Supporting Documentation for Transaction #1358949



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PHASE II COMPREHENSIVE SITE ASSESSMENT REPORT
284 Winter Street
Haverhill, Massachusetts
RTNs 3-32792 and 3-32875

April 2022
File No. 01.0172397.10

PREPARED FOR:
Boston Gas Company d/b/a National Grid
Waltham, Massachusetts

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Appendix H – Soil Gas Analytical Reports

ALPHA ANALYTICAL

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Lab Number: L1634001

Client: NewFields

ATTN: Stephen D. Emsbo-Mattingly

Project Name: WINTER STREET HAVERHILL

Project Number: 01.0172397.00

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Project Name: WINTER STREET HAVERHILL
Project Number: 01.0172397.00

Lab Number: L1634001
Report Date: 11/23/16

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1634001-01	NFAA-01	AIR	HAVERHILL, MA	10/19/16 18:42	10/21/16
L1634001-02	NFSV-04	SOIL_VAPOR	HAVERHILL, MA	10/19/16 08:56	10/21/16
L1634001-03	NFSV-07	SOIL_VAPOR	HAVERHILL, MA	10/19/16 09:45	10/21/16
L1634001-04	NFSV-05	SOIL_VAPOR	HAVERHILL, MA	10/19/16 10:46	10/21/16
L1634001-05	NFSV-06	SOIL_VAPOR	HAVERHILL, MA	10/19/16 11:48	10/21/16
L1634001-06	NFSV-08	SOIL_VAPOR	HAVERHILL, MA	10/19/16 12:54	10/21/16
L1634001-07	NFSV-03	SOIL_VAPOR	HAVERHILL, MA	10/19/16 15:58	10/21/16
L1634001-08	NFSV-02	SOIL_VAPOR	HAVERHILL, MA	10/19/16 16:18	10/21/16
L1634001-09	NFSV-01	SOIL_VAPOR	HAVERHILL, MA	10/19/16 17:42	10/21/16
L1634001-10	DUP101916	SOIL_VAPOR	HAVERHILL, MA	10/19/16 17:42	10/21/16

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Case Narrative (continued)

Report Submission

This report replaces the report issued on November 17, 2016. It has been revised to correct the J values for the TO15 SIM PIANO analysis in the data package and EDD.

Volatile Organics in Air

Canisters were released from the laboratory on October 14 and 18, 2016. The canister certification results are provided as an addendum.

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics by TO-15

Volatile Organic Compounds were analyzed by GC/MS following the procedures in the Alpha Analytical SOP Determination of Volatile Organic Compounds in Ambient Air and Soil Vapor Using Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (SOP 2186, Revision 11) Method TO-15, modified. Air volatile samples are introduced into the GC by a three stage concentration technique called Microscale Purge-and-Trap. A maximum volume of 250mLs is concentrated to about a 0.5mL volume in a cryogenic trap. The trap is then heated to 10 degrees and held while passing helium through to transfer the compounds to a second trap. After transfer to the second trap, the compounds are back flushed while heating to be further focused on an open tubular focusing trap (cryofocuser) for rapid injection onto the narrow bore capillary column for analysis and detection by mass spectrometry in dual full scan and selective ion mode (SIM). Internal standards are added to the first stage cryogenic trap prior to the sample by a mass flow controller. Additional dilutions, if required, are performed by lowering the sample volume to a minimum of 25mLs for a 1:10 dilution. If further external dilutions are needed, the canister is then pressurized with UHP Nitrogen and a known volume is then injected into a 1L Canister. Qualitative identifications were confirmed by analyzing standards under the same conditions used for samples and comparing mass spectra and GC

Case Narrative (continued)

retention times. Quantification was based on the average response factor derived from a multi-level initial calibration using internal standard techniques, from the full scan signal.Sample L1634001-01 : The canister vacuum measured on receipt at the laboratory was > 15 in. Hg and was pressurized with Nitrogen before being used for analysis. The reporting limits have been elevated accordingly.

Sample L1634001-04, -09, and -10: The samples have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the samples.

Method blank, WG947959-5, has Acetaldehyde which is J qualified. Associated field sample results would be flagged with B qualifiers if the concentrations of the analyte in the samples are less than 10x the concentration in the blank.

The continuing calibration verification standard WG947959-2 has the percent deviation for Dodecane and 1-Methylnaphthalene above the 30%D limit, but below 50%D at 35.7% and 37.6% respectively. These compounds represented less than 10% of the total analytes evaluated. Refer to the Calibration Verification Form VII for specific details.

Volatile Organics by PIANO
Volatile Organic Compounds were analyzed by GC/MS following the procedures in the Alpha Analytical SOP Determination of PIANO Volatile Organic Compounds in Ambient Air and Soil Vapor Using Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry Method TO-15, modified (SOP 2255, Rev. 4, 7/27/15). Air volatile samples are introduced into the GC by a three stage concentration technique called Microscale Purge-and-Trap. A maximum volume of 250mLs is concentrated to about a 0.5mL volume in a cryogenic trap. The trap is then heated to 10 degrees and held while passing helium through to transfer the compounds to a second trap. After transfer to the second trap, the compounds are back flushed while heating to be further focused on an open tubular focusing trap (cryofocuser) for rapid injection onto the narrow bore capillary column for analysis and detection by mass spectrometry in dual full scan and selective ion mode (SIM). Internal standards are added to the first stage cryogenic trap prior to the sample by a mass flow

Case Narrative (continued)

controller. Additional dilutions, if required, are performed by lowering the sample volume to a minimum of 25mLs for a 1:10 dilution. If further external dilutions are needed, the canister is then pressurized with UHP Nitrogen and a known volume is then injected into a 1L Canister. Qualitative identifications were confirmed by analyzing standards under the same conditions used for samples and comparing mass spectra and GC retention times. Quantification was based on the average response factor derived from a multi-level initial calibration using internal standard techniques, from the SIM scan signal.

Per client specification, all samples are B-qualified if the analyte was detected in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank.

The initial calibration was analyzed on 10/28/16 and has Indene, Undecane, Dodecane, Benzothiophene, 2-Methylnaphthalene, and 1-Methylnaphthalene above the 30%RSD QC limit. Refer to the Initial Calibration Summary Form VI for specific details. These compounds represented less than 10% of the total analytes evaluated, and the RSD was below 50%, therefore, analysis proceeded.

The initial calibration verification standard has 1-Methyl-4-Isopropylbenzene with a %D above the 30% limit at 36.0%. This compound represented less than 10% of the total analytes evaluated, and the RSD were below 50%, therefore, analysis proceeded.
VOAQC The continuing calibration verification standard WG948457-2 has the percent deviation for Undecane, Pentylbenzene, Dodecane, Naphthalene, Tridecane, 2-Methylnaphthalene, and 1-Methylnaphthalene above the 30%D limit, but below 50%D at 34.3%, 31.0%, 41.0%, 30.2%, 32.5%, 35.5% and 37.0% respectively. These compounds represented less than 10% of the total analytes evaluated. Refer to the Calibration Verification Form VII for specific details. Additionally, the percent deviation for Benzothiophene was above the limit at 50.8%. All associated samples to not have amounts of this analyte above the reporting limit, so no further action was taken.

The closing calibration verification standard WG948457-7 has the percent deviation for Benzothiophene above

Case Narrative (continued)

the 30%D limit, but below 50%D at 39.8%. This compound represented less than 10% of the total analytes evaluated. Refer to the Calibration Verification Form VII for specific details.

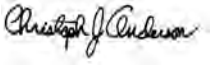
Sample L1634001-01 : The canister vacuum measured on receipt at the laboratory was > 15 in. Hg and was pressurized with Nitrogen before being used for analysis. The reporting limits have been elevated accordingly.

Sample L1634001-04 The presence of Acetone could not be determined in this sample due to a non-target compound interfering with the identification and quantification of this compound.

Sample L1634001-04, -09 and -10: The samples have elevated detection limits due to the dilution required by the elevated concentrations of target compounds in the samples.

Method blank, WG948457-5, has Pentane which is J qualified. Associated field sample results would be flagged with B qualifiers if the concentrations of the analyte in the samples were less than 10x the concentration in the blank.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Report Date: 11/23/16

Title: Technical Director/Representative

Manual Integration Codes

Flag	Reason
M1	Split or tailing peak, auto integration stopped early resulting in false low area count.
M2	Peak not found by automatic integration algorithm.
M3	Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.
M4	Poor automated baseline construction.
M5	Manual integration over a retention time range required, i.e. for hydrocarbon range methods.
M6	Misassignment of peak valley by automated integration (poor split of 2 peaks).
M7	A qualifier ion was manually integrated (only for GC/MS data).
M8	Integration of individual analyte eluting on top of an unresolved complex.
M9	Other- Explain on chromatogram

Project Name: WINTER STREET HAVERHILL

Project Number: 01.0172397.00

Lab Number: L1634001

Report Date: 11/23/16

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1634001-01	NFAA-01	0484	#16 AMB	10/14/16	229549		-	-	-	Pass	3.3	3.2	3
L1634001-01	NFAA-01	1841	6.0L Can	10/14/16	229549	L1631571-02	Pass	-29.7	-19.0	-	-	-	-
L1634001-02	NFSV-04	0173	#30 AMB	10/14/16	229549		-	-	-	Pass	72	68	6
L1634001-02	NFSV-04	2299	2.7L Can	10/14/16	229549	L1632229-07	Pass	-29.7	-4.7	-	-	-	-
L1634001-03	NFSV-07	0263	#16 AMB	10/14/16	229549		-	-	-	Pass	72	70	3
L1634001-03	NFSV-07	2300	2.7L Can	10/14/16	229549	L1632229-01	Pass	-29.8	-5.1	-	-	-	-
L1634001-04	NFSV-05	0297	#90 AMB	10/14/16	229549		-	-	-	Pass	72	68	6
L1634001-04	NFSV-05	2308	2.7L Can	10/14/16	229549	L1632229-06	Pass	-29.8	-3.5	-	-	-	-
L1634001-05	NFSV-06	0489	#90 SV	10/14/16	229549		-	-	-	Pass	70	65	7
L1634001-05	NFSV-06	2313	2.7L Can	10/14/16	229549	L1632229-04	Pass	-29.8	-5.4	-	-	-	-
L1634001-06	NFSV-08	0019	#20 SV	10/14/16	229549		-	-	-	Pass	71	77	8
L1634001-06	NFSV-08	2311	2.7L Can	10/14/16	229549	L1632229-03	Pass	-29.7	-5.8	-	-	-	-
L1634001-07	NFSV-03	0618	#16 AMB	10/14/16	229549		-	-	-	Pass	72	67	7
L1634001-07	NFSV-03	2312	2.7L Can	10/14/16	229549	L1632229-10	Pass	-29.7	-4.0	-	-	-	-
L1634001-08	NFSV-02	0353	#90 SV	10/14/16	229549		-	-	-	Pass	71	77	8

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L1634001-08	NFSV-02	2296	2.7L Can	10/14/16	229549	L1632229-09	Pass	-29.7	-1.8	-	-	-	-
L1634001-09	NFSV-01	0146	#20 SV	10/18/16	230673		-	-	-	Pass	67	79	16
L1634001-09	NFSV-01	2302	2.7L Can	10/18/16	230673	L1632229-05	Pass	-29.2	-2.8	-	-	-	-
L1634001-10	DUP101916	0217	#30 SV	10/14/16	229549		-	-	-	Pass	72	75	4
L1634001-10	DUP101916	2309	2.7L Can	10/14/16	229549	L1632229-08	Pass	-29.8	-5.9	-	-	-	-

Organics

Air Volatiles by TO-15

Leak Check

---------- Leak Check Report ----------

11/1/2016 1:33:24 PM
Leak Check for C:\Smart\161101.SEQ
Report File: C:\Smart\161101.LCR
Leak Check Method: Evacuation
Pressurize/Evacuate time(sec) 5
Equilibration time(sec) 10
Maintanance time(sec) 30

Sample Inlet	Auto1	Auto2	Auto3	Start	End	Rate(psi/min)	
1	3	---	---	2.2	2.4	0.40	
1	4	---	---	1.2	1.4	0.40	
1	5	---	---	0.8	1.0	0.40	L16340001-01
1	6	---	---	0.7	0.9	0.40	02
1	7	---	---	0.8	0.9	0.20	03
1	8	---	---	0.8	1.0	0.40	04
1	9	---	---	0.9	1.0	0.20	05
1	10	---	---	0.8	0.9	0.20	06
1	11	---	---	0.8	0.9	0.20	07
1	12	---	---	0.9	1.0	0.20	08
1	13	---	---	1.0	1.3	0.60	09
1	14	---	---	1.0	1.3	0.60	10

Canister Dilution Worksheet

Alpha Analytical, Inc.
Canister Dilution Worksheet

	NJDEP Required Information							Pressurization Dilution				Can Dilution				Instrument Dilution				
Sample ID	Can size, L	$P_{1,}$ in Hg	$P_{1,}$ atm	$V_{1,}$ L	$P_{2,}$ in Hg	$P_{2,}$ atm	$V_{2,}$ L	$P_{1,}$ psia	$P_{2,}$ psia	Dilution factor	Gas Used*	Volume injected, mL	Final Pressure, psia	Volume of Dilution Gas in Can, L	Can dilution factor	Volume of Bag or Can Analyzed, mL	Instrument Dilution Factor	Final Dilution Factor	Final Volume Injected, mL	Analyst Initials
L1634001-01D	6.0	-18.31	0.39	2.33	-9.74	0.67	4.05	5.7	9.9	1.74	N2	1000	14.7	1.00	1.00	250	1.00	1.74	143.9394	MJB

*N2 = Nitrogen and H2= Hydrogen

Analyst data input fields

Analyst Comments:

in Hg = ((psia/14.67)*29.94)-29.94 atm =psia/14.67 psig=psia - 14.67 psia = dilution instrument reading

Form# 117-05
11/02/2016 10:38:54

Work Group

ALPHA ANALYTICAL LABORATORIES, INC.

Alpha WORK GROUP REPORT (wk02)

Nov 02 2016, 02:15 pm

Work Group: WG947959 for Department: 3 GC/MS

Created: 01-NOV-16 Due: Operator: MB

Sample	Client ID	C	Product	Matrix	Stat	UA	HOLD	DUE	PR	Location
L1634001-01	NFAA-01	S	NF-TO15	AIR	DONE	U	1118	1111	S0	Can-6
L1634001-02	NFSV-04	S	NF-TO15	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1634001-03	NFSV-07	S	NF-TO15	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1634001-04	NFSV-05	S	NF-TO15	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1634001-05	NFSV-06	S	NF-TO15	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1634001-06	NFSV-08	S	NF-TO15	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1634001-07	NFSV-03	S	NF-TO15	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1634001-08	NFSV-02	S	NF-TO15	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1634001-09	NFSV-01	S	NF-TO15	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1634001-10	DUP101916	S	NF-TO15	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1635199-02	CAN 203 SHELF 9	S	NF-TO15	AIR	DONE	U	1130	1108	NC	Can-2.7
L1635229-01	CAN 1602 SHELF 46	S	NF-TO15	AIR	DONE	U	1130	1108	NC	Can-6
WG947959-1	MS BFB Tune Standard	S	NF-TO15	SOIL_VAPOR	DONE	U				
WG947959-1	MS BFB Tune Standard	S	NF-TO15	AIR	DONE	U				
WG947959-2	Continuing Calibrati	S	NF-TO15	SOIL_VAPOR	DONE	U				
WG947959-2	Continuing Calibrati	S	NF-TO15	AIR	DONE	U				
WG947959-3	Laboratory Control S	S	NF-TO15	SOIL_VAPOR	DONE	U				
WG947959-3	Laboratory Control S	S	NF-TO15	AIR	DONE	U				
WG947959-4	LCS Duplicate	S	NF-TO15	SOIL_VAPOR	DONE	U				
WG947959-4	LCS Duplicate	S	NF-TO15	AIR	DONE	U				
WG947959-5	Laboratory Method Bl	S	NF-TO15	SOIL_VAPOR	DONE	U				
WG947959-5	Laboratory Method Bl	S	NF-TO15	AIR	DONE	U				
WG947959-6	Duplicate Sample	S	NF-TO15	SOIL_VAPOR	DONE	U				
WG947959-6	Duplicate Sample	S	NF-TO15	AIR	DONE	U				

Comments:

WG947959-4	WG947959-3
WG947959-6	L1634001-04

Sequence Logs

----------SEQUENCE TABLE ----------

Sequence Name: C:\Smart\161012NT_ICAL.SEQ
Date: 10-13-2016
Time: 09:39:55
Int. Std Volume: 100 cc

Sample Name	Inlet #	Auto Pos	Samp Vol.	Cal Std Vol.	Method	Time
TA1101201	1	1	250	100	C:\Smart\Alpha-TO15.CTD	12:00
ITO15-SIMSTD0.02	1	5	50	100	C:\Smart\Alpha-TO15.CTD	12:00
ITO15-SIMSTD0.04	1	5	100	100	C:\Smart\Alpha-TO15.CTD	12:00
ITO15-SIMSTD0.1	1	5	250	100	C:\Smart\Alpha-TO15.CTD	12:00
ITO15-SIMSTD0.2	1	6	100	100	C:\Smart\Alpha-TO15.CTD	12:00
ITO15-SIMSTD0.5	1	6	250	100	C:\Smart\Alpha-TO15.CTD	12:00
ITO15-SIMSTD1.0	1	7	25	100	C:\Smart\Alpha-TO15.CTD	12:00
ITO15-SIMSTD5.0	1	7	125	100	C:\Smart\Alpha-TO15.CTD	12:00
ITO15-SIMSTD10	1	7	250	100	C:\Smart\Alpha-TO15.CTD	12:00
ITO15-SIMSTD20	1	8	50	100	C:\Smart\Alpha-TO15.CTD	12:00
ITO15-SIMSTD50	1	8	125	100	C:\Smart\Alpha-TO15.CTD	12:00
ITO15-SIMSTD100	1	8	250	100	C:\Smart\Alpha-TO15.CTD	12:00
BA1101201	1	1	250	0	C:\Smart\Alpha-TO15.CTD	12:00
BA1101202	1	1	250	100	C:\Smart\Alpha-TO15.CTD	12:00
CTO15-LLSTD10	1	2	250	100	C:\Smart\Alpha-TO15.CTD	12:00
CTO15-SIMSTD5.0	1	2	125	100	C:\Smart\Alpha-TO15.CTD	12:00

Alpha Analytical Air Lab
Instrument Run Log

ID: Airpiano 1

Date: 10/12/16

Analyst Initials: RY

Internal Standard/Surrogate IDs: SS16-022 / CSS15-001

Internal Standard/Surrogate Volume: 100 ml

Sequence File Name: 161012.S

SIM ICAL# PIANO ICAL # Full Scan ICAL# TO12 ICAL# APH ICAL#

AS Position #	Sample ID	Acquisition Method	Data File ID	Standard ID or Batch ID #, ICAL Ref #	Comment (s)	Product/ sublist	Check Pass ? Y/N
1	TA1101201	TO15_SFS	R148694	250ml	TUNE		NA
5	ITO15-SIMSTD0.02	TO15_SFS	R148695	SS16-029D2 50ML 0.02	SIM ONLY		NA
5	ITO15-SIMSTD0.04	TO15_SFS	R148696	SS16-029D2 100ML 0.04	SIM ONLY		NA
5	ITO15-SIMSTD0.1	TO15_SFS	R148697	SS16-029D2 250ML 0.1	SIM ONLY		NA
6	ITO15-SIMSTD0.2	TO15_SFS	R148698	SS16-029C2 50ML 0.2			NA
6	ITO15-SIMSTD0.5	TO15_SFS	R148699	SS16-029C2 ML 0.5			NA
7	ITO15-SIMSTD1.0	TO15_SFS	R148700	SS16-029B 25ML 1.0			NA
7	ITO15-SIMSTD5.0	TO15_SFS	R148701	SS16-029B 125ML 5.0			NA
7	ITO15-SIMSTD10.0	TO15_SFS	R148702	SS16-029B 250ML 10.0			NA
8	ITO15-SIMSTD20.0	TO15_SFS	R148703	SS16-029A 50ML 20.0			NA
8	ITO15-SIMSTD50.0	TO15_SFS	R148704	SS16-029A 125ML 50.0			NA
8	ITO15-LLSTD100.0	TO15_SFS	R148705	SS16-029A 250ML 100.0	NOT FOR SIM		NA
1	BA1101201	TO15_SFS	R148706	250ml			NA
		Pause					NA
1	BA1101202	TO15_SFS	R148707	250ml			NA
2	CTO15-LLSTD10.0	TO15_SFS	R148708	SS15-032A 250ML 10.0	FULL SCAN ICV		NA
2	CTO15-SIMSTD5.0	TO15_SFS	R148709	SS15-032A 125ML 5.0	SIM ICV		NA

Alpha Analytical Air Lab
Instrument Run Log

Date(s) of Initial Calibration: Refer to Initial Calibration Summary Form 6

Date Acquired: see Instrument Performance Check Summary and/or quantitation report.

Sample ID information: { Lab sample ID, dept #, actual volume analyzed (mL), nominal volume analyzed (mL) } L1301234-01,3,250,2

Dilution Factor: See Form 1 report, or divide nominal volume by actual volume analyzed

----------SEQUENCE TABLE ----------

Sequence Name: C:\Smart\161101.SEQ
Date: 11-02-2016
Time: 06:44:26
Int. Std Volume: 100 cc

Sample Name	Inlet #	Auto Pos	Samp Vol.	Cal Std Vol.	Method	Time
TA1110101	1	1	250	100	C:\Smart\Alpha-TO15.CTD	12:00
CA1110101	1	2	250	100	C:\Smart\Alpha-TO15.CTD	12:00
CTO15-LLSTD10	1	3	250	100	C:\Smart\Alpha-TO15.CTD	12:00
CTO15-LLSTD10	1	3	250	100	C:\Smart\Alpha-TO15.CTD	12:00
BA1110101	1	1	250	100	C:\Smart\Alpha-TO15.CTD	12:00
BA1110102	1	1	250	100	C:\Smart\Alpha-TO15.CTD	12:00
L1635229-01	1	3	250	100	C:\Smart\Alpha-TO15.CTD	12:00
L1635199-02	1	4	250	100	C:\Smart\Alpha-TO15.CTD	12:00
L1634001-01	1	5	250	100	C:\Smart\Alpha-TO15.CTD	12:00
L1634001-02	1	6	250	100	C:\Smart\Alpha-TO15.CTD	12:00
L1634001-03	1	7	250	100	C:\Smart\Alpha-TO15.CTD	12:00
L1634001-04	1	8	75	100	C:\Smart\Alpha-TO15.CTD	12:00
L1634001-04DUP	1	8	75	100	C:\Smart\Alpha-TO15.CTD	12:00
L1634001-05	1	9	250	100	C:\Smart\Alpha-TO15.CTD	12:00
L1634001-06	1	10	250	100	C:\Smart\Alpha-TO15.CTD	12:00
L1634001-07	1	11	250	100	C:\Smart\Alpha-TO15.CTD	12:00
L1634001-08	1	12	250	100	C:\Smart\Alpha-TO15.CTD	12:00
L1634001-09	1	13	50	100	C:\Smart\Alpha-TO15.CTD	12:00
L1634001-10	1	14	50	100	C:\Smart\Alpha-TO15.CTD	12:00

Alpha Analytical Air Lab
Instrument Run Log

ID: Airpiano 1

Date: 11/01/16

Analyst Initials: MB

Internal Standard/Surrogate IDs: SS16-022 / CSS15-001

Internal Standard/Surrogate Volume: 100 ml

Sequence File Name: 161101.S

SIM ICAL# 12988 PIANO ICAL # Full Scan ICAL# 12987 TO12 ICAL# APH ICAL#

AS Position #	Sample ID	Acquisition Method	Data File ID	Standard ID or Batch ID #, ICAL Ref #	Comment (s)	Product/ sublist	Check Pass ? Y/N
1	WG947959-1	TO15_SFS	R149090	250ml	TUNE		NA
2	WG947959-2	TO15_SFS	R149091	SS16-029B 250ML 10.0	CC		NA
		Pause					
3	WG947959-3	TO15_SFS	R149092	SS16-028B 250ML 10.0	LCS		NA
3	WG947959-4	TO15_SFS	R149093	SS16-028B 250ML 10.0	LCSD		NA
1	BA1110101	TO15_SFS	R149094	250ml			NA
1	WG947959-5	TO15_SFS	R149095	250ml	BLANK		NA
3	L1635229-01,3,250,250	TO15_SFS	R149096	WG947959,ICAL12987		KEYSPAN	Y
4	L1635199-02,3,250,250	TO15_SFS	R149097	WG947959,ICAL12987		KEYSPAN	Y
5	L1634001-01D,3,143.9394,250	TO15_SFS	R149098	WG947959,ICAL12987		KEYSPAN	Y
6	L1634001-02,3,250,250	TO15_SFS	R149099	WG947959,ICAL12987		KEYSPAN	Y
7	L1634001-03,3,250,250	TO15_SFS	R149100	WG947959,ICAL12987		KEYSPAN	Y
8	L1634001-04D,3,75,250	TO15_SFS	R149101	WG947959,ICAL12987		KEYSPAN	Y
8	WG947959-6D,3,75,250	TO15_SFS	R149102	WG947959,ICAL12987	DUPLICATE	KEYSPAN	Y
9	L1634001-05,3,250,250	TO15_SFS	R149103	WG947959,ICAL12987		KEYSPAN	Y
10	L1634001-06,3,250,250	TO15_SFS	R149104	WG947959,ICAL12987		KEYSPAN	Y
11	L1634001-07,3,250,250	TO15_SFS	R149105	WG947959,ICAL12987		KEYSPAN	Y
12	L1634001-08,3,250,250	TO15_SFS	R149106	WG947959,ICAL12987		KEYSPAN	Y
13	L1634001-09D,3,50,250	TO15_SFS	R149107	WG947959,ICAL12987		KEYSPAN	Y
14	L1634001-10D,3,50,250	TO15_SFS	R149108	WG947959,ICAL12987		KEYSPAN	Y

Alpha Analytical Air Lab
Instrument Run Log

Date(s) of Initial Calibration: Refer to Initial Calibration Summary Form 6

Date Acquired: see Instrument Performance Check Summary and/or quantitation report.

Sample ID information: { Lab sample ID, dept #, actual volume analyzed (mL), nominal volume analyzed (mL) } L1301234-01,3,250,2

Dilution Factor: See Form 1 report, or divide nominal volume by actual volume analyzed

Sample Raw Data and Results Summary

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-01D	Date Collected	: 10/19/16 18:42
Client ID	: NFAA-01	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 15:08
Sample Matrix	: AIR	Dilution Factor	: 1.737
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149098	Instrument ID	: AIRPIANO1
Sample Amount	: 144 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-71-8	Dichlorodifluoromethane	0.361	0.347	0.081	1.79	1.72	0.400	
74-87-3	Chloromethane	0.507	0.347	0.166	1.05	0.717	0.343	
76-14-2	Freon-114	ND	0.347	0.073	ND	2.43	0.509	U
75-01-4	Vinyl chloride	ND	0.347	0.066	ND	0.887	0.168	U
106-99-0	1,3-Butadiene	ND	0.347	0.139	ND	0.768	0.308	U
106-97-8	Butane	3.00	0.347	0.077	7.13	0.825	0.183	
75-07-0	Acetaldehyde	ND	4.34	0.949	ND	7.82	1.71	U
74-83-9	Bromomethane	ND	0.347	0.121	ND	1.35	0.470	U
75-00-3	Chloroethane	ND	0.347	0.133	ND	0.916	0.351	U
64-17-5	Ethanol	6.96	4.34	0.941	13.1	8.18	1.77	
593-60-2	Vinyl bromide	ND	0.347	0.121	ND	1.52	0.529	U
107-02-8	Acrolein	ND	0.868	0.198	ND	1.99	0.454	U
67-64-1	Acetone	3.98	1.74	0.286	9.45	4.13	0.679	
75-69-4	Trichlorofluoromethane	0.210	0.347	0.072	1.18	1.95	0.406	J
67-63-0	Isopropanol	ND	0.868	0.091	ND	2.13	0.224	U
109-66-0	Pentane	0.768	0.347	0.083	2.27	1.02	0.243	
75-35-4	1,1-Dichloroethene	ND	0.347	0.098	ND	1.38	0.390	U
75-65-0	tert-Butyl Alcohol	ND	0.868	0.104	ND	2.63	0.315	U
75-09-2	Methylene chloride	0.571	1.00	0.520	1.98	3.02	1.81	J
107-05-1	3-Chloropropene	ND	0.347	0.141	ND	1.09	0.441	U
75-15-0	Carbon disulfide	ND	0.347	0.060	ND	1.08	0.187	U
76-13-1	Freon-113	ND	0.347	0.089	ND	2.66	0.681	U
156-60-5	trans-1,2-Dichloroethene	ND	0.347	0.128	ND	1.38	0.507	U
75-34-3	1,1-Dichloroethane	ND	0.347	0.134	ND	1.40	0.542	U
1634-04-4	Methyl tert butyl ether	ND	0.347	0.092	ND	1.25	0.331	U
78-93-3	2-Butanone	0.264	0.868	0.082	0.779	2.56	0.242	J
156-59-2	cis-1,2-Dichloroethene	0.106	0.347	0.102	0.420	1.38	0.404	J
67-66-3	Chloroform	ND	0.347	0.092	ND	1.69	0.450	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-01D	Date Collected	: 10/19/16 18:42
Client ID	: NFAA-01	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 15:08
Sample Matrix	: AIR	Dilution Factor	: 1.737
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149098	Instrument ID	: AIRPIANO1
Sample Amount	: 144 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
107-06-2	1,2-Dichloroethane	ND	0.347	0.096	ND	1.40	0.388	U
110-54-3	n-Hexane	0.181	0.347	0.090	0.638	1.22	0.317	J
71-55-6	1,1,1-Trichloroethane	ND	0.347	0.099	ND	1.89	0.540	U
71-43-2	Benzene	0.193	0.347	0.093	0.617	1.11	0.298	J
110-02-1	Thiophene	ND	0.347	0.092	ND	1.19	0.316	U
56-23-5	Carbon tetrachloride	ND	0.347	0.082	ND	2.18	0.515	U
110-82-7	Cyclohexane	ND	0.347	0.114	ND	1.19	0.392	U
78-87-5	1,2-Dichloropropane	ND	0.347	0.121	ND	1.60	0.559	U
75-27-4	Bromodichloromethane	ND	0.347	0.114	ND	2.32	0.764	U
123-91-1	1,4-Dioxane	ND	0.347	0.135	ND	1.25	0.486	U
79-01-6	Trichloroethene	ND	0.347	0.123	ND	1.86	0.661	U
540-84-1	2,2,4-Trimethylpentane	ND	0.347	0.114	ND	1.62	0.532	U
142-82-5	Heptane	ND	0.347	0.096	ND	1.42	0.393	U
10061-01-5	cis-1,3-Dichloropropene	ND	0.347	0.129	ND	1.58	0.586	U
108-10-1	4-Methyl-2-pentanone	ND	0.868	0.105	ND	3.56	0.430	U
10061-02-6	trans-1,3-Dichloropropene	ND	0.347	0.120	ND	1.58	0.545	U
79-00-5	1,1,2-Trichloroethane	ND	0.347	0.116	ND	1.89	0.633	U
108-88-3	Toluene	0.479	0.347	0.109	1.81	1.31	0.411	
554-14-3	2-Methylthiophene	ND	0.347	0.137	ND	1.39	0.550	U
591-78-6	2-Hexanone	ND	0.347	0.105	ND	1.42	0.430	U
616-44-4	3-Methylthiophene	ND	0.347	0.116	ND	1.39	0.466	U
124-48-1	Dibromochloromethane	ND	0.347	0.130	ND	2.96	1.11	U
106-93-4	1,2-Dibromoethane	ND	0.347	0.135	ND	2.67	1.04	U
111-65-9	Octane	ND	0.347	0.073	ND	1.62	0.341	U
127-18-4	Tetrachloroethene	ND	0.347	0.132	ND	2.35	0.895	U
108-90-7	Chlorobenzene	ND	0.347	0.137	ND	1.60	0.631	U
100-41-4	Ethylbenzene	ND	0.347	0.096	ND	1.51	0.419	U
872-55-9	2-Ethylthiophene	ND	0.347	0.099	ND	1.59	0.455	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-01D	Date Collected	: 10/19/16 18:42
Client ID	: NFAA-01	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 15:08
Sample Matrix	: AIR	Dilution Factor	: 1.737
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149098	Instrument ID	: AIRPIANO1
Sample Amount	: 144 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
179601-23-1	p/m-Xylene	ND	0.695	0.241	ND	3.02	1.05	U
75-25-2	Bromoform	ND	0.347	0.091	ND	3.59	0.939	U
100-42-5	Styrene	ND	0.347	0.139	ND	1.48	0.592	U
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.347	0.095	ND	2.38	0.654	U
95-47-6	o-Xylene	ND	0.347	0.110	ND	1.51	0.478	U
111-84-2	Nonane	ND	0.347	0.108	ND	1.82	0.567	U
95-49-8	2-Chlorotoluene	ND	0.347	0.085	ND	1.80	0.438	U
622-96-8	4-Ethyltoluene	ND	0.347	0.135	ND	1.71	0.664	U
108-67-8	1,3,5-Trimethylbenzene	ND	0.347	0.101	ND	1.71	0.497	U
95-63-6	1,2,4-Trimethylbenzene	ND	0.347	0.120	ND	1.71	0.590	U
124-18-5	Decane	ND	0.347	0.084	ND	2.02	0.489	U
541-73-1	1,3-Dichlorobenzene	ND	0.347	0.111	ND	2.09	0.667	U
106-46-7	1,4-Dichlorobenzene	ND	0.347	0.063	ND	2.09	0.377	U
526-73-8	1,2,3-Trimethylbenzene	ND	0.347	0.130	ND	1.71	0.639	U
95-50-1	1,2-Dichlorobenzene	ND	0.347	0.107	ND	2.09	0.643	U
496-11-7	Indane	ND	0.347	0.138	ND	1.68	0.667	U
95-13-6	Indene	ND	0.347	0.106	ND	1.65	0.504	U
1120-21-4	Undecane	ND	0.347	0.092	ND	2.22	0.586	U
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.347	0.138	ND	1.90	0.757	U
112-40-3	Dodecane	0.122	0.347	0.083	0.850	2.42	0.578	J
120-82-1	1,2,4-Trichlorobenzene	ND	0.347	0.106	ND	2.58	0.787	U
91-20-3	Naphthalene	ND	0.347	0.074	ND	1.82	0.387	U
95-15-8	Benzothiophene	ND	0.868	0.081	ND	4.76	0.446	U
87-68-3	Hexachlorobutadiene	ND	0.347	0.127	ND	3.70	1.35	U
91-57-6	2-Methylnaphthalene	ND	1.74	0.473	ND	10.1	2.75	U
90-12-0	1-Methylnaphthalene	ND	1.74	0.433	ND	10.1	2.52	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149098.D
Acq On : 1 Nov 2016 3:08 pm
Operator : AIRPIANO1:RY
Sample : L1634001-01D,3,143.9394,250
Misc : WG947959,ICAL12987
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 02 09:55:42 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	137858	10.000	ppbV	-0.01
Standard Area = 153282			Recovery =		89.94%	
43) 1,4-difluorobenzene	12.41	114	226207	10.000	ppbV	0.00
Standard Area = 240182			Recovery =		94.18%	
67) chlorobenzene-D5	16.82	54	61309	10.000	ppbV	0.00
Standard Area = 64184			Recovery =		95.52%	
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	67528	9.965	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =		99.65%	
69) toluene-D8	15.14	98	179586	9.725	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =		97.25%	
90) bromofluorobenzene	18.01	95	117476	9.102	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =		91.02%	
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	3677	0.208	ppbV	95
6) chloromethane	4.37	50	2121	0.292	ppbV	89
7) Freon-114	0.00		0	N.D.		
9) vinyl chloride	0.00		0	N.D.		
10) 1,3-butadiene	0.00		0	N.D.		
11) butane	4.95	43	23210	1.730	ppbV	96
12) acetaldehyde	0.00		0	N.D.	d	
13) bromomethane	0.00		0	N.D.		
14) chloroethane	0.00		0	N.D.		
15) ethanol	5.73	31	27041	4.006	ppbV	98
17) vinyl bromide	0.00		0	N.D.		
18) acrolein	0.00		0	N.D.		
19) acetone	6.38	43	36133	2.292	ppbV #	89
21) trichlorofluoromethane	6.57	101	2203	0.121	ppbV	93
22) isopropyl alcohol	0.00		0	N.D.	d	
24) pentane	7.06	43	6557	0.442	ppbV	97
26) 1,1-dichloroethene	0.00		0	N.D.		
27) tertiary butyl alcohol	0.00		0	N.D.	d	
28) methylene chloride	7.59	49	3414	0.329	ppbV	88
29) 3-chloropropene	0.00		0	N.D.	d	
30) carbon disulfide	7.90		0	N.D.		

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149098.D
Acq On : 1 Nov 2016 3:08 pm
Operator : AIRPIANO1:RY
Sample : L1634001-01D,3,143.9394,250
Misc : WG947959,ICAL12987
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 02 09:55:42 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
31) Freon 113	7.92		0	N.D.		
32) trans-1,2-dichloroethene	0.00		0	N.D.		
33) 1,1-dichloroethane	0.00		0	N.D.		
34) MTBE	0.00		0	N.D.	d	
36) 2-butanone	9.54	43	2979	0.152	ppbV #	93
37) cis-1,2-dichloroethene	10.00	61	558	0.061	ppbV #	63
39) chloroform	0.00		0	N.D.		
42) 1,2-dichloroethane	0.00		0	N.D.		
44) hexane	10.25	57	1601	0.104	ppbV #	45
48) 1,1,1-trichloroethane	0.00		0	N.D.		
50) benzene	12.00	78	2357	0.111	ppbV #	83
51) thiophene	0.00		0	N.D.		
52) carbon tetrachloride	12.17		0	N.D.		
53) cyclohexane	12.31		0	N.D.		
56) 1,2-dichloropropane	0.00		0	N.D.		
57) bromodichloromethane	0.00		0	N.D.		
58) 1,4-dioxane	0.00		0	N.D.		
59) trichloroethene	0.00		0	N.D.		
60) 2,2,4-trimethylpentane	13.24		0	N.D.		
62) heptane	13.53		0	N.D.		
63) cis-1,3-dichloropropene	0.00		0	N.D.		
64) 4-methyl-2-pentanone	0.00		0	N.D.		
65) trans-1,3-dichloropropene	0.00		0	N.D.		
66) 1,1,2-trichloroethane	0.00		0	N.D.		
68) toluene	15.24	91	7056	0.276	ppbV	98
70) 2-methylthiophene	0.00		0	N.D.	d	
72) 2-hexanone	0.00		0	N.D.	d	
73) 3-methylthiophene	0.00		0	N.D.		
74) dibromochloromethane	0.00		0	N.D.		
75) 1,2-dibromoethane	0.00		0	N.D.		
77) octane	0.00		0	N.D.		
78) tetrachloroethene	16.29		0	N.D.		
80) chlorobenzene	0.00		0	N.D.		
81) ethylbenzene	17.16		0	N.D.		
82) 2-ethylthiophene	0.00		0	N.D.		
83) m+p-xylene	17.29		0	N.D.		
84) bromoform	0.00		0	N.D.		
85) styrene	0.00		0	N.D.		

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149098.D
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Operator : AIRPIANO1:RY
Sample : L1634001-01D,3,143.9394,250
Misc : WG947959,ICAL12987
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 02 09:55:42 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
86)	1,1,2,2-tetrachloroethane	0.00		0	N.D.		
87)	o-xylene	17.67		0	N.D.		
89)	nonane	17.81		0	N.D.		
93)	2-chlorotoluene	0.00		0	N.D.		
96)	4-ethyl toluene	18.60		0	N.D.		
97)	1,3,5-trimethylbenzene	18.65		0	N.D.		
99)	1,2,4-trimethylbenzene	18.95		0	N.D.		
100)	decane	18.99		0	N.D.		
102)	1,3-dichlorobenzene	0.00		0	N.D.		
103)	1,4-dichlorobenzene	0.00		0	N.D.		
105)	1,2,3-trimethylbenzene	19.28		0	N.D.		
107)	1,2-dichlorobenzene	0.00		0	N.D.		
109)	indan	19.44		0	N.D.		
110)	indene	19.44		0	N.D.		
112)	undecane	0.00		0	N.D.	d	
113)	1,2,4,5-tetramethylben...	0.00		0	N.D.		
114)	dodecane	20.84	57	1915M3	0.070	ppbV	
115)	1,2,4-trichlorobenzene	0.00		0	N.D.		
116)	naphthalene	20.96		0	N.D.		
118)	benzothiophene	0.00		0	N.D.		
119)	hexachlorobutadiene	0.00		0	N.D.		
120)	2-methylnaphthalene	0.00		0	N.D.		
121)	1-methylnaphthalene	0.00		0	N.D.		

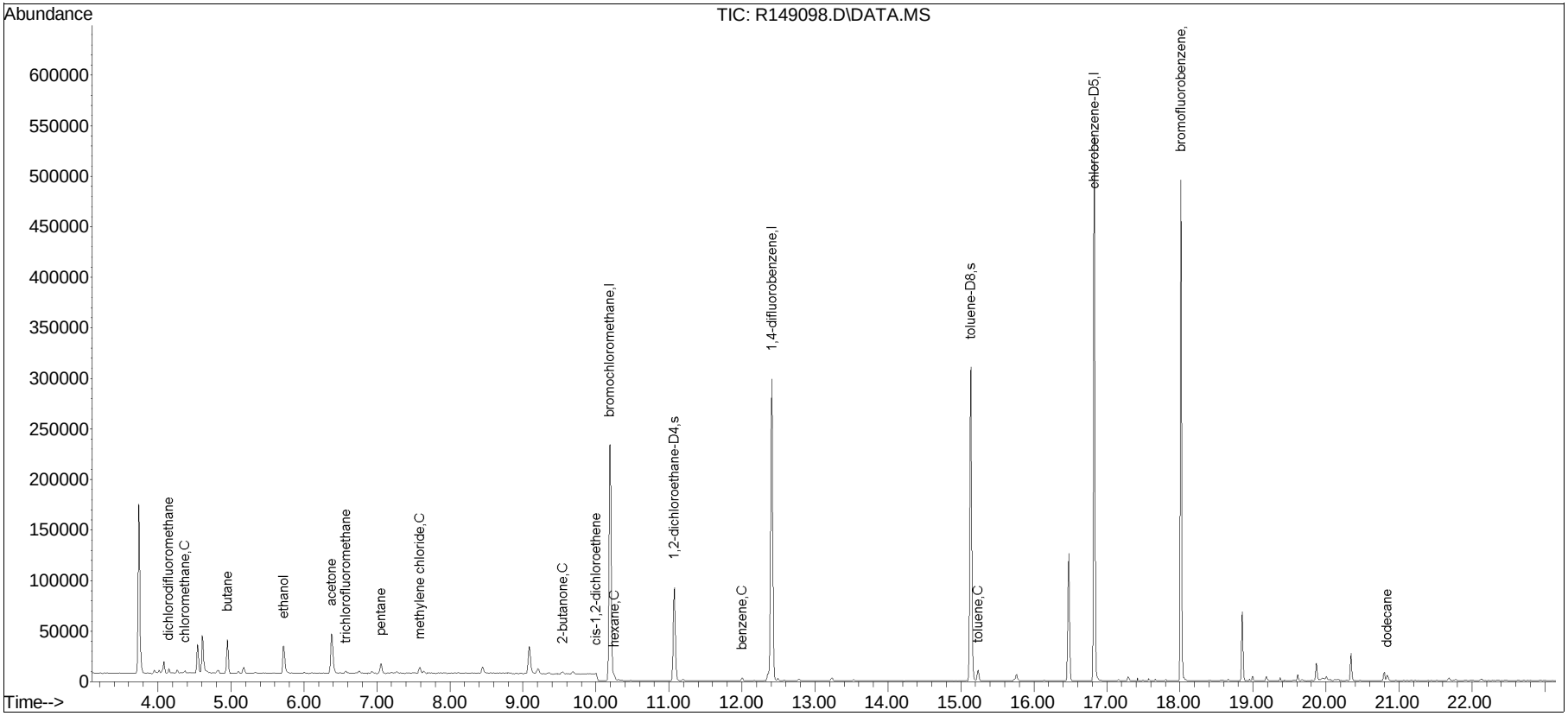
(#) = qualifier out of range (m) = manual integration (+) = signals summed

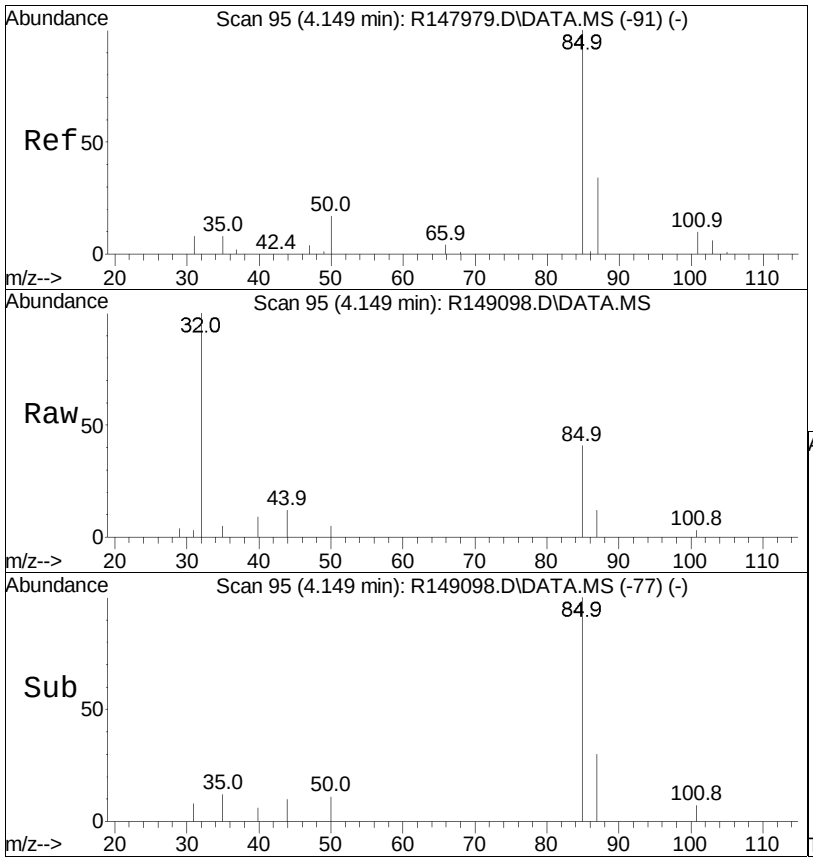
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149098.D
Acq On : 1 Nov 2016 3:08 pm
Operator : AIRPIANO1:RY
Sample : L1634001-01D,3,143.9394,250
Misc : WG947959,ICAL12987
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 02 09:55:42 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Keyspan_TO15 - .a\AIR1\2016\161101K\R149091.D

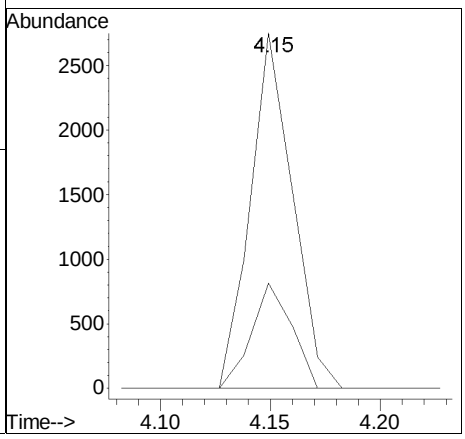


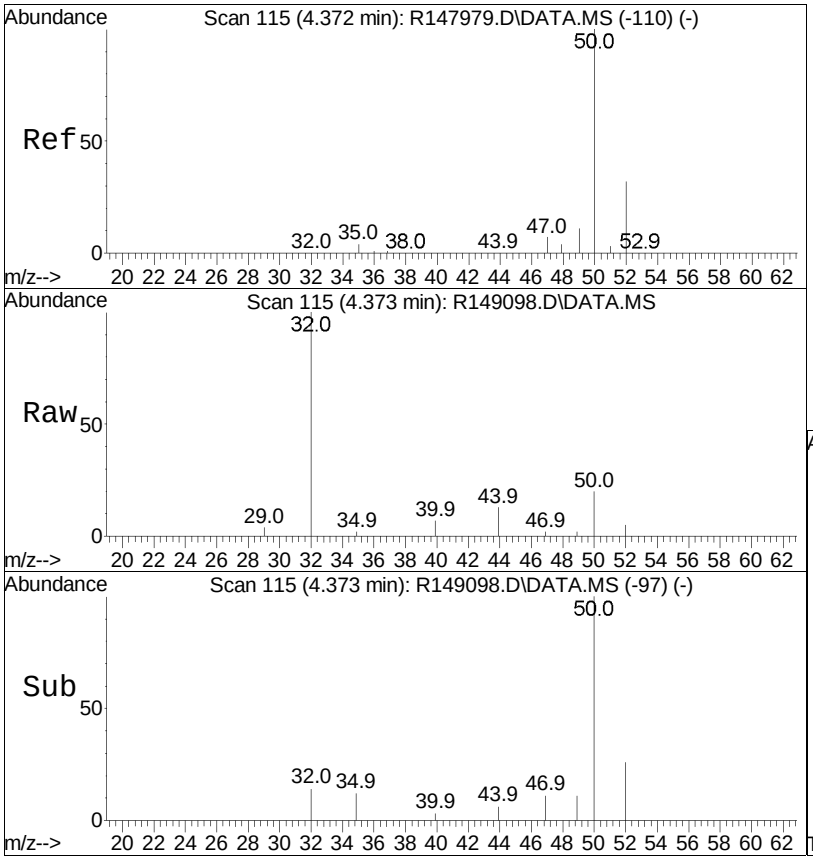


#5
dichlorodifluoromethane
Concen: 0.21 ppbV
RT: 4.15 min Scan# 95
Delta R.T. -0.000 min
Lab File: R149098.D
Acq: 1 Nov 2016 3:08 pm

Tgt Ion: 85 Resp: 3677

Ion	Ratio	Lower	Upper
85	100		
87	29.6	25.9	38.9

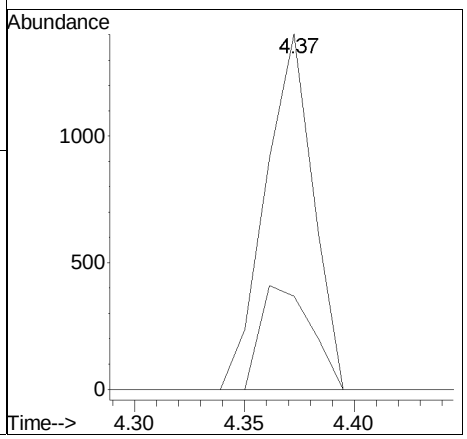


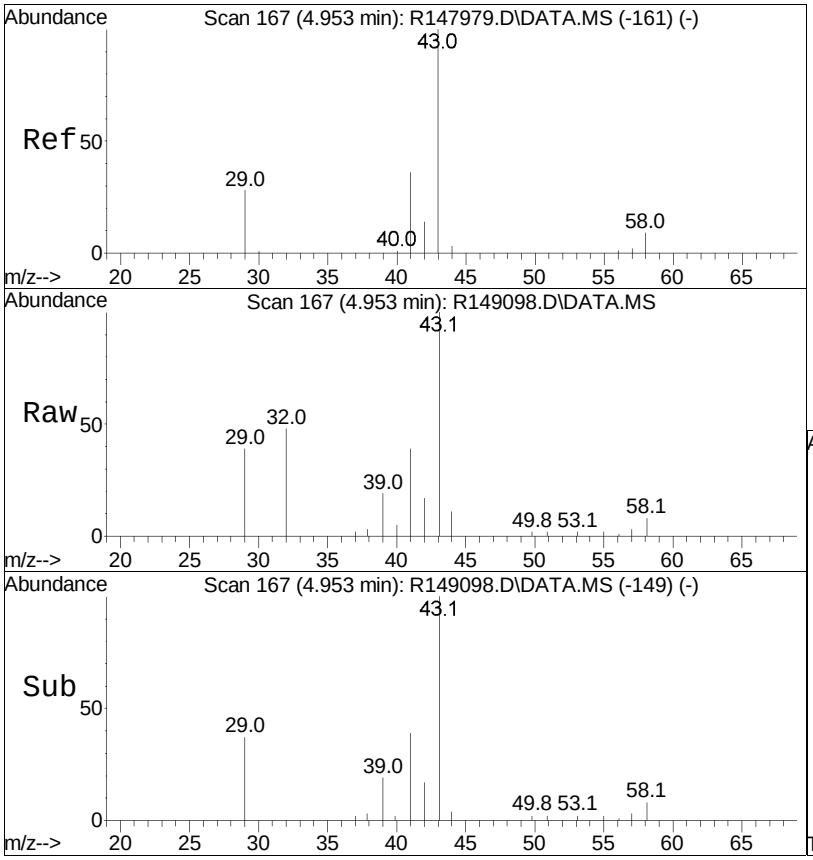


#6
chloromethane
Concen: 0.29 ppbV
RT: 4.37 min Scan# 115
Delta R.T. -0.000 min
Lab File: R149098.D
Acq: 1 Nov 2016 3:08 pm

Tgt Ion: 50 Resp: 2121

Ion	Ratio	Lower	Upper
50	100		
52	26.2	25.7	38.5

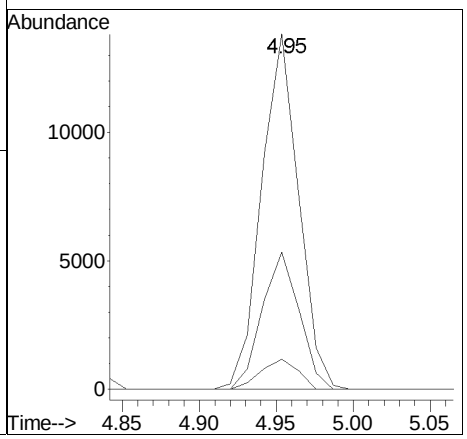


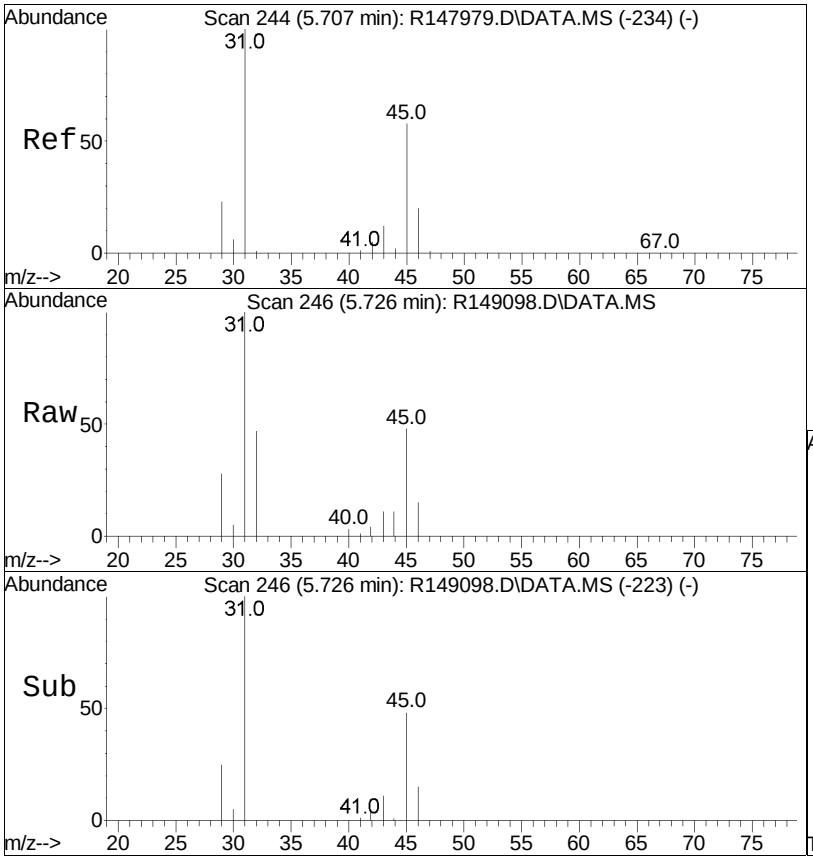


#11
butane
Concen: 1.73 ppbV
RT: 4.95 min Scan# 167
Delta R.T. -0.000 min
Lab File: R149098.D
Acq: 1 Nov 2016 3:08 pm

Tgt Ion: 43 Resp: 23210

Ion	Ratio	Lower	Upper
43	100		
58	8.5	7.1	10.7
41	38.6	28.7	43.1

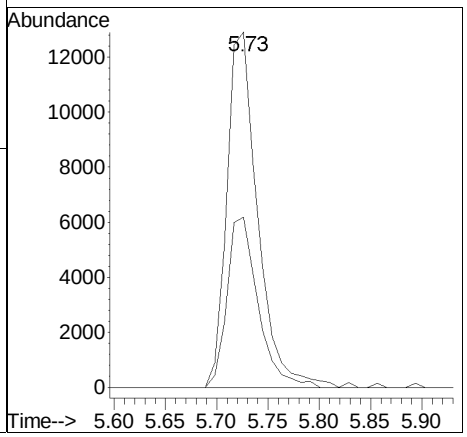


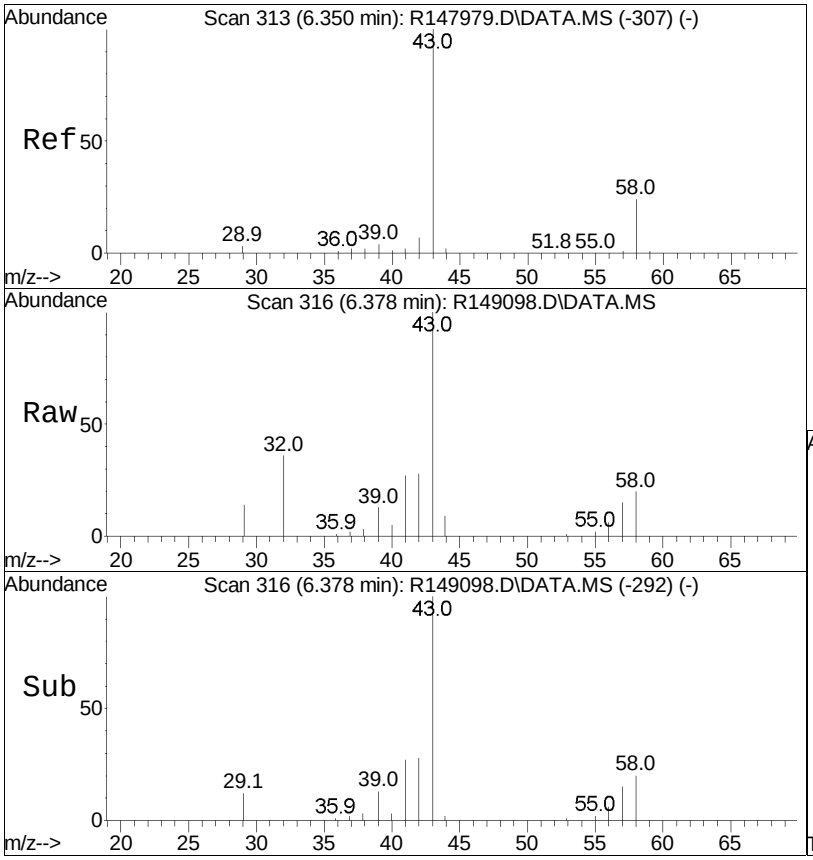


#15
ethanol
Concen: 4.01 ppbV
RT: 5.73 min Scan# 246
Delta R.T. 0.019 min
Lab File: R149098.D
Acq: 1 Nov 2016 3:08 pm

Tgt Ion: 31 Resp: 27041

Ion	Ratio	Lower	Upper
31	100		
45	47.9	37.2	55.8

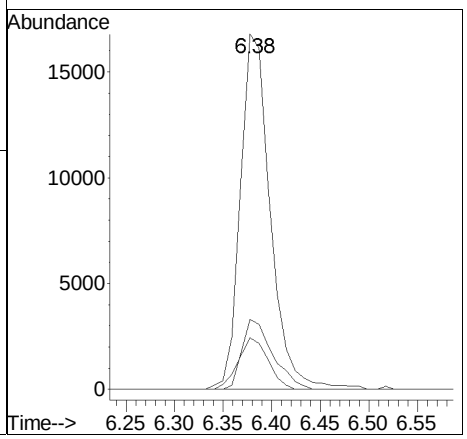


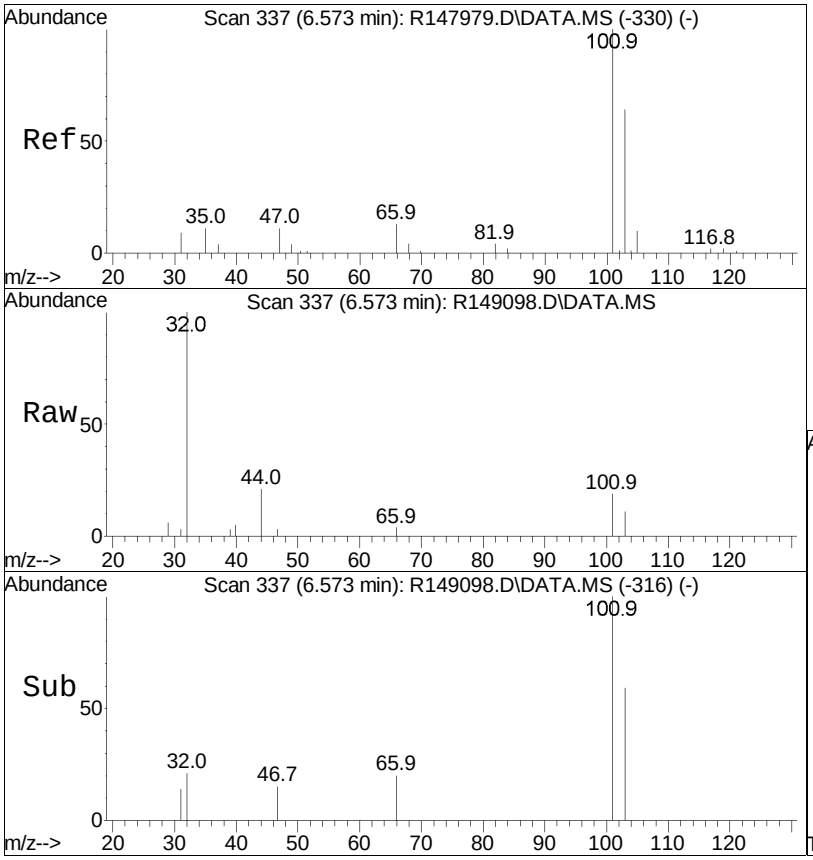


#19
acetone
Concen: 2.29 ppbV
RT: 6.38 min Scan# 316
Delta R.T. 0.028 min
Lab File: R149098.D
Acq: 1 Nov 2016 3:08 pm

Tgt Ion: 43 Resp: 36133

Ion	Ratio	Lower	Upper
43	100		
58	19.7	19.8	29.8#
57	14.5	0.6	1.0#

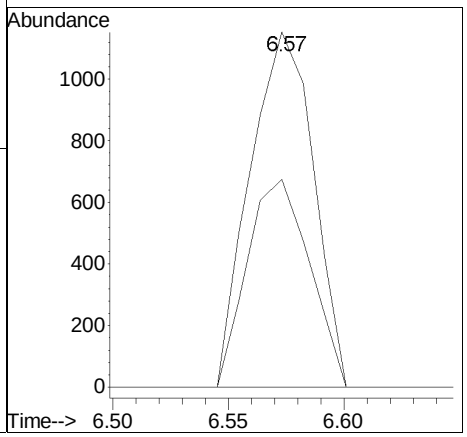


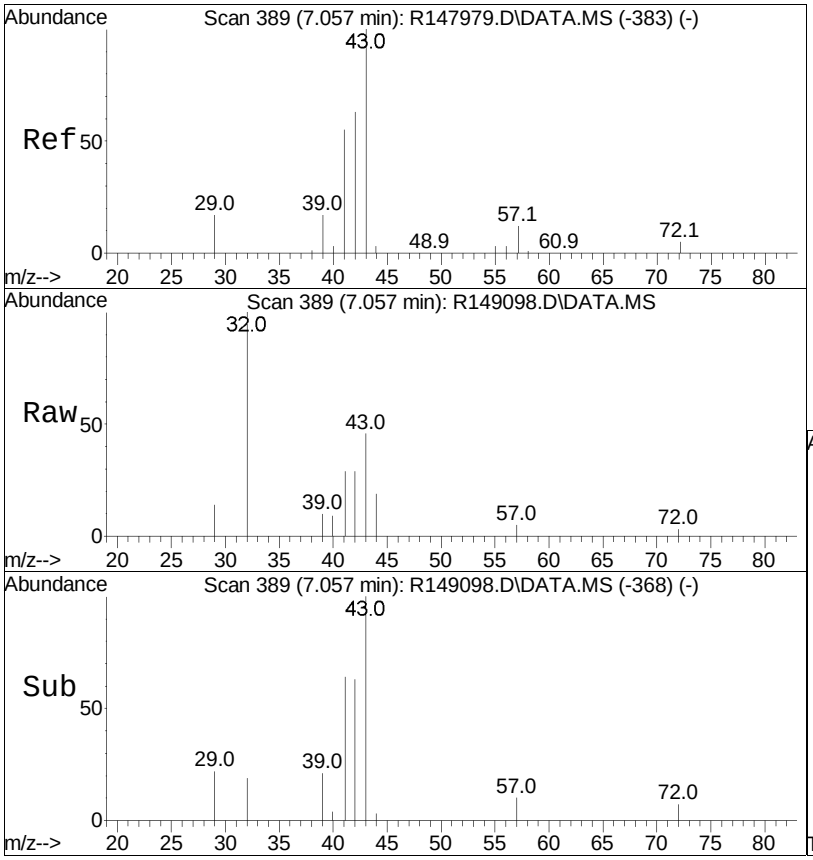


#21
trichlorofluoromethane
Concen: 0.12 ppbV
RT: 6.57 min Scan# 337
Delta R.T. -0.000 min
Lab File: R149098.D
Acq: 1 Nov 2016 3:08 pm

Tgt Ion:101 Resp: 2203

Ion	Ratio	Lower	Upper
101	100		
103	58.5	51.0	76.4

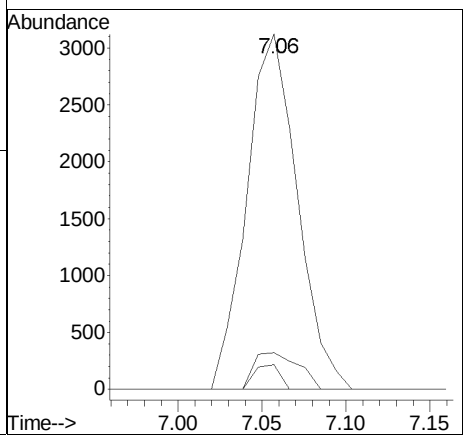


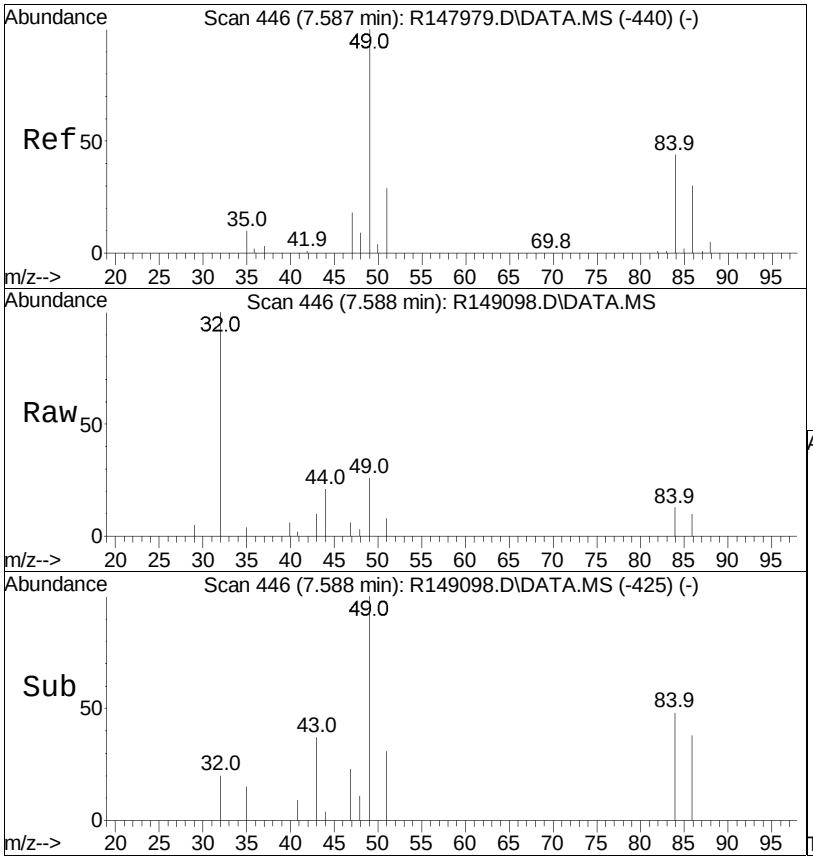


#24
pentane
Concen: 0.44 ppbV
RT: 7.06 min Scan# 389
Delta R.T. -0.000 min
Lab File: R149098.D
Acq: 1 Nov 2016 3:08 pm

Tgt Ion: 43 Resp: 6557

Ion	Ratio	Lower	Upper
43	100		
57	10.3	9.8	14.8
72	6.9	5.4	8.2

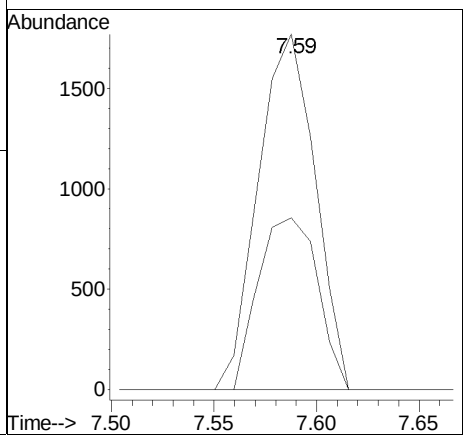


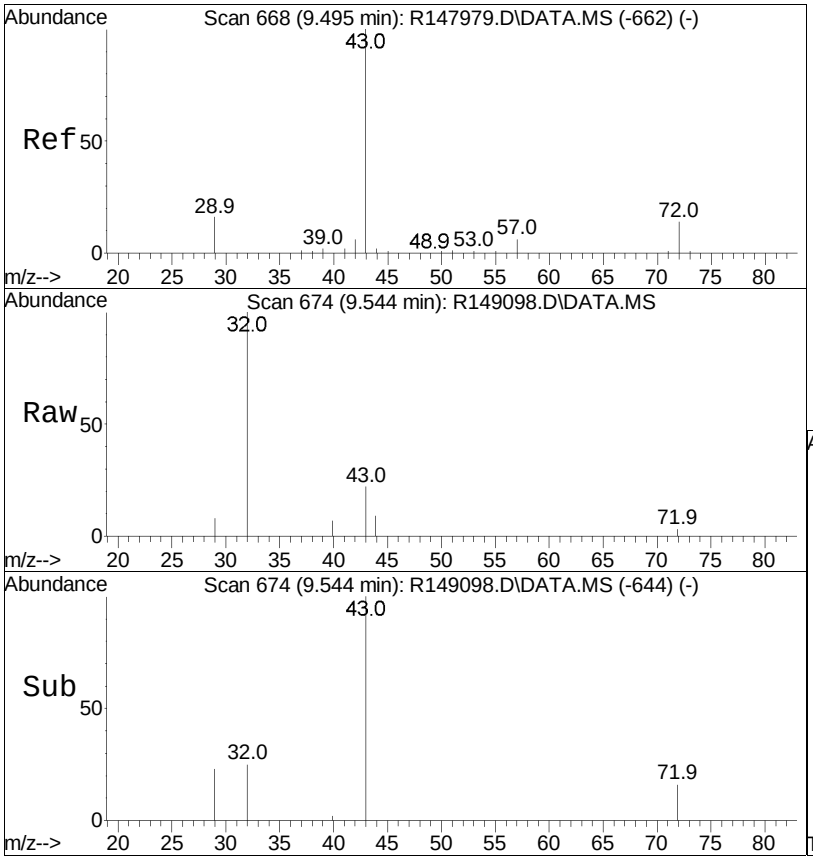


#28
methylene chloride
Concen: 0.33 ppbV
RT: 7.59 min Scan# 446
Delta R.T. -0.000 min
Lab File: R149098.D
Acq: 1 Nov 2016 3:08 pm

Tgt Ion: 49 Resp: 3414

Ion	Ratio	Lower	Upper
49	100		
84	48.3	45.9	68.9

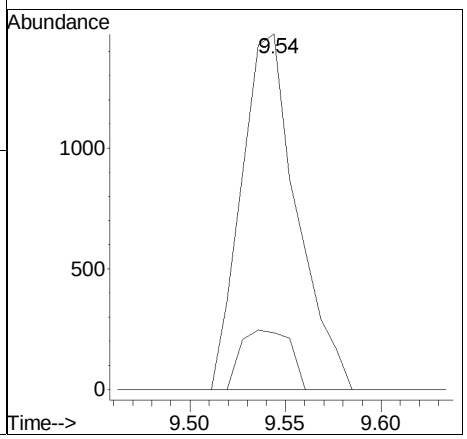


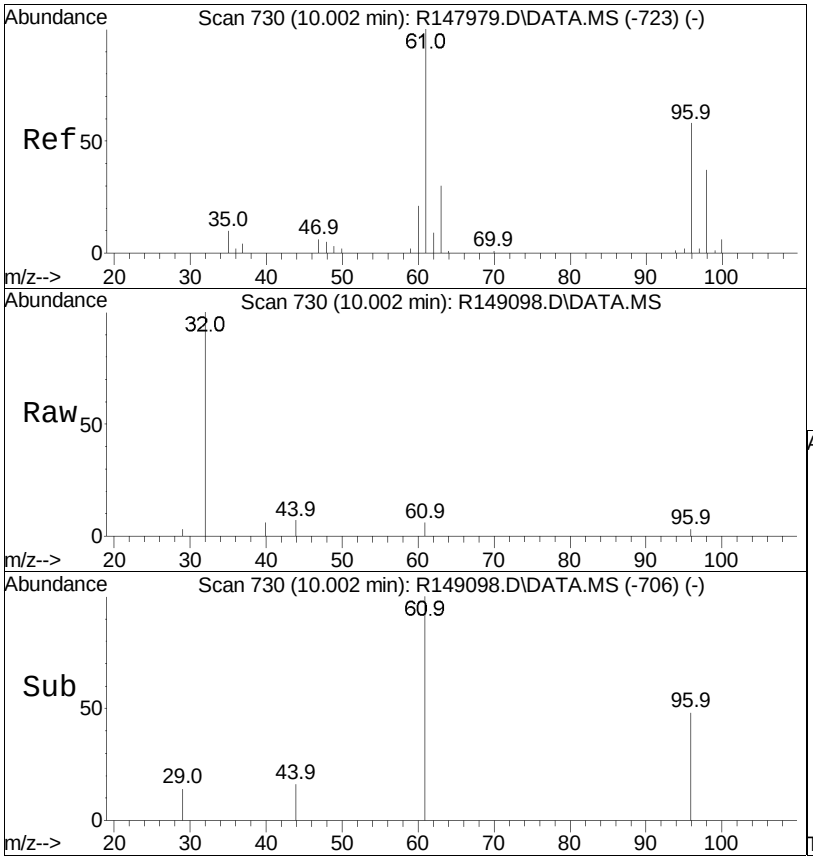


#36
2-butanone
Concen: 0.15 ppbV
RT: 9.54 min Scan# 674
Delta R.T. 0.049 min
Lab File: R149098.D
Acq: 1 Nov 2016 3:08 pm

Tgt Ion: 43 Resp: 2979

Ion	Ratio	Lower	Upper
43	100		
72	16.0	13.6	20.4
57	0.0	4.9	7.3#

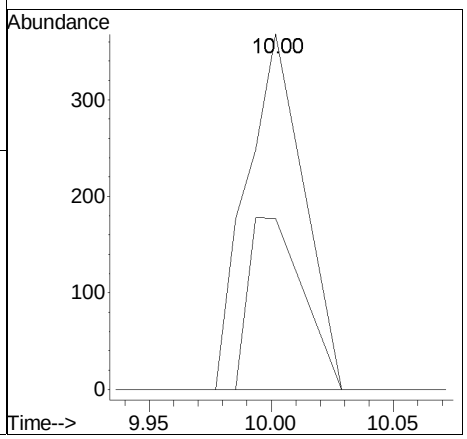


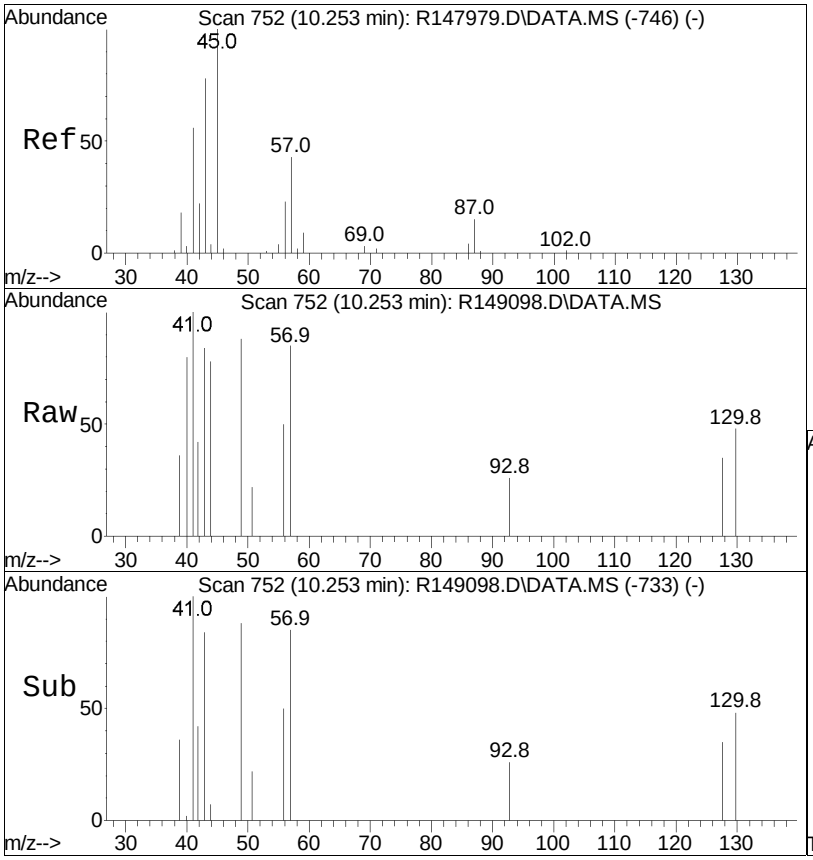


#37
cis-1,2-dichloroethene
Concen: 0.06 ppbV
RT: 10.00 min Scan# 730
Delta R.T. -0.000 min
Lab File: R149098.D
Acq: 1 Nov 2016 3:08 pm

Tgt Ion: 61 Resp: 558

Ion	Ratio	Lower	Upper
61	100		
96	48.1	50.1	75.1#
98	0.0	32.5	48.7#

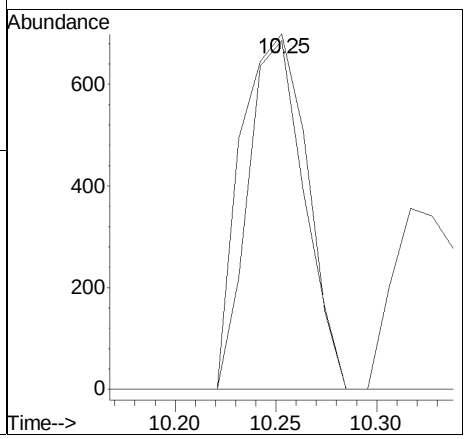


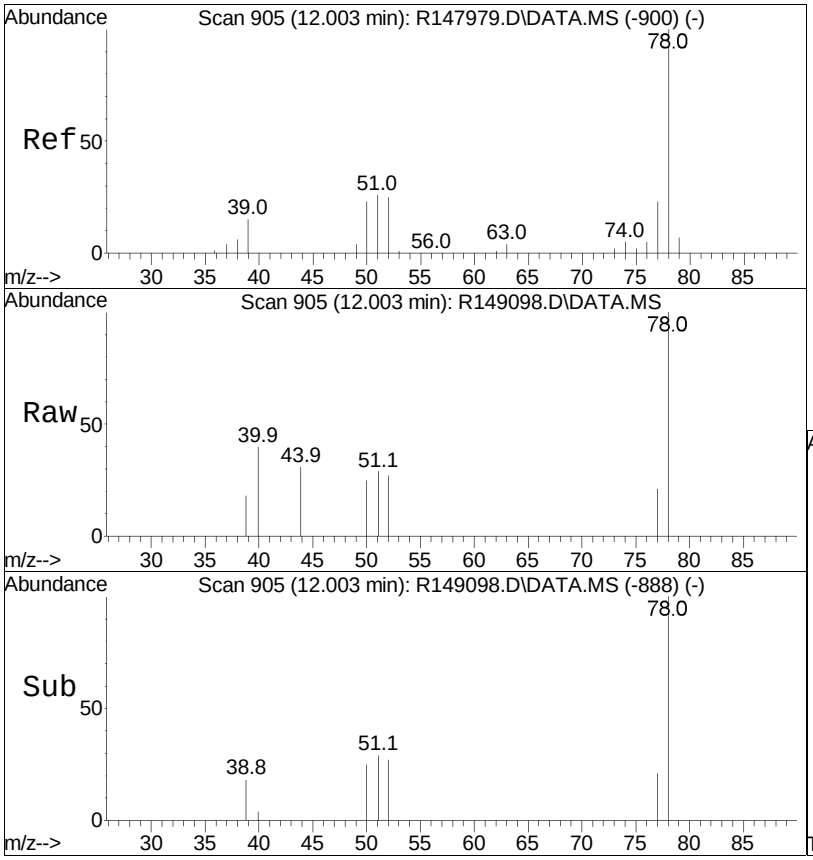


#44
hexane
Concen: 0.10 ppbV
RT: 10.25 min Scan# 752
Delta R.T. -0.000 min
Lab File: R149098.D
Acq: 1 Nov 2016 3:08 pm

Tgt Ion: 57 Resp: 1601

Ion	Ratio	Lower	Upper
57	100		
43	98.1	142.3	213.5#
86	0.0	9.3	13.9#

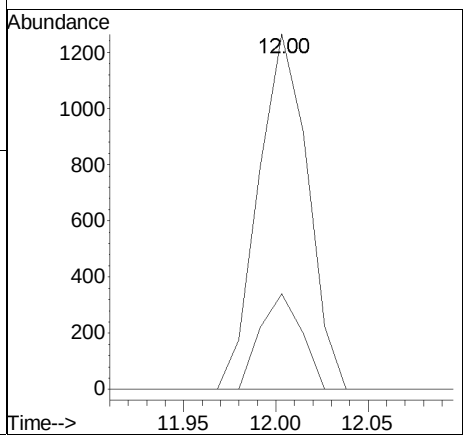


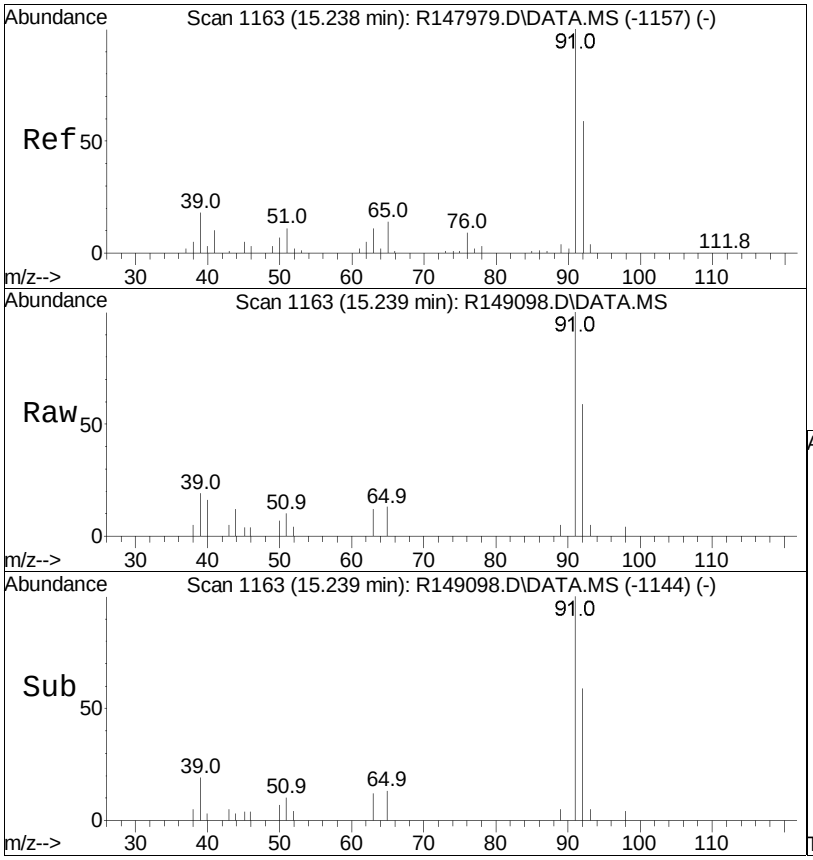


#50
benzene
Concen: 0.11 ppbV
RT: 12.00 min Scan# 905
Delta R.T. -0.000 min
Lab File: R149098.D
Acq: 1 Nov 2016 3:08 pm

Tgt Ion: 78 Resp: 2357

Ion	Ratio	Lower	Upper
78	100		
52	26.9	15.2	22.8#

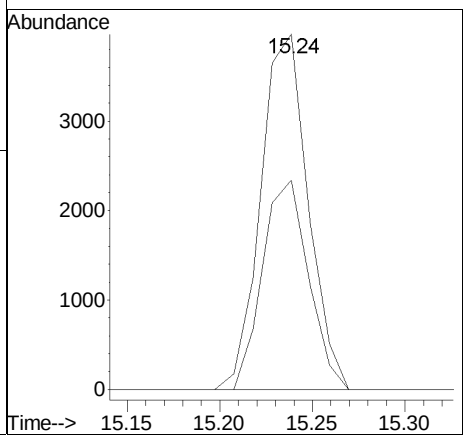


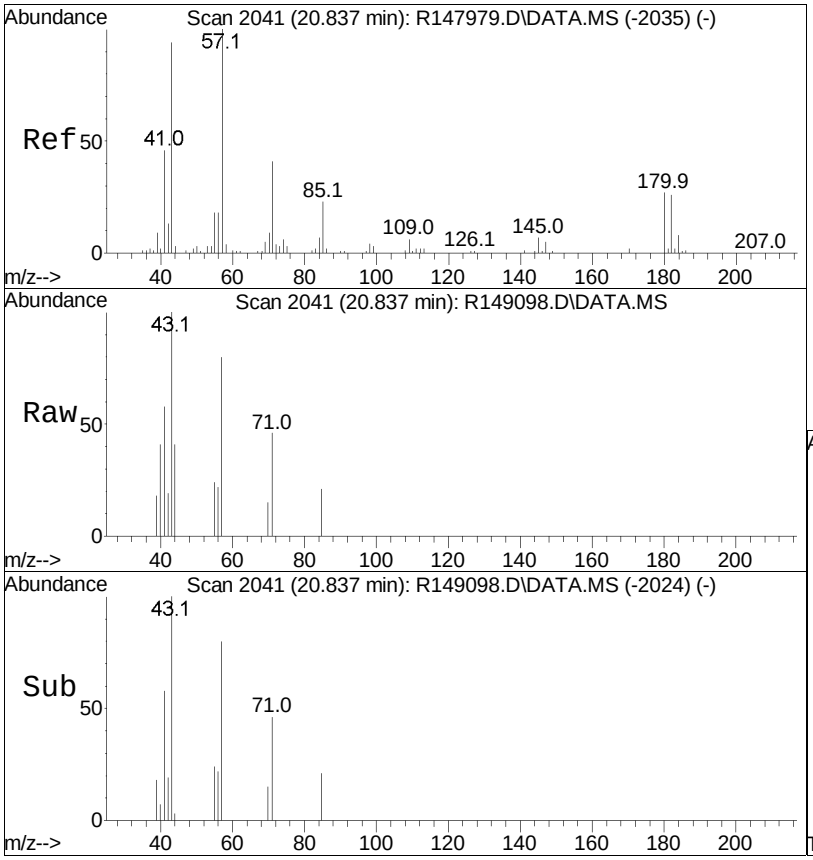


#68
toluene
Concen: 0.28 ppbV
RT: 15.24 min Scan# 1163
Delta R.T. -0.000 min
Lab File: R149098.D
Acq: 1 Nov 2016 3:08 pm

Tgt Ion: 91 Resp: 7056

Ion	Ratio	Lower	Upper
91	100		
92	58.9	45.8	68.6

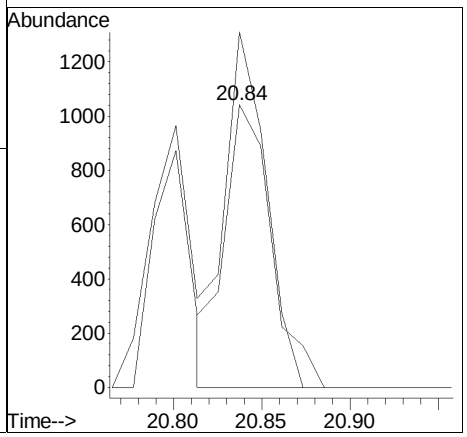




#114
dodecane
Concen: 0.07 ppbV m
RT: 20.84 min Scan# 2041
Delta R.T. -0.000 min
Lab File: R149098.D
Acq: 1 Nov 2016 3:08 pm

Tgt Ion: 57 Resp: 1915

Ion	Ratio	Lower	Upper
57	100		
43	125.7	76.2	114.4#



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-02	Date Collected	: 10/19/16 08:56
Client ID	: NFSV-04	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 15:42
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149099	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-71-8	Dichlorodifluoromethane	0.298	0.200	0.047	1.47	0.989	0.230	
74-87-3	Chloromethane	ND	0.200	0.096	ND	0.413	0.198	U
76-14-2	Freon-114	ND	0.200	0.042	ND	1.40	0.293	U
75-01-4	Vinyl chloride	ND	0.200	0.038	ND	0.511	0.097	U
106-99-0	1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177	U
106-97-8	Butane	1.34	0.200	0.044	3.19	0.475	0.105	
75-07-0	Acetaldehyde	6.22	2.50	0.547	11.2	4.50	0.985	B
74-83-9	Bromomethane	ND	0.200	0.070	ND	0.777	0.270	U
75-00-3	Chloroethane	ND	0.200	0.077	ND	0.528	0.202	U
64-17-5	Ethanol	1.98	2.50	0.542	3.73	4.71	1.02	J
593-60-2	Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306	U
107-02-8	Acrolein	0.166	0.500	0.114	0.381	1.15	0.261	J
67-64-1	Acetone	18.2	1.00	0.165	43.2	2.38	0.392	
75-69-4	Trichlorofluoromethane	0.228	0.200	0.042	1.28	1.12	0.234	
67-63-0	Isopropanol	3.46	0.500	0.053	8.50	1.23	0.129	
109-66-0	Pentane	0.343	0.200	0.048	1.01	0.590	0.140	
75-35-4	1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224	U
75-65-0	tert-Butyl Alcohol	1.77	0.500	0.060	5.37	1.52	0.182	
75-09-2	Methylene chloride	ND	1.00	0.299	ND	1.74	1.04	U
107-05-1	3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254	U
75-15-0	Carbon disulfide	0.342	0.200	0.035	1.07	0.623	0.107	
76-13-1	Freon-113	0.053	0.200	0.051	0.406	1.53	0.392	J
156-60-5	trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293	U
75-34-3	1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312	U
1634-04-4	Methyl tert butyl ether	0.294	0.200	0.053	1.06	0.721	0.190	
78-93-3	2-Butanone	2.73	0.500	0.047	8.05	1.47	0.139	
156-59-2	cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233	U
67-66-3	Chloroform	ND	0.200	0.053	ND	0.977	0.259	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-02	Date Collected	: 10/19/16 08:56
Client ID	: NFSV-04	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 15:42
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149099	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
107-06-2	1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223	U
110-54-3	n-Hexane	0.068	0.200	0.052	0.240	0.705	0.183	J
71-55-6	1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311	U
71-43-2	Benzene	0.257	0.200	0.054	0.821	0.639	0.172	
110-02-1	Thiophene	ND	0.200	0.053	ND	0.688	0.182	U
56-23-5	Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296	U
110-82-7	Cyclohexane	ND	0.200	0.066	ND	0.688	0.226	U
78-87-5	1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322	U
75-27-4	Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439	U
123-91-1	1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281	U
79-01-6	Trichloroethene	ND	0.200	0.071	ND	1.07	0.382	U
540-84-1	2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308	U
142-82-5	Heptane	ND	0.200	0.055	ND	0.820	0.227	U
10061-01-5	cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338	U
108-10-1	4-Methyl-2-pentanone	2.46	0.500	0.061	10.1	2.05	0.249	
10061-02-6	trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315	U
79-00-5	1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364	U
108-88-3	Toluene	1.63	0.200	0.063	6.14	0.754	0.237	
554-14-3	2-Methylthiophene	ND	0.200	0.079	ND	0.803	0.317	U
591-78-6	2-Hexanone	1.90	0.200	0.060	7.79	0.820	0.248	
616-44-4	3-Methylthiophene	ND	0.200	0.067	ND	0.803	0.269	U
124-48-1	Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636	U
106-93-4	1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599	U
111-65-9	Octane	ND	0.200	0.042	ND	0.934	0.197	U
127-18-4	Tetrachloroethene	0.248	0.200	0.076	1.68	1.36	0.514	
108-90-7	Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363	U
100-41-4	Ethylbenzene	0.191	0.200	0.056	0.830	0.869	0.241	J
872-55-9	2-Ethylthiophene	ND	0.200	0.057	ND	0.918	0.262	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-02	Date Collected	: 10/19/16 08:56
Client ID	: NFSV-04	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 15:42
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149099	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
179601-23-1	p/m-Xylene	0.774	0.400	0.139	3.36	1.74	0.604	
75-25-2	Bromoform	ND	0.200	0.052	ND	2.07	0.541	U
100-42-5	Styrene	ND	0.200	0.080	ND	0.852	0.340	U
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376	U
95-47-6	o-Xylene	0.376	0.200	0.063	1.63	0.869	0.274	
111-84-2	Nonane	0.094	0.200	0.063	0.493	1.05	0.328	J
95-49-8	2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252	U
622-96-8	4-Ethyltoluene	0.110	0.200	0.078	0.541	0.983	0.381	J
108-67-8	1,3,5-Trimethylbenzene	0.110	0.200	0.058	0.541	0.983	0.287	J
95-63-6	1,2,4-Trimethylbenzene	0.332	0.200	0.069	1.63	0.983	0.341	
124-18-5	Decane	0.514	0.200	0.048	2.99	1.16	0.282	
541-73-1	1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383	U
106-46-7	1,4-Dichlorobenzene	ND	0.200	0.036	ND	1.20	0.217	U
526-73-8	1,2,3-Trimethylbenzene	0.078	0.200	0.075	0.383	0.983	0.369	J
95-50-1	1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369	U
496-11-7	Indane	ND	0.200	0.080	ND	0.967	0.384	U
95-13-6	Indene	ND	0.200	0.061	ND	0.951	0.289	U
1120-21-4	Undecane	0.408	0.200	0.053	2.61	1.28	0.338	
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.200	0.080	ND	1.10	0.436	U
112-40-3	Dodecane	6.22	0.200	0.048	43.3	1.39	0.333	
120-82-1	1,2,4-Trichlorobenzene	ND	0.200	0.061	ND	1.48	0.454	U
91-20-3	Naphthalene	0.126	0.200	0.043	0.661	1.05	0.223	J
95-15-8	Benzothiophene	ND	0.500	0.047	ND	2.74	0.257	U
87-68-3	Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781	U
91-57-6	2-Methylnaphthalene	ND	1.00	0.272	ND	5.82	1.58	U
90-12-0	1-Methylnaphthalene	ND	1.00	0.250	ND	5.82	1.45	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149099.D
Acq On : 1 Nov 2016 3:42 pm
Operator : AIRPIANO1:RY
Sample : L1634001-02,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 02 09:57:33 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	141026	10.000	ppbV	0.00
Standard Area = 153282			Recovery =		92.00%	
43) 1,4-difluorobenzene	12.41	114	231064	10.000	ppbV	0.00
Standard Area = 240182			Recovery =		96.20%	
67) chlorobenzene-D5	16.82	54	63024	10.000	ppbV	0.00
Standard Area = 64184			Recovery =		98.19%	
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	67994	9.823	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =		98.23%	
69) toluene-D8	15.14	98	183150	9.648	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =		96.48%	
90) bromofluorobenzene	18.01	95	121855	9.185	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =		91.85%	
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	5389	0.298	ppbV	98
6) chloromethane	0.00		0	N.D.	d	
7) Freon-114	4.52		0	N.D.		
9) vinyl chloride	0.00		0	N.D.		
10) 1,3-butadiene	4.88		0	N.D.		
11) butane	4.95	43	18427	1.342	ppbV	96
12) acetaldehyde	4.54	29	49972	6.217	ppbV #	84
13) bromomethane	0.00		0	N.D.		
14) chloroethane	0.00		0	N.D.		
15) ethanol	5.72	31	13707	1.985	ppbV	95
17) vinyl bromide	0.00		0	N.D.		
18) acrolein	6.18	56	564	0.166	ppbV #	44
19) acetone	6.36	43	293236	18.186	ppbV	99
21) trichlorofluoromethane	6.57	101	4251	0.228	ppbV	97
22) isopropyl alcohol	6.73	45	57970	3.457	ppbV	100
24) pentane	7.06	43	5201	0.343	ppbV	98
26) 1,1-dichloroethene	0.00		0	N.D.		
27) tertiary butyl alcohol	7.52	59	29829	1.767	ppbV	92
28) methylene chloride	7.58		0	N.D.		
29) 3-chloropropene	0.00		0	N.D.	d	
30) carbon disulfide	7.91	76	7469	0.342	ppbV #	29

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149099.D
Acq On : 1 Nov 2016 3:42 pm
Operator : AIRPIANO1:RY
Sample : L1634001-02,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 02 09:57:33 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
31) Freon 113	7.92	101	754	0.053	ppbV	92
32) trans-1,2-dichloroethene	0.00		0	N.D.		
33) 1,1-dichloroethane	0.00		0	N.D.		
34) MTBE	9.11	73	6240	0.294	ppbV #	90
36) 2-butanone	9.51	43	54914	2.731	ppbV	99
37) cis-1,2-dichloroethene	0.00		0	N.D.		
39) chloroform	10.35		0	N.D.		
42) 1,2-dichloroethane	0.00		0	N.D.		
44) hexane	10.25	57	1069	0.068	ppbV #	25
48) 1,1,1-trichloroethane	0.00		0	N.D.		
50) benzene	12.00	78	5588	0.257	ppbV	93
51) thiophene	0.00		0	N.D.		
52) carbon tetrachloride	0.00		0	N.D.		
53) cyclohexane	0.00		0	N.D.	d	
56) 1,2-dichloropropane	0.00		0	N.D.		
57) bromodichloromethane	0.00		0	N.D.		
58) 1,4-dioxane	0.00		0	N.D.		
59) trichloroethene	0.00		0	N.D.		
60) 2,2,4-trimethylpentane	0.00		0	N.D.	d	
62) heptane	13.53		0	N.D.		
63) cis-1,3-dichloropropene	0.00		0	N.D.		
64) 4-methyl-2-pentanone	14.22	43	62631	2.460	ppbV	98
65) trans-1,3-dichloropropene	0.00		0	N.D.		
66) 1,1,2-trichloroethane	0.00		0	N.D.		
68) toluene	15.24	91	42721	1.626	ppbV	99
70) 2-methylthiophene	0.00		0	N.D.	d	
72) 2-hexanone	15.49	43	46551	1.898	ppbV #	89
73) 3-methylthiophene	0.00		0	N.D.		
74) dibromochloromethane	0.00		0	N.D.		
75) 1,2-dibromoethane	0.00		0	N.D.		
77) octane	16.14		0	N.D.		
78) tetrachloroethene	16.29	166	3330	0.248	ppbV	92
80) chlorobenzene	0.00		0	N.D.		
81) ethylbenzene	17.16	91	6586	0.191	ppbV	99
82) 2-ethylthiophene	17.05		0	N.D.		
83) m+p-xylene	17.29	91	21269	0.774	ppbV	96
84) bromoform	0.00		0	N.D.		
85) styrene	17.59		0	N.D.		

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149099.D
Acq On : 1 Nov 2016 3:42 pm
Operator : AIRPIANO1:RY
Sample : L1634001-02,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 02 09:57:33 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

	Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
86)	1,1,2,2-tetrachloroethane	0.00		0	N.D.			
87)	o-xylene	17.66	91	10693	0.376	ppbV		95
89)	nonane	17.81	43	2510M6	0.094	ppbV		
93)	2-chlorotoluene	0.00		0	N.D.			
96)	4-ethyl toluene	18.59	105	4452M3	0.110	ppbV		
97)	1,3,5-trimethylbenzene	18.64	105	3491	0.110	ppbV		99
99)	1,2,4-trimethylbenzene	18.95	105	10622	0.332	ppbV	#	50
100)	decane	18.99	57	12937M4	0.514	ppbV		
102)	1,3-dichlorobenzene	0.00		0	N.D.			
103)	1,4-dichlorobenzene	0.00		0	N.D.			
105)	1,2,3-trimethylbenzene	19.27	105	2735	0.078	ppbV		99
107)	1,2-dichlorobenzene	0.00		0	N.D.			
109)	indan	19.44		0	N.D.			
110)	indene	19.51		0	N.D.			
112)	undecane	19.94	57	11322M4	0.408	ppbV		
113)	1,2,4,5-tetramethylben...	20.19		0	N.D.			
114)	dodecane	20.84	57	176035	6.221	ppbV		97
115)	1,2,4-trichlorobenzene	20.83		0	N.D.			
116)	naphthalene	20.95	128	5048	0.126	ppbV		100
118)	benzothiophene	0.00		0	N.D.	d		
119)	hexachlorobutadiene	0.00		0	N.D.			
120)	2-methylnaphthalene	22.10		0	N.D.			
121)	1-methylnaphthalene	22.30		0	N.D.			

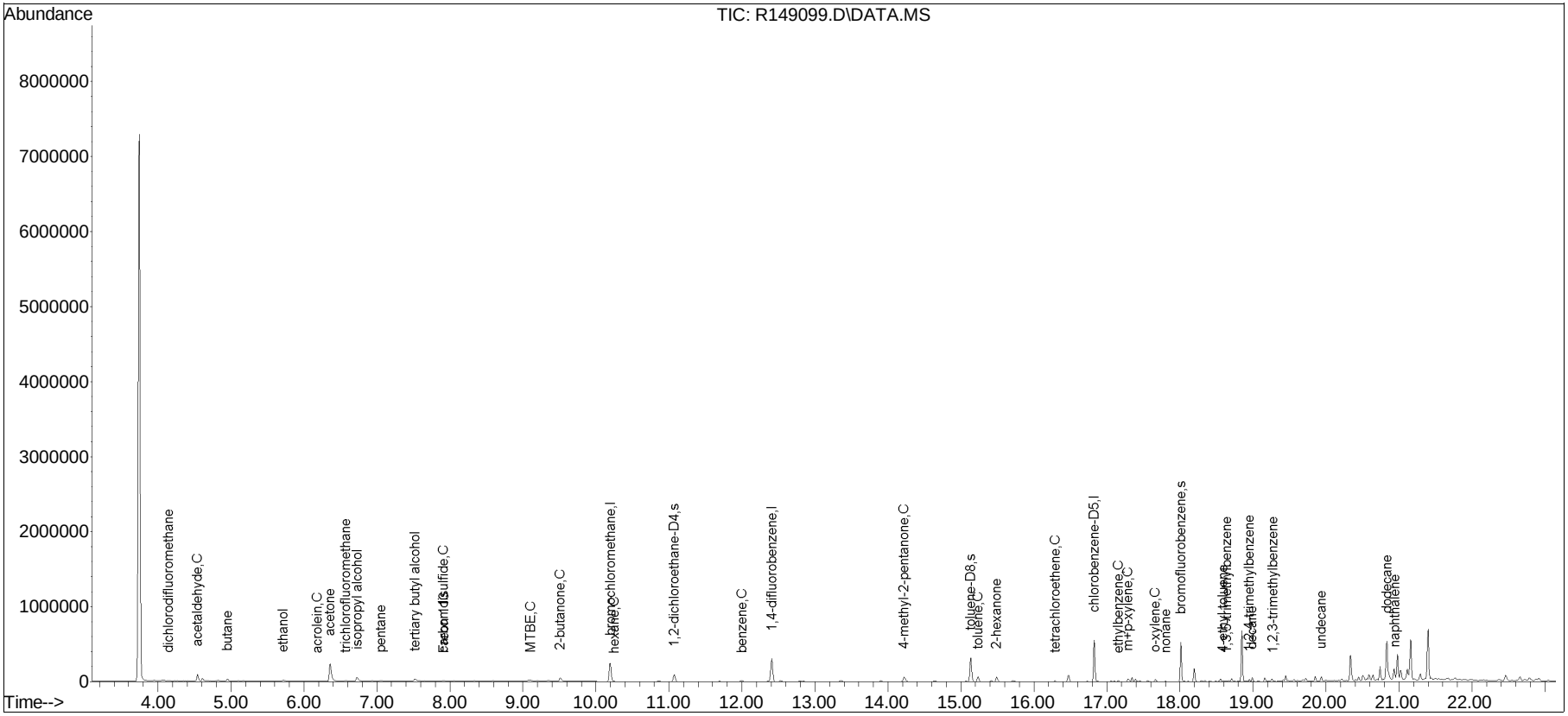
(#) = qualifier out of range (m) = manual integration (+) = signals summed

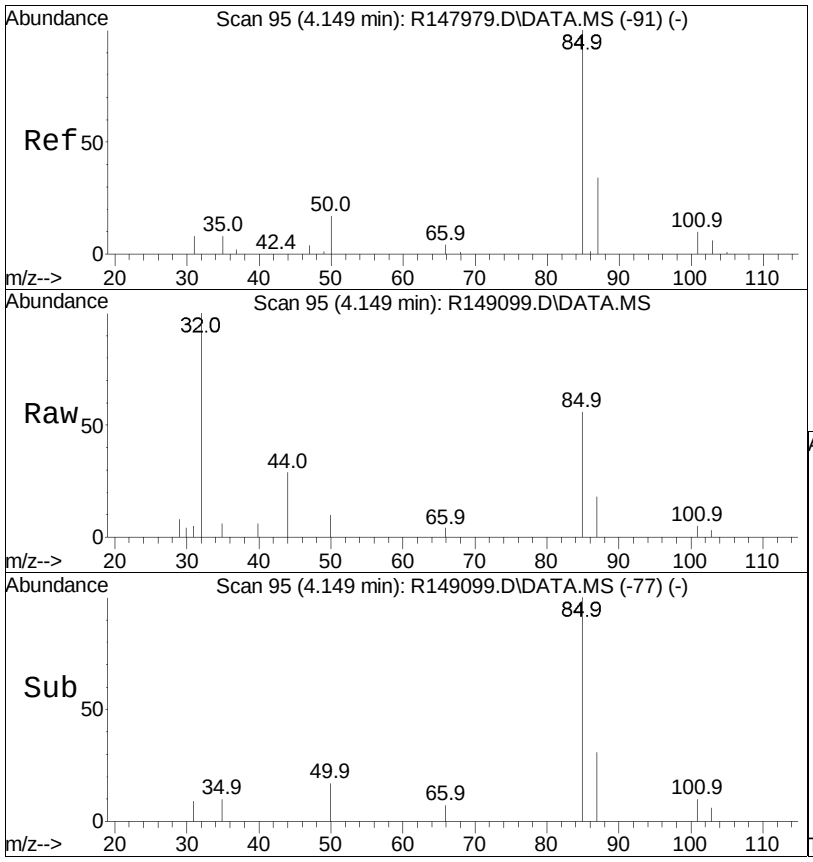
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149099.D
Acq On : 1 Nov 2016 3:42 pm
Operator : AIRPIANO1:RY
Sample : L1634001-02,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 02 09:57:33 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Keyspan_TO15 - .a\AIR1\2016\161101K\R149091.D

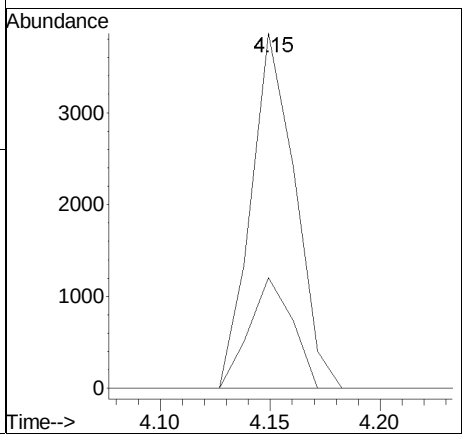


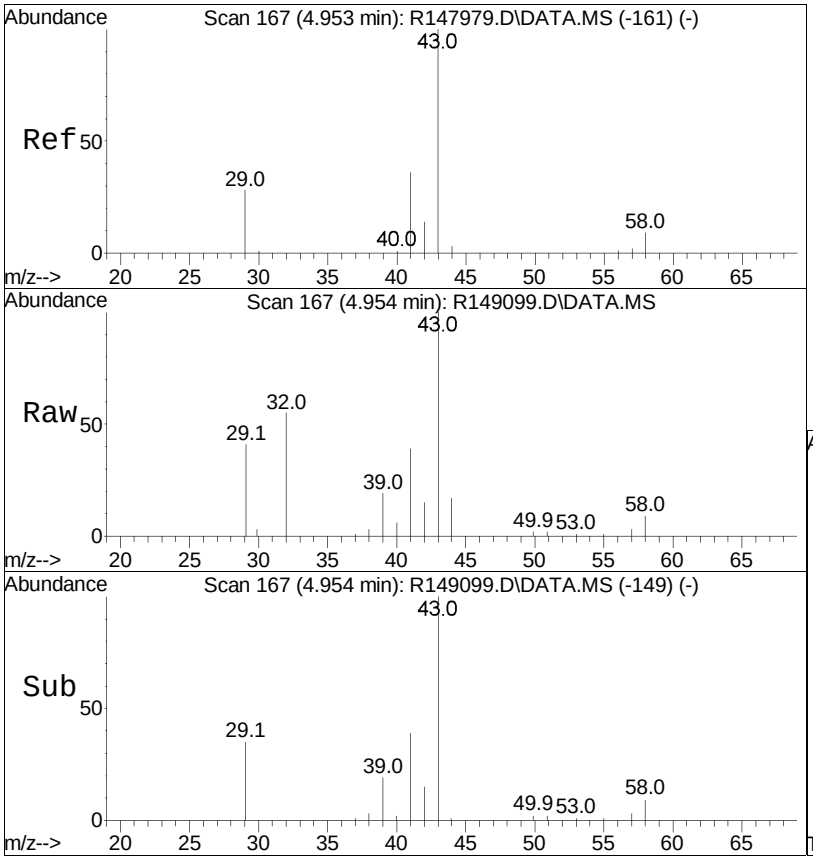


#5
dichlorodifluoromethane
Concen: 0.30 ppbV
RT: 4.15 min Scan# 95
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 85 Resp: 5389

Ion	Ratio	Lower	Upper
85	100		
87	31.2	25.9	38.9

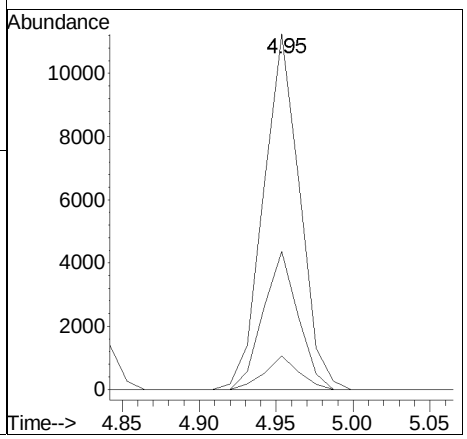


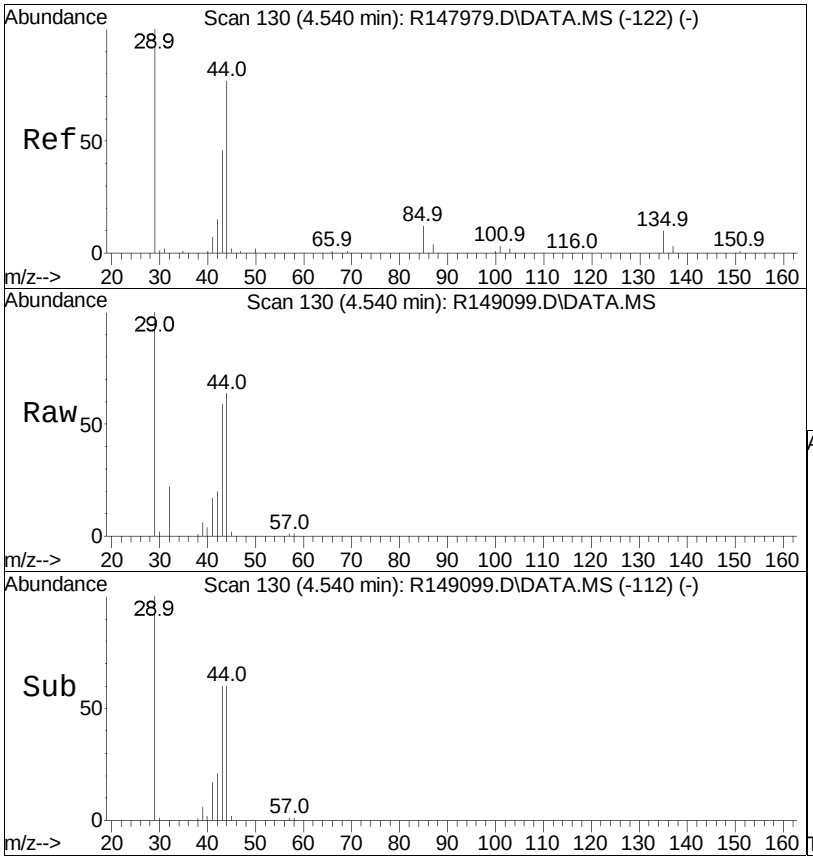


#11
butane
Concen: 1.34 ppbV
RT: 4.95 min Scan# 167
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 43 Resp: 18427

Ion	Ratio	Lower	Upper
43	100		
58	9.5	7.1	10.7
41	38.8	28.7	43.1

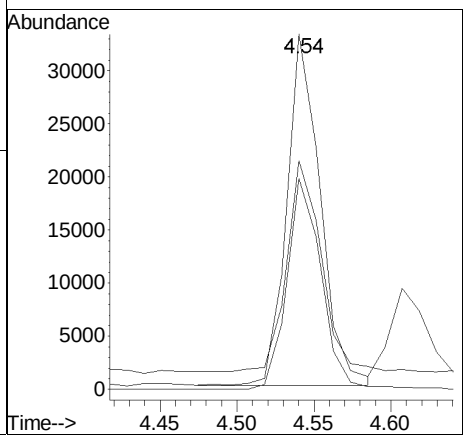


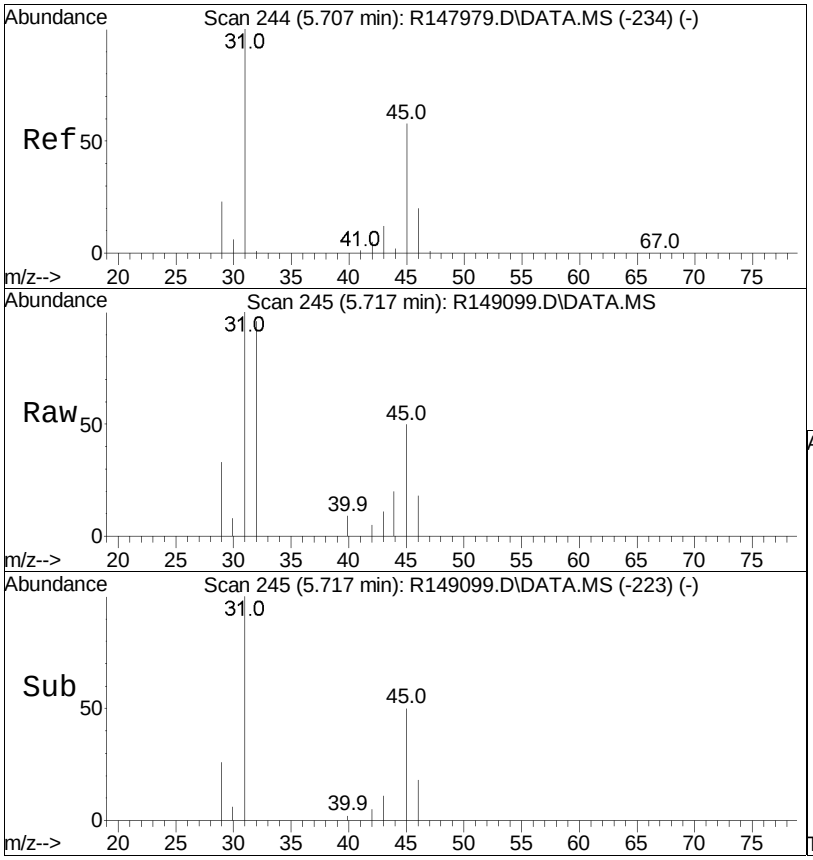


#12
acetaldehyde
Concen: 6.22 ppbV
RT: 4.54 min Scan# 130
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 29 Resp: 49972

Ion	Ratio	Lower	Upper
29	100		
44	64.4	50.2	75.4
43	59.4	29.0	43.6#

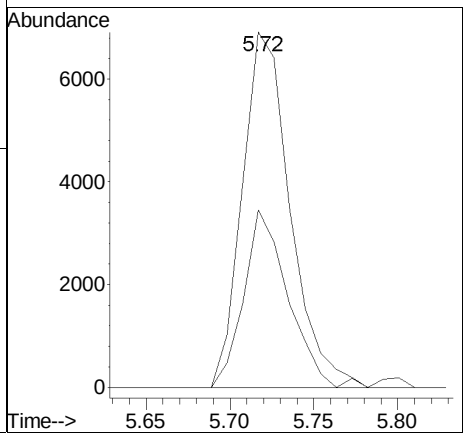


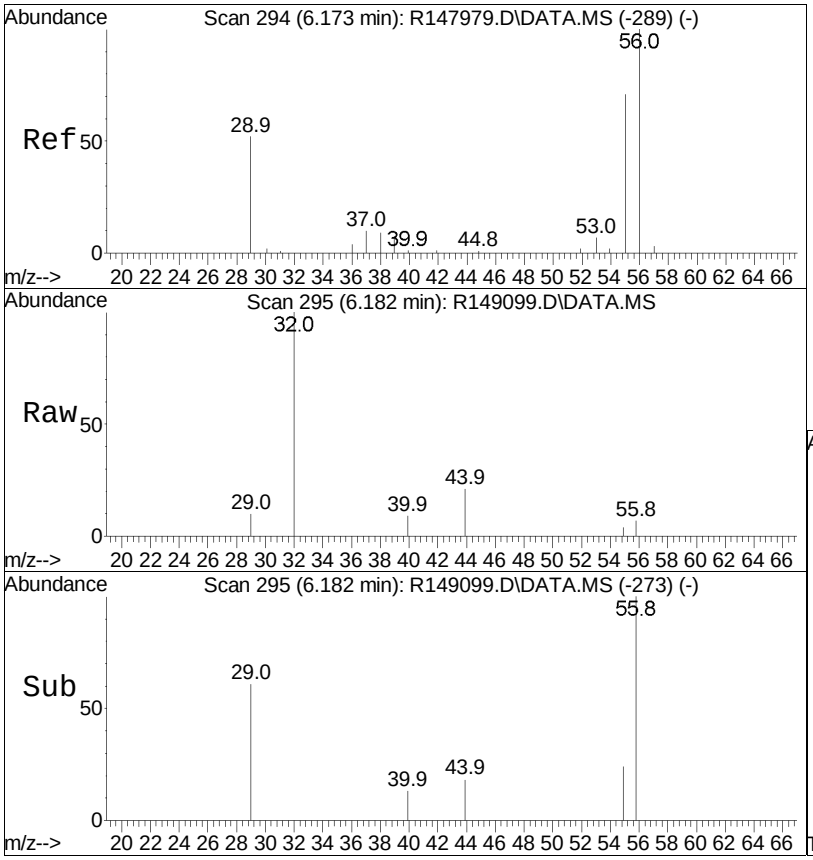


#15
ethanol
Concen: 1.99 ppbV
RT: 5.72 min Scan# 245
Delta R.T. 0.009 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 31 Resp: 13707

Ion	Ratio	Lower	Upper
31	100		
45	49.9	37.2	55.8

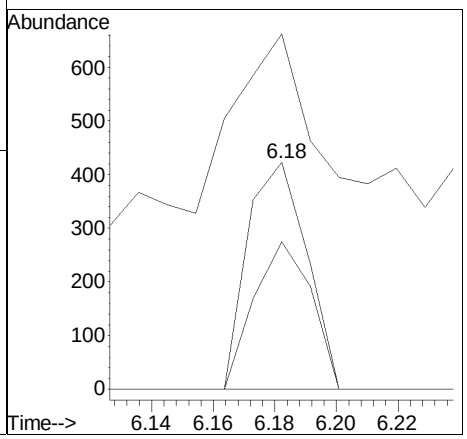


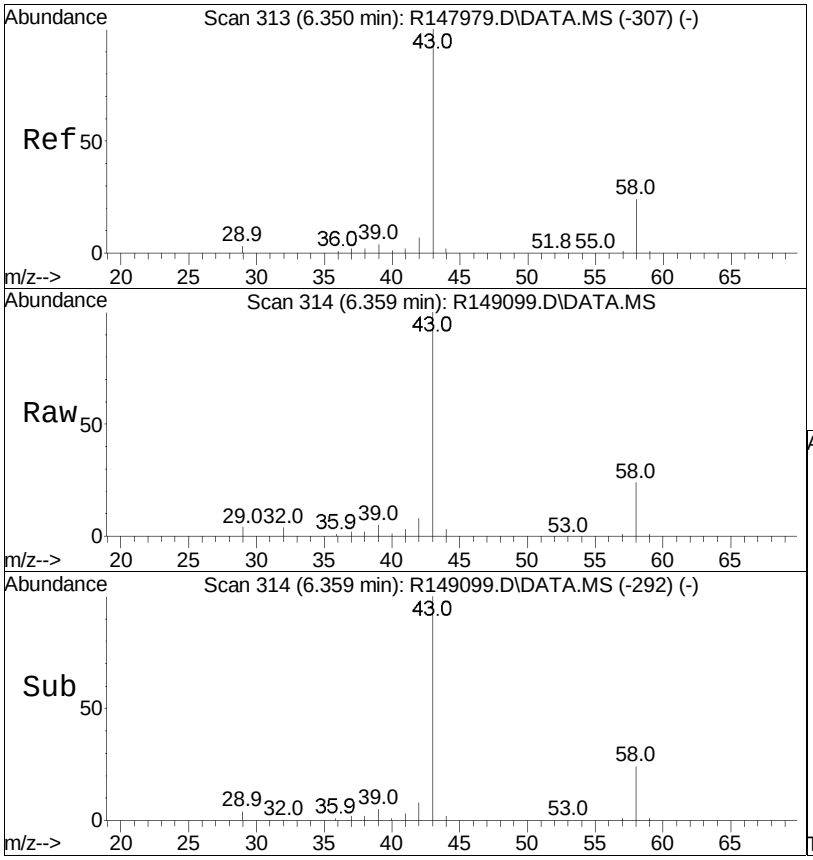


#18
acrolein
Concen: 0.17 ppbV
RT: 6.18 min Scan# 295
Delta R.T. 0.009 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 56 Resp: 564

Ion	Ratio	Lower	Upper
56	100		
55	65.0	56.2	84.4
29	156.5	56.3	84.5#

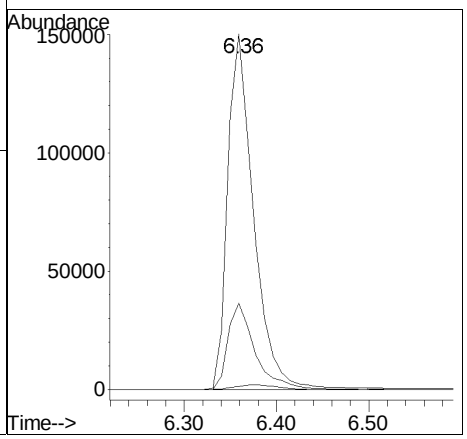


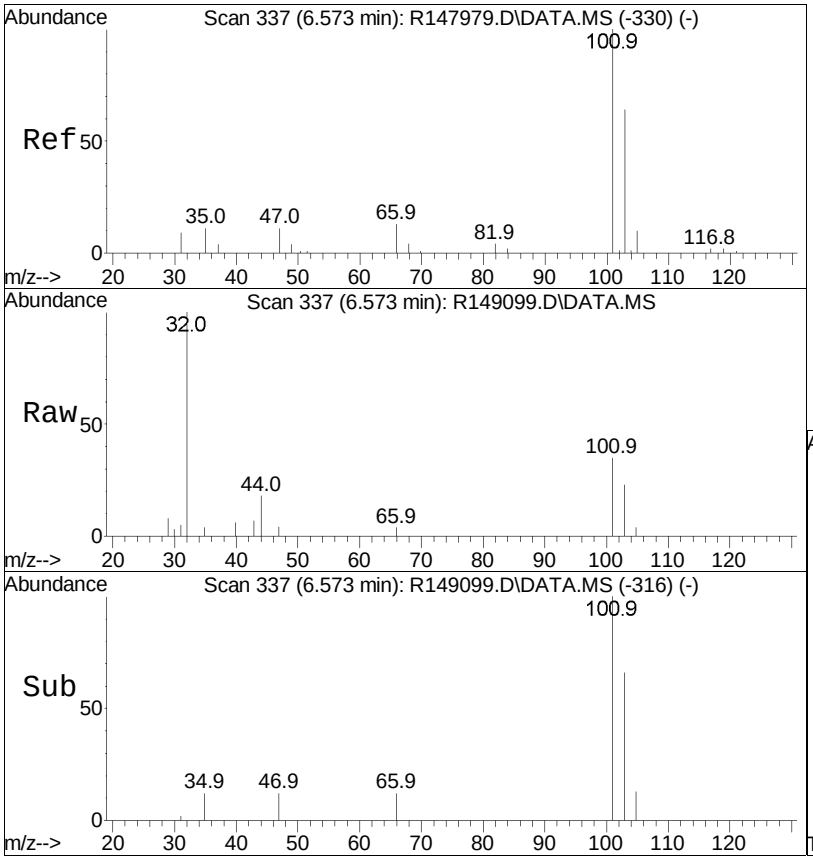


#19
acetone
Concen: 18.19 ppbV
RT: 6.36 min Scan# 314
Delta R.T. 0.009 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 43 Resp: 293236

Ion	Ratio	Lower	Upper
43	100		
58	24.2	19.8	29.8
57	0.8	0.6	1.0

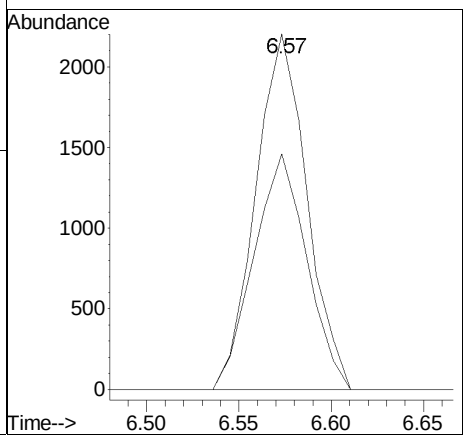


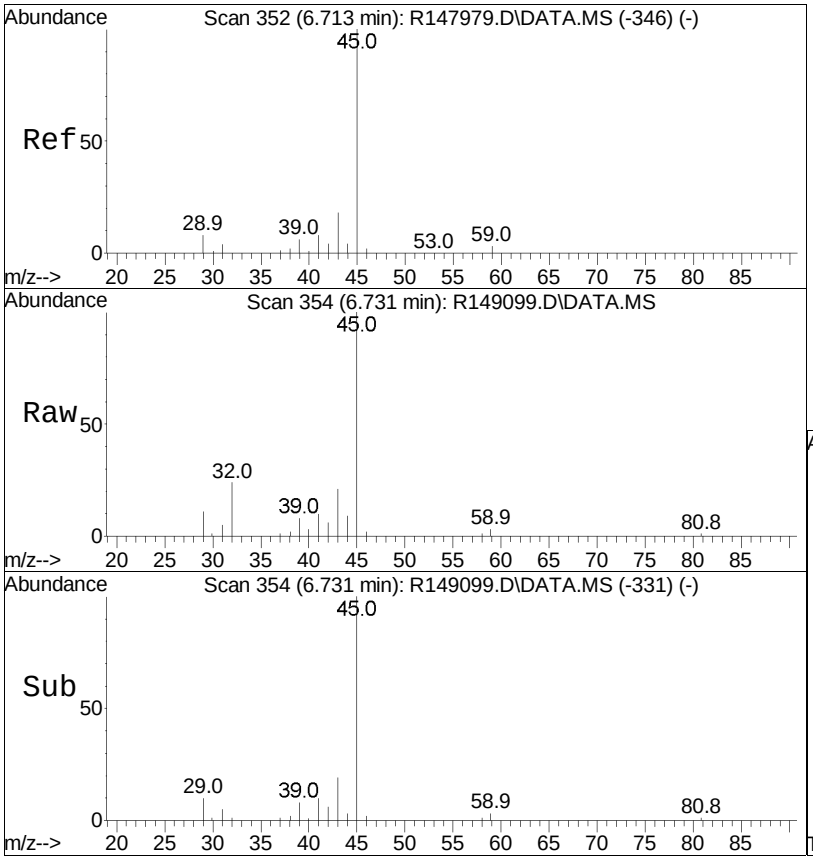


#21
trichlorofluoromethane
Concen: 0.23 ppbV
RT: 6.57 min Scan# 337
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion:101 Resp: 4251

Ion	Ratio	Lower	Upper
101	100		
103	66.3	51.0	76.4

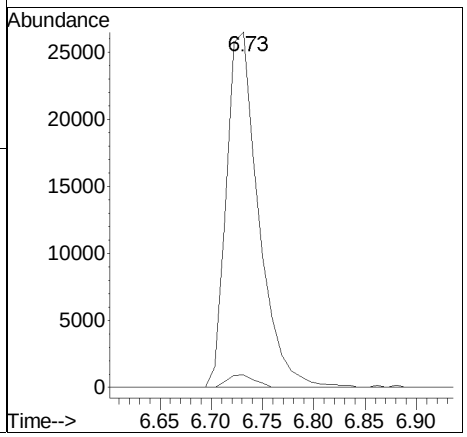


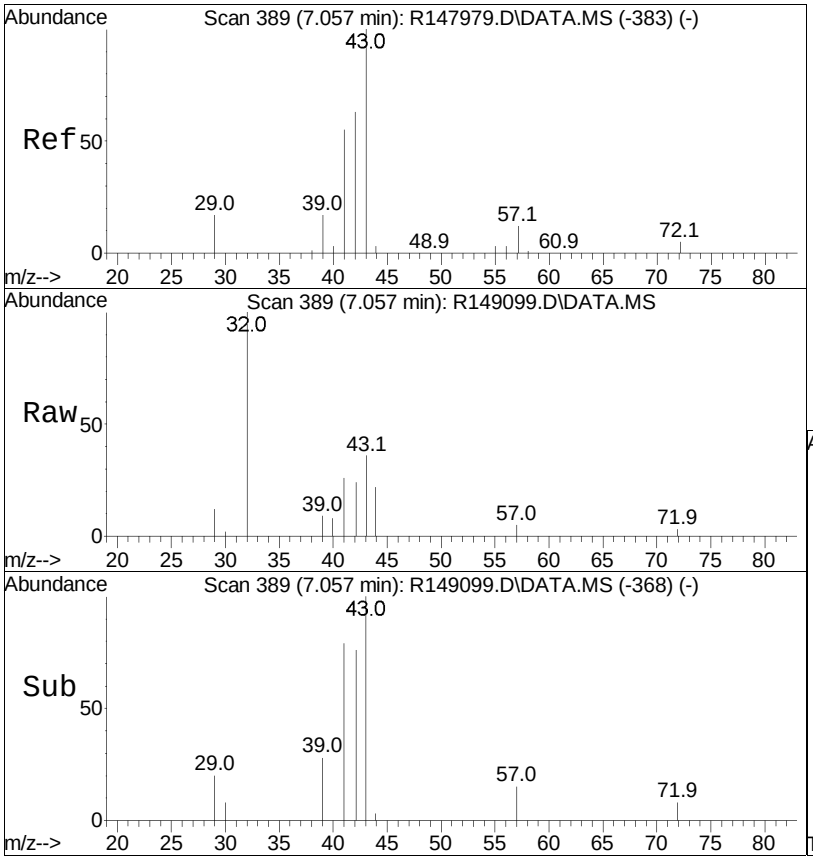


#22
isopropyl alcohol
Concen: 3.46 ppbV
RT: 6.73 min Scan# 354
Delta R.T. 0.019 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 45 Resp: 57970

Ion	Ratio	Lower	Upper
45	100		
59	3.5	2.7	4.1

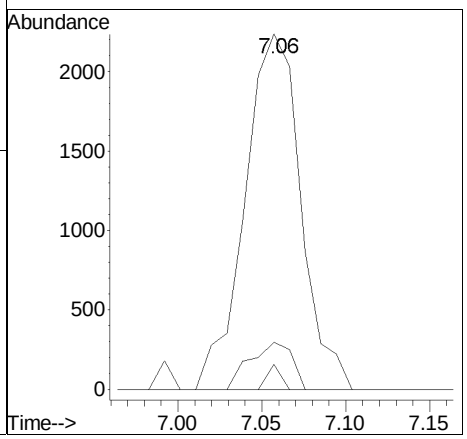


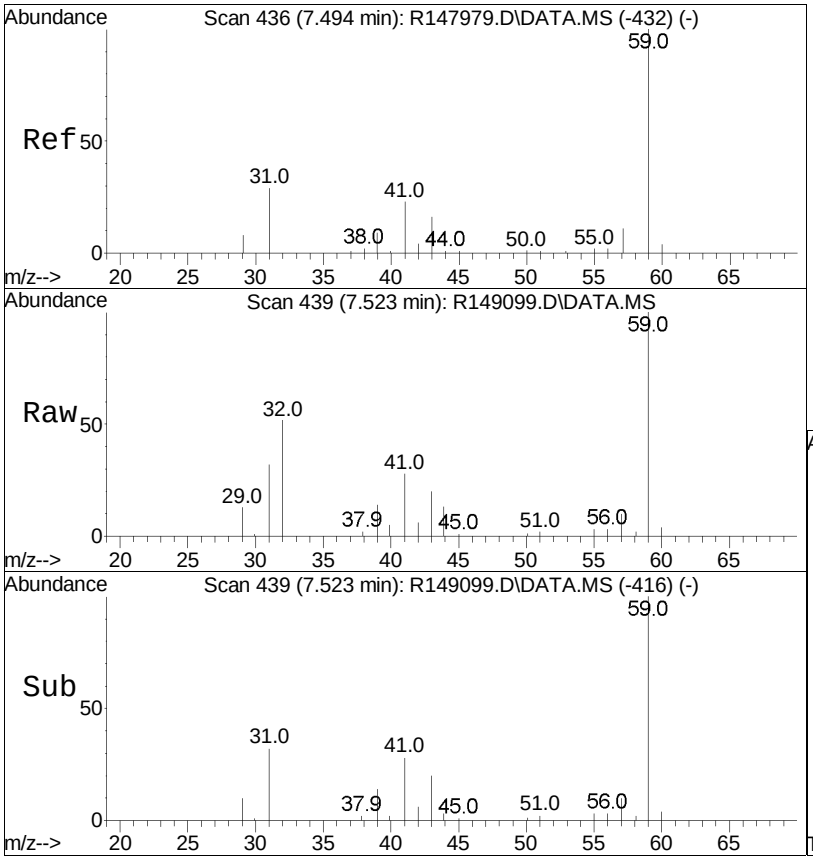


#24
pentane
Concen: 0.34 ppbV
RT: 7.06 min Scan# 389
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 43 Resp: 5201

Ion	Ratio	Lower	Upper
43	100		
57	13.3	9.8	14.8
72	7.1	5.4	8.2

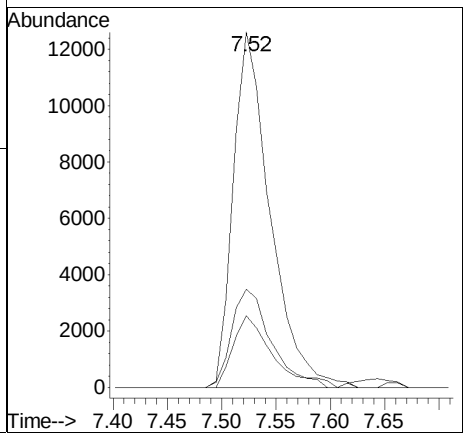


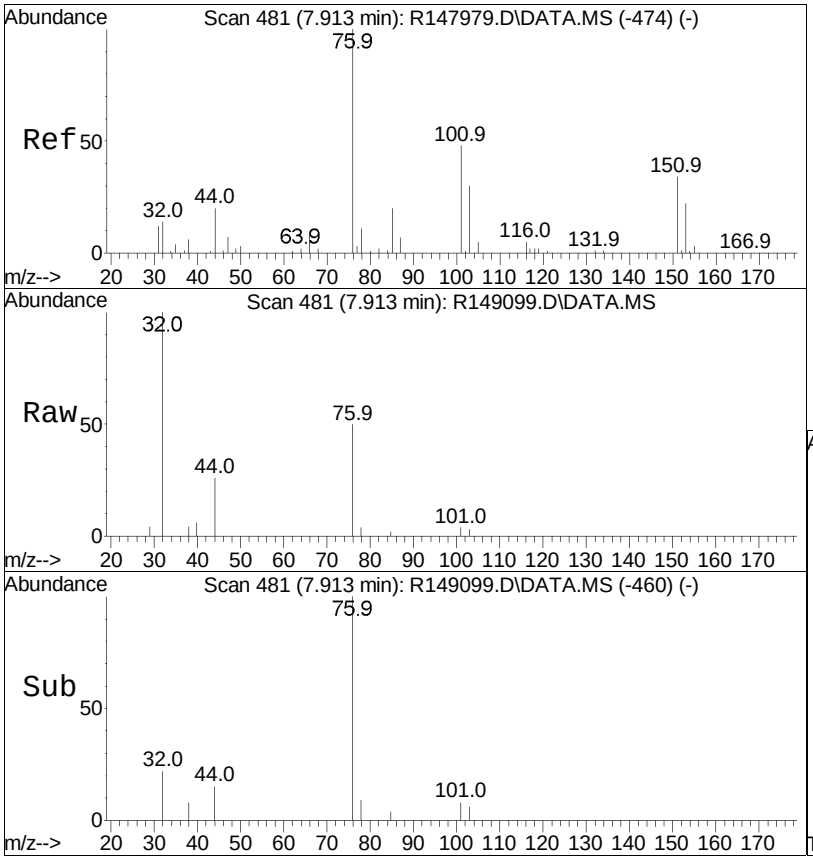


#27
tertiary butyl alcohol
Concen: 1.77 ppbV
RT: 7.52 min Scan# 439
Delta R.T. 0.019 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 59 Resp: 29829

Ion	Ratio	Lower	Upper
59	100		
41	27.6	18.9	28.3
43	20.2	13.7	20.5

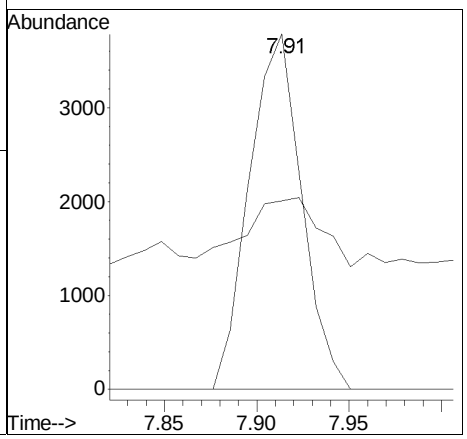


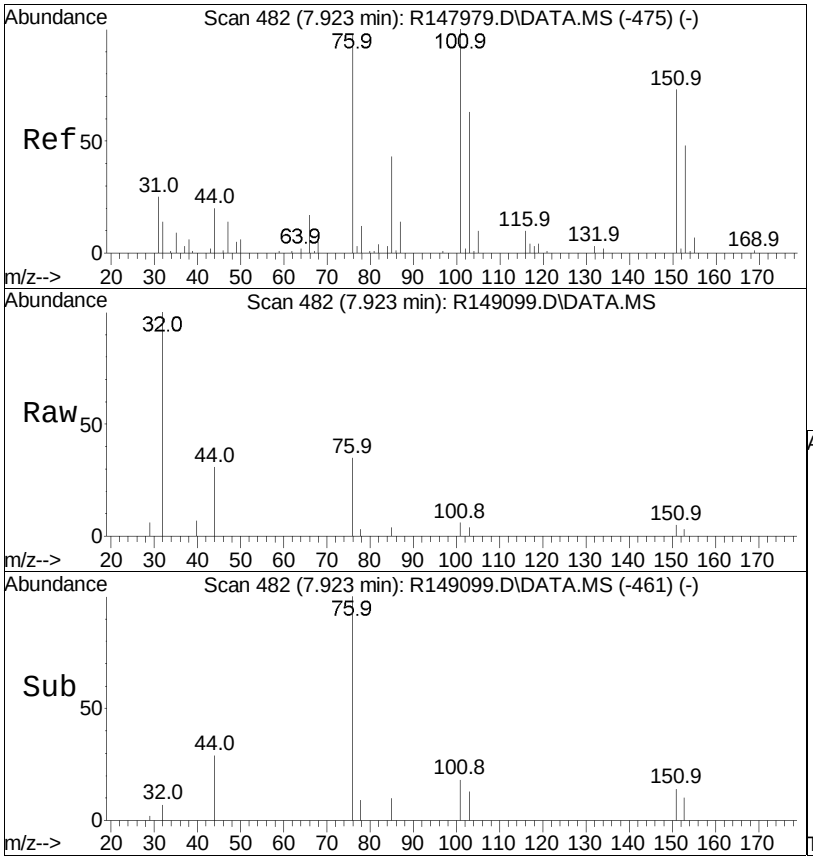


#30
carbon disulfide
Concen: 0.34 ppbV
RT: 7.91 min Scan# 481
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 76 Resp: 7469

Ion	Ratio	Lower	Upper
76	100		
44	53.1	16.3	24.5#

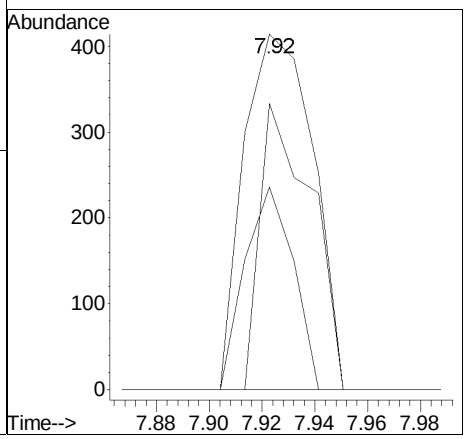


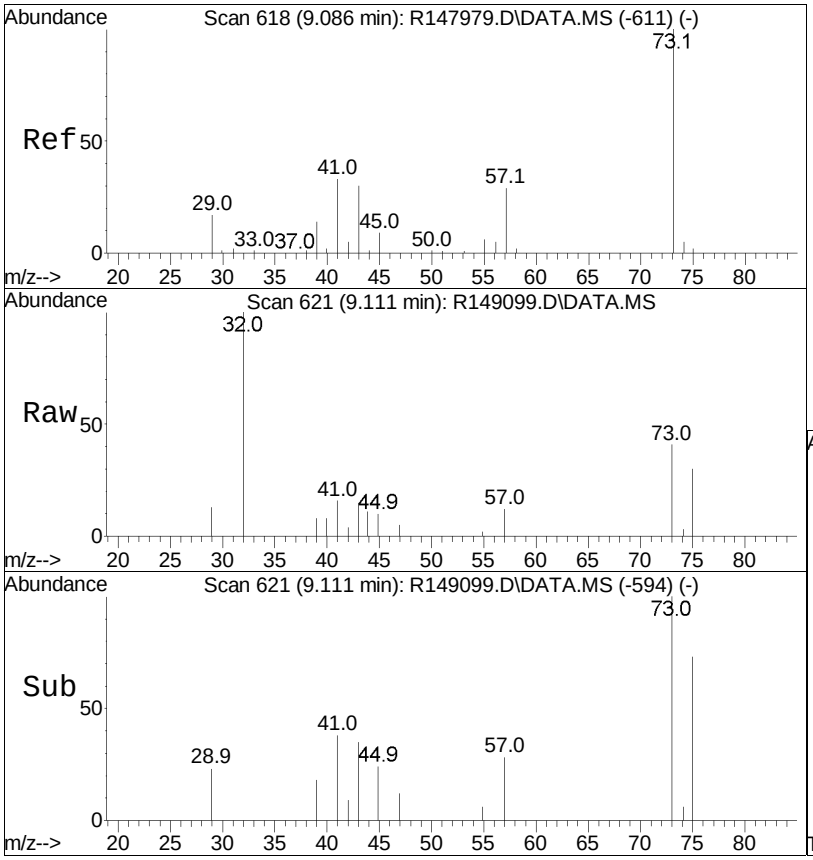


#31
Freon 113
Concen: 0.05 ppbV
RT: 7.92 min Scan# 482
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion:101 Resp: 754

Ion	Ratio	Lower	Upper
101	100		
85	57.0	38.3	57.5
151	80.4	61.3	91.9

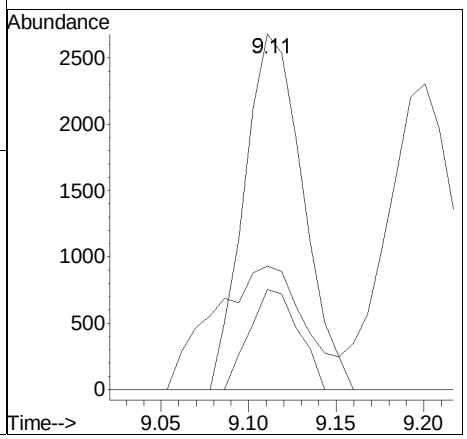


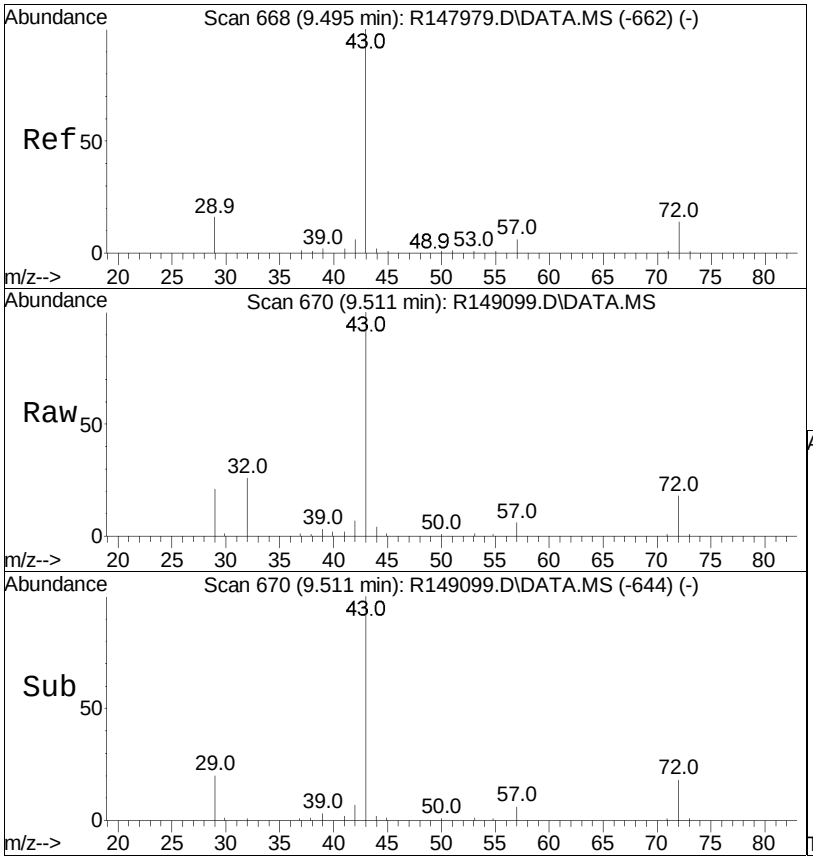


#34
MTBE
Concen: 0.29 ppbV
RT: 9.11 min Scan# 621
Delta R.T. 0.025 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 73 Resp: 6240

Ion	Ratio	Lower	Upper
73	100		
57	28.2	19.1	28.7
43	34.7	23.0	34.4#

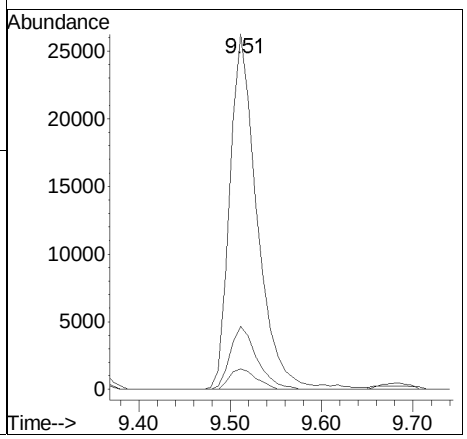


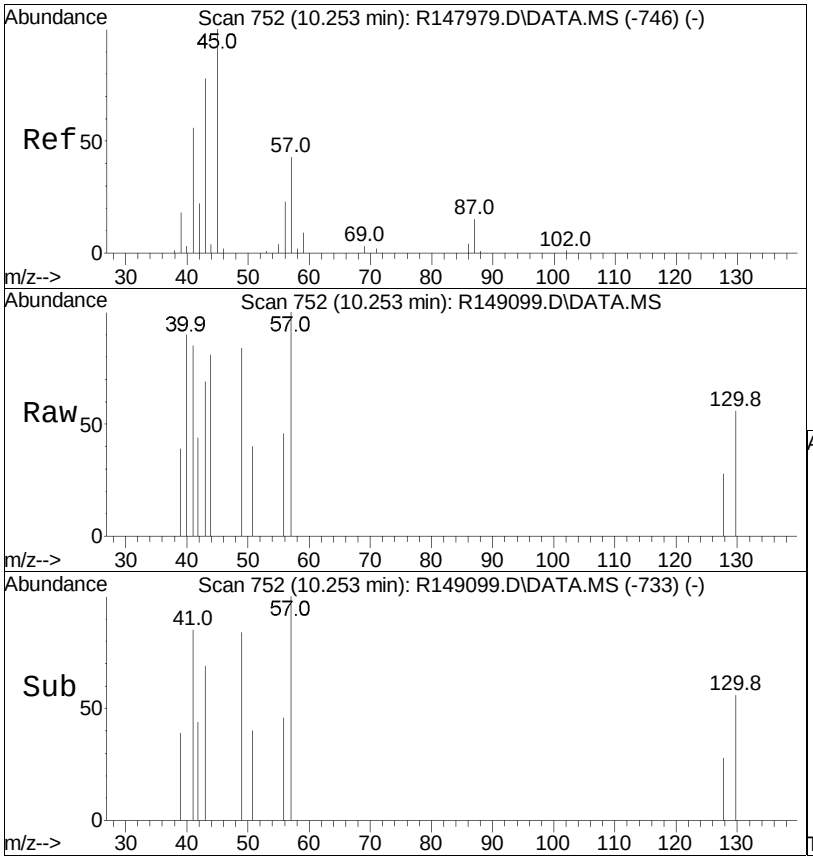


#36
2-butanone
Concen: 2.73 ppbV
RT: 9.51 min Scan# 670
Delta R.T. 0.016 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 43 Resp: 54914

Ion	Ratio	Lower	Upper
43	100		
72	17.7	13.6	20.4
57	5.8	4.9	7.3

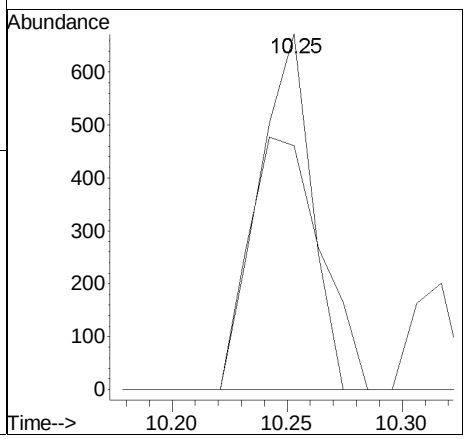


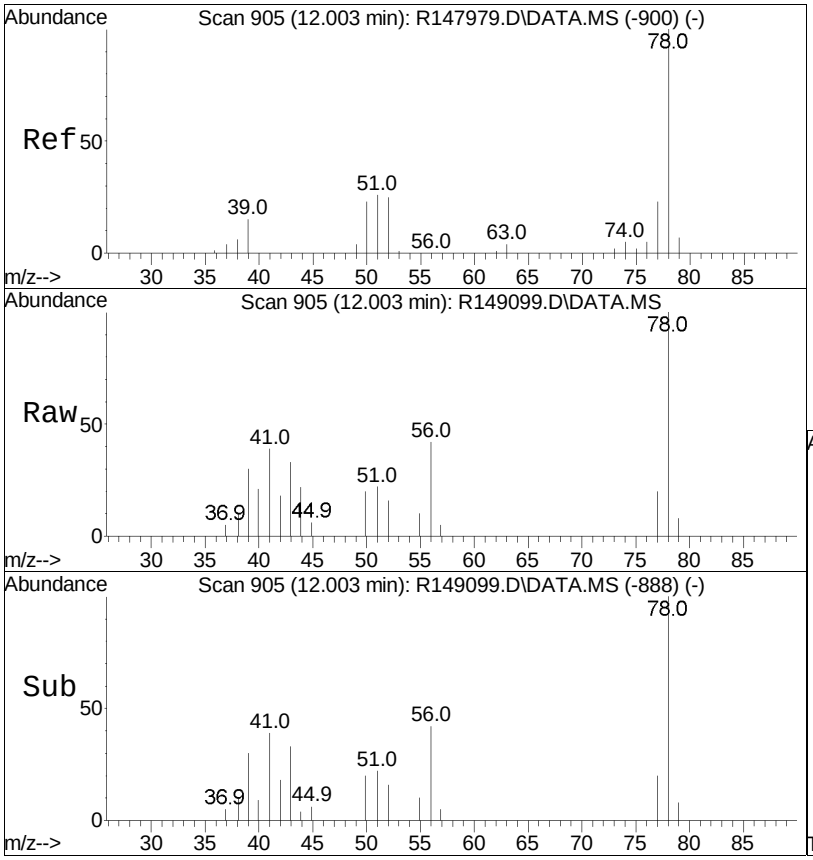


#44
hexane
Concen: 0.07 ppbV
RT: 10.25 min Scan# 752
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 57 Resp: 1069

Ion	Ratio	Lower	Upper
57	100		
43	68.6	142.3	213.5#
86	0.0	9.3	13.9#

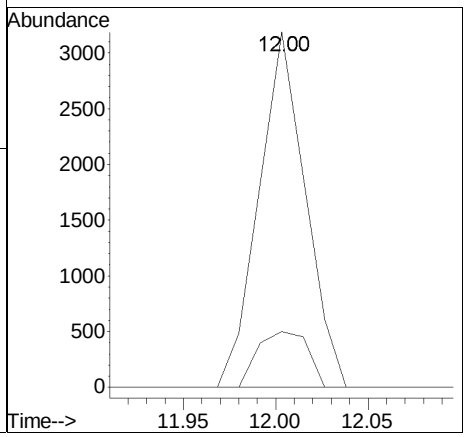


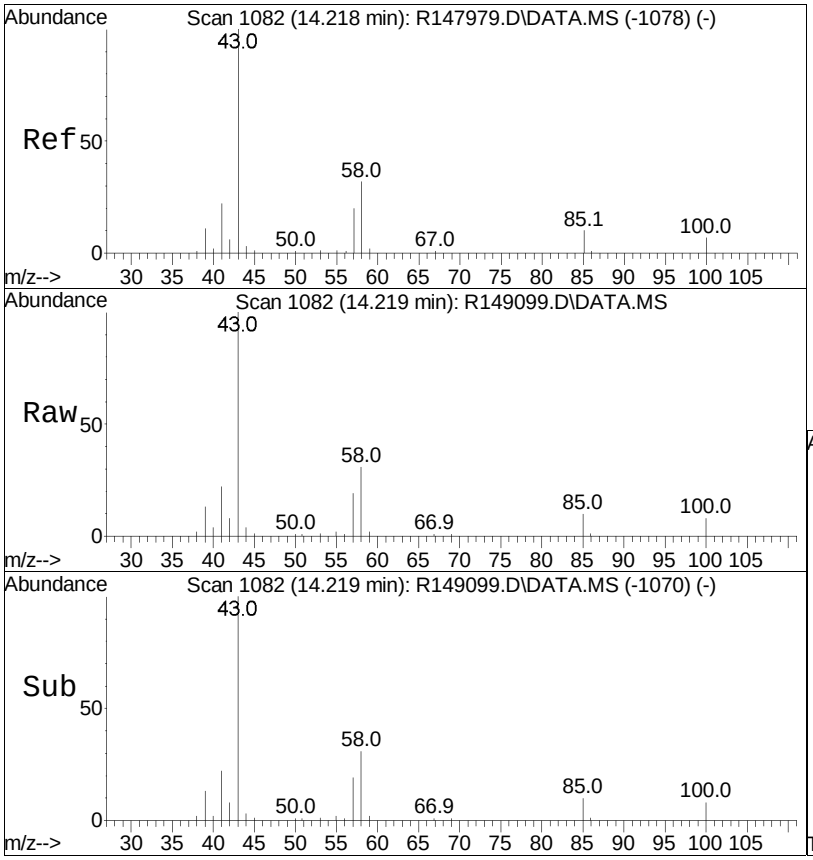


#50
benzene
Concen: 0.26 ppbV
RT: 12.00 min Scan# 905
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 78 Resp: 5588

Ion	Ratio	Lower	Upper
78	100		
52	15.7	15.2	22.8

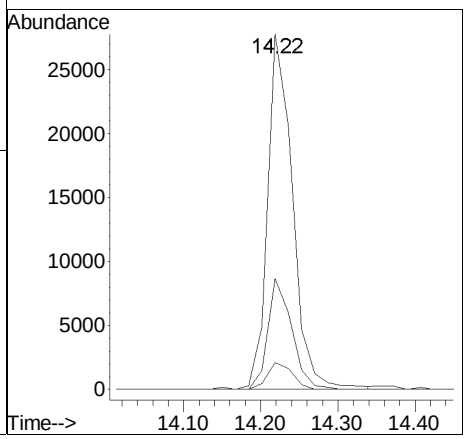


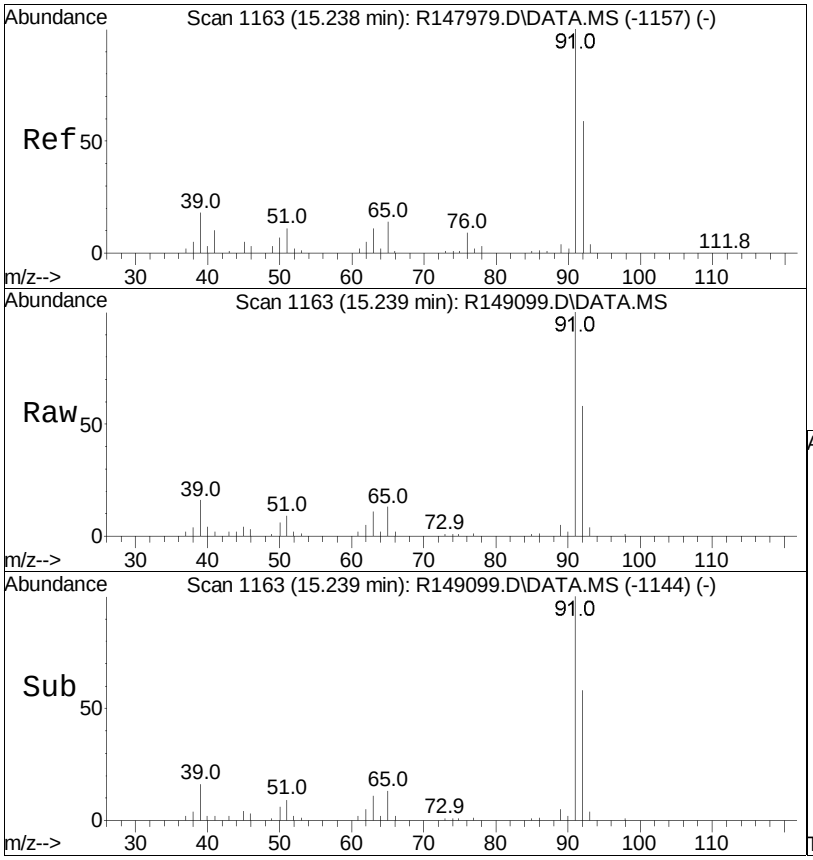


#64
4-methyl-2-pentanone
Concen: 2.46 ppbV
RT: 14.22 min Scan# 1082
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 43 Resp: 62631

Ion	Ratio	Lower	Upper
43	100		
58	31.2	25.8	38.8
100	7.5	6.9	10.3

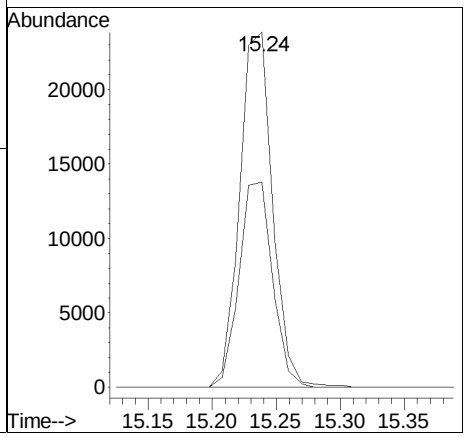


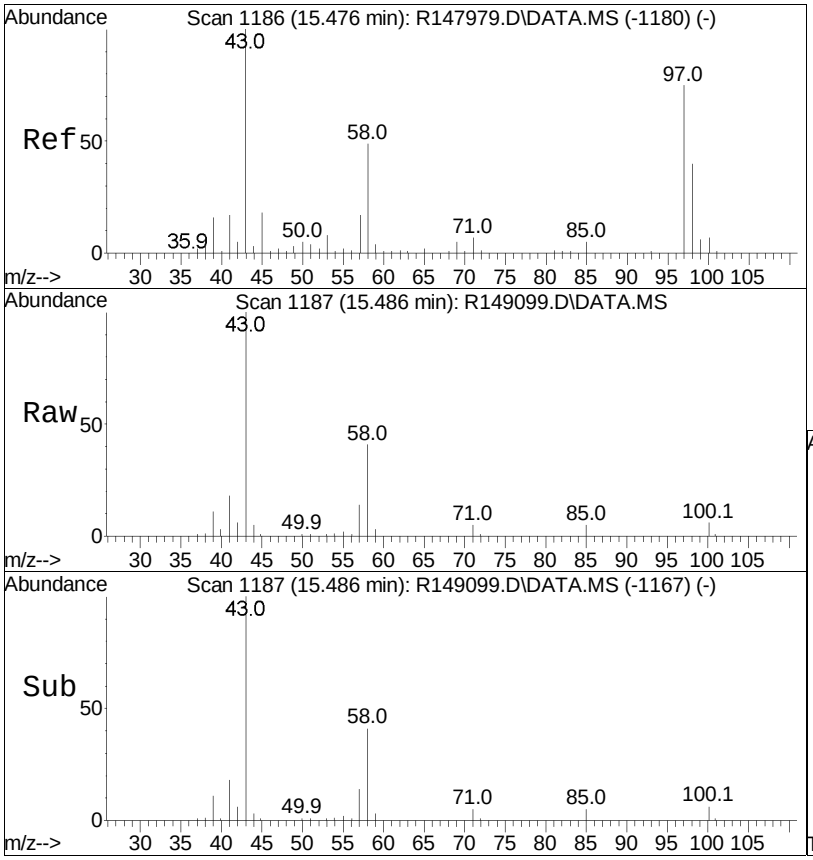


#68
toluene
Concen: 1.63 ppbV
RT: 15.24 min Scan# 1163
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 91 Resp: 42721

Ion	Ratio	Lower	Upper
91	100		
92	57.8	45.8	68.6

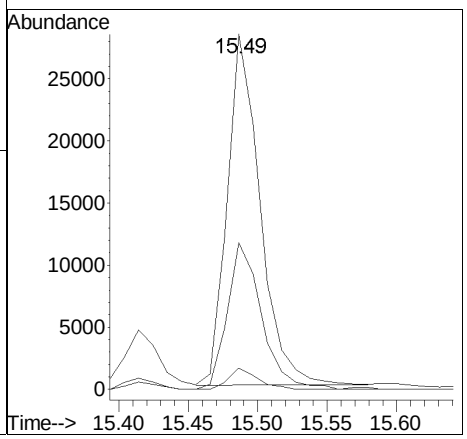


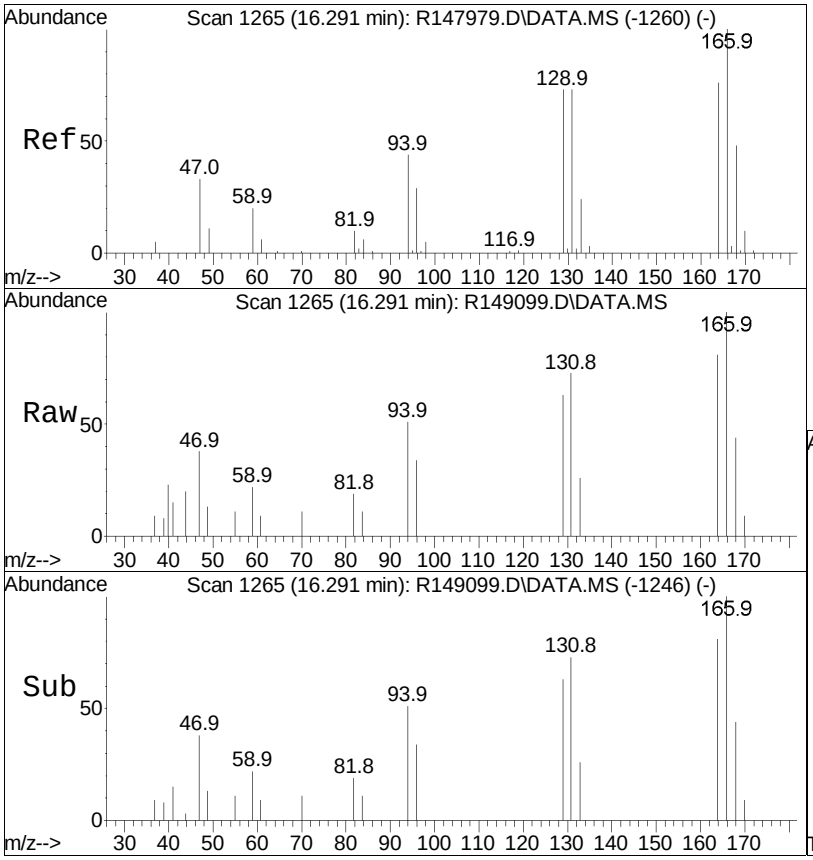


#72
2-hexanone
Concen: 1.90 ppbV
RT: 15.49 min Scan# 1187
Delta R.T. 0.010 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 43 Resp: 46551

Ion	Ratio	Lower	Upper
43	100		
58	41.3	39.7	59.5
100	6.0	6.9	10.3#

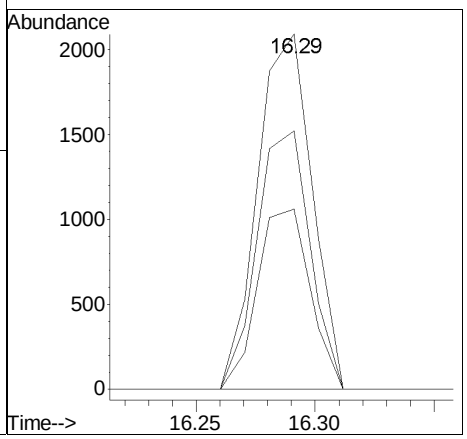


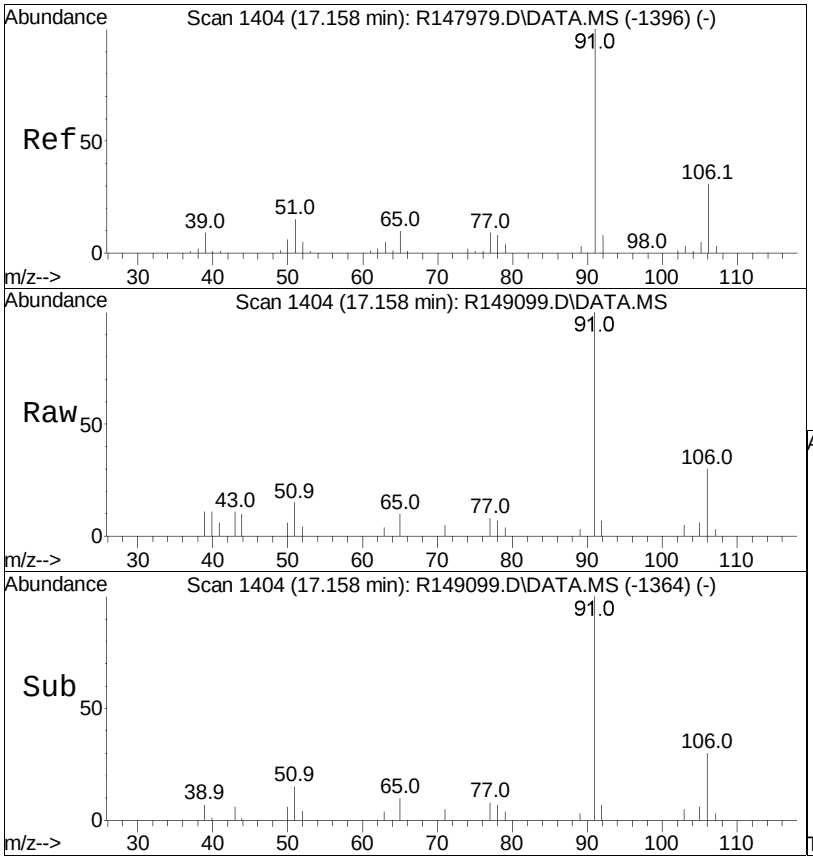


#78
tetrachloroethene
Concen: 0.25 ppbV
RT: 16.29 min Scan# 1265
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion:166 Resp: 3330

Ion	Ratio	Lower	Upper
166	100		
131	72.7	53.0	79.4
94	50.7	36.6	55.0

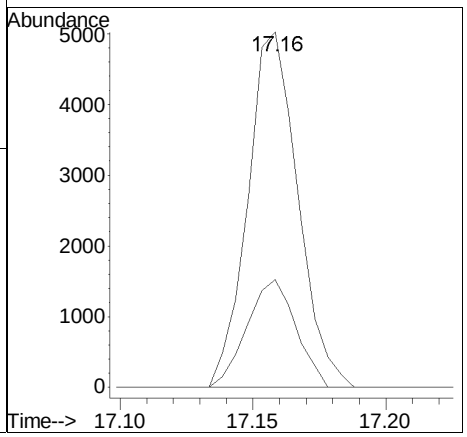


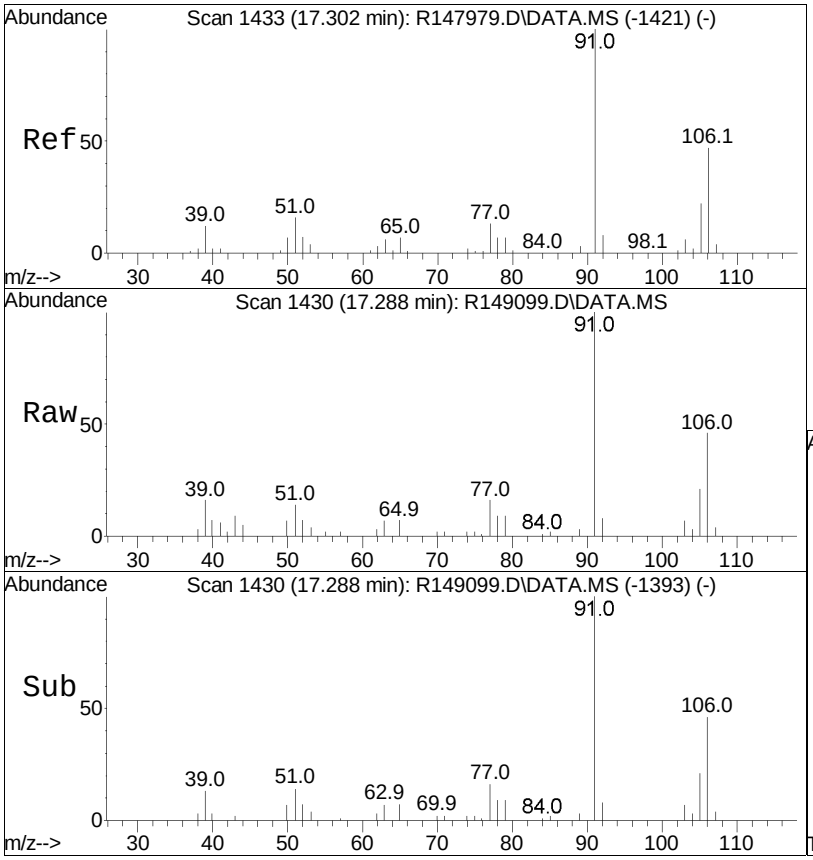


#81
ethylbenzene
Concen: 0.19 ppbV
RT: 17.16 min Scan# 1404
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 91 Resp: 6586

Ion	Ratio	Lower	Upper
91	100		
106	30.3	24.5	36.7

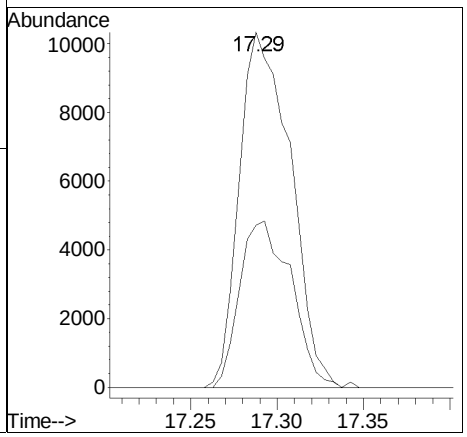


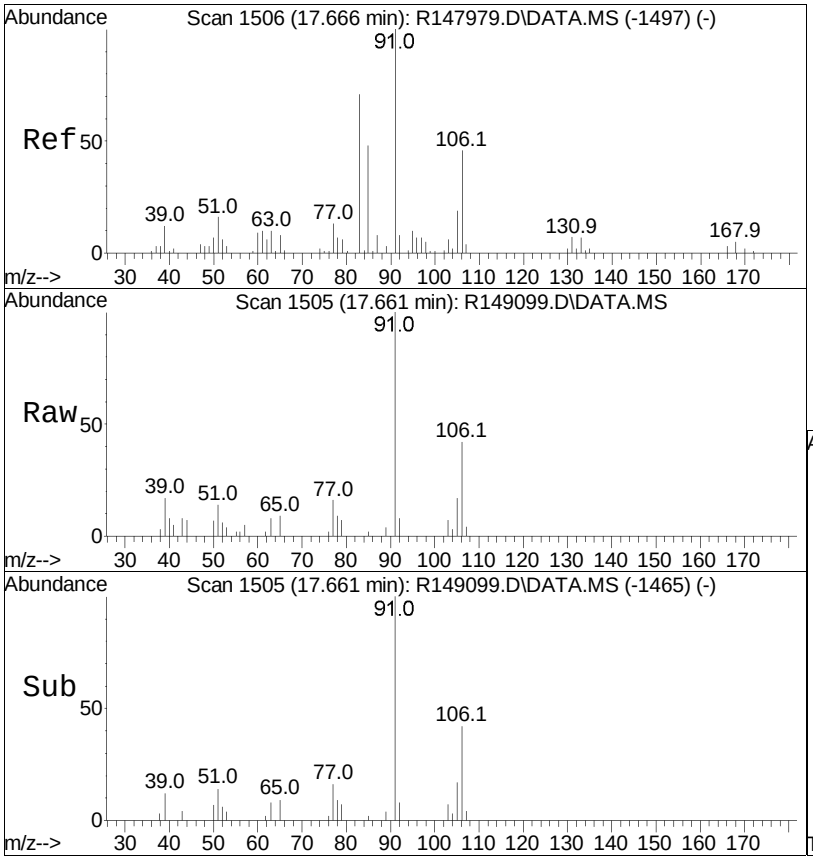


#83
m+p-xylene
Concen: 0.77 ppbV
RT: 17.29 min Scan# 1430
Delta R.T. -0.015 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 91 Resp: 21269

Ion	Ratio	Lower	Upper
91	100		
106	45.7	38.8	58.2

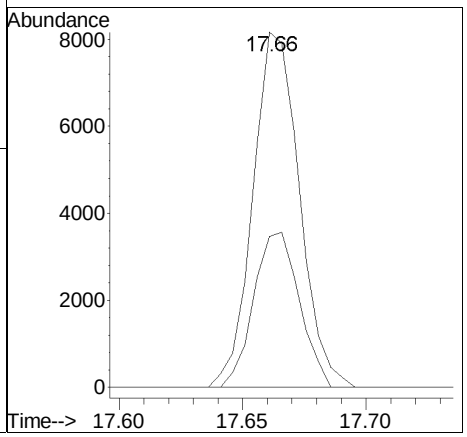


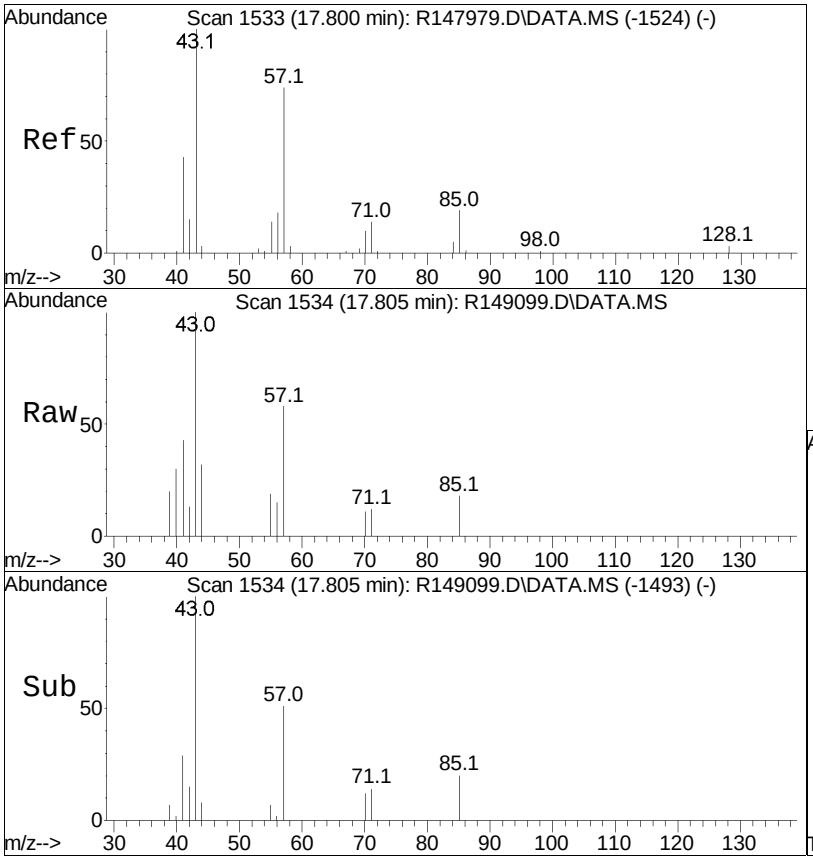


#87
o-xylene
Concen: 0.38 ppbV
RT: 17.66 min Scan# 1505
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 91 Resp: 10693

Ion	Ratio	Lower	Upper
91	100		
106	42.5	36.5	54.7

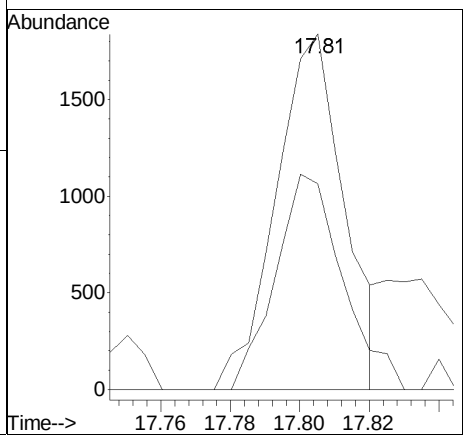


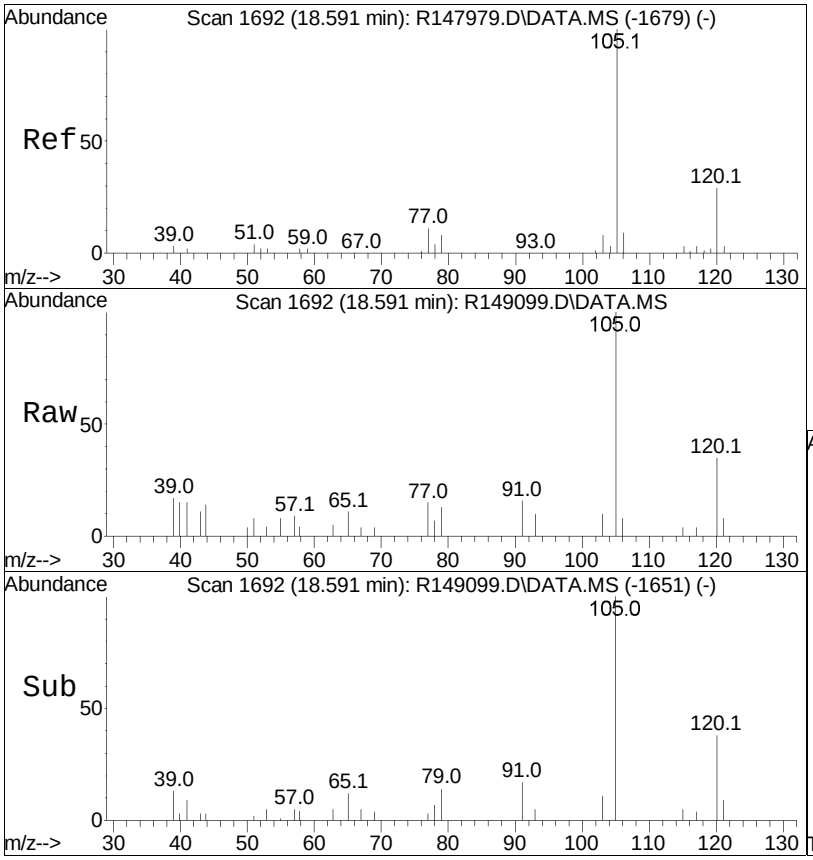


#89
nonane
Concen: 0.09 ppbV m
RT: 17.81 min Scan# 1534
Delta R.T. 0.005 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 43 Resp: 2510

Ion	Ratio	Lower	Upper
43	100		
57	57.9	58.8	88.2#
128	0.0	2.3	3.5#

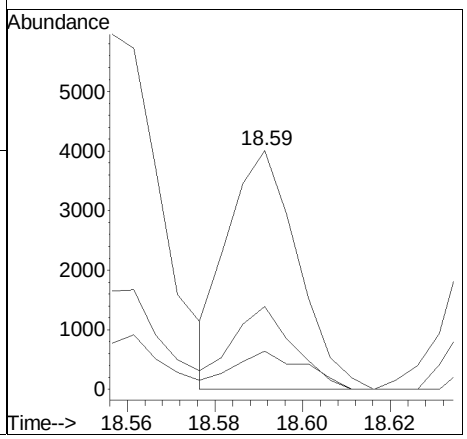


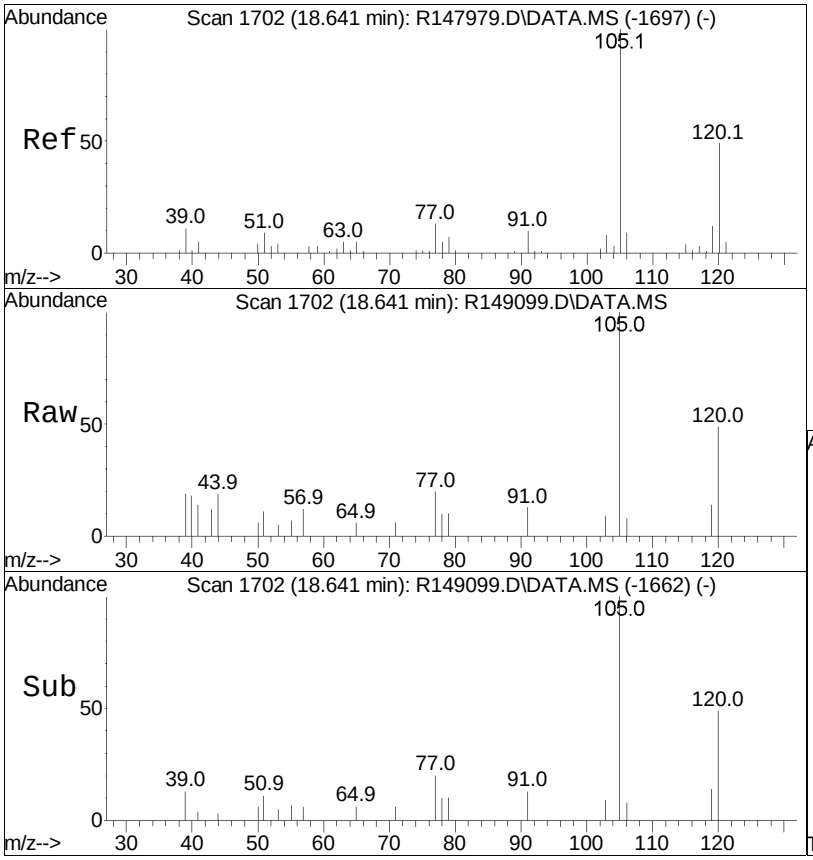


#96
4-ethyl toluene
Concen: 0.11 ppbV m
RT: 18.59 min Scan# 1692
Delta R.T. 0.005 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion:105 Resp: 4452

Ion	Ratio	Lower	Upper
105	100		
120	34.7	23.3	34.9
91	16.0	9.6	14.4#

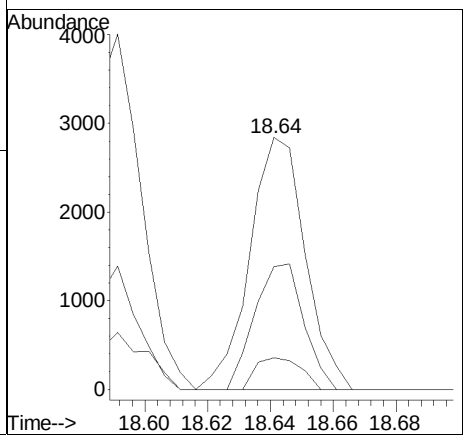


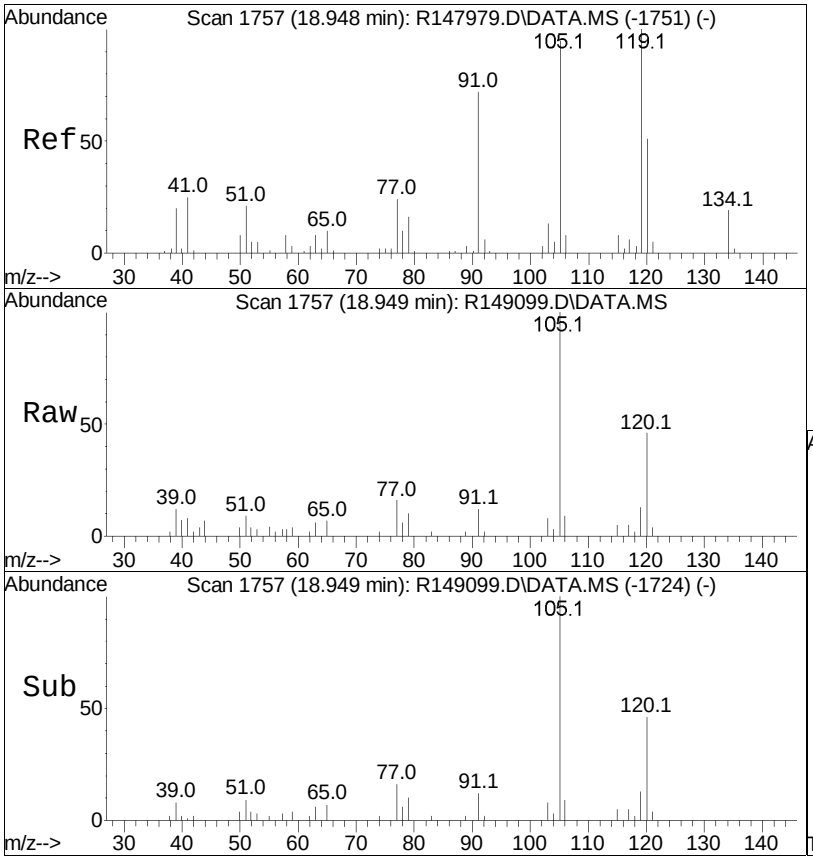


#97
1,3,5-trimethylbenzene
Concen: 0.11 ppbV
RT: 18.64 min Scan# 1702
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion:105 Resp: 3491

Ion	Ratio	Lower	Upper
105	100		
120	48.7	38.5	57.7
91	12.6	9.2	13.8

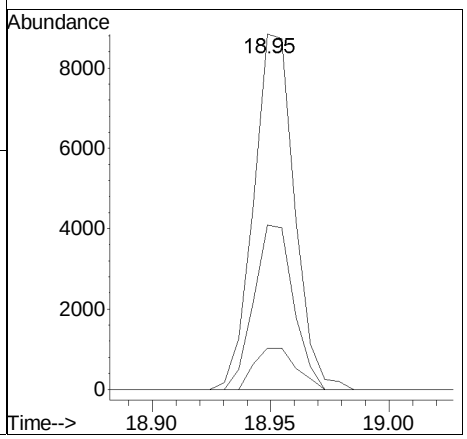


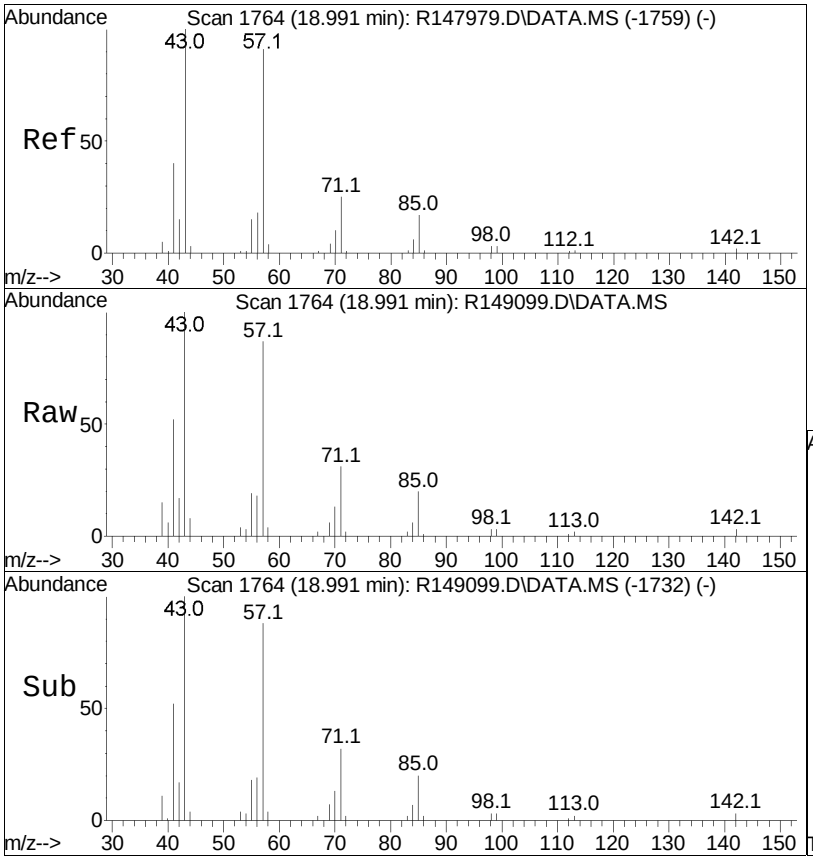


#99
1,2,4-trimethylbenzene
Concen: 0.33 ppbV
RT: 18.95 min Scan# 1757
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion:105 Resp: 10622

Ion	Ratio	Lower	Upper
105	100		
120	46.2	43.0	64.4
91	11.7	63.7	95.5#

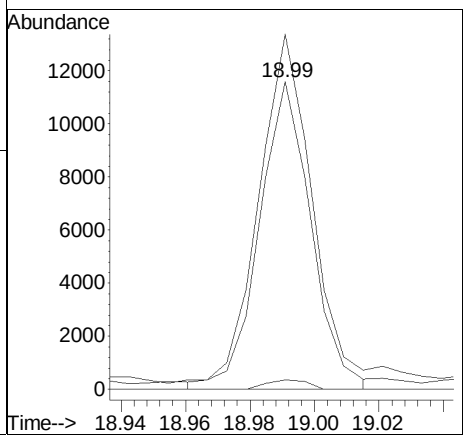


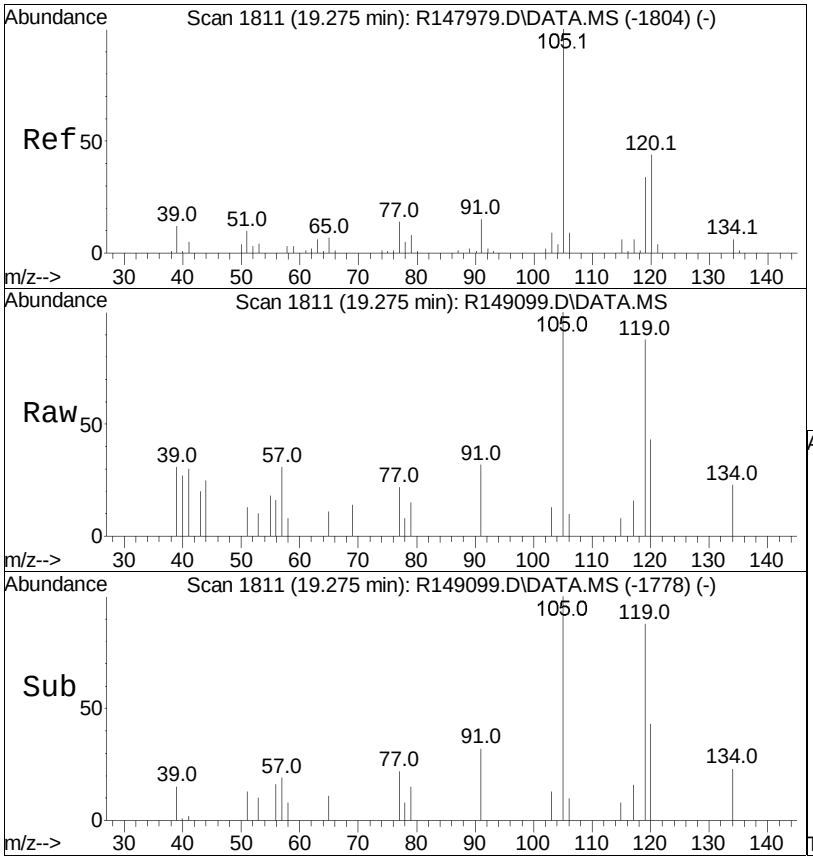


#100
decane
Concen: 0.51 ppbV m
RT: 18.99 min Scan# 1764
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 57 Resp: 12937

Ion	Ratio	Lower	Upper
57	100		
43	115.4	88.1	132.1
142	3.1	2.4	3.6

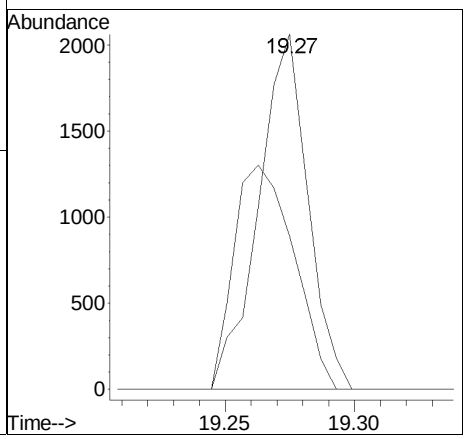


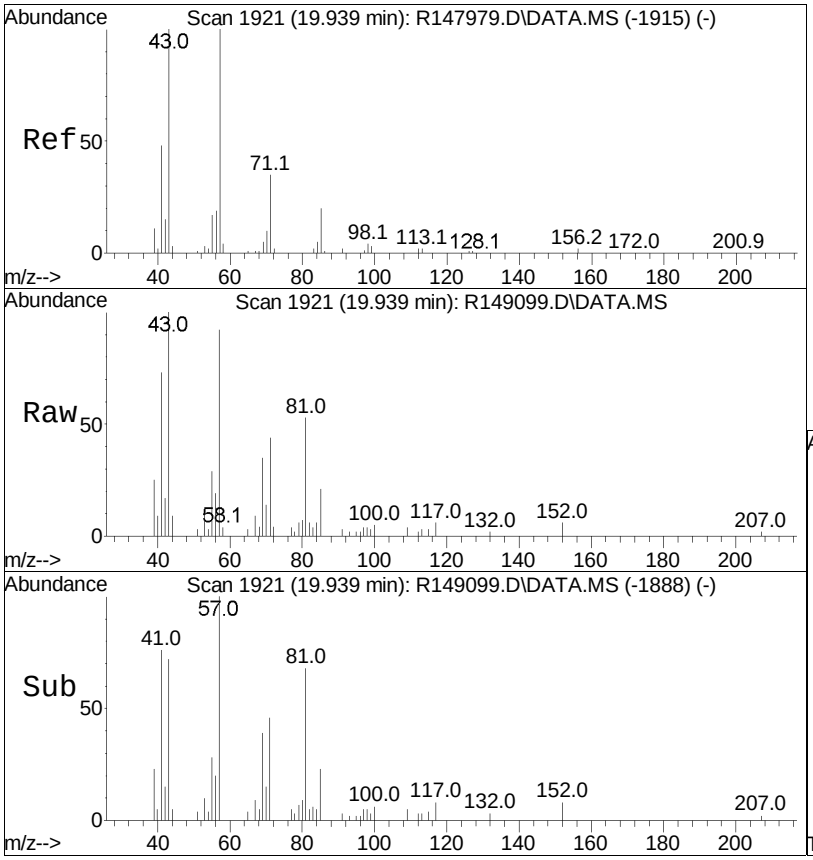


#105
1,2,3-trimethylbenzene
Concen: 0.08 ppbV
RT: 19.27 min Scan# 1811
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion:105 Resp: 2735

Ion	Ratio	Lower	Upper
105	100		
120	43.2	35.0	52.6

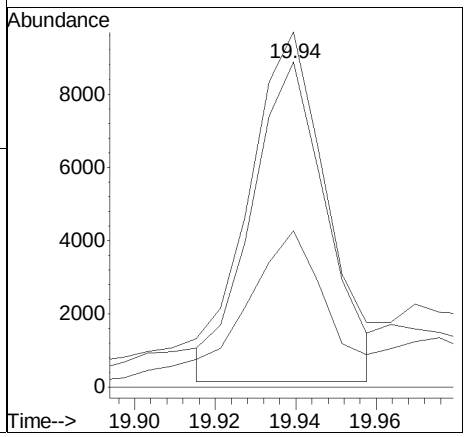


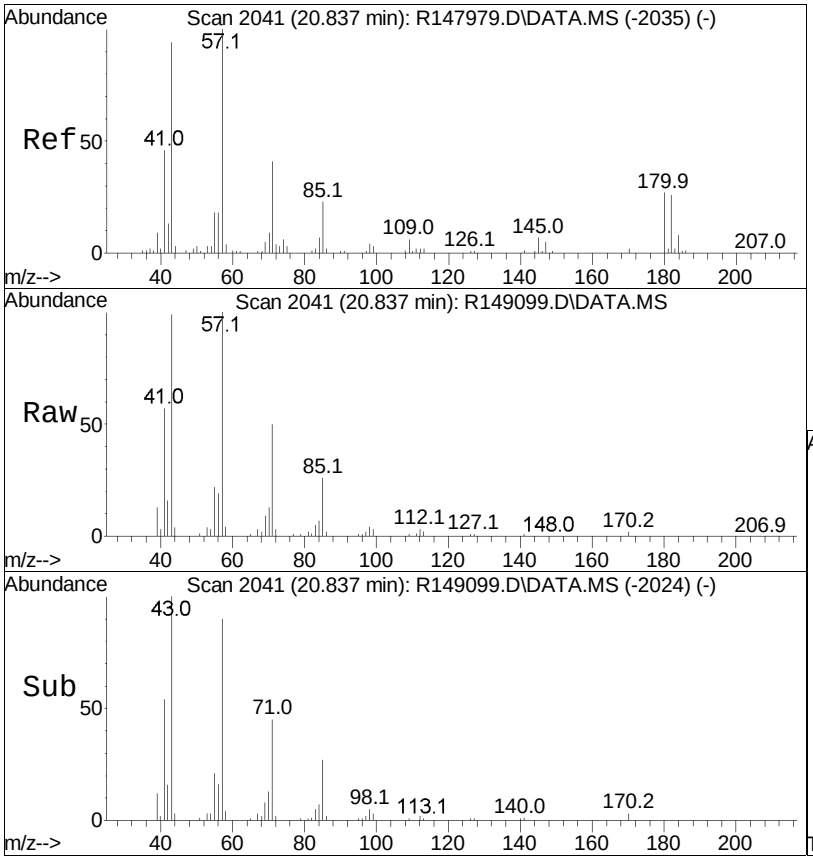


#112
undecane
Concen: 0.41 ppbV m
RT: 19.94 min Scan# 1921
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 57 Resp: 11322

Ion	Ratio	Lower	Upper
57	100		
43	109.2	81.6	122.4
71	48.1	35.4	53.2
156	0.0	2.2	3.4#

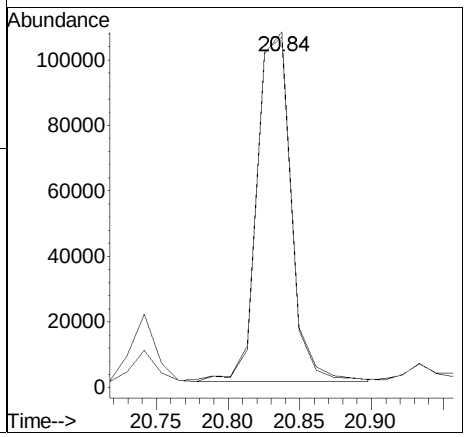


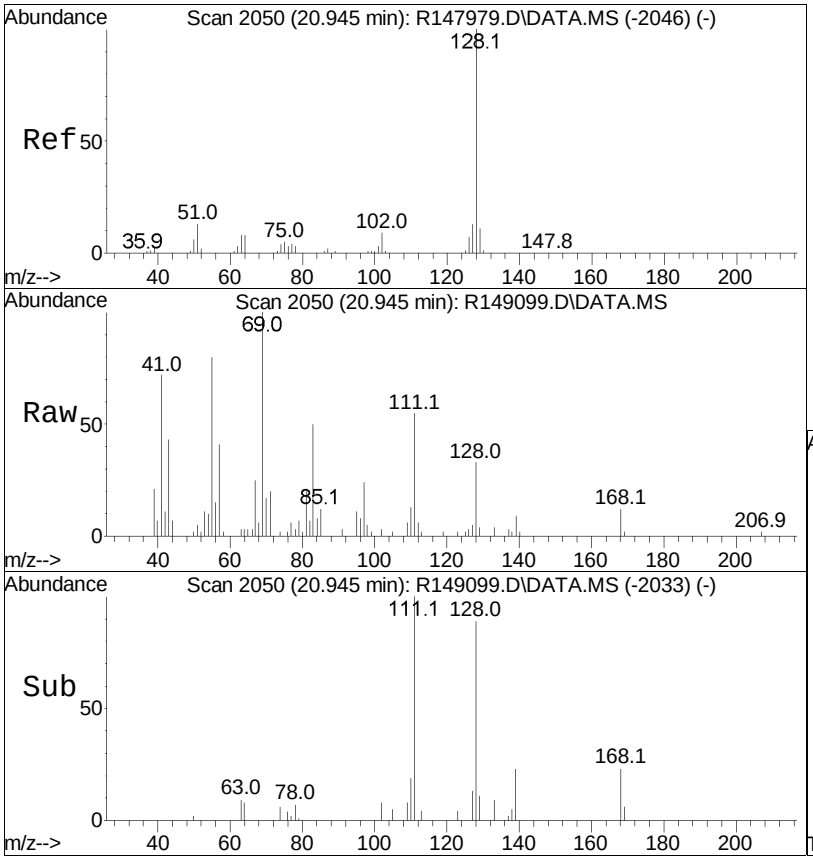


#114
dodecane
Concen: 6.22 ppbV
RT: 20.84 min Scan# 2041
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion: 57 Resp: 176035

Ion	Ratio	Lower	Upper
57	100		
43	98.5	76.2	114.4

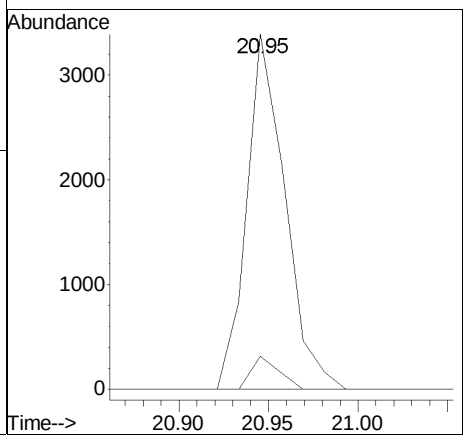




#116
naphthalene
Concen: 0.13 ppbV
RT: 20.95 min Scan# 2050
Delta R.T. 0.000 min
Lab File: R149099.D
Acq: 1 Nov 2016 3:42 pm

Tgt Ion:128 Resp: 5048

Ion	Ratio	Lower	Upper
128	100		
102	9.3	7.5	11.3



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-03	Date Collected	: 10/19/16 09:45
Client ID	: NFSV-07	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 16:16
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149100	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-71-8	Dichlorodifluoromethane	0.269	0.200	0.047	1.33	0.989	0.230	
74-87-3	Chloromethane	0.154	0.200	0.096	0.318	0.413	0.198	J
76-14-2	Freon-114	ND	0.200	0.042	ND	1.40	0.293	U
75-01-4	Vinyl chloride	ND	0.200	0.038	ND	0.511	0.097	U
106-99-0	1,3-Butadiene	0.320	0.200	0.080	0.708	0.442	0.177	
106-97-8	Butane	31.6	0.200	0.044	75.1	0.475	0.105	
75-07-0	Acetaldehyde	ND	2.50	0.547	ND	4.50	0.985	U
74-83-9	Bromomethane	ND	0.200	0.070	ND	0.777	0.270	U
75-00-3	Chloroethane	0.994	0.200	0.077	2.62	0.528	0.202	
64-17-5	Ethanol	2.88	2.50	0.542	5.43	4.71	1.02	
593-60-2	Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306	U
107-02-8	Acrolein	0.352	0.500	0.114	0.807	1.15	0.261	J
67-64-1	Acetone	37.0	1.00	0.165	87.9	2.38	0.392	
75-69-4	Trichlorofluoromethane	0.175	0.200	0.042	0.983	1.12	0.234	J
67-63-0	Isopropanol	7.11	0.500	0.053	17.5	1.23	0.129	
109-66-0	Pentane	3.19	0.200	0.048	9.41	0.590	0.140	
75-35-4	1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224	U
75-65-0	tert-Butyl Alcohol	2.36	0.500	0.060	7.15	1.52	0.182	
75-09-2	Methylene chloride	ND	1.00	0.299	ND	1.74	1.04	U
107-05-1	3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254	U
75-15-0	Carbon disulfide	2.12	0.200	0.035	6.60	0.623	0.107	
76-13-1	Freon-113	ND	0.200	0.051	ND	1.53	0.392	U
156-60-5	trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293	U
75-34-3	1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312	U
1634-04-4	Methyl tert butyl ether	0.083	0.200	0.053	0.299	0.721	0.190	J
78-93-3	2-Butanone	7.95	0.500	0.047	23.4	1.47	0.139	
156-59-2	cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233	U
67-66-3	Chloroform	0.325	0.200	0.053	1.59	0.977	0.259	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-03	Date Collected	: 10/19/16 09:45
Client ID	: NFSV-07	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 16:16
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149100	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
107-06-2	1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223	U
110-54-3	n-Hexane	0.440	0.200	0.052	1.55	0.705	0.183	
71-55-6	1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311	U
71-43-2	Benzene	1.91	0.200	0.054	6.10	0.639	0.172	
110-02-1	Thiophene	ND	0.200	0.053	ND	0.688	0.182	U
56-23-5	Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296	U
110-82-7	Cyclohexane	0.223	0.200	0.066	0.768	0.688	0.226	
78-87-5	1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322	U
75-27-4	Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439	U
123-91-1	1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281	U
79-01-6	Trichloroethene	ND	0.200	0.071	ND	1.07	0.382	U
540-84-1	2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308	U
142-82-5	Heptane	0.190	0.200	0.055	0.779	0.820	0.227	J
10061-01-5	cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338	U
108-10-1	4-Methyl-2-pentanone	5.87	0.500	0.061	24.1	2.05	0.249	
10061-02-6	trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315	U
79-00-5	1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364	U
108-88-3	Toluene	1.35	0.200	0.063	5.09	0.754	0.237	
554-14-3	2-Methylthiophene	ND	0.200	0.079	ND	0.803	0.317	U
591-78-6	2-Hexanone	3.84	0.200	0.060	15.7	0.820	0.248	
616-44-4	3-Methylthiophene	ND	0.200	0.067	ND	0.803	0.269	U
124-48-1	Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636	U
106-93-4	1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599	U
111-65-9	Octane	0.069	0.200	0.042	0.322	0.934	0.197	J
127-18-4	Tetrachloroethene	ND	0.200	0.076	ND	1.36	0.514	U
108-90-7	Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363	U
100-41-4	Ethylbenzene	0.404	0.200	0.056	1.75	0.869	0.241	
872-55-9	2-Ethylthiophene	ND	0.200	0.057	ND	0.918	0.262	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-03	Date Collected	: 10/19/16 09:45
Client ID	: NFSV-07	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 16:16
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149100	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
179601-23-1	p/m-Xylene	0.588	0.400	0.139	2.55	1.74	0.604	
75-25-2	Bromoform	ND	0.200	0.052	ND	2.07	0.541	U
100-42-5	Styrene	0.083	0.200	0.080	0.353	0.852	0.340	J
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376	U
95-47-6	o-Xylene	0.251	0.200	0.063	1.09	0.869	0.274	
111-84-2	Nonane	0.150	0.200	0.063	0.787	1.05	0.328	J
95-49-8	2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252	U
622-96-8	4-Ethyltoluene	0.152	0.200	0.078	0.747	0.983	0.381	J
108-67-8	1,3,5-Trimethylbenzene	0.091	0.200	0.058	0.447	0.983	0.287	J
95-63-6	1,2,4-Trimethylbenzene	0.270	0.200	0.069	1.33	0.983	0.341	
124-18-5	Decane	1.61	0.200	0.048	9.37	1.16	0.282	
541-73-1	1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383	U
106-46-7	1,4-Dichlorobenzene	ND	0.200	0.036	ND	1.20	0.217	U
526-73-8	1,2,3-Trimethylbenzene	0.101	0.200	0.075	0.497	0.983	0.369	J
95-50-1	1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369	U
496-11-7	Indane	0.126	0.200	0.080	0.609	0.967	0.384	J
95-13-6	Indene	ND	0.200	0.061	ND	0.951	0.289	U
1120-21-4	Undecane	1.26	0.200	0.053	8.05	1.28	0.338	
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.200	0.080	ND	1.10	0.436	U
112-40-3	Dodecane	26.9	0.200	0.048	187	1.39	0.333	
120-82-1	1,2,4-Trichlorobenzene	0.076	0.200	0.061	0.564	1.48	0.454	J
91-20-3	Naphthalene	0.347	0.200	0.043	1.82	1.05	0.223	
95-15-8	Benzothiophene	ND	0.500	0.047	ND	2.74	0.257	U
87-68-3	Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781	U
91-57-6	2-Methylnaphthalene	ND	1.00	0.272	ND	5.82	1.58	U
90-12-0	1-Methylnaphthalene	ND	1.00	0.250	ND	5.82	1.45	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149100.D
Acq On : 1 Nov 2016 4:16 pm
Operator : AIRPIANO1:RY
Sample : L1634001-03,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 02 09:59:44 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	145746	10.000	ppbV	-0.01
Standard Area = 153282			Recovery = 95.08%			
43) 1,4-difluorobenzene	12.41	114	241217	10.000	ppbV	0.00
Standard Area = 240182			Recovery = 100.43%			
67) chlorobenzene-D5	16.82	54	67378	10.000	ppbV	0.00
Standard Area = 64184			Recovery = 104.98%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	68911	9.537	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 95.37%			
69) toluene-D8	15.14	98	189110	9.318	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 93.18%			
90) bromofluorobenzene	18.01	95	126543	8.922	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 89.22%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	5023	0.269	ppbV	97
6) chloromethane	4.37	50	1186	0.154	ppbV #	85
7) Freon-114	4.52		0	N.D.		
9) vinyl chloride	0.00		0	N.D.		
10) 1,3-butadiene	4.88	54	1865	0.320	ppbV	88
11) butane	4.95	43	448595	31.623	ppbV	100
12) acetaldehyde	0.00		0	N.D.	d	
13) bromomethane	0.00		0	N.D.		
14) chloroethane	5.51	64	3612	0.994	ppbV	94
15) ethanol	5.72	31	20555	2.880	ppbV	100
17) vinyl bromide	0.00		0	N.D.		
18) acrolein	6.18	56	1237	0.352	ppbV #	71
19) acetone	6.35	43	615766M6	36.953	ppbV	
21) trichlorofluoromethane	6.57	101	3374	0.175	ppbV	97
22) isopropyl alcohol	6.72	45	123223	7.111	ppbV	100
24) pentane	7.06	43	49997	3.190	ppbV	96
26) 1,1-dichloroethene	0.00		0	N.D.	d	
27) tertiary butyl alcohol	7.51	59	41163	2.359	ppbV #	88
28) methylene chloride	7.59		0	N.D.		
29) 3-chloropropene	0.00		0	N.D.	d	
30) carbon disulfide	7.91	76	47770	2.119	ppbV	92

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149100.D
Acq On : 1 Nov 2016 4:16 pm
Operator : AIRPIANO1:RY
Sample : L1634001-03,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 02 09:59:44 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
31) Freon 113	7.93		0	N.D.			
32) trans-1,2-dichloroethene	0.00		0	N.D.			
33) 1,1-dichloroethane	0.00		0	N.D.			
34) MTBE	9.12	73	1826	0.083	ppbV	#	74
36) 2-butanone	9.50	43	165269	7.952	ppbV		97
37) cis-1,2-dichloroethene	0.00		0	N.D.			
39) chloroform	10.35	83	6929	0.325	ppbV		99
42) 1,2-dichloroethane	0.00		0	N.D.			
44) hexane	10.25	57	7198	0.440	ppbV	#	33
48) 1,1,1-trichloroethane	0.00		0	N.D.			
50) benzene	12.00	78	43406	1.911	ppbV		98
51) thiophene	12.15		0	N.D.			
52) carbon tetrachloride	0.00		0	N.D.			
53) cyclohexane	12.31	56	2991	0.223	ppbV	#	77
56) 1,2-dichloropropane	0.00		0	N.D.			
57) bromodichloromethane	0.00		0	N.D.	d		
58) 1,4-dioxane	0.00		0	N.D.			
59) trichloroethene	0.00		0	N.D.			
60) 2,2,4-trimethylpentane	0.00		0	N.D.	d		
62) heptane	13.53	43	3589	0.190	ppbV	#	94
63) cis-1,3-dichloropropene	0.00		0	N.D.			
64) 4-methyl-2-pentanone	14.22	43	156047	5.871	ppbV		100
65) trans-1,3-dichloropropene	0.00		0	N.D.			
66) 1,1,2-trichloroethane	0.00		0	N.D.			
68) toluene	15.23	91	37932	1.350	ppbV		99
70) 2-methylthiophene	0.00		0	N.D.	d		
72) 2-hexanone	15.49	43	100568	3.836	ppbV	#	93
73) 3-methylthiophene	15.48		0	N.D.			
74) dibromochloromethane	0.00		0	N.D.			
75) 1,2-dibromoethane	0.00		0	N.D.			
77) octane	16.14	85	577	0.069	ppbV	#	78
78) tetrachloroethene	16.28		0	N.D.			
80) chlorobenzene	0.00		0	N.D.			
81) ethylbenzene	17.16	91	14894	0.404	ppbV		97
82) 2-ethylthiophene	0.00		0	N.D.	d		
83) m+p-xylene	17.29	91	17290	0.588	ppbV		91
84) bromoform	0.00		0	N.D.			
85) styrene	17.58	104	1746	0.083	ppbV	#	90

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149100.D
Acq On : 1 Nov 2016 4:16 pm
Operator : AIRPIANO1:RY
Sample : L1634001-03,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 02 09:59:44 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

	Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
86)	1,1,2,2-tetrachloroethane	0.00		0	N.D.	d		
87)	o-xylene	17.66	91	7610	0.251	ppbV		95
89)	nonane	17.81	43	4288M4	0.150	ppbV		
93)	2-chlorotoluene	0.00		0	N.D.			
96)	4-ethyl toluene	18.59	105	6544	0.152	ppbV	#	94
97)	1,3,5-trimethylbenzene	18.64	105	3115	0.091	ppbV	#	91
99)	1,2,4-trimethylbenzene	18.95	105	9238	0.270	ppbV	#	52
100)	decane	18.99	57	43359	1.611	ppbV		98
102)	1,3-dichlorobenzene	0.00		0	N.D.	d		
103)	1,4-dichlorobenzene	19.14		0	N.D.			
105)	1,2,3-trimethylbenzene	19.27	105	3769	0.101	ppbV		90
107)	1,2-dichlorobenzene	0.00		0	N.D.			
109)	indan	19.44	117	5111	0.126	ppbV	#	95
110)	indene	19.51		0	N.D.			
112)	undecane	19.94	57	37208M4	1.255	ppbV		
113)	1,2,4,5-tetramethylben...	20.19		0	N.D.			
114)	dodecane	20.84	57	814733	26.931	ppbV		99
115)	1,2,4-trichlorobenzene	20.83	180	1701	0.076	ppbV	#	26
116)	naphthalene	20.95	128	14809	0.347	ppbV		97
118)	benzothiophene	21.02		0	N.D.			
119)	hexachlorobutadiene	0.00		0	N.D.			
120)	2-methylnaphthalene	22.09		0	N.D.			
121)	1-methylnaphthalene	22.30		0	N.D.			

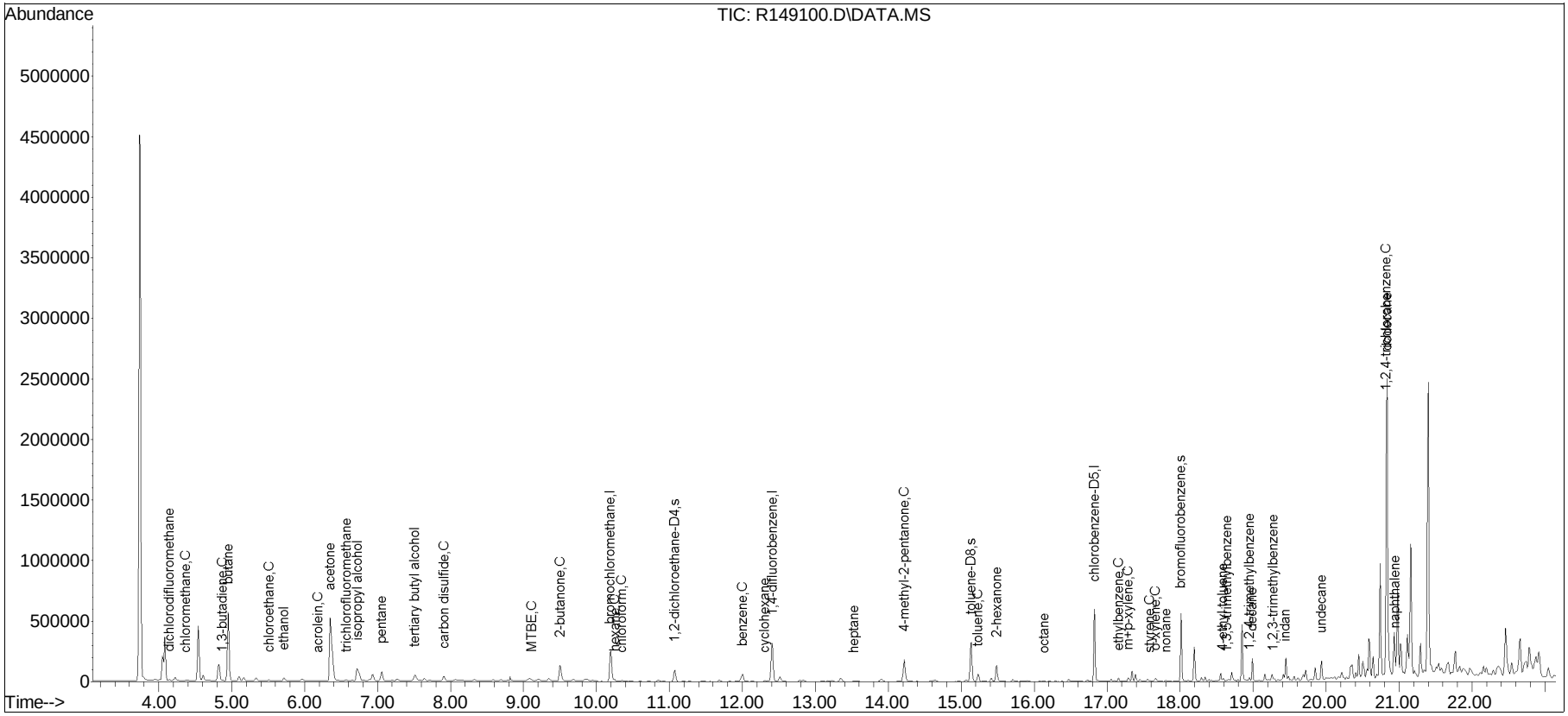
(#) = qualifier out of range (m) = manual integration (+) = signals summed

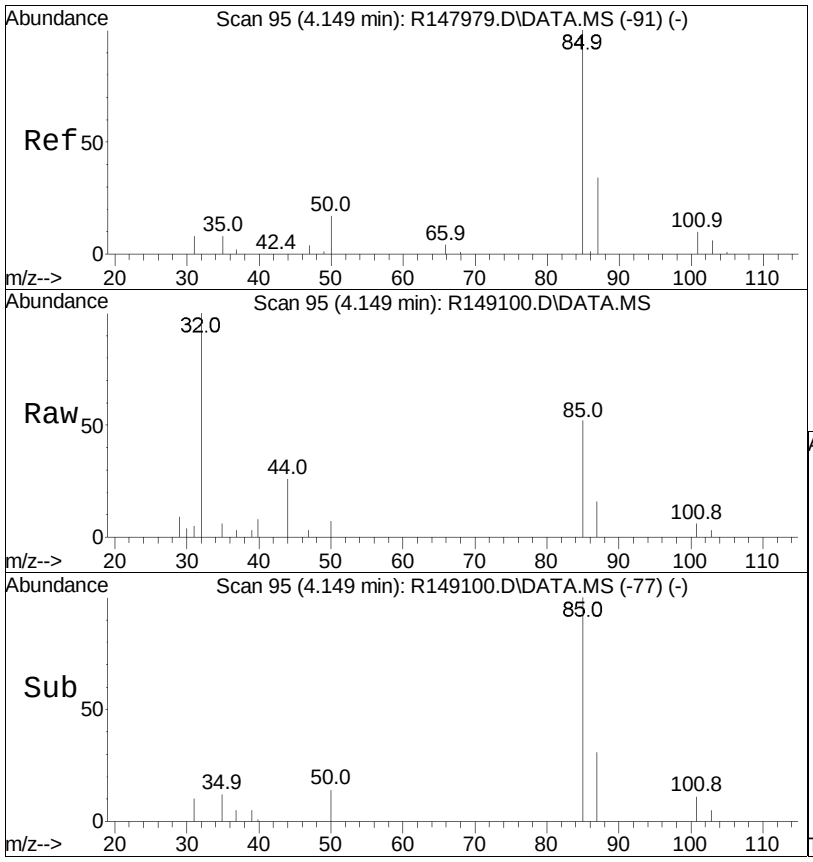
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149100.D
Acq On : 1 Nov 2016 4:16 pm
Operator : AIRPIANO1:RY
Sample : L1634001-03,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 02 09:59:44 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Keyspan_TO15 - .a\AIR1\2016\161101K\R149091.D

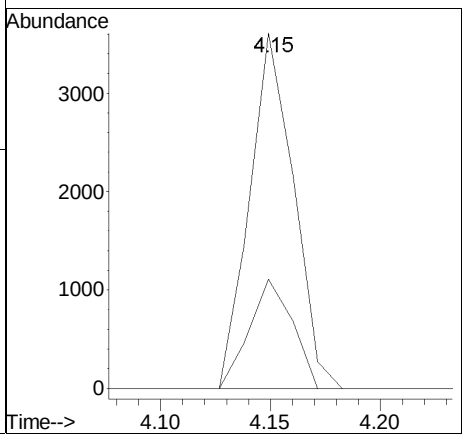


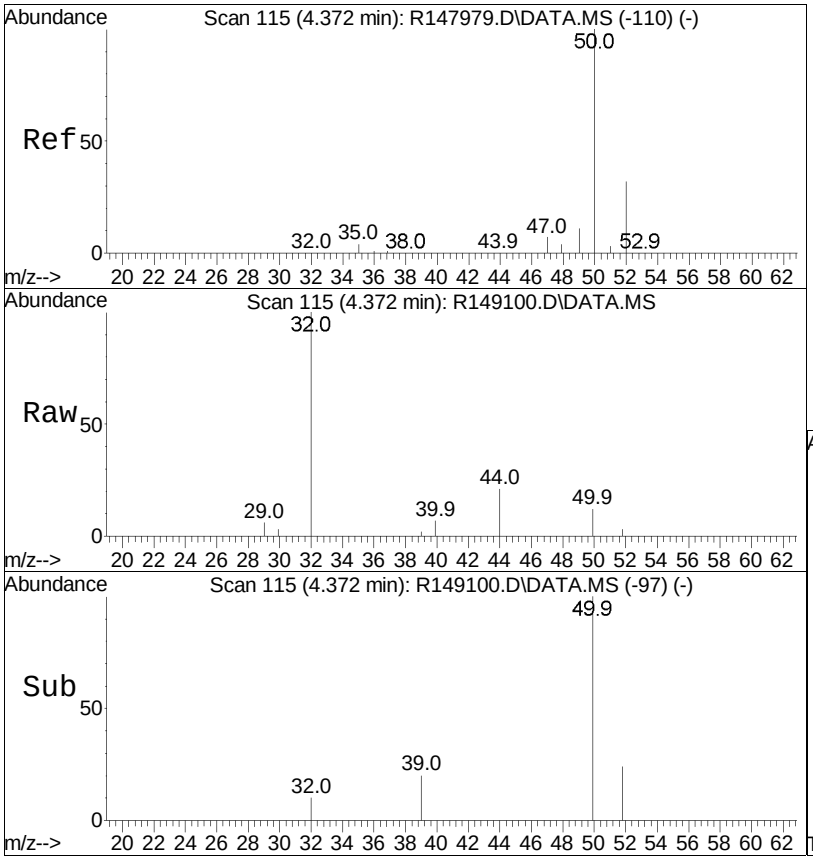


#5
dichlorodifluoromethane
Concen: 0.27 ppbV
RT: 4.15 min Scan# 95
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 85 Resp: 5023

Ion	Ratio	Lower	Upper
85	100		
87	30.7	25.9	38.9

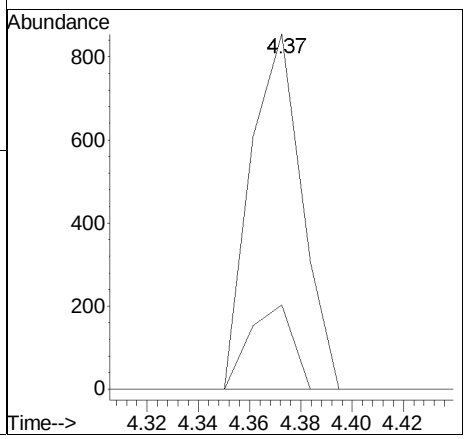


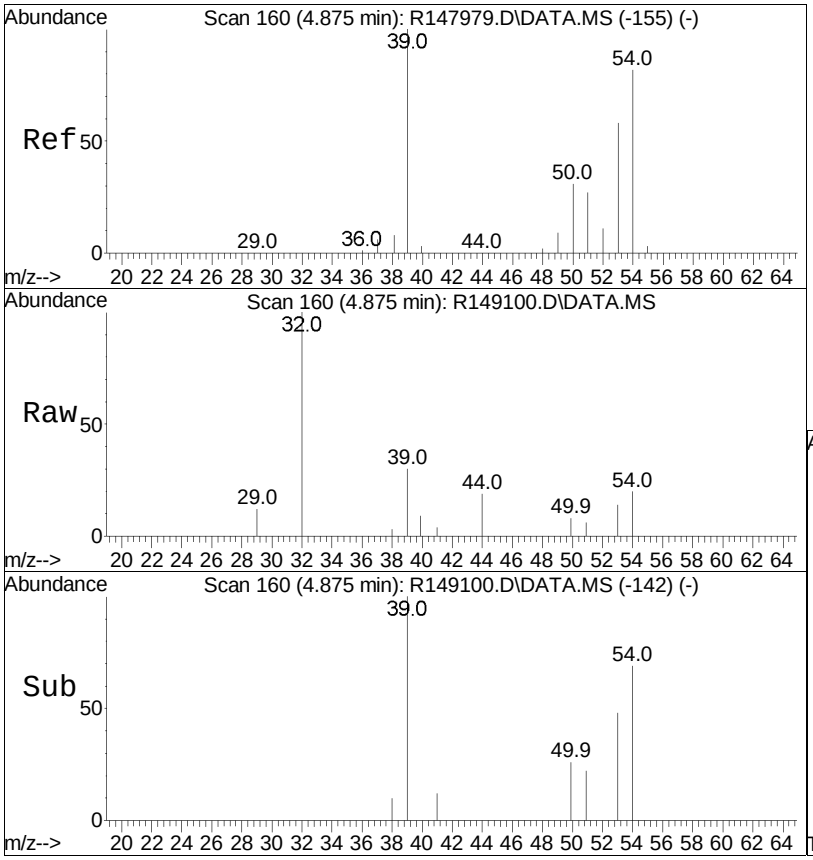


#6
chloromethane
Concen: 0.15 ppbV
RT: 4.37 min Scan# 115
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 50 Resp: 1186

Ion	Ratio	Lower	Upper
50	100		
52	23.7	25.7	38.5#

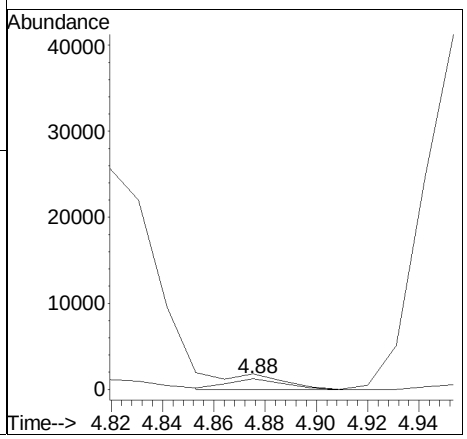




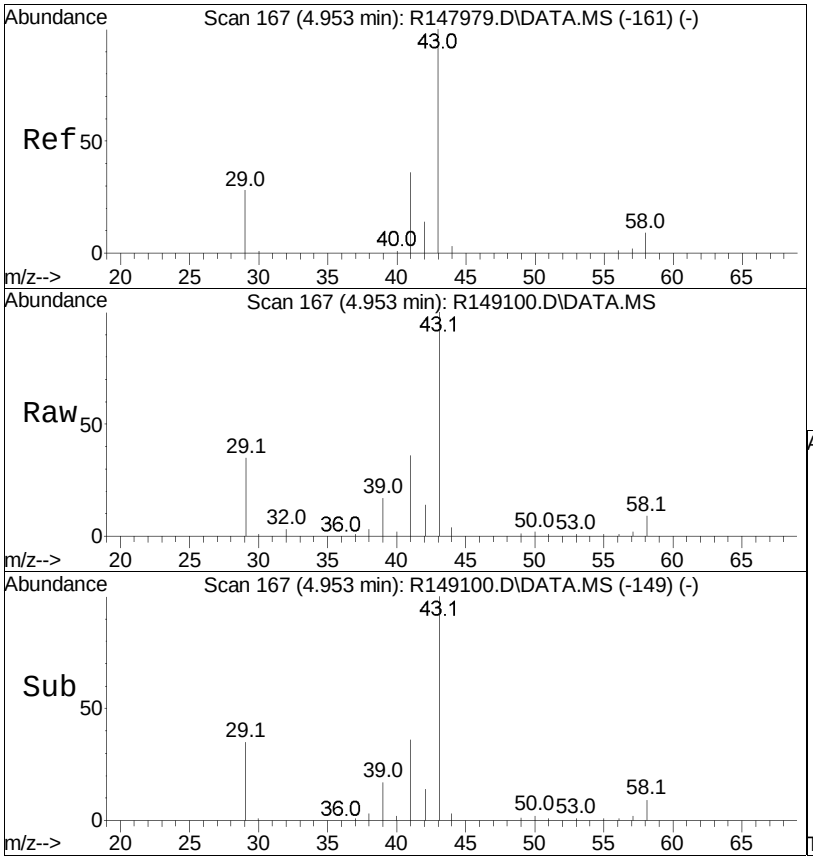
#10
1,3-butadiene
Concen: 0.32 ppbV
RT: 4.88 min Scan# 160
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 54 Resp: 1865

Ion	Ratio	Lower	Upper
54	100		
39	144.9	105.0	157.6



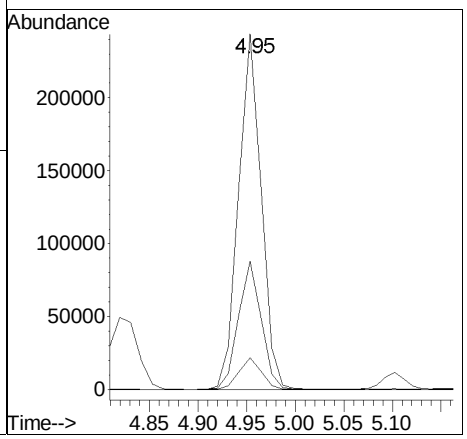
R149100.D TALL161012.M Wed Nov 02 10:00:04 2016 Page 7

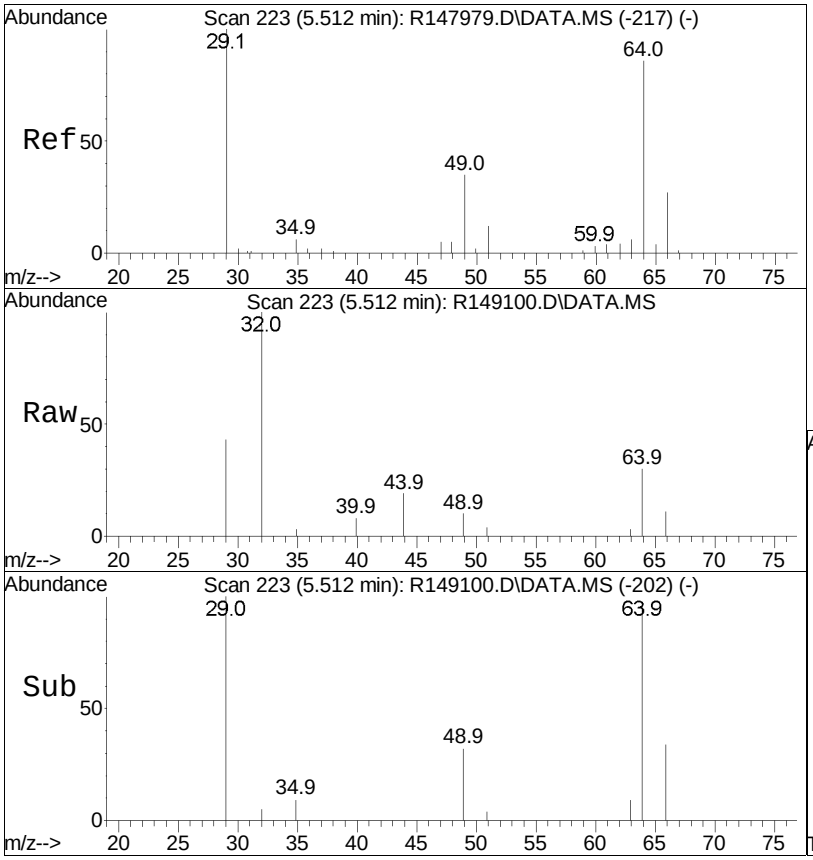


#11
butane
Concen: 31.62 ppbV
RT: 4.95 min Scan# 167
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 43 Resp: 448595

Ion	Ratio	Lower	Upper
43	100		
58	8.9	7.1	10.7
41	36.1	28.7	43.1

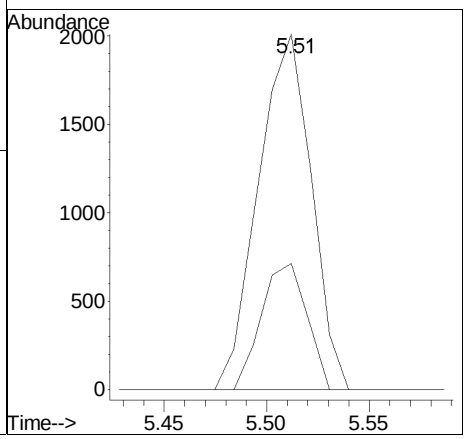


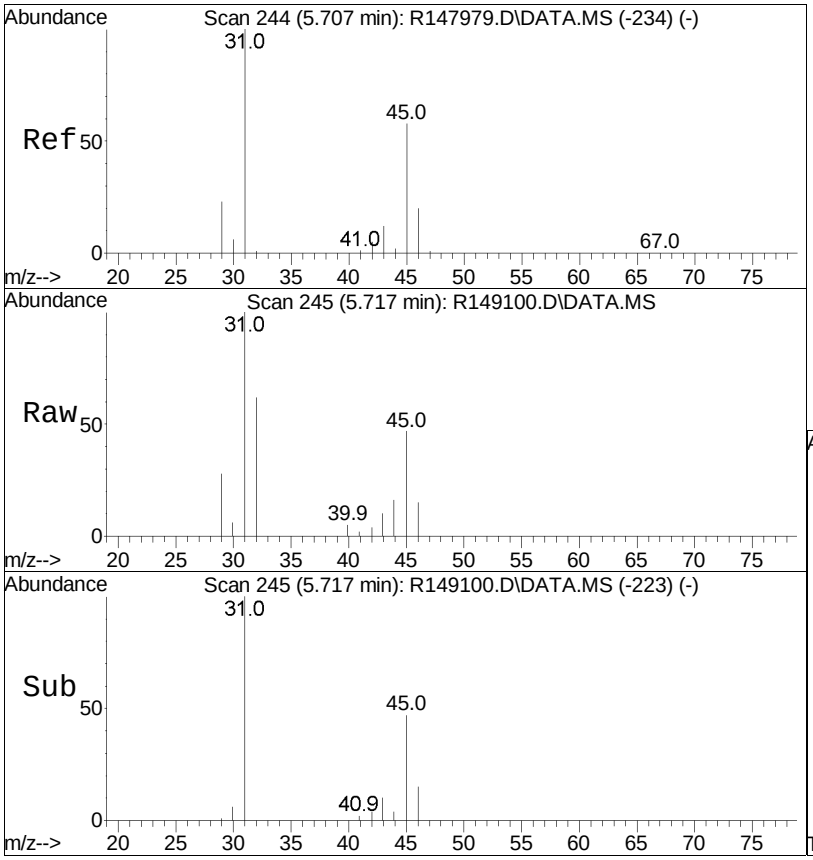


#14
chloroethane
Concen: 0.99 ppbV
RT: 5.51 min Scan# 223
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 64 Resp: 3612

Ion	Ratio	Lower	Upper
64	100		
66	35.5	25.7	38.5

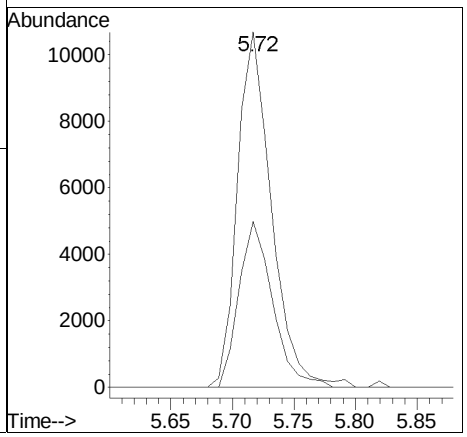


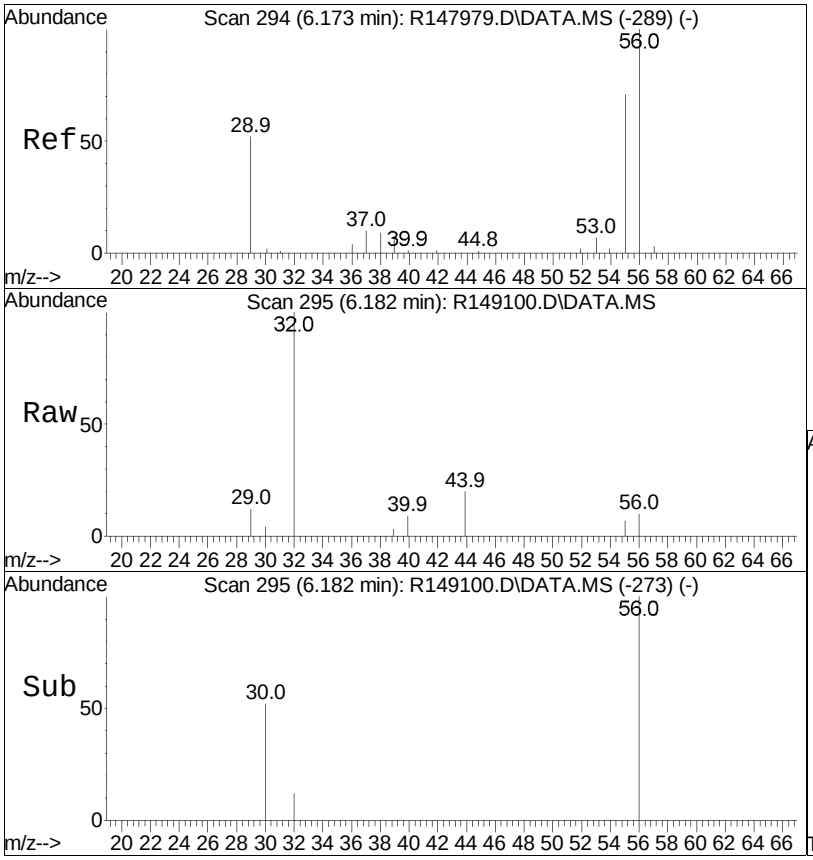


#15
ethanol
Concen: 2.88 ppbV
RT: 5.72 min Scan# 245
Delta R.T. 0.009 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 31 Resp: 20555

Ion	Ratio	Lower	Upper
31	100		
45	46.7	37.2	55.8

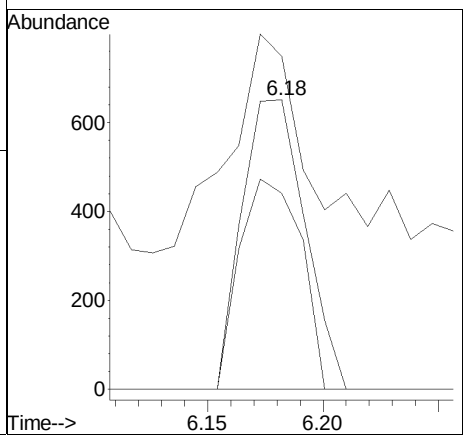


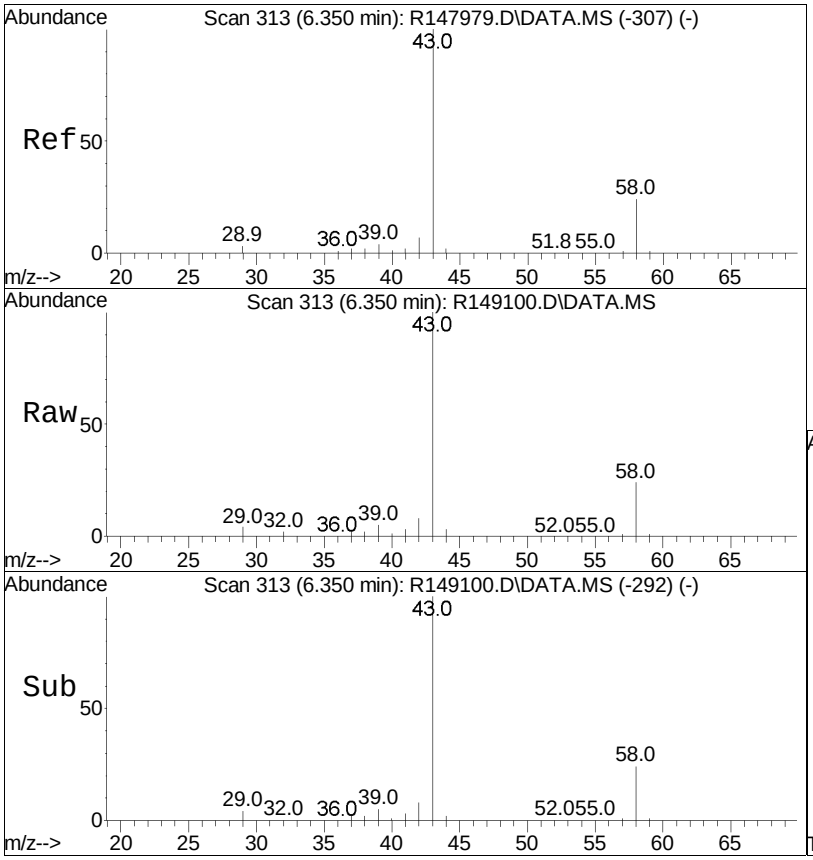


#18
acrolein
Concen: 0.35 ppbV
RT: 6.18 min Scan# 295
Delta R.T. 0.009 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 56 Resp: 1237

Ion	Ratio	Lower	Upper
56	100		
55	67.7	56.2	84.4
29	115.1	56.3	84.5#

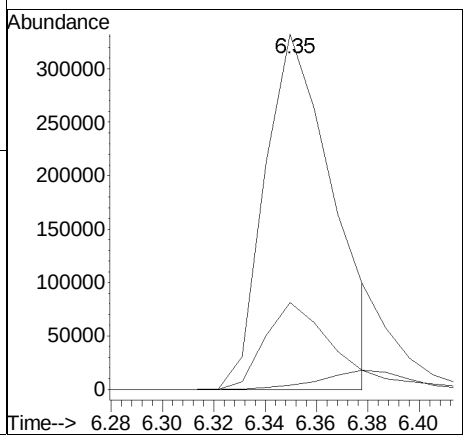


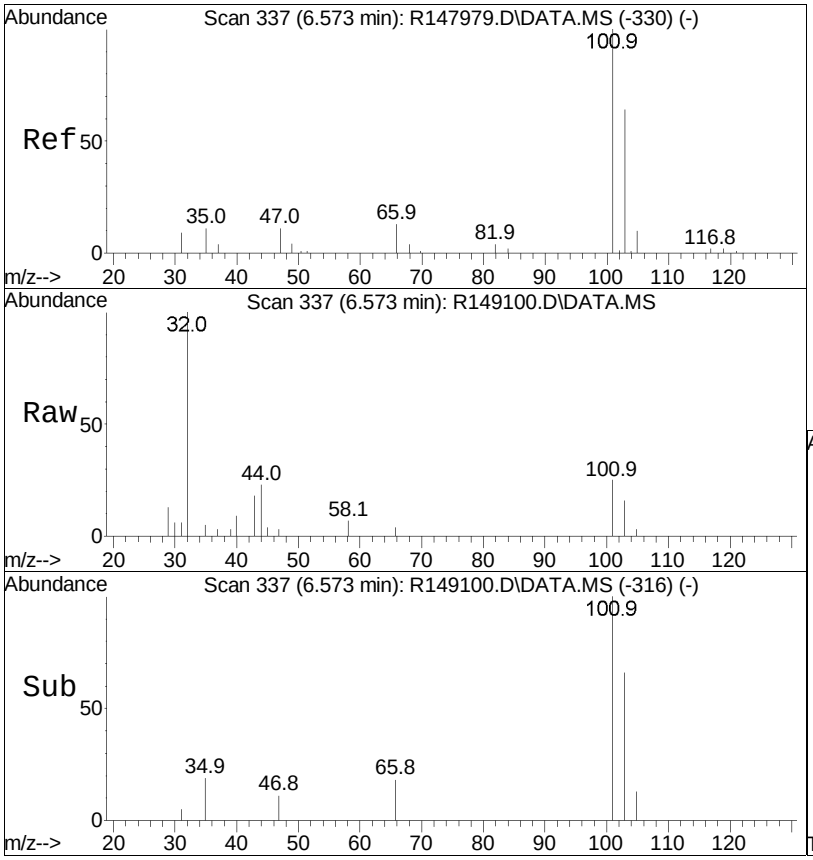


#19
acetone
Concen: 36.95 ppbV m
RT: 6.35 min Scan# 313
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 43 Resp: 615766

Ion	Ratio	Lower	Upper
43	100		
58	24.5	19.8	29.8
57	1.2	0.6	1.0#

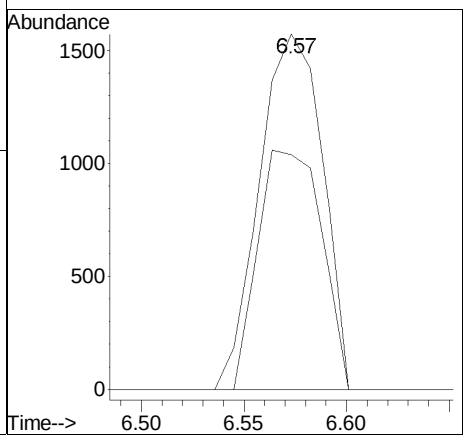


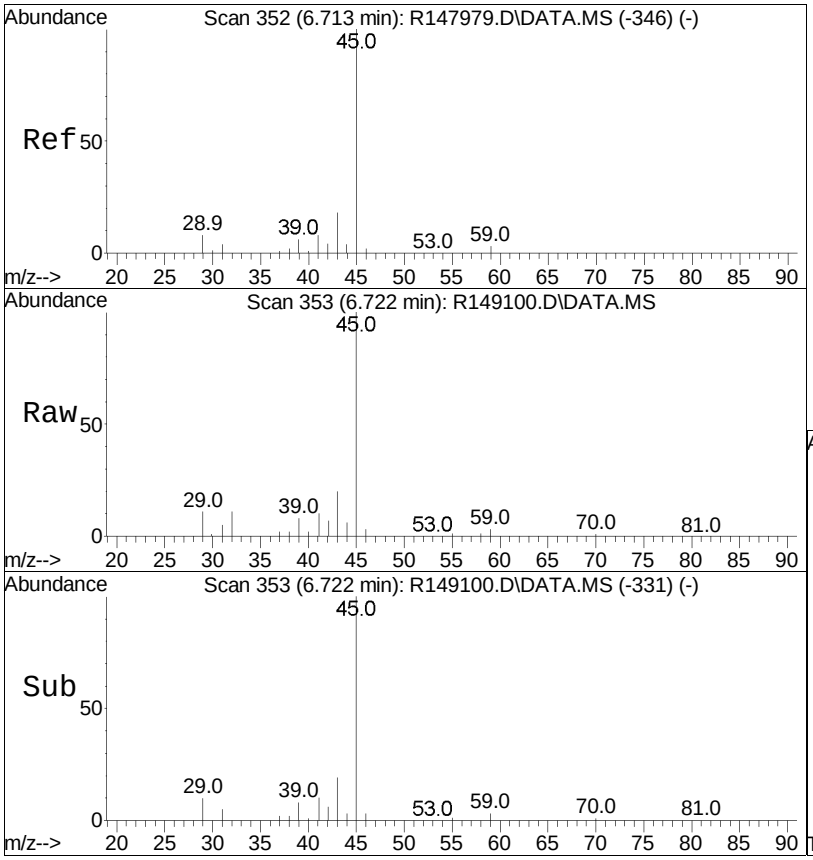


#21
trichlorofluoromethane
Concen: 0.18 ppbV
RT: 6.57 min Scan# 337
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion:101 Resp: 3374

Ion	Ratio	Lower	Upper
101	100		
103	66.1	51.0	76.4

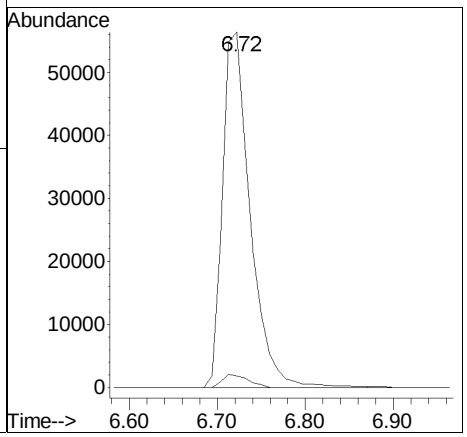


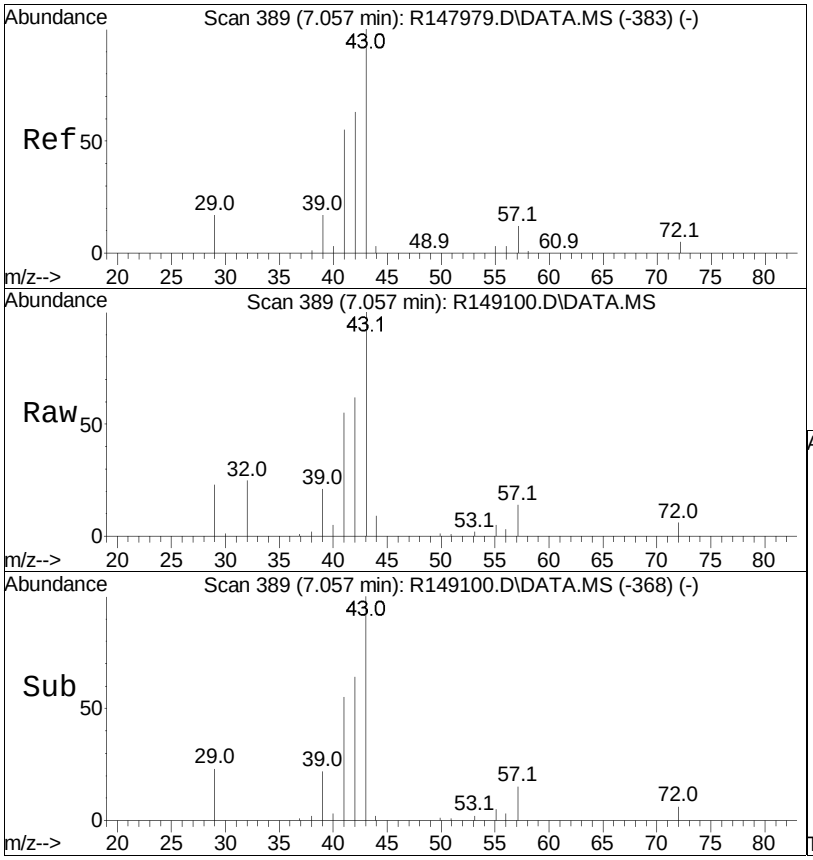


#22
isopropyl alcohol
Concen: 7.11 ppbV
RT: 6.72 min Scan# 353
Delta R.T. 0.009 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 45 Resp: 123223

Ion	Ratio	Lower	Upper
45	100		
59	3.2	2.7	4.1

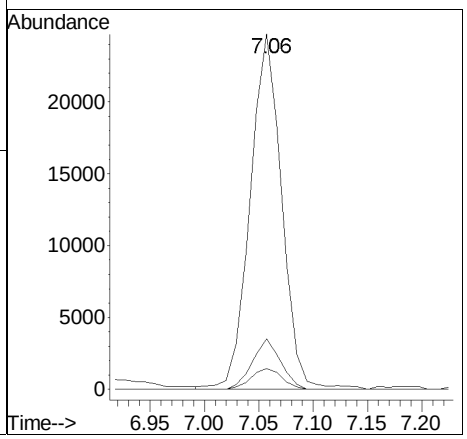


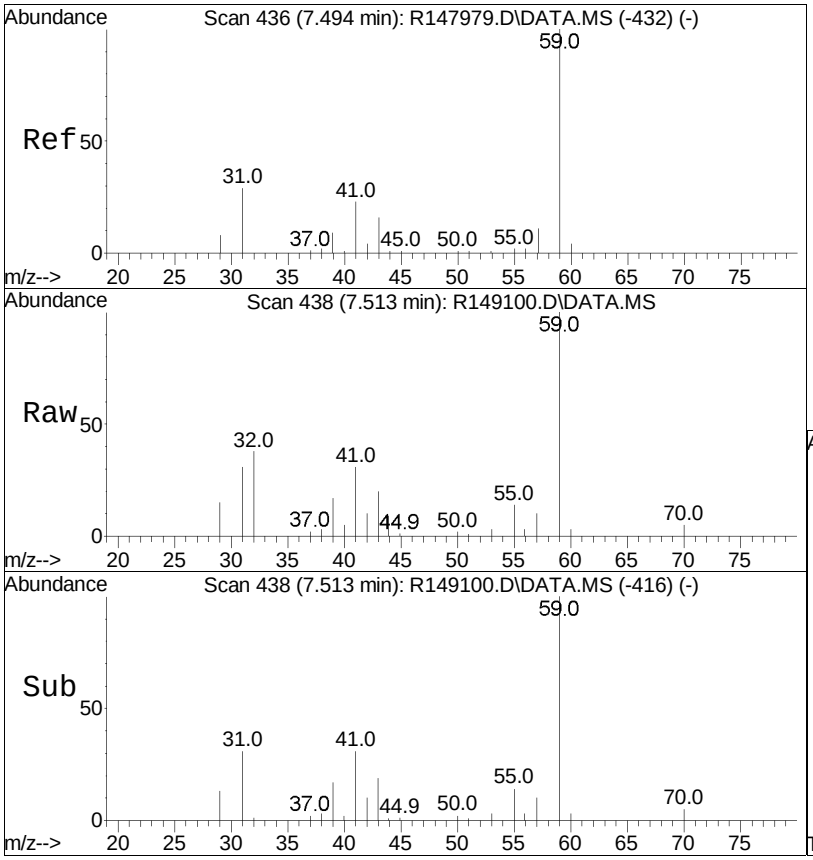


#24
pentane
Concen: 3.19 ppbV
RT: 7.06 min Scan# 389
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 43 Resp: 49997

Ion	Ratio	Lower	Upper
43	100		
57	14.2	9.8	14.8
72	5.9	5.4	8.2

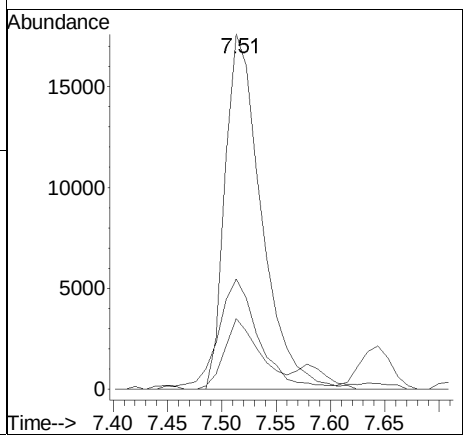


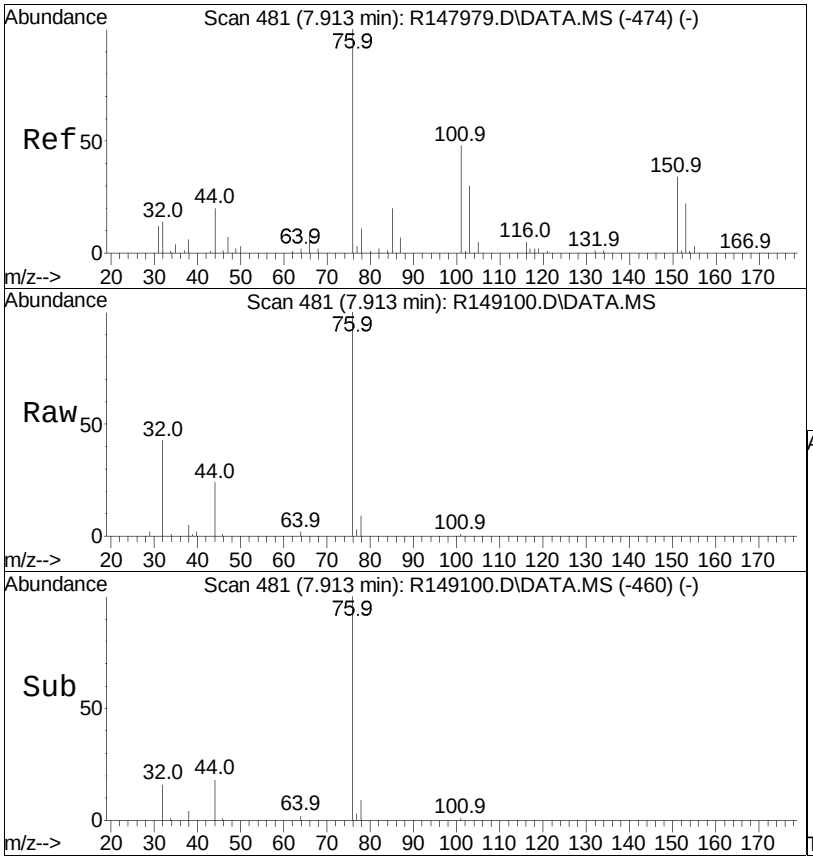


#27
tertiary butyl alcohol
Concen: 2.36 ppbV
RT: 7.51 min Scan# 438
Delta R.T. 0.009 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 59 Resp: 41163

Ion	Ratio	Lower	Upper
59	100		
41	31.1	18.9	28.3#
43	19.9	13.7	20.5

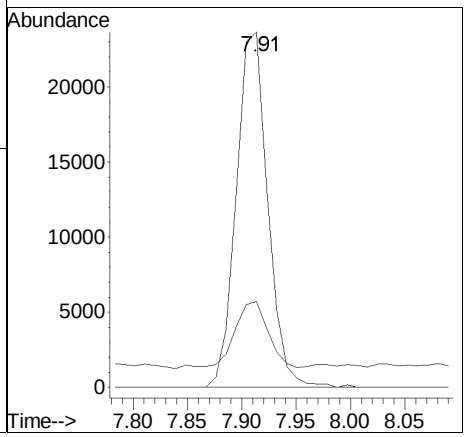


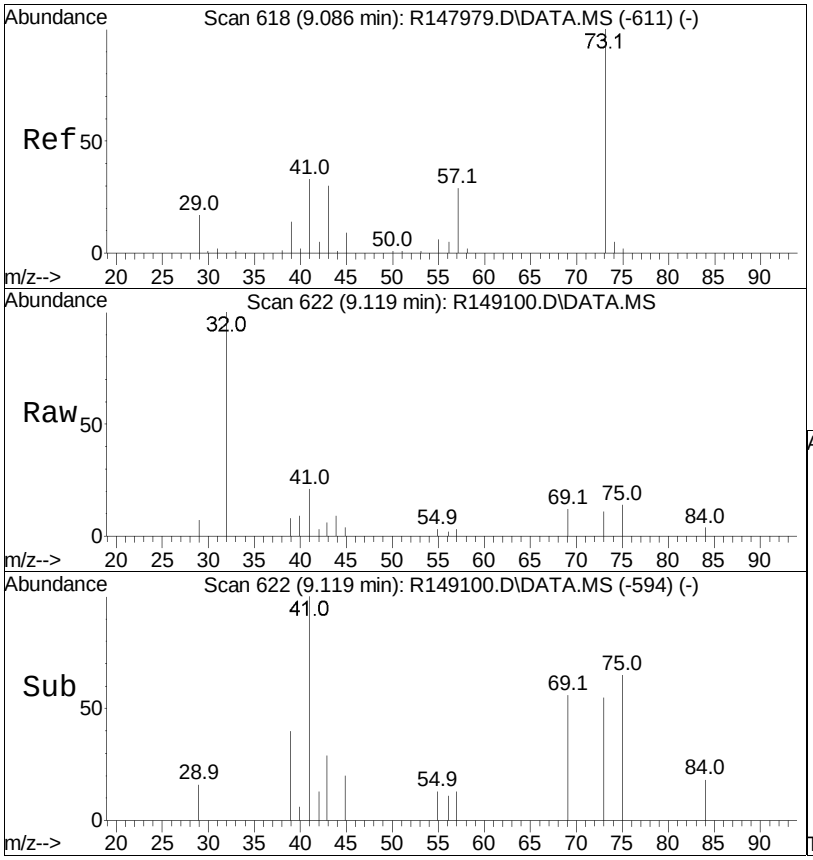


#30
carbon disulfide
Concen: 2.12 ppbV
RT: 7.91 min Scan# 481
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 76 Resp: 47770

Ion	Ratio	Lower	Upper
76	100		
44	24.1	16.3	24.5

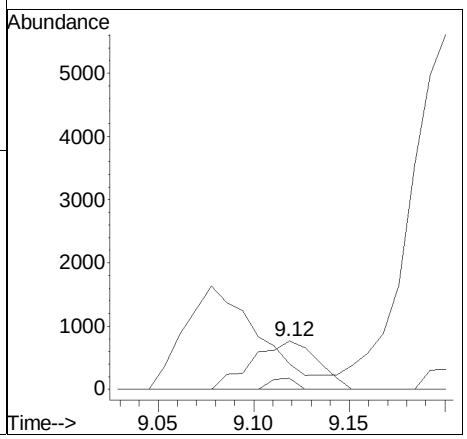


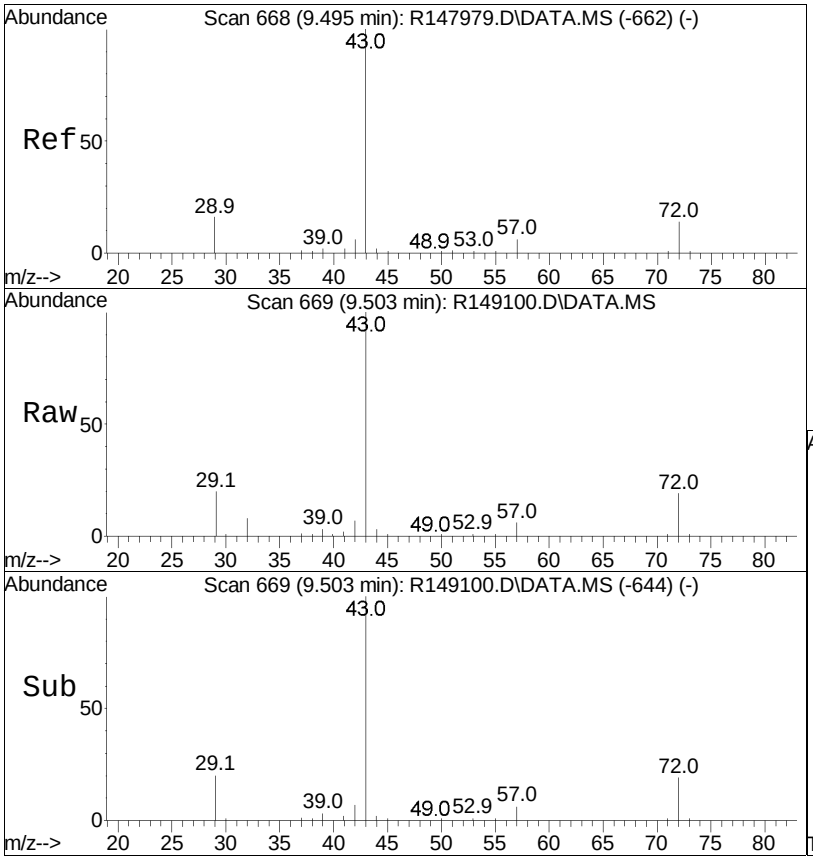


#34
MTBE
Concen: 0.08 ppbV
RT: 9.12 min Scan# 622
Delta R.T. 0.033 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 73 Resp: 1826

Ion	Ratio	Lower	Upper
73	100		
57	22.9	19.1	28.7
43	52.7	23.0	34.4#

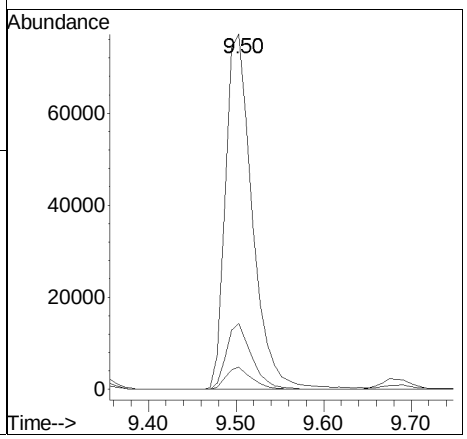


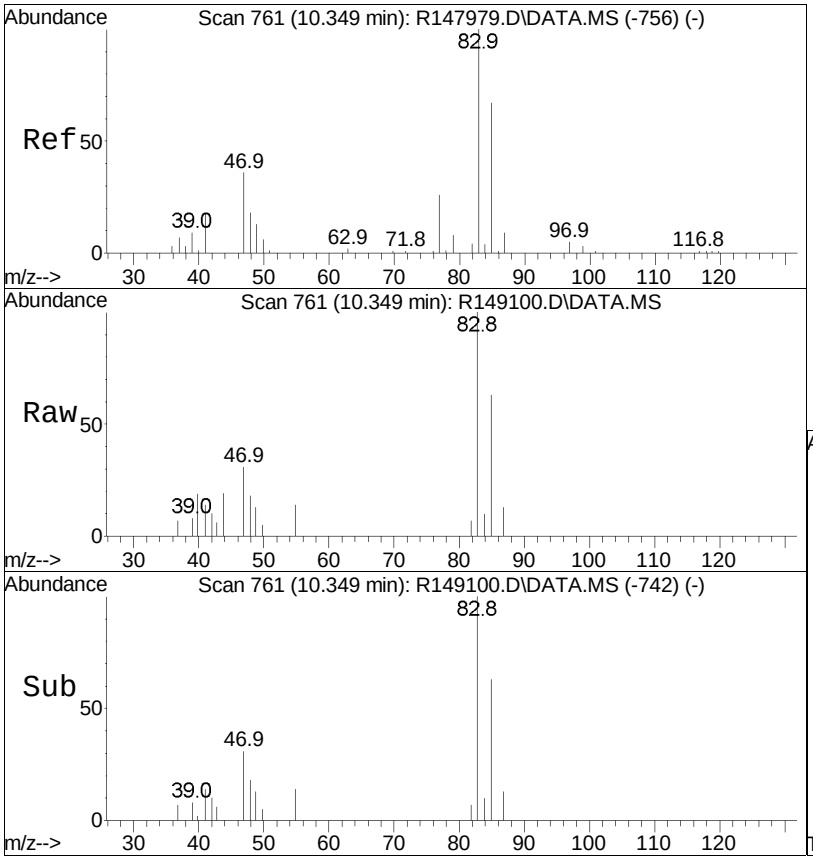


#36
2-butanone
Concen: 7.95 ppbV
RT: 9.50 min Scan# 669
Delta R.T. 0.008 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 43 Resp: 165269

Ion	Ratio	Lower	Upper
43	100		
72	18.6	13.6	20.4
57	6.3	4.9	7.3

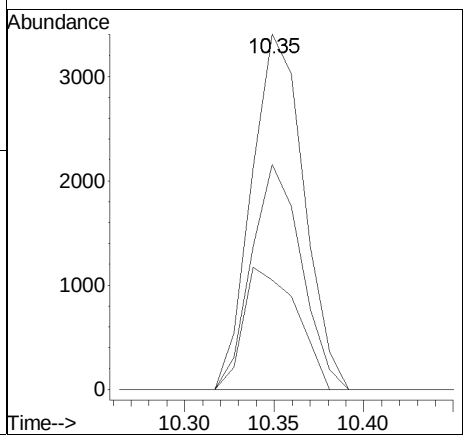


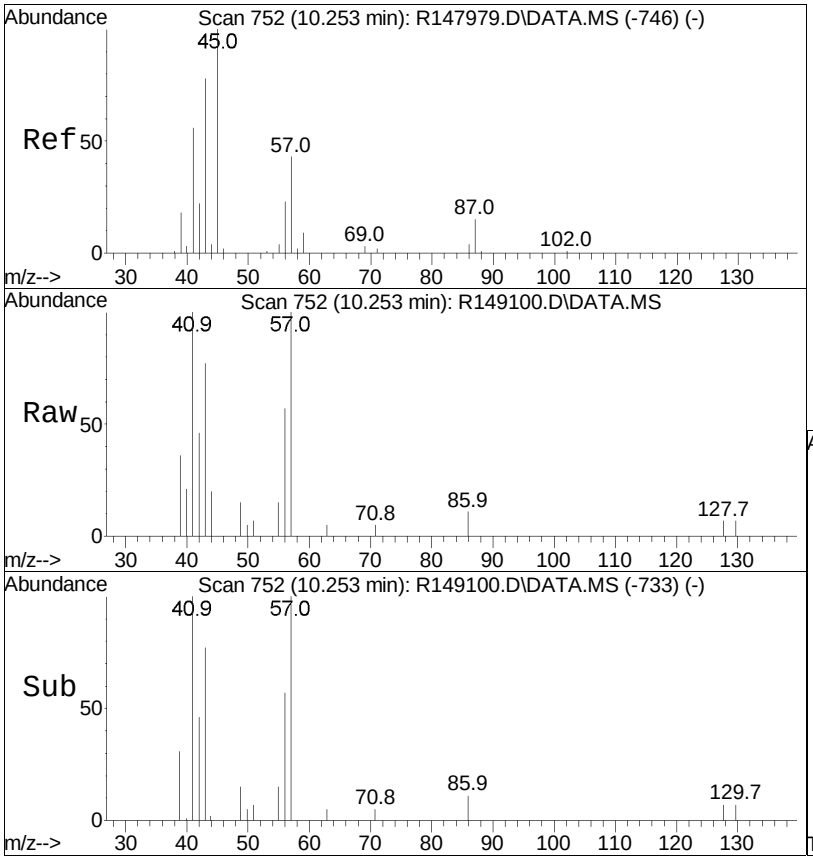


#39
chloroform
Concen: 0.33 ppbV
RT: 10.35 min Scan# 761
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 83 Resp: 6929

Ion	Ratio	Lower	Upper
83	100		
85	63.3	51.1	76.7
47	30.8	25.8	38.8

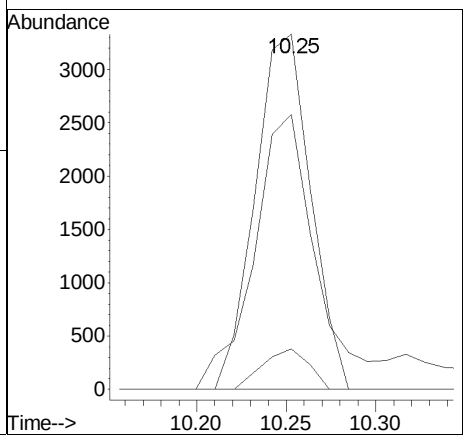


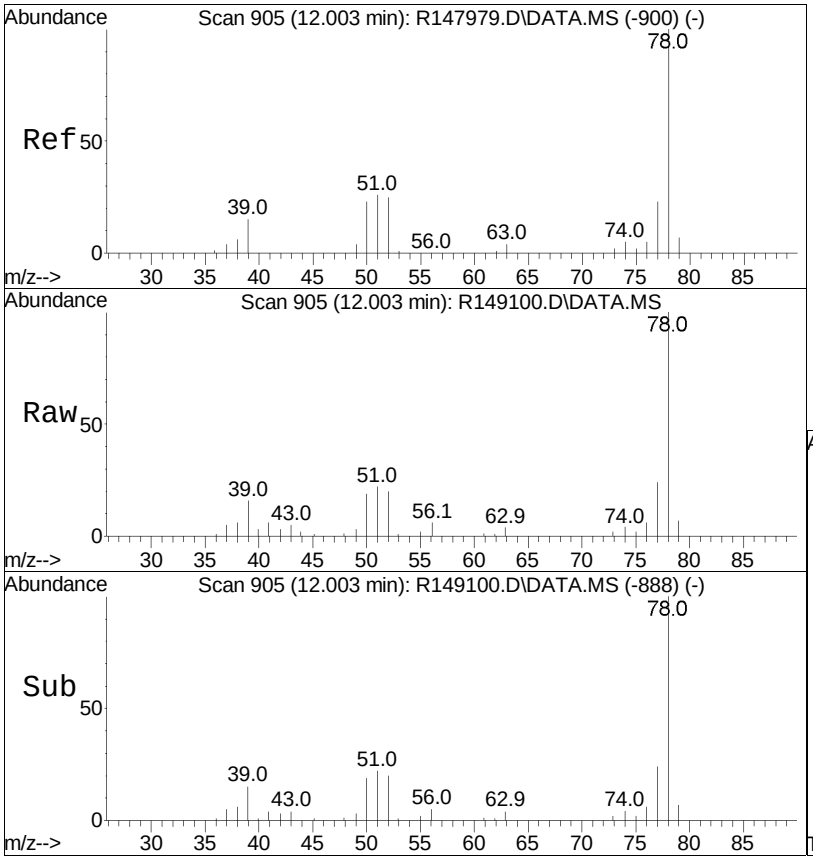


#44
hexane
Concen: 0.44 ppbV
RT: 10.25 min Scan# 752
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 57 Resp: 7198

Ion	Ratio	Lower	Upper
57	100		
43	77.4	142.3	213.5#
86	11.4	9.3	13.9

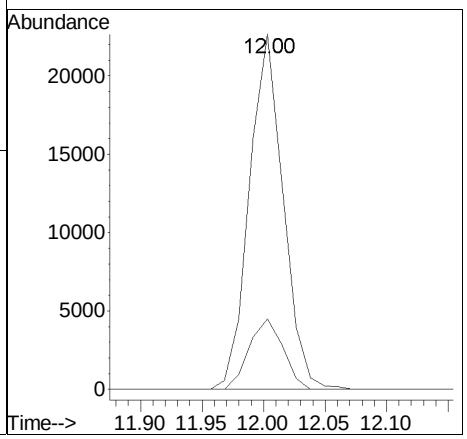


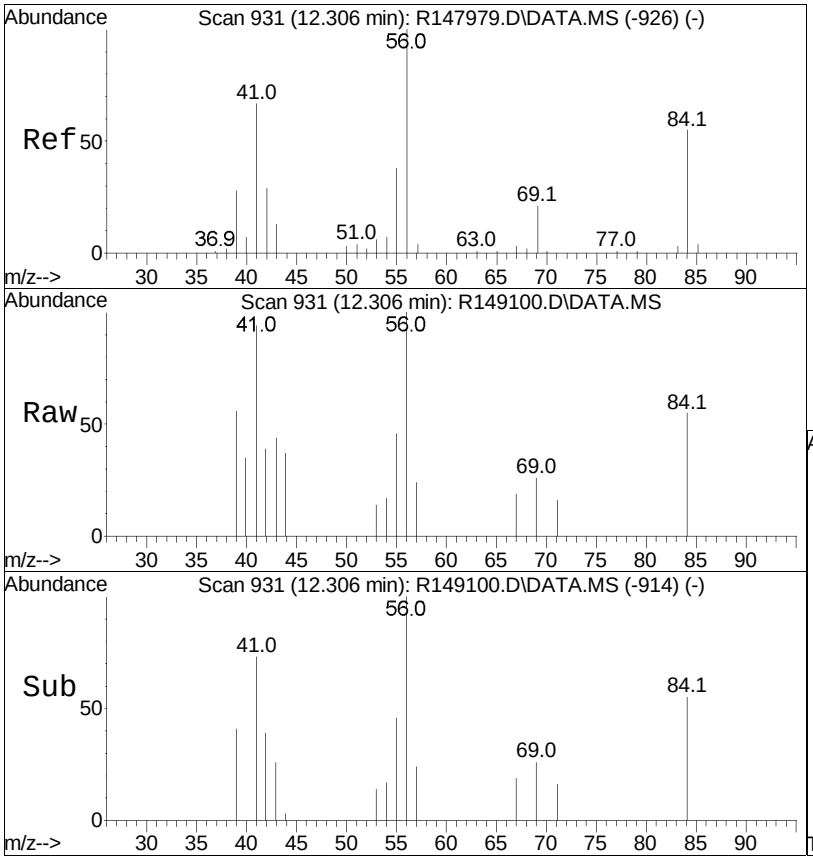


#50
benzene
Concen: 1.91 ppbV
RT: 12.00 min Scan# 905
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 78 Resp: 43406

Ion	Ratio	Lower	Upper
78	100		
52	19.8	15.2	22.8

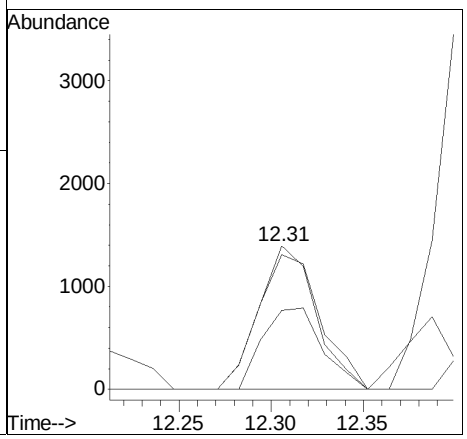


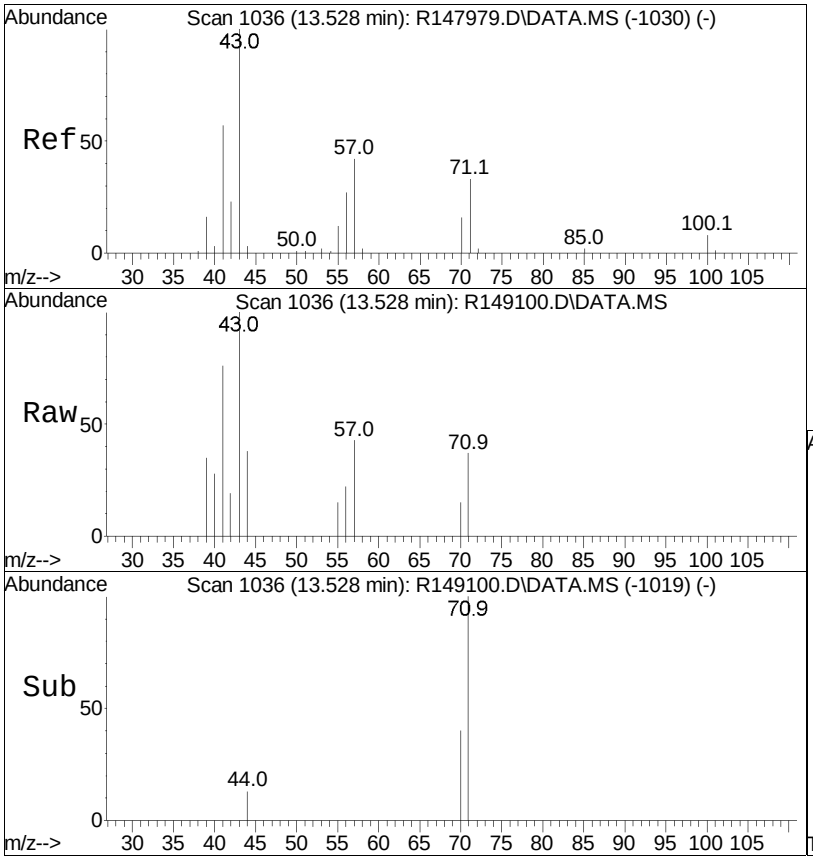


#53
cyclohexane
Concen: 0.22 ppbV
RT: 12.31 min Scan# 931
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 56 Resp: 2991

Ion	Ratio	Lower	Upper
56	100		
84	55.1	56.5	84.7#
41	93.8	57.5	86.3#

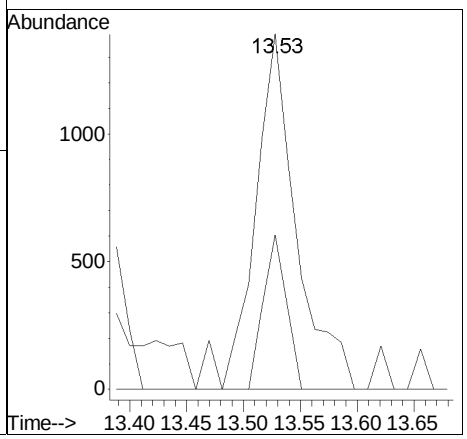


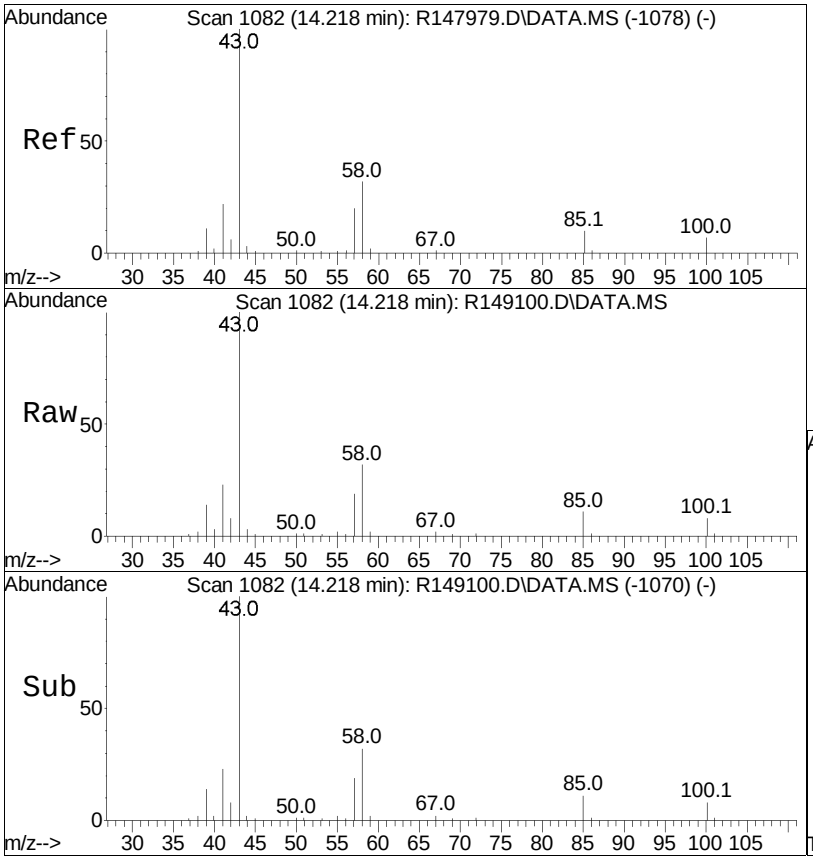


#62
heptane
Concen: 0.19 ppbV
RT: 13.53 min Scan# 1036
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 43 Resp: 3589

Ion	Ratio	Lower	Upper
43	100		
57	43.5	34.2	51.2
100	0.0	7.9	11.9#

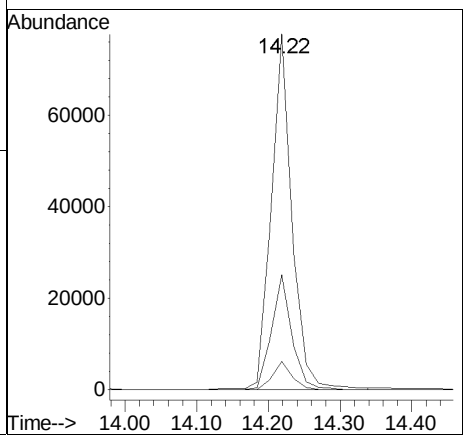


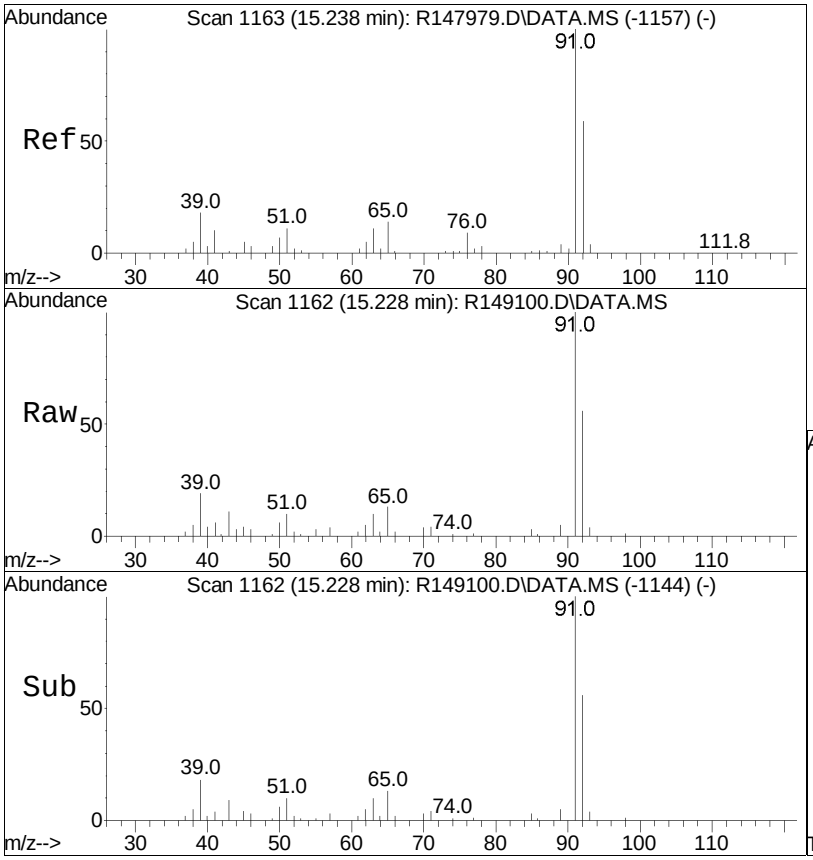


#64
4-methyl-2-pentanone
Concen: 5.87 ppbV
RT: 14.22 min Scan# 1082
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 43 Resp: 156047

Ion	Ratio	Lower	Upper
43	100		
58	32.3	25.8	38.8
100	7.9	6.9	10.3

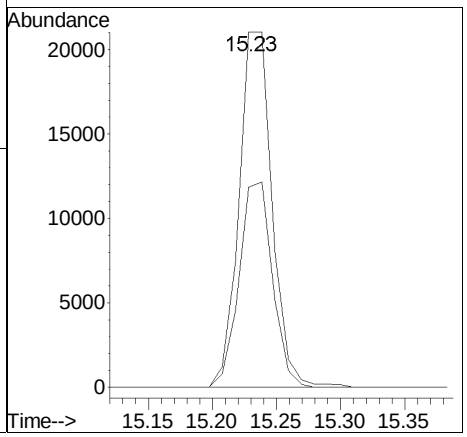


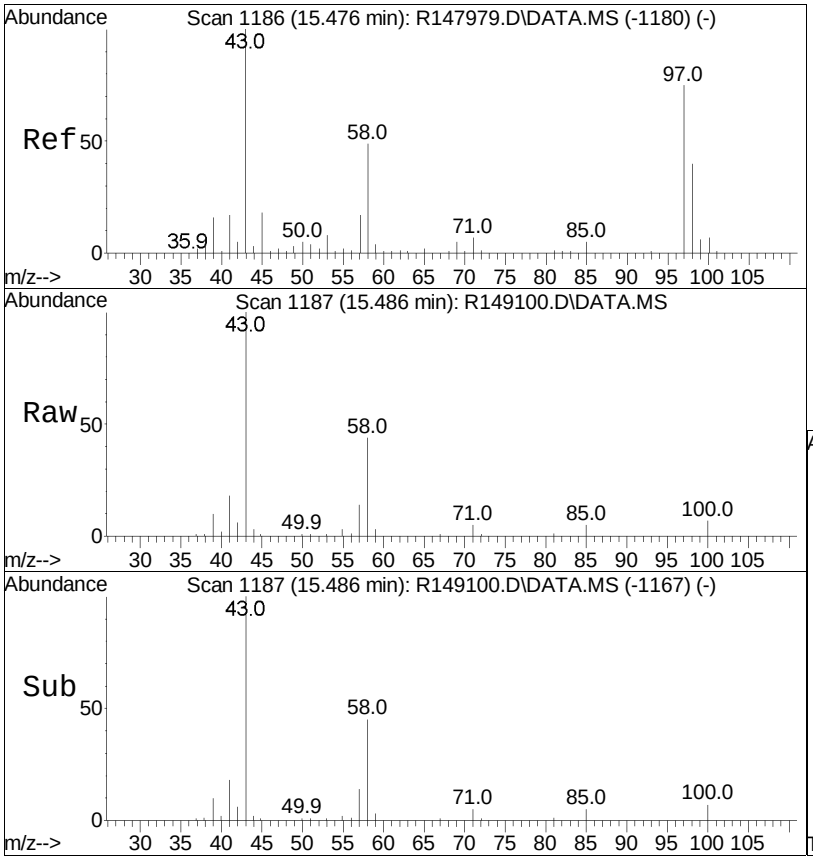


#68
toluene
Concen: 1.35 ppbV
RT: 15.23 min Scan# 1162
Delta R.T. -0.010 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 91 Resp: 37932

Ion	Ratio	Lower	Upper
91	100		
92	56.4	45.8	68.6

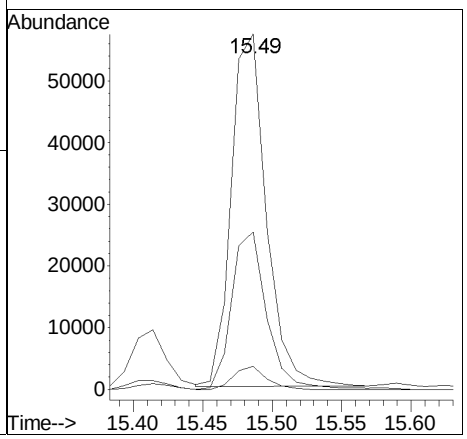


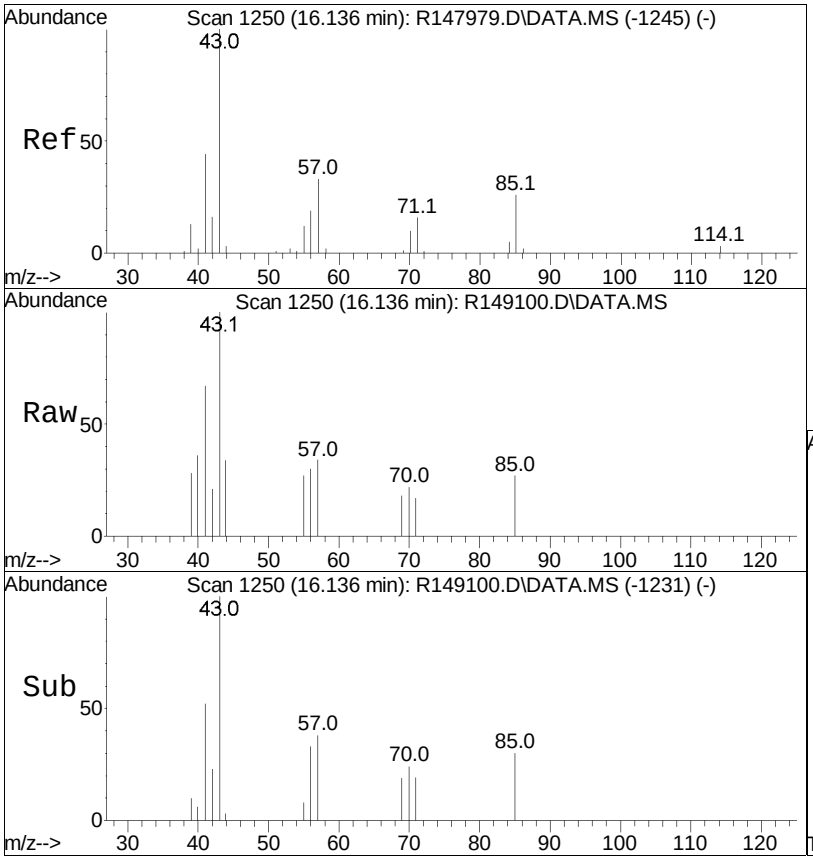


#72
2-hexanone
Concen: 3.84 ppbV
RT: 15.49 min Scan# 1187
Delta R.T. 0.010 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 43 Resp: 100568

Ion	Ratio	Lower	Upper
43	100		
58	44.3	39.7	59.5
100	6.5	6.9	10.3#

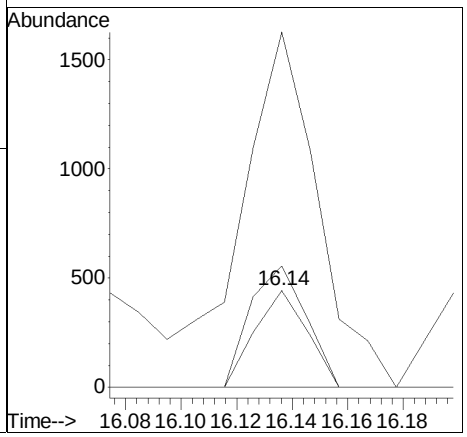


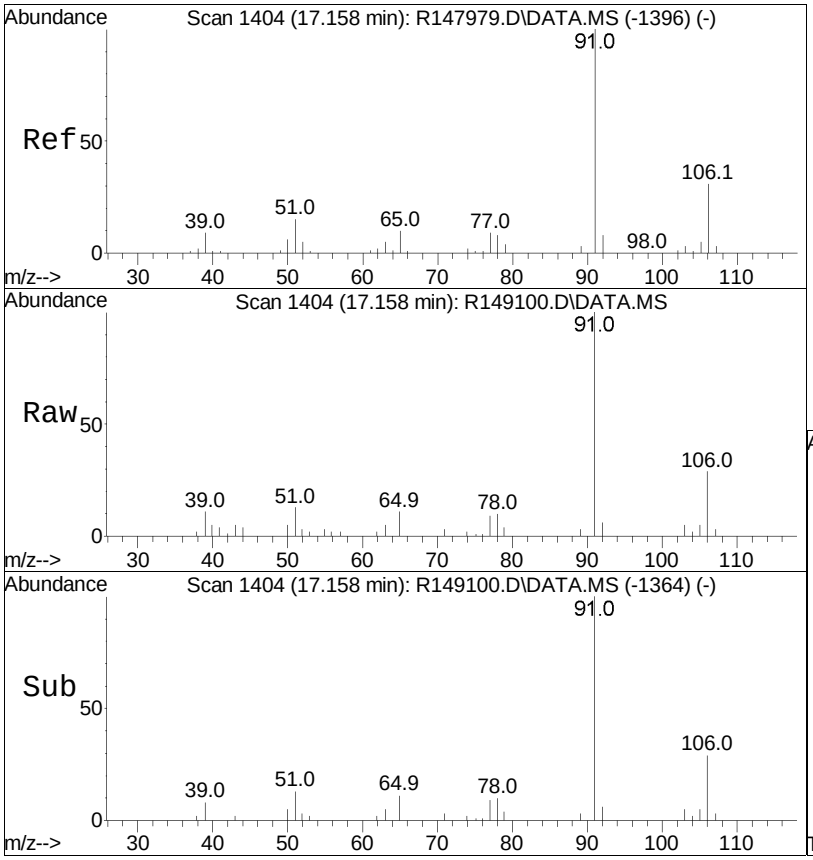


#77
octane
Concen: 0.07 ppbV
RT: 16.14 min Scan# 1250
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 85 Resp: 577

Ion	Ratio	Lower	Upper
85	100		
57	125.7	84.9	127.3
114	0.0	8.2	12.2#
43	367.3	257.0	385.4

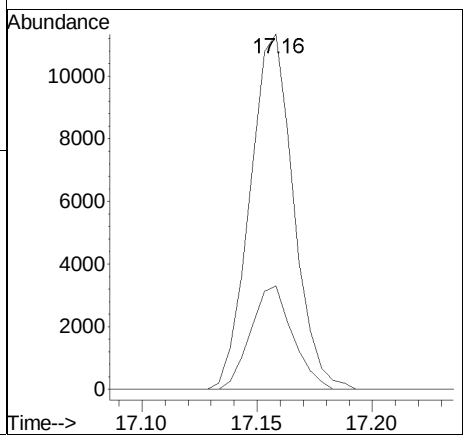


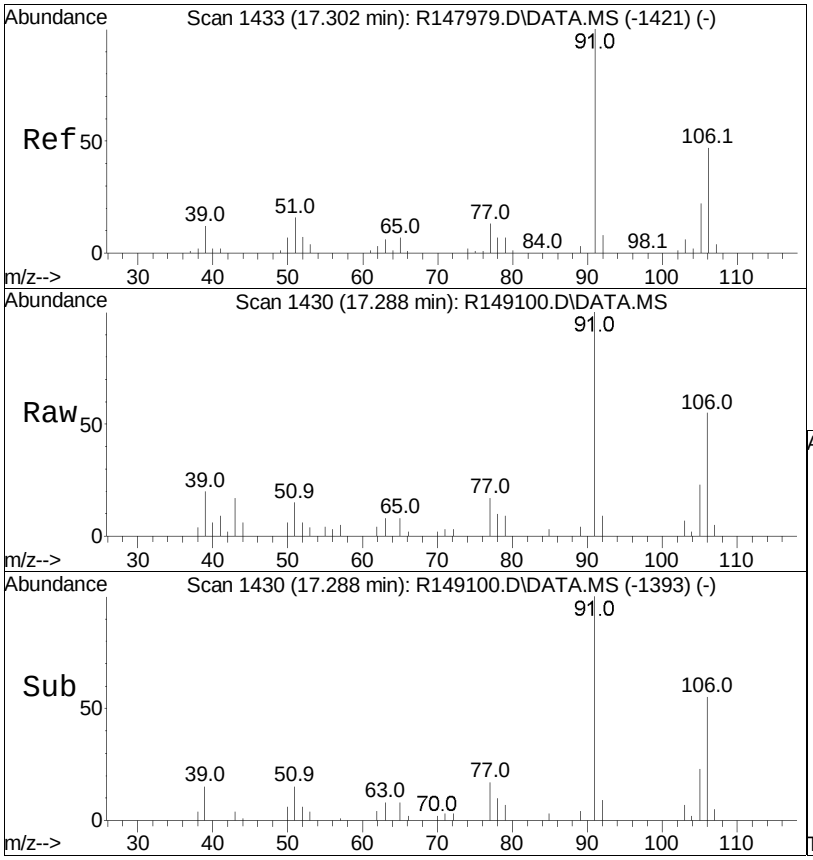


#81
ethylbenzene
Concen: 0.40 ppbV
RT: 17.16 min Scan# 1404
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 91 Resp: 14894

Ion	Ratio	Lower	Upper
91	100		
106	29.1	24.5	36.7

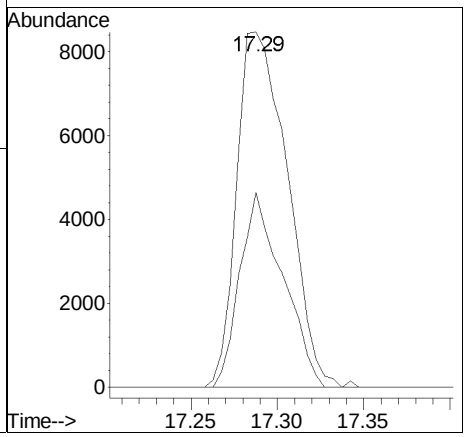


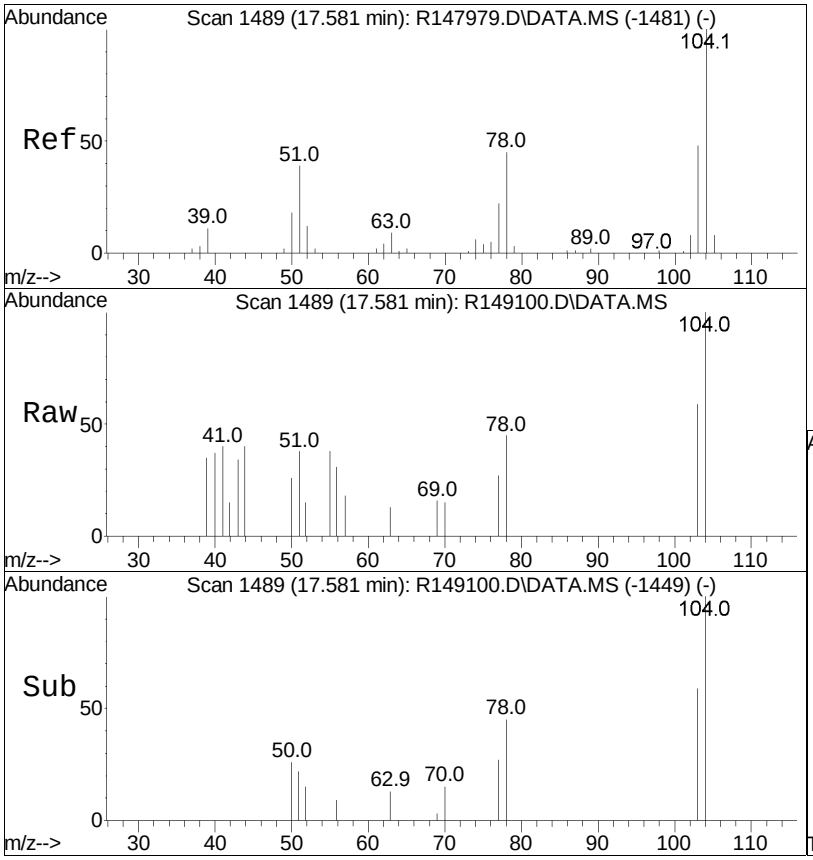


#83
m+p-xylene
Concen: 0.59 ppbV
RT: 17.29 min Scan# 1430
Delta R.T. -0.015 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 91 Resp: 17290

Ion	Ratio	Lower	Upper
91	100		
106	54.9	38.8	58.2

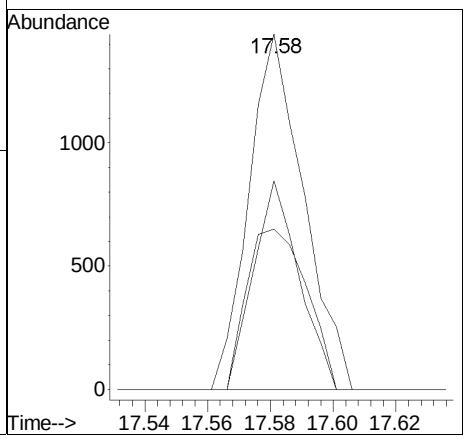


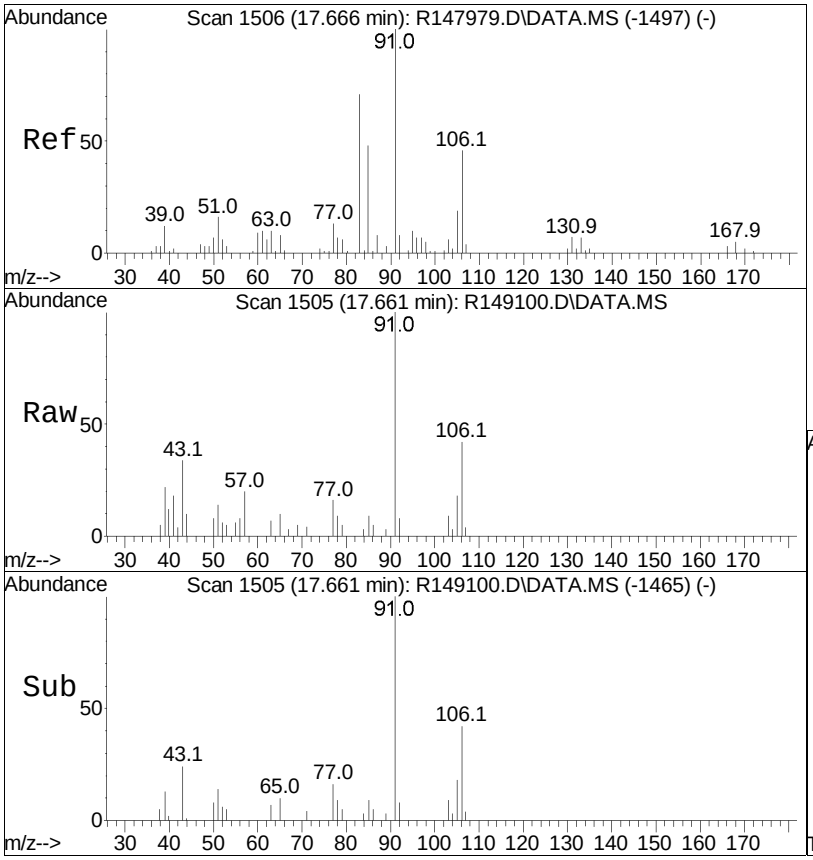


#85
styrene
Concen: 0.08 ppbV
RT: 17.58 min Scan# 1489
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion:104 Resp: 1746

Ion	Ratio	Lower	Upper
104	100		
103	58.7	38.5	57.7#
78	45.1	38.8	58.2

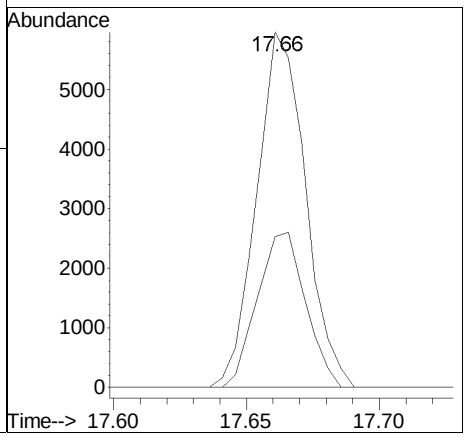


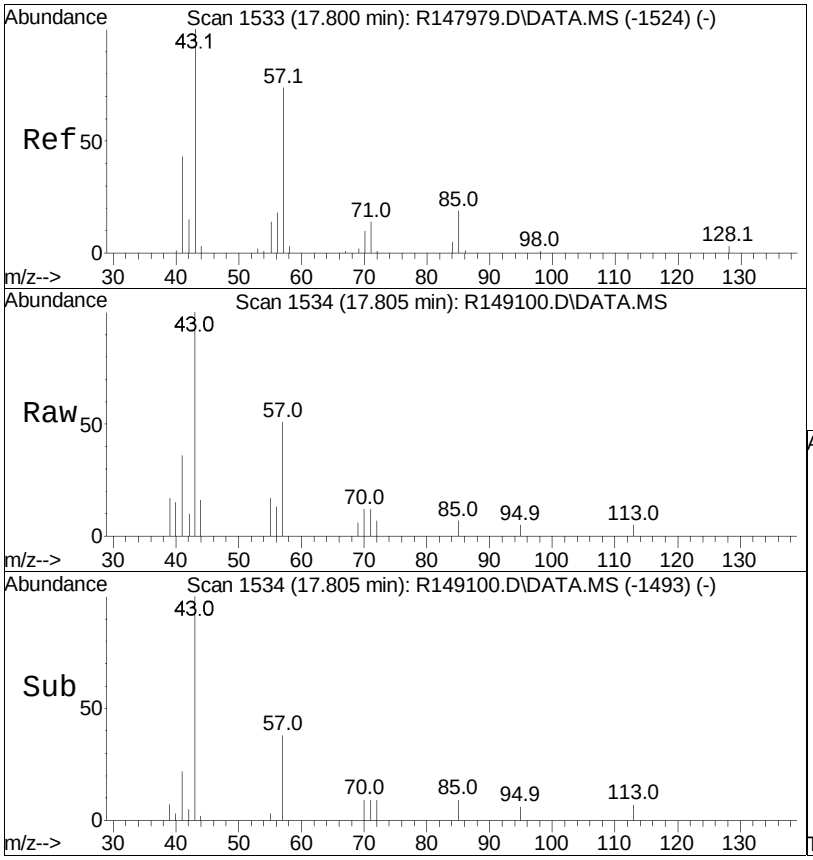


#87
o-xylene
Concen: 0.25 ppbV
RT: 17.66 min Scan# 1505
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 91 Resp: 7610

Ion	Ratio	Lower	Upper
91	100		
106	42.4	36.5	54.7

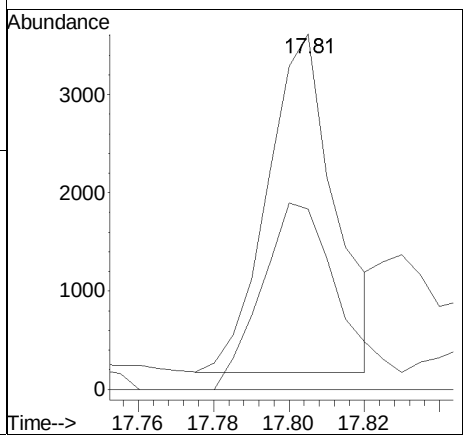


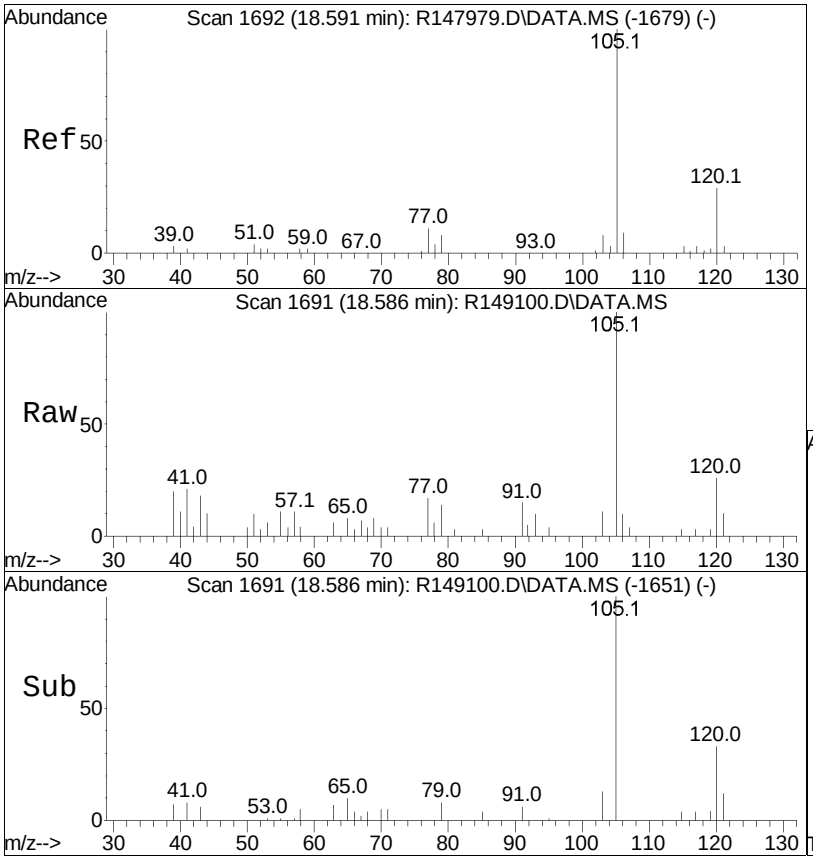


#89
nonane
Concen: 0.15 ppbV m
RT: 17.81 min Scan# 1534
Delta R.T. 0.005 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 43 Resp: 4288

Ion	Ratio	Lower	Upper
43	100		
57	50.8	58.8	88.2#
128	0.0	2.3	3.5#

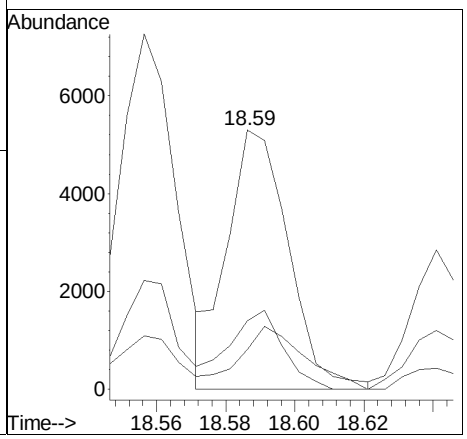


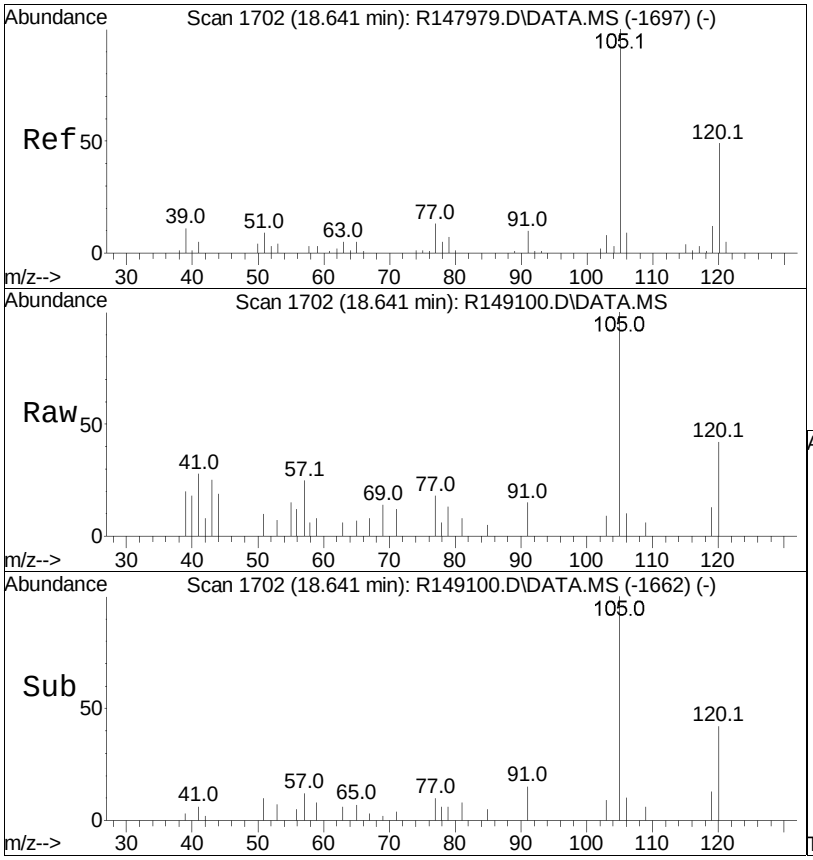


#96
4-ethyl toluene
Concen: 0.15 ppbV
RT: 18.59 min Scan# 1691
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion:105 Resp: 6544

Ion	Ratio	Lower	Upper
105	100		
120	26.4	23.3	34.9
91	15.4	9.6	14.4#

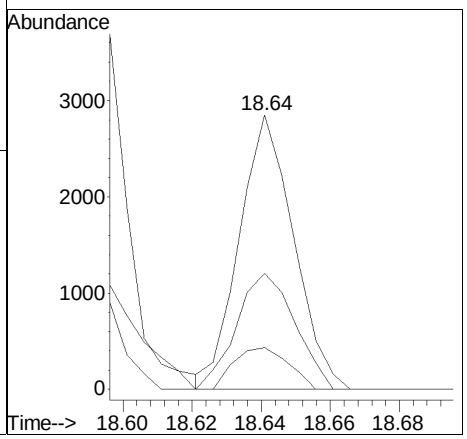


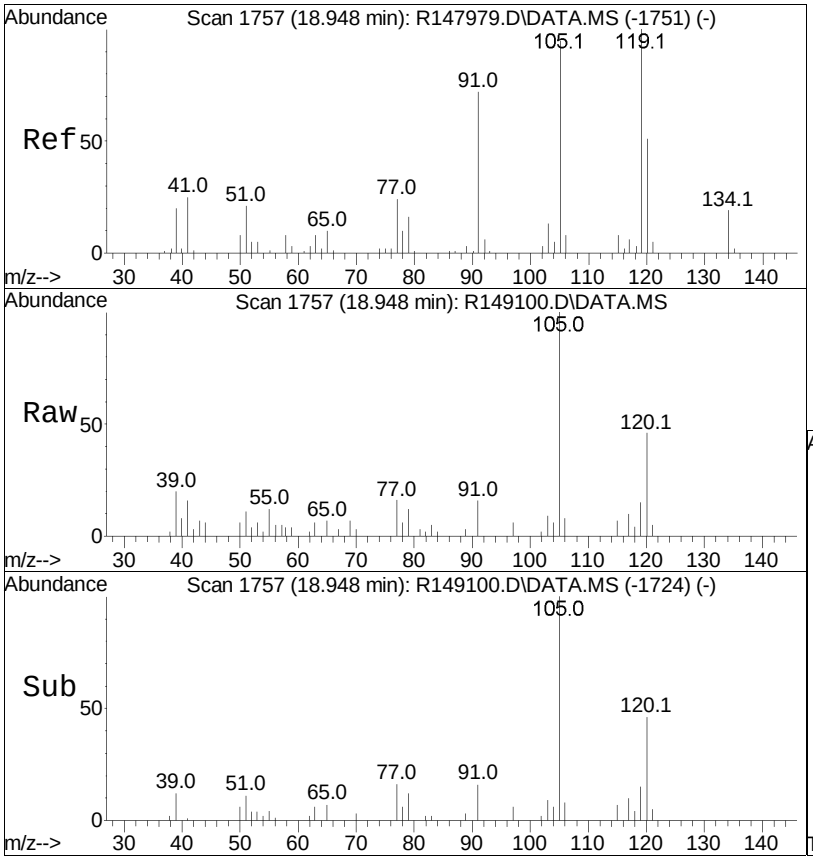


#97
1,3,5-trimethylbenzene
Concen: 0.09 ppbV
RT: 18.64 min Scan# 1702
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion:105 Resp: 3115

Ion	Ratio	Lower	Upper
105	100		
120	42.3	38.5	57.7
91	15.2	9.2	13.8#

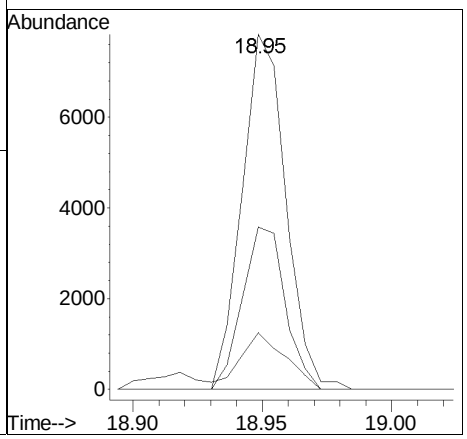


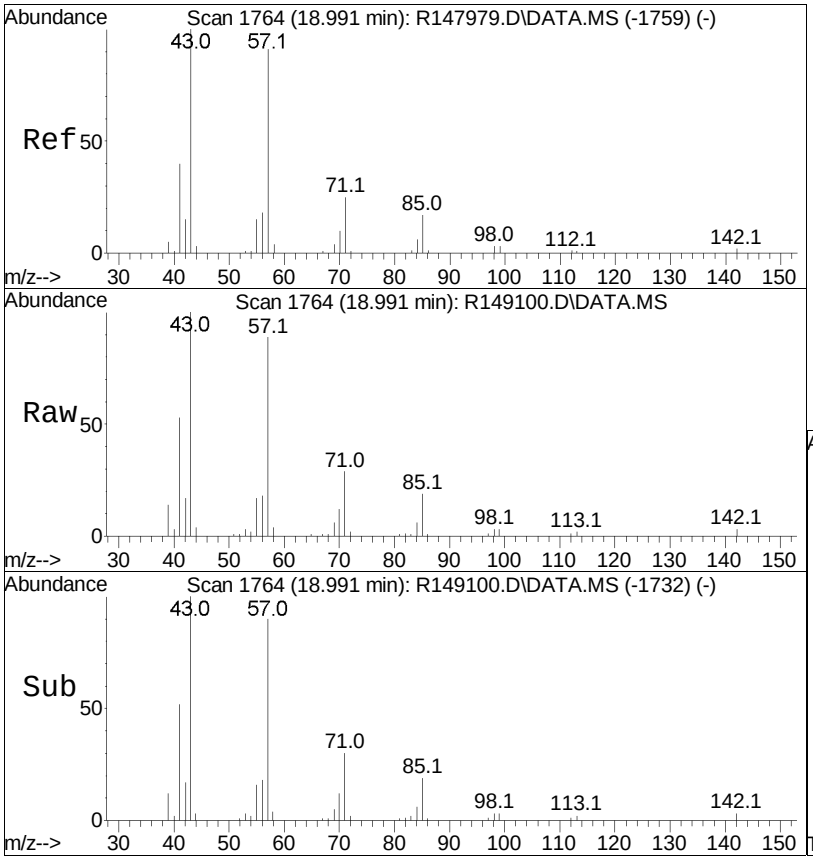


#99
1,2,4-trimethylbenzene
Concen: 0.27 ppbV
RT: 18.95 min Scan# 1757
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion:105 Resp: 9238

Ion	Ratio	Lower	Upper
105	100		
120	45.7	43.0	64.4
91	16.0	63.7	95.5#

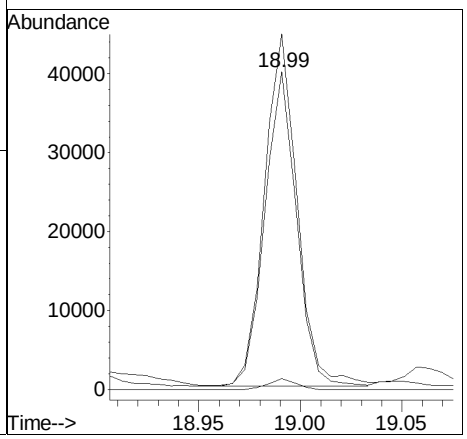


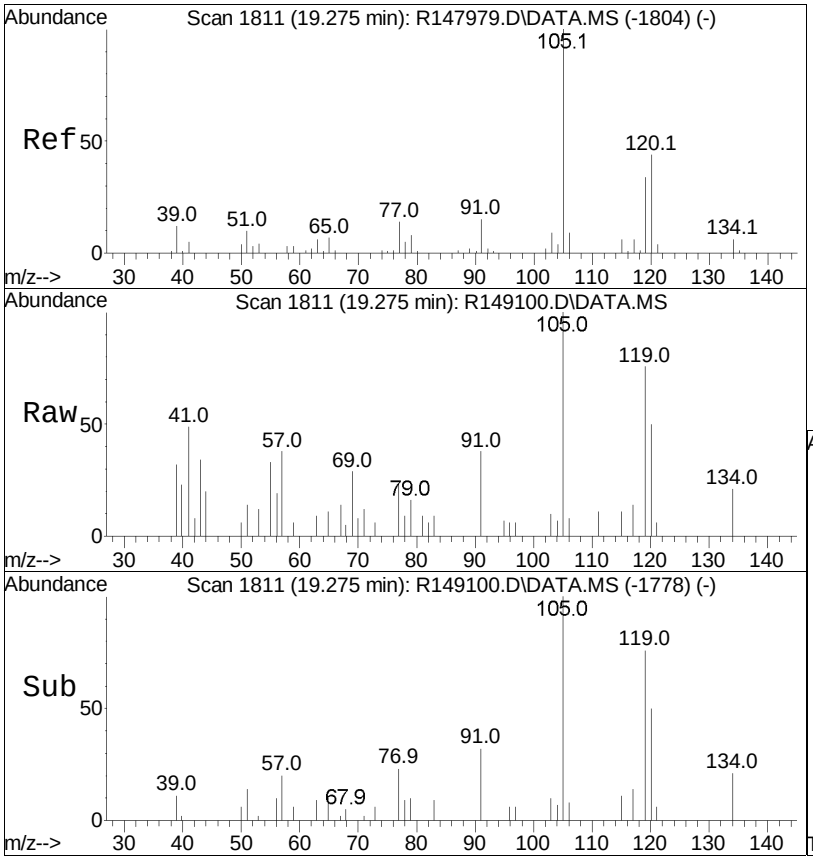


#100
decane
Concen: 1.61 ppbV
RT: 18.99 min Scan# 1764
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 57 Resp: 43359

Ion	Ratio	Lower	Upper
57	100		
43	111.8	88.1	132.1
142	3.4	2.4	3.6

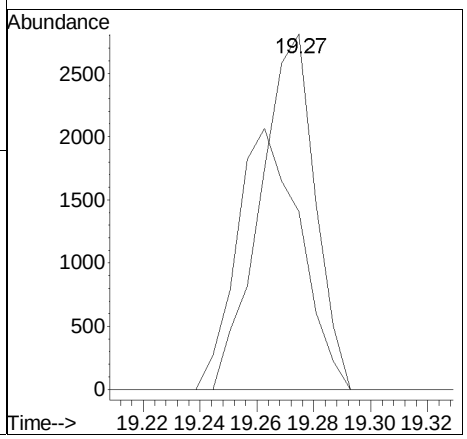


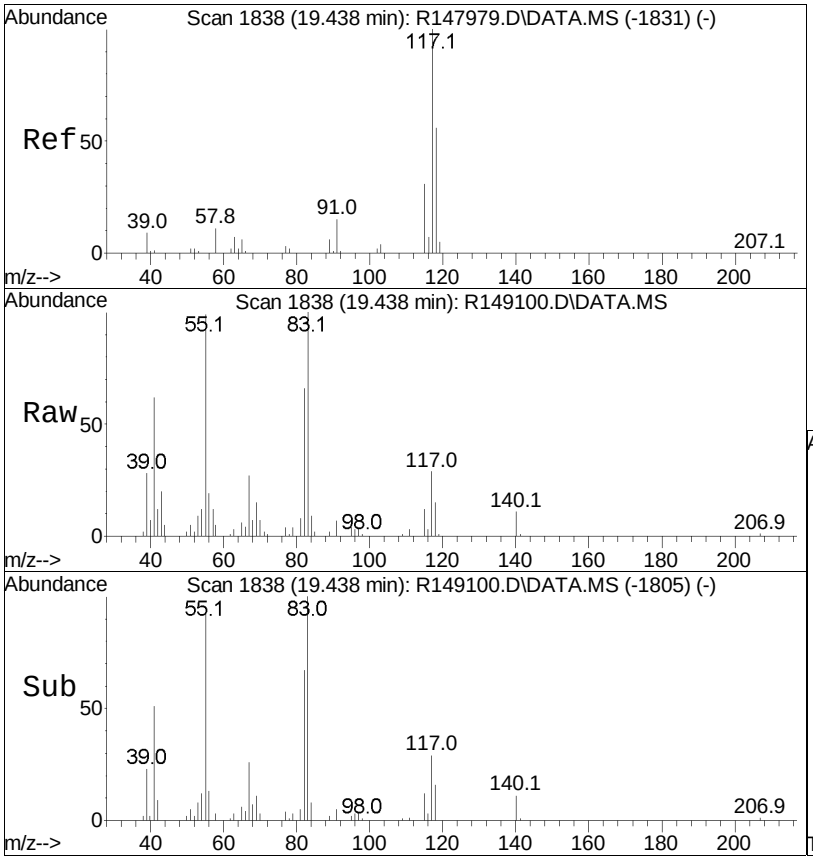


#105
1,2,3-trimethylbenzene
Concen: 0.10 ppbV
RT: 19.27 min Scan# 1811
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion:105 Resp: 3769

Ion	Ratio	Lower	Upper
105	100		
120	50.0	35.0	52.6

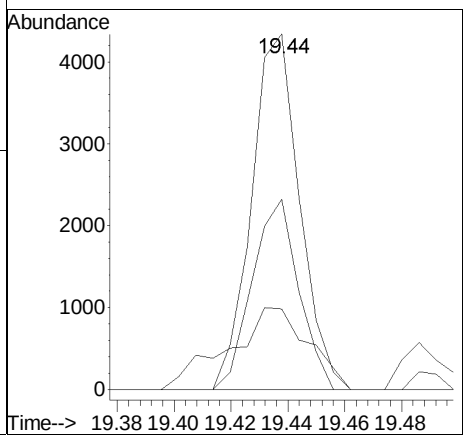


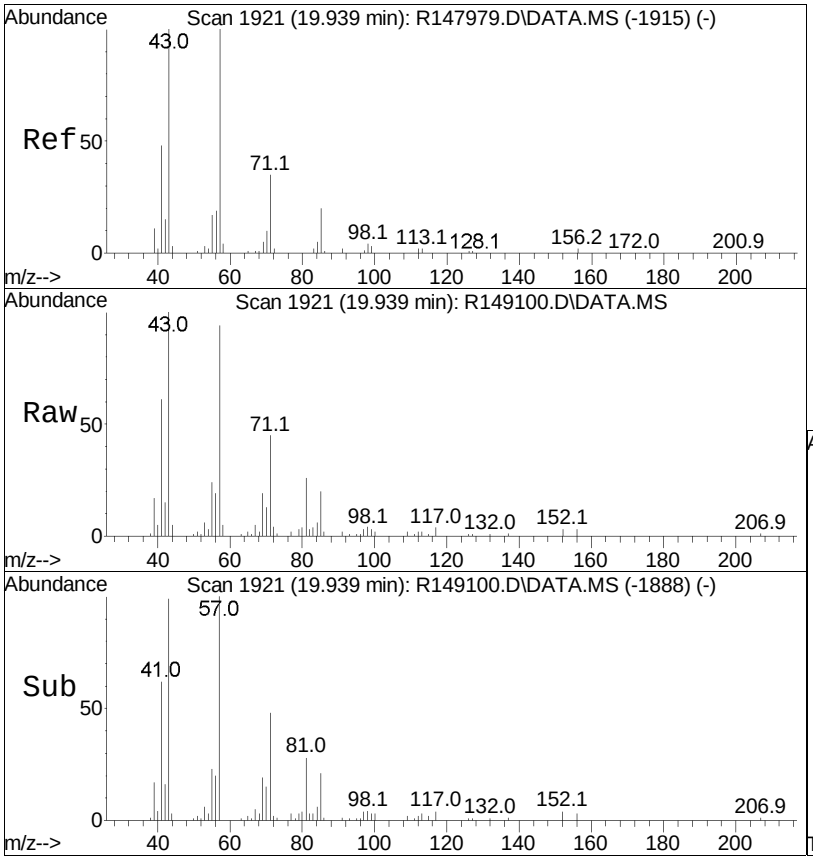


#109
indan
Concen: 0.13 ppbV
RT: 19.44 min Scan# 1838
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion:117 Resp: 5111

Ion	Ratio	Lower	Upper
117	100		
118	53.5	44.2	66.2
91	22.6	13.0	19.4#

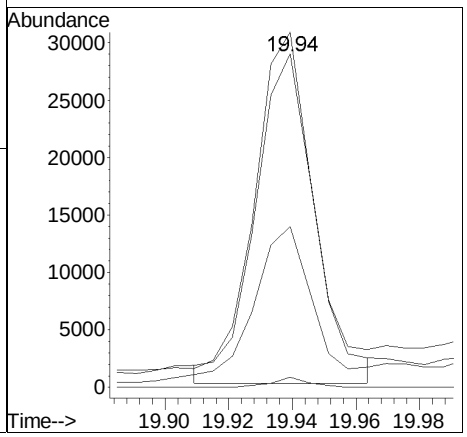


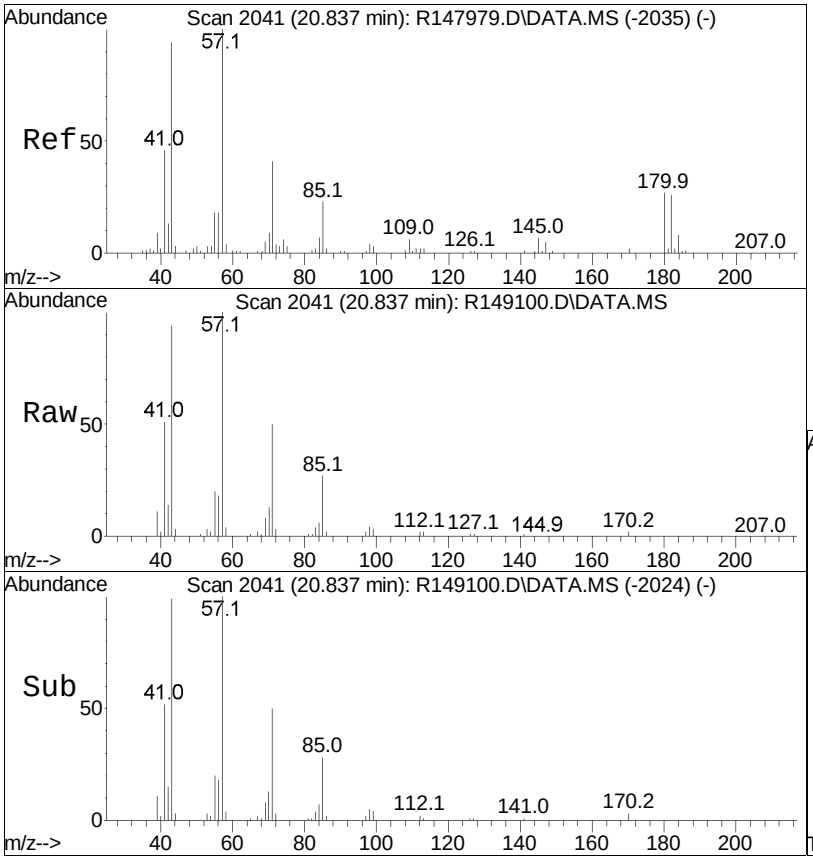


#112
undecane
Concen: 1.25 ppbV m
RT: 19.94 min Scan# 1921
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 57 Resp: 37208

Ion	Ratio	Lower	Upper
57	100		
43	106.5	81.6	122.4
71	48.2	35.4	53.2
156	3.1	2.2	3.4

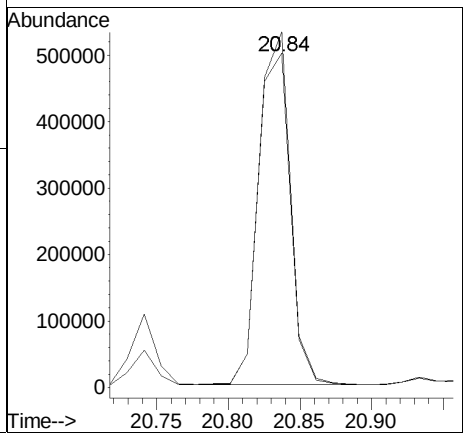


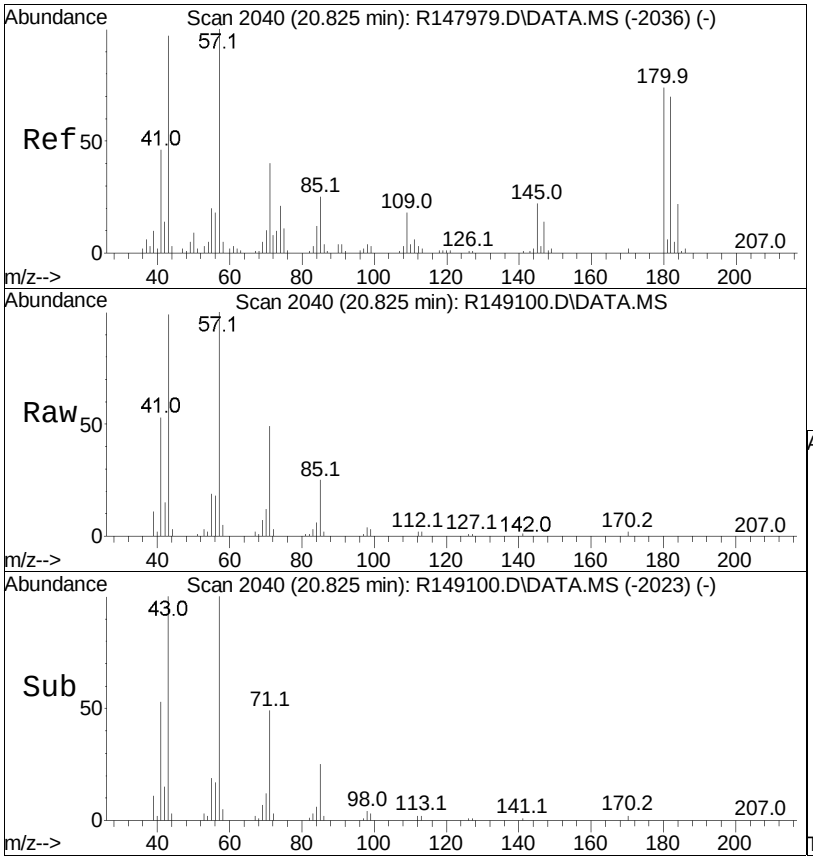


#114
dodecane
Concen: 26.93 ppbV
RT: 20.84 min Scan# 2041
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion: 57 Resp: 814733

Ion	Ratio	Lower	Upper
57	100		
43	94.1	76.2	114.4

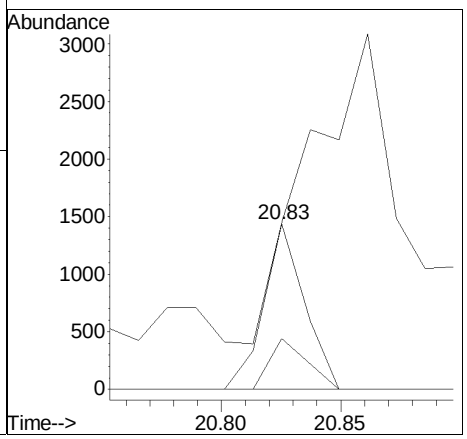


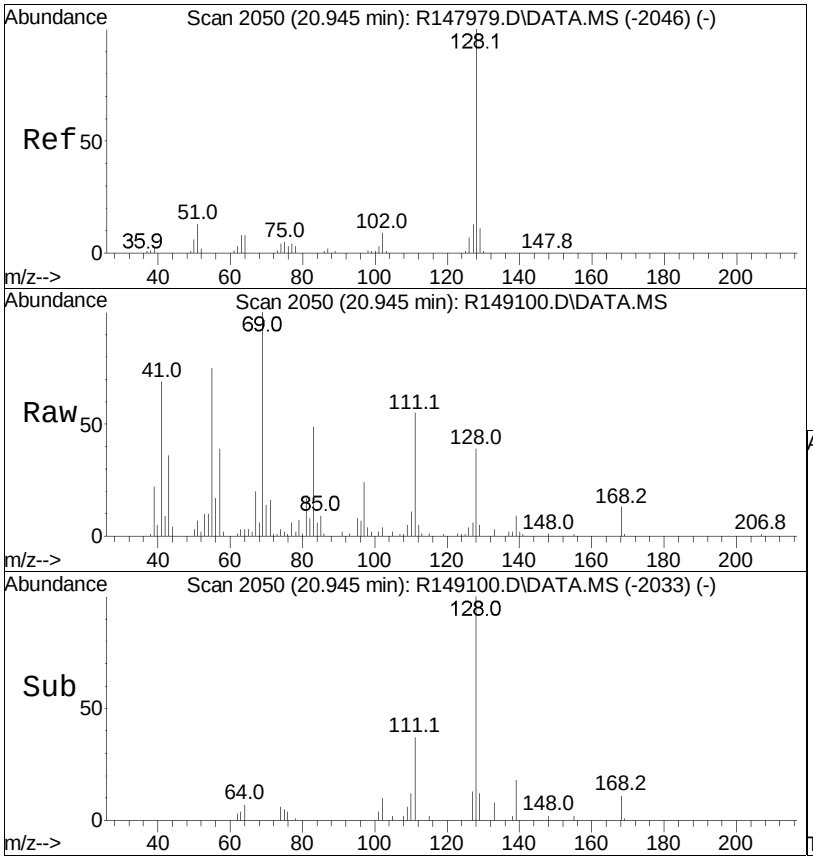


#115
1,2,4-trichlorobenzene
Concen: 0.08 ppbV
RT: 20.83 min Scan# 2040
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion:180 Resp: 1701

Ion	Ratio	Lower	Upper
180	100		
145	30.7	22.8	34.2
109	100.6	18.7	28.1#

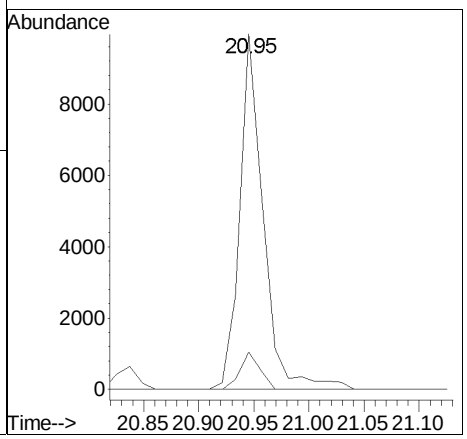




#116
naphthalene
Concen: 0.35 ppbV
RT: 20.95 min Scan# 2050
Delta R.T. -0.000 min
Lab File: R149100.D
Acq: 1 Nov 2016 4:16 pm

Tgt Ion:128 Resp: 14809

Ion	Ratio	Lower	Upper
128	100		
102	10.5	7.5	11.3



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-04D	Date Collected	: 10/19/16 10:46
Client ID	: NFSV-05	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 16:47
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 3.333
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149101	Instrument ID	: AIRPIANO1
Sample Amount	: 75.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-71-8	Dichlorodifluoromethane	0.750	0.667	0.155	3.71	3.30	0.766	
74-87-3	Chloromethane	ND	0.667	0.319	ND	1.38	0.659	U
76-14-2	Freon-114	ND	0.667	0.140	ND	4.66	0.979	U
75-01-4	Vinyl chloride	ND	0.667	0.126	ND	1.71	0.322	U
106-99-0	1,3-Butadiene	ND	0.667	0.266	ND	1.48	0.588	U
106-97-8	Butane	140	0.667	0.147	333	1.59	0.349	
75-07-0	Acetaldehyde	ND	8.33	1.82	ND	15.0	3.28	U
74-83-9	Bromomethane	ND	0.667	0.232	ND	2.59	0.901	U
75-00-3	Chloroethane	ND	0.667	0.256	ND	1.76	0.676	U
64-17-5	Ethanol	ND	8.33	1.80	ND	15.7	3.39	U
593-60-2	Vinyl bromide	ND	0.667	0.233	ND	2.92	1.02	U
107-02-8	Acrolein	ND	1.67	0.379	ND	3.83	0.869	U
67-64-1	Acetone	ND	3.33	0.550	ND	7.91	1.31	U
75-69-4	Trichlorofluoromethane	0.583	0.667	0.139	3.28	3.75	0.781	J
67-63-0	Isopropanol	8.67	1.67	0.175	21.3	4.10	0.430	
109-66-0	Pentane	48.7	0.667	0.158	144	1.97	0.466	
75-35-4	1,1-Dichloroethene	ND	0.667	0.189	ND	2.64	0.749	U
75-65-0	tert-Butyl Alcohol	2.20	1.67	0.200	6.67	5.06	0.606	
75-09-2	Methylene chloride	ND	1.67	0.997	ND	5.80	3.46	U
107-05-1	3-Chloropropene	ND	0.667	0.271	ND	2.09	0.848	U
75-15-0	Carbon disulfide	0.183	0.667	0.115	0.570	2.08	0.358	J
76-13-1	Freon-113	ND	0.667	0.170	ND	5.11	1.30	U
156-60-5	trans-1,2-Dichloroethene	ND	0.667	0.247	ND	2.64	0.979	U
75-34-3	1,1-Dichloroethane	ND	0.667	0.257	ND	2.70	1.04	U
1634-04-4	Methyl tert butyl ether	45.6	0.667	0.176	164	2.40	0.635	
78-93-3	2-Butanone	2.85	1.67	0.157	8.41	4.93	0.463	
156-59-2	cis-1,2-Dichloroethene	ND	0.667	0.196	ND	2.64	0.777	U
67-66-3	Chloroform	ND	0.667	0.177	ND	3.26	0.864	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-04D	Date Collected	: 10/19/16 10:46
Client ID	: NFSV-05	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 16:47
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 3.333
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149101	Instrument ID	: AIRPIANO1
Sample Amount	: 75.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
107-06-2	1,2-Dichloroethane	0.876	0.667	0.184	3.55	2.70	0.745	
110-54-3	n-Hexane	15.1	0.667	0.173	53.2	2.35	0.610	
71-55-6	1,1,1-Trichloroethane	ND	0.667	0.190	ND	3.64	1.04	U
71-43-2	Benzene	170	0.667	0.179	543	2.13	0.572	
110-02-1	Thiophene	0.303	0.667	0.176	1.04	2.30	0.606	J
56-23-5	Carbon tetrachloride	ND	0.667	0.157	ND	4.20	0.988	U
110-82-7	Cyclohexane	0.890	0.667	0.219	3.06	2.30	0.754	
78-87-5	1,2-Dichloropropane	ND	0.667	0.232	ND	3.08	1.07	U
75-27-4	Bromodichloromethane	ND	0.667	0.219	ND	4.47	1.47	U
123-91-1	1,4-Dioxane	ND	0.667	0.260	ND	2.40	0.937	U
79-01-6	Trichloroethene	ND	0.667	0.237	ND	3.58	1.27	U
540-84-1	2,2,4-Trimethylpentane	2.03	0.667	0.220	9.48	3.12	1.03	
142-82-5	Heptane	3.92	0.667	0.184	16.1	2.73	0.754	
10061-01-5	cis-1,3-Dichloropropene	ND	0.667	0.248	ND	3.03	1.13	U
108-10-1	4-Methyl-2-pentanone	ND	1.67	0.202	ND	6.84	0.828	U
10061-02-6	trans-1,3-Dichloropropene	ND	0.667	0.231	ND	3.03	1.05	U
79-00-5	1,1,2-Trichloroethane	ND	0.667	0.222	ND	3.64	1.21	U
108-88-3	Toluene	226	0.667	0.209	852	2.51	0.788	
554-14-3	2-Methylthiophene	ND	0.667	0.263	ND	2.68	1.06	U
591-78-6	2-Hexanone	0.377	0.667	0.201	1.55	2.73	0.824	J
616-44-4	3-Methylthiophene	ND	0.667	0.223	ND	2.68	0.895	U
124-48-1	Dibromochloromethane	ND	0.667	0.249	ND	5.68	2.12	U
106-93-4	1,2-Dibromoethane	ND	0.667	0.260	ND	5.13	2.00	U
111-65-9	Octane	1.27	0.667	0.140	5.93	3.12	0.654	
127-18-4	Tetrachloroethene	ND	0.667	0.253	ND	4.52	1.72	U
108-90-7	Chlorobenzene	ND	0.667	0.263	ND	3.07	1.21	U
100-41-4	Ethylbenzene	18.3	0.667	0.185	79.5	2.90	0.804	
872-55-9	2-Ethylthiophene	ND	0.667	0.190	ND	3.06	0.872	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-04D	Date Collected	: 10/19/16 10:46
Client ID	: NFSV-05	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 16:47
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 3.333
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149101	Instrument ID	: AIRPIANO1
Sample Amount	: 75.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
179601-23-1	p/m-Xylene	99.2	1.33	0.463	431	5.78	2.01	
75-25-2	Bromoform	ND	0.667	0.174	ND	6.90	1.80	U
100-42-5	Styrene	ND	0.667	0.266	ND	2.84	1.13	U
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.667	0.183	ND	4.58	1.26	U
95-47-6	o-Xylene	28.4	0.667	0.210	123	2.90	0.912	
111-84-2	Nonane	0.683	0.667	0.208	3.58	3.50	1.09	
95-49-8	2-Chlorotoluene	ND	0.667	0.162	ND	3.45	0.839	U
622-96-8	4-Ethyltoluene	3.67	0.667	0.259	18.0	3.28	1.27	
108-67-8	1,3,5-Trimethylbenzene	6.96	0.667	0.195	34.2	3.28	0.959	
95-63-6	1,2,4-Trimethylbenzene	17.0	0.667	0.231	83.6	3.28	1.14	
124-18-5	Decane	1.34	0.667	0.161	7.80	3.88	0.937	
541-73-1	1,3-Dichlorobenzene	ND	0.667	0.212	ND	4.01	1.27	U
106-46-7	1,4-Dichlorobenzene	ND	0.667	0.120	ND	4.01	0.721	U
526-73-8	1,2,3-Trimethylbenzene	3.77	0.667	0.250	18.5	3.28	1.23	
95-50-1	1,2-Dichlorobenzene	ND	0.667	0.205	ND	4.01	1.23	U
496-11-7	Indane	0.963	0.667	0.265	4.66	3.22	1.28	
95-13-6	Indene	ND	0.667	0.203	ND	3.17	0.965	U
1120-21-4	Undecane	0.743	0.667	0.176	4.75	4.26	1.13	
95-93-2	1,2,4,5-Tetramethylbenzene	0.450	0.667	0.265	2.47	3.66	1.45	J
112-40-3	Dodecane	1.55	0.667	0.159	10.8	4.65	1.11	
120-82-1	1,2,4-Trichlorobenzene	ND	0.667	0.204	ND	4.95	1.51	U
91-20-3	Naphthalene	1.70	0.667	0.142	8.91	3.50	0.745	
95-15-8	Benzothiophene	ND	1.67	0.156	ND	9.17	0.856	U
87-68-3	Hexachlorobutadiene	ND	0.667	0.244	ND	7.11	2.60	U
91-57-6	2-Methylnaphthalene	ND	3.33	0.908	ND	19.4	5.28	U
90-12-0	1-Methylnaphthalene	ND	3.33	0.832	ND	19.4	4.84	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149101.D
Acq On : 1 Nov 2016 4:47 pm
Operator : AIRPIANO1:RY
Sample : L1634001-04D,3,75,250
Misc : WG947959,ICAL12987
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 02 10:02:36 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	149585	10.000	ppbV	-0.01
Standard Area = 153282			Recovery = 97.59%			
43) 1,4-difluorobenzene	12.41	114	244102	10.000	ppbV	0.00
Standard Area = 240182			Recovery = 101.63%			
67) chlorobenzene-D5	16.82	54	66756	10.000	ppbV	0.00
Standard Area = 64184			Recovery = 104.01%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	69904	9.560	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 95.60%			
69) toluene-D8	15.14	98	193097	9.603	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 96.03%			
90) bromofluorobenzene	18.01	95	133808	9.522	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 95.22%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	4304	0.225	ppbV	97
6) chloromethane	4.37		0	N.D.		
7) Freon-114	0.00		0	N.D.		
9) vinyl chloride	0.00		0	N.D.		
10) 1,3-butadiene	0.00		0	N.D.	d	
11) butane	4.95	43	613114	42.111	ppbV	99
12) acetaldehyde	0.00		0	N.D.	d	
13) bromomethane	0.00		0	N.D.		
14) chloroethane	0.00		0	N.D.		
15) ethanol	5.73		0	N.D.		
17) vinyl bromide	0.00		0	N.D.		
18) acrolein	0.00		0	N.D.		
19) acetone	0.00		0	N.D.	d	
21) trichlorofluoromethane	6.57	101	3465	0.175	ppbV	97
22) isopropyl alcohol	6.73	45	46277	2.602	ppbV	99
24) pentane	7.06	43	235006	14.608	ppbV	97
26) 1,1-dichloroethene	0.00		0	N.D.		
27) tertiary butyl alcohol	7.53	59	11821	0.660	ppbV #	92
28) methylene chloride	7.59		0	N.D.		
29) 3-chloropropene	0.00		0	N.D.	d	
30) carbon disulfide	7.91	76	1279	0.055	ppbV #	1

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149101.D
Acq On : 1 Nov 2016 4:47 pm
Operator : AIRPIANO1:RY
Sample : L1634001-04D,3,75,250
Misc : WG947959,ICAL12987
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 02 10:02:36 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
31) Freon 113	0.00		0	N.D.			
32) trans-1,2-dichloroethene	0.00		0	N.D.			
33) 1,1-dichloroethane	0.00		0	N.D.			
34) MTBE	9.09	73	307973	13.685	ppbV		97
36) 2-butanone	9.52	43	18217	0.854	ppbV		98
37) cis-1,2-dichloroethene	0.00		0	N.D.			
39) chloroform	0.00		0	N.D.			
42) 1,2-dichloroethane	11.20	62	3338	0.263	ppbV	#	85
44) hexane	10.25	57	74877	4.519	ppbV	#	34
48) 1,1,1-trichloroethane	0.00		0	N.D.			
50) benzene	12.00	78	1169763	50.883	ppbV		100
51) thiophene	12.15	84	1773	0.091	ppbV		89
52) carbon tetrachloride	0.00		0	N.D.			
53) cyclohexane	12.31	56	3623	0.267	ppbV		97
56) 1,2-dichloropropane	0.00		0	N.D.			
57) bromodichloromethane	0.00		0	N.D.	d		
58) 1,4-dioxane	0.00		0	N.D.			
59) trichloroethene	0.00		0	N.D.			
60) 2,2,4-trimethylpentane	13.23	57	27176	0.608	ppbV		89
62) heptane	13.53	43	22532	1.177	ppbV		96
63) cis-1,3-dichloropropene	0.00		0	N.D.			
64) 4-methyl-2-pentanone	0.00		0	N.D.	d		
65) trans-1,3-dichloropropene	0.00		0	N.D.			
66) 1,1,2-trichloroethane	0.00		0	N.D.			
68) toluene	15.24	91	1890613	67.939	ppbV		99
70) 2-methylthiophene	0.00		0	N.D.	d		
72) 2-hexanone	15.51	43	2923	0.113	ppbV	#	84
73) 3-methylthiophene	15.48		0	N.D.			
74) dibromochloromethane	0.00		0	N.D.			
75) 1,2-dibromoethane	0.00		0	N.D.			
77) octane	16.14	85	3174	0.382	ppbV	#	90
78) tetrachloroethene	16.29		0	N.D.			
80) chlorobenzene	16.86		0	N.D.			
81) ethylbenzene	17.15	91	200805	5.501	ppbV		98
82) 2-ethylthiophene	0.00		0	N.D.	d		
83) m+p-xylene	17.29	91	866887	29.772	ppbV		99
84) bromoform	0.00		0	N.D.			
85) styrene	17.59		0	N.D.			

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149101.D
Acq On : 1 Nov 2016 4:47 pm
Operator : AIRPIANO1:RY
Sample : L1634001-04D,3,75,250
Misc : WG947959,ICAL12987
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 02 10:02:36 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

	Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
86)	1,1,2,2-tetrachloroethane	0.00		0	N.D.	d		
87)	o-xylene	17.66	91	256582	8.528	ppbV		100
89)	nonane	17.80	43	5793M4	0.205	ppbV		
93)	2-chlorotoluene	0.00		0	N.D.			
96)	4-ethyl toluene	18.59	105	47133	1.102	ppbV		97
97)	1,3,5-trimethylbenzene	18.64	105	70415	2.087	ppbV		99
99)	1,2,4-trimethylbenzene	18.95	105	172635	5.095	ppbV	#	49
100)	decane	18.99	57	10738M4	0.403	ppbV		
102)	1,3-dichlorobenzene	0.00		0	N.D.			
103)	1,4-dichlorobenzene	0.00		0	N.D.			
105)	1,2,3-trimethylbenzene	19.27	105	41846	1.132	ppbV		95
107)	1,2-dichlorobenzene	0.00		0	N.D.			
109)	indan	19.44	117	11653	0.289	ppbV		97
110)	indene	0.00		0	N.D.	d		
112)	undecane	19.94	57	6564M4	0.223	ppbV		
113)	1,2,4,5-tetramethylben...	20.19	119	7160	0.135	ppbV		97
114)	dodecane	20.84	57	13921	0.464	ppbV		95
115)	1,2,4-trichlorobenzene	20.83		0	N.D.			
116)	naphthalene	20.95	128	21650	0.511	ppbV		100
118)	benzothiophene	0.00		0	N.D.	d		
119)	hexachlorobutadiene	0.00		0	N.D.			
120)	2-methylnaphthalene	22.10		0	N.D.			
121)	1-methylnaphthalene	0.00		0	N.D.			

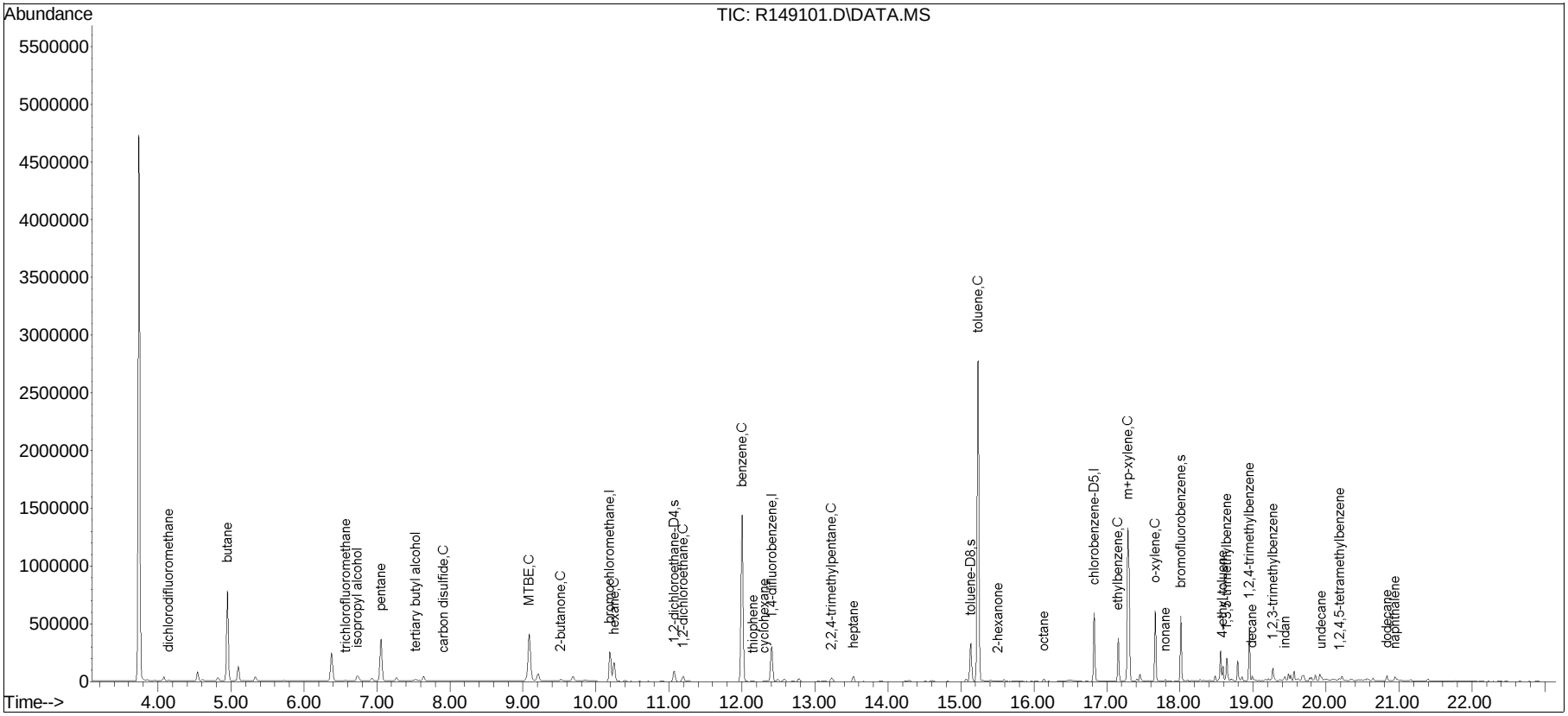
(#) = qualifier out of range (m) = manual integration (+) = signals summed

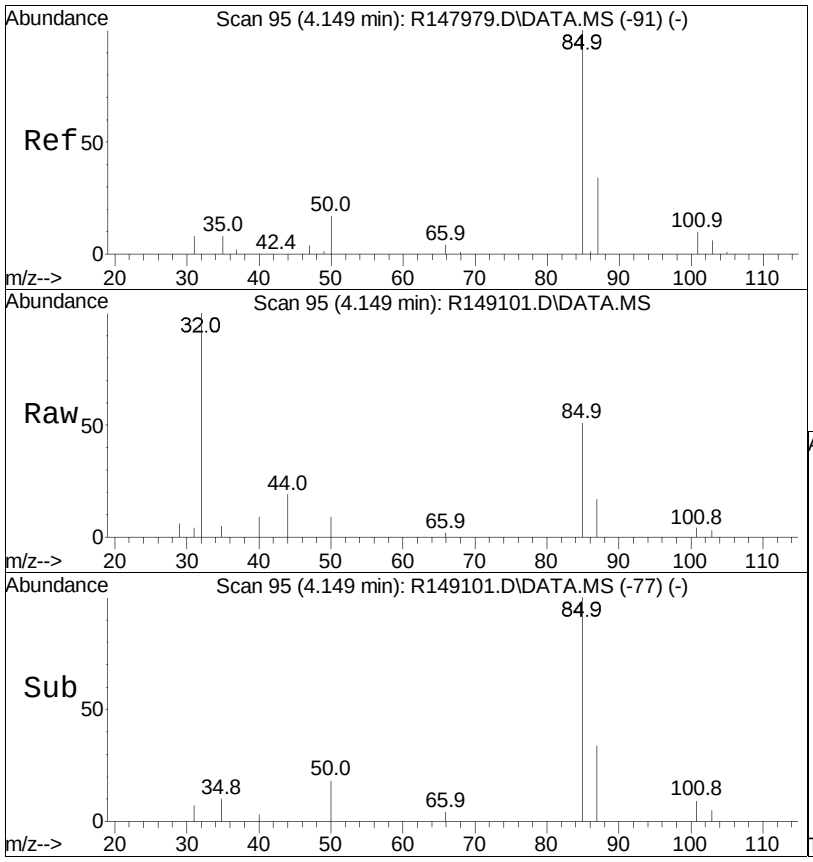
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149101.D
Acq On : 1 Nov 2016 4:47 pm
Operator : AIRPIANO1:RY
Sample : L1634001-04D,3,75,250
Misc : WG947959,ICAL12987
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 02 10:02:36 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Keyspan_TO15 - .a\AIR1\2016\161101K\R149091.D

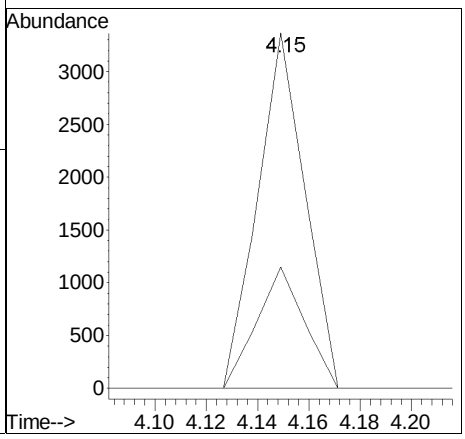


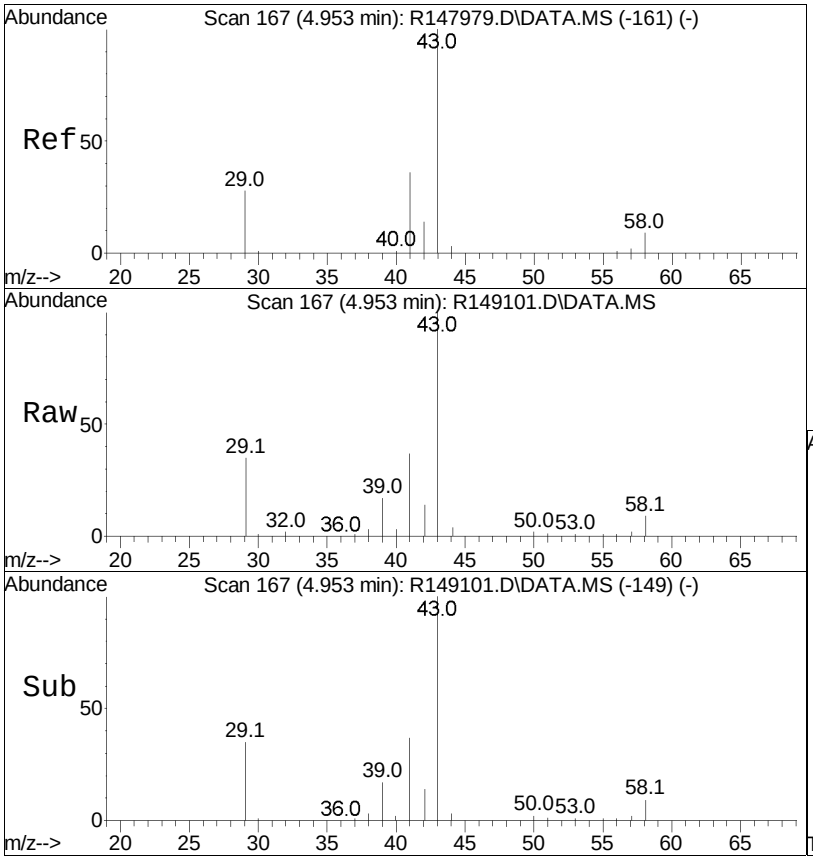


#5
dichlorodifluoromethane
Concen: 0.22 ppbV
RT: 4.15 min Scan# 95
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 85 Resp: 4304

Ion	Ratio	Lower	Upper
85	100		
87	34.1	25.9	38.9

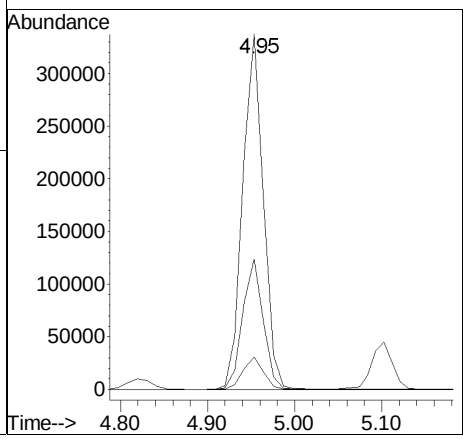


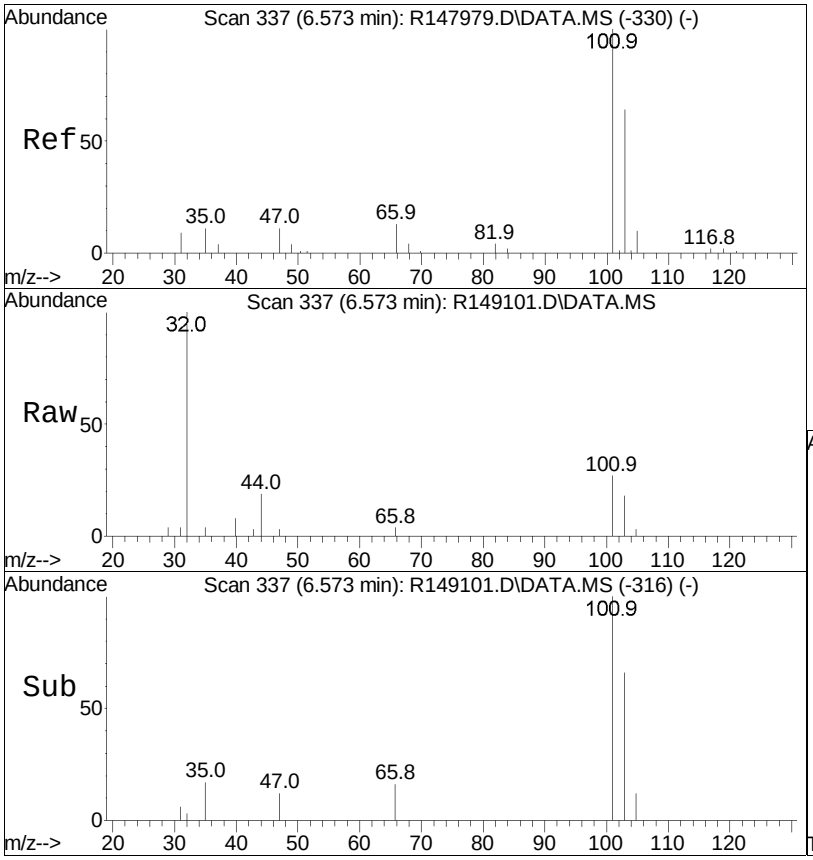


#11
butane
Concen: 42.11 ppbV
RT: 4.95 min Scan# 167
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 43 Resp: 613114

Ion	Ratio	Lower	Upper
43	100		
58	9.1	7.1	10.7
41	36.8	28.7	43.1

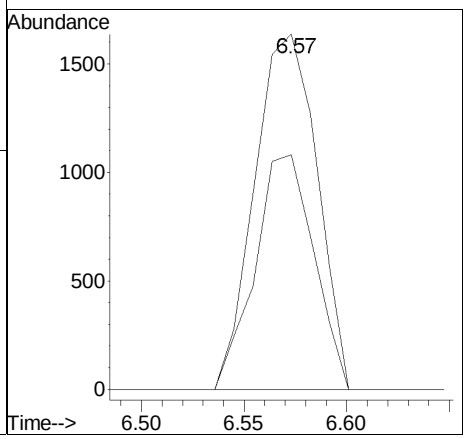


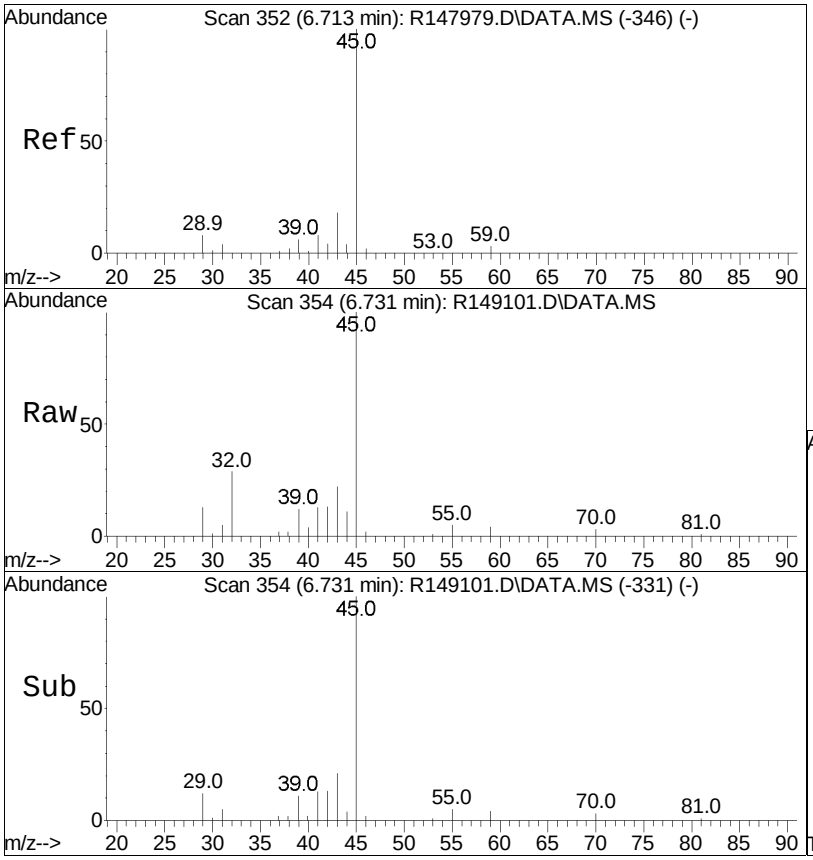


#21
trichlorofluoromethane
Concen: 0.18 ppbV
RT: 6.57 min Scan# 337
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion:101 Resp: 3465

Ion	Ratio	Lower	Upper
101	100		
103	66.1	51.0	76.4

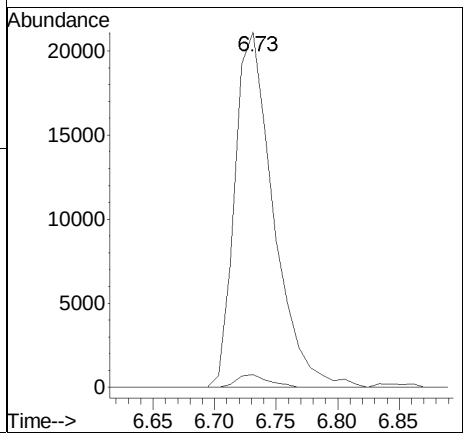


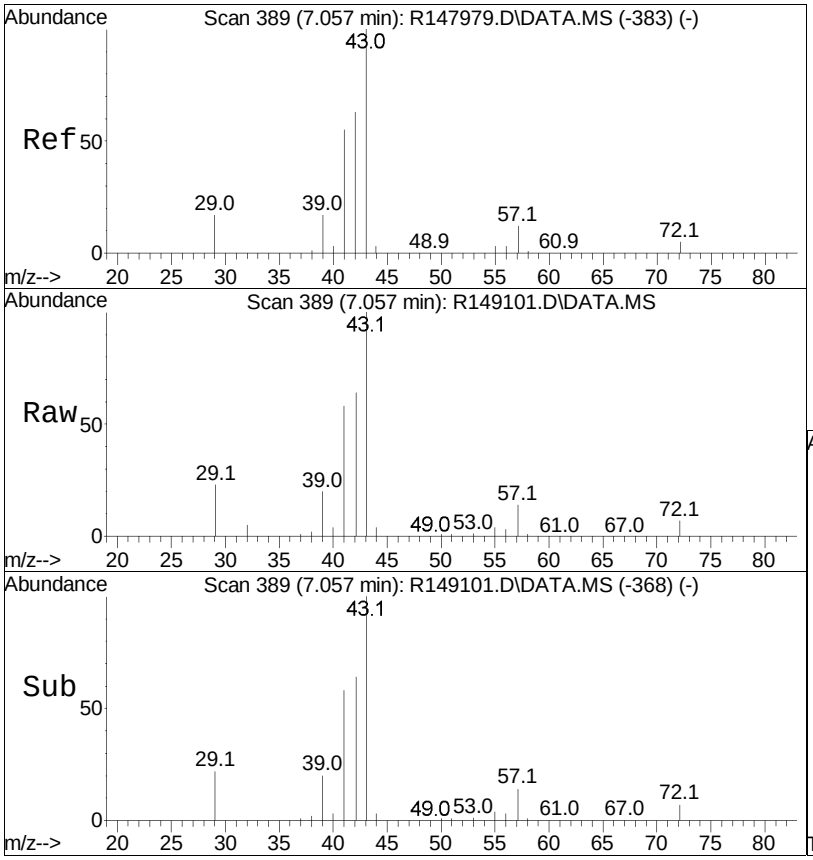


#22
isopropyl alcohol
Concen: 2.60 ppbV
RT: 6.73 min Scan# 354
Delta R.T. 0.018 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 45 Resp: 46277

Ion	Ratio	Lower	Upper
45	100		
59	3.6	2.7	4.1

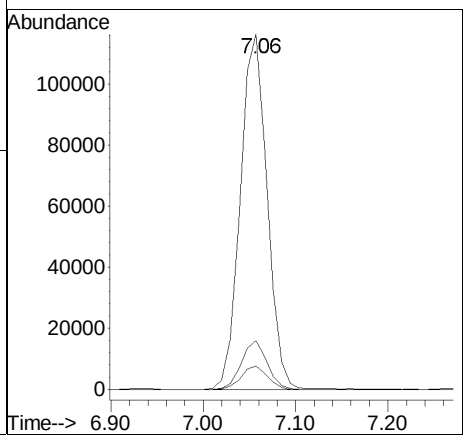


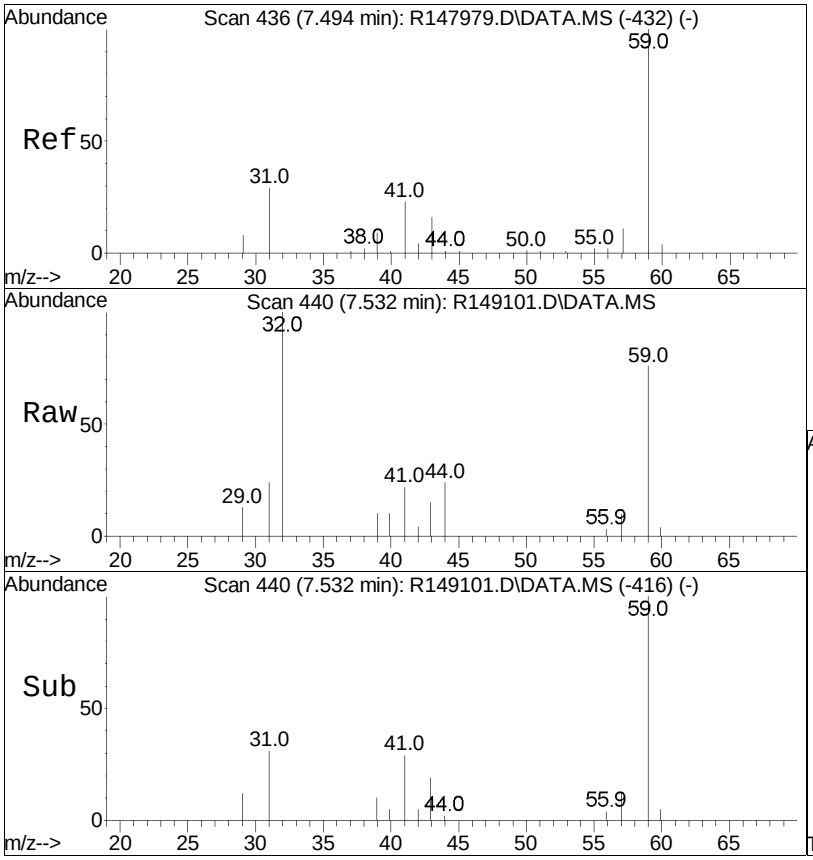


#24
pentane
Concen: 14.61 ppbV
RT: 7.06 min Scan# 389
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 43 Resp: 235006

Ion	Ratio	Lower	Upper
43	100		
57	13.7	9.8	14.8
72	6.6	5.4	8.2

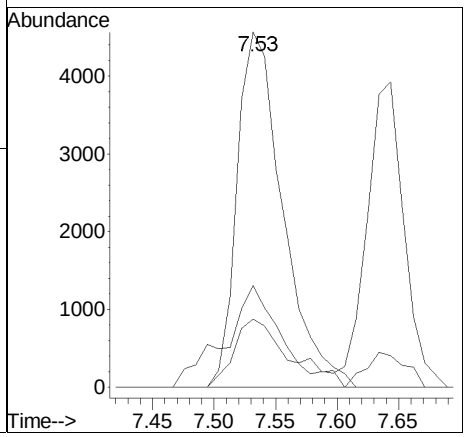


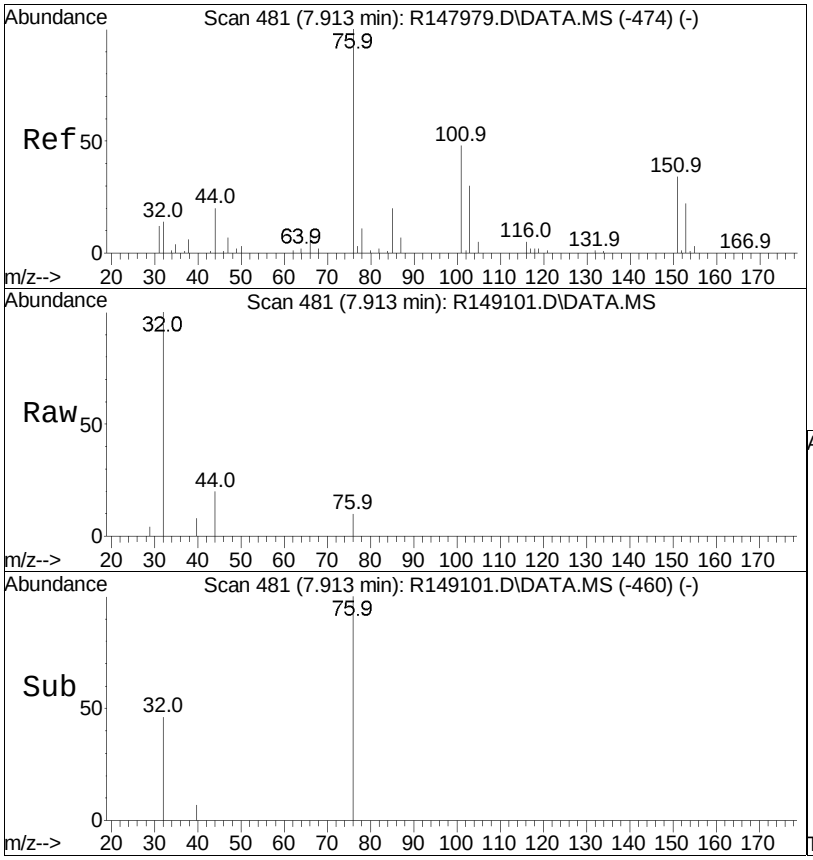


#27
tertiary butyl alcohol
Concen: 0.66 ppbV
RT: 7.53 min Scan# 440
Delta R.T. 0.028 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 59 Resp: 11821

Ion	Ratio	Lower	Upper
59	100		
41	28.6	18.9	28.3#
43	19.2	13.7	20.5

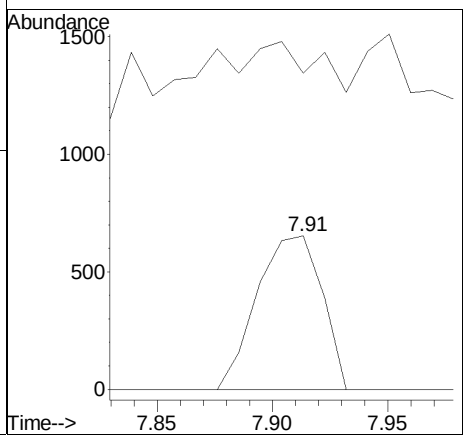


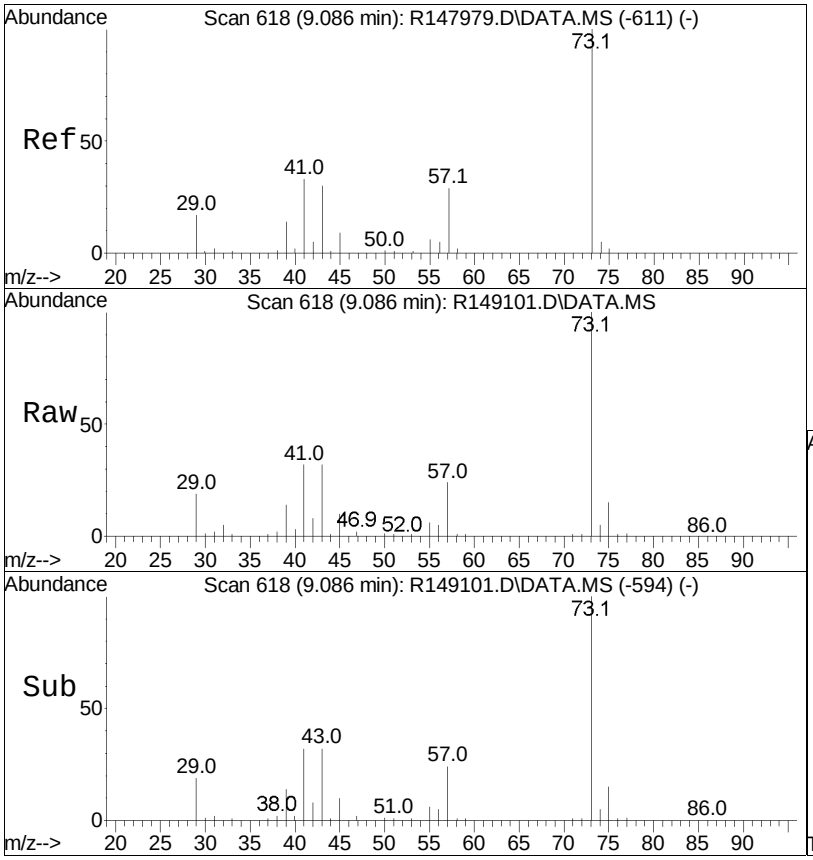


#30
carbon disulfide
Concen: 0.06 ppbV
RT: 7.91 min Scan# 481
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 76 Resp: 1279

Ion	Ratio	Lower	Upper
76	100		
44	205.8	16.3	24.5#

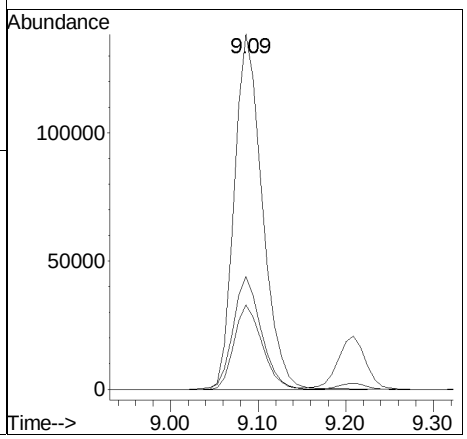


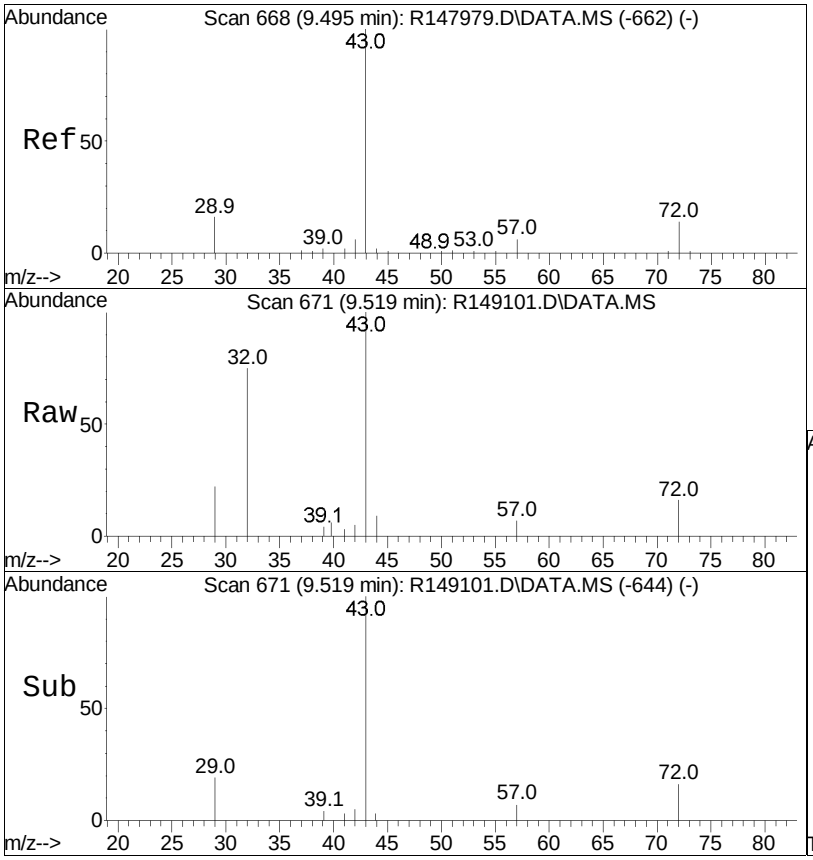


#34
MTBE
Concen: 13.68 ppbV
RT: 9.09 min Scan# 618
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 73 Resp: 307973

Ion	Ratio	Lower	Upper
73	100		
57	23.8	19.1	28.7
43	31.8	23.0	34.4

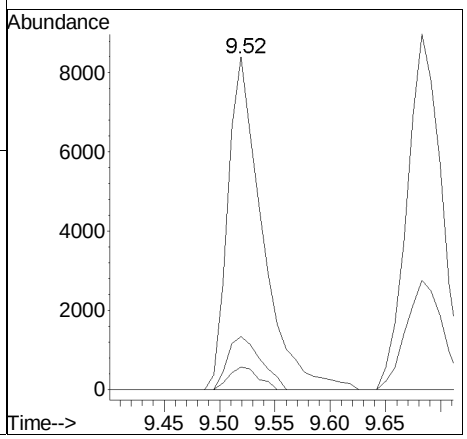


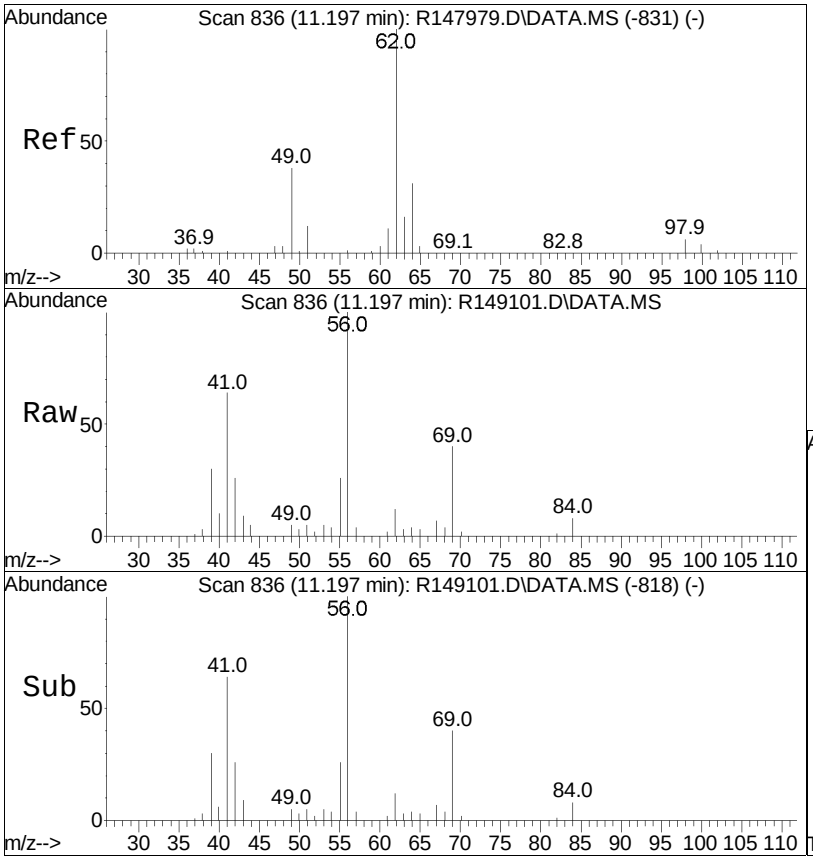


#36
2-butanone
Concen: 0.85 ppbV
RT: 9.52 min Scan# 671
Delta R.T. 0.024 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 43 Resp: 18217

Ion	Ratio	Lower	Upper
43	100		
72	15.9	13.6	20.4
57	6.7	4.9	7.3

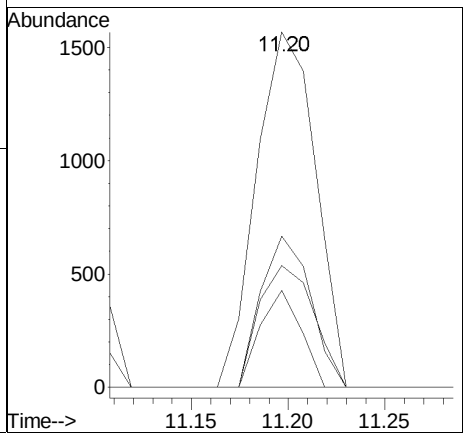


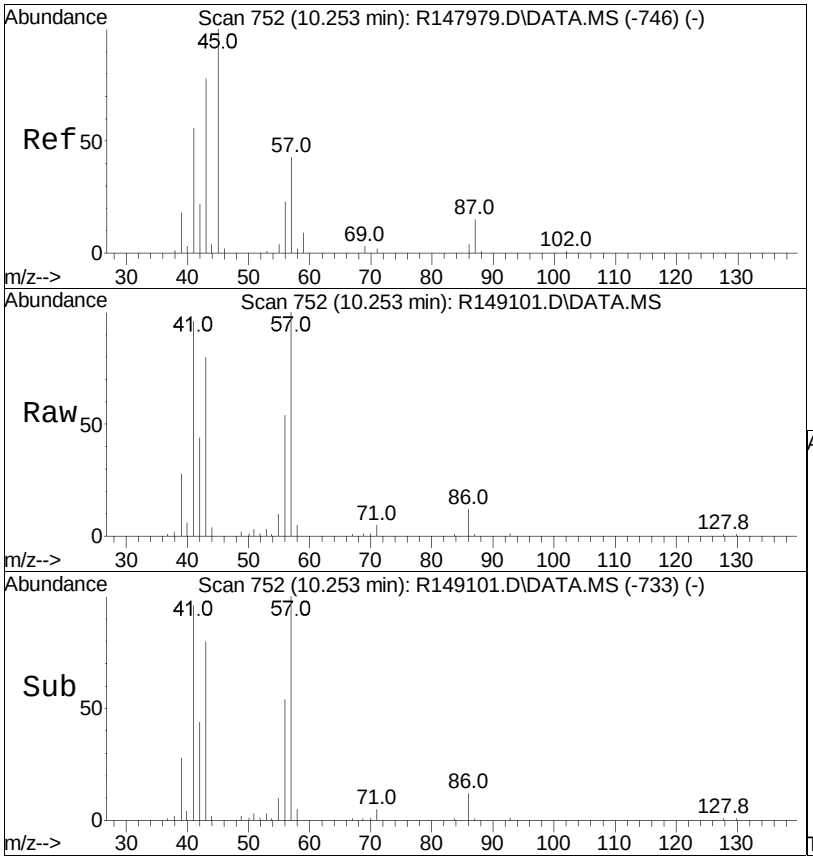


#42
1,2-dichloroethane
Concen: 0.26 ppbV
RT: 11.20 min Scan# 836
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 62 Resp: 3338

Ion	Ratio	Lower	Upper
62	100		
64	34.3	25.0	37.6
49	42.6	26.1	39.1#
63	27.3	12.2	18.2#

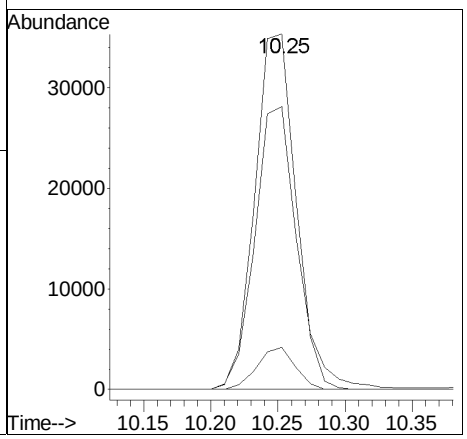


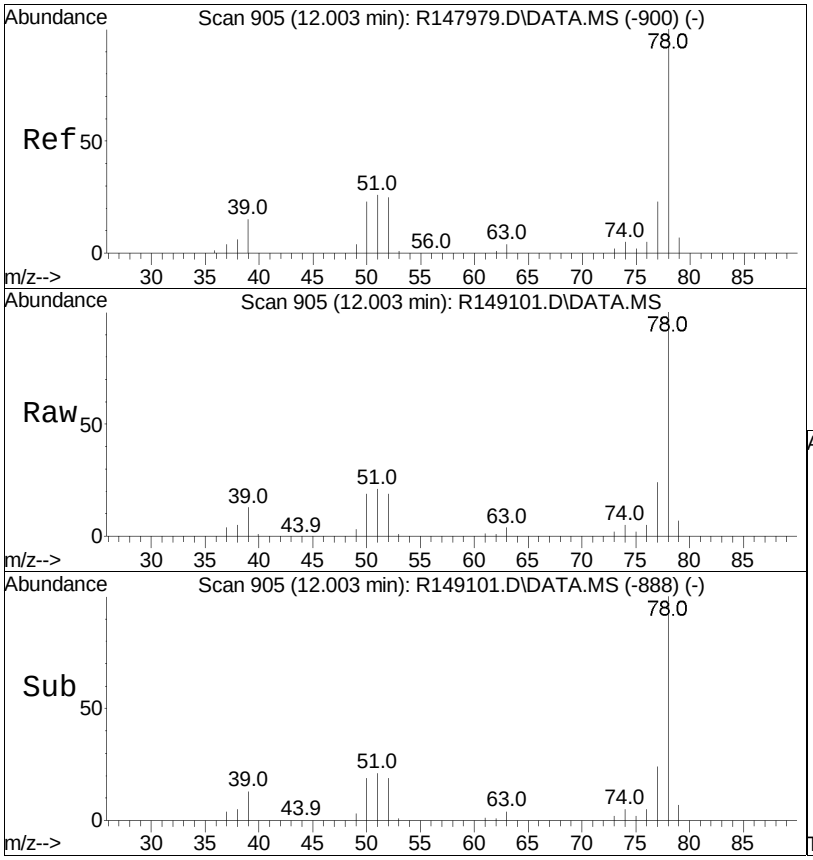


#44
hexane
Concen: 4.52 ppbV
RT: 10.25 min Scan# 752
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 57 Resp: 74877

Ion	Ratio	Lower	Upper
57	100		
43	79.6	142.3	213.5#
86	11.9	9.3	13.9

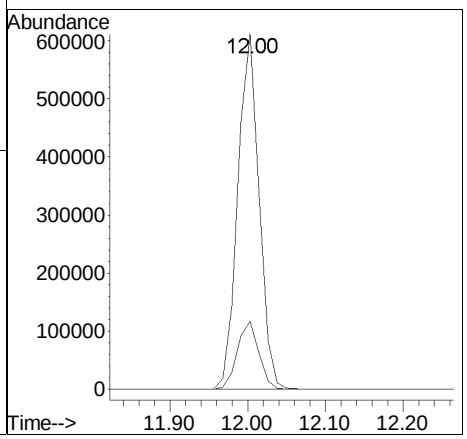


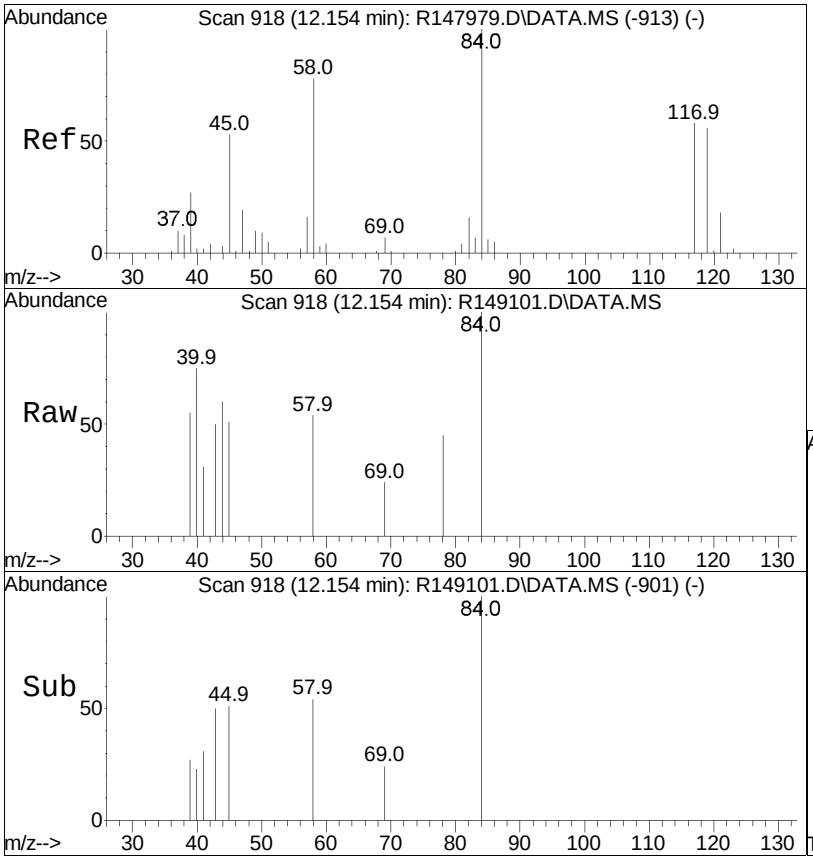


#50
benzene
Concen: 50.88 ppbV
RT: 12.00 min Scan# 905
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 78 Resp: 1169763

Ion	Ratio	Lower	Upper
78	100		
52	19.2	15.2	22.8

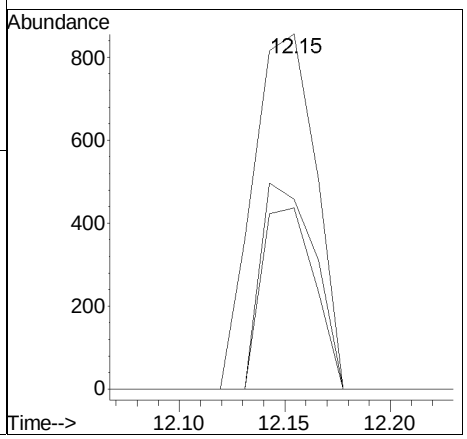


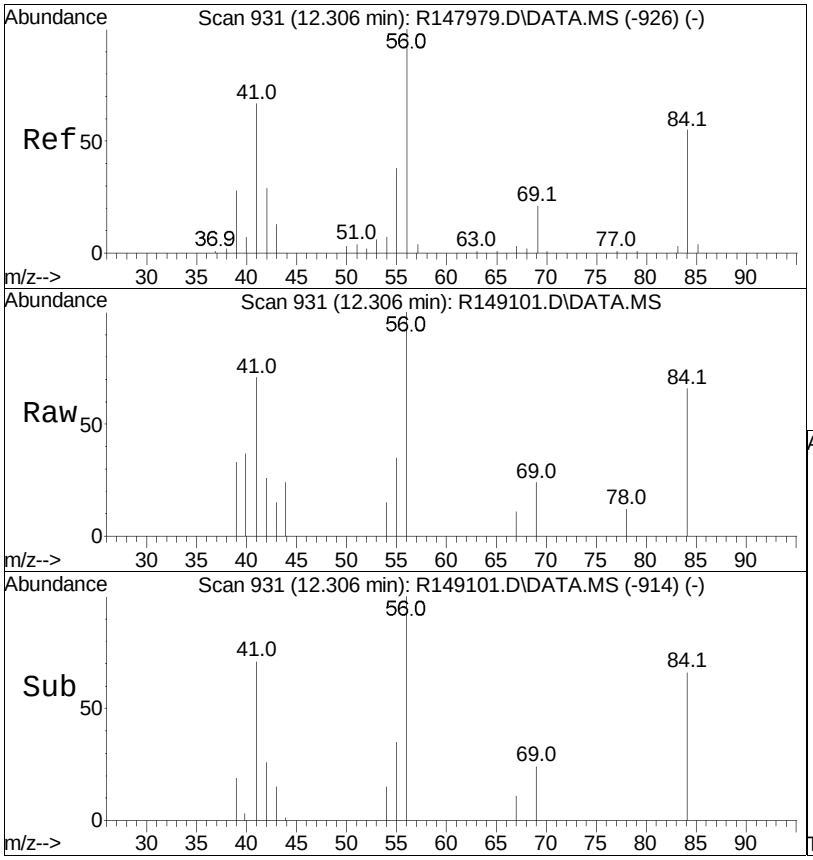


#51
thiophene
Concen: 0.09 ppbV
RT: 12.15 min Scan# 918
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 84 Resp: 1773

Ion	Ratio	Lower	Upper
84	100		
58	53.5	48.7	73.1
45	51.1	34.4	51.6

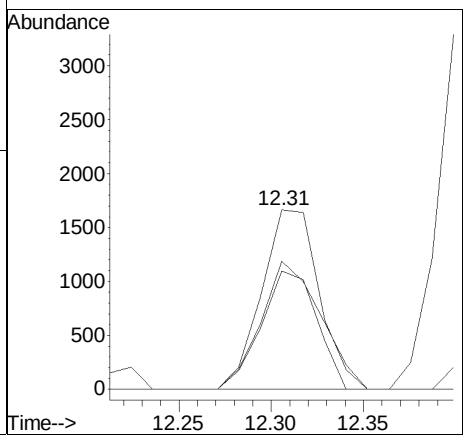


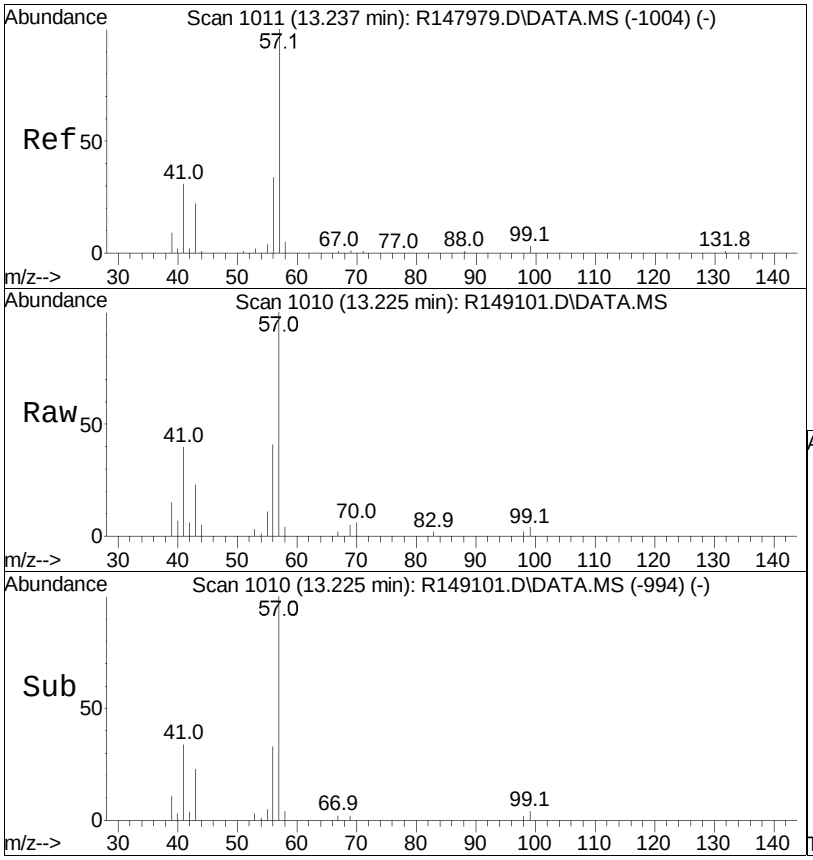


#53
cyclohexane
Concen: 0.27 ppbV
RT: 12.31 min Scan# 931
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 56 Resp: 3623

Ion	Ratio	Lower	Upper
56	100		
84	65.9	56.5	84.7
41	71.4	57.5	86.3

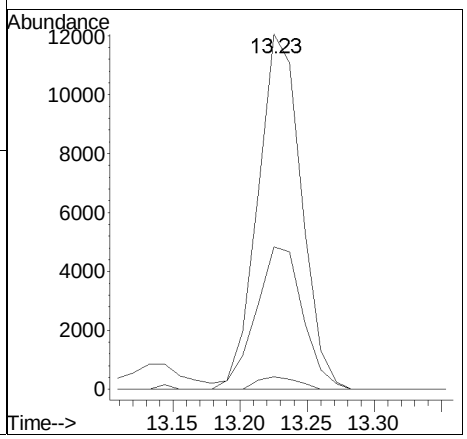


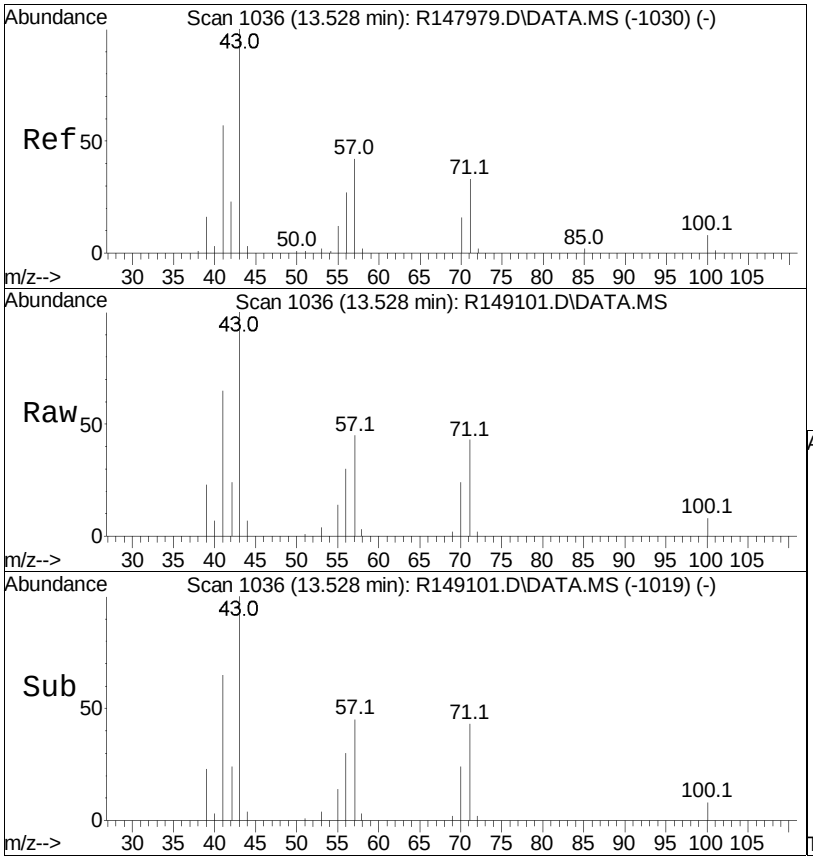


#60
2,2,4-trimethylpentane
Concen: 0.61 ppbV
RT: 13.23 min Scan# 1010
Delta R.T. -0.012 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 57 Resp: 27176

Ion	Ratio	Lower	Upper
57	100		
99	3.5	3.0	4.6
41	40.1	26.8	40.2

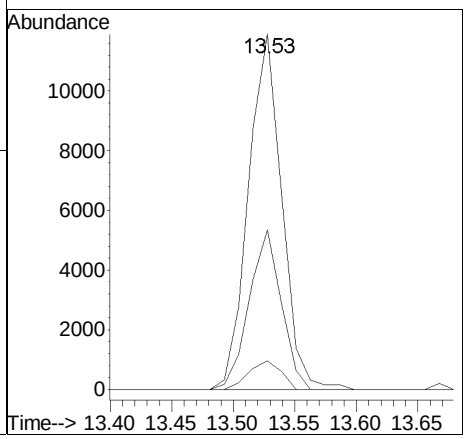


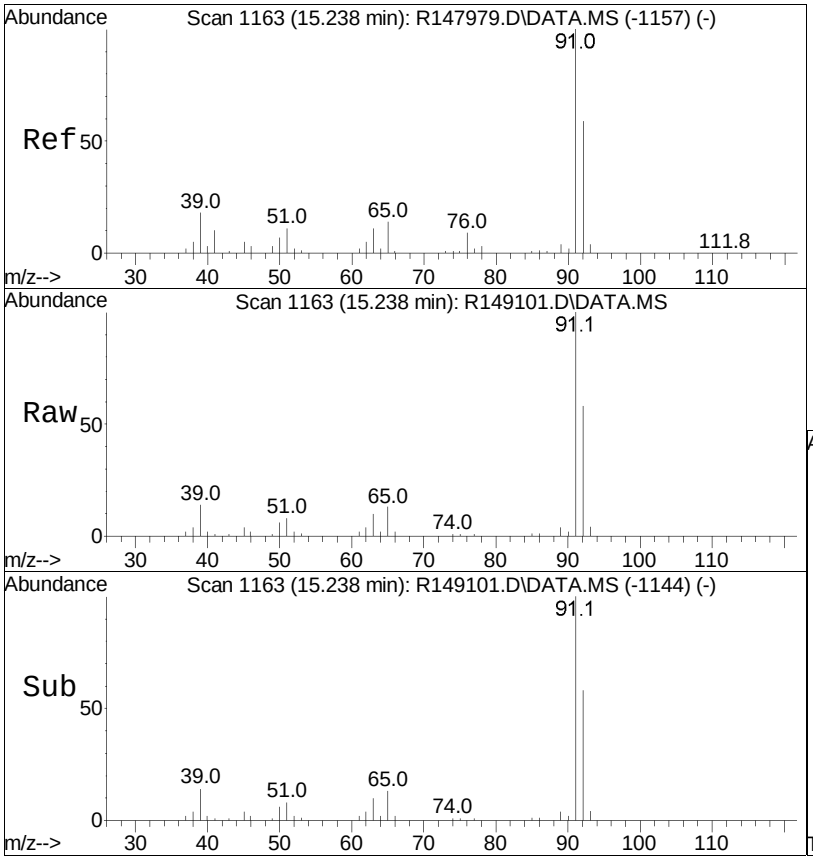


#62
heptane
Concen: 1.18 ppbV
RT: 13.53 min Scan# 1036
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 43 Resp: 22532

Ion	Ratio	Lower	Upper
43	100		
57	44.9	34.2	51.2
100	8.0	7.9	11.9

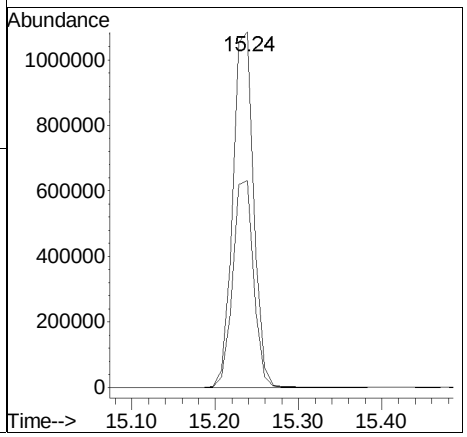


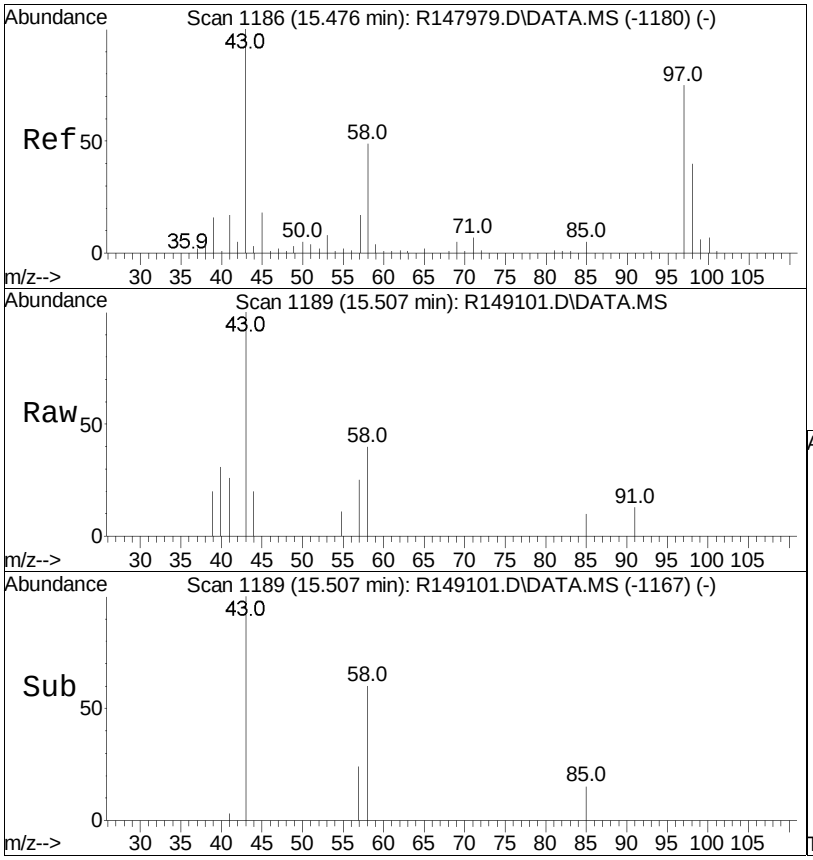


#68
toluene
Concen: 67.94 ppbV
RT: 15.24 min Scan# 1163
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 91 Resp: 1890613

Ion	Ratio	Lower	Upper
91	100		
92	58.2	45.8	68.6

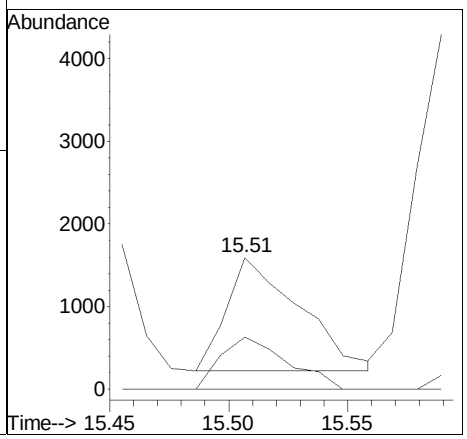


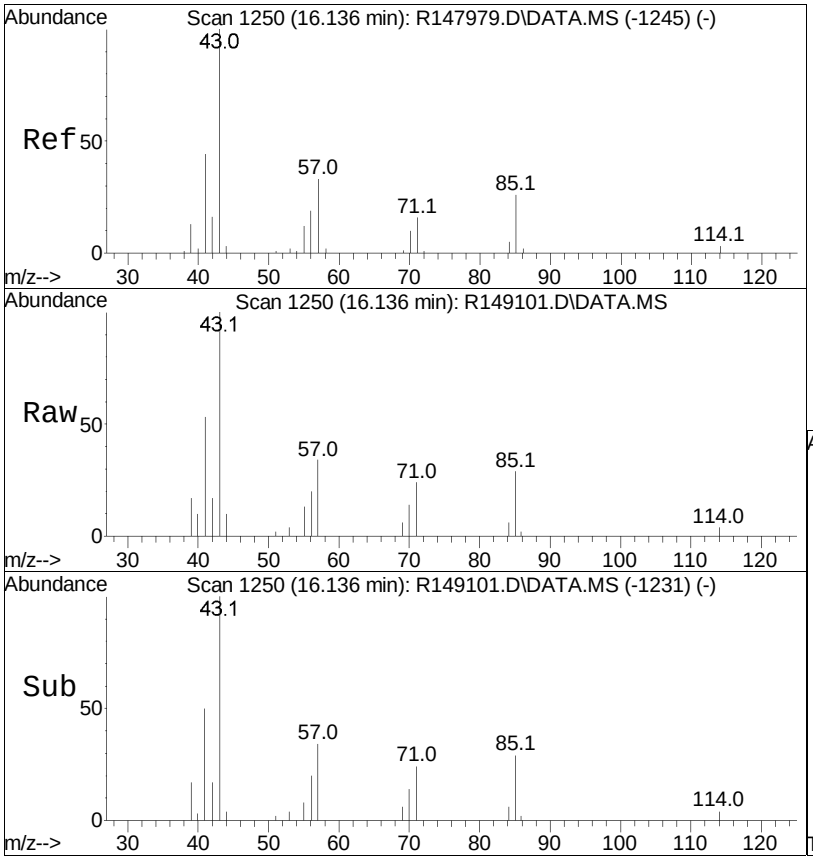


#72
2-hexanone
Concen: 0.11 ppbV
RT: 15.51 min Scan# 1189
Delta R.T. 0.031 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 43 Resp: 2923

Ion	Ratio	Lower	Upper
43	100		
58	39.8	39.7	59.5
100	0.0	6.9	10.3#

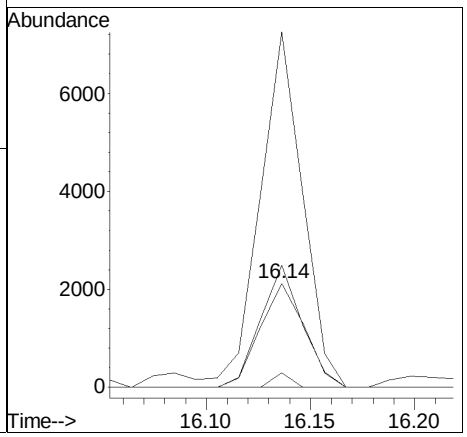


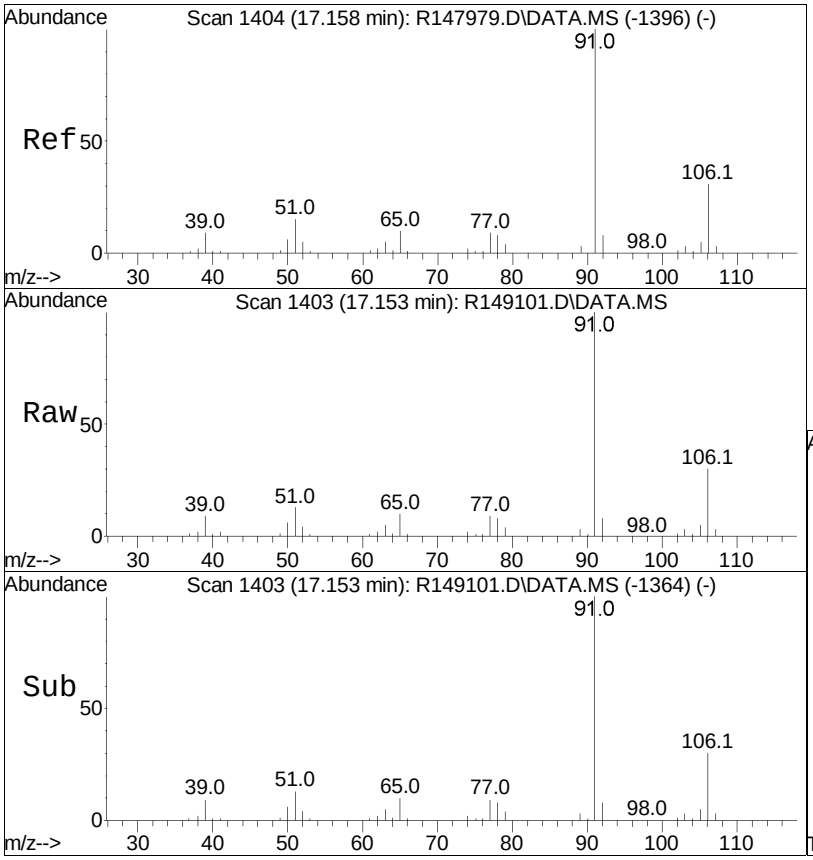


#77
octane
Concen: 0.38 ppbV
RT: 16.14 min Scan# 1250
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 85 Resp: 3174

Ion	Ratio	Lower	Upper
85	100		
57	117.5	84.9	127.3
114	14.0	8.2	12.2#
43	341.9	257.0	385.4

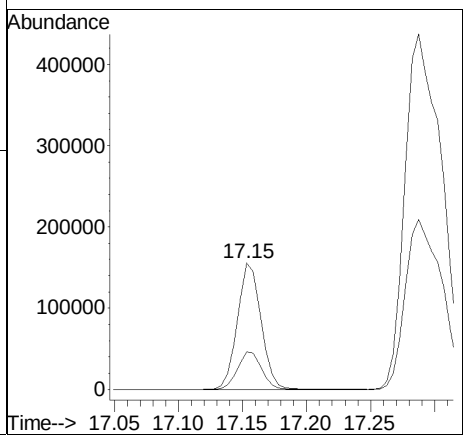


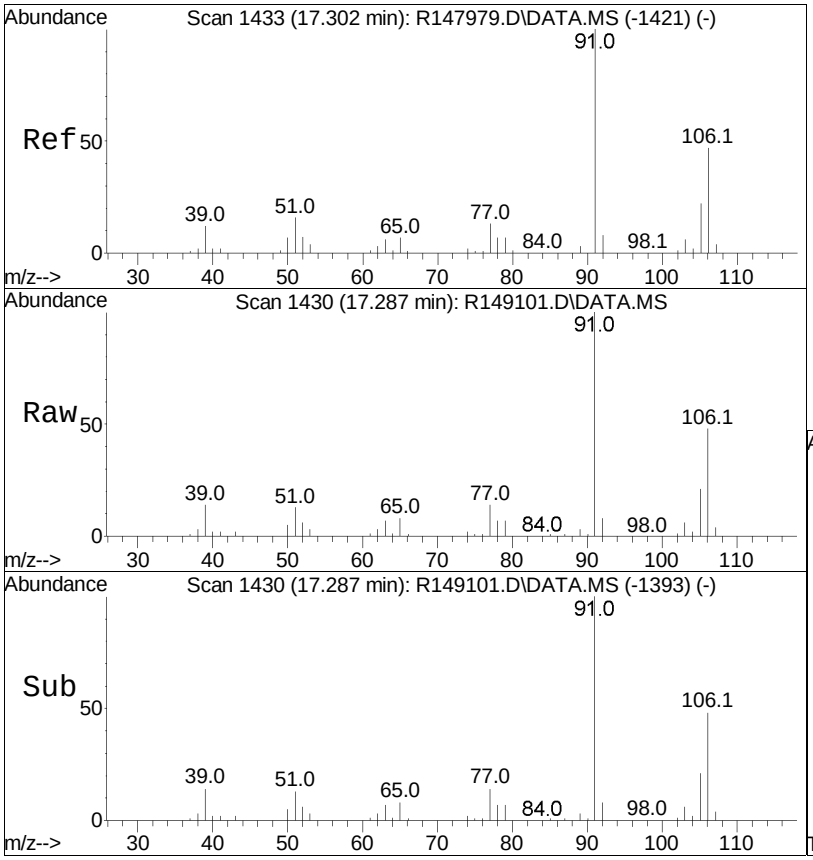


#81
ethylbenzene
Concen: 5.50 ppbV
RT: 17.15 min Scan# 1403
Delta R.T. -0.005 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 91 Resp: 200805

Ion	Ratio	Lower	Upper
91	100		
106	29.7	24.5	36.7

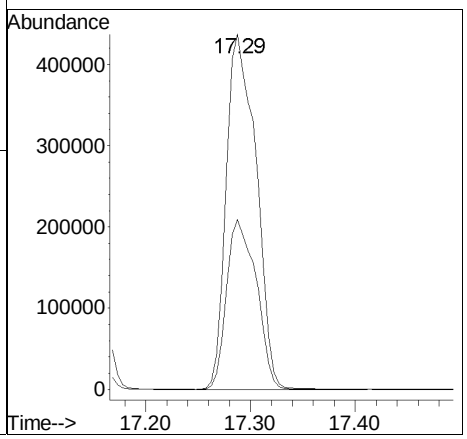


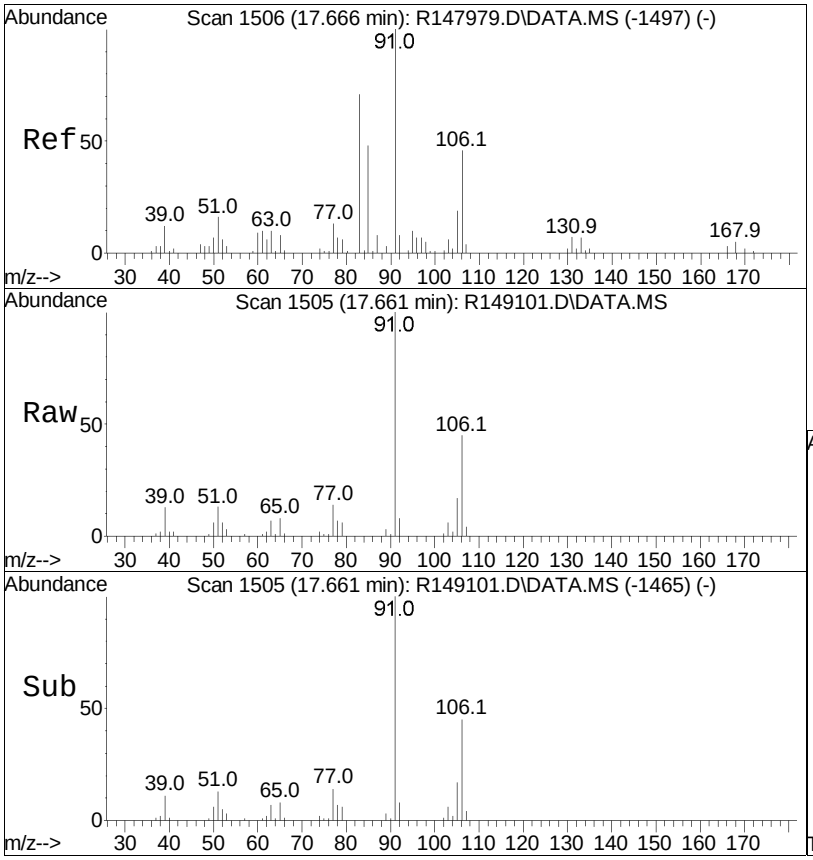


#83
m+p-xylene
Concen: 29.77 ppbV
RT: 17.29 min Scan# 1430
Delta R.T. -0.015 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 91 Resp: 866887

Ion	Ratio	Lower	Upper
91	100		
106	47.8	38.8	58.2

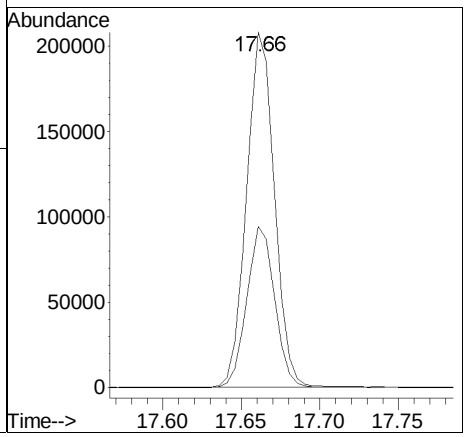


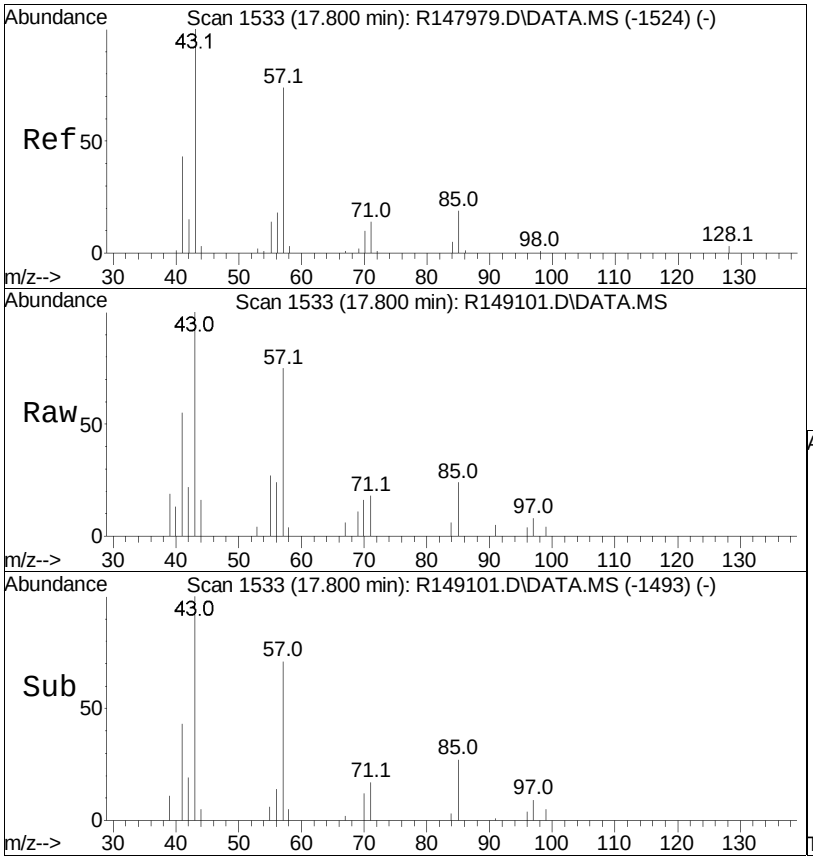


#87
o-xylene
Concen: 8.53 ppbV
RT: 17.66 min Scan# 1505
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 91 Resp: 256582

Ion	Ratio	Lower	Upper
91	100		
106	45.3	36.5	54.7

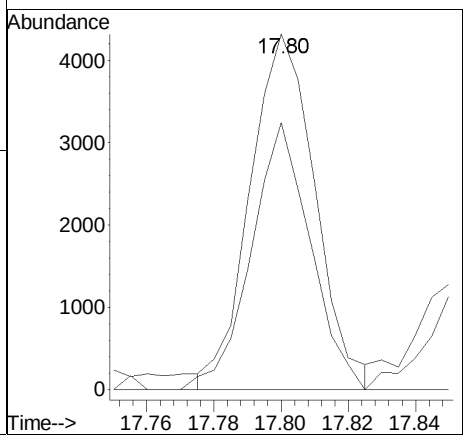


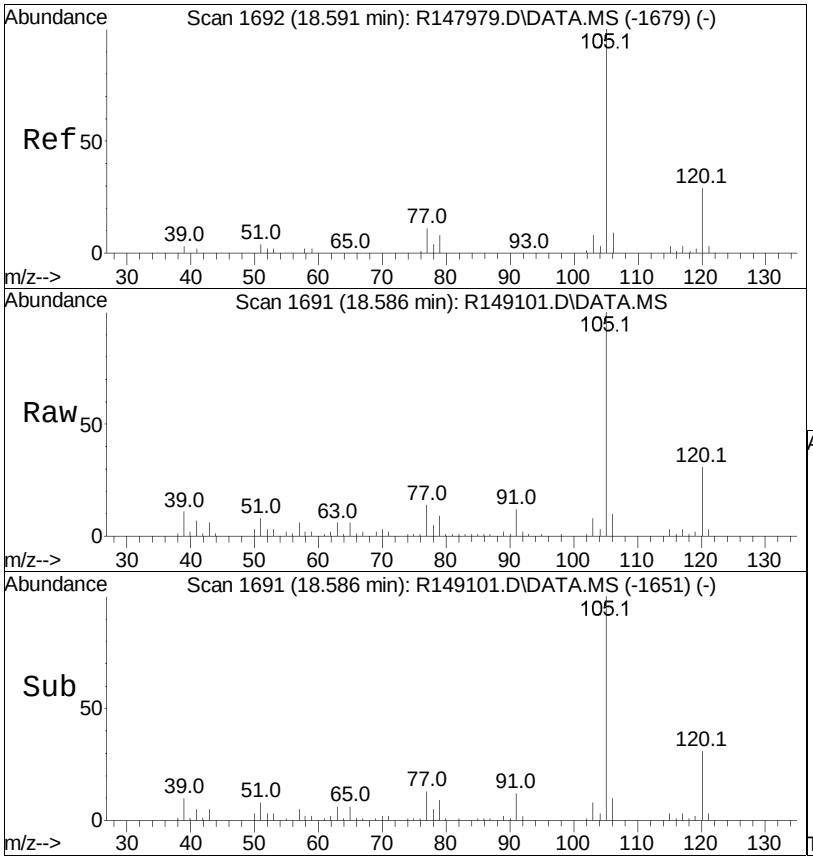


#89
nonane
Concen: 0.21 ppbV m
RT: 17.80 min Scan# 1533
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 43 Resp: 5793

Ion	Ratio	Lower	Upper
43	100		
57	75.1	58.8	88.2
128	0.0	2.3	3.5#

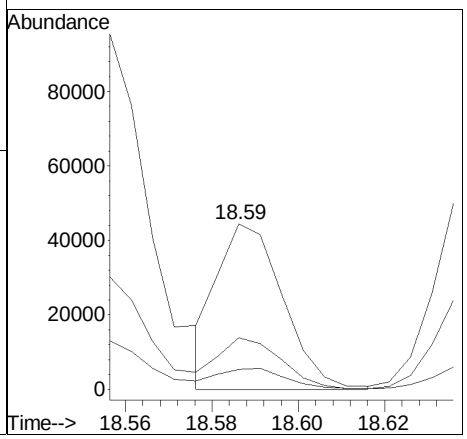


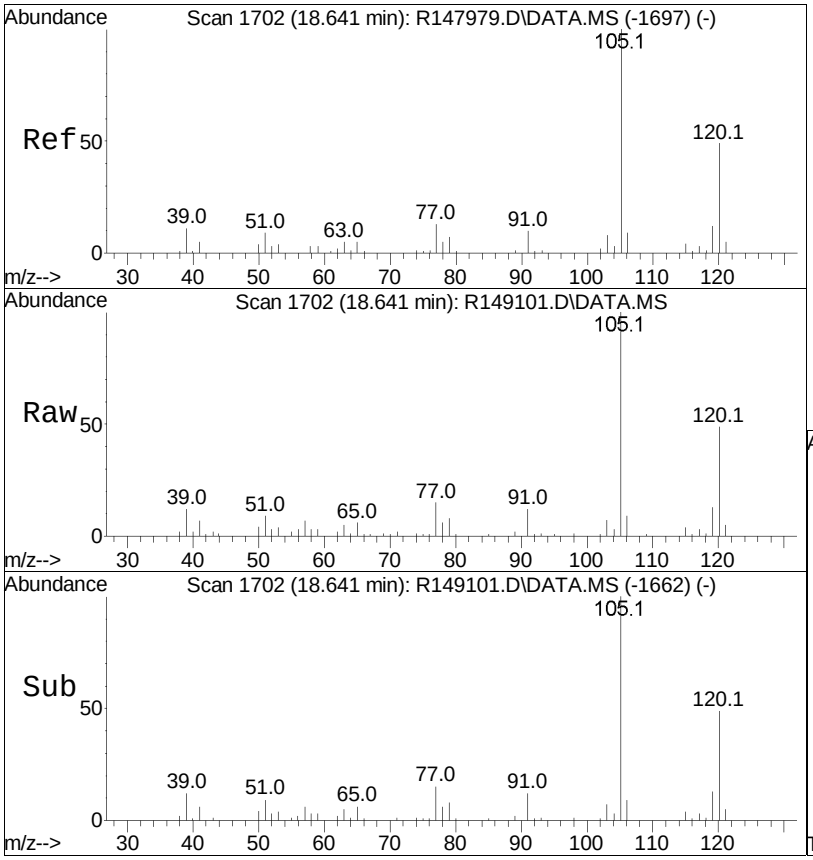


#96
4-ethyl toluene
Concen: 1.10 ppbV
RT: 18.59 min Scan# 1691
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion:105 Resp: 47133

Ion	Ratio	Lower	Upper
105	100		
120	31.2	23.3	34.9
91	12.1	9.6	14.4

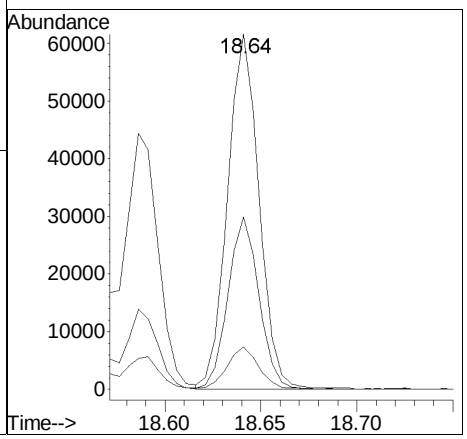


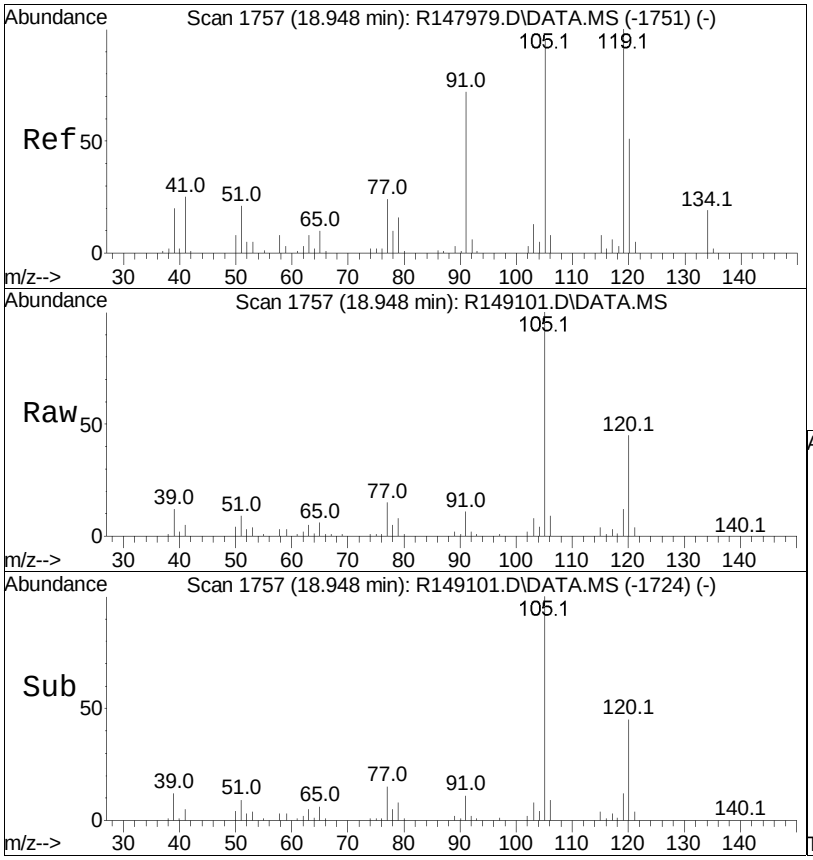


#97
1,3,5-trimethylbenzene
Concen: 2.09 ppbV
RT: 18.64 min Scan# 1702
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion:105 Resp: 70415

Ion	Ratio	Lower	Upper
105	100		
120	48.5	38.5	57.7
91	11.9	9.2	13.8

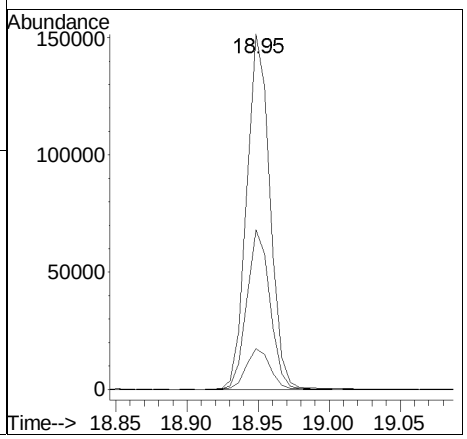


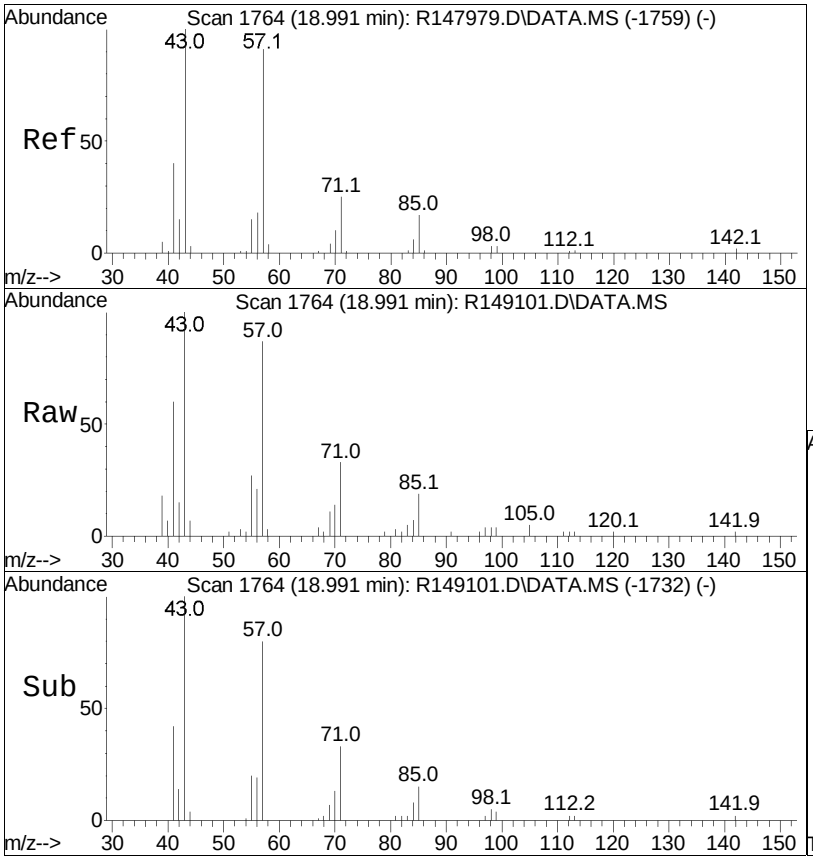


#99
1,2,4-trimethylbenzene
Concen: 5.10 ppbV
RT: 18.95 min Scan# 1757
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion:105 Resp: 172635

Ion	Ratio	Lower	Upper
105	100		
120	44.9	43.0	64.4
91	11.5	63.7	95.5#

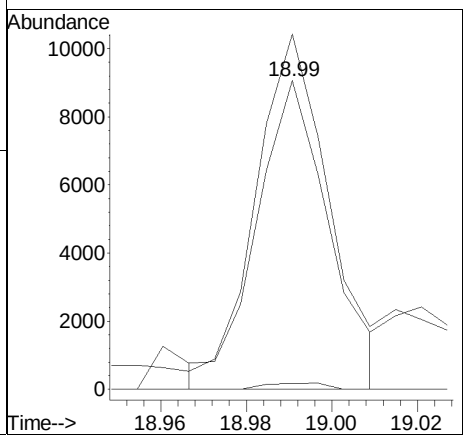


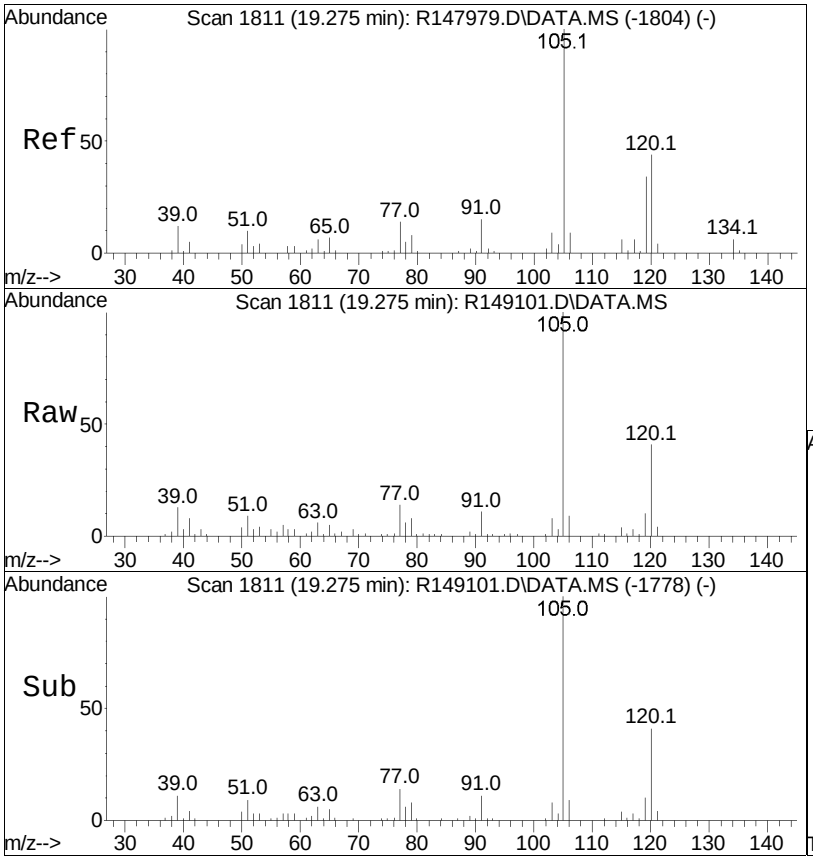


#100
decane
Concen: 0.40 ppbV m
RT: 18.99 min Scan# 1764
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 57 Resp: 10738

Ion	Ratio	Lower	Upper
57	100		
43	115.1	88.1	132.1
142	1.9	2.4	3.6#

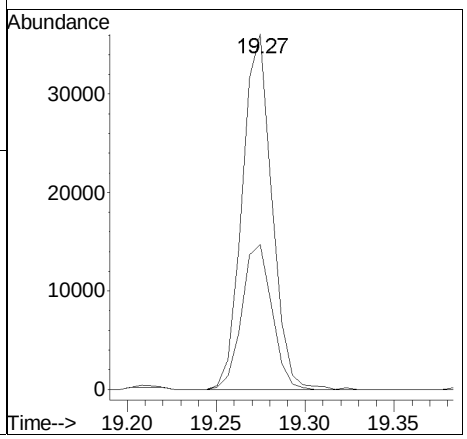


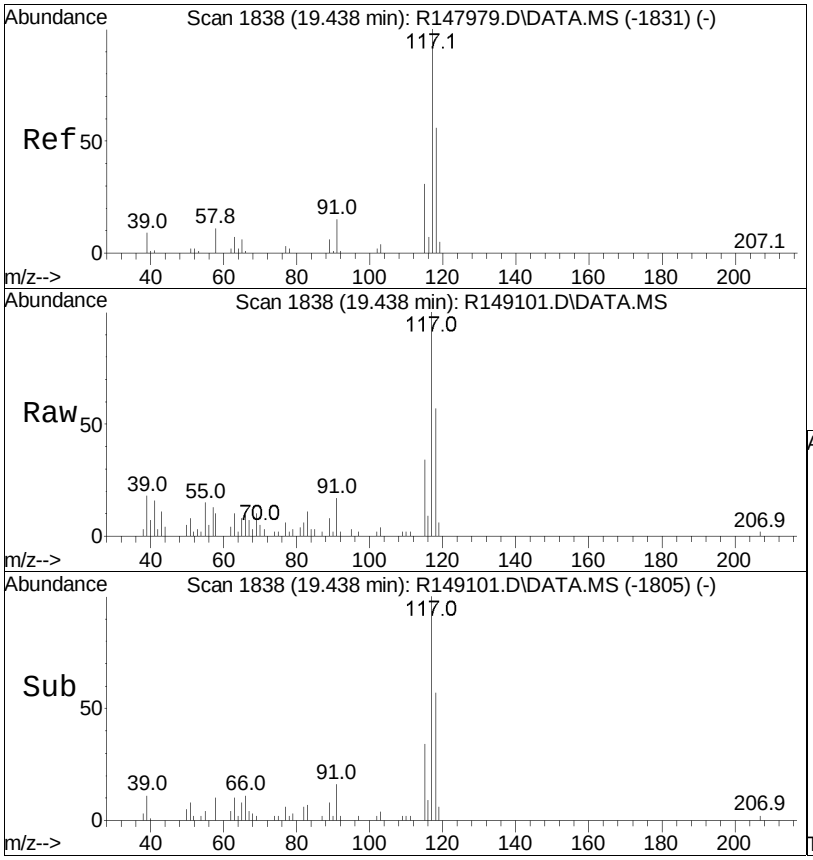


#105
1,2,3-trimethylbenzene
Concen: 1.13 ppbV
RT: 19.27 min Scan# 1811
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion:105 Resp: 41846

Ion	Ratio	Lower	Upper
105	100		
120	40.8	35.0	52.6

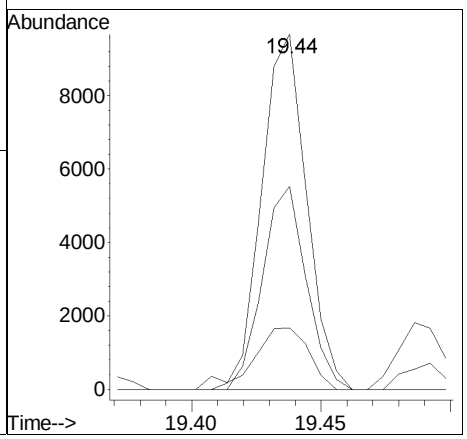


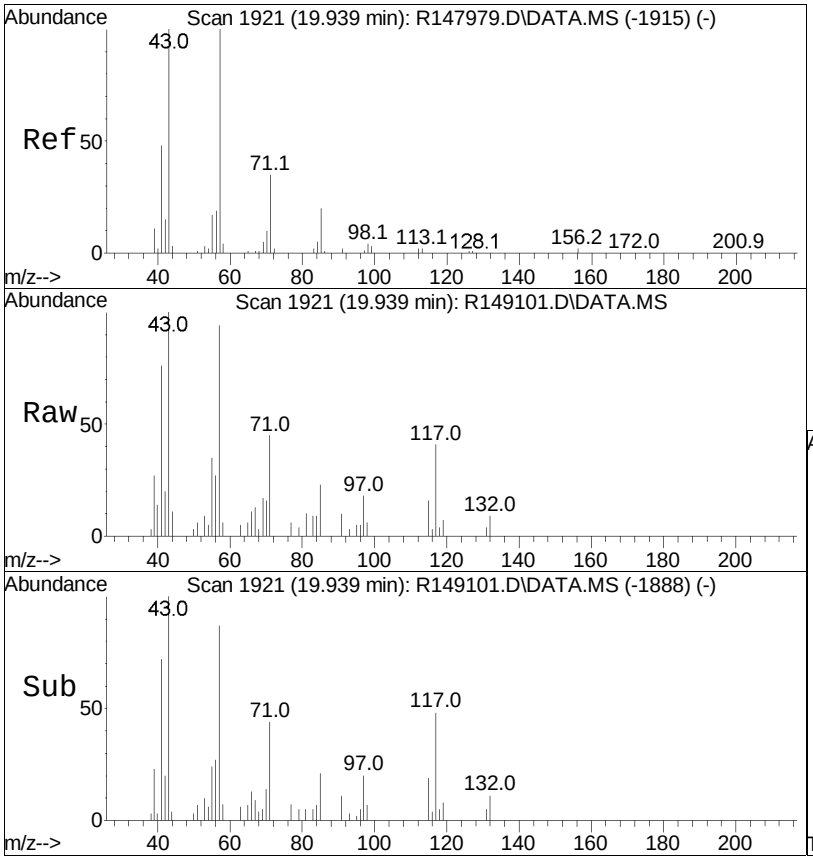


#109
indan
Concen: 0.29 ppbV
RT: 19.44 min Scan# 1838
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion:117 Resp: 11653

Ion	Ratio	Lower	Upper
117	100		
118	57.2	44.2	66.2
91	17.3	13.0	19.4

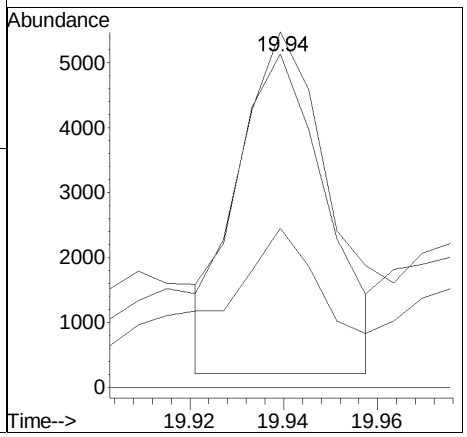


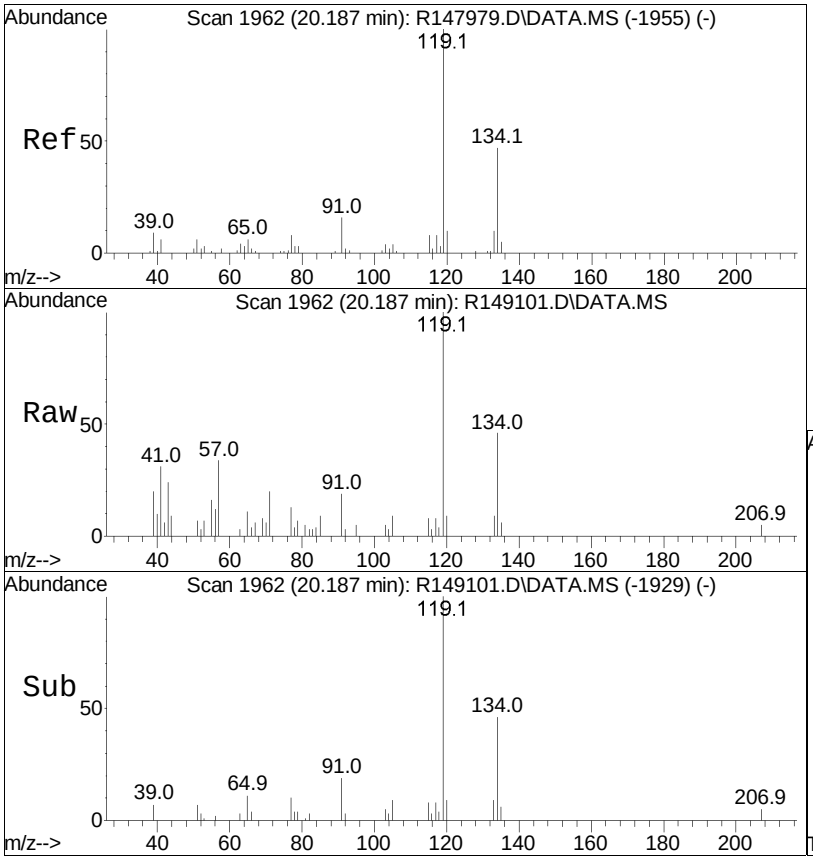


#112
undecane
Concen: 0.22 ppbV m
RT: 19.94 min Scan# 1921
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 57 Resp: 6564

Ion	Ratio	Lower	Upper
57	100		
43	106.5	81.6	122.4
71	47.7	35.4	53.2
156	0.0	2.2	3.4#

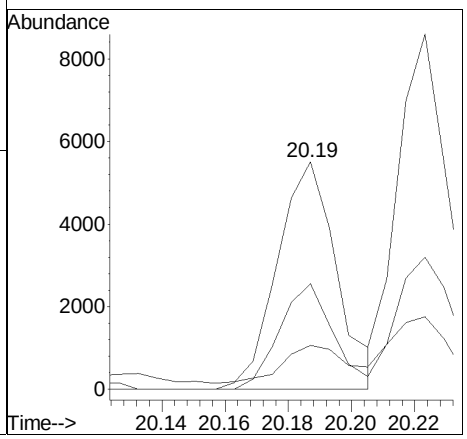


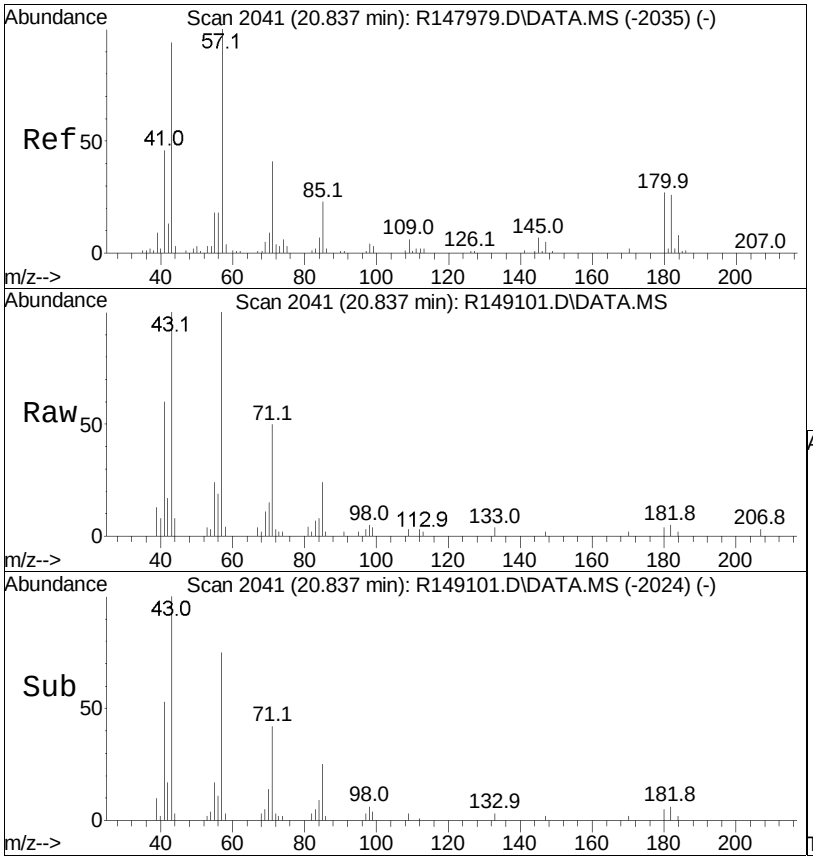


#113
1,2,4,5-tetramethylbenzene
Concen: 0.13 ppbV
RT: 20.19 min Scan# 1962
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion:119 Resp: 7160

Ion	Ratio	Lower	Upper
119	100		
134	46.5	36.2	54.2
91	19.3	13.7	20.5

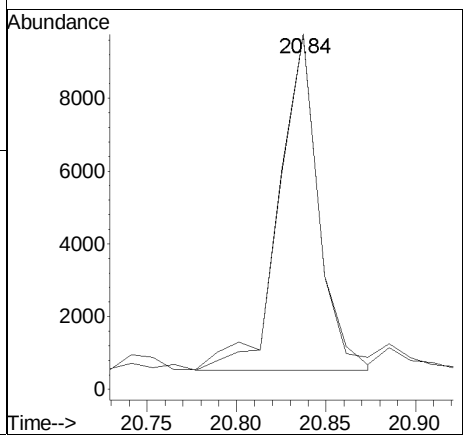


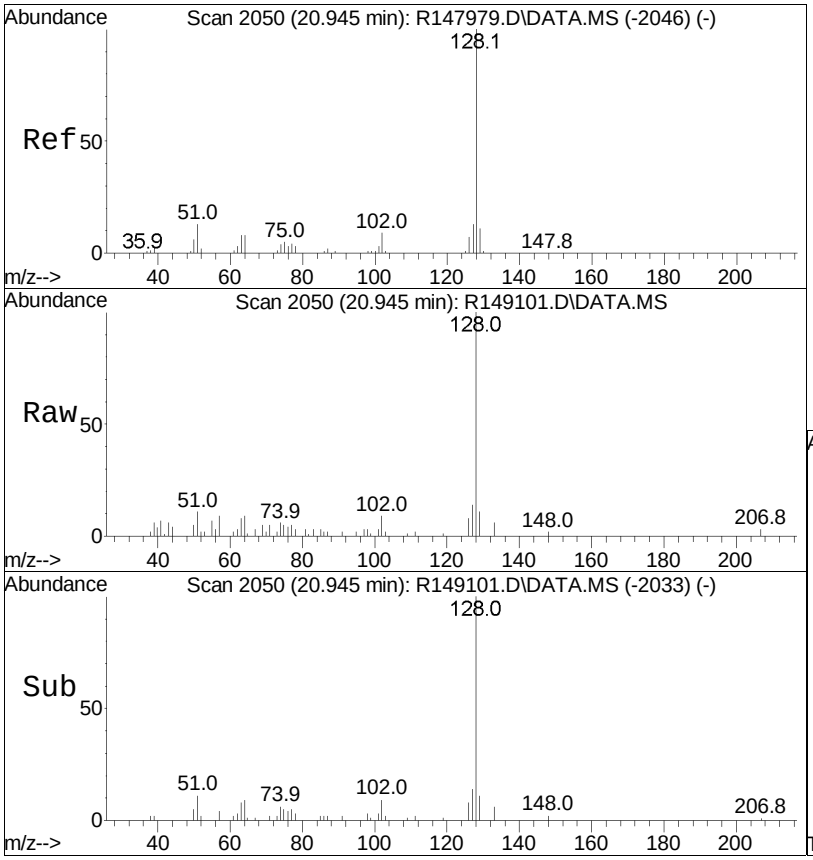


#114
dodecane
Concen: 0.46 ppbV
RT: 20.84 min Scan# 2041
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion: 57 Resp: 13921

Ion	Ratio	Lower	Upper
57	100		
43	100.2	76.2	114.4

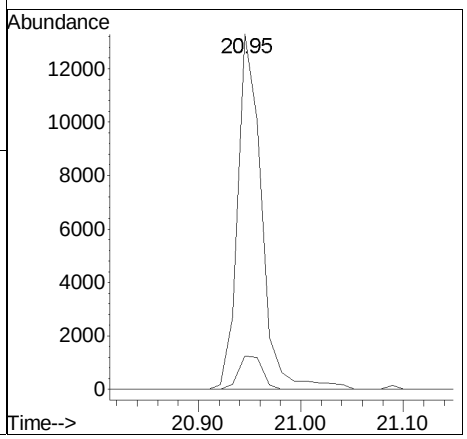




#116
naphthalene
Concen: 0.51 ppbV
RT: 20.95 min Scan# 2050
Delta R.T. -0.000 min
Lab File: R149101.D
Acq: 1 Nov 2016 4:47 pm

Tgt Ion:128 Resp: 21650

Ion	Ratio	Lower	Upper
128	100		
102	9.4	7.5	11.3



Lab Duplicates
Form 3

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Client Sample ID	: NFSV-05	Matrix	: SOIL_VAPOR
Lab Sample ID	: L1634001-04	Analysis Date	: 11/01/16 16:47
Lab File ID	: R149101	DUP File ID	: R149102
Dup Sample ID	: WG947959-6	DUP Analysis Date	: 11/01/16 17:18

Parameter	Sample Concentration (ppbV)	Duplicate Concentration (ppbV)	RPD	RPD Limit
Dichlorodifluoromethane	0.750	0.833	10	25
Chloromethane	ND	ND	NC	25
Freon-114	ND	ND	NC	25
Vinyl chloride	ND	ND	NC	25
1,3-Butadiene	ND	ND	NC	25
Butane	140	144	3	25
Acetaldehyde	ND	ND	NC	25
Bromomethane	ND	ND	NC	25
Chloroethane	ND	ND	NC	25
Ethanol	ND	ND	NC	25
Vinyl bromide	ND	ND	NC	25
Acrolein	ND	ND	NC	25
Acetone	ND	ND	NC	25
Trichlorofluoromethane	0.583J	0.613J	NC	25
Isopropanol	8.67	8.63	0	25
Pentane	48.7	49.8	2	25
1,1-Dichloroethene	ND	ND	NC	25
tert-Butyl Alcohol	2.20	2.21	0	25
Methylene chloride	ND	ND	NC	25
3-Chloropropene	ND	ND	NC	25
Carbon disulfide	0.183J	0.177J	NC	25
Freon-113	ND	ND	NC	25
trans-1,2-Dichloroethene	ND	ND	NC	25
1,1-Dichloroethane	ND	ND	NC	25
Methyl tert butyl ether	45.6	46.1	1	25
2-Butanone	2.85	2.84	0	25
cis-1,2-Dichloroethene	ND	ND	NC	25

Lab Duplicates
Form 3

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Client Sample ID	: NFSV-05	Matrix	: SOIL_VAPOR
Lab Sample ID	: L1634001-04	Analysis Date	: 11/01/16 16:47
Lab File ID	: R149101	DUP File ID	: R149102
Dup Sample ID	: WG947959-6	DUP Analysis Date	: 11/01/16 17:18

Parameter	Sample Concentration (ppbV)	Duplicate Concentration (ppbV)	RPD	RPD Limit
Chloroform	ND	ND	NC	25
1,2-Dichloroethane	0.876	0.913	4	25
n-Hexane	15.1	14.8	2	25
1,1,1-Trichloroethane	ND	ND	NC	25
Benzene	170	171	1	25
Thiophene	0.303J	0.337J	NC	25
Carbon tetrachloride	ND	ND	NC	25
Cyclohexane	0.890	0.820	8	25
1,2-Dichloropropane	ND	ND	NC	25
Bromodichloromethane	ND	ND	NC	25
1,4-Dioxane	ND	ND	NC	25
Trichloroethene	ND	ND	NC	25
2,2,4-Trimethylpentane	2.03	2.02	0	25
Heptane	3.92	4.04	3	25
cis-1,3-Dichloropropene	ND	ND	NC	25
4-Methyl-2-pentanone	ND	ND	NC	25
trans-1,3-Dichloropropene	ND	ND	NC	25
1,1,2-Trichloroethane	ND	ND	NC	25
Toluene	226	229	1	25
2-Methylthiophene	ND	ND	NC	25
2-Hexanone	0.377J	0.530J	NC	25
3-Methylthiophene	ND	ND	NC	25
Dibromochloromethane	ND	ND	NC	25
1,2-Dibromoethane	ND	ND	NC	25
Octane	1.27	1.16	9	25
Tetrachloroethene	ND	ND	NC	25
Chlorobenzene	ND	ND	NC	25

Lab Duplicates
Form 3

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Client Sample ID	: NFSV-05	Matrix	: SOIL_VAPOR
Lab Sample ID	: L1634001-04	Analysis Date	: 11/01/16 16:47
Lab File ID	: R149101	DUP File ID	: R149102
Dup Sample ID	: WG947959-6	DUP Analysis Date	: 11/01/16 17:18

Parameter	Sample Concentration (ppbV)	Duplicate Concentration (ppbV)	RPD	RPD Limit
Ethylbenzene	18.3	18.3	0	25
2-Ethylthiophene	ND	ND	NC	25
p/m-Xylene	99.2	100	1	25
Bromoform	ND	ND	NC	25
Styrene	ND	ND	NC	25
1,1,2,2-Tetrachloroethane	ND	ND	NC	25
o-Xylene	28.4	29.1	2	25
Nonane	0.683	0.643J	NC	25
2-Chlorotoluene	ND	ND	NC	25
4-Ethyltoluene	3.67	3.71	1	25
1,3,5-Trimethylbenzene	6.96	7.30	5	25
1,2,4-Trimethylbenzene	17.0	17.7	4	25
Decane	1.34	1.40	4	25
1,3-Dichlorobenzene	ND	ND	NC	25
1,4-Dichlorobenzene	ND	ND	NC	25
1,2,3-Trimethylbenzene	3.77	3.90	3	25
1,2-Dichlorobenzene	ND	ND	NC	25
Indane	0.963	1.01	5	25
Indene	ND	ND	NC	25
Undecane	0.743	0.920	21	25
1,2,4,5-Tetramethylbenzene	0.450J	0.523J	NC	25
Dodecane	1.55	1.75	12	25
1,2,4-Trichlorobenzene	ND	ND	NC	25
Naphthalene	1.70	2.19	25	25
Benzothiophene	ND	ND	NC	25
Hexachlorobutadiene	ND	ND	NC	25
2-Methylnaphthalene	ND	ND	NC	25

Lab Duplicates
Form 3

Client	: NewFields	**Lab Number**	: L1634001
Project Name	: WINTER STREET HAVERHILL	**Project Number**	: 01.0172397.00
Client Sample ID	: NFSV-05	**Matrix**	: SOIL_VAPOR
Lab Sample ID	: L1634001-04	**Analysis Date**	: 11/01/16 16:47
Lab File ID	: R149101	**DUP File ID**	: R149102
Dup Sample ID	: WG947959-6	**DUP Analysis Date**	: 11/01/16 17:18

Parameter	Sample Concentration (ppbV)	Duplicate Concentration (ppbV)	RPD	RPD Limit
1-Methylnaphthalene	ND	ND	NC	25

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: WG947959-6D	Date Collected	: 10/19/16 10:46
Client ID	: NFSV-05DUP	Date Received	: 10/21/16
Sample Location	:	Date Analyzed	: 11/01/16 17:18
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 3.333
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149102	Instrument ID	: AIRPIANO1
Sample Amount	: 75.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-71-8	Dichlorodifluoromethane	0.833	0.667	0.155	4.12	3.30	.2	
74-87-3	Chloromethane	ND	0.667	0.319	ND	1.38	.2	U
76-14-2	Freon-114	ND	0.667	0.140	ND	4.66	.2	U
75-01-4	Vinyl chloride	ND	0.667	0.126	ND	1.71	.2	U
106-99-0	1,3-Butadiene	ND	0.667	0.266	ND	1.48	.2	U
106-97-8	Butane	144.	0.667	0.147	342.	1.59	.2	
75-07-0	Acetaldehyde	ND	8.33	1.82	ND	15.0	2.5	U
74-83-9	Bromomethane	ND	0.667	0.232	ND	2.59	.2	U
75-00-3	Chloroethane	ND	0.667	0.256	ND	1.76	.2	U
64-17-5	Ethanol	ND	8.33	1.80	ND	15.7	2.5	U
593-60-2	Vinyl bromide	ND	0.667	0.233	ND	2.92	.2	U
107-02-8	Acrolein	ND	1.67	0.379	ND	3.83	.5	U
67-64-1	Acetone	ND	3.33	0.550	ND	7.91	1	U
75-69-4	Trichlorofluoromethane	0.613	0.667	0.139	3.44	3.75	.2	J
67-63-0	Isopropanol	8.63	1.67	0.175	21.2	4.10	.5	
109-66-0	Pentane	49.8	0.667	0.158	147.	1.97	.2	
75-35-4	1,1-Dichloroethene	ND	0.667	0.189	ND	2.64	.2	U
75-65-0	tert-Butyl Alcohol	2.21	1.67	0.200	6.70	5.06	.5	
75-09-2	Methylene chloride	ND	1.67	0.997	ND	5.80	.5	U
107-05-1	3-Chloropropene	ND	0.667	0.271	ND	2.09	.2	U
75-15-0	Carbon disulfide	0.177	0.667	0.115	0.551	2.08	.2	J
76-13-1	Freon-113	ND	0.667	0.170	ND	5.11	.2	U
156-60-5	trans-1,2-Dichloroethene	ND	0.667	0.247	ND	2.64	.2	U
75-34-3	1,1-Dichloroethane	ND	0.667	0.257	ND	2.70	.2	U
1634-04-4	Methyl tert butyl ether	46.1	0.667	0.176	166.	2.40	.2	
78-93-3	2-Butanone	2.84	1.67	0.157	8.38	4.93	.5	
156-59-2	cis-1,2-Dichloroethene	ND	0.667	0.196	ND	2.64	.2	U
67-66-3	Chloroform	ND	0.667	0.177	ND	3.26	.2	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: WG947959-6D	Date Collected	: 10/19/16 10:46
Client ID	: NFSV-05DUP	Date Received	: 10/21/16
Sample Location	:	Date Analyzed	: 11/01/16 17:18
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 3.333
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149102	Instrument ID	: AIRPIANO1
Sample Amount	: 75.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
107-06-2	1,2-Dichloroethane	0.913	0.667	0.184	3.70	2.70	.2	
110-54-3	n-Hexane	14.8	0.667	0.173	52.2	2.35	.2	
71-55-6	1,1,1-Trichloroethane	ND	0.667	0.190	ND	3.64	.2	U
71-43-2	Benzene	171.	0.667	0.179	546.	2.13	.2	
110-02-1	Thiophene	0.337	0.667	0.176	1.16	2.30	.2	J
56-23-5	Carbon tetrachloride	ND	0.667	0.157	ND	4.20	.2	U
110-82-7	Cyclohexane	0.820	0.667	0.219	2.82	2.30	.2	
78-87-5	1,2-Dichloropropane	ND	0.667	0.232	ND	3.08	.2	U
75-27-4	Bromodichloromethane	ND	0.667	0.219	ND	4.47	.2	U
123-91-1	1,4-Dioxane	ND	0.667	0.260	ND	2.40	.2	U
79-01-6	Trichloroethene	ND	0.667	0.237	ND	3.58	.2	U
540-84-1	2,2,4-Trimethylpentane	2.02	0.667	0.220	9.43	3.12	.2	
142-82-5	Heptane	4.04	0.667	0.184	16.6	2.73	.2	
10061-01-5	cis-1,3-Dichloropropene	ND	0.667	0.248	ND	3.03	.2	U
108-10-1	4-Methyl-2-pentanone	ND	1.67	0.202	ND	6.84	.5	U
10061-02-6	trans-1,3-Dichloropropene	ND	0.667	0.231	ND	3.03	.2	U
79-00-5	1,1,2-Trichloroethane	ND	0.667	0.222	ND	3.64	.2	U
108-88-3	Toluene	229.	0.667	0.209	863.	2.51	.2	
554-14-3	2-Methylthiophene	ND	0.667	0.263	ND	2.68	.2	U
591-78-6	2-Hexanone	0.530	0.667	0.201	2.17	2.73	.2	J
616-44-4	3-Methylthiophene	ND	0.667	0.223	ND	2.68	.2	U
124-48-1	Dibromochloromethane	ND	0.667	0.249	ND	5.68	.2	U
106-93-4	1,2-Dibromoethane	ND	0.667	0.260	ND	5.13	.2	U
111-65-9	Octane	1.16	0.667	0.140	5.42	3.12	.2	
127-18-4	Tetrachloroethene	ND	0.667	0.253	ND	4.52	.2	U
108-90-7	Chlorobenzene	ND	0.667	0.263	ND	3.07	.2	U
100-41-4	Ethylbenzene	18.3	0.667	0.185	79.5	2.90	.2	
872-55-9	2-Ethylthiophene	ND	0.667	0.190	ND	3.06	.2	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: WG947959-6D	Date Collected	: 10/19/16 10:46
Client ID	: NFSV-05DUP	Date Received	: 10/21/16
Sample Location	:	Date Analyzed	: 11/01/16 17:18
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 3.333
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149102	Instrument ID	: AIRPIANO1
Sample Amount	: 75.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
179601-23-1	p/m-Xylene	100.	1.33	0.463	434.	5.78	.4	
75-25-2	Bromoform	ND	0.667	0.174	ND	6.90	.2	U
100-42-5	Styrene	ND	0.667	0.266	ND	2.84	.2	U
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.667	0.183	ND	4.58	.2	U
95-47-6	o-Xylene	29.1	0.667	0.210	126.	2.90	.2	
111-84-2	Nonane	0.643	0.667	0.208	3.37	3.50	.2	J
95-49-8	2-Chlorotoluene	ND	0.667	0.162	ND	3.45	.2	U
622-96-8	4-Ethyltoluene	3.71	0.667	0.259	18.2	3.28	.2	
108-67-8	1,3,5-Trimethylbenzene	7.30	0.667	0.195	35.9	3.28	.2	
95-63-6	1,2,4-Trimethylbenzene	17.7	0.667	0.231	87.0	3.28	.2	
124-18-5	Decane	1.40	0.667	0.161	8.15	3.88	.2	
541-73-1	1,3-Dichlorobenzene	ND	0.667	0.212	ND	4.01	.2	U
106-46-7	1,4-Dichlorobenzene	ND	0.667	0.120	ND	4.01	.2	U
526-73-8	1,2,3-Trimethylbenzene	3.90	0.667	0.250	19.2	3.28	.2	
95-50-1	1,2-Dichlorobenzene	ND	0.667	0.205	ND	4.01	.2	U
496-11-7	Indane	1.01	0.667	0.265	4.88	3.22	.2	
95-13-6	Indene	ND	0.667	0.203	ND	3.17	.2	U
1120-21-4	Undecane	0.920	0.667	0.176	5.88	4.26	.2	
95-93-2	1,2,4,5-Tetramethylbenzene	0.523	0.667	0.265	2.87	3.66	.2	J
112-40-3	Dodecane	1.75	0.667	0.159	12.2	4.65	.2	
120-82-1	1,2,4-Trichlorobenzene	ND	0.667	0.204	ND	4.95	.2	U
91-20-3	Naphthalene	2.19	0.667	0.142	11.5	3.50	.2	
95-15-8	Benzothiophene	ND	1.67	0.156	ND	9.17	.5	U
87-68-3	Hexachlorobutadiene	ND	0.667	0.244	ND	7.11	.2	U
91-57-6	2-Methylnaphthalene	ND	3.33	0.908	ND	19.4	1	U
90-12-0	1-Methylnaphthalene	ND	3.33	0.832	ND	19.4	1	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149102.D
Acq On : 1 Nov 2016 5:18 pm
Operator : AIRPIANO1:RY
Sample : WG947959-6D,3,75,250
Misc : WG947959,ICAL12987
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 02 10:05:25 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	145000	10.000	ppbV	-0.01
Standard Area = 153282			Recovery = 94.60%			
43) 1,4-difluorobenzene	12.41	114	238025	10.000	ppbV	0.00
Standard Area = 240182			Recovery = 99.10%			
67) chlorobenzene-D5	16.82	54	65073	10.000	ppbV	0.00
Standard Area = 64184			Recovery = 101.39%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	69997	9.817	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.17%			
69) toluene-D8	15.14	98	194868	9.942	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.42%			
90) bromofluorobenzene	18.01	95	133391	9.738	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 97.38%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	4644	0.250	ppbV	97
6) chloromethane	0.00		0	N.D.	d	
7) Freon-114	0.00		0	N.D.		
9) vinyl chloride	0.00		0	N.D.		
10) 1,3-butadiene	0.00		0	N.D.	d	
11) butane	4.95	43	609558	43.191	ppbV	100
12) acetaldehyde	0.00		0	N.D.	d	
13) bromomethane	0.00		0	N.D.		
14) chloroethane	0.00		0	N.D.		
15) ethanol	5.73		0	N.D.		
17) vinyl bromide	0.00		0	N.D.		
18) acrolein	0.00		0	N.D.		
19) acetone	0.00		0	N.D.	d	
21) trichlorofluoromethane	6.57	101	3535	0.184	ppbV	89
22) isopropyl alcohol	6.73	45	44654	2.590	ppbV	99
24) pentane	7.06	43	232793	14.928	ppbV	99
26) 1,1-dichloroethene	0.00		0	N.D.		
27) tertiary butyl alcohol	7.53	59	11490	0.662	ppbV	92
28) methylene chloride	7.58		0	N.D.		
29) 3-chloropropene	0.00		0	N.D.	d	
30) carbon disulfide	7.91	76	1178	0.053	ppbV #	1

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149102.D
Acq On : 1 Nov 2016 5:18 pm
Operator : AIRPIANO1:RY
Sample : WG947959-6D,3,75,250
Misc : WG947959,ICAL12987
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 02 10:05:25 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
31) Freon 113	0.00		0	N.D.			
32) trans-1,2-dichloroethene	0.00		0	N.D.			
33) 1,1-dichloroethane	0.00		0	N.D.			
34) MTBE	9.09	73	301564	13.824	ppbV		96
36) 2-butanone	9.52	43	17644	0.853	ppbV		97
37) cis-1,2-dichloroethene	0.00		0	N.D.			
39) chloroform	0.00		0	N.D.			
42) 1,2-dichloroethane	11.20	62	3370	0.274	ppbV	#	91
44) hexane	10.25	57	71981	4.455	ppbV	#	33
48) 1,1,1-trichloroethane	0.00		0	N.D.			
50) benzene	12.00	78	1152989	51.434	ppbV		100
51) thiophene	12.15	84	1918	0.101	ppbV		96
52) carbon tetrachloride	0.00		0	N.D.			
53) cyclohexane	12.31	56	3255	0.246	ppbV		98
56) 1,2-dichloropropane	0.00		0	N.D.			
57) bromodichloromethane	0.00		0	N.D.	d		
58) 1,4-dioxane	0.00		0	N.D.			
59) trichloroethene	0.00		0	N.D.			
60) 2,2,4-trimethylpentane	13.23	57	26435	0.607	ppbV		91
62) heptane	13.53	43	22599	1.211	ppbV		99
63) cis-1,3-dichloropropene	0.00		0	N.D.			
64) 4-methyl-2-pentanone	0.00		0	N.D.	d		
65) trans-1,3-dichloropropene	0.00		0	N.D.			
66) 1,1,2-trichloroethane	0.00		0	N.D.			
68) toluene	15.23	91	1864643	68.739	ppbV		98
70) 2-methylthiophene	0.00		0	N.D.	d		
72) 2-hexanone	15.51	43	4017M3	0.159	ppbV		
73) 3-methylthiophene	15.48		0	N.D.			
74) dibromochloromethane	0.00		0	N.D.			
75) 1,2-dibromoethane	0.00		0	N.D.			
77) octane	16.14	85	2816	0.348	ppbV		89
78) tetrachloroethene	0.00		0	N.D.			
80) chlorobenzene	0.00		0	N.D.	d		
81) ethylbenzene	17.15	91	195466	5.493	ppbV		98
82) 2-ethylthiophene	0.00		0	N.D.	d		
83) m+p-xylene	17.29	91	856607	30.180	ppbV		100
84) bromoform	0.00		0	N.D.			
85) styrene	17.58		0	N.D.			

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149102.D
Acq On : 1 Nov 2016 5:18 pm
Operator : AIRPIANO1:RY
Sample : WG947959-6D,3,75,250
Misc : WG947959,ICAL12987
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 02 10:05:25 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

	Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
86)	1,1,2,2-tetrachloroethane	0.00		0	N.D.	d		
87)	o-xylene	17.66	91	255714	8.719	ppbV		99
89)	nonane	17.80	43	5315	0.193	ppbV	#	95
93)	2-chlorotoluene	0.00		0	N.D.	d		
96)	4-ethyl toluene	18.59	105	46394	1.113	ppbV		99
97)	1,3,5-trimethylbenzene	18.64	105	72118	2.192	ppbV		100
99)	1,2,4-trimethylbenzene	18.95	105	175787	5.323	ppbV	#	49
100)	decane	18.99	57	10895M4	0.419	ppbV		
102)	1,3-dichlorobenzene	0.00		0	N.D.			
103)	1,4-dichlorobenzene	0.00		0	N.D.			
105)	1,2,3-trimethylbenzene	19.27	105	42119	1.169	ppbV		100
107)	1,2-dichlorobenzene	0.00		0	N.D.			
109)	indan	19.44	117	11925	0.303	ppbV		99
110)	indene	0.00		0	N.D.	d		
112)	undecane	19.94	57	7909M4	0.276	ppbV		
113)	1,2,4,5-tetramethylben...	20.19	119	8133	0.157	ppbV	#	95
114)	dodecane	20.84	57	15318M4	0.524	ppbV		
115)	1,2,4-trichlorobenzene	20.83		0	N.D.			
116)	naphthalene	20.95	128	27132	0.657	ppbV		98
118)	benzothiophene	0.00		0	N.D.	d		
119)	hexachlorobutadiene	0.00		0	N.D.			
120)	2-methylnaphthalene	22.10		0	N.D.			
121)	1-methylnaphthalene	22.30		0	N.D.			

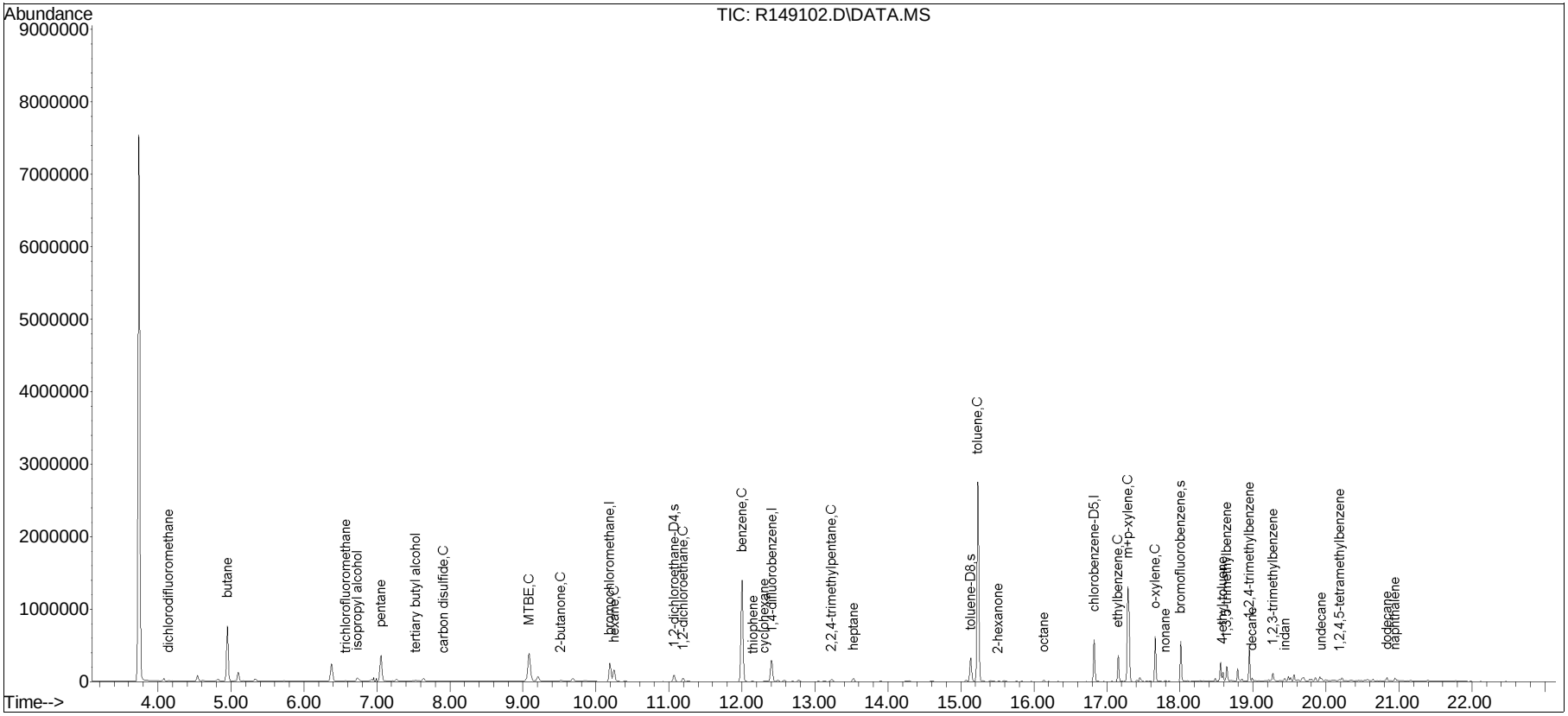
(#) = qualifier out of range (m) = manual integration (+) = signals summed

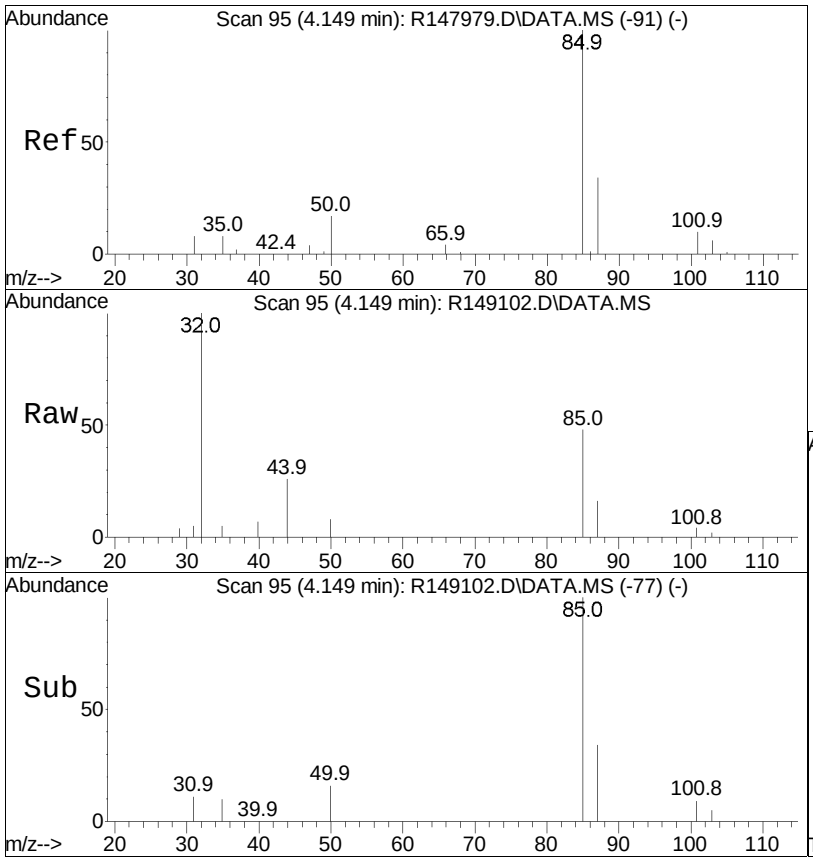
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149102.D
Acq On : 1 Nov 2016 5:18 pm
Operator : AIRPIANO1:RY
Sample : WG947959-6D,3,75,250
Misc : WG947959,ICAL12987
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 02 10:05:25 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Keyspan_TO15 - .a\AIR1\2016\161101K\R149091.D

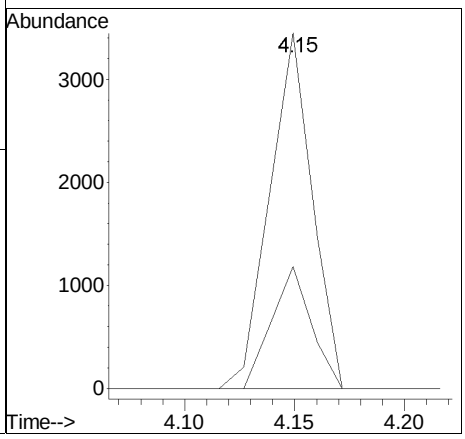


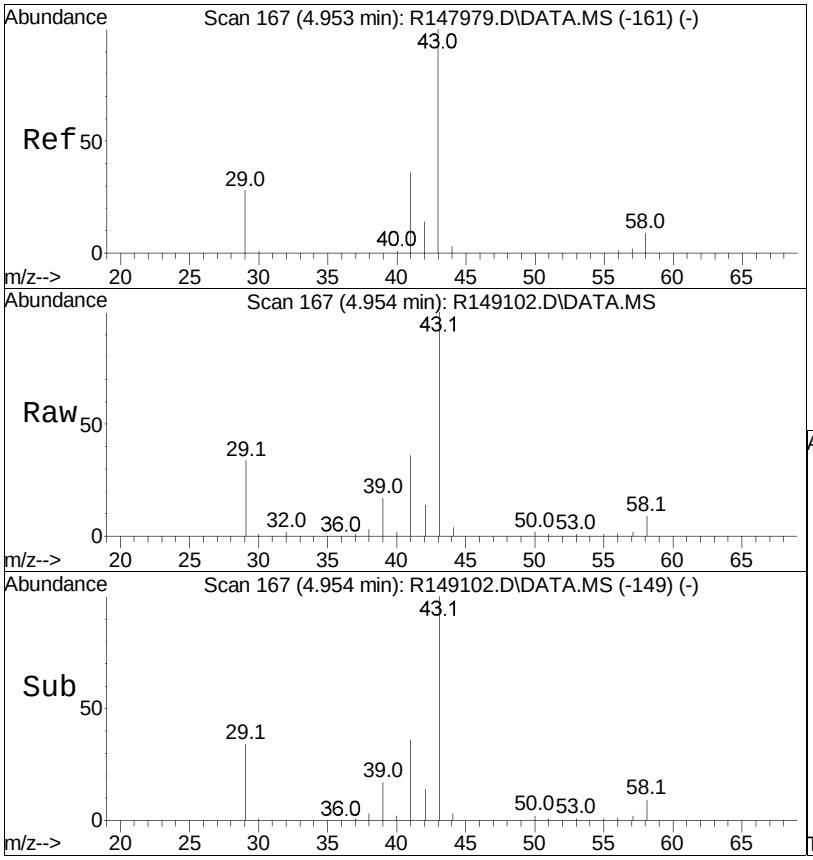


#5
dichlorodifluoromethane
Concen: 0.25 ppbV
RT: 4.15 min Scan# 95
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 85 Resp: 4644

Ion	Ratio	Lower	Upper
85	100		
87	34.3	25.9	38.9

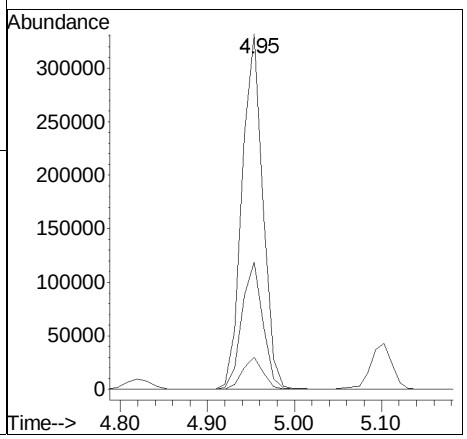


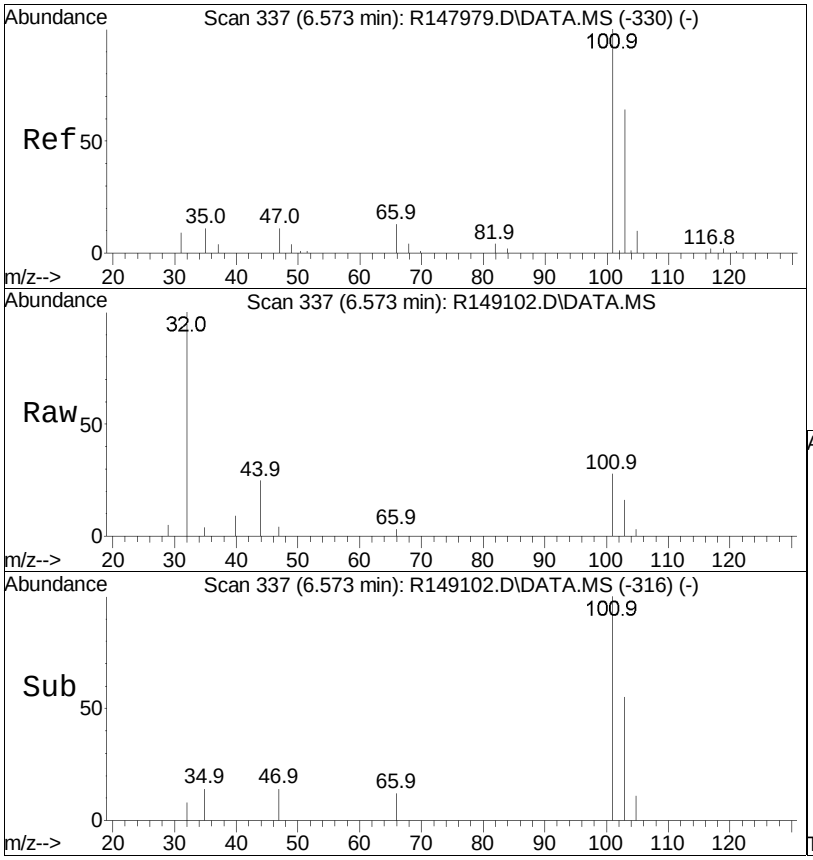


#11
butane
Concen: 43.19 ppbV
RT: 4.95 min Scan# 167
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 43 Resp: 609558

Ion	Ratio	Lower	Upper
43	100		
58	9.1	7.1	10.7
41	35.9	28.7	43.1

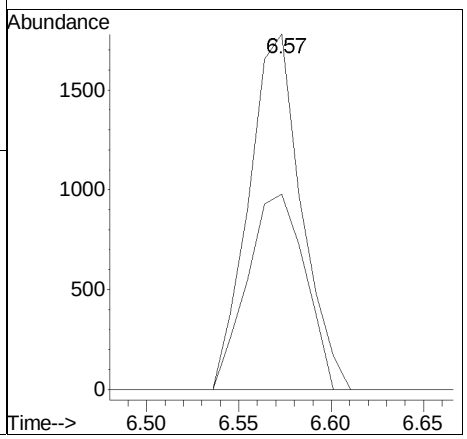


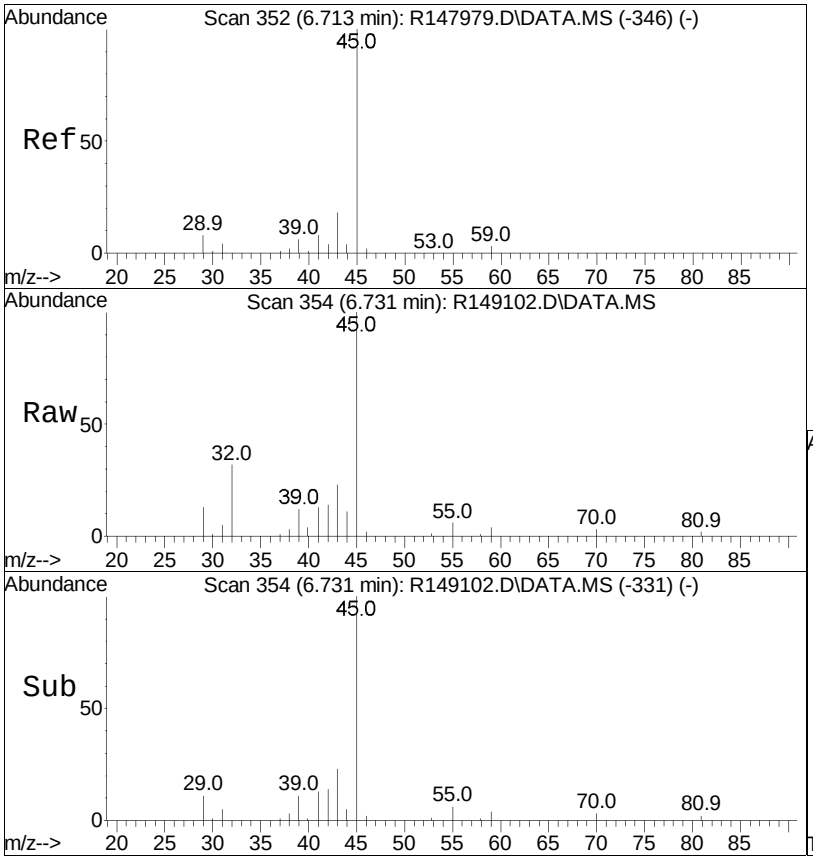


#21
trichlorofluoromethane
Concen: 0.18 ppbV
RT: 6.57 min Scan# 337
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion:101 Resp: 3535

Ion	Ratio	Lower	Upper
101	100		
103	54.9	51.0	76.4

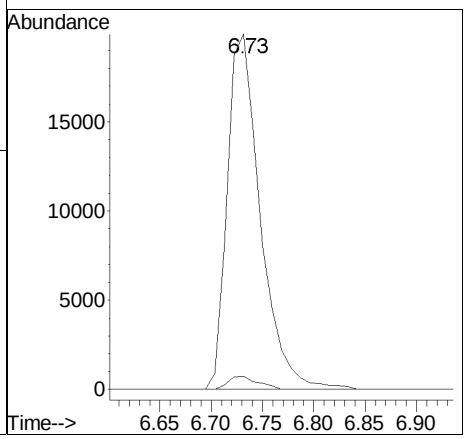


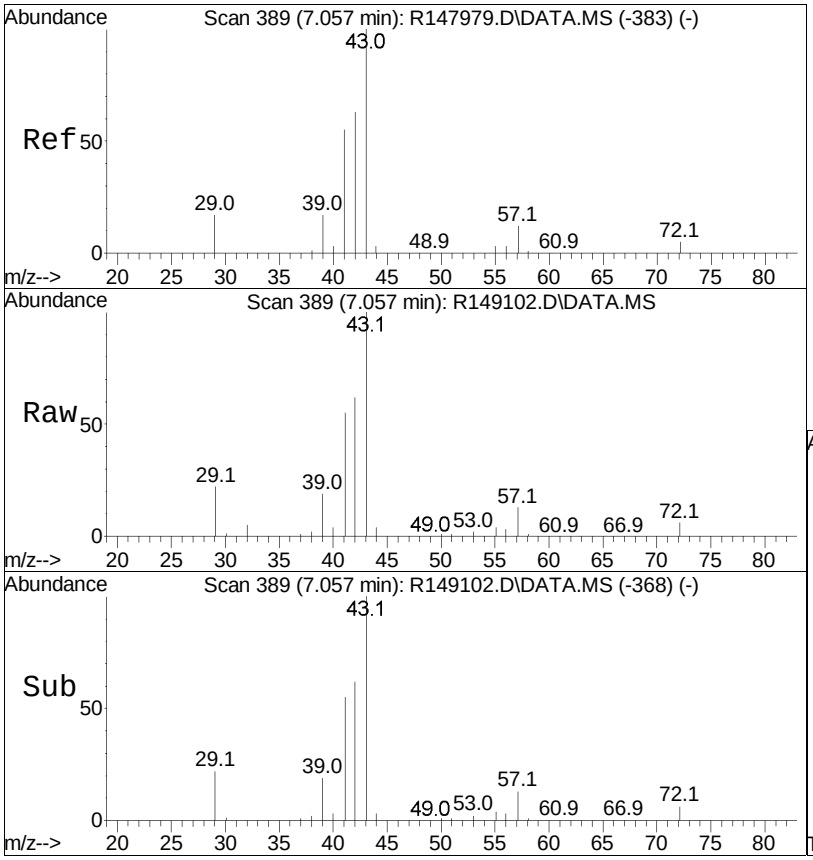


#22
isopropyl alcohol
Concen: 2.59 ppbV
RT: 6.73 min Scan# 354
Delta R.T. 0.019 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 45 Resp: 44654

Ion	Ratio	Lower	Upper
45	100		
59	3.8	2.7	4.1

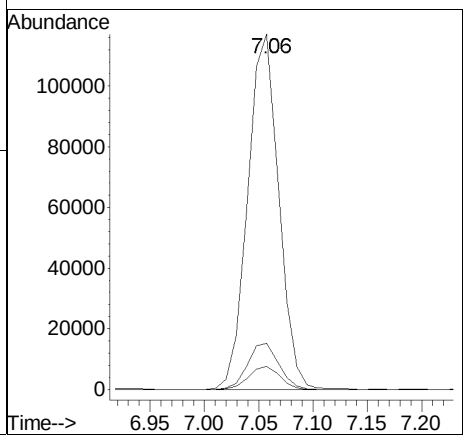


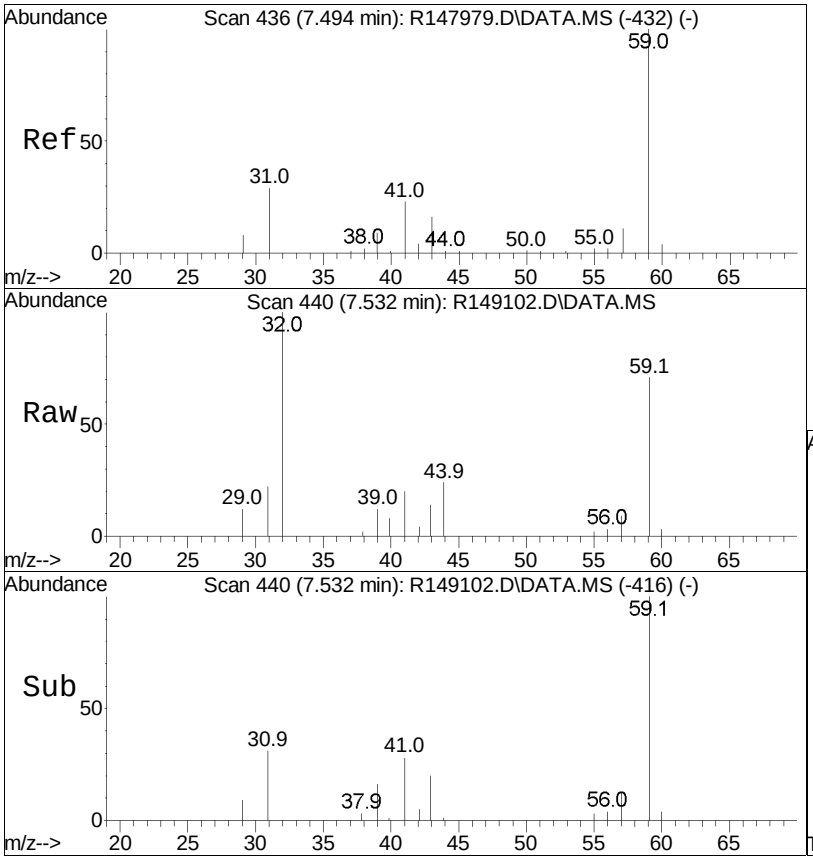


#24
pentane
Concen: 14.93 ppbV
RT: 7.06 min Scan# 389
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 43 Resp: 232793

Ion	Ratio	Lower	Upper
43	100		
57	13.0	9.8	14.8
72	6.5	5.4	8.2

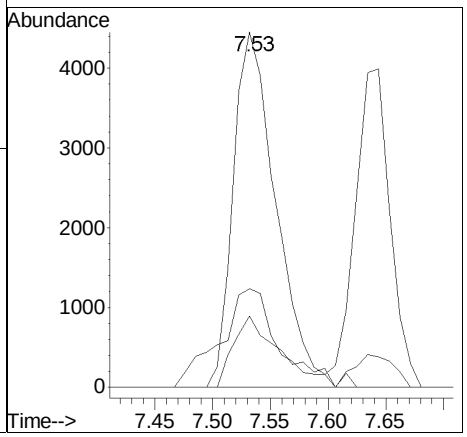


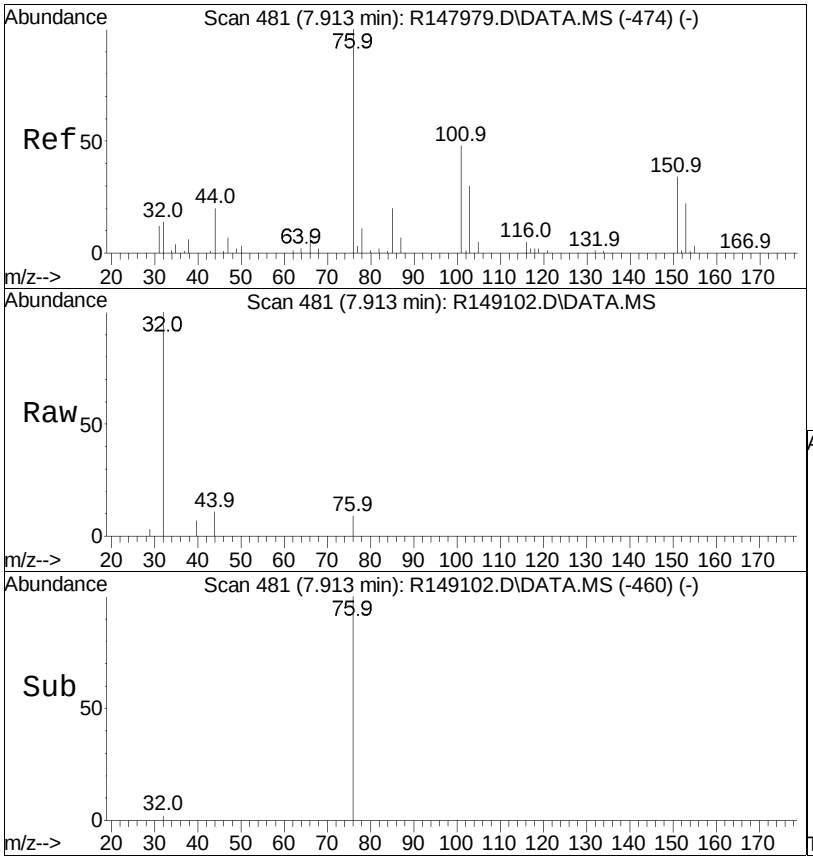


#27
tertiary butyl alcohol
Concen: 0.66 ppbV
RT: 7.53 min Scan# 440
Delta R.T. 0.028 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 59 Resp: 11490

Ion	Ratio	Lower	Upper
59	100		
41	27.8	18.9	28.3
43	20.1	13.7	20.5

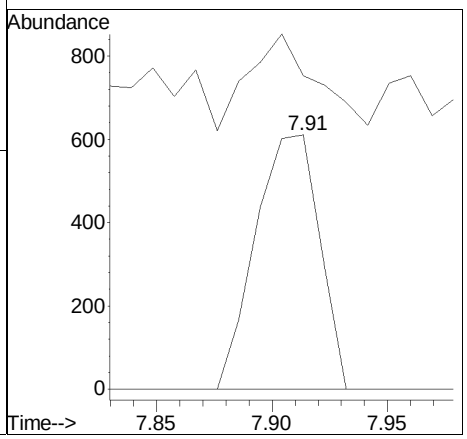


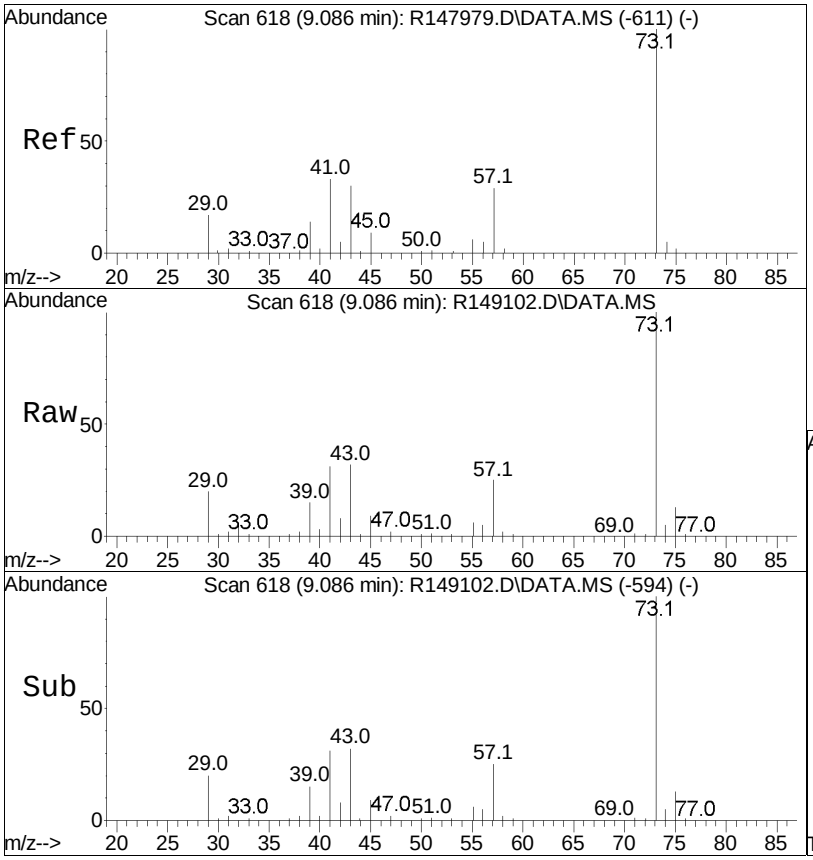


#30
carbon disulfide
Concen: 0.05 ppbV
RT: 7.91 min Scan# 481
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 76 Resp: 1178

Ion	Ratio	Lower	Upper
76	100		
44	123.2	16.3	24.5#

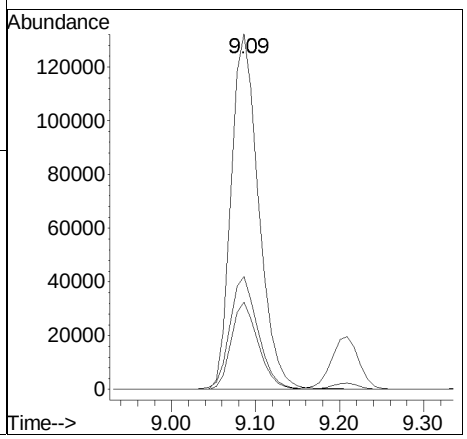


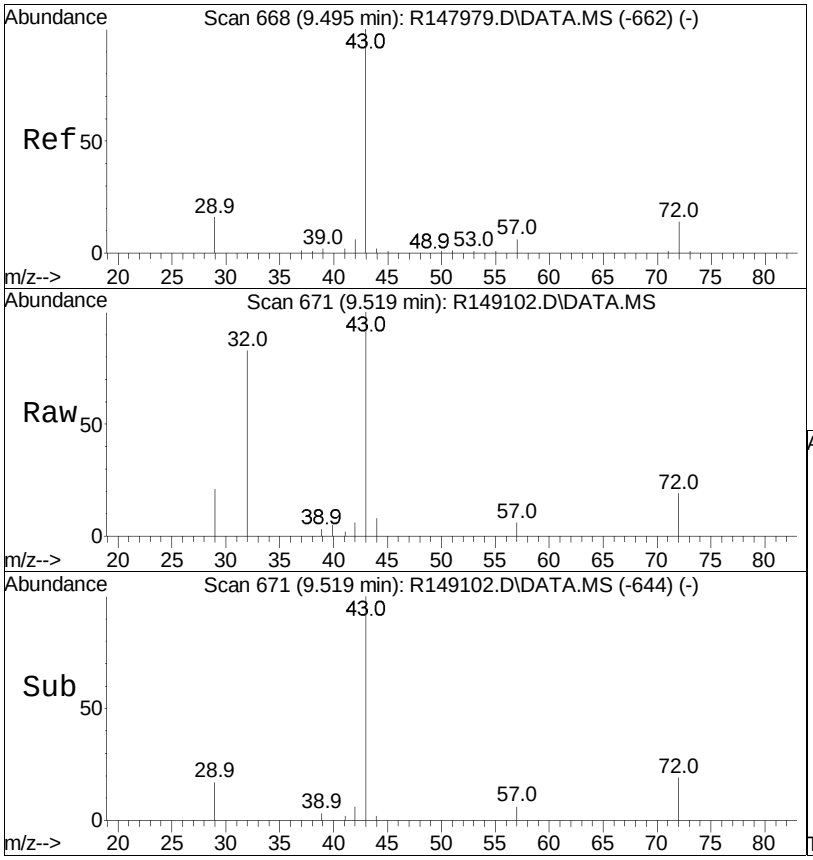


#34
MTBE
Concen: 13.82 ppbV
RT: 9.09 min Scan# 618
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 73 Resp: 301564

Ion	Ratio	Lower	Upper
73	100		
57	24.6	19.1	28.7
43	31.8	23.0	34.4

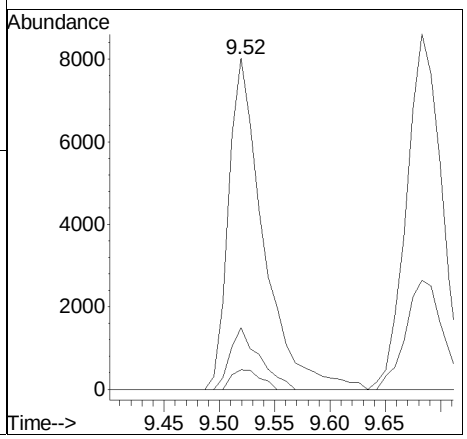


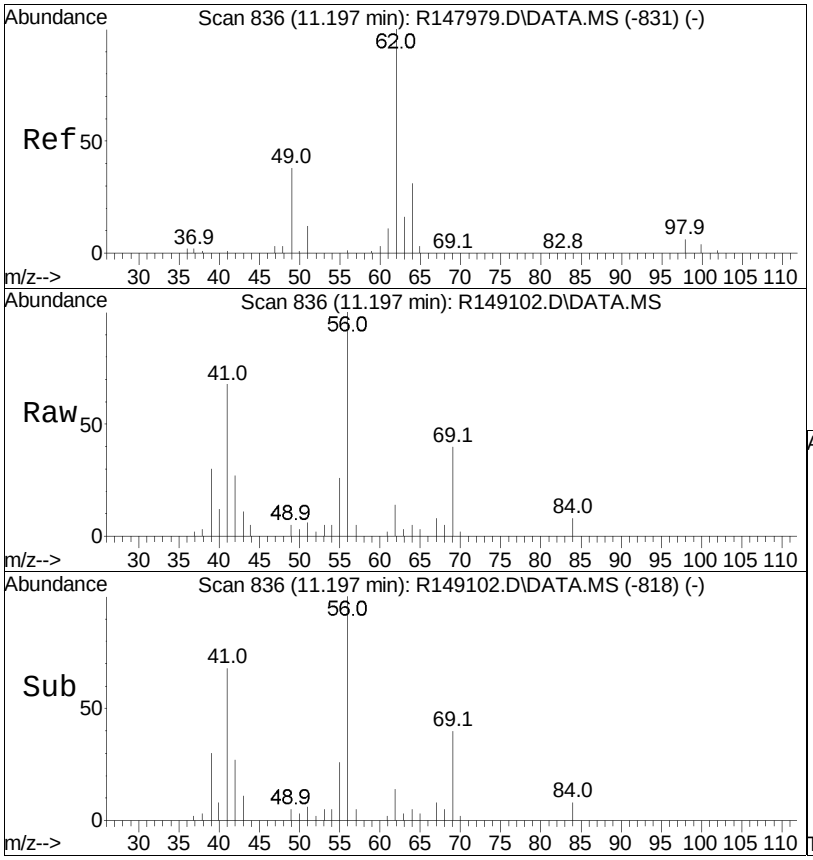


#36
2-butanone
Concen: 0.85 ppbV
RT: 9.52 min Scan# 671
Delta R.T. 0.025 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 43 Resp: 17644

Ion	Ratio	Lower	Upper
43	100		
72	18.6	13.6	20.4
57	5.9	4.9	7.3

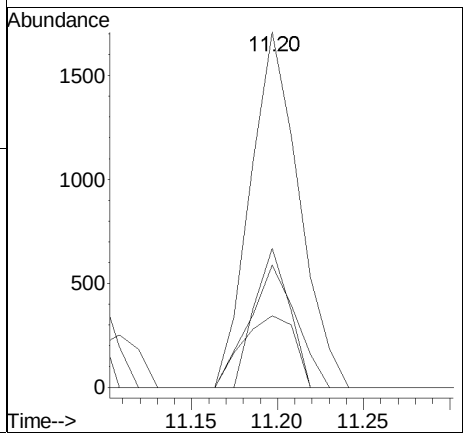


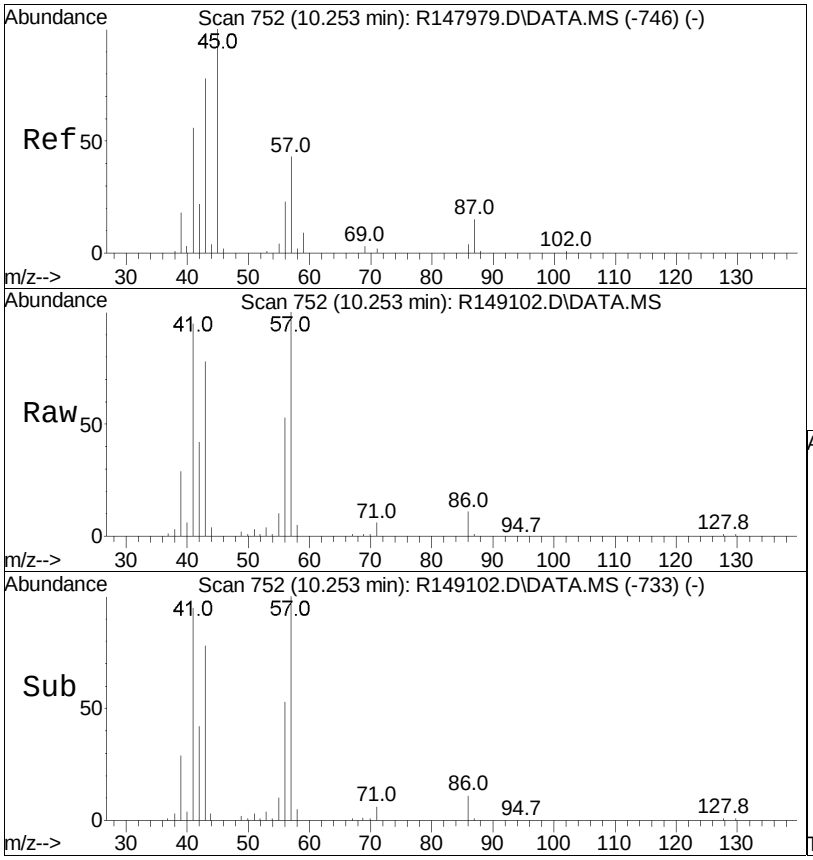


#42
1,2-dichloroethane
Concen: 0.27 ppbV
RT: 11.20 min Scan# 836
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 62 Resp: 3370

Ion	Ratio	Lower	Upper
62	100		
64	39.1	25.0	37.6#
49	34.4	26.1	39.1
63	20.2	12.2	18.2#

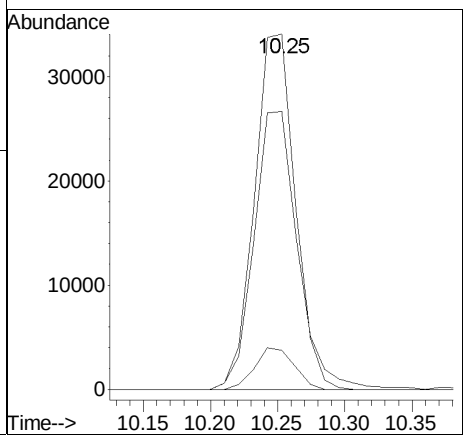


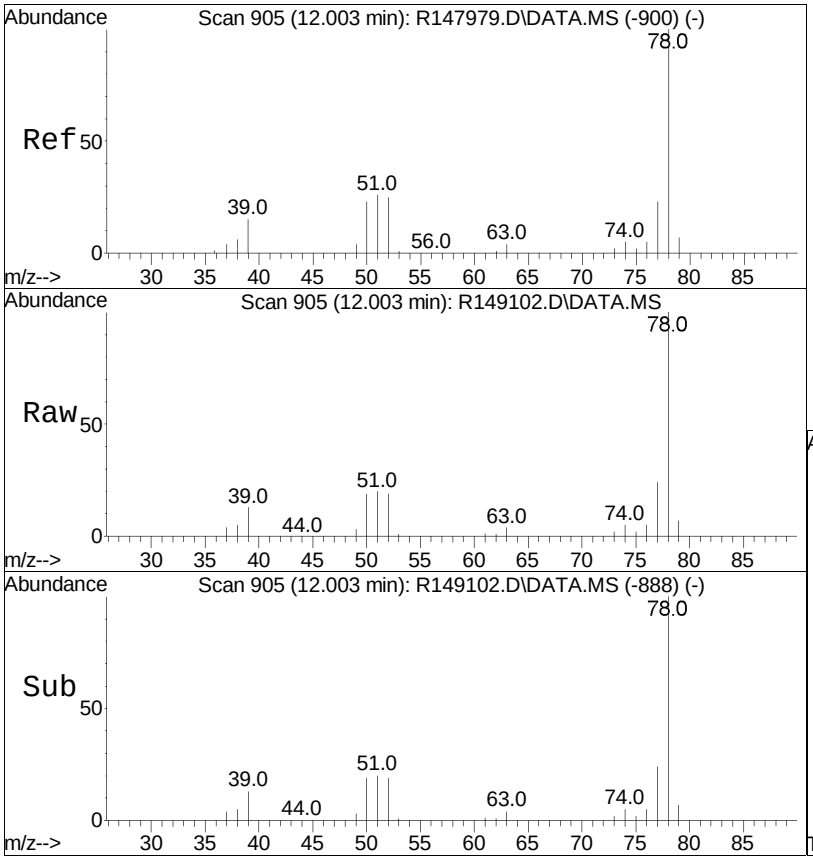


#44
hexane
Concen: 4.45 ppbV
RT: 10.25 min Scan# 752
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 57 Resp: 71981

Ion	Ratio	Lower	Upper
57	100		
43	78.2	142.3	213.5#
86	11.0	9.3	13.9

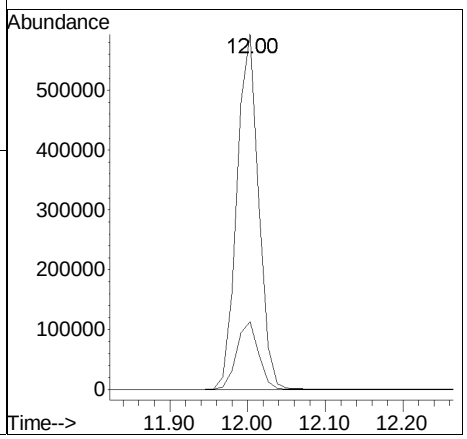


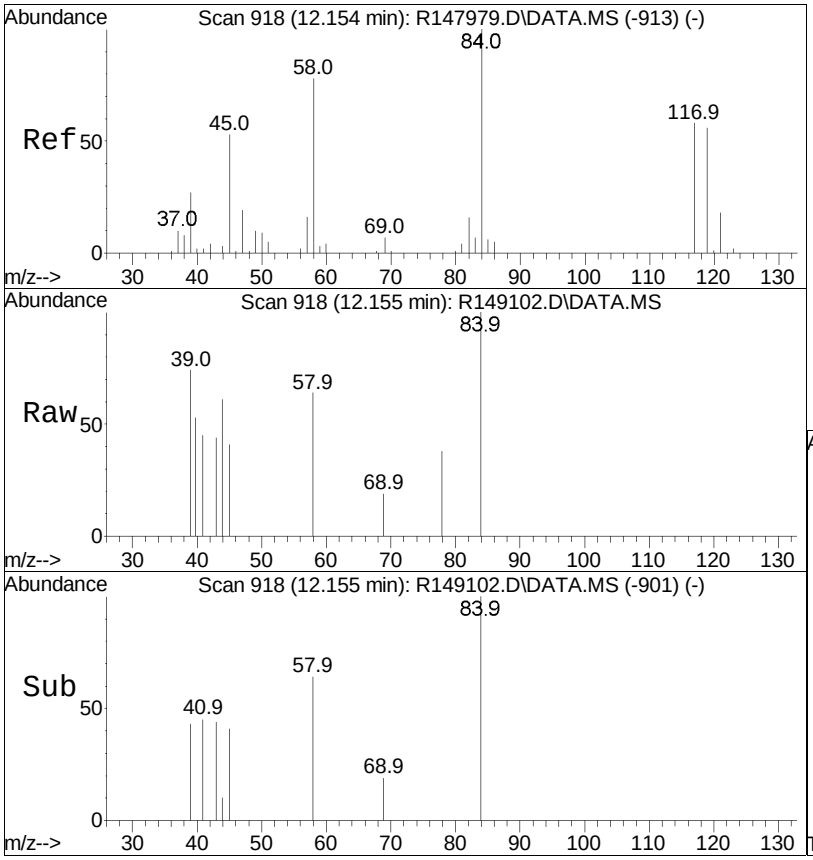


#50
benzene
Concen: 51.43 ppbV
RT: 12.00 min Scan# 905
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 78 Resp: 1152989

Ion	Ratio	Lower	Upper
78	100		
52	19.1	15.2	22.8

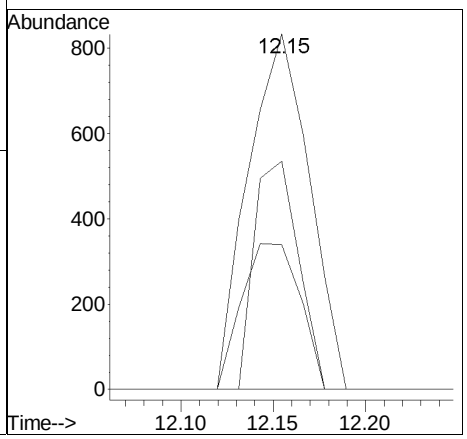


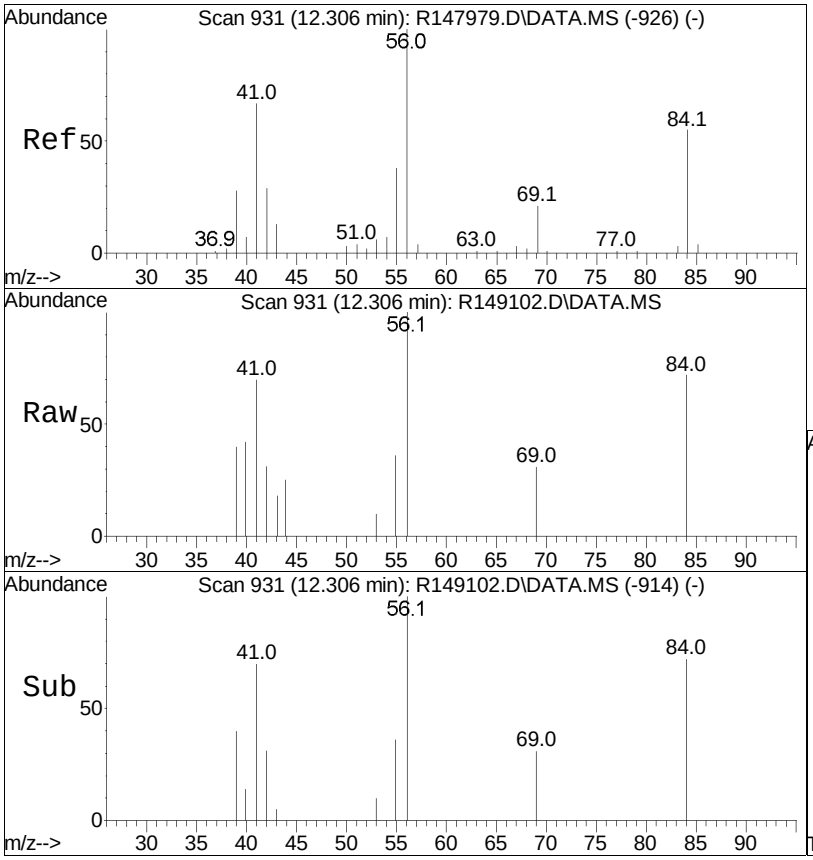


#51
thiophene
Concen: 0.10 ppbV
RT: 12.15 min Scan# 918
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 84 Resp: 1918

Ion	Ratio	Lower	Upper
84	100		
58	64.2	48.7	73.1
45	40.7	34.4	51.6

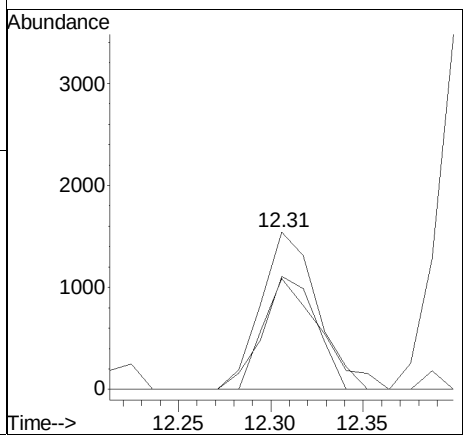


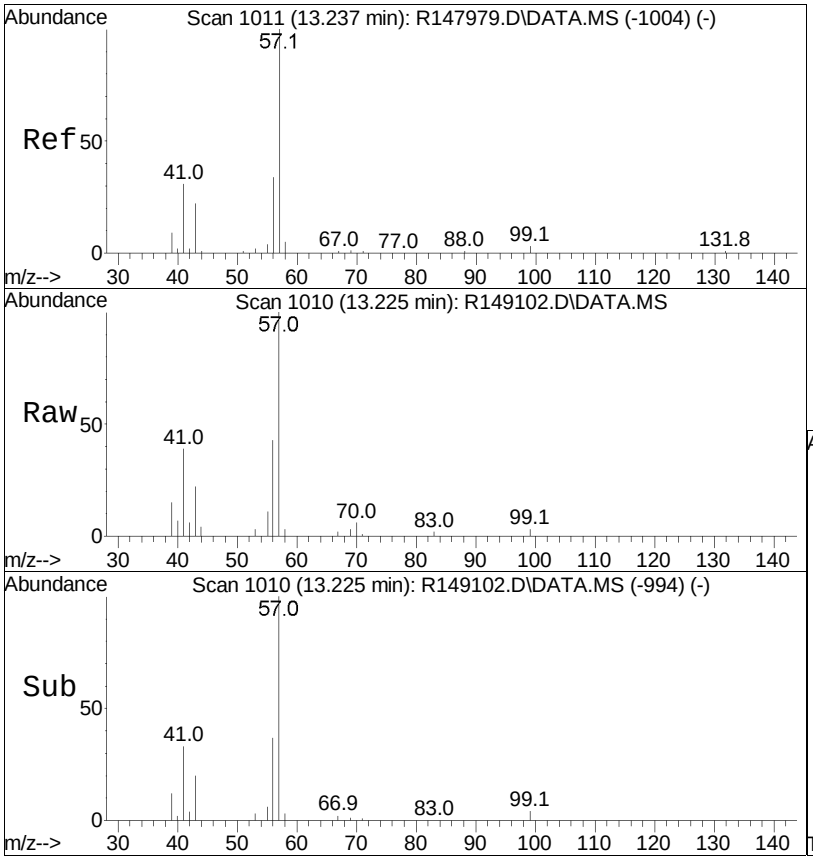


#53
cyclohexane
Concen: 0.25 ppbV
RT: 12.31 min Scan# 931
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 56 Resp: 3255

Ion	Ratio	Lower	Upper
56	100		
84	71.9	56.5	84.7
41	70.4	57.5	86.3

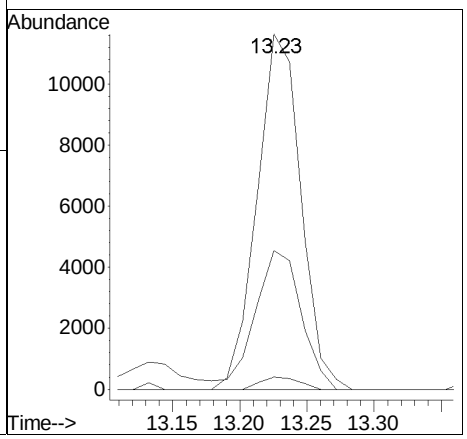


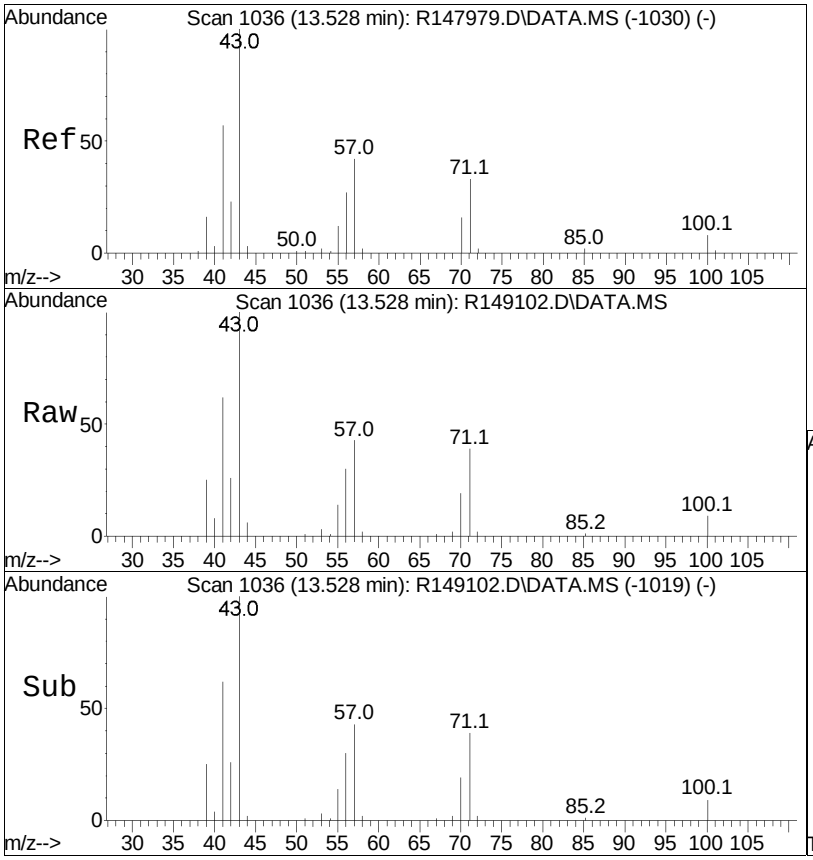


#60
2,2,4-trimethylpentane
Concen: 0.61 ppbV
RT: 13.23 min Scan# 1010
Delta R.T. -0.012 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 57 Resp: 26435

Ion	Ratio	Lower	Upper
57	100		
99	3.5	3.0	4.6
41	39.1	26.8	40.2

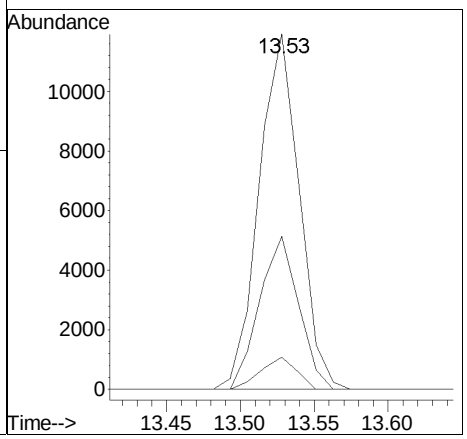


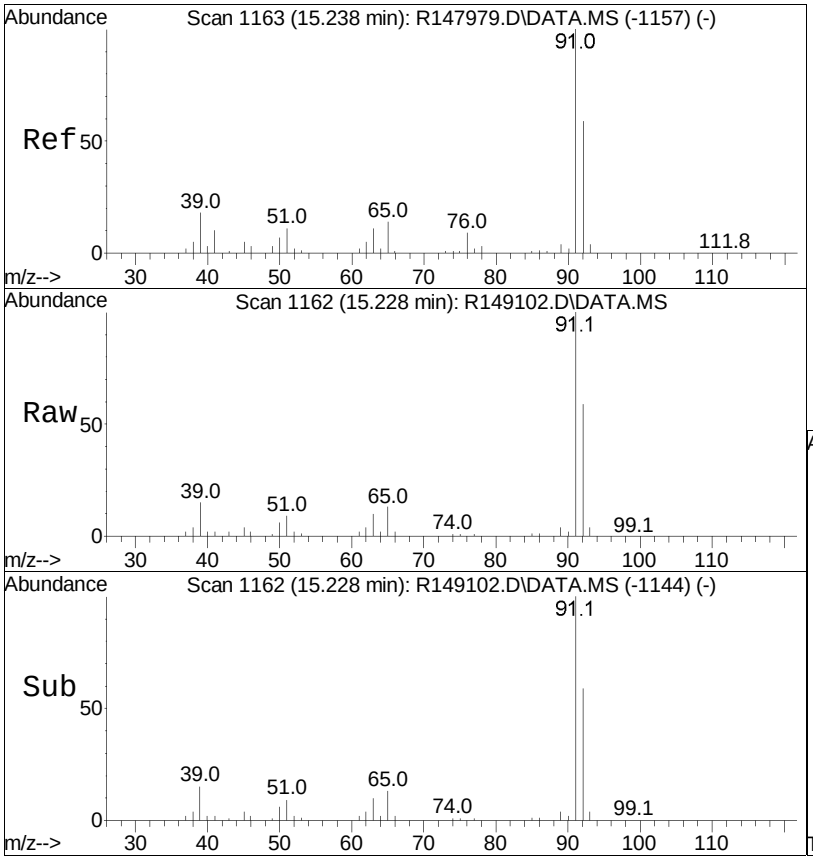


#62
heptane
Concen: 1.21 ppbV
RT: 13.53 min Scan# 1036
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 43 Resp: 22599

Ion	Ratio	Lower	Upper
43	100		
57	43.0	34.2	51.2
100	9.1	7.9	11.9

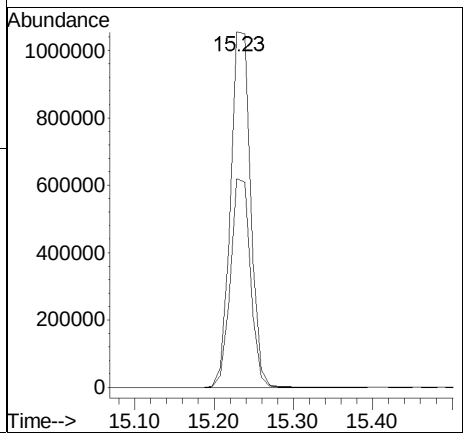


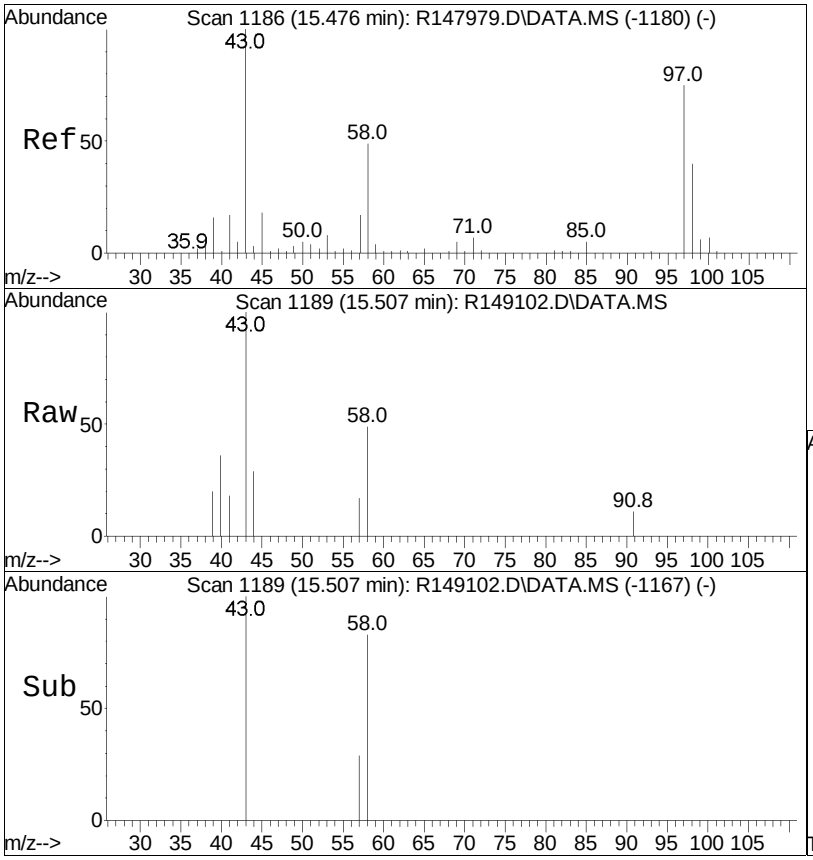


#68
toluene
Concen: 68.74 ppbV
RT: 15.23 min Scan# 1162
Delta R.T. -0.010 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 91 Resp: 1864643

Ion	Ratio	Lower	Upper
91	100		
92	58.8	45.8	68.6

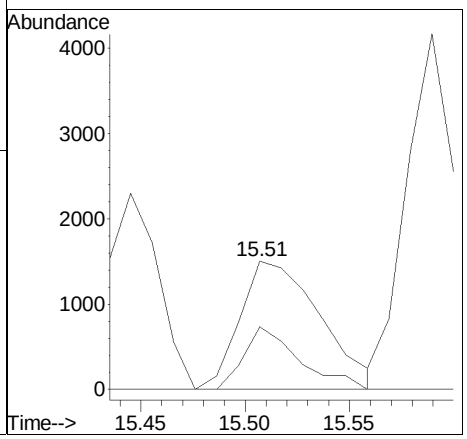


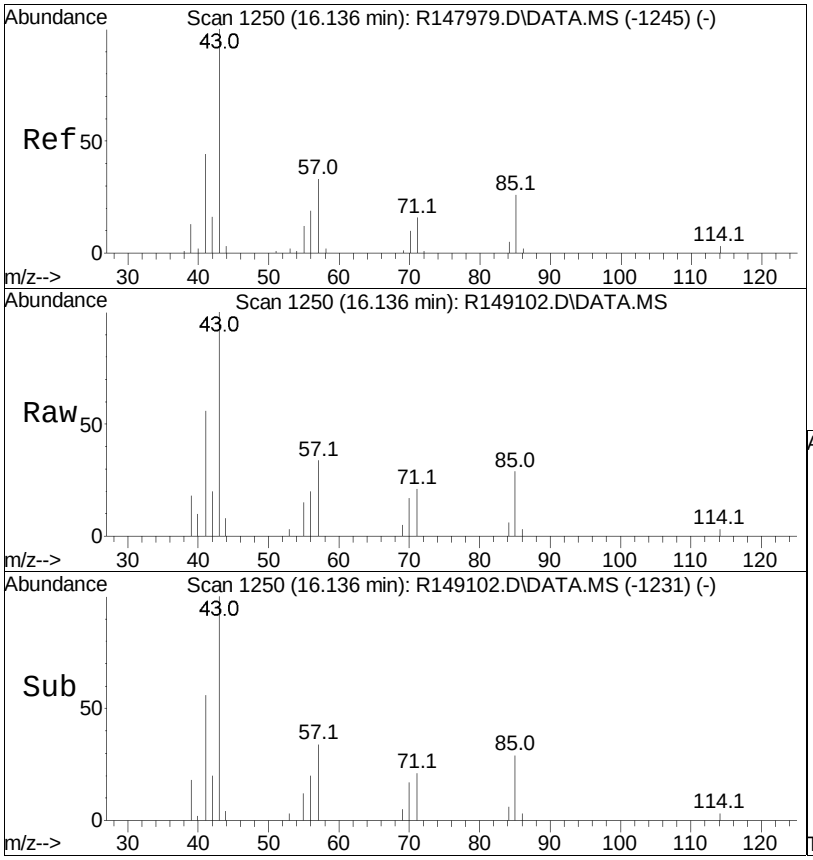


#72
2-hexanone
Concen: 0.16 ppbV m
RT: 15.51 min Scan# 1189
Delta R.T. 0.031 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 43 Resp: 4017

Ion	Ratio	Lower	Upper
43	100		
58	48.8	39.7	59.5
100	0.0	6.9	10.3#

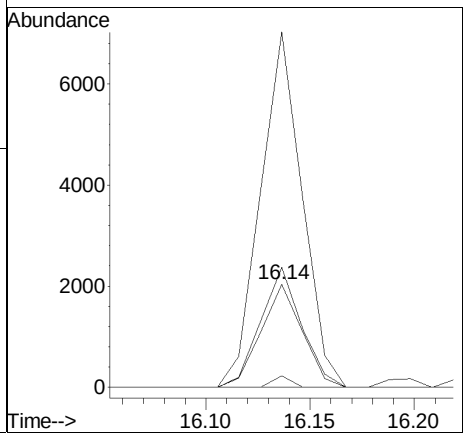


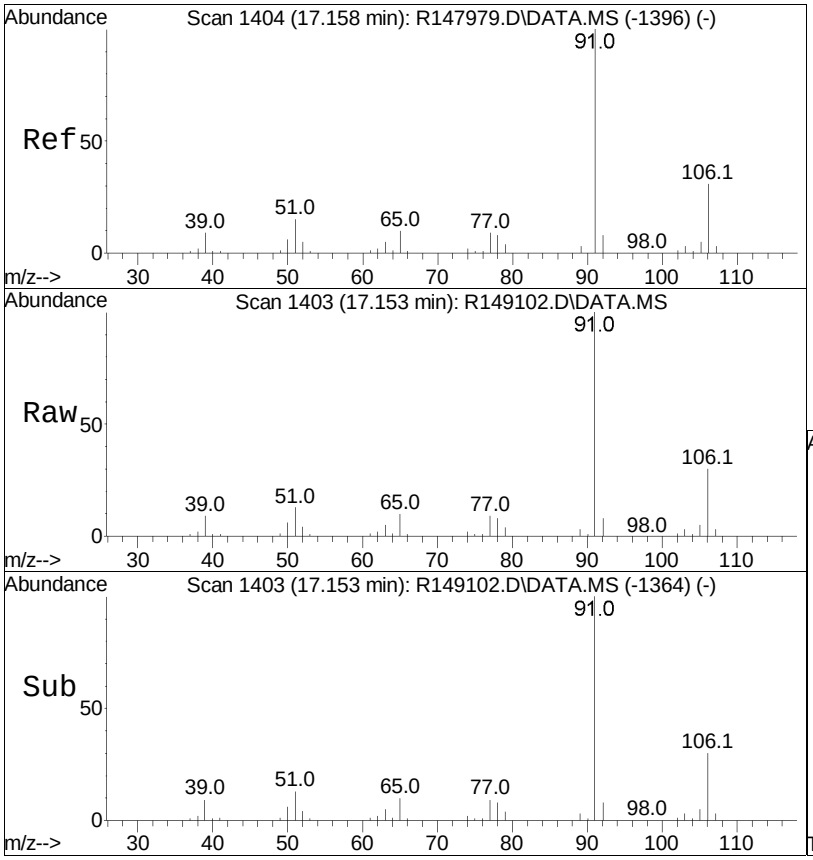


#77
octane
Concen: 0.35 ppbV
RT: 16.14 min Scan# 1250
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 85 Resp: 2816

Ion	Ratio	Lower	Upper
85	100		
57	116.6	84.9	127.3
114	11.2	8.2	12.2
43	344.9	257.0	385.4

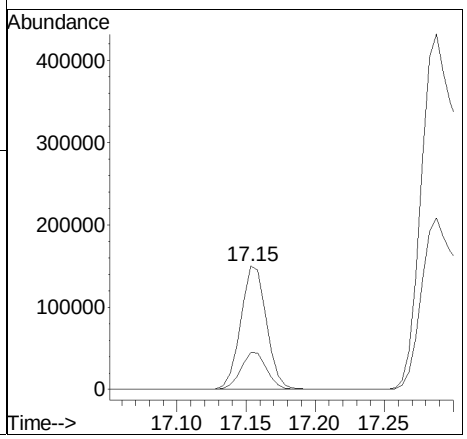


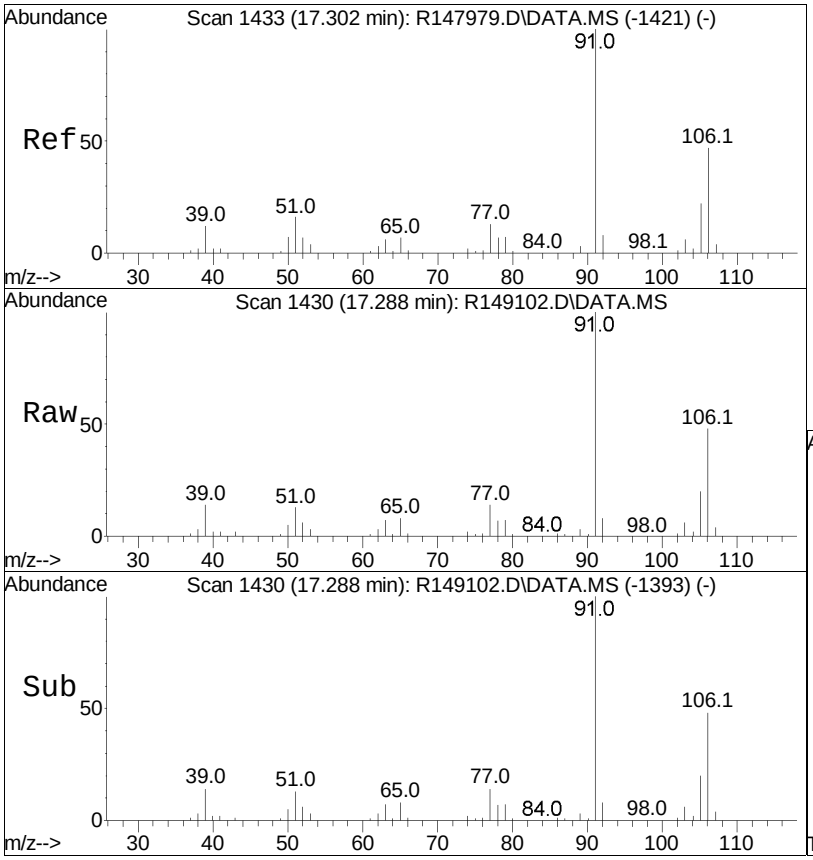


#81
ethylbenzene
Concen: 5.49 ppbV
RT: 17.15 min Scan# 1403
Delta R.T. -0.005 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 91 Resp: 195466

Ion	Ratio	Lower	Upper
91	100		
106	29.8	24.5	36.7

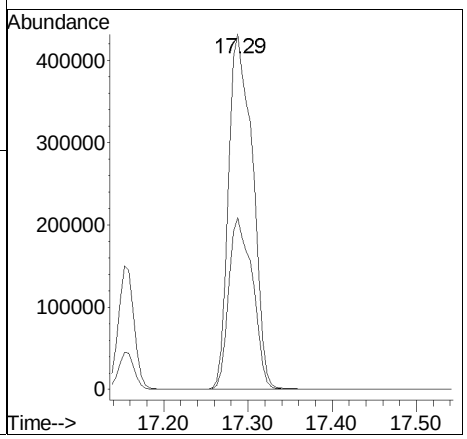


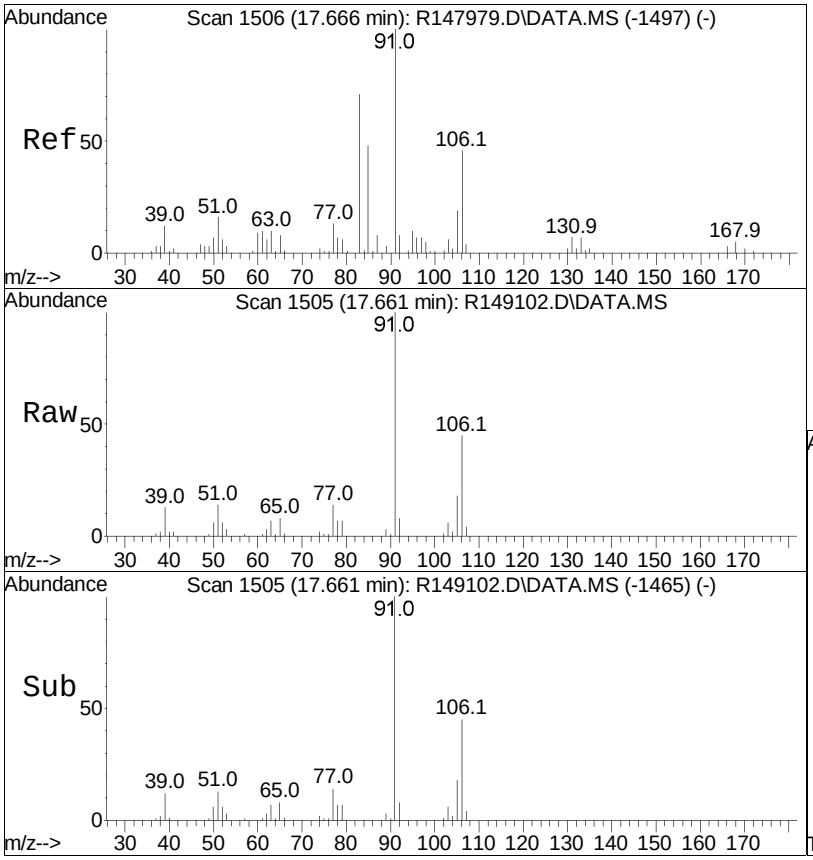


#83
m+p-xylene
Concen: 30.18 ppbV
RT: 17.29 min Scan# 1430
Delta R.T. -0.015 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 91 Resp: 856607

Ion	Ratio	Lower	Upper
91	100		
106	48.3	38.8	58.2

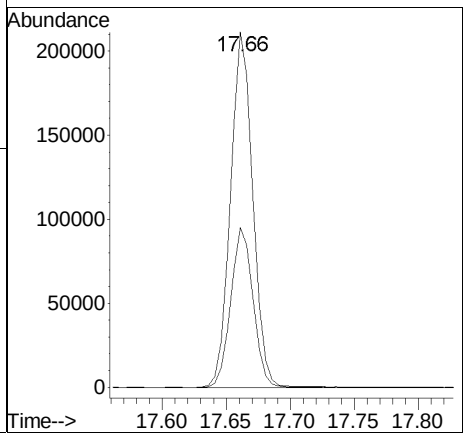


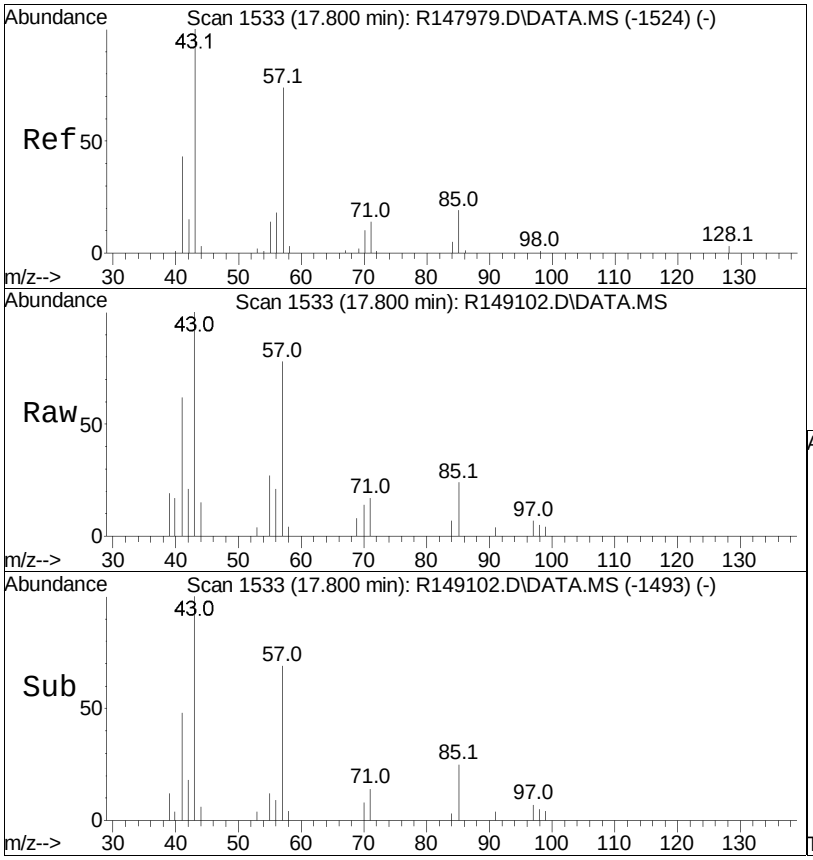


#87
o-xylene
Concen: 8.72 ppbV
RT: 17.66 min Scan# 1505
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 91 Resp: 255714

Ion	Ratio	Lower	Upper
91	100		
106	45.0	36.5	54.7

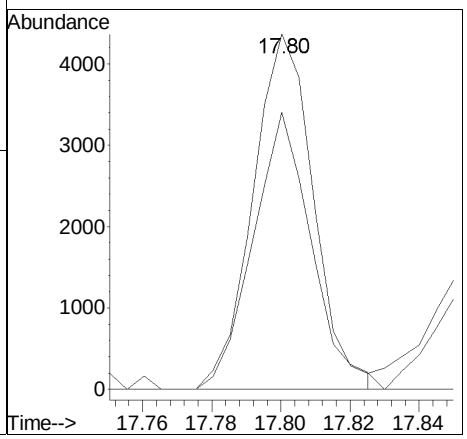


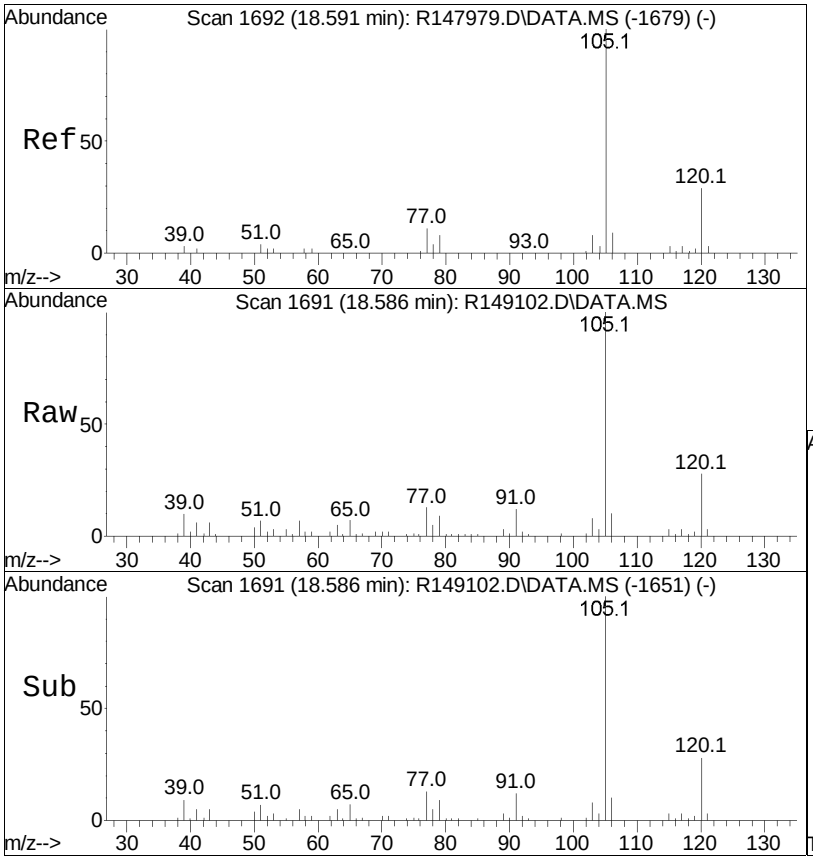


#89
nonane
Concen: 0.19 ppbV
RT: 17.80 min Scan# 1533
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 43 Resp: 5315

Ion	Ratio	Lower	Upper
43	100		
57	78.0	58.8	88.2
128	0.0	2.3	3.5#

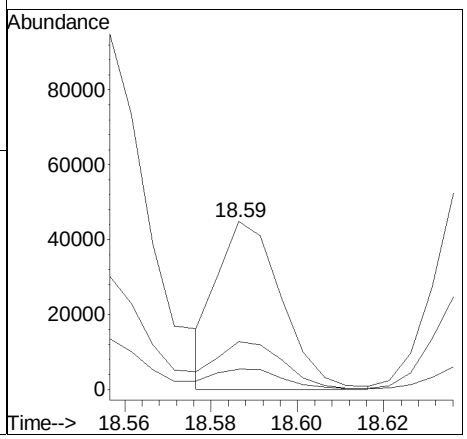


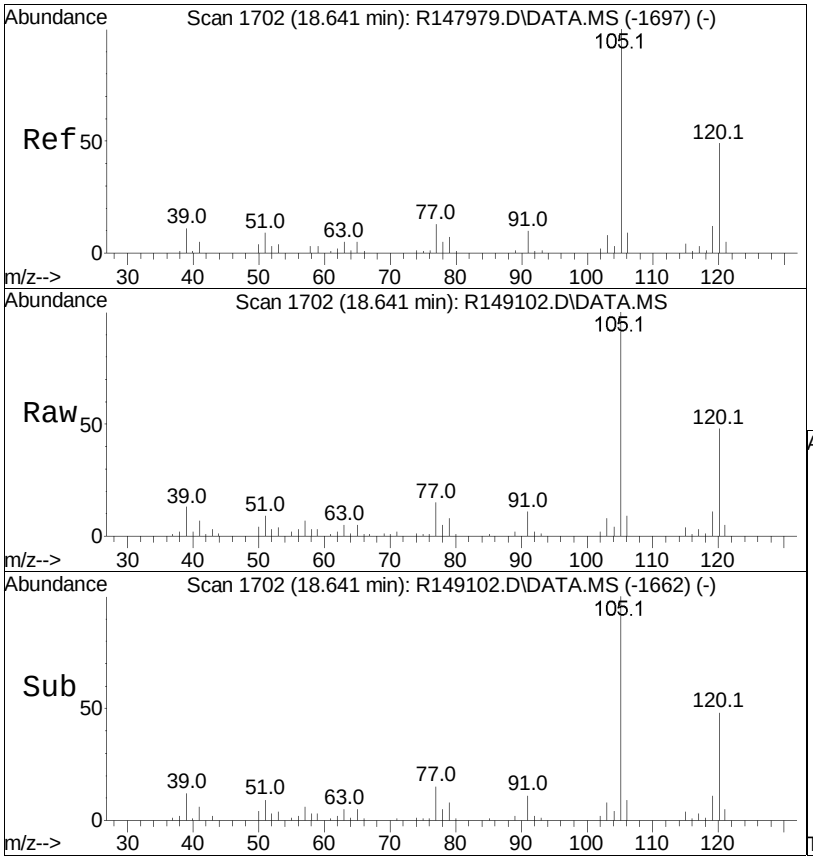


#96
4-ethyl toluene
Concen: 1.11 ppbV
RT: 18.59 min Scan# 1691
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion:105 Resp: 46394

Ion	Ratio	Lower	Upper
105	100		
120	28.5	23.3	34.9
91	12.1	9.6	14.4

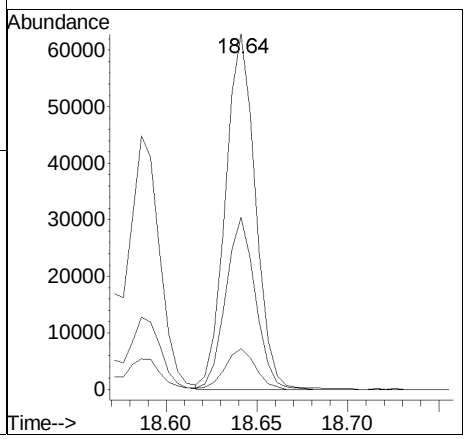


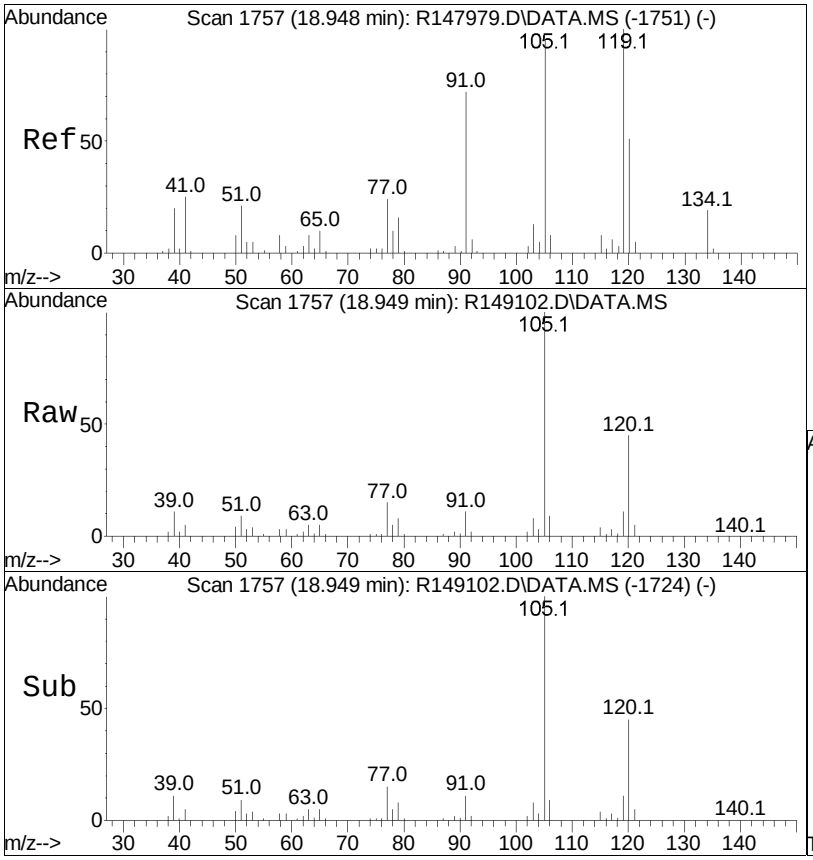


#97
1,3,5-trimethylbenzene
Concen: 2.19 ppbV
RT: 18.64 min Scan# 1702
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion:105 Resp: 72118

Ion	Ratio	Lower	Upper
105	100		
120	48.4	38.5	57.7
91	11.4	9.2	13.8

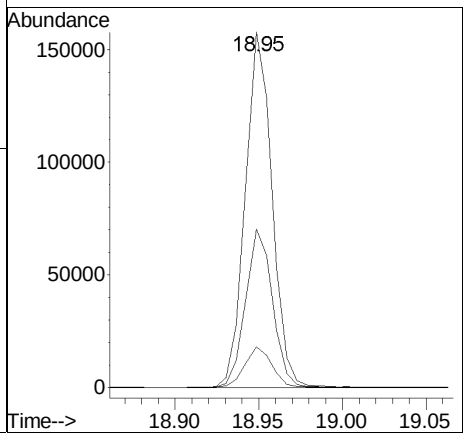


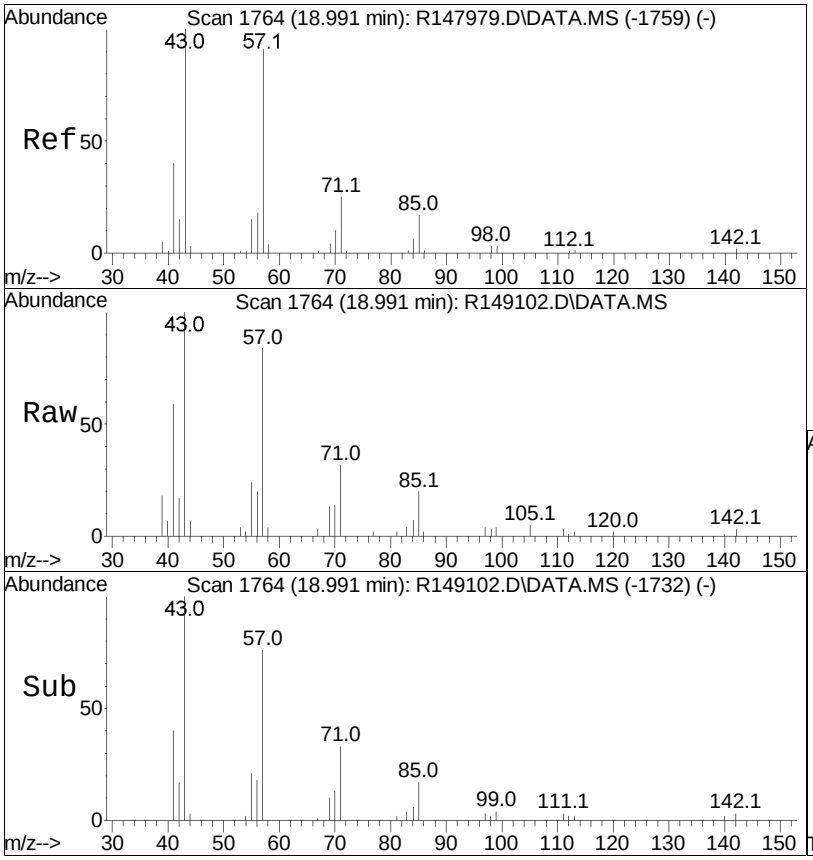


#99
1,2,4-trimethylbenzene
Concen: 5.32 ppbV
RT: 18.95 min Scan# 1757
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion:105 Resp: 175787

Ion	Ratio	Lower	Upper
105	100		
120	44.6	43.0	64.4
91	11.4	63.7	95.5#

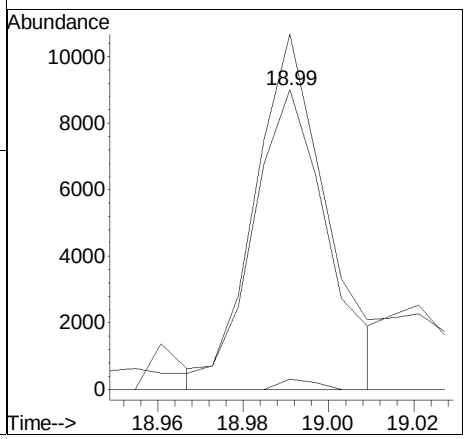


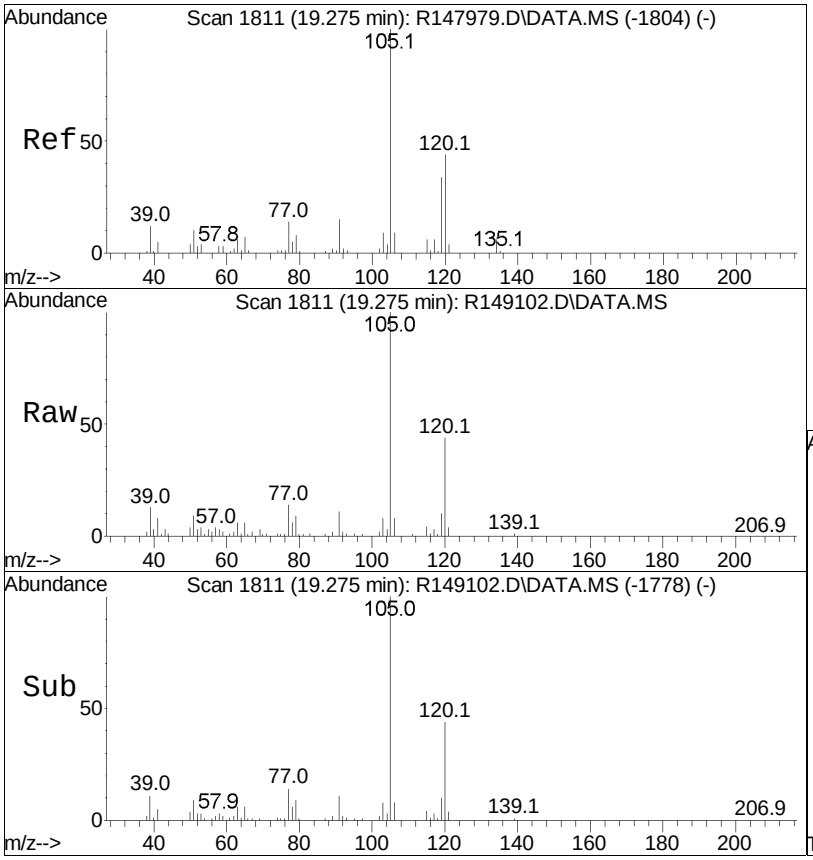


#100
decane
Concen: 0.42 ppbV m
RT: 18.99 min Scan# 1764
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 57 Resp: 10895

Ion	Ratio	Lower	Upper
57	100		
43	118.5	88.1	132.1
142	3.4	2.4	3.6

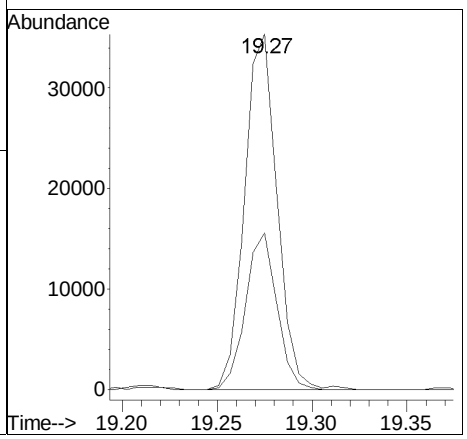


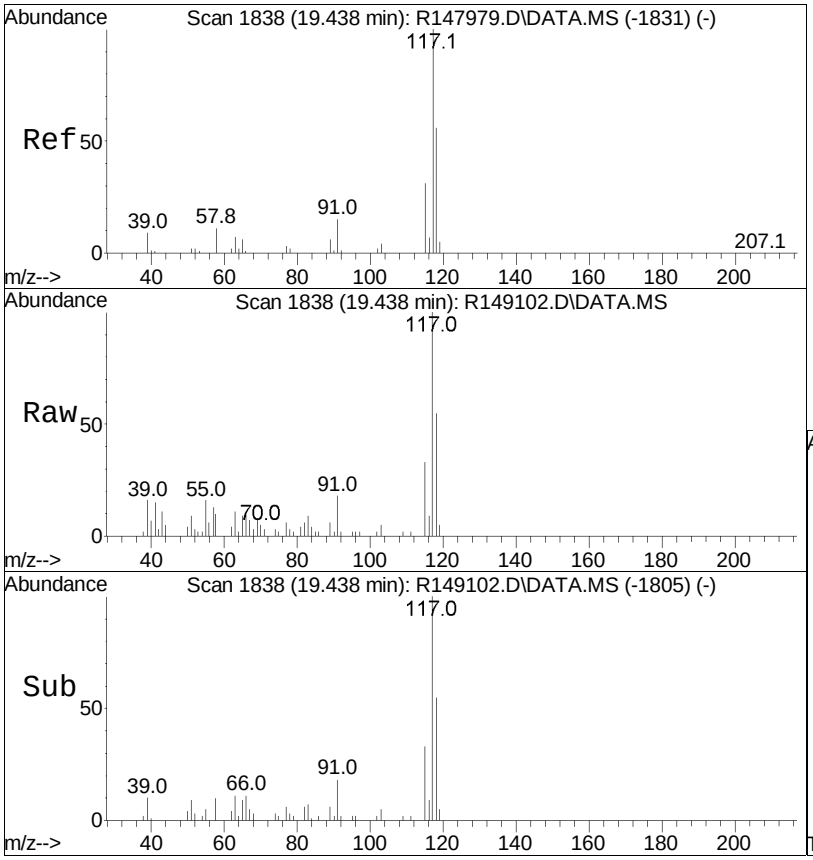


#105
1,2,3-trimethylbenzene
Concen: 1.17 ppbV
RT: 19.27 min Scan# 1811
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion:105 Resp: 42119

Ion	Ratio	Lower	Upper
105	100		
120	44.1	35.0	52.6

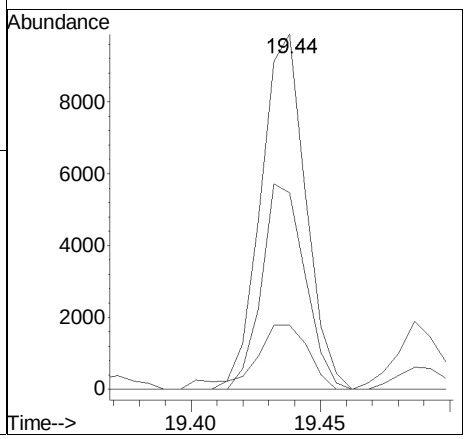


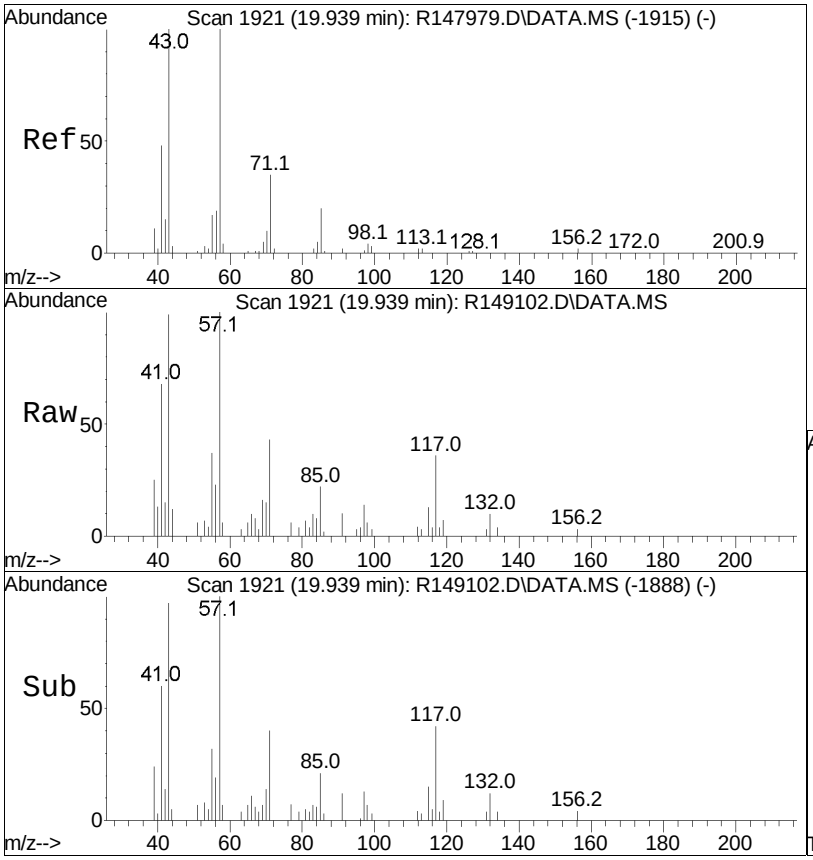


#109
indan
Concen: 0.30 ppbV
RT: 19.44 min Scan# 1838
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion:117 Resp: 11925

Ion	Ratio	Lower	Upper
117	100		
118	55.3	44.2	66.2
91	18.0	13.0	19.4

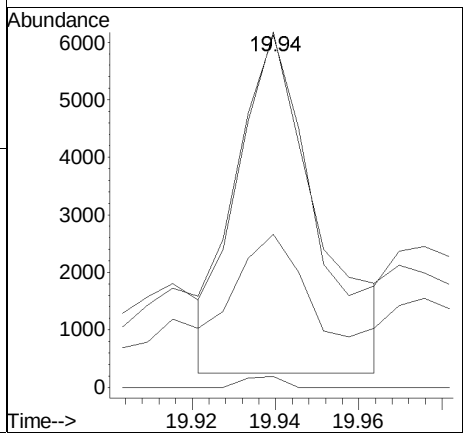


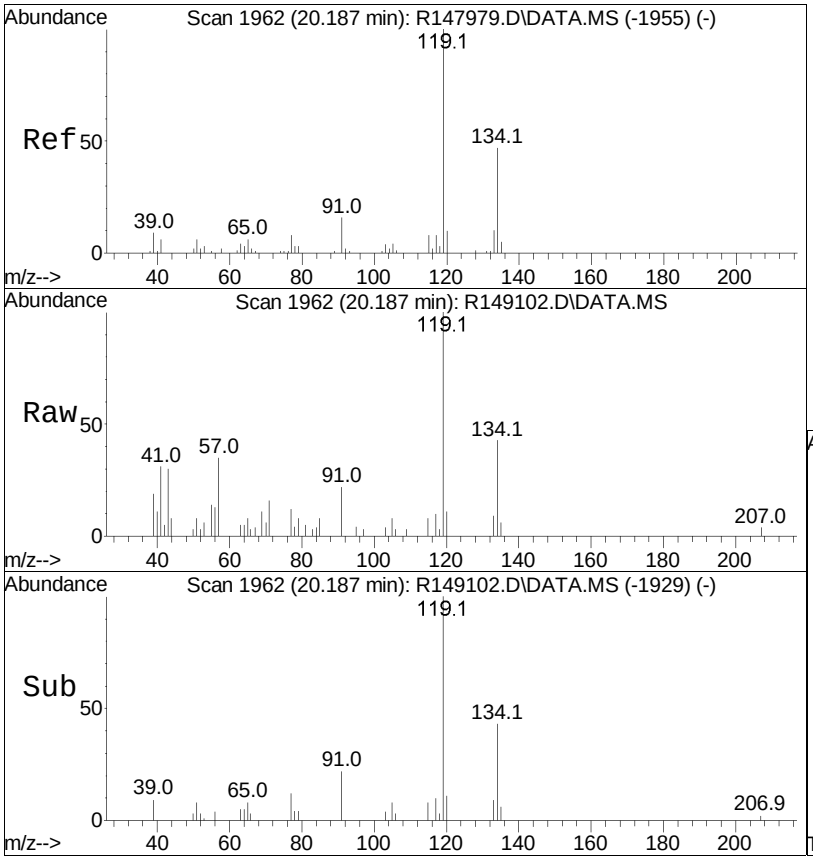


#112
undecane
Concen: 0.28 ppbV m
RT: 19.94 min Scan# 1921
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 57 Resp: 7909

Ion	Ratio	Lower	Upper
57	100		
43	99.1	81.6	122.4
71	43.0	35.4	53.2
156	3.1	2.2	3.4

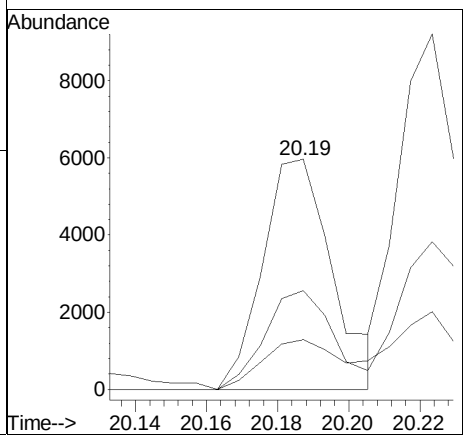


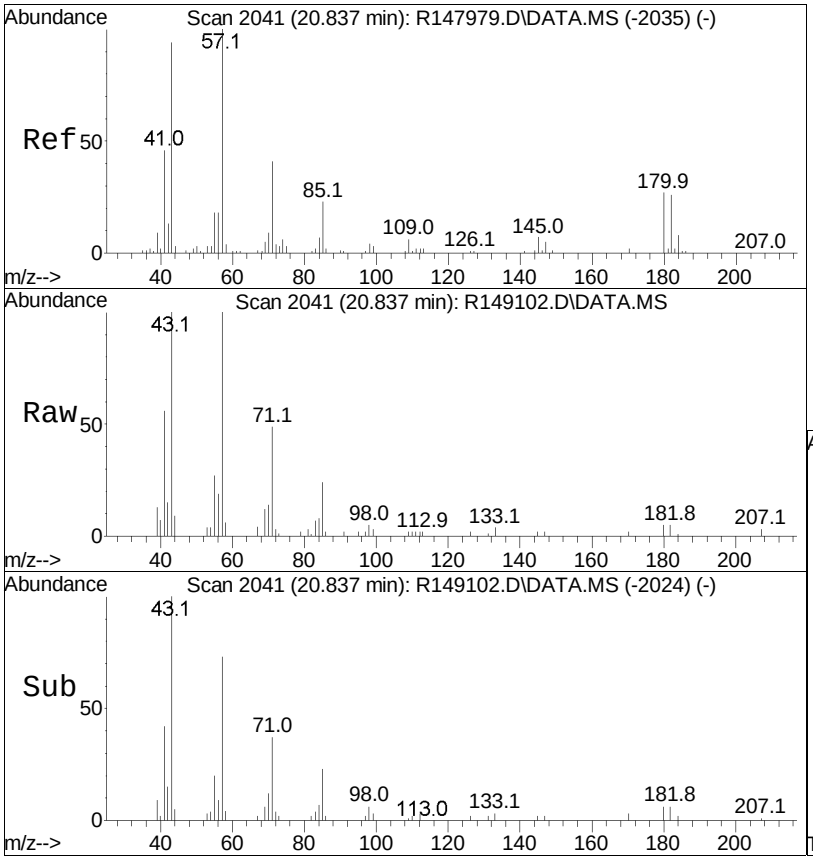


#113
1,2,4,5-tetramethylbenzene
Concen: 0.16 ppbV
RT: 20.19 min Scan# 1962
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion:119 Resp: 8133

Ion	Ratio	Lower	Upper
119	100		
134	43.0	36.2	54.2
91	21.6	13.7	20.5#

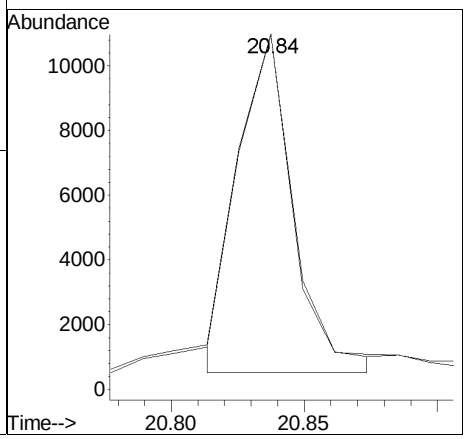


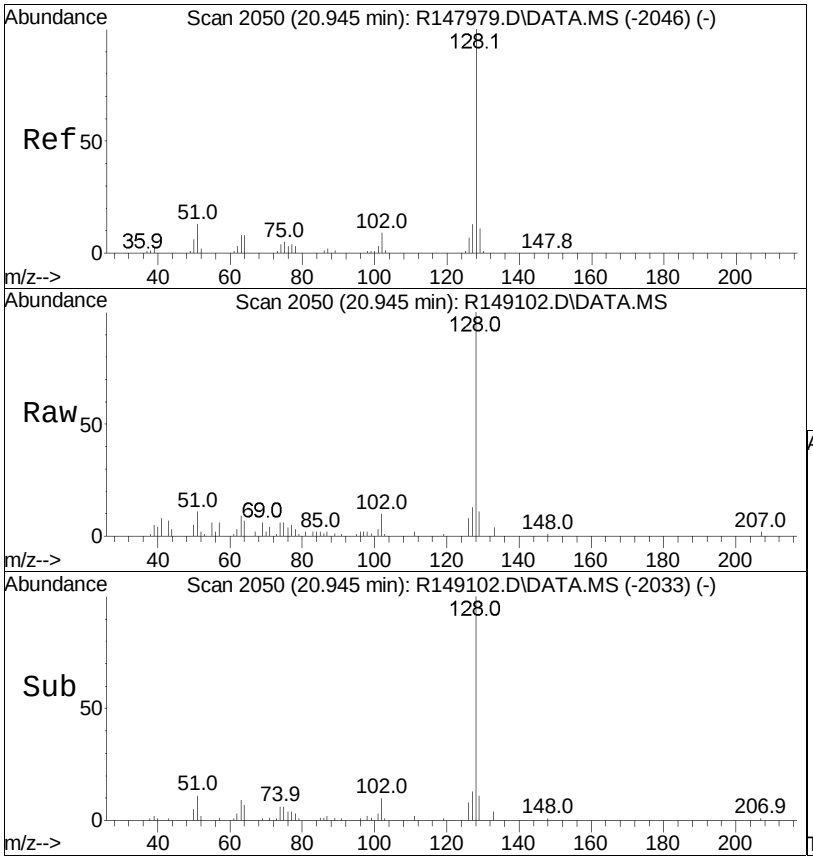


#114
dodecane
Concen: 0.52 ppbV m
RT: 20.84 min Scan# 2041
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion: 57 Resp: 15318

Ion	Ratio	Lower	Upper
57	100		
43	100.2	76.2	114.4

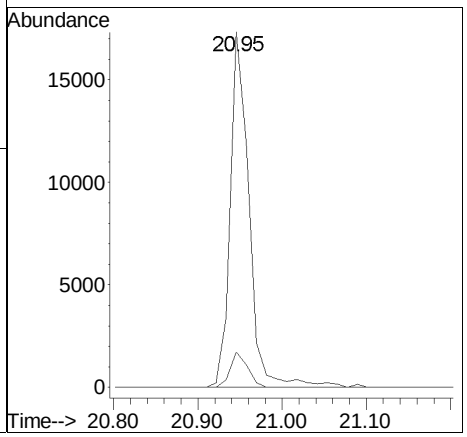




#116
naphthalene
Concen: 0.66 ppbV
RT: 20.95 min Scan# 2050
Delta R.T. 0.000 min
Lab File: R149102.D
Acq: 1 Nov 2016 5:18 pm

Tgt Ion:128 Resp: 27132

Ion	Ratio	Lower	Upper
128	100		
102	10.0	7.5	11.3



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-05	Date Collected	: 10/19/16 11:48
Client ID	: NFSV-06	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 17:52
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149103	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-71-8	Dichlorodifluoromethane	0.578	0.200	0.047	2.86	0.989	0.230	
74-87-3	Chloromethane	ND	0.200	0.096	ND	0.413	0.198	U
76-14-2	Freon-114	ND	0.200	0.042	ND	1.40	0.293	U
75-01-4	Vinyl chloride	ND	0.200	0.038	ND	0.511	0.097	U
106-99-0	1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177	U
106-97-8	Butane	7.26	0.200	0.044	17.3	0.475	0.105	
75-07-0	Acetaldehyde	ND	2.50	0.547	ND	4.50	0.985	U
74-83-9	Bromomethane	ND	0.200	0.070	ND	0.777	0.270	U
75-00-3	Chloroethane	ND	0.200	0.077	ND	0.528	0.202	U
64-17-5	Ethanol	1.27	2.50	0.542	2.39	4.71	1.02	J
593-60-2	Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306	U
107-02-8	Acrolein	0.133	0.500	0.114	0.305	1.15	0.261	J
67-64-1	Acetone	7.96	1.00	0.165	18.9	2.38	0.392	G
75-69-4	Trichlorofluoromethane	0.715	0.200	0.042	4.02	1.12	0.234	
67-63-0	Isopropanol	4.12	0.500	0.053	10.1	1.23	0.129	
109-66-0	Pentane	2.15	0.200	0.048	6.34	0.590	0.140	
75-35-4	1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224	U
75-65-0	tert-Butyl Alcohol	1.85	0.500	0.060	5.61	1.52	0.182	
75-09-2	Methylene chloride	0.304	1.00	0.299	1.06	1.74	1.04	J
107-05-1	3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254	U
75-15-0	Carbon disulfide	0.166	0.200	0.035	0.517	0.623	0.107	J
76-13-1	Freon-113	0.052	0.200	0.051	0.399	1.53	0.392	J
156-60-5	trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293	U
75-34-3	1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312	U
1634-04-4	Methyl tert butyl ether	0.666	0.200	0.053	2.40	0.721	0.190	
78-93-3	2-Butanone	1.34	0.500	0.047	3.95	1.47	0.139	
156-59-2	cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233	U
67-66-3	Chloroform	0.233	0.200	0.053	1.14	0.977	0.259	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-05	Date Collected	: 10/19/16 11:48
Client ID	: NFSV-06	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 17:52
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149103	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
107-06-2	1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223	U
110-54-3	n-Hexane	0.392	0.200	0.052	1.38	0.705	0.183	
71-55-6	1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311	U
71-43-2	Benzene	0.180	0.200	0.054	0.575	0.639	0.172	J
110-02-1	Thiophene	ND	0.200	0.053	ND	0.688	0.182	U
56-23-5	Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296	U
110-82-7	Cyclohexane	ND	0.200	0.066	ND	0.688	0.226	U
78-87-5	1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322	U
75-27-4	Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439	U
123-91-1	1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281	U
79-01-6	Trichloroethene	ND	0.200	0.071	ND	1.07	0.382	U
540-84-1	2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308	U
142-82-5	Heptane	0.103	0.200	0.055	0.422	0.820	0.227	J
10061-01-5	cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338	U
108-10-1	4-Methyl-2-pentanone	0.622	0.500	0.061	2.55	2.05	0.249	
10061-02-6	trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315	U
79-00-5	1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364	U
108-88-3	Toluene	0.355	0.200	0.063	1.34	0.754	0.237	
554-14-3	2-Methylthiophene	ND	0.200	0.079	ND	0.803	0.317	U
591-78-6	2-Hexanone	2.16	0.200	0.060	8.85	0.820	0.248	
616-44-4	3-Methylthiophene	ND	0.200	0.067	ND	0.803	0.269	U
124-48-1	Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636	U
106-93-4	1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599	U
111-65-9	Octane	0.077	0.200	0.042	0.360	0.934	0.197	J
127-18-4	Tetrachloroethene	0.305	0.200	0.076	2.07	1.36	0.514	
108-90-7	Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363	U
100-41-4	Ethylbenzene	0.083	0.200	0.056	0.361	0.869	0.241	J
872-55-9	2-Ethylthiophene	ND	0.200	0.057	ND	0.918	0.262	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-05	Date Collected	: 10/19/16 11:48
Client ID	: NFSV-06	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 17:52
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149103	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
179601-23-1	p/m-Xylene	0.392	0.400	0.139	1.70	1.74	0.604	J
75-25-2	Bromoform	ND	0.200	0.052	ND	2.07	0.541	U
100-42-5	Styrene	ND	0.200	0.080	ND	0.852	0.340	U
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376	U
95-47-6	o-Xylene	0.218	0.200	0.063	0.947	0.869	0.274	
111-84-2	Nonane	0.107	0.200	0.063	0.561	1.05	0.328	J
95-49-8	2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252	U
622-96-8	4-Ethyltoluene	0.084	0.200	0.078	0.413	0.983	0.381	J
108-67-8	1,3,5-Trimethylbenzene	0.115	0.200	0.058	0.565	0.983	0.287	J
95-63-6	1,2,4-Trimethylbenzene	0.293	0.200	0.069	1.44	0.983	0.341	
124-18-5	Decane	0.332	0.200	0.048	1.93	1.16	0.282	
541-73-1	1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383	U
106-46-7	1,4-Dichlorobenzene	ND	0.200	0.036	ND	1.20	0.217	U
526-73-8	1,2,3-Trimethylbenzene	0.114	0.200	0.075	0.560	0.983	0.369	J
95-50-1	1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369	U
496-11-7	Indane	ND	0.200	0.080	ND	0.967	0.384	U
95-13-6	Indene	ND	0.200	0.061	ND	0.951	0.289	U
1120-21-4	Undecane	0.301	0.200	0.053	1.92	1.28	0.338	
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.200	0.080	ND	1.10	0.436	U
112-40-3	Dodecane	2.87	0.200	0.048	20.0	1.39	0.333	
120-82-1	1,2,4-Trichlorobenzene	0.537	0.200	0.061	3.99	1.48	0.454	
91-20-3	Naphthalene	0.090	0.200	0.043	0.472	1.05	0.223	J
95-15-8	Benzothiophene	ND	0.500	0.047	ND	2.74	0.257	U
87-68-3	Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781	U
91-57-6	2-Methylnaphthalene	ND	1.00	0.272	ND	5.82	1.58	U
90-12-0	1-Methylnaphthalene	ND	1.00	0.250	ND	5.82	1.45	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149103.D
Acq On : 1 Nov 2016 5:52 pm
Operator : AIRPIANO1:RY
Sample : L1634001-05,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 02 10:07:13 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	138834	10.000	ppbV	-0.01
Standard Area = 153282			Recovery = 90.57%			
43) 1,4-difluorobenzene	12.41	114	225342	10.000	ppbV	0.00
Standard Area = 240182			Recovery = 93.82%			
67) chlorobenzene-D5	16.82	54	61583	10.000	ppbV	0.00
Standard Area = 64184			Recovery = 95.95%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	69581	10.308	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 103.08%			
69) toluene-D8	15.14	98	185535	10.002	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.02%			
90) bromofluorobenzene	18.01	95	124204	9.581	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 95.81%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	10273	0.578	ppbV	98
6) chloromethane	4.37		0	N.D.		
7) Freon-114	4.52		0	N.D.		
9) vinyl chloride	0.00		0	N.D.		
10) 1,3-butadiene	4.95		0	N.D.		
11) butane	4.95	43	98050	7.256	ppbV	100
12) acetaldehyde	0.00		0	N.D.	d	
13) bromomethane	0.00		0	N.D.		
14) chloroethane	0.00		0	N.D.		
15) ethanol	5.73	31	8631	1.270	ppbV	99
17) vinyl bromide	0.00		0	N.D.		
18) acrolein	6.18	56	445	0.133	ppbV #	13
19) acetone	6.37	43	126394M6	7.963	ppbV	
21) trichlorofluoromethane	6.57	101	13131	0.715	ppbV	97
22) isopropyl alcohol	6.72	45	67926	4.115	ppbV	99
24) pentane	7.06	43	32092	2.149	ppbV	99
26) 1,1-dichloroethene	0.00		0	N.D.		
27) tertiary butyl alcohol	7.53	59	30696	1.847	ppbV	95
28) methylene chloride	7.59	49	3183	0.304	ppbV #	83
29) 3-chloropropene	0.00		0	N.D.	d	
30) carbon disulfide	7.91	76	3554	0.166	ppbV #	1

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149103.D
Acq On : 1 Nov 2016 5:52 pm
Operator : AIRPIANO1:RY
Sample : L1634001-05,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 02 10:07:13 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
31) Freon 113	7.92	101	724	0.052	ppbV		94
32) trans-1,2-dichloroethene	0.00		0	N.D.			
33) 1,1-dichloroethane	0.00		0	N.D.			
34) MTBE	9.11	73	13909	0.666	ppbV	#	90
36) 2-butanone	9.52	43	26507	1.339	ppbV		96
37) cis-1,2-dichloroethene	0.00		0	N.D.			
39) chloroform	10.35	83	4733	0.233	ppbV		95
42) 1,2-dichloroethane	0.00		0	N.D.			
44) hexane	10.25	57	5997	0.392	ppbV	#	31
48) 1,1,1-trichloroethane	0.00		0	N.D.			
50) benzene	12.00	78	3822	0.180	ppbV	#	90
51) thiophene	0.00		0	N.D.			
52) carbon tetrachloride	0.00		0	N.D.			
53) cyclohexane	12.31		0	N.D.			
56) 1,2-dichloropropane	0.00		0	N.D.			
57) bromodichloromethane	0.00		0	N.D.			
58) 1,4-dioxane	0.00		0	N.D.			
59) trichloroethene	0.00		0	N.D.			
60) 2,2,4-trimethylpentane	13.23		0	N.D.			
62) heptane	13.53	43	1812	0.103	ppbV	#	94
63) cis-1,3-dichloropropene	0.00		0	N.D.			
64) 4-methyl-2-pentanone	14.24	43	15435M4	0.622	ppbV		
65) trans-1,3-dichloropropene	0.00		0	N.D.			
66) 1,1,2-trichloroethane	0.00		0	N.D.			
68) toluene	15.24	91	9105	0.355	ppbV		95
70) 2-methylthiophene	0.00		0	N.D.	d		
72) 2-hexanone	15.49	43	51787	2.161	ppbV	#	92
73) 3-methylthiophene	0.00		0	N.D.			
74) dibromochloromethane	0.00		0	N.D.			
75) 1,2-dibromoethane	0.00		0	N.D.			
77) octane	16.14	85	593	0.077	ppbV	#	93
78) tetrachloroethene	16.28	166	4014	0.305	ppbV		91
80) chlorobenzene	0.00		0	N.D.			
81) ethylbenzene	17.16	91	2781	0.083	ppbV		97
82) 2-ethylthiophene	0.00		0	N.D.	d		
83) m+p-xylene	17.30	91	10524	0.392	ppbV		93
84) bromoform	0.00		0	N.D.			
85) styrene	17.59		0	N.D.			

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149103.D
Acq On : 1 Nov 2016 5:52 pm
Operator : AIRPIANO1:RY
Sample : L1634001-05,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 02 10:07:13 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
86) 1,1,2,2-tetrachloroethane	0.00		0	N.D.			
87) o-xylene	17.66	91	6041	0.218	ppbV		97
89) nonane	17.81	43	2800	0.107	ppbV	#	80
93) 2-chlorotoluene	0.00		0	N.D.			
96) 4-ethyl toluene	18.59	105	3304	0.084	ppbV	#	93
97) 1,3,5-trimethylbenzene	18.64	105	3575	0.115	ppbV	#	94
99) 1,2,4-trimethylbenzene	18.95	105	9149	0.293	ppbV	#	49
100) decane	18.99	57	8177M4	0.332	ppbV		
102) 1,3-dichlorobenzene	0.00		0	N.D.			
103) 1,4-dichlorobenzene	0.00		0	N.D.			
105) 1,2,3-trimethylbenzene	19.27	105	3887	0.114	ppbV		95
107) 1,2-dichlorobenzene	0.00		0	N.D.			
109) indan	19.44		0	N.D.			
110) indene	19.51		0	N.D.			
112) undecane	19.94	57	8165M4	0.301	ppbV		
113) 1,2,4,5-tetramethylben...	20.19		0	N.D.			
114) dodecane	20.84	57	79335	2.869	ppbV		100
115) 1,2,4-trichlorobenzene	20.83	180	11046	0.537	ppbV	#	92
116) naphthalene	20.95	128	3502	0.090	ppbV		100
118) benzothiophene	21.02		0	N.D.			
119) hexachlorobutadiene	0.00		0	N.D.			
120) 2-methylnaphthalene	0.00		0	N.D.			
121) 1-methylnaphthalene	22.30		0	N.D.			

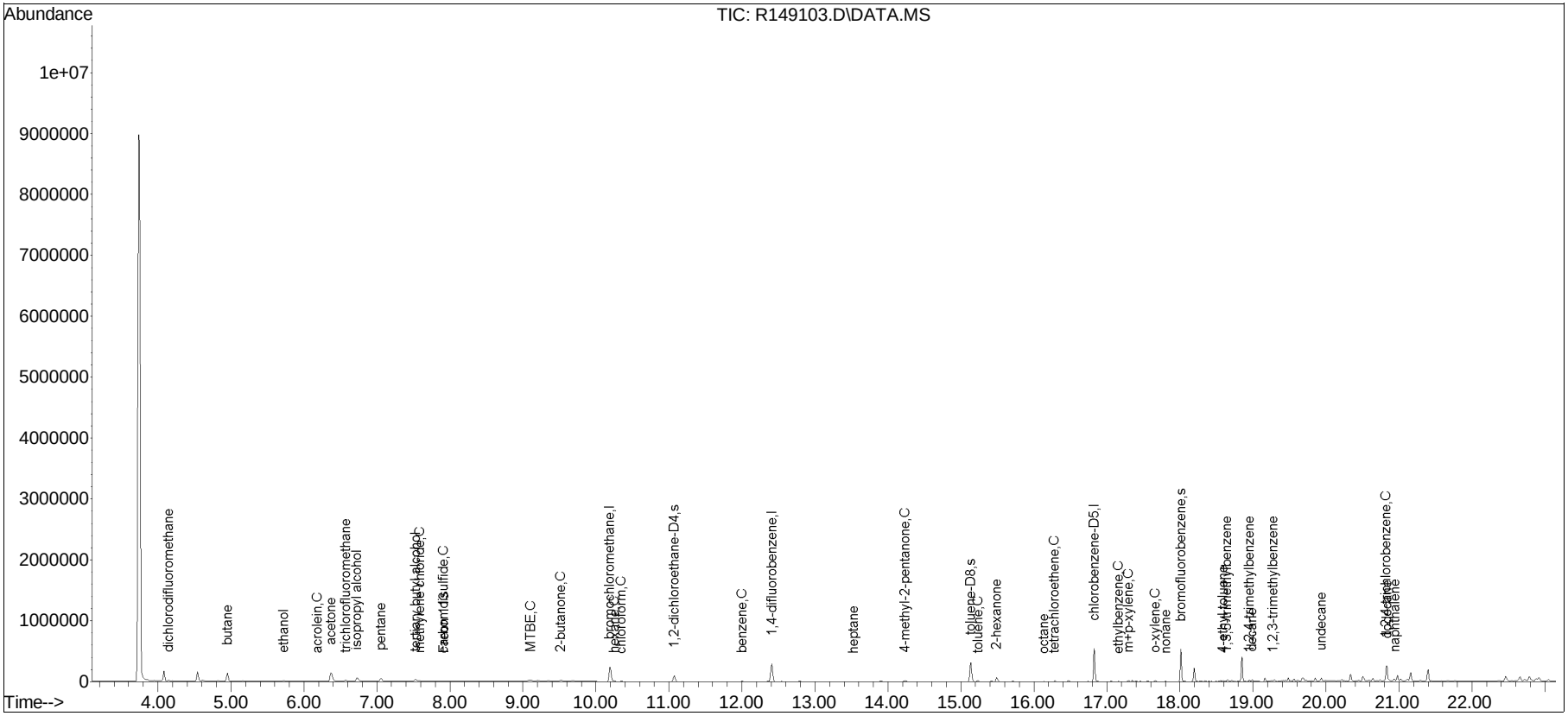
(#) = qualifier out of range (m) = manual integration (+) = signals summed

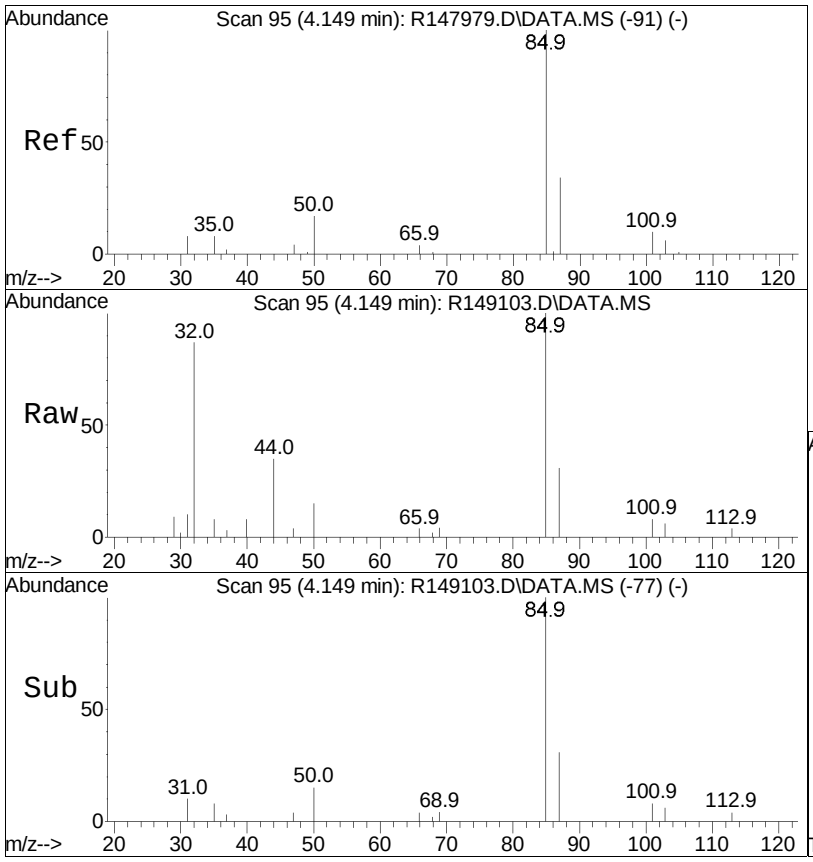
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149103.D
Acq On : 1 Nov 2016 5:52 pm
Operator : AIRPIANO1:RY
Sample : L1634001-05,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 02 10:07:13 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Keyspan_TO15 - .a\AIR1\2016\161101K\R149091.D

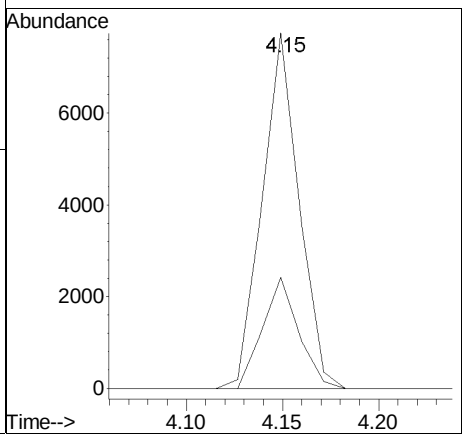


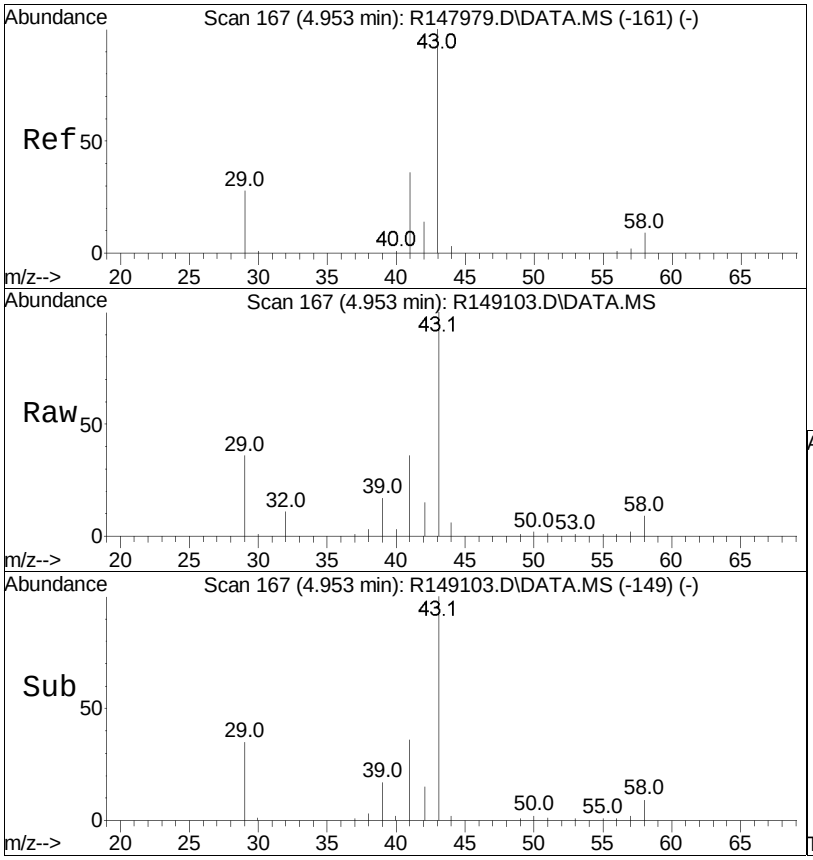


#5
dichlorodifluoromethane
Concen: 0.58 ppbV
RT: 4.15 min Scan# 95
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 85 Resp: 10273

Ion	Ratio	Lower	Upper
85	100		
87	31.3	25.9	38.9

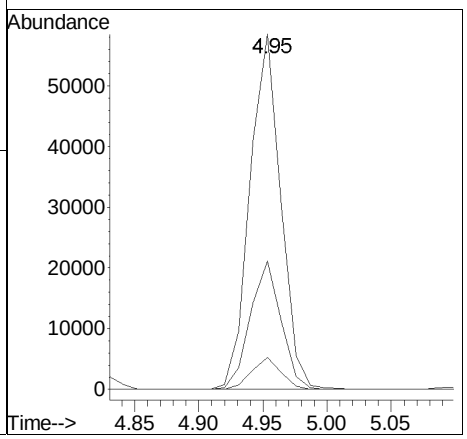


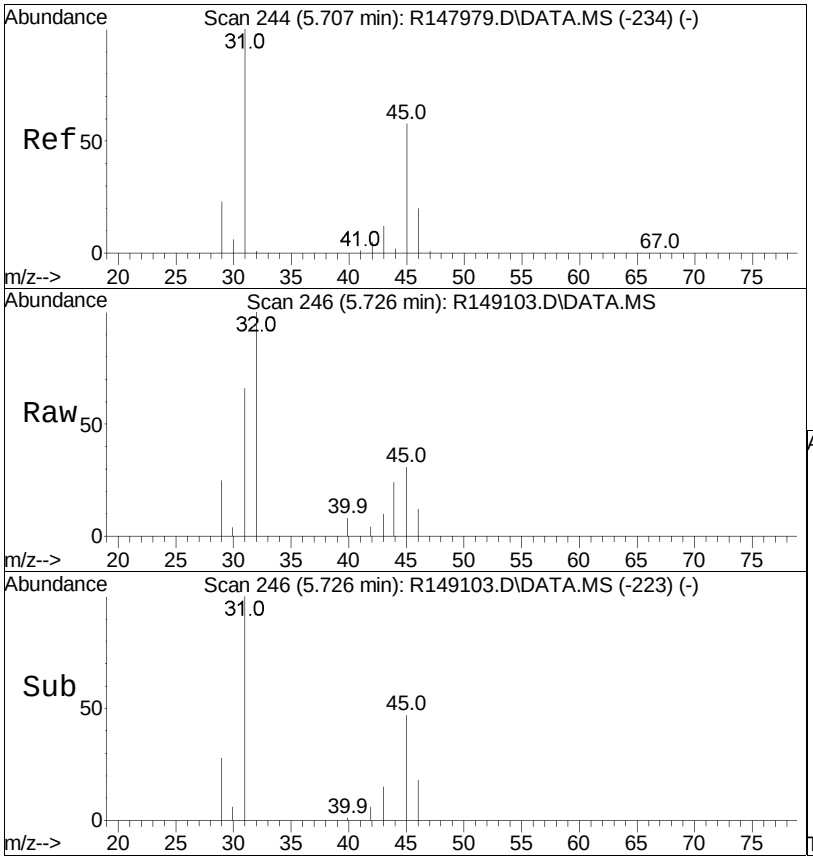


#11
butane
Concen: 7.26 ppbV
RT: 4.95 min Scan# 167
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 43 Resp: 98050

Ion	Ratio	Lower	Upper
43	100		
58	9.0	7.1	10.7
41	36.1	28.7	43.1

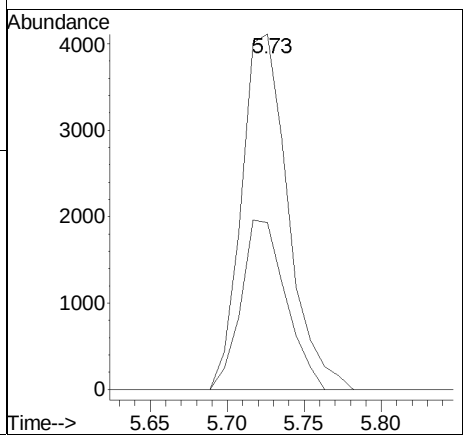


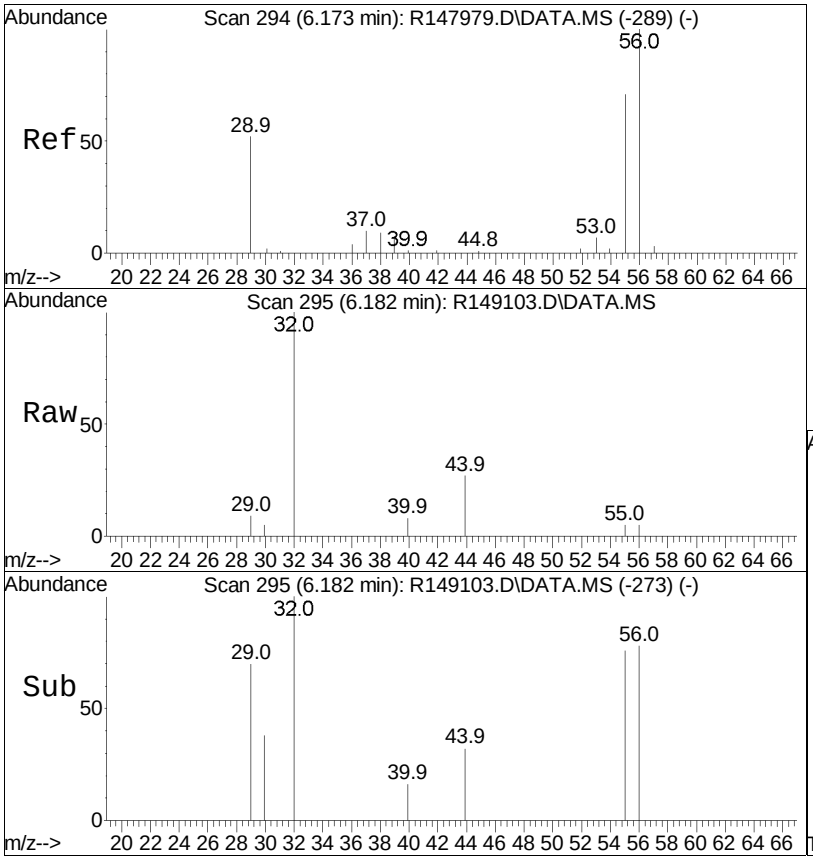


#15
ethanol
Concen: 1.27 ppbV
RT: 5.73 min Scan# 246
Delta R.T. 0.018 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 31 Resp: 8631

Ion	Ratio	Lower	Upper
31	100		
45	47.0	37.2	55.8

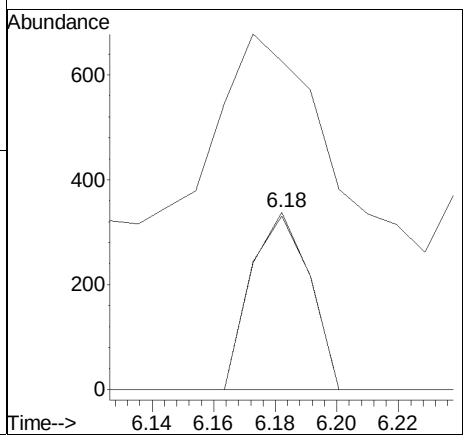


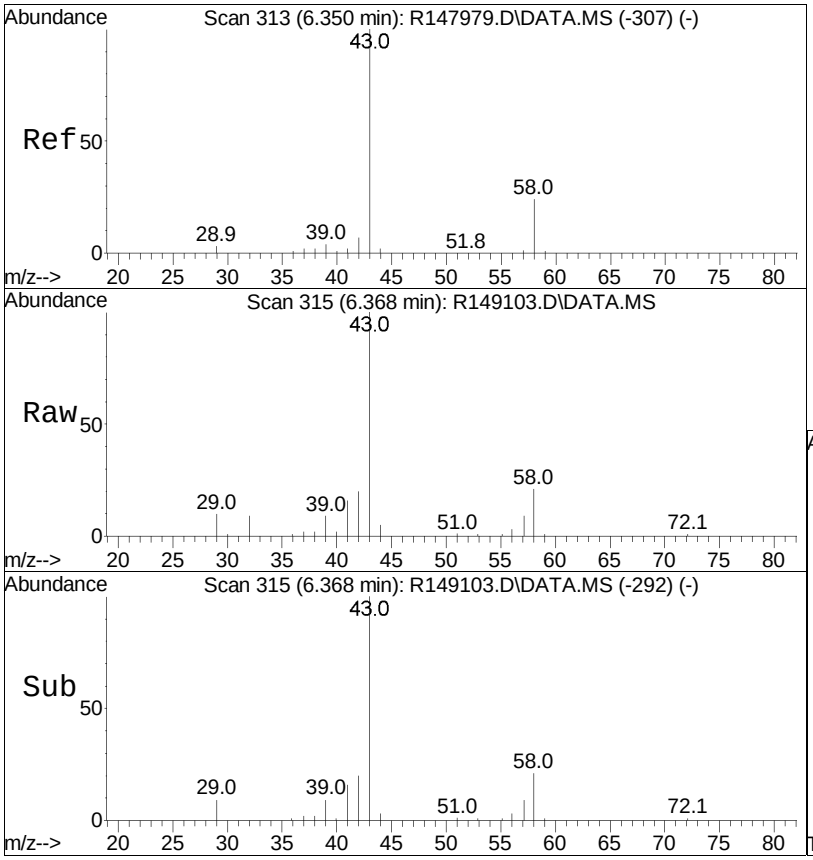


#18
acrolein
Concen: 0.13 ppbV
RT: 6.18 min Scan# 295
Delta R.T. 0.009 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 56 Resp: 445

Ion	Ratio	Lower	Upper
56	100		
55	97.9	56.2	84.4#
29	185.2	56.3	84.5#

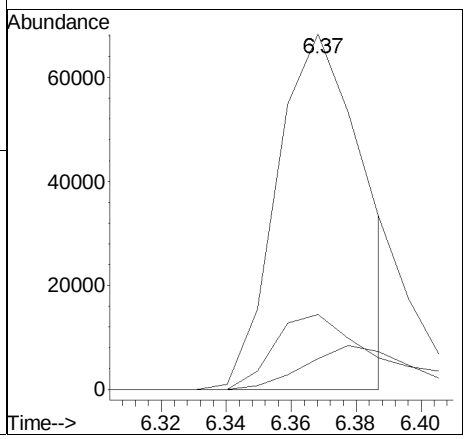


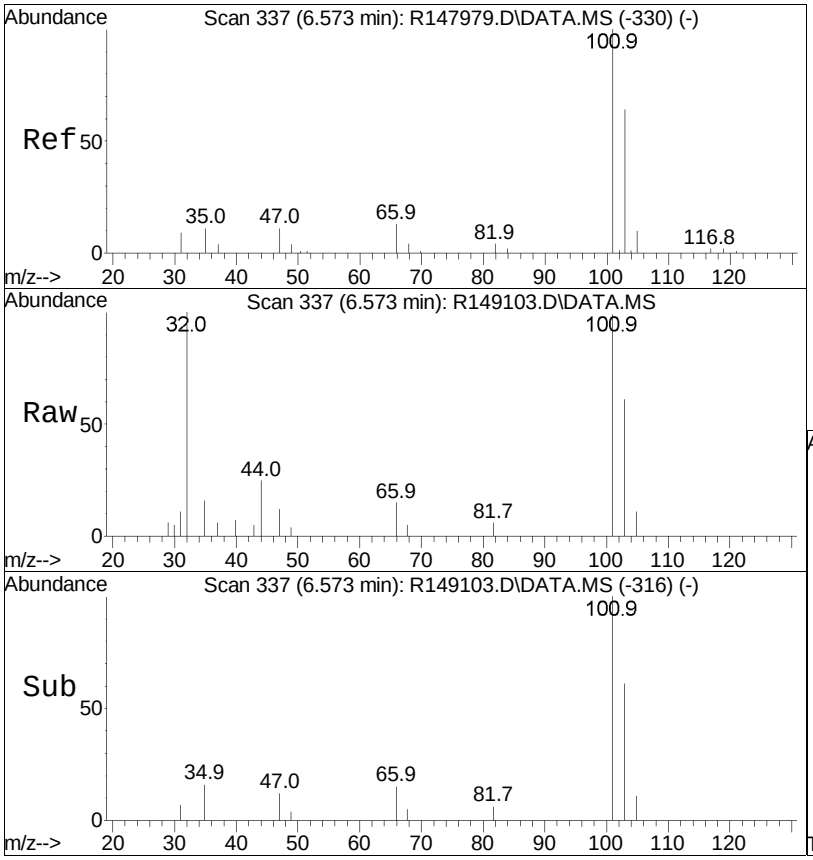


#19
acetone
Concen: 7.96 ppbV m
RT: 6.37 min Scan# 315
Delta R.T. 0.019 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 43 Resp: 126394

Ion	Ratio	Lower	Upper
43	100		
58	21.1	19.8	29.8
57	8.6	0.6	1.0#

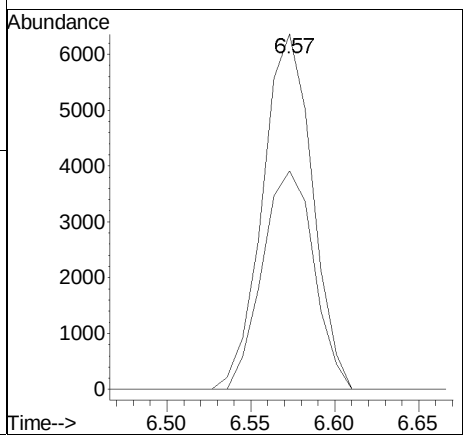


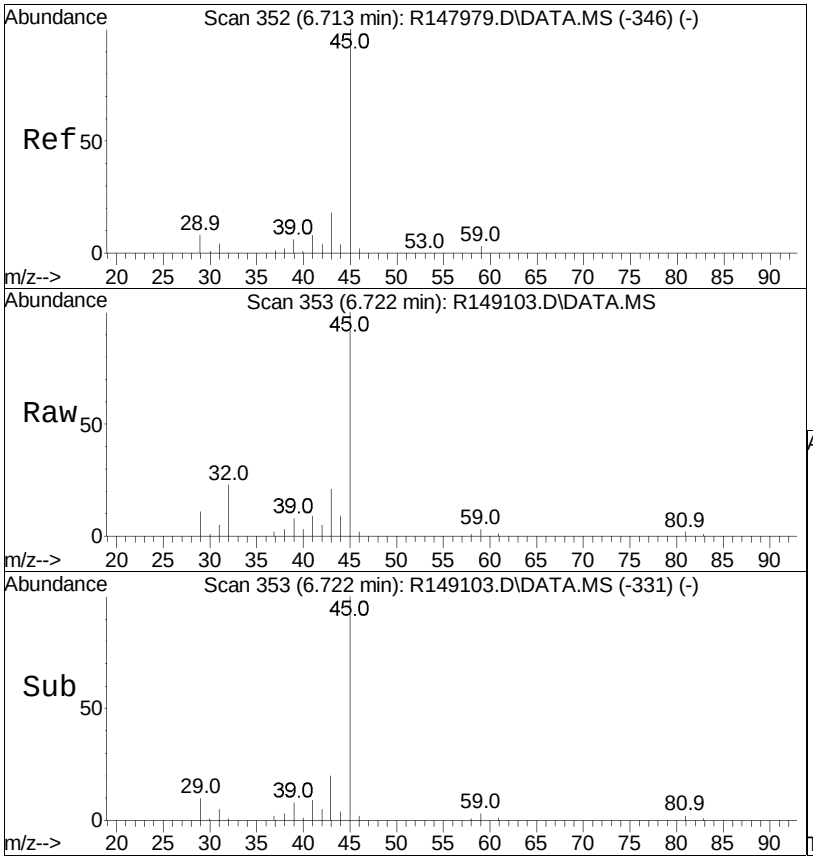


#21
trichlorofluoromethane
Concen: 0.72 ppbV
RT: 6.57 min Scan# 337
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion:101 Resp: 13131

Ion	Ratio	Lower	Upper
101	100		
103	61.5	51.0	76.4

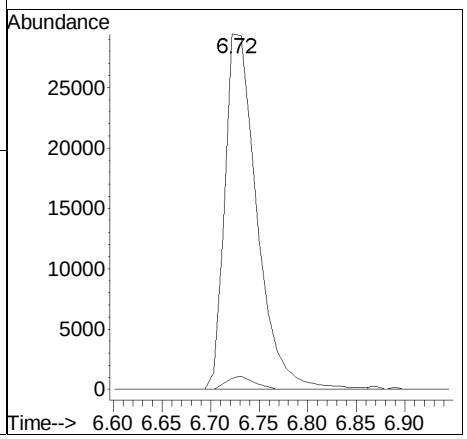


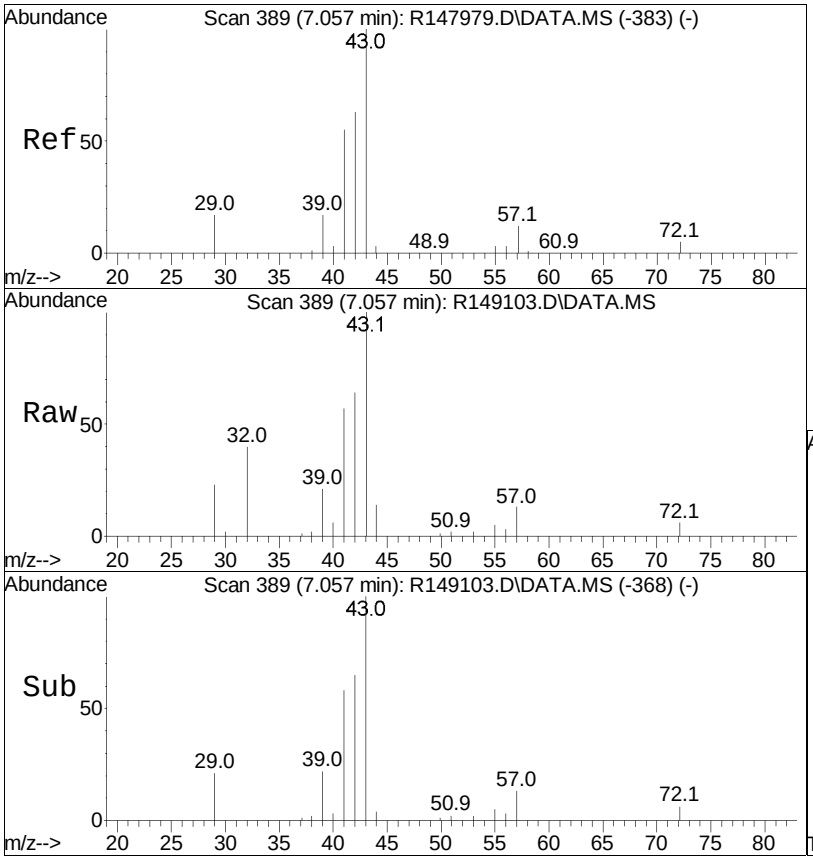


#22
isopropyl alcohol
Concen: 4.12 ppbV
RT: 6.72 min Scan# 353
Delta R.T. 0.009 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 45 Resp: 67926

Ion	Ratio	Lower	Upper
45	100		
59	3.1	2.7	4.1

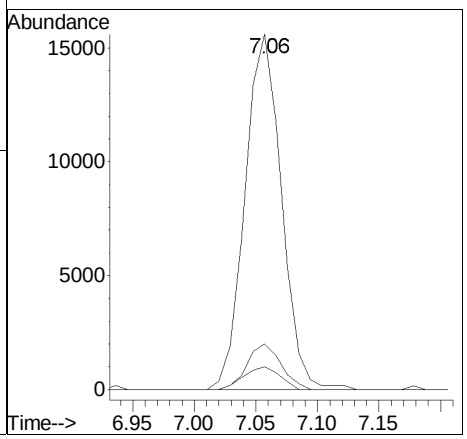


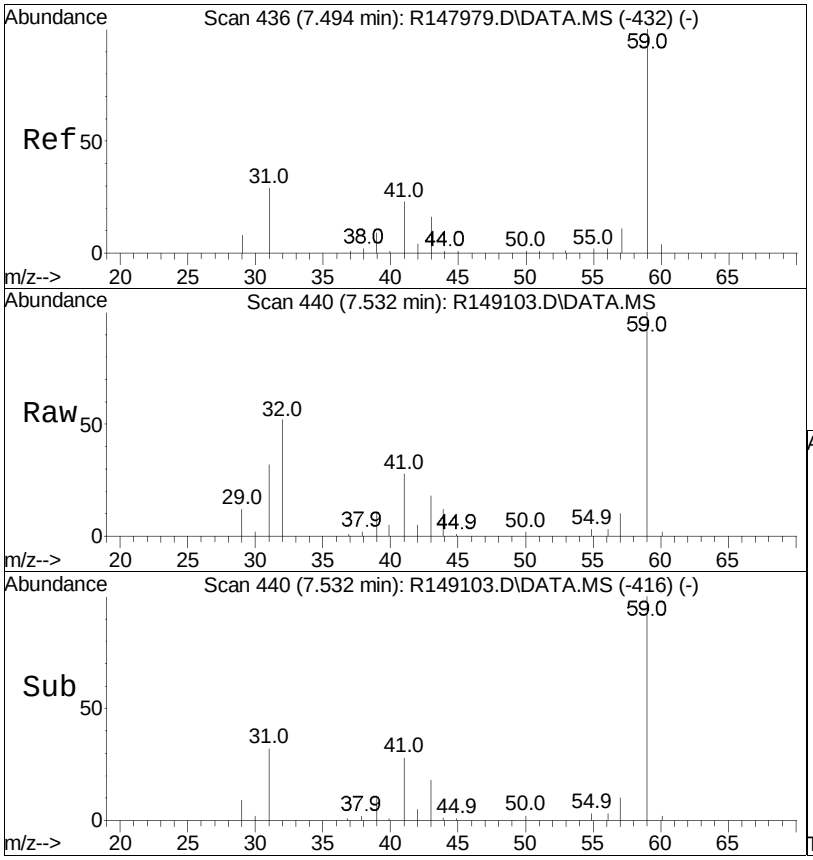


#24
pentane
Concen: 2.15 ppbV
RT: 7.06 min Scan# 389
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 43 Resp: 32092

Ion	Ratio	Lower	Upper
43	100		
57	12.8	9.8	14.8
72	6.4	5.4	8.2

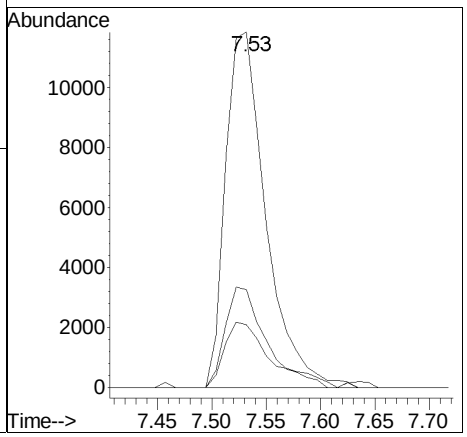


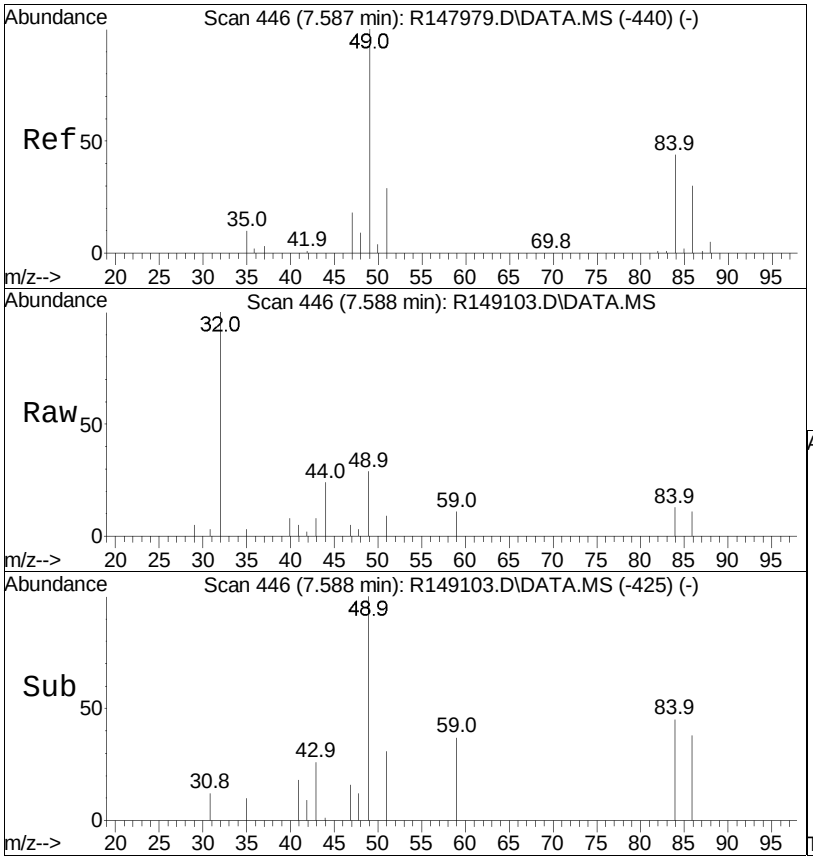


#27
tertiary butyl alcohol
Concen: 1.85 ppbV
RT: 7.53 min Scan# 440
Delta R.T. 0.028 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 59 Resp: 30696

Ion	Ratio	Lower	Upper
59	100		
41	27.5	18.9	28.3
43	17.7	13.7	20.5

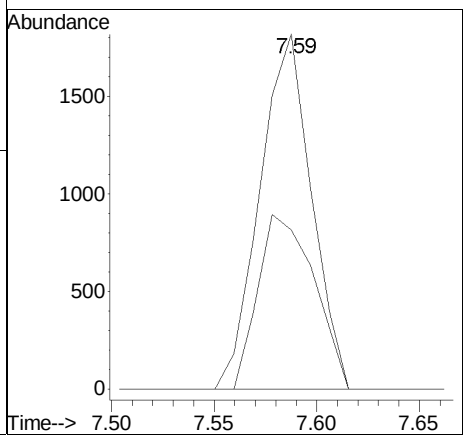


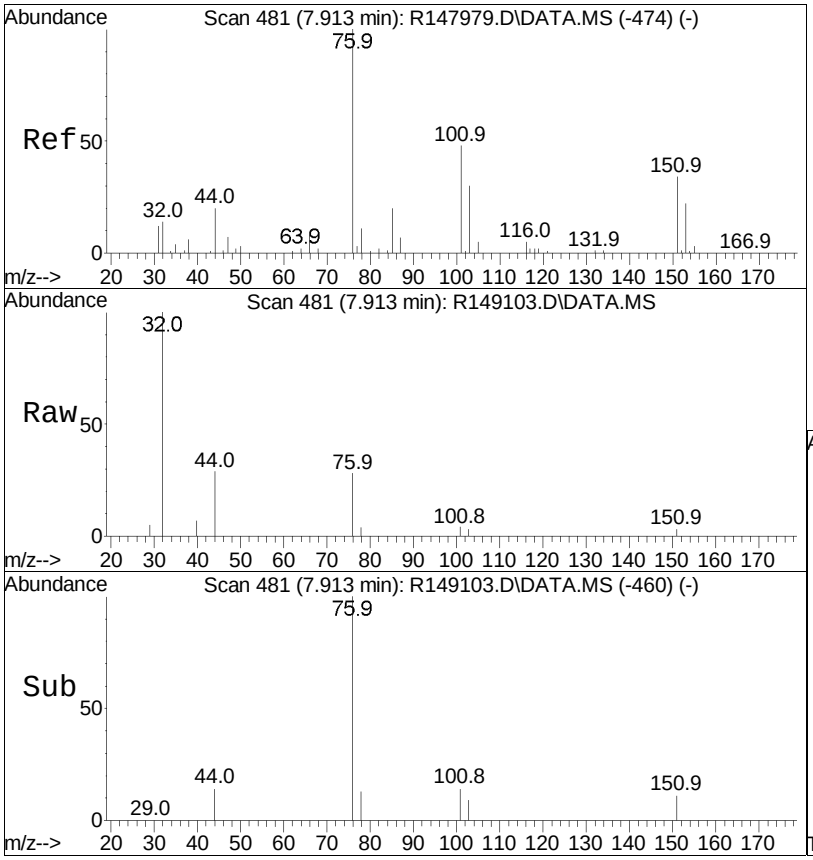


#28
methylene chloride
Concen: 0.30 ppbV
RT: 7.59 min Scan# 446
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 49 Resp: 3183

Ion	Ratio	Lower	Upper
49	100		
84	44.9	45.9	68.9#

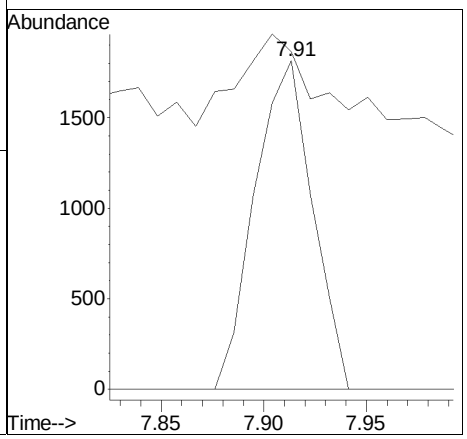


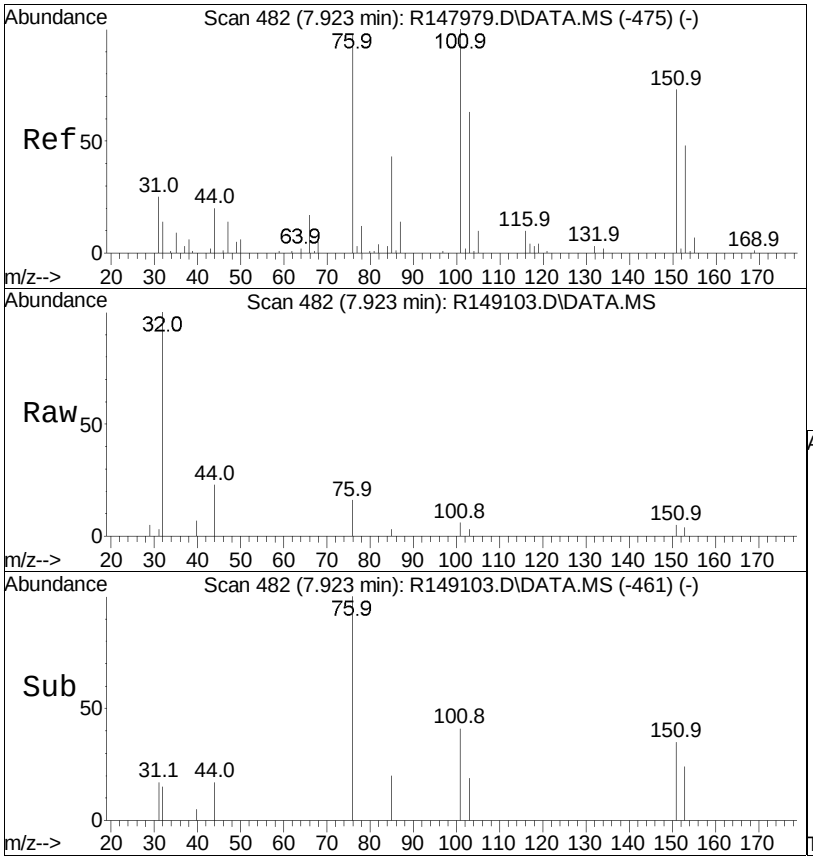


#30
carbon disulfide
Concen: 0.17 ppbV
RT: 7.91 min Scan# 481
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 76 Resp: 3554

Ion	Ratio	Lower	Upper
76	100		
44	102.7	16.3	24.5#

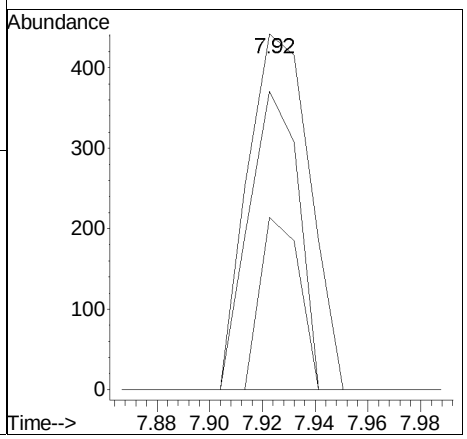


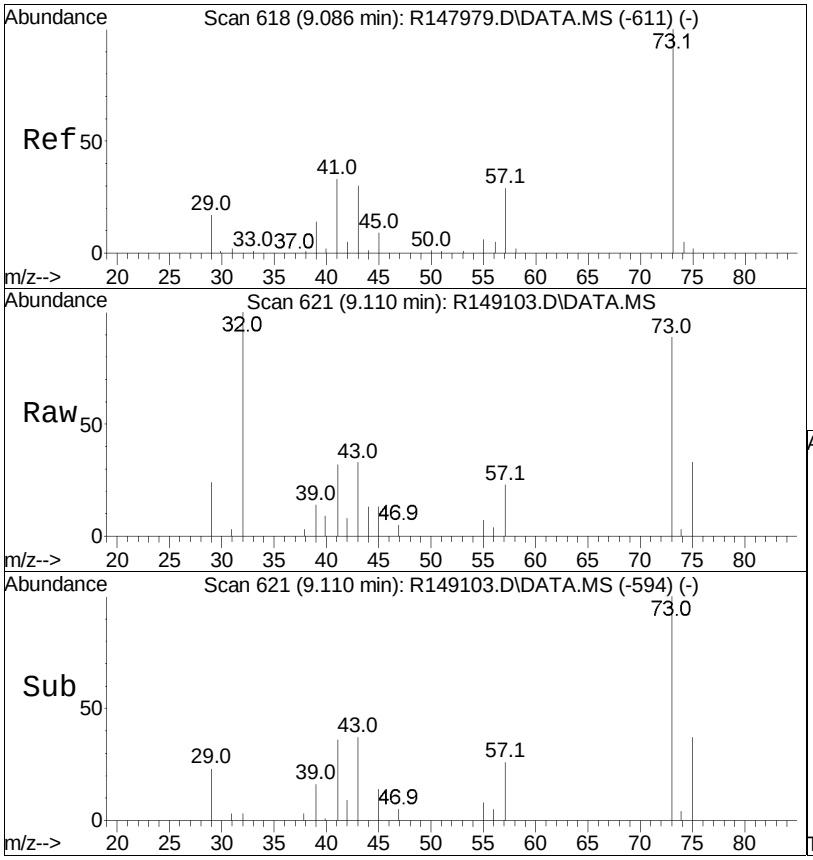


#31
Freon 113
Concen: 0.05 ppbV
RT: 7.92 min Scan# 482
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion:101 Resp: 724

Ion	Ratio	Lower	Upper
101	100		
85	48.4	38.3	57.5
151	83.9	61.3	91.9

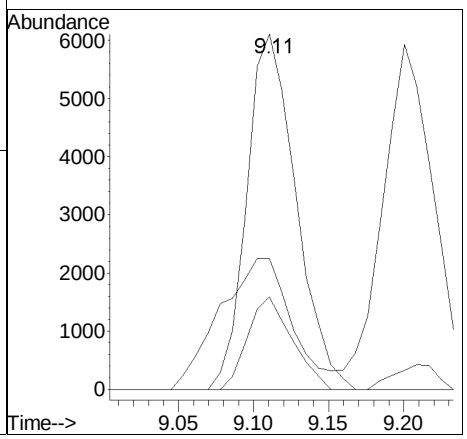


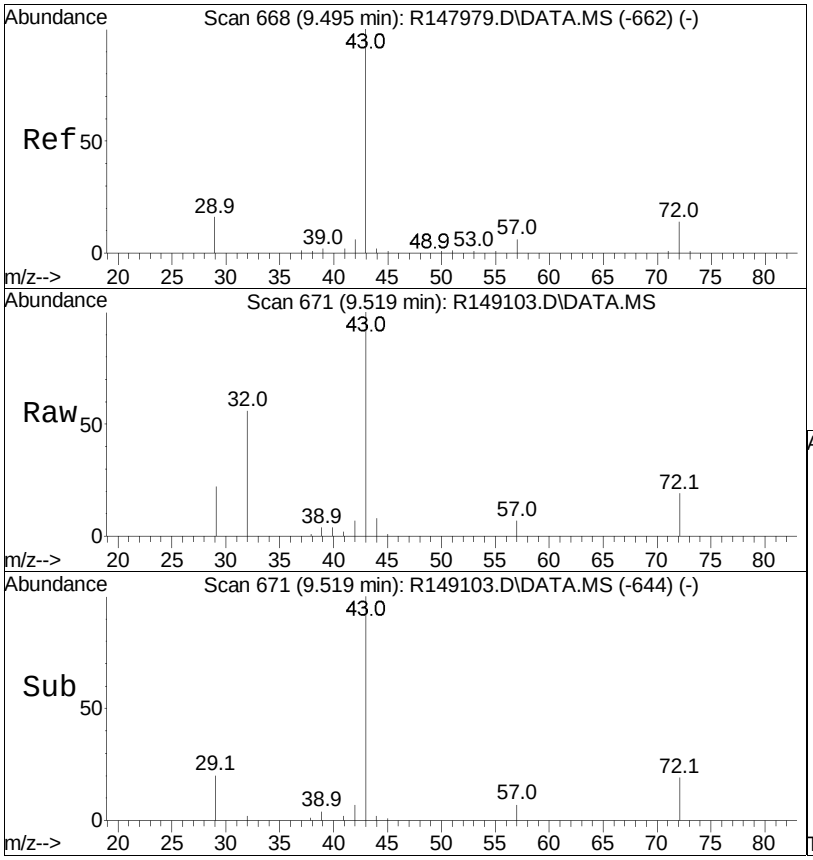


#34
MTBE
Concen: 0.67 ppbV
RT: 9.11 min Scan# 621
Delta R.T. 0.024 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 73 Resp: 13909

Ion	Ratio	Lower	Upper
73	100		
57	26.0	19.1	28.7
43	36.9	23.0	34.4#

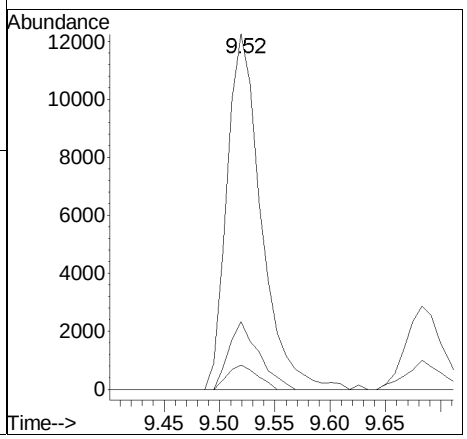


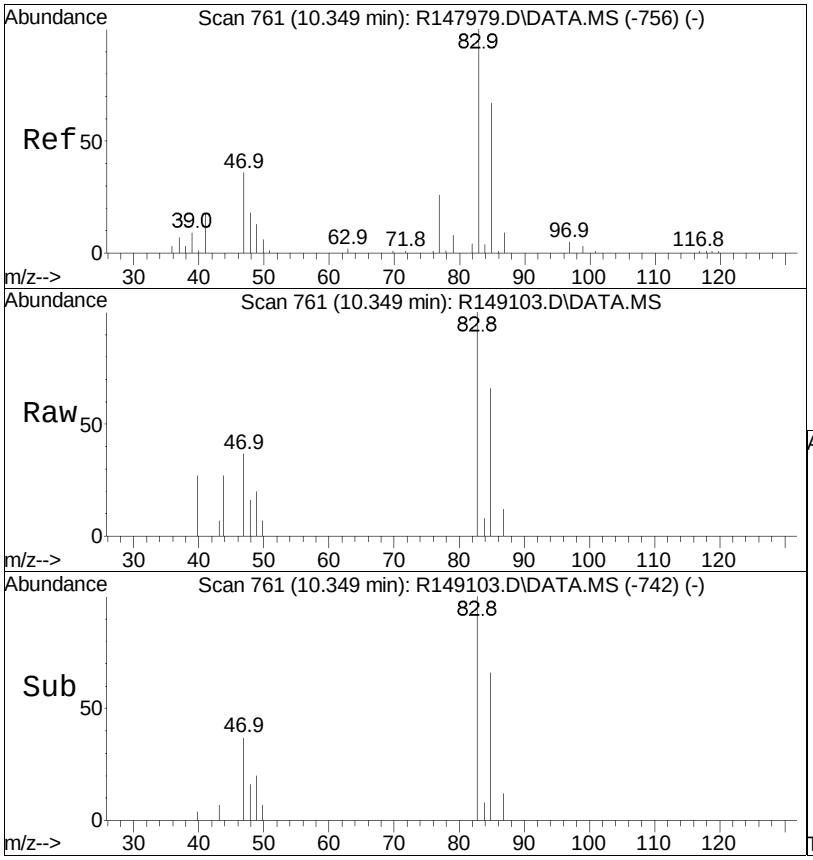


#36
2-butanone
Concen: 1.34 ppbV
RT: 9.52 min Scan# 671
Delta R.T. 0.024 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 43 Resp: 26507

Ion	Ratio	Lower	Upper
43	100		
72	19.1	13.6	20.4
57	6.9	4.9	7.3

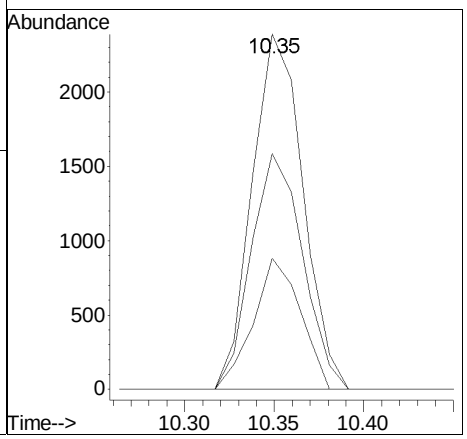


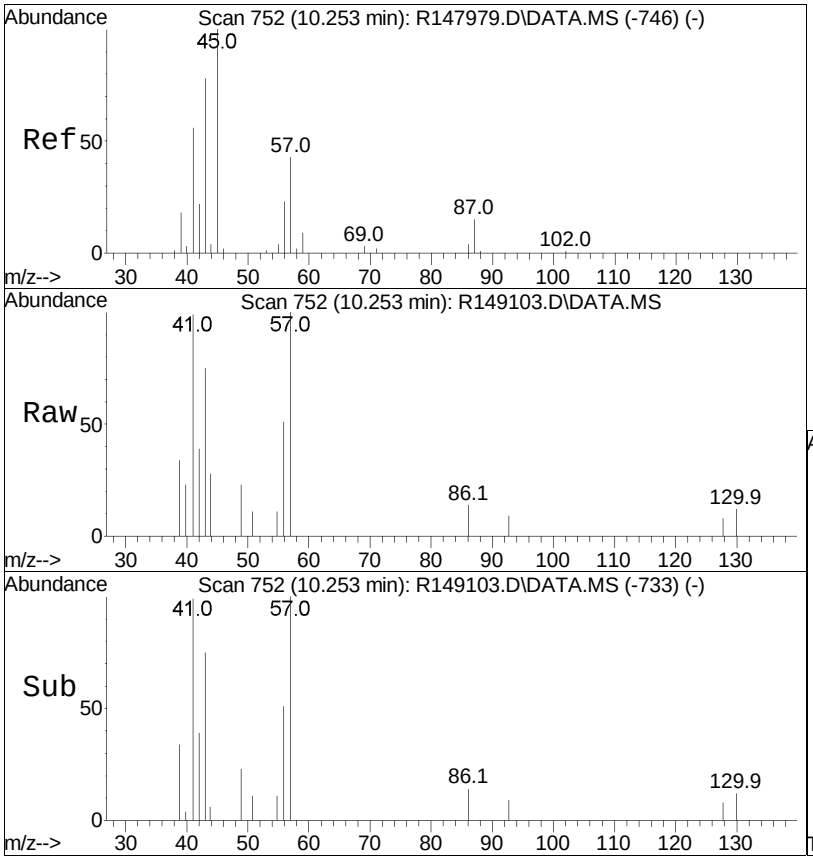


#39
chloroform
Concen: 0.23 ppbV
RT: 10.35 min Scan# 761
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 83 Resp: 4733

Ion	Ratio	Lower	Upper
83	100		
85	66.4	51.1	76.7
47	36.9	25.8	38.8

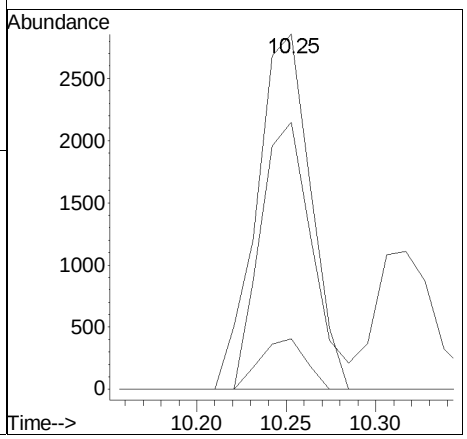


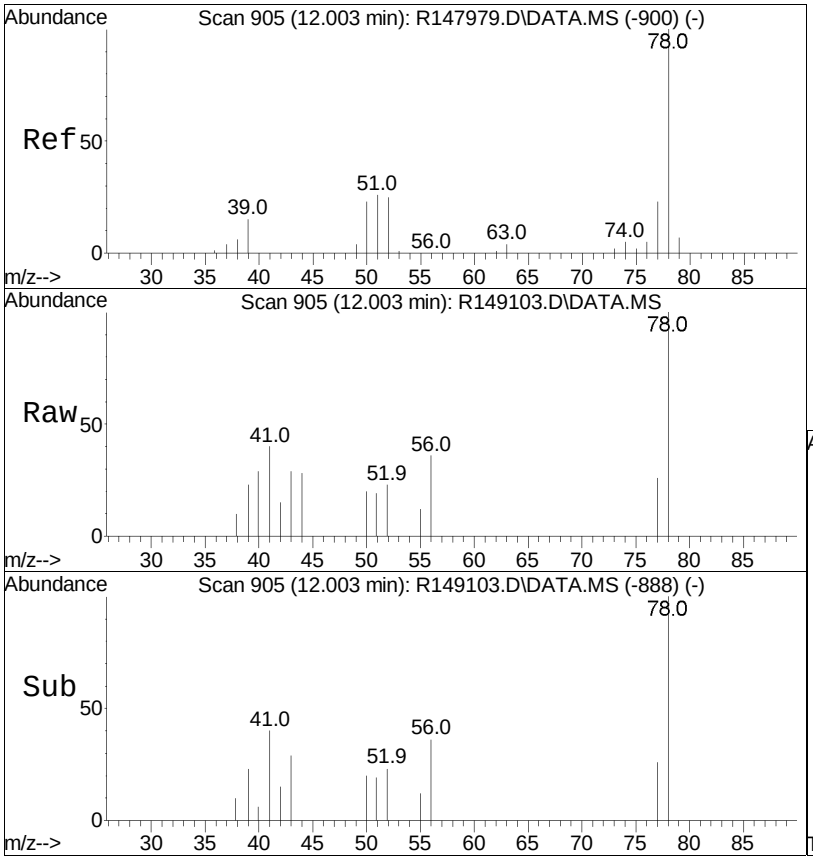


#44
hexane
Concen: 0.39 ppbV
RT: 10.25 min Scan# 752
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 57 Resp: 5997

Ion	Ratio	Lower	Upper
57	100		
43	75.2	142.3	213.5#
86	14.2	9.3	13.9#

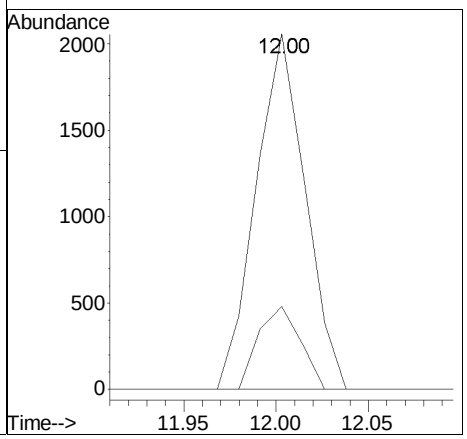


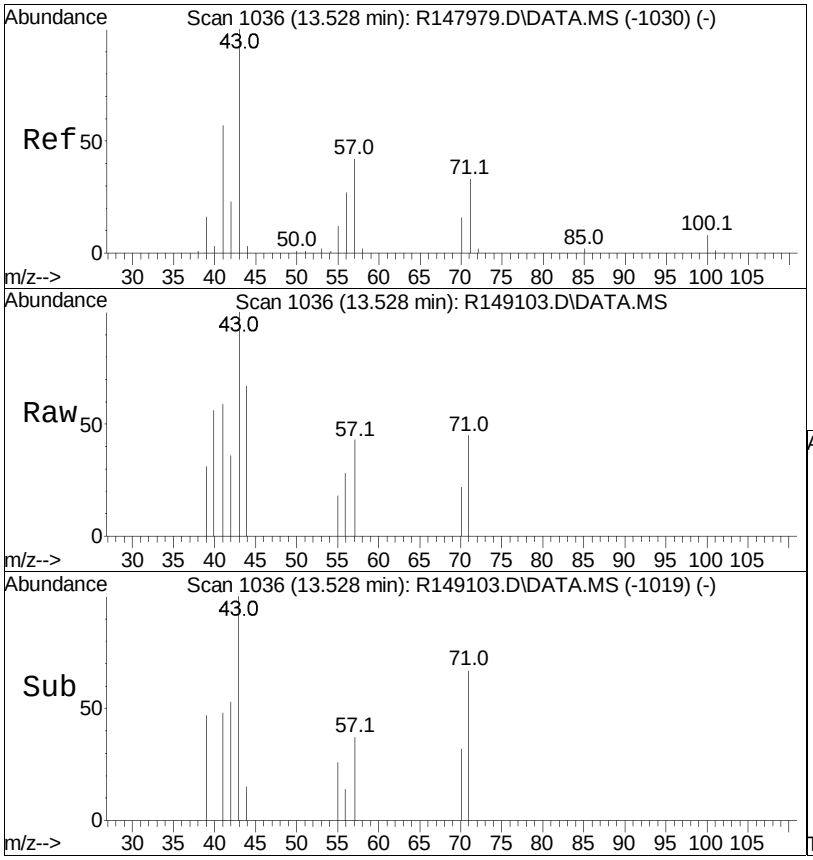


#50
benzene
Concen: 0.18 ppbV
RT: 12.00 min Scan# 905
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 78 Resp: 3822

Ion	Ratio	Lower	Upper
78	100		
52	23.3	15.2	22.8#

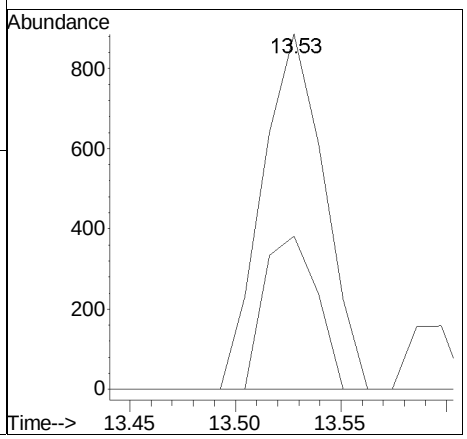


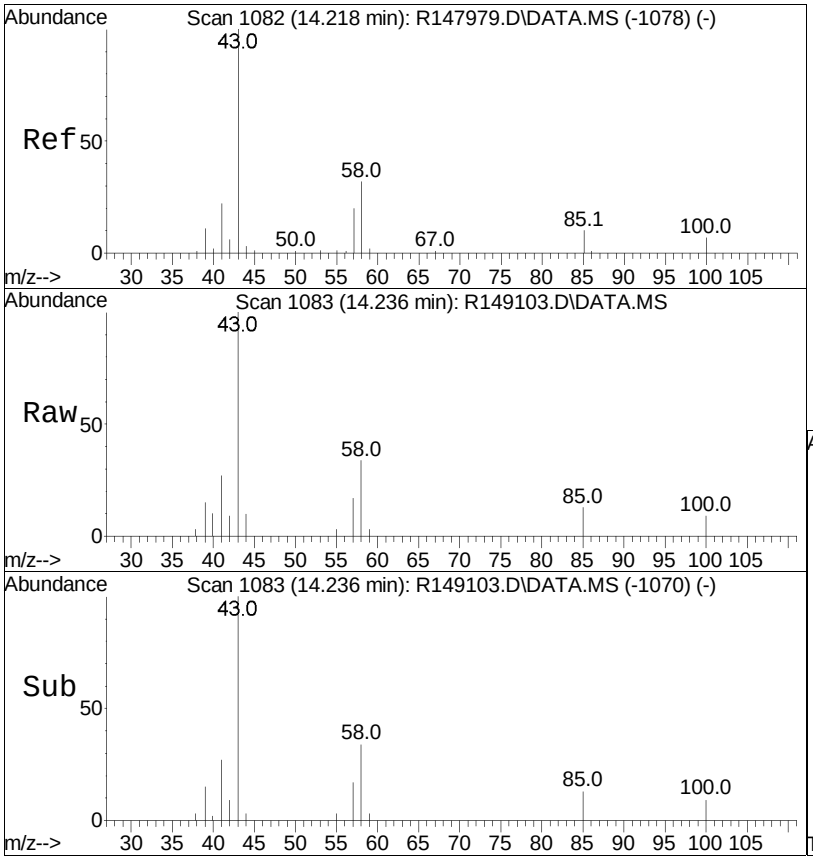


#62
heptane
Concen: 0.10 ppbV
RT: 13.53 min Scan# 1036
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 43 Resp: 1812

Ion	Ratio	Lower	Upper
43	100		
57	43.1	34.2	51.2
100	0.0	7.9	11.9#

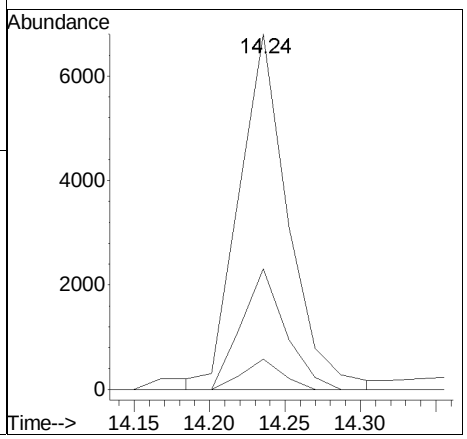


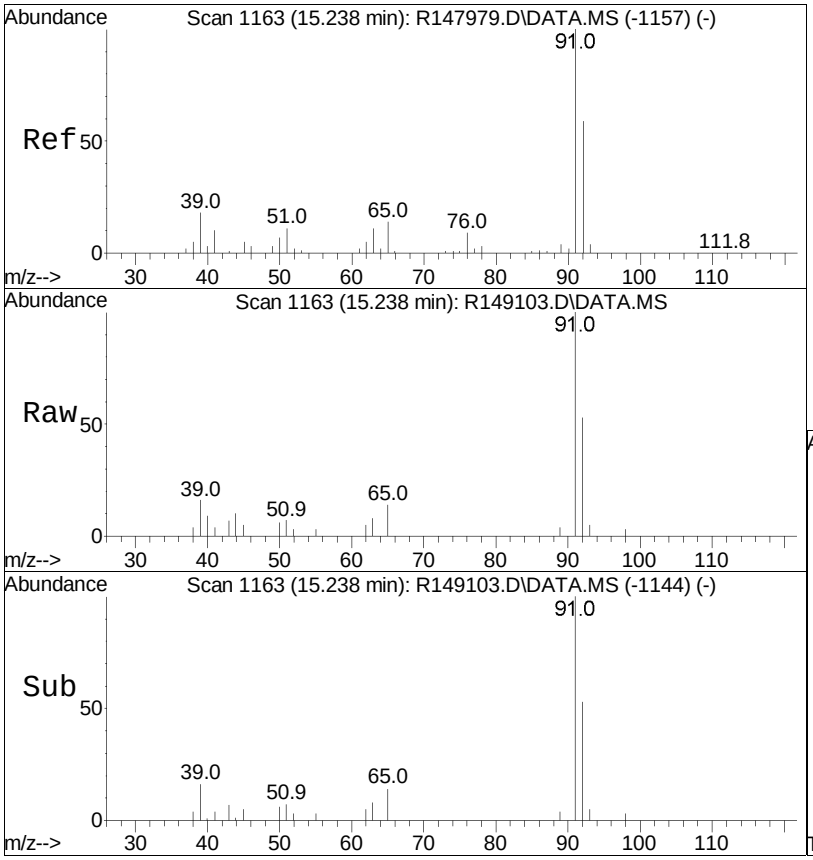


#64
4-methyl-2-pentanone
Concen: 0.62 ppbV m
RT: 14.24 min Scan# 1083
Delta R.T. 0.017 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 43 Resp: 15435

Ion	Ratio	Lower	Upper
43	100		
58	34.0	25.8	38.8
100	8.5	6.9	10.3

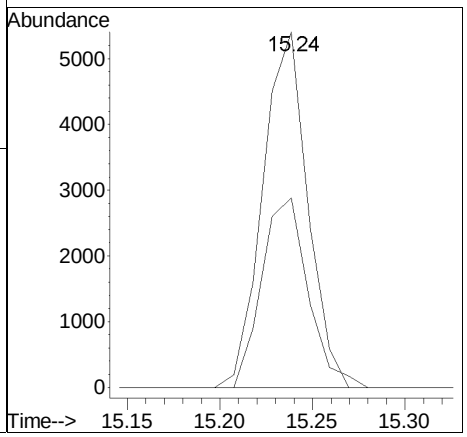


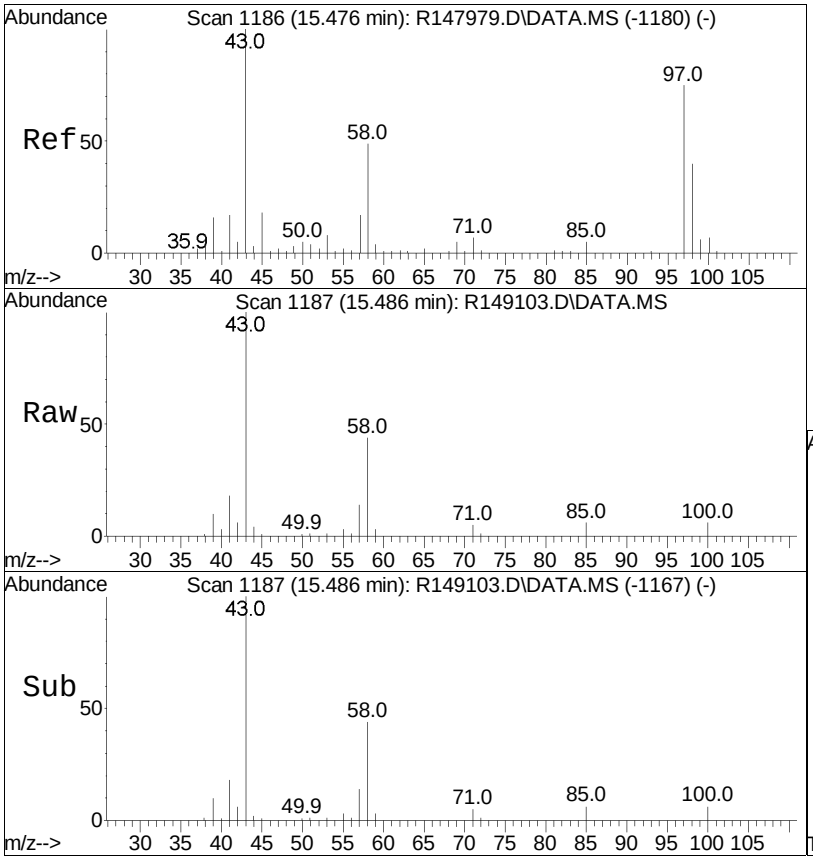


#68
toluene
Concen: 0.35 ppbV
RT: 15.24 min Scan# 1163
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 91 Resp: 9105

Ion	Ratio	Lower	Upper
91	100		
92	53.3	45.8	68.6

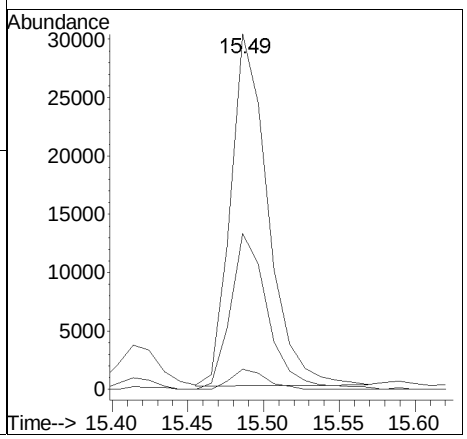


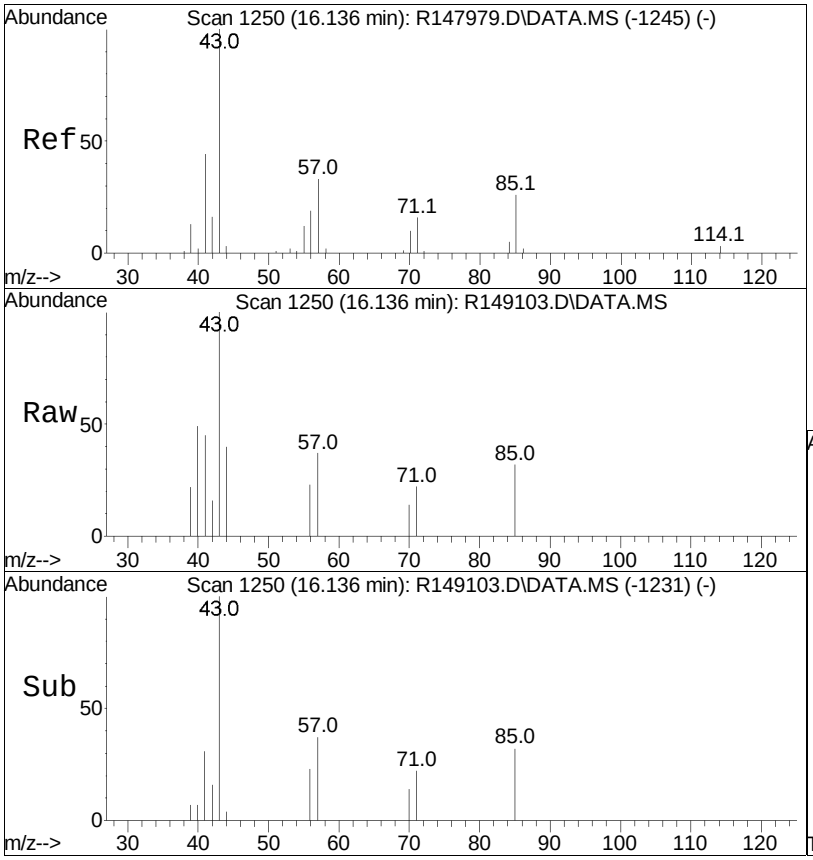


#72
2-hexanone
Concen: 2.16 ppbV
RT: 15.49 min Scan# 1187
Delta R.T. 0.010 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 43 Resp: 51787

Ion	Ratio	Lower	Upper
43	100		
58	43.9	39.7	59.5
100	5.7	6.9	10.3#

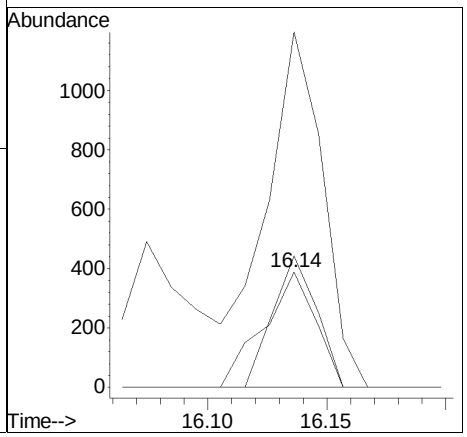


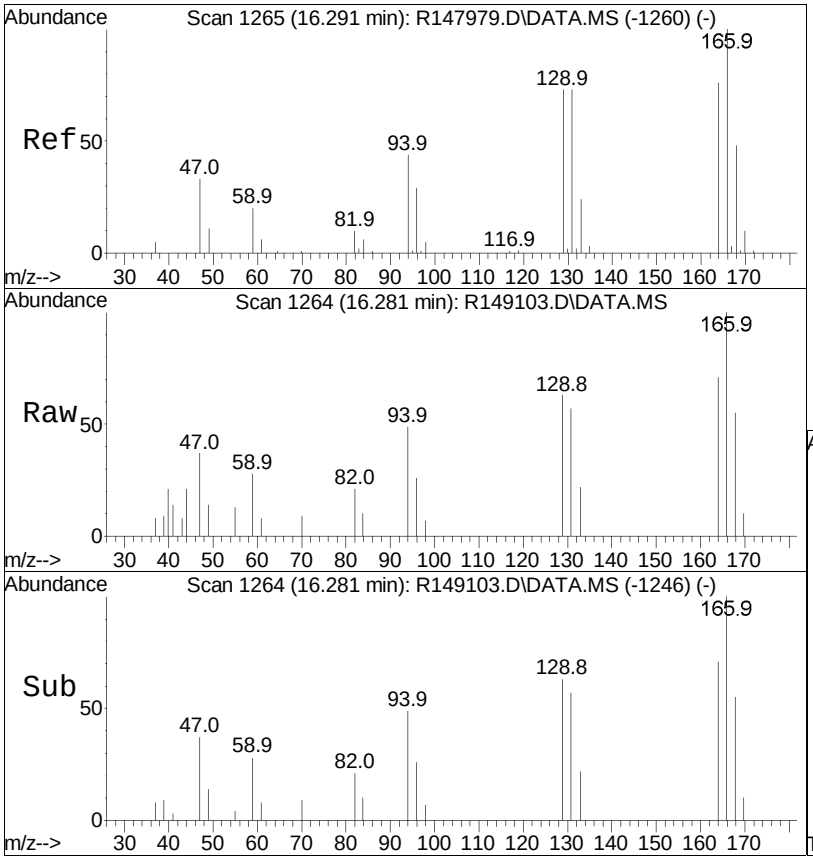


#77
octane
Concen: 0.08 ppbV
RT: 16.14 min Scan# 1250
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 85 Resp: 593

Ion	Ratio	Lower	Upper
85	100		
57	113.9	84.9	127.3
114	0.0	8.2	12.2#
43	307.7	257.0	385.4

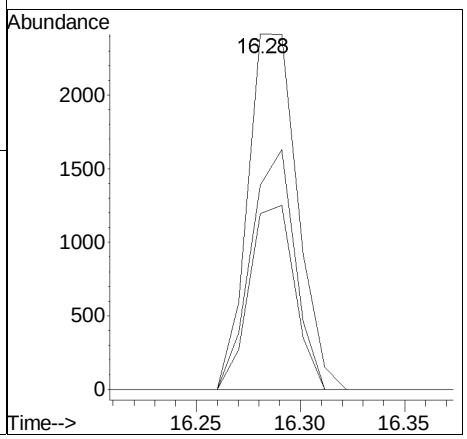


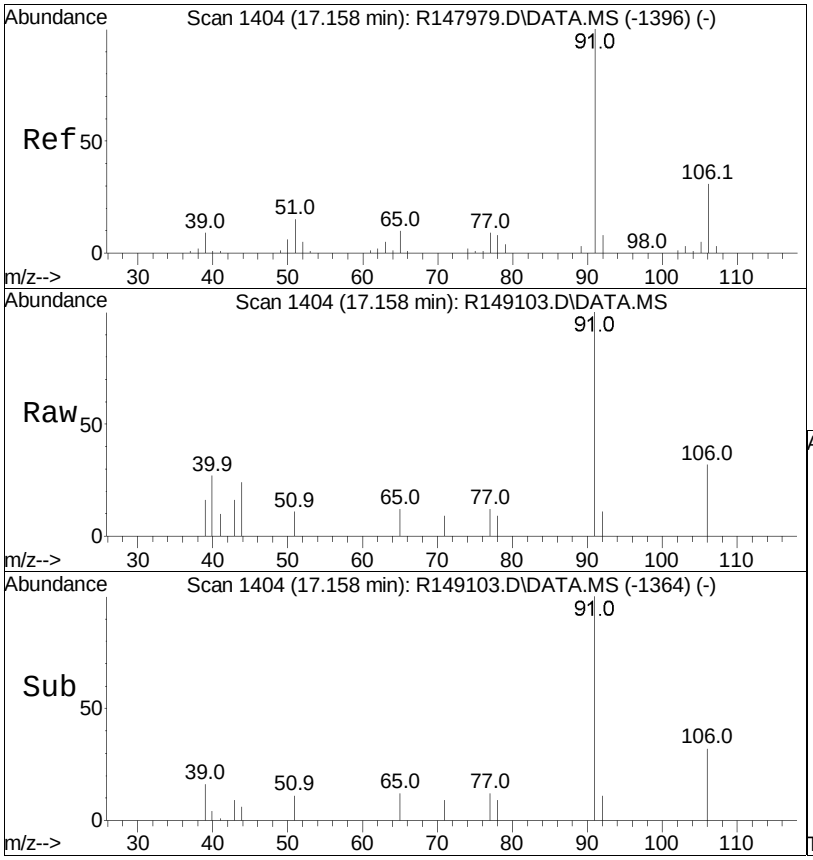


#78
tetrachloroethene
Concen: 0.31 ppbV
RT: 16.28 min Scan# 1264
Delta R.T. -0.010 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion:166 Resp: 4014

Ion	Ratio	Lower	Upper
166	100		
131	57.5	53.0	79.4
94	49.5	36.6	55.0

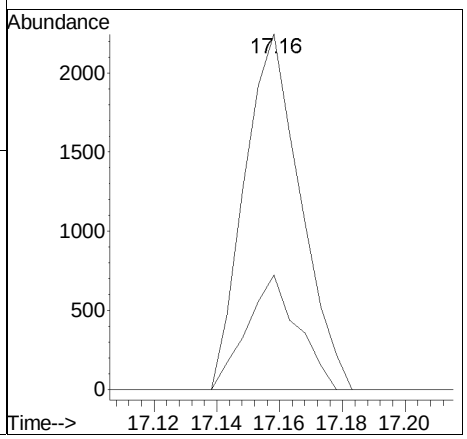


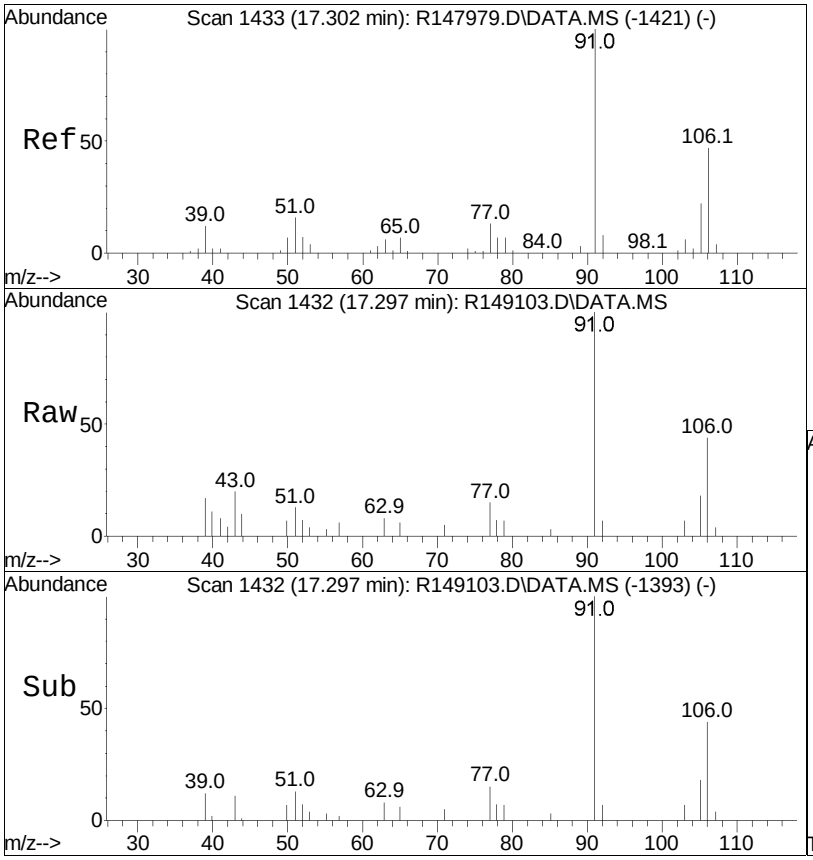


#81
ethylbenzene
Concen: 0.08 ppbV
RT: 17.16 min Scan# 1404
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 91 Resp: 2781

Ion	Ratio	Lower	Upper
91	100		
106	32.2	24.5	36.7

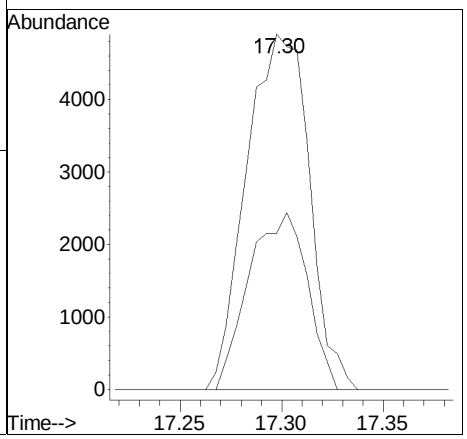


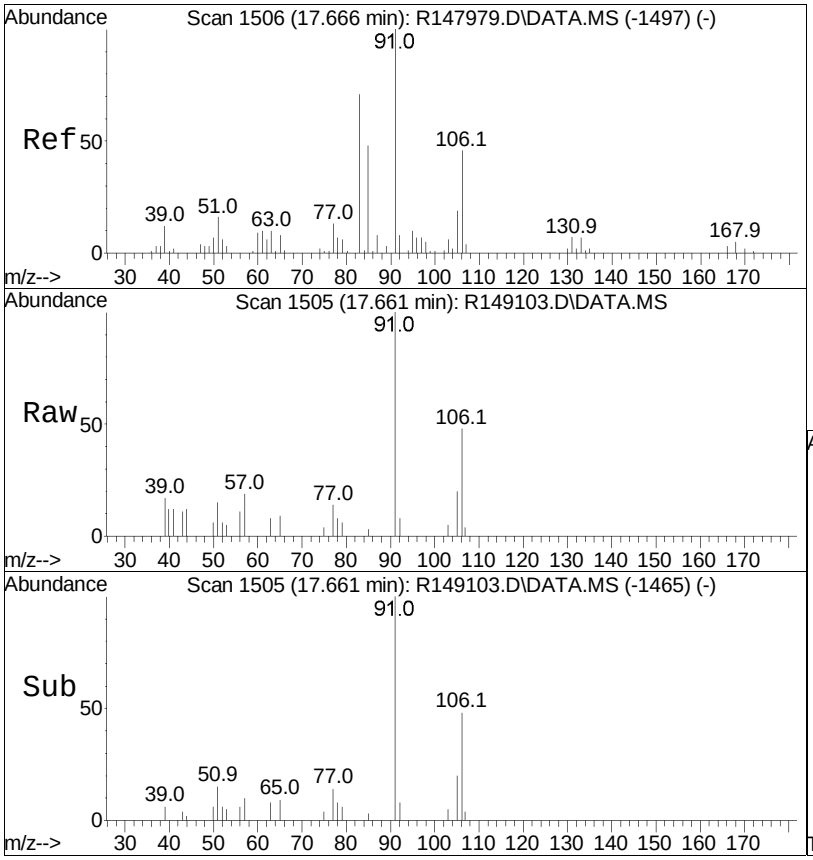


#83
m+p-xylene
Concen: 0.39 ppbV
RT: 17.30 min Scan# 1432
Delta R.T. -0.005 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 91 Resp: 10524

Ion	Ratio	Lower	Upper
91	100		
106	44.0	38.8	58.2

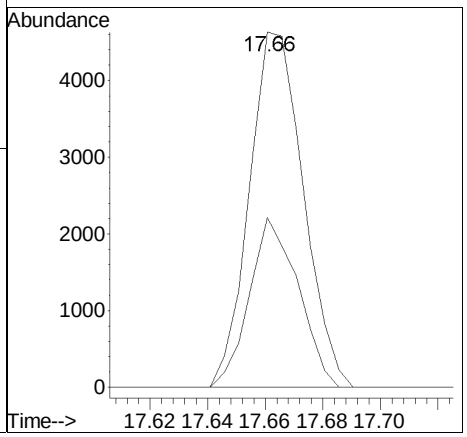


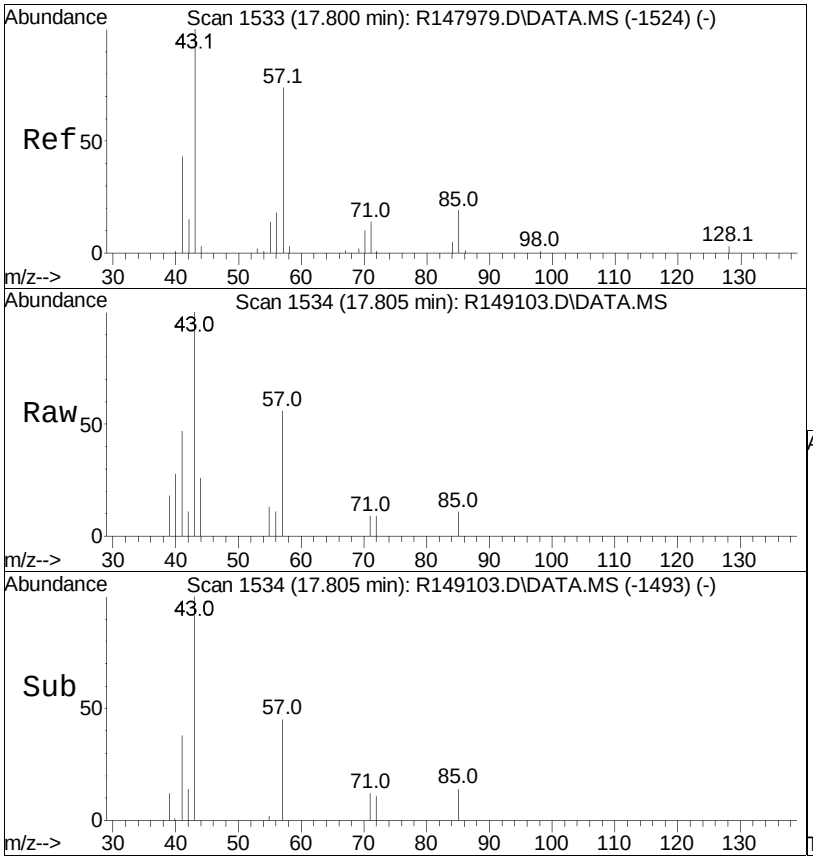


#87
o-xylene
Concen: 0.22 ppbV
RT: 17.66 min Scan# 1505
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 91 Resp: 6041

Ion	Ratio	Lower	Upper
91	100		
106	47.8	36.5	54.7

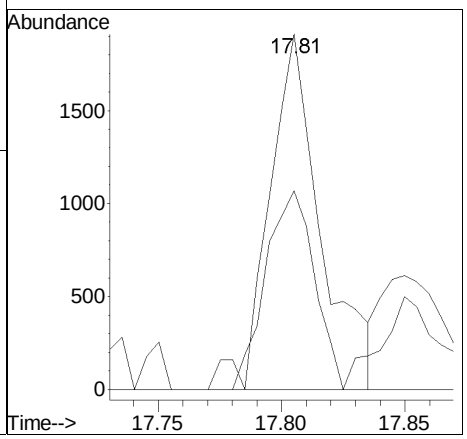


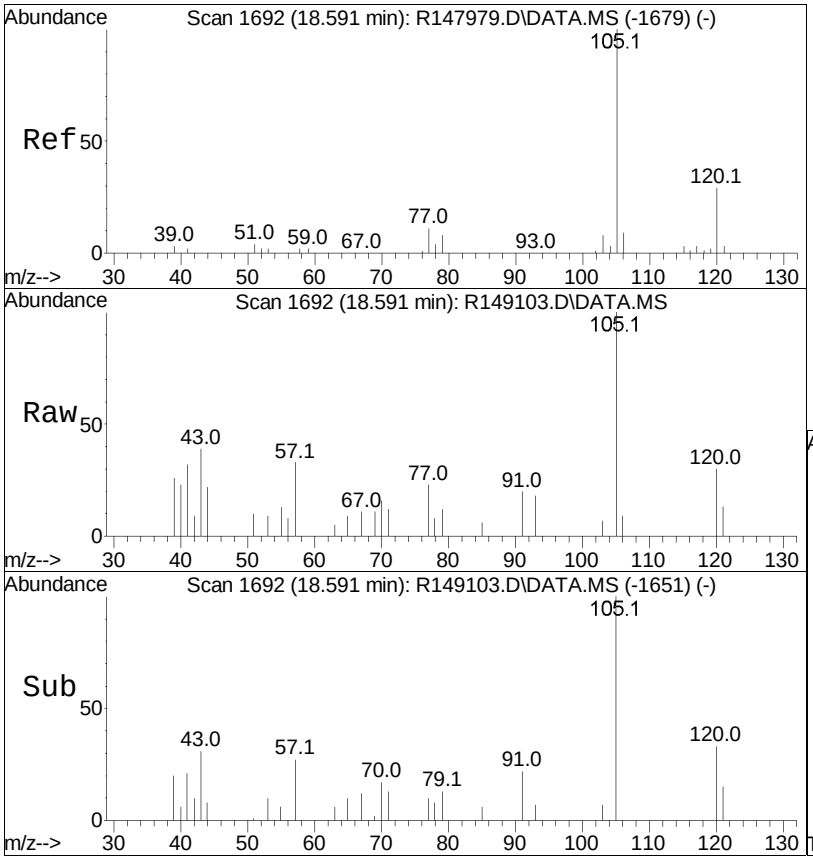


#89
nonane
Concen: 0.11 ppbV
RT: 17.81 min Scan# 1534
Delta R.T. 0.005 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 43 Resp: 2800

Ion	Ratio	Lower	Upper
43	100		
57	55.9	58.8	88.2#
128	0.0	2.3	3.5#

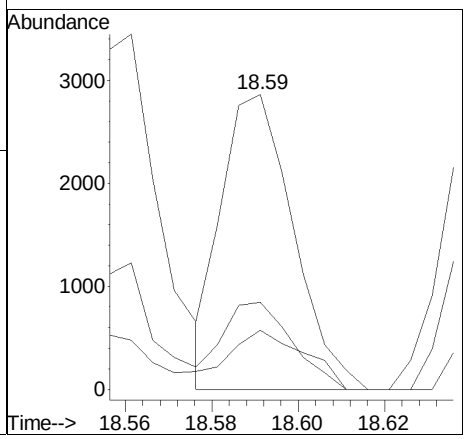


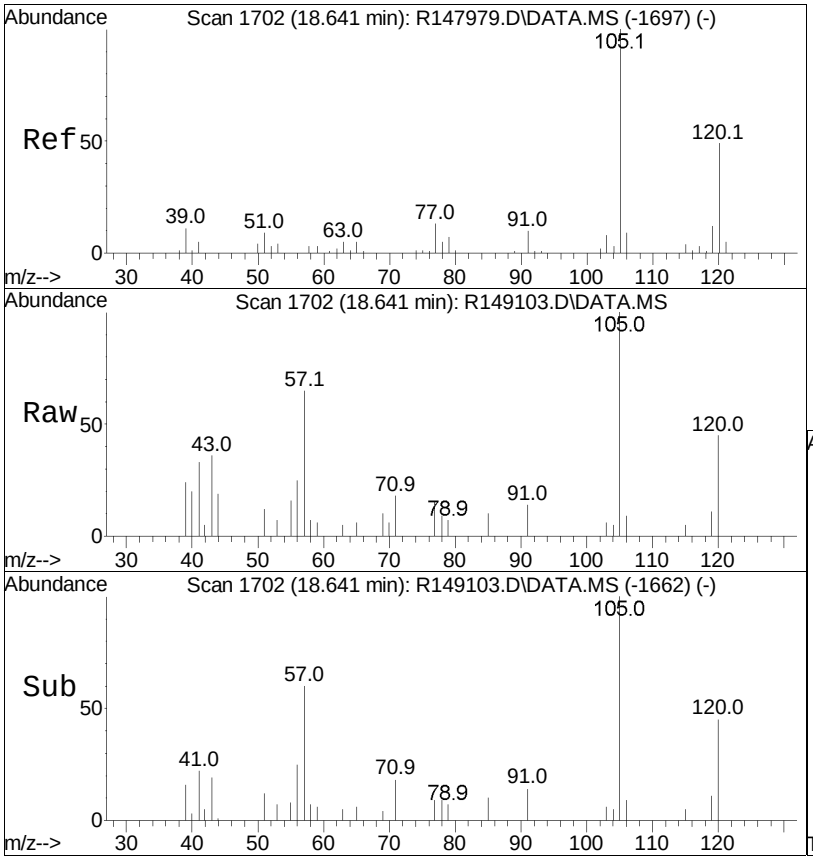


#96
4-ethyl toluene
Concen: 0.08 ppbV
RT: 18.59 min Scan# 1692
Delta R.T. 0.005 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion:105 Resp: 3304

Ion	Ratio	Lower	Upper
105	100		
120	29.5	23.3	34.9
91	20.1	9.6	14.4#

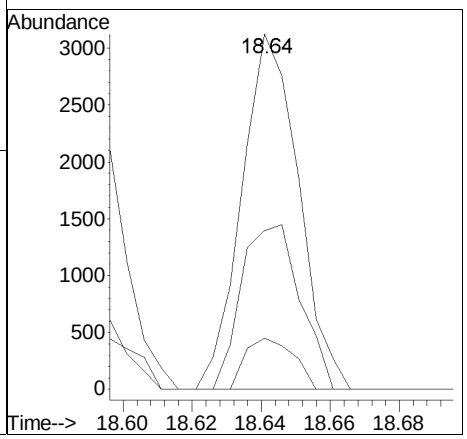


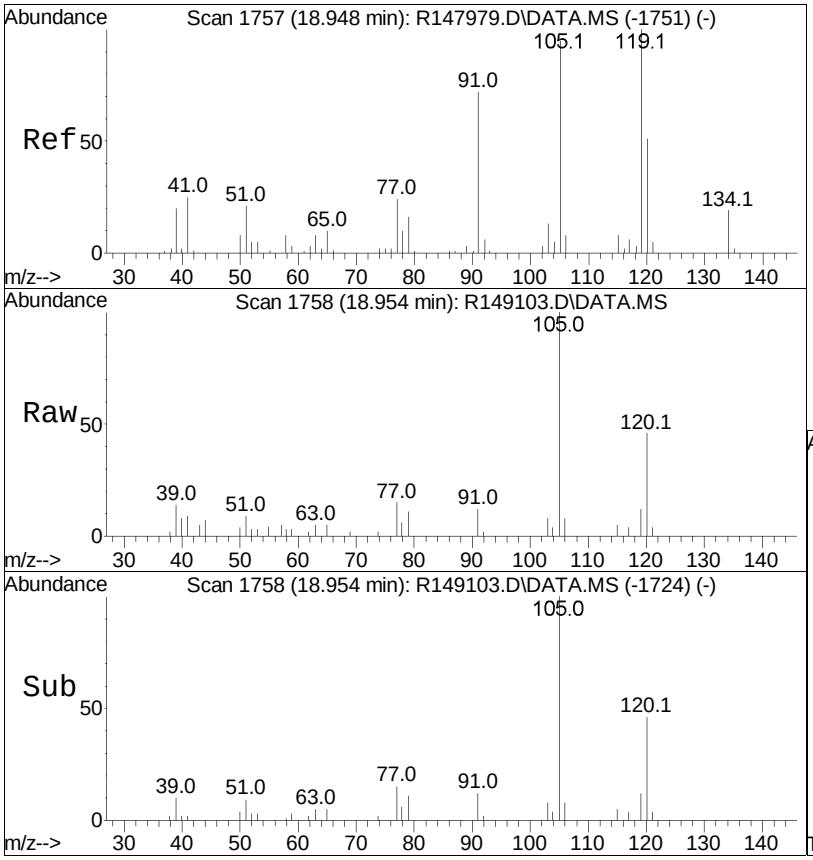


#97
1,3,5-trimethylbenzene
Concen: 0.11 ppbV
RT: 18.64 min Scan# 1702
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion:105 Resp: 3575

Ion	Ratio	Lower	Upper
105	100		
120	44.7	38.5	57.7
91	14.4	9.2	13.8#

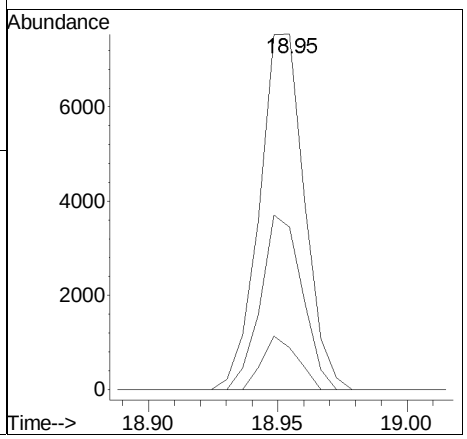


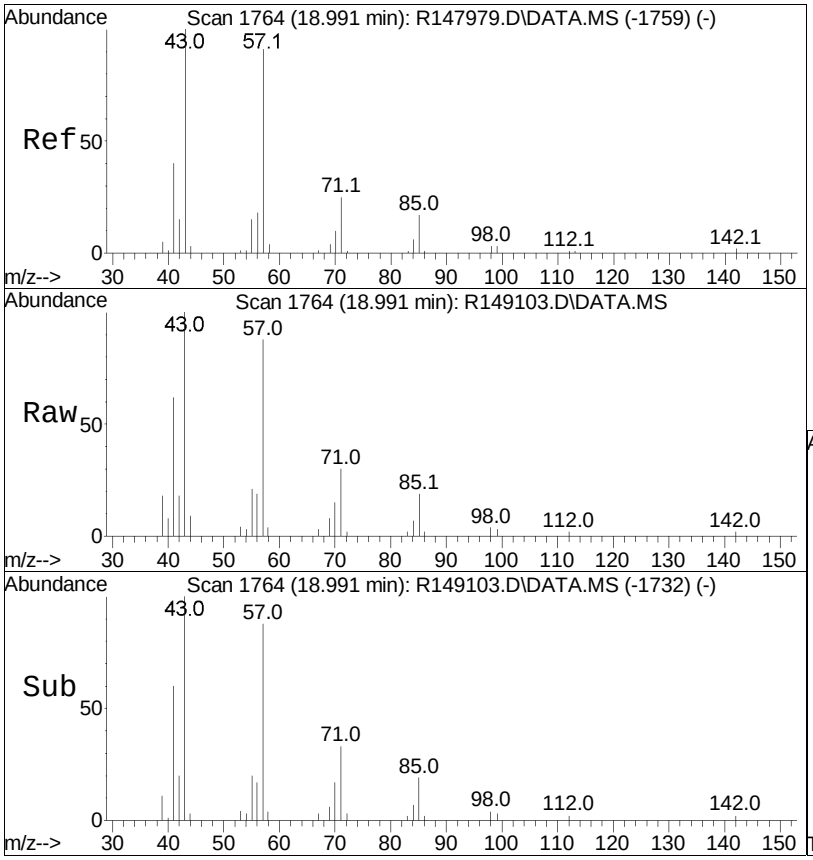


#99
1,2,4-trimethylbenzene
Concen: 0.29 ppbV
RT: 18.95 min Scan# 1758
Delta R.T. 0.006 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion:105 Resp: 9149

Ion	Ratio	Lower	Upper
105	100		
120	45.7	43.0	64.4
91	11.7	63.7	95.5#

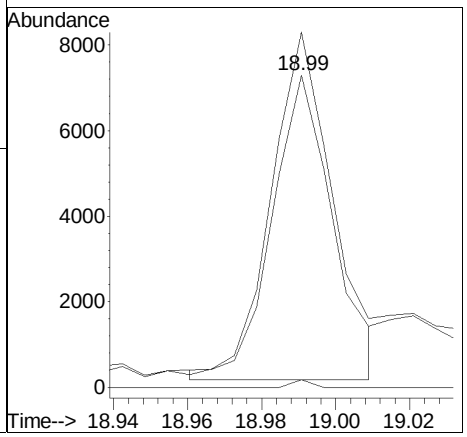


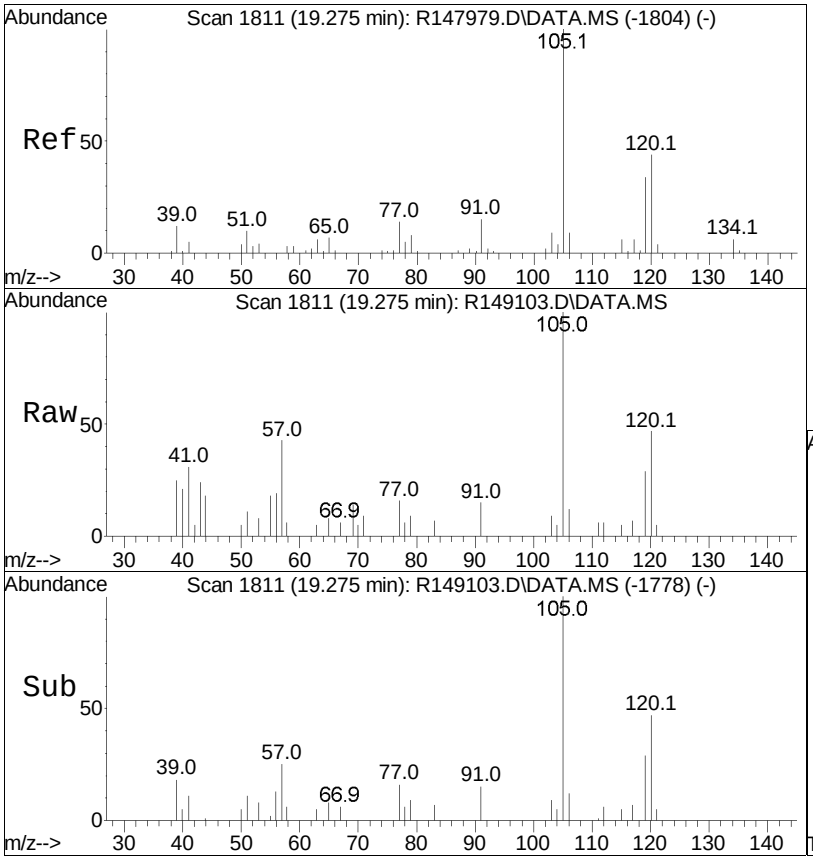


#100
decane
Concen: 0.33 ppbV m
RT: 18.99 min Scan# 1764
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 57 Resp: 8177

Ion	Ratio	Lower	Upper
57	100		
43	113.8	88.1	132.1
142	2.5	2.4	3.6

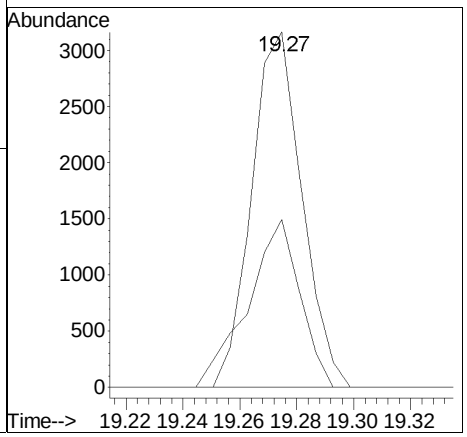


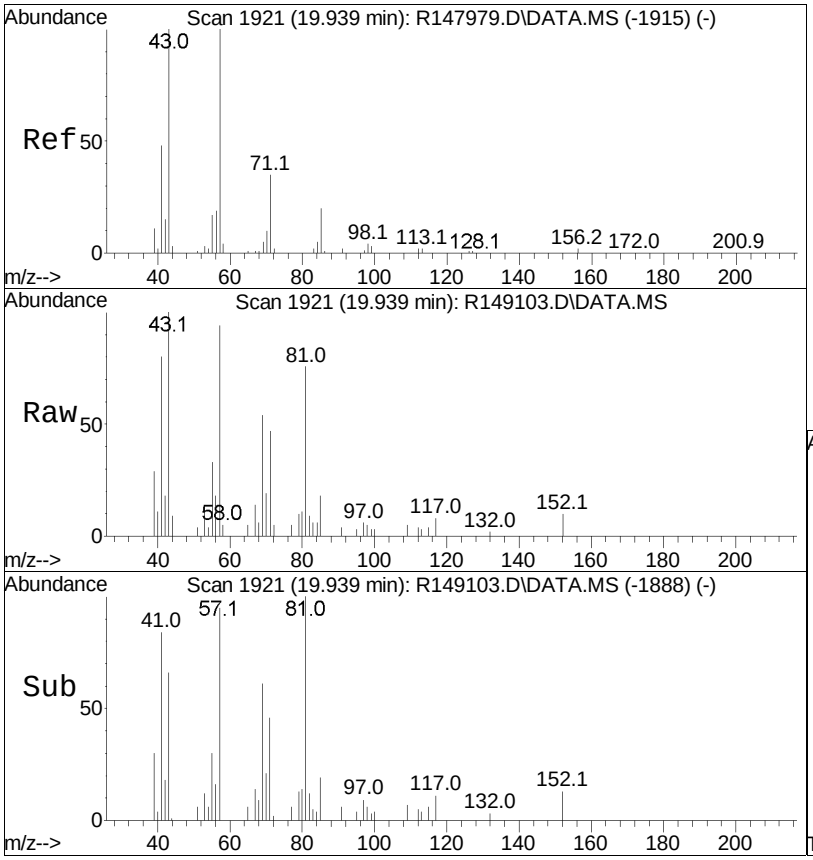


#105
1,2,3-trimethylbenzene
Concen: 0.11 ppbV
RT: 19.27 min Scan# 1811
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion:105 Resp: 3887

Ion	Ratio	Lower	Upper
105	100		
120	47.3	35.0	52.6

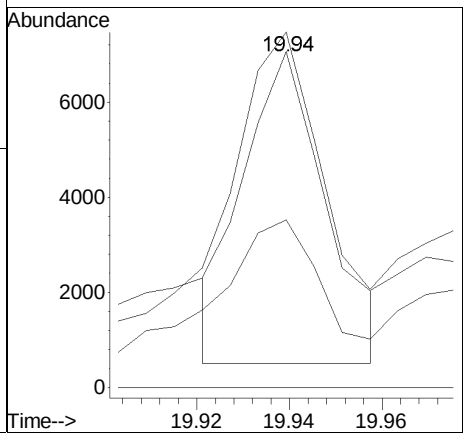


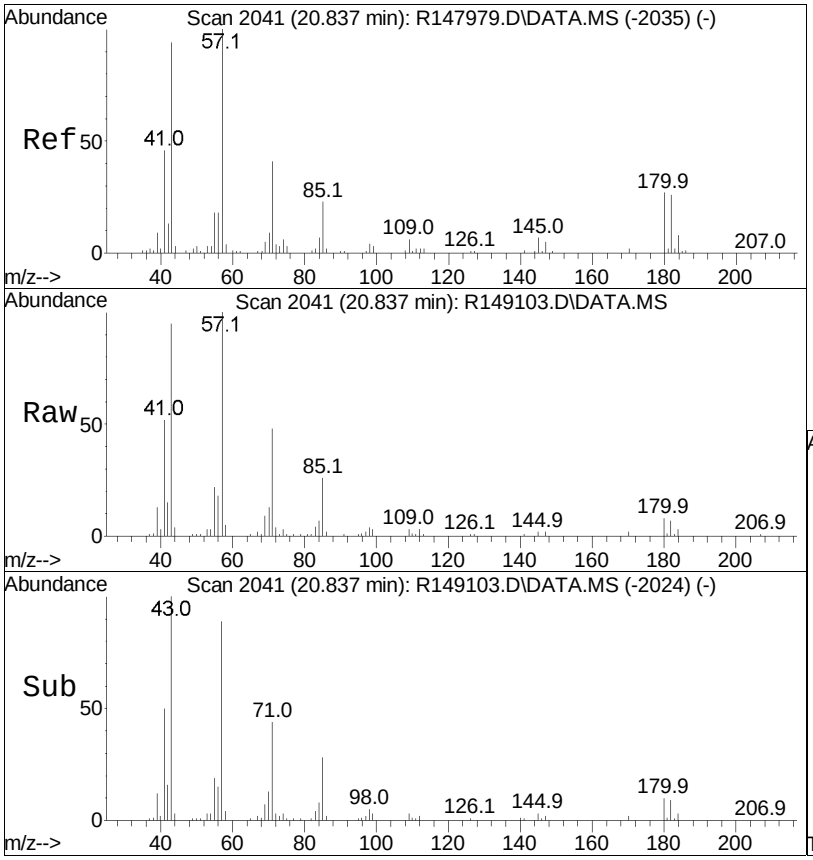


#112
undecane
Concen: 0.30 ppbV m
RT: 19.94 min Scan# 1921
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 57 Resp: 8165

Ion	Ratio	Lower	Upper
57	100		
43	105.8	81.6	122.4
71	49.9	35.4	53.2
156	0.0	2.2	3.4#

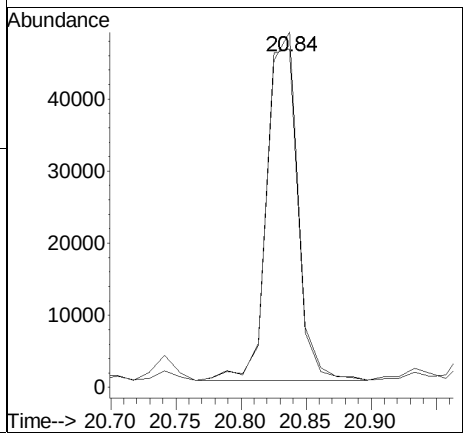


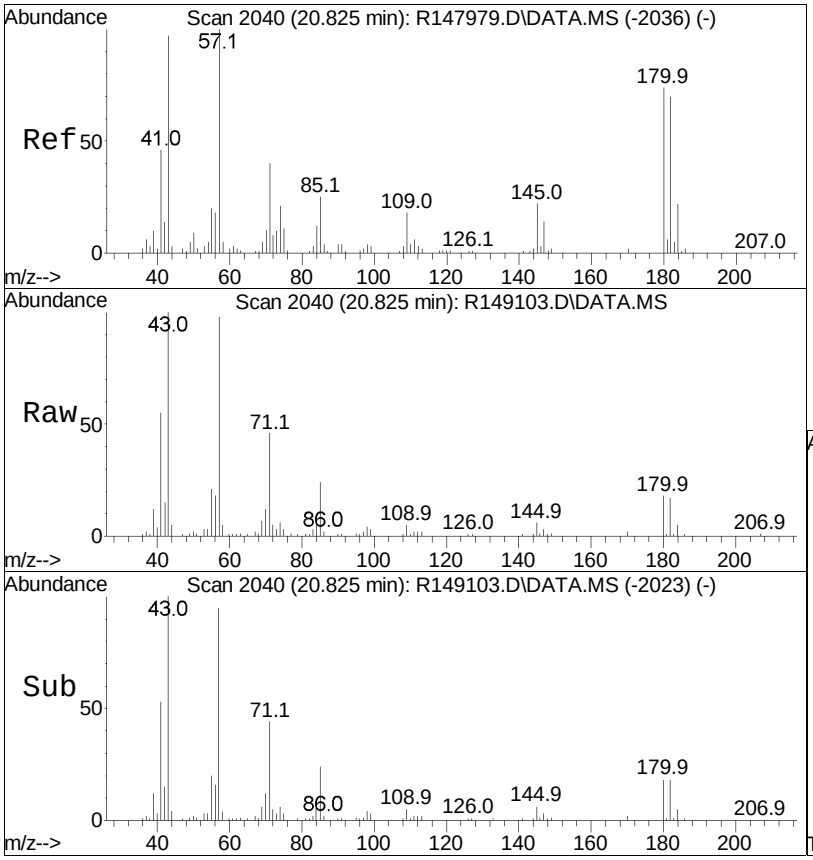


#114
dodecane
Concen: 2.87 ppbV
RT: 20.84 min Scan# 2041
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion: 57 Resp: 79335

Ion	Ratio	Lower	Upper
57	100		
43	95.2	76.2	114.4

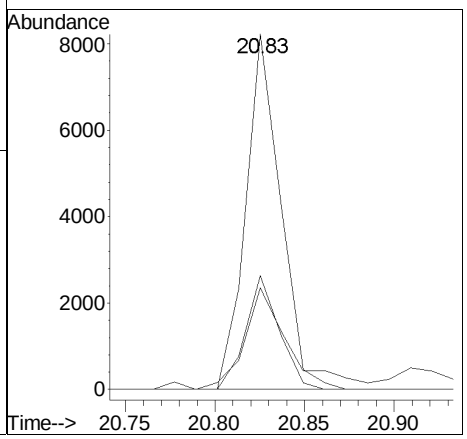


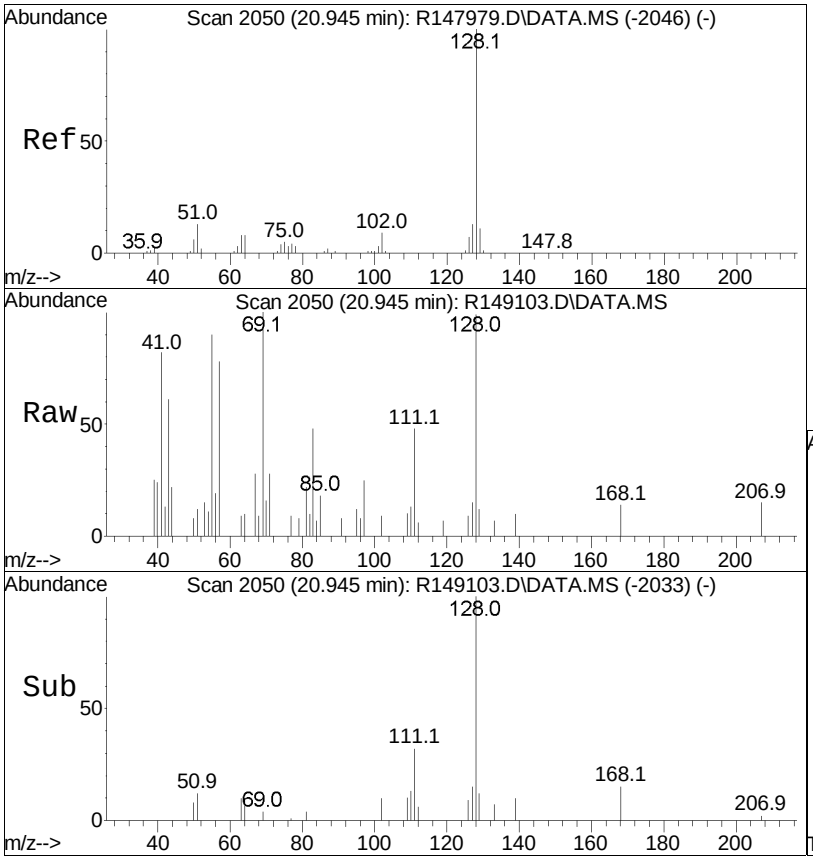


#115
1,2,4-trichlorobenzene
Concen: 0.54 ppbV
RT: 20.83 min Scan# 2040
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion:180 Resp: 11046

Ion	Ratio	Lower	Upper
180	100		
145	32.0	22.8	34.2
109	28.6	18.7	28.1#

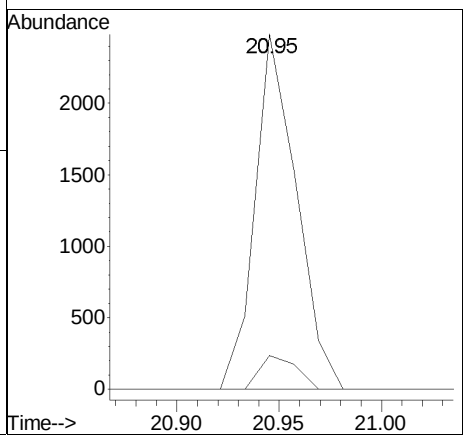




#116
naphthalene
Concen: 0.09 ppbV
RT: 20.95 min Scan# 2050
Delta R.T. -0.000 min
Lab File: R149103.D
Acq: 1 Nov 2016 5:52 pm

Tgt Ion:128 Resp: 3502

Ion	Ratio	Lower	Upper
128	100		
102	9.5	7.5	11.3



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-06	Date Collected	: 10/19/16 12:54
Client ID	: NFSV-08	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 18:26
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149104	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-71-8	Dichlorodifluoromethane	0.187	0.200	0.047	0.925	0.989	0.230	J
74-87-3	Chloromethane	ND	0.200	0.096	ND	0.413	0.198	U
76-14-2	Freon-114	ND	0.200	0.042	ND	1.40	0.293	U
75-01-4	Vinyl chloride	ND	0.200	0.038	ND	0.511	0.097	U
106-99-0	1,3-Butadiene	0.345	0.200	0.080	0.763	0.442	0.177	
106-97-8	Butane	5.38	0.200	0.044	12.8	0.475	0.105	
75-07-0	Acetaldehyde	ND	2.50	0.547	ND	4.50	0.985	U
74-83-9	Bromomethane	ND	0.200	0.070	ND	0.777	0.270	U
75-00-3	Chloroethane	ND	0.200	0.077	ND	0.528	0.202	U
64-17-5	Ethanol	2.87	2.50	0.542	5.41	4.71	1.02	
593-60-2	Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306	U
107-02-8	Acrolein	0.311	0.500	0.114	0.713	1.15	0.261	J
67-64-1	Acetone	25.0	1.00	0.165	59.4	2.38	0.392	G
75-69-4	Trichlorofluoromethane	0.110	0.200	0.042	0.618	1.12	0.234	J
67-63-0	Isopropanol	7.70	0.500	0.053	18.9	1.23	0.129	
109-66-0	Pentane	1.43	0.200	0.048	4.22	0.590	0.140	
75-35-4	1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224	U
75-65-0	tert-Butyl Alcohol	2.49	0.500	0.060	7.55	1.52	0.182	
75-09-2	Methylene chloride	0.380	1.00	0.299	1.32	1.74	1.04	J
107-05-1	3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254	U
75-15-0	Carbon disulfide	0.629	0.200	0.035	1.96	0.623	0.107	
76-13-1	Freon-113	ND	0.200	0.051	ND	1.53	0.392	U
156-60-5	trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293	U
75-34-3	1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312	U
1634-04-4	Methyl tert butyl ether	0.204	0.200	0.053	0.735	0.721	0.190	
78-93-3	2-Butanone	5.03	0.500	0.047	14.8	1.47	0.139	
156-59-2	cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233	U
67-66-3	Chloroform	0.067	0.200	0.053	0.327	0.977	0.259	J

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-06	Date Collected	: 10/19/16 12:54
Client ID	: NFSV-08	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 18:26
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149104	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
107-06-2	1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223	U
110-54-3	n-Hexane	0.266	0.200	0.052	0.937	0.705	0.183	
71-55-6	1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311	U
71-43-2	Benzene	0.538	0.200	0.054	1.72	0.639	0.172	
110-02-1	Thiophene	ND	0.200	0.053	ND	0.688	0.182	U
56-23-5	Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296	U
110-82-7	Cyclohexane	0.148	0.200	0.066	0.509	0.688	0.226	J
78-87-5	1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322	U
75-27-4	Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439	U
123-91-1	1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281	U
79-01-6	Trichloroethene	ND	0.200	0.071	ND	1.07	0.382	U
540-84-1	2,2,4-Trimethylpentane	0.577	0.200	0.066	2.70	0.934	0.308	
142-82-5	Heptane	0.115	0.200	0.055	0.471	0.820	0.227	J
10061-01-5	cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338	U
108-10-1	4-Methyl-2-pentanone	2.50	0.500	0.061	10.2	2.05	0.249	
10061-02-6	trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315	U
79-00-5	1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364	U
108-88-3	Toluene	0.395	0.200	0.063	1.49	0.754	0.237	
554-14-3	2-Methylthiophene	ND	0.200	0.079	ND	0.803	0.317	U
591-78-6	2-Hexanone	3.28	0.200	0.060	13.4	0.820	0.248	
616-44-4	3-Methylthiophene	ND	0.200	0.067	ND	0.803	0.269	U
124-48-1	Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636	U
106-93-4	1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599	U
111-65-9	Octane	0.057	0.200	0.042	0.266	0.934	0.197	J
127-18-4	Tetrachloroethene	0.117	0.200	0.076	0.793	1.36	0.514	J
108-90-7	Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363	U
100-41-4	Ethylbenzene	0.082	0.200	0.056	0.356	0.869	0.241	J
872-55-9	2-Ethylthiophene	ND	0.200	0.057	ND	0.918	0.262	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-06	Date Collected	: 10/19/16 12:54
Client ID	: NFSV-08	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 18:26
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149104	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
179601-23-1	p/m-Xylene	0.165	0.400	0.139	0.717	1.74	0.604	J
75-25-2	Bromoform	ND	0.200	0.052	ND	2.07	0.541	U
100-42-5	Styrene	ND	0.200	0.080	ND	0.852	0.340	U
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376	U
95-47-6	o-Xylene	0.076	0.200	0.063	0.330	0.869	0.274	J
111-84-2	Nonane	0.117	0.200	0.063	0.614	1.05	0.328	J
95-49-8	2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252	U
622-96-8	4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381	U
108-67-8	1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287	U
95-63-6	1,2,4-Trimethylbenzene	0.074	0.200	0.069	0.364	0.983	0.341	J
124-18-5	Decane	0.512	0.200	0.048	2.98	1.16	0.282	
541-73-1	1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383	U
106-46-7	1,4-Dichlorobenzene	ND	0.200	0.036	ND	1.20	0.217	U
526-73-8	1,2,3-Trimethylbenzene	ND	0.200	0.075	ND	0.983	0.369	U
95-50-1	1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369	U
496-11-7	Indane	ND	0.200	0.080	ND	0.967	0.384	U
95-13-6	Indene	ND	0.200	0.061	ND	0.951	0.289	U
1120-21-4	Undecane	0.401	0.200	0.053	2.56	1.28	0.338	
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.200	0.080	ND	1.10	0.436	U
112-40-3	Dodecane	4.51	0.200	0.048	31.4	1.39	0.333	
120-82-1	1,2,4-Trichlorobenzene	0.089	0.200	0.061	0.661	1.48	0.454	J
91-20-3	Naphthalene	0.185	0.200	0.043	0.970	1.05	0.223	J
95-15-8	Benzothiophene	ND	0.500	0.047	ND	2.74	0.257	U
87-68-3	Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781	U
91-57-6	2-Methylnaphthalene	ND	1.00	0.272	ND	5.82	1.58	U
90-12-0	1-Methylnaphthalene	ND	1.00	0.250	ND	5.82	1.45	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149104.D
Acq On : 1 Nov 2016 6:26 pm
Operator : AIRPIANO1:RY
Sample : L1634001-06,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 02 10:09:40 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	139846	10.000	ppbV	-0.01
Standard Area = 153282			Recovery = 91.23%			
43) 1,4-difluorobenzene	12.41	114	230584	10.000	ppbV	0.00
Standard Area = 240182			Recovery = 96.00%			
67) chlorobenzene-D5	16.82	54	62902	10.000	ppbV	0.00
Standard Area = 64184			Recovery = 98.00%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	70033	10.139	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.39%			
69) toluene-D8	15.14	98	192417	10.155	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.55%			
90) bromofluorobenzene	18.01	95	127816	9.653	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 96.53%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	3345	0.187	ppbV	98
6) chloromethane	0.00		0	N.D.	d	
7) Freon-114	4.52		0	N.D.		
9) vinyl chloride	0.00		0	N.D.		
10) 1,3-butadiene	4.88	54	1933	0.345	ppbV	91
11) butane	4.95	43	73200	5.378	ppbV	99
12) acetaldehyde	0.00		0	N.D.	d	
13) bromomethane	0.00		0	N.D.		
14) chloroethane	0.00		0	N.D.		
15) ethanol	5.72	31	19637	2.868	ppbV	95
17) vinyl bromide	0.00		0	N.D.		
18) acrolein	6.17	56	1051	0.311	ppbV #	53
19) acetone	6.35	43	399893M6	25.010	ppbV	
21) trichlorofluoromethane	6.57	101	2035	0.110	ppbV	97
22) isopropyl alcohol	6.72	45	128020	7.700	ppbV	99
24) pentane	7.06	43	21573	1.434	ppbV	96
26) 1,1-dichloroethene	0.00		0	N.D.	d	
27) tertiary butyl alcohol	7.51	59	41714	2.491	ppbV	94
28) methylene chloride	7.59	49	4002	0.380	ppbV #	83
29) 3-chloropropene	0.00		0	N.D.	d	
30) carbon disulfide	7.91	76	13612	0.629	ppbV #	50

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149104.D
Acq On : 1 Nov 2016 6:26 pm
Operator : AIRPIANO1:RY
Sample : L1634001-06,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 02 10:09:40 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
31) Freon 113	7.92		0	N.D.		
32) trans-1,2-dichloroethene	0.00		0	N.D.	d	
33) 1,1-dichloroethane	0.00		0	N.D.		
34) MTBE	9.11	73	4284	0.204	ppbV #	44
36) 2-butanone	9.50	43	100285	5.029	ppbV	97
37) cis-1,2-dichloroethene	0.00		0	N.D.		
39) chloroform	10.35	83	1377	0.067	ppbV	97
42) 1,2-dichloroethane	0.00		0	N.D.		
44) hexane	10.25	57	4168	0.266	ppbV #	35
48) 1,1,1-trichloroethane	0.00		0	N.D.		
50) benzene	12.00	78	11680	0.538	ppbV	99
51) thiophene	0.00		0	N.D.	d	
52) carbon tetrachloride	0.00		0	N.D.		
53) cyclohexane	12.32	56	1901	0.148	ppbV #	78
56) 1,2-dichloropropane	0.00		0	N.D.		
57) bromodichloromethane	0.00		0	N.D.		
58) 1,4-dioxane	0.00		0	N.D.		
59) trichloroethene	13.20		0	N.D.		
60) 2,2,4-trimethylpentane	13.23	57	24333M4	0.577	ppbV	
62) heptane	13.53	43	2077	0.115	ppbV #	84
63) cis-1,3-dichloropropene	0.00		0	N.D.		
64) 4-methyl-2-pentanone	14.22	43	63511	2.500	ppbV	96
65) trans-1,3-dichloropropene	0.00		0	N.D.		
66) 1,1,2-trichloroethane	0.00		0	N.D.		
68) toluene	15.24	91	10350	0.395	ppbV	90
70) 2-methylthiophene	0.00		0	N.D.	d	
72) 2-hexanone	15.49	43	80401	3.285	ppbV #	91
73) 3-methylthiophene	0.00		0	N.D.	d	
74) dibromochloromethane	0.00		0	N.D.		
75) 1,2-dibromoethane	0.00		0	N.D.		
77) octane	16.14	85	450	0.057	ppbV #	82
78) tetrachloroethene	16.29	166	1576	0.117	ppbV	93
80) chlorobenzene	0.00		0	N.D.		
81) ethylbenzene	17.16	91	2819	0.082	ppbV	93
82) 2-ethylthiophene	0.00		0	N.D.	d	
83) m+p-xylene	17.28	91	4534	0.165	ppbV	93
84) bromoform	0.00		0	N.D.		
85) styrene	17.58		0	N.D.		

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149104.D
Acq On : 1 Nov 2016 6:26 pm
Operator : AIRPIANO1:RY
Sample : L1634001-06,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 02 10:09:40 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
86) 1,1,2,2-tetrachloroethane	17.71		0	N.D.		
87) o-xylene	17.66	91	2161	0.076	ppbV	98
89) nonane	17.80	43	3125M4	0.117	ppbV	
93) 2-chlorotoluene	0.00		0	N.D.		
96) 4-ethyl toluene	18.59		0	N.D.		
97) 1,3,5-trimethylbenzene	18.64		0	N.D.		
99) 1,2,4-trimethylbenzene	18.95	105	2378	0.074	ppbV #	56
100) decane	18.99	57	12857	0.512	ppbV	96
102) 1,3-dichlorobenzene	0.00		0	N.D.		
103) 1,4-dichlorobenzene	0.00		0	N.D.		
105) 1,2,3-trimethylbenzene	19.27		0	N.D.		
107) 1,2-dichlorobenzene	0.00		0	N.D.		
109) indan	0.00		0	N.D.	d	
110) indene	19.51		0	N.D.		
112) undecane	19.94	57	11106M4	0.401	ppbV	
113) 1,2,4,5-tetramethylben...	20.18		0	N.D.		
114) dodecane	20.83	57	127428	4.512	ppbV	94
115) 1,2,4-trichlorobenzene	20.83	180	1878	0.089	ppbV #	9
116) naphthalene	20.95	128	7362	0.185	ppbV #	94
118) benzothiophene	0.00		0	N.D.	d	
119) hexachlorobutadiene	0.00		0	N.D.		
120) 2-methylnaphthalene	22.09		0	N.D.		
121) 1-methylnaphthalene	22.30		0	N.D.		

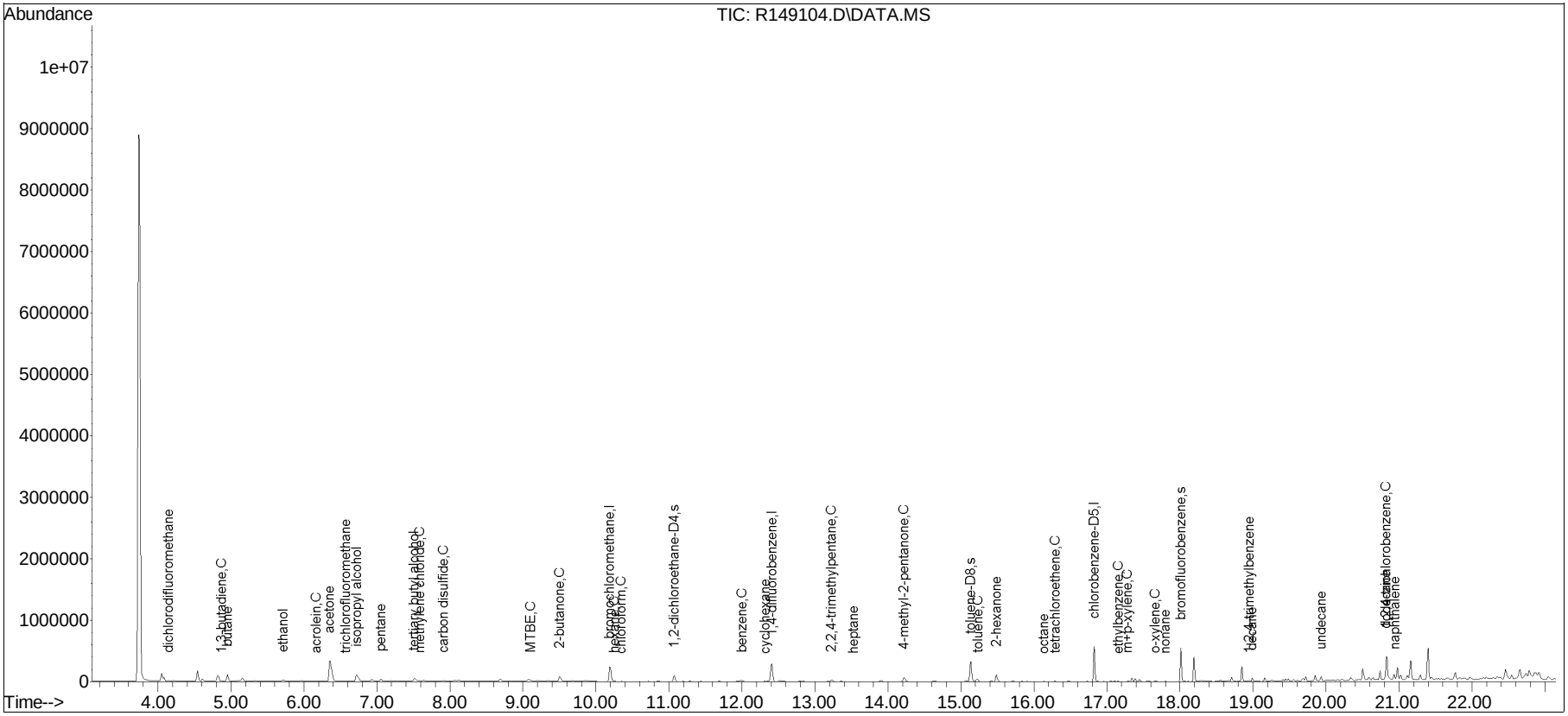
(#) = qualifier out of range (m) = manual integration (+) = signals summed

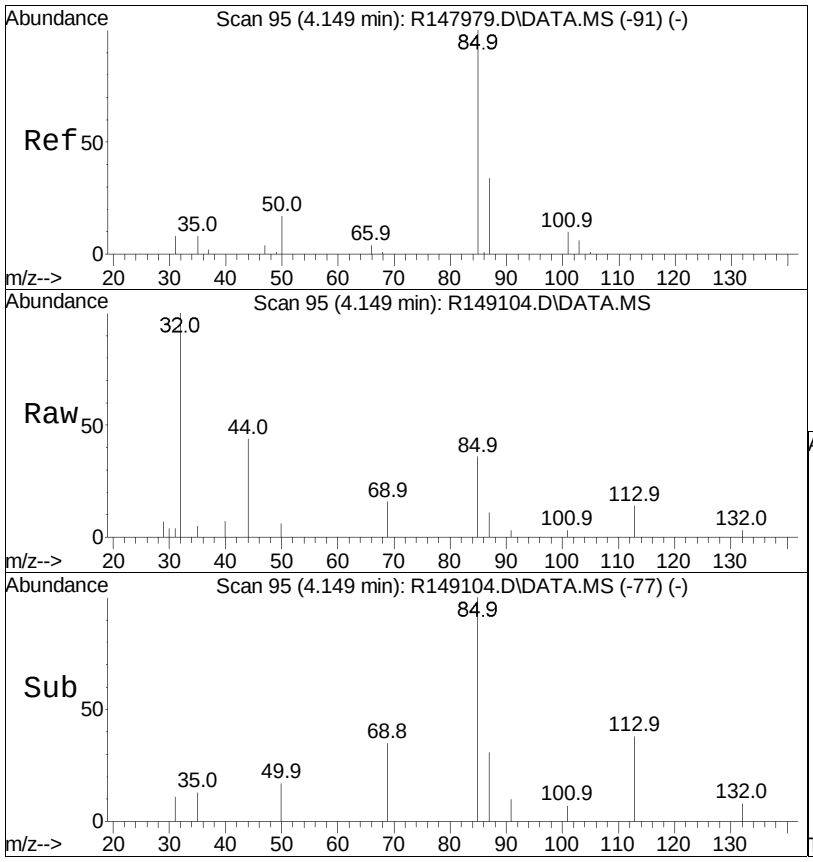
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149104.D
Acq On : 1 Nov 2016 6:26 pm
Operator : AIRPIANO1:RY
Sample : L1634001-06,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 02 10:09:40 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Keyspan_TO15 - .a\AIR1\2016\161101K\R149091.D

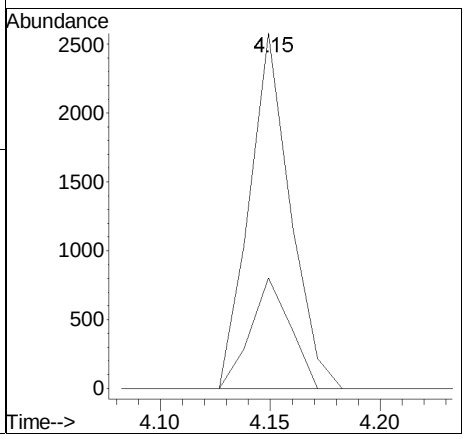


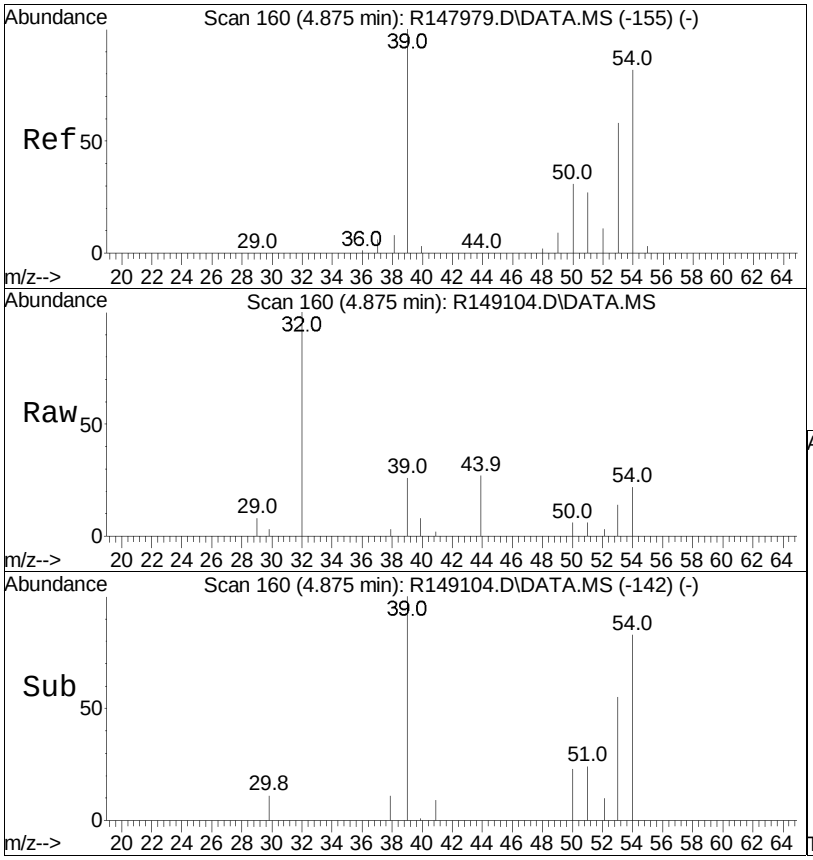


#5
dichlorodifluoromethane
Concen: 0.19 ppbV
RT: 4.15 min Scan# 95
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 85 Resp: 3345

Ion	Ratio	Lower	Upper
85	100		
87	31.1	25.9	38.9

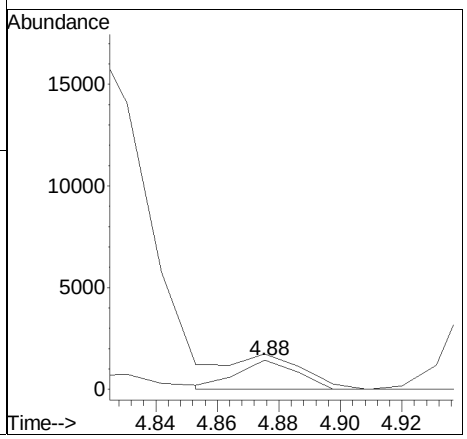


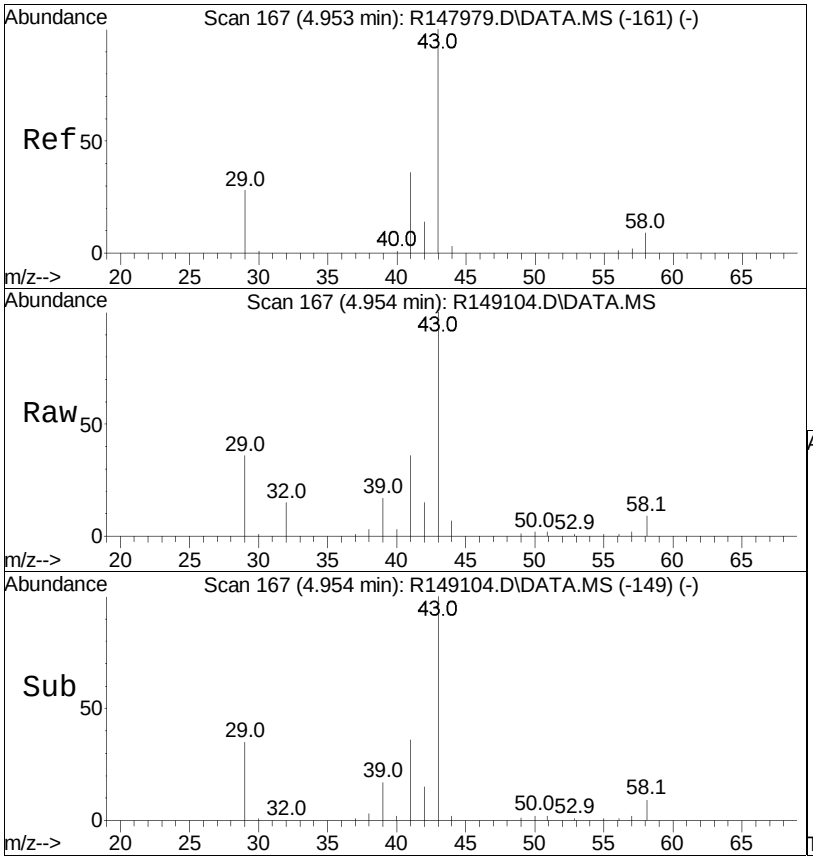


#10
1,3-butadiene
Concen: 0.35 ppbV
RT: 4.88 min Scan# 160
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 54 Resp: 1933

Ion	Ratio	Lower	Upper
54	100		
39	120.9	105.0	157.6

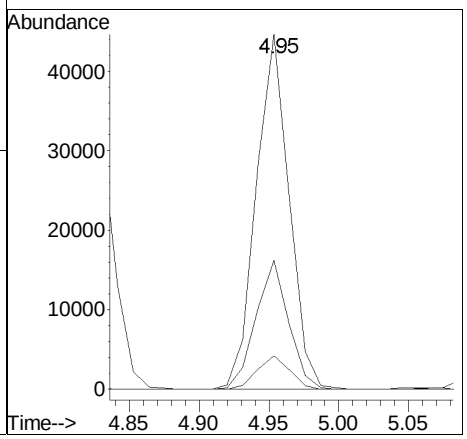


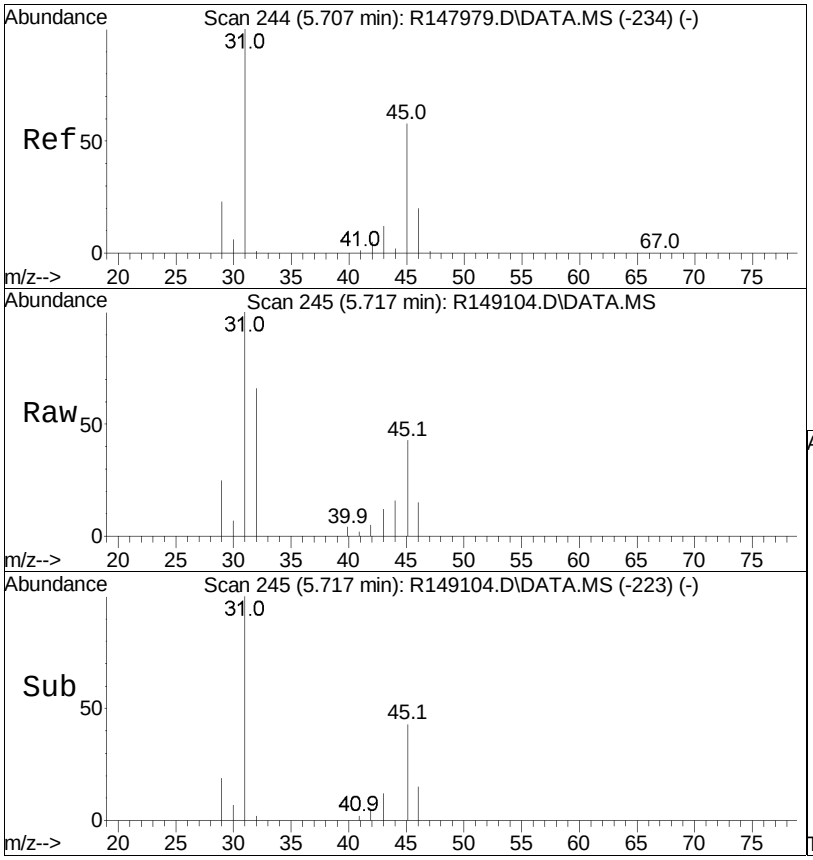


#11
butane
Concen: 5.38 ppbV
RT: 4.95 min Scan# 167
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 43 Resp: 73200

Ion	Ratio	Lower	Upper
43	100		
58	9.5	7.1	10.7
41	36.4	28.7	43.1

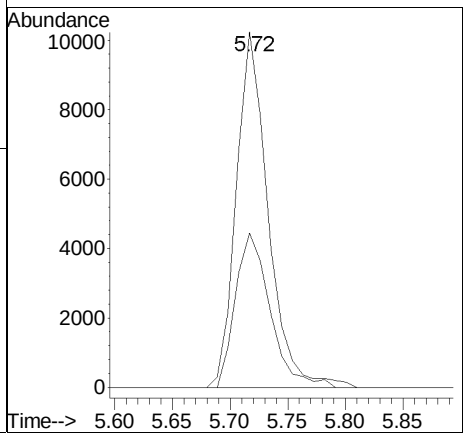


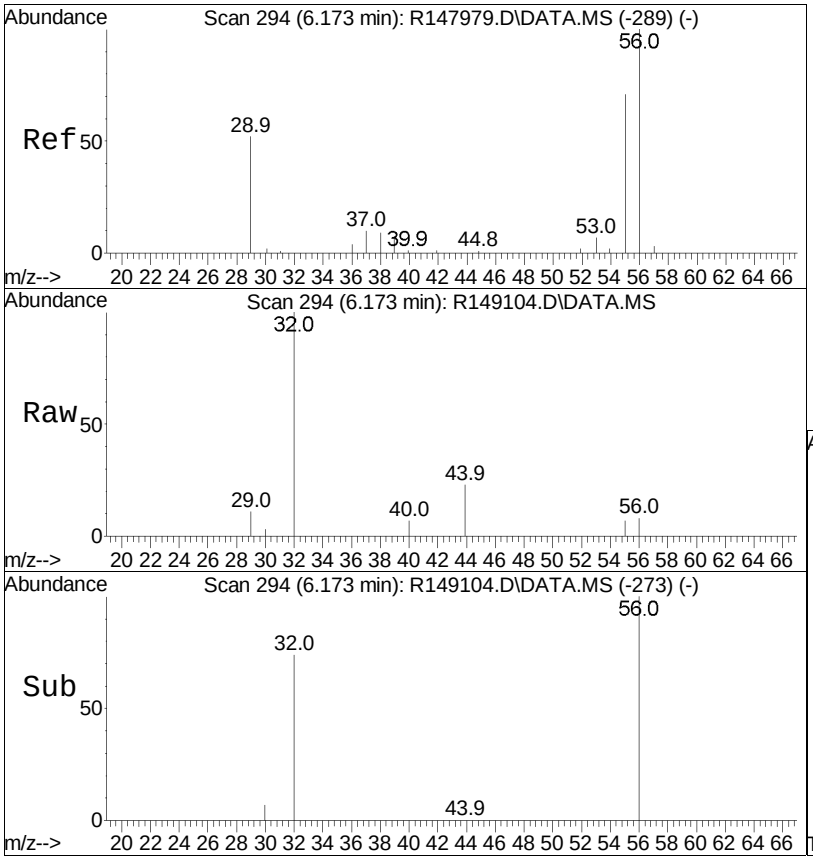


#15
ethanol
Concen: 2.87 ppbV
RT: 5.72 min Scan# 245
Delta R.T. 0.009 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 31 Resp: 19637

Ion	Ratio	Lower	Upper
31	100		
45	43.4	37.2	55.8

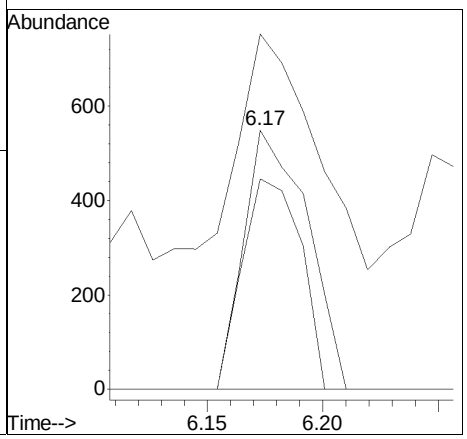


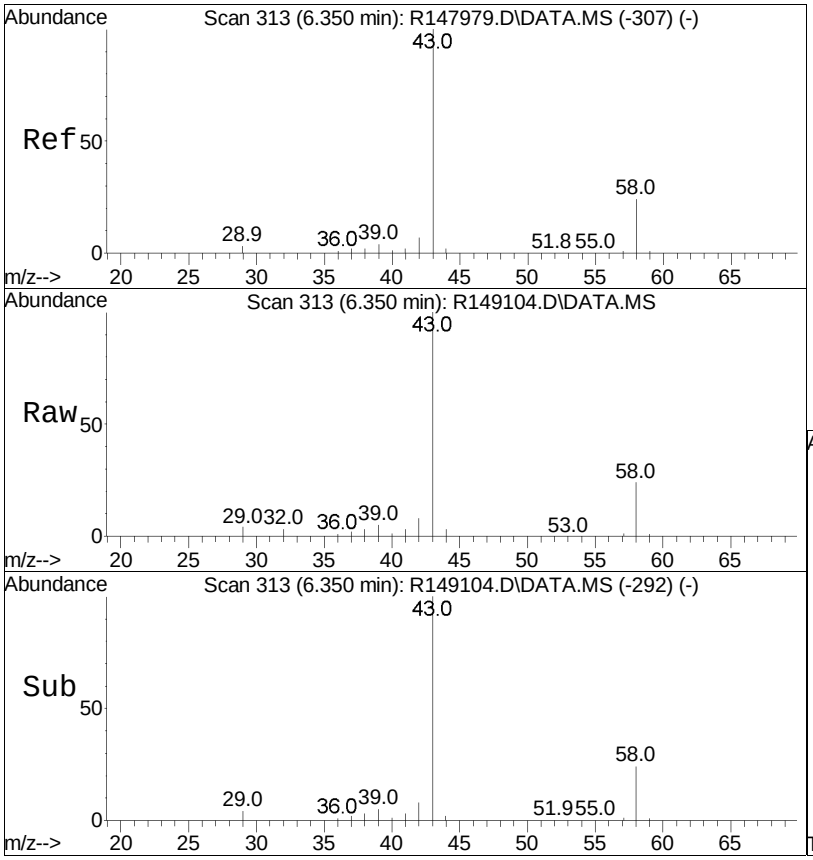


#18
acrolein
Concen: 0.31 ppbV
RT: 6.17 min Scan# 294
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 56 Resp: 1051

Ion	Ratio	Lower	Upper
56	100		
55	81.2	56.2	84.4
29	137.2	56.3	84.5#

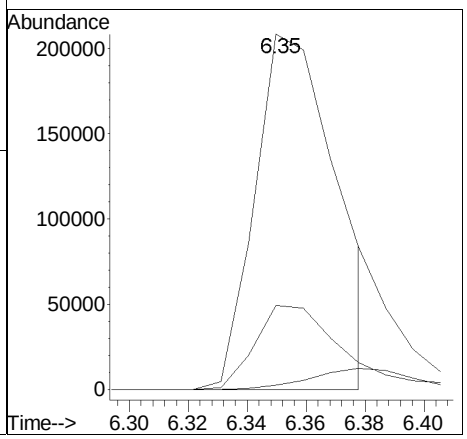


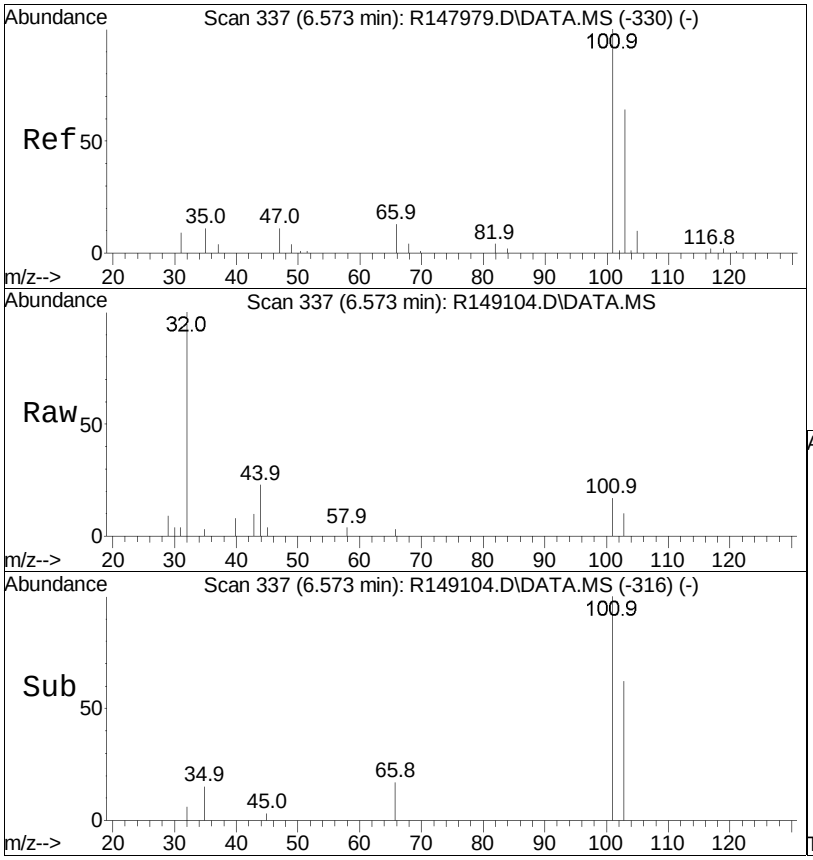


#19
acetone
Concen: 25.01 ppbV m
RT: 6.35 min Scan# 313
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 43 Resp: 399893

Ion	Ratio	Lower	Upper
43	100		
58	23.6	19.8	29.8
57	1.2	0.6	1.0#

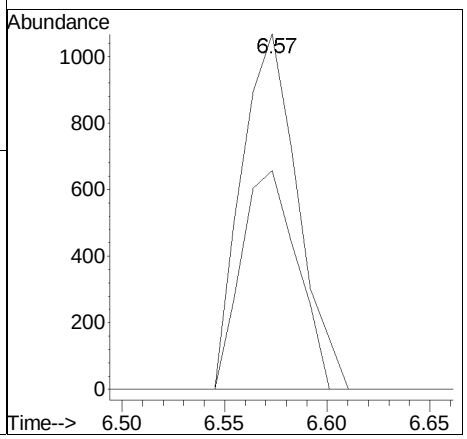


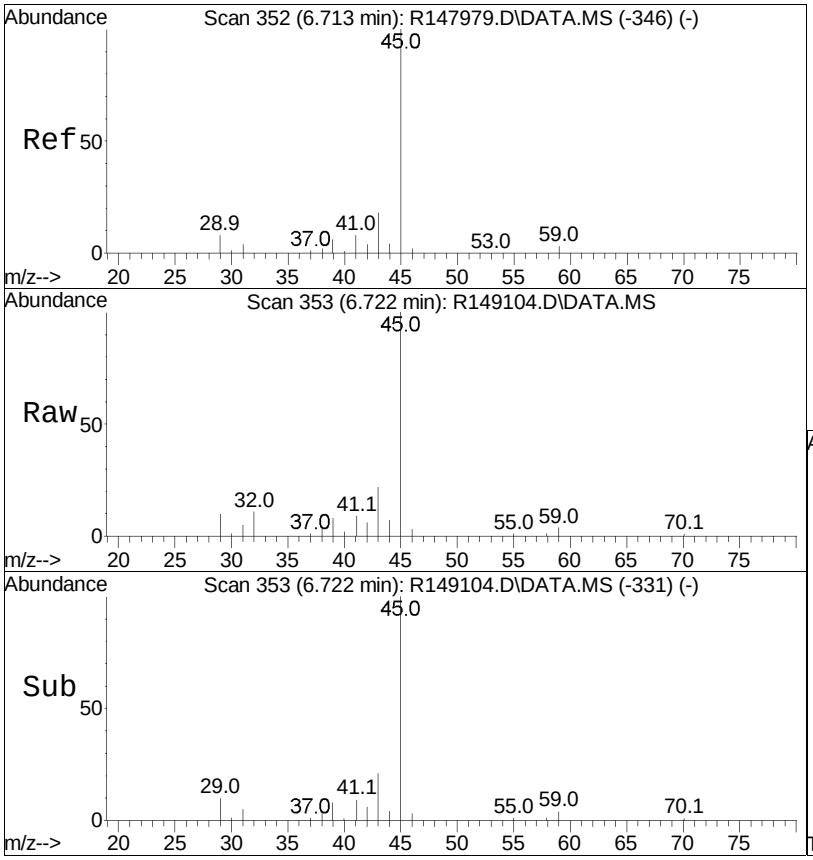


#21
trichlorofluoromethane
Concen: 0.11 ppbV
RT: 6.57 min Scan# 337
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion:101 Resp: 2035

Ion	Ratio	Lower	Upper
101	100		
103	61.6	51.0	76.4

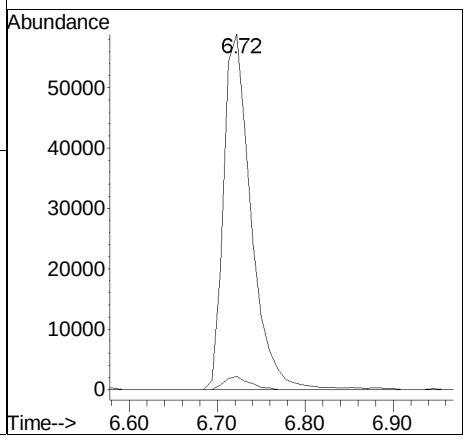


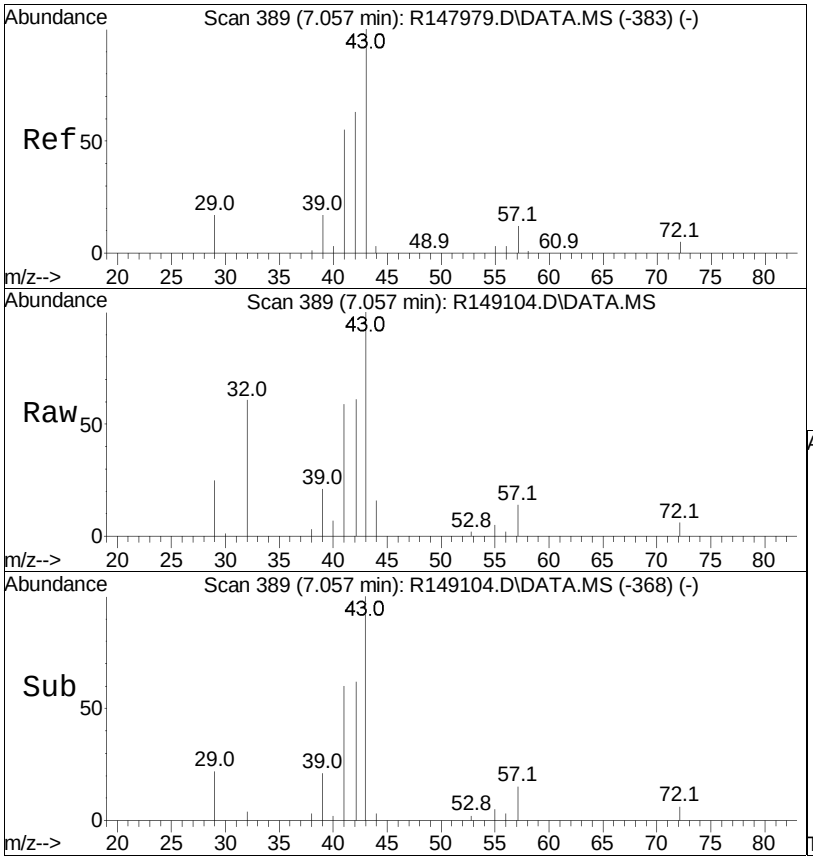


#22
isopropyl alcohol
Concen: 7.70 ppbV
RT: 6.72 min Scan# 353
Delta R.T. 0.009 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 45 Resp: 128020

Ion	Ratio	Lower	Upper
45	100		
59	3.7	2.7	4.1

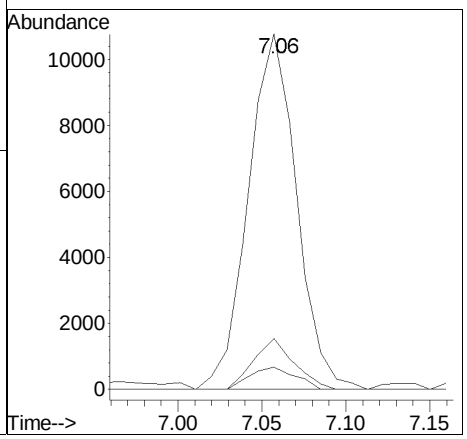


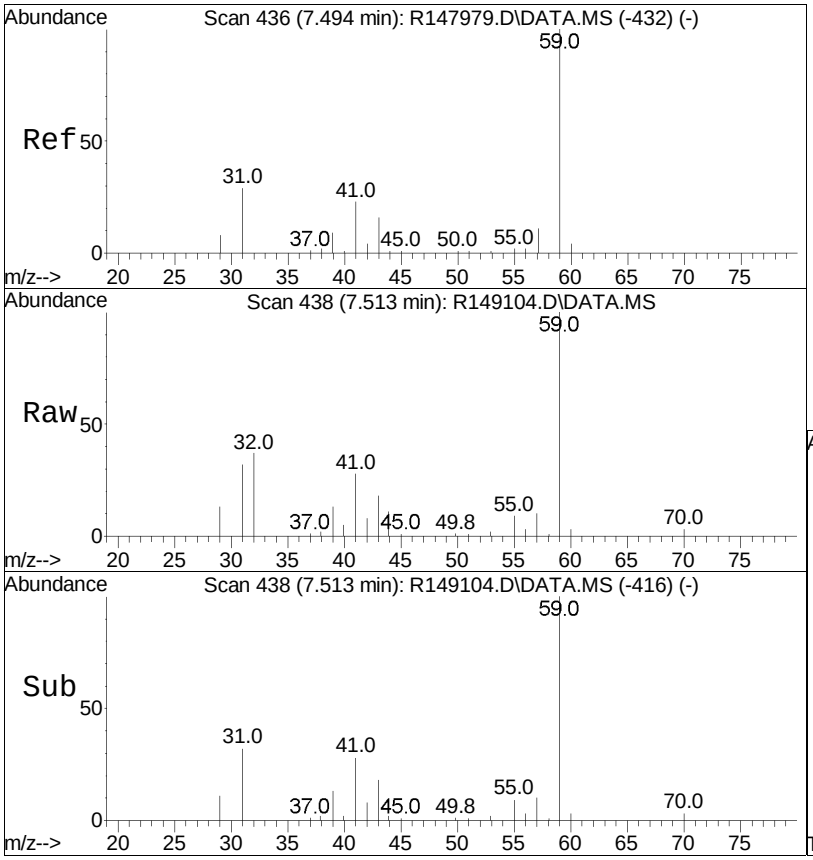


#24
pentane
Concen: 1.43 ppbV
RT: 7.06 min Scan# 389
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 43 Resp: 21573

Ion	Ratio	Lower	Upper
43	100		
57	14.3	9.8	14.8
72	6.3	5.4	8.2

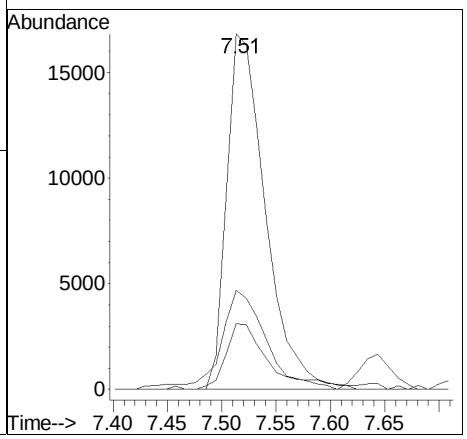


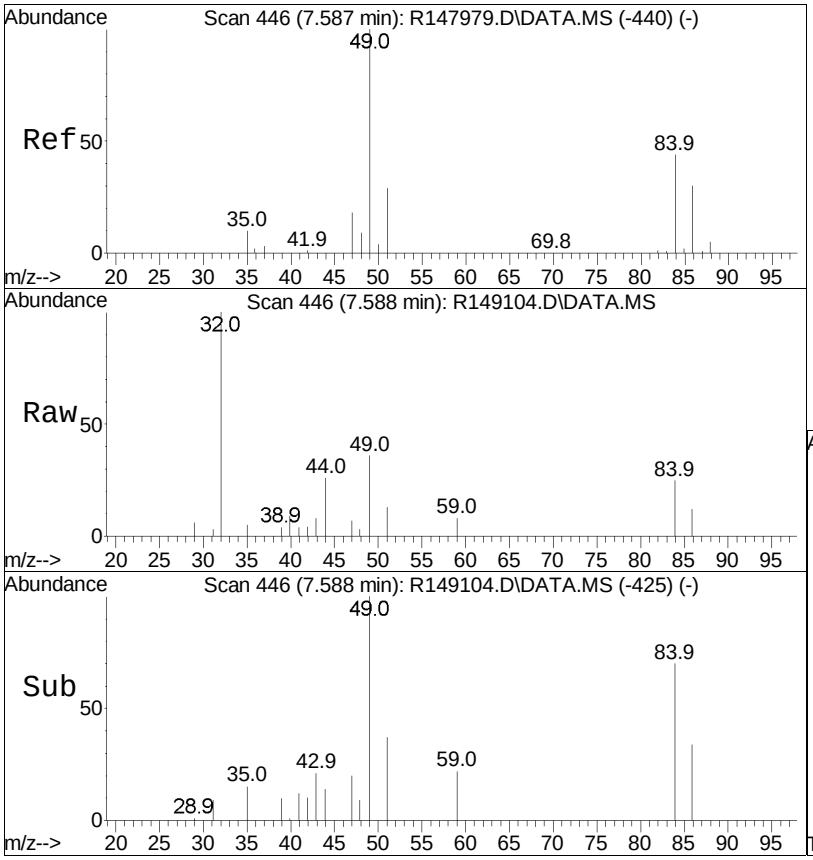


#27
tertiary butyl alcohol
Concen: 2.49 ppbV
RT: 7.51 min Scan# 438
Delta R.T. 0.009 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 59 Resp: 41714

Ion	Ratio	Lower	Upper
59	100		
41	27.9	18.9	28.3
43	18.5	13.7	20.5

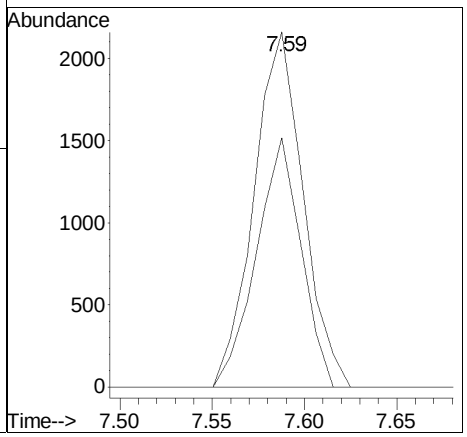


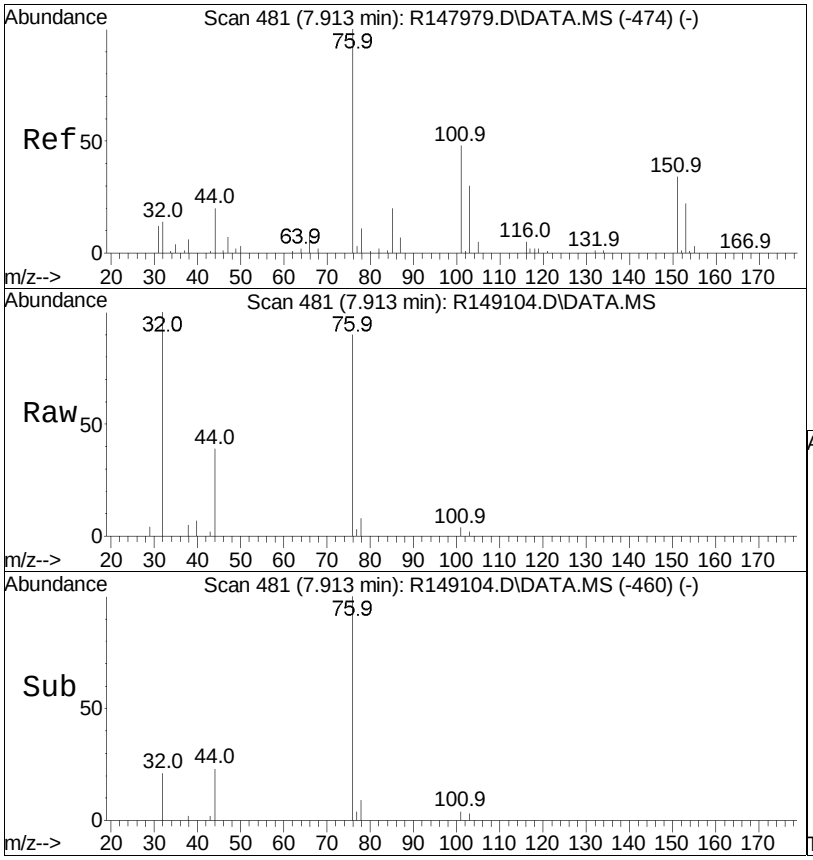


#28
methylene chloride
Concen: 0.38 ppbV
RT: 7.59 min Scan# 446
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 49 Resp: 4002

Ion	Ratio	Lower	Upper
49	100		
84	70.3	45.9	68.9#

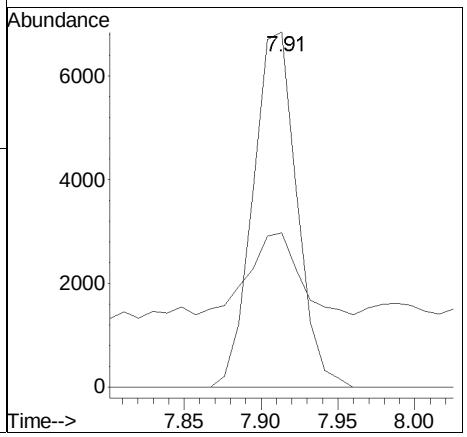


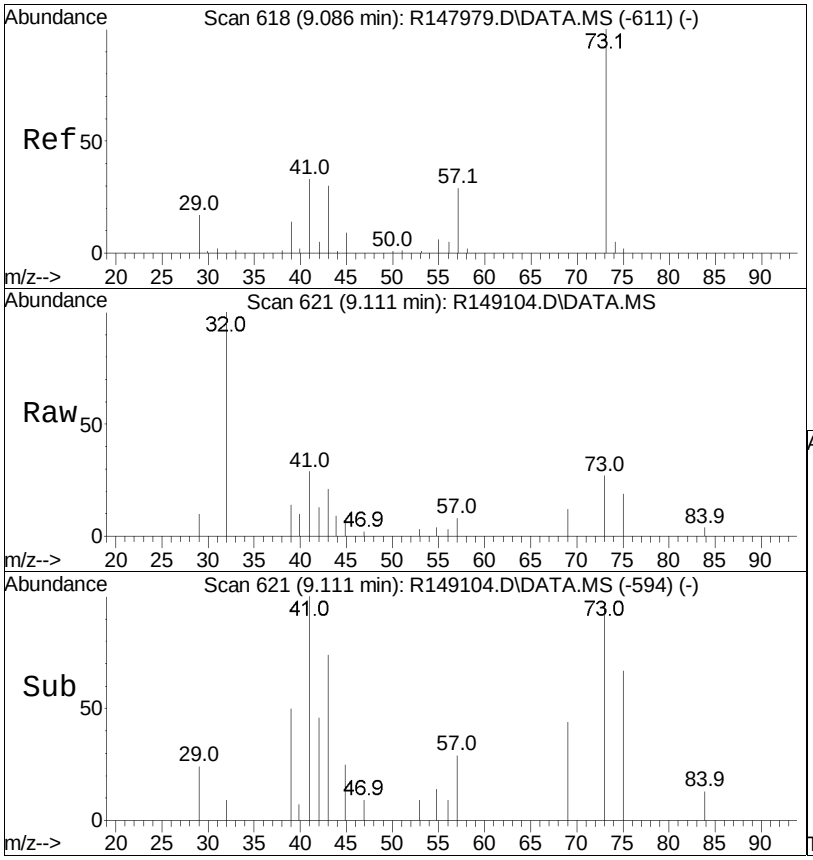


#30
carbon disulfide
Concen: 0.63 ppbV
RT: 7.91 min Scan# 481
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 76 Resp: 13612

Ion	Ratio	Lower	Upper
76	100		
44	43.5	16.3	24.5#

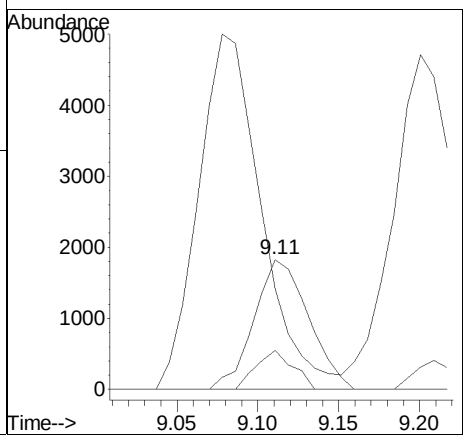


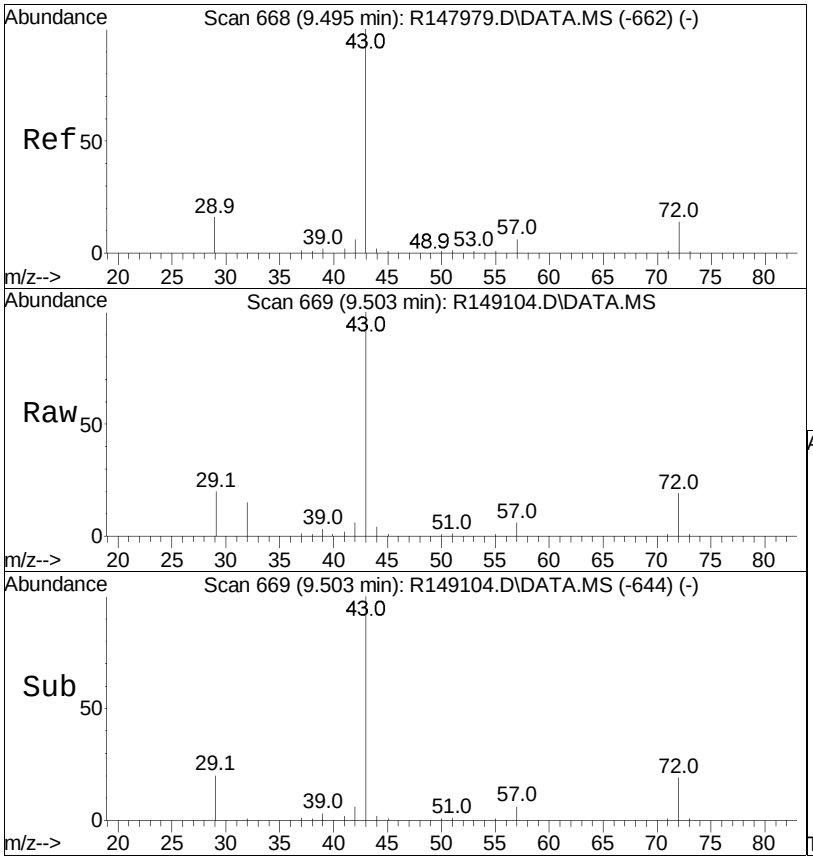


#34
MTBE
Concen: 0.20 ppbV
RT: 9.11 min Scan# 621
Delta R.T. 0.024 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 73 Resp: 4284

Ion	Ratio	Lower	Upper
73	100		
57	30.1	19.1	28.7#
43	77.6	23.0	34.4#

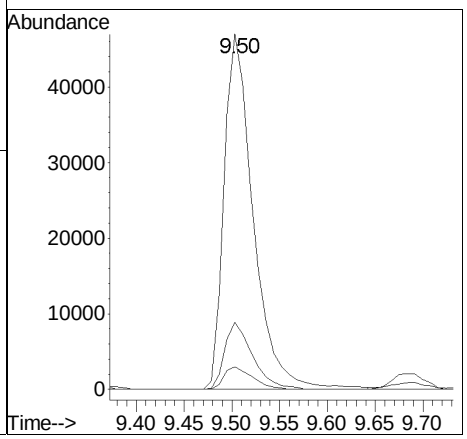


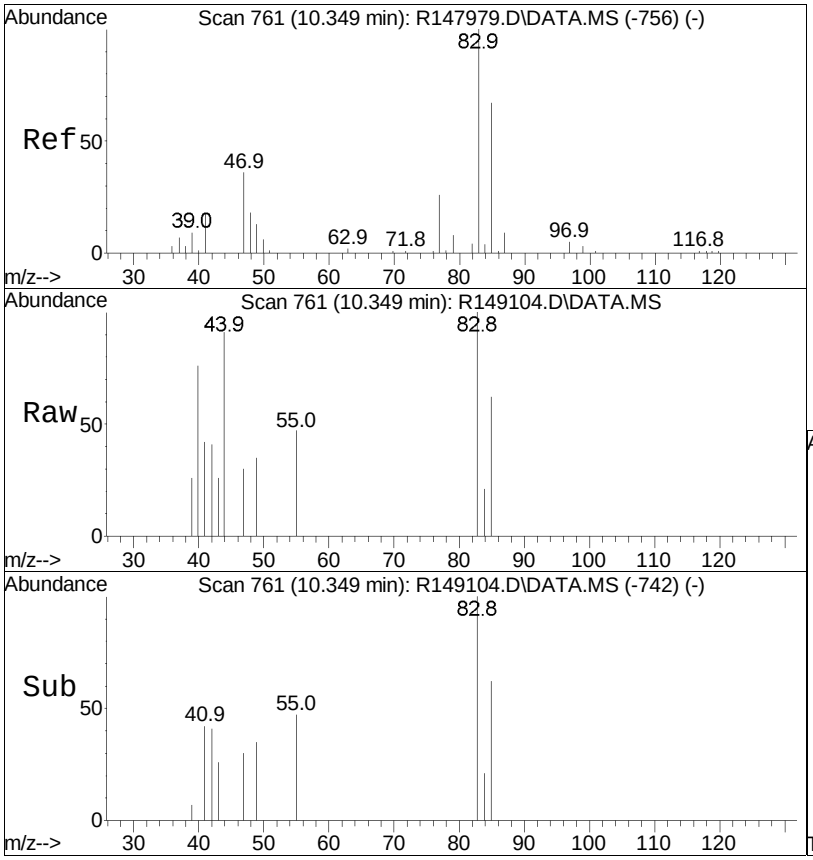


#36
2-butanone
Concen: 5.03 ppbV
RT: 9.50 min Scan# 669
Delta R.T. 0.008 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 43 Resp: 100285

Ion	Ratio	Lower	Upper
43	100		
72	18.9	13.6	20.4
57	6.4	4.9	7.3

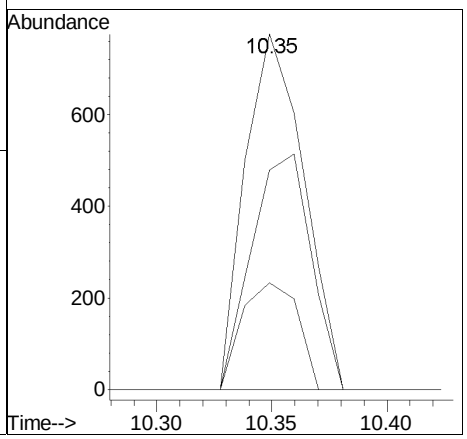


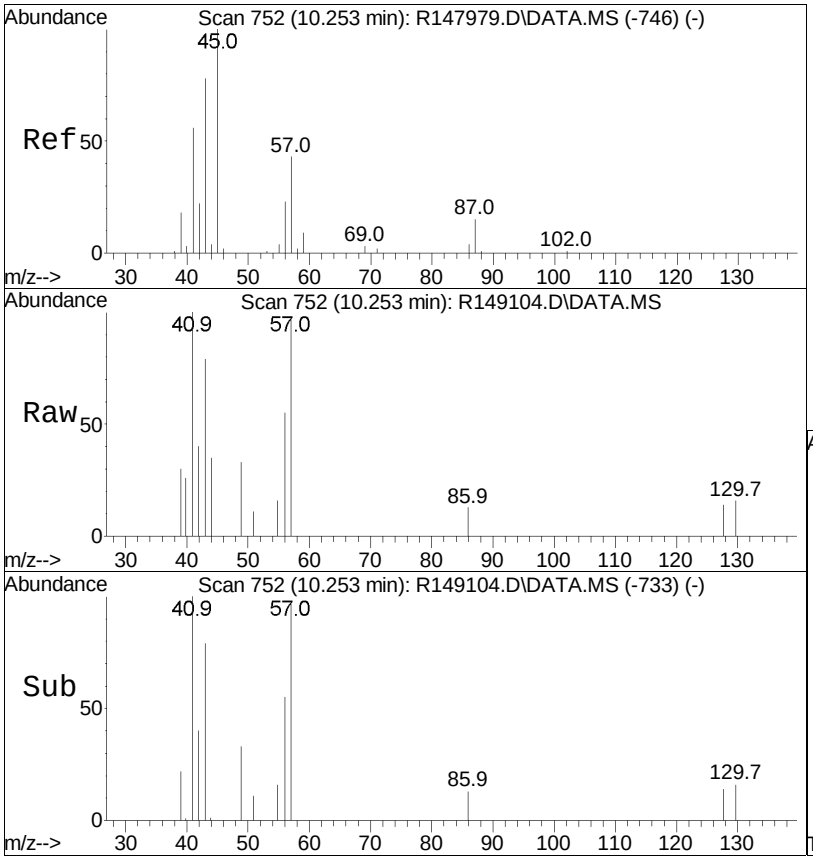


#39
chloroform
Concen: 0.07 ppbV
RT: 10.35 min Scan# 761
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 83 Resp: 1377

Ion	Ratio	Lower	Upper
83	100		
85	61.7	51.1	76.7
47	30.0	25.8	38.8

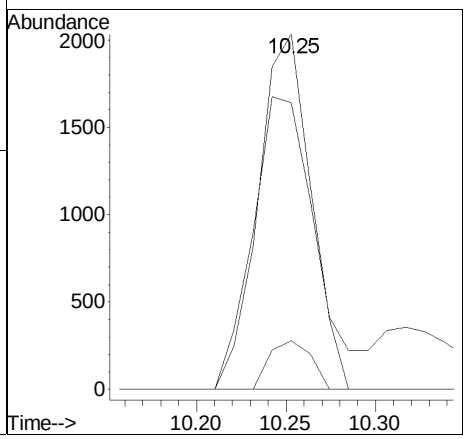


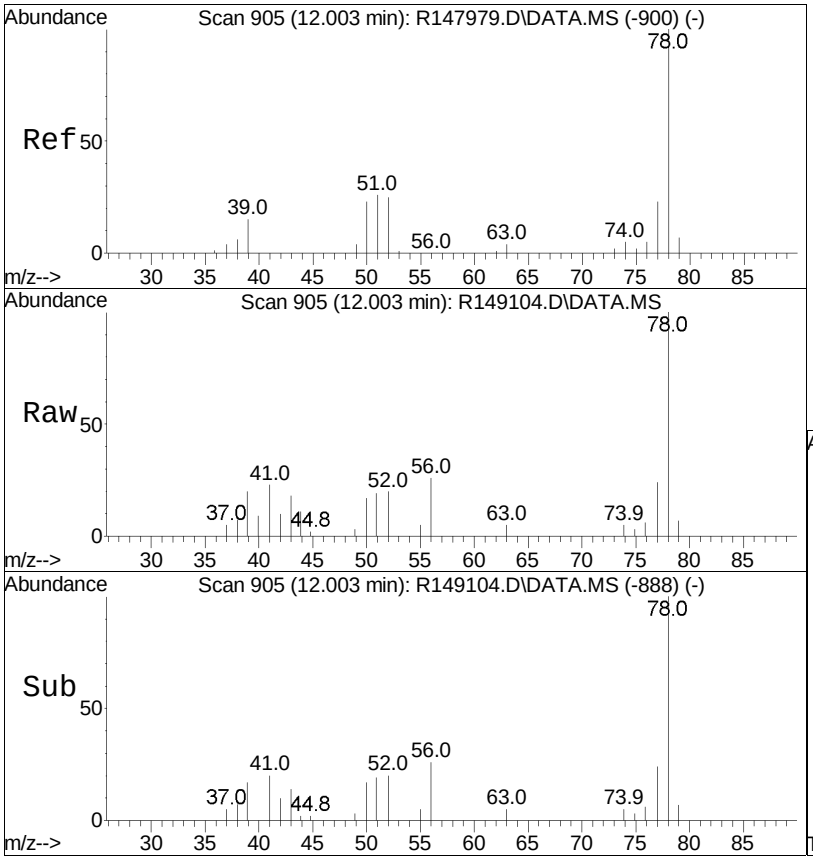


#44
hexane
Concen: 0.27 ppbV
RT: 10.25 min Scan# 752
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 57 Resp: 4168

Ion	Ratio	Lower	Upper
57	100		
43	80.6	142.3	213.5#
86	13.7	9.3	13.9

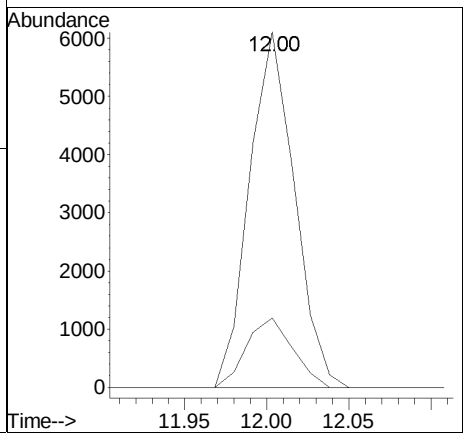


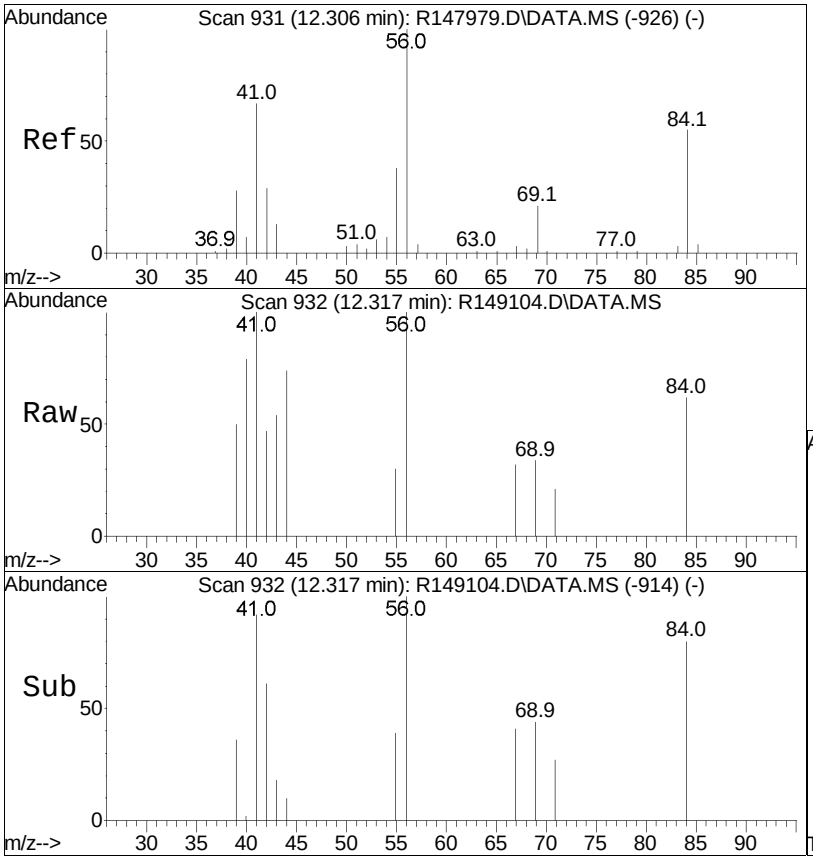


#50
benzene
Concen: 0.54 ppbV
RT: 12.00 min Scan# 905
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 78 Resp: 11680

Ion	Ratio	Lower	Upper
78	100		
52	19.5	15.2	22.8

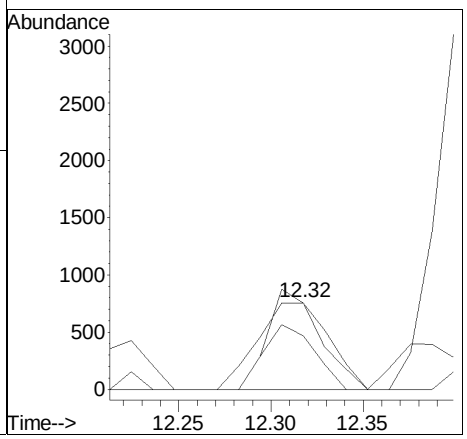


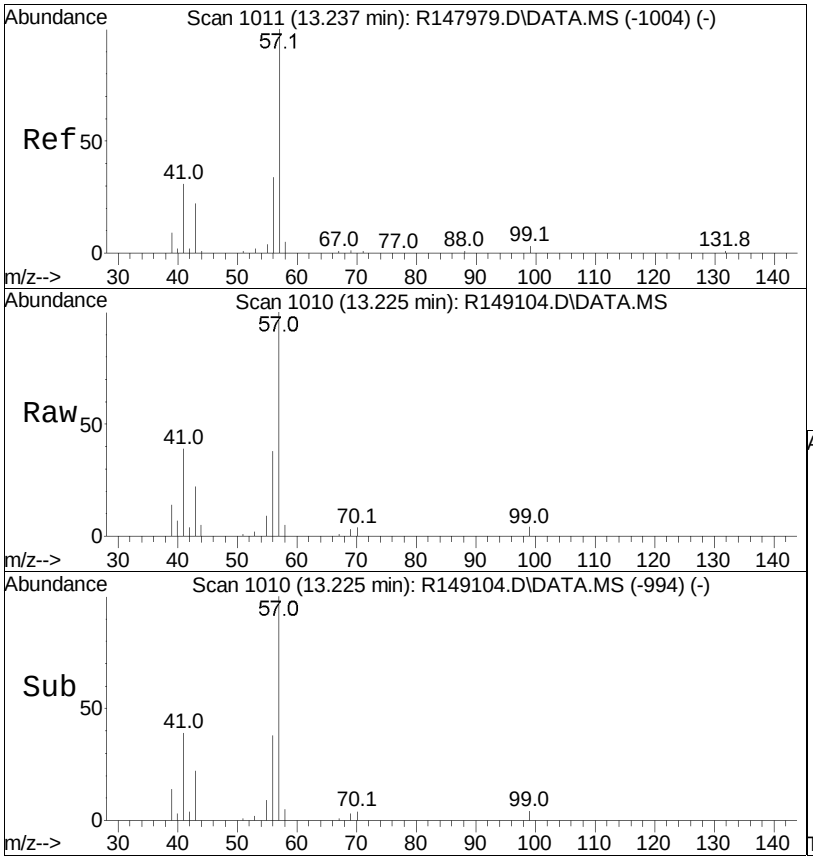


#53
cyclohexane
Concen: 0.15 ppbV
RT: 12.32 min Scan# 932
Delta R.T. 0.012 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 56 Resp: 1901

Ion	Ratio	Lower	Upper
56	100		
84	62.0	56.5	84.7
41	99.7	57.5	86.3#

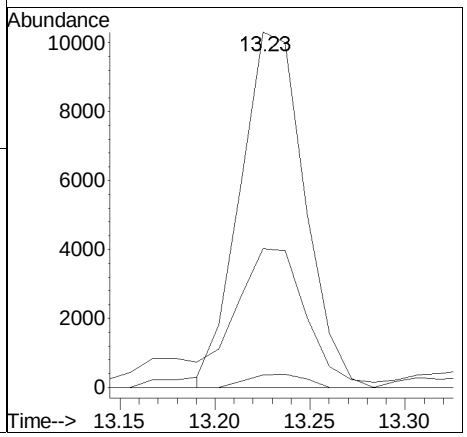


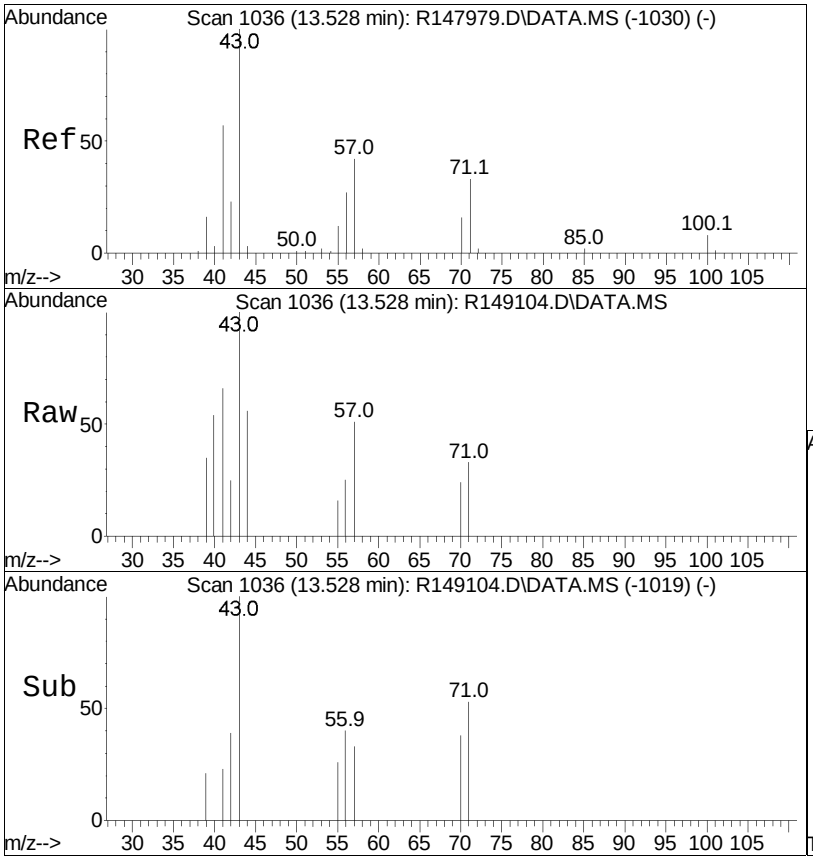


#60
2,2,4-trimethylpentane
Concen: 0.58 ppbV m
RT: 13.23 min Scan# 1010
Delta R.T. -0.012 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 57 Resp: 24333

Ion	Ratio	Lower	Upper
57	100		
99	3.5	3.0	4.6
41	39.1	26.8	40.2

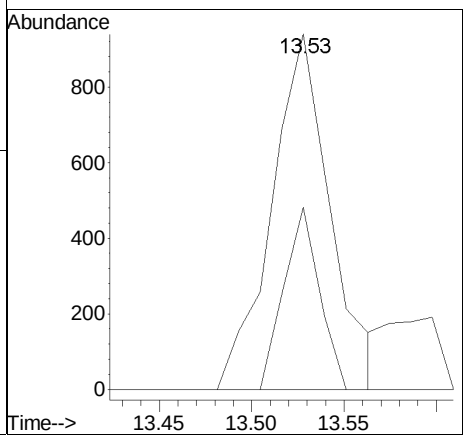


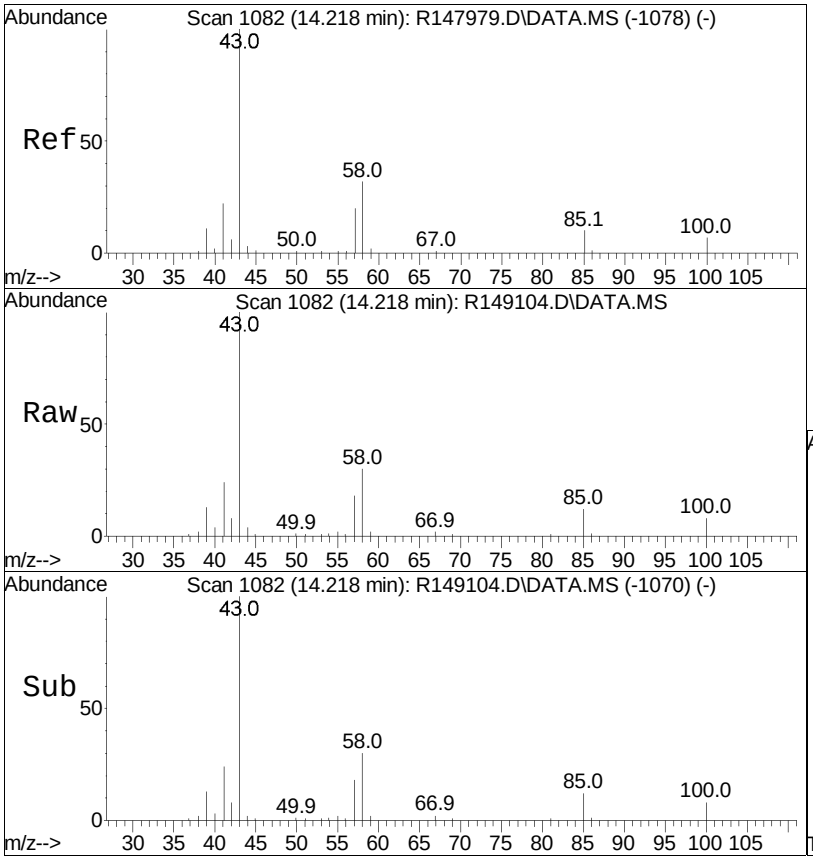


#62
heptane
Concen: 0.11 ppbV
RT: 13.53 min Scan# 1036
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 43 Resp: 2077

Ion	Ratio	Lower	Upper
43	100		
57	51.3	34.2	51.2#
100	0.0	7.9	11.9#

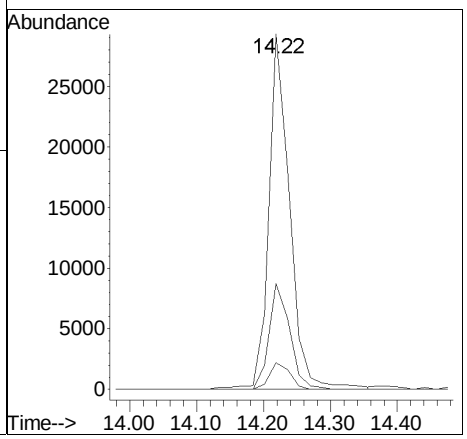


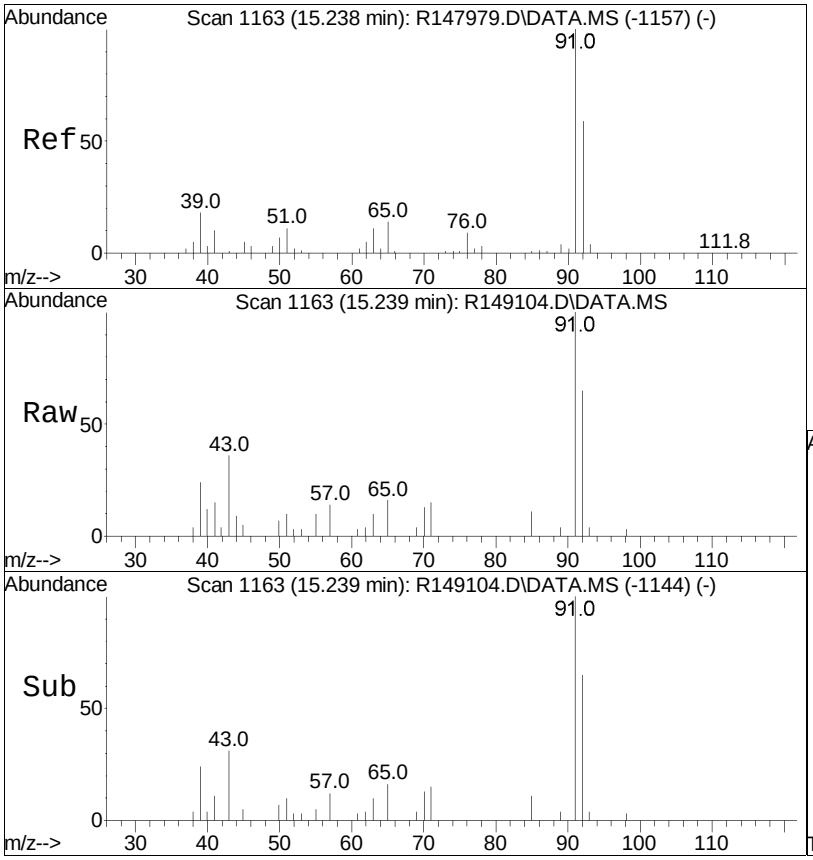


#64
4-methyl-2-pentanone
Concen: 2.50 ppbV
RT: 14.22 min Scan# 1082
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 43 Resp: 63511

Ion	Ratio	Lower	Upper
43	100		
58	29.8	25.8	38.8
100	7.5	6.9	10.3

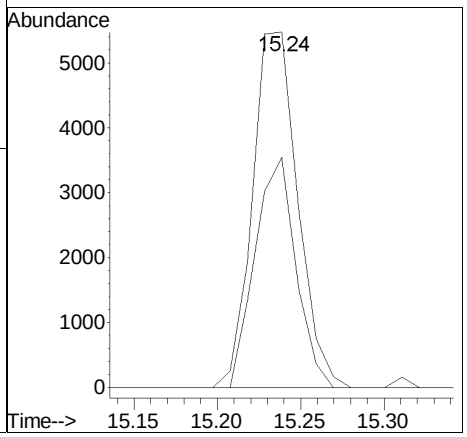


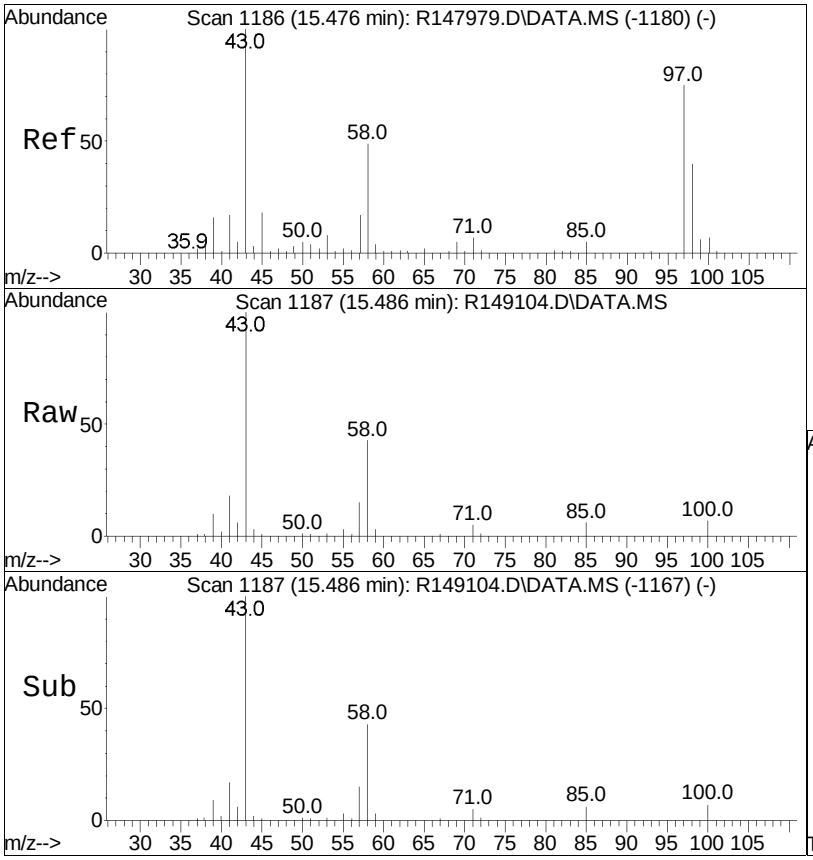


#68
toluene
Concen: 0.39 ppbV
RT: 15.24 min Scan# 1163
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 91 Resp: 10350

Ion	Ratio	Lower	Upper
91	100		
92	64.7	45.8	68.6

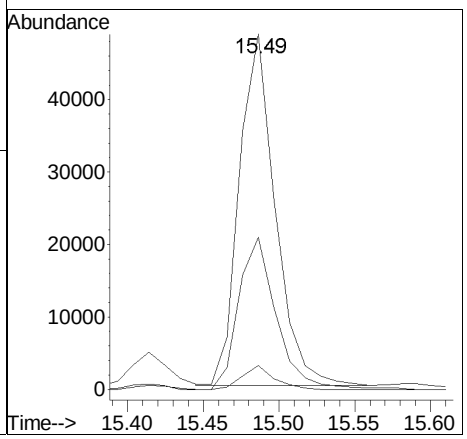


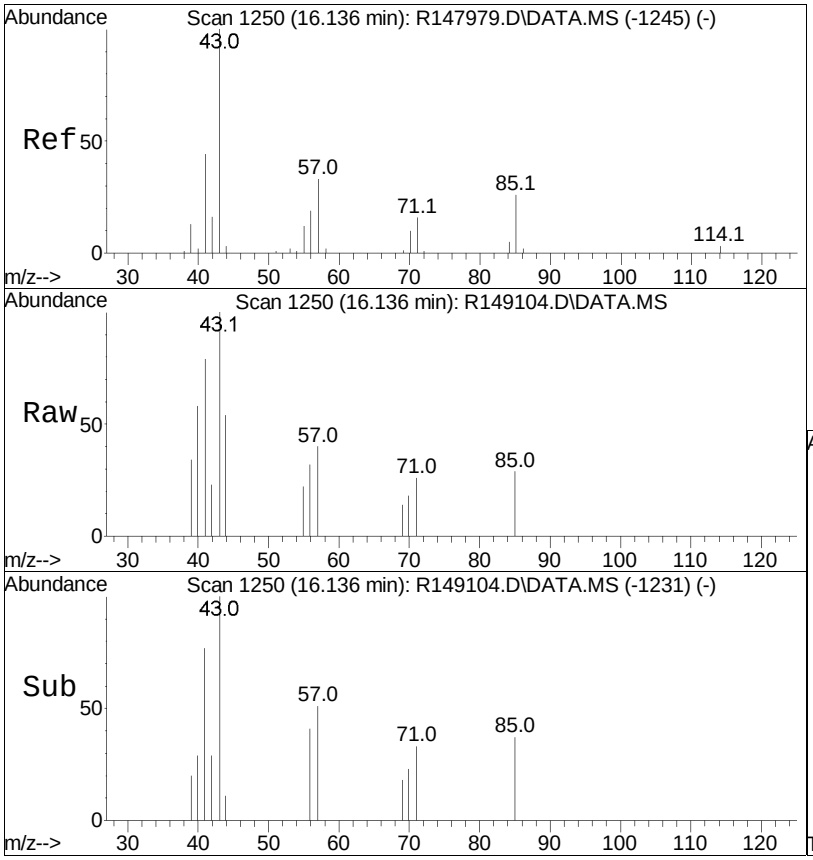


#72
2-hexanone
Concen: 3.29 ppbV
RT: 15.49 min Scan# 1187
Delta R.T. 0.010 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 43 Resp: 80401

Ion	Ratio	Lower	Upper
43	100		
58	42.8	39.7	59.5
100	6.7	6.9	10.3#

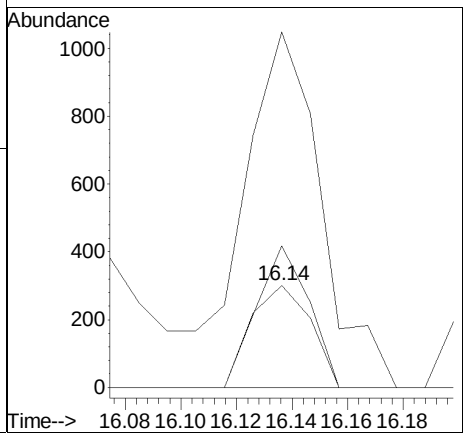


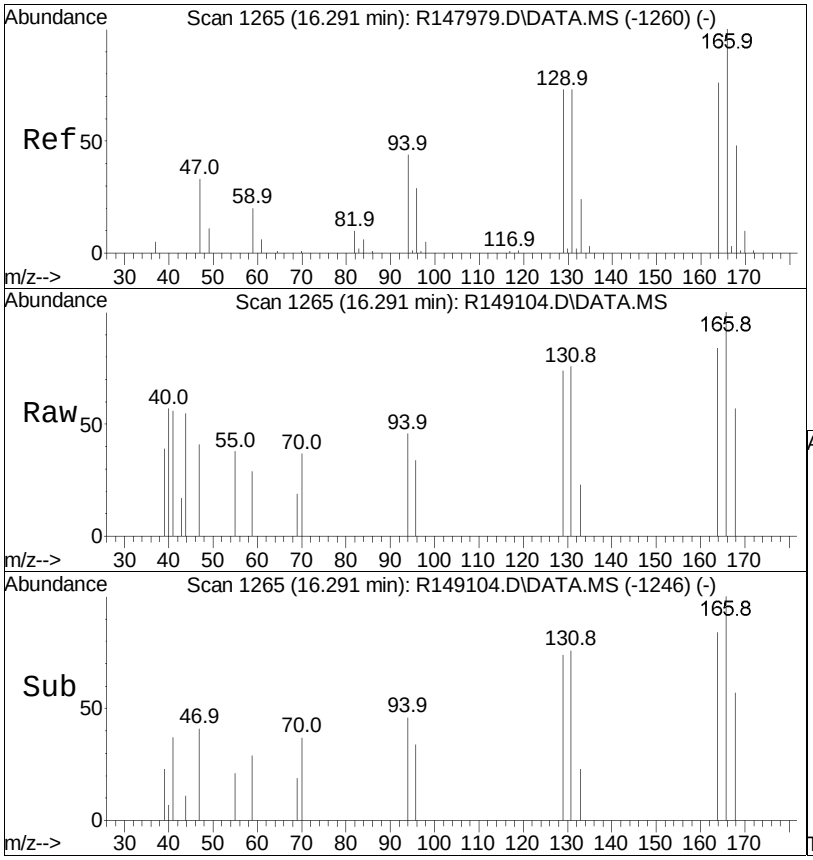


#77
octane
Concen: 0.06 ppbV
RT: 16.14 min Scan# 1250
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 85 Resp: 450

Ion	Ratio	Lower	Upper
85	100		
57	138.9	84.9	127.3#
114	0.0	8.2	12.2#
43	348.2	257.0	385.4

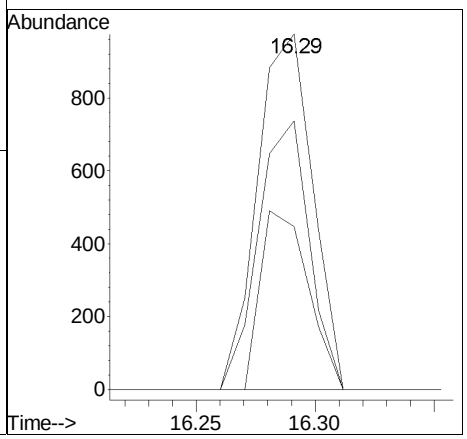


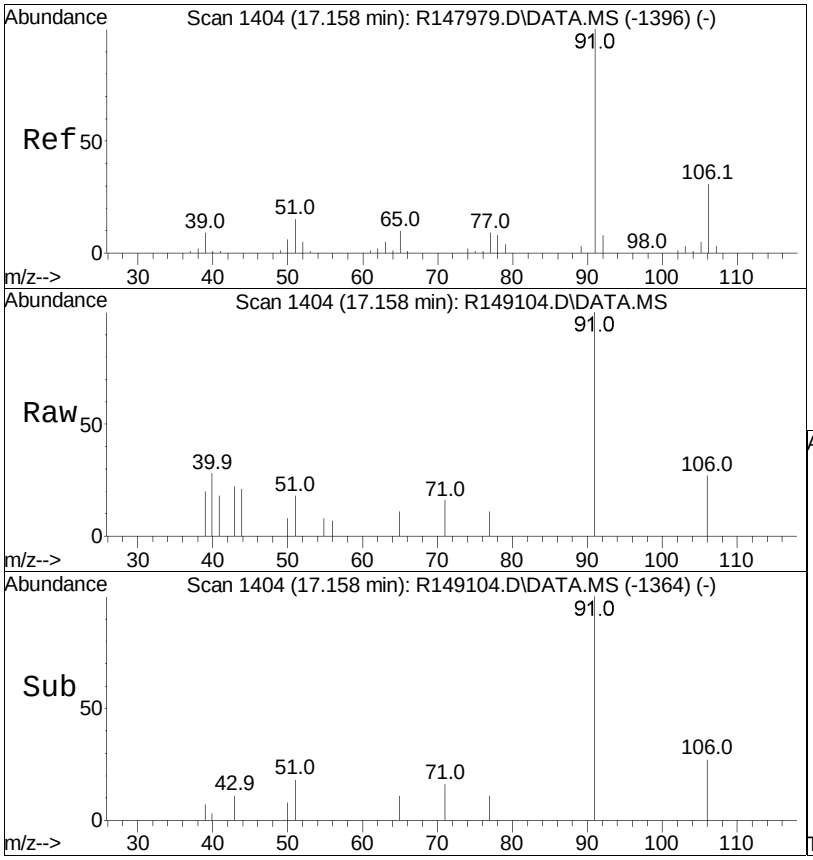


#78
tetrachloroethene
Concen: 0.12 ppbV
RT: 16.29 min Scan# 1265
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion:166 Resp: 1576

Ion	Ratio	Lower	Upper
166	100		
131	75.6	53.0	79.4
94	45.8	36.6	55.0

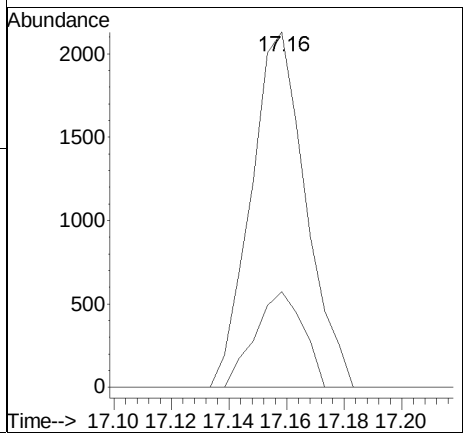


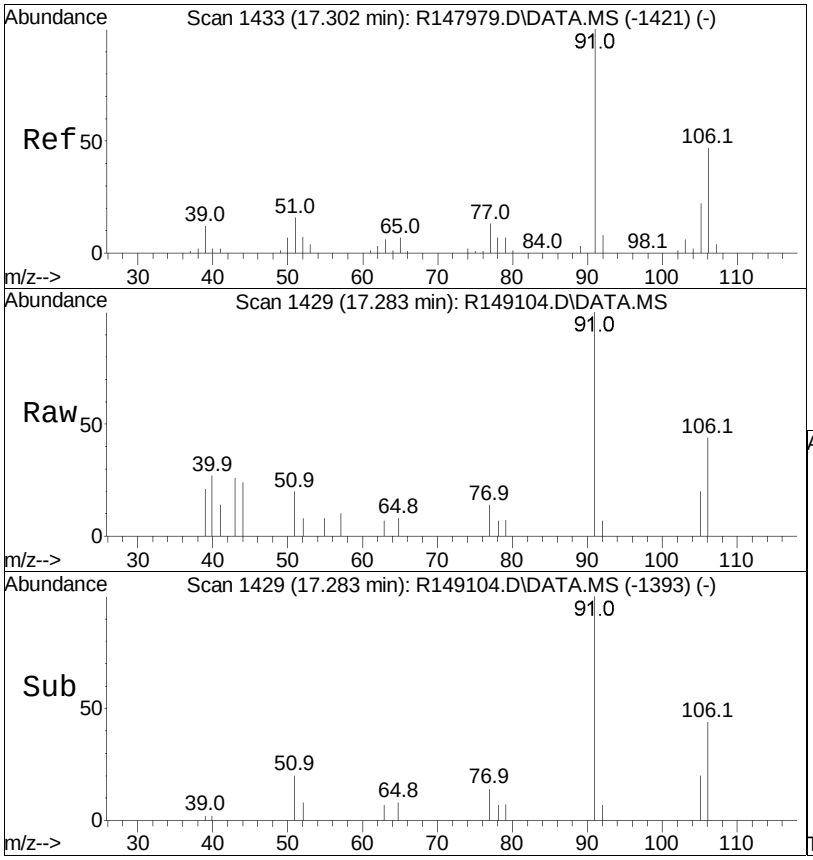


#81
ethylbenzene
Concen: 0.08 ppbV
RT: 17.16 min Scan# 1404
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 91 Resp: 2819

Ion	Ratio	Lower	Upper
91	100		
106	26.9	24.5	36.7

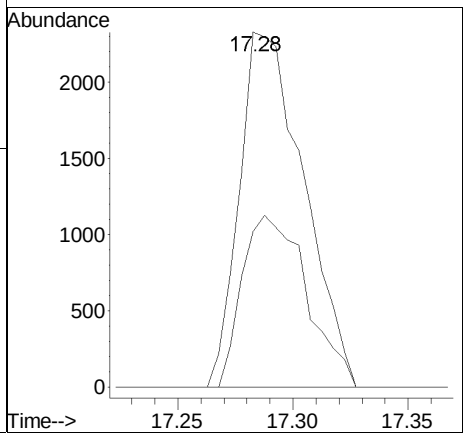


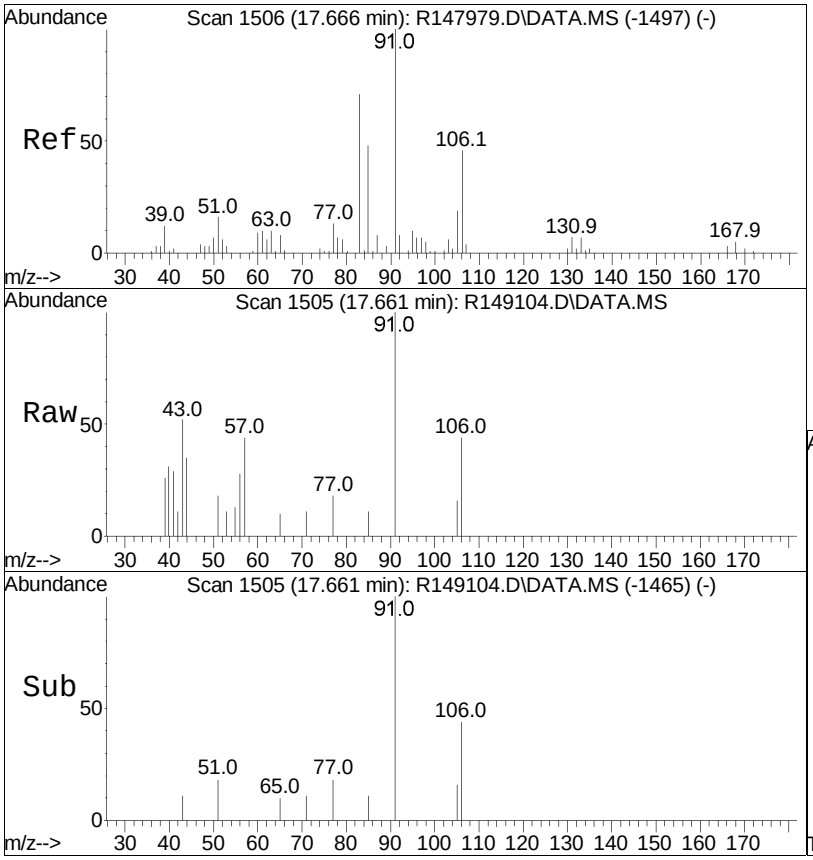


#83
m+p-xylene
Concen: 0.17 ppbV
RT: 17.28 min Scan# 1429
Delta R.T. -0.020 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 91 Resp: 4534

Ion	Ratio	Lower	Upper
91	100		
106	43.9	38.8	58.2

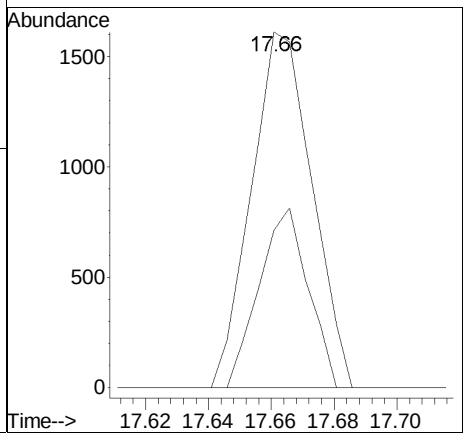


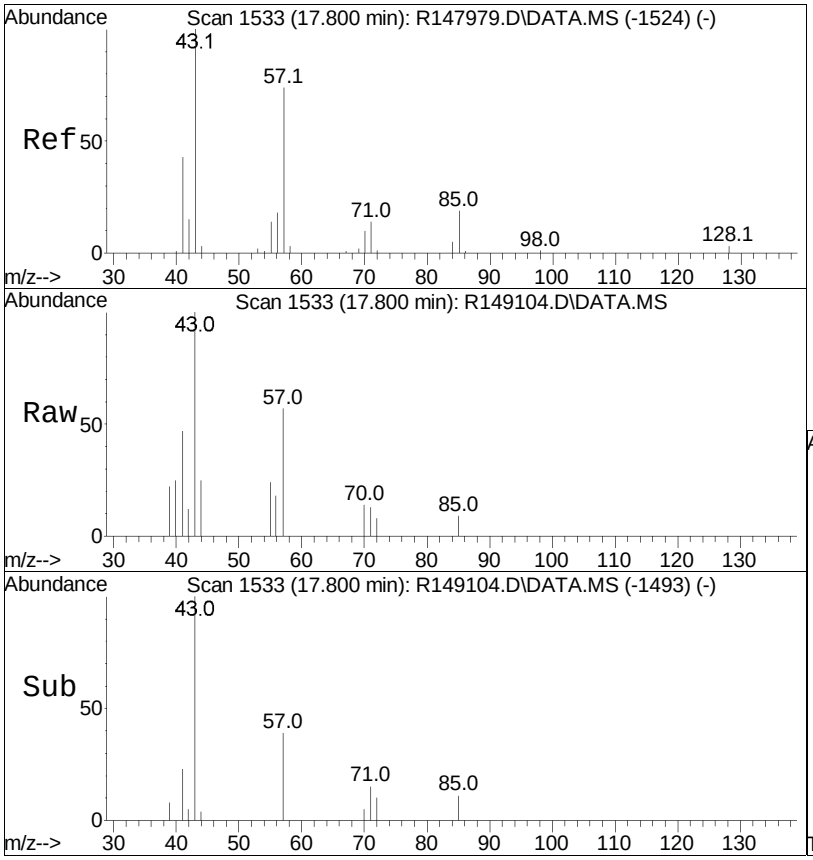


#87
o-xylene
Concen: 0.08 ppbV
RT: 17.66 min Scan# 1505
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 91 Resp: 2161

Ion	Ratio	Lower	Upper
91	100		
106	44.2	36.5	54.7

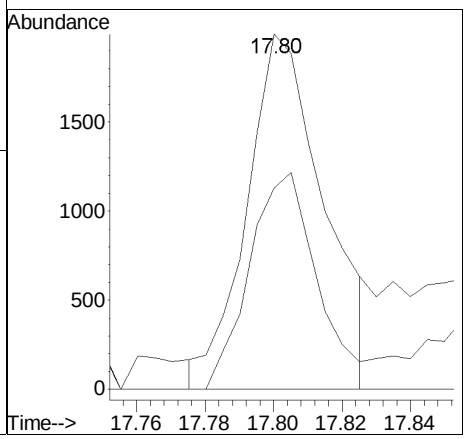


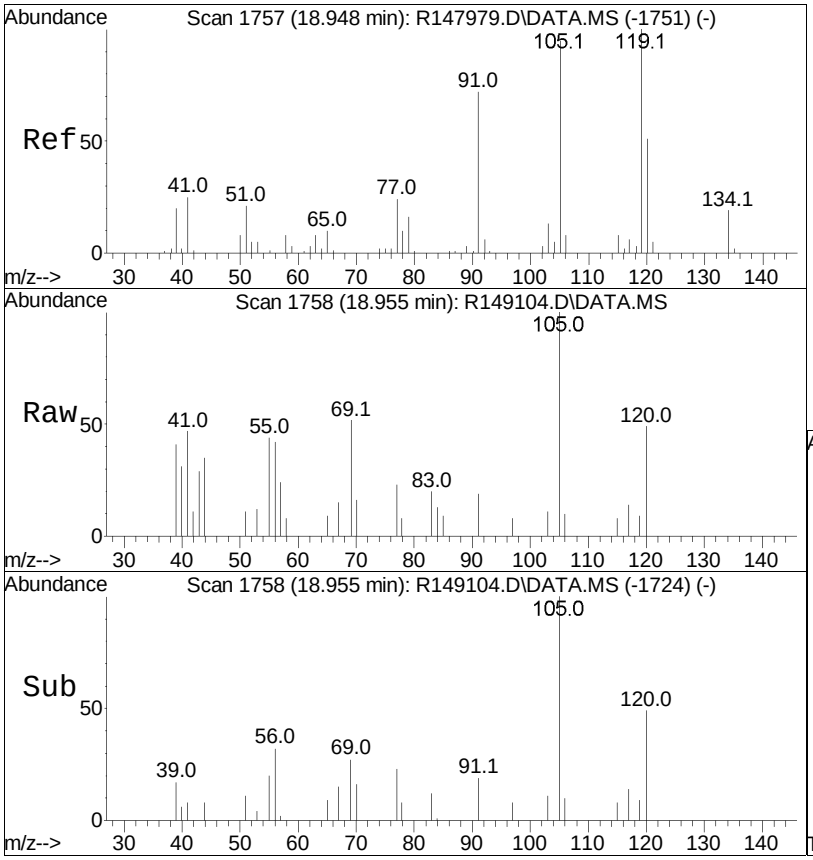


#89
nonane
Concen: 0.12 ppbV m
RT: 17.80 min Scan# 1533
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 43 Resp: 3125

Ion	Ratio	Lower	Upper
43	100		
57	56.7	58.8	88.2#
128	0.0	2.3	3.5#

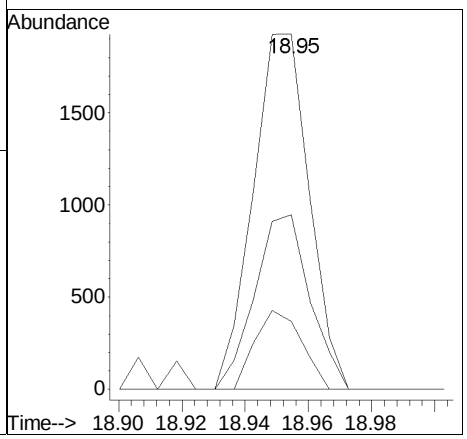


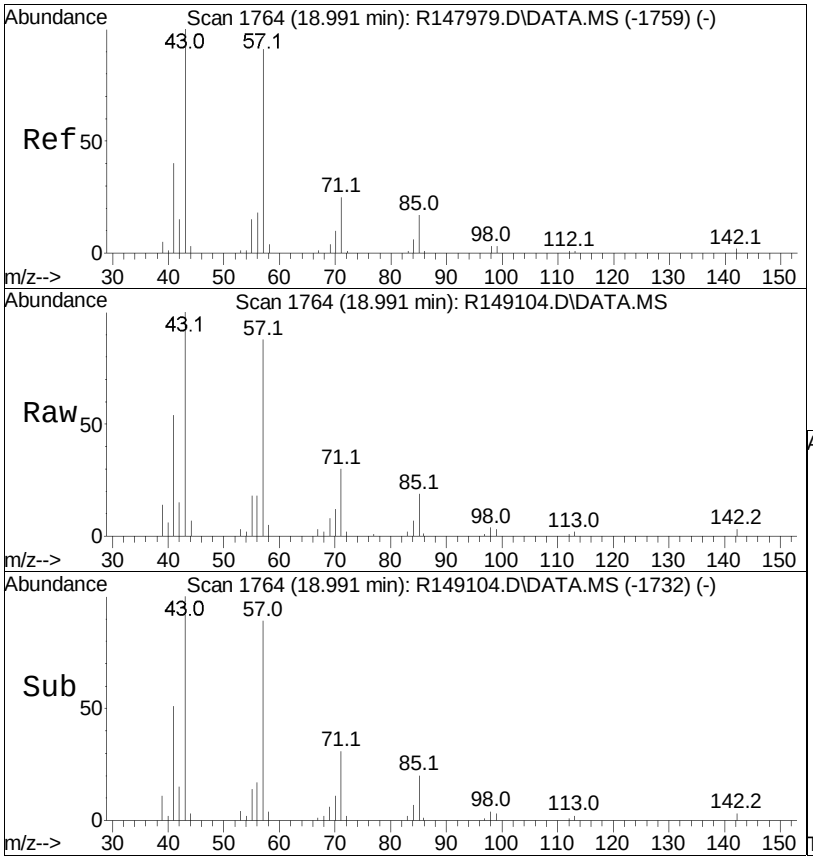


#99
1,2,4-trimethylbenzene
Concen: 0.07 ppbV
RT: 18.95 min Scan# 1758
Delta R.T. 0.006 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion:105 Resp: 2378

Ion	Ratio	Lower	Upper
105	100		
120	49.1	43.0	64.4
91	19.1	63.7	95.5#

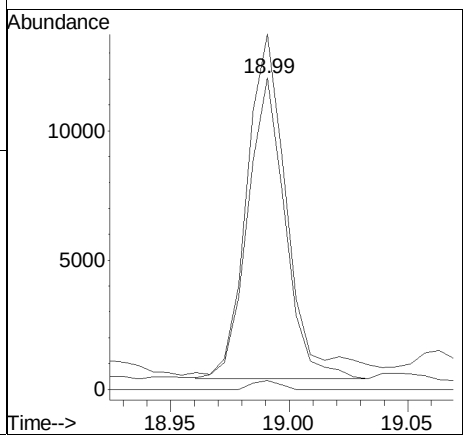


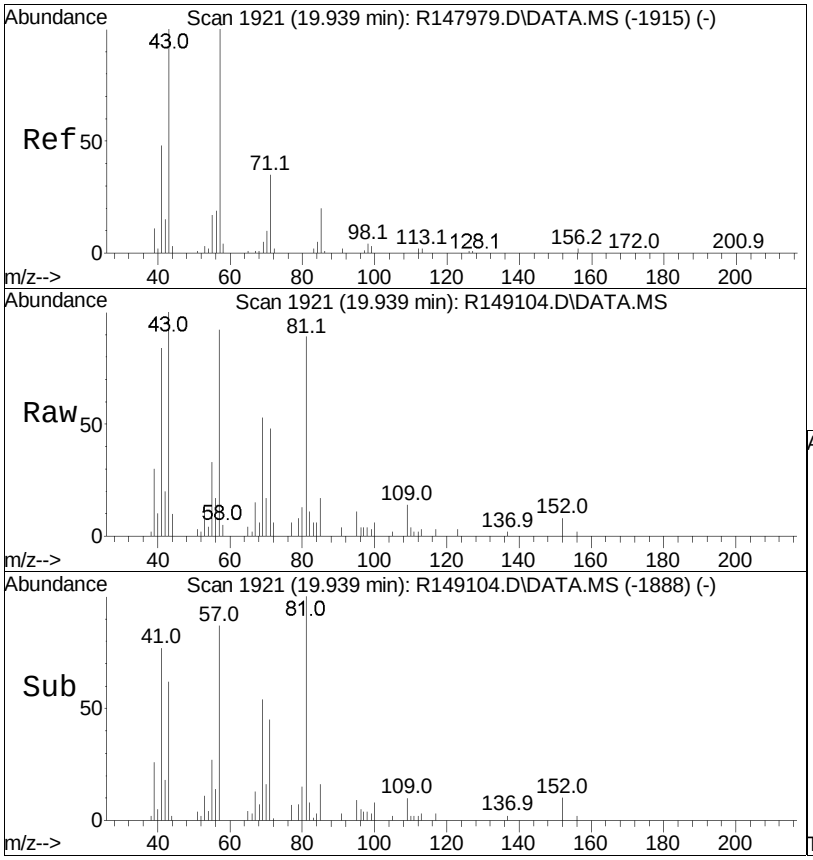


#100
decane
Concen: 0.51 ppbV
RT: 18.99 min Scan# 1764
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 57 Resp: 12857

Ion	Ratio	Lower	Upper
57	100		
43	114.0	88.1	132.1
142	2.9	2.4	3.6

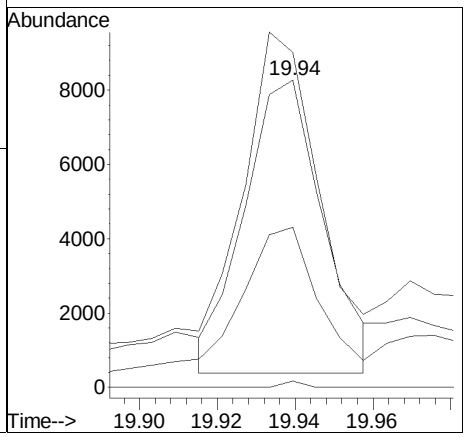


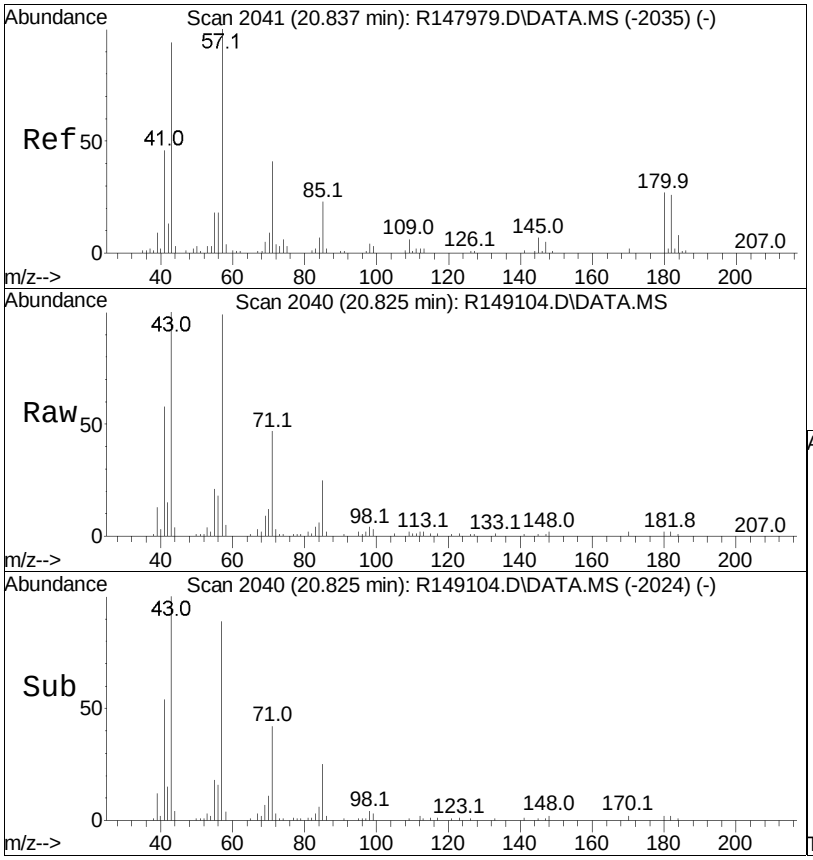


#112
undecane
Concen: 0.40 ppbV m
RT: 19.94 min Scan# 1921
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 57 Resp: 11106

Ion	Ratio	Lower	Upper
57	100		
43	109.0	81.6	122.4
71	52.1	35.4	53.2
156	2.1	2.2	3.4#

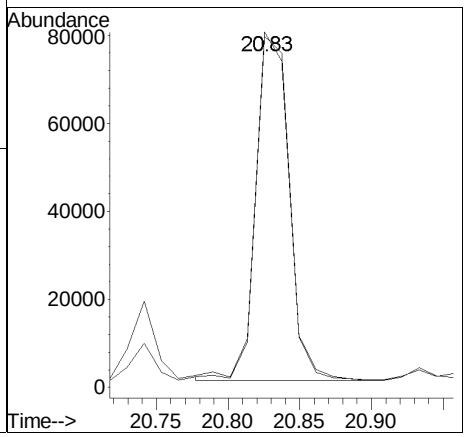


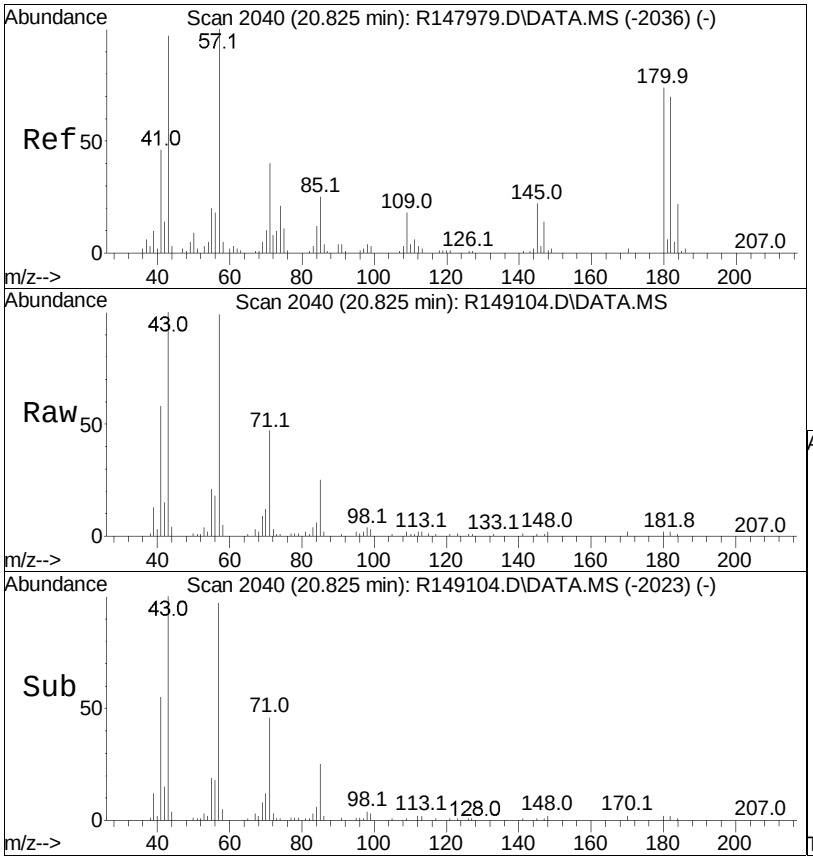


#114
dodecane
Concen: 4.51 ppbV
RT: 20.83 min Scan# 2040
Delta R.T. -0.012 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion: 57 Resp: 127428

Ion	Ratio	Lower	Upper
57	100		
43	101.2	76.2	114.4

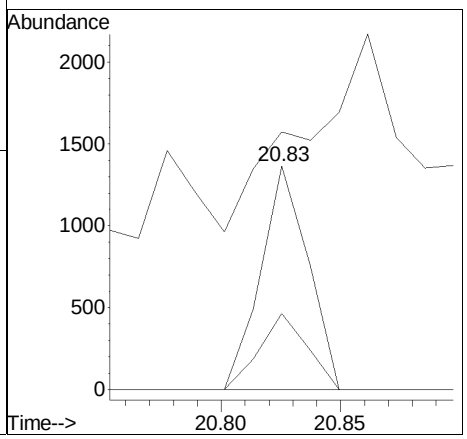


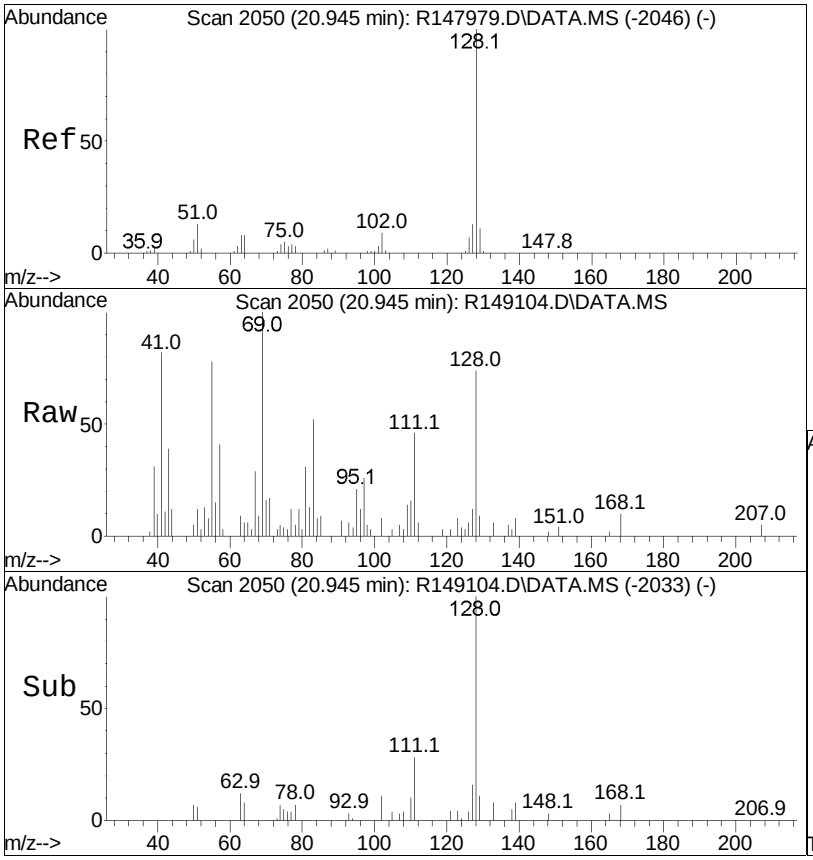


#115
1,2,4-trichlorobenzene
Concen: 0.09 ppbV
RT: 20.83 min Scan# 2040
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion:180 Resp: 1878

Ion	Ratio	Lower	Upper
180	100		
145	34.0	22.8	34.2
109	115.3	18.7	28.1#

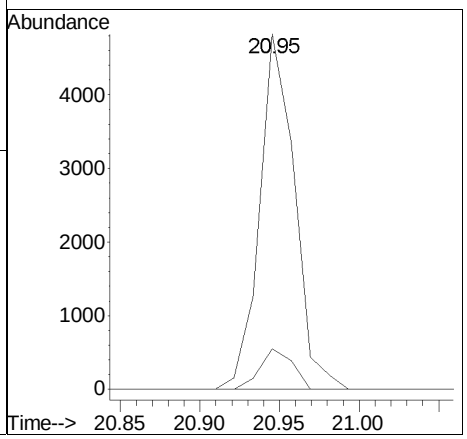




#116
naphthalene
Concen: 0.18 ppbV
RT: 20.95 min Scan# 2050
Delta R.T. -0.000 min
Lab File: R149104.D
Acq: 1 Nov 2016 6:26 pm

Tgt Ion:128 Resp: 7362

Ion	Ratio	Lower	Upper
128	100		
102	11.4	7.5	11.3#



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-07	Date Collected	: 10/19/16 15:58
Client ID	: NFSV-03	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 19:00
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149105	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-71-8	Dichlorodifluoromethane	0.350	0.200	0.047	1.73	0.989	0.230	
74-87-3	Chloromethane	ND	0.200	0.096	ND	0.413	0.198	U
76-14-2	Freon-114	ND	0.200	0.042	ND	1.40	0.293	U
75-01-4	Vinyl chloride	ND	0.200	0.038	ND	0.511	0.097	U
106-99-0	1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177	U
106-97-8	Butane	0.357	0.200	0.044	0.849	0.475	0.105	
75-07-0	Acetaldehyde	7.16	2.50	0.547	12.9	4.50	0.985	
74-83-9	Bromomethane	ND	0.200	0.070	ND	0.777	0.270	U
75-00-3	Chloroethane	ND	0.200	0.077	ND	0.528	0.202	U
64-17-5	Ethanol	1.50	2.50	0.542	2.83	4.71	1.02	J
593-60-2	Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306	U
107-02-8	Acrolein	0.163	0.500	0.114	0.374	1.15	0.261	J
67-64-1	Acetone	4.73	1.00	0.165	11.2	2.38	0.392	
75-69-4	Trichlorofluoromethane	0.457	0.200	0.042	2.57	1.12	0.234	
67-63-0	Isopropanol	8.99	0.500	0.053	22.1	1.23	0.129	
109-66-0	Pentane	ND	0.200	0.048	ND	0.590	0.140	U
75-35-4	1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224	U
75-65-0	tert-Butyl Alcohol	0.626	0.500	0.060	1.90	1.52	0.182	
75-09-2	Methylene chloride	ND	1.00	0.299	ND	1.74	1.04	U
107-05-1	3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254	U
75-15-0	Carbon disulfide	0.079	0.200	0.035	0.246	0.623	0.107	J
76-13-1	Freon-113	0.053	0.200	0.051	0.406	1.53	0.392	J
156-60-5	trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293	U
75-34-3	1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312	U
1634-04-4	Methyl tert butyl ether	ND	0.200	0.053	ND	0.721	0.190	U
78-93-3	2-Butanone	1.58	0.500	0.047	4.66	1.47	0.139	
156-59-2	cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233	U
67-66-3	Chloroform	ND	0.200	0.053	ND	0.977	0.259	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-07	Date Collected	: 10/19/16 15:58
Client ID	: NFSV-03	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 19:00
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149105	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
107-06-2	1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223	U
110-54-3	n-Hexane	ND	0.200	0.052	ND	0.705	0.183	U
71-55-6	1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311	U
71-43-2	Benzene	ND	0.200	0.054	ND	0.639	0.172	U
110-02-1	Thiophene	ND	0.200	0.053	ND	0.688	0.182	U
56-23-5	Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296	U
110-82-7	Cyclohexane	ND	0.200	0.066	ND	0.688	0.226	U
78-87-5	1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322	U
75-27-4	Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439	U
123-91-1	1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281	U
79-01-6	Trichloroethene	ND	0.200	0.071	ND	1.07	0.382	U
540-84-1	2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308	U
142-82-5	Heptane	ND	0.200	0.055	ND	0.820	0.227	U
10061-01-5	cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338	U
108-10-1	4-Methyl-2-pentanone	0.121	0.500	0.061	0.496	2.05	0.249	J
10061-02-6	trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315	U
79-00-5	1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364	U
108-88-3	Toluene	0.217	0.200	0.063	0.818	0.754	0.237	
554-14-3	2-Methylthiophene	ND	0.200	0.079	ND	0.803	0.317	U
591-78-6	2-Hexanone	0.870	0.200	0.060	3.57	0.820	0.248	
616-44-4	3-Methylthiophene	ND	0.200	0.067	ND	0.803	0.269	U
124-48-1	Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636	U
106-93-4	1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599	U
111-65-9	Octane	0.082	0.200	0.042	0.383	0.934	0.197	J
127-18-4	Tetrachloroethene	13.9	0.200	0.076	94.3	1.36	0.514	
108-90-7	Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363	U
100-41-4	Ethylbenzene	ND	0.200	0.056	ND	0.869	0.241	U
872-55-9	2-Ethylthiophene	ND	0.200	0.057	ND	0.918	0.262	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-07	Date Collected	: 10/19/16 15:58
Client ID	: NFSV-03	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 19:00
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149105	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
179601-23-1	p/m-Xylene	ND	0.400	0.139	ND	1.74	0.604	U
75-25-2	Bromoform	ND	0.200	0.052	ND	2.07	0.541	U
100-42-5	Styrene	ND	0.200	0.080	ND	0.852	0.340	U
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376	U
95-47-6	o-Xylene	ND	0.200	0.063	ND	0.869	0.274	U
111-84-2	Nonane	0.082	0.200	0.063	0.430	1.05	0.328	J
95-49-8	2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252	U
622-96-8	4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381	U
108-67-8	1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287	U
95-63-6	1,2,4-Trimethylbenzene	ND	0.200	0.069	ND	0.983	0.341	U
124-18-5	Decane	0.582	0.200	0.048	3.39	1.16	0.282	
541-73-1	1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383	U
106-46-7	1,4-Dichlorobenzene	ND	0.200	0.036	ND	1.20	0.217	U
526-73-8	1,2,3-Trimethylbenzene	ND	0.200	0.075	ND	0.983	0.369	U
95-50-1	1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369	U
496-11-7	Indane	ND	0.200	0.080	ND	0.967	0.384	U
95-13-6	Indene	ND	0.200	0.061	ND	0.951	0.289	U
1120-21-4	Undecane	0.732	0.200	0.053	4.68	1.28	0.338	
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.200	0.080	ND	1.10	0.436	U
112-40-3	Dodecane	0.993	0.200	0.048	6.92	1.39	0.333	
120-82-1	1,2,4-Trichlorobenzene	0.197	0.200	0.061	1.46	1.48	0.454	J
91-20-3	Naphthalene	0.047	0.200	0.043	0.246	1.05	0.223	J
95-15-8	Benzothiophene	ND	0.500	0.047	ND	2.74	0.257	U
87-68-3	Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781	U
91-57-6	2-Methylnaphthalene	ND	1.00	0.272	ND	5.82	1.58	U
90-12-0	1-Methylnaphthalene	ND	1.00	0.250	ND	5.82	1.45	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149105.D
Acq On : 1 Nov 2016 7:00 pm
Operator : AIRPIANO1:RY
Sample : L1634001-07,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 02 10:13:17 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	141820	10.000	ppbV	-0.01
Standard Area = 153282			Recovery =	92.52%		
43) 1,4-difluorobenzene	12.41	114	235058	10.000	ppbV	0.00
Standard Area = 240182			Recovery =	97.87%		
67) chlorobenzene-D5	16.82	54	64153	10.000	ppbV	0.00
Standard Area = 64184			Recovery =	99.95%		
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	70276	9.980	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =	99.80%		
69) toluene-D8	15.14	98	194931	10.088	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =	100.88%		
90) bromofluorobenzene	18.01	95	131802	9.760	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =	97.60%		
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	6352	0.350	ppbV	92
6) chloromethane	4.37		0	N.D.		
7) Freon-114	0.00		0	N.D.		
9) vinyl chloride	0.00		0	N.D.		
10) 1,3-butadiene	0.00		0	N.D.		
11) butane	4.95	43	4930	0.357	ppbV	97
12) acetaldehyde	4.54	29	57878	7.160	ppbV	95
13) bromomethane	0.00		0	N.D.		
14) chloroethane	0.00		0	N.D.		
15) ethanol	5.72	31	10419	1.500	ppbV	95
17) vinyl bromide	0.00		0	N.D.		
18) acrolein	6.18	56	559	0.163	ppbV #	72
19) acetone	6.37	43	76664	4.728	ppbV #	100
21) trichlorofluoromethane	6.57	101	8573	0.457	ppbV	98
22) isopropyl alcohol	6.72	45	151580	8.990	ppbV	100
24) pentane	0.00		0	N.D.	d	
26) 1,1-dichloroethene	0.00		0	N.D.		
27) tertiary butyl alcohol	7.53	59	10631	0.626	ppbV #	88
28) methylene chloride	7.59		0	N.D.		
29) 3-chloropropene	0.00		0	N.D.	d	
30) carbon disulfide	7.91	76	1723	0.079	ppbV #	1

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149105.D
Acq On : 1 Nov 2016 7:00 pm
Operator : AIRPIANO1:RY
Sample : L1634001-07,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 02 10:13:17 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
31) Freon 113	7.93	101	762	0.053	ppbV	96
32) trans-1,2-dichloroethene	0.00		0	N.D.		
33) 1,1-dichloroethane	0.00		0	N.D.	d	
34) MTBE	0.00		0	N.D.	d	
36) 2-butanone	9.51	43	32052	1.585	ppbV	100
37) cis-1,2-dichloroethene	0.00		0	N.D.		
39) chloroform	0.00		0	N.D.		
42) 1,2-dichloroethane	0.00		0	N.D.		
44) hexane	0.00		0	N.D.	d	
48) 1,1,1-trichloroethane	0.00		0	N.D.		
50) benzene	0.00		0	N.D.	d	
51) thiophene	0.00		0	N.D.		
52) carbon tetrachloride	12.17		0	N.D.		
53) cyclohexane	0.00		0	N.D.	d	
56) 1,2-dichloropropane	0.00		0	N.D.		
57) bromodichloromethane	0.00		0	N.D.		
58) 1,4-dioxane	0.00		0	N.D.		
59) trichloroethene	0.00		0	N.D.		
60) 2,2,4-trimethylpentane	0.00		0	N.D.	d	
62) heptane	13.53		0	N.D.		
63) cis-1,3-dichloropropene	0.00		0	N.D.		
64) 4-methyl-2-pentanone	14.25	43	3141M6	0.121	ppbV	
65) trans-1,3-dichloropropene	0.00		0	N.D.		
66) 1,1,2-trichloroethane	0.00		0	N.D.		
68) toluene	15.24	91	5798	0.217	ppbV	99
70) 2-methylthiophene	0.00		0	N.D.	d	
72) 2-hexanone	15.50	43	21712M4	0.870	ppbV	
73) 3-methylthiophene	0.00		0	N.D.		
74) dibromochloromethane	0.00		0	N.D.		
75) 1,2-dibromoethane	0.00		0	N.D.		
77) octane	16.14	85	654	0.082	ppbV #	78
78) tetrachloroethene	16.28	166	190572	13.919	ppbV	95
80) chlorobenzene	0.00		0	N.D.		
81) ethylbenzene	17.16		0	N.D.		
82) 2-ethylthiophene	17.19		0	N.D.		
83) m+p-xylene	17.29		0	N.D.		
84) bromoform	0.00		0	N.D.		
85) styrene	17.58		0	N.D.		

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149105.D
Acq On : 1 Nov 2016 7:00 pm
Operator : AIRPIANO1:RY
Sample : L1634001-07,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 02 10:13:17 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
86)	1,1,2,2-tetrachloroethane	17.70		0	N.D.		
87)	o-xylene	17.67		0	N.D.		
89)	nonane	17.81	43	2221	0.082	ppbV #	82
93)	2-chlorotoluene	0.00		0	N.D.		
96)	4-ethyl toluene	18.59		0	N.D.		
97)	1,3,5-trimethylbenzene	18.64		0	N.D.		
99)	1,2,4-trimethylbenzene	18.95		0	N.D.		
100)	decane	18.99	57	14925	0.582	ppbV	99
102)	1,3-dichlorobenzene	0.00		0	N.D.		
103)	1,4-dichlorobenzene	0.00		0	N.D.		
105)	1,2,3-trimethylbenzene	19.27		0	N.D.		
107)	1,2-dichlorobenzene	0.00		0	N.D.		
109)	indan	0.00		0	N.D.	d	
110)	indene	0.00		0	N.D.	d	
112)	undecane	19.93	57	20663M4	0.732	ppbV	
113)	1,2,4,5-tetramethylben...	20.19		0	N.D.		
114)	dodecane	20.84	57	28594	0.993	ppbV	96
115)	1,2,4-trichlorobenzene	20.83	180	4216	0.197	ppbV	98
116)	naphthalene	20.95	128	1896	0.047	ppbV #	73
118)	benzothiophene	0.00		0	N.D.		
119)	hexachlorobutadiene	0.00		0	N.D.		
120)	2-methylnaphthalene	22.10		0	N.D.		
121)	1-methylnaphthalene	22.30		0	N.D.		

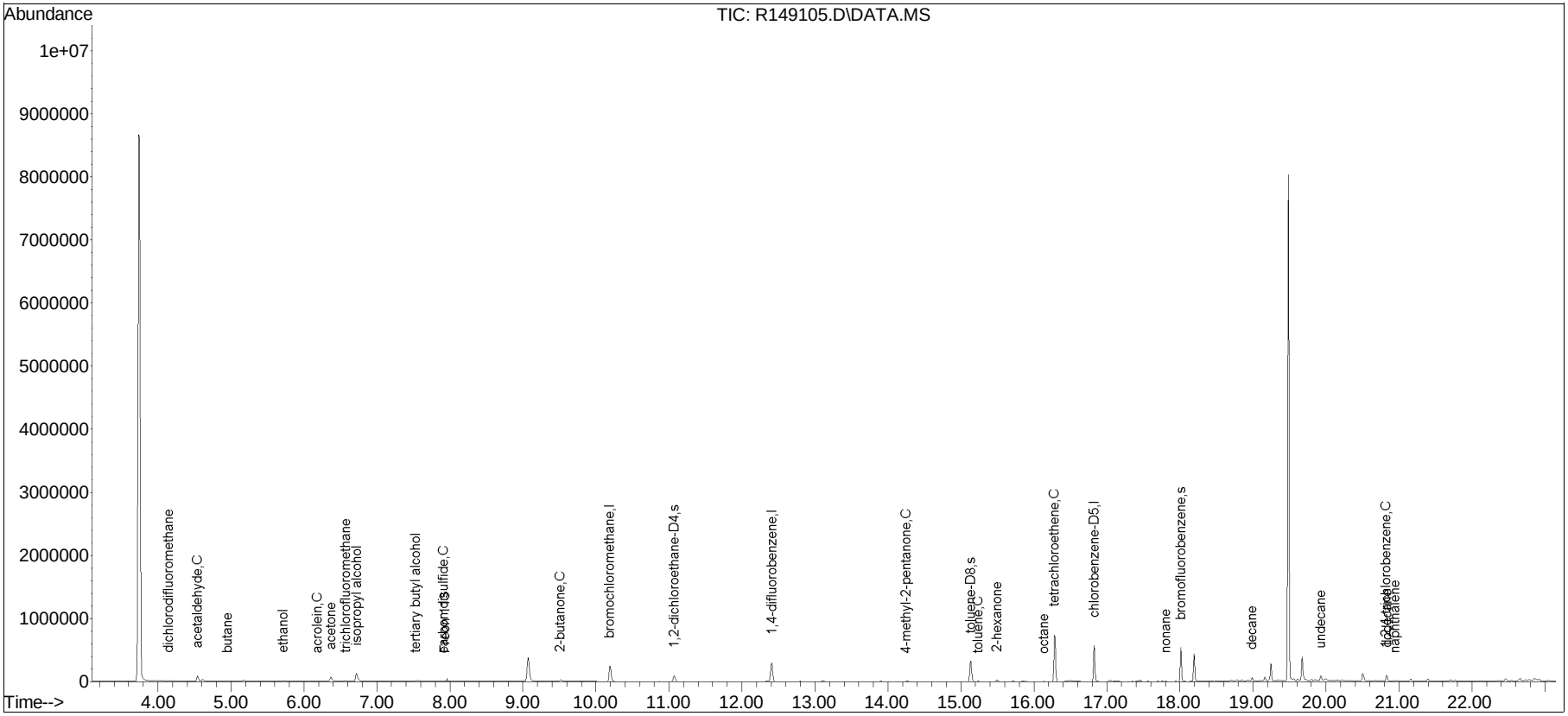
(#) = qualifier out of range (m) = manual integration (+) = signals summed

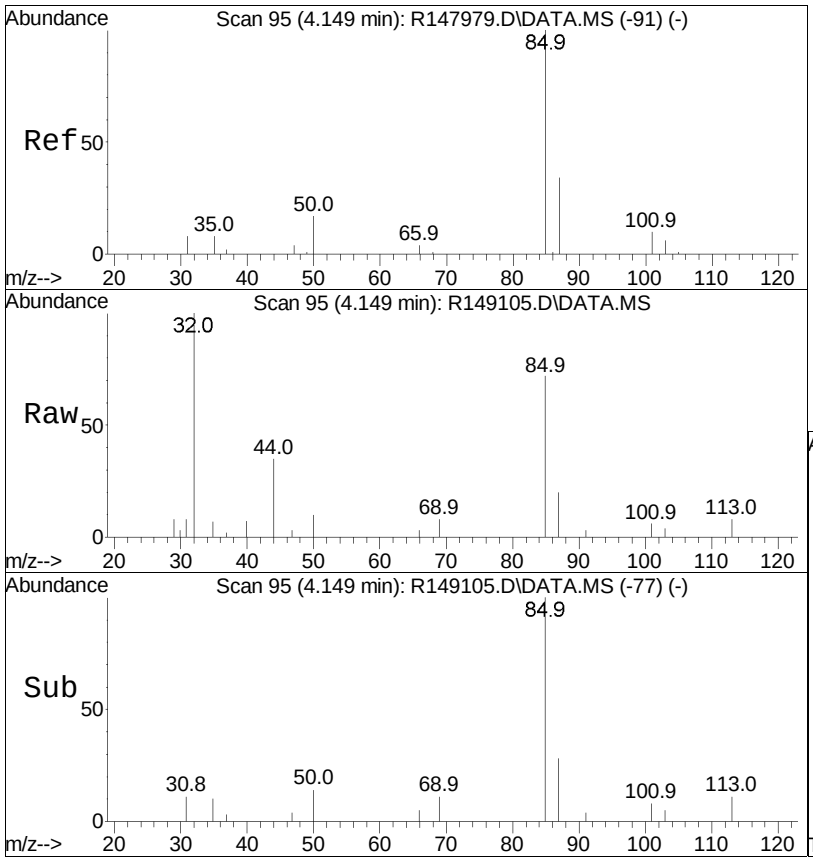
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149105.D
Acq On : 1 Nov 2016 7:00 pm
Operator : AIRPIANO1:RY
Sample : L1634001-07,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 02 10:13:17 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Keyspan_TO15 - .a\AIR1\2016\161101K\R149091.D

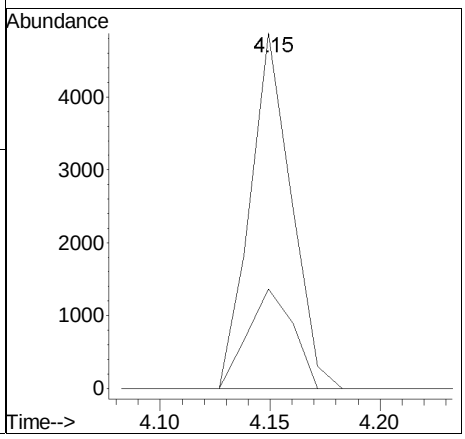


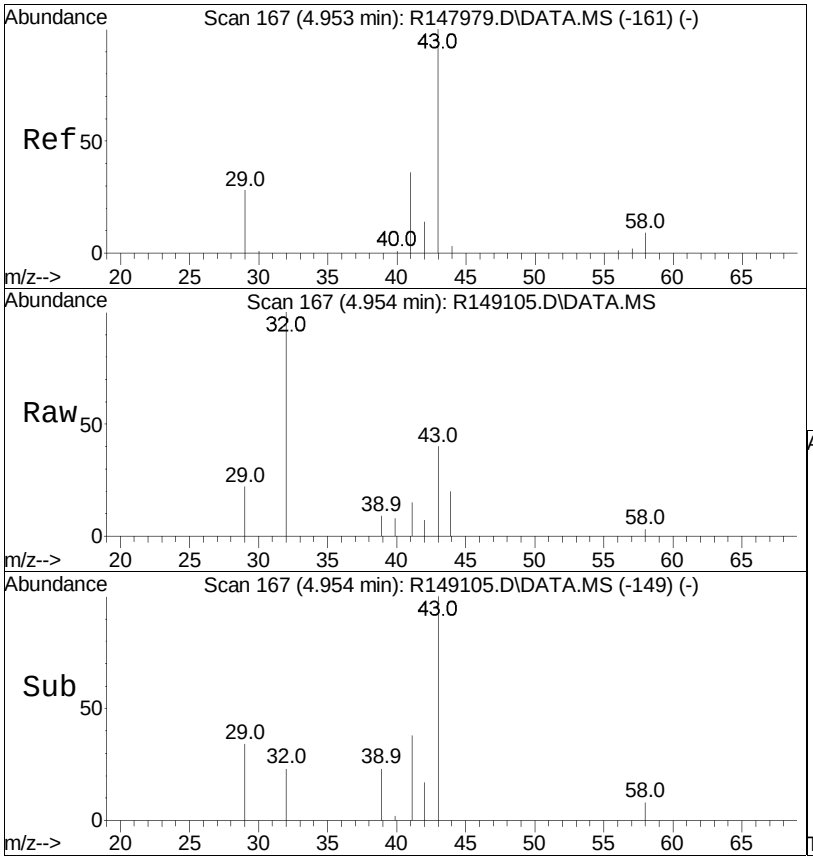


#5
dichlorodifluoromethane
Concen: 0.35 ppbV
RT: 4.15 min Scan# 95
Delta R.T. 0.000 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 85 Resp: 6352

Ion	Ratio	Lower	Upper
85	100		
87	28.0	25.9	38.9

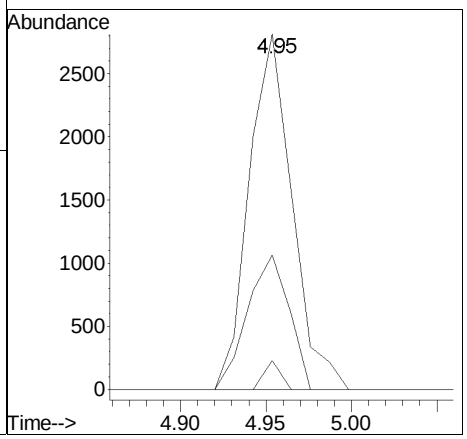


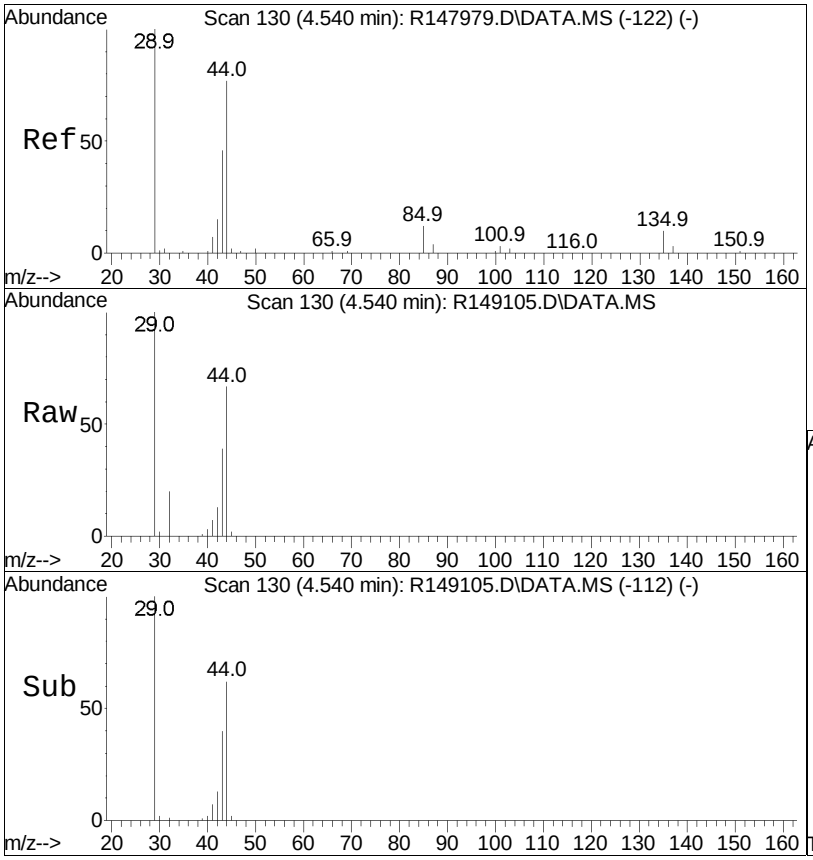


#11
butane
Concen: 0.36 ppbV
RT: 4.95 min Scan# 167
Delta R.T. 0.000 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 43 Resp: 4930

Ion	Ratio	Lower	Upper
43	100		
58	8.1	7.1	10.7
41	37.8	28.7	43.1

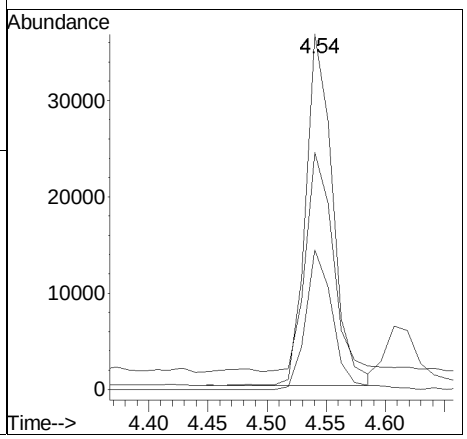


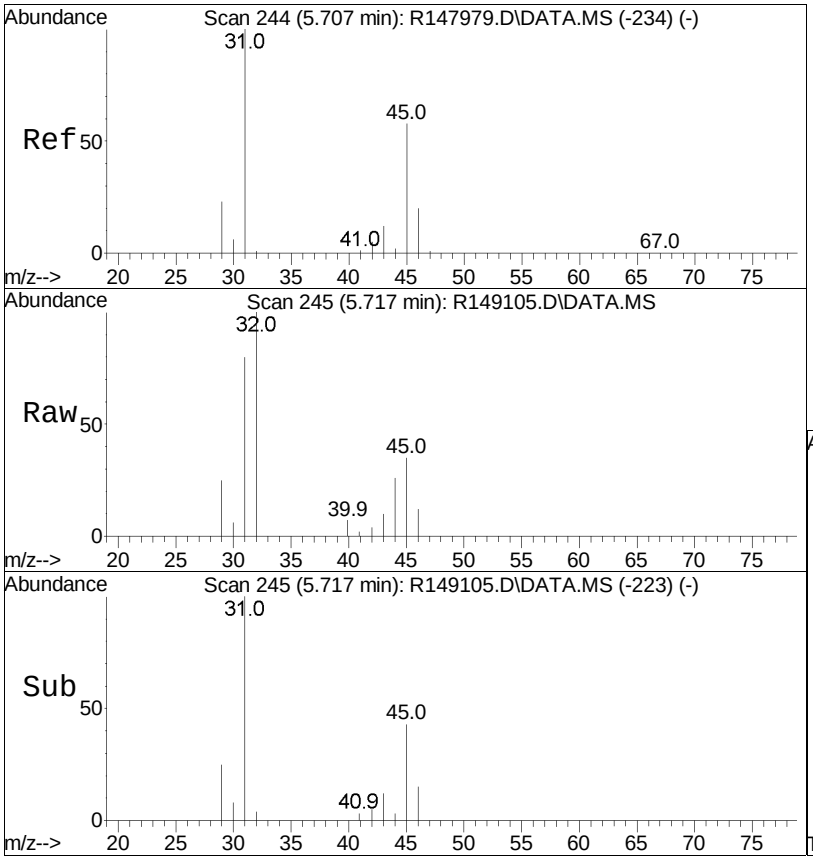


#12
acetaldehyde
Concen: 7.16 ppbV
RT: 4.54 min Scan# 130
Delta R.T. 0.000 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 29 Resp: 57878

Ion	Ratio	Lower	Upper
29	100		
44	66.7	50.2	75.4
43	39.3	29.0	43.6

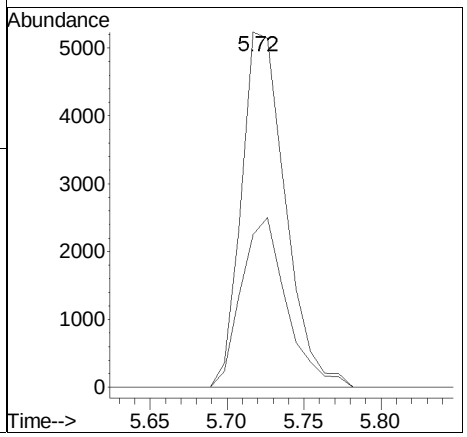


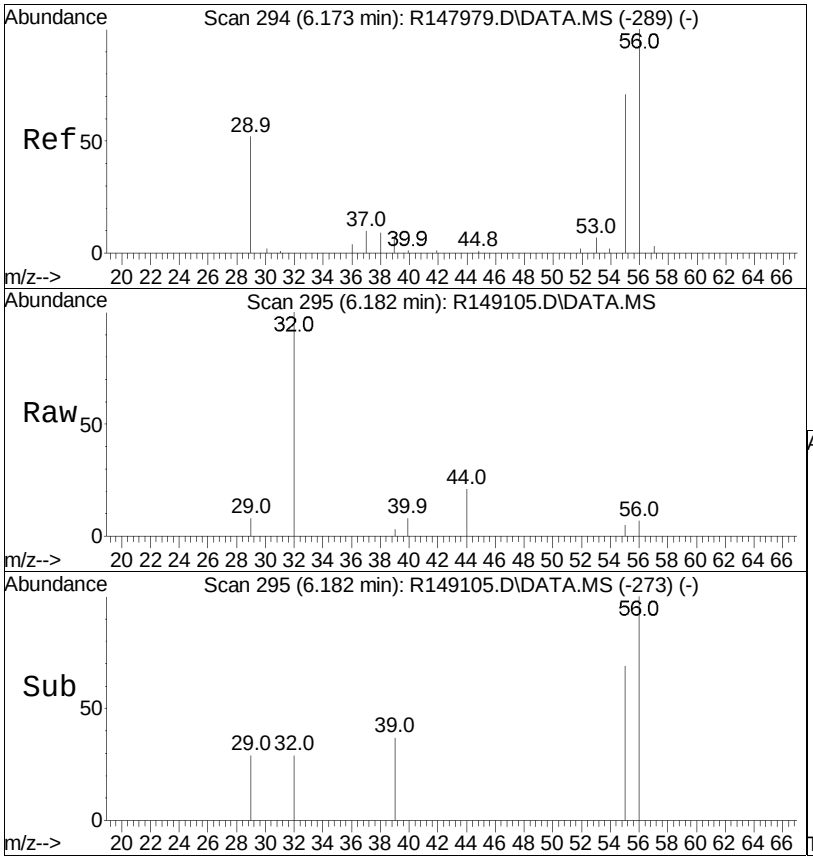


#15
ethanol
Concen: 1.50 ppbV
RT: 5.72 min Scan# 245
Delta R.T. 0.009 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 31 Resp: 10419

Ion	Ratio	Lower	Upper
31	100		
45	43.0	37.2	55.8

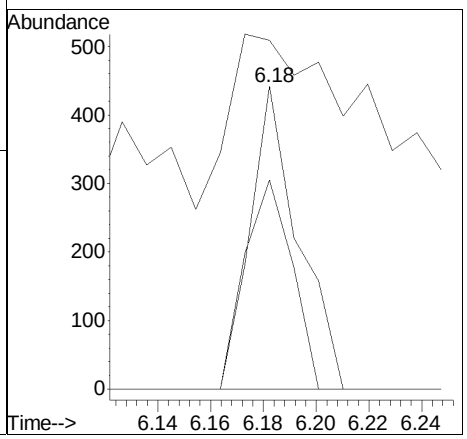


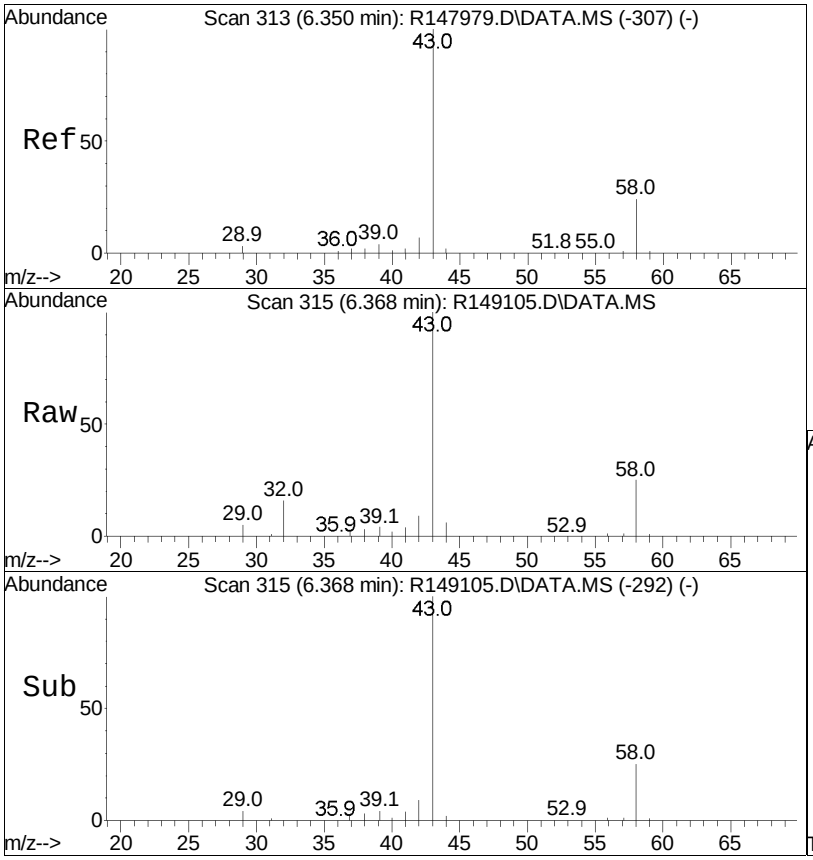


#18
acrolein
Concen: 0.16 ppbV
RT: 6.18 min Scan# 295
Delta R.T. 0.009 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 56 Resp: 559

Ion	Ratio	Lower	Upper
56	100		
55	69.0	56.2	84.4
29	115.2	56.3	84.5#

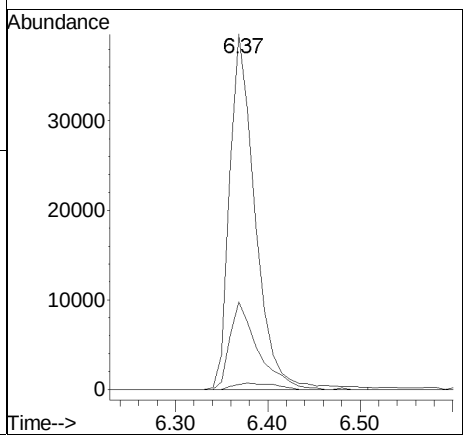


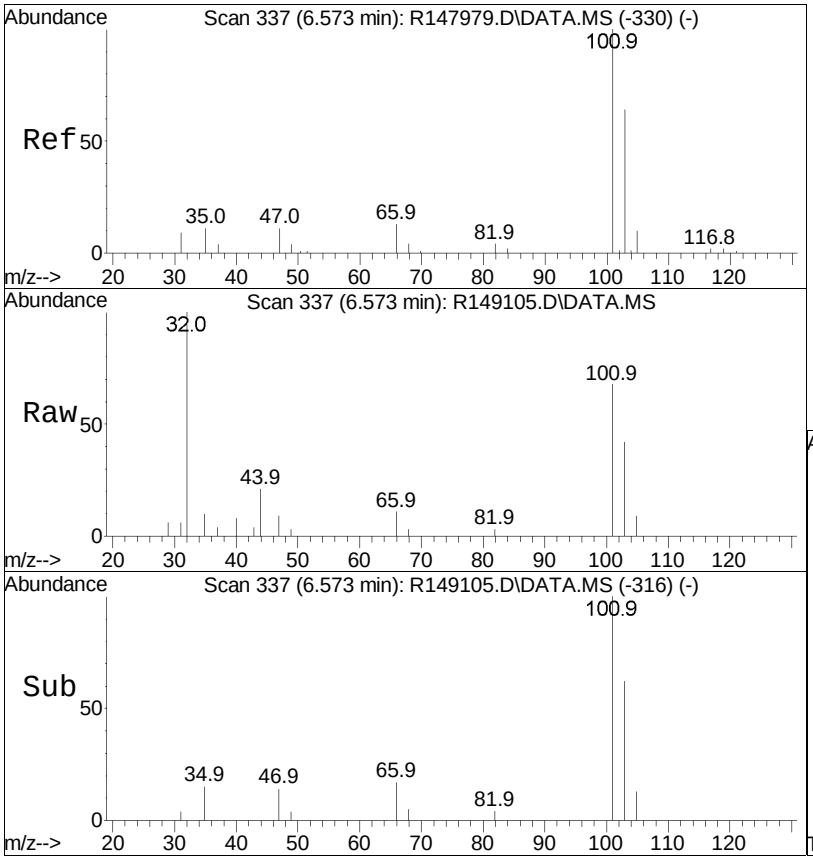


#19
acetone
Concen: 4.73 ppbV
RT: 6.37 min Scan# 315
Delta R.T. 0.019 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 43 Resp: 76664

Ion	Ratio	Lower	Upper
43	100		
58	24.7	19.8	29.8
57	1.4	0.6	1.0#

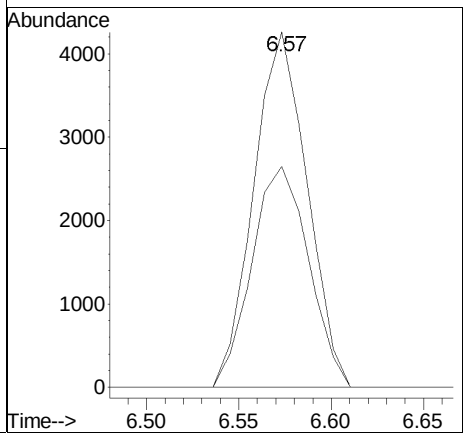


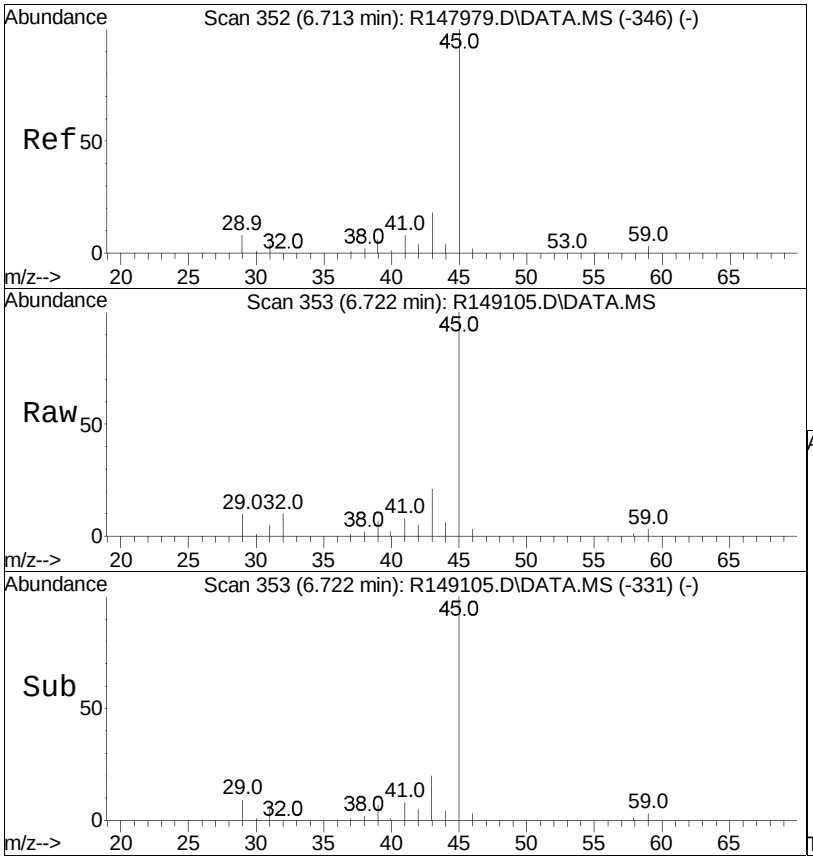


#21
trichlorofluoromethane
Concen: 0.46 ppbV
RT: 6.57 min Scan# 337
Delta R.T. 0.000 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion:101 Resp: 8573

Ion	Ratio	Lower	Upper
101	100		
103	62.2	51.0	76.4

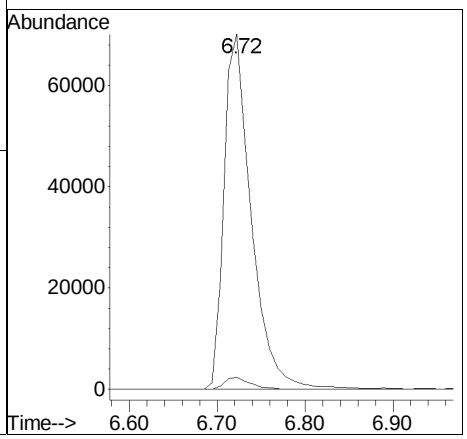


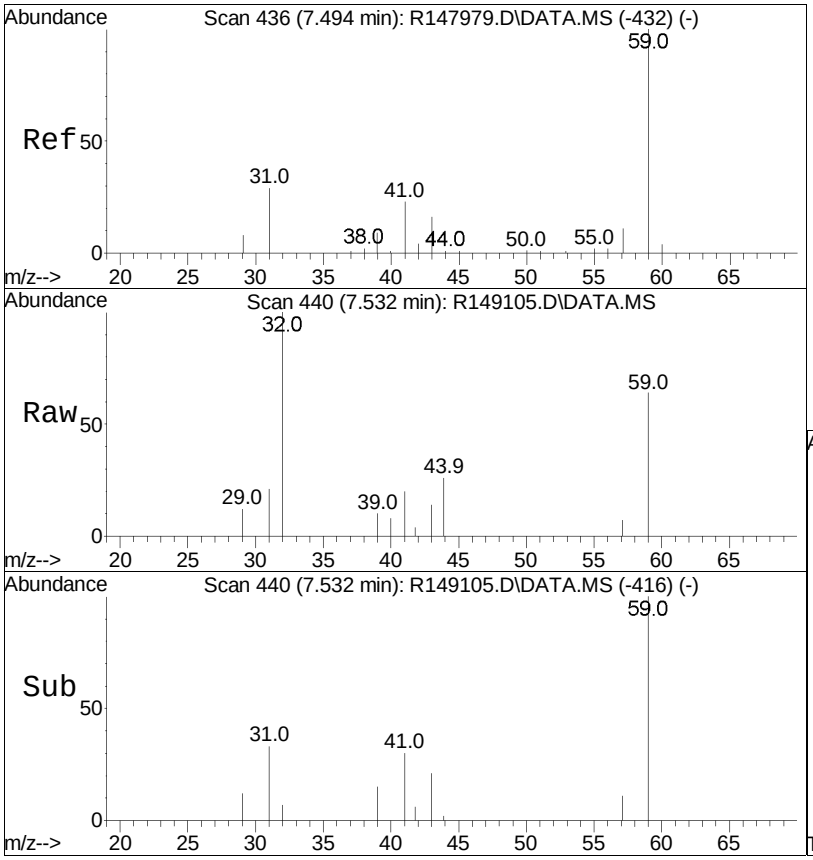


#22
isopropyl alcohol
Concen: 8.99 ppbV
RT: 6.72 min Scan# 353
Delta R.T. 0.009 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 45 Resp: 151580

Ion	Ratio	Lower	Upper
45	100		
59	3.4	2.7	4.1

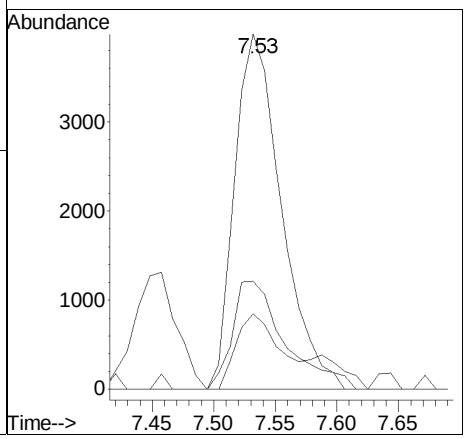


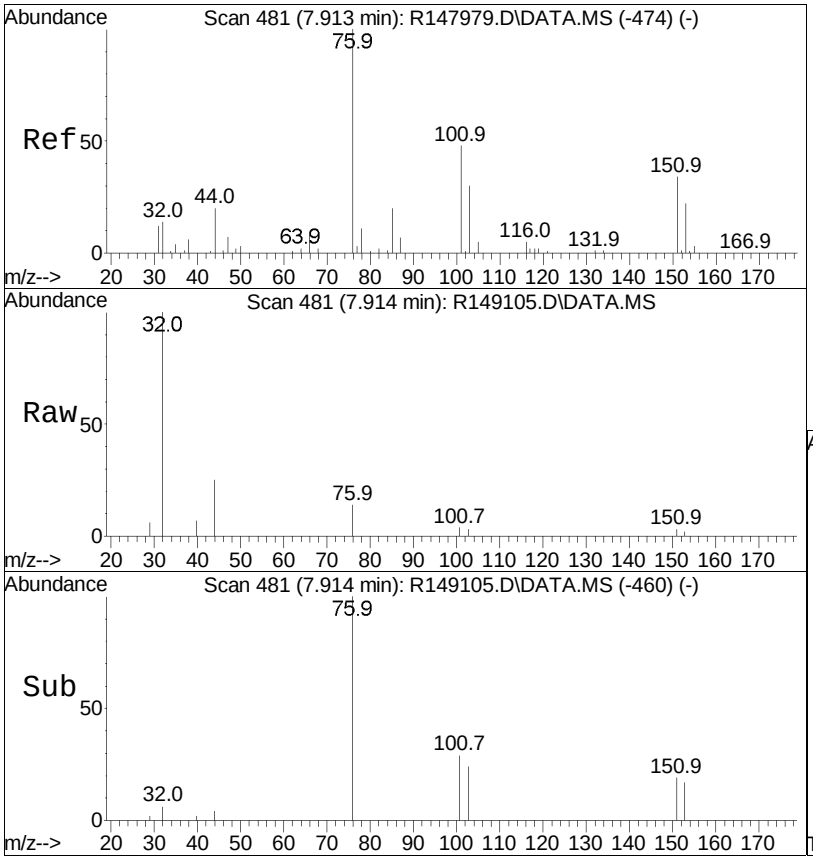


#27
tertiary butyl alcohol
Concen: 0.63 ppbV
RT: 7.53 min Scan# 440
Delta R.T. 0.028 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 59 Resp: 10631

Ion	Ratio	Lower	Upper
59	100		
41	30.4	18.9	28.3#
43	21.3	13.7	20.5#

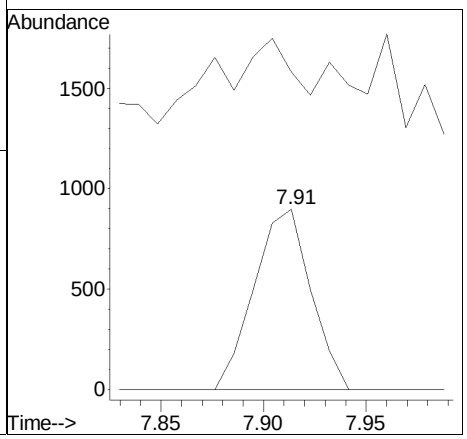


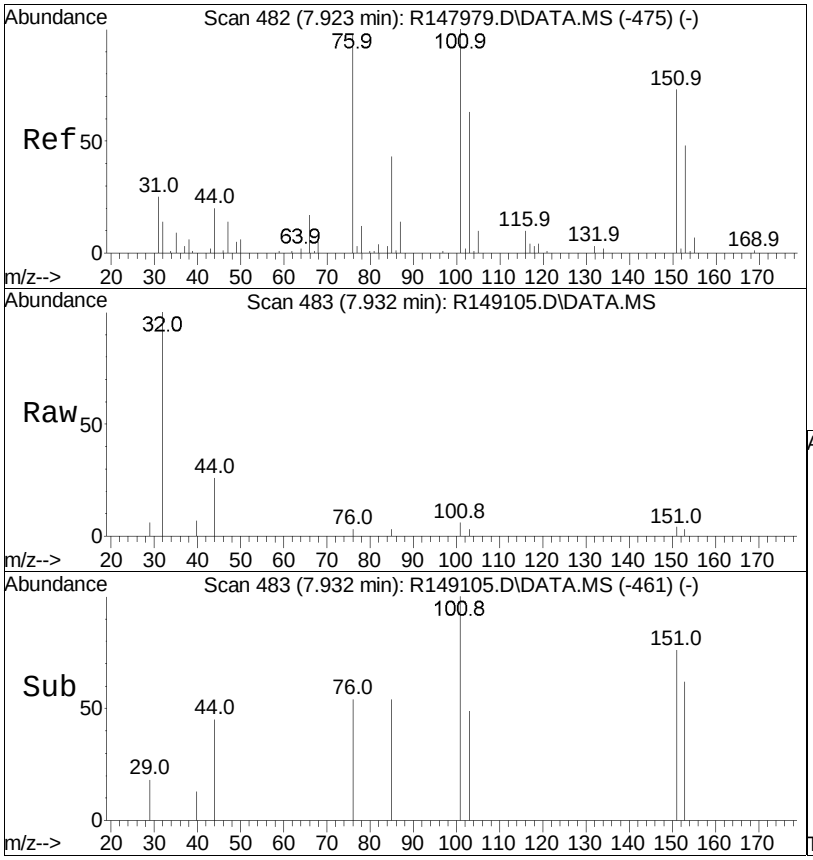


#30
carbon disulfide
Concen: 0.08 ppbV
RT: 7.91 min Scan# 481
Delta R.T. 0.000 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 76 Resp: 1723

Ion	Ratio	Lower	Upper
76	100		
44	176.1	16.3	24.5#

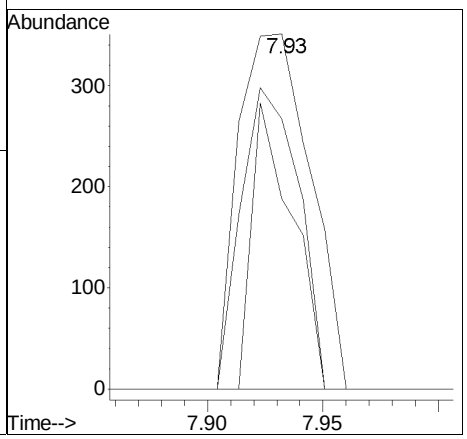


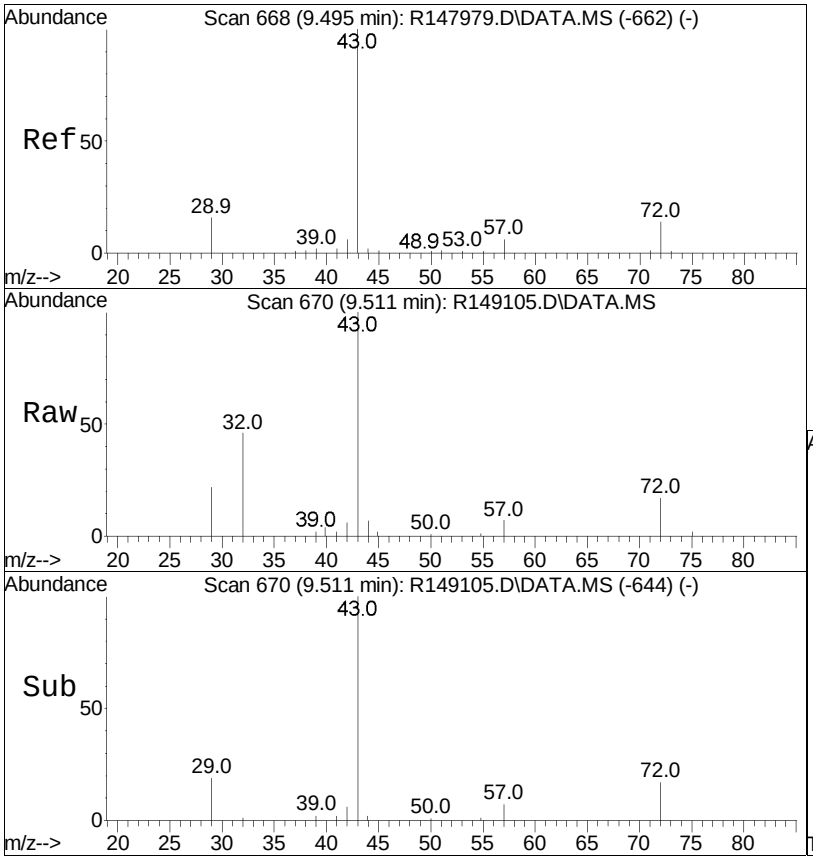


#31
Freon 113
Concen: 0.05 ppbV
RT: 7.93 min Scan# 483
Delta R.T. 0.009 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion:101 Resp: 762

Ion	Ratio	Lower	Upper
101	100		
85	53.6	38.3	57.5
151	76.1	61.3	91.9

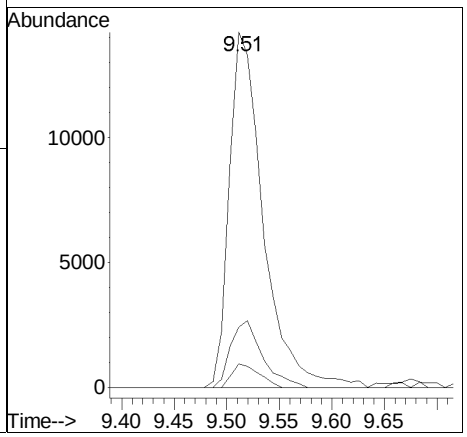


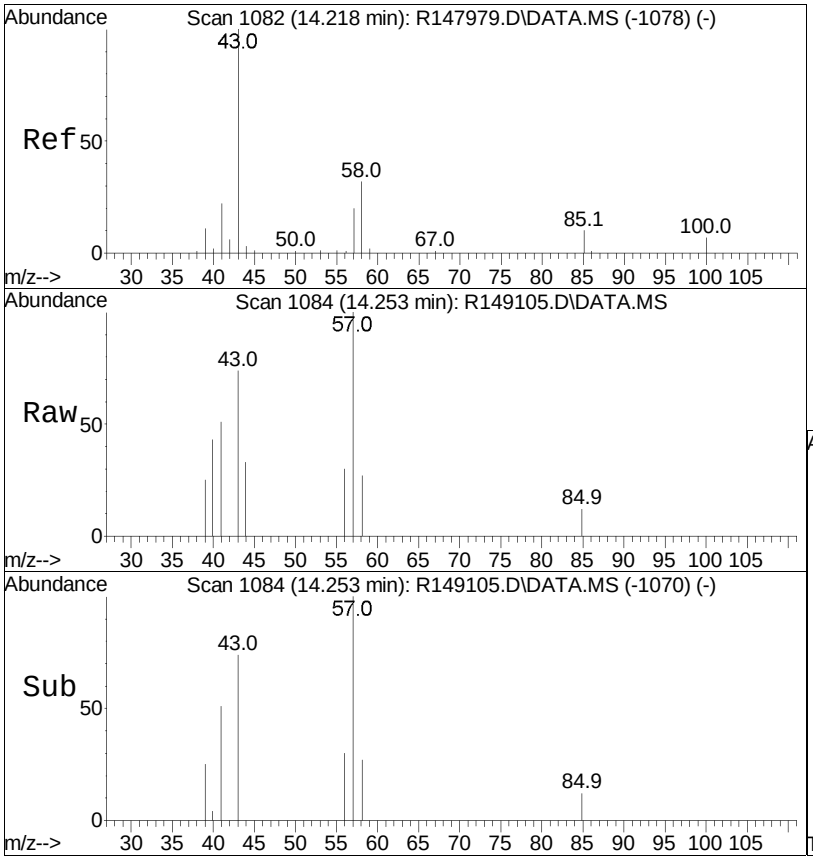


#36
2-butanone
Concen: 1.58 ppbV
RT: 9.51 min Scan# 670
Delta R.T. 0.016 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 43 Resp: 32052

Ion	Ratio	Lower	Upper
43	100		
72	17.0	13.6	20.4
57	6.6	4.9	7.3

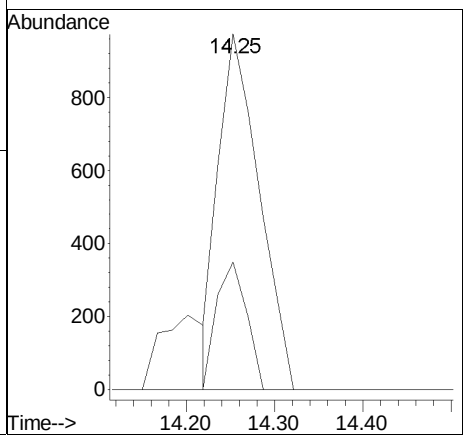


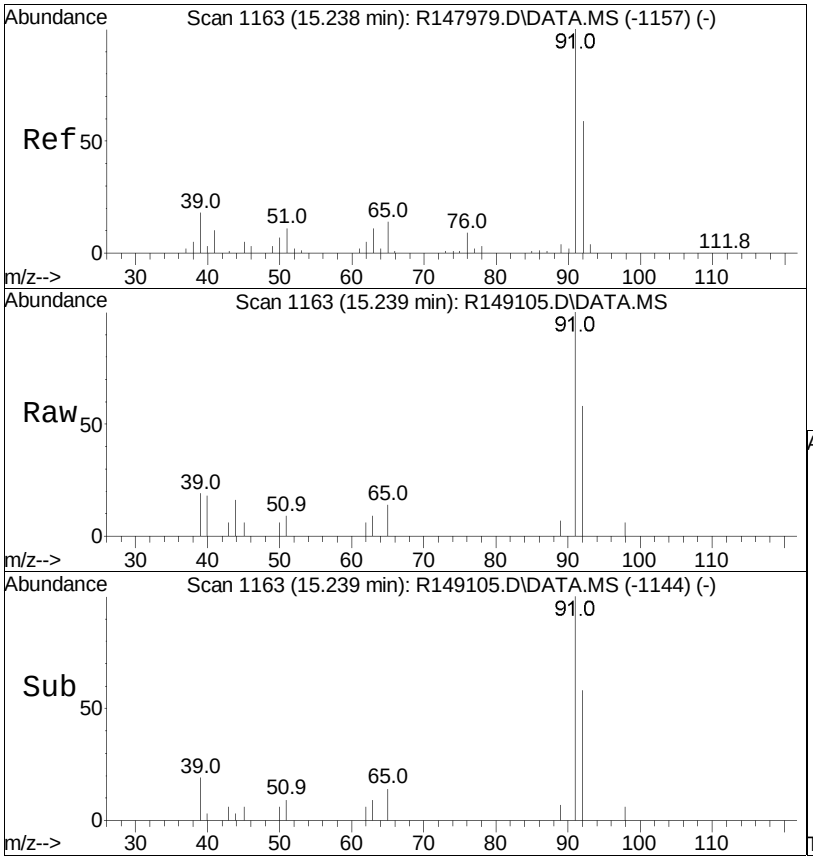


#64
4-methyl-2-pentanone
Concen: 0.12 ppbV m
RT: 14.25 min Scan# 1084
Delta R.T. 0.034 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 43 Resp: 3141

Ion	Ratio	Lower	Upper
43	100		
58	35.8	25.8	38.8
100	0.0	6.9	10.3#

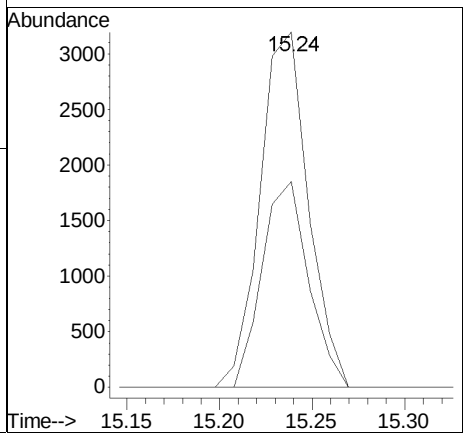


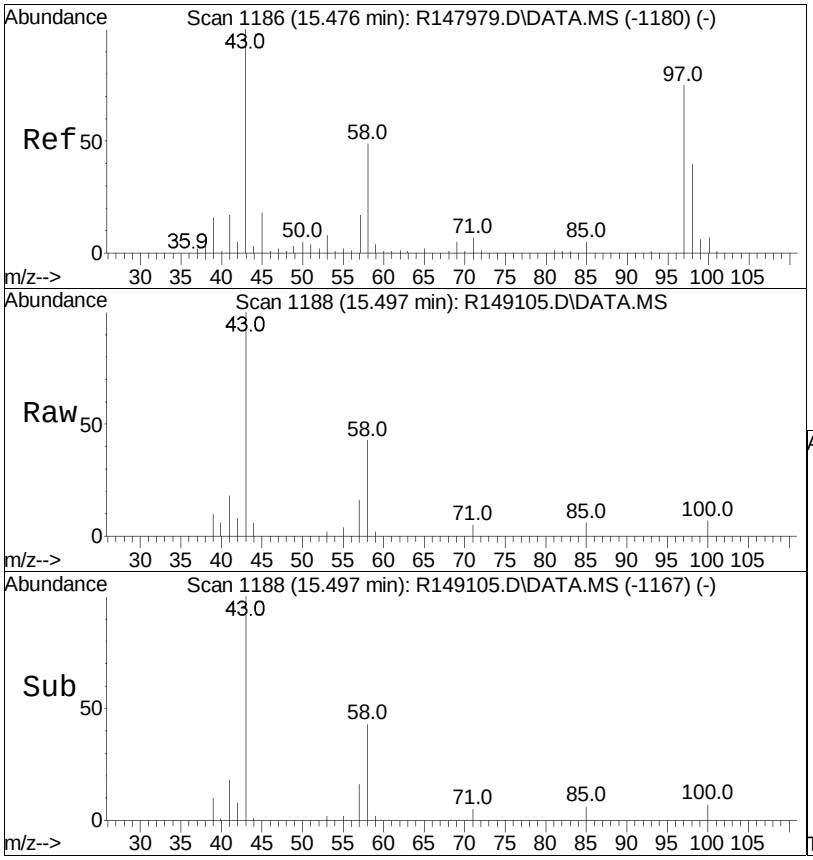


#68
toluene
Concen: 0.22 ppbV
RT: 15.24 min Scan# 1163
Delta R.T. 0.000 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 91 Resp: 5798

Ion	Ratio	Lower	Upper
91	100		
92	57.9	45.8	68.6

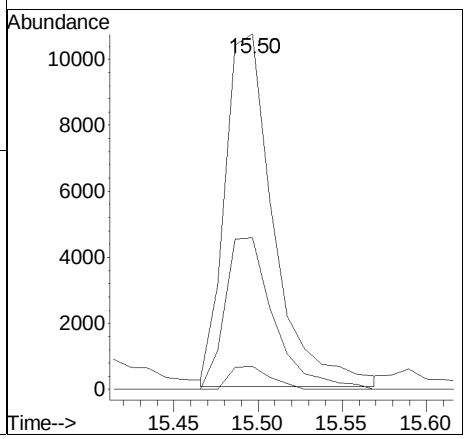


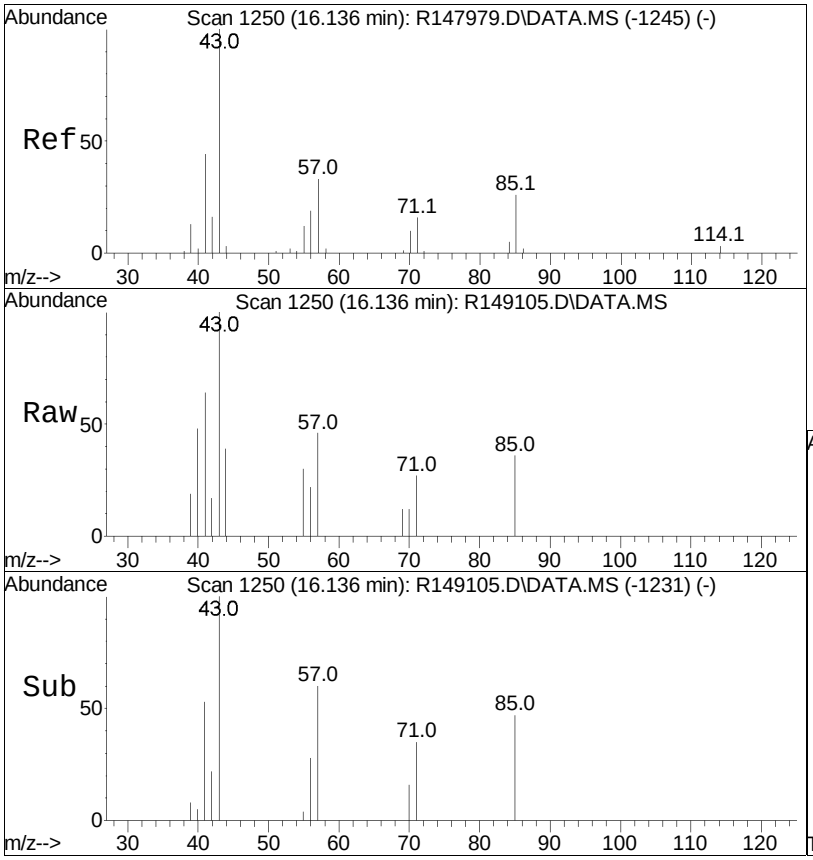


#72
2-hexanone
Concen: 0.87 ppbV m
RT: 15.50 min Scan# 1188
Delta R.T. 0.021 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 43 Resp: 21712

Ion	Ratio	Lower	Upper
43	100		
58	42.7	39.7	59.5
100	6.5	6.9	10.3#

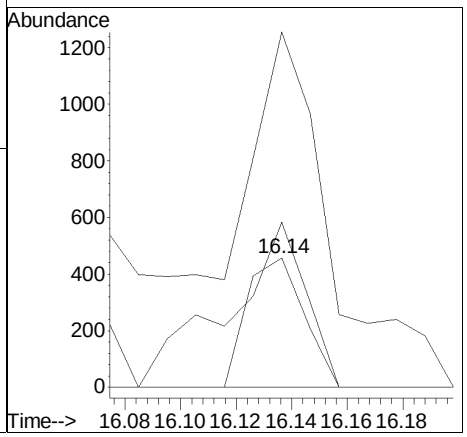


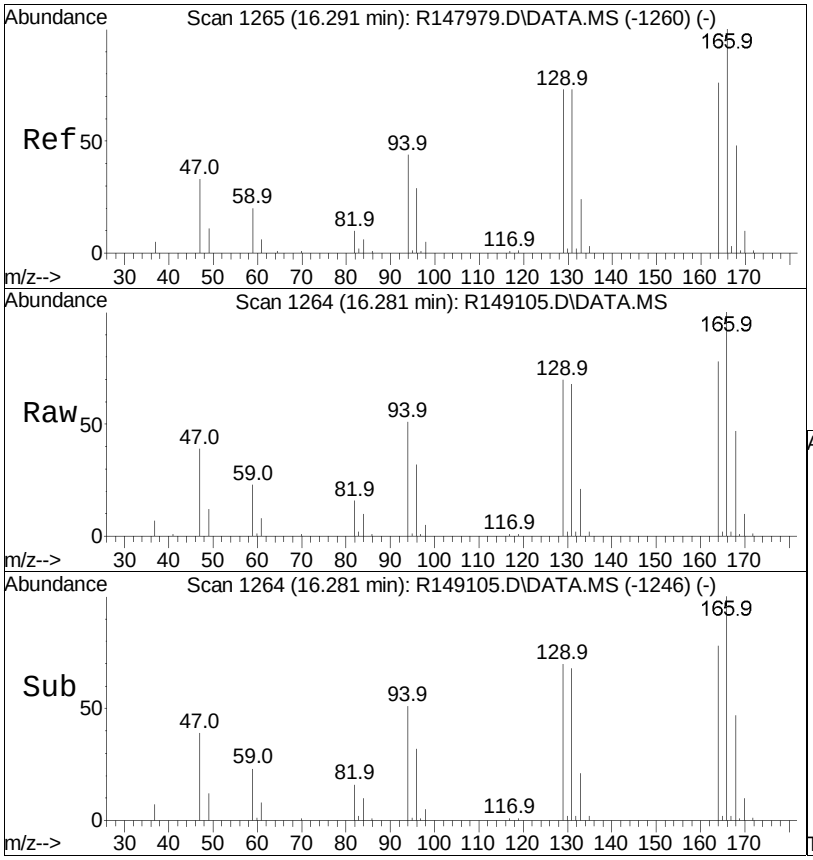


#77
octane
Concen: 0.08 ppbV
RT: 16.14 min Scan# 1250
Delta R.T. 0.000 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 85 Resp: 654

Ion	Ratio	Lower	Upper
85	100		
57	127.6	84.9	127.3#
114	0.0	8.2	12.2#
43	274.6	257.0	385.4

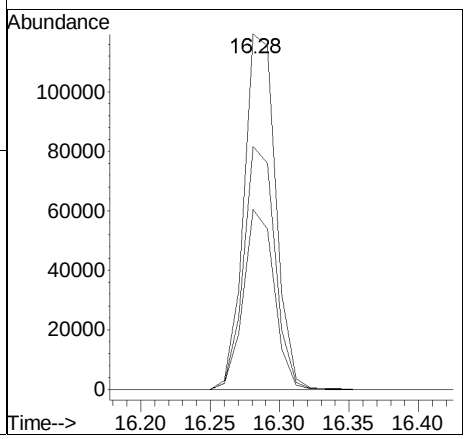


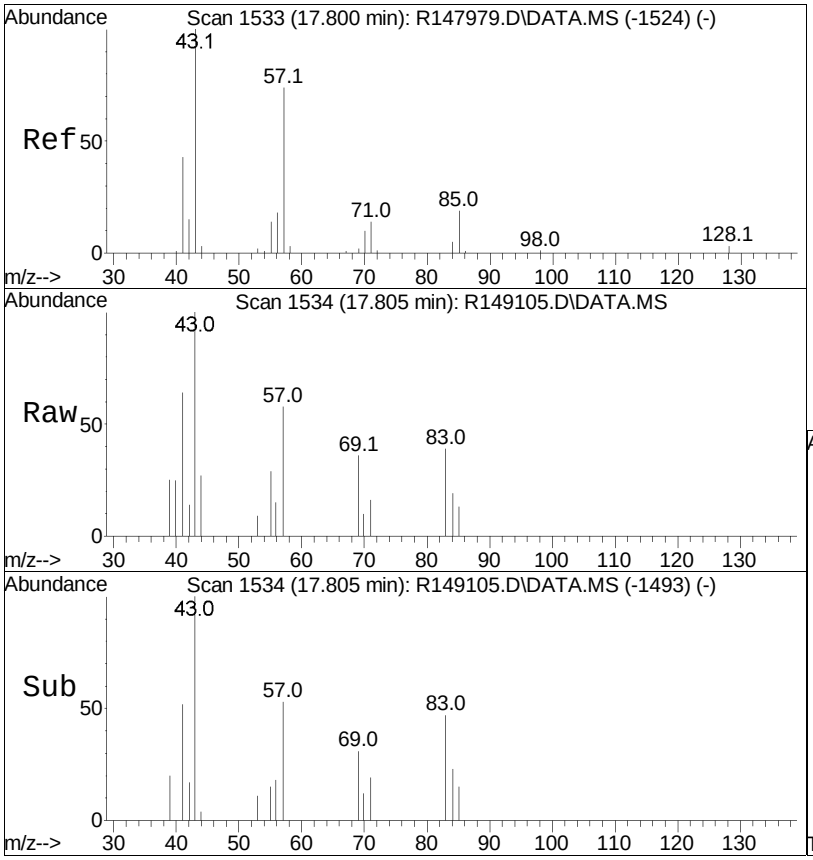


#78
tetrachloroethene
Concen: 13.92 ppbV
RT: 16.28 min Scan# 1264
Delta R.T. -0.010 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion:166 Resp: 190572

Ion	Ratio	Lower	Upper
166	100		
131	68.4	53.0	79.4
94	50.6	36.6	55.0

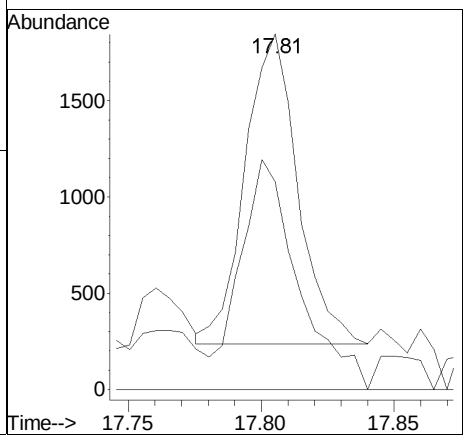


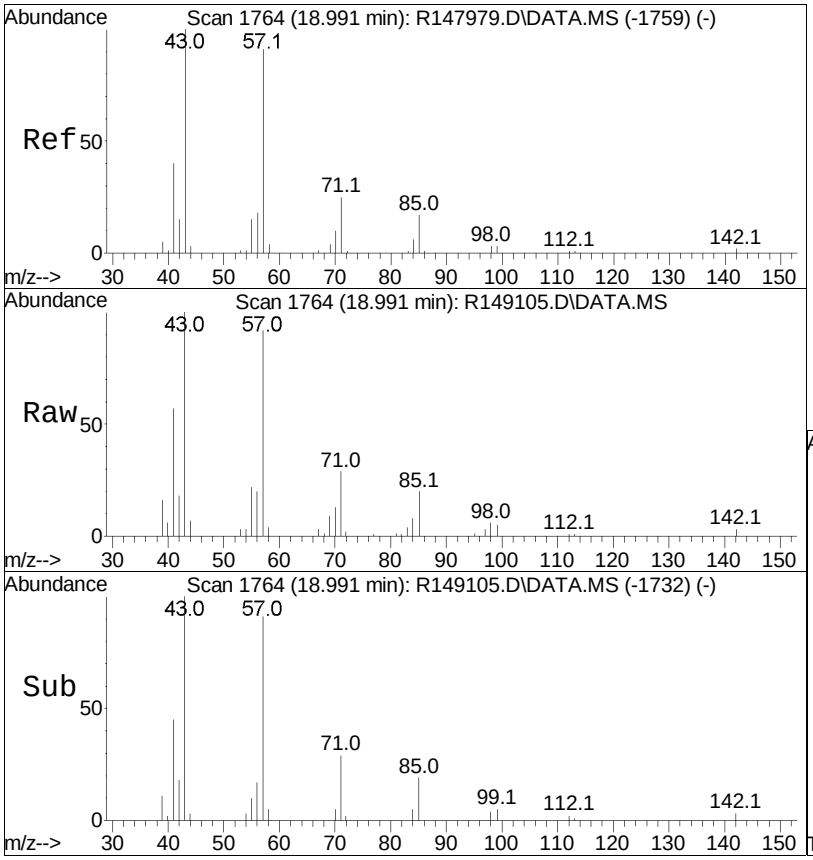


#89
nonane
Concen: 0.08 ppbV
RT: 17.81 min Scan# 1534
Delta R.T. 0.005 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 43 Resp: 2221

Ion	Ratio	Lower	Upper
43	100		
57	58.5	58.8	88.2#
128	0.0	2.3	3.5#

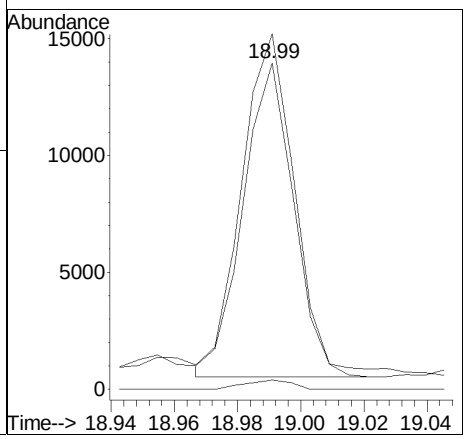


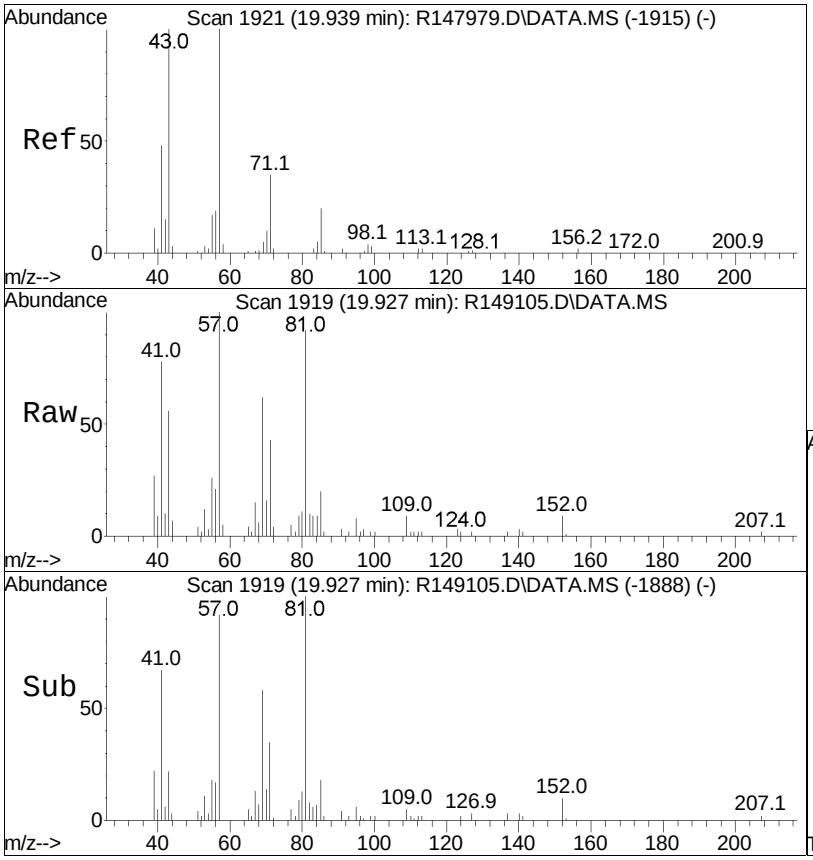


#100
decane
Concen: 0.58 ppbV
RT: 18.99 min Scan# 1764
Delta R.T. 0.000 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 57 Resp: 14925

Ion	Ratio	Lower	Upper
57	100		
43	108.9	88.1	132.1
142	2.9	2.4	3.6

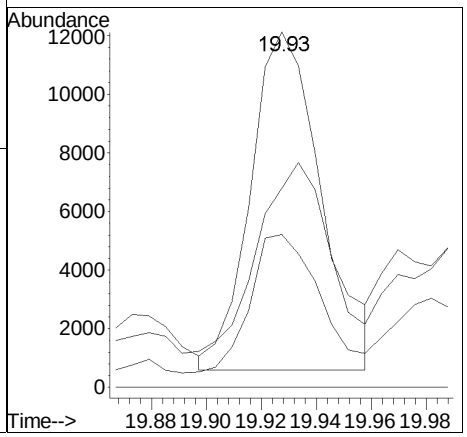


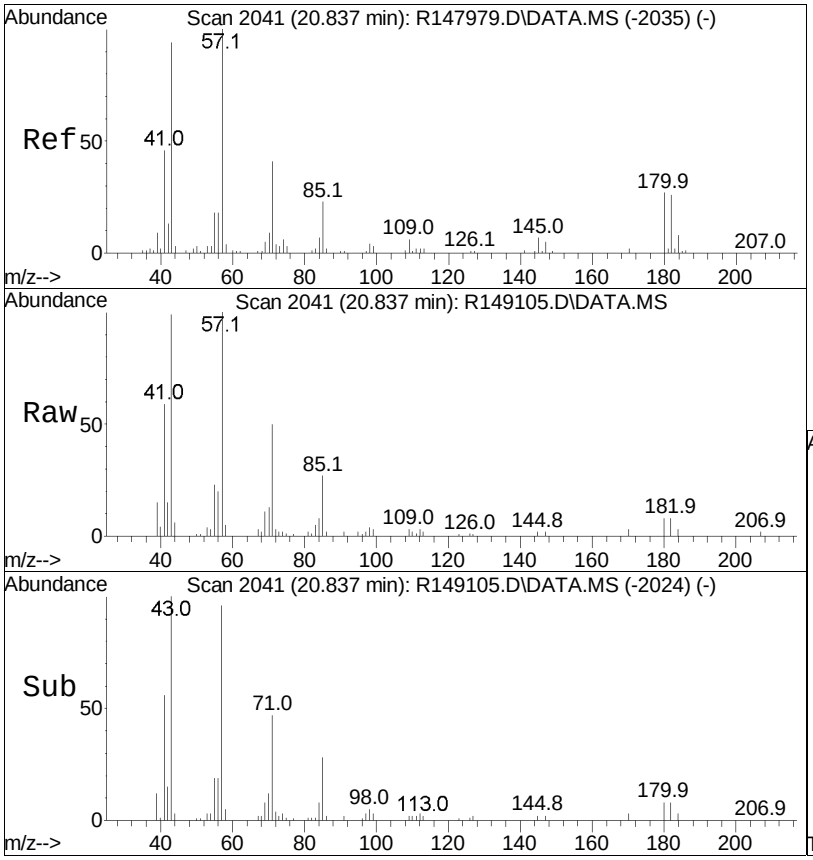


#112
undecane
Concen: 0.73 ppbV m
RT: 19.93 min Scan# 1919
Delta R.T. -0.012 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 57 Resp: 20663

Ion	Ratio	Lower	Upper
57	100		
43	56.0	81.6	122.4#
71	43.0	35.4	53.2
156	0.0	2.2	3.4#

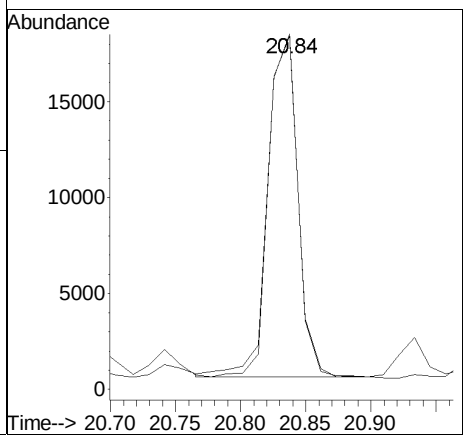


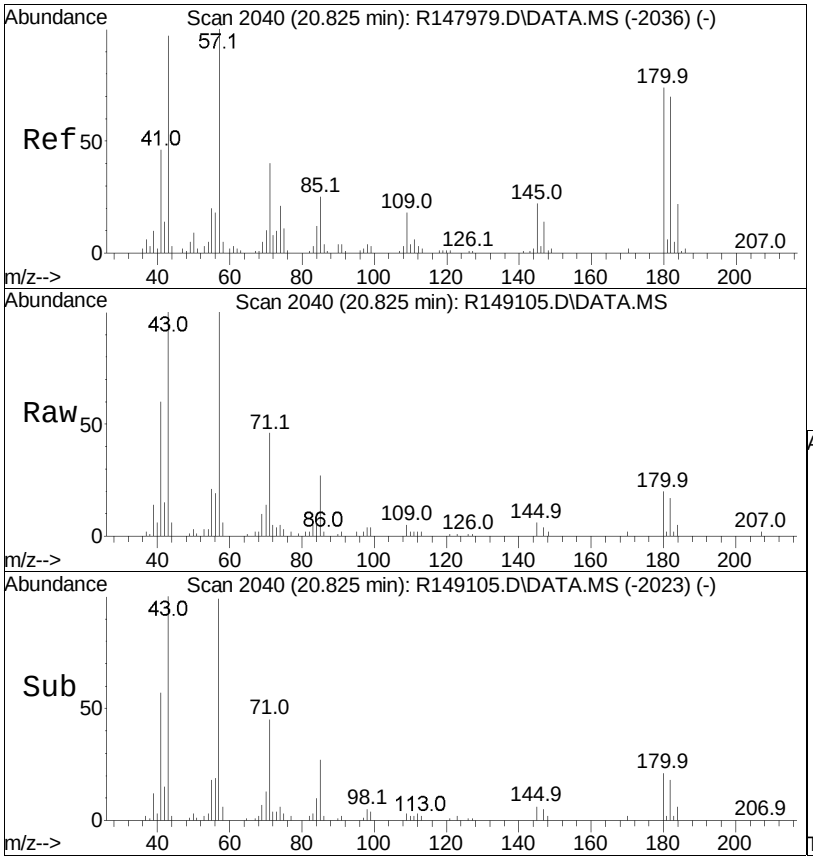


#114
dodecane
Concen: 0.99 ppbV
RT: 20.84 min Scan# 2041
Delta R.T. 0.000 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion: 57 Resp: 28594

Ion	Ratio	Lower	Upper
57	100		
43	99.4	76.2	114.4

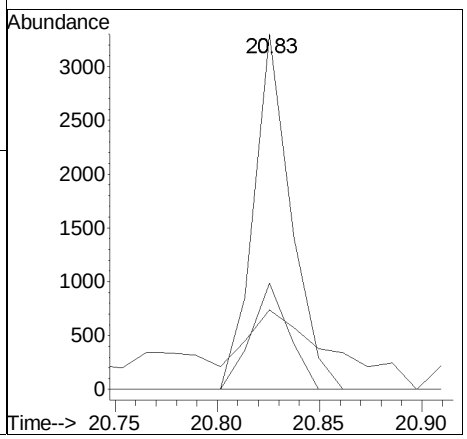


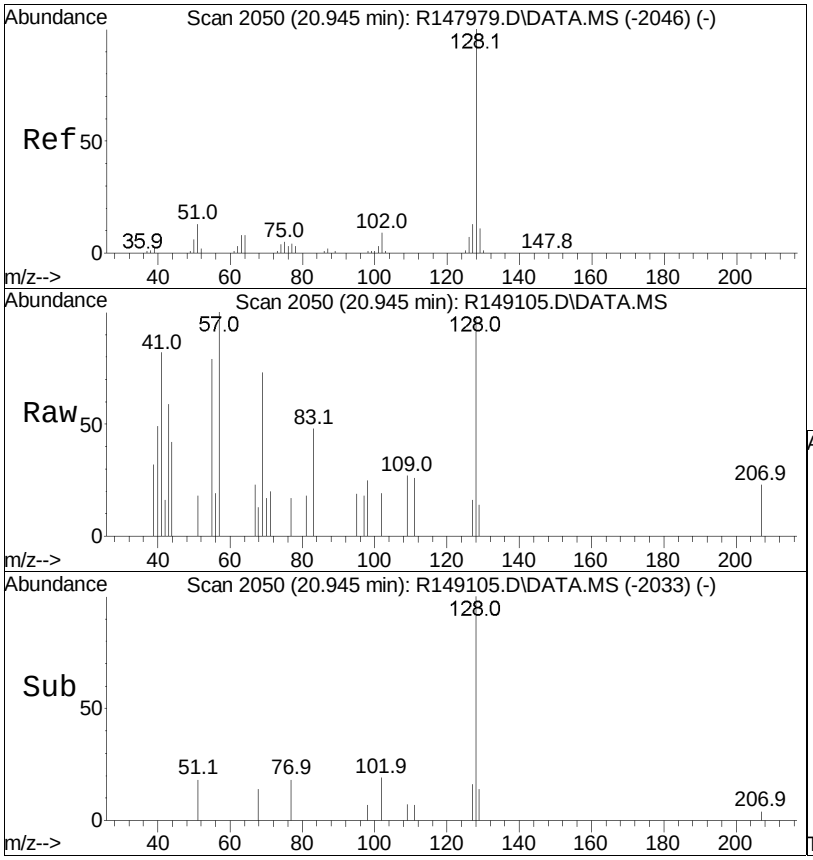


#115
1,2,4-trichlorobenzene
Concen: 0.20 ppbV
RT: 20.83 min Scan# 2040
Delta R.T. 0.000 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion:180 Resp: 4216

Ion	Ratio	Lower	Upper
180	100		
145	29.9	22.8	34.2
109	22.4	18.7	28.1

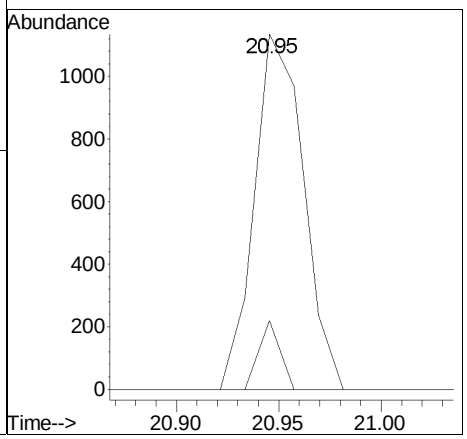




#116
naphthalene
Concen: 0.05 ppbV
RT: 20.95 min Scan# 2050
Delta R.T. 0.000 min
Lab File: R149105.D
Acq: 1 Nov 2016 7:00 pm

Tgt Ion:128 Resp: 1896

Ion	Ratio	Lower	Upper
128	100		
102	19.4	7.5	11.3#



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-08	Date Collected	: 10/19/16 16:18
Client ID	: NFSV-02	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 19:34
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149106	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-71-8	Dichlorodifluoromethane	0.370	0.200	0.047	1.83	0.989	0.230	
74-87-3	Chloromethane	0.131	0.200	0.096	0.271	0.413	0.198	J
76-14-2	Freon-114	ND	0.200	0.042	ND	1.40	0.293	U
75-01-4	Vinyl chloride	ND	0.200	0.038	ND	0.511	0.097	U
106-99-0	1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177	U
106-97-8	Butane	2.71	0.200	0.044	6.44	0.475	0.105	
75-07-0	Acetaldehyde	5.76	2.50	0.547	10.4	4.50	0.985	B
74-83-9	Bromomethane	ND	0.200	0.070	ND	0.777	0.270	U
75-00-3	Chloroethane	ND	0.200	0.077	ND	0.528	0.202	U
64-17-5	Ethanol	3.75	2.50	0.542	7.07	4.71	1.02	
593-60-2	Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306	U
107-02-8	Acrolein	0.121	0.500	0.114	0.277	1.15	0.261	J
67-64-1	Acetone	2.49	1.00	0.165	5.91	2.38	0.392	G
75-69-4	Trichlorofluoromethane	0.428	0.200	0.042	2.41	1.12	0.234	
67-63-0	Isopropanol	4.74	0.500	0.053	11.7	1.23	0.129	
109-66-0	Pentane	0.778	0.200	0.048	2.30	0.590	0.140	
75-35-4	1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224	U
75-65-0	tert-Butyl Alcohol	2.22	0.500	0.060	6.73	1.52	0.182	
75-09-2	Methylene chloride	ND	1.00	0.299	ND	1.74	1.04	U
107-05-1	3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254	U
75-15-0	Carbon disulfide	ND	0.200	0.035	ND	0.623	0.107	U
76-13-1	Freon-113	0.061	0.200	0.051	0.468	1.53	0.392	J
156-60-5	trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293	U
75-34-3	1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312	U
1634-04-4	Methyl tert butyl ether	0.065	0.200	0.053	0.234	0.721	0.190	J
78-93-3	2-Butanone	0.484	0.500	0.047	1.43	1.47	0.139	J
156-59-2	cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233	U
67-66-3	Chloroform	ND	0.200	0.053	ND	0.977	0.259	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-08	Date Collected	: 10/19/16 16:18
Client ID	: NFSV-02	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 19:34
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149106	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
107-06-2	1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223	U
110-54-3	n-Hexane	0.299	0.200	0.052	1.05	0.705	0.183	
71-55-6	1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311	U
71-43-2	Benzene	0.140	0.200	0.054	0.447	0.639	0.172	J
110-02-1	Thiophene	ND	0.200	0.053	ND	0.688	0.182	U
56-23-5	Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296	U
110-82-7	Cyclohexane	0.138	0.200	0.066	0.475	0.688	0.226	J
78-87-5	1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322	U
75-27-4	Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439	U
123-91-1	1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281	U
79-01-6	Trichloroethene	ND	0.200	0.071	ND	1.07	0.382	U
540-84-1	2,2,4-Trimethylpentane	0.128	0.200	0.066	0.598	0.934	0.308	J
142-82-5	Heptane	0.127	0.200	0.055	0.520	0.820	0.227	J
10061-01-5	cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338	U
108-10-1	4-Methyl-2-pentanone	ND	0.500	0.061	ND	2.05	0.249	U
10061-02-6	trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315	U
79-00-5	1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364	U
108-88-3	Toluene	0.405	0.200	0.063	1.53	0.754	0.237	
554-14-3	2-Methylthiophene	ND	0.200	0.079	ND	0.803	0.317	U
591-78-6	2-Hexanone	0.194	0.200	0.060	0.795	0.820	0.248	J
616-44-4	3-Methylthiophene	ND	0.200	0.067	ND	0.803	0.269	U
124-48-1	Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636	U
106-93-4	1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599	U
111-65-9	Octane	ND	0.200	0.042	ND	0.934	0.197	U
127-18-4	Tetrachloroethene	18.0	0.200	0.076	122	1.36	0.514	
108-90-7	Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363	U
100-41-4	Ethylbenzene	ND	0.200	0.056	ND	0.869	0.241	U
872-55-9	2-Ethylthiophene	ND	0.200	0.057	ND	0.918	0.262	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-08	Date Collected	: 10/19/16 16:18
Client ID	: NFSV-02	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 19:34
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149106	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
179601-23-1	p/m-Xylene	ND	0.400	0.139	ND	1.74	0.604	U
75-25-2	Bromoform	ND	0.200	0.052	ND	2.07	0.541	U
100-42-5	Styrene	ND	0.200	0.080	ND	0.852	0.340	U
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376	U
95-47-6	o-Xylene	ND	0.200	0.063	ND	0.869	0.274	U
111-84-2	Nonane	ND	0.200	0.063	ND	1.05	0.328	U
95-49-8	2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252	U
622-96-8	4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381	U
108-67-8	1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287	U
95-63-6	1,2,4-Trimethylbenzene	ND	0.200	0.069	ND	0.983	0.341	U
124-18-5	Decane	ND	0.200	0.048	ND	1.16	0.282	U
541-73-1	1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383	U
106-46-7	1,4-Dichlorobenzene	ND	0.200	0.036	ND	1.20	0.217	U
526-73-8	1,2,3-Trimethylbenzene	ND	0.200	0.075	ND	0.983	0.369	U
95-50-1	1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369	U
496-11-7	Indane	ND	0.200	0.080	ND	0.967	0.384	U
95-13-6	Indene	ND	0.200	0.061	ND	0.951	0.289	U
1120-21-4	Undecane	ND	0.200	0.053	ND	1.28	0.338	U
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.200	0.080	ND	1.10	0.436	U
112-40-3	Dodecane	0.933	0.200	0.048	6.50	1.39	0.333	
120-82-1	1,2,4-Trichlorobenzene	ND	0.200	0.061	ND	1.48	0.454	U
91-20-3	Naphthalene	ND	0.200	0.043	ND	1.05	0.223	U
95-15-8	Benzothiophene	ND	0.500	0.047	ND	2.74	0.257	U
87-68-3	Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781	U
91-57-6	2-Methylnaphthalene	ND	1.00	0.272	ND	5.82	1.58	U
90-12-0	1-Methylnaphthalene	ND	1.00	0.250	ND	5.82	1.45	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149106.D
Acq On : 1 Nov 2016 7:34 pm
Operator : AIRPIANO1:RY
Sample : L1634001-08,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 02 10:15:55 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	144210	10.000	ppbV	-0.01
Standard Area = 153282			Recovery = 94.08%			
43) 1,4-difluorobenzene	12.41	114	233160	10.000	ppbV	0.00
Standard Area = 240182			Recovery = 97.08%			
67) chlorobenzene-D5	16.82	54	64082	10.000	ppbV	0.00
Standard Area = 64184			Recovery = 99.84%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	69554	9.958	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.58%			
69) toluene-D8	15.14	98	193539	10.027	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.27%			
90) bromofluorobenzene	18.01	95	128005	9.489	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 94.89%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	6824	0.370	ppbV	96
6) chloromethane	4.37	50	994	0.131	ppbV	99
7) Freon-114	4.52		0	N.D.		
9) vinyl chloride	0.00		0	N.D.		
10) 1,3-butadiene	0.00		0	N.D.		
11) butane	4.95	43	38071	2.712	ppbV	99
12) acetaldehyde	4.54	29	47334	5.759	ppbV #	72
13) bromomethane	0.00		0	N.D.		
14) chloroethane	0.00		0	N.D.		
15) ethanol	5.72	31	26463	3.748	ppbV	99
17) vinyl bromide	0.00		0	N.D.		
18) acrolein	6.18	56	422	0.121	ppbV #	15
19) acetone	6.38	43	41032M6	2.489	ppbV	
21) trichlorofluoromethane	6.57	101	8164	0.428	ppbV	96
22) isopropyl alcohol	6.72	45	81364	4.745	ppbV	99
24) pentane	7.06	43	12062	0.778	ppbV #	96
26) 1,1-dichloroethene	0.00		0	N.D.		
27) tertiary butyl alcohol	7.52	59	38317	2.219	ppbV	92
28) methylene chloride	7.59		0	N.D.		
29) 3-chloropropene	0.00		0	N.D. d		
30) carbon disulfide	7.91		0	N.D.		

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149106.D
Acq On : 1 Nov 2016 7:34 pm
Operator : AIRPIANO1:RY
Sample : L1634001-08,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 02 10:15:55 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
31) Freon 113	7.92	101	886	0.061	ppbV	98
32) trans-1,2-dichloroethene	0.00		0	N.D.		
33) 1,1-dichloroethane	0.00		0	N.D.		
34) MTBE	9.12	73	1407	0.065	ppbV #	53
36) 2-butanone	9.53	43	9948	0.484	ppbV	98
37) cis-1,2-dichloroethene	0.00		0	N.D.		
39) chloroform	0.00		0	N.D.		
42) 1,2-dichloroethane	0.00		0	N.D.		
44) hexane	10.25	57	4739	0.299	ppbV #	36
48) 1,1,1-trichloroethane	0.00		0	N.D.		
50) benzene	12.00	78	3072	0.140	ppbV	96
51) thiophene	0.00		0	N.D.		
52) carbon tetrachloride	12.17		0	N.D.		
53) cyclohexane	12.31	56	1785	0.138	ppbV	95
56) 1,2-dichloropropane	0.00		0	N.D.		
57) bromodichloromethane	0.00		0	N.D.	d	
58) 1,4-dioxane	0.00		0	N.D.		
59) trichloroethene	0.00		0	N.D.		
60) 2,2,4-trimethylpentane	13.23	57	5460	0.128	ppbV #	85
62) heptane	13.53	43	2317	0.127	ppbV #	85
63) cis-1,3-dichloropropene	0.00		0	N.D.		
64) 4-methyl-2-pentanone	0.00		0	N.D.	d	
65) trans-1,3-dichloropropene	0.00		0	N.D.		
66) 1,1,2-trichloroethane	0.00		0	N.D.		
68) toluene	15.24	91	10824	0.405	ppbV	96
70) 2-methylthiophene	0.00		0	N.D.	d	
72) 2-hexanone	15.51	43	4840	0.194	ppbV #	83
73) 3-methylthiophene	0.00		0	N.D.		
74) dibromochloromethane	0.00		0	N.D.		
75) 1,2-dibromoethane	0.00		0	N.D.		
77) octane	16.14		0	N.D.		
78) tetrachloroethene	16.29	166	245878	17.978	ppbV	99
80) chlorobenzene	0.00		0	N.D.		
81) ethylbenzene	17.16		0	N.D.		
82) 2-ethylthiophene	0.00		0	N.D.	d	
83) m+p-xylene	17.29		0	N.D.		
84) bromoform	0.00		0	N.D.		
85) styrene	0.00		0	N.D.		

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149106.D
Acq On : 1 Nov 2016 7:34 pm
Operator : AIRPIANO1:RY
Sample : L1634001-08,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 02 10:15:55 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
86)	1,1,2,2-tetrachloroethane	0.00		0	N.D.		
87)	o-xylene	17.67		0	N.D.		
89)	nonane	17.81		0	N.D.		
93)	2-chlorotoluene	0.00		0	N.D.		
96)	4-ethyl toluene	18.59		0	N.D.		
97)	1,3,5-trimethylbenzene	18.64		0	N.D.		
99)	1,2,4-trimethylbenzene	18.95		0	N.D.		
100)	decane	0.00		0	N.D.		
102)	1,3-dichlorobenzene	0.00		0	N.D.		
103)	1,4-dichlorobenzene	0.00		0	N.D.		
105)	1,2,3-trimethylbenzene	19.27		0	N.D.		
107)	1,2-dichlorobenzene	0.00		0	N.D.		
109)	indan	0.00		0	N.D.		
110)	indene	0.00		0	N.D.		
112)	undecane	0.00		0	N.D.	d	
113)	1,2,4,5-tetramethylben...	0.00		0	N.D.	d	
114)	dodecane	20.84	57	26848M6	0.933	ppbV	
115)	1,2,4-trichlorobenzene	0.00		0	N.D.	d	
116)	naphthalene	20.95		0	N.D.		
118)	benzothiophene	0.00		0	N.D.		
119)	hexachlorobutadiene	0.00		0	N.D.		
120)	2-methylnaphthalene	22.09		0	N.D.		
121)	1-methylnaphthalene	22.30		0	N.D.		

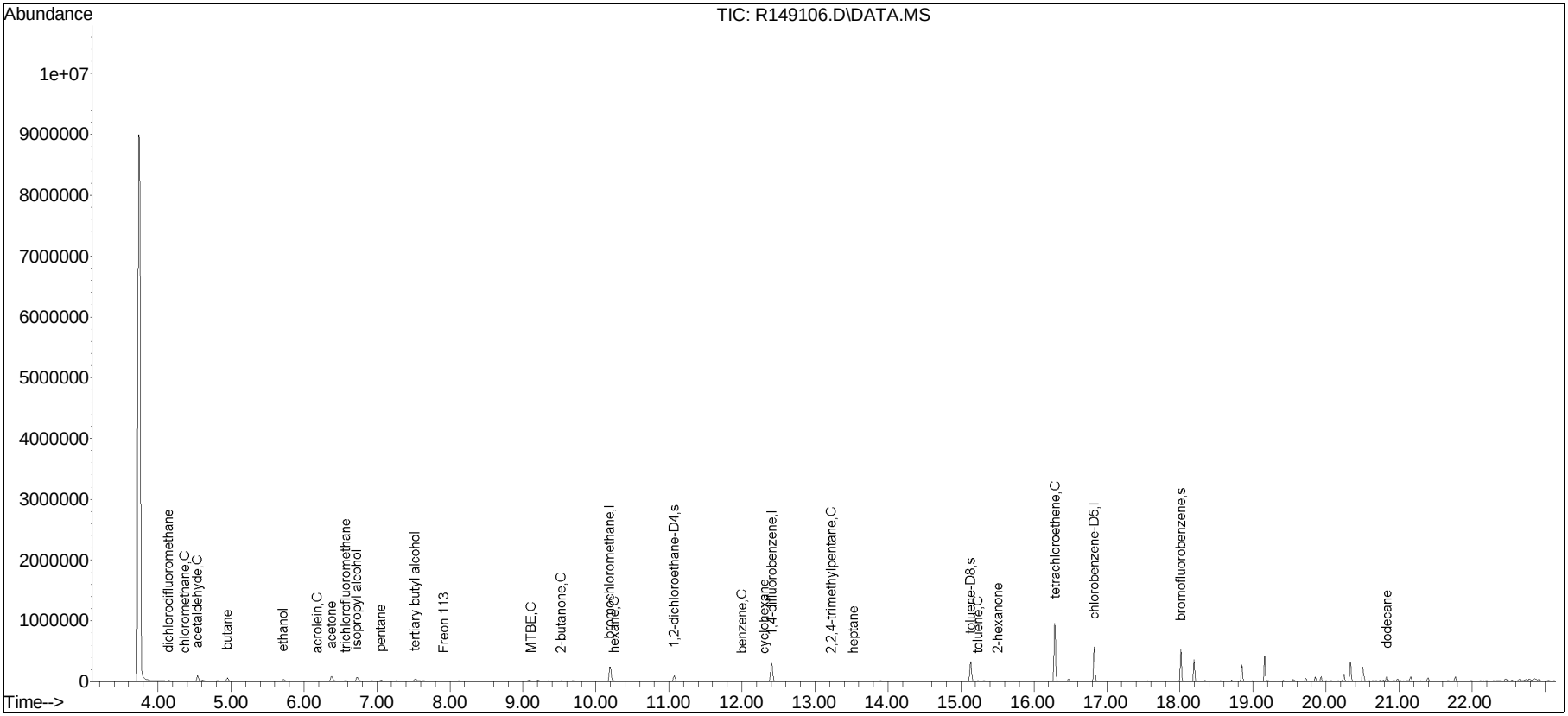
(#) = qualifier out of range (m) = manual integration (+) = signals summed

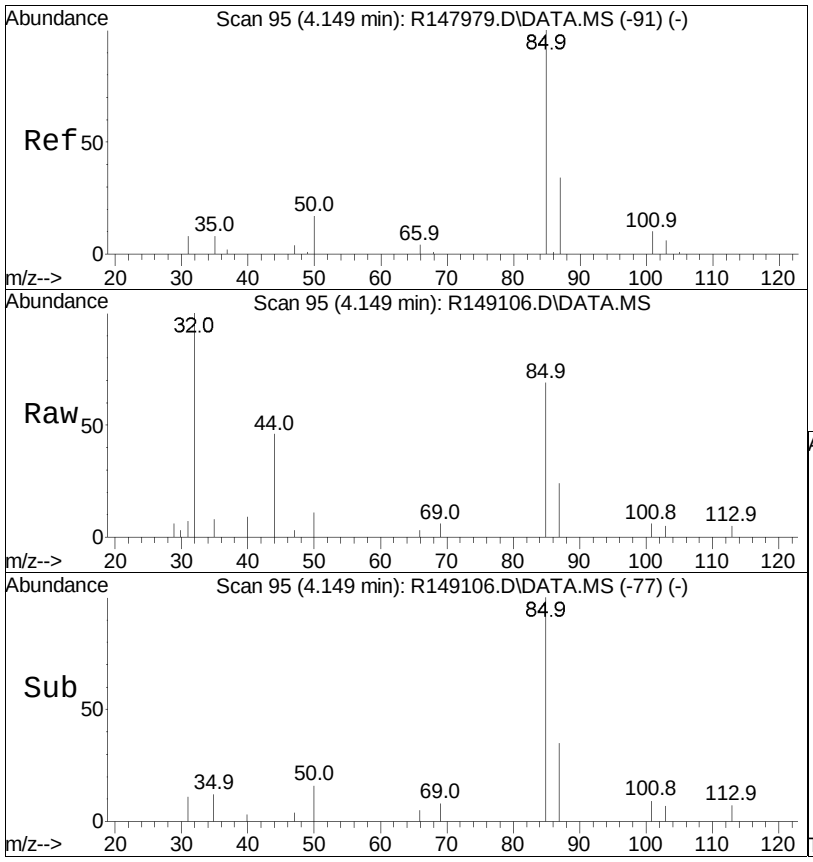
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149106.D
Acq On : 1 Nov 2016 7:34 pm
Operator : AIRPIANO1:RY
Sample : L1634001-08,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 02 10:15:55 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Keyspan_TO15 - .a\AIR1\2016\161101K\R149091.D

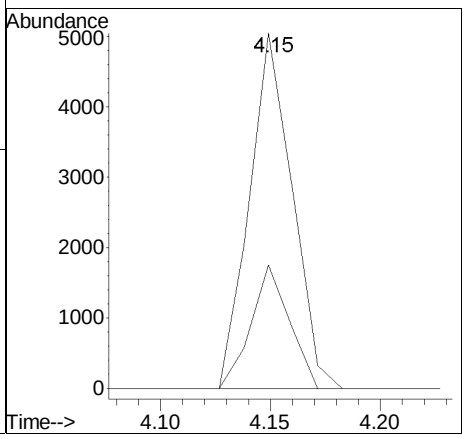


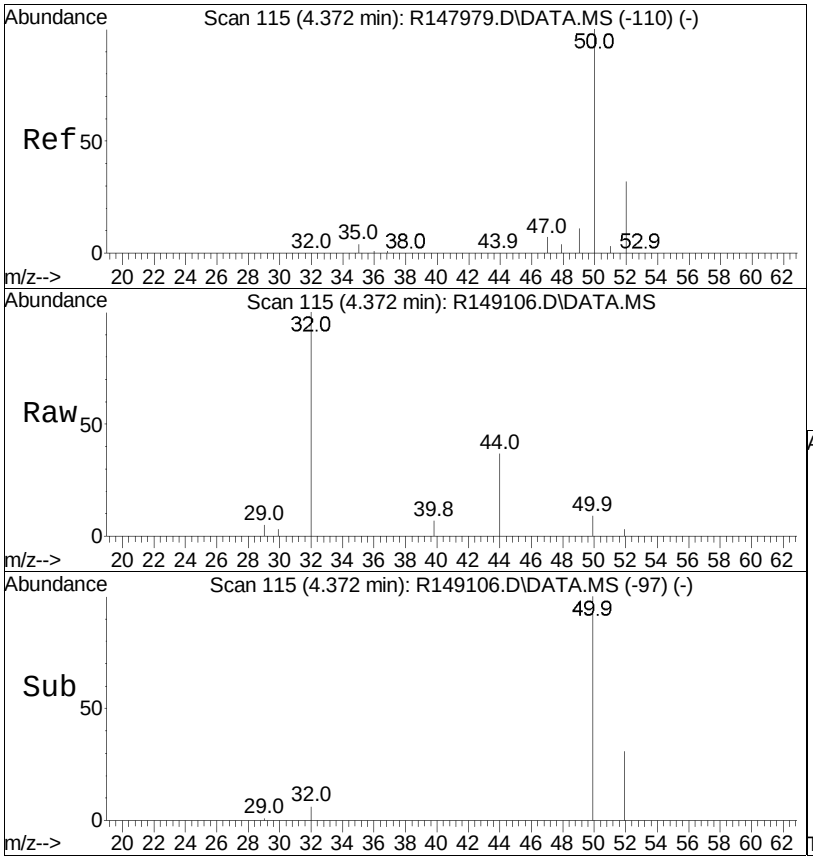


#5
dichlorodifluoromethane
Concen: 0.37 ppbV
RT: 4.15 min Scan# 95
Delta R.T. -0.000 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 85 Resp: 6824

Ion	Ratio	Lower	Upper
85	100		
87	34.7	25.9	38.9

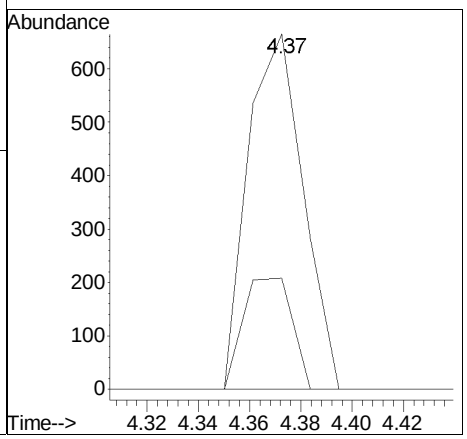


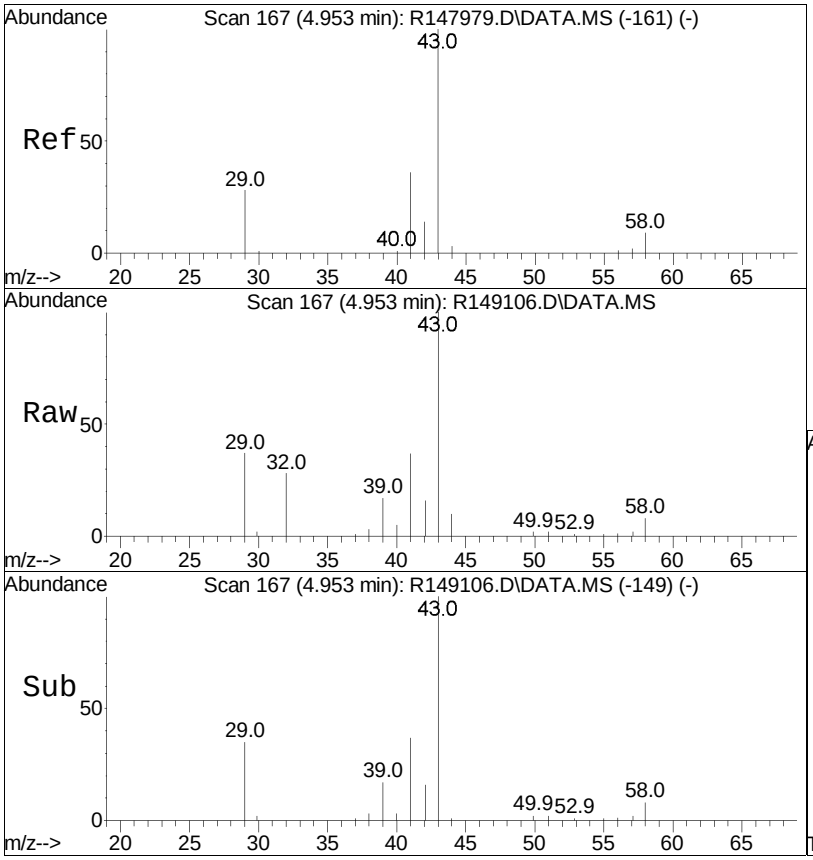


#6
chloromethane
Concen: 0.13 ppbV
RT: 4.37 min Scan# 115
Delta R.T. -0.000 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 50 Resp: 994

Ion	Ratio	Lower	Upper
50	100		
52	31.3	25.7	38.5

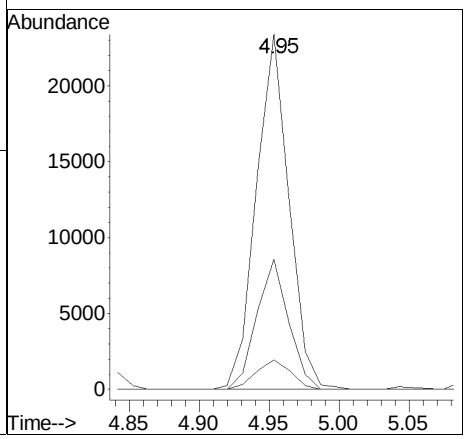


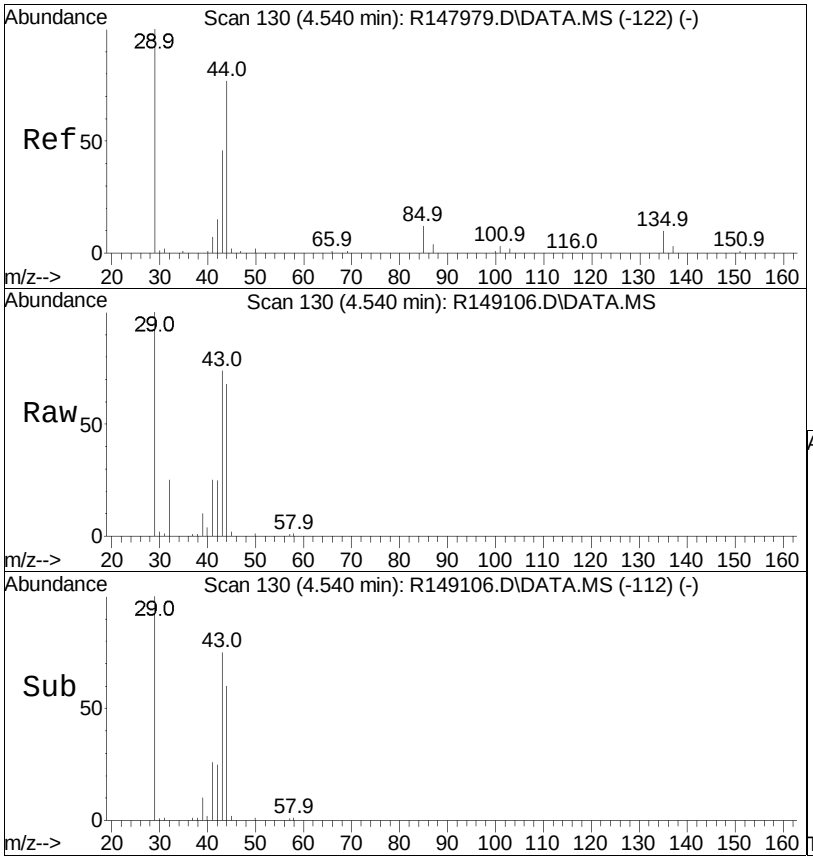


#11
butane
Concen: 2.71 ppbV
RT: 4.95 min Scan# 167
Delta R.T. -0.000 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 43 Resp: 38071

Ion	Ratio	Lower	Upper
43	100		
58	8.3	7.1	10.7
41	36.6	28.7	43.1

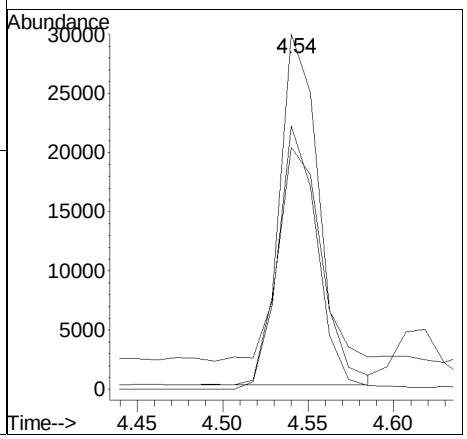


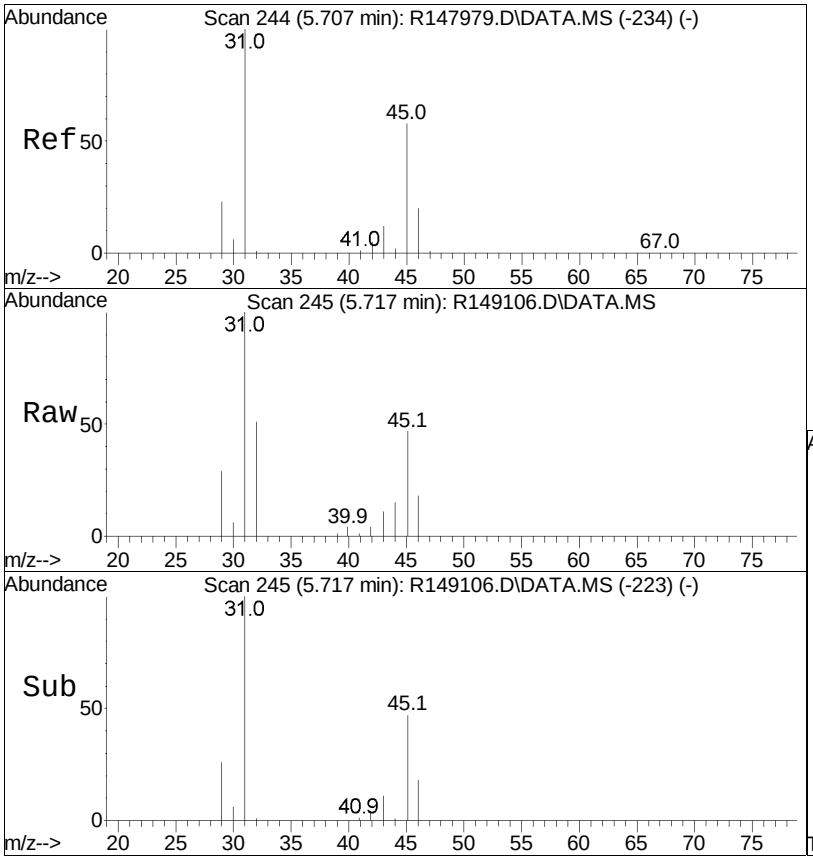


#12
acetaldehyde
Concen: 5.76 ppbV
RT: 4.54 min Scan# 130
Delta R.T. -0.000 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 29 Resp: 47334

Ion	Ratio	Lower	Upper
29	100		
44	68.2	50.2	75.4
43	74.1	29.0	43.6#

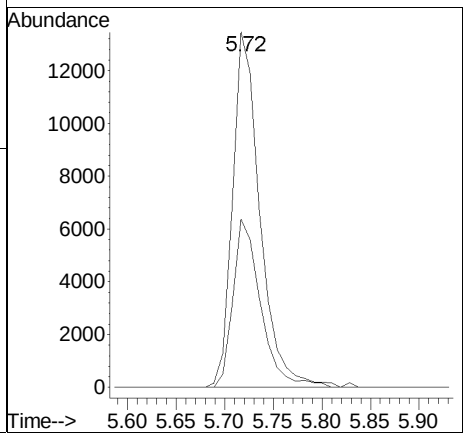


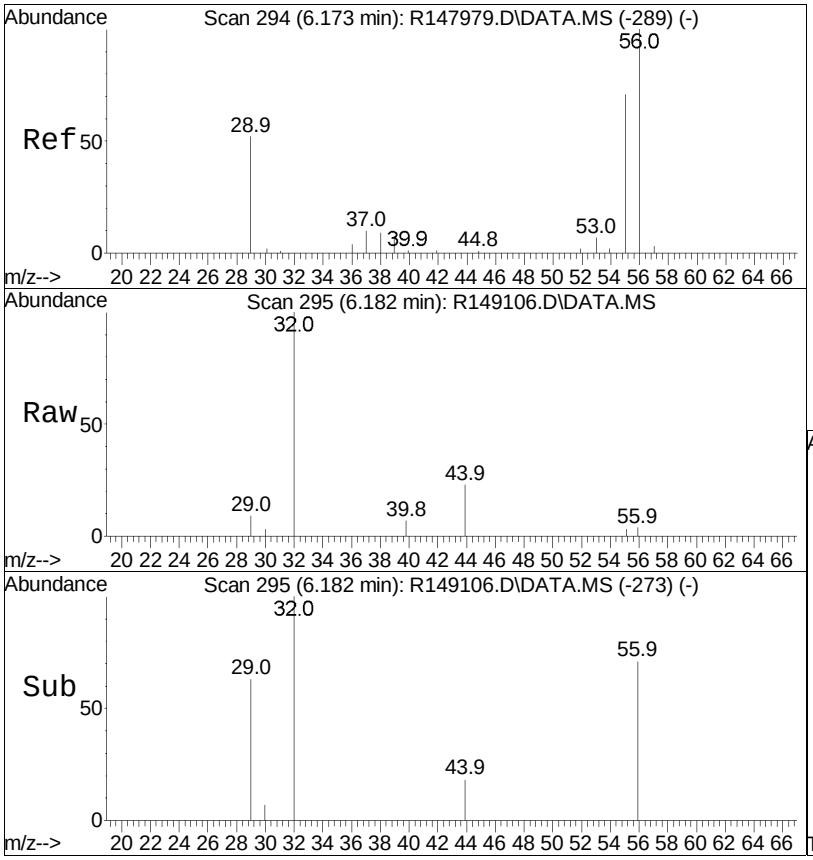


#15
ethanol
Concen: 3.75 ppbV
RT: 5.72 min Scan# 245
Delta R.T. 0.009 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 31 Resp: 26463

Ion	Ratio	Lower	Upper
31	100		
45	47.3	37.2	55.8

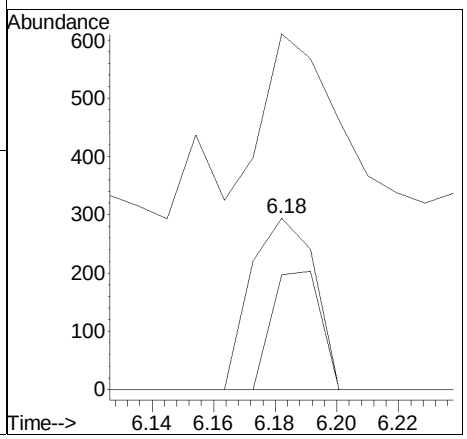


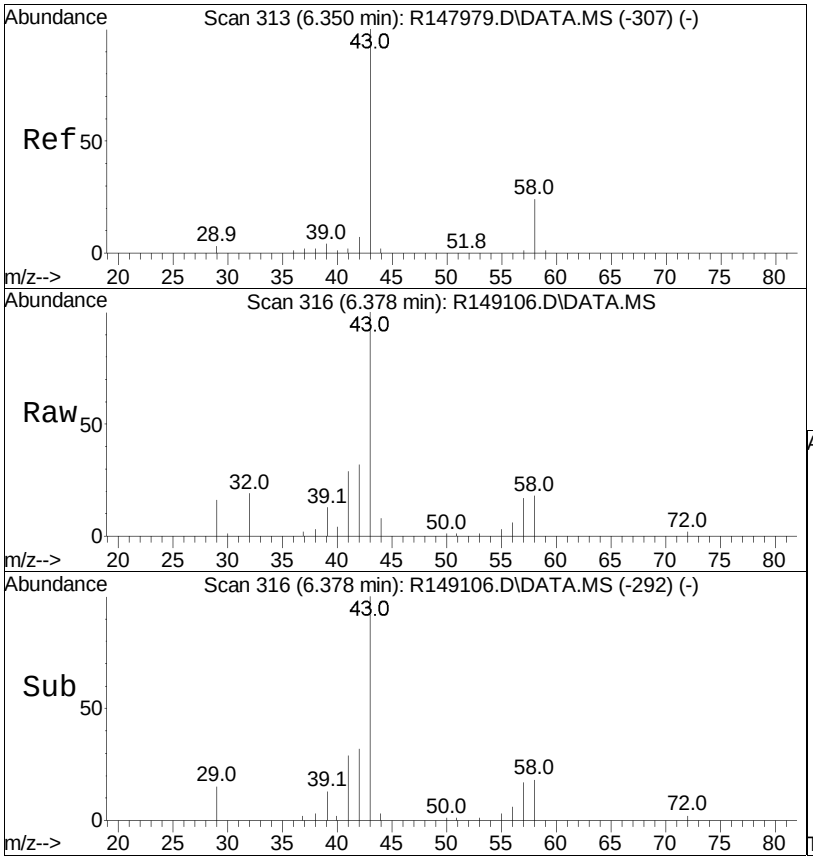


#18
acrolein
Concen: 0.12 ppbV
RT: 6.18 min Scan# 295
Delta R.T. 0.009 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 56 Resp: 422

Ion	Ratio	Lower	Upper
56	100		
55	67.0	56.2	84.4
29	207.5	56.3	84.5#

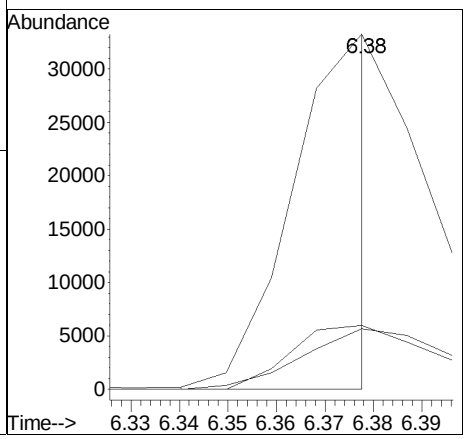


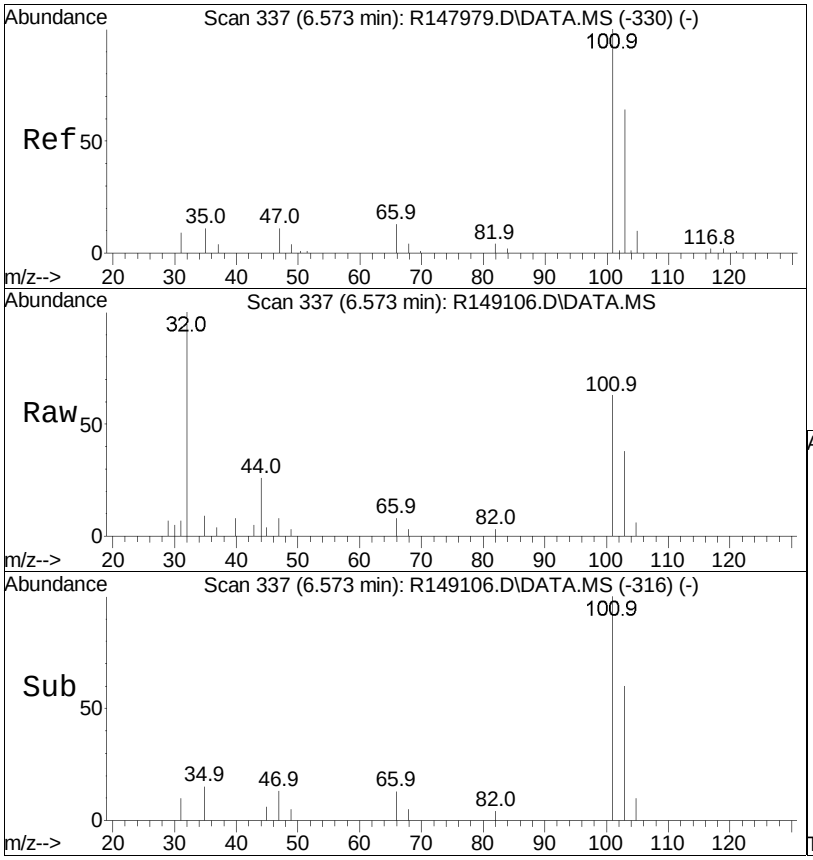


#19
acetone
Concen: 2.49 ppbV m
RT: 6.38 min Scan# 316
Delta R.T. 0.028 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 43 Resp: 41032

Ion	Ratio	Lower	Upper
43	100		
58	18.0	19.8	29.8#
57	17.1	0.6	1.0#

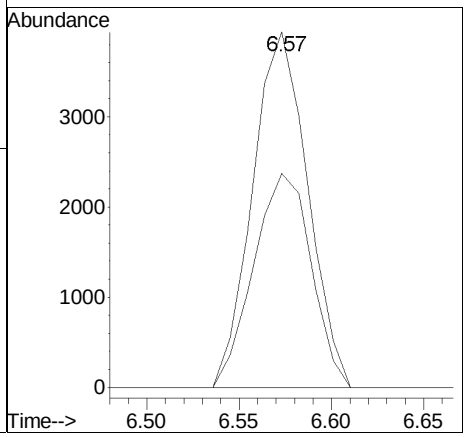


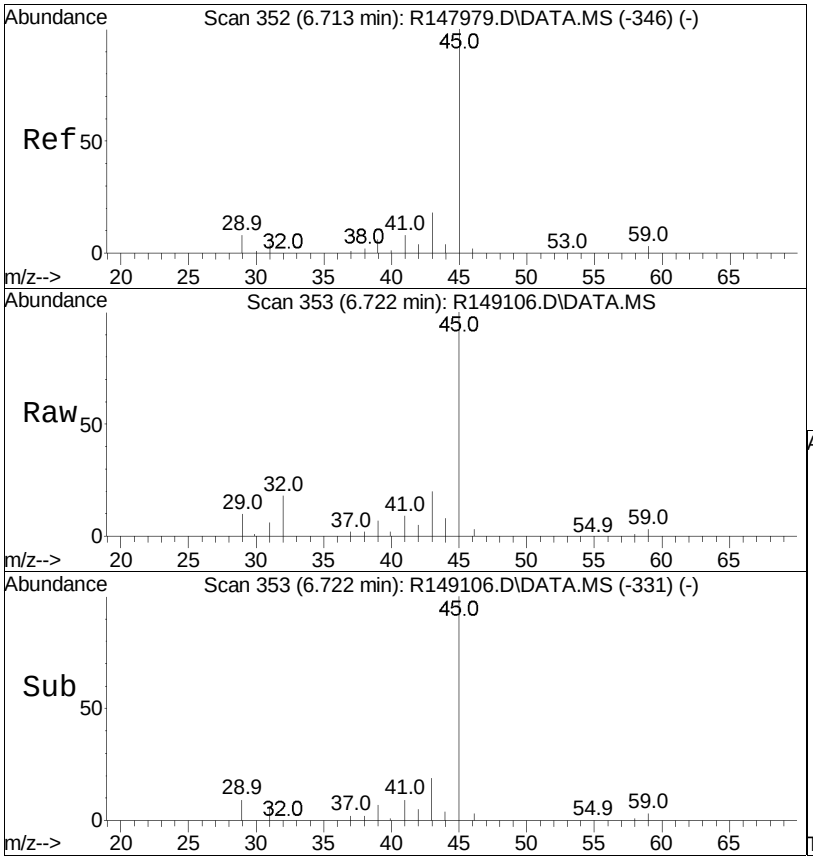


#21
trichlorofluoromethane
Concen: 0.43 ppbV
RT: 6.57 min Scan# 337
Delta R.T. -0.000 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion:101 Resp: 8164

Ion	Ratio	Lower	Upper
101	100		
103	60.2	51.0	76.4

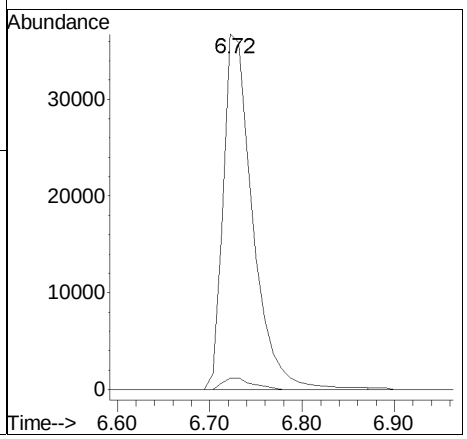


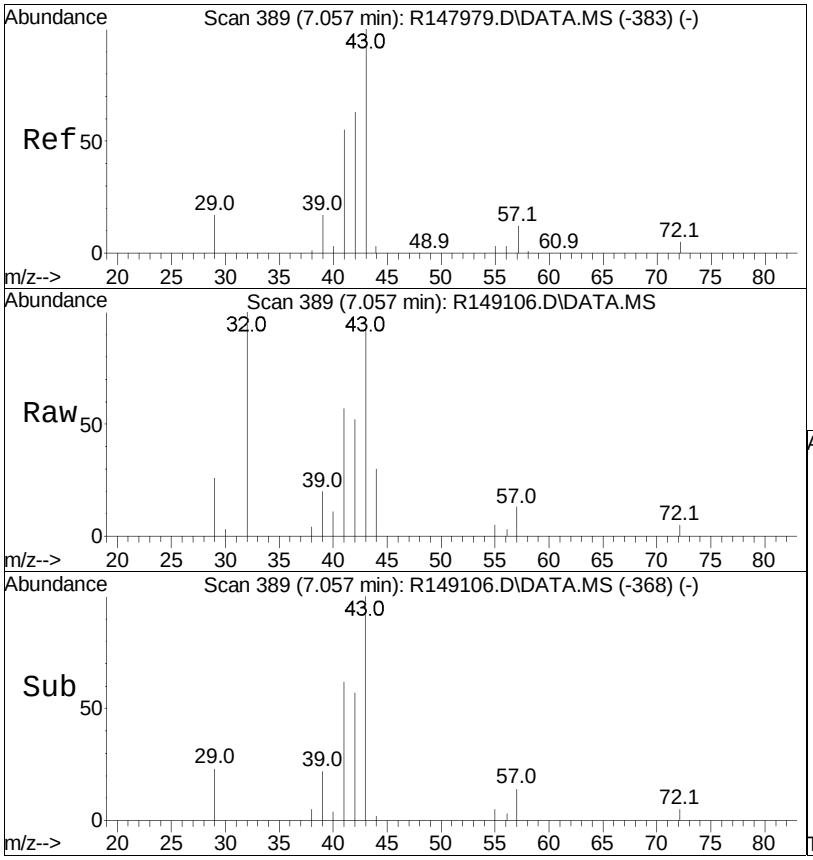


#22
isopropyl alcohol
Concen: 4.75 ppbV
RT: 6.72 min Scan# 353
Delta R.T. 0.009 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 45 Resp: 81364

Ion	Ratio	Lower	Upper
45	100		
59	3.2	2.7	4.1

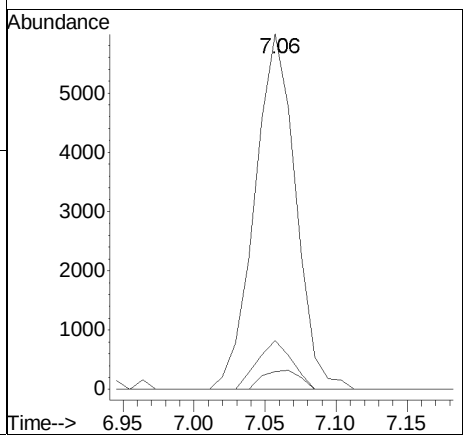


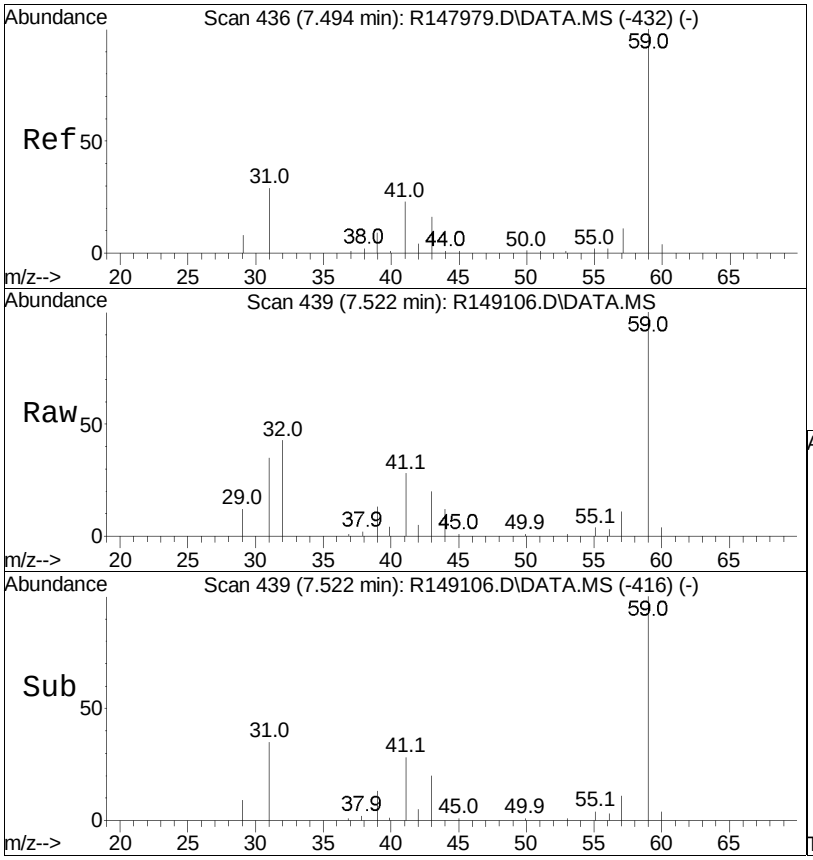


#24
pentane
Concen: 0.78 ppbV
RT: 7.06 min Scan# 389
Delta R.T. -0.000 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 43 Resp: 12062

Ion	Ratio	Lower	Upper
43	100		
57	13.7	9.8	14.8
72	5.0	5.4	8.2#

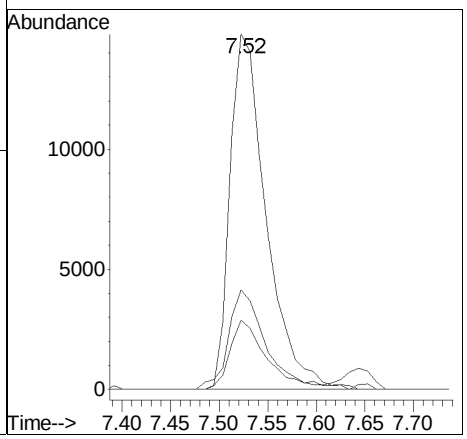


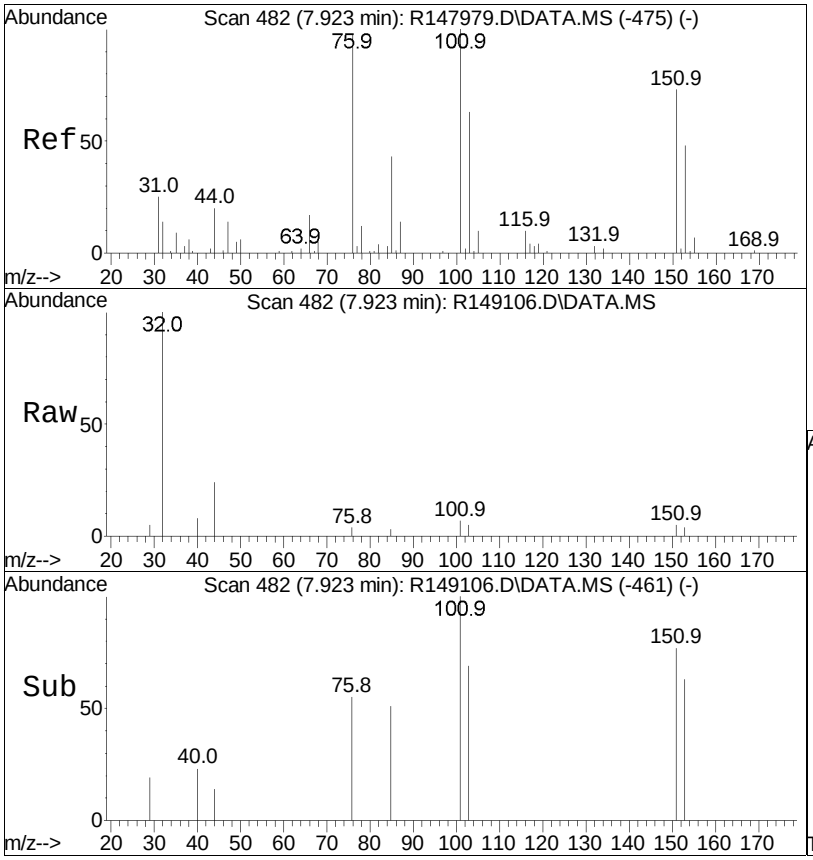


#27
tertiary butyl alcohol
Concen: 2.22 ppbV
RT: 7.52 min Scan# 439
Delta R.T. 0.019 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 59 Resp: 38317

Ion	Ratio	Lower	Upper
59	100		
41	28.0	18.9	28.3
43	19.5	13.7	20.5

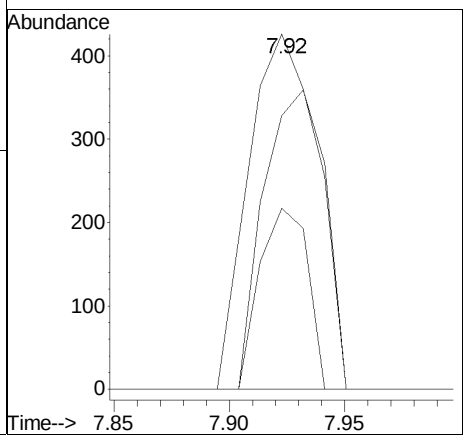


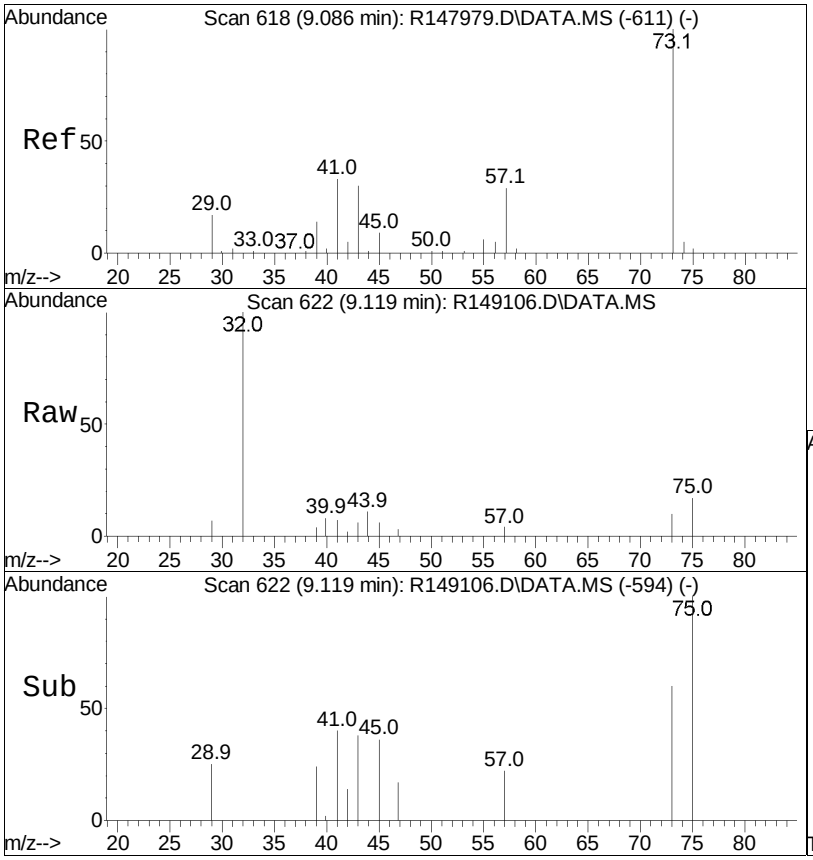


#31
Freon 113
Concen: 0.06 ppbV
RT: 7.92 min Scan# 482
Delta R.T. -0.000 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion:101 Resp: 886

Ion	Ratio	Lower	Upper
101	100		
85	50.9	38.3	57.5
151	77.0	61.3	91.9

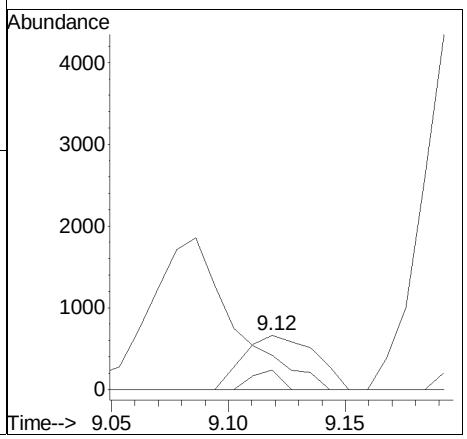


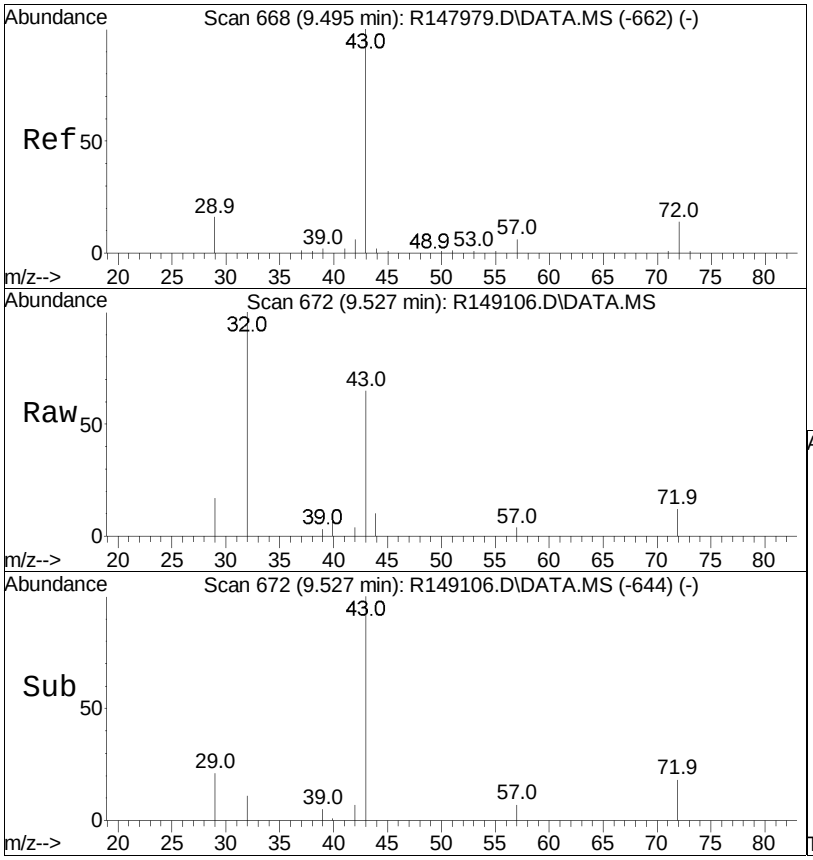


#34
MTBE
Concen: 0.06 ppbV
RT: 9.12 min Scan# 622
Delta R.T. 0.033 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 73 Resp: 1407

Ion	Ratio	Lower	Upper
73	100		
57	36.0	19.1	28.7#
43	63.3	23.0	34.4#

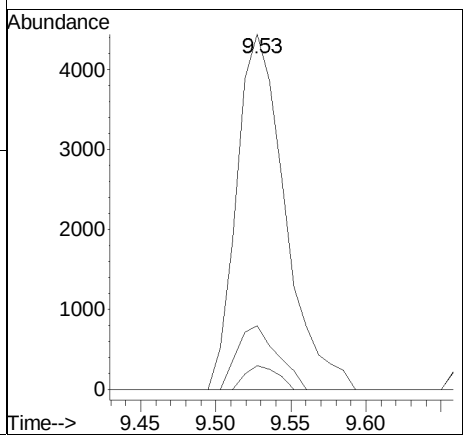


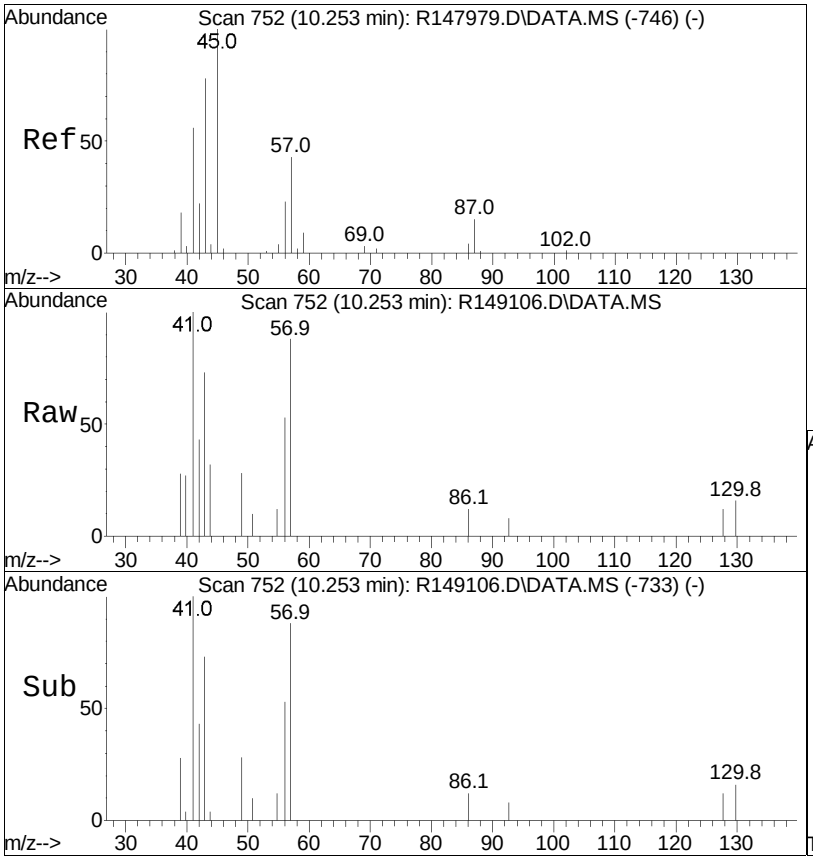


#36
2-butanone
Concen: 0.48 ppbV
RT: 9.53 min Scan# 672
Delta R.T. 0.033 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 43 Resp: 9948

Ion	Ratio	Lower	Upper
43	100		
72	17.9	13.6	20.4
57	6.7	4.9	7.3

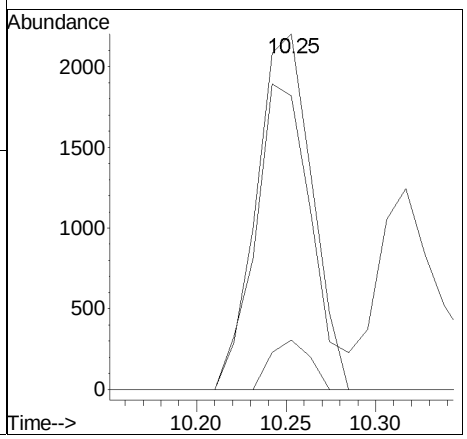


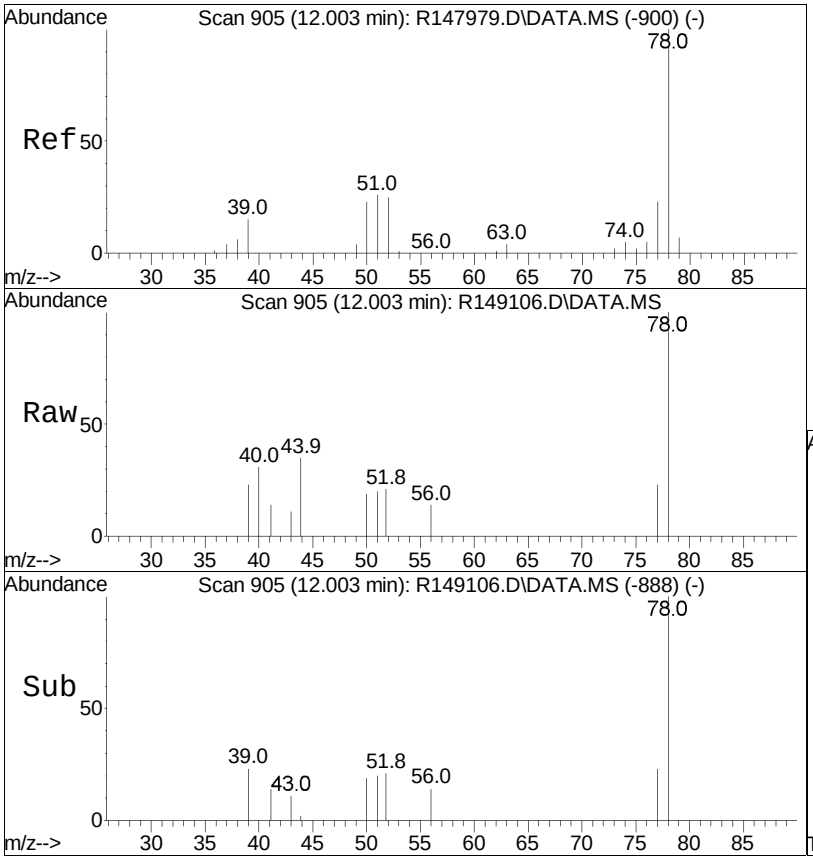


#44
hexane
Concen: 0.30 ppbV
RT: 10.25 min Scan# 752
Delta R.T. -0.000 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 57 Resp: 4739

Ion	Ratio	Lower	Upper
57	100		
43	82.6	142.3	213.5#
86	13.9	9.3	13.9

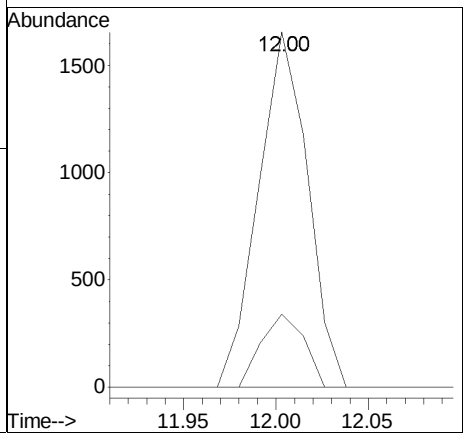


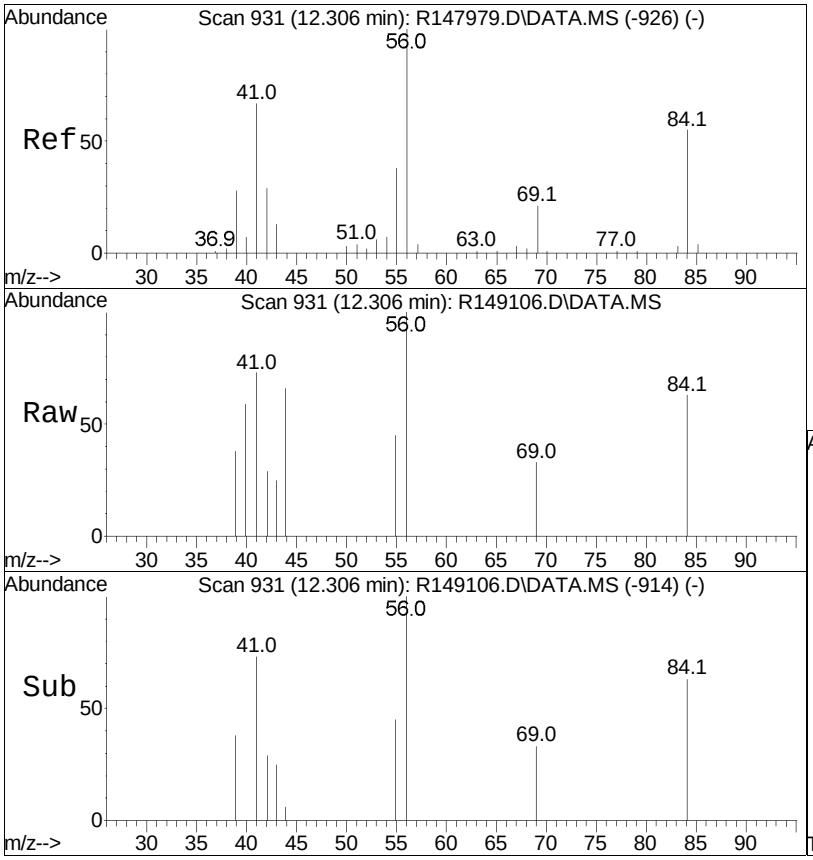


#50
benzene
Concen: 0.14 ppbV
RT: 12.00 min Scan# 905
Delta R.T. -0.000 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 78 Resp: 3072

Ion	Ratio	Lower	Upper
78	100		
52	20.6	15.2	22.8

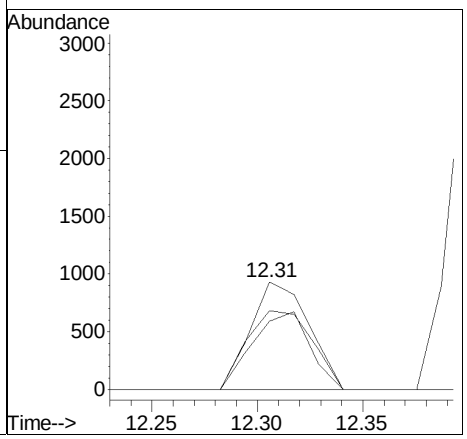


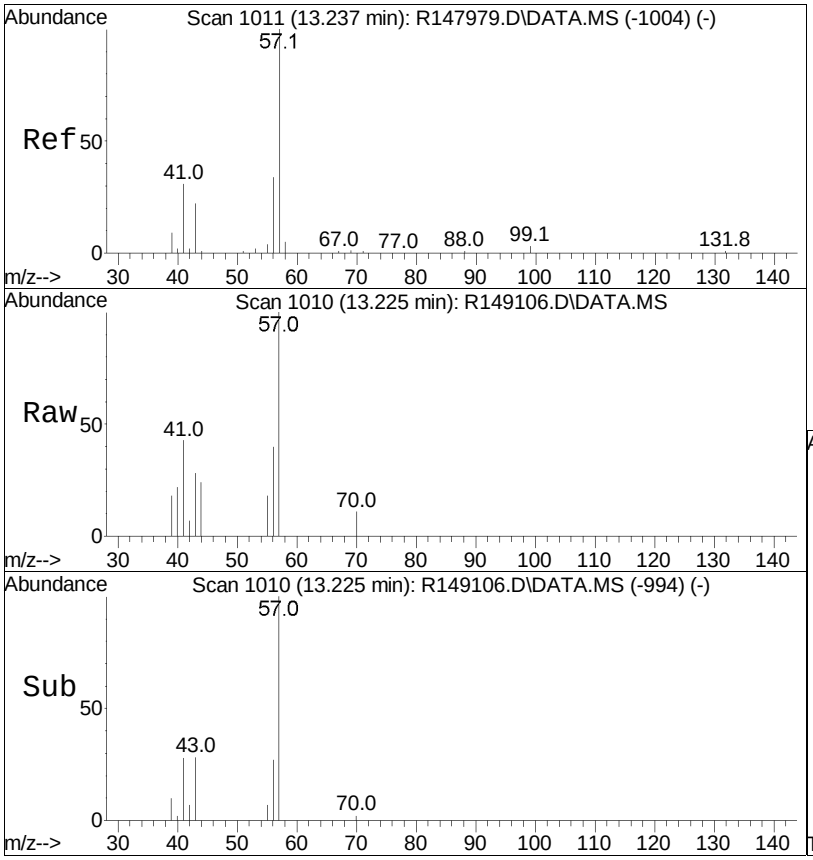


#53
cyclohexane
Concen: 0.14 ppbV
RT: 12.31 min Scan# 931
Delta R.T. -0.000 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 56 Resp: 1785

Ion	Ratio	Lower	Upper
56	100		
84	63.4	56.5	84.7
41	73.2	57.5	86.3

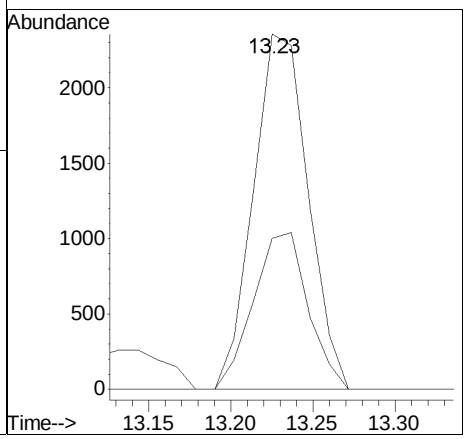


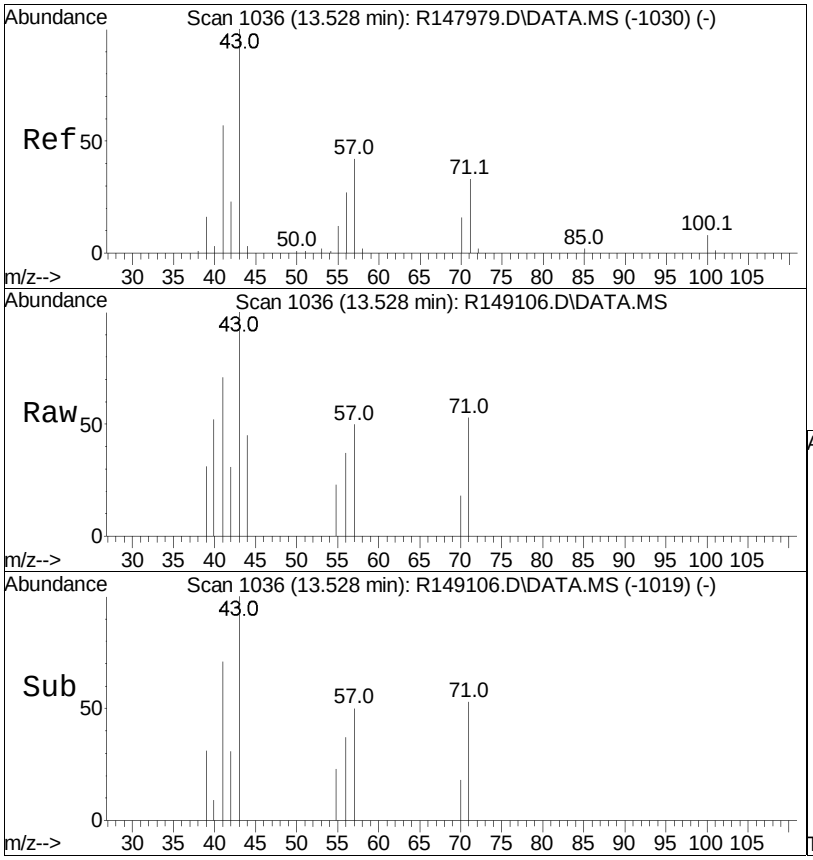


#60
2,2,4-trimethylpentane
Concen: 0.13 ppbV
RT: 13.23 min Scan# 1010
Delta R.T. -0.012 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 57 Resp: 5460

Ion	Ratio	Lower	Upper
57	100		
99	0.0	3.0	4.6#
41	42.5	26.8	40.2#

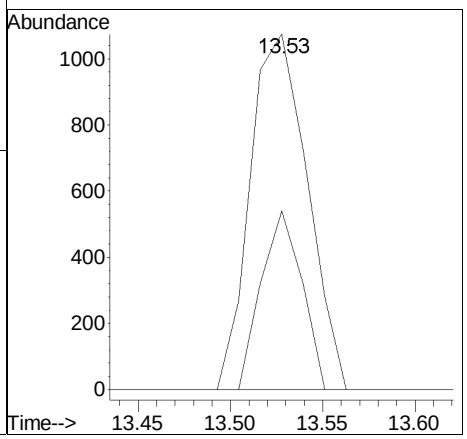


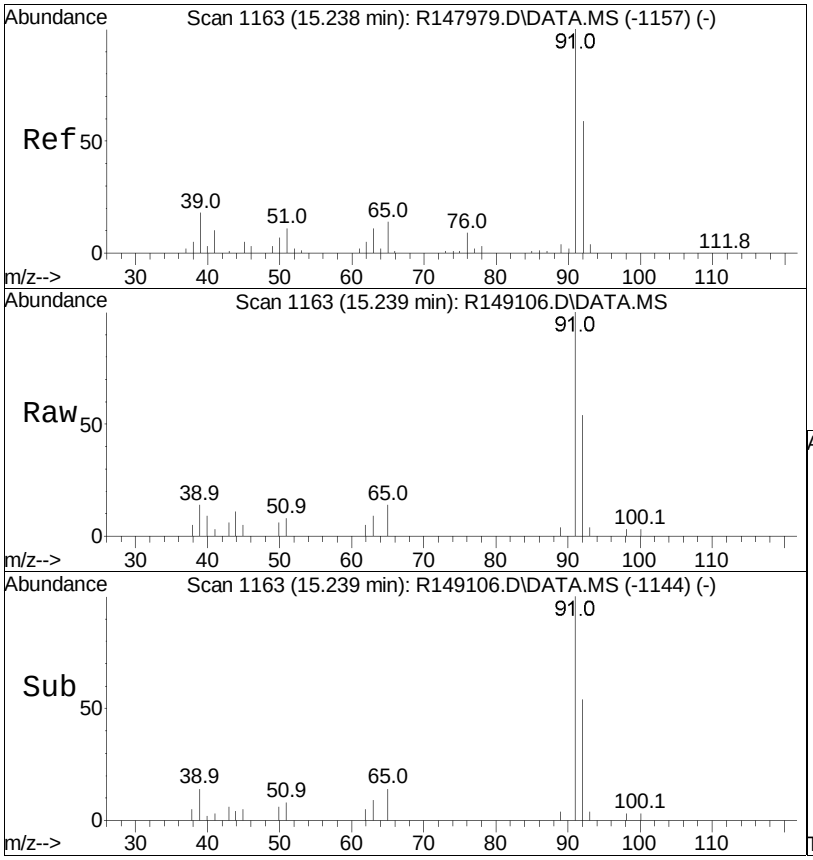


#62
heptane
Concen: 0.13 ppbV
RT: 13.53 min Scan# 1036
Delta R.T. -0.000 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 43 Resp: 2317

Ion	Ratio	Lower	Upper
43	100		
57	50.2	34.2	51.2
100	0.0	7.9	11.9#

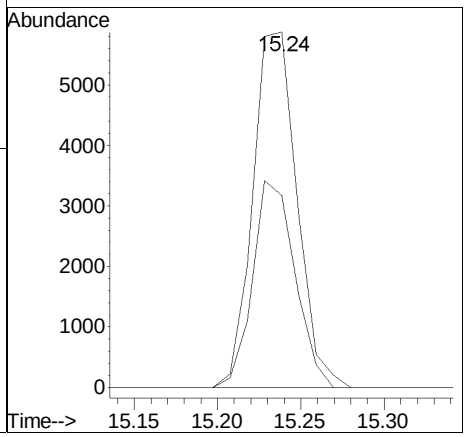


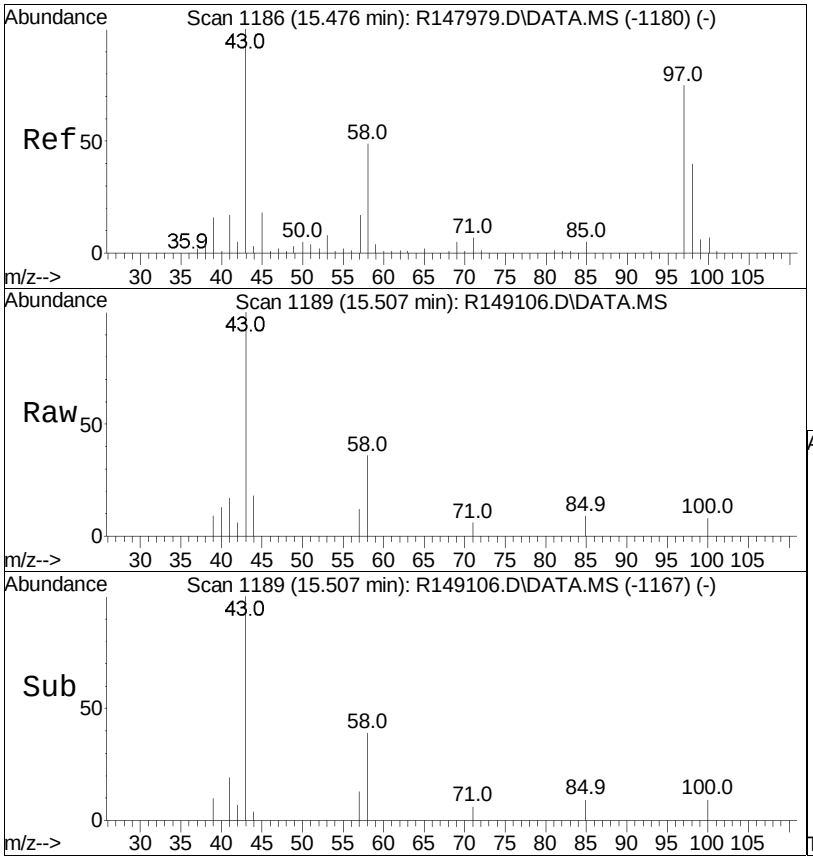


#68
toluene
Concen: 0.41 ppbV
RT: 15.24 min Scan# 1163
Delta R.T. -0.000 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 91 Resp: 10824

Ion	Ratio	Lower	Upper
91	100		
92	54.0	45.8	68.6

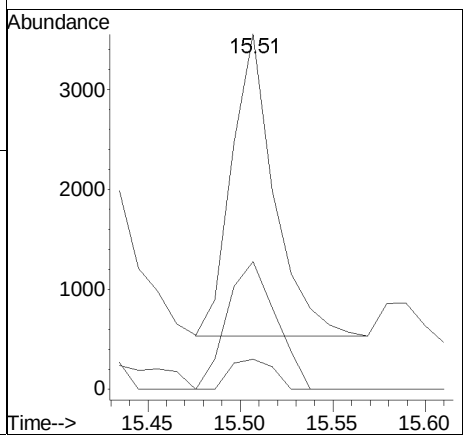


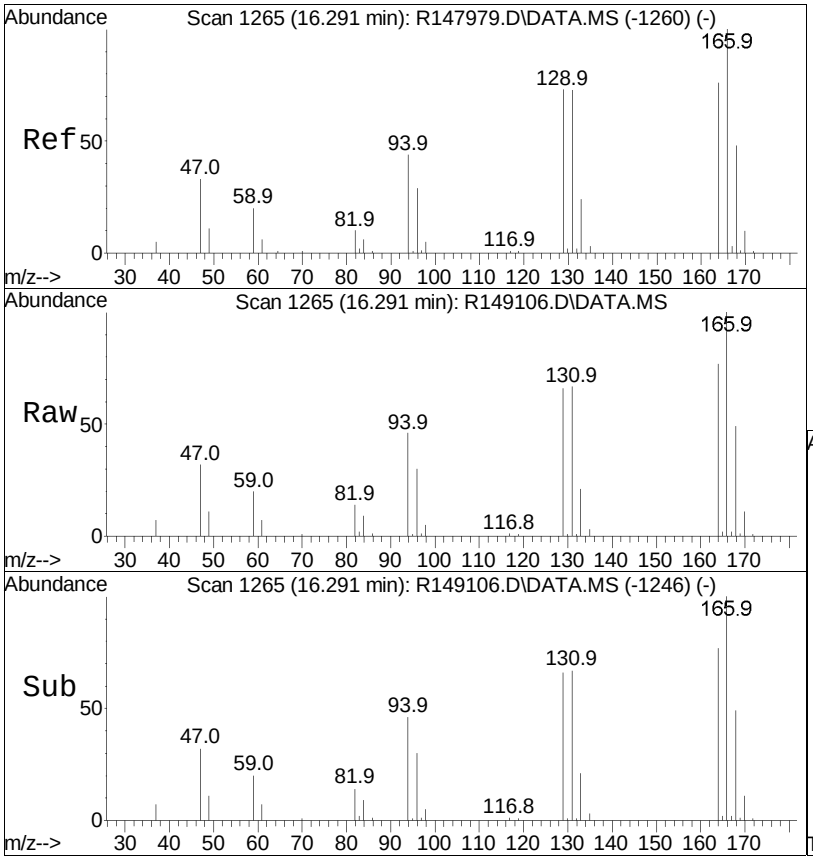


#72
2-hexanone
Concen: 0.19 ppbV
RT: 15.51 min Scan# 1189
Delta R.T. 0.031 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 43 Resp: 4840

Ion	Ratio	Lower	Upper
43	100		
58	36.0	39.7	59.5#
100	8.5	6.9	10.3

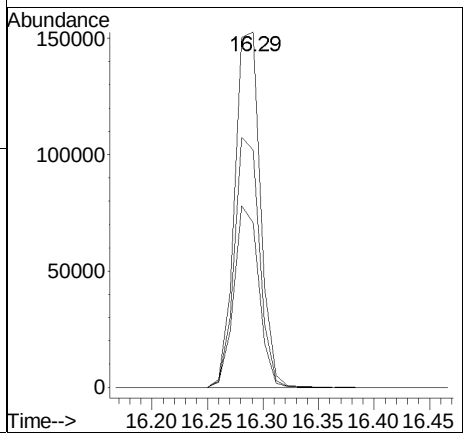


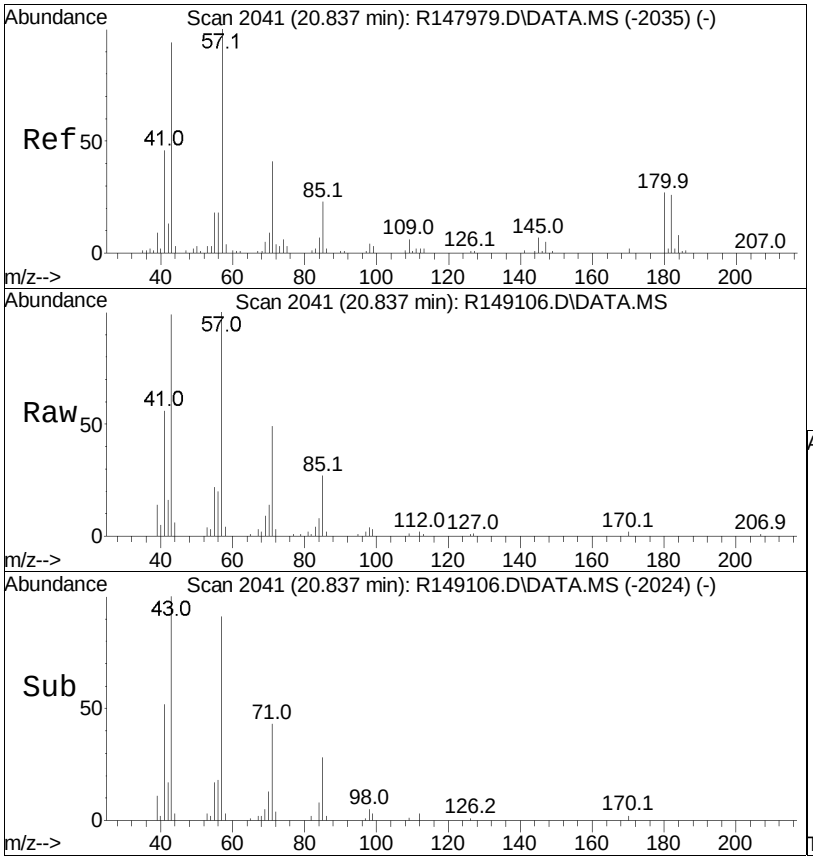


#78
tetrachloroethene
Concen: 17.98 ppbV
RT: 16.29 min Scan# 1265
Delta R.T. -0.000 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion:166 Resp: 245878

Ion	Ratio	Lower	Upper
166	100		
131	66.8	53.0	79.4
94	46.3	36.6	55.0

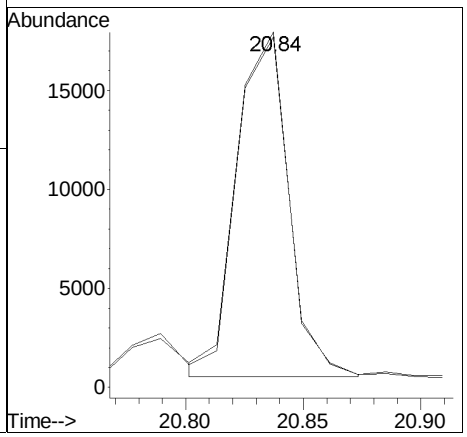




#114
dodecane
Concen: 0.93 ppbV m
RT: 20.84 min Scan# 2041
Delta R.T. -0.000 min
Lab File: R149106.D
Acq: 1 Nov 2016 7:34 pm

Tgt Ion: 57 Resp: 26848

Ion	Ratio	Lower	Upper
57	100		
43	98.6	76.2	114.4



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-09D	Date Collected	: 10/19/16 17:42
Client ID	: NFSV-01	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 20:04
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 5
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149107	Instrument ID	: AIRPIANO1
Sample Amount	: 50.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-71-8	Dichlorodifluoromethane	0.500	1.00	0.233	2.47	4.94	1.15	J
74-87-3	Chloromethane	ND	1.00	0.479	ND	2.07	0.989	U
76-14-2	Freon-114	ND	1.00	0.210	ND	6.99	1.47	U
75-01-4	Vinyl chloride	ND	1.00	0.189	ND	2.56	0.483	U
106-99-0	1,3-Butadiene	ND	1.00	0.400	ND	2.21	0.885	U
106-97-8	Butane	118	1.00	0.221	280	2.38	0.525	
75-07-0	Acetaldehyde	ND	12.5	2.73	ND	22.5	4.92	U
74-83-9	Bromomethane	ND	1.00	0.348	ND	3.88	1.35	U
75-00-3	Chloroethane	ND	1.00	0.384	ND	2.64	1.01	U
64-17-5	Ethanol	3.71	12.5	2.71	6.99	23.6	5.11	J
593-60-2	Vinyl bromide	ND	1.00	0.350	ND	4.37	1.53	U
107-02-8	Acrolein	ND	2.50	0.569	ND	5.73	1.30	U
67-64-1	Acetone	22.6	5.00	0.824	53.7	11.9	1.96	G
75-69-4	Trichlorofluoromethane	0.225	1.00	0.208	1.26	5.62	1.17	J
67-63-0	Isopropanol	12.5	2.50	0.262	30.7	6.15	0.644	
109-66-0	Pentane	30.5	1.00	0.238	90.0	2.95	0.702	
75-35-4	1,1-Dichloroethene	ND	1.00	0.283	ND	3.96	1.12	U
75-65-0	tert-Butyl Alcohol	38.4	2.50	0.300	116	7.58	0.909	
75-09-2	Methylene chloride	ND	2.50	1.50	ND	8.69	5.21	U
107-05-1	3-Chloropropene	ND	1.00	0.406	ND	3.13	1.27	U
75-15-0	Carbon disulfide	4.98	1.00	0.172	15.5	3.11	0.536	
76-13-1	Freon-113	ND	1.00	0.256	ND	7.66	1.96	U
156-60-5	trans-1,2-Dichloroethene	ND	1.00	0.370	ND	3.96	1.47	U
75-34-3	1,1-Dichloroethane	ND	1.00	0.386	ND	4.05	1.56	U
1634-04-4	Methyl tert butyl ether	287	1.00	0.264	1030	3.61	0.952	
78-93-3	2-Butanone	8.93	2.50	0.236	26.3	7.37	0.696	
156-59-2	cis-1,2-Dichloroethene	2.54	1.00	0.294	10.1	3.96	1.17	
67-66-3	Chloroform	ND	1.00	0.266	ND	4.88	1.30	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-09D	Date Collected	: 10/19/16 17:42
Client ID	: NFSV-01	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 20:04
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 5
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149107	Instrument ID	: AIRPIANO1
Sample Amount	: 50.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
107-06-2	1,2-Dichloroethane	ND	1.00	0.276	ND	4.05	1.12	U
110-54-3	n-Hexane	7.17	1.00	0.259	25.3	3.52	0.913	
71-55-6	1,1,1-Trichloroethane	ND	1.00	0.285	ND	5.46	1.55	U
71-43-2	Benzene	148	1.00	0.268	473	3.19	0.856	
110-02-1	Thiophene	1.16	1.00	0.264	3.99	3.44	0.909	
56-23-5	Carbon tetrachloride	ND	1.00	0.236	ND	6.29	1.48	U
110-82-7	Cyclohexane	11.5	1.00	0.328	39.6	3.44	1.13	
78-87-5	1,2-Dichloropropane	ND	1.00	0.348	ND	4.62	1.61	U
75-27-4	Bromodichloromethane	ND	1.00	0.328	ND	6.70	2.20	U
123-91-1	1,4-Dioxane	ND	1.00	0.390	ND	3.60	1.41	U
79-01-6	Trichloroethene	ND	1.00	0.355	ND	5.37	1.91	U
540-84-1	2,2,4-Trimethylpentane	88.1	1.00	0.330	411	4.67	1.54	
142-82-5	Heptane	4.05	1.00	0.276	16.6	4.10	1.13	
10061-01-5	cis-1,3-Dichloropropene	ND	1.00	0.372	ND	4.54	1.69	U
108-10-1	4-Methyl-2-pentanone	ND	2.50	0.304	ND	10.2	1.25	U
10061-02-6	trans-1,3-Dichloropropene	ND	1.00	0.346	ND	4.54	1.57	U
79-00-5	1,1,2-Trichloroethane	ND	1.00	0.334	ND	5.46	1.82	U
108-88-3	Toluene	83.5	1.00	0.314	315	3.77	1.18	
554-14-3	2-Methylthiophene	ND	1.00	0.394	ND	4.02	1.58	U
591-78-6	2-Hexanone	2.39	1.00	0.302	9.79	4.10	1.24	
616-44-4	3-Methylthiophene	0.365	1.00	0.334	1.47	4.02	1.34	J
124-48-1	Dibromochloromethane	ND	1.00	0.374	ND	8.52	3.19	U
106-93-4	1,2-Dibromoethane	ND	1.00	0.390	ND	7.69	3.00	U
111-65-9	Octane	5.00	1.00	0.210	23.4	4.67	0.981	
127-18-4	Tetrachloroethene	1.63	1.00	0.379	11.1	6.78	2.57	
108-90-7	Chlorobenzene	ND	1.00	0.394	ND	4.61	1.81	U
100-41-4	Ethylbenzene	55.6	1.00	0.278	242	4.34	1.21	
872-55-9	2-Ethylthiophene	ND	1.00	0.286	ND	4.59	1.31	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-09D	Date Collected	: 10/19/16 17:42
Client ID	: NFSV-01	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 20:04
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 5
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149107	Instrument ID	: AIRPIANO1
Sample Amount	: 50.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
179601-23-1	p/m-Xylene	75.2	2.00	0.694	327	8.69	3.01	
75-25-2	Bromoform	ND	1.00	0.262	ND	10.3	2.71	U
100-42-5	Styrene	6.72	1.00	0.400	28.6	4.26	1.70	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.00	0.274	ND	6.87	1.88	U
95-47-6	o-Xylene	42.3	1.00	0.316	184	4.34	1.37	
111-84-2	Nonane	11.6	1.00	0.312	60.9	5.25	1.64	
95-49-8	2-Chlorotoluene	ND	1.00	0.244	ND	5.18	1.26	U
622-96-8	4-Ethyltoluene	22.0	1.00	0.388	108	4.92	1.91	
108-67-8	1,3,5-Trimethylbenzene	45.6	1.00	0.292	224	4.92	1.44	
95-63-6	1,2,4-Trimethylbenzene	53.4	1.00	0.347	263	4.92	1.71	
124-18-5	Decane	12.8	1.00	0.242	74.5	5.82	1.41	
541-73-1	1,3-Dichlorobenzene	ND	1.00	0.318	ND	6.01	1.91	U
106-46-7	1,4-Dichlorobenzene	ND	1.00	0.180	ND	6.01	1.08	U
526-73-8	1,2,3-Trimethylbenzene	28.4	1.00	0.376	140	4.92	1.85	
95-50-1	1,2-Dichlorobenzene	ND	1.00	0.307	ND	6.01	1.85	U
496-11-7	Indane	16.7	1.00	0.398	80.7	4.83	1.92	
95-13-6	Indene	16.0	1.00	0.304	76.0	4.75	1.44	
1120-21-4	Undecane	7.84	1.00	0.264	50.1	6.39	1.69	
95-93-2	1,2,4,5-Tetramethylbenzene	4.68	1.00	0.398	25.7	5.49	2.18	
112-40-3	Dodecane	11.1	1.00	0.239	77.3	6.97	1.66	
120-82-1	1,2,4-Trichlorobenzene	1.53	1.00	0.306	11.4	7.42	2.27	
91-20-3	Naphthalene	115	1.00	0.212	603	5.24	1.11	
95-15-8	Benzothiophene	1.52	2.50	0.234	8.34	13.7	1.28	J
87-68-3	Hexachlorobutadiene	ND	1.00	0.366	ND	10.7	3.90	U
91-57-6	2-Methylnaphthalene	60.8	5.00	1.36	354	29.1	7.91	
90-12-0	1-Methylnaphthalene	66.8	5.00	1.25	389	29.1	7.27	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149107.D
Acq On : 1 Nov 2016 8:04 pm
Operator : AIRPIANO1:RY
Sample : L1634001-09D,3,50,250
Misc : WG947959,ICAL12987
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 02 10:23:02 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	143665	10.000	ppbV	-0.01
Standard Area = 153282			Recovery = 93.73%			
43) 1,4-difluorobenzene	12.41	114	235663	10.000	ppbV	0.00
Standard Area = 240182			Recovery = 98.12%			
67) chlorobenzene-D5	16.82	54	67595	10.000	ppbV	0.00
Standard Area = 64184			Recovery = 105.31%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	69869	9.897	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.97%			
69) toluene-D8	15.14	98	198454	9.747	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 97.47%			
90) bromofluorobenzene	18.01	95	155802	10.949	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 109.49%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	1845	0.100	ppbV	98
6) chloromethane	0.00		0	N.D.	d	
7) Freon-114	0.00		0	N.D.		
9) vinyl chloride	0.00		0	N.D.		
10) 1,3-butadiene	4.88		0	N.D.		
11) butane	4.95	43	330787	23.656	ppbV	100
12) acetaldehyde	0.00		0	N.D.	d	
13) bromomethane	0.00		0	N.D.		
14) chloroethane	0.00		0	N.D.		
15) ethanol	5.72	31	5216	0.742	ppbV	93
17) vinyl bromide	0.00		0	N.D.		
18) acrolein	0.00		0	N.D.		
19) acetone	6.36	43	74132M6	4.513	ppbV	
21) trichlorofluoromethane	6.57	101	857	0.045	ppbV	97
22) isopropyl alcohol	6.72	45	42608	2.494	ppbV #	98
24) pentane	7.06	43	94173	6.095	ppbV	97
26) 1,1-dichloroethene	0.00		0	N.D.	d	
27) tertiary butyl alcohol	7.50	59	132109	7.680	ppbV	93
28) methylene chloride	7.59		0	N.D.		
29) 3-chloropropene	0.00		0	N.D.	d	
30) carbon disulfide	7.90	76	22160	0.997	ppbV #	89

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149107.D
Acq On : 1 Nov 2016 8:04 pm
Operator : AIRPIANO1:RY
Sample : L1634001-09D,3,50,250
Misc : WG947959,ICAL12987
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 02 10:23:02 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
31) Freon 113	0.00		0	N.D.		
32) trans-1,2-dichloroethene	8.75		0	N.D.		
33) 1,1-dichloroethane	0.00		0	N.D. d		
34) MTBE	9.08	73	1240689	57.401	ppbV	94
36) 2-butanone	9.51	43	36589	1.786	ppbV #	99
37) cis-1,2-dichloroethene	10.00	61	4875	0.509	ppbV	98
39) chloroform	0.00		0	N.D.		
42) 1,2-dichloroethane	0.00		0	N.D. d		
44) hexane	10.25	57	22940	1.434	ppbV #	35
48) 1,1,1-trichloroethane	0.00		0	N.D.		
50) benzene	12.00	78	656546	29.581	ppbV	99
51) thiophene	12.15	84	4373	0.233	ppbV	98
52) carbon tetrachloride	0.00		0	N.D.		
53) cyclohexane	12.31	56	30204	2.302	ppbV	97
56) 1,2-dichloropropane	0.00		0	N.D.		
57) bromodichloromethane	0.00		0	N.D. d		
58) 1,4-dioxane	0.00		0	N.D.		
59) trichloroethene	13.20		0	N.D.		
60) 2,2,4-trimethylpentane	13.23	57	759572	17.615	ppbV	95
62) heptane	13.53	43	14962	0.810	ppbV	97
63) cis-1,3-dichloropropene	0.00		0	N.D.		
64) 4-methyl-2-pentanone	0.00		0	N.D. d		
65) trans-1,3-dichloropropene	0.00		0	N.D.		
66) 1,1,2-trichloroethane	0.00		0	N.D. d		
68) toluene	15.23	91	470464	16.696	ppbV	99
70) 2-methylthiophene	0.00		0	N.D. d		
72) 2-hexanone	15.49	43	12582	0.478	ppbV #	98
73) 3-methylthiophene	15.48	97	2156	0.073	ppbV	91
74) dibromochloromethane	0.00		0	N.D.		
75) 1,2-dibromoethane	0.00		0	N.D.		
77) octane	16.14	85	8413	1.000	ppbV	91
78) tetrachloroethene	16.29	166	4709	0.326	ppbV	95
80) chlorobenzene	0.00		0	N.D. d		
81) ethylbenzene	17.15	91	411332	11.127	ppbV	99
82) 2-ethylthiophene	0.00		0	N.D. d		
83) m+p-xylene	17.29	91	443415	15.039	ppbV	98
84) bromoform	0.00		0	N.D.		
85) styrene	17.58	104	28391	1.343	ppbV	99

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149107.D
Acq On : 1 Nov 2016 8:04 pm
Operator : AIRPIANO1:RY
Sample : L1634001-09D,3,50,250
Misc : WG947959,ICAL12987
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 02 10:23:02 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

	Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
86)	1,1,2,2-tetrachloroethane	0.00		0	N.D.	d		
87)	o-xylene	17.66	91	257850	8.464	ppbV		99
89)	nonane	17.80	43	66660	2.331	ppbV		98
93)	2-chlorotoluene	0.00		0	N.D.	d		
96)	4-ethyl toluene	18.59	105	190372	4.395	ppbV		99
97)	1,3,5-trimethylbenzene	18.64	105	311932	9.129	ppbV		99
99)	1,2,4-trimethylbenzene	18.95	105	366083	10.671	ppbV	#	50
100)	decane	18.99	57	69274M4	2.565	ppbV		
102)	1,3-dichlorobenzene	0.00		0	N.D.	d		
103)	1,4-dichlorobenzene	19.14		0	N.D.			
105)	1,2,3-trimethylbenzene	19.27	105	212728	5.684	ppbV		100
107)	1,2-dichlorobenzene	19.39		0	N.D.			
109)	indan	19.43	117	136474	3.342	ppbV	#	98
110)	indene	19.51	115	88296	3.197	ppbV		99
112)	undecane	19.94	57	46646M4	1.568	ppbV		
113)	1,2,4,5-tetramethylben...	20.18	119	50447	0.936	ppbV	#	97
114)	dodecane	20.83	57	67346M4	2.219	ppbV		
115)	1,2,4-trichlorobenzene	20.83	180	6907	0.306	ppbV	#	69
116)	naphthalene	20.95	128	987919	23.047	ppbV		100
118)	benzothiophene	21.01	134	13516	0.303	ppbV	#	77
119)	hexachlorobutadiene	0.00		0	N.D.			
120)	2-methylnaphthalene	22.09	142	261069	12.170	ppbV		98
121)	1-methylnaphthalene	22.29	142	305457	13.351	ppbV		99

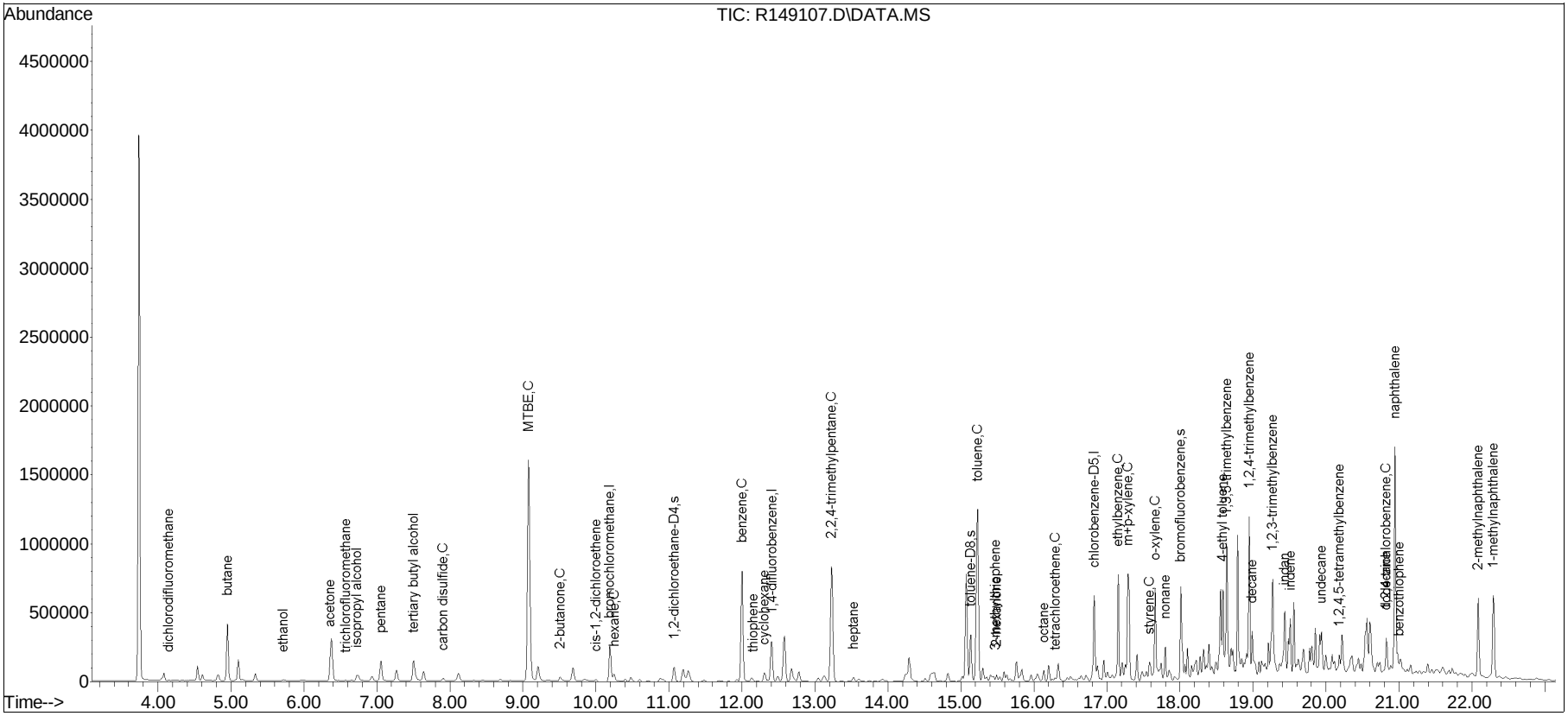
(#) = qualifier out of range (m) = manual integration (+) = signals summed

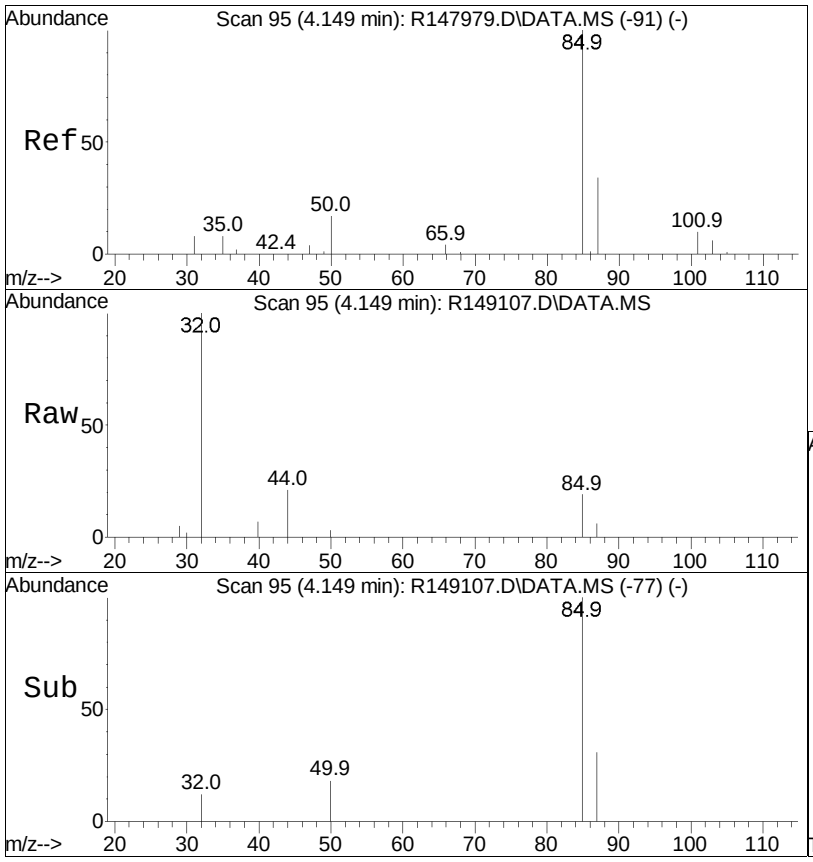
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149107.D
Acq On : 1 Nov 2016 8:04 pm
Operator : AIRPIANO1:RY
Sample : L1634001-09D,3,50,250
Misc : WG947959,ICAL12987
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 02 10:23:02 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Keyspan_TO15 - .a\AIR1\2016\161101K\R149091.D

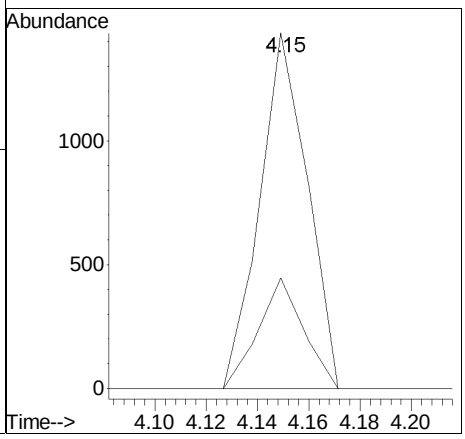


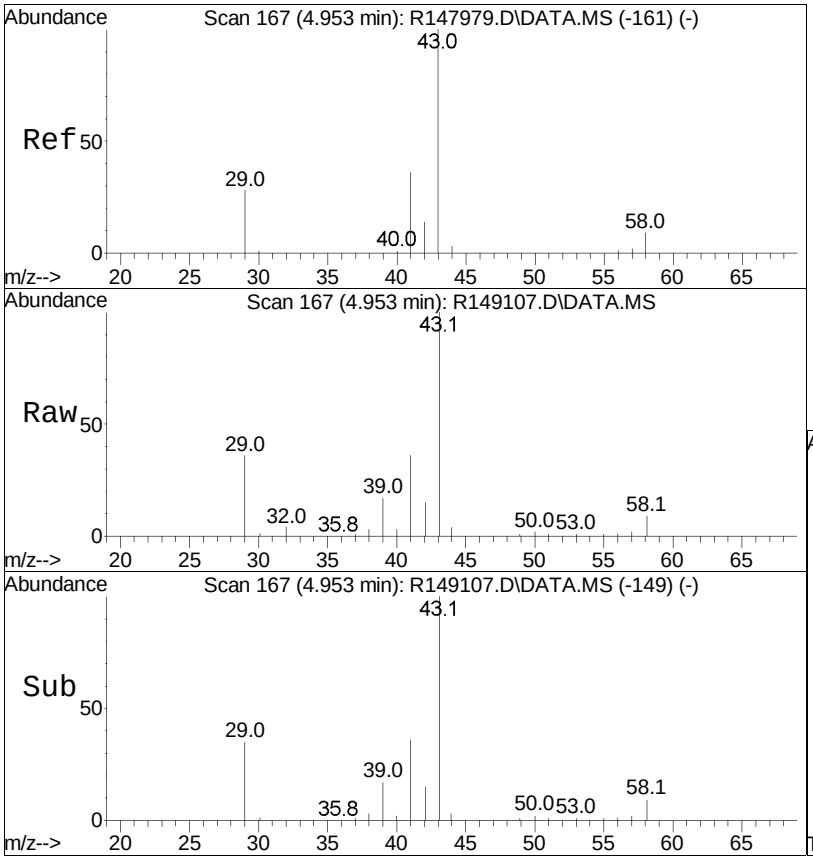


#5
dichlorodifluoromethane
Concen: 0.10 ppbV
RT: 4.15 min Scan# 95
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 85 Resp: 1845

Ion	Ratio	Lower	Upper
85	100		
87	31.1	25.9	38.9

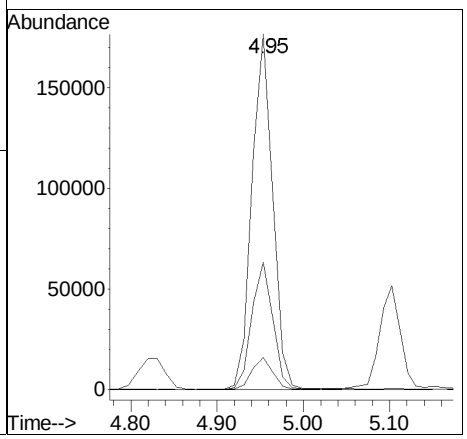


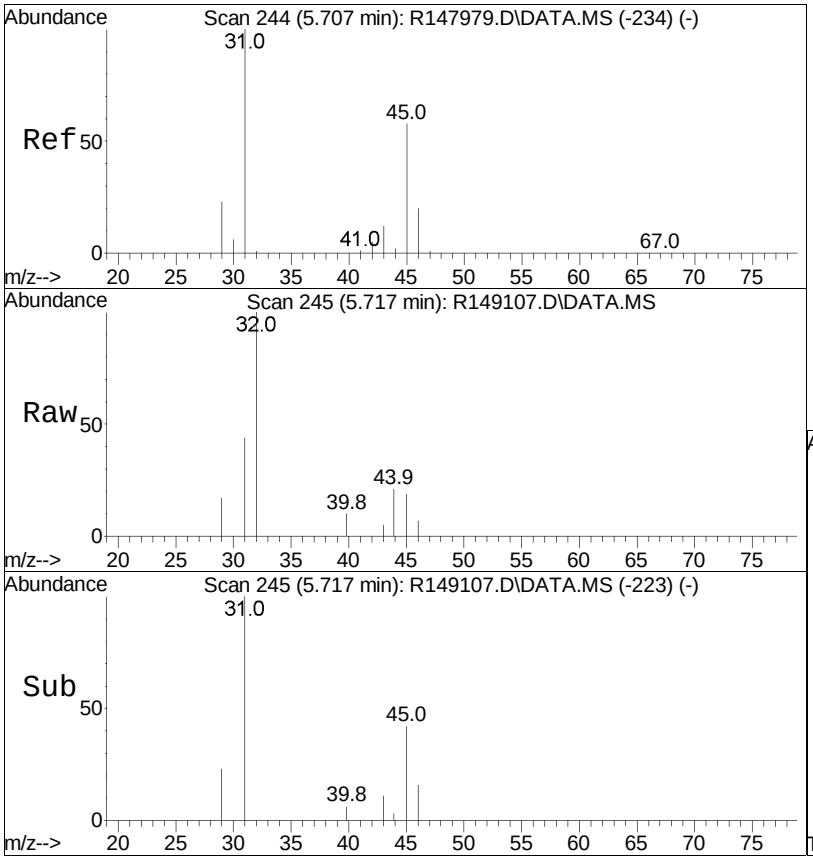


#11
butane
Concen: 23.66 ppbV
RT: 4.95 min Scan# 167
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 43 Resp: 330787

Ion	Ratio	Lower	Upper
43	100		
58	9.0	7.1	10.7
41	35.8	28.7	43.1

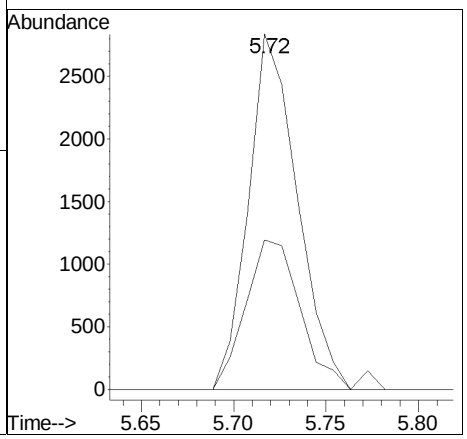


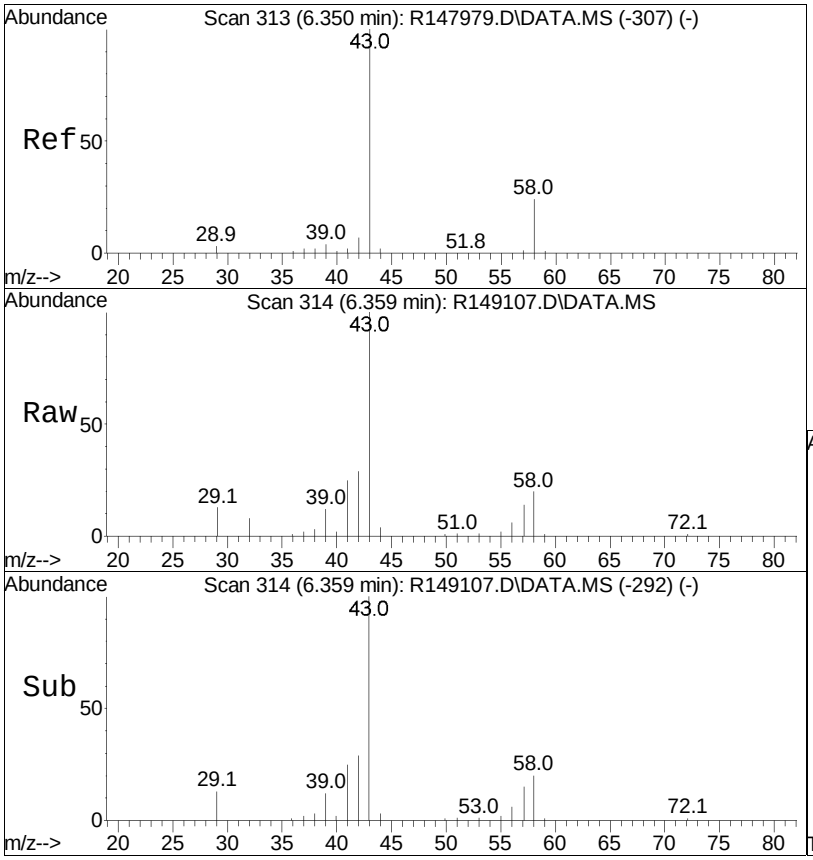


#15
ethanol
Concen: 0.74 ppbV
RT: 5.72 min Scan# 245
Delta R.T. 0.009 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 31 Resp: 5216

Ion	Ratio	Lower	Upper
31	100		
45	42.1	37.2	55.8

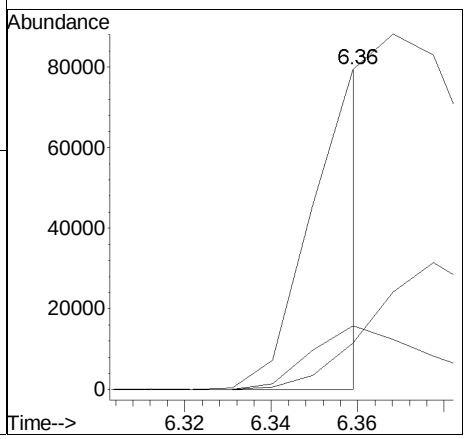


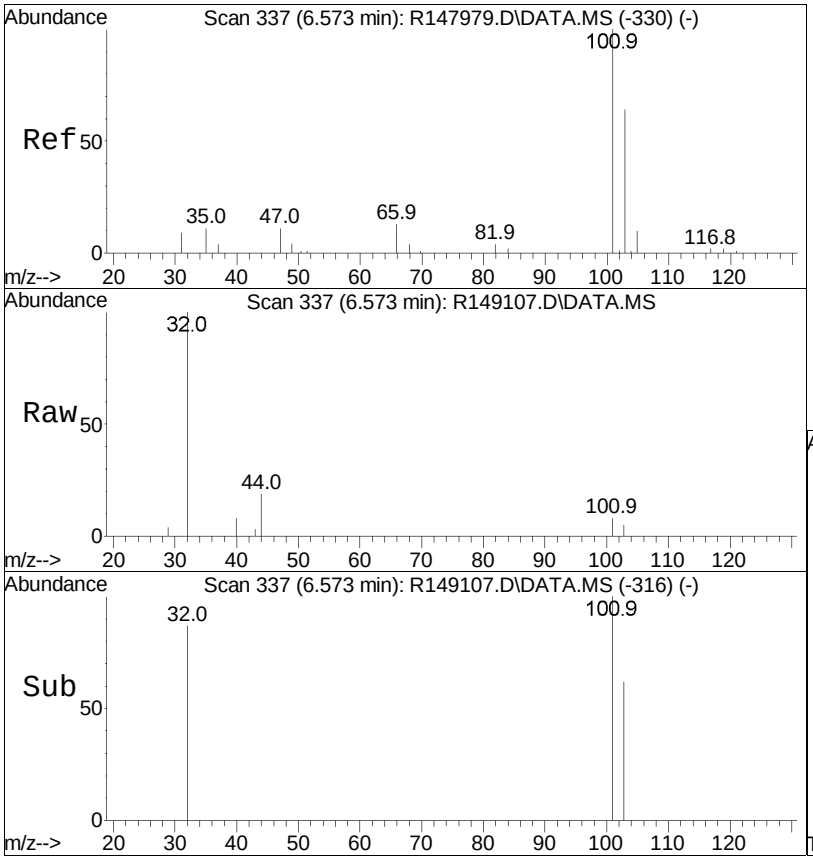


#19
acetone
Concen: 4.51 ppbV m
RT: 6.36 min Scan# 314
Delta R.T. 0.009 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 43 Resp: 74132

Ion	Ratio	Lower	Upper
43	100		
58	19.9	19.8	29.8
57	14.5	0.6	1.0#

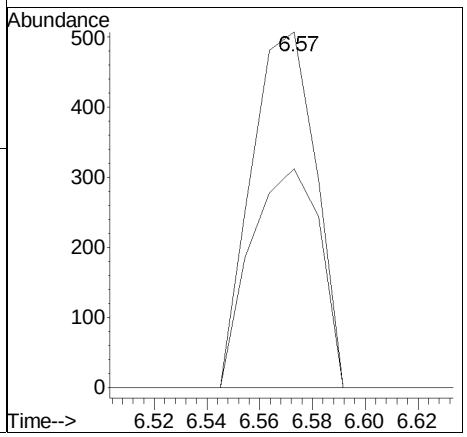


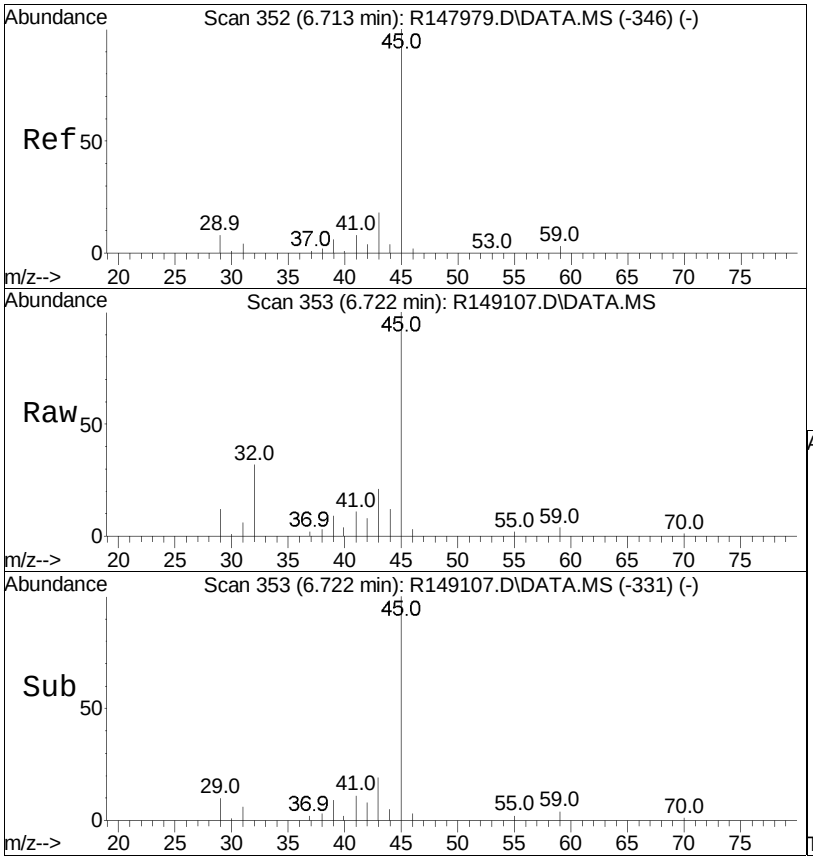


#21
trichlorofluoromethane
Concen: 0.05 ppbV
RT: 6.57 min Scan# 337
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion:101 Resp: 857

Ion	Ratio	Lower	Upper
101	100		
103	61.5	51.0	76.4

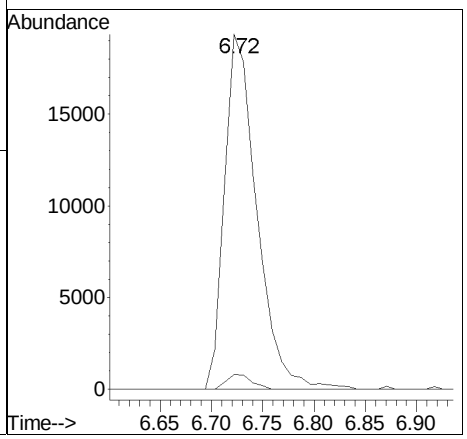


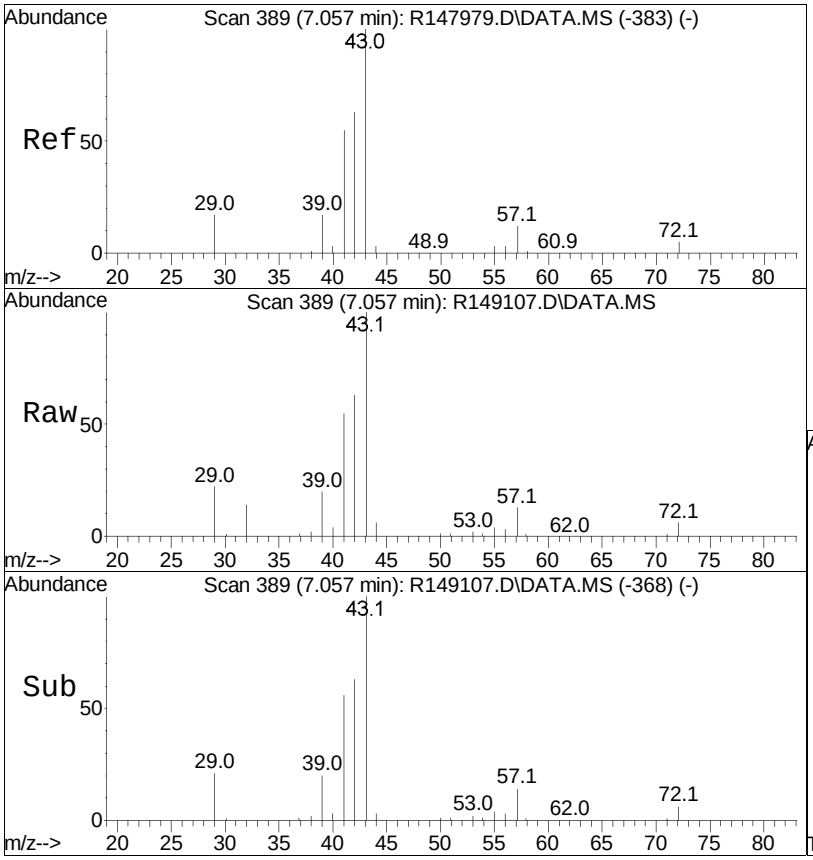


#22
isopropyl alcohol
Concen: 2.49 ppbV
RT: 6.72 min Scan# 353
Delta R.T. 0.009 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 45 Resp: 42608

Ion	Ratio	Lower	Upper
45	100		
59	4.2	2.7	4.1#

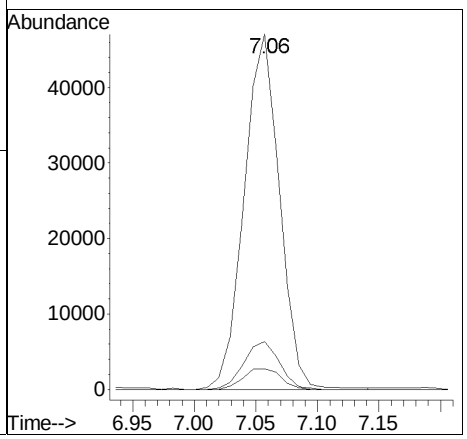


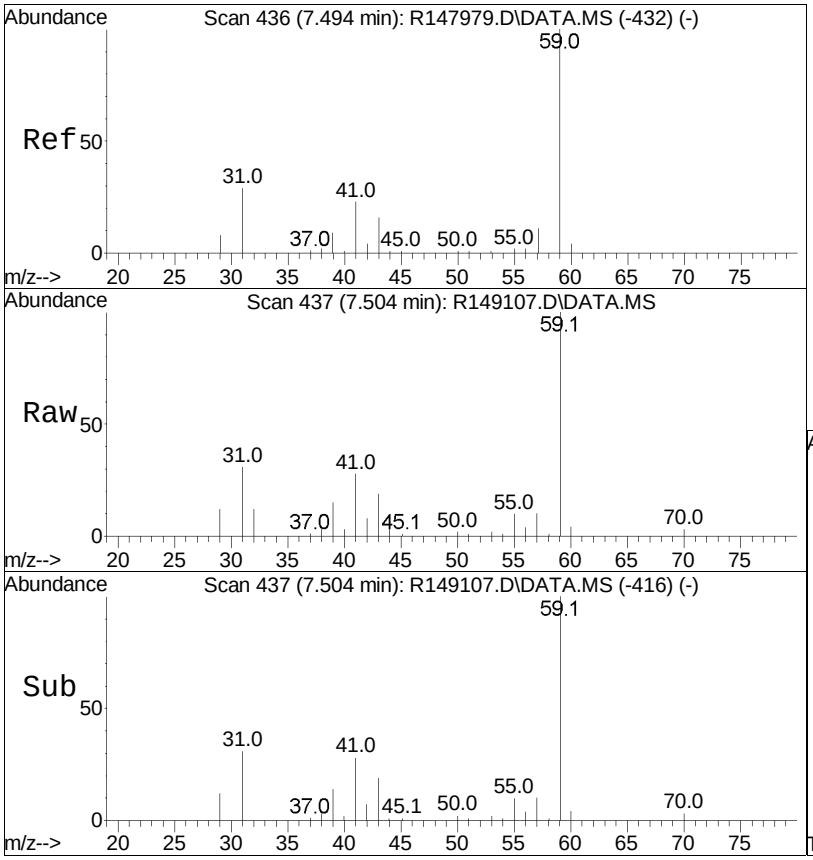


#24
pentane
Concen: 6.10 ppbV
RT: 7.06 min Scan# 389
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 43 Resp: 94173

Ion	Ratio	Lower	Upper
43	100		
57	13.5	9.8	14.8
72	5.8	5.4	8.2

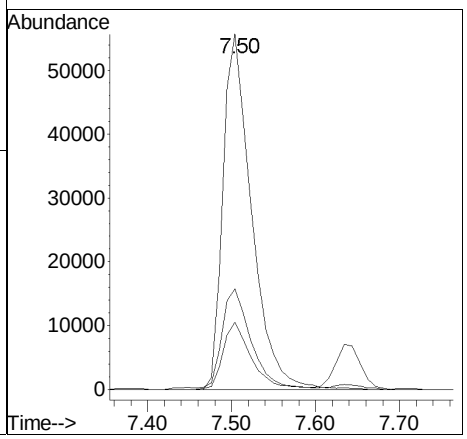


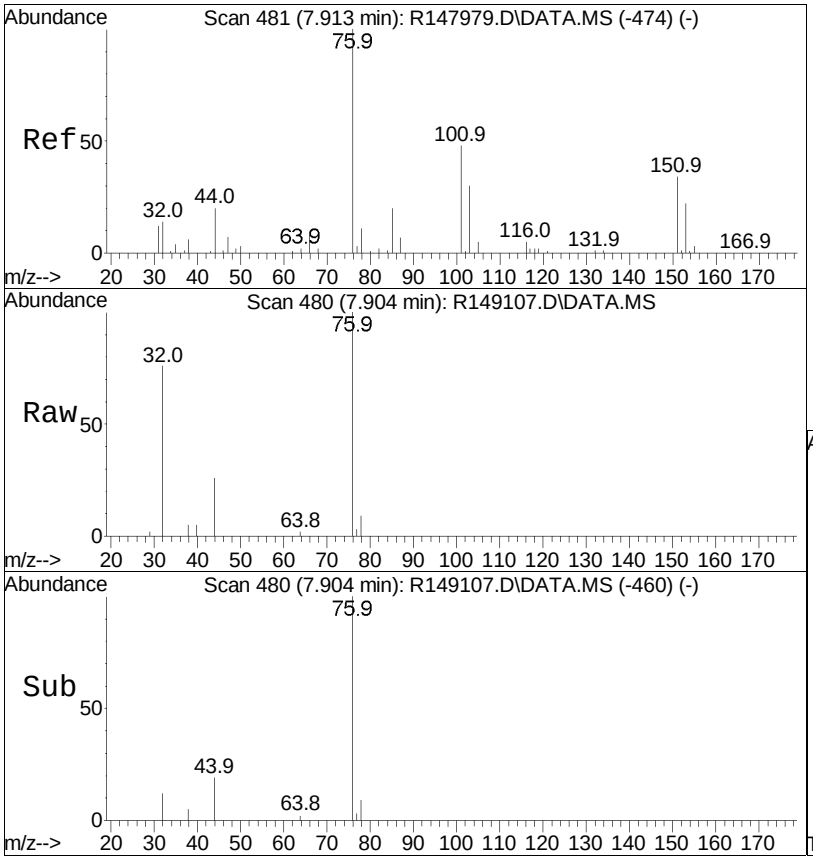


#27
tertiary butyl alcohol
Concen: 7.68 ppbV
RT: 7.50 min Scan# 437
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 59 Resp: 132109

Ion	Ratio	Lower	Upper
59	100		
41	28.3	18.9	28.3
43	18.9	13.7	20.5

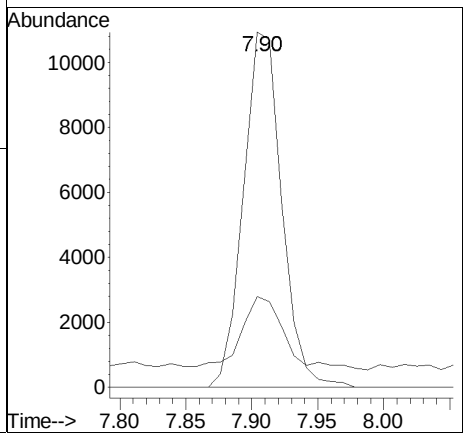


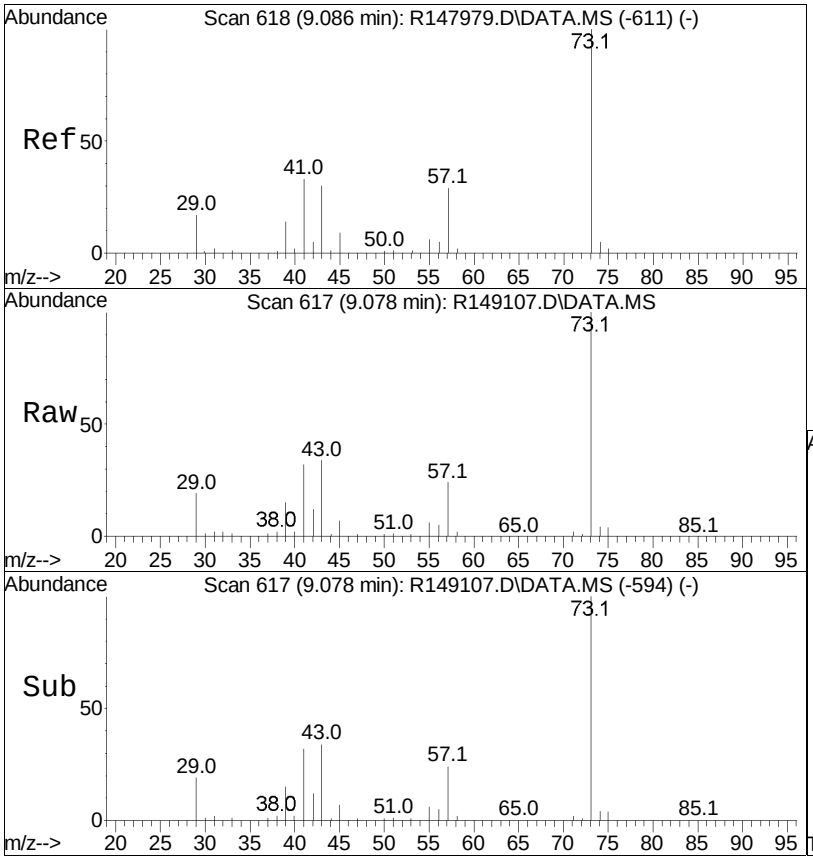


#30
carbon disulfide
Concen: 1.00 ppbV
RT: 7.90 min Scan# 480
Delta R.T. -0.009 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 76 Resp: 22160

Ion	Ratio	Lower	Upper
76	100		
44	25.6	16.3	24.5#

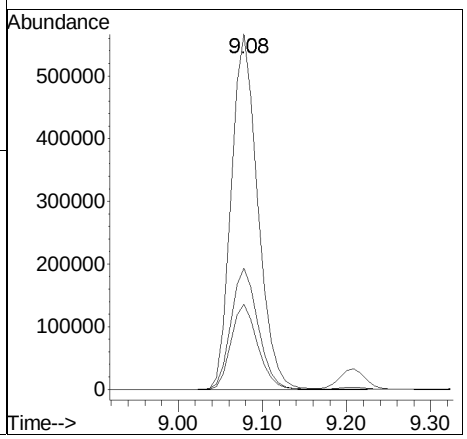


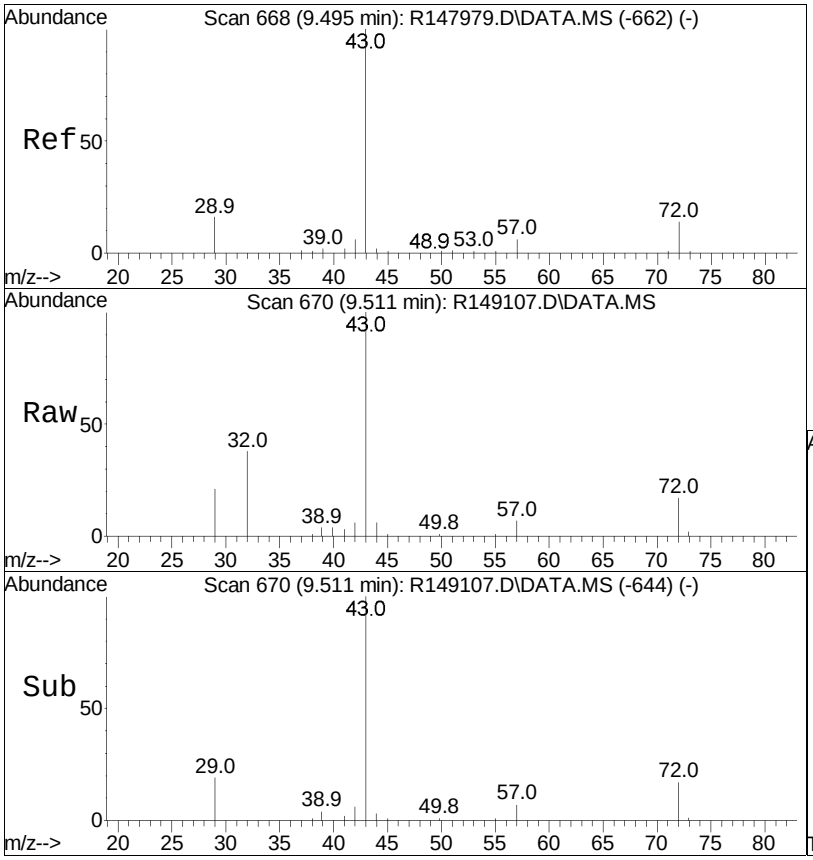


#34
MTBE
Concen: 57.40 ppbV
RT: 9.08 min Scan# 617
Delta R.T. -0.008 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 73 Resp: 1240689

Ion	Ratio	Lower	Upper
73	100		
57	24.0	19.1	28.7
43	34.1	23.0	34.4

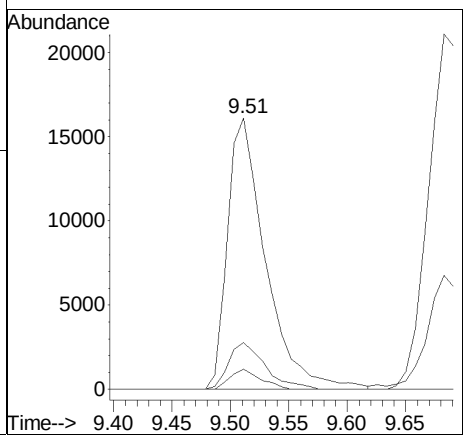


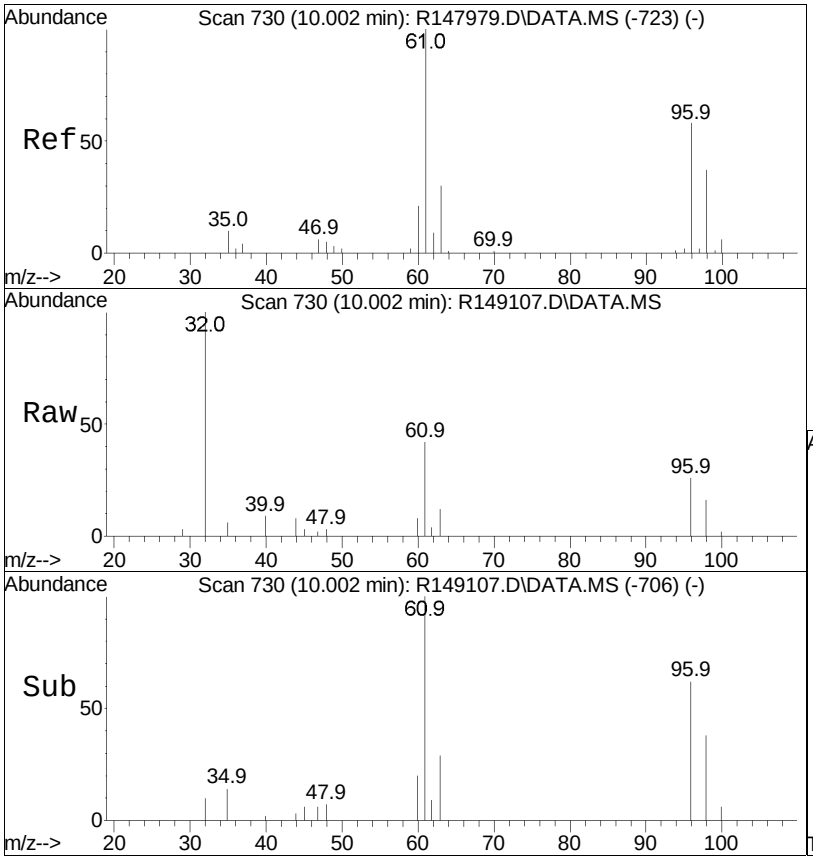


#36
2-butanone
Concen: 1.79 ppbV
RT: 9.51 min Scan# 670
Delta R.T. 0.016 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 43 Resp: 36589

Ion	Ratio	Lower	Upper
43	100		
72	17.2	13.6	20.4
57	7.5	4.9	7.3#

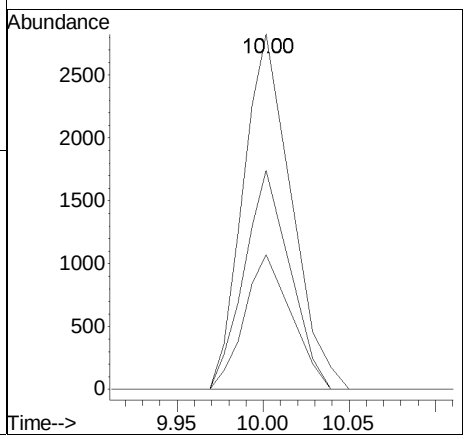


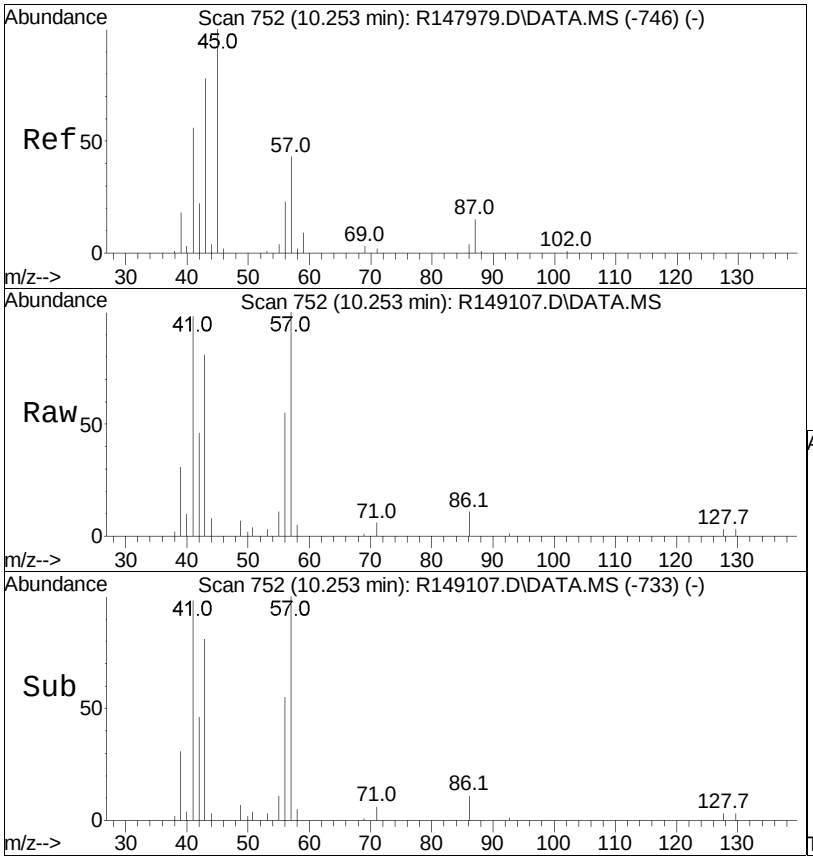


#37
cis-1,2-dichloroethene
Concen: 0.51 ppbV
RT: 10.00 min Scan# 730
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 61 Resp: 4875

Ion	Ratio	Lower	Upper
61	100		
96	61.6	50.1	75.1
98	37.9	32.5	48.7

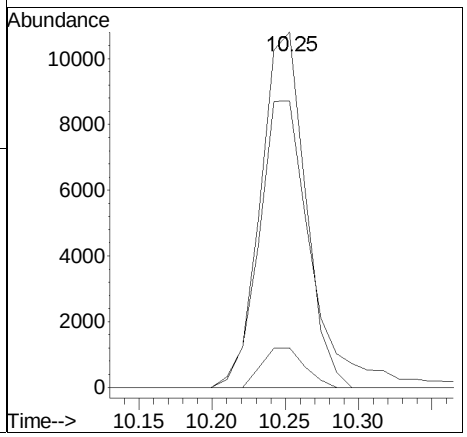


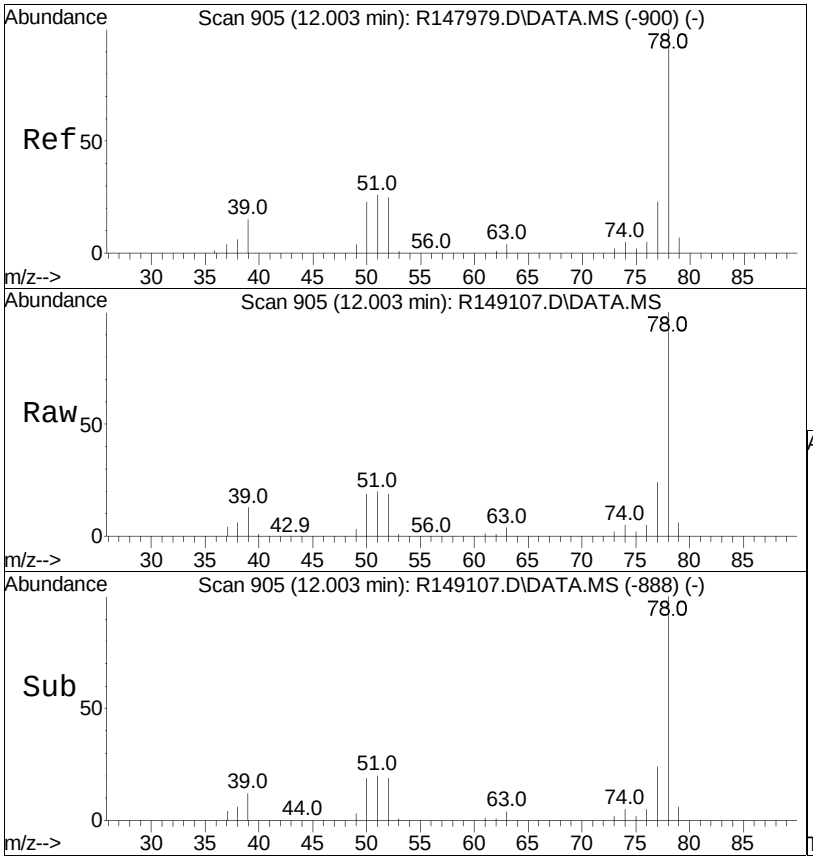


#44
hexane
Concen: 1.43 ppbV
RT: 10.25 min Scan# 752
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 57 Resp: 22940

Ion	Ratio	Lower	Upper
57	100		
43	80.7	142.3	213.5#
86	11.1	9.3	13.9

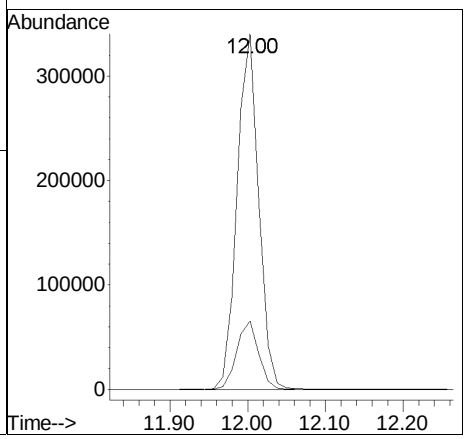


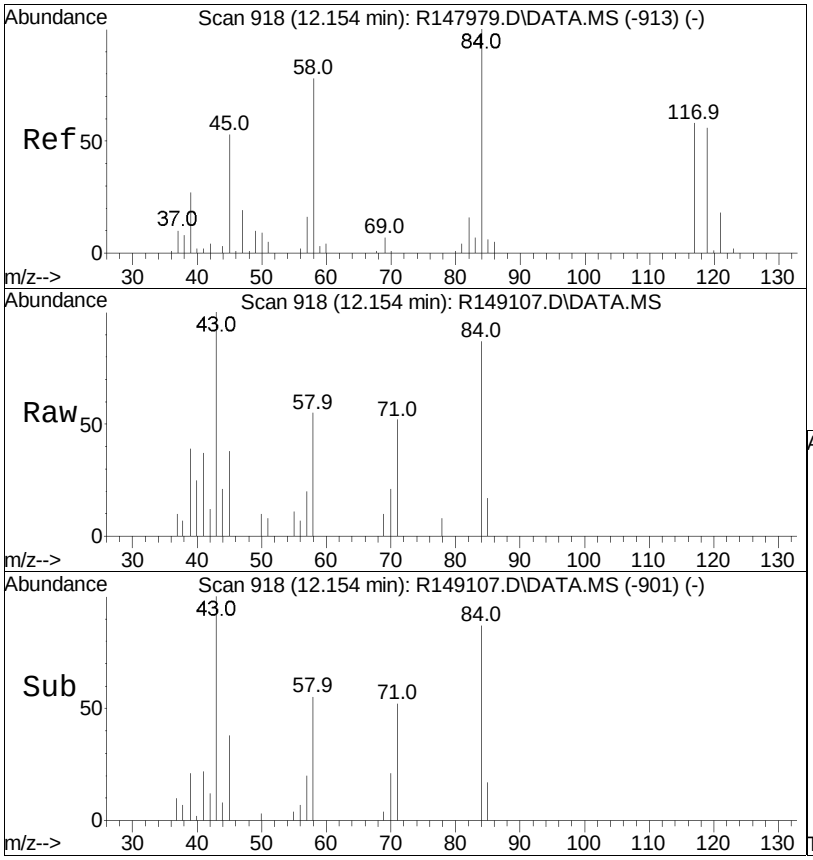


#50
benzene
Concen: 29.58 ppbV
RT: 12.00 min Scan# 905
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 78 Resp: 656546

Ion	Ratio	Lower	Upper
78	100		
52	19.3	15.2	22.8

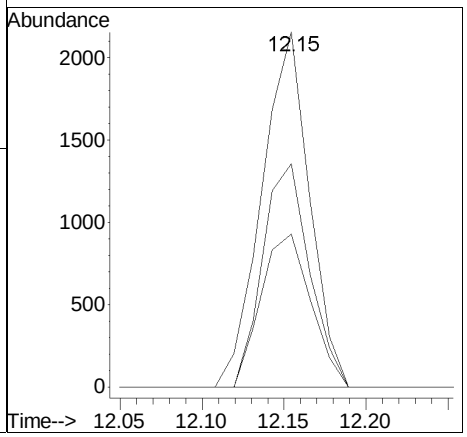


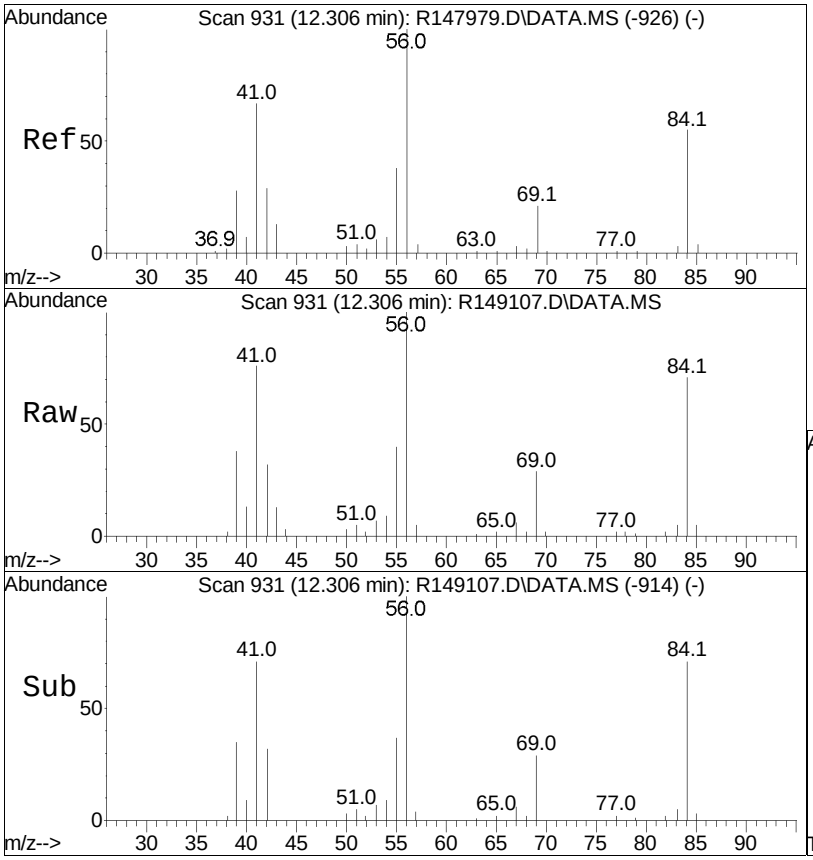


#51
thiophene
Concen: 0.23 ppbV
RT: 12.15 min Scan# 918
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 84 Resp: 4373

Ion	Ratio	Lower	Upper
84	100		
58	62.9	48.7	73.1
45	43.1	34.4	51.6

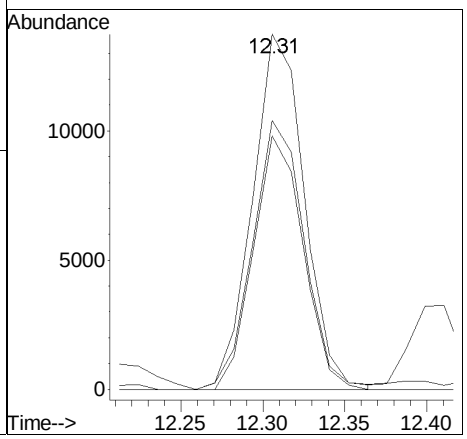


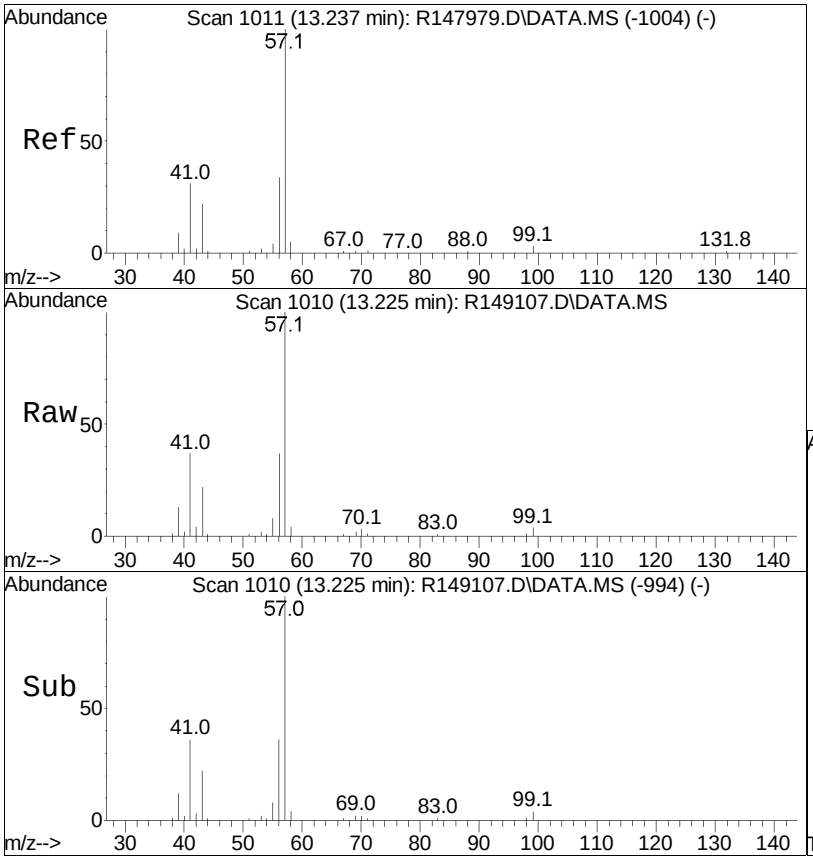


#53
cyclohexane
Concen: 2.30 ppbV
RT: 12.31 min Scan# 931
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 56 Resp: 30204

Ion	Ratio	Lower	Upper
56	100		
84	71.3	56.5	84.7
41	75.7	57.5	86.3

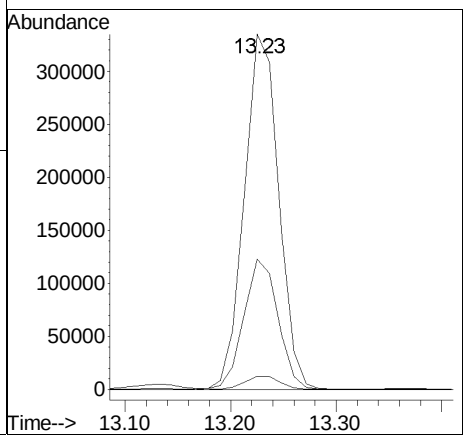


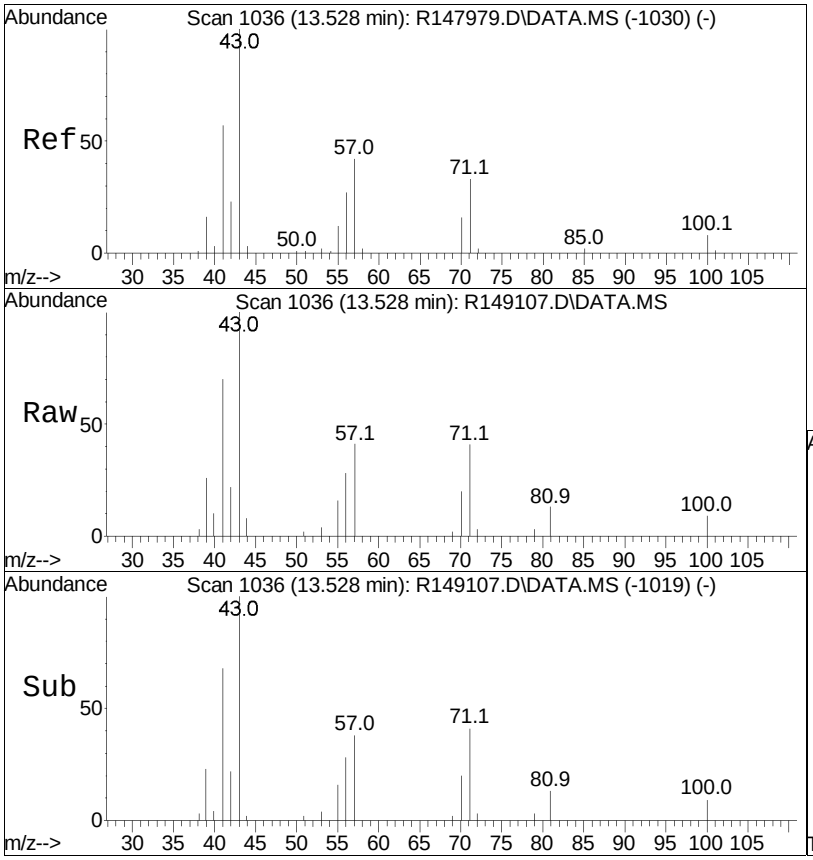


#60
2,2,4-trimethylpentane
Concen: 17.62 ppbV
RT: 13.23 min Scan# 1010
Delta R.T. -0.012 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 57 Resp: 759572

Ion	Ratio	Lower	Upper
57	100		
99	3.7	3.0	4.6
41	36.7	26.8	40.2

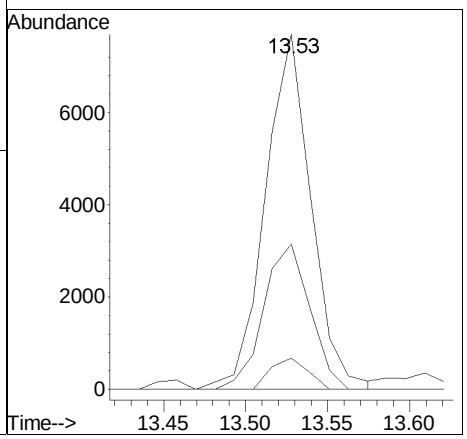


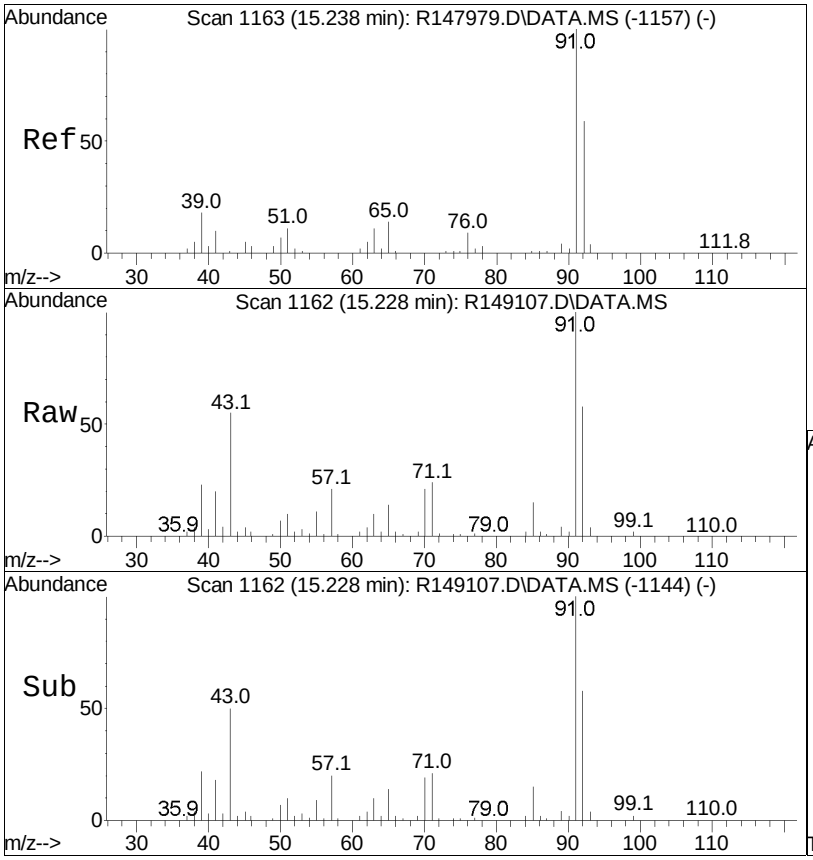


#62
heptane
Concen: 0.81 ppbV
RT: 13.53 min Scan# 1036
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 43 Resp: 14962

Ion	Ratio	Lower	Upper
43	100		
57	40.9	34.2	51.2
100	8.8	7.9	11.9

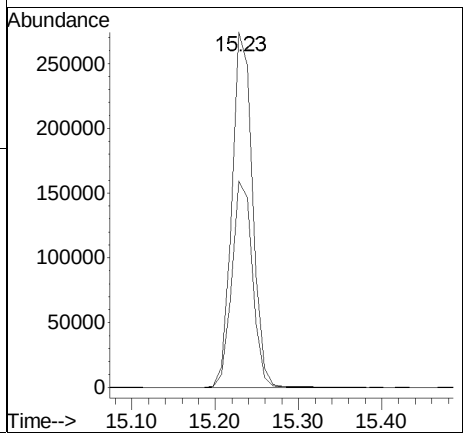


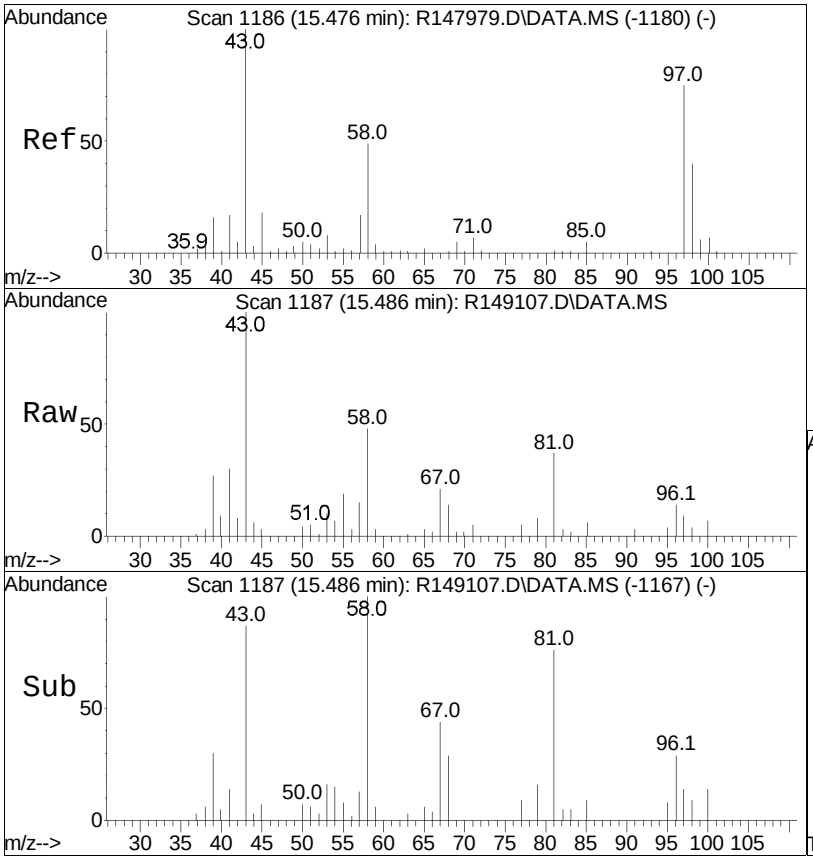


#68
toluene
Concen: 16.70 ppbV
RT: 15.23 min Scan# 1162
Delta R.T. -0.010 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 91 Resp: 470464

Ion	Ratio	Lower	Upper
91	100		
92	58.1	45.8	68.6

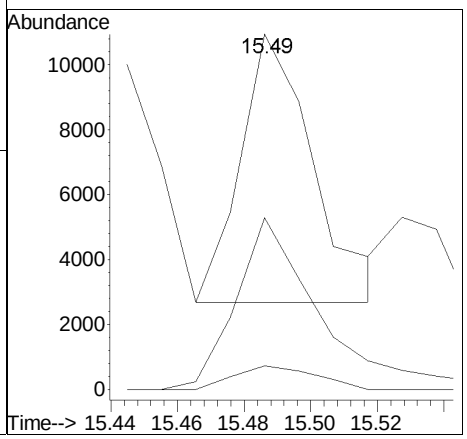


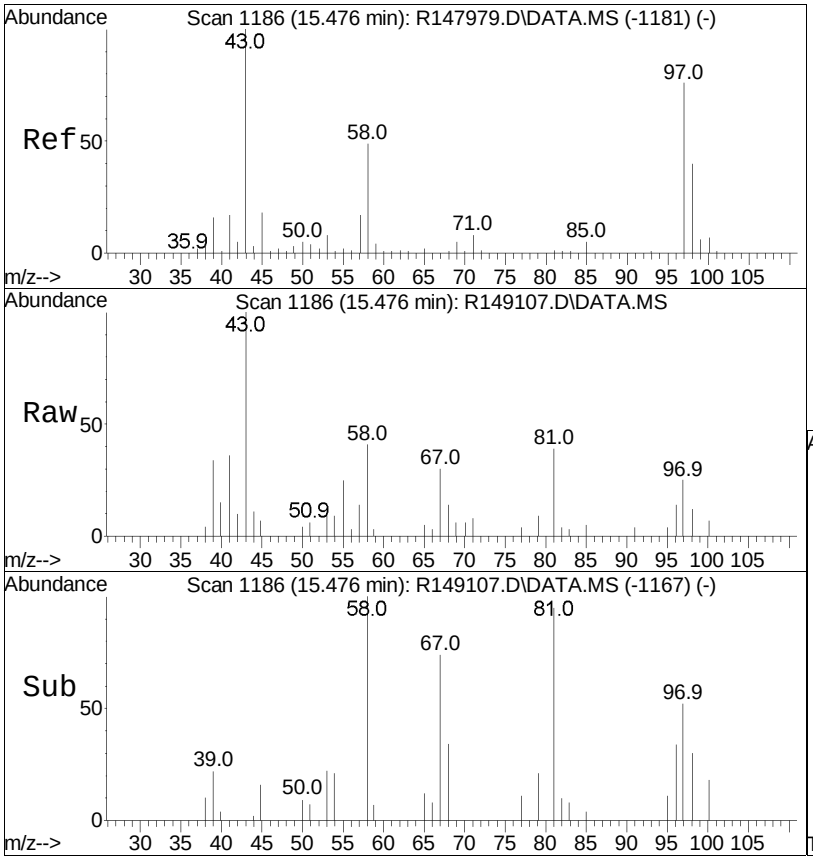


#72
2-hexanone
Concen: 0.48 ppbV
RT: 15.49 min Scan# 1187
Delta R.T. 0.010 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 43 Resp: 12582

Ion	Ratio	Lower	Upper
43	100		
58	48.3	39.7	59.5
100	6.6	6.9	10.3#

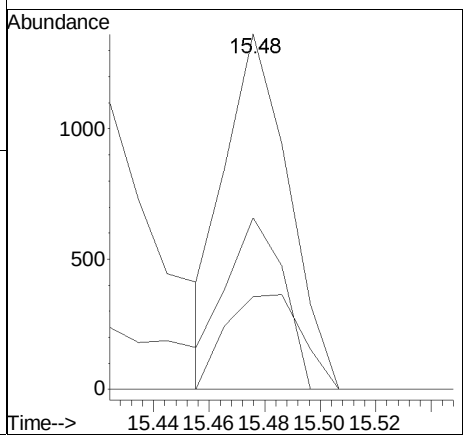


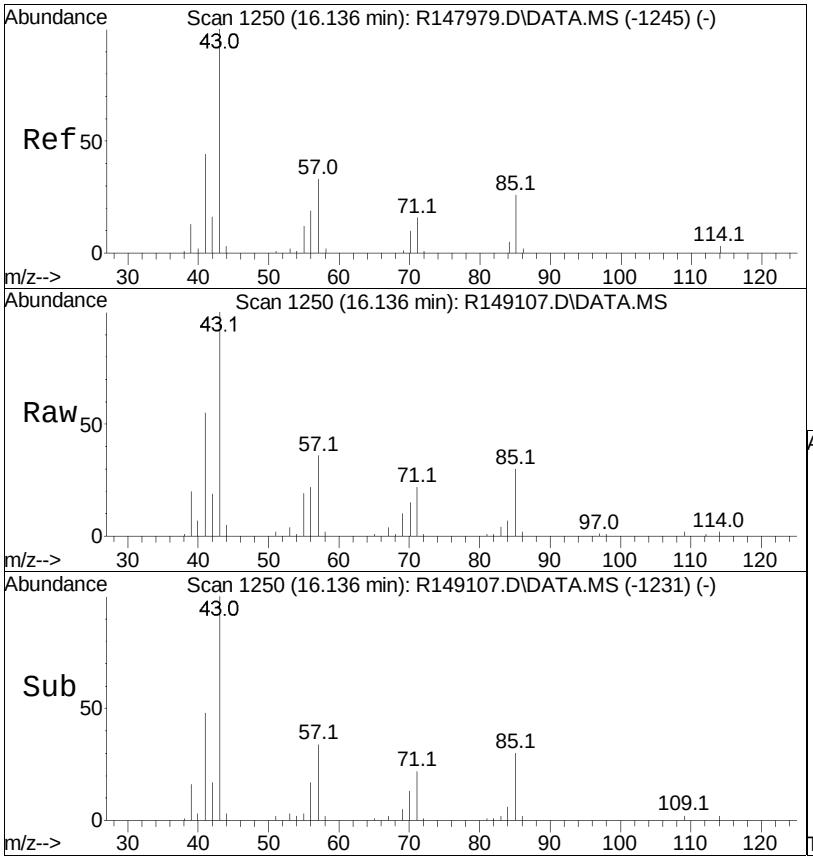


#73
3-methylthiophene
Concen: 0.07 ppbV
RT: 15.48 min Scan# 1186
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 97 Resp: 2156

Ion	Ratio	Lower	Upper
97	100		
98	48.3	43.8	65.6
45	26.1	17.6	26.4

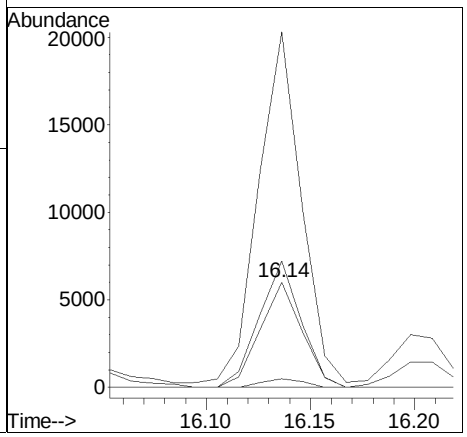


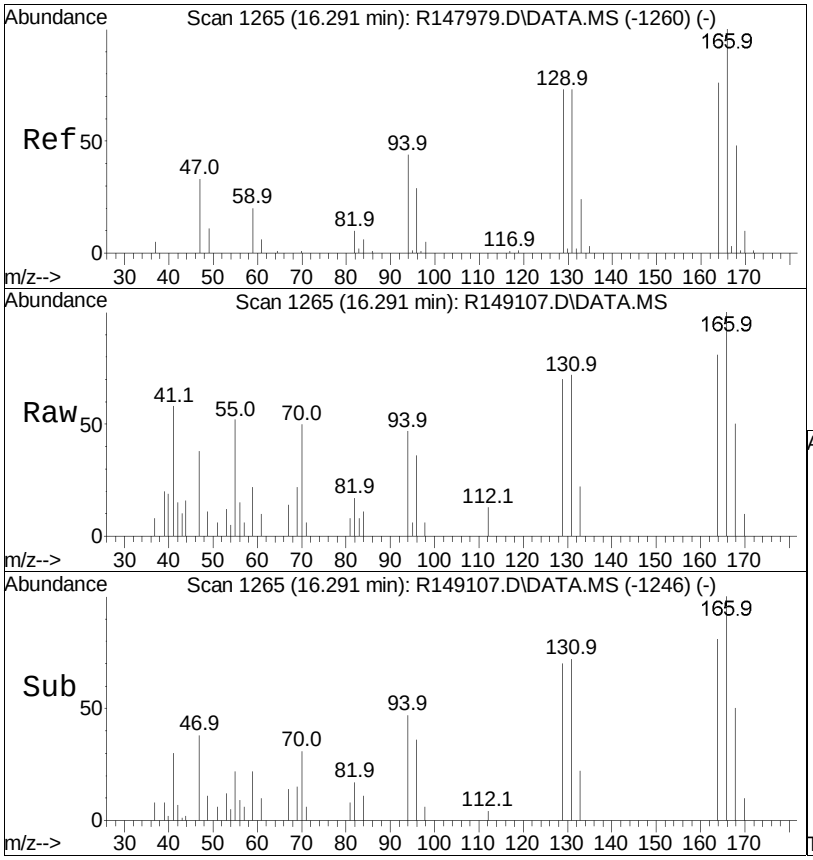


#77
octane
Concen: 1.00 ppbV
RT: 16.14 min Scan# 1250
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 85 Resp: 8413

Ion	Ratio	Lower	Upper
85	100		
57	120.2	84.9	127.3
114	8.3	8.2	12.2
43	338.1	257.0	385.4

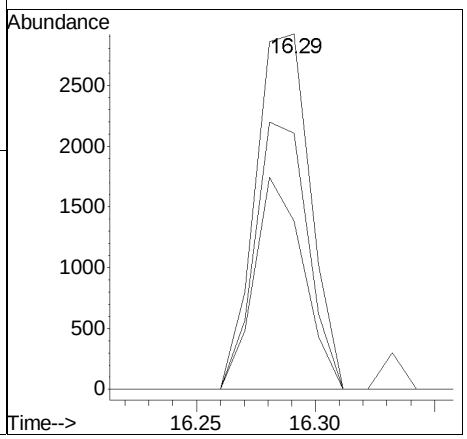


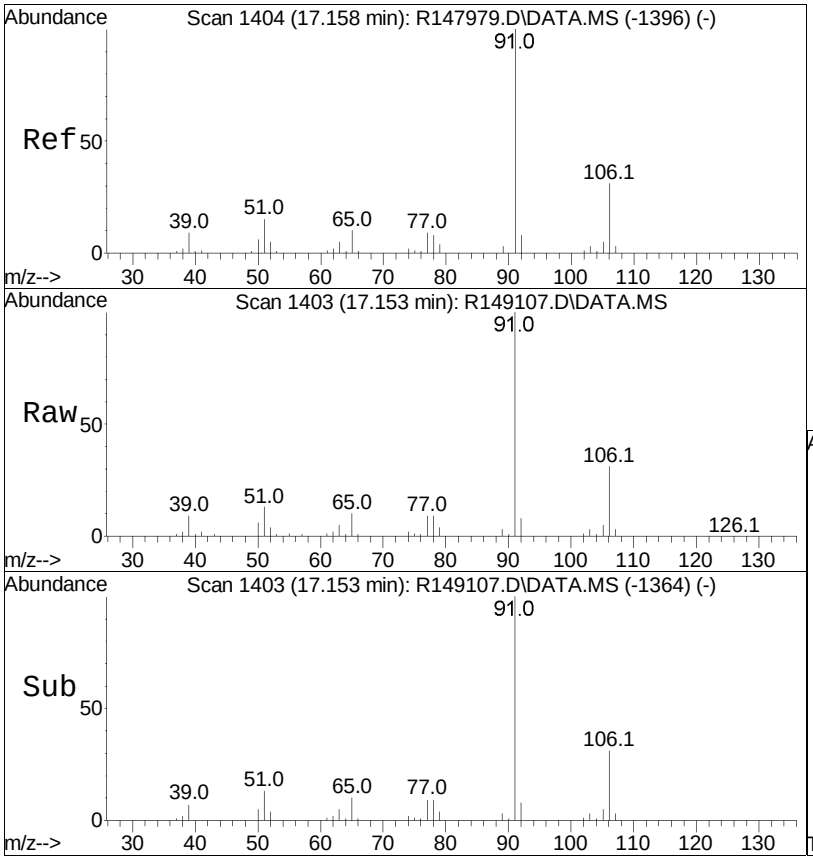


#78
tetrachloroethene
Concen: 0.33 ppbV
RT: 16.29 min Scan# 1265
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion:166 Resp: 4709

Ion	Ratio	Lower	Upper
166	100		
131	72.1	53.0	79.4
94	47.4	36.6	55.0

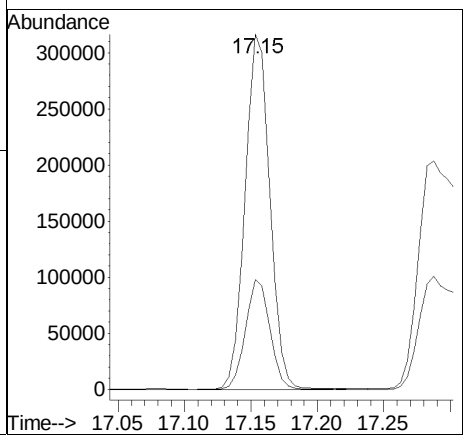


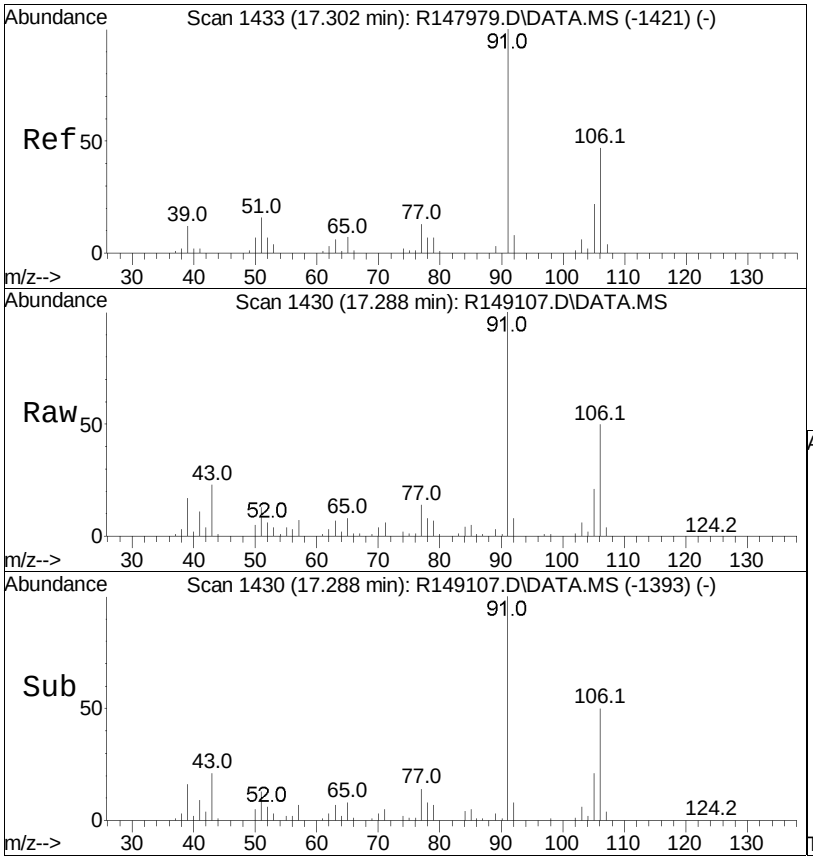


#81
ethylbenzene
Concen: 11.13 ppbV
RT: 17.15 min Scan# 1403
Delta R.T. -0.005 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 91 Resp: 411332

Ion	Ratio	Lower	Upper
91	100		
106	30.9	24.5	36.7

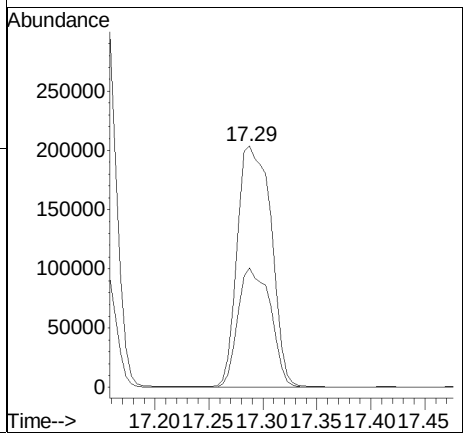


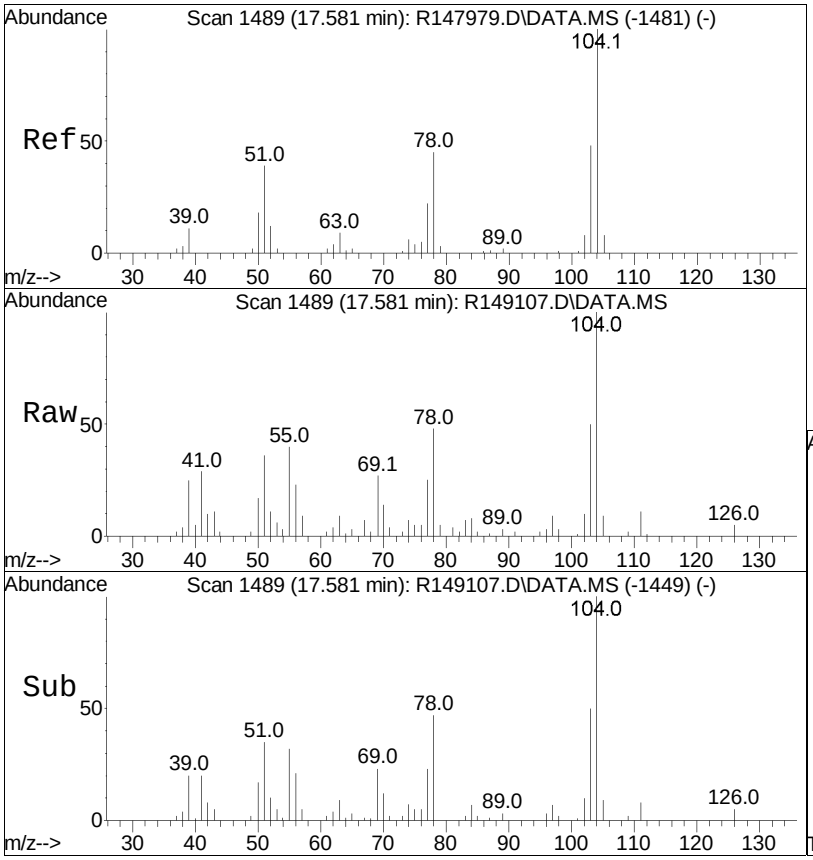


#83
m+p-xylene
Concen: 15.04 ppbV
RT: 17.29 min Scan# 1430
Delta R.T. -0.015 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 91 Resp: 443415

Ion	Ratio	Lower	Upper
91	100		
106	49.5	38.8	58.2

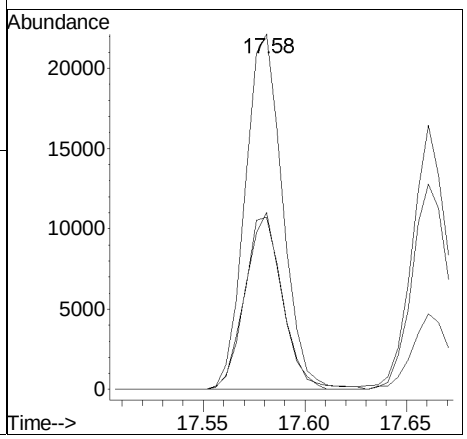


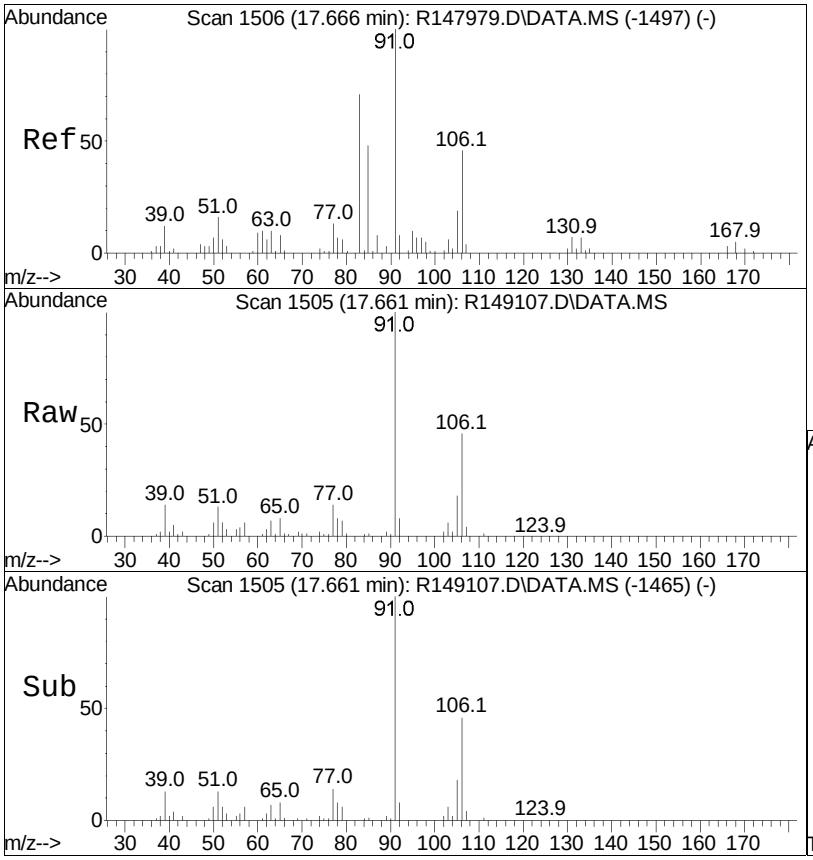


#85
styrene
Concen: 1.34 ppbV
RT: 17.58 min Scan# 1489
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion:104 Resp: 28391

Ion	Ratio	Lower	Upper
104	100		
103	49.7	38.5	57.7
78	48.4	38.8	58.2

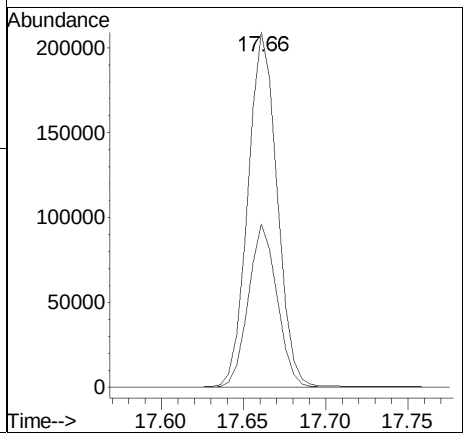


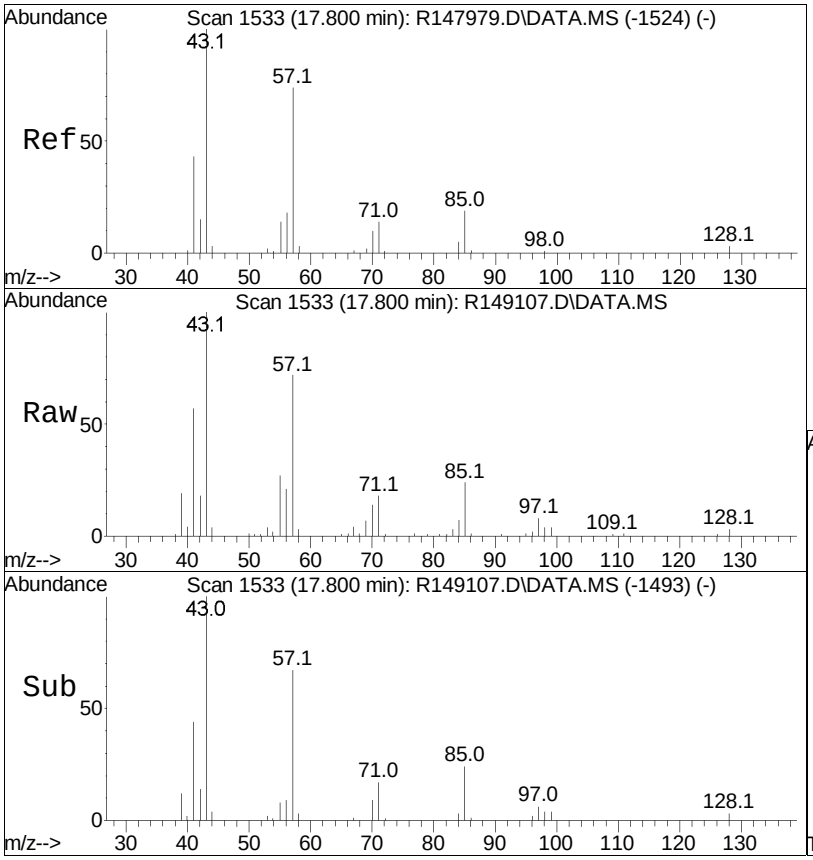


#87
o-xylene
Concen: 8.46 ppbV
RT: 17.66 min Scan# 1505
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 91 Resp: 257850

Ion	Ratio	Lower	Upper
91	100		
106	46.0	36.5	54.7

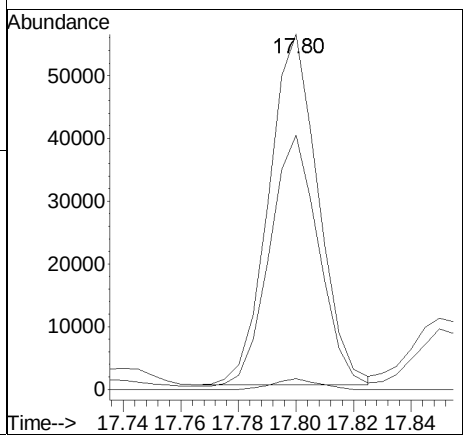


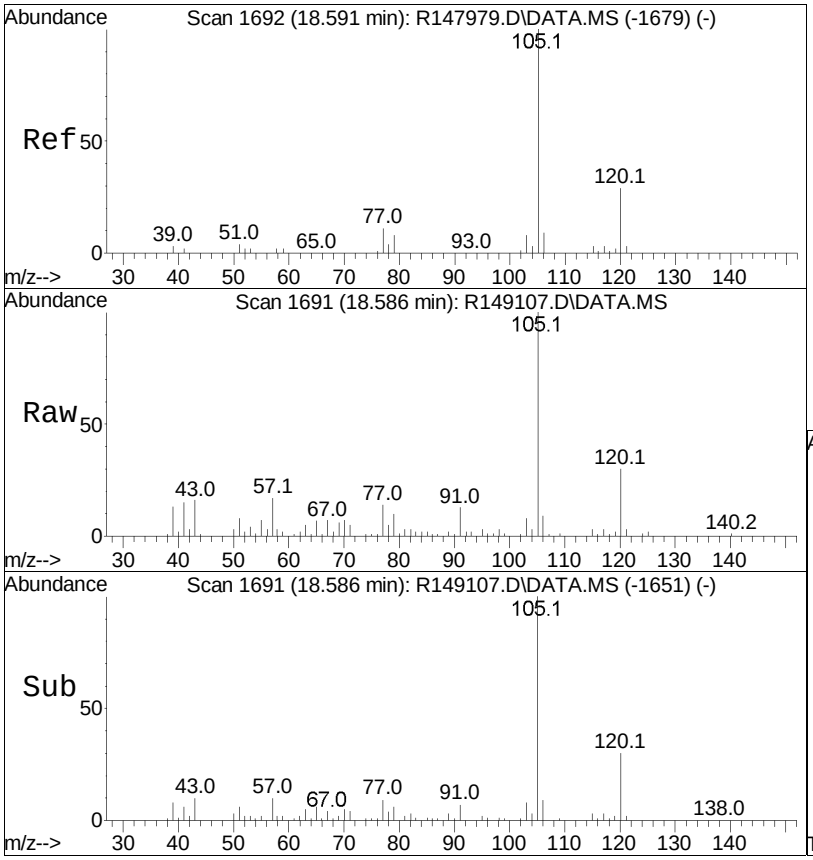


#89
nonane
Concen: 2.33 ppbV
RT: 17.80 min Scan# 1533
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 43 Resp: 66660

Ion	Ratio	Lower	Upper
43	100		
57	71.6	58.8	88.2
128	3.0	2.3	3.5

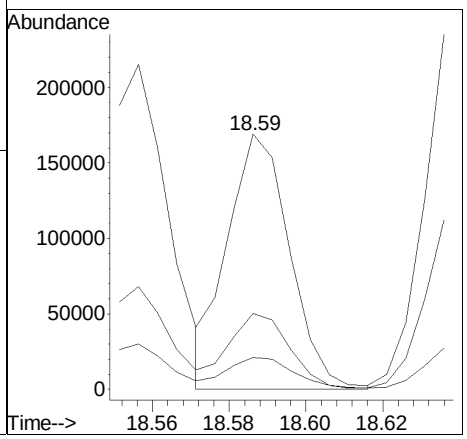


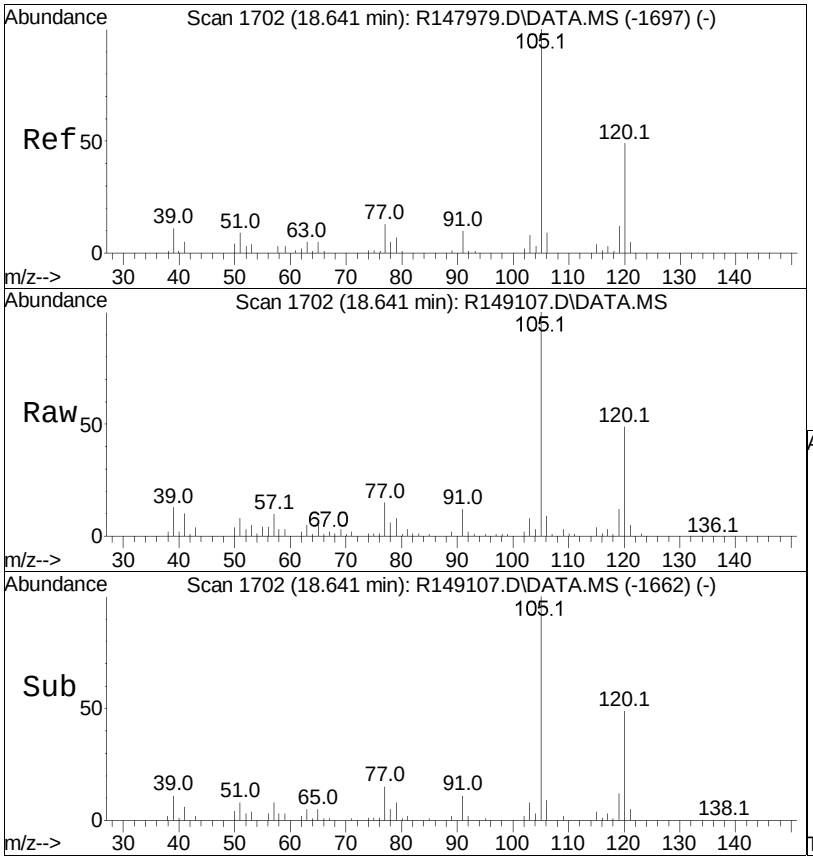


#96
4-ethyl toluene
Concen: 4.40 ppbV
RT: 18.59 min Scan# 1691
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion:105 Resp: 190372

Ion	Ratio	Lower	Upper
105	100		
120	29.7	23.3	34.9
91	12.5	9.6	14.4

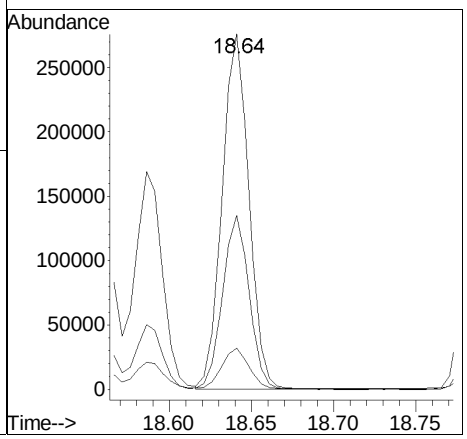


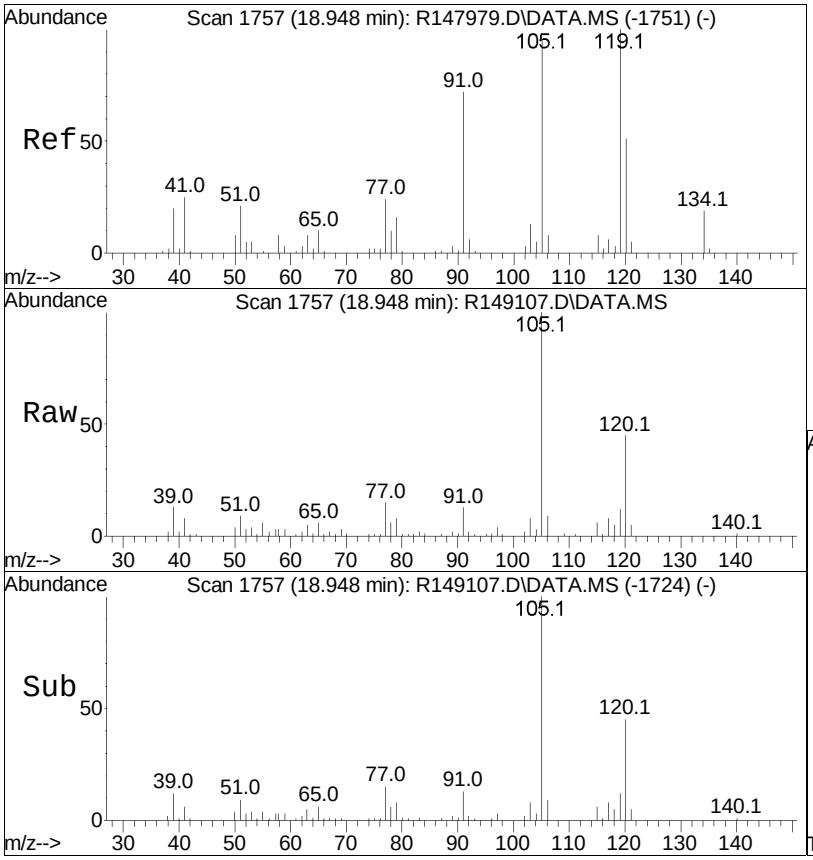


#97
1,3,5-trimethylbenzene
Concen: 9.13 ppbV
RT: 18.64 min Scan# 1702
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion:105 Resp: 311932

Ion	Ratio	Lower	Upper
105	100		
120	48.9	38.5	57.7
91	11.6	9.2	13.8

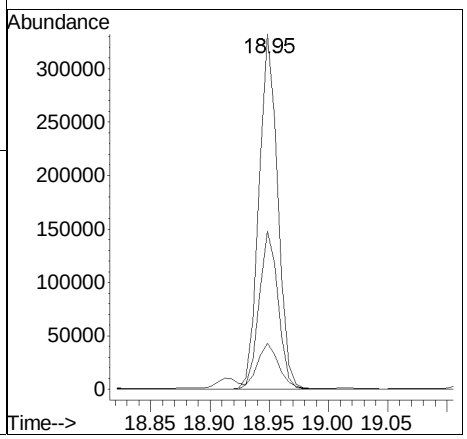


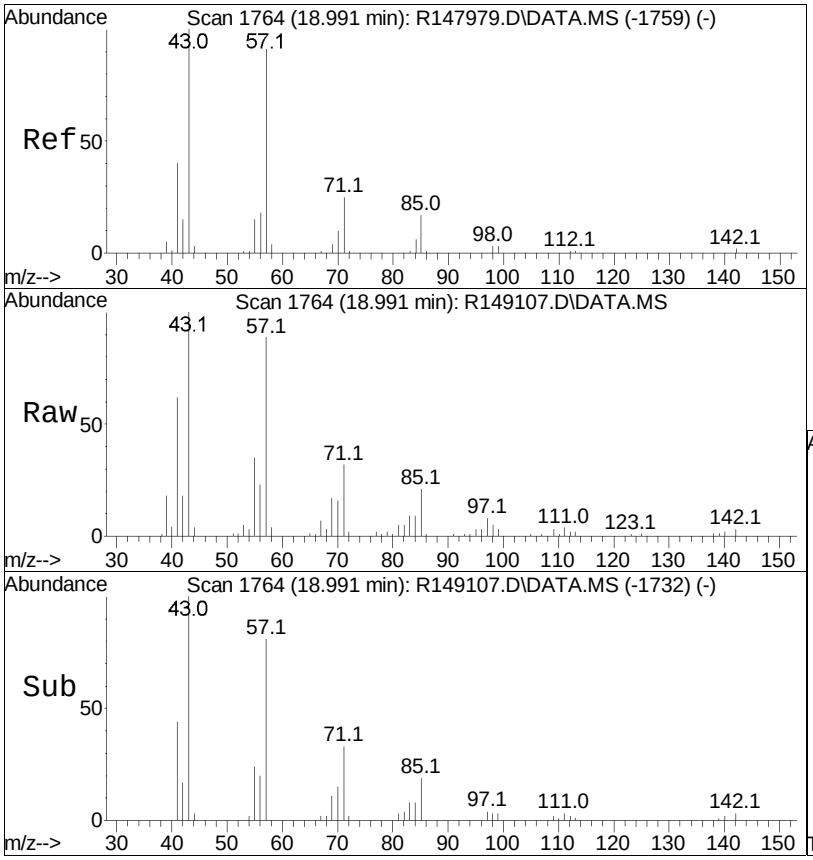


#99
1,2,4-trimethylbenzene
Concen: 10.67 ppbV
RT: 18.95 min Scan# 1757
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion:105 Resp: 366083

Ion	Ratio	Lower	Upper
105	100		
120	44.6	43.0	64.4
91	13.0	63.7	95.5#

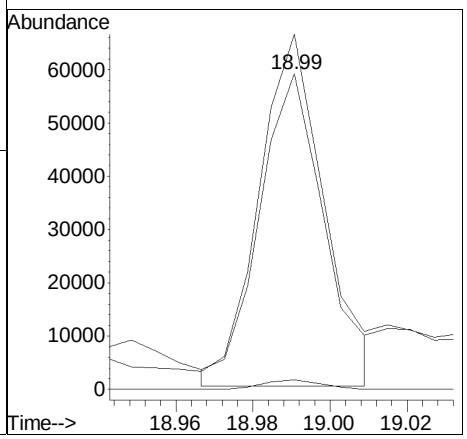


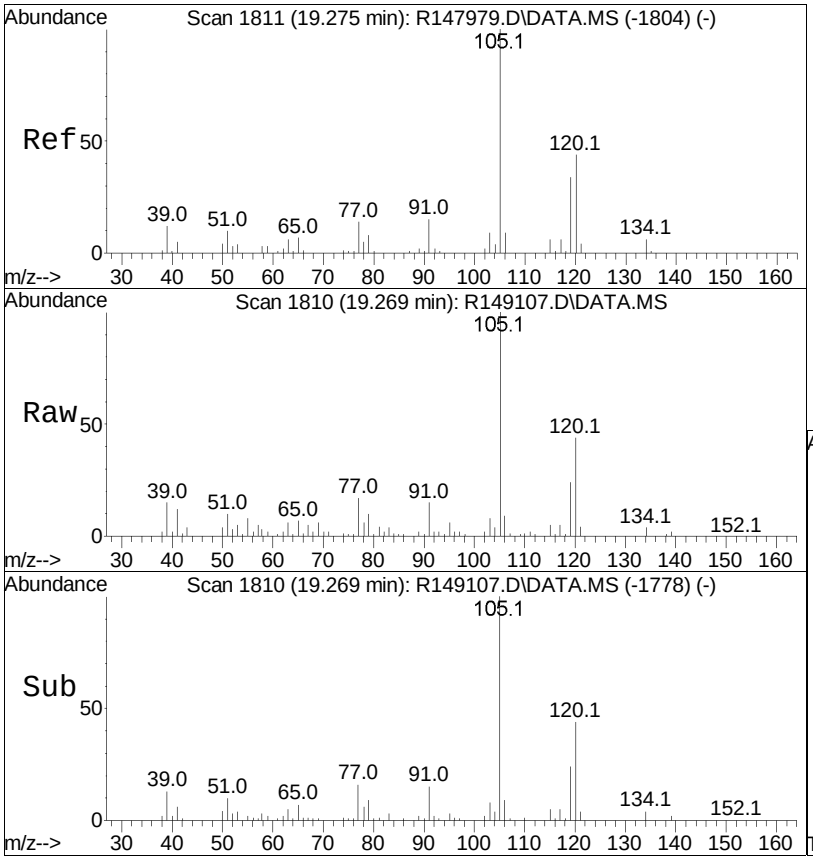


#100
decane
Concen: 2.57 ppbV m
RT: 18.99 min Scan# 1764
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 57 Resp: 69274

Ion	Ratio	Lower	Upper
57	100		
43	112.5	88.1	132.1
142	3.0	2.4	3.6

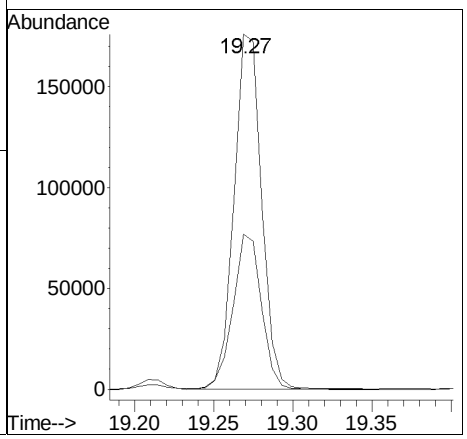


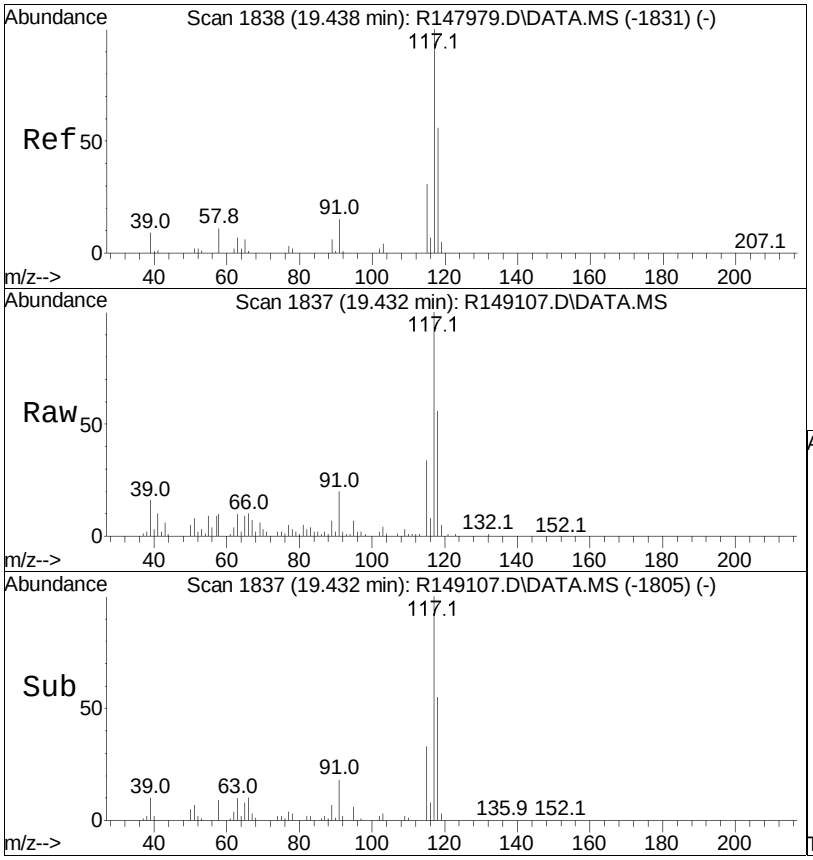


#105
1,2,3-trimethylbenzene
Concen: 5.68 ppbV
RT: 19.27 min Scan# 1810
Delta R.T. -0.006 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion:105 Resp: 212728

Ion	Ratio	Lower	Upper
105	100		
120	43.7	35.0	52.6

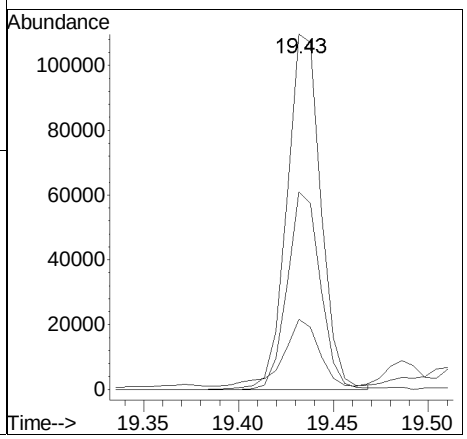


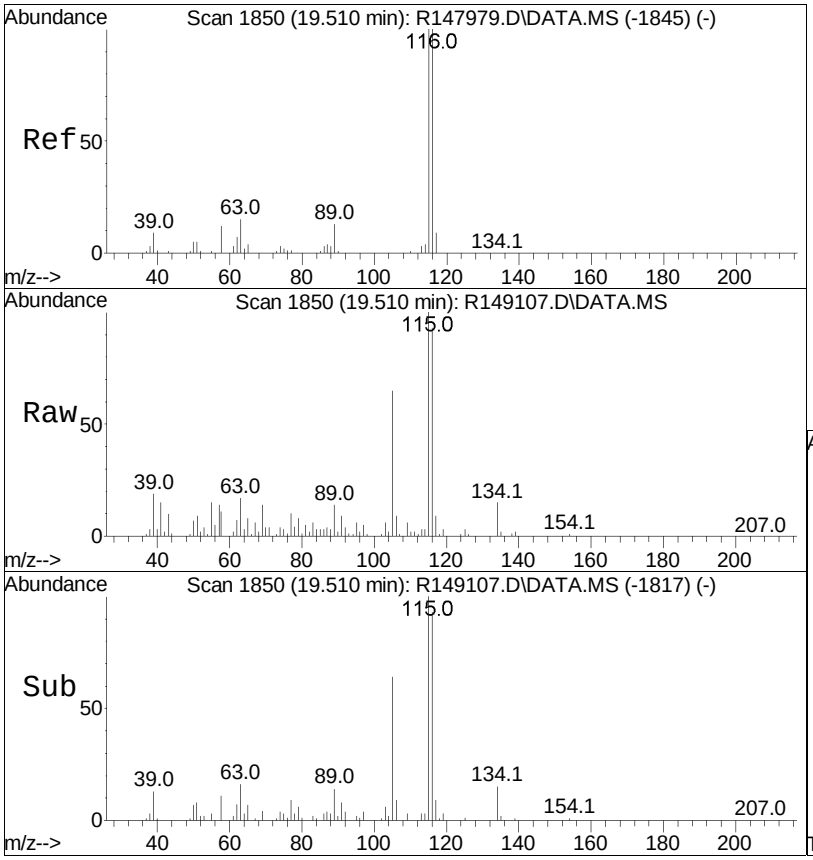


#109
indan
Concen: 3.34 ppbV
RT: 19.43 min Scan# 1837
Delta R.T. -0.006 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion:117 Resp: 136474

Ion	Ratio	Lower	Upper
117	100		
118	55.7	44.2	66.2
91	19.7	13.0	19.4#

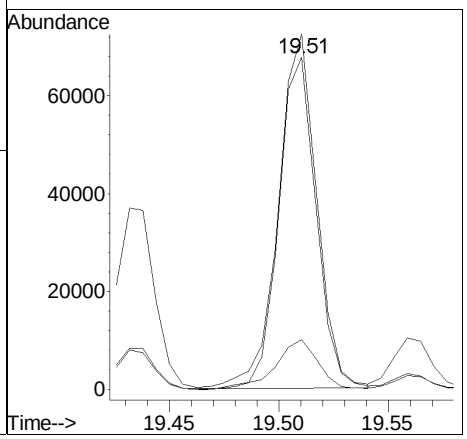


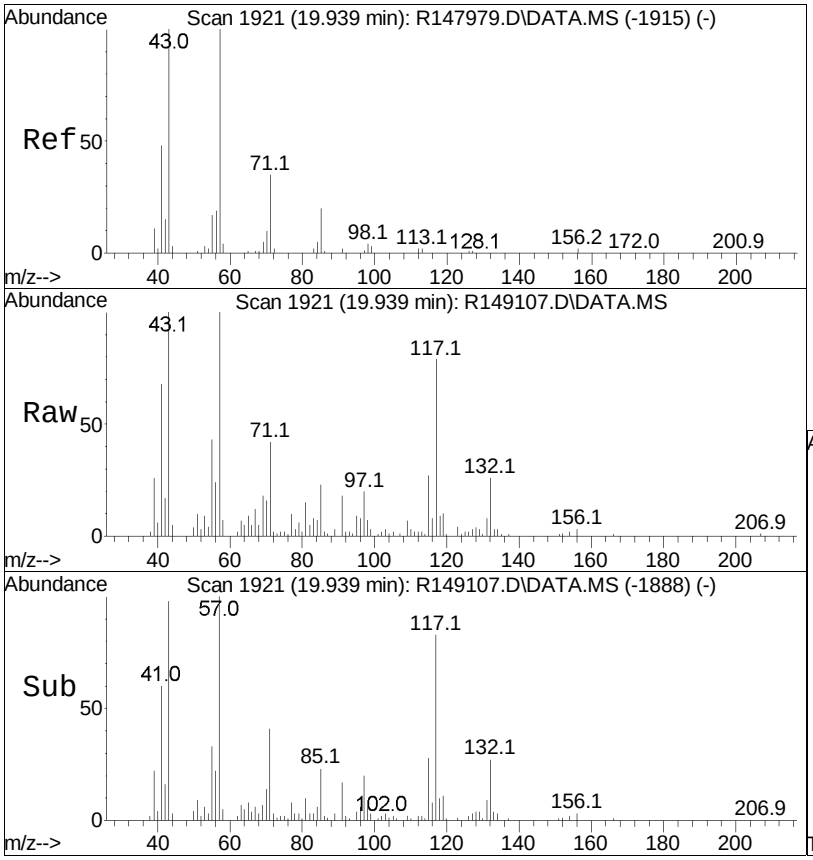


#110
indene
Concen: 3.20 ppbV
RT: 19.51 min Scan# 1850
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion:115 Resp: 88296

Ion	Ratio	Lower	Upper
115	100		
116	93.4	75.1	112.7
89	14.0	10.5	15.7

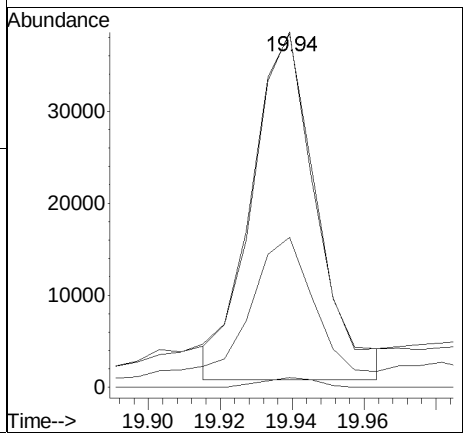


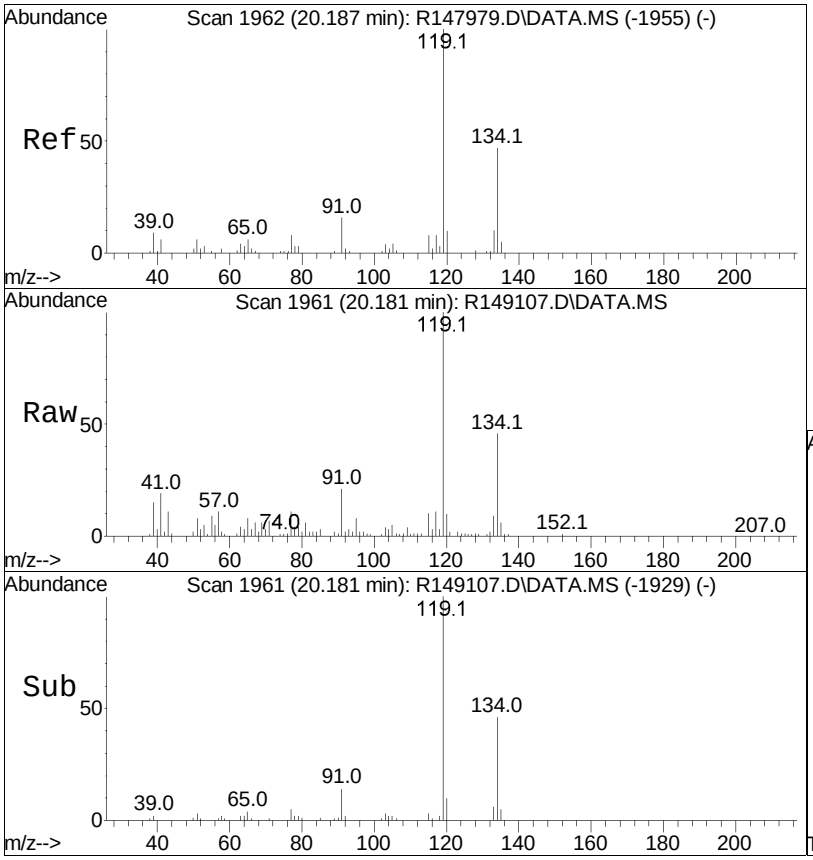


#112
undecane
Concen: 1.57 ppbV m
RT: 19.94 min Scan# 1921
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 57 Resp: 46646

Ion	Ratio	Lower	Upper
57	100		
43	99.5	81.6	122.4
71	42.2	35.4	53.2
156	2.8	2.2	3.4

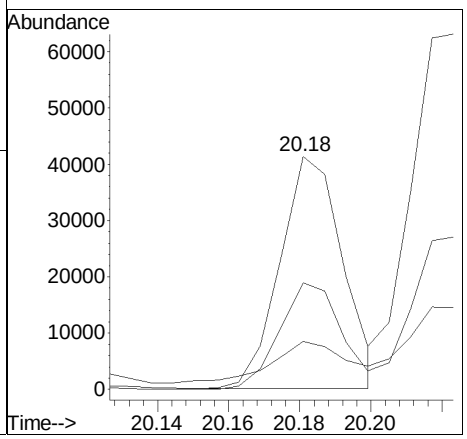


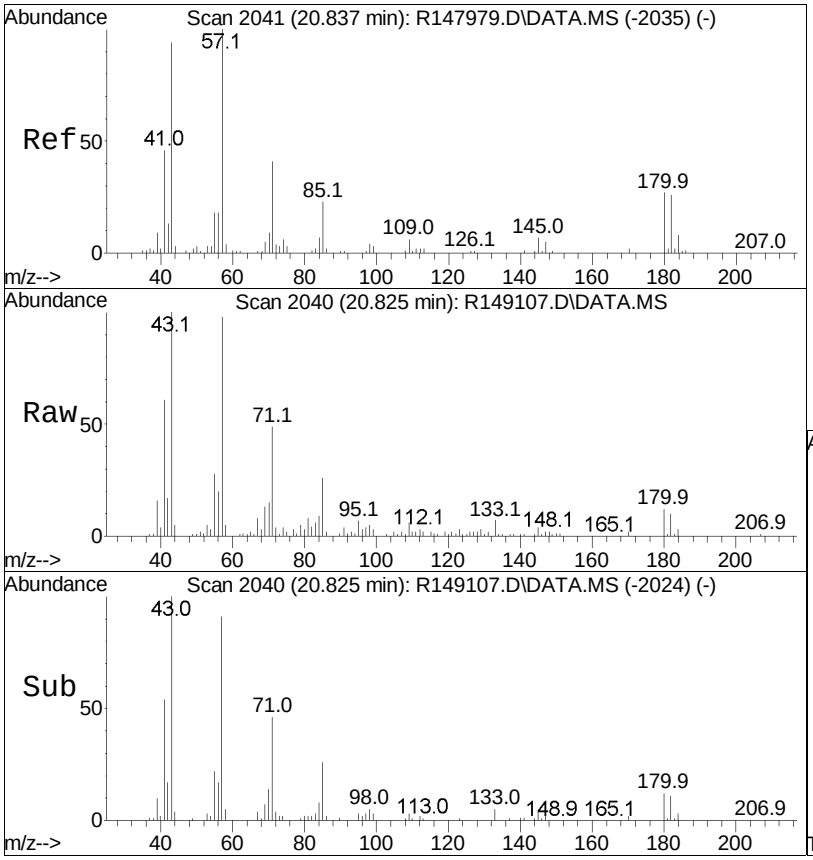


#113
1,2,4,5-tetramethylbenzene
Concen: 0.94 ppbV
RT: 20.18 min Scan# 1961
Delta R.T. -0.006 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion:119 Resp: 50447

Ion	Ratio	Lower	Upper
119	100		
134	45.8	36.2	54.2
91	20.6	13.7	20.5#

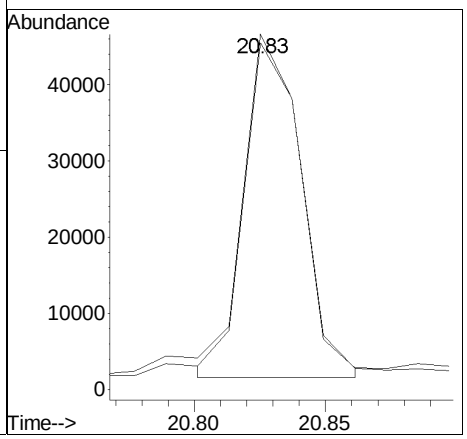


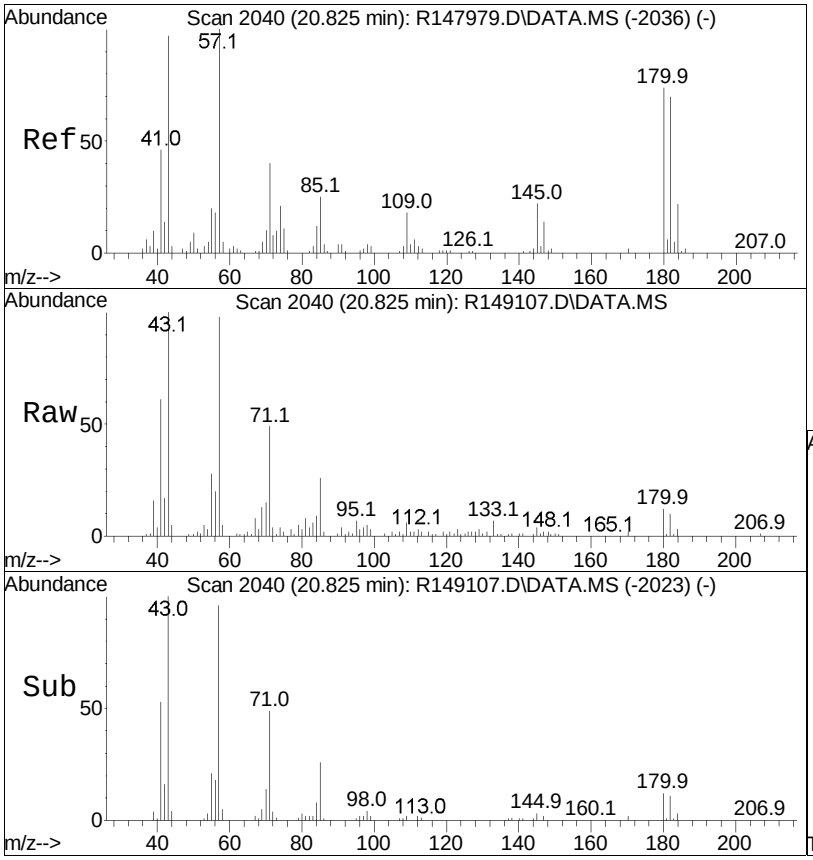


#114
dodecane
Concen: 2.22 ppbV m
RT: 20.83 min Scan# 2040
Delta R.T. -0.012 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion: 57 Resp: 67346

Ion	Ratio	Lower	Upper
57	100		
43	102.5	76.2	114.4

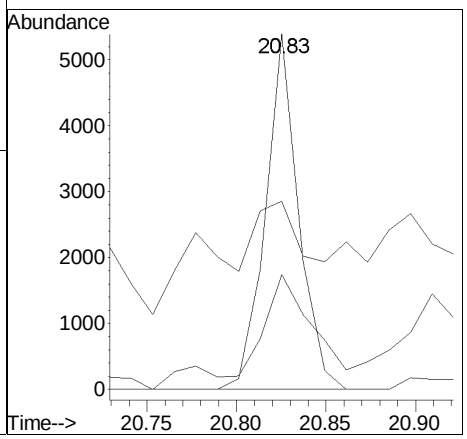


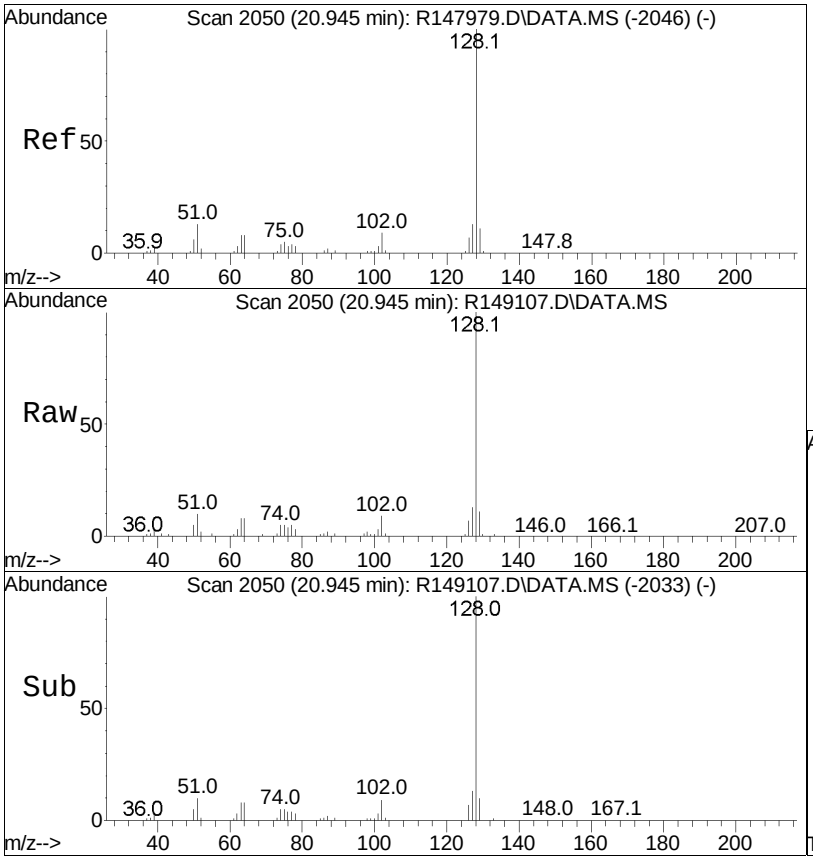


#115
1,2,4-trichlorobenzene
Concen: 0.31 ppbV
RT: 20.83 min Scan# 2040
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion:180 Resp: 6907

Ion	Ratio	Lower	Upper
180	100		
145	32.3	22.8	34.2
109	53.0	18.7	28.1#

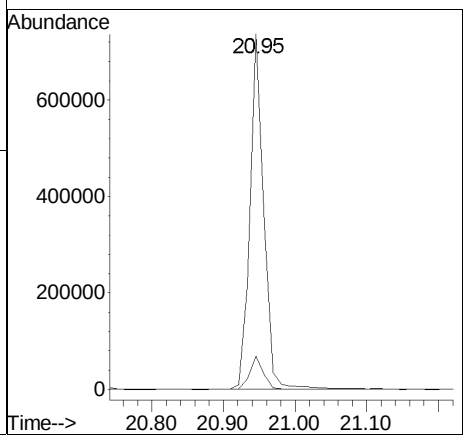


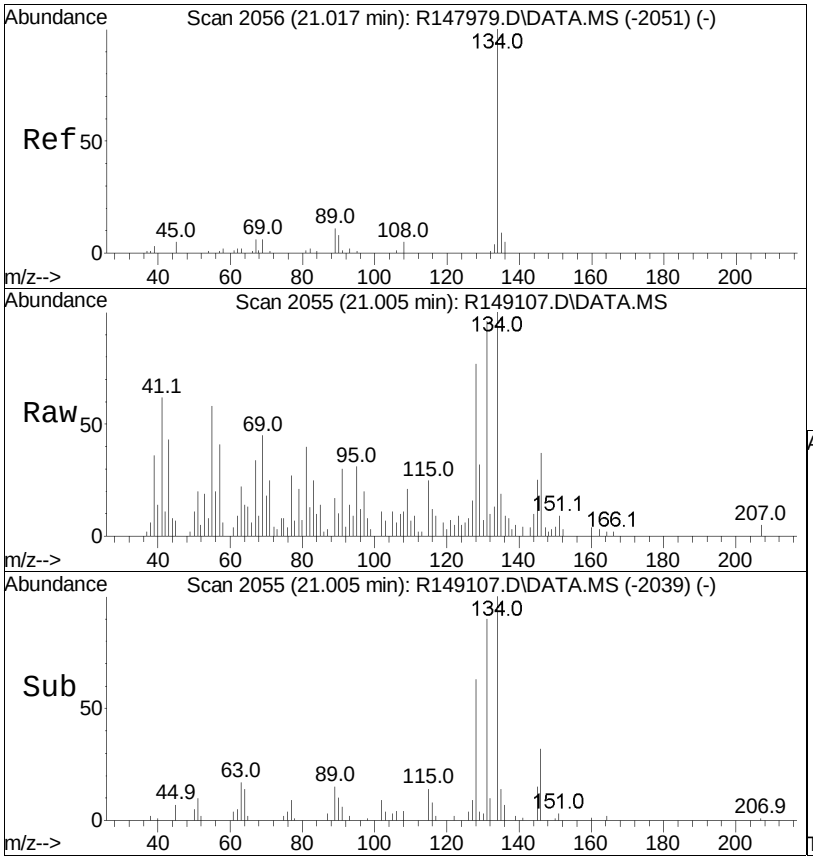


#116
naphthalene
Concen: 23.05 ppbV
RT: 20.95 min Scan# 2050
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion:128 Resp: 987919

Ion	Ratio	Lower	Upper
128	100		
102	9.3	7.5	11.3

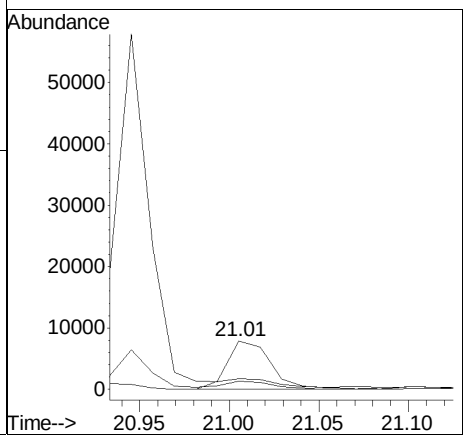


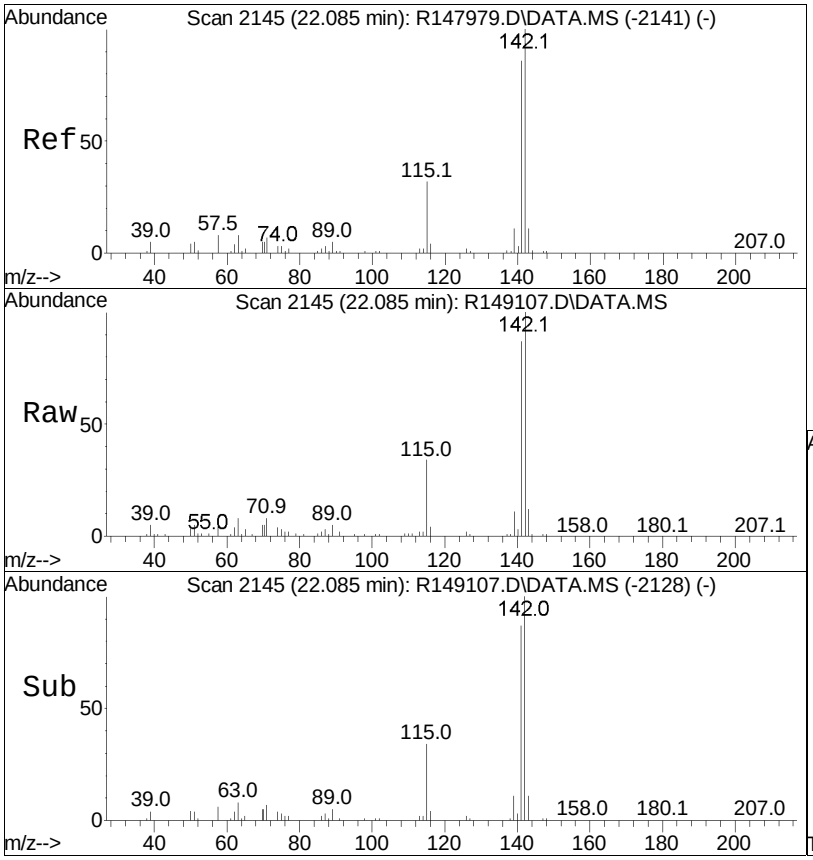


#118
benzothiophene
Concen: 0.30 ppbV
RT: 21.01 min Scan# 2055
Delta R.T. -0.012 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion:134 Resp: 13516

Ion	Ratio	Lower	Upper
134	100		
89	17.1	9.8	14.8#
63	22.1	6.5	9.7#

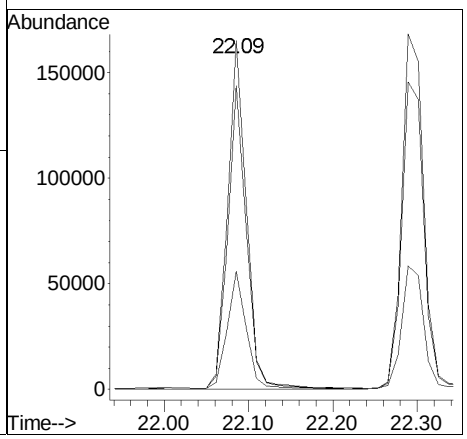


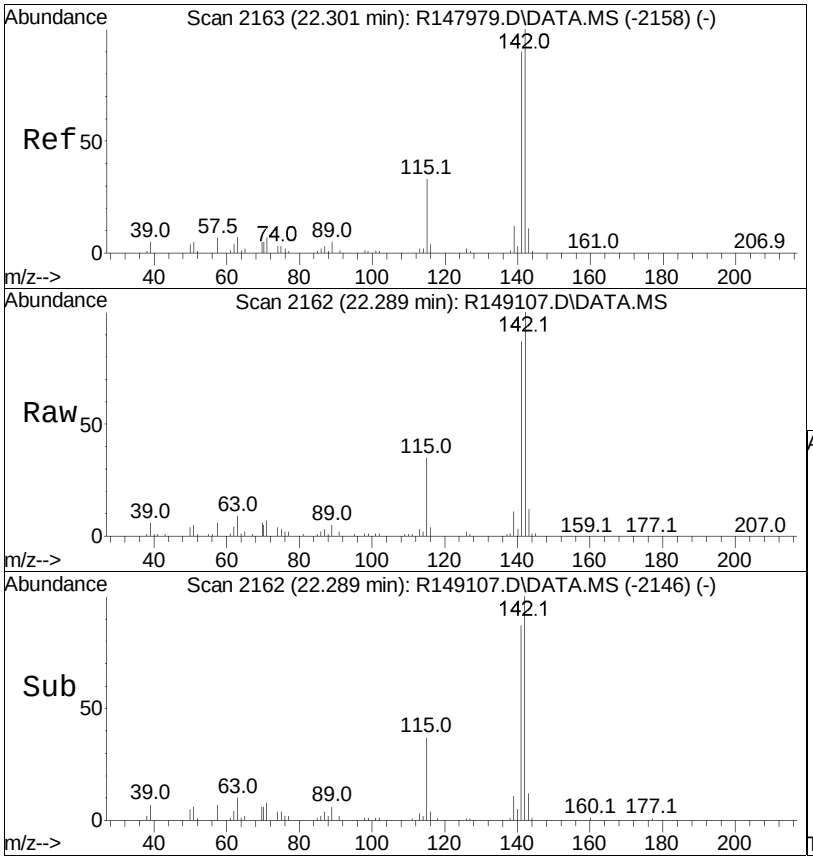


#120
2-methylnaphthalene
Concen: 12.17 ppbV
RT: 22.09 min Scan# 2145
Delta R.T. -0.000 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion:142 Resp: 261069

Ion	Ratio	Lower	Upper
142	100		
141	87.1	68.0	102.0
115	33.9	26.6	39.8

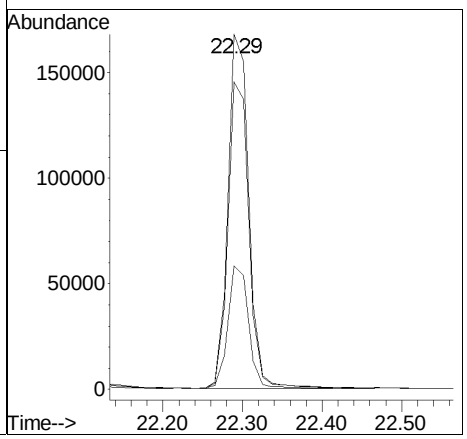




#121
1-methylnaphthalene
Concen: 13.35 ppbV
RT: 22.29 min Scan# 2162
Delta R.T. -0.012 min
Lab File: R149107.D
Acq: 1 Nov 2016 8:04 pm

Tgt Ion:142 Resp: 305457

Ion	Ratio	Lower	Upper
142	100		
141	86.5	70.4	105.6
115	34.8	27.5	41.3



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-10D	Date Collected	: 10/19/16 17:42
Client ID	: DUP101916	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 20:35
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 5
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149108	Instrument ID	: AIRPIANO1
Sample Amount	: 50.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-71-8	Dichlorodifluoromethane	0.490	1.00	0.233	2.42	4.94	1.15	J
74-87-3	Chloromethane	ND	1.00	0.479	ND	2.07	0.989	U
76-14-2	Freon-114	ND	1.00	0.210	ND	6.99	1.47	U
75-01-4	Vinyl chloride	ND	1.00	0.189	ND	2.56	0.483	U
106-99-0	1,3-Butadiene	0.415	1.00	0.400	0.918	2.21	0.885	J
106-97-8	Butane	118	1.00	0.221	280	2.38	0.525	
75-07-0	Acetaldehyde	ND	12.5	2.73	ND	22.5	4.92	U
74-83-9	Bromomethane	ND	1.00	0.348	ND	3.88	1.35	U
75-00-3	Chloroethane	ND	1.00	0.384	ND	2.64	1.01	U
64-17-5	Ethanol	3.52	12.5	2.71	6.63	23.6	5.11	J
593-60-2	Vinyl bromide	ND	1.00	0.350	ND	4.37	1.53	U
107-02-8	Acrolein	ND	2.50	0.569	ND	5.73	1.30	U
67-64-1	Acetone	20.6	5.00	0.824	48.9	11.9	1.96	G
75-69-4	Trichlorofluoromethane	0.235	1.00	0.208	1.32	5.62	1.17	J
67-63-0	Isopropanol	6.58	2.50	0.262	16.2	6.15	0.644	
109-66-0	Pentane	30.0	1.00	0.238	88.5	2.95	0.702	
75-35-4	1,1-Dichloroethene	ND	1.00	0.283	ND	3.96	1.12	U
75-65-0	tert-Butyl Alcohol	38.7	2.50	0.300	117	7.58	0.909	
75-09-2	Methylene chloride	ND	2.50	1.50	ND	8.69	5.21	U
107-05-1	3-Chloropropene	ND	1.00	0.406	ND	3.13	1.27	U
75-15-0	Carbon disulfide	4.83	1.00	0.172	15.0	3.11	0.536	
76-13-1	Freon-113	ND	1.00	0.256	ND	7.66	1.96	U
156-60-5	trans-1,2-Dichloroethene	ND	1.00	0.370	ND	3.96	1.47	U
75-34-3	1,1-Dichloroethane	ND	1.00	0.386	ND	4.05	1.56	U
1634-04-4	Methyl tert butyl ether	281	1.00	0.264	1010	3.61	0.952	
78-93-3	2-Butanone	9.20	2.50	0.236	27.1	7.37	0.696	
156-59-2	cis-1,2-Dichloroethene	2.30	1.00	0.294	9.12	3.96	1.17	
67-66-3	Chloroform	ND	1.00	0.266	ND	4.88	1.30	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-10D	Date Collected	: 10/19/16 17:42
Client ID	: DUP101916	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 20:35
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 5
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149108	Instrument ID	: AIRPIANO1
Sample Amount	: 50.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
107-06-2	1,2-Dichloroethane	ND	1.00	0.276	ND	4.05	1.12	U
110-54-3	n-Hexane	7.33	1.00	0.259	25.8	3.52	0.913	
71-55-6	1,1,1-Trichloroethane	ND	1.00	0.285	ND	5.46	1.55	U
71-43-2	Benzene	144	1.00	0.268	460	3.19	0.856	
110-02-1	Thiophene	1.16	1.00	0.264	3.99	3.44	0.909	
56-23-5	Carbon tetrachloride	ND	1.00	0.236	ND	6.29	1.48	U
110-82-7	Cyclohexane	11.2	1.00	0.328	38.6	3.44	1.13	
78-87-5	1,2-Dichloropropane	ND	1.00	0.348	ND	4.62	1.61	U
75-27-4	Bromodichloromethane	ND	1.00	0.328	ND	6.70	2.20	U
123-91-1	1,4-Dioxane	ND	1.00	0.390	ND	3.60	1.41	U
79-01-6	Trichloroethene	ND	1.00	0.355	ND	5.37	1.91	U
540-84-1	2,2,4-Trimethylpentane	85.8	1.00	0.330	401	4.67	1.54	
142-82-5	Heptane	4.12	1.00	0.276	16.9	4.10	1.13	
10061-01-5	cis-1,3-Dichloropropene	ND	1.00	0.372	ND	4.54	1.69	U
108-10-1	4-Methyl-2-pentanone	ND	2.50	0.304	ND	10.2	1.25	U
10061-02-6	trans-1,3-Dichloropropene	ND	1.00	0.346	ND	4.54	1.57	U
79-00-5	1,1,2-Trichloroethane	ND	1.00	0.334	ND	5.46	1.82	U
108-88-3	Toluene	85.1	1.00	0.314	321	3.77	1.18	
554-14-3	2-Methylthiophene	ND	1.00	0.394	ND	4.02	1.58	U
591-78-6	2-Hexanone	ND	1.00	0.302	ND	4.10	1.24	U
616-44-4	3-Methylthiophene	0.350	1.00	0.334	1.41	4.02	1.34	J
124-48-1	Dibromochloromethane	ND	1.00	0.374	ND	8.52	3.19	U
106-93-4	1,2-Dibromoethane	ND	1.00	0.390	ND	7.69	3.00	U
111-65-9	Octane	5.42	1.00	0.210	25.3	4.67	0.981	
127-18-4	Tetrachloroethene	1.74	1.00	0.379	11.8	6.78	2.57	
108-90-7	Chlorobenzene	ND	1.00	0.394	ND	4.61	1.81	U
100-41-4	Ethylbenzene	56.6	1.00	0.278	246	4.34	1.21	
872-55-9	2-Ethylthiophene	ND	1.00	0.286	ND	4.59	1.31	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-10D	Date Collected	: 10/19/16 17:42
Client ID	: DUP101916	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/01/16 20:35
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 5
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149108	Instrument ID	: AIRPIANO1
Sample Amount	: 50.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
179601-23-1	p/m-Xylene	77.0	2.00	0.694	334	8.69	3.01	
75-25-2	Bromoform	ND	1.00	0.262	ND	10.3	2.71	U
100-42-5	Styrene	6.98	1.00	0.400	29.7	4.26	1.70	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.00	0.274	ND	6.87	1.88	U
95-47-6	o-Xylene	43.2	1.00	0.316	188	4.34	1.37	
111-84-2	Nonane	11.9	1.00	0.312	62.4	5.25	1.64	
95-49-8	2-Chlorotoluene	ND	1.00	0.244	ND	5.18	1.26	U
622-96-8	4-Ethyltoluene	22.6	1.00	0.388	111	4.92	1.91	
108-67-8	1,3,5-Trimethylbenzene	47.1	1.00	0.292	232	4.92	1.44	
95-63-6	1,2,4-Trimethylbenzene	55.8	1.00	0.347	274	4.92	1.71	
124-18-5	Decane	13.6	1.00	0.242	79.2	5.82	1.41	
541-73-1	1,3-Dichlorobenzene	ND	1.00	0.318	ND	6.01	1.91	U
106-46-7	1,4-Dichlorobenzene	ND	1.00	0.180	ND	6.01	1.08	U
526-73-8	1,2,3-Trimethylbenzene	29.7	1.00	0.376	146	4.92	1.85	
95-50-1	1,2-Dichlorobenzene	ND	1.00	0.307	ND	6.01	1.85	U
496-11-7	Indane	17.4	1.00	0.398	84.1	4.83	1.92	
95-13-6	Indene	16.7	1.00	0.304	79.4	4.75	1.44	
1120-21-4	Undecane	8.50	1.00	0.264	54.3	6.39	1.69	
95-93-2	1,2,4,5-Tetramethylbenzene	5.28	1.00	0.398	29.0	5.49	2.18	
112-40-3	Dodecane	9.88	1.00	0.239	68.8	6.97	1.66	
120-82-1	1,2,4-Trichlorobenzene	ND	1.00	0.306	ND	7.42	2.27	U
91-20-3	Naphthalene	134	1.00	0.212	703	5.24	1.11	
95-15-8	Benzothiophene	1.81	2.50	0.234	9.93	13.7	1.28	J
87-68-3	Hexachlorobutadiene	ND	1.00	0.366	ND	10.7	3.90	U
91-57-6	2-Methylnaphthalene	94.4	5.00	1.36	549	29.1	7.91	
90-12-0	1-Methylnaphthalene	96.0	5.00	1.25	558	29.1	7.27	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149108.D
Acq On : 1 Nov 2016 8:35 pm
Operator : AIRPIANO1:RY
Sample : L1634001-10D,3,50,250
Misc : WG947959,ICAL12987
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Nov 02 10:22:28 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	149093	10.000	ppbV	-0.01
Standard Area = 153282			Recovery = 97.27%			
43) 1,4-difluorobenzene	12.41	114	246413	10.000	ppbV	0.00
Standard Area = 240182			Recovery = 102.59%			
67) chlorobenzene-D5	16.82	54	67892	10.000	ppbV	0.00
Standard Area = 64184			Recovery = 105.78%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	72521	9.825	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.25%			
69) toluene-D8	15.14	98	202133	9.884	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.84%			
90) bromofluorobenzene	18.01	95	160575	11.236	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 112.36%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	1879	0.098	ppbV	97
6) chloromethane	0.00		0	N.D.		
7) Freon-114	0.00		0	N.D.		
9) vinyl chloride	0.00		0	N.D.		
10) 1,3-butadiene	4.88	54	497	0.083	ppbV	98
11) butane	4.95	43	342919	23.631	ppbV	99
12) acetaldehyde	0.00		0	N.D.	d	
13) bromomethane	0.00		0	N.D.		
14) chloroethane	0.00		0	N.D.		
15) ethanol	5.73	31	5136	0.704	ppbV	94
17) vinyl bromide	0.00		0	N.D.		
18) acrolein	0.00		0	N.D.		
19) acetone	6.36	43	70151M6	4.115	ppbV	
21) trichlorofluoromethane	6.57	101	927	0.047	ppbV	95
22) isopropyl alcohol	6.73	45	23351	1.317	ppbV #	97
24) pentane	7.06	43	96126	5.995	ppbV	97
26) 1,1-dichloroethene	0.00		0	N.D.	d	
27) tertiary butyl alcohol	7.50	59	138137	7.738	ppbV	94
28) methylene chloride	7.59		0	N.D.		
29) 3-chloropropene	0.00		0	N.D.	d	
30) carbon disulfide	7.90	76	22266	0.966	ppbV #	76

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149108.D
Acq On : 1 Nov 2016 8:35 pm
Operator : AIRPIANO1:RY
Sample : L1634001-10D,3,50,250
Misc : WG947959,ICAL12987
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Nov 02 10:22:28 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
31) Freon 113	0.00		0	N.D.		
32) trans-1,2-dichloroethene	8.76		0	N.D.		
33) 1,1-dichloroethane	0.00		0	N.D.	d	
34) MTBE	9.08	73	1259817	56.164	ppbV #	94
36) 2-butanone	9.51	43	39131	1.841	ppbV	98
37) cis-1,2-dichloroethene	10.00	61	4584	0.461	ppbV	93
39) chloroform	0.00		0	N.D.		
42) 1,2-dichloroethane	0.00		0	N.D.	d	
44) hexane	10.24	57	24525	1.466	ppbV #	35
48) 1,1,1-trichloroethane	0.00		0	N.D.		
50) benzene	12.00	78	669401	28.845	ppbV	100
51) thiophene	12.15	84	4571	0.233	ppbV	96
52) carbon tetrachloride	0.00		0	N.D.		
53) cyclohexane	12.31	56	30681	2.237	ppbV	99
56) 1,2-dichloropropane	0.00		0	N.D.		
57) bromodichloromethane	0.00		0	N.D.	d	
58) 1,4-dioxane	0.00		0	N.D.		
59) trichloroethene	13.20		0	N.D.		
60) 2,2,4-trimethylpentane	13.23	57	773825	17.163	ppbV	95
62) heptane	13.53	43	15926	0.824	ppbV	98
63) cis-1,3-dichloropropene	0.00		0	N.D.		
64) 4-methyl-2-pentanone	0.00		0	N.D.	d	
65) trans-1,3-dichloropropene	0.00		0	N.D.		
66) 1,1,2-trichloroethane	0.00		0	N.D.	d	
68) toluene	15.23	91	481690	17.020	ppbV	98
70) 2-methylthiophene	0.00		0	N.D.	d	
72) 2-hexanone	0.00		0	N.D.	d	
73) 3-methylthiophene	15.48	97	2054	0.070	ppbV	96
74) dibromochloromethane	0.00		0	N.D.		
75) 1,2-dibromoethane	0.00		0	N.D.		
77) octane	16.14	85	9145	1.083	ppbV	98
78) tetrachloroethene	16.28	166	5042	0.348	ppbV #	91
80) chlorobenzene	0.00		0	N.D.	d	
81) ethylbenzene	17.15	91	420073	11.314	ppbV	100
82) 2-ethylthiophene	0.00		0	N.D.	d	
83) m+p-xylene	17.29	91	455952	15.397	ppbV	100
84) bromoform	0.00		0	N.D.		
85) styrene	17.58	104	29638	1.396	ppbV	100

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149108.D
Acq On : 1 Nov 2016 8:35 pm
Operator : AIRPIANO1:RY
Sample : L1634001-10D,3,50,250
Misc : WG947959,ICAL12987
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Nov 02 10:22:28 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

	Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
86)	1,1,2,2-tetrachloroethane	0.00		0	N.D.	d		
87)	o-xylene	17.66	91	264426	8.642	ppbV		100
89)	nonane	17.80	43	68406	2.381	ppbV		100
93)	2-chlorotoluene	0.00		0	N.D.	d		
96)	4-ethyl toluene	18.59	105	196660	4.521	ppbV		99
97)	1,3,5-trimethylbenzene	18.64	105	323506	9.426	ppbV		99
99)	1,2,4-trimethylbenzene	18.95	105	384554	11.160	ppbV	#	50
100)	decane	18.99	57	73805M4	2.721	ppbV		
102)	1,3-dichlorobenzene	0.00		0	N.D.			
103)	1,4-dichlorobenzene	0.00		0	N.D.			
105)	1,2,3-trimethylbenzene	19.27	105	223043	5.933	ppbV		100
107)	1,2-dichlorobenzene	0.00		0	N.D.	d		
109)	indan	19.43	117	143096	3.489	ppbV		99
110)	indene	19.51	115	92455	3.333	ppbV		98
112)	undecane	19.94	57	50838M4	1.701	ppbV		
113)	1,2,4,5-tetramethylben...	20.18	119	57147	1.056	ppbV		97
114)	dodecane	20.83	57	60251M4	1.976	ppbV		
115)	1,2,4-trichlorobenzene	20.83		0	N.D.			
116)	naphthalene	20.95	128	1151604	26.748	ppbV		99
118)	benzothiophene	21.01	134	16208	0.362	ppbV	#	84
119)	hexachlorobutadiene	0.00		0	N.D.			
120)	2-methylnaphthalene	22.09	142	406629	18.872	ppbV		100
121)	1-methylnaphthalene	22.29	142	441416	19.210	ppbV		99

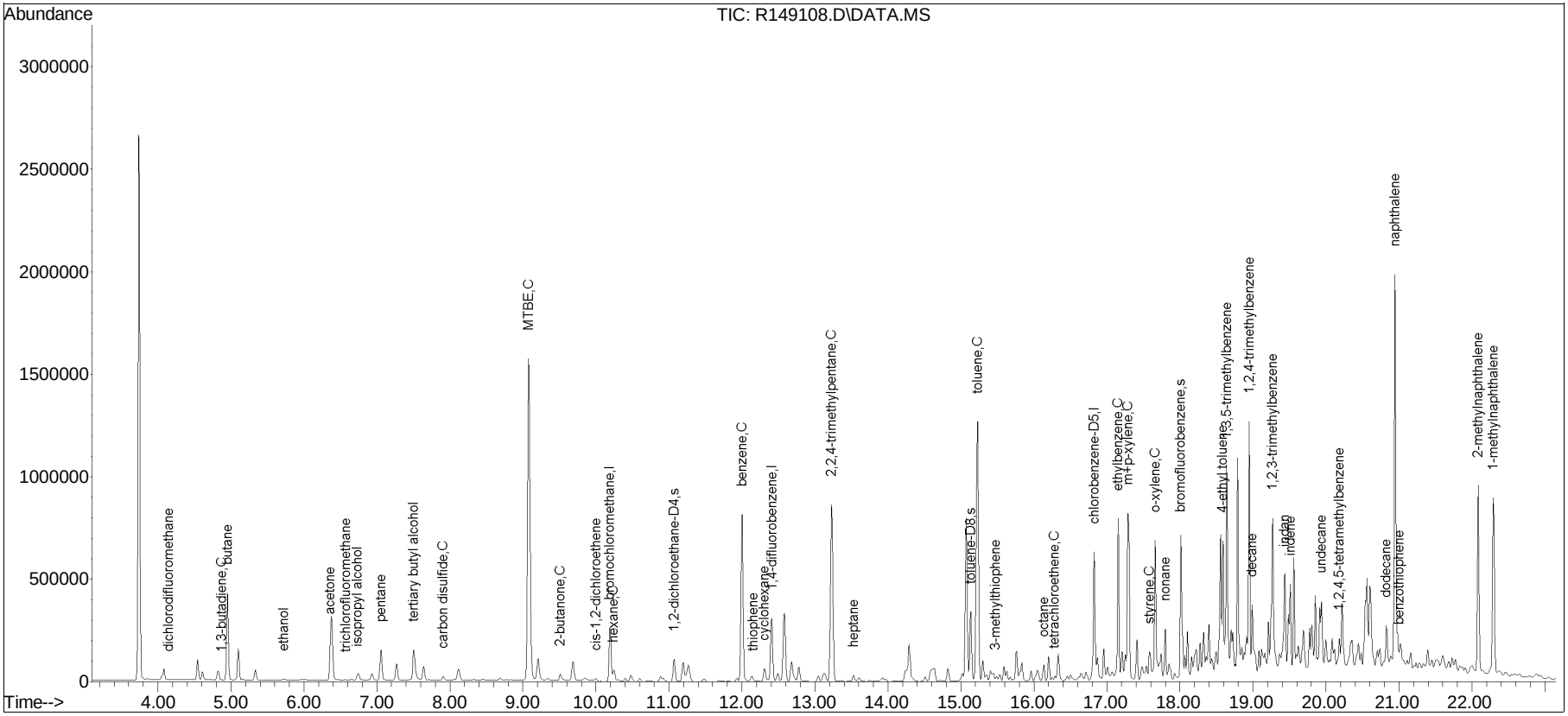
(#) = qualifier out of range (m) = manual integration (+) = signals summed

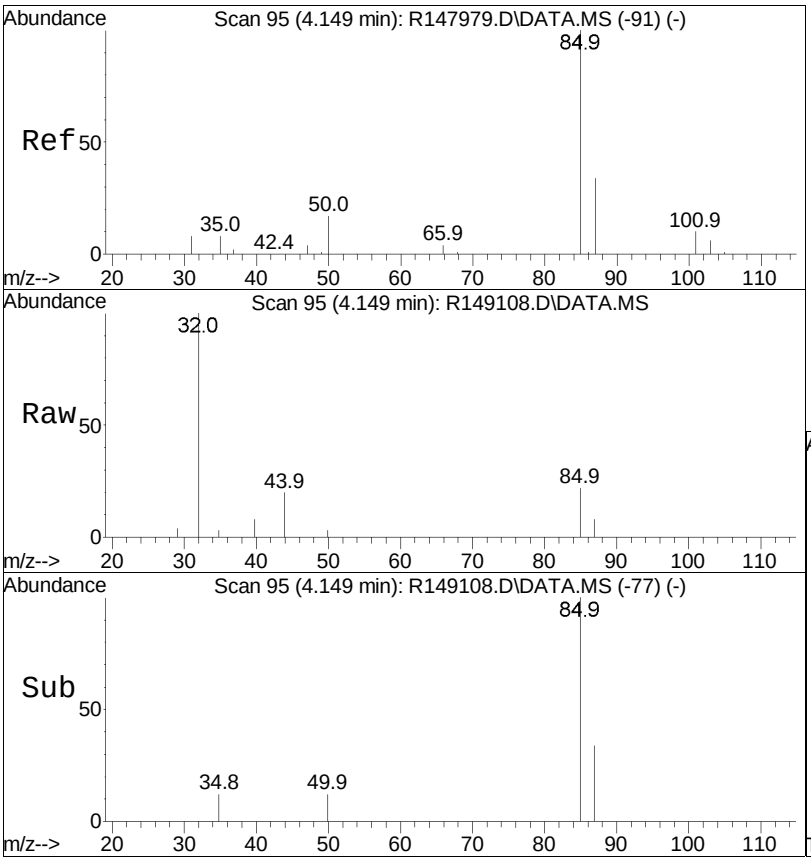
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149108.D
Acq On : 1 Nov 2016 8:35 pm
Operator : AIRPIANO1:RY
Sample : L1634001-10D,3,50,250
Misc : WG947959,ICAL12987
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Nov 02 10:22:28 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Keyspan_TO15 - .a\AIR1\2016\161101K\R149091.D

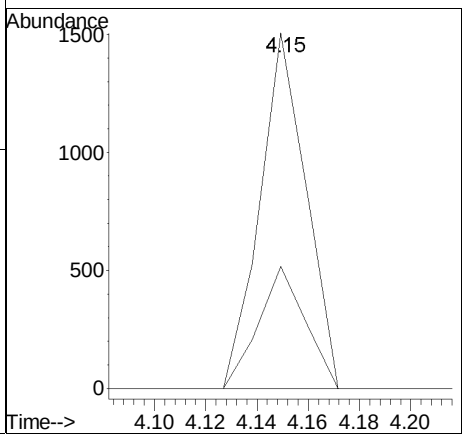


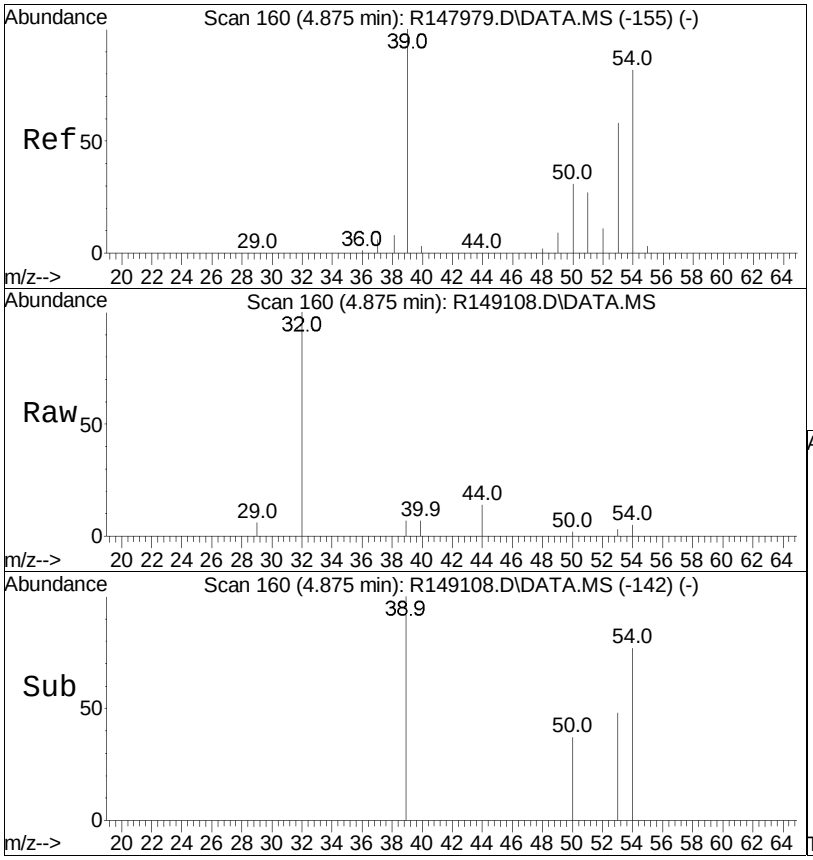


#5
dichlorodifluoromethane
Concen: 0.10 ppbV
RT: 4.15 min Scan# 95
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 85 Resp: 1879

Ion	Ratio	Lower	Upper
85	100		
87	34.3	25.9	38.9

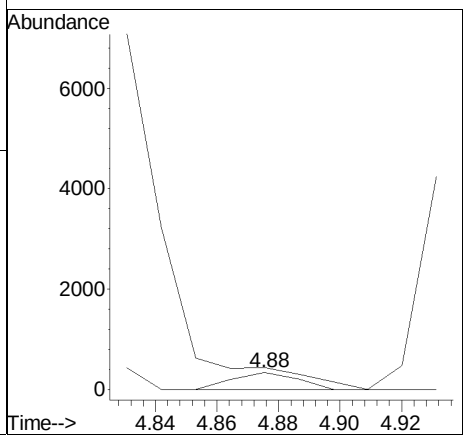


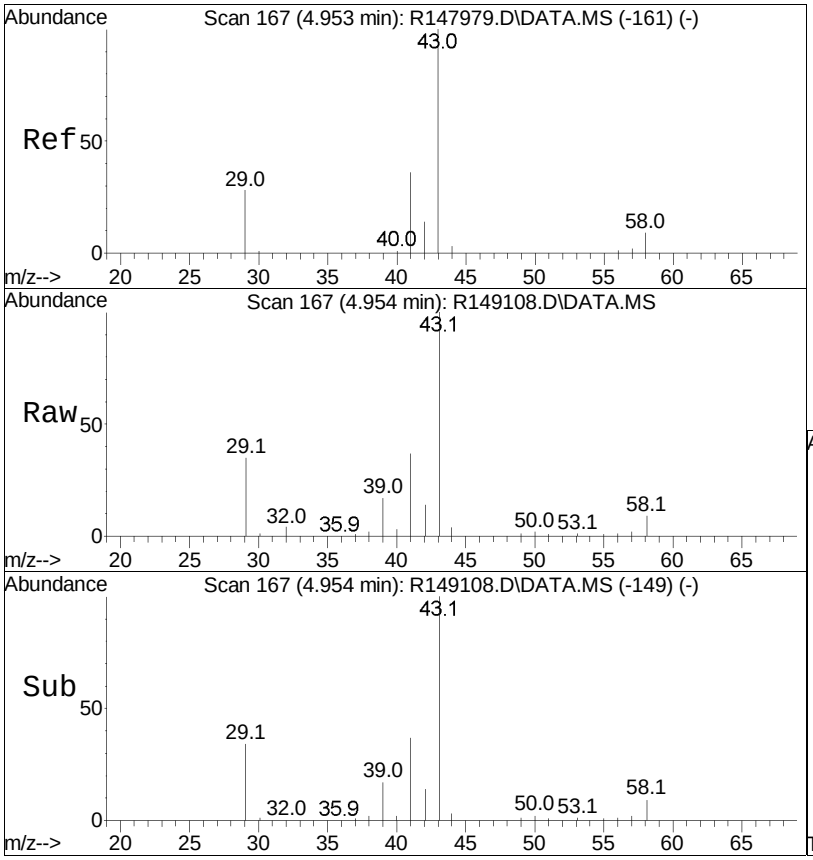


#10
1,3-butadiene
Concen: 0.08 ppbV
RT: 4.88 min Scan# 160
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 54 Resp: 497

Ion	Ratio	Lower	Upper
54	100		
39	129.1	105.0	157.6

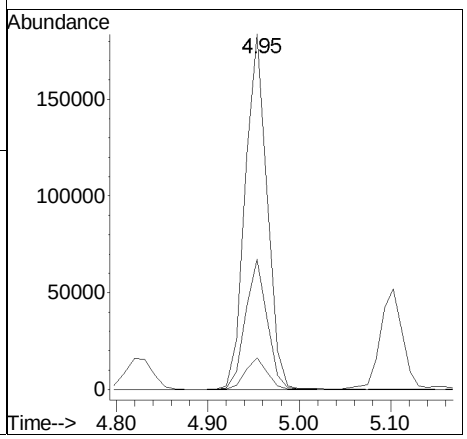


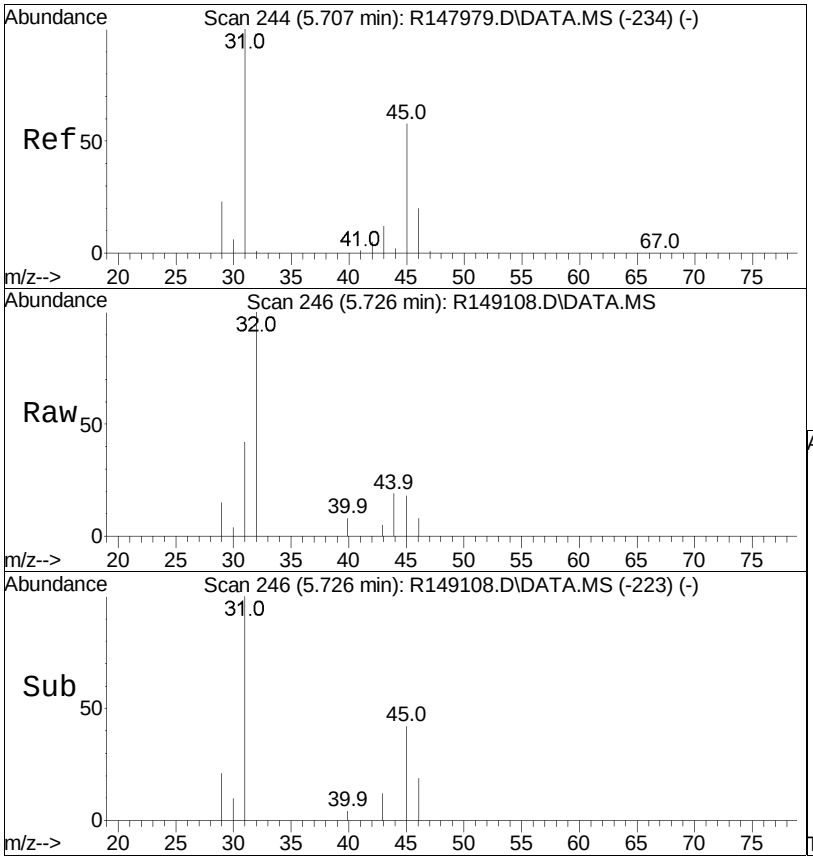


#11
butane
Concen: 23.63 ppbV
RT: 4.95 min Scan# 167
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 43 Resp: 342919

Ion	Ratio	Lower	Upper
43	100		
58	8.9	7.1	10.7
41	36.7	28.7	43.1

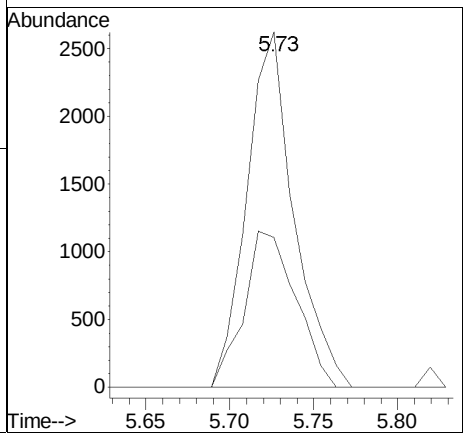


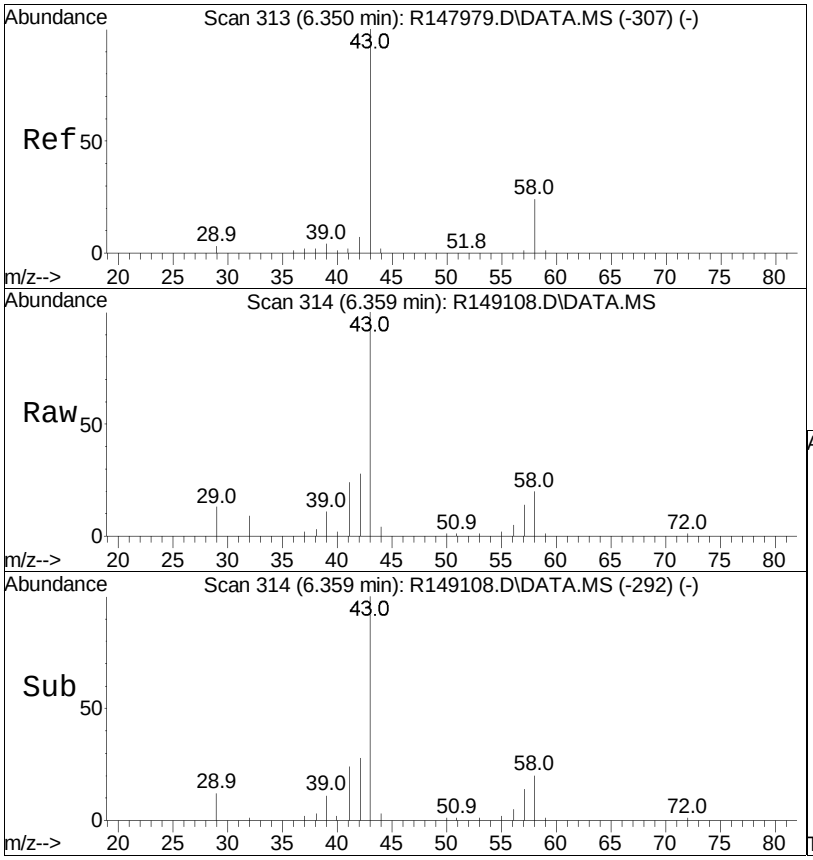


#15
ethanol
Concen: 0.70 ppbV
RT: 5.73 min Scan# 246
Delta R.T. 0.019 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 31 Resp: 5136

Ion	Ratio	Lower	Upper
31	100		
45	42.2	37.2	55.8

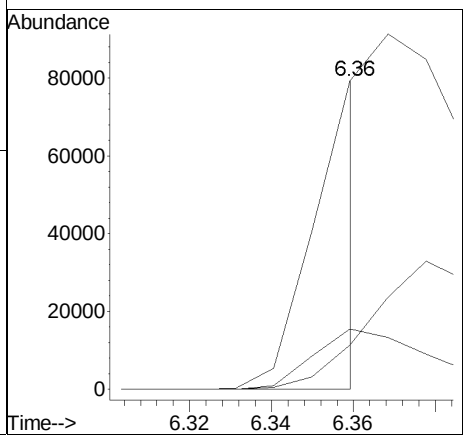


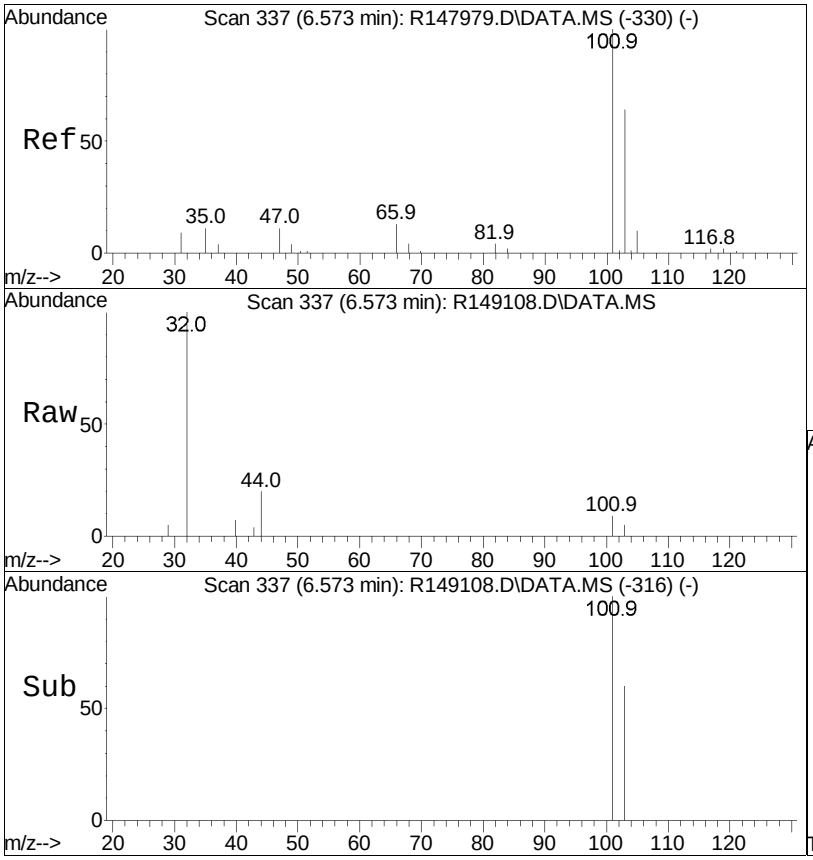


#19
acetone
Concen: 4.12 ppbV m
RT: 6.36 min Scan# 314
Delta R.T. 0.009 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 43 Resp: 70151

Ion	Ratio	Lower	Upper
43	100		
58	19.6	19.8	29.8#
57	14.4	0.6	1.0#

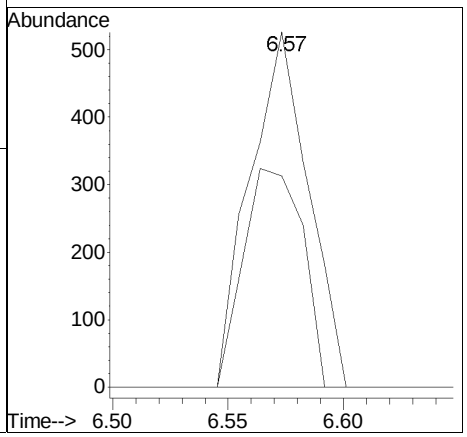


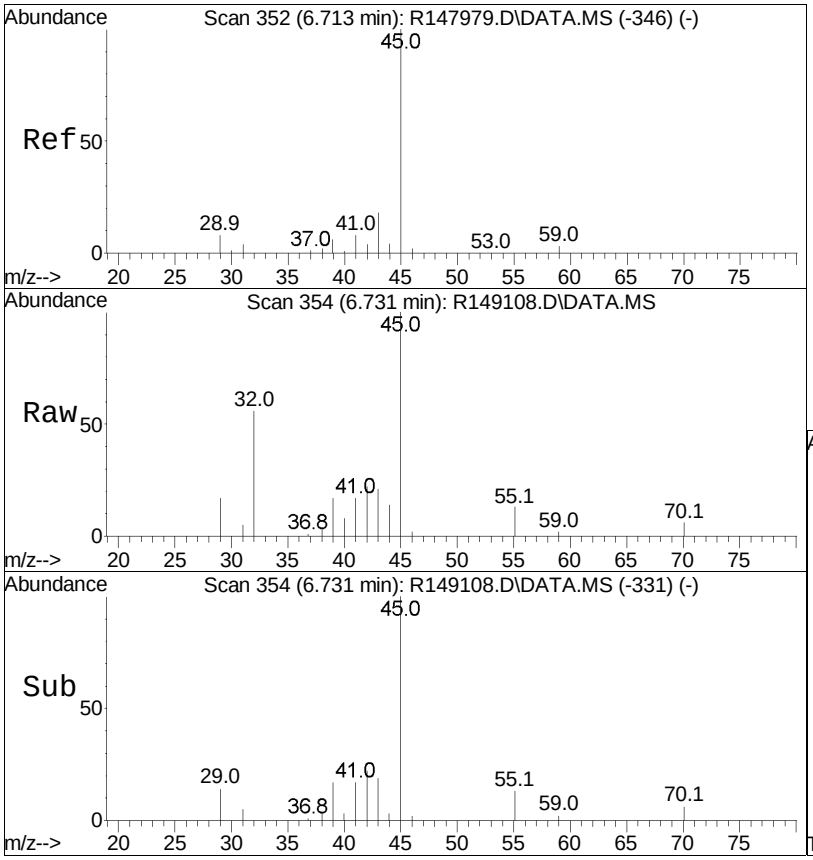


#21
trichlorofluoromethane
Concen: 0.05 ppbV
RT: 6.57 min Scan# 337
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion:101 Resp: 927

Ion	Ratio	Lower	Upper
101	100		
103	59.5	51.0	76.4

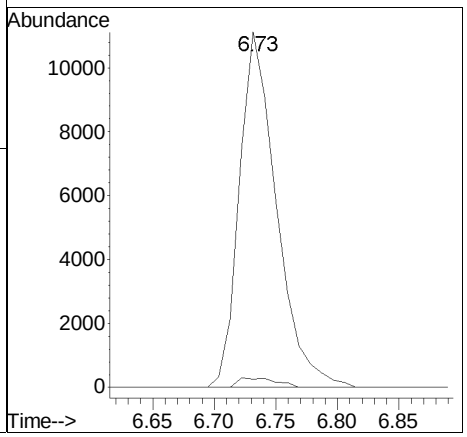


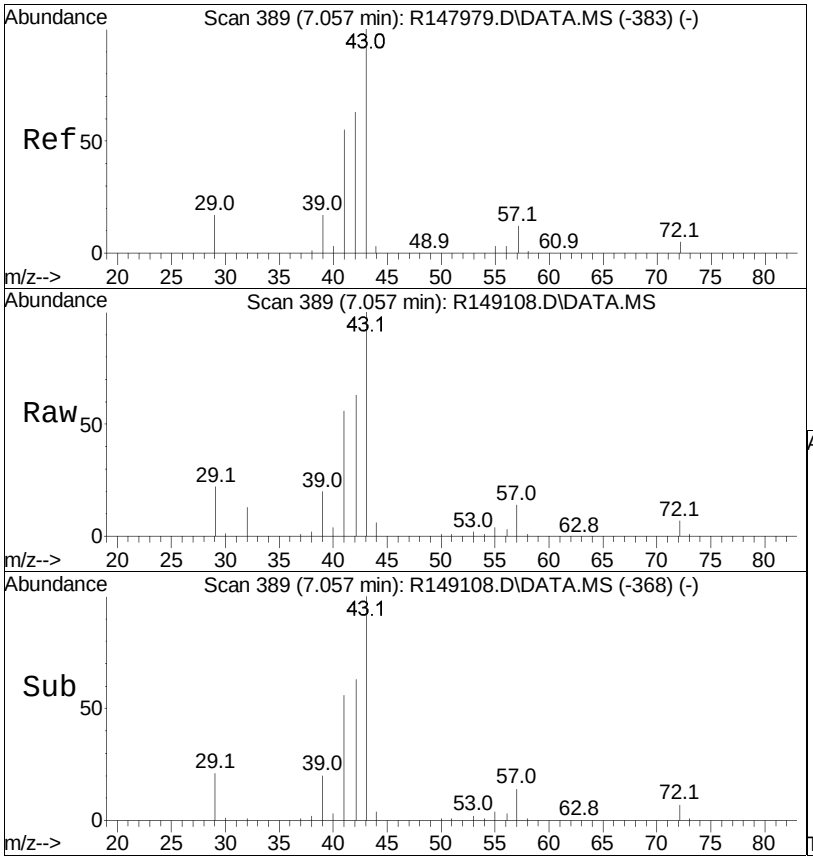


#22
isopropyl alcohol
Concen: 1.32 ppbV
RT: 6.73 min Scan# 354
Delta R.T. 0.019 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 45 Resp: 23351

Ion	Ratio	Lower	Upper
45	100		
59	2.3	2.7	4.1#

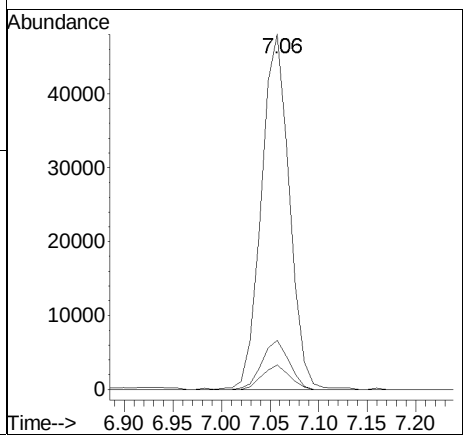


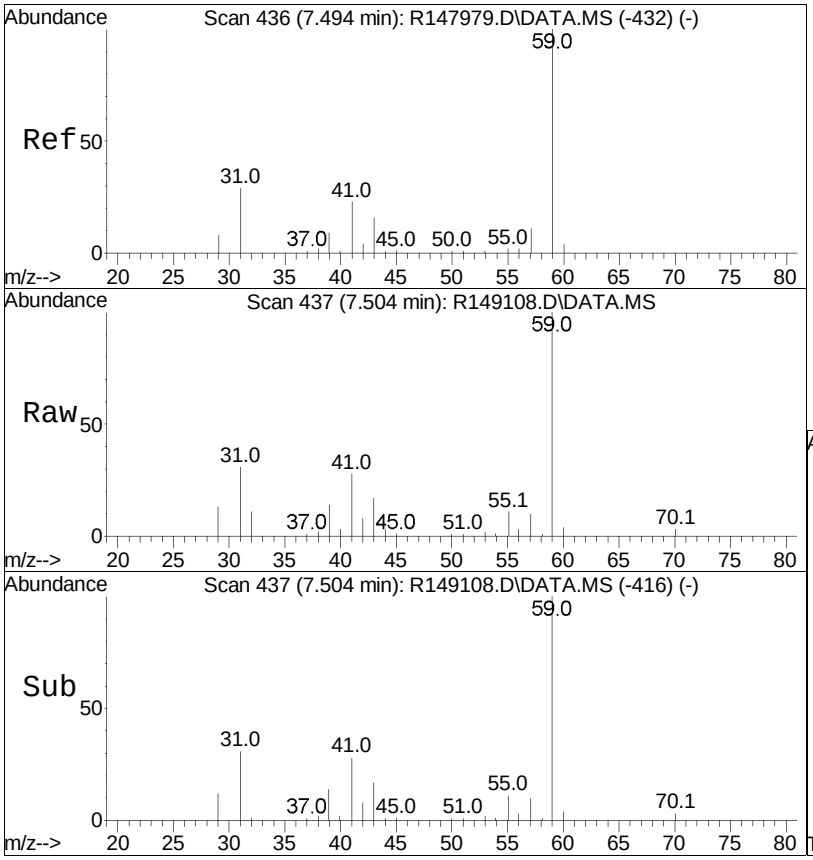


#24
pentane
Concen: 5.99 ppbV
RT: 7.06 min Scan# 389
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 43 Resp: 96126

Ion	Ratio	Lower	Upper
43	100		
57	13.8	9.8	14.8
72	6.9	5.4	8.2

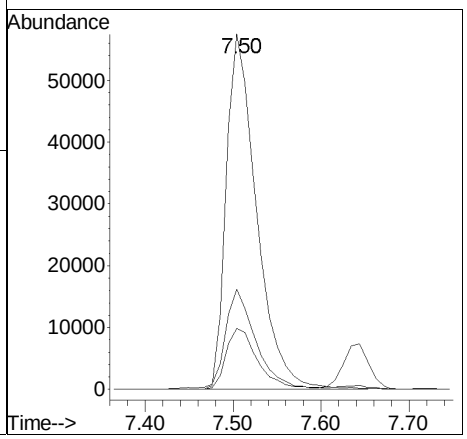


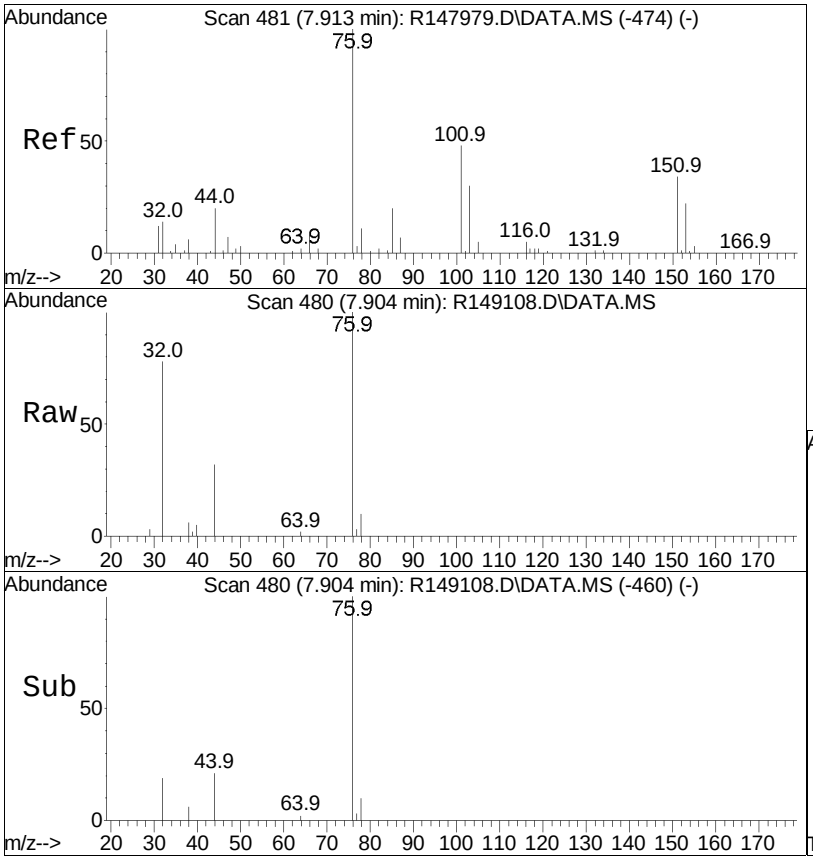


#27
tertiary butyl alcohol
Concen: 7.74 ppbV
RT: 7.50 min Scan# 437
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 59 Resp: 138137

Ion	Ratio	Lower	Upper
59	100		
41	28.2	18.9	28.3
43	17.2	13.7	20.5

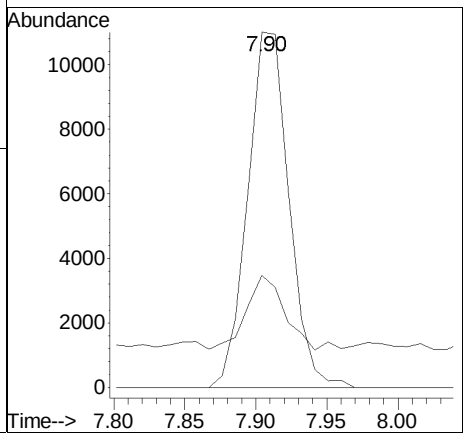


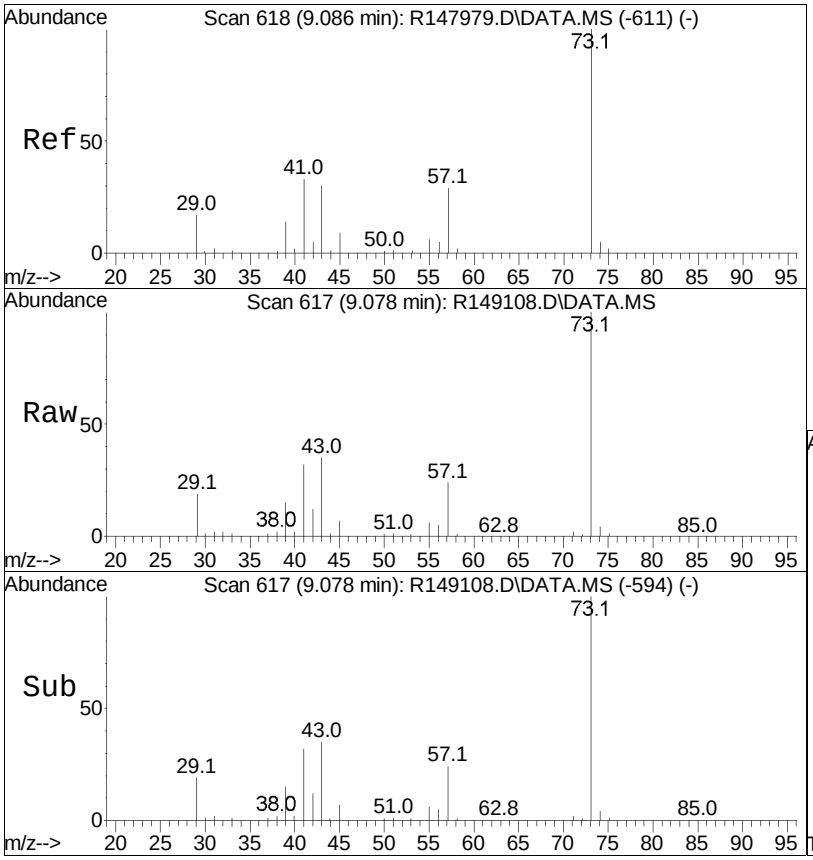


#30
carbon disulfide
Concen: 0.97 ppbV
RT: 7.90 min Scan# 480
Delta R.T. -0.009 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 76 Resp: 22266

Ion	Ratio	Lower	Upper
76	100		
44	31.5	16.3	24.5#

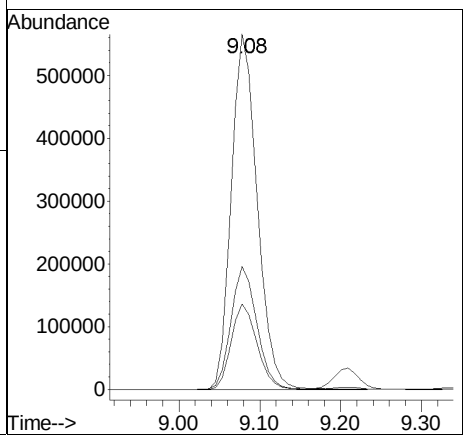


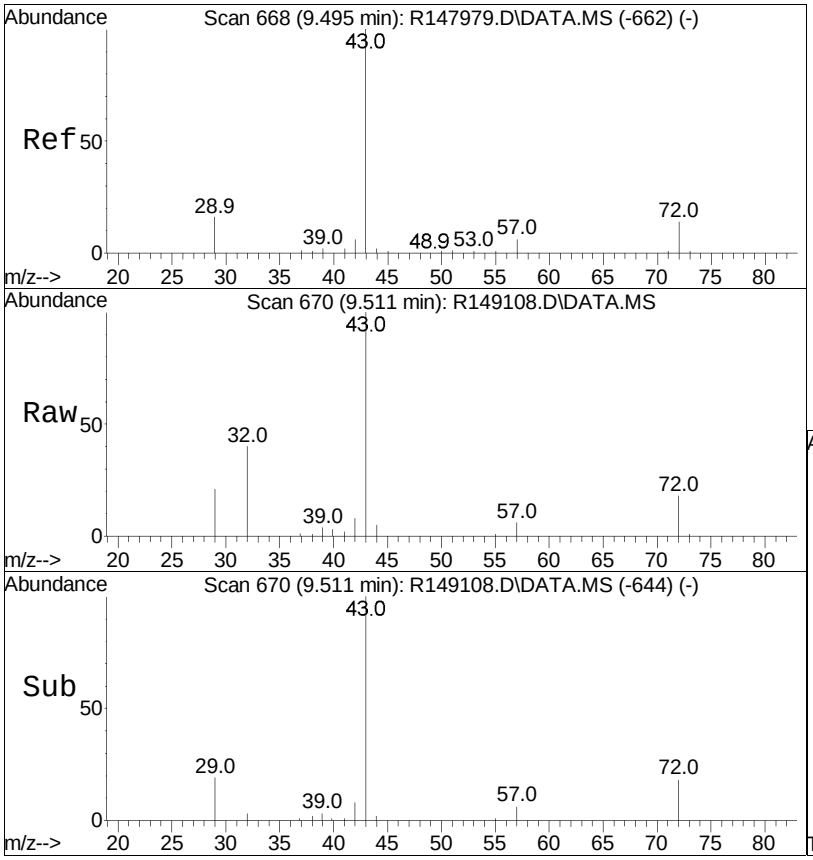


#34
MTBE
Concen: 56.16 ppbV
RT: 9.08 min Scan# 617
Delta R.T. -0.008 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 73 Resp: 1259817

Ion	Ratio	Lower	Upper
73	100		
57	24.0	19.1	28.7
43	34.6	23.0	34.4#

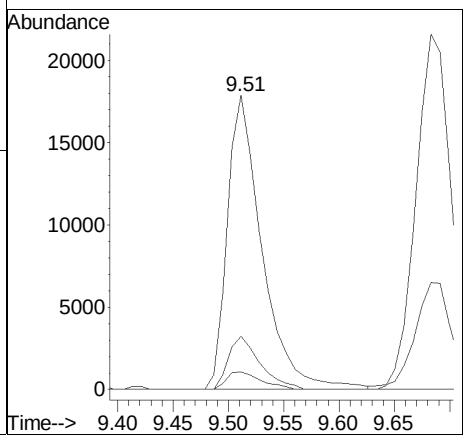


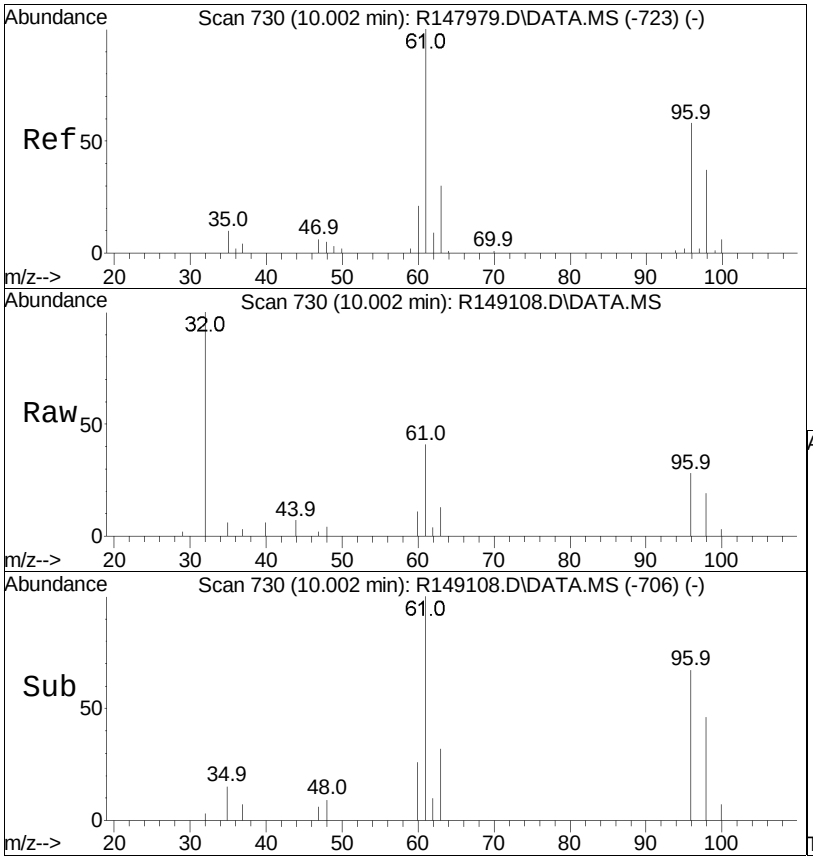


#36
2-butanone
Concen: 1.84 ppbV
RT: 9.51 min Scan# 670
Delta R.T. 0.016 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 43 Resp: 39131

Ion	Ratio	Lower	Upper
43	100		
72	18.0	13.6	20.4
57	5.9	4.9	7.3

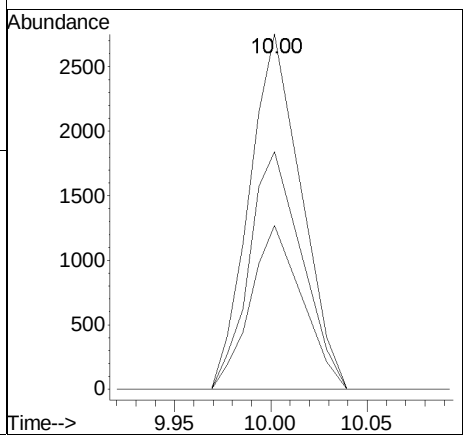


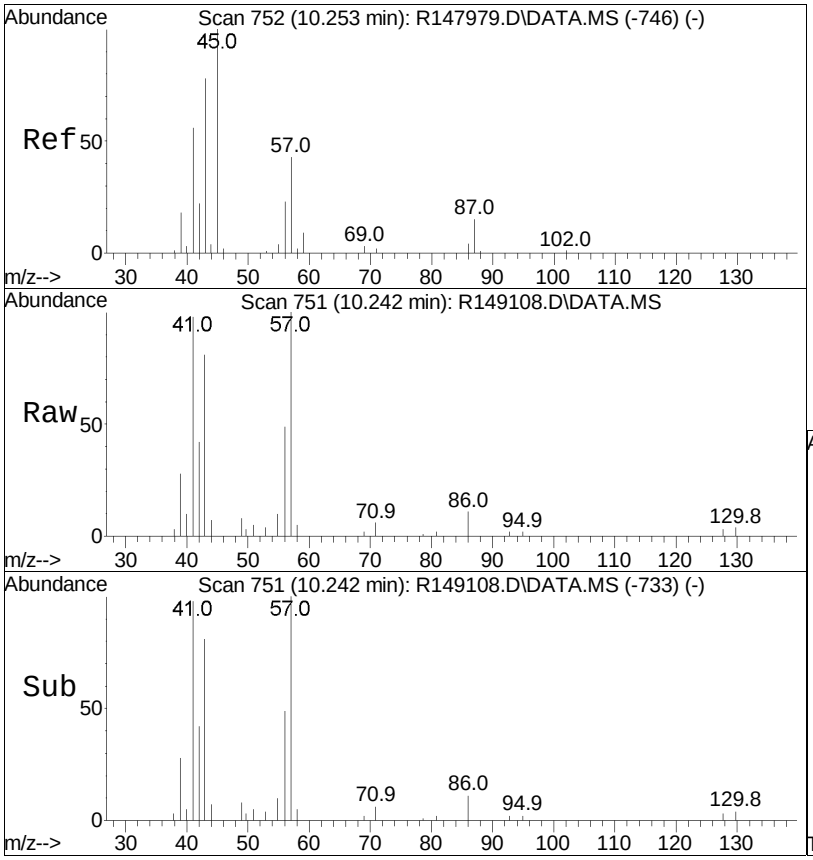


#37
cis-1,2-dichloroethene
Concen: 0.46 ppbV
RT: 10.00 min Scan# 730
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 61 Resp: 4584

Ion	Ratio	Lower	Upper
61	100		
96	66.9	50.1	75.1
98	46.1	32.5	48.7

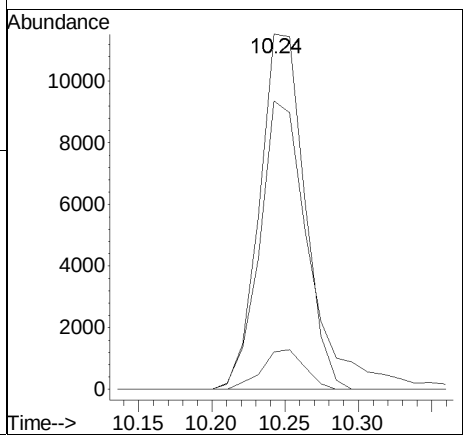


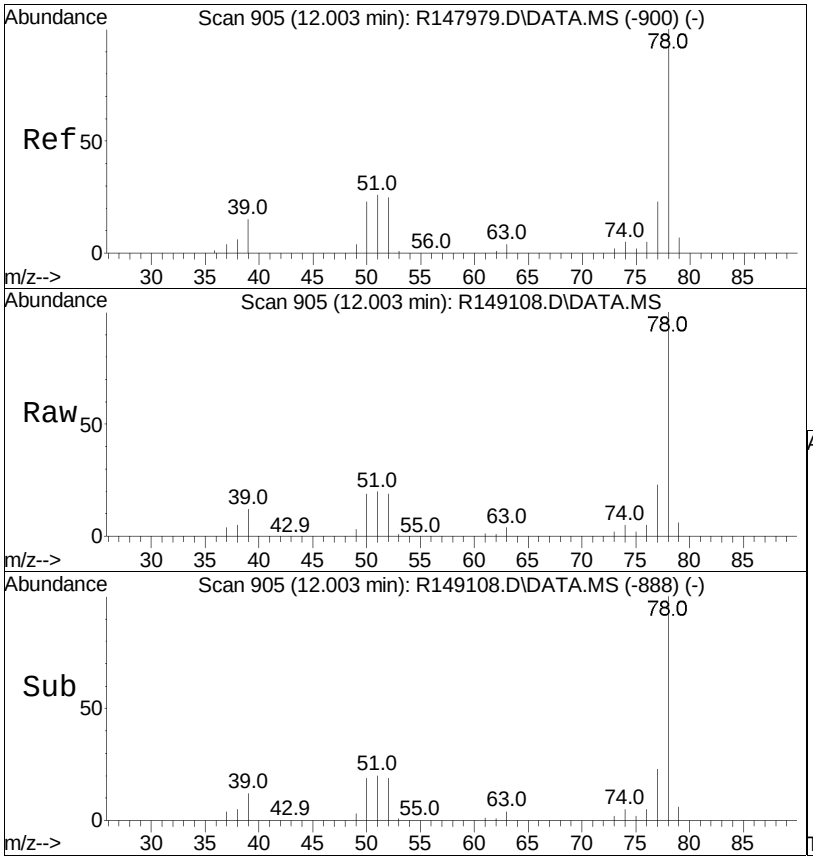


#44
hexane
Concen: 1.47 ppbV
RT: 10.24 min Scan# 751
Delta R.T. -0.011 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 57 Resp: 24525

Ion	Ratio	Lower	Upper
57	100		
43	81.2	142.3	213.5#
86	10.6	9.3	13.9

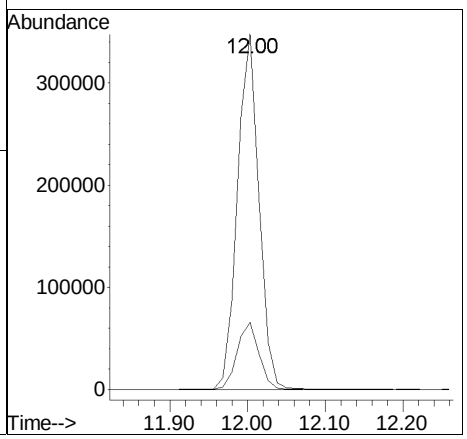


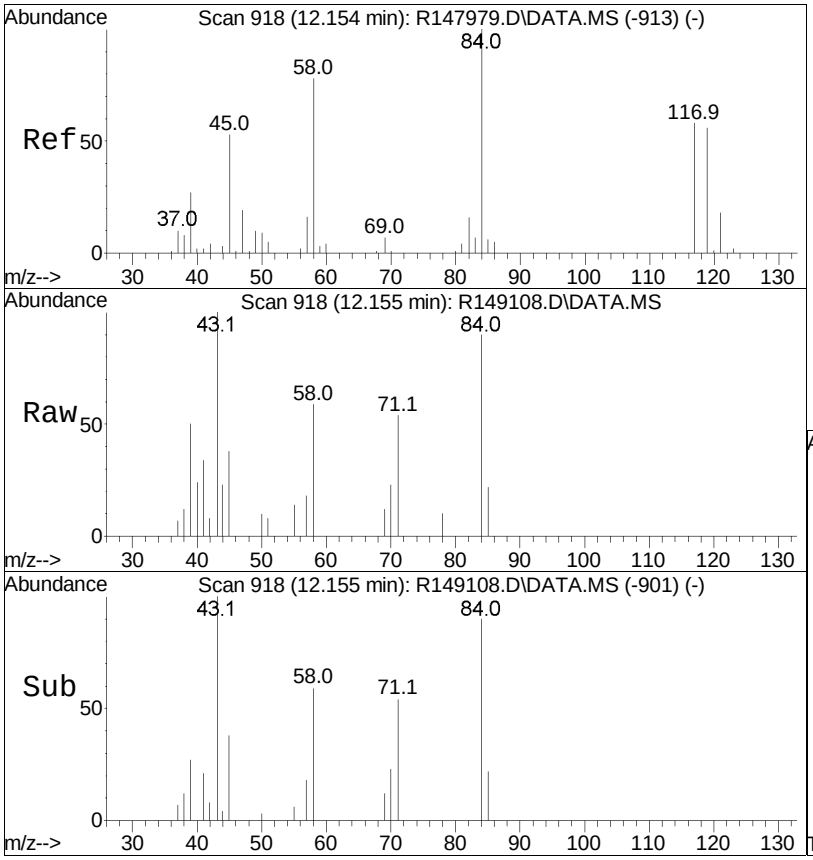


#50
benzene
Concen: 28.84 ppbV
RT: 12.00 min Scan# 905
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 78 Resp: 669401

Ion	Ratio	Lower	Upper
78	100		
52	18.9	15.2	22.8

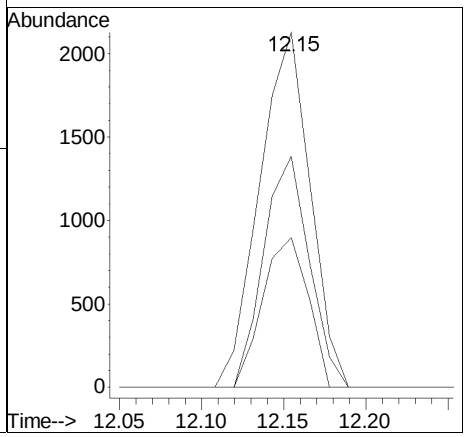


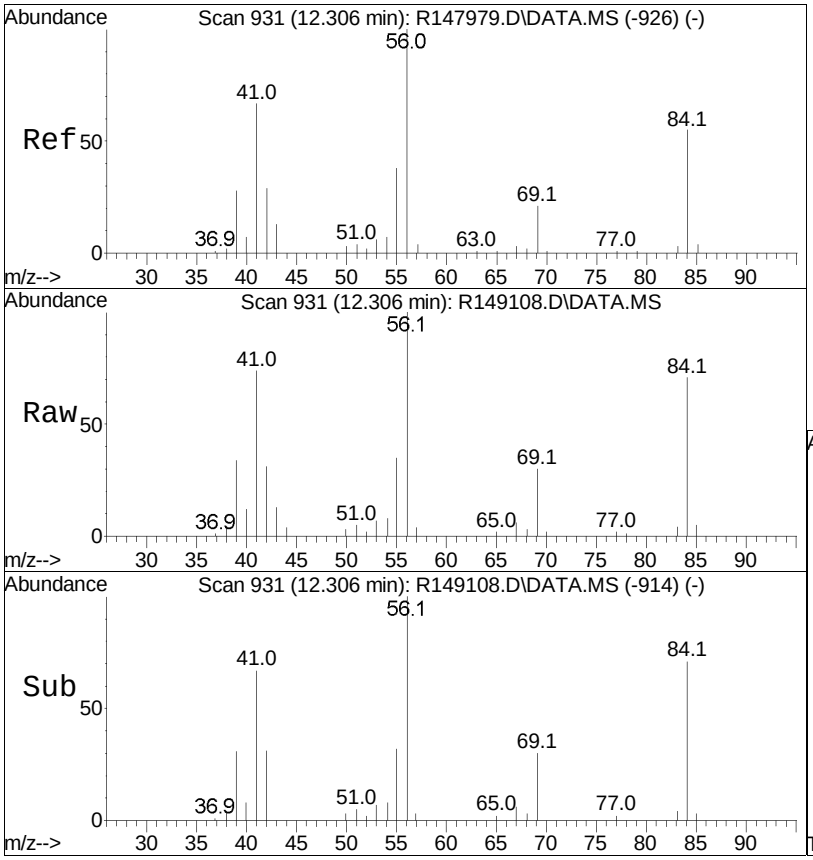


#51
thiophene
Concen: 0.23 ppbV
RT: 12.15 min Scan# 918
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 84 Resp: 4571

Ion	Ratio	Lower	Upper
84	100		
58	65.1	48.7	73.1
45	42.1	34.4	51.6

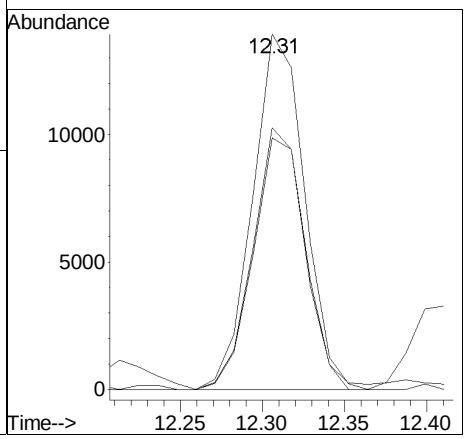


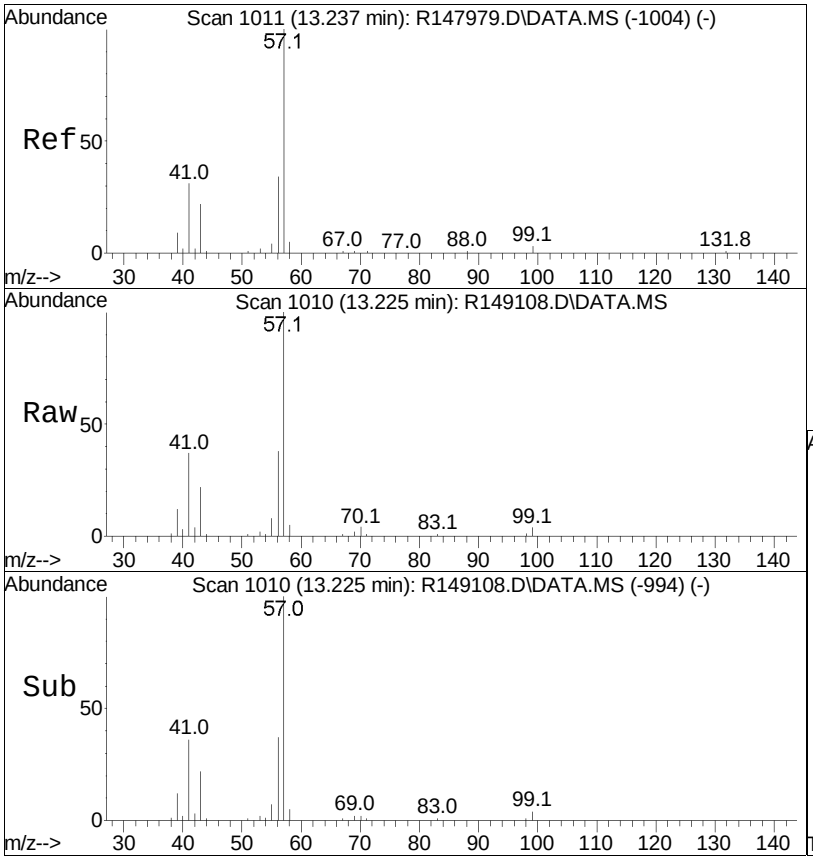


#53
cyclohexane
Concen: 2.24 ppbV
RT: 12.31 min Scan# 931
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 56 Resp: 30681

Ion	Ratio	Lower	Upper
56	100		
84	70.8	56.5	84.7
41	73.7	57.5	86.3

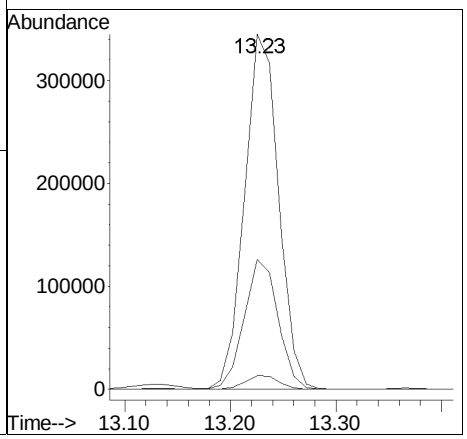


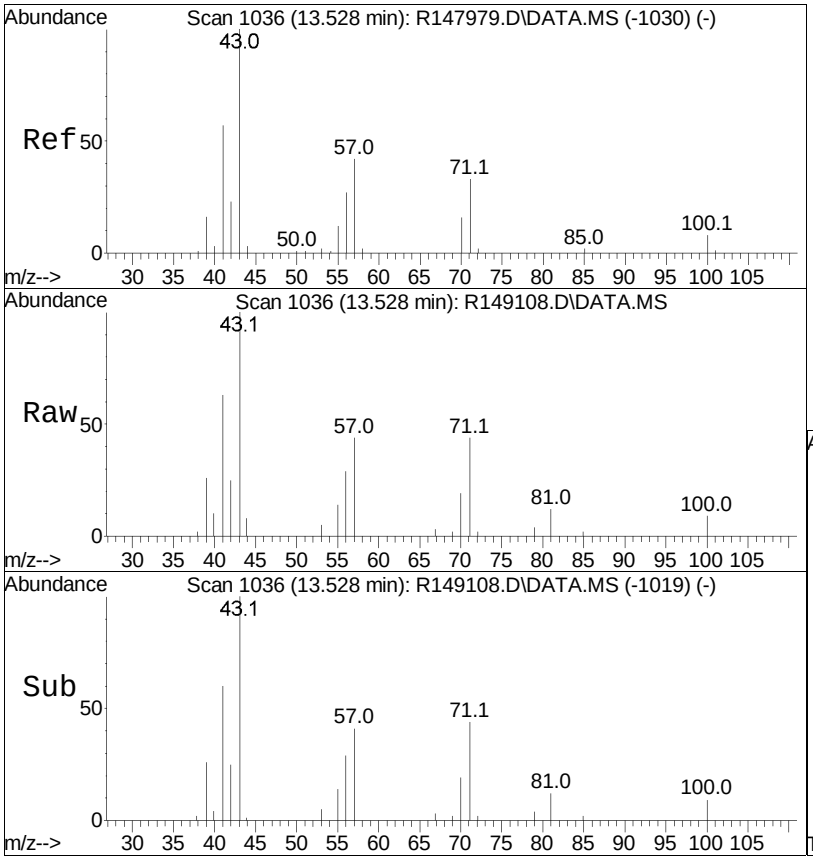


#60
2,2,4-trimethylpentane
Concen: 17.16 ppbV
RT: 13.23 min Scan# 1010
Delta R.T. -0.012 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 57 Resp: 773825

Ion	Ratio	Lower	Upper
57	100		
99	3.8	3.0	4.6
41	36.6	26.8	40.2

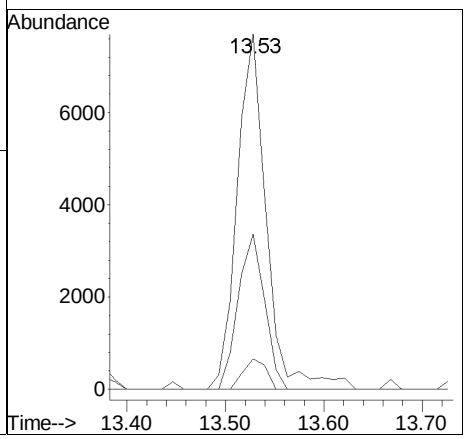


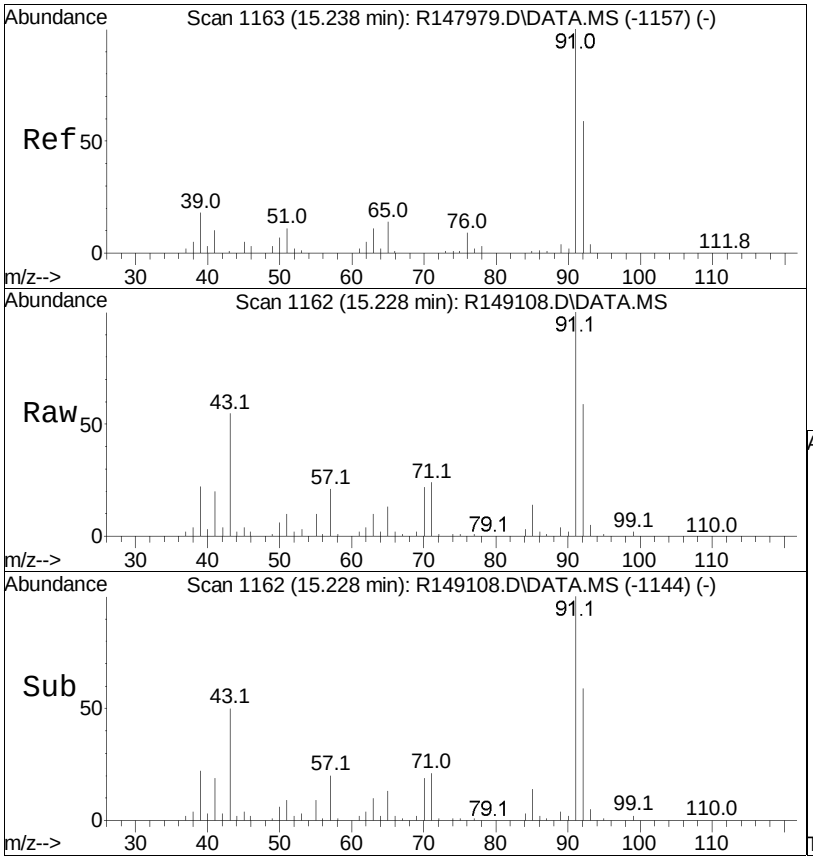


#62
heptane
Concen: 0.82 ppbV
RT: 13.53 min Scan# 1036
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 43 Resp: 15926

Ion	Ratio	Lower	Upper
43	100		
57	43.7	34.2	51.2
100	8.6	7.9	11.9

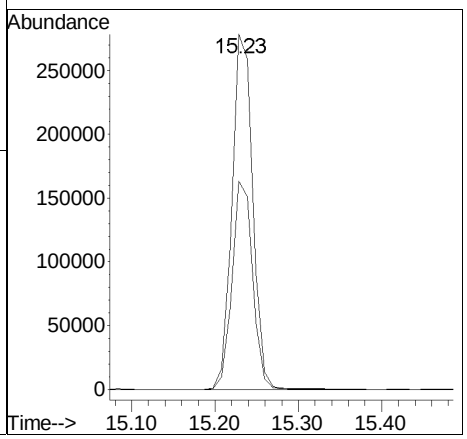


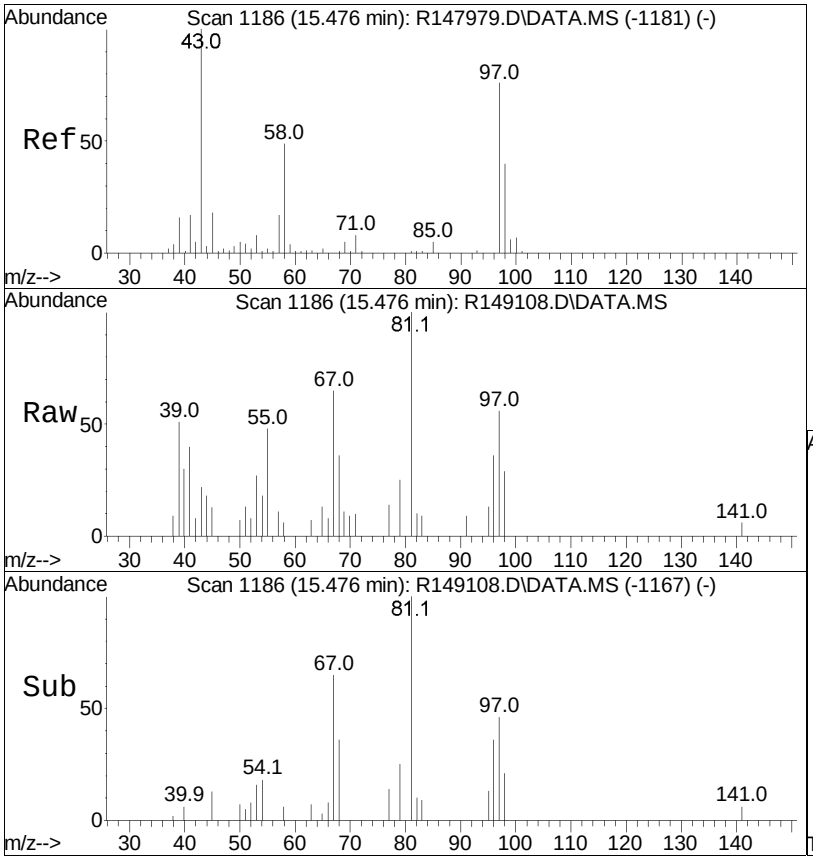


#68
toluene
Concen: 17.02 ppbV
RT: 15.23 min Scan# 1162
Delta R.T. -0.010 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 91 Resp: 481690

Ion	Ratio	Lower	Upper
91	100		
92	58.6	45.8	68.6

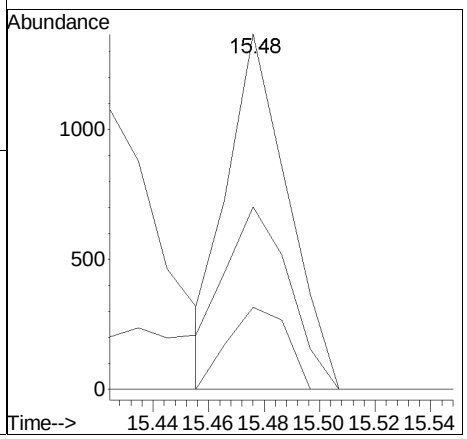


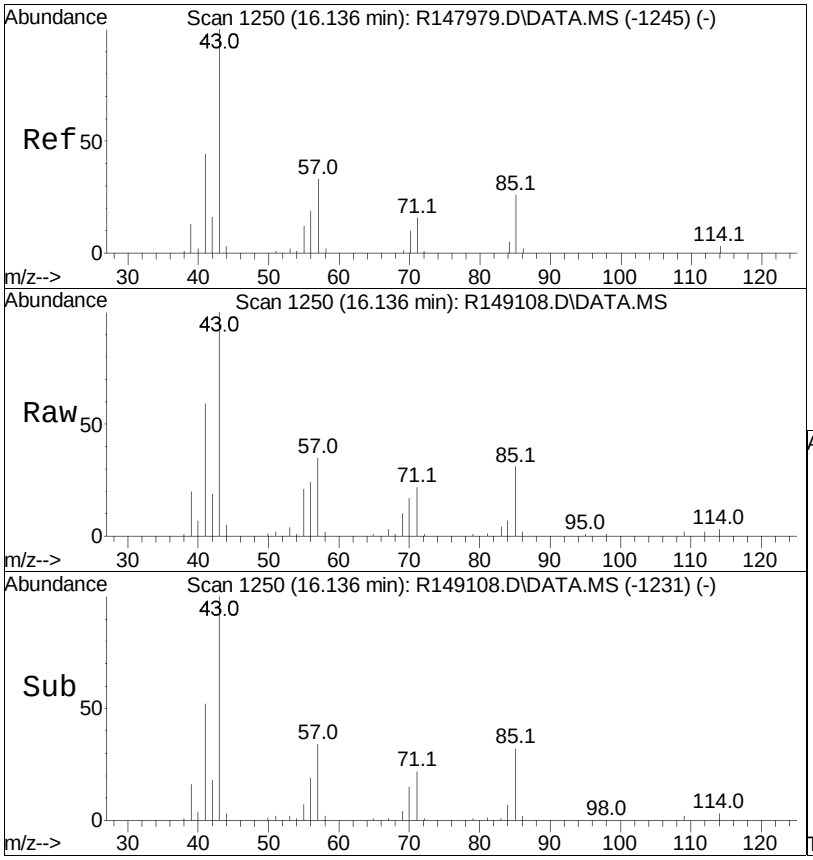


#73
3-methylthiophene
Concen: 0.07 ppbV
RT: 15.48 min Scan# 1186
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 97 Resp: 2054

Ion	Ratio	Lower	Upper
97	100		
98	51.4	43.8	65.6
45	23.1	17.6	26.4

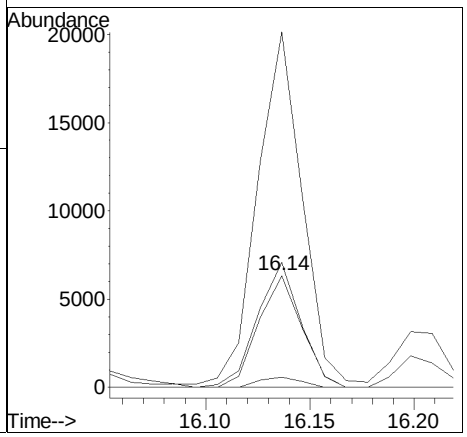


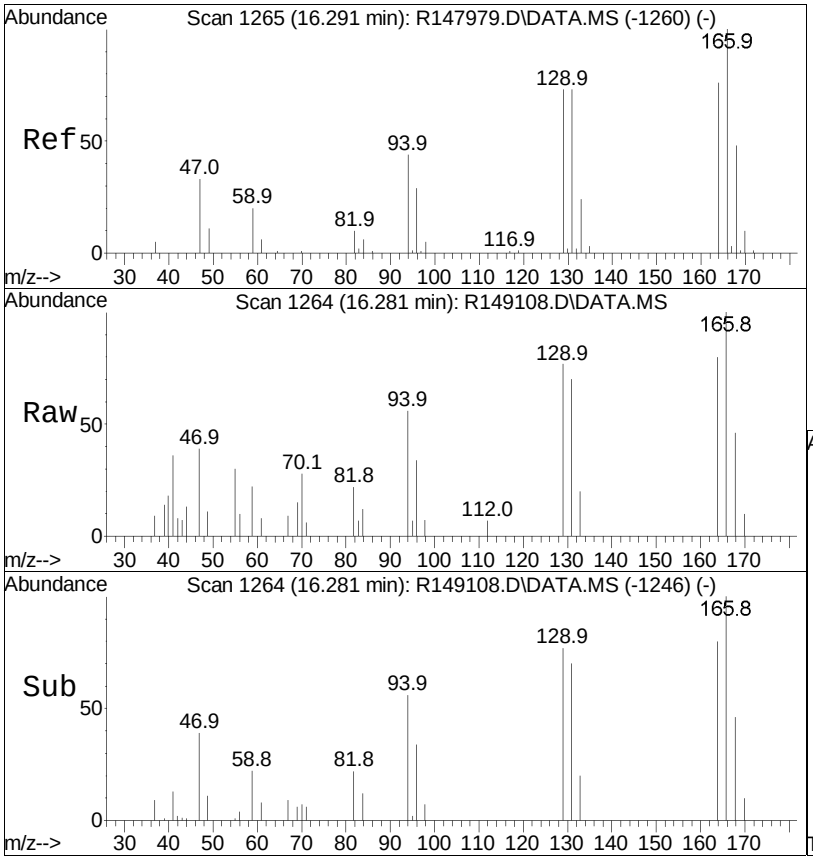


#77
octane
Concen: 1.08 ppbV
RT: 16.14 min Scan# 1250
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 85 Resp: 9145

Ion	Ratio	Lower	Upper
85	100		
57	112.1	84.9	127.3
114	9.2	8.2	12.2
43	318.8	257.0	385.4

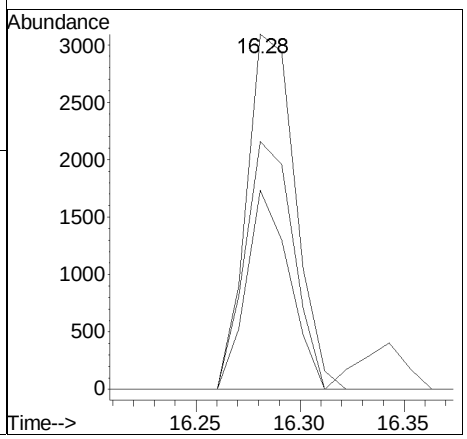


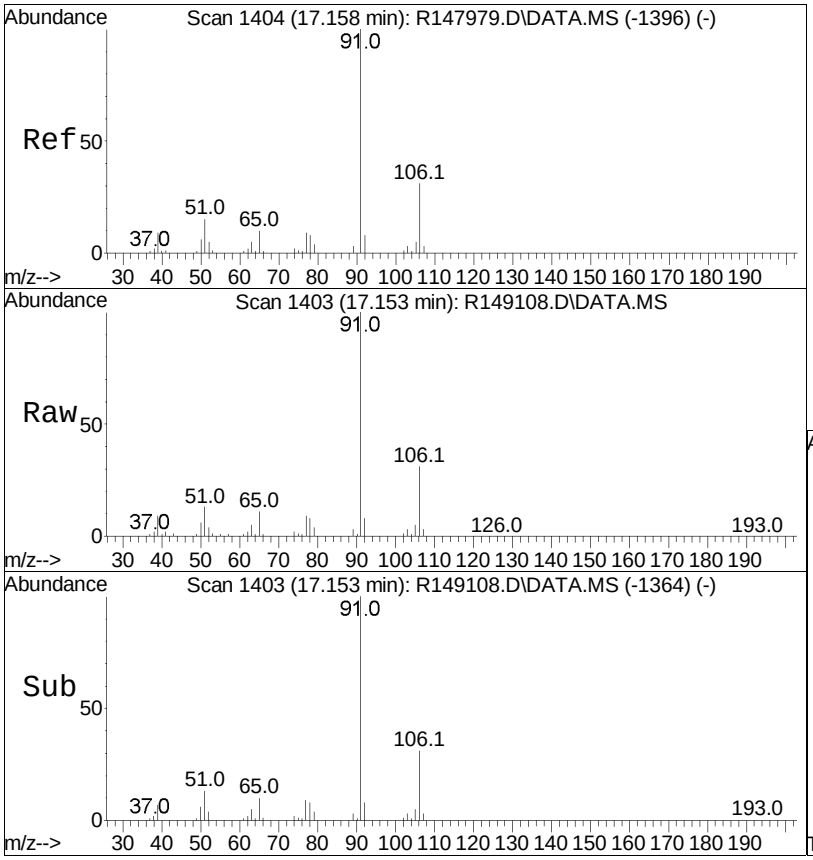


#78
tetrachloroethene
Concen: 0.35 ppbV
RT: 16.28 min Scan# 1264
Delta R.T. -0.010 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion:166 Resp: 5042

Ion	Ratio	Lower	Upper
166	100		
131	69.7	53.0	79.4
94	56.0	36.6	55.0#

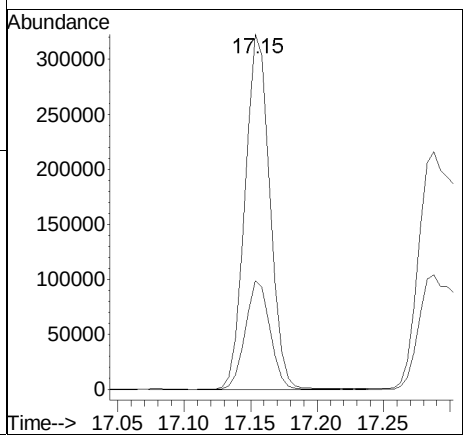


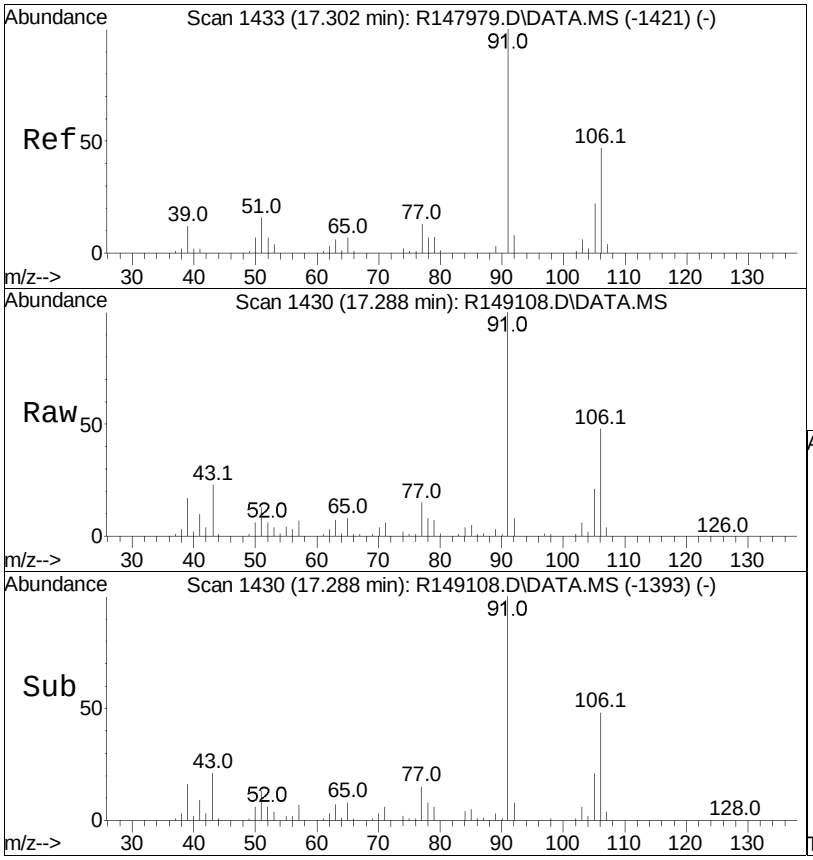


#81
ethylbenzene
Concen: 11.31 ppbV
RT: 17.15 min Scan# 1403
Delta R.T. -0.005 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 91 Resp: 420073

Ion	Ratio	Lower	Upper
91	100		
106	30.6	24.5	36.7

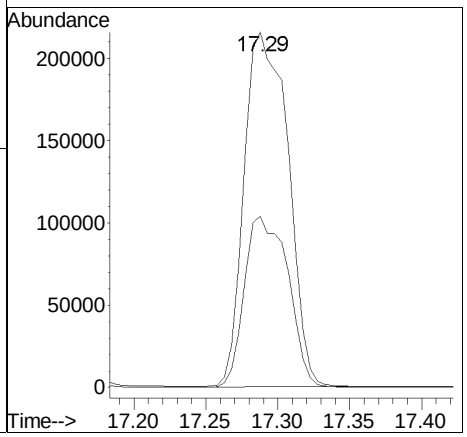


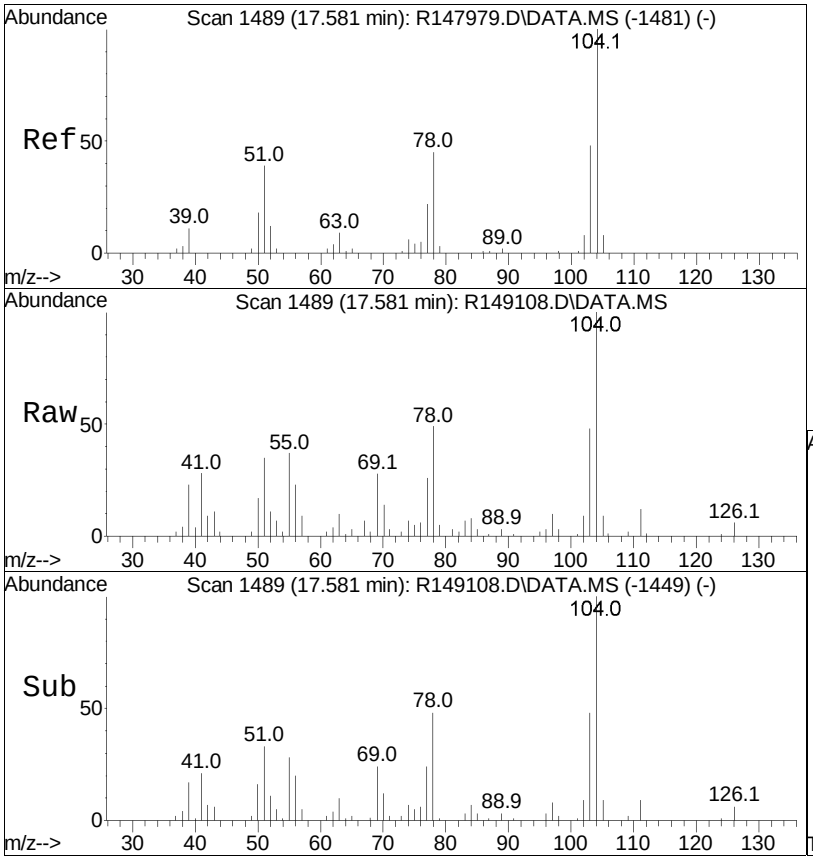


#83
m+p-xylene
Concen: 15.40 ppbV
RT: 17.29 min Scan# 1430
Delta R.T. -0.015 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 91 Resp: 455952

Ion	Ratio	Lower	Upper
91	100		
106	48.2	38.8	58.2

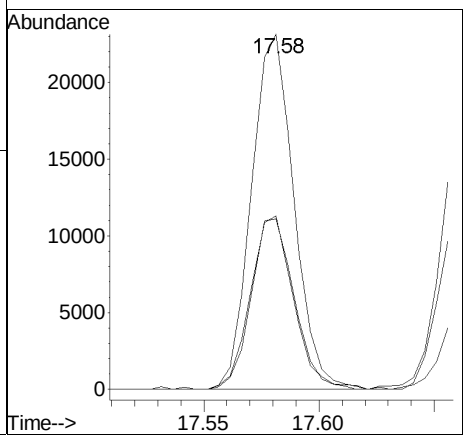


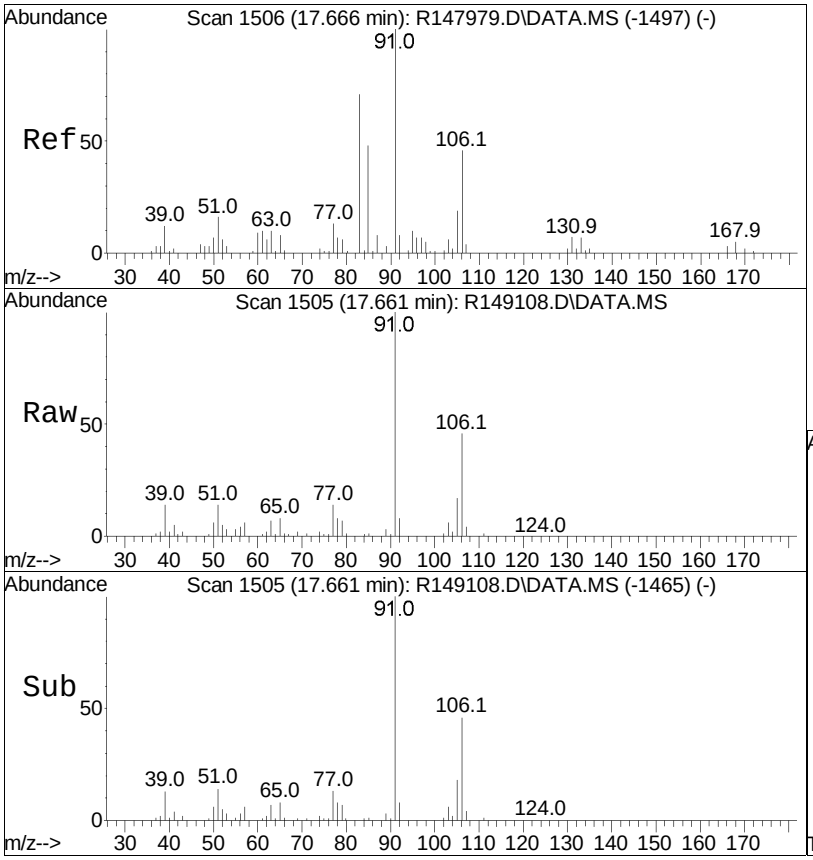


#85
styrene
Concen: 1.40 ppbV
RT: 17.58 min Scan# 1489
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion:104 Resp: 29638

Ion	Ratio	Lower	Upper
104	100		
103	48.0	38.5	57.7
78	48.8	38.8	58.2

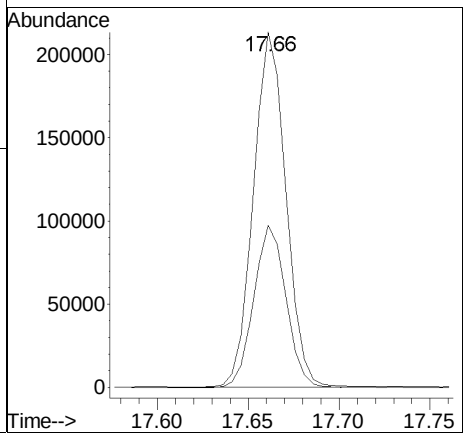


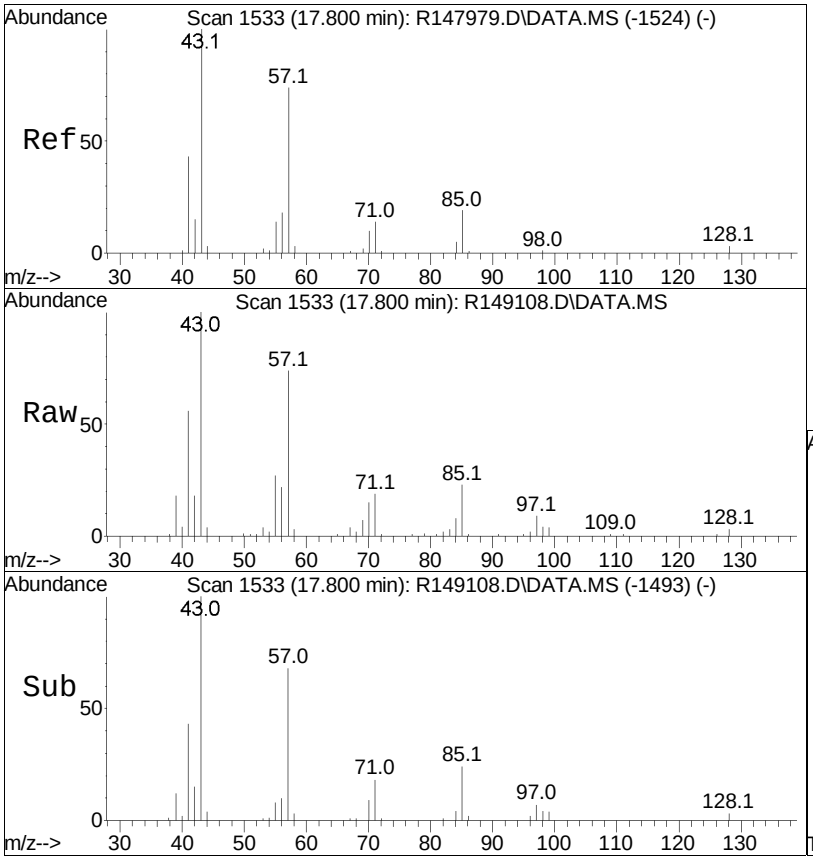


#87
o-xylene
Concen: 8.64 ppbV
RT: 17.66 min Scan# 1505
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 91 Resp: 264426

Ion	Ratio	Lower	Upper
91	100		
106	45.6	36.5	54.7

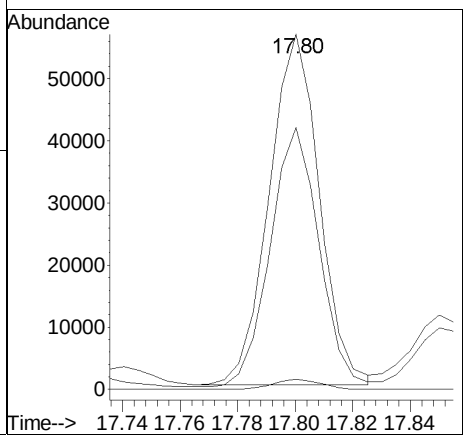


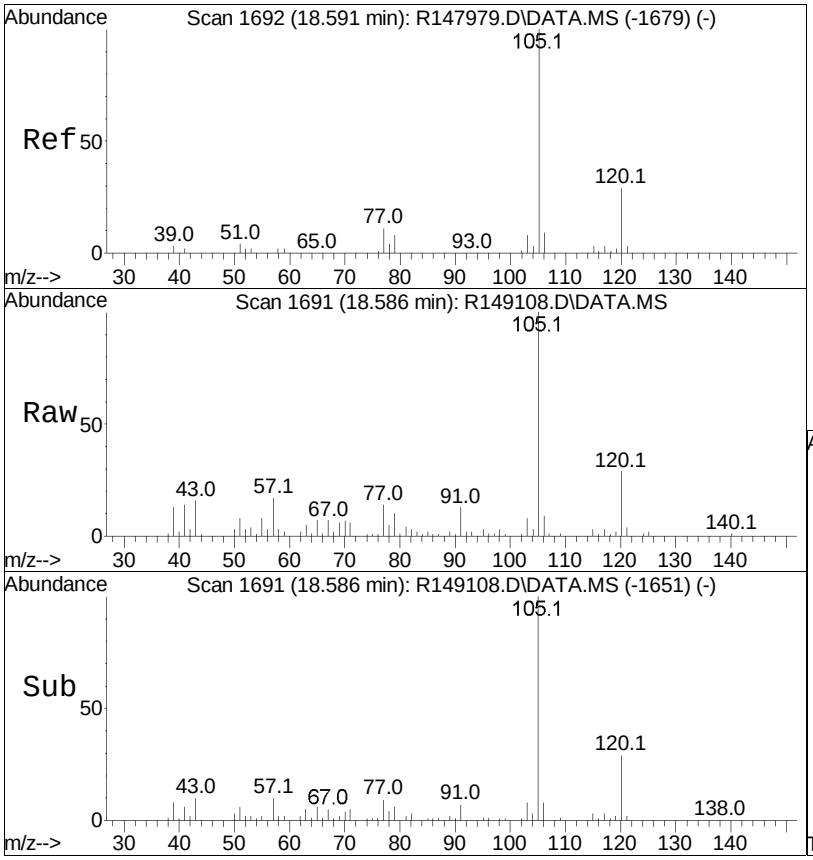


#89
nonane
Concen: 2.38 ppbV
RT: 17.80 min Scan# 1533
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 43 Resp: 68406

Ion	Ratio	Lower	Upper
43	100		
57	73.7	58.8	88.2
128	2.9	2.3	3.5

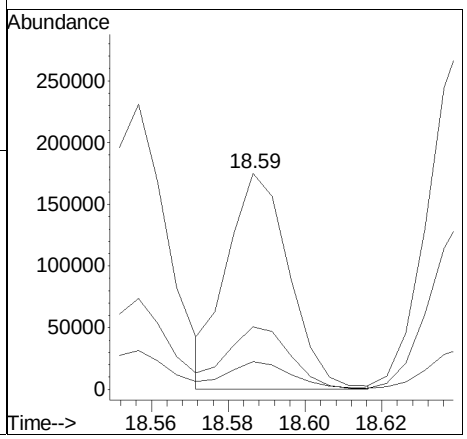


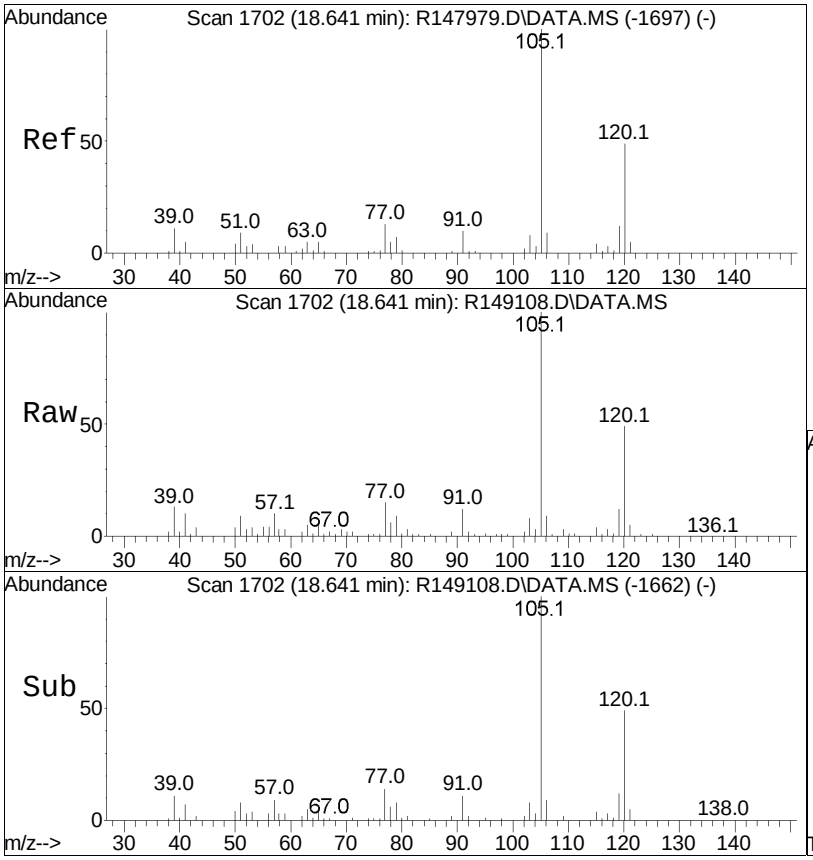


#96
4-ethyl toluene
Concen: 4.52 ppbV
RT: 18.59 min Scan# 1691
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion:105 Resp: 196660

Ion	Ratio	Lower	Upper
105	100		
120	28.9	23.3	34.9
91	12.9	9.6	14.4

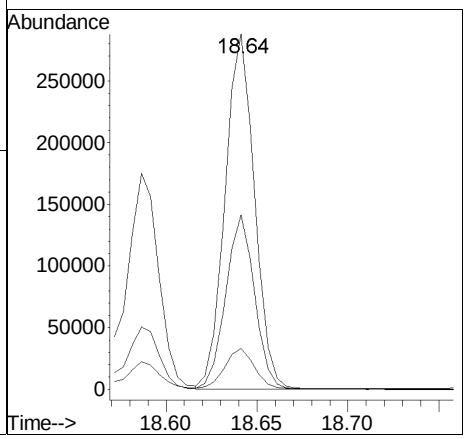


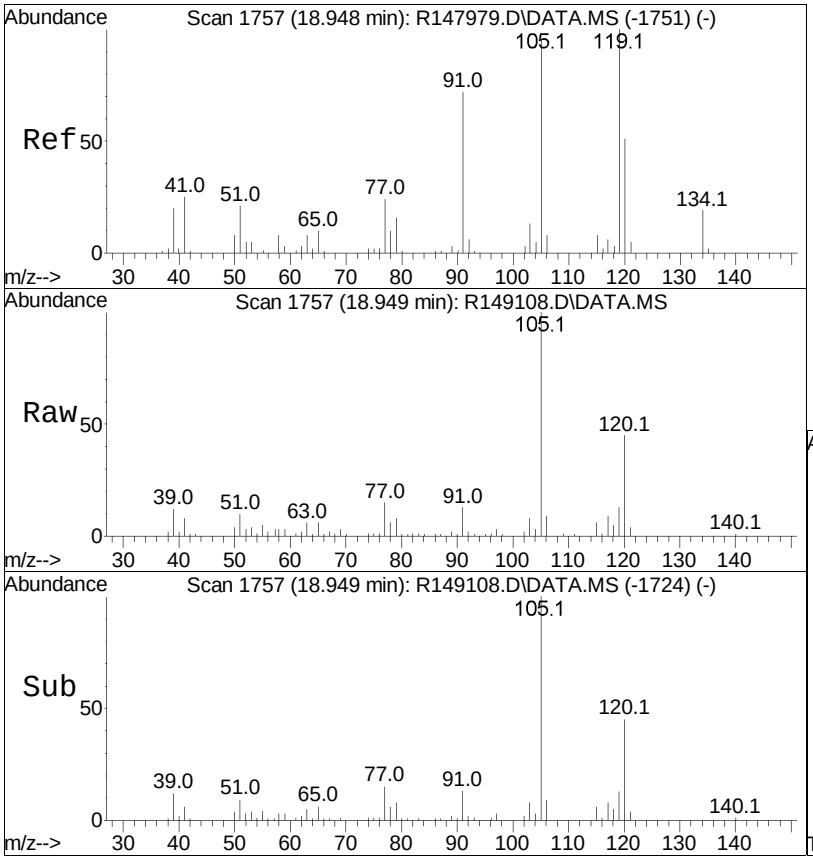


#97
1,3,5-trimethylbenzene
Concen: 9.43 ppbV
RT: 18.64 min Scan# 1702
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion:105 Resp: 323506

Ion	Ratio	Lower	Upper
105	100		
120	49.1	38.5	57.7
91	11.5	9.2	13.8

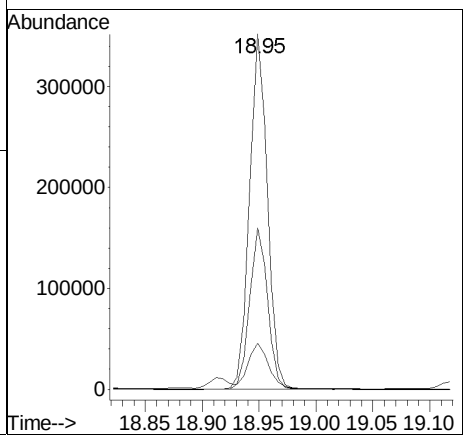


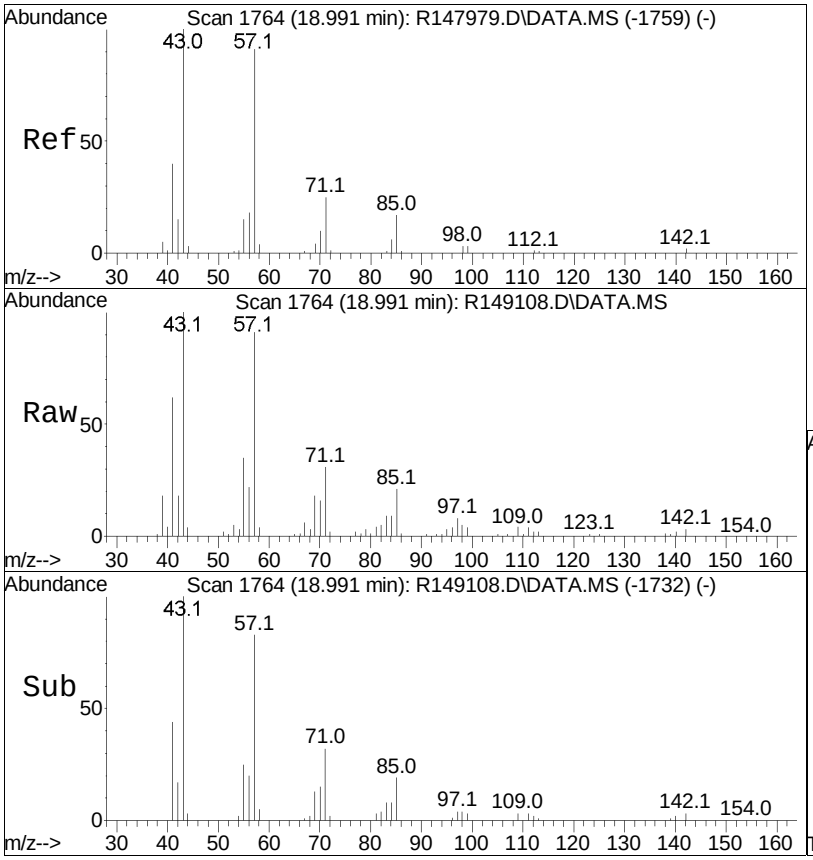


#99
1,2,4-trimethylbenzene
Concen: 11.16 ppbV
RT: 18.95 min Scan# 1757
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion:105 Resp: 384554

Ion	Ratio	Lower	Upper
105	100		
120	45.5	43.0	64.4
91	13.0	63.7	95.5#

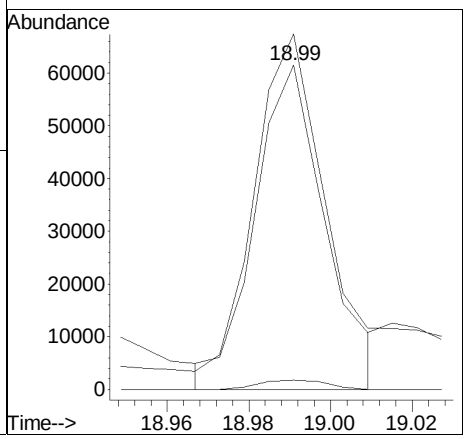


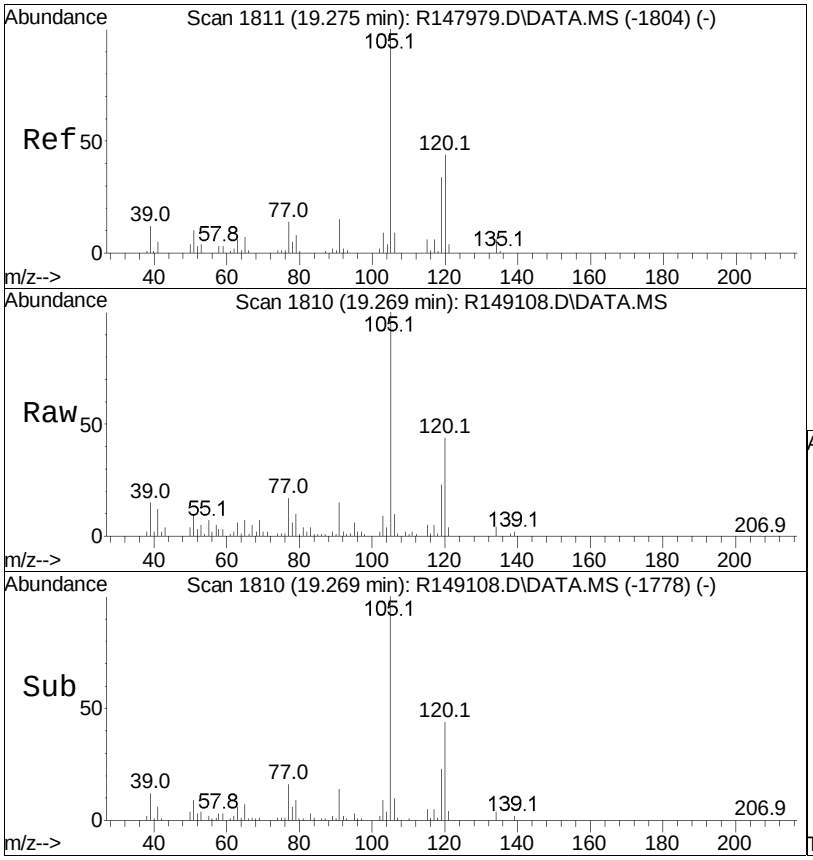


#100
decane
Concen: 2.72 ppbV m
RT: 18.99 min Scan# 1764
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 57 Resp: 73805

Ion	Ratio	Lower	Upper
57	100		
43	109.5	88.1	132.1
142	2.8	2.4	3.6

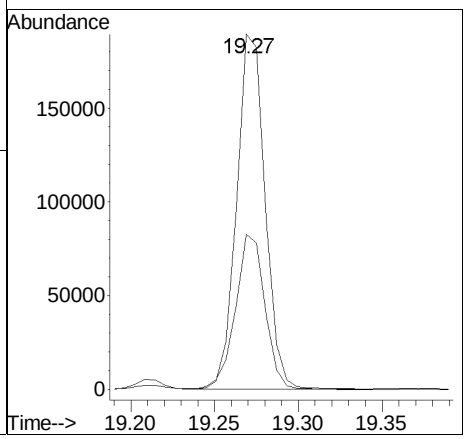


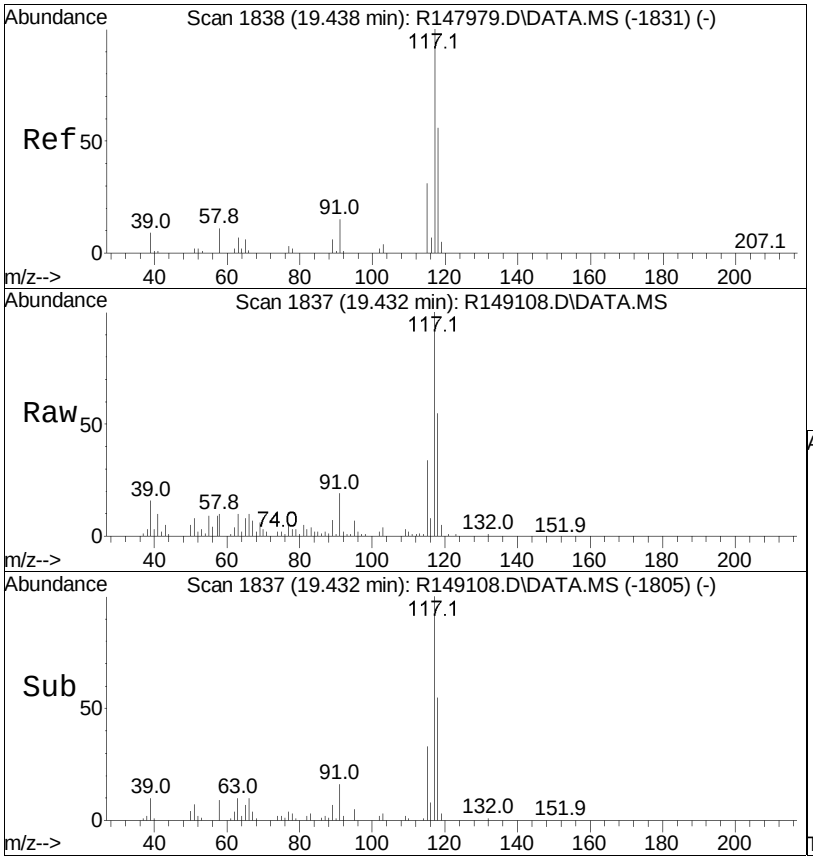


#105
1,2,3-trimethylbenzene
Concen: 5.93 ppbV
RT: 19.27 min Scan# 1810
Delta R.T. -0.006 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion:105 Resp: 223043

Ion	Ratio	Lower	Upper
105	100		
120	43.7	35.0	52.6

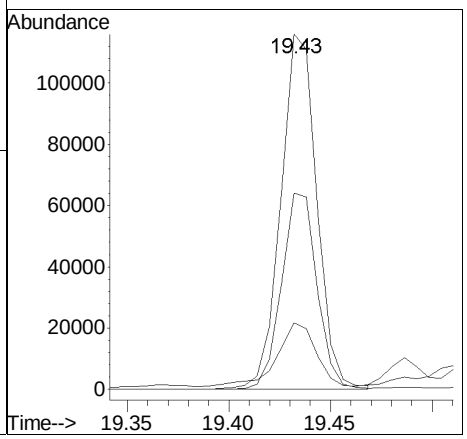


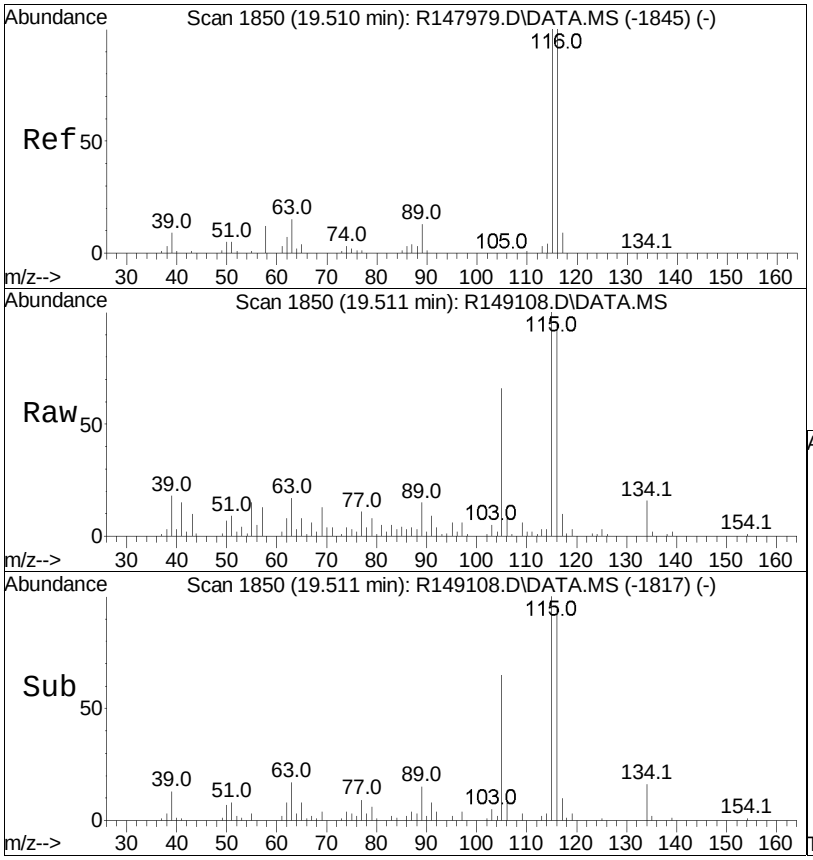


#109
indan
Concen: 3.49 ppbV
RT: 19.43 min Scan# 1837
Delta R.T. -0.006 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion:117 Resp: 143096

Ion	Ratio	Lower	Upper
117	100		
118	55.3	44.2	66.2
91	18.7	13.0	19.4

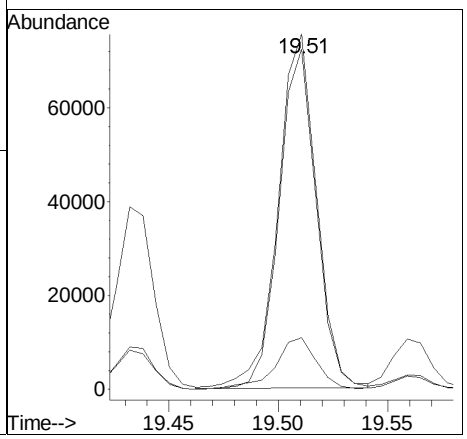


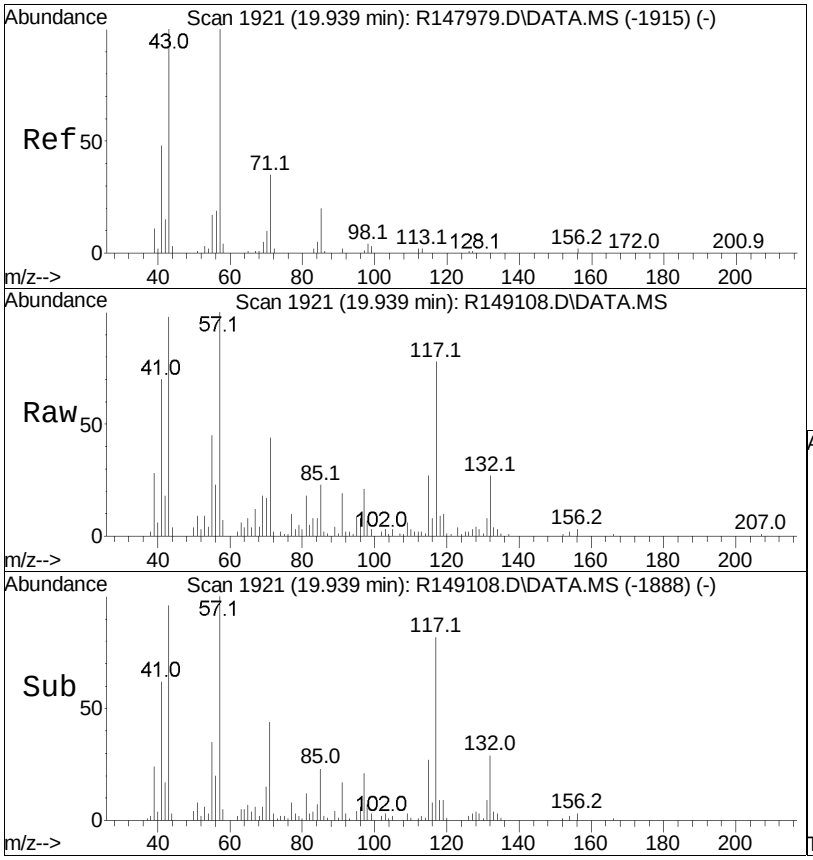


#110
indene
Concen: 3.33 ppbV
RT: 19.51 min Scan# 1850
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion:115 Resp: 92455

Ion	Ratio	Lower	Upper
115	100		
116	95.8	75.1	112.7
89	14.6	10.5	15.7

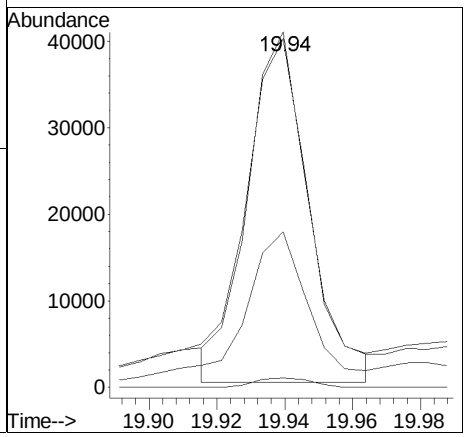


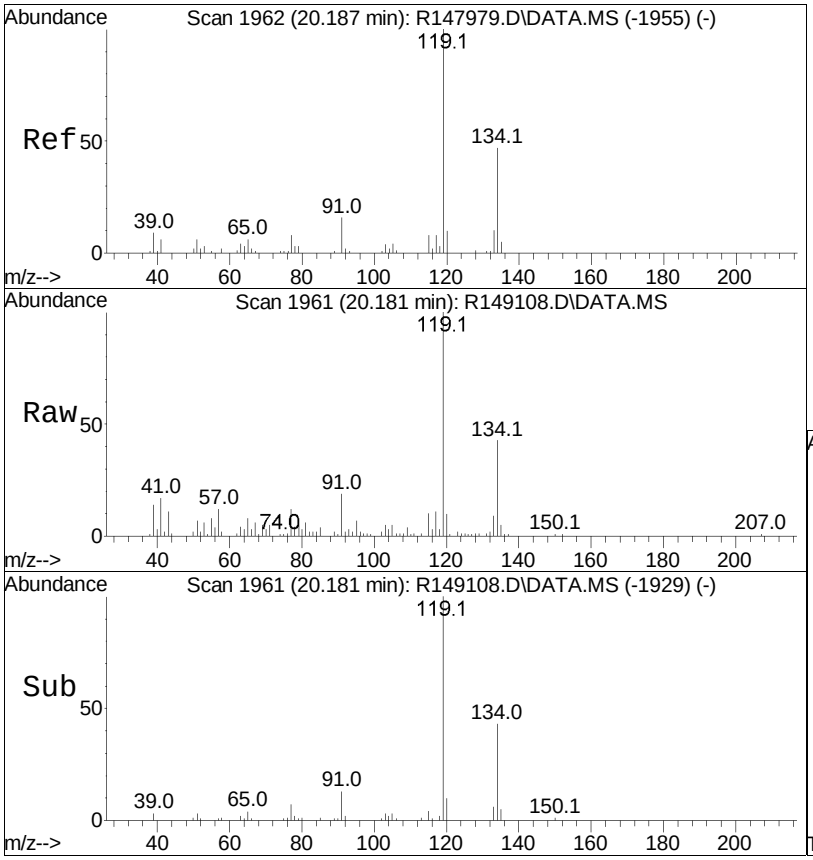


#112
undecane
Concen: 1.70 ppbV m
RT: 19.94 min Scan# 1921
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 57 Resp: 50838

Ion	Ratio	Lower	Upper
57	100		
43	98.2	81.6	122.4
71	43.8	35.4	53.2
156	2.6	2.2	3.4

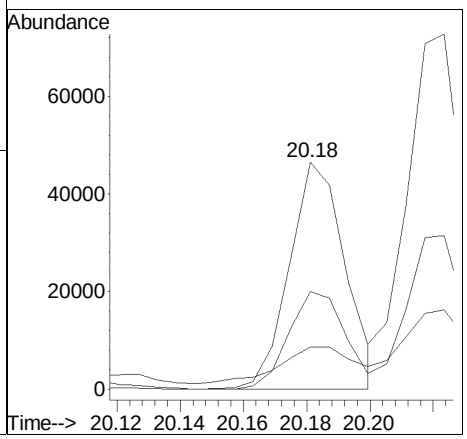


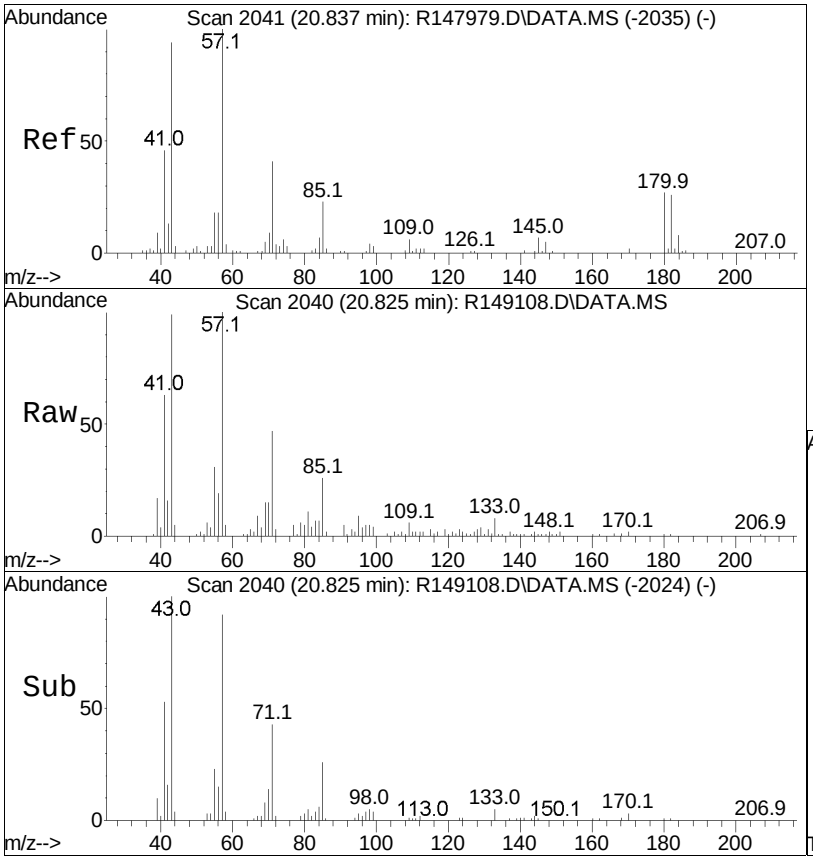


#113
1,2,4,5-tetramethylbenzene
Concen: 1.06 ppbV
RT: 20.18 min Scan# 1961
Delta R.T. -0.006 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion:119 Resp: 57147

Ion	Ratio	Lower	Upper
119	100		
134	43.1	36.2	54.2
91	18.7	13.7	20.5

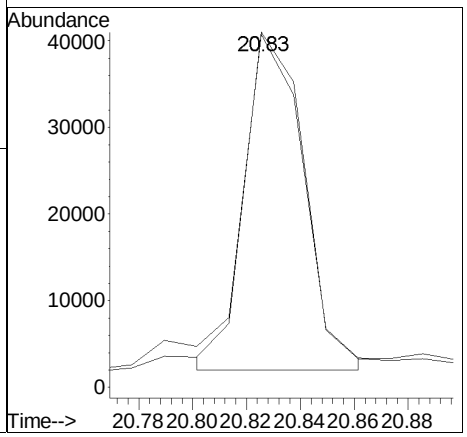


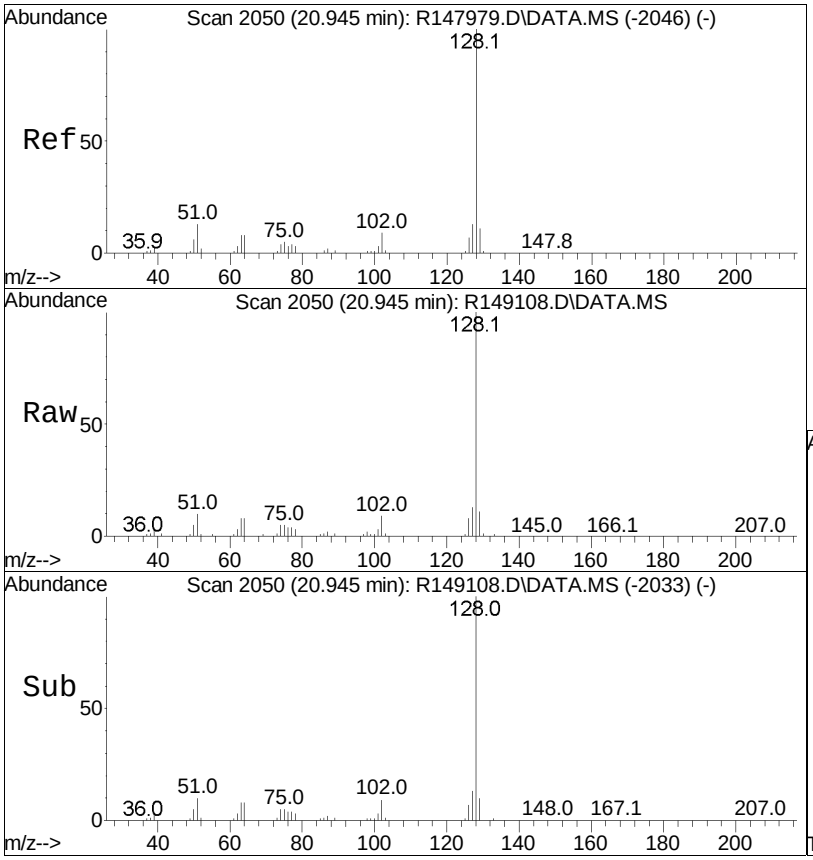


#114
dodecane
Concen: 1.98 ppbV m
RT: 20.83 min Scan# 2040
Delta R.T. -0.012 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion: 57 Resp: 60251

Ion	Ratio	Lower	Upper
57	100		
43	99.3	76.2	114.4

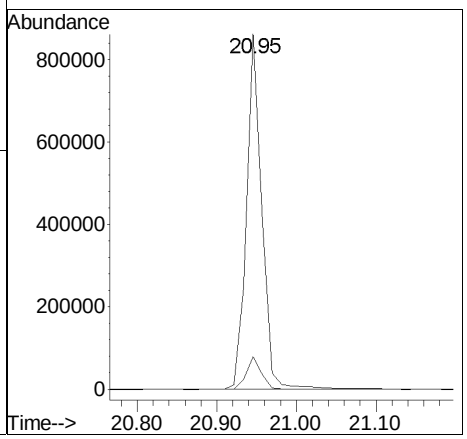


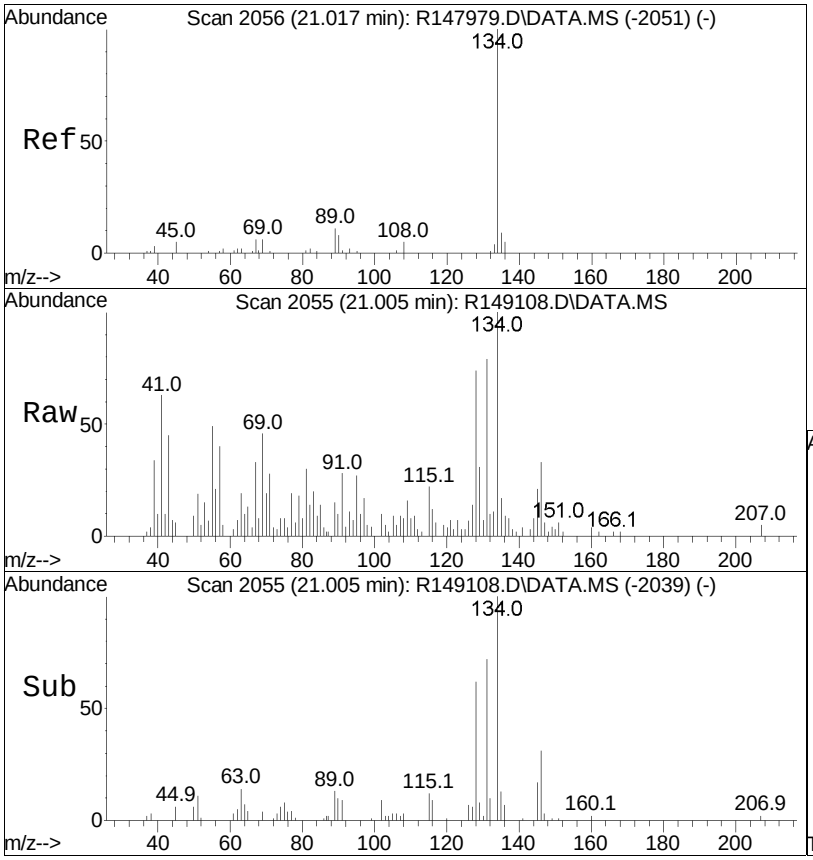


#116
naphthalene
Concen: 26.75 ppbV
RT: 20.95 min Scan# 2050
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion:128 Resp: 1151604

Ion	Ratio	Lower	Upper
128	100		
102	9.2	7.5	11.3

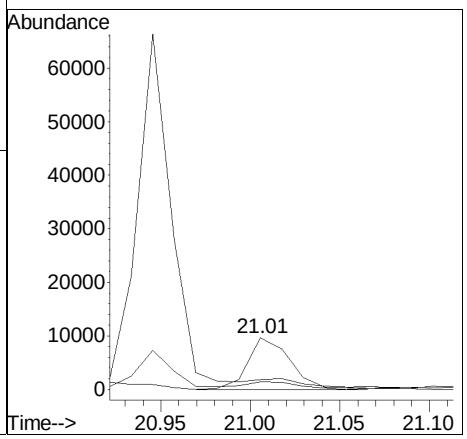


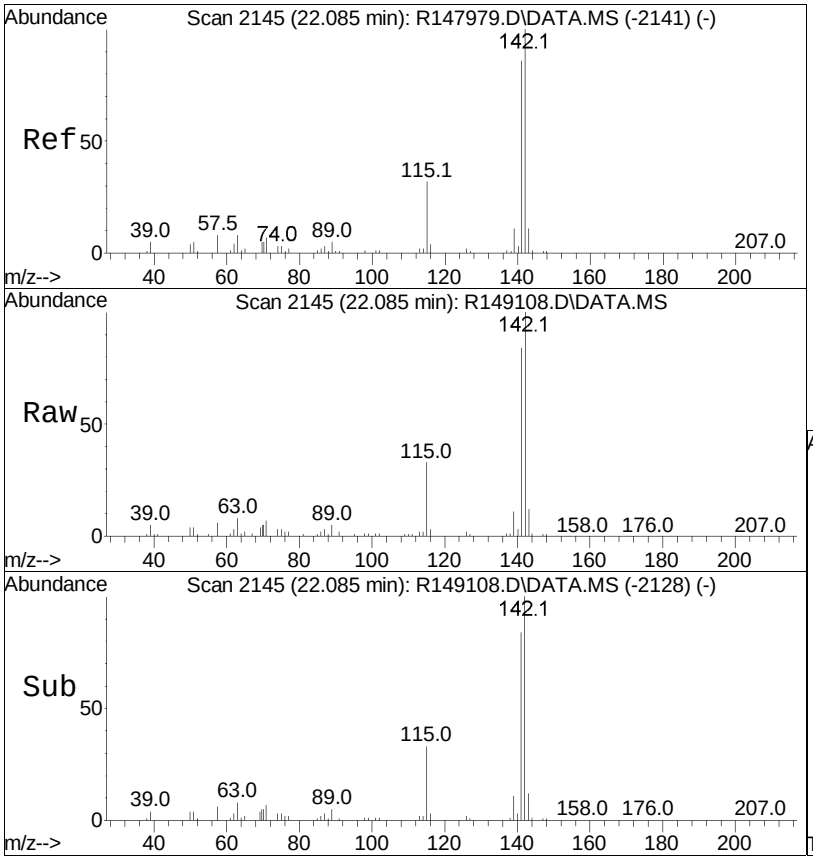


#118
benzothiophene
Concen: 0.36 ppbV
RT: 21.01 min Scan# 2055
Delta R.T. -0.012 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion:134 Resp: 16208

Ion	Ratio	Lower	Upper
134	100		
89	14.7	9.8	14.8
63	19.0	6.5	9.7#

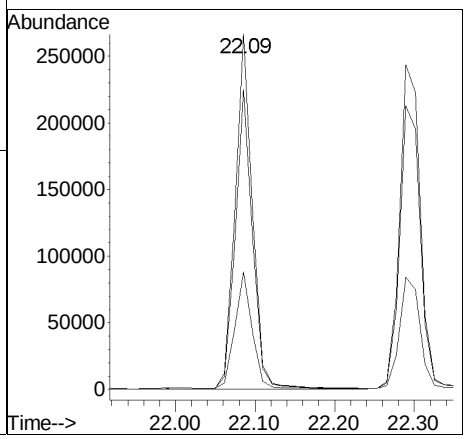


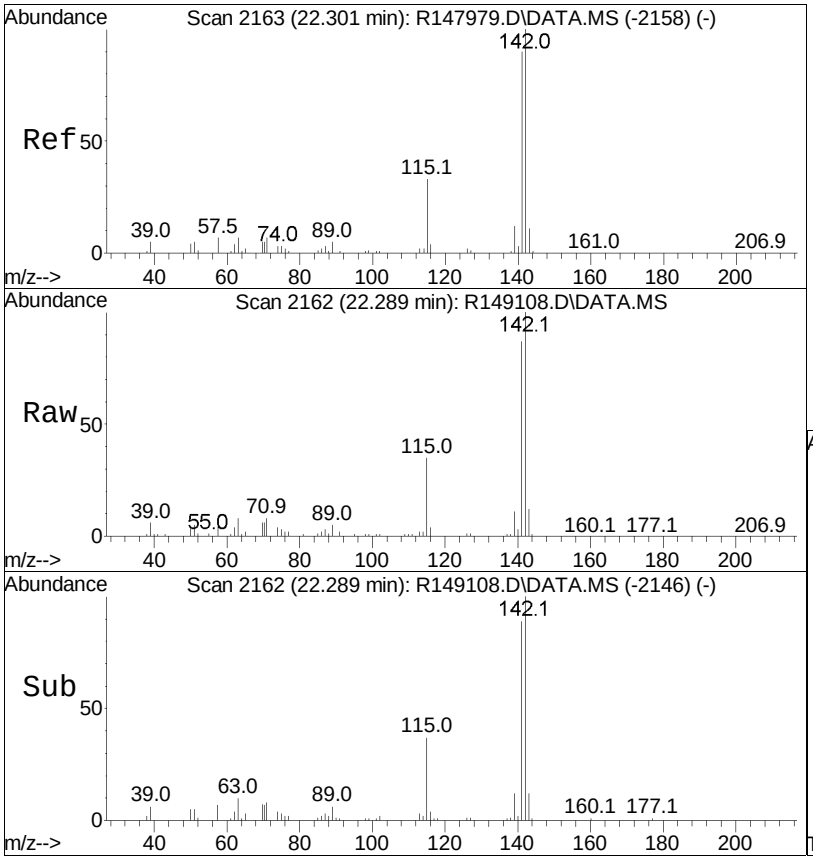


#120
2-methylnaphthalene
Concen: 18.87 ppbV
RT: 22.09 min Scan# 2145
Delta R.T. 0.000 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion:142 Resp: 406629

Ion	Ratio	Lower	Upper
142	100		
141	84.5	68.0	102.0
115	33.0	26.6	39.8

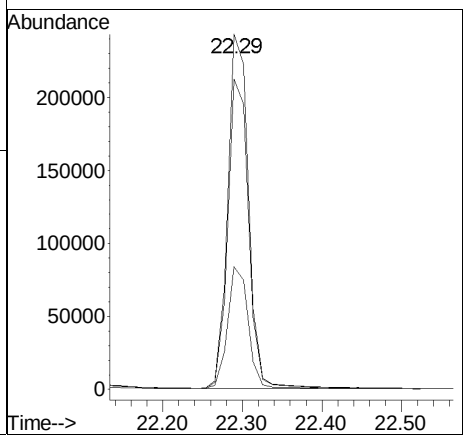




#121
1-methylnaphthalene
Concen: 19.21 ppbV
RT: 22.29 min Scan# 2162
Delta R.T. -0.012 min
Lab File: R149108.D
Acq: 1 Nov 2016 8:35 pm

Tgt Ion:142 Resp: 441416

Ion	Ratio	Lower	Upper
142	100		
141	87.4	70.4	105.6
115	34.5	27.5	41.3



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: WG947959-5	Date Collected	: NA
Client ID	: WG947959-5BLANK	Date Received	: NA
Sample Location	:	Date Analyzed	: 11/01/16 12:46
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149095	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
75-71-8	Dichlorodifluoromethane	ND	0.200	0.047	ND	0.989	0.230	U
74-87-3	Chloromethane	ND	0.200	0.096	ND	0.413	0.198	U
76-14-2	Freon-114	ND	0.200	0.042	ND	1.40	0.293	U
75-01-4	Vinyl chloride	ND	0.200	0.038	ND	0.511	0.097	U
106-99-0	1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177	U
106-97-8	Butane	ND	0.200	0.044	ND	0.475	0.105	U
75-07-0	Acetaldehyde	0.693	2.50	0.547	1.25	4.50	0.985	J
74-83-9	Bromomethane	ND	0.200	0.070	ND	0.777	0.270	U
75-00-3	Chloroethane	ND	0.200	0.077	ND	0.528	0.202	U
64-17-5	Ethanol	ND	2.50	0.542	ND	4.71	1.02	U
593-60-2	Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306	U
107-02-8	Acrolein	ND	0.500	0.114	ND	1.15	0.261	U
67-64-1	Acetone	ND	1.00	0.165	ND	2.38	0.392	U
75-69-4	Trichlorofluoromethane	ND	0.200	0.042	ND	1.12	0.234	U
67-63-0	Isopropanol	ND	0.500	0.053	ND	1.23	0.129	U
109-66-0	Pentane	ND	0.200	0.048	ND	0.590	0.140	U
75-35-4	1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224	U
75-65-0	tert-Butyl Alcohol	ND	0.500	0.060	ND	1.52	0.182	U
75-09-2	Methylene chloride	ND	1.00	0.299	ND	1.74	1.04	U
107-05-1	3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254	U
75-15-0	Carbon disulfide	ND	0.200	0.035	ND	0.623	0.107	U
76-13-1	Freon-113	ND	0.200	0.051	ND	1.53	0.392	U
156-60-5	trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293	U
75-34-3	1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312	U
1634-04-4	Methyl tert butyl ether	ND	0.200	0.053	ND	0.721	0.190	U
78-93-3	2-Butanone	ND	0.500	0.047	ND	1.47	0.139	U
156-59-2	cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233	U
67-66-3	Chloroform	ND	0.200	0.053	ND	0.977	0.259	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: WG947959-5	Date Collected	: NA
Client ID	: WG947959-5BLANK	Date Received	: NA
Sample Location	:	Date Analyzed	: 11/01/16 12:46
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149095	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
107-06-2	1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223	U
110-54-3	n-Hexane	ND	0.200	0.052	ND	0.705	0.183	U
71-55-6	1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311	U
71-43-2	Benzene	ND	0.200	0.054	ND	0.639	0.172	U
110-02-1	Thiophene	ND	0.200	0.053	ND	0.688	0.182	U
56-23-5	Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296	U
110-82-7	Cyclohexane	ND	0.200	0.066	ND	0.688	0.226	U
78-87-5	1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322	U
75-27-4	Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439	U
123-91-1	1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281	U
79-01-6	Trichloroethene	ND	0.200	0.071	ND	1.07	0.382	U
540-84-1	2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308	U
142-82-5	Heptane	ND	0.200	0.055	ND	0.820	0.227	U
10061-01-5	cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338	U
108-10-1	4-Methyl-2-pentanone	ND	0.500	0.061	ND	2.05	0.249	U
10061-02-6	trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315	U
79-00-5	1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364	U
108-88-3	Toluene	ND	0.200	0.063	ND	0.754	0.237	U
554-14-3	2-Methylthiophene	ND	0.200	0.079	ND	0.803	0.317	U
591-78-6	2-Hexanone	ND	0.200	0.060	ND	0.820	0.248	U
616-44-4	3-Methylthiophene	ND	0.200	0.067	ND	0.803	0.269	U
124-48-1	Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636	U
106-93-4	1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599	U
111-65-9	Octane	ND	0.200	0.042	ND	0.934	0.197	U
127-18-4	Tetrachloroethene	ND	0.200	0.076	ND	1.36	0.514	U
108-90-7	Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363	U
100-41-4	Ethylbenzene	ND	0.200	0.056	ND	0.869	0.241	U
872-55-9	2-Ethylthiophene	ND	0.200	0.057	ND	0.918	0.262	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: WG947959-5	Date Collected	: NA
Client ID	: WG947959-5BLANK	Date Received	: NA
Sample Location	:	Date Analyzed	: 11/01/16 12:46
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15	Analyst	: RY
Lab File ID	: R149095	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
179601-23-1	p/m-Xylene	ND	0.400	0.139	ND	1.74	0.604	U
75-25-2	Bromoform	ND	0.200	0.052	ND	2.07	0.541	U
100-42-5	Styrene	ND	0.200	0.080	ND	0.852	0.340	U
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376	U
95-47-6	o-Xylene	ND	0.200	0.063	ND	0.869	0.274	U
111-84-2	Nonane	ND	0.200	0.063	ND	1.05	0.328	U
95-49-8	2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252	U
622-96-8	4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381	U
108-67-8	1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287	U
95-63-6	1,2,4-Trimethylbenzene	ND	0.200	0.069	ND	0.983	0.341	U
124-18-5	Decane	ND	0.200	0.048	ND	1.16	0.282	U
541-73-1	1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383	U
106-46-7	1,4-Dichlorobenzene	ND	0.200	0.036	ND	1.20	0.217	U
526-73-8	1,2,3-Trimethylbenzene	ND	0.200	0.075	ND	0.983	0.369	U
95-50-1	1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369	U
496-11-7	Indane	ND	0.200	0.080	ND	0.967	0.384	U
95-13-6	Indene	ND	0.200	0.061	ND	0.951	0.289	U
1120-21-4	Undecane	ND	0.200	0.053	ND	1.28	0.338	U
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.200	0.080	ND	1.10	0.436	U
112-40-3	Dodecane	ND	0.200	0.048	ND	1.39	0.333	U
120-82-1	1,2,4-Trichlorobenzene	ND	0.200	0.061	ND	1.48	0.454	U
91-20-3	Naphthalene	ND	0.200	0.043	ND	1.05	0.223	U
95-15-8	Benzothiophene	ND	0.500	0.047	ND	2.74	0.257	U
87-68-3	Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781	U
91-57-6	2-Methylnaphthalene	ND	1.00	0.272	ND	5.82	1.58	U
90-12-0	1-Methylnaphthalene	ND	1.00	0.250	ND	5.82	1.45	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149095.D
Acq On : 1 Nov 2016 12:46 pm
Operator : AIRPIANO1:RY
Sample : WG947959-5,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Nov 01 13:14:06 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	138852	10.000	ppbV	-0.01
Standard Area = 153282			Recovery = 90.59%			
43) 1,4-difluorobenzene	12.40	114	229390	10.000	ppbV	-0.01
Standard Area = 240182			Recovery = 95.51%			
67) chlorobenzene-D5	16.82	54	61227	10.000	ppbV	0.00
Standard Area = 64184			Recovery = 95.39%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.06	65	68872	10.023	ppbV	-0.01
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.23%			
69) toluene-D8	15.14	98	193172	10.474	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 104.74%			
90) bromofluorobenzene	18.01	95	121437	9.422	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 94.22%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	0.00		0	N.D.		
6) chloromethane	0.00		0	N.D.		
7) Freon-114	0.00		0	N.D.		
9) vinyl chloride	0.00		0	N.D.		
10) 1,3-butadiene	0.00		0	N.D.		
11) butane	0.00		0	N.D.		
12) acetaldehyde	4.55	29	5484	0.693	ppbV #	79
13) bromomethane	0.00		0	N.D.		
14) chloroethane	0.00		0	N.D.		
15) ethanol	5.76		0	N.D.		
17) vinyl bromide	0.00		0	N.D.		
18) acrolein	0.00		0	N.D.		
19) acetone	6.43		0	N.D.		
21) trichlorofluoromethane	0.00		0	N.D.		
22) isopropyl alcohol	0.00		0	N.D.		
24) pentane	7.05		0	N.D.		
26) 1,1-dichloroethene	0.00		0	N.D.		
27) tertiary butyl alcohol	0.00		0	N.D.		
28) methylene chloride	7.59		0	N.D.		
29) 3-chloropropene	0.00		0	N.D.		
30) carbon disulfide	7.92		0	N.D.		

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149095.D
Acq On : 1 Nov 2016 12:46 pm
Operator : AIRPIANO1:RY
Sample : WG947959-5,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Nov 01 13:14:06 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
31) Freon 113	0.00		0	N.D.		
32) trans-1,2-dichloroethene	0.00		0	N.D.		
33) 1,1-dichloroethane	0.00		0	N.D.		
34) MTBE	0.00		0	N.D.		
36) 2-butanone	0.00		0	N.D.		
37) cis-1,2-dichloroethene	0.00		0	N.D.		
39) chloroform	0.00		0	N.D.		
42) 1,2-dichloroethane	0.00		0	N.D.		
44) hexane	0.00		0	N.D.		
48) 1,1,1-trichloroethane	0.00		0	N.D.		
50) benzene	0.00		0	N.D.		
51) thiophene	0.00		0	N.D.		
52) carbon tetrachloride	0.00		0	N.D.		
53) cyclohexane	0.00		0	N.D.		d
56) 1,2-dichloropropane	0.00		0	N.D.		
57) bromodichloromethane	0.00		0	N.D.		
58) 1,4-dioxane	0.00		0	N.D.		
59) trichloroethene	0.00		0	N.D.		
60) 2,2,4-trimethylpentane	0.00		0	N.D.		
62) heptane	0.00		0	N.D.		
63) cis-1,3-dichloropropene	0.00		0	N.D.		
64) 4-methyl-2-pentanone	0.00		0	N.D.		
65) trans-1,3-dichloropropene	0.00		0	N.D.		
66) 1,1,2-trichloroethane	0.00		0	N.D.		
68) toluene	0.00		0	N.D.		
70) 2-methylthiophene	0.00		0	N.D.		d
72) 2-hexanone	0.00		0	N.D.		
73) 3-methylthiophene	0.00		0	N.D.		
74) dibromochloromethane	0.00		0	N.D.		
75) 1,2-dibromoethane	0.00		0	N.D.		
77) octane	0.00		0	N.D.		
78) tetrachloroethene	0.00		0	N.D.		
80) chlorobenzene	0.00		0	N.D.		
81) ethylbenzene	0.00		0	N.D.		
82) 2-ethylthiophene	0.00		0	N.D.		
83) m+p-xylene	0.00		0	N.D.		
84) bromoform	0.00		0	N.D.		
85) styrene	0.00		0	N.D.		

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149095.D
Acq On : 1 Nov 2016 12:46 pm
Operator : AIRPIANO1:RY
Sample : WG947959-5,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Nov 01 13:14:06 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
86) 1,1,2,2-tetrachloroethane	0.00		0		N.D.	
87) o-xylene	0.00		0		N.D.	
89) nonane	0.00		0		N.D.	
93) 2-chlorotoluene	0.00		0		N.D.	
96) 4-ethyl toluene	0.00		0		N.D.	
97) 1,3,5-trimethylbenzene	0.00		0		N.D.	
99) 1,2,4-trimethylbenzene	0.00		0		N.D.	
100) decane	0.00		0		N.D.	
102) 1,3-dichlorobenzene	0.00		0		N.D.	
103) 1,4-dichlorobenzene	0.00		0		N.D.	
105) 1,2,3-trimethylbenzene	0.00		0		N.D.	
107) 1,2-dichlorobenzene	0.00		0		N.D.	
109) indan	0.00		0		N.D.	
110) indene	0.00		0		N.D.	
112) undecane	0.00		0		N.D.	
113) 1,2,4,5-tetramethylben...	0.00		0		N.D.	
114) dodecane	0.00		0		N.D.	
115) 1,2,4-trichlorobenzene	0.00		0		N.D.	
116) naphthalene	0.00		0		N.D.	
118) benzothiophene	0.00		0		N.D.	
119) hexachlorobutadiene	0.00		0		N.D.	
120) 2-methylnaphthalene	0.00		0		N.D.	
121) 1-methylnaphthalene	0.00		0		N.D.	

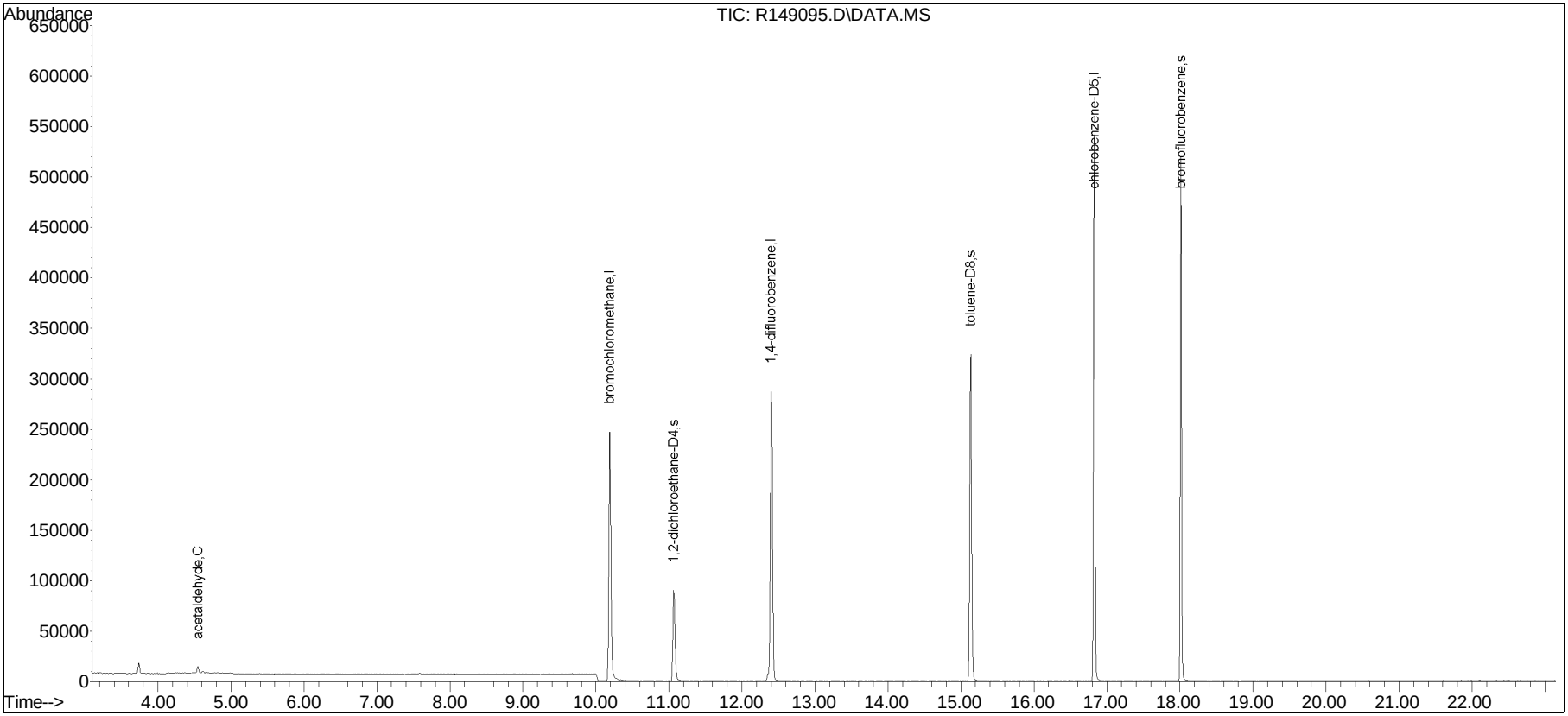
(#) = qualifier out of range (m) = manual integration (+) = signals summed

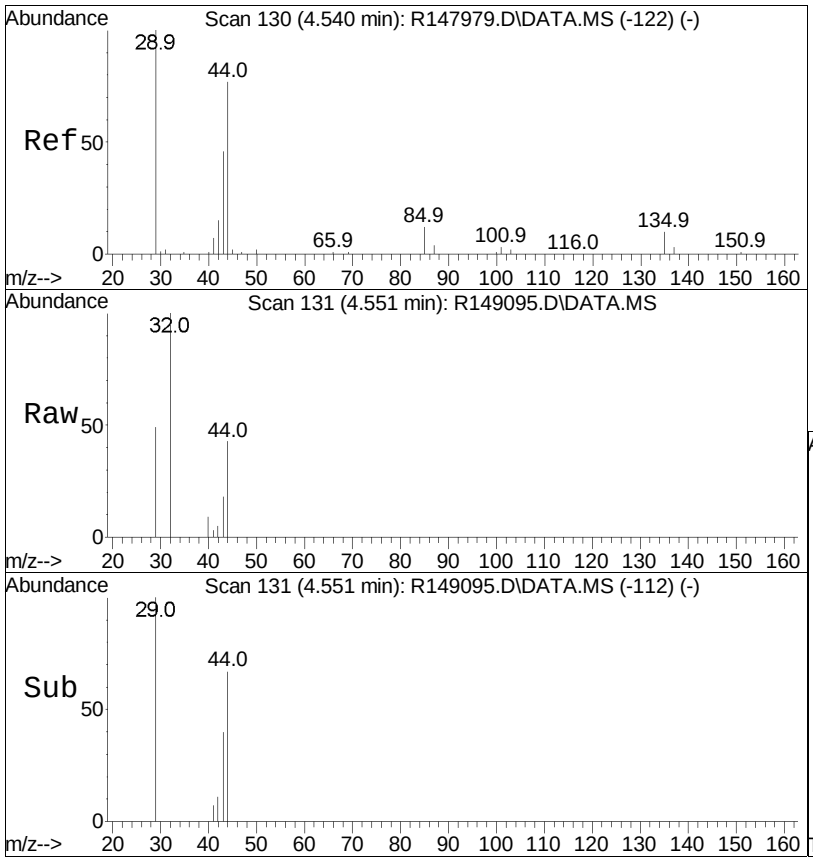
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149095.D
Acq On : 1 Nov 2016 12:46 pm
Operator : AIRPIANO1:RY
Sample : WG947959-5,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Nov 01 13:14:06 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Keyspan_TO15 - .a\AIR1\2016\161101K\R149091.D

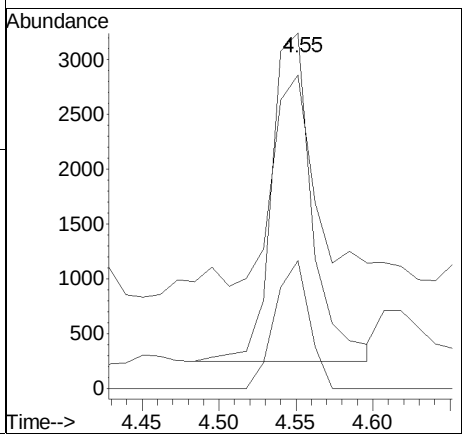




#12
acetaldehyde
Concen: 0.69 ppbV
RT: 4.55 min Scan# 131
Delta R.T. 0.011 min
Lab File: R149095.D
Acq: 1 Nov 2016 12:46 pm

Tgt Ion: 29 Resp: 5484

Ion	Ratio	Lower	Upper
29	100		
44	88.2	50.2	75.4#
43	36.0	29.0	43.6



Laboratory Control Sample
Form 3

Client	: NewFields	**Lab Number**	: L1634001
Project Name	: WINTER STREET HAVERHILL	**Project Number**	: 01.0172397.00
Matrix	: AIR		
LCS Sample ID	: WG947959-3	**Analysis Date :** 11/01/16 10:34	**File ID** : R149092
LCSD Sample ID	: WG947959-4	**Analysis Date :** 11/01/16 11:08	**File ID** : R149093

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	True (ppbV)	Found (ppbV)	%R	True (ppbV)	Found (ppbV)	%R	RPD	Recovery Limits	RPD Limit
1,3-Butadiene	10	10.3	103	10	10.0	100	3	70-130	25
Isopropanol	25	24.5	98	25	24.8	99	1	70-130	25
Methyl tert butyl ether	10	9.20	92	10	9.40	94	2	70-130	25
1,2-Dichloroethane	10	9.42	94	10	9.48	95	1	70-130	25
n-Hexane	10	9.91	99	10	9.86	99	0	70-130	25
Benzene	10	10.1	101	10	10.3	103	2	70-130	25
Cyclohexane	10	9.84	98	10	10.1	101	3	70-130	25
2,2,4-Trimethylpentane	10	10.0	100	10	10.4	104	4	70-130	25
Heptane	10	10.0	100	10	10.2	102	2	70-130	25
Toluene	10	10.3	103	10	10.3	103	0	70-130	25
1,2-Dibromoethane	10	10.7	107	10	11.0	110	3	70-130	25
Ethylbenzene	10	10.4	104	10	10.7	107	3	70-130	25
p/m-Xylene	20	20.9	104	20	21.1	106	2	70-130	25
Styrene	10	10.6	106	10	10.8	108	2	70-130	25
o-Xylene	10	10.8	108	10	11.0	110	2	70-130	25
4-Ethyltoluene	10	10.1	101	10	10.4	104	3	70-130	25
1,3,5-Trimethylbenzene	10	10.7	107	10	11.0	110	3	70-130	25
1,2,4-Trimethylbenzene	10	11.2	112	10	11.4	114	2	70-130	25
Naphthalene	10	11.4	114	10	11.8	118	3	70-130	25

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149092.D
Acq On : 1 Nov 2016 10:34 am
Operator : AIRPIANO1:RY
Sample : WG947959-3,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 01 10:59:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : NF-LCS - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	154281	10.000	ppbV	0.00
Standard Area = 153282			Recovery = 100.65%			
43) 1,4-difluorobenzene	12.41	114	245074	10.000	ppbV	0.00
Standard Area = 240182			Recovery = 102.04%			
67) chlorobenzene-D5	16.82	54	65266	10.000	ppbV	0.00
Standard Area = 64184			Recovery = 101.69%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	69186	9.424	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 94.24%			
69) toluene-D8	15.14	98	185787	9.450	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 94.50%			
90) bromofluorobenzene	18.01	95	130619	9.507	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 95.07%			
Target Compounds						Qvalue
10) 1,3-butadiene	4.88	54	63736	10.324	ppbV	96
22) isopropyl alcohol	6.71	45	450107	24.538	ppbV	100
34) MTBE	9.09	73	213497	9.198	ppbV	98
42) 1,2-dichloroethane	11.20	62	123458	9.423	ppbV	98
44) hexane	10.25	57	164858	9.909	ppbV	98
50) benzene	12.00	78	233064	10.098	ppbV	99
53) cyclohexane	12.31	56	134322	9.845	ppbV	99
60) 2,2,4-trimethylpentane	13.23	57	450955	10.057	ppbV	100
62) heptane	13.53	43	192286	10.005	ppbV	98
68) toluene	15.23	91	279738	10.282	ppbV	98
75) 1,2-dibromoethane	15.88	107	166874	10.660	ppbV	100
81) ethylbenzene	17.15	91	370955	10.393	ppbV	98
83) m+p-xylene	17.30	91	595980	20.935	ppbV	98
85) styrene	17.58	104	217577	10.659	ppbV	99
87) o-xylene	17.66	91	316654	10.765	ppbV	100
96) 4-ethyl toluene	18.59	105	423795M6	10.134	ppbV	
97) 1,3,5-trimethylbenzene	18.64	105	353710	10.721	ppbV	100
99) 1,2,4-trimethylbenzene	18.95	105	369875	11.166	ppbV	94
116) naphthalene	20.95	128	474067	11.454	ppbV	100

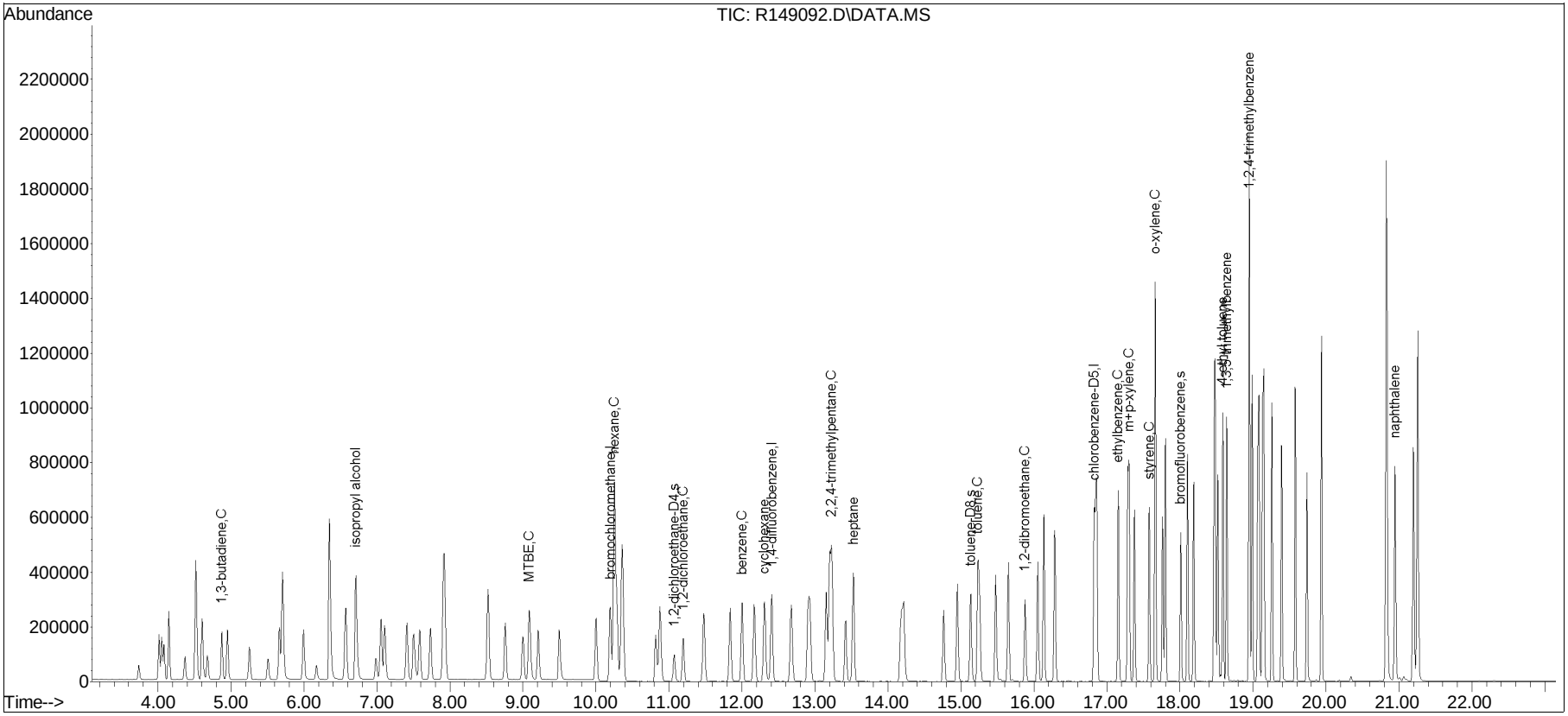
(#) = qualifier out of range (m) = manual integration (+) = signals summed

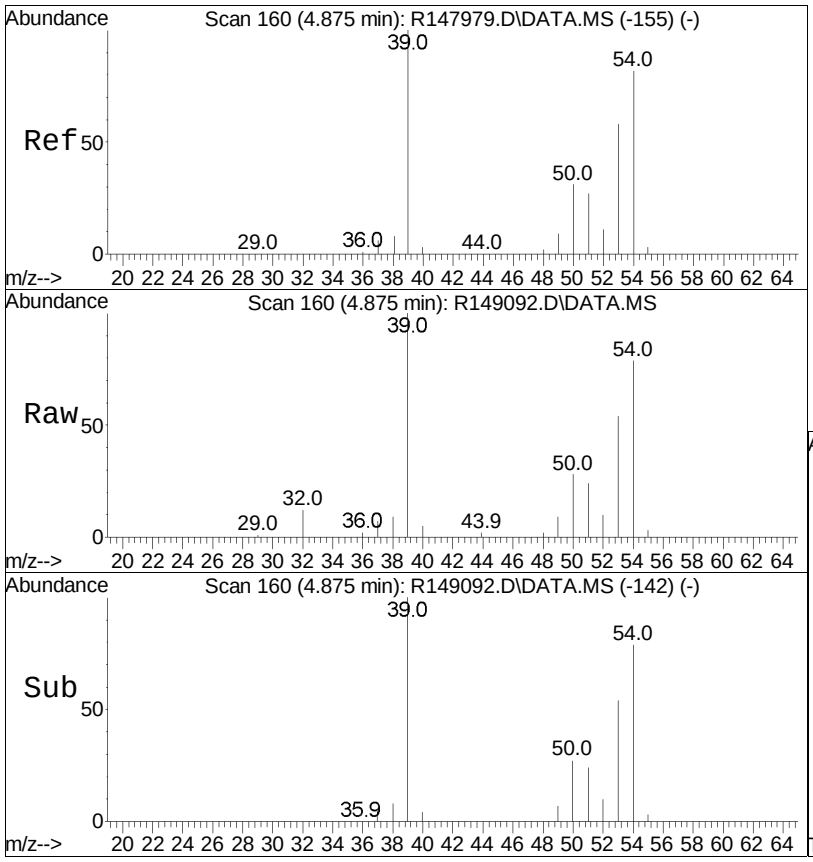
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149092.D
Acq On : 1 Nov 2016 10:34 am
Operator : AIRPIANO1:RY
Sample : WG947959-3,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 01 10:59:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : NF-LCS - .cs\Data\AIR1\2016\161101K\R149091.D

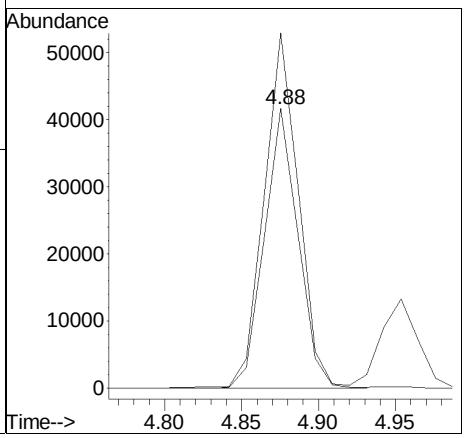


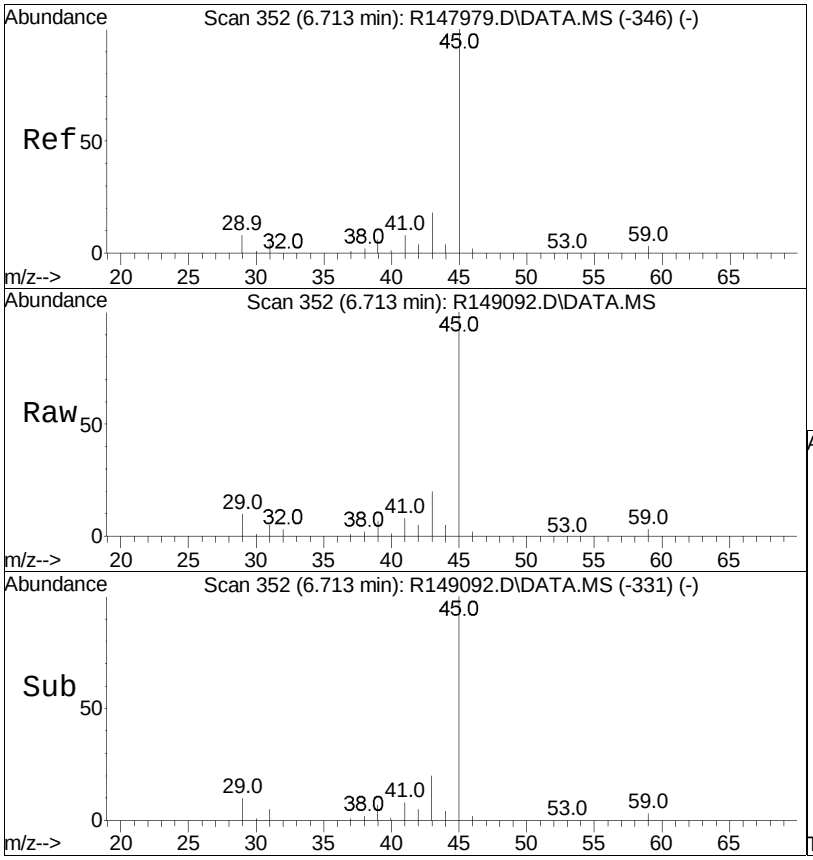


#10
1,3-butadiene
Concen: 10.32 ppbV
RT: 4.88 min Scan# 160
Delta R.T. 0.000 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion: 54 Resp: 63736

Ion	Ratio	Lower	Upper
54	100		
39	126.8	105.0	157.6

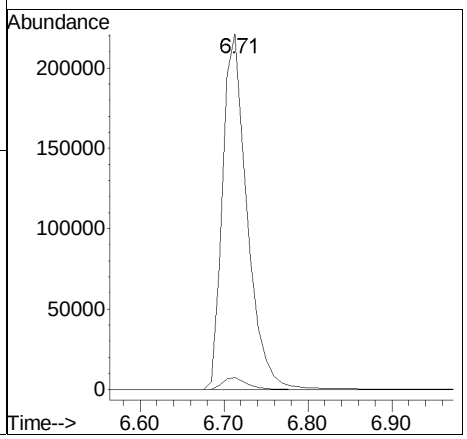


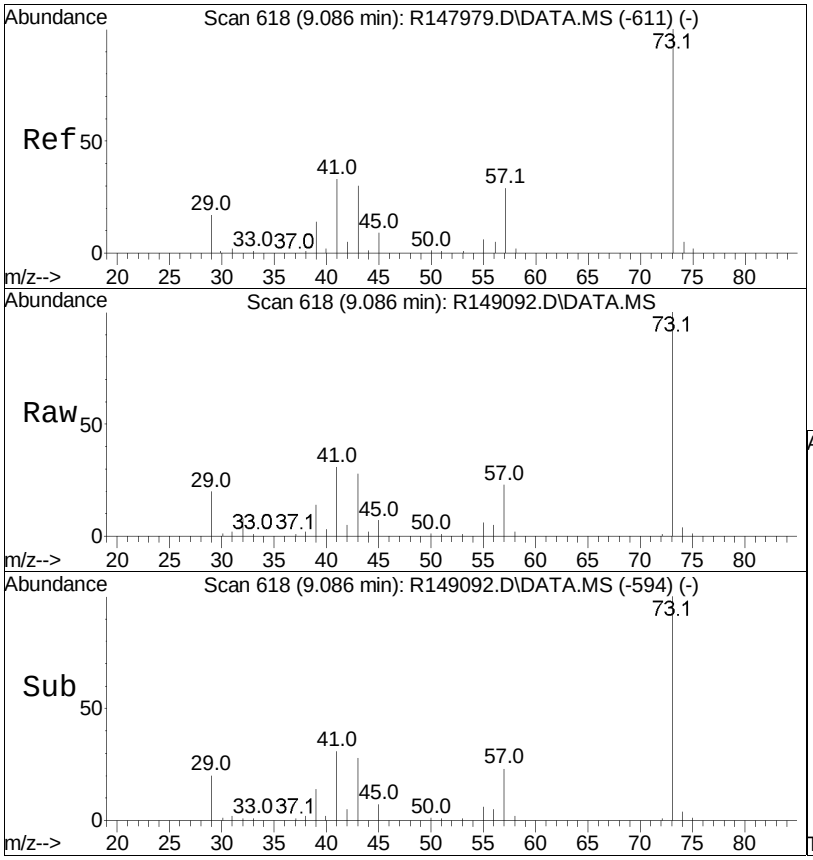


#22
isopropyl alcohol
Concen: 24.54 ppbV
RT: 6.71 min Scan# 352
Delta R.T. 0.000 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion: 45 Resp: 450107

Ion	Ratio	Lower	Upper
45	100		
59	3.4	2.7	4.1

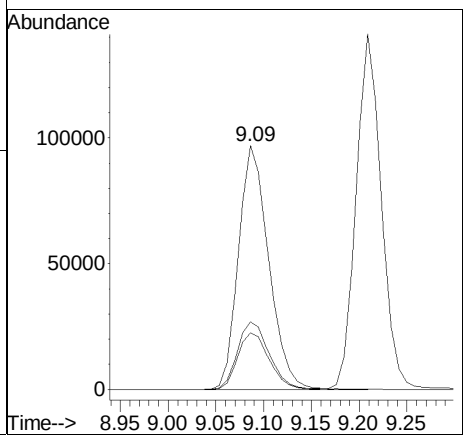


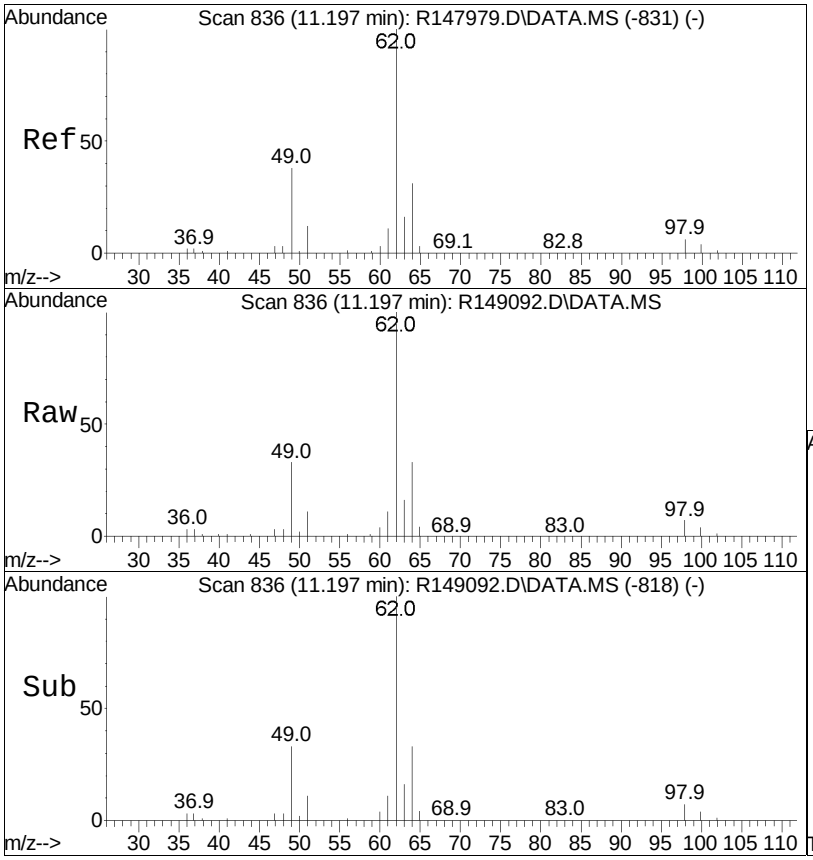


#34
MTBE
Concen: 9.20 ppbV
RT: 9.09 min Scan# 618
Delta R.T. 0.000 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion: 73 Resp: 213497

Ion	Ratio	Lower	Upper
73	100		
57	23.2	19.1	28.7
43	27.7	23.0	34.4

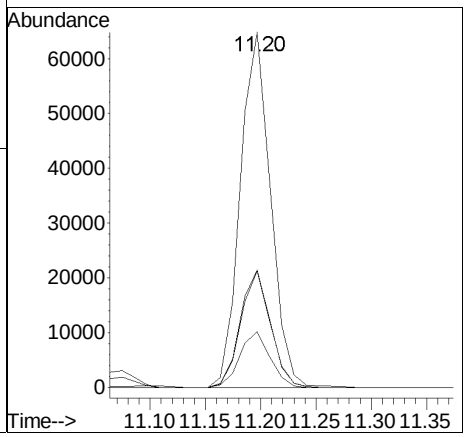


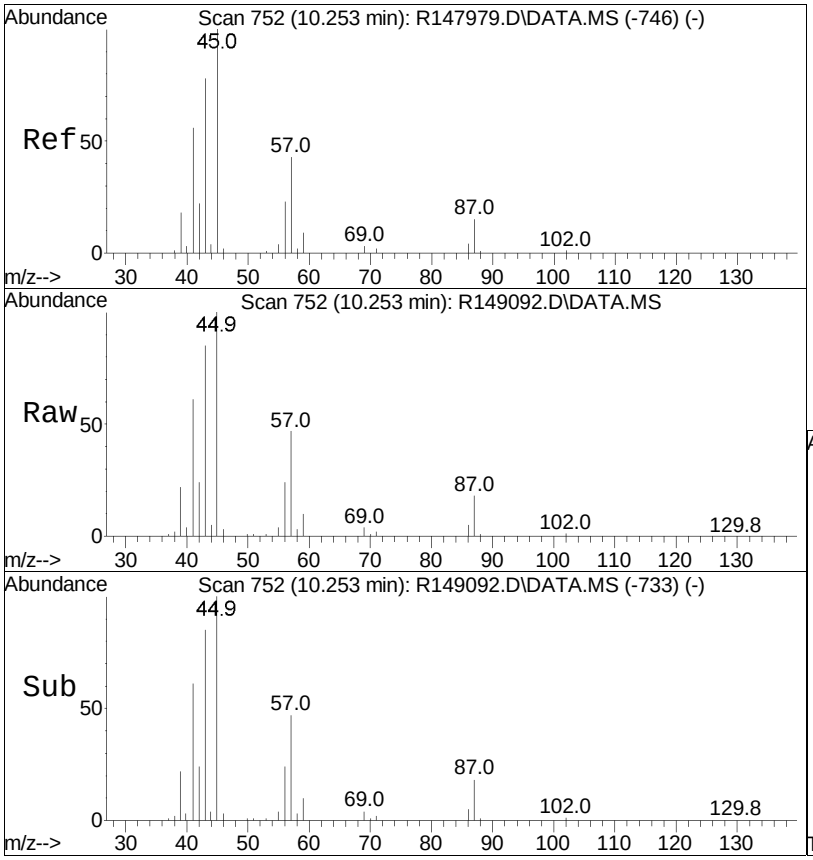


#42
1,2-dichloroethane
Concen: 9.42 ppbV
RT: 11.20 min Scan# 836
Delta R.T. 0.000 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion: 62 Resp: 123458

Ion	Ratio	Lower	Upper
62	100		
64	32.8	25.0	37.6
49	33.1	26.1	39.1
63	15.7	12.2	18.2

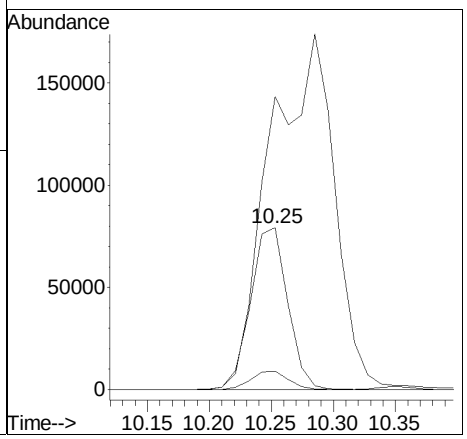


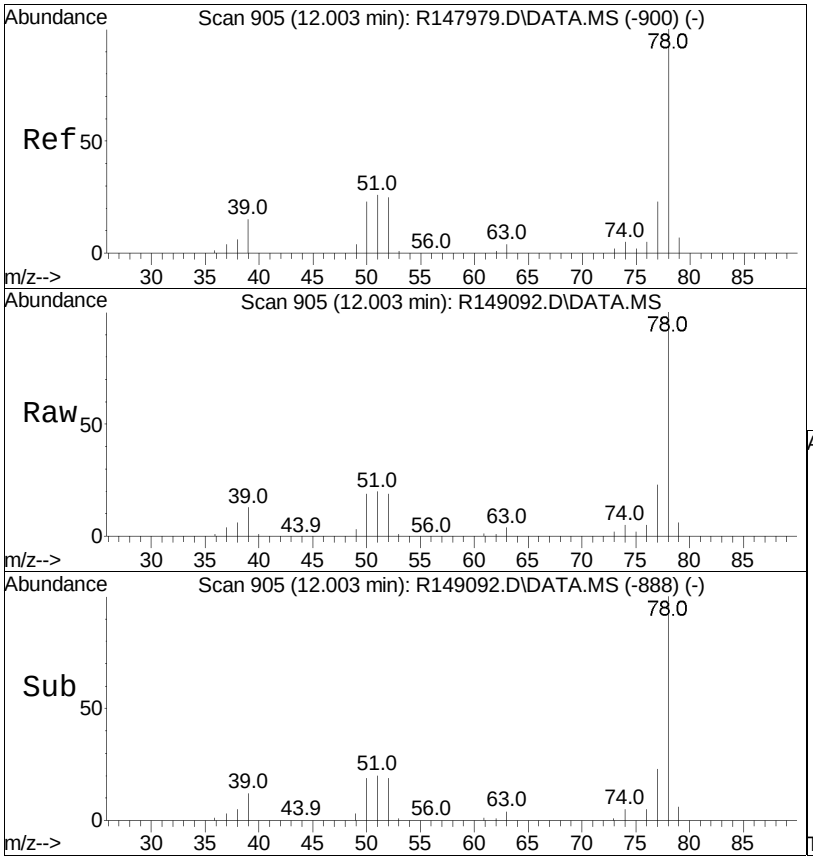


#44
hexane
Concen: 9.91 ppbV
RT: 10.25 min Scan# 752
Delta R.T. 0.000 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion: 57 Resp: 164858

Ion	Ratio	Lower	Upper
57	100		
43	181.1	142.3	213.5
86	11.3	9.3	13.9

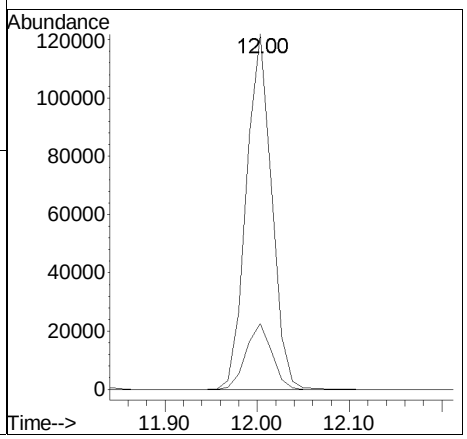


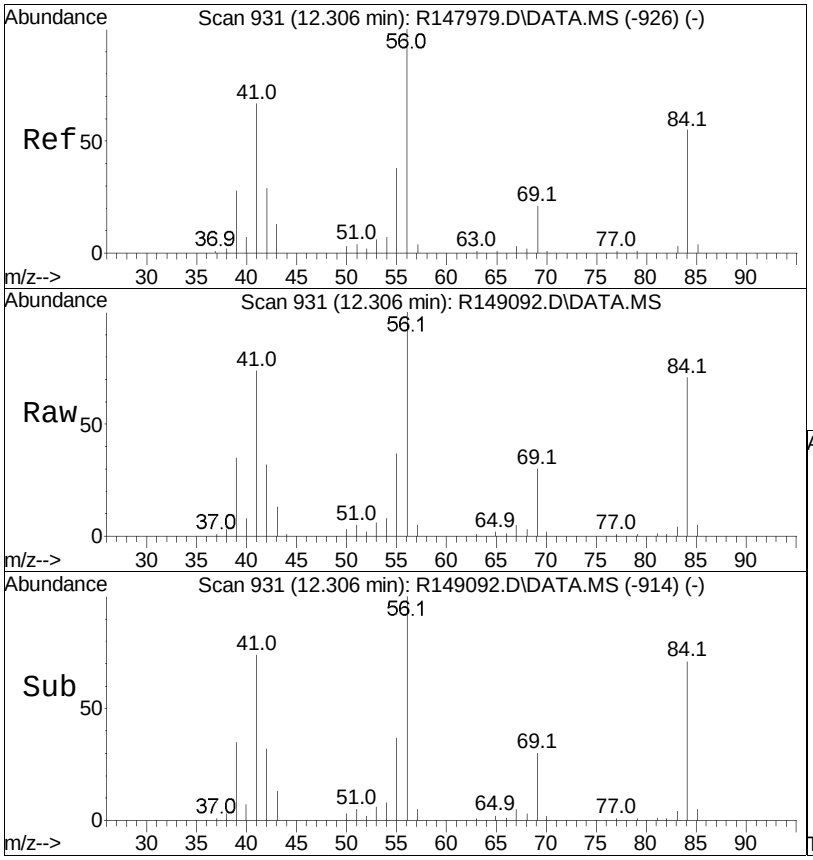


#50
benzene
Concen: 10.10 ppbV
RT: 12.00 min Scan# 905
Delta R.T. 0.000 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion: 78 Resp: 233064

Ion	Ratio	Lower	Upper
78	100		
52	18.5	15.2	22.8

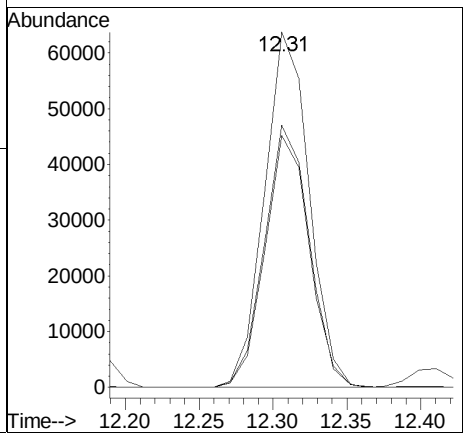


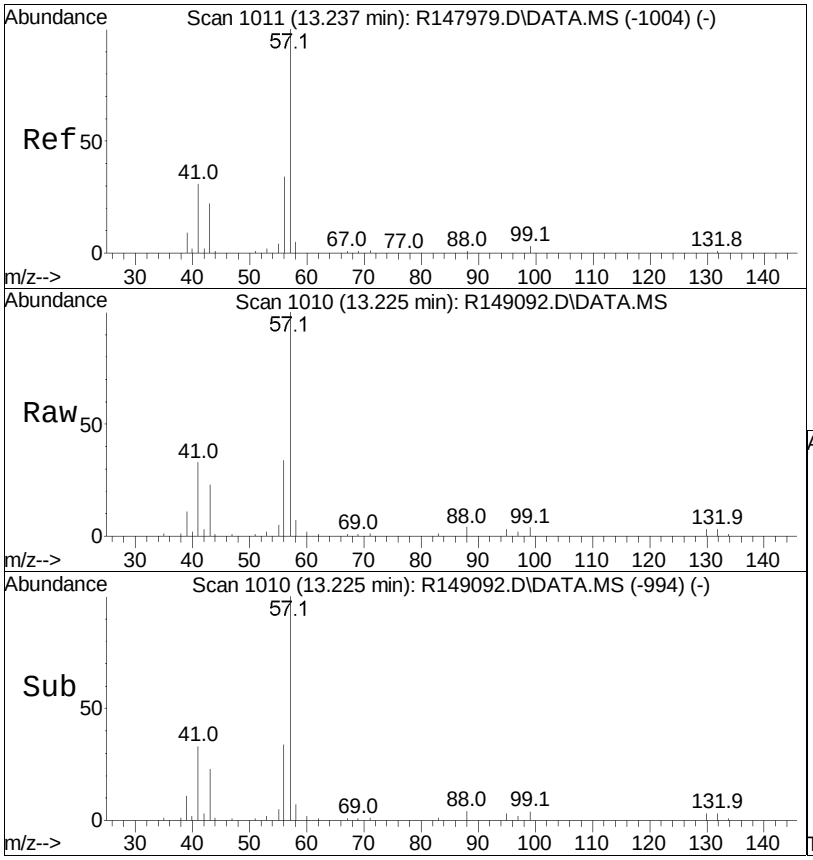


#53
cyclohexane
Concen: 9.85 ppbV
RT: 12.31 min Scan# 931
Delta R.T. 0.000 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion: 56 Resp: 134322

Ion	Ratio	Lower	Upper
56	100		
84	70.9	56.5	84.7
41	73.7	57.5	86.3

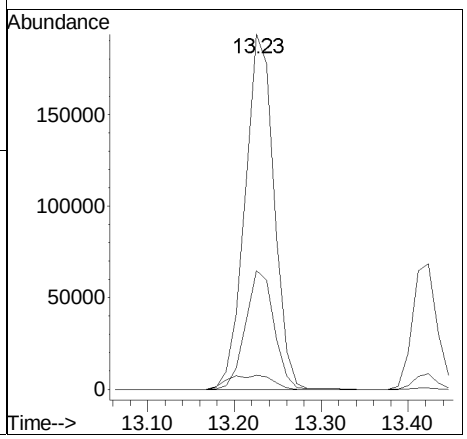


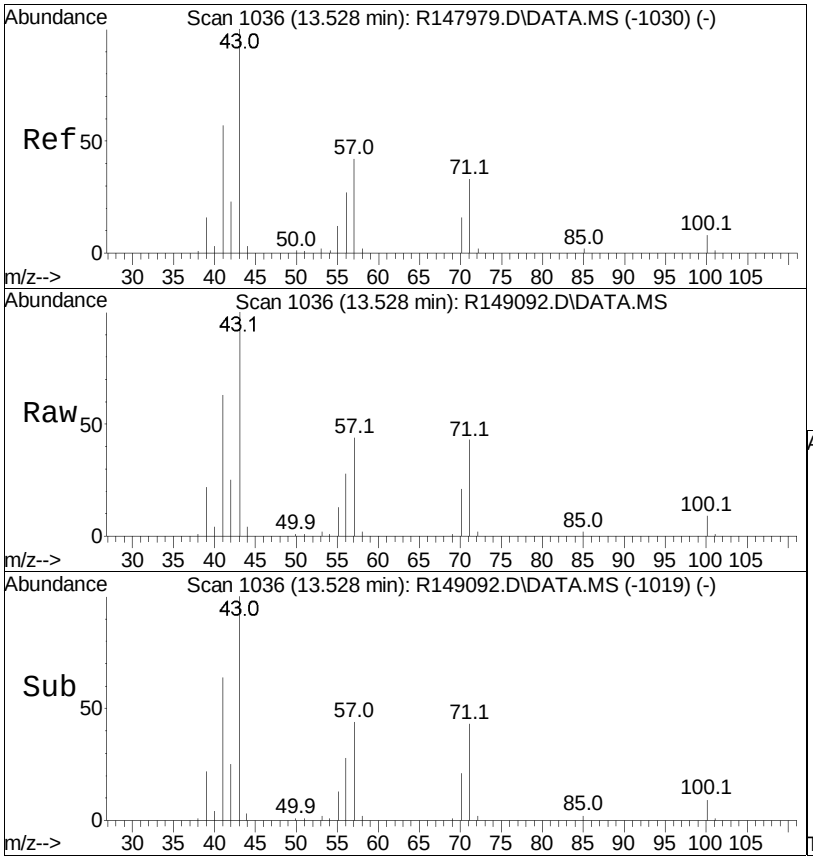


#60
2,2,4-trimethylpentane
Concen: 10.06 ppbV
RT: 13.23 min Scan# 1010
Delta R.T. -0.012 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion: 57 Resp: 450955

Ion	Ratio	Lower	Upper
57	100		
99	4.0	3.0	4.6
41	33.5	26.8	40.2

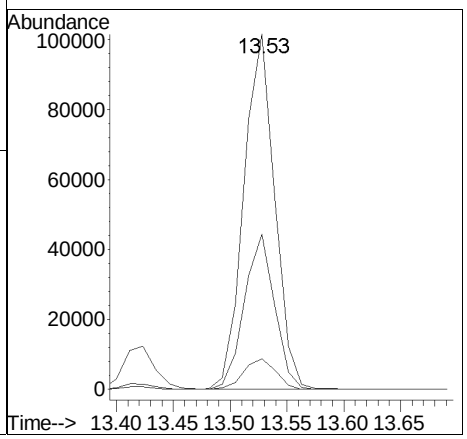


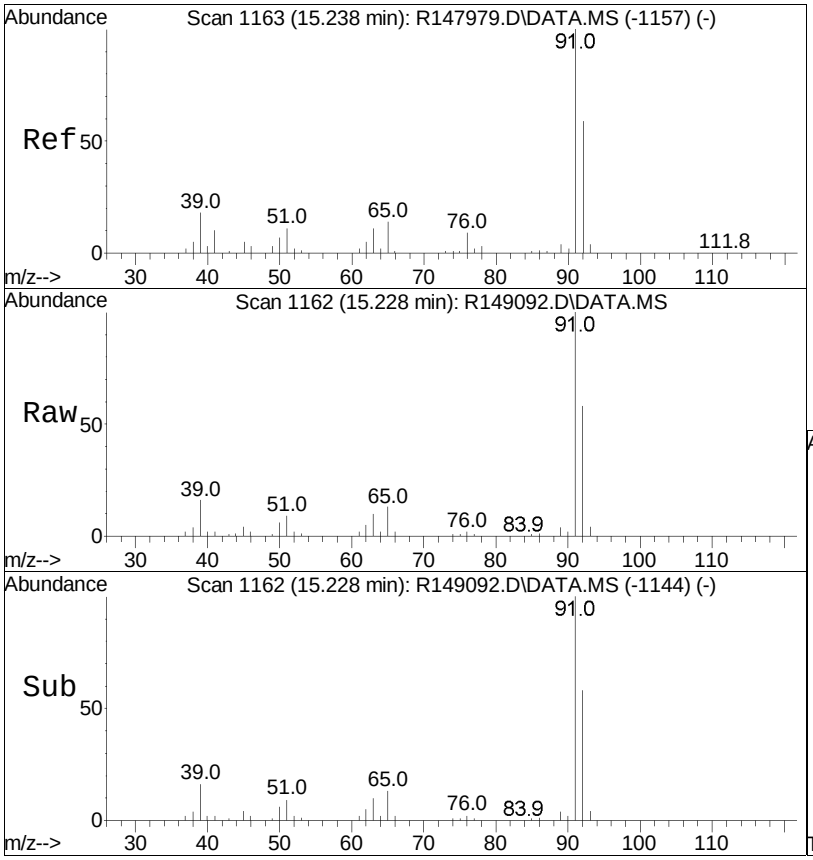


#62
heptane
Concen: 10.00 ppbV
RT: 13.53 min Scan# 1036
Delta R.T. 0.000 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion: 43 Resp: 192286

Ion	Ratio	Lower	Upper
43	100		
57	43.7	34.2	51.2
100	8.7	7.9	11.9

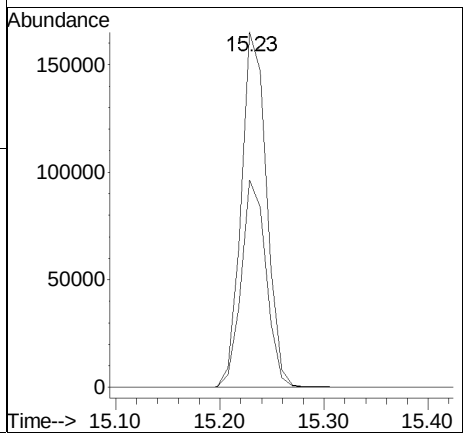


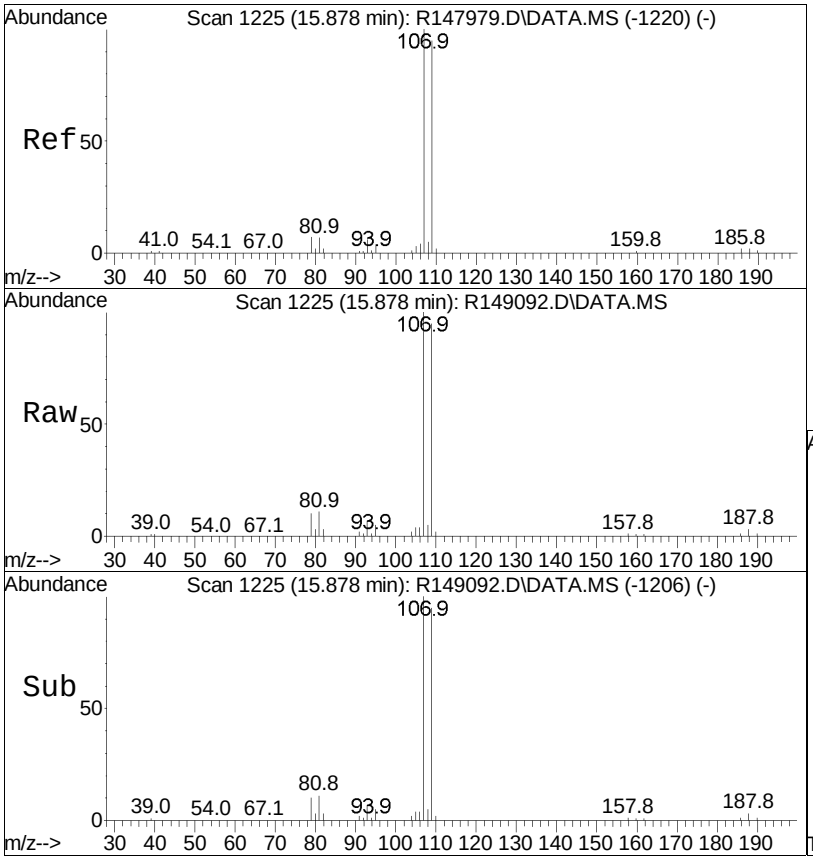


#68
toluene
Concen: 10.28 ppbV
RT: 15.23 min Scan# 1162
Delta R.T. -0.010 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion: 91 Resp: 279738

Ion	Ratio	Lower	Upper
91	100		
92	58.4	45.8	68.6

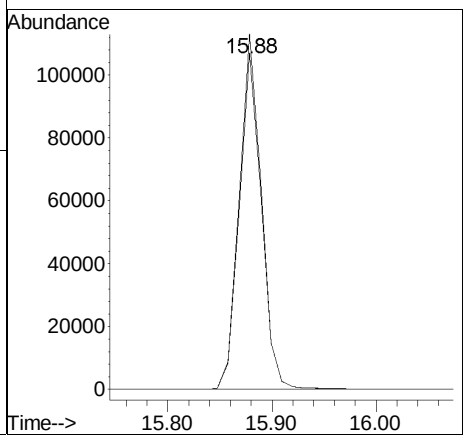


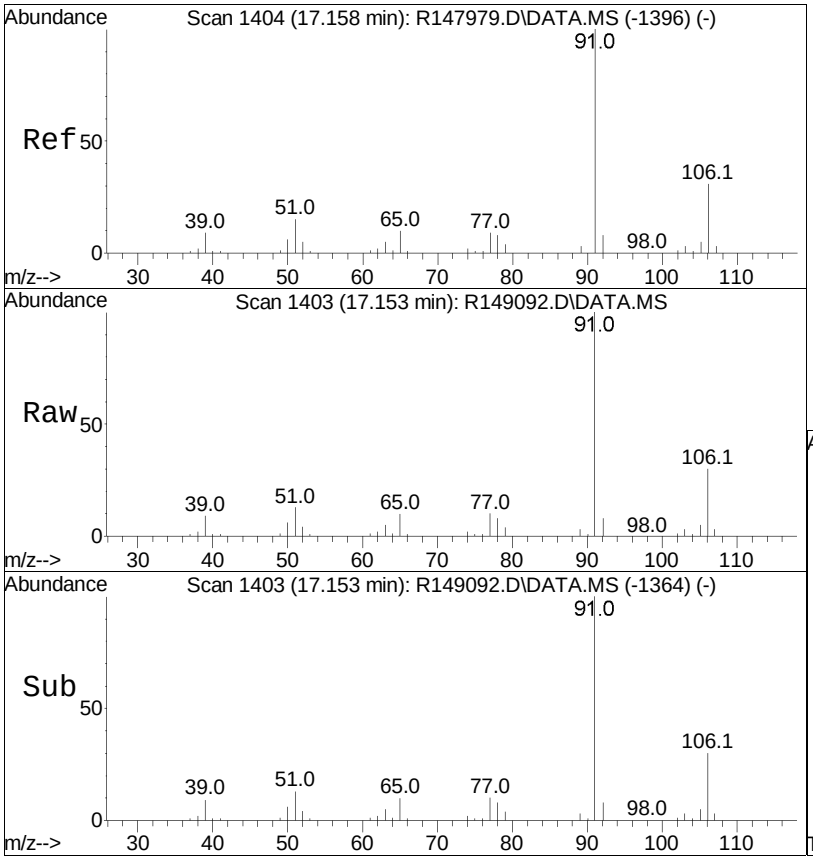


#75
1,2-dibromoethane
Concen: 10.66 ppbV
RT: 15.88 min Scan# 1225
Delta R.T. 0.000 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion:107 Resp: 166874

Ion	Ratio	Lower	Upper
107	100		
109	94.7	75.8	113.8

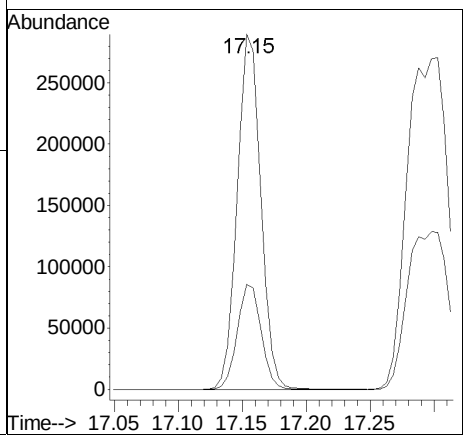


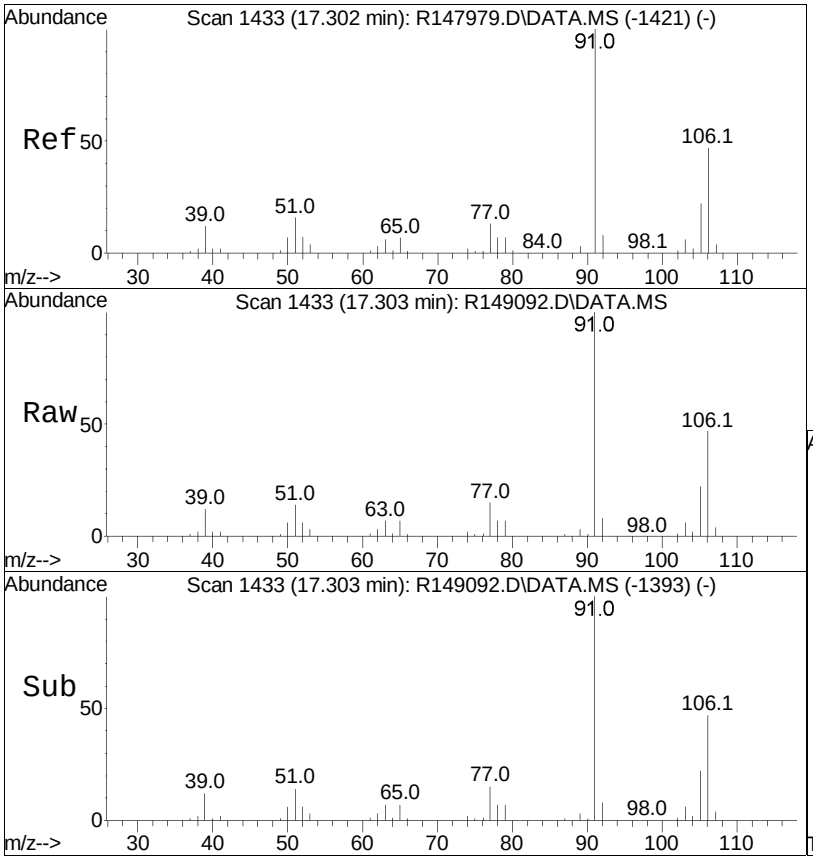


#81
ethylbenzene
Concen: 10.39 ppbV
RT: 17.15 min Scan# 1403
Delta R.T. -0.005 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion: 91 Resp: 370955

Ion	Ratio	Lower	Upper
91	100		
106	29.5	24.5	36.7

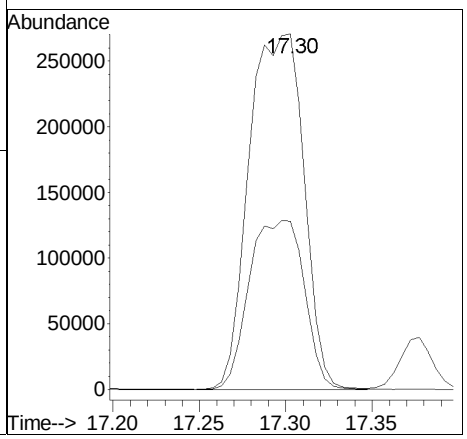


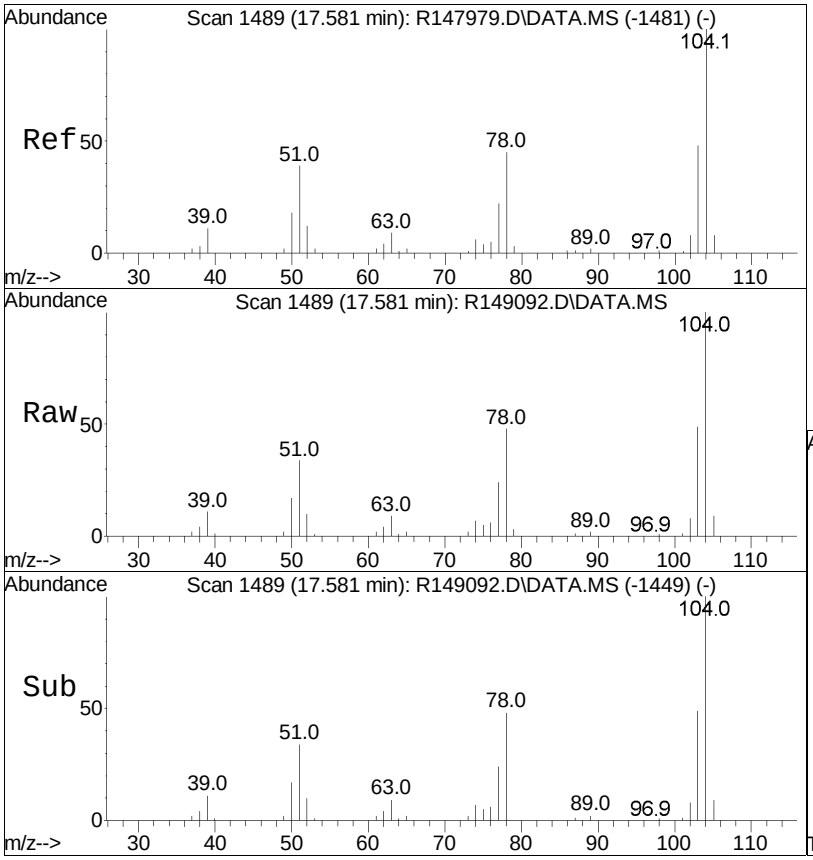


#83
m+p-xylene
Concen: 20.94 ppbV
RT: 17.30 min Scan# 1433
Delta R.T. 0.000 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion: 91 Resp: 595980

Ion	Ratio	Lower	Upper
91	100		
106	47.3	38.8	58.2

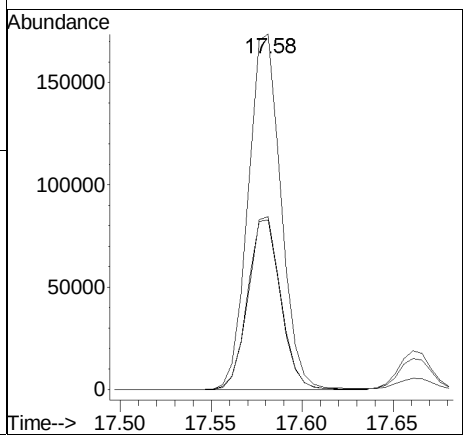


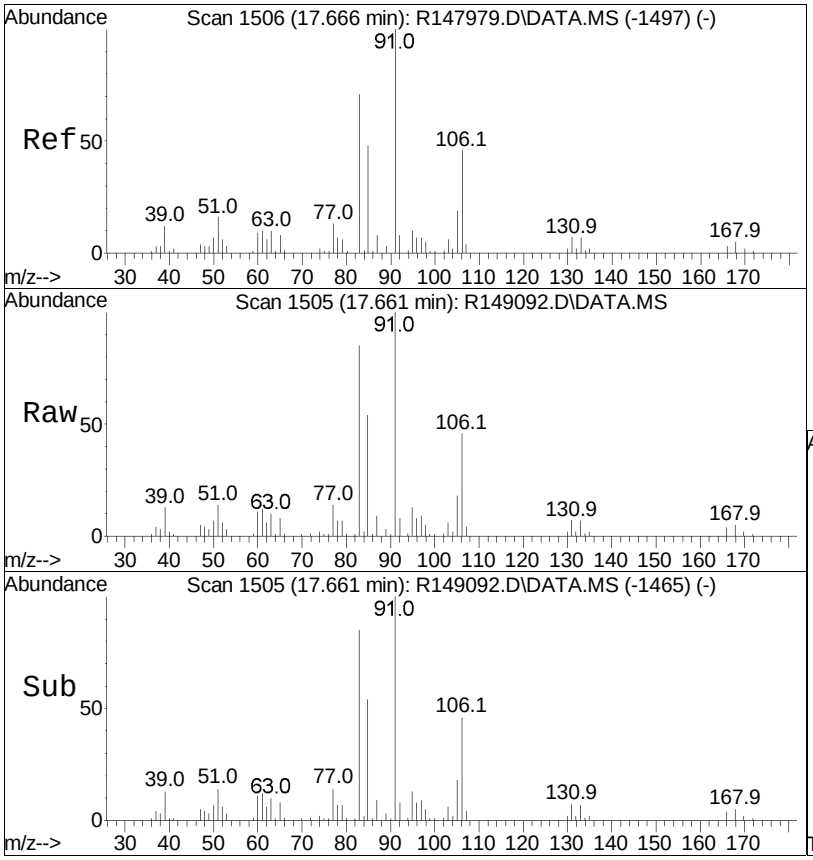


#85
styrene
Concen: 10.66 ppbV
RT: 17.58 min Scan# 1489
Delta R.T. 0.000 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion:104 Resp: 217577

Ion	Ratio	Lower	Upper
104	100		
103	48.6	38.5	57.7
78	47.7	38.8	58.2

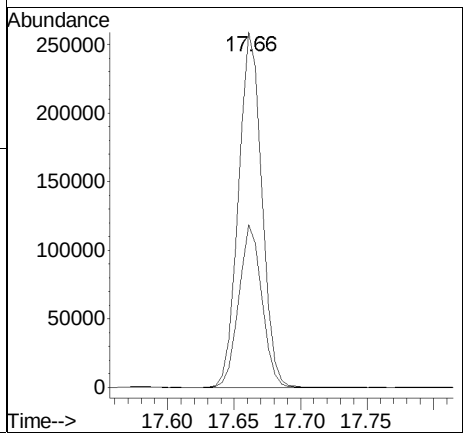


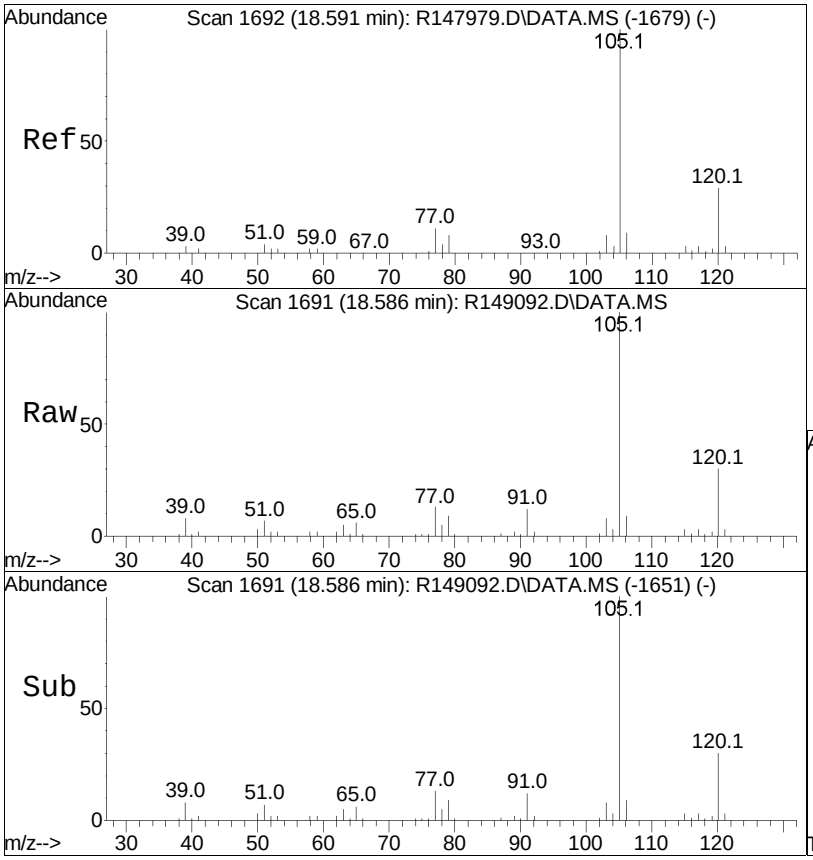


#87
o-xylene
Concen: 10.76 ppbV
RT: 17.66 min Scan# 1505
Delta R.T. 0.000 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion: 91 Resp: 316654

Ion	Ratio	Lower	Upper
91	100		
106	45.7	36.5	54.7

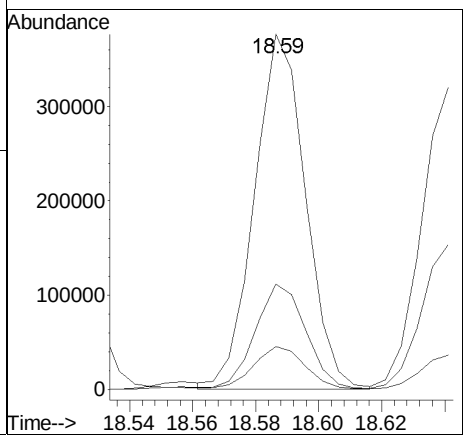


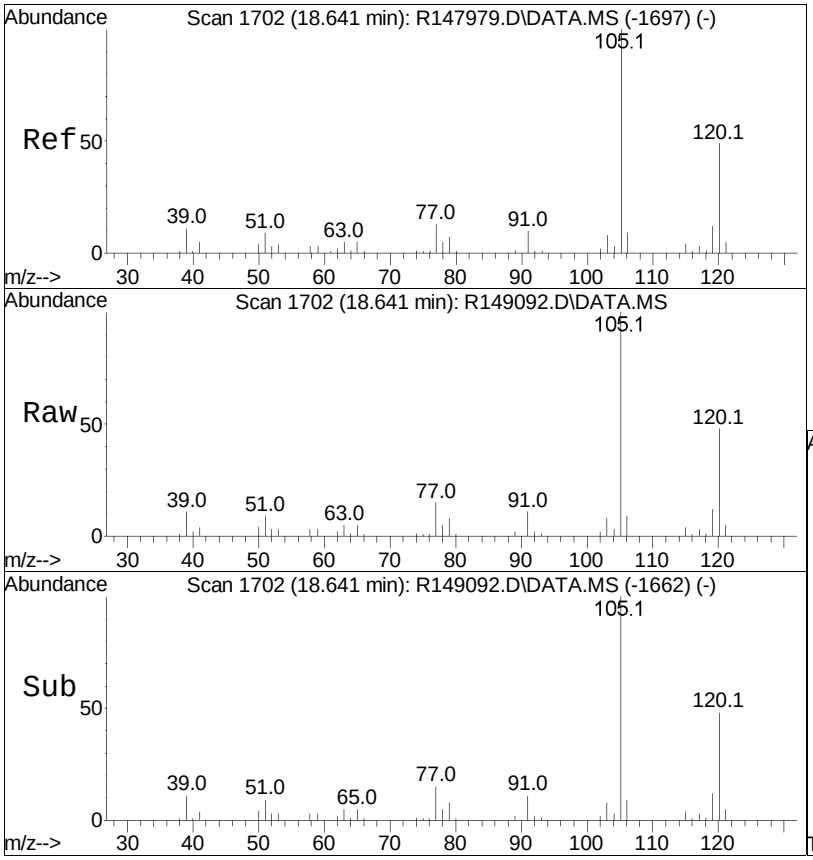


#96
4-ethyl toluene
Concen: 10.13 ppbV m
RT: 18.59 min Scan# 1691
Delta R.T. 0.000 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion:105 Resp: 423795

Ion	Ratio	Lower	Upper
105	100		
120	29.7	23.3	34.9
91	12.1	9.6	14.4

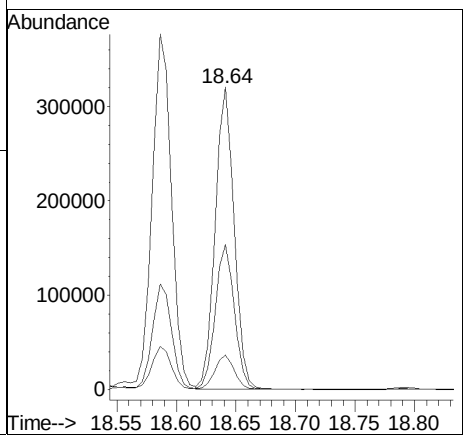


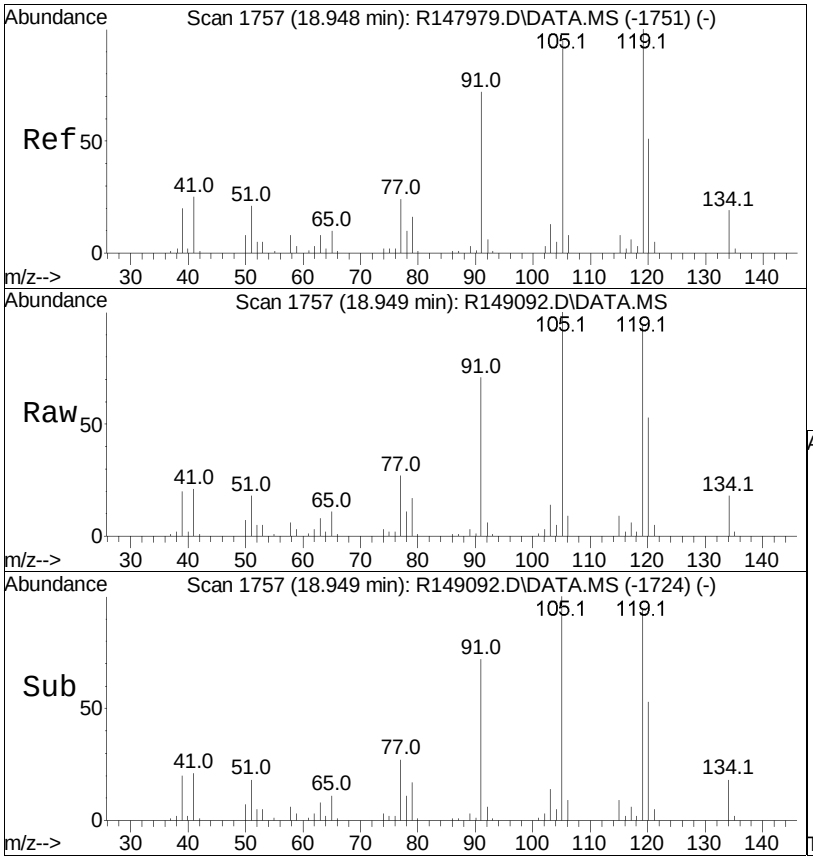


#97
1,3,5-trimethylbenzene
Concen: 10.72 ppbV
RT: 18.64 min Scan# 1702
Delta R.T. 0.000 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion:105 Resp: 353710

Ion	Ratio	Lower	Upper
105	100		
120	47.9	38.5	57.7
91	11.3	9.2	13.8

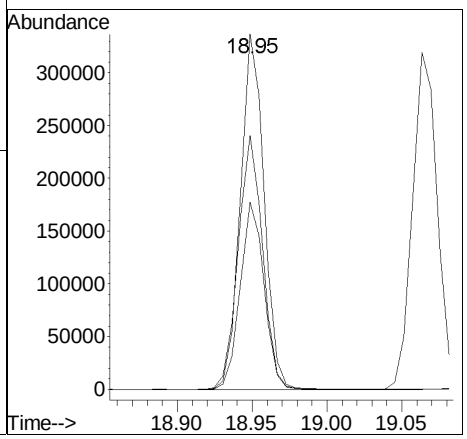


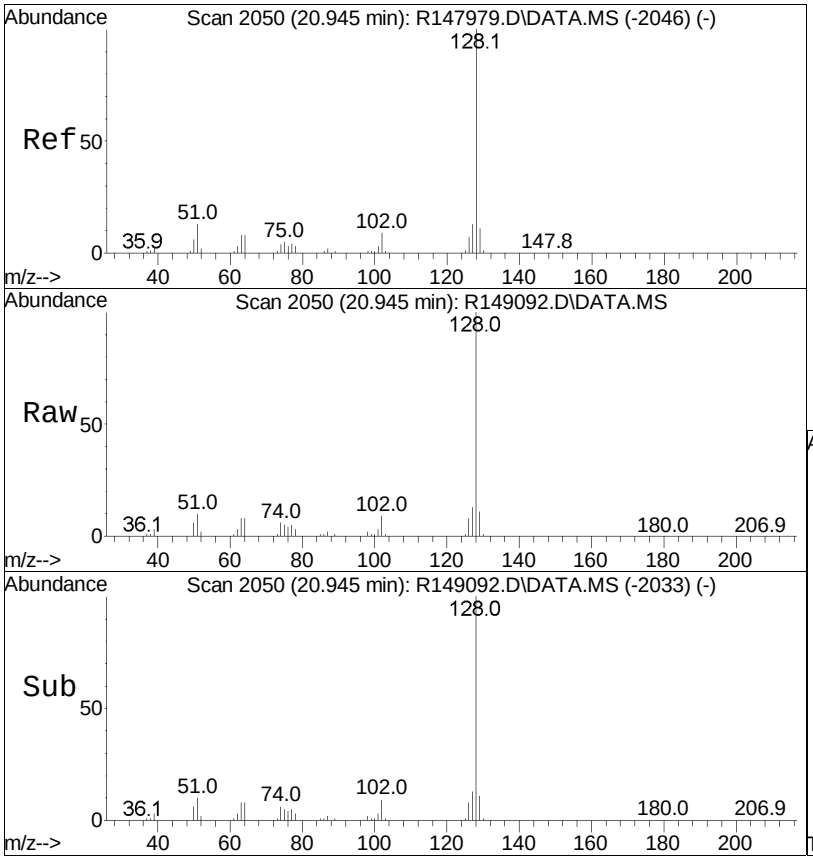


#99
1,2,4-trimethylbenzene
Concen: 11.17 ppbV
RT: 18.95 min Scan# 1757
Delta R.T. 0.000 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion:105 Resp: 369875

Ion	Ratio	Lower	Upper
105	100		
120	52.7	43.0	64.4
91	71.5	63.7	95.5

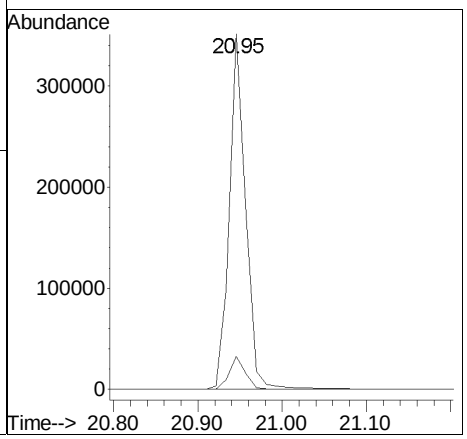




#116
naphthalene
Concen: 11.45 ppbV
RT: 20.95 min Scan# 2050
Delta R.T. 0.000 min
Lab File: R149092.D
Acq: 1 Nov 2016 10:34 am

Tgt Ion:128 Resp: 474067

Ion	Ratio	Lower	Upper
128	100		
102	9.3	7.5	11.3



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149093.D
Acq On : 1 Nov 2016 11:08 am
Operator : AIRPIANO1:RY
Sample : WG947959-4,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 01 11:32:29 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161101K\R149091.D
Sub List : NF-LCS - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	152214	10.000	ppbV	-0.01
Standard Area = 153282			Recovery =		99.30%	
43) 1,4-difluorobenzene	12.41	114	239972	10.000	ppbV	0.00
Standard Area = 240182			Recovery =		99.91%	
67) chlorobenzene-D5	16.82	54	63980	10.000	ppbV	0.00
Standard Area = 64184			Recovery =		99.68%	
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	70896	9.862	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =		98.62%	
69) toluene-D8	15.14	98	187704	9.740	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =		97.40%	
90) bromofluorobenzene	18.01	95	130908	9.720	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery =		97.20%	
Target Compounds						Qvalue
10) 1,3-butadiene	4.88	54	61105	10.032	ppbV	98
22) isopropyl alcohol	6.71	45	448298	24.771	ppbV	100
34) MTBE	9.09	73	215264	9.400	ppbV	99
42) 1,2-dichloroethane	11.20	62	122538	9.480	ppbV	99
44) hexane	10.24	57	160586	9.858	ppbV #	67
50) benzene	12.00	78	233372	10.326	ppbV	100
53) cyclohexane	12.31	56	134654	10.080	ppbV	99
60) 2,2,4-trimethylpentane	13.23	57	455250	10.368	ppbV	99
62) heptane	13.53	43	191037	10.151	ppbV	97
68) toluene	15.23	91	275759	10.339	ppbV	98
75) 1,2-dibromoethane	15.88	107	168430	10.976	ppbV	97
81) ethylbenzene	17.15	91	373755	10.682	ppbV	100
83) m+p-xylene	17.30	91	588800	21.099	ppbV	100
85) styrene	17.58	104	215366	10.762	ppbV	98
87) o-xylene	17.66	91	315890	10.955	ppbV	98
96) 4-ethyl toluene	18.59	105	424812M6	10.363	ppbV	
97) 1,3,5-trimethylbenzene	18.64	105	356421	11.020	ppbV	99
99) 1,2,4-trimethylbenzene	18.95	105	369783	11.388	ppbV	94
116) naphthalene	20.95	128	477279	11.764	ppbV	100

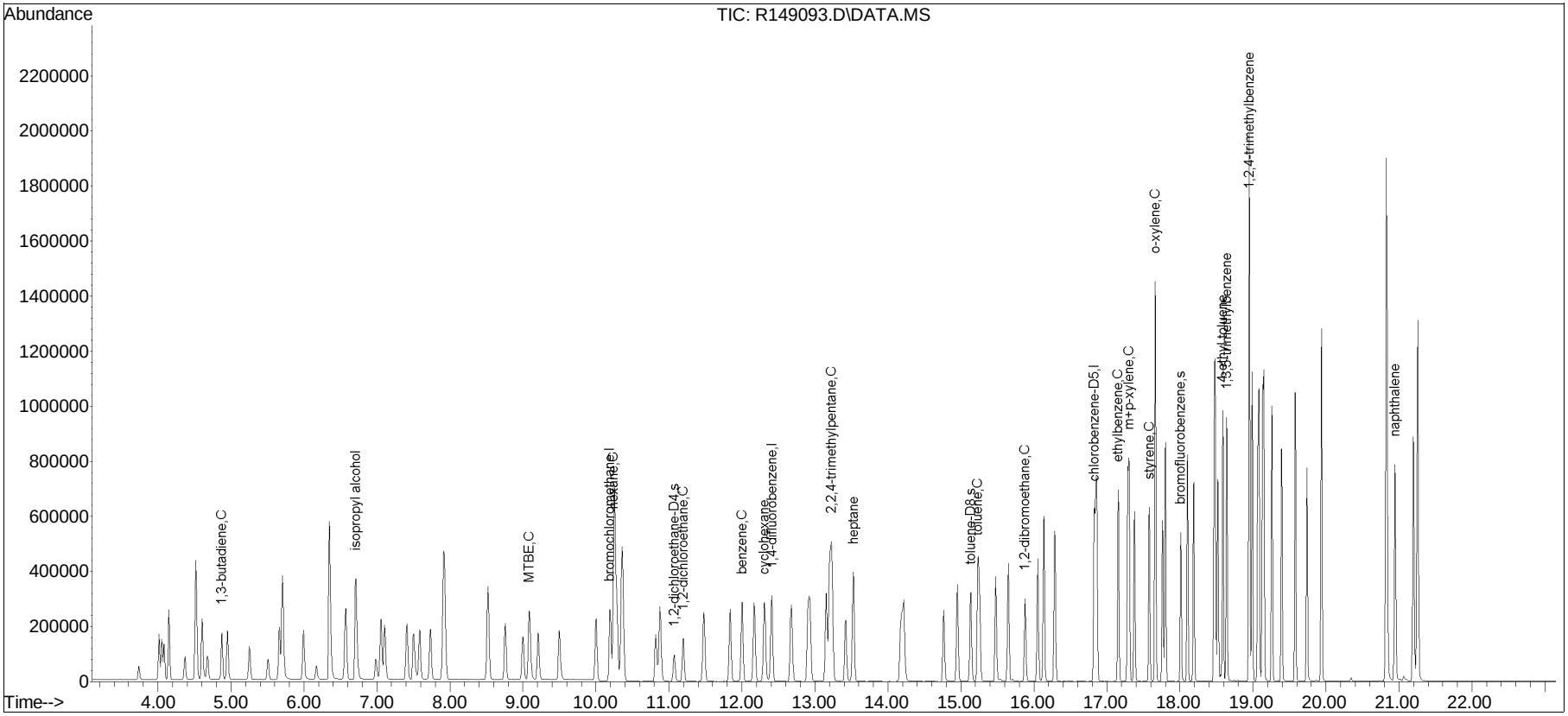
(#) = qualifier out of range (m) = manual integration (+) = signals summed

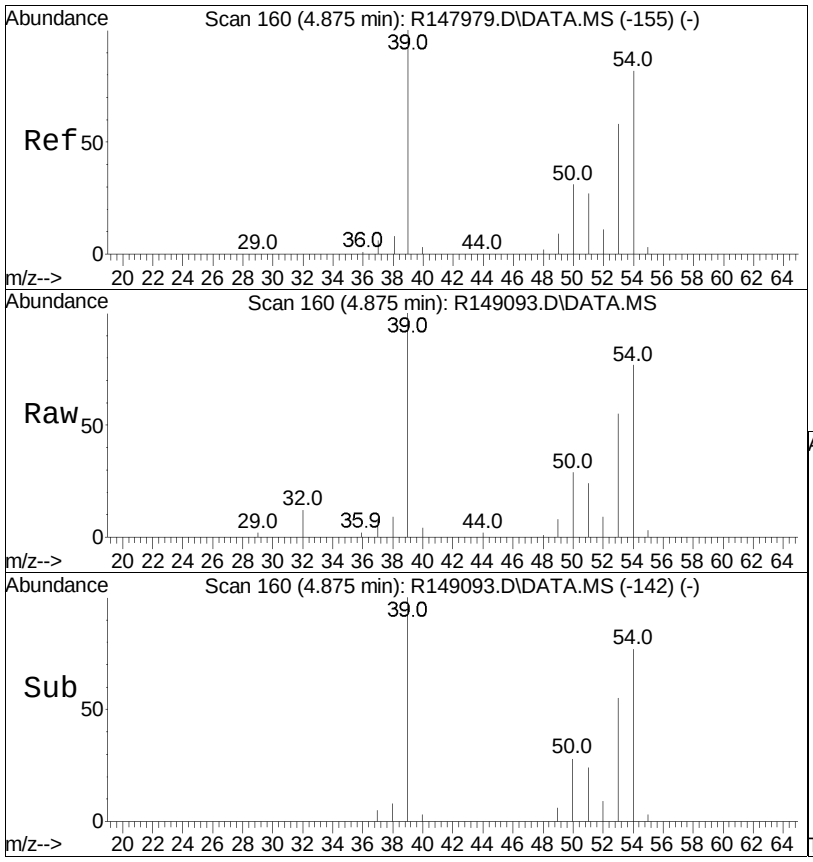
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149093.D
Acq On : 1 Nov 2016 11:08 am
Operator : AIRPIANO1:RY
Sample : WG947959-4,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 01 11:32:29 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : NF-LCS - .cs\Data\AIR1\2016\161101K\R149091.D

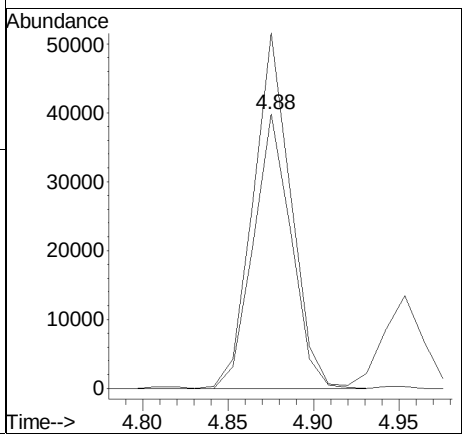


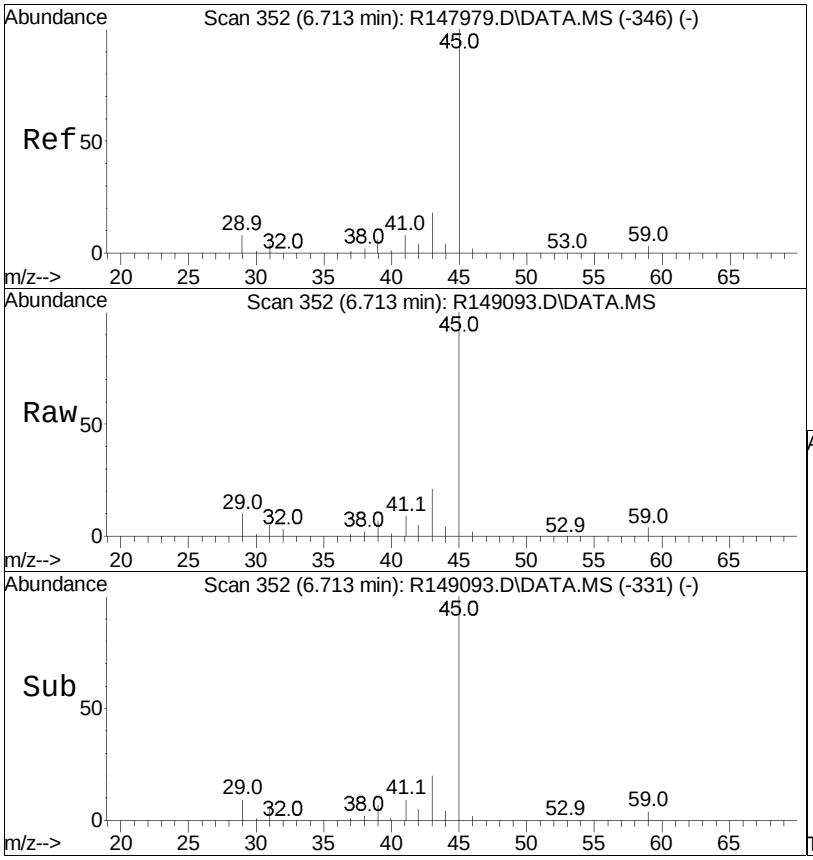


#10
1,3-butadiene
Concen: 10.03 ppbV
RT: 4.88 min Scan# 160
Delta R.T. -0.000 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion: 54 Resp: 61105

Ion	Ratio	Lower	Upper
54	100		
39	129.4	105.0	157.6

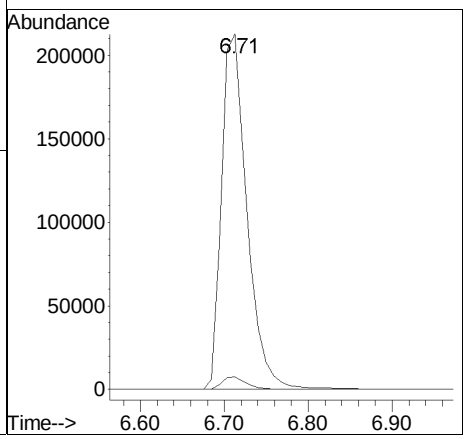


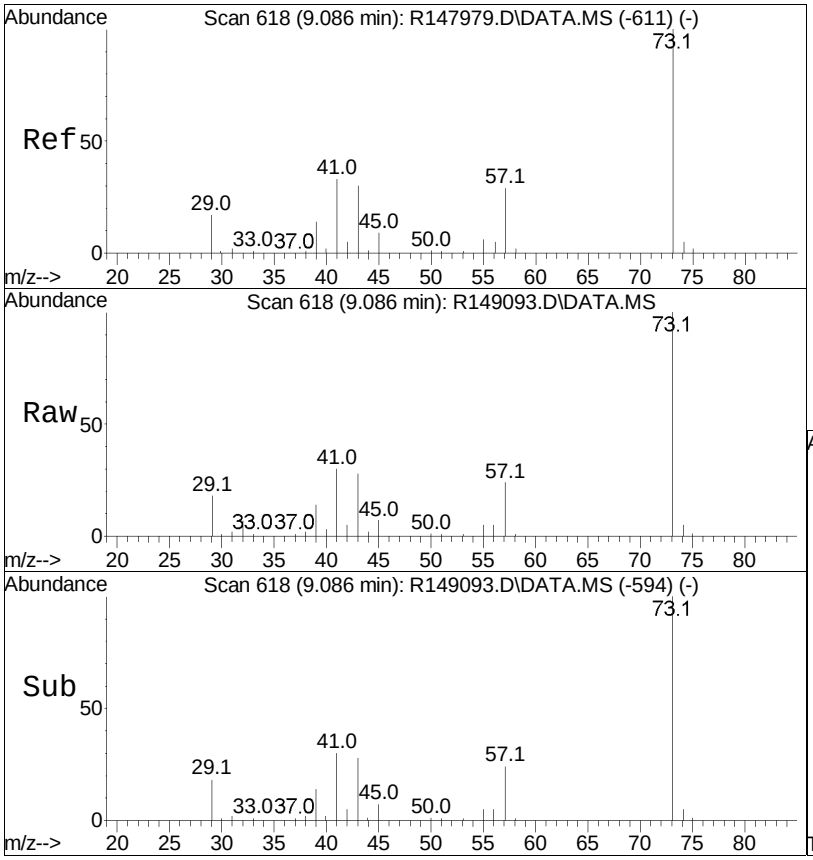


#22
isopropyl alcohol
Concen: 24.77 ppbV
RT: 6.71 min Scan# 352
Delta R.T. -0.000 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion: 45 Resp: 448298

Ion	Ratio	Lower	Upper
45	100		
59	3.5	2.7	4.1

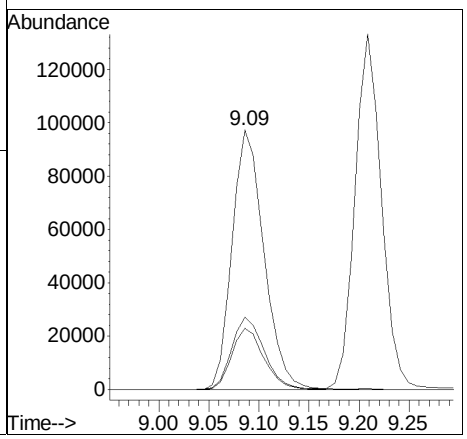


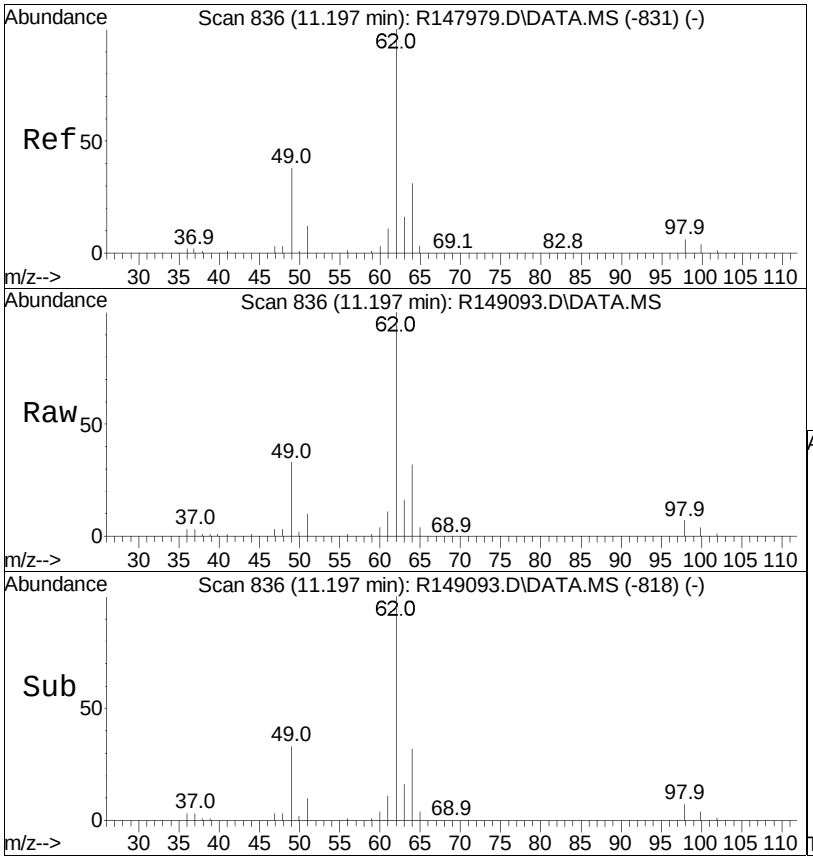


#34
MTBE
Concen: 9.40 ppbV
RT: 9.09 min Scan# 618
Delta R.T. -0.000 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion: 73 Resp: 215264

Ion	Ratio	Lower	Upper
73	100		
57	23.5	19.1	28.7
43	27.8	23.0	34.4

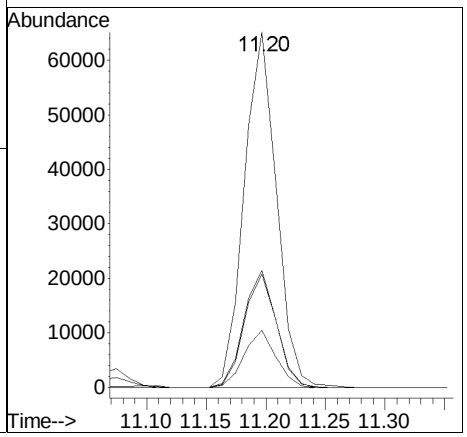


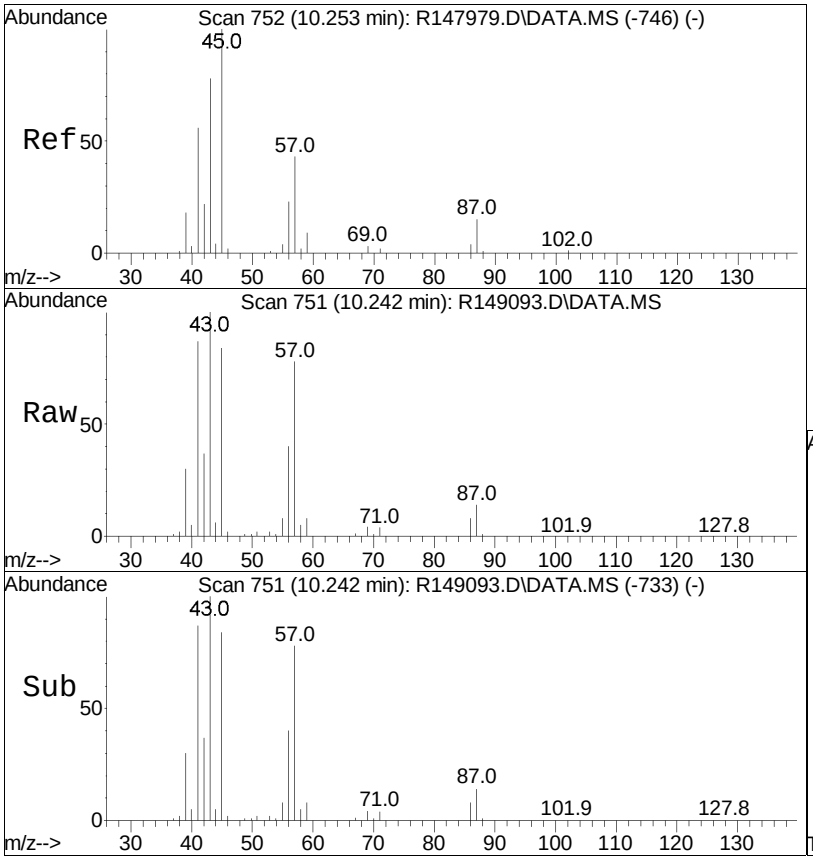


#42
1,2-dichloroethane
Concen: 9.48 ppbV
RT: 11.20 min Scan# 836
Delta R.T. -0.000 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion: 62 Resp: 122538

Ion	Ratio	Lower	Upper
62	100		
64	31.9	25.0	37.6
49	33.0	26.1	39.1
63	16.0	12.2	18.2

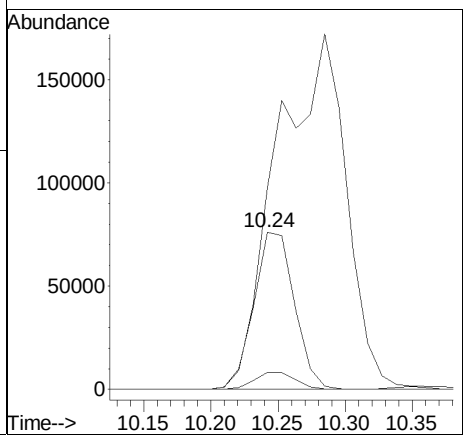


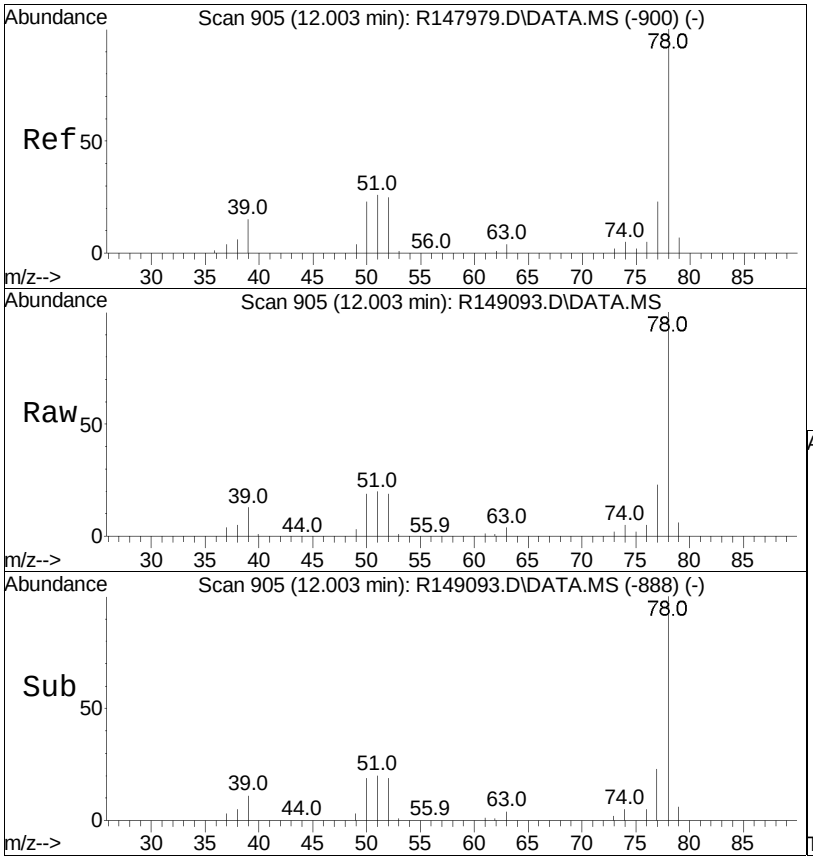


#44
hexane
Concen: 9.86 ppbV
RT: 10.24 min Scan# 751
Delta R.T. -0.011 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion: 57 Resp: 160586

Ion	Ratio	Lower	Upper
57	100		
43	128.4	142.3	213.5#
86	10.8	9.3	13.9

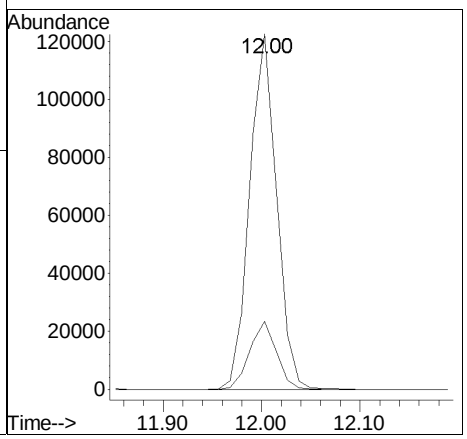


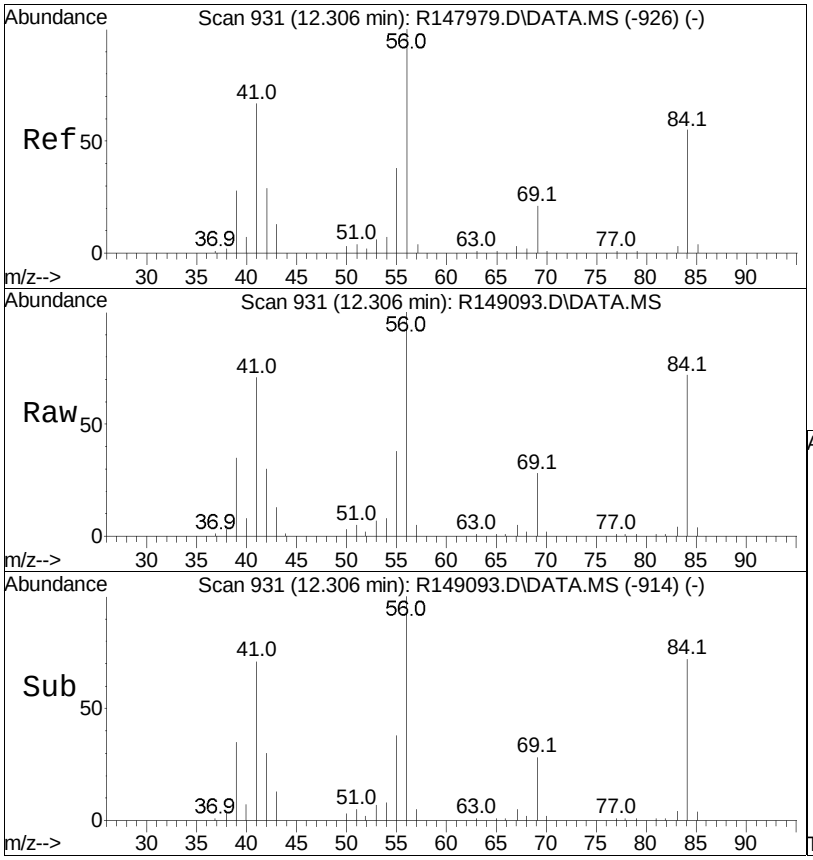


#50
benzene
Concen: 10.33 ppbV
RT: 12.00 min Scan# 905
Delta R.T. -0.000 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion: 78 Resp: 233372

Ion	Ratio	Lower	Upper
78	100		
52	19.2	15.2	22.8

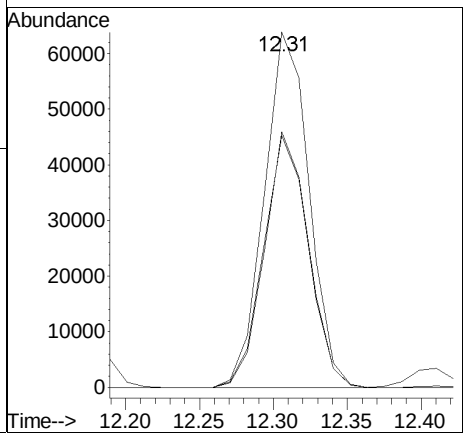


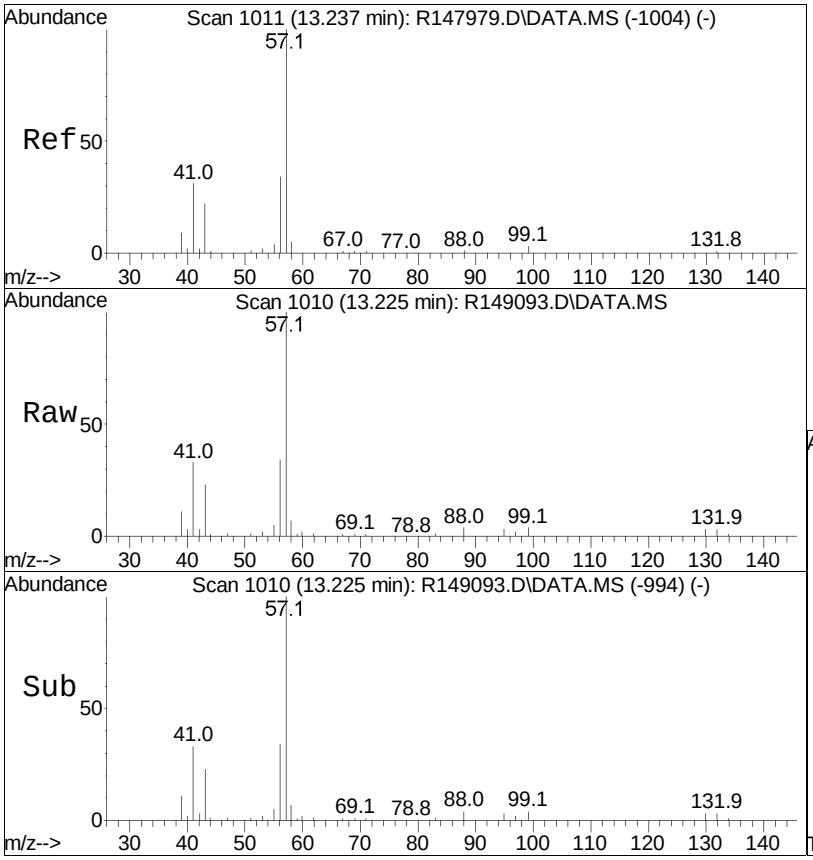


#53
cyclohexane
Concen: 10.08 ppbV
RT: 12.31 min Scan# 931
Delta R.T. -0.000 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion: 56 Resp: 134654

Ion	Ratio	Lower	Upper
56	100		
84	72.0	56.5	84.7
41	70.9	57.5	86.3

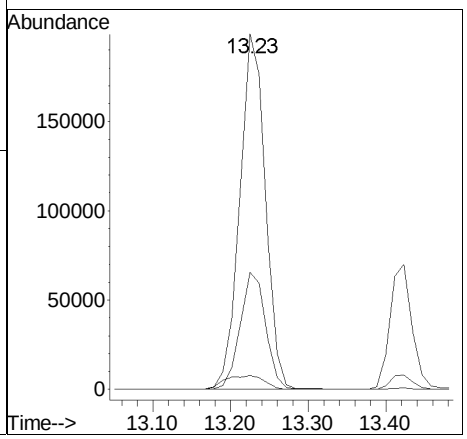


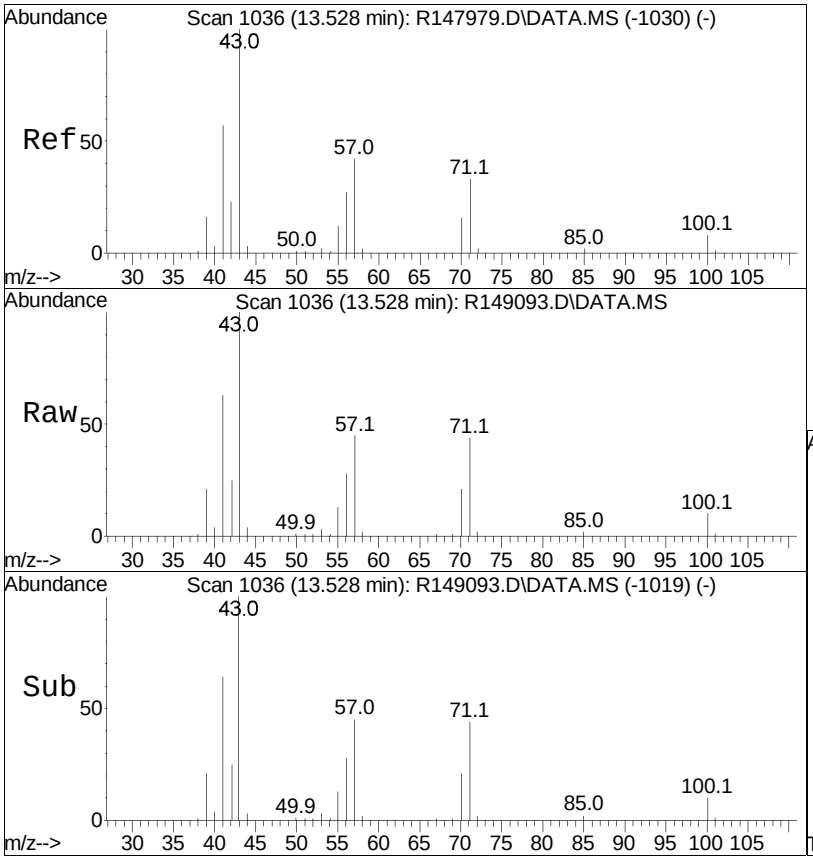


#60
2,2,4-trimethylpentane
Concen: 10.37 ppbV
RT: 13.23 min Scan# 1010
Delta R.T. -0.012 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion: 57 Resp: 455250

Ion	Ratio	Lower	Upper
57	100		
99	3.9	3.0	4.6
41	32.9	26.8	40.2

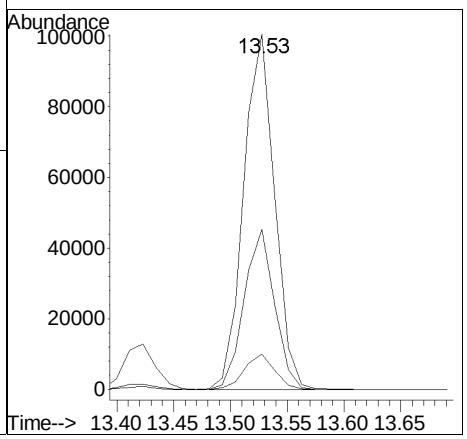


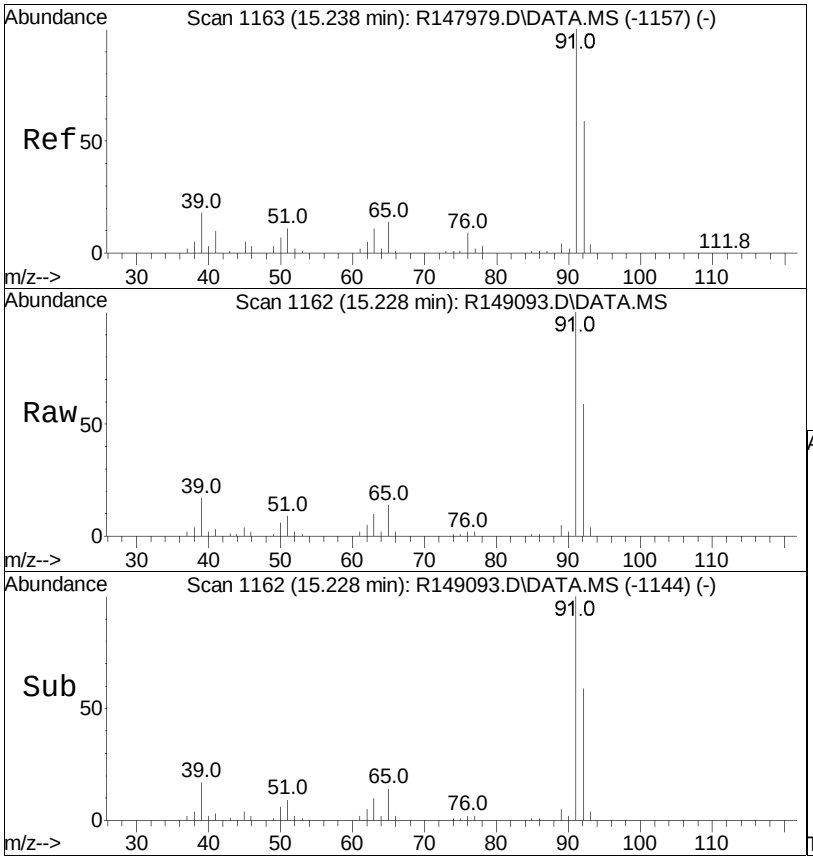


#62
heptane
Concen: 10.15 ppbV
RT: 13.53 min Scan# 1036
Delta R.T. -0.000 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion: 43 Resp: 191037

Ion	Ratio	Lower	Upper
43	100		
57	45.0	34.2	51.2
100	9.9	7.9	11.9

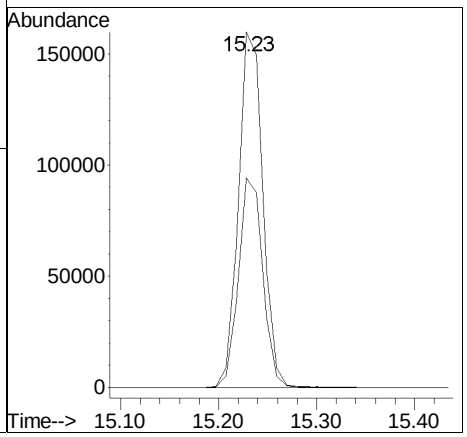


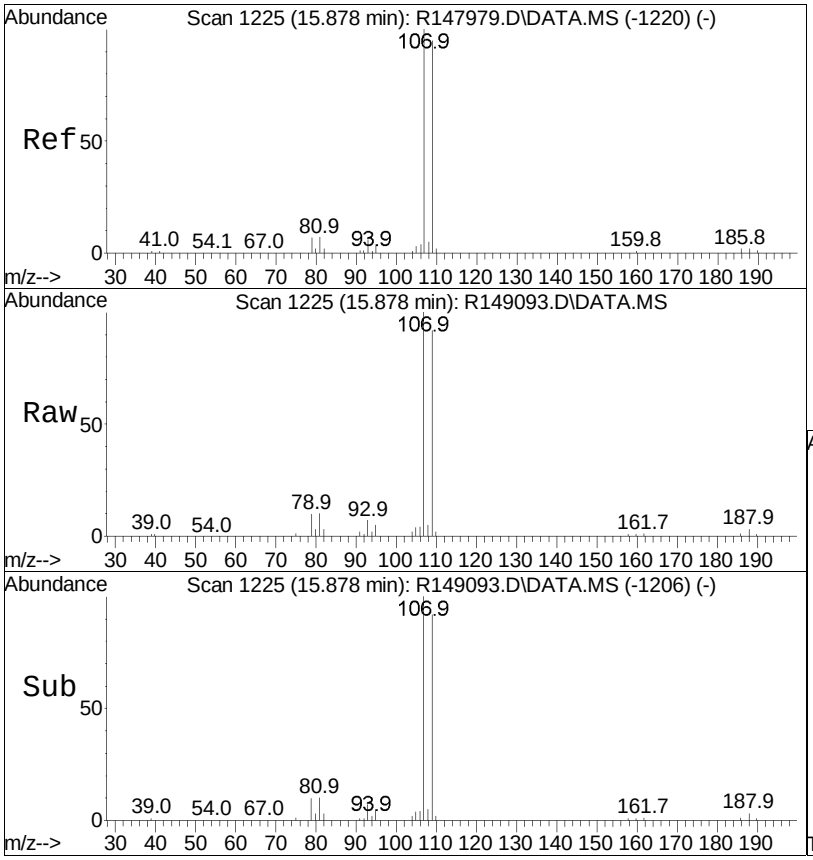


#68
toluene
Concen: 10.34 ppbV
RT: 15.23 min Scan# 1162
Delta R.T. -0.011 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion: 91 Resp: 275759

Ion	Ratio	Lower	Upper
91	100		
92	58.9	45.8	68.6

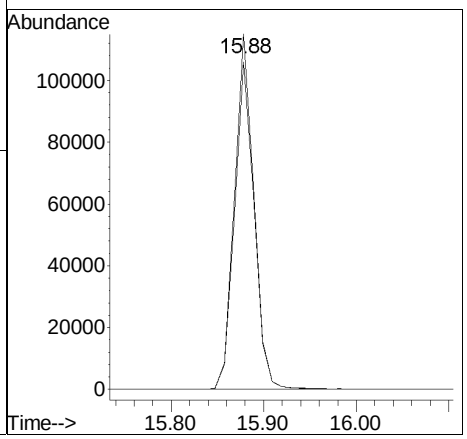


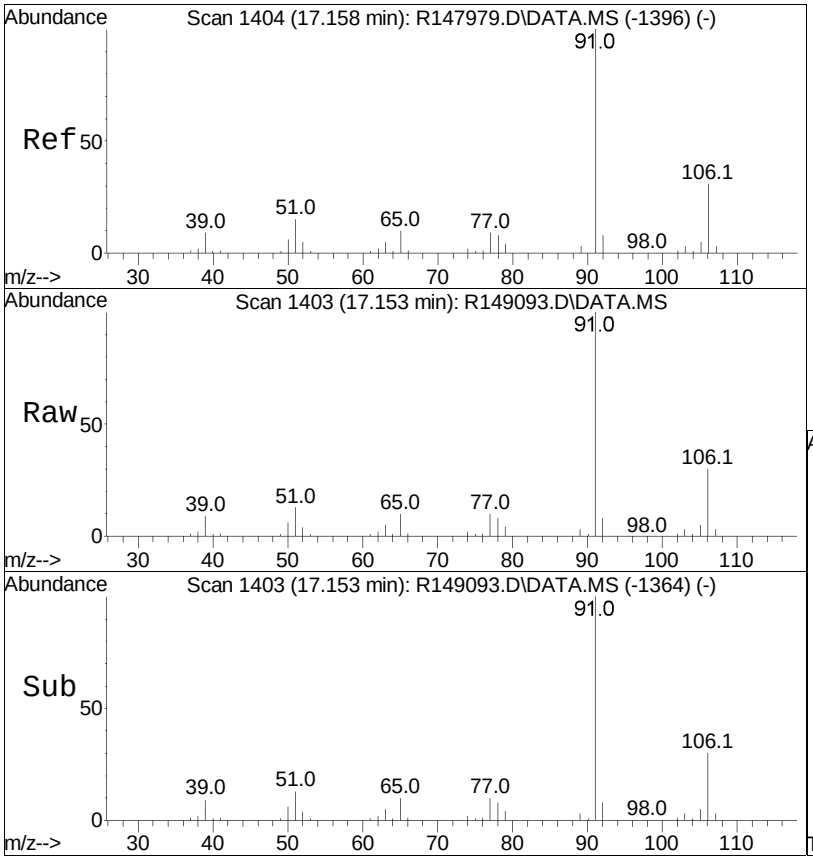


#75
1,2-dibromoethane
Concen: 10.98 ppbV
RT: 15.88 min Scan# 1225
Delta R.T. -0.000 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion:107 Resp: 168430

Ion	Ratio	Lower	Upper
107	100		
109	92.1	75.8	113.8

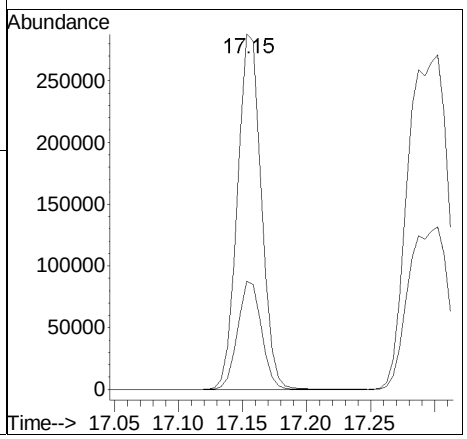


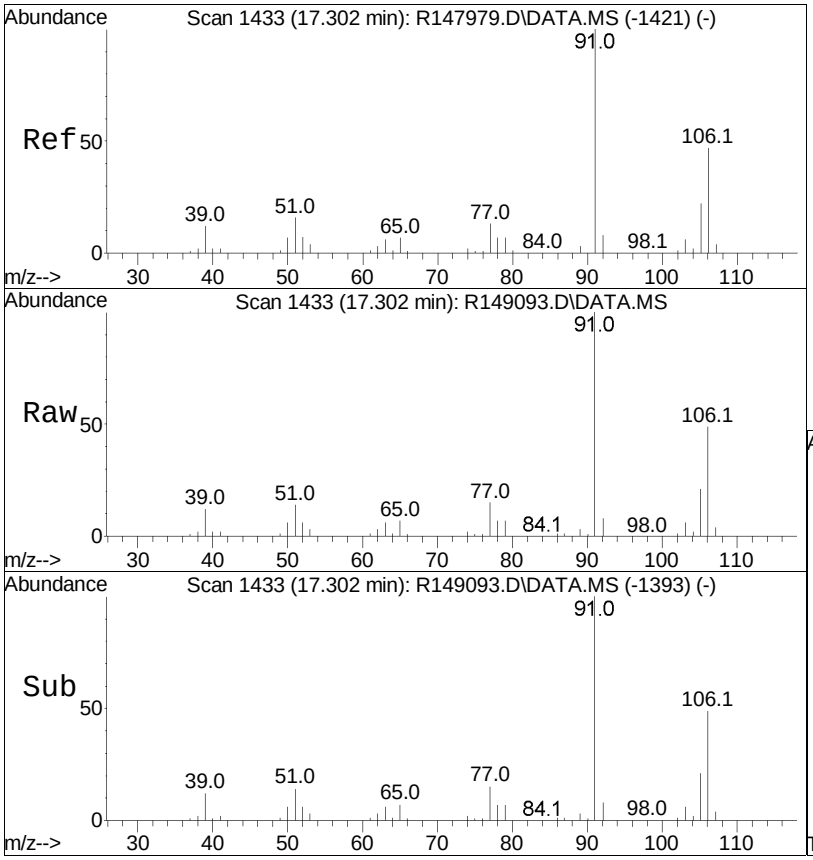


#81
ethylbenzene
Concen: 10.68 ppbV
RT: 17.15 min Scan# 1403
Delta R.T. -0.005 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion: 91 Resp: 373755

Ion	Ratio	Lower	Upper
91	100		
106	30.4	24.5	36.7

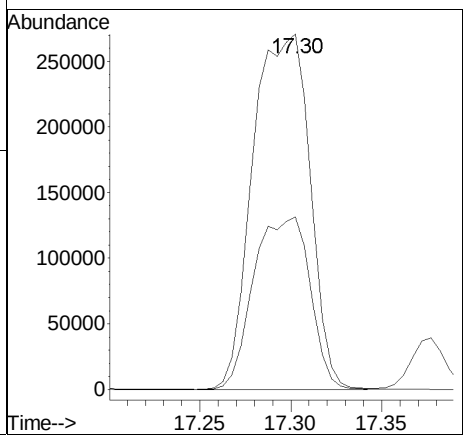


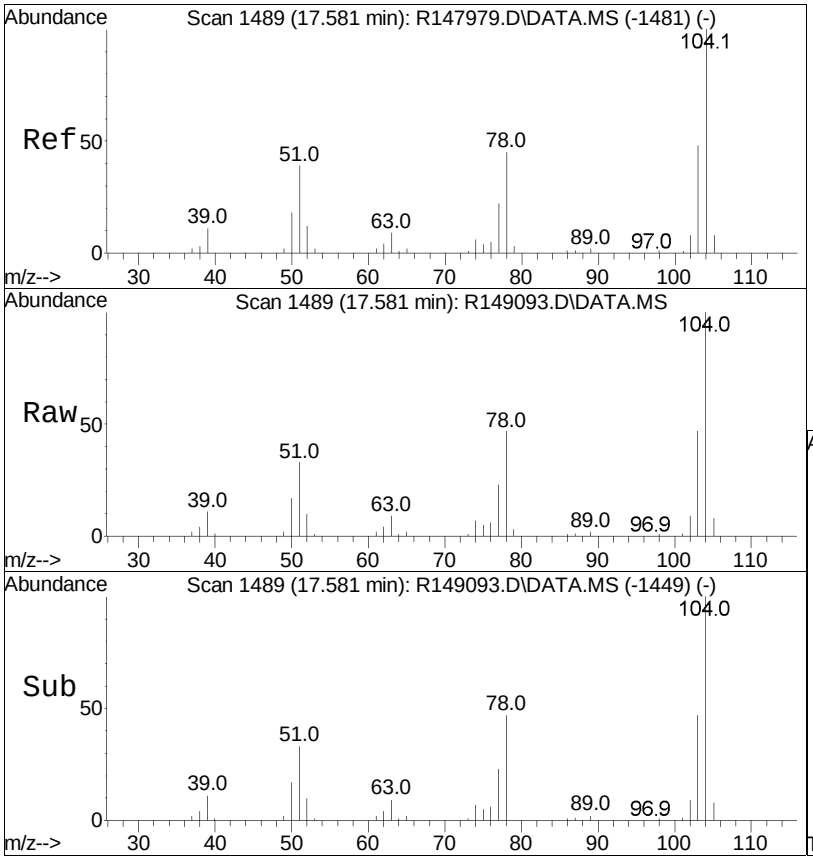


#83
m+p-xylene
Concen: 21.10 ppbV
RT: 17.30 min Scan# 1433
Delta R.T. -0.000 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion: 91 Resp: 588800

Ion	Ratio	Lower	Upper
91	100		
106	48.6	38.8	58.2

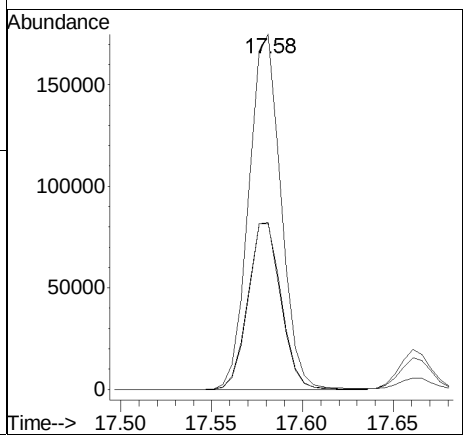


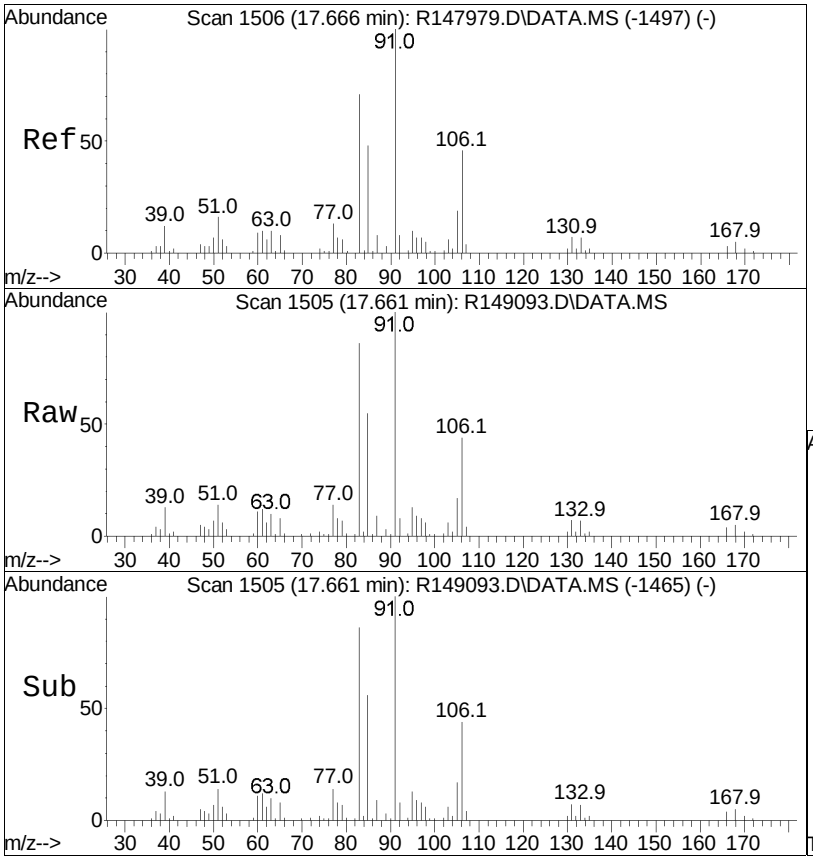


#85
styrene
Concen: 10.76 ppbV
RT: 17.58 min Scan# 1489
Delta R.T. -0.000 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion:104 Resp: 215366

Ion	Ratio	Lower	Upper
104	100		
103	46.6	38.5	57.7
78	46.9	38.8	58.2

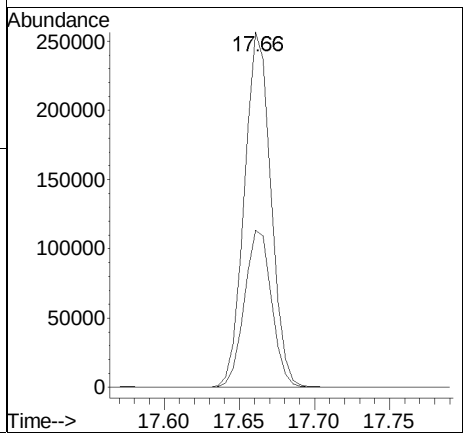


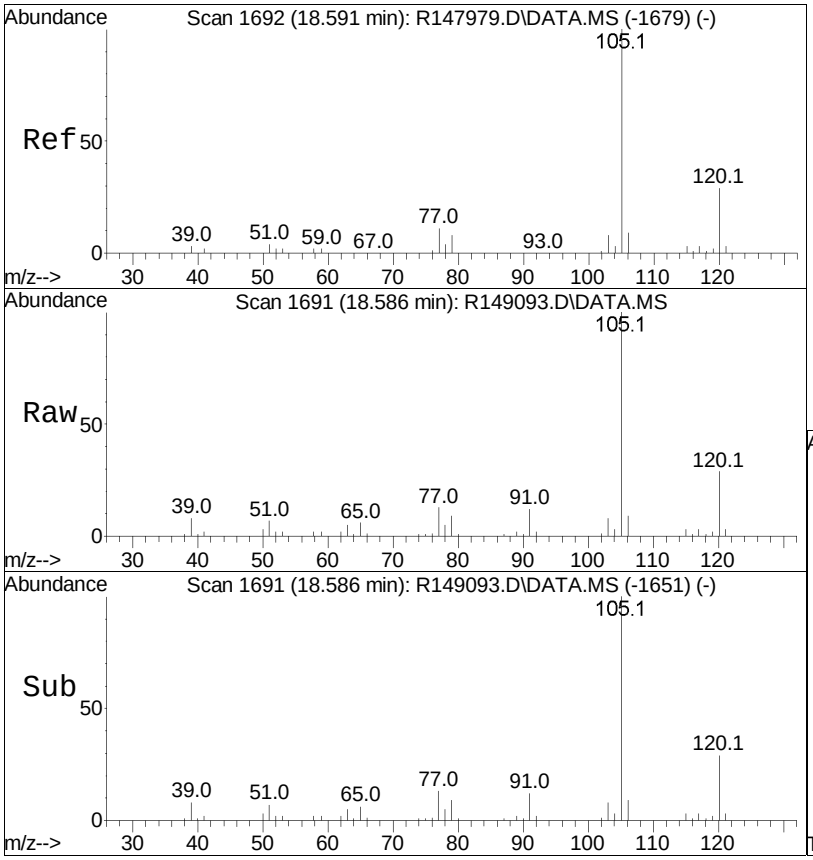


#87
o-xylene
Concen: 10.95 ppbV
RT: 17.66 min Scan# 1505
Delta R.T. -0.000 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion: 91 Resp: 315890

Ion	Ratio	Lower	Upper
91	100		
106	44.2	36.5	54.7

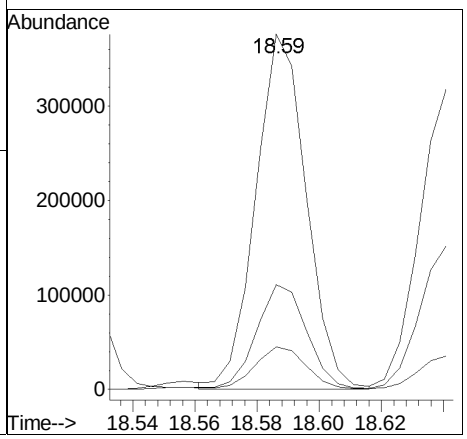


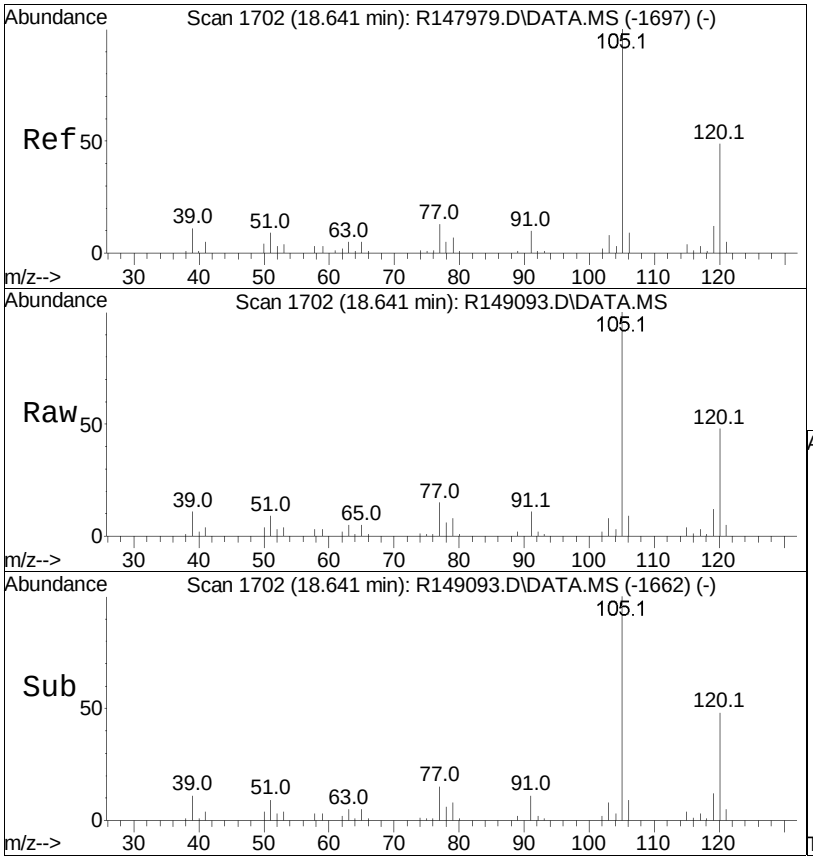


#96
4-ethyl toluene
Concen: 10.36 ppbV m
RT: 18.59 min Scan# 1691
Delta R.T. -0.000 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion:105 Resp: 424812

Ion	Ratio	Lower	Upper
105	100		
120	29.5	23.3	34.9
91	12.0	9.6	14.4

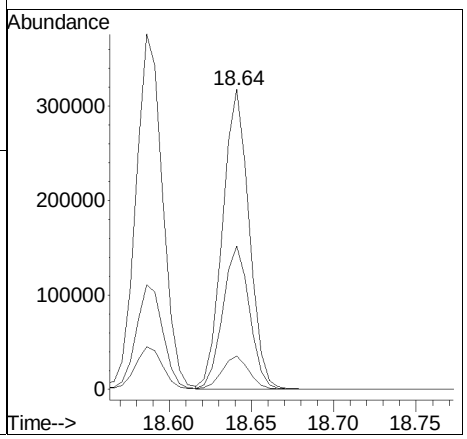


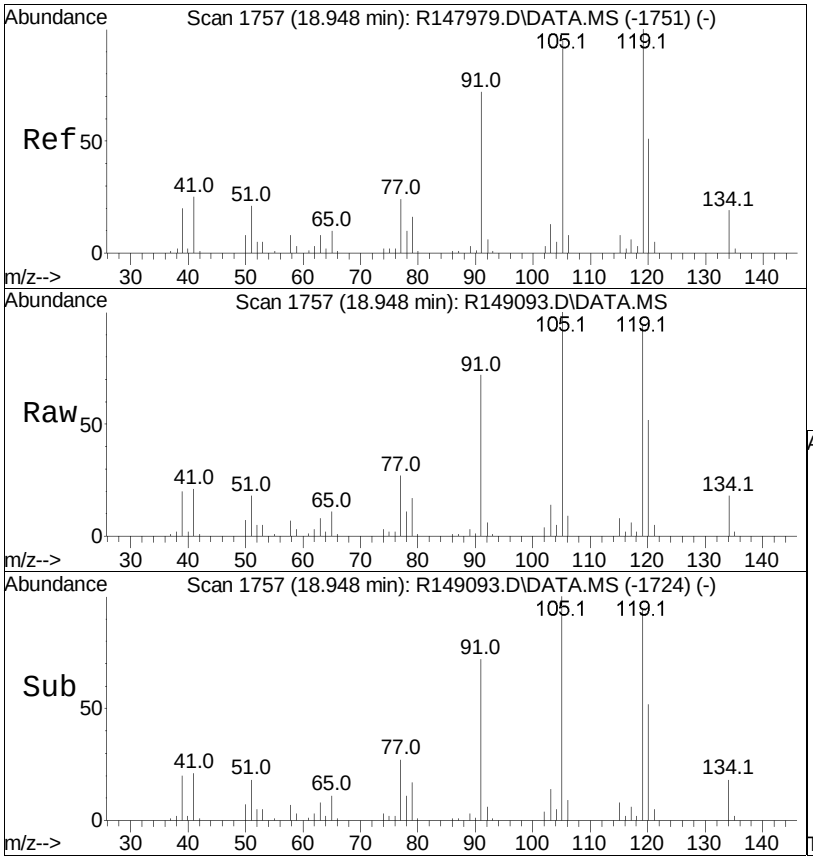


#97
1,3,5-trimethylbenzene
Concen: 11.02 ppbV
RT: 18.64 min Scan# 1702
Delta R.T. -0.000 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion:105 Resp: 356421

Ion	Ratio	Lower	Upper
105	100		
120	47.8	38.5	57.7
91	11.1	9.2	13.8

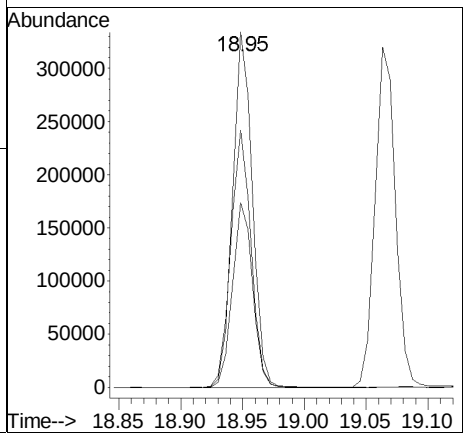


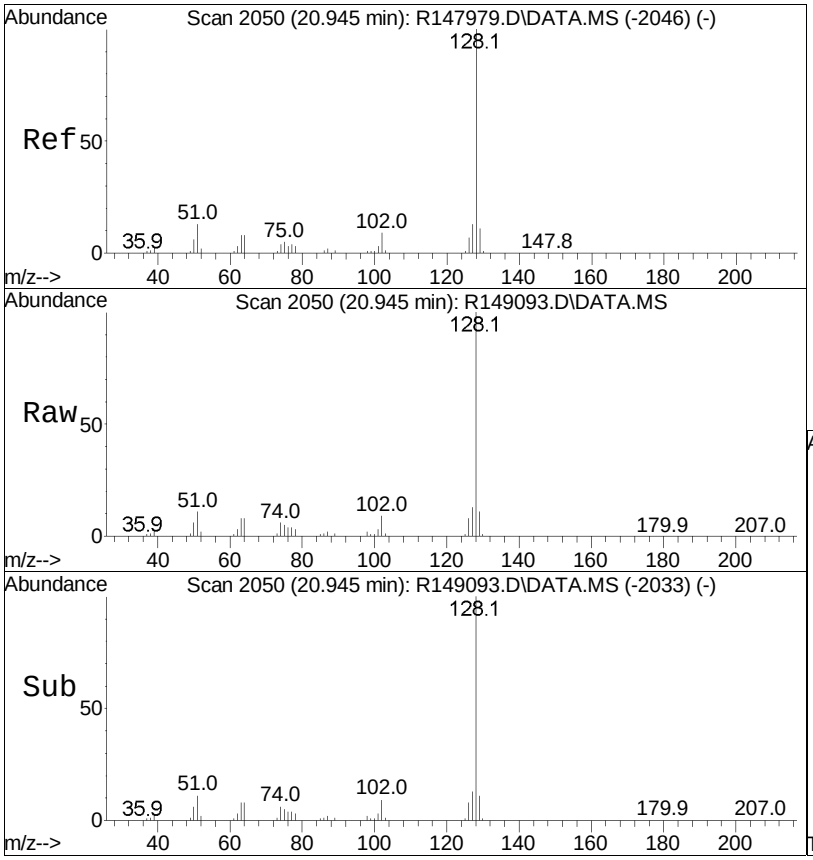


#99
1,2,4-trimethylbenzene
Concen: 11.39 ppbV
RT: 18.95 min Scan# 1757
Delta R.T. -0.000 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion:105 Resp: 369783

Ion	Ratio	Lower	Upper
105	100		
120	52.0	43.0	64.4
91	72.4	63.7	95.5

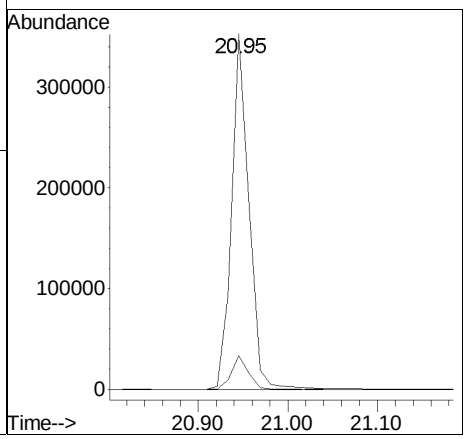




#116
naphthalene
Concen: 11.76 ppbV
RT: 20.95 min Scan# 2050
Delta R.T. -0.000 min
Lab File: R149093.D
Acq: 1 Nov 2016 11:08 am

Tgt Ion:128 Resp: 477279

Ion	Ratio	Lower	Upper
128	100		
102	9.5	7.5	11.3



Quality Control Results

Form 2
Surrogate Recovery
AIRVOA

Client: NewFields
Project Name: WINTER STREET HAVERHILL

Lab Number: L1634001
Project Number: 01.0172397.00
Matrix:

CLIENT ID (LAB SAMPLE NO.)	SMC1 TOL	SMC2 DCA	SMC3 BFB	SMC4	TOT OUT
DUP101916 (L1634001-10D)	99	98	112	--	0
NFSV-05DUP	99	98	97	--	0
WG947959-4LCSD	97	99	97	--	0
WG947959-3LCS	95	94	95	--	0
WG947959-5BLANK	105	100	94	--	0
NFAA-01 (L1634001-01D)	97	100	91	--	0
NFSV-01 (L1634001-09D)	97	99	109	--	0
NFSV-02 (L1634001-08)	100	100	95	--	0
NFSV-03 (L1634001-07)	101	100	98	--	0
NFSV-04 (L1634001-02)	96	98	92	--	0
NFSV-05 (L1634001-04D)	96	96	95	--	0
NFSV-06 (L1634001-05)	100	103	96	--	0
NFSV-07 (L1634001-03)	93	95	89	--	0
NFSV-08 (L1634001-06)	102	101	97	--	0

	QC LIMITS
TOL = TOLUENE-D8	(70-130)
DCA = 1,2-DICHLOROETHANE-D4	(70-130)
BFB = BROMOFLUOROBENZENE	(70-130)

* Values outside of QC limits

Method Blank Summary
Form 4

Client	: NewFields	**Lab Number**	: L1634001
Project Name	: WINTER STREET HAVERHILL	**Project Number**	: 01.0172397.00
Lab Sample ID	: WG947959-5	**Lab File ID**	: R149095
Instrument ID	: AIRPIANO1		
Matrix	: SOIL_VAPOR	**Analysis Date**	: 11/01/16 12:46

Client Sample No.	Lab Sample ID	Analysis Date
WG947959-3LCS	WG947959-3	11/01/16 10:34
WG947959-4LCSD	WG947959-4	11/01/16 11:08
NFAA-01	L1634001-01D	11/01/16 15:08
NFSV-04	L1634001-02	11/01/16 15:42
NFSV-07	L1634001-03	11/01/16 16:16
NFSV-05	L1634001-04D	11/01/16 16:47
NFSV-05DUP	WG947959-6D	11/01/16 17:18
NFSV-06	L1634001-05	11/01/16 17:52
NFSV-08	L1634001-06	11/01/16 18:26
NFSV-03	L1634001-07	11/01/16 19:00
NFSV-02	L1634001-08	11/01/16 19:34
NFSV-01	L1634001-09D	11/01/16 20:04
DUP101916	L1634001-10D	11/01/16 20:35

Tune Summary

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: NewFields	**Lab Number**	: L1634001
Project Name	: WINTER STREET HAVERHILL	**Project Number**	: 01.0172397.00
Instrument ID	: AIRPIANO1	**Analysis Date**	: 10/12/16 16:10
Tune Standard	: WG941698-1	**Tune File ID**	: R148694_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	8.0 - 40.0% of mass 95	23.2
75	30.0 - 66.0% of mass 95	51.3
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.4
173	Less than 2.0% of mass 174	0 (0)1
174	50.0 - 120.0% of mass 95	89.1
175	4.0 - 9.0% of mass 174	6.7 (7.6)1
176	93.0 - 101% of mass 174	85.5 (95.9)1
177	5.0 - 9.0% of mass 176	5.8 (6.8)2

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

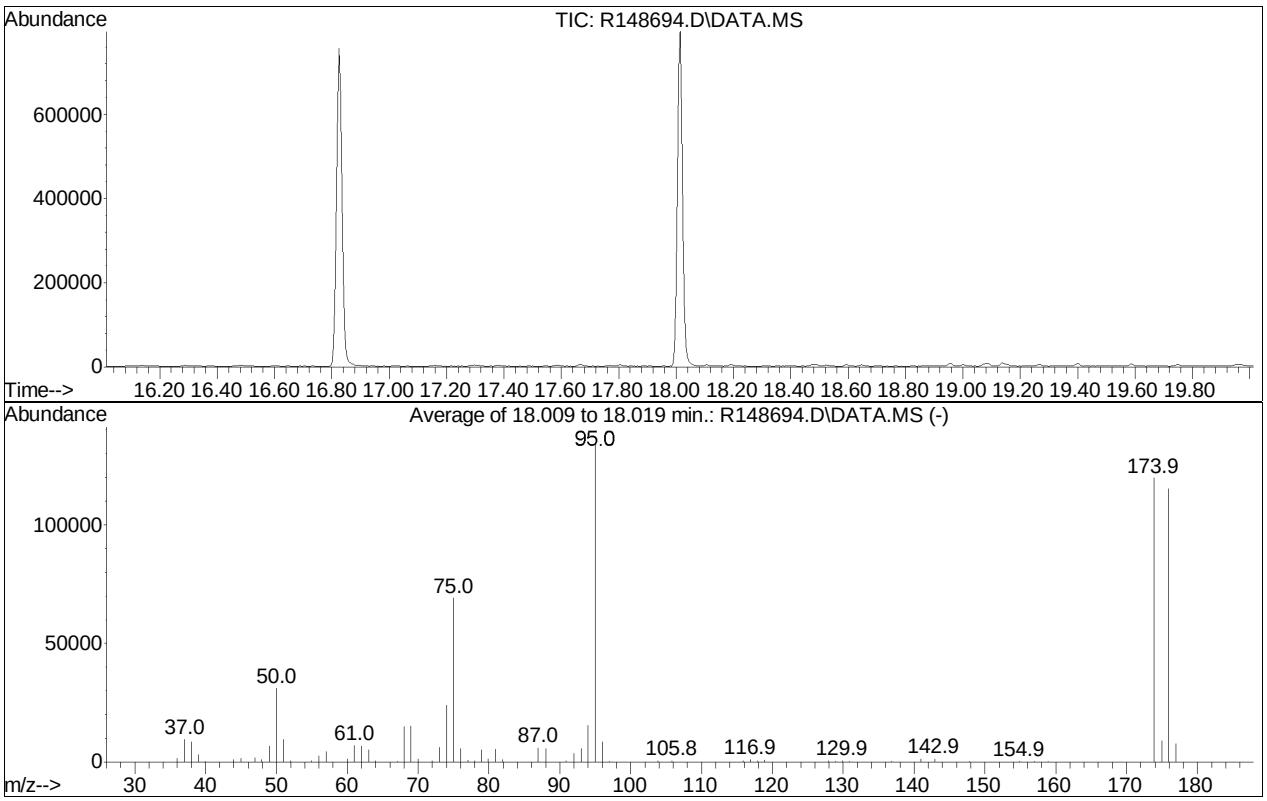
This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
STD0.2	R909223-1	R148698	10/12/16 18:18
STD0.5	R909223-2	R148699	10/12/16 18:51
STD1.0	R909223-3	R148700	10/12/16 19:22
STD5.0	R909223-4	R148701	10/12/16 19:54
STD10.0	R909223-5	R148702	10/12/16 20:28
STD20.0	R909223-6	R148703	10/12/16 20:59
STD50.0	R909223-7	R148704	10/12/16 21:31
STD100.0	R909223-8	R148705	10/12/16 22:04
ICV QUANT REPORT	R909223-9	R148708	10/13/16 09:10

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148694.D
Acq On : 12 Oct 2016 4:10 pm
Operator : AIRPIANO1:RY
Sample : WG941698-1,3,250,250
Misc : WG941698
ALS Vial : 1 Sample Multiplier: 1

Integration File: rteint.p

Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Thu Oct 13 09:23:01 2016



AutoFind: Scans 1575, 1576, 1577; Background Corrected with Scan 1568

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	23.2	31248	PASS
75	95	30	66	51.3	69123	PASS
95	95	100	100	100.0	134656	PASS
96	95	5	9	6.4	8681	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	89.1	120003	PASS
175	174	4	9	7.6	9083	PASS
176	174	93	101	95.9	115117	PASS
177	176	5	9	6.8	7839	PASS

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: NewFields	**Lab Number**	: L1634001
Project Name	: WINTER STREET HAVERHILL	**Project Number**	: 01.0172397.00
Instrument ID	: AIRPIANO1	**Analysis Date**	: 11/01/16 09:17
Tune Standard	: WG947959-1	**Tune File ID**	: R149090_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	8.0 - 40.0% of mass 95	24.2
75	30.0 - 66.0% of mass 95	50.9
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.8
173	Less than 2.0% of mass 174	0 (0)1
174	50.0 - 120.0% of mass 95	85.3
175	4.0 - 9.0% of mass 174	6.5 (7.6)1
176	93.0 - 101% of mass 174	81.3 (95.3)1
177	5.0 - 9.0% of mass 176	5.5 (6.7)2

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

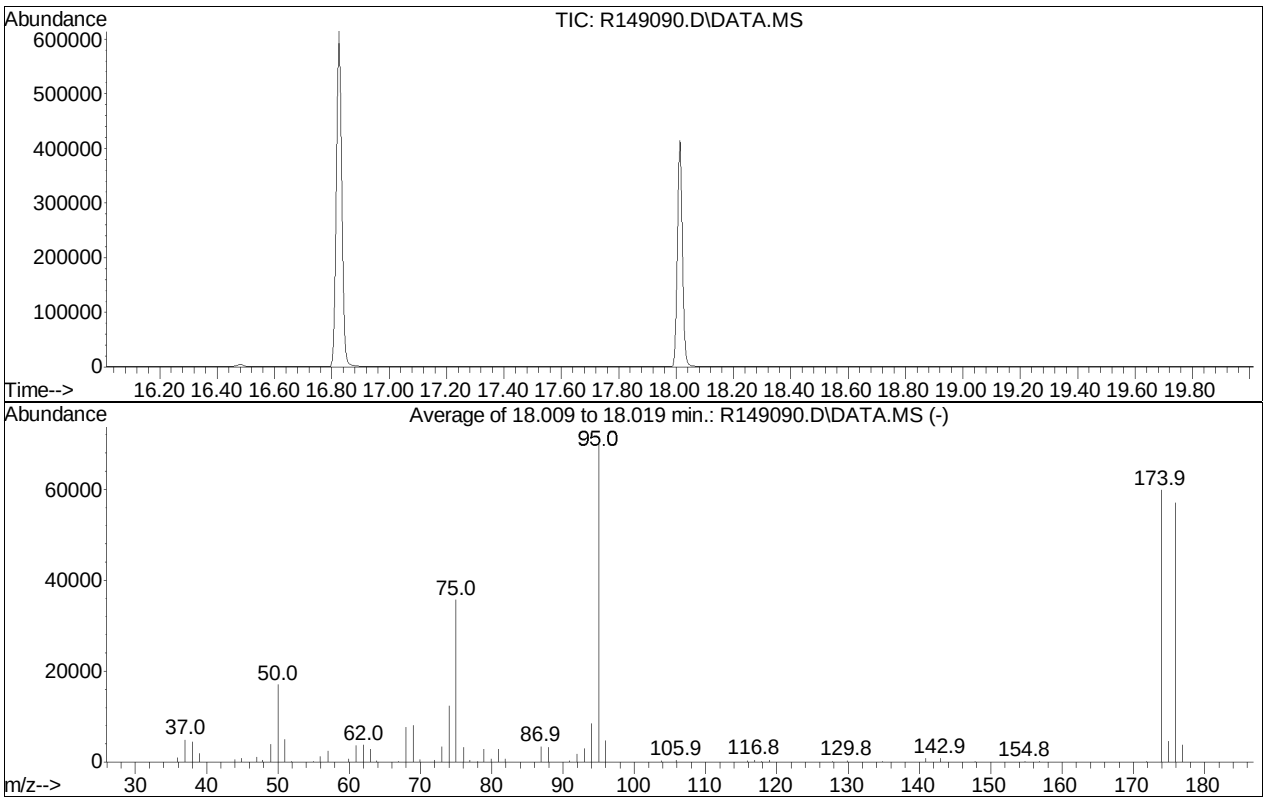
This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
WG947959-2CCAL	WG947959-2	R149091	11/01/16 09:51
WG947959-3LCS	WG947959-3	R149092	11/01/16 10:34
WG947959-4LCSD	WG947959-4	R149093	11/01/16 11:08
WG947959-5BLANK	WG947959-5	R149095	11/01/16 12:46
NFAA-01	L1634001-01D	R149098	11/01/16 15:08
NFSV-04	L1634001-02	R149099	11/01/16 15:42
NFSV-07	L1634001-03	R149100	11/01/16 16:16
NFSV-05	L1634001-04D	R149101	11/01/16 16:47
WG947959-6DUP	WG947959-6D	R149102	11/01/16 17:18
NFSV-06	L1634001-05	R149103	11/01/16 17:52
NFSV-08	L1634001-06	R149104	11/01/16 18:26
NFSV-03	L1634001-07	R149105	11/01/16 19:00
NFSV-02	L1634001-08	R149106	11/01/16 19:34
NFSV-01	L1634001-09D	R149107	11/01/16 20:04
DUP101916	L1634001-10D	R149108	11/01/16 20:35

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149090.D
Acq On : 1 Nov 2016 9:17 am
Operator : AIRPIANO1:RY
Sample : WG947959-1,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 1 Sample Multiplier: 1

Integration File: rteint.p

Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Thu Oct 13 09:23:01 2016



AutoFind: Scans 1575, 1576, 1577; Background Corrected with Scan 1568

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	24.2	17029	PASS
75	95	30	66	50.9	35795	PASS
95	95	100	100	100.0	70283	PASS
96	95	5	9	6.8	4784	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	85.3	59933	PASS
175	174	4	9	7.6	4565	PASS
176	174	93	101	95.3	57107	PASS
177	176	5	9	6.7	3839	PASS

Initial Calibration

Initial Calibration Summary
Form 6

Client	**: NewFields**	**Lab Number**	**: L1634001**
Project Name	**: WINTER STREET HAVERHILL**	**Project Number**	**: 01.0172397.00**
Instrument ID	**: AIRPIANO1**	**Ical Ref**	**: ICAL12987**
Calibration dates	**: 10/12/16 18:18 10/12/16 22:04**		

Calibration Files
0.2 =R148698.D 0.5 =R148699.D 1.0 =R148700.D 5.0 =R148701.D 10 =R148702.D 20 =R148703.D
50 =R148704.D 100 =R148705.D

		Compound	0.2	0.5	1.0	5.0	10	20	50	100	Avg	%RSD
1)	I	bromochloromethane	----------ISTD----------									
2)		chlorodifluoromethane	1.159	1.083	1.184	1.078	1.079	0.744	0.665	0.628	0.9526	24.34
3)		propylene		0.584	0.613	0.534	0.527	0.357	0.320	0.309	0.4632	28.14
4)		propane		0.653	0.697	0.605	0.611	0.429	0.378	0.354	0.5324	26.49
5)		dichlorodifluoromethane	1.545	1.475	1.641	1.414	1.401	1.038	0.937	0.793	1.2805	24.40
6)	C	chloromethane	0.636	0.603	0.685	0.589	0.594	0.403	0.363	0.346	0.5272	25.45
7)		Freon-114	1.702	1.621	1.829	1.623	1.664	1.151	1.027	0.968	1.4481	23.52
8)	C	methanol			0.410	0.349	0.338	0.199	0.177	0.163	0.2728	38.67#
9)	C	vinyl chloride	0.555	0.591	0.671	0.602	0.613	0.428	0.380	0.360	0.5249	22.54
10)	C	1,3-butadiene	0.449	0.462	0.495	0.463	0.459	0.315	0.287	0.271	0.4002	23.00
11)		butane	1.191	1.118	1.197	1.037	1.138	0.789	0.681	0.636	0.9733	24.04
12)	C	acetaldehyde	0.799	0.673	0.644	0.567	0.558	0.511	0.433	0.376	0.5700	23.79
13)	C	bromomethane	0.609	0.586	0.605	0.536	0.548	0.383	0.345	0.325	0.4922	24.51
14)	C	chloroethane	0.265	0.308	0.308	0.288	0.285	0.199	0.177	0.166	0.2494	23.82
15)		ethanol		0.571	0.645	0.578	0.574	0.400	0.348	0.311	0.4896	27.09
16)		dichlorofluoromethane	1.349	1.369	1.478	1.314	1.338	0.927	0.823	0.771	1.1711	24.02
17)	C	vinyl bromide	0.524	0.543	0.593	0.532	0.555	0.376	0.338	0.321	0.4727	23.06
18)	C	acrolein	0.325	0.299	0.292	0.258	0.258	0.183	0.163	0.154	0.2414	27.41
19)		acetone	1.442	1.291	1.302	1.178	1.194	1.034	0.897	0.808	1.1433	18.86
20)	C	acetonitrile	0.633	0.632	0.689	0.614	0.618	0.426	0.381	0.360	0.5442	24.21
21)		trichlorofluoromethane	1.529	1.538	1.650	1.477	1.517	1.054	0.933	0.879	1.3223	23.54
22)		isopropyl alcohol	1.436	1.321	1.412	1.259	1.256	1.050	0.928	0.849	1.1889	18.54
23)	C	acrylonitrile	0.592	0.498	0.492	0.458	0.466	0.329	0.295	0.280	0.4261	26.22
24)		pentane	1.326	1.281	1.321	1.184	1.206	0.840	0.749	0.698	1.0755	24.83
25)		ethyl ether	1.266	1.154	1.178	1.048	1.065	0.735	0.644	0.591	0.9601	27.40
26)	C	1,1-dichloroethene	1.069	1.041	1.173	1.023	1.044	0.722	0.641	0.608	0.9154	24.13
27)		tertiary butyl alcohol		1.432	1.538	1.372	1.402	0.963	0.863	0.812	1.1973	25.49
28)	C	methylene chloride		1.003	1.000	0.842	0.848	0.584	0.510	0.485	0.7534	29.67
29)	C	3-chloropropene	1.018	1.102	1.082	0.962	0.976	0.677	0.600	0.566	0.8729	25.36
30)	C	carbon disulfide	1.867	1.741	1.905	1.740	1.771	1.212	1.095	1.042	1.5467	23.53
31)		Freon 113	1.164	1.173	1.231	1.135	1.155	0.794	0.716	0.677	1.0058	23.15
32)		trans-1,2-dichloroethene	0.988	0.964	1.084	1.001	1.012	0.693	0.638	0.610	0.8736	22.00
33)	C	1,1-dichloroethane	1.148	1.190	1.260	1.153	1.169	0.809	0.729	0.697	1.0195	22.74
34)	C	MTBE	1.693	1.727	1.868	1.705	1.734	1.185	1.086	1.038	1.5045	22.55
35)	C	vinyl acetate			1.617	1.495	1.707	1.138	1.087	1.057	1.3502	21.46
36)	C	2-butanone	1.716	1.526	1.786	1.627	1.641	1.141	1.013	0.958	1.4260	23.44
37)		cis-1,2-dichloroethene	0.813	0.777	0.880	0.774	0.750	0.524	0.435	0.384	0.6671	28.40
38)		Ethyl Acetate	0.316	0.225	0.307	0.264	0.274	0.192	0.175	0.168	0.2402	24.30
39)	C	chloroform	1.704	1.678	1.777	1.648	1.673	1.157	1.051	1.009	1.4621	22.41
40)		Tetrahydrofuran	1.067	1.067	1.027	0.905	0.917	0.635	0.556	0.548	0.8402	26.82

Initial Calibration Summary
Form 6

Client	**: NewFields**	**Lab Number**	**: L1634001**
Project Name	**: WINTER STREET HAVERHILL**	**Project Number**	**: 01.0172397.00**
Instrument ID	**: AIRPIANO1**	**Ical Ref**	**: ICAL12987**
Calibration dates	**: 10/12/16 18:18 10/12/16 22:04**		

Calibration Files
0.2 =R148698.D 0.5 =R148699.D 1.0 =R148700.D 5.0 =R148701.D 10 =R148702.D 20 =R148703.D
50 =R148704.D 100 =R148705.D

		Compound	0.2	0.5	1.0	5.0	10	20	50	100	Avg	%RSD
41)		2,2-dichloropropane	1.635	1.474	1.634	1.457	1.473	1.130	1.026	0.991	1.3524	19.48
42)	C	1,2-dichloroethane	1.048	0.934	1.053	0.958	0.971	0.673	0.593	0.564	0.8492	24.10
43)	I	1,4-difluorobenzene	----------ISTD----------									
44)	C	hexane	0.813	0.729	0.848	0.765	0.744	0.525	0.502	0.506	0.6789	21.24
45)		diisopropyl ether	0.330	0.342	0.380	0.349	0.342	0.241	0.233	0.236	0.3066	19.52
46)		tert-butyl ethyl ether	1.226	1.194	1.402	1.251	1.225	0.866	0.820	0.822	1.1007	20.73
47)	s	1,2-dichloroethane-D4	0.305	0.302	0.305	0.306	0.302	0.300	0.287	0.290	0.2996	2.40
48)	C	1,1,1-trichloroethane	0.809	0.745	0.866	0.769	0.763	0.603	0.568	0.566	0.7112	16.28
49)		1,1-dichloropropene	0.577	0.542	0.622	0.575	0.576	0.404	0.382	0.382	0.5075	19.78
50)	C	benzene	1.099	1.050	1.187	1.037	1.037	0.737	0.694	0.694	0.9418	21.22
51)		thiophene	0.843	0.806	0.909	0.804	0.813	0.748	0.715	0.725	0.7954	8.15
52)	C	carbon tetrachloride	0.781	0.768	0.862	0.785	0.788	0.554	0.533	0.534	0.7005	19.40
53)		cyclohexane	0.641	0.652	0.690	0.617	0.606	0.432	0.406	0.409	0.5567	21.47
54)		tert-amyl methyl ether	1.120	1.072	1.252	1.087	1.093	0.757	0.728	0.736	0.9806	21.06
55)		dibromomethane	0.414	0.423	0.510	0.456	0.459	0.327	0.311	0.316	0.4021	18.71
56)	C	1,2-dichloropropane	0.401	0.425	0.485	0.433	0.434	0.309	0.294	0.299	0.3850	19.18
57)		bromodichloromethane	0.904	0.905	1.060	0.926	0.924	0.657	0.609	0.626	0.8263	20.58
58)	C	1,4-dioxane	0.211	0.214	0.266	0.247	0.250	0.181	0.173	0.177	0.2150	16.91
59)	C	trichloroethene	0.426	0.407	0.488	0.443	0.444	0.318	0.296	0.309	0.3913	18.70
60)	C	2,2,4-trimethylpentane	2.106	2.013	2.260	2.053	2.049	1.437	1.353	1.367	1.8297	20.53
61)		methyl methacrylate	0.793	0.688	0.813	0.742	0.720	0.704	0.646	0.649	0.7194	8.51
62)		heptane	0.882	0.892	1.030	0.858	0.863	0.607	0.573	0.570	0.7842	22.36
63)	C	cis-1,3-dichloropropene	0.577	0.568	0.676	0.621	0.626	0.448	0.430	0.432	0.5472	17.81
64)	C	4-methyl-2-pentanone	1.222	1.265	1.428	1.243	1.211	0.853	0.803	0.791	1.1018	22.43
65)		trans-1,3-dichloropropene	0.601	0.609	0.716	0.643	0.659	0.469	0.452	0.454	0.5752	17.93
66)	C	1,1,2-trichloroethane	0.397	0.430	0.474	0.437	0.429	0.307	0.293	0.299	0.3832	18.85
67)	I	chlorobenzene-D5	----------ISTD----------									
68)	C	toluene	4.723	4.534	5.097	4.609	4.620	3.266	3.272	3.229	4.1686	18.58
69)	s	toluene-D8	2.957	3.004	3.066	3.012	2.996	2.980	3.064	3.019	3.0122	1.26
70)		2-methylthiophene	4.437	4.213	4.946	4.437	4.413	4.276	4.266	4.216	4.4006	5.46
71)		1,3-dichloropropane	2.218	2.192	2.539	2.322	2.327	1.675	1.637	1.625	2.0666	17.62
72)		2-hexanone	4.358	4.022	5.017	4.329	4.400	3.126	3.009	2.864	3.8906	20.31
73)		3-methylthiophene	4.081	4.209	4.864	4.411	4.421	4.323	4.293	4.167	4.3461	5.52
74)		dibromochloromethane	2.971	2.952	3.437	3.174	3.207	2.283	2.301	2.267	2.8241	16.72
75)	C	1,2-dibromoethane	2.480	2.554	2.950	2.699	2.722	1.936	1.924	1.922	2.3985	17.24
76)		butyl acetate	0.443	0.500	0.595	0.550	0.558	0.391	0.388	0.388	0.4766	17.85
77)		octane	1.358	1.360	1.545	1.394	1.385	0.961	0.966	0.985	1.2442	18.84
78)	C	tetrachloroethene	2.244	2.218	2.624	2.397	2.411	1.710	1.719	1.751	2.1342	16.84
79)		1,1,1,2-tetrachloroethane	1.997	1.971	2.267	2.047	2.051	1.474	1.474	1.439	1.8400	17.68
80)	C	chlorobenzene	3.564	3.464	4.007	3.662	3.595	2.603	2.619	2.621	3.2669	17.22

Initial Calibration Summary
Form 6

Client	**: NewFields**	**Lab Number**	**: L1634001**
Project Name	**: WINTER STREET HAVERHILL**	**Project Number**	**: 01.0172397.00**
Instrument ID	**: AIRPIANO1**	**Ical Ref**	**: ICAL12987**
Calibration dates	**: 10/12/16 18:18 10/12/16 22:04**		

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50 =R148704.D 100 =R148705.D

		Compound	0.2	0.5	1.0	5.0	10	20	50	100	Avg	%RSD
81)	C	ethylbenzene	6.011	5.864	6.572	6.104	6.137	4.355	4.367	4.340	5.4687	17.27
82)		2-ethylthiophene	5.172	5.137	5.878	5.417	5.378	5.291	5.243	5.088	5.3255	4.71
83)	C	m+p-xylene	4.684	4.640	5.352	4.822	4.897	3.474	3.537	3.489	4.3618	17.09
84)	C	bromoform	3.234	3.274	3.822	3.622	3.749	2.664	2.750	2.725	3.2299	14.71
85)	C	styrene	3.134	3.216	3.773	3.548	3.594	2.553	2.596	2.608	3.1277	15.77
86)	C	1,1,2,2-tetrachloroethane	3.781	3.854	4.388	4.046	4.123	2.829	2.986	2.799	3.6008	17.57
87)	C	o-xylene	4.903	4.812	5.574	5.004	5.067	3.600	3.662	3.434	4.5071	18.06
88)		1,2,3-trichloropropane	2.903	2.984	3.482	3.125	3.154	2.225	2.230	2.208	2.7887	17.91
89)		nonane	4.567	4.759	5.357	4.718	4.723	3.313	3.263	3.149	4.2311	20.15
90)	s	bromofluorobenzene	2.153	2.082	2.116	2.125	2.098	2.058	2.111	2.098	2.1051	1.36
91)	C	isopropylbenzene	6.127	5.977	6.999	6.447	6.507	4.604	4.652	4.587	5.7375	17.03
92)		bromobenzene	3.650	3.606	4.158	3.720	3.790	2.634	2.677	2.682	3.3647	17.93
93)		2-chlorotoluene	1.458	1.649	1.842	1.711	1.728	1.226	1.246	1.221	1.5100	16.86
94)		n-propylbenzene	1.675	1.734	1.967	1.834	1.885	1.361	1.388	1.338	1.6480	15.32
95)		4-chlorotoluene	5.019	4.764	5.828	5.200	5.289	3.748	3.677	3.744	4.6587	17.83
96)		4-ethyl toluene	6.572	6.597	7.792	7.301	7.345	5.184	5.302	5.165	6.4074	16.60
97)		1,3,5-trimethylbenzene	5.039	5.285	6.182	5.724	5.834	4.058	4.166	4.155	5.0553	16.67
98)		tert-butylbenzene	5.666	5.568	6.654	6.081	6.366	4.409	4.473	4.024	5.4051	18.24
99)		1,2,4-trimethylbenzene	5.044	5.169	6.240	5.785	6.036	4.122	4.307	3.900	5.0753	17.74
100)		decane	4.171	4.250	4.996	4.520	4.574	3.088	3.237	3.127	3.9952	18.58
101)	C	Benzyl Chloride	5.143	5.170	6.013	5.830	6.080	4.160	4.445	4.400	5.1551	14.87
102)		1,3-dichlorobenzene	3.938	3.841	4.446	4.190	4.335	2.973	3.151	3.074	3.7435	15.91
103)	C	1,4-dichlorobenzene	3.934	3.836	4.480	4.260	4.416	2.991	3.140	3.090	3.7684	16.35
104)		sec-butylbenzene	7.734	7.694	9.016	8.464	8.649	5.882	6.177	5.877	7.4366	17.32
105)		1,2,3-trimethylbenzene	5.037	5.186	6.032	5.737	5.884	5.375	5.771	5.275	5.5372	6.58
106)		p-isopropyltoluene	6.709	6.867	8.016	7.619	7.891	5.438	5.782	5.214	6.6919	16.62
107)		1,2-dichlorobenzene	3.446	3.540	4.207	4.012	4.068	2.715	2.939	2.940	3.4834	16.57
108)		n-butylbenzene	6.675	6.613	7.813	7.331	7.508	4.824	5.269	5.202	6.4046	18.10
109)		indan	5.559	5.635	6.508	6.218	6.322	5.927	6.279	5.884	6.0414	5.66
110)		indene	3.614	3.722	4.319	4.136	4.220	4.011	4.358	4.303	4.0853	6.90
111)	C	1,2-dibromo-3-chloropropane	1.959	2.098	2.451	2.287	2.365	1.438	1.608	1.632	1.9797	19.40
112)		undecane	4.403	4.611	5.519	5.271	5.288	3.045	3.511	3.560	4.4011	21.34
113)		1,2,4,5-tetramethylbenzene	7.595	7.845	9.294	8.976	9.259	6.316	7.338	7.147	7.9713	13.74
114)		dodecane	4.486	4.743	5.716	5.711	5.982	2.870	3.233	3.180	4.4900	28.18
115)	C	1,2,4-trichlorobenzene	3.033	3.468	4.101	4.102	4.294	2.197	2.652	2.871	3.3395	23.14
116)		naphthalene	5.996	6.588	7.947	7.677	7.961	4.106	4.850	5.608	6.3415	23.02
117)		1,2,3-trichlorobenzene	2.772	3.085	3.726	3.773	3.940	1.915	2.304	2.742	3.0321	24.26
118)		benzothiophene	5.074	6.011	7.151	7.263	7.379	5.666	6.756	7.413	6.5891	13.55
119)	C	hexachlorobutadiene	2.695	2.838	3.382	3.314	3.532	1.799	2.254	2.693	2.8133	21.08
120)		2-methylnaphthalene			3.701	3.976	4.267	2.065	2.306	2.727	3.1736	29.21

Initial Calibration Summary
Form 6

Client	**: NewFields**	**Lab Number**	**: L1634001**
Project Name	**: WINTER STREET HAVERHILL**	**Project Number**	**: 01.0172397.00**
Instrument ID	**: AIRPIANO1**	**Ical Ref**	**: ICAL12987**
Calibration dates	**: 10/12/16 18:18 10/12/16 22:04**		

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50 =R148704.D 100 =R148705.D

	Compound	0.2	0.5	1.0	5.0	10	20	50	100	Avg	%RSD
121)	1-methylnaphthalene			4.007	4.514	4.848	2.045	2.238	2.656	3.3846	36.05#

Response Factor Report Air Piano 1

Method Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Method File : TALL161012.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Thu Oct 13 09:23:01 2016
Response Via : Initial Calibration

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50 =R148704.D 100 =R148705.D

Compound		0.2	0.5	1.0	5.0	10	20	50	100	Avg	%RSD
Bromochloromethane		----------ISTD----------									
Dichlorodifluoromethane	e	1.545	1.475	1.641	1.414	1.401	1.038	0.937	0.793	1.2805	24.40
Chloromethane		0.636	0.603	0.685	0.589	0.594	0.403	0.363	0.346	0.5272	25.45
Freon-114		1.702	1.621	1.829	1.623	1.664	1.151	1.027	0.968	1.4481	23.52
Vinyl chloride		0.555	0.591	0.671	0.602	0.613	0.428	0.380	0.360	0.5249	22.54
1,3-Butadiene		0.449	0.462	0.495	0.463	0.459	0.315	0.287	0.271	0.4002	23.00
Butane		1.191	1.118	1.197	1.037	1.138	0.789	0.681	0.636	0.9733	24.04
Acetaldehyde		0.799	0.673	0.644	0.567	0.558	0.511	0.433	0.376	0.5700	23.79
Bromomethane		0.609	0.586	0.605	0.536	0.548	0.383	0.345	0.325	0.4922	24.51
Chloroethane		0.265	0.308	0.308	0.288	0.285	0.199	0.177	0.166	0.2494	23.82
Ethanol			0.571	0.645	0.578	0.574	0.400	0.348	0.311	0.4896	27.09
Vinyl bromide		0.524	0.543	0.593	0.532	0.555	0.376	0.338	0.321	0.4727	23.06
Acrolein		0.325	0.299	0.292	0.258	0.258	0.183	0.163	0.154	0.2414	27.41
Acetone		1.442	1.291	1.302	1.178	1.194	1.034	0.897	0.808	1.1433	18.86
Trichlorofluoromethane		1.529	1.538	1.650	1.477	1.517	1.054	0.933	0.879	1.3223	23.54
Isopropanol		1.436	1.321	1.412	1.259	1.256	1.050	0.928	0.849	1.1889	18.54
Pentane		1.326	1.281	1.321	1.184	1.206	0.840	0.749	0.698	1.0755	24.83
1,1-Dichloroethene		1.069	1.041	1.173	1.023	1.044	0.722	0.641	0.608	0.9154	24.13
tert-Butyl Alcohol			1.432	1.538	1.372	1.402	0.963	0.863	0.812	1.1973	25.49
Methylene chloride			1.003	1.000	0.842	0.848	0.584	0.510	0.485	0.7534	29.67
3-Chloropropene		1.018	1.102	1.082	0.962	0.976	0.677	0.600	0.566	0.8729	25.36
Carbon disulfide		1.867	1.741	1.905	1.740	1.771	1.212	1.095	1.042	1.5467	23.53
Freon-113		1.164	1.173	1.231	1.135	1.155	0.794	0.716	0.677	1.0058	23.15
trans-1,2-Dichloroethene	ne	0.988	0.964	1.084	1.001	1.012	0.693	0.638	0.610	0.8736	22.00
1,1-Dichloroethane		1.148	1.190	1.260	1.153	1.169	0.809	0.729	0.697	1.0195	22.74
Methyl tert butyl ether		1.693	1.727	1.868	1.705	1.734	1.185	1.086	1.038	1.5045	22.55
2-Butanone		1.716	1.526	1.786	1.627	1.641	1.141	1.013	0.958	1.4260	23.44
cis-1,2-Dichloroethene		0.813	0.777	0.880	0.774	0.750	0.524	0.435	0.384	0.6671	28.40
Chloroform		1.704	1.678	1.777	1.648	1.673	1.157	1.051	1.009	1.4621	22.41
1,2-Dichloroethane		1.048	0.934	1.053	0.958	0.971	0.673	0.593	0.564	0.8492	24.10
1,4-Difluorobenzene		----------ISTD----------									

Response Factor Report Air Piano 1

Method Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Method File : TALL161012.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Thu Oct 13 09:23:01 2016
Response Via : Initial Calibration

Calibration Files
0.2 =R148698.D 0.5 =R148699.D 1.0 =R148700.D 5.0 =R148701.D 10 =R148702.D 20 =R148703.D
50 =R148704.D 100 =R148705.D

Compound		0.2	0.5	1.0	5.0	10	20	50	100	Avg	%RSD
n-Hexane		0.813	0.729	0.848	0.765	0.744	0.525	0.502	0.506	0.6789	21.24
1,2-Dichloroethane-d4		0.305	0.302	0.305	0.306	0.302	0.300	0.287	0.290	0.2996	2.40
1,1,1-Trichloroethane		0.809	0.745	0.866	0.769	0.763	0.603	0.568	0.566	0.7112	16.28
Benzene		1.099	1.050	1.187	1.037	1.037	0.737	0.694	0.694	0.9418	21.22
Thiophene		0.843	0.806	0.909	0.804	0.813	0.748	0.715	0.725	0.7954	8.15
Carbon tetrachloride		0.781	0.768	0.862	0.785	0.788	0.554	0.533	0.534	0.7005	19.40
Cyclohexane		0.641	0.652	0.690	0.617	0.606	0.432	0.406	0.409	0.5567	21.47
1,2-Dichloropropane		0.401	0.425	0.485	0.433	0.434	0.309	0.294	0.299	0.3850	19.18
Bromodichloromethane		0.904	0.905	1.060	0.926	0.924	0.657	0.609	0.626	0.8263	20.58
1,4-Dioxane		0.211	0.214	0.266	0.247	0.250	0.181	0.173	0.177	0.2150	16.91
Trichloroethene		0.426	0.407	0.488	0.443	0.444	0.318	0.296	0.309	0.3913	18.70
2,2,4-Trimethylpentane		2.106	2.013	2.260	2.053	2.049	1.437	1.353	1.367	1.8297	20.53
Heptane		0.882	0.892	1.030	0.858	0.863	0.607	0.573	0.570	0.7842	22.36
cis-1,3-Dichloropropene	e	0.577	0.568	0.676	0.621	0.626	0.448	0.430	0.432	0.5472	17.81
4-Methyl-2-pentanone		1.222	1.265	1.428	1.243	1.211	0.853	0.803	0.791	1.1018	22.43
trans-1,3-Dichloropropene	ene	0.601	0.609	0.716	0.643	0.659	0.469	0.452	0.454	0.5752	17.93
1,1,2-Trichloroethane		0.397	0.430	0.474	0.437	0.429	0.307	0.293	0.299	0.3832	18.85
chlorobenzene-d5		----------ISTD----------									
Toluene		4.723	4.534	5.097	4.609	4.620	3.266	3.272	3.229	4.1686	18.58
Toluene-d8		2.957	3.004	3.066	3.012	2.996	2.980	3.064	3.019	3.0122	1.26
2-Methylthiophene		4.437	4.213	4.946	4.437	4.413	4.276	4.266	4.216	4.4006	5.46
2-Hexanone		4.358	4.022	5.017	4.329	4.400	3.126	3.009	2.864	3.8906	20.31
3-Methylthiophene		4.081	4.209	4.864	4.411	4.421	4.323	4.293	4.167	4.3461	5.52
Dibromochloromethane		2.971	2.952	3.437	3.174	3.207	2.283	2.301	2.267	2.8241	16.72
1,2-Dibromoethane		2.480	2.554	2.950	2.699	2.722	1.936	1.924	1.922	2.3985	17.24
Octane		1.358	1.360	1.545	1.394	1.385	0.961	0.966	0.985	1.2442	18.84
Tetrachloroethene		2.244	2.218	2.624	2.397	2.411	1.710	1.719	1.751	2.1342	16.84
Chlorobenzene		3.564	3.464	4.007	3.662	3.595	2.603	2.619	2.621	3.2669	17.22
Ethylbenzene		6.011	5.864	6.572	6.104	6.137	4.355	4.367	4.340	5.4687	17.27
2-Ethylthiophene		5.172	5.137	5.878	5.417	5.378	5.291	5.243	5.088	5.3255	4.71
p/m-Xylene		4.684	4.640	5.352	4.822	4.897	3.474	3.537	3.489	4.3618	17.09

Response Factor Report Air Piano 1

Method Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Method File : TALL161012.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Thu Oct 13 09:23:01 2016
Response Via : Initial Calibration

Calibration Files
0.2 =R148698.D 0.5 =R148699.D 1.0 =R148700.D 5.0 =R148701.D 10 =R148702.D 20 =R148703.D
50 =R148704.D 100 =R148705.D

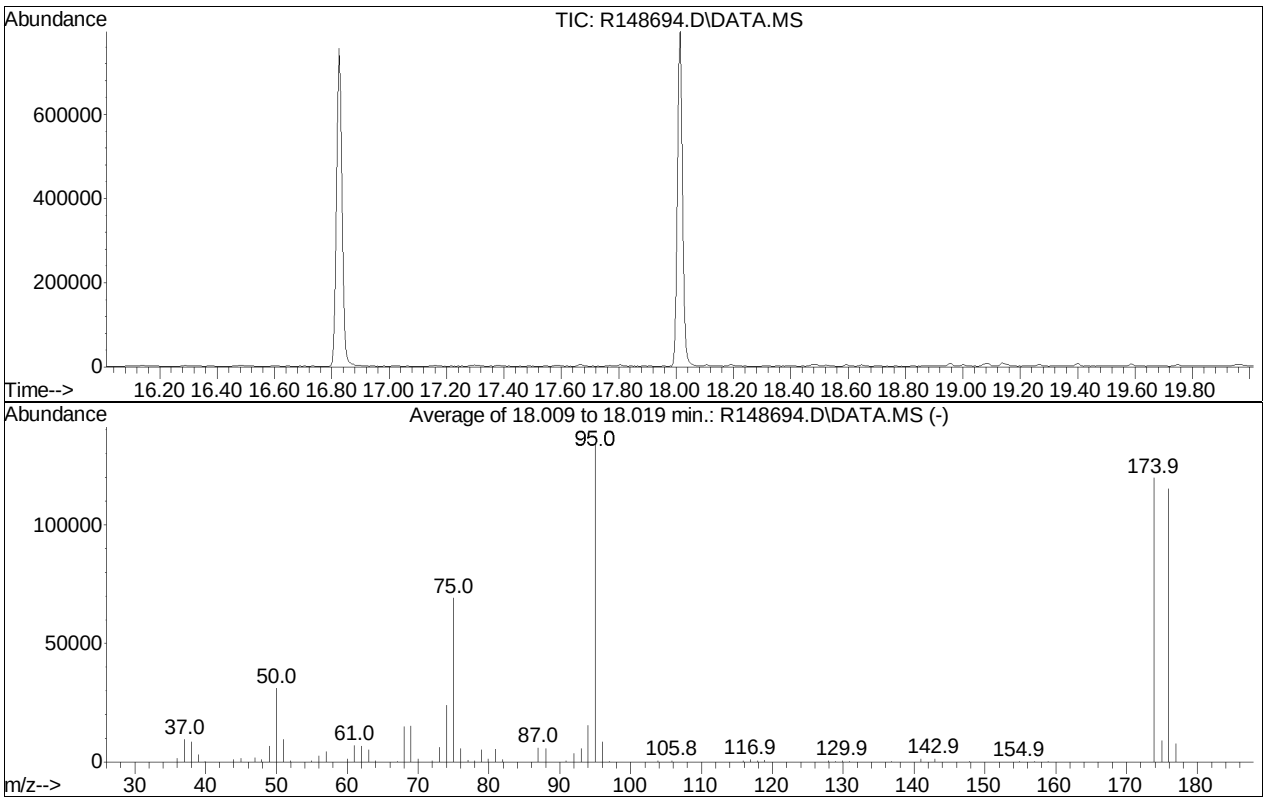
Compound	0.2	0.5	1.0	5.0	10	20	50	100	Avg	%RSD
Bromoform	3.234	3.274	3.822	3.622	3.749	2.664	2.750	2.725	3.2299	14.71
Styrene	3.134	3.216	3.773	3.548	3.594	2.553	2.596	2.608	3.1277	15.77
1,1,2,2-Tetrachloroethane ane	3.781	3.854	4.388	4.046	4.123	2.829	2.986	2.799	3.6008	17.57
o-Xylene	4.903	4.812	5.574	5.004	5.067	3.600	3.662	3.434	4.5071	18.06
Nonane	4.567	4.759	5.357	4.718	4.723	3.313	3.263	3.149	4.2311	20.15
Bromofluorobenzene	2.153	2.082	2.116	2.125	2.098	2.058	2.111	2.098	2.1051	1.36
2-Chlorotoluene	1.458	1.649	1.842	1.711	1.728	1.226	1.246	1.221	1.5100	16.86
4-Ethyltoluene	6.572	6.597	7.792	7.301	7.345	5.184	5.302	5.165	6.4074	16.60
1,3,5-Trimethylbenzene	5.039	5.285	6.182	5.724	5.834	4.058	4.166	4.155	5.0553	16.67
1,2,4-Trimethylbenzene	5.044	5.169	6.240	5.785	6.036	4.122	4.307	3.900	5.0753	17.74
1Decane	4.171	4.250	4.996	4.520	4.574	3.088	3.237	3.127	3.9952	18.58
11,3-Dichlorobenzene	3.938	3.841	4.446	4.190	4.335	2.973	3.151	3.074	3.7435	15.91
11,4-Dichlorobenzene	3.934	3.836	4.480	4.260	4.416	2.991	3.140	3.090	3.7684	16.35
11,2,3-Trimethylbenzene	5.037	5.186	6.032	5.737	5.884	5.375	5.771	5.275	5.5372	6.58
11,2-Dichlorobenzene	3.446	3.540	4.207	4.012	4.068	2.715	2.939	2.940	3.4834	16.57
1Indane	5.559	5.635	6.508	6.218	6.322	5.927	6.279	5.884	6.0414	5.66
1Indene	3.614	3.722	4.319	4.136	4.220	4.011	4.358	4.303	4.0853	6.90
1Undecane	4.403	4.611	5.519	5.271	5.288	3.045	3.511	3.560	4.4011	21.34
11,2,4,5-Tetramethylbenzene zene	7.595	7.845	9.294	8.976	9.259	6.316	7.338	7.147	7.9713	13.74
1Dodecane	4.486	4.743	5.716	5.711	5.982	2.870	3.233	3.180	4.4900	28.18
11,2,4-Trichlorobenzene	3.033	3.468	4.101	4.102	4.294	2.197	2.652	2.871	3.3395	23.14
1Naphthalene	5.996	6.588	7.947	7.677	7.961	4.106	4.850	5.608	6.3415	23.02
1Benzothiophene	5.074	6.011	7.151	7.263	7.379	5.666	6.756	7.413	6.5891	13.55
1Hexachlorobutadiene	2.695	2.838	3.382	3.314	3.532	1.799	2.254	2.693	2.8133	21.08
12-Methylnaphthalene			3.701	3.976	4.267	2.065	2.306	2.727	3.1736	29.21
11-Methylnaphthalene			4.007	4.514	4.848	2.045	2.238	2.656	3.3846	36.05#

(#) = Out of Range

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148694.D
Acq On : 12 Oct 2016 4:10 pm
Operator : AIRPIANO1:RY
Sample : WG941698-1,3,250,250
Misc : WG941698
ALS Vial : 1 Sample Multiplier: 1

Integration File: rteint.p

Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Title : TO-14A/TO-15 SIM/Full Scan Analysis
Last Update : Thu Oct 13 09:23:01 2016



AutoFind: Scans 1575, 1576, 1577; Background Corrected with Scan 1568

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	23.2	31248	PASS
75	95	30	66	51.3	69123	PASS
95	95	100	100	100.0	134656	PASS
96	95	5	9	6.4	8681	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	89.1	120003	PASS
175	174	4	9	7.6	9083	PASS
176	174	93	101	95.9	115117	PASS
177	176	5	9	6.8	7839	PASS

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148698.D
Acq On : 12 Oct 2016 6:18 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD0.2
Misc : WG941698
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 13 09:11:45 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	190055	10.000	ppbV	-0.01
Standard Area = 183579			Recovery = 103.53%			
43) 1,4-difluorobenzene	12.41	114	318427	10.000	ppbV	0.00
Standard Area = 310801			Recovery = 102.45%			
67) chlorobenzene-D5	16.82	54	87745	10.000	ppbV	0.00
Standard Area = 84704			Recovery = 103.59%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	97091	10.081	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.81%			
69) toluene-D8	15.14	98	259435	9.869	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.69%			
90) bromofluorobenzene	18.01	95	188953	10.262	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 102.62%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	5871	0.221	ppbV	94
6) chloromethane	4.37	50	2418	0.214	ppbV	89
7) Freon-114	4.52	85	6471	0.205	ppbV	96
9) vinyl chloride	4.67	62	2109	0.181	ppbV	100
10) 1,3-butadiene	4.88	54	1705	0.195	ppbV	85
11) butane	4.95	43	4528M4	0.209	ppbV	
12) acetaldehyde	4.54	29	15183	1.431	ppbV #	87
13) bromomethane	5.25	94	2313	0.222	ppbV	93
14) chloroethane	5.51	64	1006	0.185	ppbV #	43
15) ethanol	5.73	31	12751	1.168	ppbV	94
17) vinyl bromide	6.00	106	1993	0.189	ppbV #	66
18) acrolein	6.19	56	1236	0.252	ppbV #	19
19) acetone	6.39	43	27415	1.208	ppbV #	99
21) trichlorofluoromethane	6.57	101	5813	0.202	ppbV	92
22) isopropyl alcohol	6.76	45	13647M4	0.571	ppbV	
24) pentane	7.06	43	5041	0.220	ppbV #	96
26) 1,1-dichloroethene	7.41	61	4065	0.205	ppbV	90
27) tertiary butyl alcohol	7.57	59	5824	0.219	ppbV #	68
28) methylene chloride	7.59	49	4857	0.301	ppbV #	80
29) 3-chloropropene	7.73	41	3871	0.209	ppbV	93
30) carbon disulfide	7.91	76	7096	0.211	ppbV #	1

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148698.D
Acq On : 12 Oct 2016 6:18 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD0.2
Misc : WG941698
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 13 09:11:45 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
31) Freon 113	7.92	101	4426	0.202	ppbV		97
32) trans-1,2-dichloroethene	8.76	61	3754	0.195	ppbV		95
33) 1,1-dichloroethane	9.00	63	4363	0.196	ppbV		94
34) MTBE	9.13	73	6434	0.195	ppbV	#	86
36) 2-butanone	9.54	43	6524	0.209	ppbV	#	97
37) cis-1,2-dichloroethene	10.00	61	3091	0.217	ppbV		92
39) chloroform	10.35	83	6478	0.204	ppbV		94
42) 1,2-dichloroethane	11.20	62	3983	0.216	ppbV		97
44) hexane	10.25	57	5175	0.218	ppbV	#	45
48) 1,1,1-trichloroethane	11.47	97	5149	0.212	ppbV		96
50) benzene	12.00	78	6998	0.212	ppbV		96
51) thiophene	12.15	84	5369	0.208	ppbV		96
52) carbon tetrachloride	12.17	117	4976	0.198	ppbV		99
53) cyclohexane	12.31	56	4085	0.212	ppbV	#	83
56) 1,2-dichloropropane	12.93	63	2554	0.185	ppbV		92
57) bromodichloromethane	13.16	83	5754	0.196	ppbV		98
58) 1,4-dioxane	13.27	88	1344	0.169	ppbV		92
59) trichloroethene	13.20	130	2710	0.192	ppbV		99
60) 2,2,4-trimethylpentane	13.24	57	13414	0.206	ppbV		93
62) heptane	13.53	43	5619	0.205	ppbV		93
63) cis-1,3-dichloropropene	14.18	75	3674	0.184	ppbV		93
64) 4-methyl-2-pentanone	14.25	43	7782	0.202	ppbV		96
65) trans-1,3-dichloropropene	14.77	75	3829	0.182	ppbV		90
66) 1,1,2-trichloroethane	14.96	97	2526	0.185	ppbV		94
68) toluene	15.24	91	8289	0.204	ppbV		85
70) 2-methylthiophene	15.30	97	7787	0.201	ppbV	#	96
72) 2-hexanone	15.52	43	7647M3	0.198	ppbV		
73) 3-methylthiophene	15.48	97	7162	0.185	ppbV		97
74) dibromochloromethane	15.65	129	5213	0.185	ppbV		94
75) 1,2-dibromoethane	15.89	107	4352	0.182	ppbV		99
77) octane	16.14	85	2383	0.196	ppbV	#	98
78) tetrachloroethene	16.29	166	3938	0.186	ppbV		97
80) chlorobenzene	16.86	112	6254	0.198	ppbV		95
81) ethylbenzene	17.16	91	10548	0.196	ppbV		96
82) 2-ethylthiophene	17.19	97	9076	0.192	ppbV		97
83) m+p-xylene	17.30	91	16439	0.383	ppbV		96
84) bromoform	17.38	173	5675	0.173	ppbV		98
85) styrene	17.58	104	5500	0.174	ppbV		97

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148698.D
Acq On : 12 Oct 2016 6:18 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD0.2
Misc : WG941698
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 13 09:11:45 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
86) 1,1,2,2-tetrachloroethane	17.67	83	6636	0.183	ppbV		100
87) o-xylene	17.67	91	8605	0.194	ppbV		95
89) nonane	17.81	43	8014	0.193	ppbV		99
93) 2-chlorotoluene	18.47	126	2558	0.169	ppbV		69
96) 4-ethyl toluene	18.59	105	11534	0.179	ppbV		97
97) 1,3,5-trimethylbenzene	18.64	105	8843	0.173	ppbV		97
99) 1,2,4-trimethylbenzene	18.95	105	8852	0.167	ppbV		99
100) decane	19.00	57	7319	0.182	ppbV		99
102) 1,3-dichlorobenzene	19.09	146	6911	0.182	ppbV		97
103) 1,4-dichlorobenzene	19.14	146	6903	0.178	ppbV		97
105) 1,2,3-trimethylbenzene	19.27	105	8840	0.171	ppbV		99
107) 1,2-dichlorobenzene	19.40	146	6047	0.169	ppbV		93
109) indan	19.44	117	9755	0.176	ppbV		99
110) indene	19.51	115	6342	0.171	ppbV		96
112) undecane	19.95	57	7727	0.167	ppbV	#	96
113) 1,2,4,5-tetramethylben...	20.19	119	13329	0.164	ppbV		99
114) dodecane	20.84	57	7872	0.150	ppbV		92
115) 1,2,4-trichlorobenzene	20.83	180	5322	0.141	ppbV		97
116) naphthalene	20.96	128	10523	0.151	ppbV		99
118) benzothiophene	21.02	134	8904	0.138	ppbV		97
119) hexachlorobutadiene	21.26	225	4729	0.153	ppbV	#	88
120) 2-methylnaphthalene	22.10	142	3339	0.089	ppbV		93
121) 1-methylnaphthalene	22.30	142	4565	0.107	ppbV		92

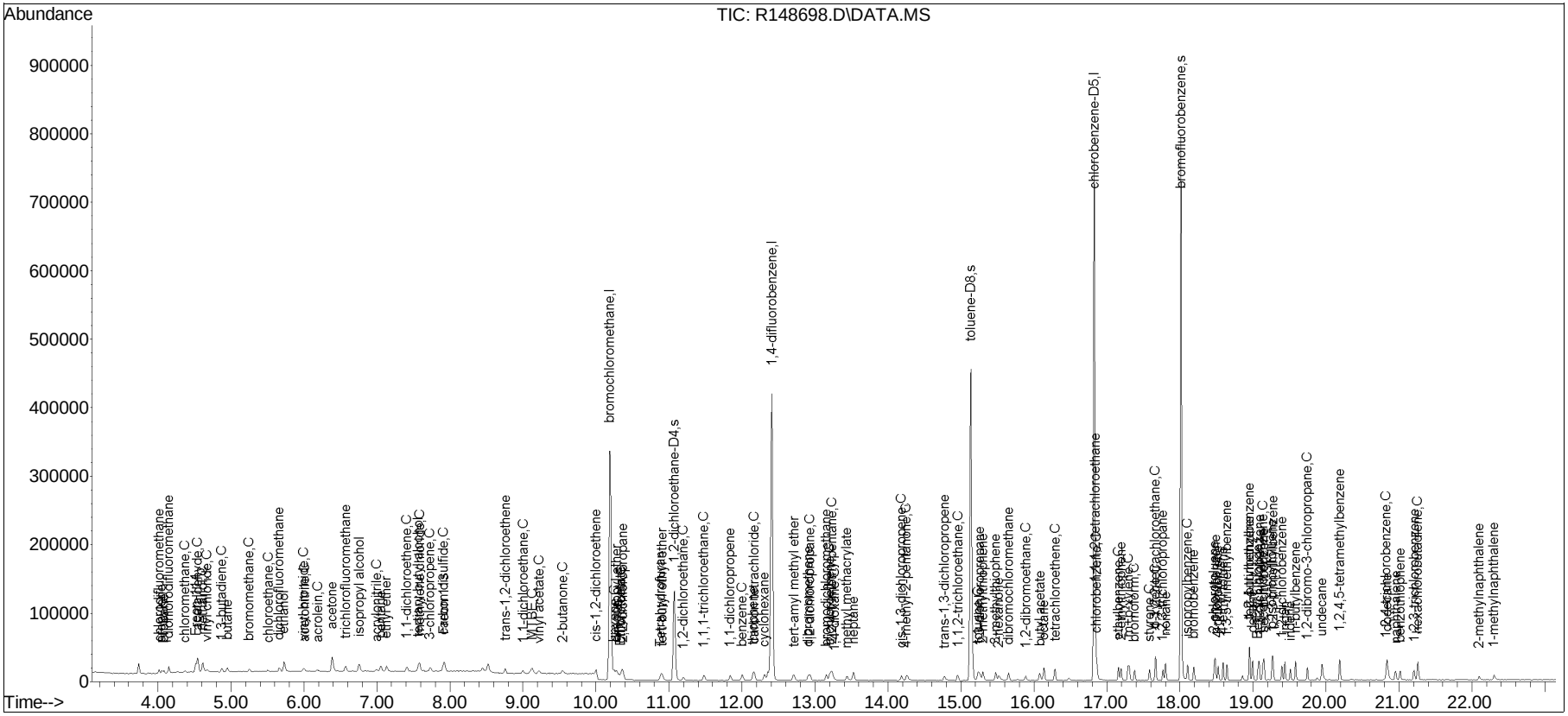
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148698.D
Acq On : 12 Oct 2016 6:18 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD0.2
Misc : WG941698
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 13 09:11:45 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

Sub List : Default - All compounds listed1012NT_ICAL\R148702.D

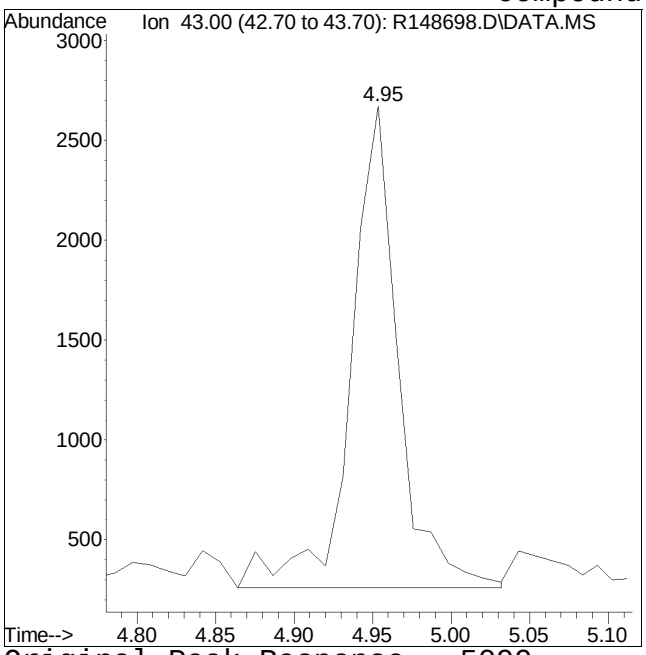


Manual Integration/Negative Proof Report

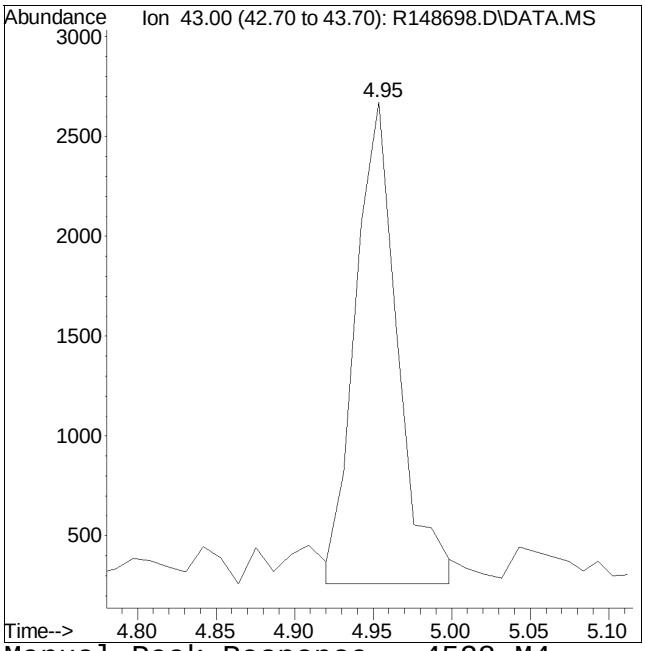
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R148698.D
Date Inj'd : 10/12/2016 6:18 pm
Sample : ITO15-SIMSTD0.2

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 10/13/2016 7:15 am

Compound #11: butane



Original Peak Response = 5099



Manual Peak Response = 4528 M4

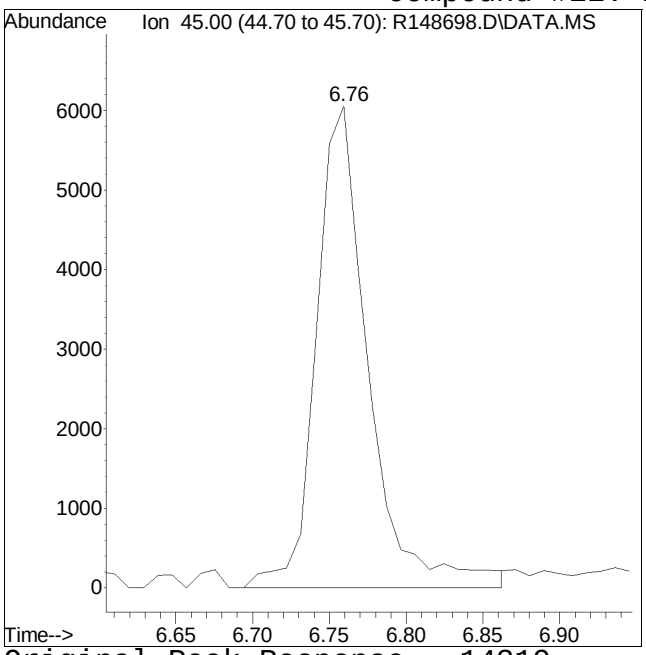
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

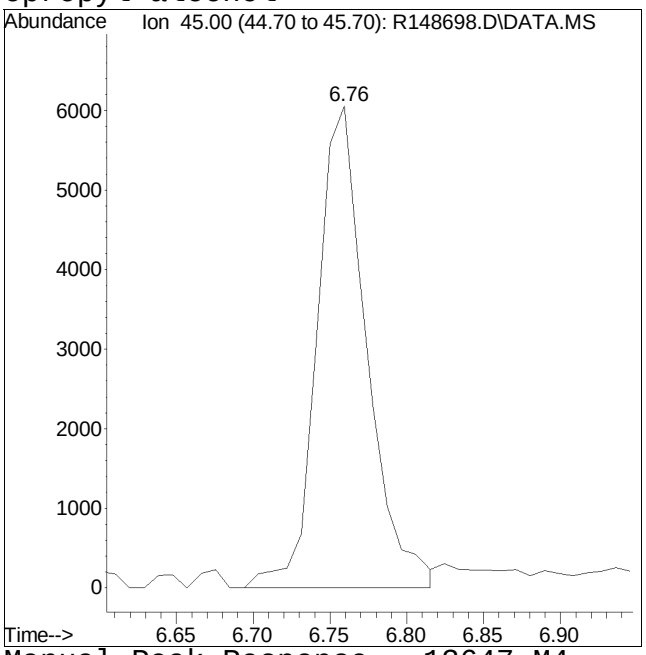
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R148698.D
Date Inj'd : 10/12/2016 6:18 pm
Sample : ITO15-SIMSTD0.2

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 10/13/2016 7:15 am

Compound #22: isopropyl alcohol



Original Peak Response = 14319



Manual Peak Response = 13647 M4

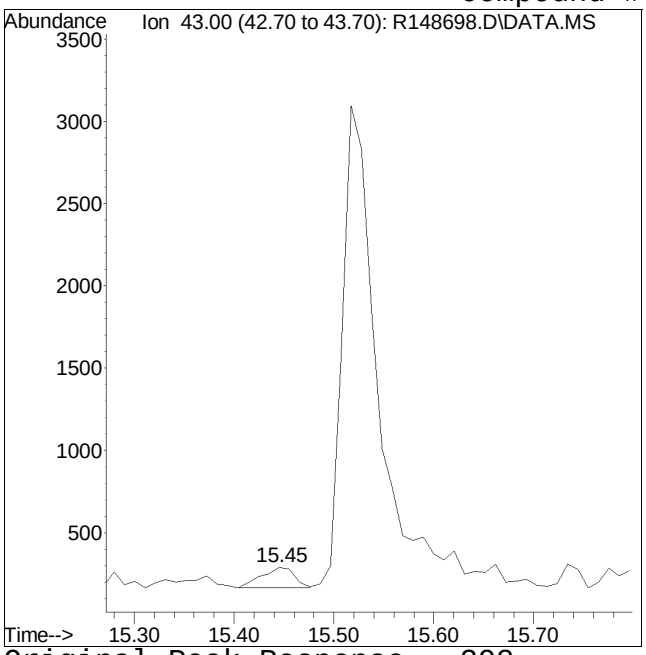
M4 = Poor automated baseline construction.

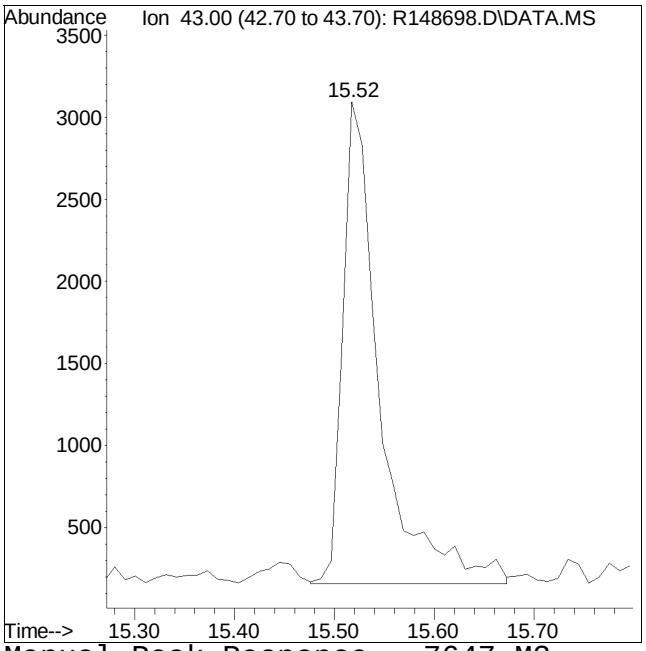
Manual Integration/Negative Proof Report

Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R148698.D
Date Inj'd : 10/12/2016 6:18 pm
Sample : ITO15-SIMSTD0.2

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 10/13/2016 7:15 am

Compound #72: 2-hexanone





Original Peak Response = 292 Manual Peak Response = 7647 M3

M3 = Misidentification of the peak (i.e. 1,4-dichlorobenzene identified as 1,3-dichlorobenzene), or misidentification from 2 partially resolved peaks not being split.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148699.D
Acq On : 12 Oct 2016 6:51 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD0.5
Misc : WG941698
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 13 09:13:10 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	188718	10.000	ppbV	-0.01
Standard Area = 183579			Recovery = 102.80%			
43) 1,4-difluorobenzene	12.41	114	320711	10.000	ppbV	0.00
Standard Area = 310801			Recovery = 103.19%			
67) chlorobenzene-D5	16.82	54	86927	10.000	ppbV	0.00
Standard Area = 84704			Recovery = 102.62%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	96742	9.974	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.74%			
69) toluene-D8	15.14	98	261131	10.027	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.27%			
90) bromofluorobenzene	18.01	95	180955	9.920	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.20%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	13916	0.526	ppbV	99
6) chloromethane	4.37	50	5686	0.508	ppbV	92
7) Freon-114	4.52	85	15295	0.487	ppbV	95
9) vinyl chloride	4.67	62	5576	0.482	ppbV	96
10) 1,3-butadiene	4.88	54	4363	0.503	ppbV	96
11) butane	4.95	43	10548	0.491	ppbV	99
12) acetaldehyde	4.54	29	31738	3.012	ppbV	95
13) bromomethane	5.25	94	5533	0.535	ppbV	99
14) chloroethane	5.50	64	2906	0.539	ppbV #	84
15) ethanol	5.73	31	26945	2.486	ppbV	93
17) vinyl bromide	6.00	106	5121	0.489	ppbV	97
18) acrolein	6.18	56	2820	0.580	ppbV #	79
19) acetone	6.38	43	60911	2.703	ppbV #	99
21) trichlorofluoromethane	6.57	101	14514	0.507	ppbV	96
22) isopropyl alcohol	6.74	45	31160	1.314	ppbV #	97
24) pentane	7.06	43	12086	0.531	ppbV	98
26) 1,1-dichloroethene	7.41	61	9827	0.499	ppbV	95
27) tertiary butyl alcohol	7.55	59	13510	0.510	ppbV #	89
28) methylene chloride	7.59	49	9467	0.591	ppbV	92
29) 3-chloropropene	7.74	41	10396	0.565	ppbV	97
30) carbon disulfide	7.90	76	16425	0.491	ppbV #	60

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148699.D
Acq On : 12 Oct 2016 6:51 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD0.5
Misc : WG941698
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 13 09:13:10 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
31) Freon 113	7.92	101	11073	0.508	ppbV		96
32) trans-1,2-dichloroethene	8.76	61	9097	0.476	ppbV		95
33) 1,1-dichloroethane	9.00	63	11233	0.509	ppbV		100
34) MTBE	9.11	73	16298	0.498	ppbV		95
36) 2-butanone	9.53	43	14399	0.465	ppbV		99
37) cis-1,2-dichloroethene	10.00	61	7331	0.518	ppbV		96
39) chloroform	10.35	83	15838	0.502	ppbV		99
42) 1,2-dichloroethane	11.20	62	8812	0.481	ppbV		96
44) hexane	10.25	57	11683	0.490	ppbV	#	52
48) 1,1,1-trichloroethane	11.47	97	11945	0.488	ppbV		98
50) benzene	12.00	78	16831	0.506	ppbV		98
51) thiophene	12.15	84	12932	0.496	ppbV		95
52) carbon tetrachloride	12.18	117	12310	0.487	ppbV		97
53) cyclohexane	12.31	56	10457	0.538	ppbV		97
56) 1,2-dichloropropane	12.93	63	6823	0.490	ppbV		96
57) bromodichloromethane	13.16	83	14510	0.490	ppbV		98
58) 1,4-dioxane	13.25	88	3438	0.428	ppbV	#	66
59) trichloroethene	13.20	130	6520	0.458	ppbV		95
60) 2,2,4-trimethylpentane	13.24	57	32278	0.491	ppbV	#	99
62) heptane	13.53	43	14301	0.517	ppbV		98
63) cis-1,3-dichloropropene	14.18	75	9109	0.453	ppbV		99
64) 4-methyl-2-pentanone	14.25	43	20285	0.522	ppbV		97
65) trans-1,3-dichloropropene	14.77	75	9765	0.462	ppbV		97
66) 1,1,2-trichloroethane	14.95	97	6889	0.501	ppbV		93
68) toluene	15.24	91	19707	0.491	ppbV		90
70) 2-methylthiophene	15.30	97	18309	0.477	ppbV		98
72) 2-hexanone	15.51	43	17483	0.457	ppbV	#	89
73) 3-methylthiophene	15.48	97	18293	0.476	ppbV		98
74) dibromochloromethane	15.65	129	12832	0.460	ppbV		98
75) 1,2-dibromoethane	15.88	107	11102	0.469	ppbV		95
77) octane	16.14	85	5912	0.491	ppbV		94
78) tetrachloroethene	16.29	166	9640	0.460	ppbV		94
80) chlorobenzene	16.86	112	15056	0.482	ppbV		98
81) ethylbenzene	17.16	91	25489	0.478	ppbV		98
82) 2-ethylthiophene	17.19	97	22327	0.478	ppbV		98
83) m+p-xylene	17.30	91	40332	0.948	ppbV		91
84) bromoform	17.38	173	14228	0.437	ppbV		98
85) styrene	17.58	104	13978	0.447	ppbV		98

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148699.D
Acq On : 12 Oct 2016 6:51 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD0.5
Misc : WG941698
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 13 09:13:10 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
86) 1,1,2,2-tetrachloroethane	17.67	83	16749	0.467	ppbV	99
87) o-xylene	17.67	91	20915	0.475	ppbV	100
89) nonane	17.80	43	20685	0.504	ppbV	98
93) 2-chlorotoluene	18.47	126	7169	0.477	ppbV	69
96) 4-ethyl toluene	18.59	105	28673	0.449	ppbV	99
97) 1,3,5-trimethylbenzene	18.64	105	22969	0.453	ppbV	97
99) 1,2,4-trimethylbenzene	18.95	105	22465	0.428	ppbV	93
100) decane	18.99	57	18470	0.465	ppbV	96
102) 1,3-dichlorobenzene	19.08	146	16694	0.443	ppbV	95
103) 1,4-dichlorobenzene	19.14	146	16673	0.434	ppbV	98
105) 1,2,3-trimethylbenzene	19.27	105	22540	0.441	ppbV	96
107) 1,2-dichlorobenzene	19.40	146	15387	0.435	ppbV	96
109) indan	19.44	117	24493	0.446	ppbV	97
110) indene	19.51	115	16179	0.441	ppbV	96
112) undecane	19.95	57	20043	0.436	ppbV	97
113) 1,2,4,5-tetramethylben...	20.19	119	34098	0.424	ppbV	99
114) dodecane	20.84	57	20614	0.396	ppbV	87
115) 1,2,4-trichlorobenzene	20.83	180	15071	0.404	ppbV	99
116) naphthalene	20.95	128	28632	0.414	ppbV	97
118) benzothiophene	21.02	134	26126	0.407	ppbV	99
119) hexachlorobutadiene	21.26	225	12334	0.402	ppbV	95
120) 2-methylnaphthalene	22.10	142	11060	0.298	ppbV	95
121) 1-methylnaphthalene	22.30	142	13936	0.331	ppbV	90

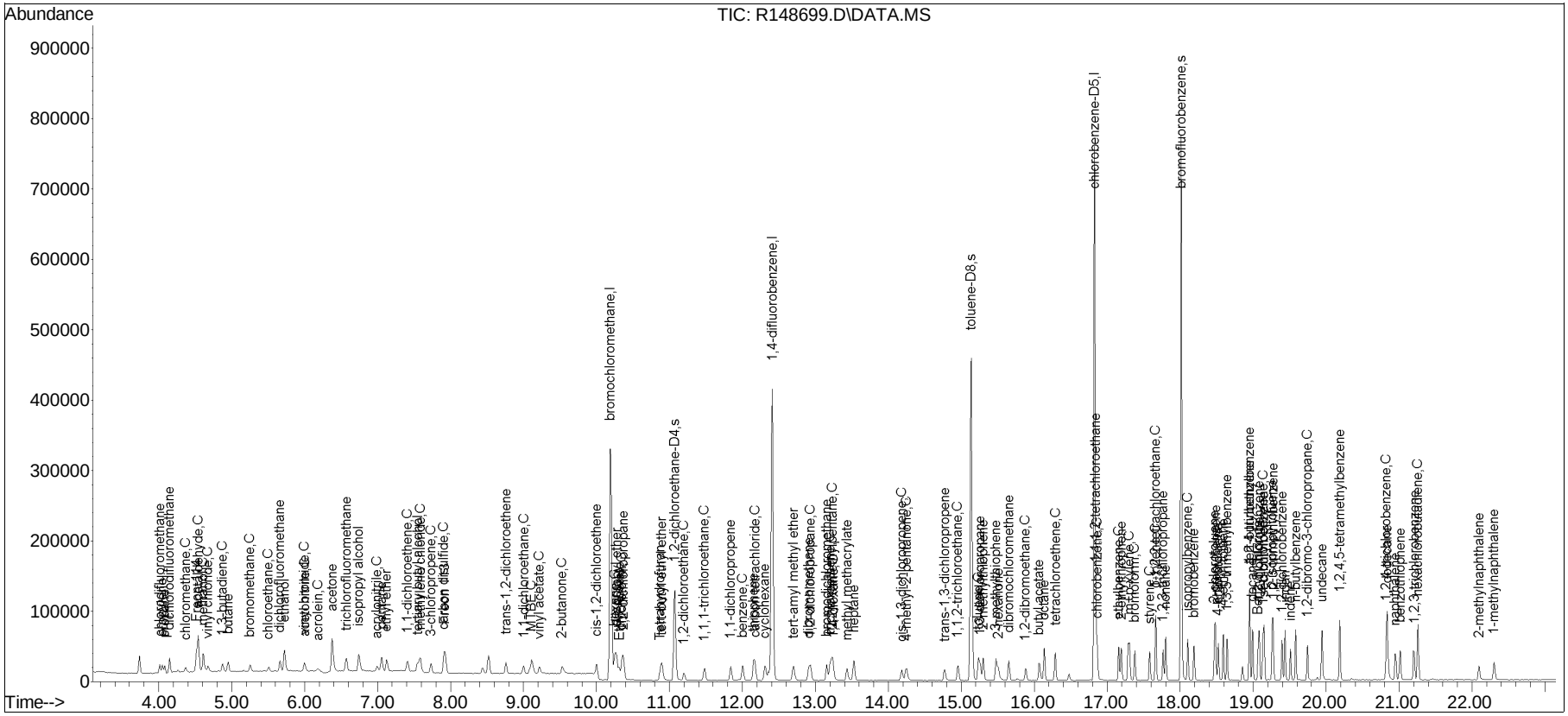
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148699.D
Acq On : 12 Oct 2016 6:51 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD0.5
Misc : WG941698
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 13 09:13:10 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

Sub List : Default - All compounds listed1012NT_ICAL\R148702.D



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148700.D
Acq On : 12 Oct 2016 7:22 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD1.0
Misc : WG941698
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 13 09:16:39 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	194902	10.000	ppbV	-0.01
Standard Area = 183579			Recovery = 106.17%			
43) 1,4-difluorobenzene	12.41	114	315145	10.000	ppbV	0.00
Standard Area = 310801			Recovery = 101.40%			
67) chlorobenzene-D5	16.82	54	85149	10.000	ppbV	0.00
Standard Area = 84704			Recovery = 100.53%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	95981	10.070	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.70%			
69) toluene-D8	15.14	98	261080	10.235	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 102.35%			
90) bromofluorobenzene	18.01	95	180139	10.082	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.82%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	31981	1.171	ppbV	97
6) chloromethane	4.36	50	13346	1.154	ppbV	95
7) Freon-114	4.52	85	35642	1.099	ppbV	98
9) vinyl chloride	4.67	62	13074	1.093	ppbV	99
10) 1,3-butadiene	4.88	54	9642	1.077	ppbV	98
11) butane	4.95	43	23331	1.052	ppbV	98
12) acetaldehyde	4.54	29	62761	5.768	ppbV	98
13) bromomethane	5.25	94	11800	1.104	ppbV	93
14) chloroethane	5.50	64	6008	1.080	ppbV	95
15) ethanol	5.72	31	62834	5.613	ppbV	98
17) vinyl bromide	6.00	106	11556	1.068	ppbV	96
18) acrolein	6.17	56	5686	1.132	ppbV #	65
19) acetone	6.37	43	126866	5.452	ppbV	100
21) trichlorofluoromethane	6.57	101	32155	1.087	ppbV	99
22) isopropyl alcohol	6.73	45	68784	2.809	ppbV #	98
24) pentane	7.06	43	25738	1.095	ppbV #	96
26) 1,1-dichloroethene	7.41	61	22871	1.124	ppbV	96
27) tertiary butyl alcohol	7.53	59	29967	1.096	ppbV	95
28) methylene chloride	7.58	49	19498	1.179	ppbV	99
29) 3-chloropropene	7.73	41	21086	1.109	ppbV	94
30) carbon disulfide	7.90	76	37138	1.076	ppbV #	71

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148700.D
Acq On : 12 Oct 2016 7:22 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD1.0
Misc : WG941698
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 13 09:16:39 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
31) Freon 113	7.92	101	24000	1.066	ppbV		97
32) trans-1,2-dichloroethene	8.76	61	21133	1.072	ppbV		97
33) 1,1-dichloroethane	9.00	63	24566	1.078	ppbV		99
34) MTBE	9.10	73	36413	1.077	ppbV		95
36) 2-butanone	9.52	43	34819	1.089	ppbV		96
37) cis-1,2-dichloroethene	10.00	61	17150	1.173	ppbV		95
39) chloroform	10.35	83	34631	1.062	ppbV		99
42) 1,2-dichloroethane	11.20	62	20530	1.085	ppbV		97
44) hexane	10.24	57	26731	1.140	ppbV	#	44
48) 1,1,1-trichloroethane	11.49	97	27299	1.135	ppbV		97
50) benzene	12.00	78	37418	1.145	ppbV		95
51) thiophene	12.15	84	28657	1.119	ppbV		98
52) carbon tetrachloride	12.17	117	27162	1.094	ppbV		98
53) cyclohexane	12.31	56	21750	1.139	ppbV		98
56) 1,2-dichloropropane	12.93	63	15282	1.117	ppbV		98
57) bromodichloromethane	13.16	83	33412	1.147	ppbV		100
58) 1,4-dioxane	13.24	88	8376	1.061	ppbV	#	65
59) trichloroethene	13.20	130	15392	1.099	ppbV		97
60) 2,2,4-trimethylpentane	13.23	57	71215	1.103	ppbV	#	99
62) heptane	13.53	43	32452	1.194	ppbV		99
63) cis-1,3-dichloropropene	14.18	75	21309	1.080	ppbV		94
64) 4-methyl-2-pentanone	14.24	43	45002	1.179	ppbV		98
65) trans-1,3-dichloropropene	14.76	75	22552	1.086	ppbV		95
66) 1,1,2-trichloroethane	14.95	97	14934	1.104	ppbV		96
68) toluene	15.24	91	43397	1.103	ppbV		99
70) 2-methylthiophene	15.30	97	42117	1.121	ppbV		99
72) 2-hexanone	15.50	43	42719	1.140	ppbV	#	91
73) 3-methylthiophene	15.48	97	41415	1.100	ppbV		99
74) dibromochloromethane	15.65	129	29269	1.072	ppbV		100
75) 1,2-dibromoethane	15.88	107	25120	1.084	ppbV		95
77) octane	16.14	85	13159	1.116	ppbV		97
78) tetrachloroethene	16.29	166	22345	1.088	ppbV		97
80) chlorobenzene	16.86	112	34119	1.114	ppbV		97
81) ethylbenzene	17.16	91	55958	1.071	ppbV		100
82) 2-ethylthiophene	17.19	97	50052	1.093	ppbV		99
83) m+p-xylene	17.30	91	91146	2.186	ppbV		100
84) bromoform	17.38	173	32545	1.020	ppbV		99
85) styrene	17.58	104	32128	1.050	ppbV		97

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148700.D
Acq On : 12 Oct 2016 7:22 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD1.0
Misc : WG941698
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 13 09:16:39 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
86) 1,1,2,2-tetrachloroethane	17.66	83	37361	1.064	ppbV	100
87) o-xylene	17.66	91	47461	1.100	ppbV	96
89) nonane	17.80	43	45614	1.134	ppbV	98
93) 2-chlorotoluene	18.47	126	15681	1.066	ppbV	97
96) 4-ethyl toluene	18.59	105	66349	1.061	ppbV	99
97) 1,3,5-trimethylbenzene	18.64	105	52642	1.060	ppbV	98
99) 1,2,4-trimethylbenzene	18.95	105	53129	1.034	ppbV	97
100) decane	18.99	57	42537	1.092	ppbV	100
102) 1,3-dichlorobenzene	19.08	146	37858	1.026	ppbV	97
103) 1,4-dichlorobenzene	19.13	146	38145	1.014	ppbV	97
105) 1,2,3-trimethylbenzene	19.27	105	51363	1.025	ppbV	99
107) 1,2-dichlorobenzene	19.40	146	35822	1.034	ppbV	96
109) indan	19.44	117	55412	1.029	ppbV	99
110) indene	19.51	115	36773	1.023	ppbV	97
112) undecane	19.94	57	46995	1.044	ppbV	98
113) 1,2,4,5-tetramethylben...	20.19	119	79139	1.004	ppbV	98
114) dodecane	20.84	57	48672	0.956	ppbV	96
115) 1,2,4-trichlorobenzene	20.83	180	34917	0.955	ppbV	100
116) naphthalene	20.95	128	67666	0.998	ppbV	100
118) benzothiophene	21.02	134	60889	0.969	ppbV	96
119) hexachlorobutadiene	21.26	225	28798	0.958	ppbV	96
120) 2-methylnaphthalene	22.10	142	31517	0.868	ppbV	94
121) 1-methylnaphthalene	22.30	142	34122	0.827	ppbV	98

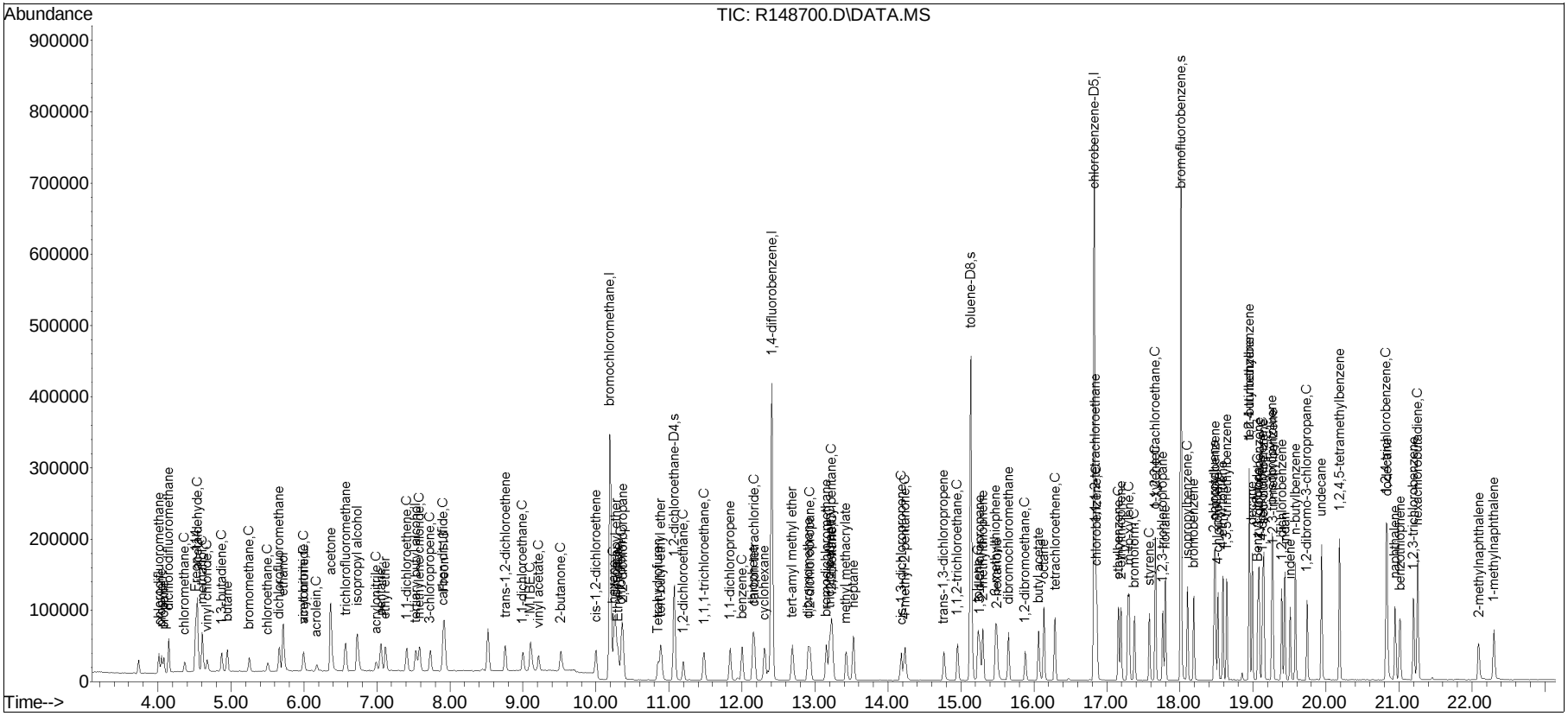
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148700.D
Acq On : 12 Oct 2016 7:22 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD1.0
Misc : WG941698
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 13 09:16:39 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

Sub List : Default - All compounds listed1012NT_ICAL\R148702.D



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148701.D
Acq On : 12 Oct 2016 7:54 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD5.0
Misc : WG941698
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 13 09:18:01 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	189601	10.000	ppbV	-0.01
Standard Area = 183579			Recovery = 103.28%			
43) 1,4-difluorobenzene	12.41	114	313483	10.000	ppbV	0.00
Standard Area = 310801			Recovery = 100.86%			
67) chlorobenzene-D5	16.82	54	85254	10.000	ppbV	0.00
Standard Area = 84704			Recovery = 100.65%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	95874	10.112	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.12%			
69) toluene-D8	15.14	98	256745	10.052	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.52%			
90) bromofluorobenzene	18.01	95	181138	10.125	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.25%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	134051	5.047	ppbV	99
6) chloromethane	4.37	50	55821	4.960	ppbV	99
7) Freon-114	4.52	85	153863	4.878	ppbV	98
9) vinyl chloride	4.67	62	57063	4.906	ppbV	98
10) 1,3-butadiene	4.88	54	43904	5.041	ppbV	97
11) butane	4.95	43	98327	4.557	ppbV	99
12) acetaldehyde	4.54	29	268552	25.369	ppbV	99
13) bromomethane	5.25	94	50829	4.889	ppbV	98
14) chloroethane	5.50	64	27265	5.037	ppbV	96
15) ethanol	5.71	31	273901M4	25.150	ppbV	
17) vinyl bromide	6.00	106	50455	4.794	ppbV	96
18) acrolein	6.17	56	24435	5.001	ppbV	97
19) acetone	6.35	43	558537	24.672	ppbV	99
21) trichlorofluoromethane	6.57	101	140028	4.867	ppbV	96
22) isopropyl alcohol	6.71	45	298275	12.521	ppbV	100
24) pentane	7.06	43	112218	4.906	ppbV	97
26) 1,1-dichloroethene	7.41	61	97010	4.900	ppbV	98
27) tertiary butyl alcohol	7.50	59	130076	4.892	ppbV	99
28) methylene chloride	7.59	49	79802	4.961	ppbV	98
29) 3-chloropropene	7.74	41	91238	4.932	ppbV	99
30) carbon disulfide	7.90	76	164949	4.911	ppbV	95

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148701.D
Acq On : 12 Oct 2016 7:54 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD5.0
Misc : WG941698
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 13 09:18:01 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
31) Freon 113	7.92	101	107599	4.915	ppbV		97
32) trans-1,2-dichloroethene	8.76	61	94894	4.947	ppbV		99
33) 1,1-dichloroethane	9.00	63	109284	4.932	ppbV		97
34) MTBE	9.09	73	161664	4.917	ppbV		100
36) 2-butanone	9.50	43	154210	4.957	ppbV		98
37) cis-1,2-dichloroethene	10.00	61	73330	5.155	ppbV		99
39) chloroform	10.35	83	156230	4.925	ppbV		99
42) 1,2-dichloroethane	11.20	62	90814	4.932	ppbV		98
44) hexane	10.25	57	119829	5.138	ppbV		98
48) 1,1,1-trichloroethane	11.47	97	120506	5.037	ppbV		99
50) benzene	12.00	78	162504	4.999	ppbV		99
51) thiophene	12.15	84	125986	4.946	ppbV		98
52) carbon tetrachloride	12.17	117	122982	4.979	ppbV		99
53) cyclohexane	12.31	56	96636	5.088	ppbV		100
56) 1,2-dichloropropane	12.93	63	67853	4.984	ppbV		99
57) bromodichloromethane	13.16	83	145159	5.011	ppbV		99
58) 1,4-dioxane	13.21	88	38733	4.934	ppbV	#	81
59) trichloroethene	13.20	130	69371	4.981	ppbV		99
60) 2,2,4-trimethylpentane	13.23	57	321809	5.011	ppbV		99
62) heptane	13.53	43	134488	4.973	ppbV		99
63) cis-1,3-dichloropropene	14.18	75	97264	4.954	ppbV		98
64) 4-methyl-2-pentanone	14.22	43	194769	5.132	ppbV		99
65) trans-1,3-dichloropropene	14.76	75	100746	4.875	ppbV		98
66) 1,1,2-trichloroethane	14.95	97	68518	5.093	ppbV		97
68) toluene	15.24	91	196450	4.988	ppbV		99
70) 2-methylthiophene	15.30	97	189151	5.028	ppbV		100
72) 2-hexanone	15.48	43	184517	4.919	ppbV		99
73) 3-methylthiophene	15.48	97	188035	4.989	ppbV		99
74) dibromochloromethane	15.65	129	135304	4.949	ppbV		100
75) 1,2-dibromoethane	15.88	107	115066	4.958	ppbV		99
77) octane	16.14	85	59435	5.034	ppbV		100
78) tetrachloroethene	16.29	166	102183	4.971	ppbV		100
80) chlorobenzene	16.86	112	156091	5.092	ppbV		99
81) ethylbenzene	17.16	91	260214	4.974	ppbV		98
82) 2-ethylthiophene	17.19	97	230928	5.037	ppbV		99
83) m+p-xylene	17.30	91	411116	9.848	ppbV		100
84) bromoform	17.38	173	154391	4.831	ppbV		99
85) styrene	17.58	104	151251	4.937	ppbV		98

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148701.D
Acq On : 12 Oct 2016 7:54 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD5.0
Misc : WG941698
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 13 09:18:01 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
86)	1,1,2,2-tetrachloroethane	17.66	83	172450	4.906	ppbV	99
87)	o-xylene	17.66	91	213310	4.938	ppbV	99
89)	nonane	17.80	43	201095	4.994	ppbV	99
93)	2-chlorotoluene	18.47	126	72931	4.951	ppbV	96
96)	4-ethyl toluene	18.59	105	311237	4.971	ppbV	99
97)	1,3,5-trimethylbenzene	18.64	105	243984	4.906	ppbV	99
99)	1,2,4-trimethylbenzene	18.95	105	246581	4.792	ppbV	100
100)	decane	18.99	57	192660	4.941	ppbV	100
102)	1,3-dichlorobenzene	19.08	146	178591	4.832	ppbV	98
103)	1,4-dichlorobenzene	19.13	146	181579	4.823	ppbV	100
105)	1,2,3-trimethylbenzene	19.27	105	244557	4.875	ppbV	100
107)	1,2-dichlorobenzene	19.40	146	171011	4.930	ppbV	100
109)	indan	19.44	117	265047	4.918	ppbV	100
110)	indene	19.51	115	176304	4.901	ppbV	99
112)	undecane	19.94	57	224686	4.984	ppbV	99
113)	1,2,4,5-tetramethylben...	20.19	119	382628	4.848	ppbV	99
114)	dodecane	20.84	57	243461	4.774	ppbV	98
115)	1,2,4-trichlorobenzene	20.83	180	174840	4.776	ppbV	98
116)	naphthalene	20.95	128	327234	4.822	ppbV	100
118)	benzothiophene	21.01	134	309601	4.921	ppbV	97
119)	hexachlorobutadiene	21.26	225	141258	4.691	ppbV	98
120)	2-methylnaphthalene	22.09	142	169482	4.659	ppbV	99
121)	1-methylnaphthalene	22.30	142	192400	4.655	ppbV	99

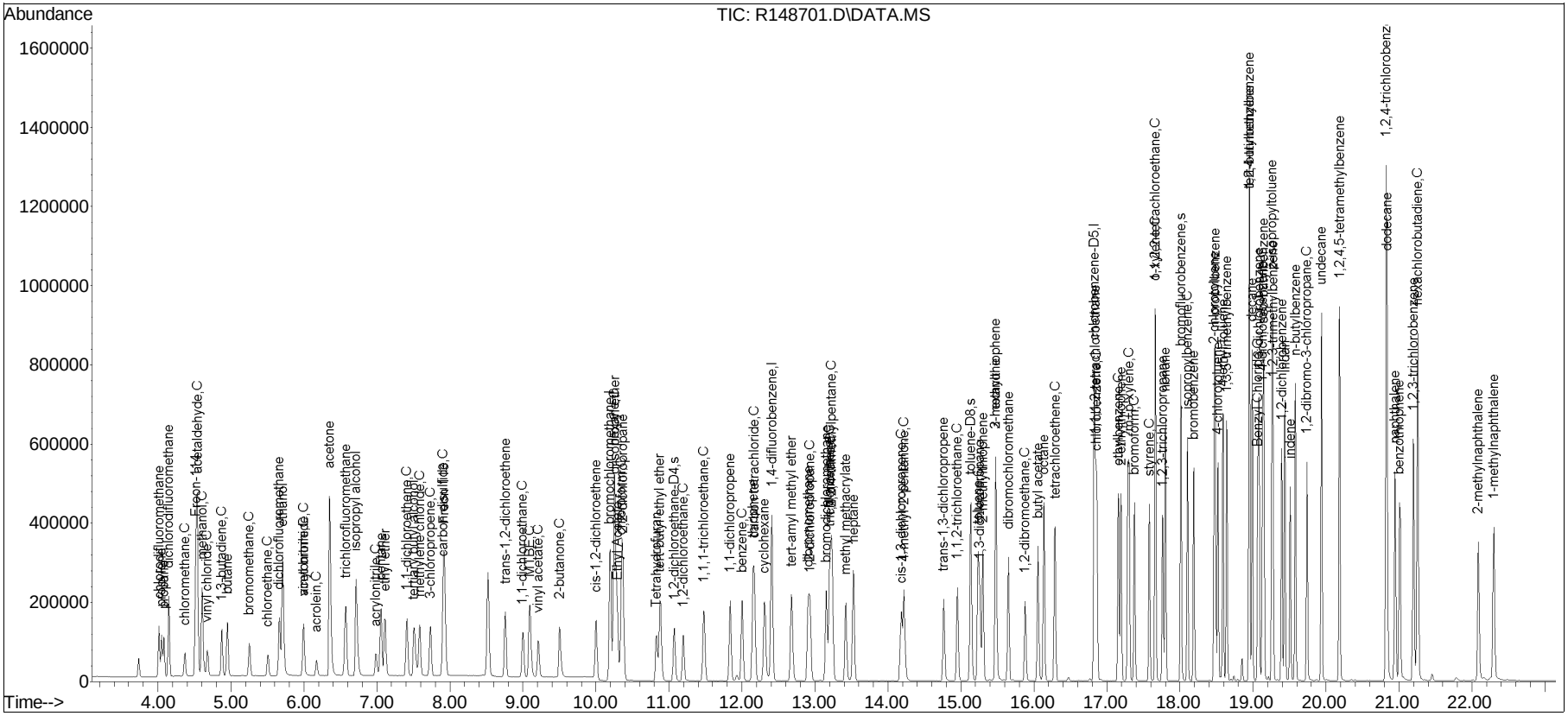
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148701.D
Acq On : 12 Oct 2016 7:54 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD5.0
Misc : WG941698
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 13 09:18:01 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

Sub List : Default - All compounds listed1012NT_ICAL\R148702.D

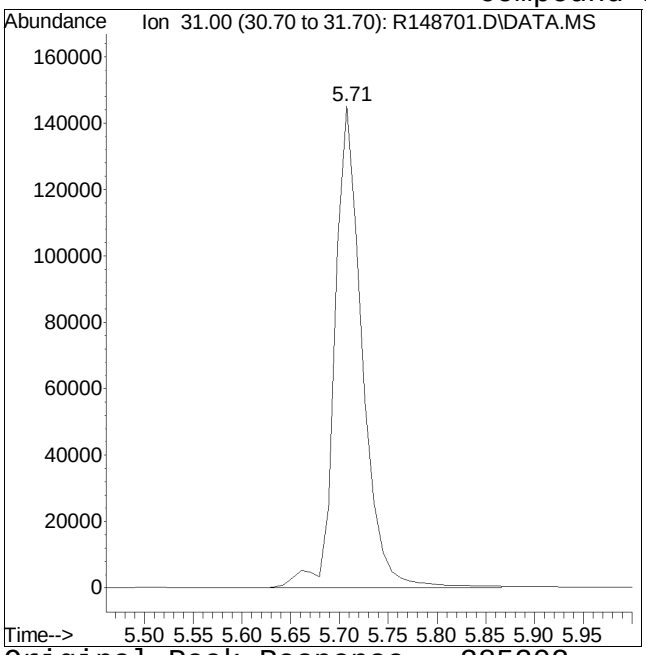


Manual Integration/Negative Proof Report

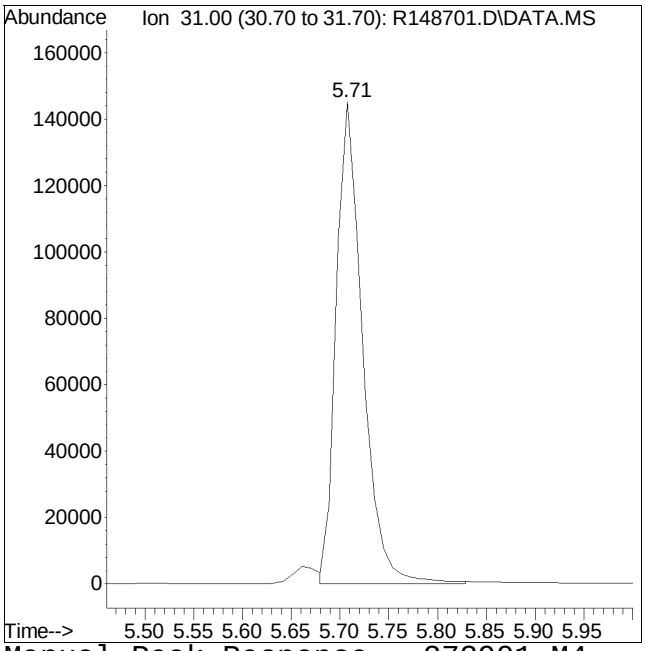
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R148701.D
Date Inj'd : 10/12/2016 7:54 pm
Sample : ITO15-SIMSTD5.0

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 10/13/2016 7:16 am

Compound #15: ethanol



Original Peak Response = 285202



Manual Peak Response = 273901 M4

M4 = Poor automated baseline construction.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148702.D
Acq On : 12 Oct 2016 8:28 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD10.0
Misc : WG941698
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 13 09:29:18 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	183579	10.000	ppbV	0.00
Standard Area = 183579			Recovery = 100.00%			
43) 1,4-difluorobenzene	12.41	114	310801	10.000	ppbV	0.00
Standard Area = 310801			Recovery = 100.00%			
67) chlorobenzene-D5	16.82	54	84704	10.000	ppbV	0.00
Standard Area = 84704			Recovery = 100.00%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	94000	10.096	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.96%			
69) toluene-D8	15.14	98	253759	9.946	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.46%			
90) bromofluorobenzene	18.01	95	177747	9.969	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.69%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	257171	10.940	ppbV	100
6) chloromethane	4.37	50	108961	11.259	ppbV	100
7) Freon-114	4.52	85	305385	11.487	ppbV	100
9) vinyl chloride	4.67	62	112618	11.686	ppbV	100
10) 1,3-butadiene	4.88	54	84320	11.478	ppbV	100
11) butane	4.95	43	208931	11.693	ppbV	100
12) acetaldehyde	4.54	29	512478	48.978	ppbV	100
13) bromomethane	5.25	94	100657	11.140	ppbV	100
14) chloroethane	5.51	64	52406	11.446	ppbV	100
15) ethanol	5.71	31	527233M6	58.658	ppbV	
17) vinyl bromide	6.00	106	101905	11.744	ppbV	100
18) acrolein	6.17	56	47303	10.675	ppbV	100
19) acetone	6.35	43	1095478	52.192	ppbV	100
21) trichlorofluoromethane	6.57	101	278578	11.476	ppbV	100
22) isopropyl alcohol	6.71	45	576645	26.419	ppbV	100
24) pentane	7.06	43	221458M6	11.217	ppbV	
26) 1,1-dichloroethene	7.41	61	191704	11.407	ppbV	100
27) tertiary butyl alcohol	7.50	59	257454	11.713	ppbV	100
28) methylene chloride	7.59	49	155740	11.261	ppbV	100
29) 3-chloropropene	7.74	41	179104	11.177	ppbV	100
30) carbon disulfide	7.91	76	325199	11.453	ppbV	100

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148702.D
Acq On : 12 Oct 2016 8:28 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD10.0
Misc : WG941698
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 13 09:29:18 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
31) Freon 113	7.92	101	211986	11.480	ppbV	100
32) trans-1,2-dichloroethene	8.76	61	185732	11.581	ppbV	100
33) 1,1-dichloroethane	9.00	63	214547	11.464	ppbV	100
34) MTBE	9.09	73	318328	11.526	ppbV	100
36) 2-butanone	9.49	43	301194	11.506	ppbV	100
37) cis-1,2-dichloroethene	10.00	61	137736	11.246	ppbV	100
39) chloroform	10.35	83	307138	11.443	ppbV	100
42) 1,2-dichloroethane	11.20	62	178290	11.436	ppbV	100
44) hexane	10.25	57	231245	10.960	ppbV	100
48) 1,1,1-trichloroethane	11.49	97	237215	10.732	ppbV	100
50) benzene	12.00	78	322282	11.010	ppbV	100
51) thiophene	12.15	84	252547	10.216	ppbV	100
52) carbon tetrachloride	12.17	117	244892	11.249	ppbV	100
53) cyclohexane	12.31	56	188294	10.883	ppbV	100
56) 1,2-dichloropropane	12.93	63	134975	11.281	ppbV	100
57) bromodichloromethane	13.16	83	287174M6	11.182	ppbV	
58) 1,4-dioxane	13.20	88	77837	11.651	ppbV	100
59) trichloroethene	13.20	130	138066	11.353	ppbV	100
60) 2,2,4-trimethylpentane	13.24	57	636702	11.196	ppbV	100
62) heptane	13.53	43	268131	11.001	ppbV	100
63) cis-1,3-dichloropropene	14.18	75	194658	11.446	ppbV	100
64) 4-methyl-2-pentanone	14.22	43	376300	10.989	ppbV	100
65) trans-1,3-dichloropropene	14.76	75	204881	11.459	ppbV	100
66) 1,1,2-trichloroethane	14.95	97	133374	11.198	ppbV	100
68) toluene	15.24	91	391295	11.082	ppbV	100
70) 2-methylthiophene	15.30	97	373778	10.028	ppbV	100
72) 2-hexanone	15.48	43	372690	11.309	ppbV	100
73) 3-methylthiophene	15.48	97	374447	10.172	ppbV	100
74) dibromochloromethane	15.65	129	271660	11.357	ppbV	100
75) 1,2-dibromoethane	15.88	107	230563	11.349	ppbV	100
77) octane	16.14	85	117312	11.131	ppbV	100
78) tetrachloroethene	16.29	166	204228	11.297	ppbV	100
80) chlorobenzene	16.86	112	304544	11.006	ppbV	100
81) ethylbenzene	17.16	91	519789	11.221	ppbV	100
82) 2-ethylthiophene	17.19	97	455533	10.098	ppbV	100
83) m+p-xylene	17.30	91	829551	22.453	ppbV	100
84) bromoform	17.38	173	317537	11.606	ppbV	100
85) styrene	17.58	104	304406	11.490	ppbV	100

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148702.D
Acq On : 12 Oct 2016 8:28 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD10.0
Misc : WG941698
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 13 09:29:18 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
86) 1,1,2,2-tetrachloroethane	17.66	83	349239	11.450	ppbV	100
87) o-xylene	17.66	91	429173	11.242	ppbV	100
89) nonane	17.80	43	400059	11.163	ppbV	100
93) 2-chlorotoluene	18.47	126	146344	11.441	ppbV	100
96) 4-ethyl toluene	18.59	105	622119M6	11.463	ppbV	
97) 1,3,5-trimethylbenzene	18.64	105	494132	11.540	ppbV	100
99) 1,2,4-trimethylbenzene	18.95	105	511275	11.893	ppbV	100
100) decane	18.99	57	387425	11.449	ppbV	100
102) 1,3-dichlorobenzene	19.08	146	367203	11.580	ppbV	100
103) 1,4-dichlorobenzene	19.13	146	374089	11.720	ppbV	100
105) 1,2,3-trimethylbenzene	19.27	105	498435	10.627	ppbV	100
107) 1,2-dichlorobenzene	19.40	146	344612	11.679	ppbV	100
109) indan	19.44	117	535510	10.465	ppbV	100
110) indene	19.51	115	357414	10.329	ppbV	100
112) undecane	19.94	57	447909	12.015	ppbV	100
113) 1,2,4,5-tetramethylben...	20.19	119	784235	11.615	ppbV	100
114) dodecane	20.84	57	506673	13.322	ppbV	100
115) 1,2,4-trichlorobenzene	20.83	180	363686	12.857	ppbV	100
116) naphthalene	20.95	128	674305	12.553	ppbV	100
118) benzothiophene	21.02	134	625053	11.199	ppbV	100
119) hexachlorobutadiene	21.26	225	299187	12.555	ppbV	100
120) 2-methylnaphthalene	22.09	142	361399	13.444	ppbV	100
121) 1-methylnaphthalene	22.30	142	410635	14.323	ppbV	100

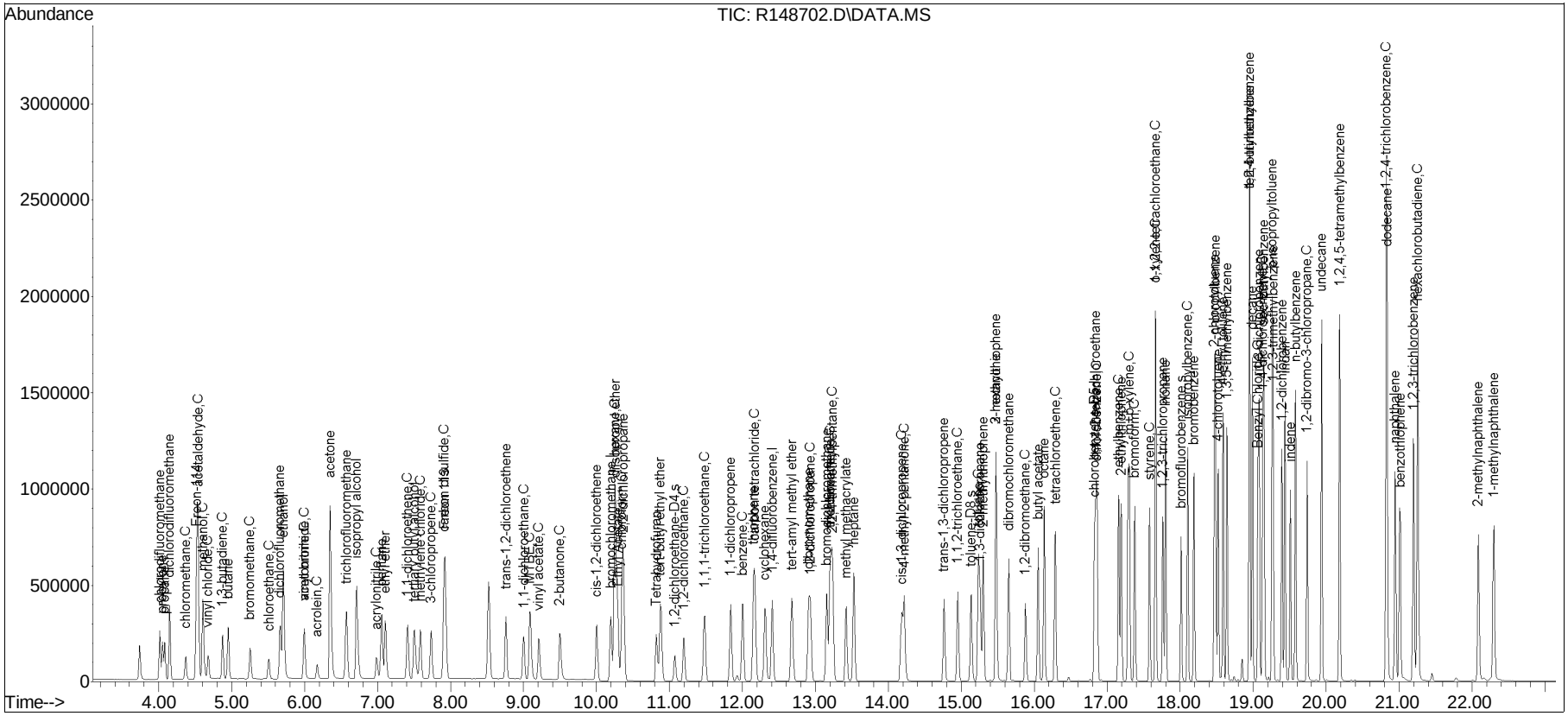
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148702.D
Acq On : 12 Oct 2016 8:28 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD10.0
Misc : WG941698
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 13 09:29:18 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Default - All compounds listed1012NT_ICAL\R148702.D

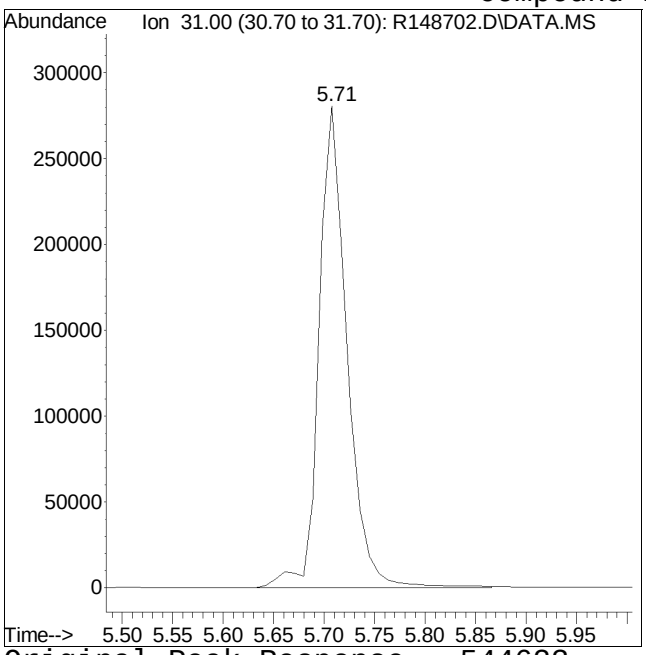


Manual Integration/Negative Proof Report

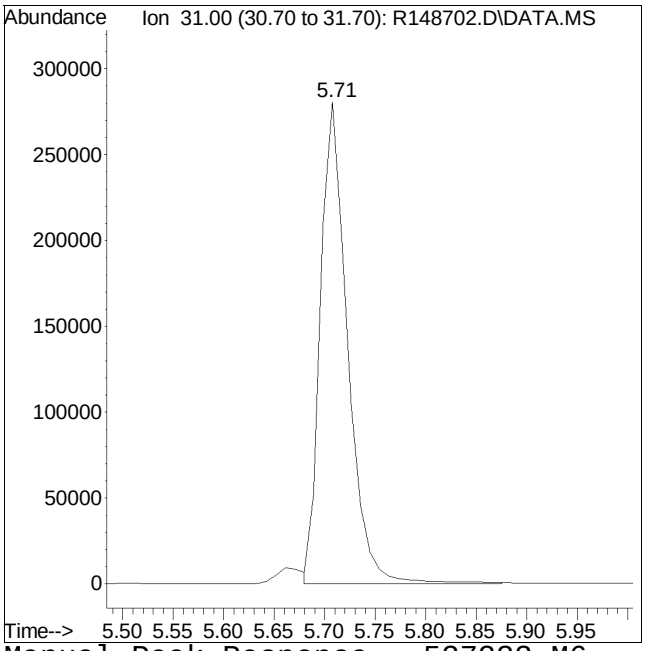
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R148702.D
Date Inj'd : 10/12/2016 8:28 pm
Sample : ITO15-SIMSTD10.0

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 10/13/2016 9:29 am

Compound #15: ethanol



Original Peak Response = 544623



Manual Peak Response = 527233 M6

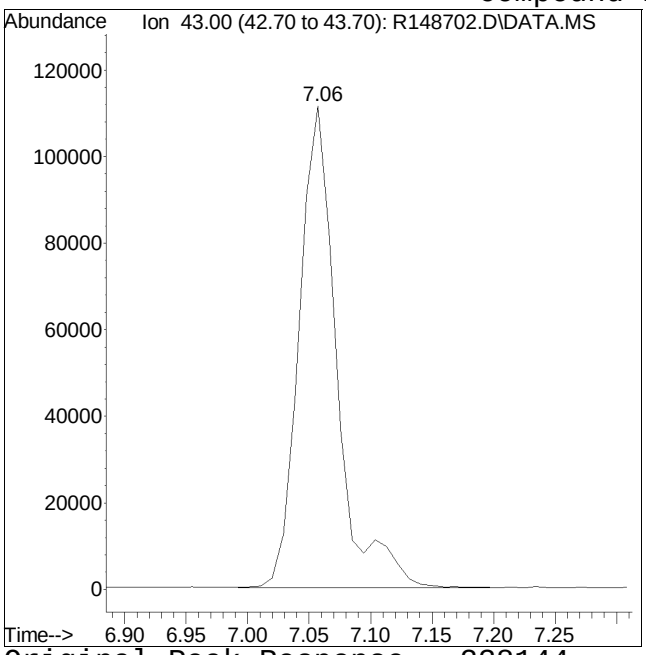
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

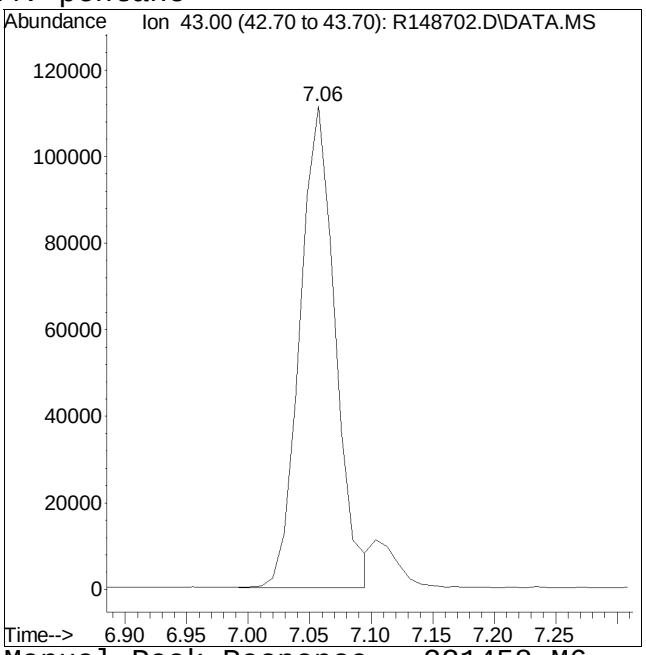
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R148702.D
Date Inj'd : 10/12/2016 8:28 pm
Sample : ITO15-SIMSTD10.0

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 10/13/2016 9:29 am

Compound #24: pentane



Original Peak Response = 238144



Manual Peak Response = 221458 M6

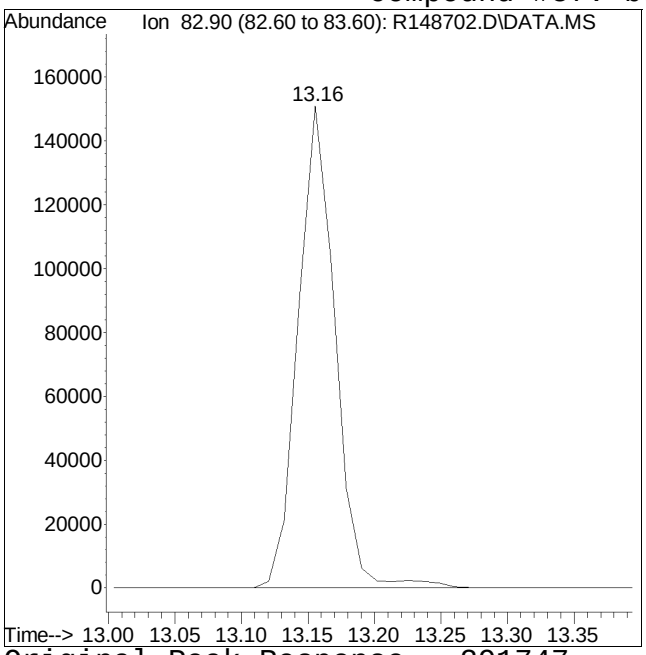
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

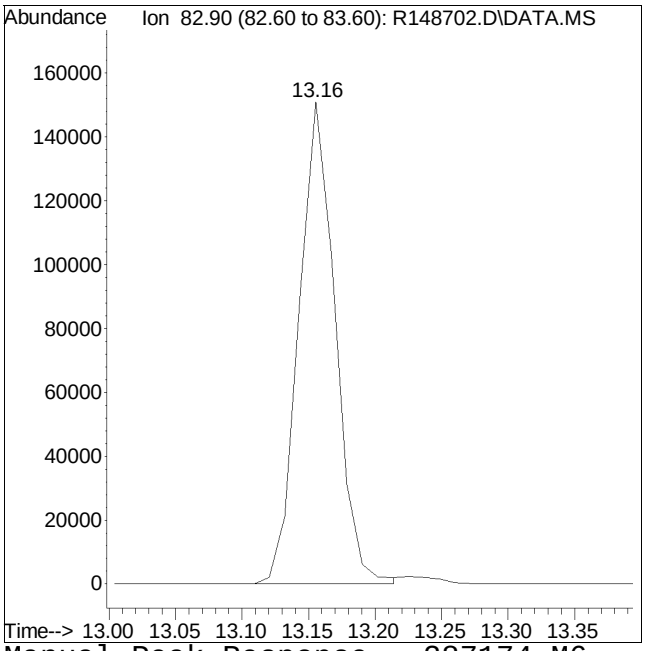
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R148702.D
Date Inj'd : 10/12/2016 8:28 pm
Sample : ITO15-SIMSTD10.0

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 10/13/2016 9:29 am

Compound #57: bromodichloromethane



Original Peak Response = 291747



Manual Peak Response = 287174 M6

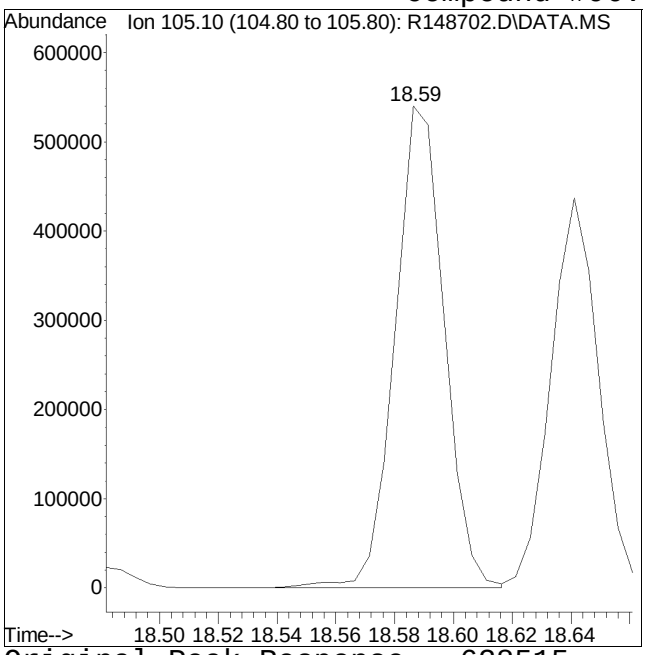
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

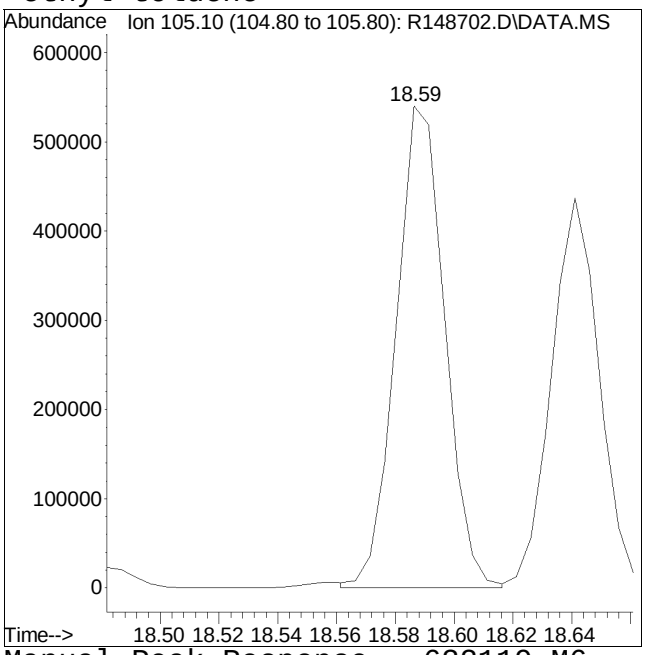
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R148702.D
Date Inj'd : 10/12/2016 8:28 pm
Sample : ITO15-SIMSTD10.0

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 10/13/2016 9:29 am

Compound #96: 4-ethyl toluene



Original Peak Response = 628515



Manual Peak Response = 622119 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148703.D
Acq On : 12 Oct 2016 8:59 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD20.0
Misc : WG941698
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 13 09:19:24 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	191031	10.000	ppbV	0.00
Standard Area = 183579			Recovery = 104.06%			
43) 1,4-difluorobenzene	12.41	114	318636	10.000	ppbV	0.00
Standard Area = 310801			Recovery = 102.52%			
67) chlorobenzene-D5	16.82	54	86520	10.000	ppbV	0.00
Standard Area = 84704			Recovery = 102.14%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	95698	9.930	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.30%			
69) toluene-D8	15.14	98	257835	9.947	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.47%			
90) bromofluorobenzene	18.01	95	178031	9.806	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.06%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	396700	14.824	ppbV	99
6) chloromethane	4.37	50	153935	13.576	ppbV	99
7) Freon-114	4.52	85	439894	13.843	ppbV	99
9) vinyl chloride	4.67	62	163365	13.940	ppbV	99
10) 1,3-butadiene	4.88	54	120380	13.720	ppbV	99
11) butane	4.95	43	301324	13.860	ppbV	99
12) acetaldehyde	4.54	29	975661	91.477	ppbV	99
13) bromomethane	5.25	94	146405	13.978	ppbV	97
14) chloroethane	5.51	64	75879	13.914	ppbV	99
15) ethanol	5.71	31	763187M6	69.553	ppbV	
17) vinyl bromide	6.00	106	143603	13.542	ppbV	96
18) acrolein	6.17	56	70025	14.225	ppbV	98
19) acetone	6.35	43	1975076	86.590	ppbV	99
21) trichlorofluoromethane	6.57	101	402805	13.895	ppbV	99
22) isopropyl alcohol	6.71	45	1003234	41.798	ppbV	100
24) pentane	7.06	43	320775M6	13.920	ppbV	
26) 1,1-dichloroethene	7.41	61	275917	13.831	ppbV	98
27) tertiary butyl alcohol	7.50	59	368034	13.737	ppbV	98
28) methylene chloride	7.59	49	223100	13.766	ppbV	98
29) 3-chloropropene	7.74	41	258487	13.869	ppbV	98
30) carbon disulfide	7.91	76	463224	13.689	ppbV	97

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148703.D
Acq On : 12 Oct 2016 8:59 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD20.0
Misc : WG941698
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 13 09:19:24 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
31) Freon 113	7.92	101	303538	13.760	ppbV	99
32) trans-1,2-dichloroethene	8.76	61	264613	13.691	ppbV	100
33) 1,1-dichloroethane	9.00	63	309239	13.851	ppbV	98
34) MTBE	9.09	73	452630	13.664	ppbV	100
36) 2-butanone	9.49	43	436044	13.912	ppbV	98
37) cis-1,2-dichloroethene	10.00	61	200145	13.964	ppbV	100
39) chloroform	10.35	83	441914	13.827	ppbV	99
42) 1,2-dichloroethane	11.20	62	257027	13.854	ppbV	99
44) hexane	10.25	57	334733	14.119	ppbV	100
48) 1,1,1-trichloroethane	11.49	97	384569	15.813	ppbV	99
50) benzene	12.00	78	469911	14.222	ppbV	99
51) thiophene	12.15	84	476458	18.402	ppbV	97
52) carbon tetrachloride	12.17	117	352745	14.050	ppbV	99
53) cyclohexane	12.31	56	275156	14.254	ppbV	99
56) 1,2-dichloropropane	12.93	63	196627	14.209	ppbV	100
57) bromodichloromethane	13.16	83	418786	14.224	ppbV	100
58) 1,4-dioxane	13.20	88	115097	14.423	ppbV	98
59) trichloroethene	13.20	130	202520	14.308	ppbV	97
60) 2,2,4-trimethylpentane	13.24	57	915625	14.027	ppbV	100
62) heptane	13.53	43	386548	14.062	ppbV	99
63) cis-1,3-dichloropropene	14.18	75	285278	14.295	ppbV	100
64) 4-methyl-2-pentanone	14.22	43	543546	14.089	ppbV	99
65) trans-1,3-dichloropropene	14.76	75	298903	14.230	ppbV	98
66) 1,1,2-trichloroethane	14.95	97	195730	14.314	ppbV	97
68) toluene	15.24	91	565113	14.139	ppbV	98
70) 2-methylthiophene	15.30	97	739981	19.382	ppbV	99
72) 2-hexanone	15.48	43	540907	14.209	ppbV	97
73) 3-methylthiophene	15.48	97	748062	19.558	ppbV	99
74) dibromochloromethane	15.65	129	394983	14.234	ppbV	100
75) 1,2-dibromoethane	15.88	107	335073	14.228	ppbV	97
77) octane	16.14	85	166229	13.872	ppbV	97
78) tetrachloroethene	16.29	166	295837	14.182	ppbV	100
80) chlorobenzene	16.86	112	450459	14.481	ppbV	99
81) ethylbenzene	17.16	91	753568	14.193	ppbV	100
82) 2-ethylthiophene	17.19	97	915573	19.677	ppbV	99
83) m+p-xylene	17.30	91	1202230	28.377	ppbV	99
84) bromoform	17.38	173	461037	14.214	ppbV	99
85) styrene	17.58	104	441705	14.206	ppbV	99

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148703.D
Acq On : 12 Oct 2016 8:59 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD20.0
Misc : WG941698
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 13 09:19:24 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
86) 1,1,2,2-tetrachloroethane	17.66	83	489596	13.725	ppbV	99
87) o-xylene	17.66	91	622995	14.211	ppbV	99
89) nonane	17.80	43	573300	14.030	ppbV	100
93) 2-chlorotoluene	18.47	126	212188	14.195	ppbV	98
96) 4-ethyl toluene	18.59	105	897038	14.116	ppbV	99
97) 1,3,5-trimethylbenzene	18.64	105	702128	13.911	ppbV	100
99) 1,2,4-trimethylbenzene	18.95	105	713286	13.658	ppbV	98
100) decane	18.99	57	534364	13.503	ppbV	100
102) 1,3-dichlorobenzene	19.08	146	514526	13.718	ppbV	98
103) 1,4-dichlorobenzene	19.13	146	517628	13.547	ppbV	99
105) 1,2,3-trimethylbenzene	19.27	105	930112	18.269	ppbV	100
107) 1,2-dichlorobenzene	19.40	146	469851	13.348	ppbV	99
109) indan	19.44	117	1025596	18.750	ppbV	99
110) indene	19.51	115	694044	19.011	ppbV	98
112) undecane	19.94	57	526941	11.518	ppbV	98
113) 1,2,4,5-tetramethylben...	20.19	119	1092902	13.643	ppbV	100
114) dodecane	20.84	57	496608	9.596	ppbV	100
115) 1,2,4-trichlorobenzene	20.83	180	380218	10.235	ppbV	100
116) naphthalene	20.95	128	710441	10.315	ppbV	100
118) benzothiophene	21.02	134	980387	15.356	ppbV	100
119) hexachlorobutadiene	21.26	225	311336	10.188	ppbV	99
120) 2-methylnaphthalene	22.09	142	357299	9.679	ppbV	99
121) 1-methylnaphthalene	22.30	142	353862	8.437	ppbV	98

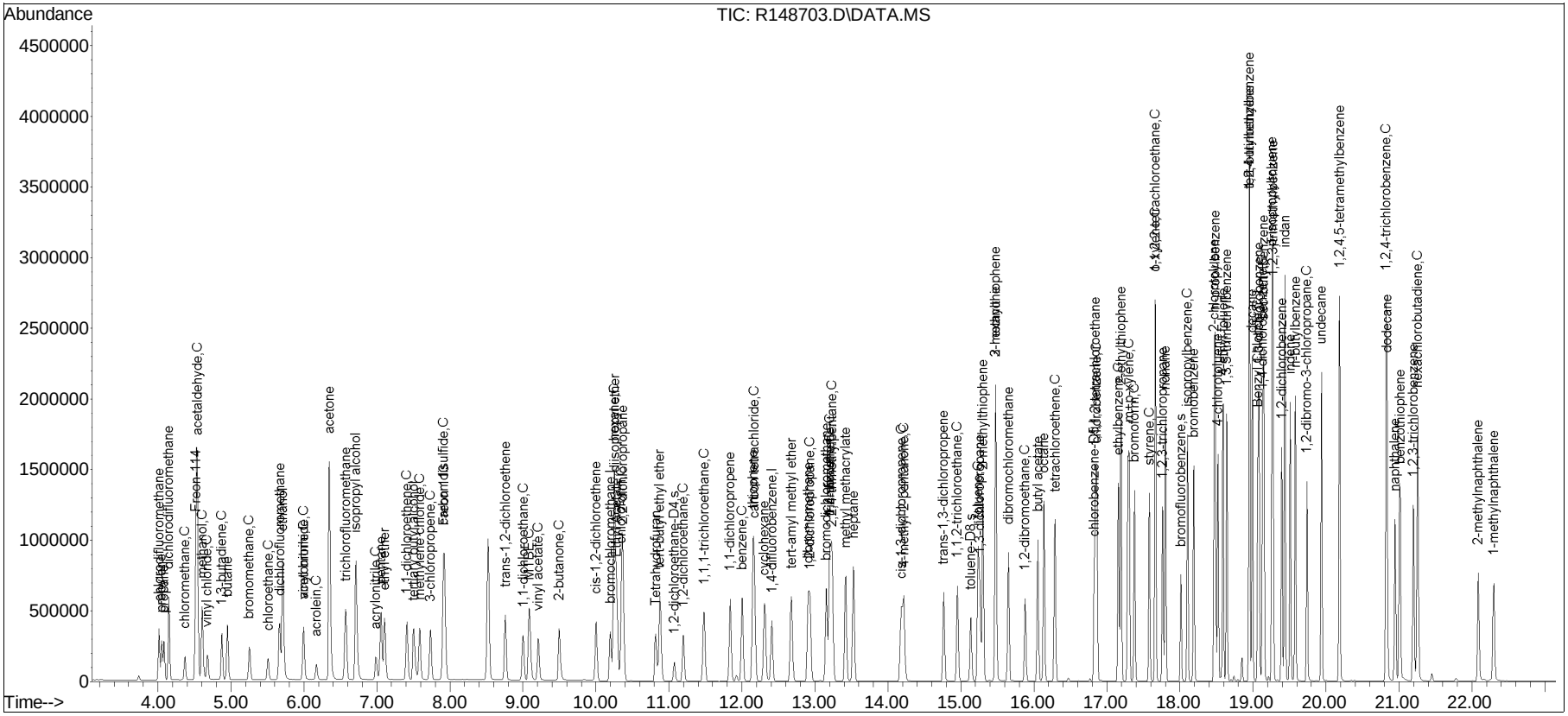
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148703.D
Acq On : 12 Oct 2016 8:59 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD20.0
Misc : WG941698
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 13 09:19:24 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

Sub List : Default - All compounds listed1012NT_ICAL\R148702.D

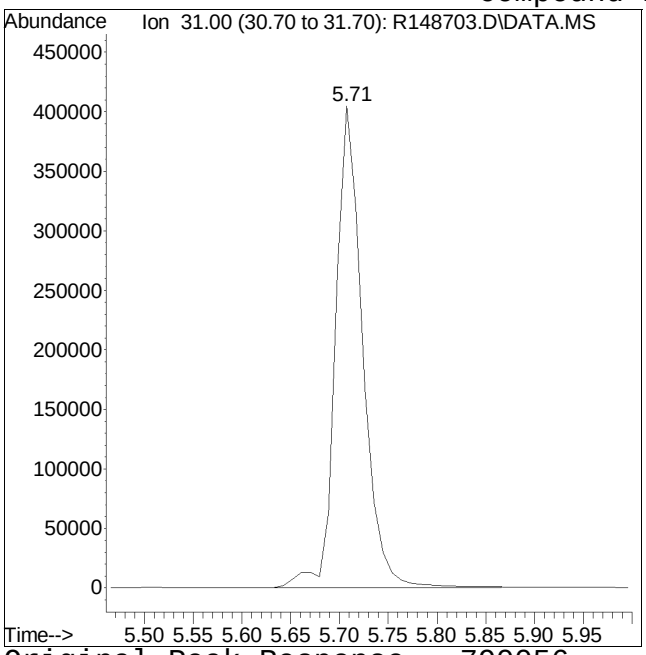


Manual Integration/Negative Proof Report

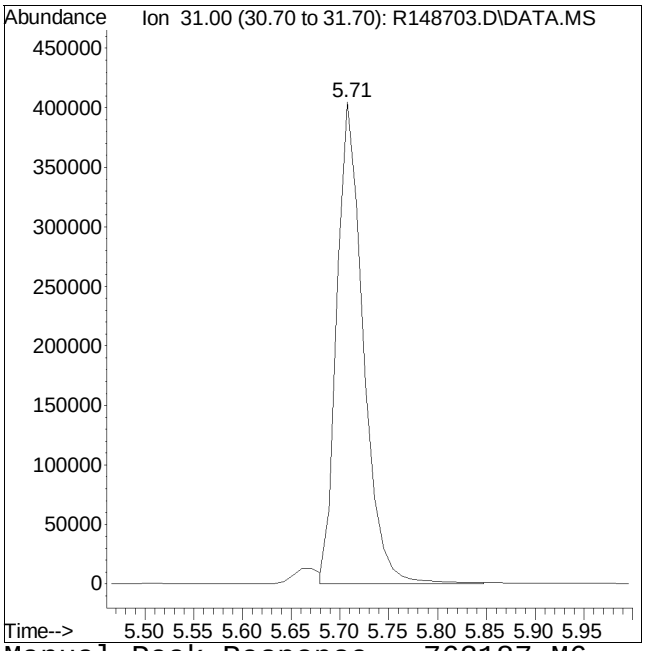
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R148703.D
Date Inj'd : 10/12/2016 8:59 pm
Sample : ITO15-SIMSTD20.0

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 10/13/2016 7:16 am

Compound #15: ethanol



Original Peak Response = 790056



Manual Peak Response = 763187 M6

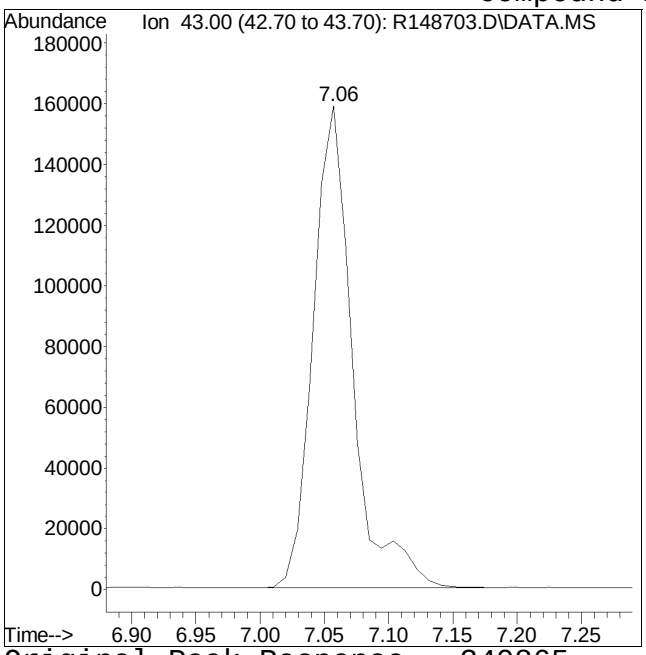
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

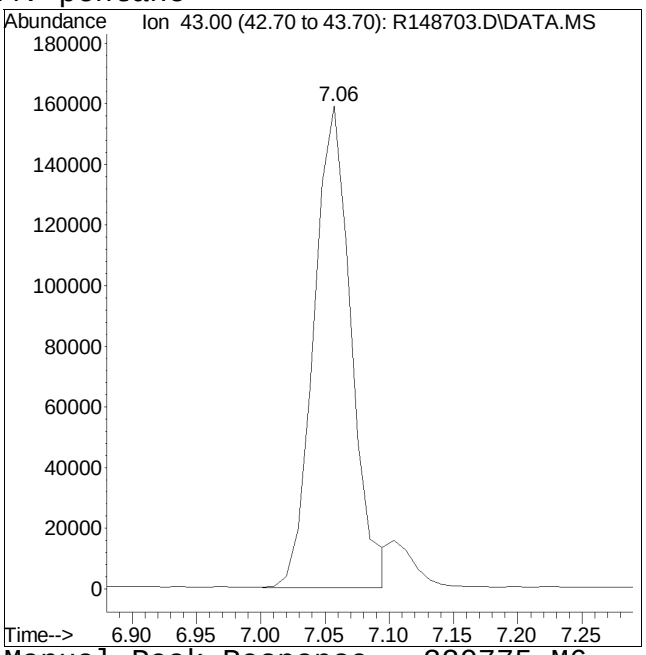
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R148703.D
Date Inj'd : 10/12/2016 8:59 pm
Sample : ITO15-SIMSTD20.0

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 10/13/2016 7:16 am

Compound #24: pentane



Original Peak Response = 340865



Manual Peak Response = 320775 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148704.D
Acq On : 12 Oct 2016 9:31 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD50.0
Misc : WG941698
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 13 09:20:56 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	201730	10.000	ppbV	0.00
Standard Area = 183579			Recovery = 109.89%			
43) 1,4-difluorobenzene	12.41	114	322122	10.000	ppbV	0.00
Standard Area = 310801			Recovery = 103.64%			
67) chlorobenzene-D5	16.82	54	84331	10.000	ppbV	0.00
Standard Area = 84704			Recovery = 99.56%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	92392	9.483	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 94.83%			
69) toluene-D8	15.14	98	258413	10.228	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 102.28%			
90) bromofluorobenzene	18.01	95	177991	10.058	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.58%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	945305	33.450	ppbV	100
6) chloromethane	4.37	50	366063	30.573	ppbV	99
7) Freon-114	4.52	85	1036086	30.875	ppbV	99
9) vinyl chloride	4.69	62	383414	30.982	ppbV	100
10) 1,3-butadiene	4.88	54	289775	31.274	ppbV	97
11) butane	4.95	43	686641	29.907	ppbV	99
12) acetaldehyde	4.54	29	2183331	193.850	ppbV	97
13) bromomethane	5.25	94	347540	31.421	ppbV	96
14) chloroethane	5.51	64	178191	30.943	ppbV	98
15) ethanol	5.72	31	1756697M6	151.606	ppbV	
17) vinyl bromide	6.00	106	340457	30.403	ppbV	94
18) acrolein	6.17	56	164095	31.567	ppbV	97
19) acetone	6.35	43	4524980	187.861	ppbV	98
21) trichlorofluoromethane	6.57	101	941178	30.745	ppbV	98
22) isopropyl alcohol	6.71	45	2341162	92.367	ppbV	100
24) pentane	7.06	43	755361M6	31.040	ppbV	
26) 1,1-dichloroethene	7.41	61	646876	30.707	ppbV	99
27) tertiary butyl alcohol	7.50	59	870231	30.760	ppbV	99
28) methylene chloride	7.59	49	514810	30.081	ppbV	99
29) 3-chloropropene	7.74	41	605307	30.756	ppbV	99
30) carbon disulfide	7.91	76	1104479	30.907	ppbV	95

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148704.D
Acq On : 12 Oct 2016 9:31 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD50.0
Misc : WG941698
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 13 09:20:56 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
31) Freon 113	7.92	101	721996	30.994	ppbV		100
32) trans-1,2-dichloroethene	8.76	61	643049	31.507	ppbV		100
33) 1,1-dichloroethane	9.00	63	735474	31.196	ppbV		98
34) MTBE	9.09	73	1095471	31.317	ppbV		98
36) 2-butanone	9.49	43	1021470	30.863	ppbV		98
37) cis-1,2-dichloroethene	10.00	61	438817	28.993	ppbV		99
39) chloroform	10.36	83	1060152	31.411	ppbV		99
42) 1,2-dichloroethane	11.20	62	598142	30.530	ppbV		99
44) hexane	10.25	57	807926	33.710	ppbV		95
48) 1,1,1-trichloroethane	11.49	97	914378	37.192	ppbV		98
50) benzene	12.00	78	1117055	33.443	ppbV		99
51) thiophene	12.15	84	1152379	44.027	ppbV		97
52) carbon tetrachloride	12.18	117	858431	33.821	ppbV		99
53) cyclohexane	12.32	56	654459	33.536	ppbV		98
56) 1,2-dichloropropane	12.93	63	473149	33.823	ppbV		98
57) bromodichloromethane	13.16	83	980099	32.930	ppbV		100
58) 1,4-dioxane	13.20	88	278469	34.519	ppbV		96
59) trichloroethene	13.20	130	477336	33.358	ppbV		98
60) 2,2,4-trimethylpentane	13.24	57	2179495	33.028	ppbV		99
62) heptane	13.53	43	922622	33.200	ppbV		99
63) cis-1,3-dichloropropene	14.18	75	691855	34.293	ppbV		100
64) 4-methyl-2-pentanone	14.22	43	1292597	33.143	ppbV		100
65) trans-1,3-dichloropropene	14.76	75	727444	34.258	ppbV		98
66) 1,1,2-trichloroethane	14.95	97	471911	34.139	ppbV		99
68) toluene	15.24	91	1379671	35.415	ppbV		98
70) 2-methylthiophene	15.30	97	1798665	48.334	ppbV		99
72) 2-hexanone	15.48	43	1268867	34.197	ppbV	#	95
73) 3-methylthiophene	15.48	97	1810196	48.557	ppbV		99
74) dibromochloromethane	15.65	129	970392	35.879	ppbV		99
75) 1,2-dibromoethane	15.88	107	811365	35.346	ppbV		98
77) octane	16.14	85	407111	34.857	ppbV		96
78) tetrachloroethene	16.29	166	724618	35.638	ppbV		99
80) chlorobenzene	16.86	112	1104335	36.422	ppbV		99
81) ethylbenzene	17.16	91	1841335	35.581	ppbV		100
82) 2-ethylthiophene	17.19	97	2210557	48.741	ppbV		99
83) m+p-xylene	17.31	91	2982669	72.229	ppbV		100
84) bromoform	17.38	173	1159477	36.676	ppbV		99
85) styrene	17.58	104	1094541	36.116	ppbV		99

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148704.D
Acq On : 12 Oct 2016 9:31 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD50.0
Misc : WG941698
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 13 09:20:56 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
86) 1,1,2,2-tetrachloroethane	17.67	83	1259126	36.213	ppbV	100
87) o-xylene	17.67	91	1544128	36.138	ppbV	99
89) nonane	17.80	43	1375819	34.543	ppbV	97
93) 2-chlorotoluene	18.47	126	525355	36.057	ppbV	75
96) 4-ethyl toluene	18.59	105	2235729	36.096	ppbV	99
97) 1,3,5-trimethylbenzene	18.64	105	1756620	35.707	ppbV	100
99) 1,2,4-trimethylbenzene	18.95	105	1816166	35.679	ppbV	94
100) decane	19.00	57	1365006	35.389	ppbV	96
102) 1,3-dichlorobenzene	19.09	146	1328632	36.343	ppbV	99
103) 1,4-dichlorobenzene	19.14	146	1323790	35.544	ppbV	98
105) 1,2,3-trimethylbenzene	19.27	105	2433213	49.033	ppbV	99
107) 1,2-dichlorobenzene	19.40	146	1239169	36.117	ppbV	98
109) indan	19.44	117	2647412	49.656	ppbV	97
110) indene	19.51	115	1837617	51.642	ppbV	97
112) undecane	19.94	57	1480226	33.194	ppbV	98
113) 1,2,4,5-tetramethylben...	20.19	119	3094140	39.629	ppbV	99
114) dodecane	20.84	57	1363018	27.020	ppbV	95
115) 1,2,4-trichlorobenzene	20.83	180	1118033	30.878	ppbV	100
116) naphthalene	20.95	128	2045120	30.463	ppbV	100
118) benzothiophene	21.02	134	2848568	45.775	ppbV	99
119) hexachlorobutadiene	21.26	225	950274	31.902	ppbV	97
120) 2-methylnaphthalene	22.09	142	972500	27.028	ppbV	100
121) 1-methylnaphthalene	22.30	142	943538	23.079	ppbV	99

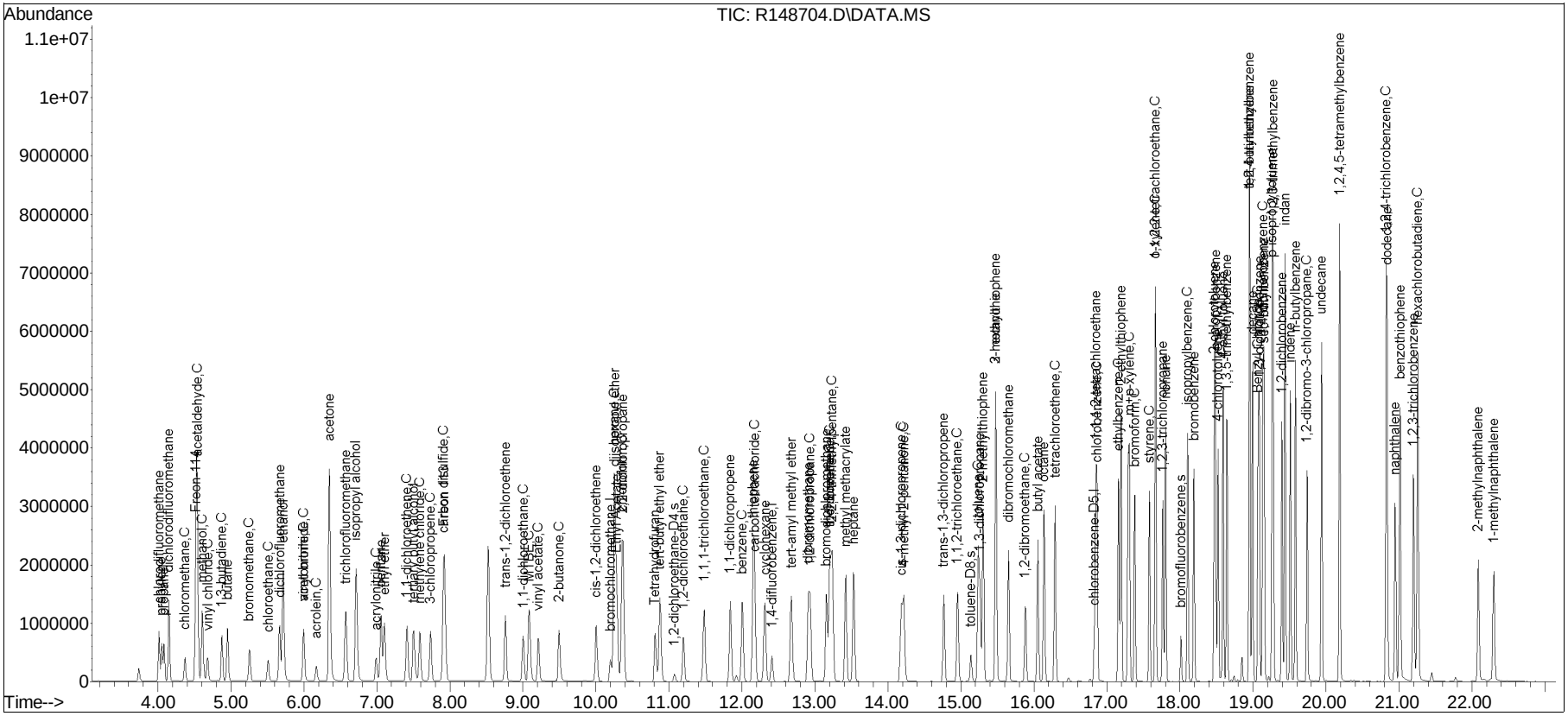
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148704.D
Acq On : 12 Oct 2016 9:31 pm
Operator : AIRPIANO1:RY
Sample : ITO15-SIMSTD50.0
Misc : WG941698
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 13 09:20:56 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

Sub List : Default - All compounds listed1012NT_ICAL\R148702.D

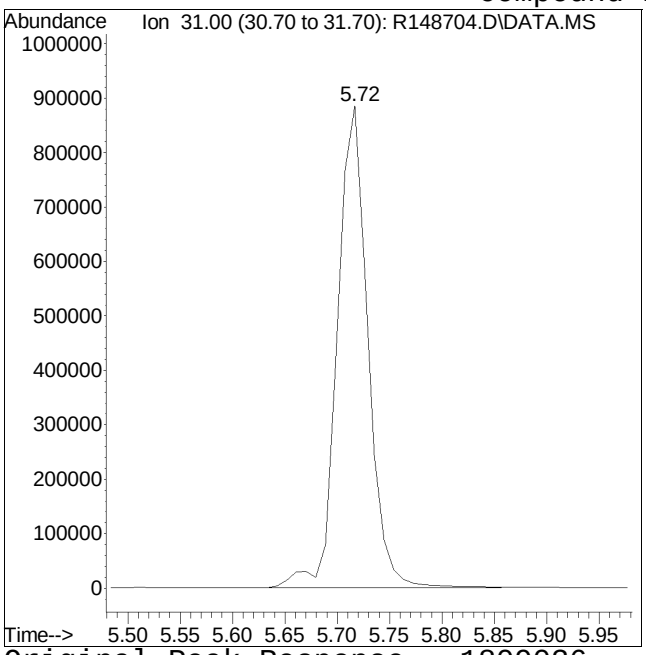


Manual Integration/Negative Proof Report

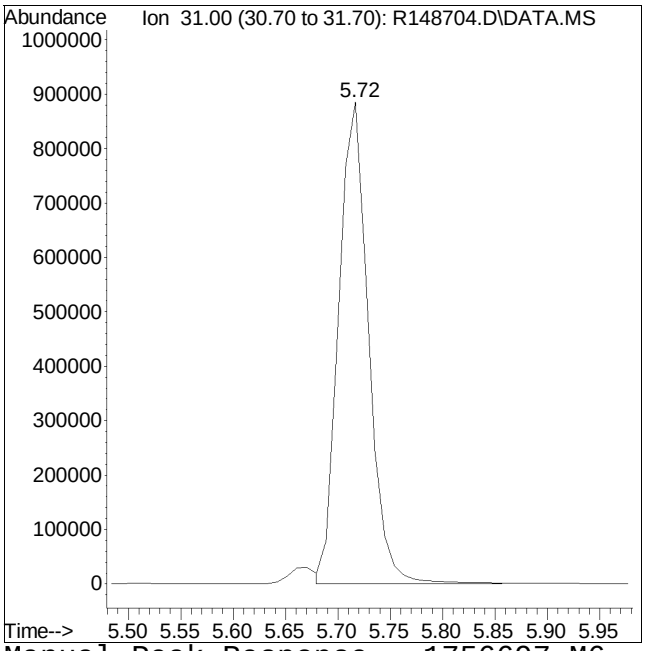
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R148704.D
Date Inj'd : 10/12/2016 9:31 pm
Sample : ITO15-SIMSTD50.0

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 10/13/2016 7:16 am

Compound #15: ethanol



Original Peak Response = 1809036



Manual Peak Response = 1756697 M6

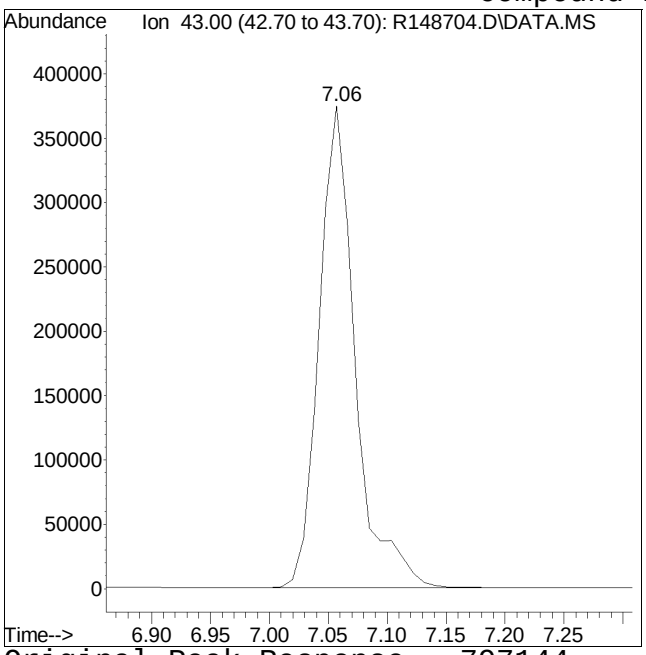
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

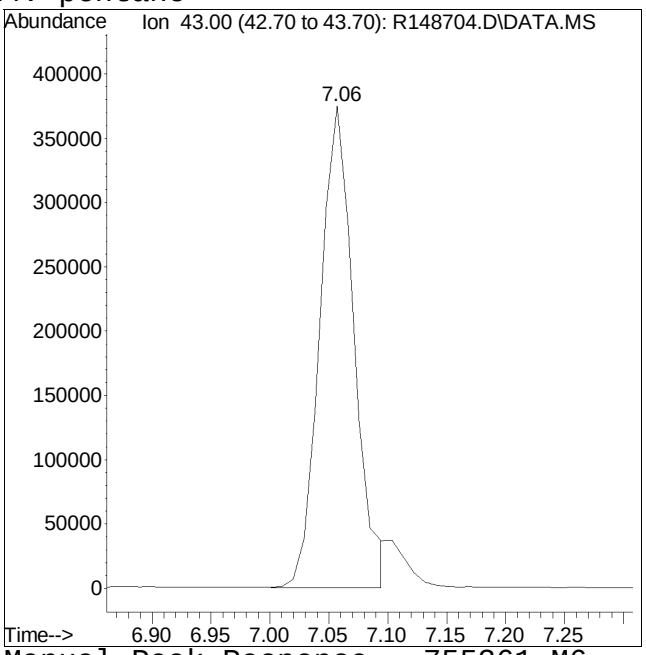
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R148704.D
Date Inj'd : 10/12/2016 9:31 pm
Sample : ITO15-SIMSTD50.0

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 10/13/2016 7:16 am

Compound #24: pentane



Original Peak Response = 797144



Manual Peak Response = 755361 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148705.D
Acq On : 12 Oct 2016 10:04 pm
Operator : AIRPIANO1:RY
Sample : ITO15-LLSTD100.0
Misc : WG941698
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 13 09:22:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	210424	10.000	ppbV	0.00
Standard Area = 183579			Recovery = 114.62%			
43) 1,4-difluorobenzene	12.41	114	321667	10.000	ppbV	0.00
Standard Area = 310801			Recovery = 103.50%			
67) chlorobenzene-D5	16.83	54	85110	10.000	ppbV	# 0.00
Standard Area = 84704			Recovery = 100.48%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	93259	9.586	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 95.86%			
69) toluene-D8	15.14	98	256930	10.077	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.77%			
90) bromofluorobenzene	18.01	95	178595	10.000	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.00%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	1669583	56.639	ppbV	99
6) chloromethane	4.37	50	727285	58.232	ppbV	100
7) Freon-114	4.52	85	2036397	58.176	ppbV	98
9) vinyl chloride	4.67	62	757227	58.661	ppbV	99
10) 1,3-butadiene	4.88	54	569957	58.971	ppbV	96
11) butane	4.95	43	1337513	55.850	ppbV	100
12) acetaldehyde	4.54	29	3951717	336.363	ppbV	95
13) bromomethane	5.25	94	684007	59.285	ppbV	96
14) chloroethane	5.51	64	349462	58.176	ppbV	100
15) ethanol	5.73	31	3275595M4	271.010	ppbV	
17) vinyl bromide	6.00	106	674614	57.755	ppbV	96
18) acrolein	6.17	56	323602	59.679	ppbV	96
19) acetone	6.36	43	8499400	338.285	ppbV	96
21) trichlorofluoromethane	6.57	101	1850530	57.953	ppbV	100
22) isopropyl alcohol	6.73	45	4466879	168.952	ppbV	100
24) pentane	7.06	43	1467993M6	57.831	ppbV	
26) 1,1-dichloroethene	7.41	61	1279220	58.216	ppbV	99
27) tertiary butyl alcohol	7.50	59	1707675	57.867	ppbV	99
28) methylene chloride	7.59	49	1021466	57.220	ppbV	98
29) 3-chloropropene	7.74	41	1191174	58.023	ppbV	100
30) carbon disulfide	7.91	76	2192639	58.823	ppbV	93

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148705.D
Acq On : 12 Oct 2016 10:04 pm
Operator : AIRPIANO1:RY
Sample : ITO15-LLSTD100.0
Misc : WG941698
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 13 09:22:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
31) Freon 113	7.92	101	1425531	58.667	ppbV		99
32) trans-1,2-dichloroethene	8.76	61	1284215	60.322	ppbV		99
33) 1,1-dichloroethane	9.00	63	1466573	59.636	ppbV		98
34) MTBE	9.09	73	2183609	59.845	ppbV		98
36) 2-butanone	9.49	43	2015013	58.366	ppbV		97
37) cis-1,2-dichloroethene	10.00	61	808560	51.214	ppbV		98
39) chloroform	10.36	83	2122355	60.285	ppbV		99
42) 1,2-dichloroethane	11.20	62	1186407	58.054	ppbV		99
44) hexane	10.25	57	1627858	68.017	ppbV		84
48) 1,1,1-trichloroethane	11.49	97	1821918	74.210	ppbV		97
50) benzene	12.00	78	2232049	66.918	ppbV		99
51) thiophene	12.17	84	2331122	89.186	ppbV		96
52) carbon tetrachloride	12.18	117	1716697	67.732	ppbV		99
53) cyclohexane	12.32	56	1316881	67.575	ppbV		97
56) 1,2-dichloropropane	12.93	63	961560	68.833	ppbV		96
57) bromodichloromethane	13.17	83	2014778	67.789	ppbV		99
58) 1,4-dioxane	13.20	88	570648	70.837	ppbV		92
59) trichloroethene	13.20	130	993338	69.516	ppbV		99
60) 2,2,4-trimethylpentane	13.24	57	4397843	66.739	ppbV		98
62) heptane	13.54	43	1832925	66.050	ppbV		97
63) cis-1,3-dichloropropene	14.18	75	1391004	69.045	ppbV		97
64) 4-methyl-2-pentanone	14.22	43	2543698	65.314	ppbV		98
65) trans-1,3-dichloropropene	14.77	75	1458915	68.802	ppbV		95
66) 1,1,2-trichloroethane	14.96	97	962575	69.733	ppbV		97
68) toluene	15.24	91	2748258	69.900	ppbV		98
70) 2-methylthiophene	15.31	97	3588645	95.552	ppbV		99
72) 2-hexanone	15.48	43	2437912	65.102	ppbV	#	93
73) 3-methylthiophene	15.49	97	3546239	94.254	ppbV		98
74) dibromochloromethane	15.65	129	1929486	70.687	ppbV		98
75) 1,2-dibromoethane	15.89	107	1635434	70.594	ppbV		98
77) octane	16.15	85	838244	71.113	ppbV		87
78) tetrachloroethene	16.29	166	1490503	72.634	ppbV		99
80) chlorobenzene	16.87	112	2230617	72.895	ppbV		99
81) ethylbenzene	17.16	91	3693496	70.719	ppbV		99
82) 2-ethylthiophene	17.20	97	4330715	94.616	ppbV		98
83) m+p-xylene	17.31	91	5939227	142.508	ppbV		100
84) bromoform	17.39	173	2319456	72.697	ppbV		98
85) styrene	17.59	104	2219634	72.569	ppbV		99

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148705.D
Acq On : 12 Oct 2016 10:04 pm
Operator : AIRPIANO1:RY
Sample : ITO15-LLSTD100.0
Misc : WG941698
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 13 09:22:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
86) 1,1,2,2-tetrachloroethane	17.67	83	2382468	67.893	ppbV	100
87) o-xylene	17.67	91	2922787	67.778	ppbV	99
89) nonane	17.81	43	2680284	66.678	ppbV	94
93) 2-chlorotoluene	18.47	126	1039130	70.667	ppbV #	58
96) 4-ethyl toluene	18.59	105	4396121	70.327	ppbV	98
97) 1,3,5-trimethylbenzene	18.65	105	3536339	71.225	ppbV	99
99) 1,2,4-trimethylbenzene	18.96	105	3319089	64.608	ppbV	88
100) decane	19.00	57	2661080	68.359	ppbV	93
102) 1,3-dichlorobenzene	19.09	146	2616198	70.907	ppbV	98
103) 1,4-dichlorobenzene	19.14	146	2630247	69.975	ppbV	97
105) 1,2,3-trimethylbenzene	19.28	105	4489492	89.642	ppbV	100
107) 1,2-dichlorobenzene	19.40	146	2502135	72.261	ppbV	98
109) indan	19.44	117	5008123	93.075	ppbV	96
110) indene	19.52	115	3662105	101.972	ppbV	98
112) undecane	19.95	57	3030337	67.332	ppbV	93
113) 1,2,4,5-tetramethylben...	20.19	119	6082727	77.193	ppbV	98
114) dodecane	20.84	57	2706536	53.163	ppbV	90
115) 1,2,4-trichlorobenzene	20.83	180	2443398	66.864	ppbV	99
116) naphthalene	20.96	128	4772817	70.444	ppbV	99
118) benzothiophene	21.02	134	6309292	100.459	ppbV	98
119) hexachlorobutadiene	21.26	225	2291657	76.231	ppbV	93
120) 2-methylnaphthalene	22.09	142	2320689	63.908	ppbV	99
121) 1-methylnaphthalene	22.30	142	2260789	54.793	ppbV	99

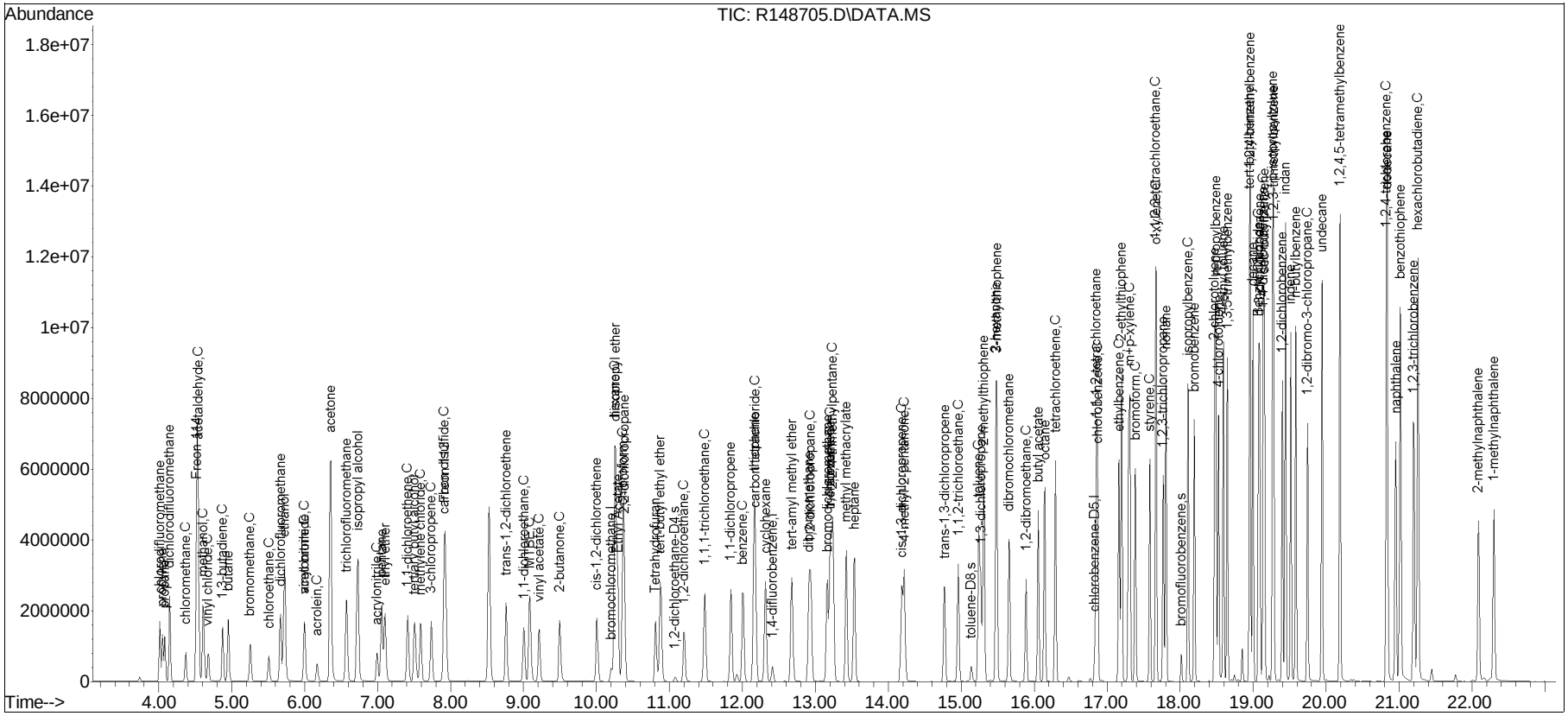
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148705.D
Acq On : 12 Oct 2016 10:04 pm
Operator : AIRPIANO1:RY
Sample : ITO15-LLSTD100.0
Misc : WG941698
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 13 09:22:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 07:15:03 2016
Response via : Initial Calibration

Sub List : Default - All compounds listed1012NT_ICAL\R148702.D

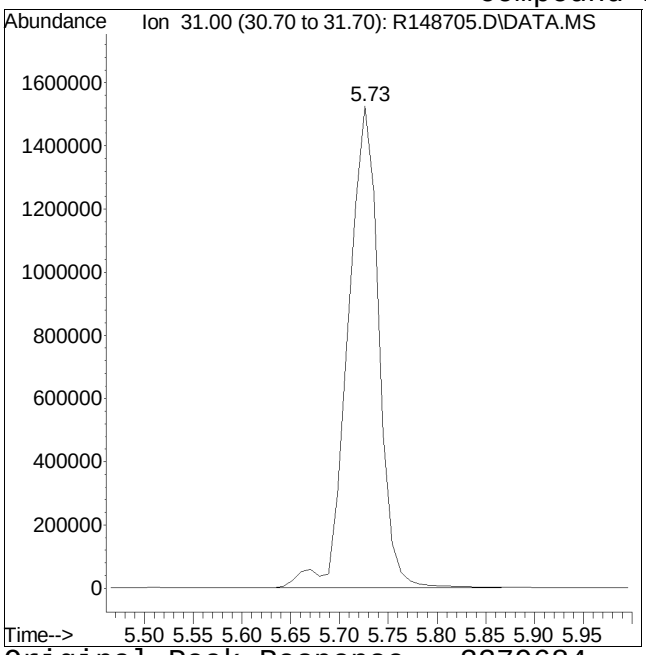


Manual Integration/Negative Proof Report

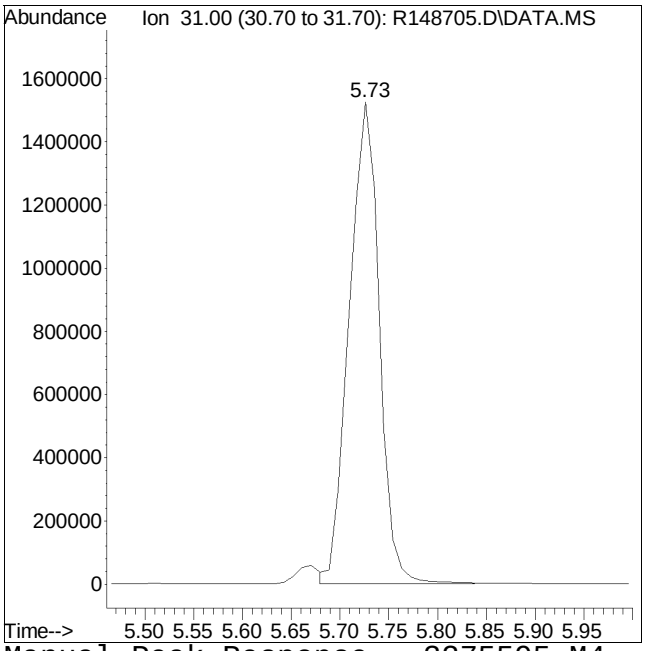
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R148705.D
Date Inj'd : 10/12/2016 10:04 pm
Sample : ITO15-LLSTD100.0

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 10/13/2016 7:16 am

Compound #15: ethanol



Original Peak Response = 3379684



Manual Peak Response = 3275595 M4

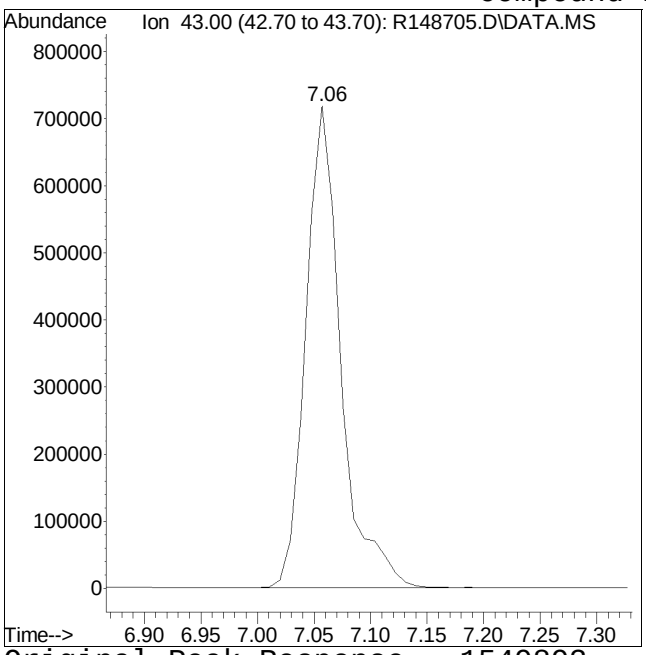
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

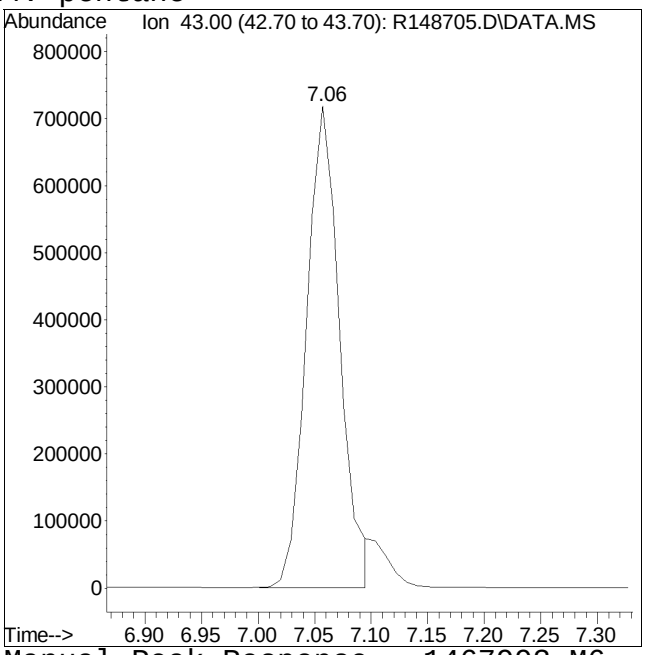
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R148705.D
Date Inj'd : 10/12/2016 10:04 pm
Sample : ITO15-LLSTD100.0

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 10/13/2016 7:16 am

Compound #24: pentane



Original Peak Response = 1549893



Manual Peak Response = 1467993 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Initial Calibration Verification

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148708.D
Acq On : 13 Oct 2016 9:10 am
Operator : AIRPIANO1:RY
Sample : CTO15-LLSTD10.0
Misc : WG941698
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 13 09:35:35 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	bromochloromethane	1.000	1.000	0.0	112	0.00
5		dichlorodifluoromethane	1.281	1.124	12.3	90	0.00
6	C	chloromethane	0.527	0.525	0.4	99	0.00
7		Freon-114	1.448	1.471	-1.6	99	0.00
9	C	vinyl chloride	0.525	0.540	-2.9	99	0.00
10	C	1,3-butadiene	0.400	0.431	-7.7	105	0.00
11		butane	0.973	0.911	6.4	90	0.00
13	C	bromomethane	0.492	0.493	-0.2	101	0.00
14	C	chloroethane	0.249	0.255	-2.4	100	0.00
15		ethanol	0.490	0.443	9.6	86	0.00
17	C	vinyl bromide	0.473	0.489	-3.4	99	0.00
18	C	acrolein	0.241	0.209	13.3	91	0.00
19		acetone	1.143	0.869	24.0	82	0.00
21		trichlorofluoromethane	1.322	1.363	-3.1	101	0.00
22		isopropyl alcohol	1.189	1.050	11.7	94	0.00
24		pentane	1.075	0.978	9.0	91	0.00
26	C	1,1-dichloroethene	0.915	0.941	-2.8	101	0.00
27		tertiary butyl alcohol	1.197	1.144	4.4	92	0.00
28	C	methylene chloride	0.753	0.766	-1.7	101	0.00
29	C	3-chloropropene	0.873	0.926	-6.1	107	0.00
30	C	carbon disulfide	1.547	1.559	-0.8	99	0.00
31		Freon 113	1.006	1.040	-3.4	101	0.00
32		trans-1,2-dichloroethene	0.874	0.820	6.2	91	0.00
33	C	1,1-dichloroethane	1.019	1.050	-3.0	101	0.00
34	C	MTBE	1.504	1.562	-3.9	101	0.00
36	C	2-butanone	1.426	1.446	-1.4	99	0.00
37		cis-1,2-dichloroethene	0.667	0.768	-15.1	115	0.00
39	C	chloroform	1.462	1.520	-4.0	102	0.00
42	C	1,2-dichloroethane	0.849	0.858	-1.1	99	0.00
43	I	1,4-difluorobenzene	1.000	1.000	0.0	111	0.00
44	C	hexane	0.679	0.677	0.3	101	0.00
47	s	1,2-dichloroethane-D4	0.300	0.283	5.7	104	0.00
48	C	1,1,1-trichloroethane	0.711	0.709	0.3	103	0.00
50	C	benzene	0.942	0.942	0.0	101	0.00
52	C	carbon tetrachloride	0.700	0.731	-4.4	103	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148708.D
Acq On : 13 Oct 2016 9:10 am
Operator : AIRPIANO1:RY
Sample : CTO15-LLSTD10.0
Misc : WG941698
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 13 09:35:35 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
53		cyclohexane	0.557	0.556	0.2	101	0.00
56	C	1,2-dichloropropane	0.385	0.399	-3.6	102	0.00
57		bromodichloromethane	0.826	0.861	-4.2	103	0.00
58	C	1,4-dioxane	0.215	0.221	-2.8	97	0.00
59	C	trichloroethene	0.391	0.410	-4.9	102	0.00
60	C	2,2,4-trimethylpentane	1.830	1.832	-0.1	99	0.00
62		heptane	0.784	0.775	1.1	99	0.00
63	C	cis-1,3-dichloropropene	0.547	0.608	-11.2	107	0.00
64	C	4-methyl-2-pentanone	1.102	1.096	0.5	100	0.00
65		trans-1,3-dichloropropene	0.575	0.549	4.5	92	0.00
66	C	1,1,2-trichloroethane	0.383	0.411	-7.3	106	0.00
67	I	chlorobenzene-D5	1.000	1.000	0.0	104	0.00
68	C	toluene	4.169	4.445	-6.6	100	0.00
69	s	toluene-D8	3.012	2.973	1.3	104	0.00
72		2-hexanone	3.891	4.129	-6.1	98	0.00
74		dibromochloromethane	2.824	3.132	-10.9	102	0.00
75	C	1,2-dibromoethane	2.398	2.663	-11.1	102	0.00
77		octane	1.244	1.217	2.2	92	0.00
78	C	tetrachloroethene	2.134	2.353	-10.3	102	0.00
80	C	chlorobenzene	3.267	3.564	-9.1	104	0.00
81	C	ethylbenzene	5.469	5.952	-8.8	101	0.00
83	C	m+p-xylene	4.362	4.706	-7.9	100	0.00
84	C	bromoform	3.230	3.609	-11.7	101	0.00
85	C	styrene	3.128	3.500	-11.9	102	0.00
86	C	1,1,2,2-tetrachloroethane	3.601	4.033	-12.0	102	0.00
87	C	o-xylene	4.507	5.004	-11.0	103	0.00
89		nonane	4.231	4.111	2.8	91	0.00
90	s	bromofluorobenzene	2.105	1.992	5.4	99	0.00
93		2-chlorotoluene	1.510	1.536	-1.7	93	0.00
96		4-ethyl toluene	6.407	6.864	-7.1	98	0.00
97		1,3,5-trimethylbenzene	5.055	5.662	-12.0	101	0.00
99		1,2,4-trimethylbenzene	5.075	5.888	-16.0	102	0.00
100		decane	3.995	3.969	0.7	91	0.00
102		1,3-dichlorobenzene	3.744	4.249	-13.5	102	0.00
103	C	1,4-dichlorobenzene	3.768	4.290	-13.9	101	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148708.D
Acq On : 13 Oct 2016 9:10 am
Operator : AIRPIANO1:RY
Sample : CTO15-LLSTD10.0
Misc : WG941698
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 13 09:35:35 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
107	1,2-dichlorobenzene	3.483	3.991	-14.6	102	0.00
112	undecane	4.401	4.741	-7.7	94	0.00
114	dodecane	4.490	5.370	-19.6	94	0.00
115 C	1,2,4-trichlorobenzene	3.339	4.177	-25.1	102	0.00
116	naphthalene	6.341	7.272	-14.7	95	0.00
119 C	hexachlorobutadiene	2.813	3.552	-26.3	105	0.00

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148708.D
Acq On : 13 Oct 2016 9:10 am
Operator : AIRPIANO1:RY
Sample : CTO15-LLSTD10.0
Misc : WG941698
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 13 09:35:35 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default-ICV-AP2 - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	206080	10.000	ppbV	0.00
Standard Area = 183579			Recovery = 112.26%			
43) 1,4-difluorobenzene	12.41	114	343822	10.000	ppbV	0.00
Standard Area = 310801			Recovery = 110.62%			
67) chlorobenzene-D5	16.82	54	88456	10.000	ppbV	0.00
Standard Area = 84704			Recovery = 104.43%			
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	97373	9.454	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 94.54%			
69) toluene-D8	15.14	98	263018	9.871	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.71%			
90) bromofluorobenzene	18.01	95	176165	9.461	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 94.61%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	231663	8.779	ppbV	100
6) chloromethane	4.37	50	108143	9.954	ppbV	99
7) Freon-114	4.52	85	303169	10.159	ppbV	99
9) vinyl chloride	4.67	62	111358	10.294	ppbV	99
10) 1,3-butadiene	4.88	54	88850	10.774	ppbV	99
11) butane	4.95	43	187801	9.363	ppbV	99
13) bromomethane	5.25	94	101611	10.018	ppbV	97
14) chloroethane	5.51	64	52475	10.209	ppbV	100
15) ethanol	5.71	31	455984M4	45.192	ppbV	
17) vinyl bromide	6.00	106	100809	10.349	ppbV	95
18) acrolein	6.17	56	42998	8.644	ppbV	96
19) acetone	6.35	43	894909	37.981	ppbV	99
21) trichlorofluoromethane	6.57	101	280973	10.311	ppbV	100
22) isopropyl alcohol	6.71	45	541096	22.084	ppbV	100
24) pentane	7.06	43	201534M6	9.093	ppbV	
26) 1,1-dichloroethene	7.41	61	193870	10.277	ppbV	97
27) tertiary butyl alcohol	7.50	59	235735	9.554	ppbV	100
28) methylene chloride	7.59	49	157940	10.173	ppbV	99
29) 3-chloropropene	7.74	41	190783	10.606	ppbV	99
30) carbon disulfide	7.91	76	321267	10.079	ppbV	98
31) Freon 113	7.92	101	214262	10.337	ppbV	100

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148708.D
Acq On : 13 Oct 2016 9:10 am
Operator : AIRPIANO1:RY
Sample : CTO15-LLSTD10.0
Misc : WG941698
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 13 09:35:35 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default-ICV-AP2 - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
32) trans-1,2-dichloroethene	8.76	61	169065	9.390	ppbV		99
33) 1,1-dichloroethane	9.00	63	216309	10.296	ppbV		98
34) MTBE	9.09	73	321824	10.380	ppbV		99
36) 2-butanone	9.49	43	298078	10.143	ppbV		99
37) cis-1,2-dichloroethene	10.00	61	158278	11.513	ppbV		98
39) chloroform	10.35	83	313343	10.399	ppbV		97
42) 1,2-dichloroethane	11.20	62	176786	10.102	ppbV		99
44) hexane	10.25	57	232857	9.976	ppbV		98
48) 1,1,1-trichloroethane	11.49	97	243709	9.967	ppbV		98
50) benzene	12.00	78	323924	10.004	ppbV		100
52) carbon tetrachloride	12.17	117	251387	10.438	ppbV		98
53) cyclohexane	12.31	56	191028	9.980	ppbV		98
56) 1,2-dichloropropane	12.93	63	137236	10.368	ppbV		99
57) bromodichloromethane	13.16	83	296107	10.422	ppbV		99
58) 1,4-dioxane	13.20	88	75855	10.263	ppbV		100
59) trichloroethene	13.20	130	141135	10.491	ppbV		99
60) 2,2,4-trimethylpentane	13.24	57	629992	10.014	ppbV		99
62) heptane	13.53	43	266440	9.881	ppbV		98
63) cis-1,3-dichloropropene	14.18	75	208941	11.106	ppbV		99
64) 4-methyl-2-pentanone	14.22	43	376912	9.949	ppbV		99
65) trans-1,3-dichloropropene	14.76	75	188802	9.546	ppbV		98
66) 1,1,2-trichloroethane	14.95	97	141308	10.725	ppbV		99
68) toluene	15.24	91	393174	10.663	ppbV		98
72) 2-hexanone	15.48	43	365217	10.612	ppbV	#	93
74) dibromochloromethane	15.65	129	277078	11.092	ppbV		100
75) 1,2-dibromoethane	15.88	107	235543	11.102	ppbV		98
77) octane	16.14	85	107673	9.783	ppbV		96
78) tetrachloroethene	16.29	166	208106	11.023	ppbV		99
80) chlorobenzene	16.86	112	315294	10.911	ppbV		99
81) ethylbenzene	17.16	91	526487	10.884	ppbV		100
83) m+p-xylene	17.30	91	832509	21.577	ppbV		100
84) bromoform	17.38	173	319242	11.174	ppbV		100
85) styrene	17.58	104	309633	11.192	ppbV		98
86) 1,1,2,2-tetrachloroethane	17.66	83	356755	11.201	ppbV		100
87) o-xylene	17.66	91	442663	11.103	ppbV		99
89) nonane	17.80	43	363602	9.715	ppbV		99
93) 2-chlorotoluene	18.47	126	135900	10.174	ppbV		95
96) 4-ethyl toluene	18.59	105	607183	10.713	ppbV		99

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148708.D
Acq On : 13 Oct 2016 9:10 am
Operator : AIRPIANO1:RY
Sample : CTO15-LLSTD10.0
Misc : WG941698
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 13 09:35:35 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\R148702.D
Sub List : Default-ICV-AP2 - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
97) 1,3,5-trimethylbenzene	18.64	105	500819	11.200	ppbV	98
99) 1,2,4-trimethylbenzene	18.95	105	520793	11.601	ppbV	96
100) decane	18.99	57	351077	9.934	ppbV	100
102) 1,3-dichlorobenzene	19.08	146	375831	11.350	ppbV	98
103) 1,4-dichlorobenzene	19.13	146	379449	11.383	ppbV	100
107) 1,2-dichlorobenzene	19.40	146	353017	11.457	ppbV	100
112) undecane	19.94	57	419361	10.772	ppbV	99
114) dodecane	20.84	57	474965	11.959	ppbV	99
115) 1,2,4-trichlorobenzene	20.83	180	369498	12.509	ppbV	100
116) naphthalene	20.95	128	643213	11.467	ppbV	100
119) hexachlorobutadiene	21.26	225	314191	12.626	ppbV	99

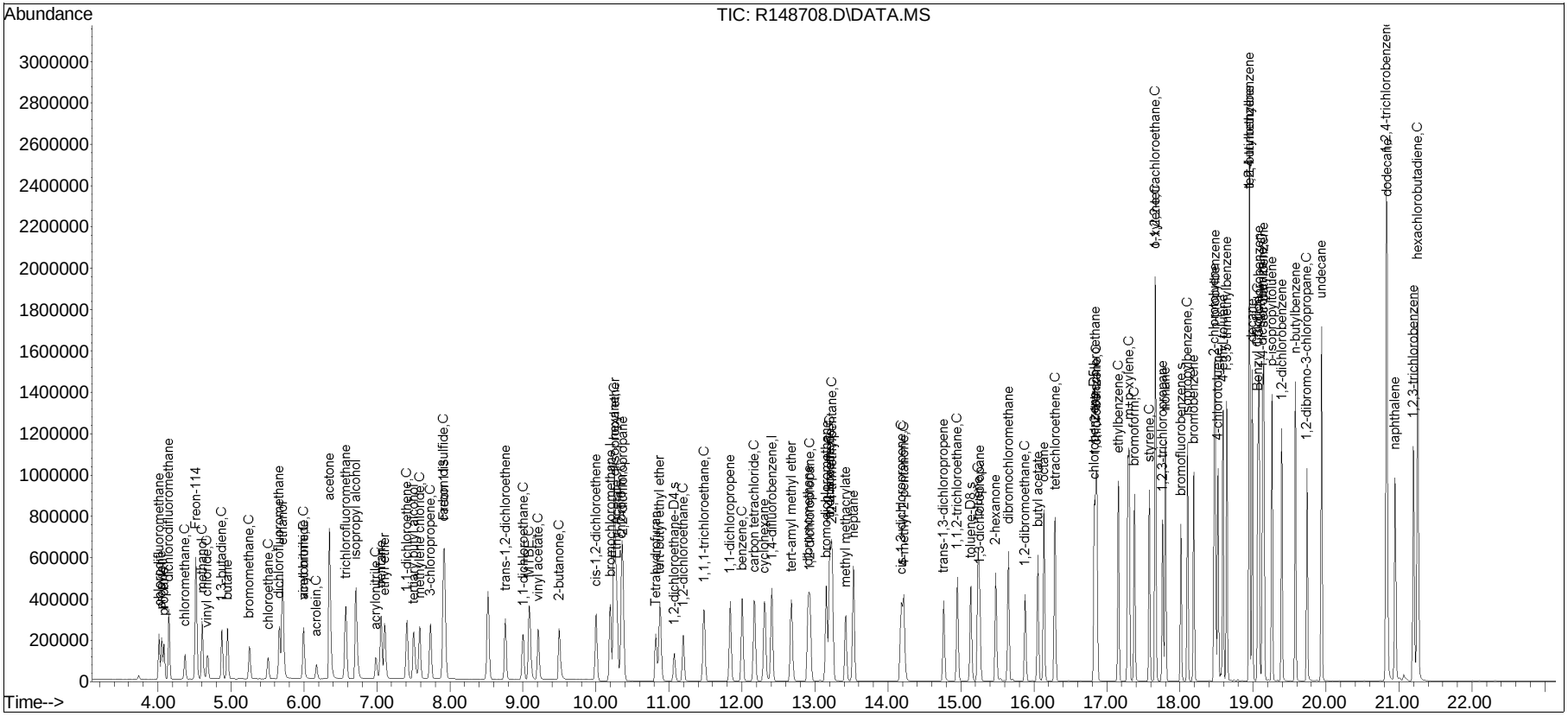
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\
Data File : R148708.D
Acq On : 13 Oct 2016 9:10 am
Operator : AIRPIANO1:RY
Sample : CTO15-LLSTD10.0
Misc : WG941698
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 13 09:35:35 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161012NT_ICAL\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Default-ICV-AP2 - All compounds listedCAL\R148702.D

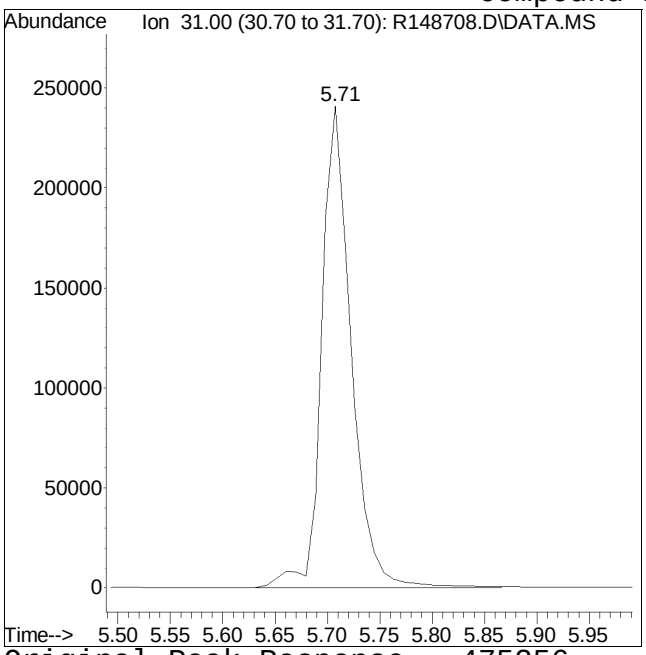


Manual Integration/Negative Proof Report

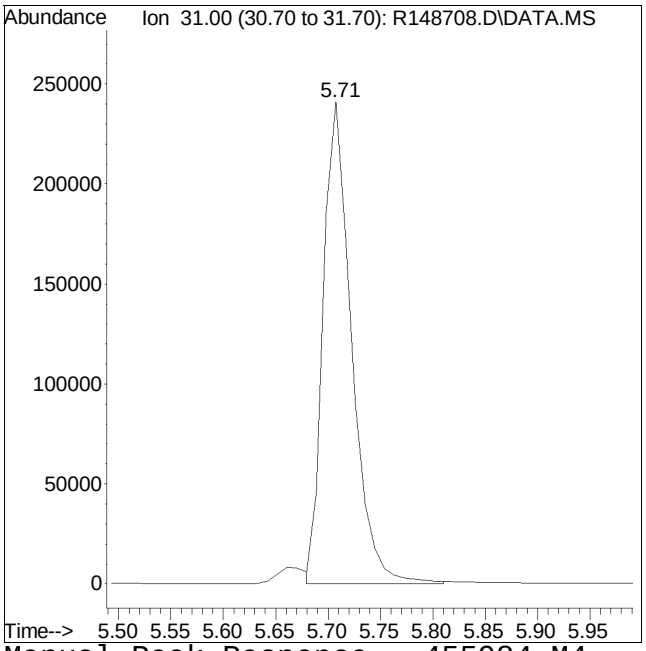
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R148708.D
Date Inj'd : 10/13/2016 9:10 am
Sample : CTO15-LLSTD10.0

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 10/13/2016 9:34 am

Compound #15: ethanol



Original Peak Response = 475256



Manual Peak Response = 455984 M4

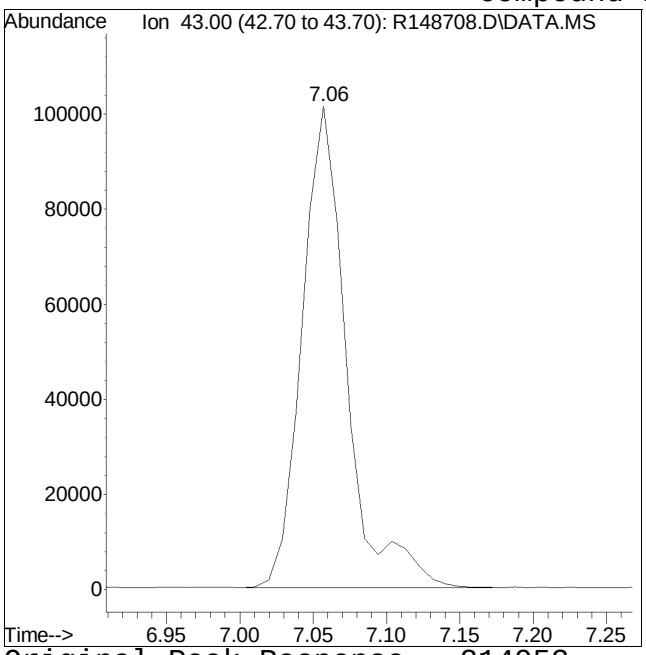
M4 = Poor automated baseline construction.

Manual Integration/Negative Proof Report

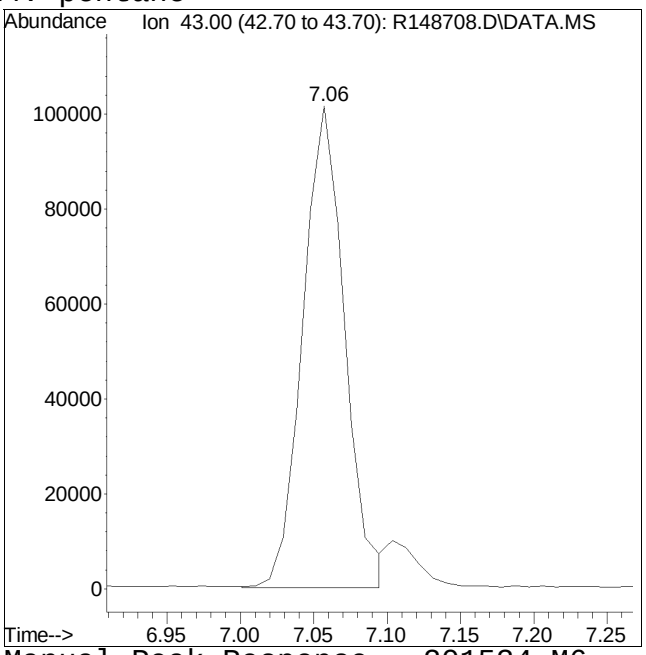
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R148708.D
Date Inj'd : 10/13/2016 9:10 am
Sample : CTO15-LLSTD10.0

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 10/13/2016 9:34 am

Compound #24: pentane



Original Peak Response = 214952



Manual Peak Response = 201534 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Continuing Calibration

Continuing Calibration
Form 7

Client	: NewFields	Lab Number	: L1634001	
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00	
Instrument ID	: AIRPIANO1	Calibration Date	: 11/01/16 09:51	
Lab File ID	: R149091	Init. Calib. Date(s)	: 10/12/16	10/12/16
Sample No	: WG947959-2	Init. Calib. Times	: 18:18	22:04
Channel	:			

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
bromochloromethane	1	1	-	0	30	83	-.01
dichlorodifluoromethane	1.281	1.124	-	12.3	30	67	0
chloromethane	0.527	0.538	-	-2.1	30	76	0
Freon-114	1.448	1.508	-	-4.1	30	76	0
vinyl chloride	0.525	0.538	-	-2.5	30	73	0
1,3-butadiene	0.4	0.405	-	-1.3	30	74	0
butane	0.973	0.998	-	-2.6	30	73	0
acetaldehyde	0.57	0.51	-	10.5	30	76	0
bromomethane	0.492	0.509	-	-3.5	30	78	0
chloroethane	0.249	0.259	-	-4	30	76	0
ethanol	0.49	0.499	-	-1.8	30	73	0
vinyl bromide	0.473	0.492	-	-4	30	74	0
acrolein	0.241	0.218	-	9.5	30	70	0
acetone	1.143	1.079	-	5.6	30	75	0
trichlorofluoromethane	1.322	1.417	-	-7.2	30	78	0
isopropyl alcohol	1.189	1.094	-	8	30	73	0
pentane	1.075	1.041	-	3.2	30	72	0
1,1-dichloroethene	0.915	0.925	-	-1.1	30	74	0
tertiary butyl alcohol	1.197	1.189	-	0.7	30	71	0
methylene chloride	0.753	0.766	-	-1.7	30	75	0
3-chloropropene	0.873	0.851	-	2.5	30	73	0
carbon disulfide	1.547	1.616	-	-4.5	30	76	0
Freon 113	1.006	1.07	-	-6.4	30	77	0
trans-1,2-dichloroethene	0.874	0.89	-	-1.8	30	73	0
1,1-dichloroethane	1.019	1.047	-	-2.7	30	75	0
MTBE	1.504	1.469	-	2.3	30	71	0
2-butanone	1.426	1.503	-	-5.4	30	76	0
cis-1,2-dichloroethene	0.667	0.712	-	-6.7	30	79	0
chloroform	1.462	1.523	-	-4.2	30	76	0
1,2-dichloroethane	0.849	0.861	-	-1.4	30	74	0
1,4-difluorobenzene	1	1	-	0	30	77	0
hexane	0.679	0.728	-	-7.2	30	76	-.01
1,2-dichloroethane-D4	0.3	0.298	-	0.7	30	76	0
1,1,1-trichloroethane	0.711	0.717	-	-0.8	30	73	-.01
benzene	0.942	1.008	-	-7	30	75	0
thiophene	0.795	0.779	-	2	30	74	0
carbon tetrachloride	0.7	0.75	-	-7.1	30	74	0
cyclohexane	0.557	0.588	-	-5.6	30	75	0
1,2-dichloropropane	0.385	0.43	-	-11.7	30	77	0
bromodichloromethane	0.826	0.893	-	-8.1	30	75	0
1,4-dioxane	0.215	0.235	-	-9.3	30	73	0
trichloroethene	0.391	0.431	-	-10.2	30	75	0
2,2,4-trimethylpentane	1.83	1.988	-	-8.6	30	75	-.01
heptane	0.784	0.85	-	-8.4	30	76	0
cis-1,3-dichloropropene	0.547	0.589	-	-7.7	30	73	0

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: NewFields	Lab Number	: L1634001	
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00	
Instrument ID	: AIRPIANO1	Calibration Date	: 11/01/16 09:51	
Lab File ID	: R149091	Init. Calib. Date(s)	: 10/12/16	10/12/16
Sample No	: WG947959-2	Init. Calib. Times	: 18:18	22:04
Channel	:			

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
4-methyl-2-pentanone	1.102	1.192	-	-8.2	30	76	0
trans-1,3-dichloropropene	0.575	0.612	-	-6.4	30	72	0
1,1,2-trichloroethane	0.383	0.421	-	-9.9	30	76	0
chlorobenzene-D5	1	1	-	0	30	76	0
toluene	4.169	4.563	-	-9.5	30	75	-.01
toluene-D8	3.012	2.938	-	2.5	30	74	0
2-methylthiophene	4.401	4.405	-	-0.1	30	76	0
2-hexanone	3.891	4.368	-	-12.3	30	75	0
3-methylthiophene	4.346	4.405	-	-1.4	30	76	0
dibromochloromethane	2.824	3.151	-	-11.6	30	74	0
1,2-dibromoethane	2.398	2.709	-	-13	30	75	0
octane	1.244	1.348	-	-8.4	30	74	0
tetrachloroethene	2.134	2.237	-	-4.8	30	70	-.01
chlorobenzene	3.267	3.606	-	-10.4	30	76	0
ethylbenzene	5.469	5.973	-	-9.2	30	74	0
2-ethylthiophene	5.326	5.387	-	-1.1	30	76	0
m+p-xylene	4.362	4.827	-	-10.7	30	75	0
bromoform	3.23	3.617	-	-12	30	73	0
styrene	3.128	3.497	-	-11.8	30	74	0
1,1,2,2-tetrachloroethane	3.601	4.304	-	-19.5	30	79	0
o-xylene	4.507	5.083	-	-12.8	30	76	0
nonane	4.231	4.812	-	-13.7	30	77	0
bromofluorobenzene	2.105	2	-	5	30	72	0
2-chlorotoluene	1.51	1.718	-	-13.8	30	75	0
4-ethyl toluene	6.407	7.29	-	-13.8	30	75	0
1,3,5-trimethylbenzene	5.055	5.753	-	-13.8	30	75	0
1,2,4-trimethylbenzene	5.075	5.973	-	-17.7	30	75	0
decane	3.995	4.523	-	-13.2	30	75	0
1,3-dichlorobenzene	3.744	4.25	-	-13.5	30	74	0
1,4-dichlorobenzene	3.768	4.315	-	-14.5	30	74	0
1,2,3-trimethylbenzene	5.537	5.804	-	-4.8	30	75	0
1,2-dichlorobenzene	3.483	4.025	-	-15.6	30	75	0
indan	6.041	6.344	-	-5	30	76	0
indene	4.085	4.204	-	-2.9	30	75	0
undecane	4.401	5.381	-	-22.3	30	77	0
1,2,4,5-tetramethylbenzene	7.971	9.232	-	-15.8	30	76	0
dodecane	4.49	6.095	-	-35.7*	30	77	0
1,2,4-trichlorobenzene	3.339	4.115	-	-23.2	30	73	0
naphthalene	6.341	7.949	-	-25.4	30	76	0
benzothiophene	6.589	7.418	-	-12.6	30	76	-.01
hexachlorobutadiene	2.813	3.457	-	-22.9	30	74	0
2-methylnaphthalene	3.174	4.084	-	-28.7	30	73	0
1-methylnaphthalene	3.385	4.657	-	-37.6*	30	73	0

* Value outside of QC limits.

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149091.D
Acq On : 1 Nov 2016 9:51 am
Operator : AIRPIANO1:RY
Sample : WG947959-2,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 01 10:18:19 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	I	bromochloromethane	1.000	1.000	0.0	83	-0.01
5		dichlorodifluoromethane	1.281	1.124	12.3	67	0.00
6	C	chloromethane	0.527	0.538	-2.1	76	0.00
7		Freon-114	1.448	1.508	-4.1	76	0.00
9	C	vinyl chloride	0.525	0.538	-2.5	73	0.00
10	C	1,3-butadiene	0.400	0.405	-1.3	74	0.00
11		butane	0.973	0.998	-2.6	73	0.00
12	C	acetaldehyde	0.570	0.510	10.5	76	0.00
13	C	bromomethane	0.492	0.509	-3.5	78	0.00
14	C	chloroethane	0.249	0.259	-4.0	76	0.00
15		ethanol	0.490	0.499	-1.8	73	0.00
17	C	vinyl bromide	0.473	0.492	-4.0	74	0.00
18	C	acrolein	0.241	0.218	9.5	70	0.00
19		acetone	1.143	1.079	5.6	75	0.00
21		trichlorofluoromethane	1.322	1.417	-7.2	78	0.00
22		isopropyl alcohol	1.189	1.094	8.0	73	0.00
24		pentane	1.075	1.041	3.2	72	0.00
26	C	1,1-dichloroethene	0.915	0.925	-1.1	74	0.00
27		tertiary butyl alcohol	1.197	1.189	0.7	71	0.00
28	C	methylene chloride	0.753	0.766	-1.7	75	0.00
29	C	3-chloropropene	0.873	0.851	2.5	73	0.00
30	C	carbon disulfide	1.547	1.616	-4.5	76	0.00
31		Freon 113	1.006	1.070	-6.4	77	0.00
32		trans-1,2-dichloroethene	0.874	0.890	-1.8	73	0.00
33	C	1,1-dichloroethane	1.019	1.047	-2.7	75	0.00
34	C	MTBE	1.504	1.469	2.3	71	0.00
36	C	2-butanone	1.426	1.503	-5.4	76	0.00
37		cis-1,2-dichloroethene	0.667	0.712	-6.7	79	0.00
39	C	chloroform	1.462	1.523	-4.2	76	0.00
42	C	1,2-dichloroethane	0.849	0.861	-1.4	74	0.00
43	I	1,4-difluorobenzene	1.000	1.000	0.0	77	0.00
44	C	hexane	0.679	0.728	-7.2	76	-0.01
47	s	1,2-dichloroethane-D4	0.300	0.298	0.7	76	0.00
48	C	1,1,1-trichloroethane	0.711	0.717	-0.8	73	-0.01
50	C	benzene	0.942	1.008	-7.0	75	0.00
51		thiophene	0.795	0.779	2.0	74	0.00
52	C	carbon tetrachloride	0.700	0.750	-7.1	74	0.00
53		cyclohexane	0.557	0.588	-5.6	75	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149091.D
Acq On : 1 Nov 2016 9:51 am
Operator : AIRPIANO1:RY
Sample : WG947959-2,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 01 10:18:19 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
56	C	1,2-dichloropropane	0.385	0.430	-11.7	77	0.00
57		bromodichloromethane	0.826	0.893	-8.1	75	0.00
58	C	1,4-dioxane	0.215	0.235	-9.3	73	0.00
59	C	trichloroethene	0.391	0.431	-10.2	75	0.00
60	C	2,2,4-trimethylpentane	1.830	1.988	-8.6	75	-0.01
62		heptane	0.784	0.850	-8.4	76	0.00
63	C	cis-1,3-dichloropropene	0.547	0.589	-7.7	73	0.00
64	C	4-methyl-2-pentanone	1.102	1.192	-8.2	76	0.00
65		trans-1,3-dichloropropene	0.575	0.612	-6.4	72	0.00
66	C	1,1,2-trichloroethane	0.383	0.421	-9.9	76	0.00
67	I	chlorobenzene-D5	1.000	1.000	0.0	76	0.00
68	C	toluene	4.169	4.563	-9.5	75	-0.01
69	s	toluene-D8	3.012	2.938	2.5	74	0.00
70		2-methylthiophene	4.401	4.405	-0.1	76	0.00
72		2-hexanone	3.891	4.368	-12.3	75	0.00
73		3-methylthiophene	4.346	4.405	-1.4	76	0.00
74		dibromochloromethane	2.824	3.151	-11.6	74	0.00
75	C	1,2-dibromoethane	2.398	2.709	-13.0	75	0.00
77		octane	1.244	1.348	-8.4	74	0.00
78	C	tetrachloroethene	2.134	2.237	-4.8	70	-0.01
80	C	chlorobenzene	3.267	3.606	-10.4	76	0.00
81	C	ethylbenzene	5.469	5.973	-9.2	74	0.00
82		2-ethylthiophene	5.326	5.387	-1.1	76	0.00
83	C	m+p-xylene	4.362	4.827	-10.7	75	0.00
84	C	bromoform	3.230	3.617	-12.0	73	0.00
85	C	styrene	3.128	3.497	-11.8	74	0.00
86	C	1,1,2,2-tetrachloroethane	3.601	4.304	-19.5	79	0.00
87	C	o-xylene	4.507	5.083	-12.8	76	0.00
89		nonane	4.231	4.812	-13.7	77	0.00
90	s	bromofluorobenzene	2.105	2.000	5.0	72	0.00
93		2-chlorotoluene	1.510	1.718	-13.8	75	0.00
96		4-ethyl toluene	6.407	7.290	-13.8	75	0.00
97		1,3,5-trimethylbenzene	5.055	5.753	-13.8	75	0.00
99		1,2,4-trimethylbenzene	5.075	5.973	-17.7	75	0.00
100		decane	3.995	4.523	-13.2	75	0.00
102		1,3-dichlorobenzene	3.744	4.250	-13.5	74	0.00
103	C	1,4-dichlorobenzene	3.768	4.315	-14.5	74	0.00
105		1,2,3-trimethylbenzene	5.537	5.804	-4.8	75	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149091.D
Acq On : 1 Nov 2016 9:51 am
Operator : AIRPIANO1:RY
Sample : WG947959-2,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 01 10:18:19 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 60% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 140%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
107		1,2-dichlorobenzene	3.483	4.025	-15.6	75	0.00
109		indan	6.041	6.344	-5.0	76	0.00
110		indene	4.085	4.204	-2.9	75	0.00
112		undecane	4.401	5.381	-22.3	77	0.00
113		1,2,4,5-tetramethylbenzene	7.971	9.232	-15.8	76	0.00
114		dodecane	4.490	6.095	-35.7#	77	0.00
115	C	1,2,4-trichlorobenzene	3.339	4.115	-23.2	73	0.00
116		naphthalene	6.341	7.949	-25.4	76	0.00
118		benzothiophene	6.589	7.418	-12.6	76	-0.01
119	C	hexachlorobutadiene	2.813	3.457	-22.9	74	0.00
120		2-methylnaphthalene	3.174	4.084	-28.7	73	0.00
121		1-methylnaphthalene	3.385	4.657	-37.6#	73	0.00

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149091.D
Acq On : 1 Nov 2016 9:51 am
Operator : AIRPIANO1:RY
Sample : WG947959-2,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 01 10:18:19 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	153282	10.000	ppbV	-0.01
43) 1,4-difluorobenzene	12.41	114	240182	10.000	ppbV	0.00
67) chlorobenzene-D5	16.82	54	64184	10.000	ppbV	0.00
System Monitoring Compounds						
47) 1,2-dichloroethane-D4	11.07	65	71486	9.936	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.36%			
69) toluene-D8	15.14	98	188583	9.754	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 97.54%			
90) bromofluorobenzene	18.01	95	128343	9.499	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 94.99%			
Target Compounds						Qvalue
5) dichlorodifluoromethane	4.15	85	172217	8.774	ppbV	99
6) chloromethane	4.37	50	82470	10.206	ppbV	100
7) Freon-114	4.52	85	231120	10.412	ppbV	99
9) vinyl chloride	4.67	62	82524	10.256	ppbV	98
10) 1,3-butadiene	4.88	54	62007	10.109	ppbV	98
11) butane	4.95	43	152959	10.253	ppbV	98
12) acetaldehyde	4.54	29	391016	44.756	ppbV	99
13) bromomethane	5.25	94	78087	10.350	ppbV	96
14) chloroethane	5.51	64	39670	10.377	ppbV	100
15) ethanol	5.71	31	382789M6	51.005	ppbV	
17) vinyl bromide	6.00	106	75343	10.399	ppbV	96
18) acrolein	6.17	56	33343	9.012	ppbV	94
19) acetone	6.35	43	827318	47.207	ppbV	100
21) trichlorofluoromethane	6.57	101	217192	10.715	ppbV	100
22) isopropyl alcohol	6.71	45	419255	23.005	ppbV	99
24) pentane	7.06	43	159619M6	9.683	ppbV	
26) 1,1-dichloroethene	7.41	61	141793	10.105	ppbV	99
27) tertiary butyl alcohol	7.50	59	182240	9.930	ppbV	96
28) methylene chloride	7.59	49	117378	10.165	ppbV	100
29) 3-chloropropene	7.74	41	130411	9.747	ppbV	98
30) carbon disulfide	7.91	76	247651	10.446	ppbV	98
31) Freon 113	7.92	101	164046	10.640	ppbV	98
32) trans-1,2-dichloroethene	8.76	61	136459	10.190	ppbV	99
33) 1,1-dichloroethane	9.00	63	160460	10.268	ppbV	98
34) MTBE	9.09	73	225218	9.766	ppbV	100
36) 2-butanone	9.49	43	230314	10.537	ppbV	99
37) cis-1,2-dichloroethene	10.00	61	109209	10.680	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149091.D
Acq On : 1 Nov 2016 9:51 am
Operator : AIRPIANO1:RY
Sample : WG947959-2,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 01 10:18:19 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
39) chloroform	10.35	83	233427	10.415	ppbV		99
42) 1,2-dichloroethane	11.20	62	132044	10.144	ppbV		99
44) hexane	10.24	57	174823	10.722	ppbV	#	69
48) 1,1,1-trichloroethane	11.47	97	172204	10.082	ppbV		97
50) benzene	12.00	78	242135	10.704	ppbV		100
51) thiophene	12.15	84	187102	9.794	ppbV		98
52) carbon tetrachloride	12.17	117	180120	10.706	ppbV		99
53) cyclohexane	12.31	56	141213	10.561	ppbV		99
56) 1,2-dichloropropane	12.93	63	103332	11.175	ppbV		99
57) bromodichloromethane	13.16	83	214590M6	10.812	ppbV		
58) 1,4-dioxane	13.20	88	56447M6	10.933	ppbV		
59) trichloroethene	13.20	130	103631	11.027	ppbV		99
60) 2,2,4-trimethylpentane	13.23	57	477394	10.863	ppbV		100
62) heptane	13.53	43	204150	10.838	ppbV		99
63) cis-1,3-dichloropropene	14.18	75	141503	10.767	ppbV		100
64) 4-methyl-2-pentanone	14.22	43	286368	10.821	ppbV		99
65) trans-1,3-dichloropropene	14.76	75	146885	10.631	ppbV		98
66) 1,1,2-trichloroethane	14.95	97	101114	10.986	ppbV		98
68) toluene	15.23	91	292884	10.946	ppbV		99
70) 2-methylthiophene	15.30	97	282724	10.010	ppbV		98
72) 2-hexanone	15.48	43	280328	11.226	ppbV		100
73) 3-methylthiophene	15.48	97	282746	10.136	ppbV		99
74) dibromochloromethane	15.65	129	202260	11.159	ppbV		98
75) 1,2-dibromoethane	15.88	107	173882	11.295	ppbV		97
77) octane	16.14	85	86490	10.830	ppbV		98
78) tetrachloroethene	16.28	166	143582	10.482	ppbV		93
80) chlorobenzene	16.86	112	231470	11.039	ppbV		99
81) ethylbenzene	17.15	91	383361	10.922	ppbV		98
82) 2-ethylthiophene	17.19	97	345731	10.115	ppbV		97
83) m+p-xylene	17.30	91	619686	22.135	ppbV		97
84) bromoform	17.38	173	232129	11.197	ppbV		99
85) styrene	17.58	104	224466	11.181	ppbV		98
86) 1,1,2,2-tetrachloroethane	17.66	83	276227	11.952	ppbV		99
87) o-xylene	17.66	91	326269	11.279	ppbV		99
89) nonane	17.80	43	308823	11.372	ppbV		100
93) 2-chlorotoluene	18.47	126	110290	11.379	ppbV	#	63
96) 4-ethyl toluene	18.59	105	467904M6	11.378	ppbV		
97) 1,3,5-trimethylbenzene	18.64	105	369244	11.380	ppbV		99
99) 1,2,4-trimethylbenzene	18.95	105	383400	11.770	ppbV		99
100) decane	18.99	57	290330	11.322	ppbV		99
102) 1,3-dichlorobenzene	19.08	146	272771	11.352	ppbV		98

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149091.D
Acq On : 1 Nov 2016 9:51 am
Operator : AIRPIANO1:RY
Sample : WG947959-2,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 01 10:18:19 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Keyspan_TO15 - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
103) 1,4-dichlorobenzene	19.13	146	276943	11.450	ppbV	99
105) 1,2,3-trimethylbenzene	19.27	105	372548	10.482	ppbV	99
107) 1,2-dichlorobenzene	19.40	146	258347	11.555	ppbV	99
109) indan	19.44	117	407184	10.501	ppbV	99
110) indene	19.51	115	269824	10.290	ppbV	99
112) undecane	19.94	57	345392	12.227	ppbV	99
113) 1,2,4,5-tetramethylben...	20.19	119	592540	11.581	ppbV	100
114) dodecane	20.84	57	391180	13.574	ppbV	99
115) 1,2,4-trichlorobenzene	20.83	180	264144	12.324	ppbV	100
116) naphthalene	20.95	128	510186	12.535	ppbV	100
118) benzothiophene	21.01	134	476087	11.257	ppbV	98
119) hexachlorobutadiene	21.26	225	221870	12.287	ppbV	99
120) 2-methylnaphthalene	22.09	142	262111	12.868	ppbV	100
121) 1-methylnaphthalene	22.30	142	298928	13.760	ppbV	99

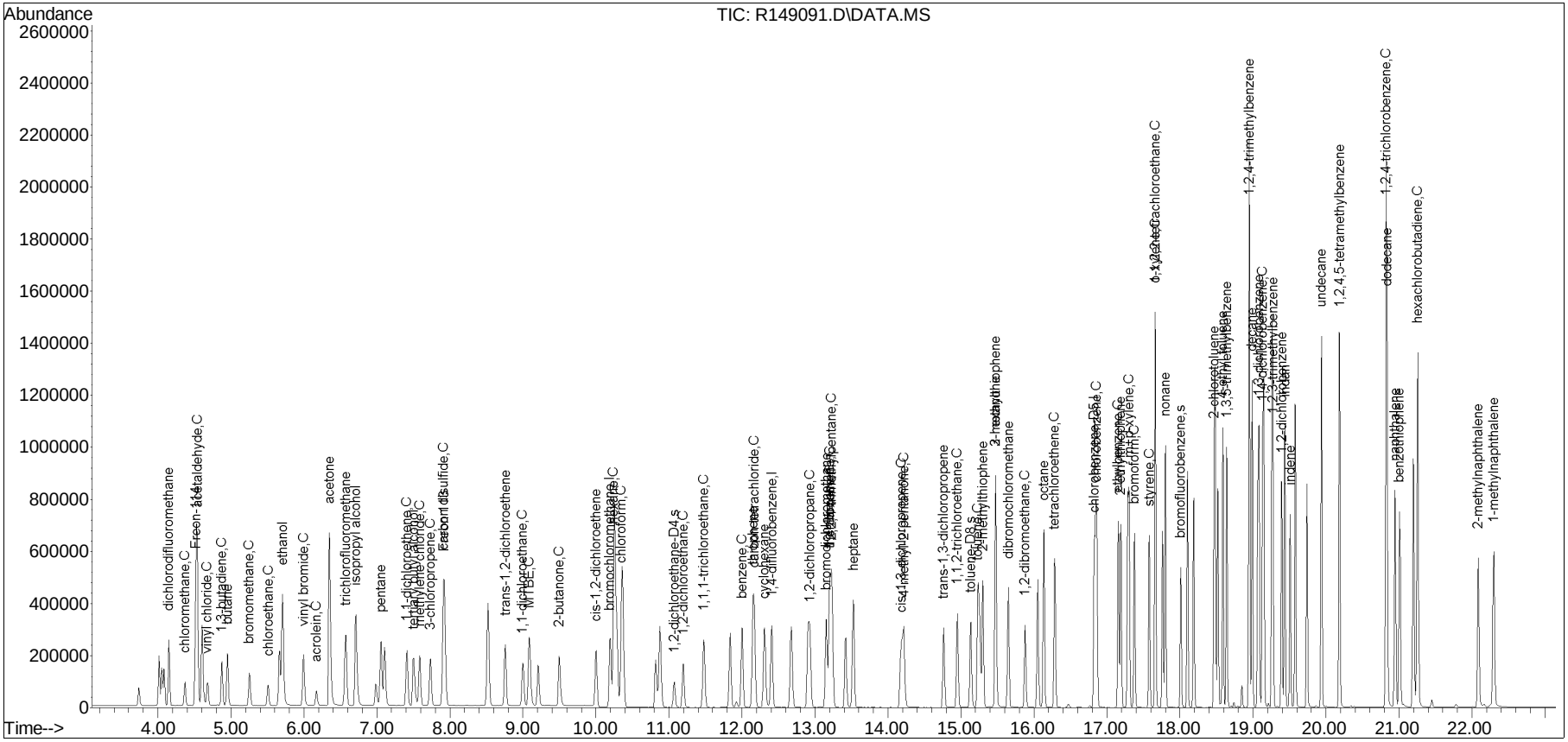
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161101K\
Data File : R149091.D
Acq On : 1 Nov 2016 9:51 am
Operator : AIRPIANO1:RY
Sample : WG947959-2,3,250,250
Misc : WG947959,ICAL12987
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 01 10:18:19 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161101K\TALL161012.M
Quant Title : TO-14A/TO-15 SIM/Full Scan Analysis
QLast Update : Thu Oct 13 09:23:01 2016
Response via : Initial Calibration

Sub List : Keyspan_TO15 - .

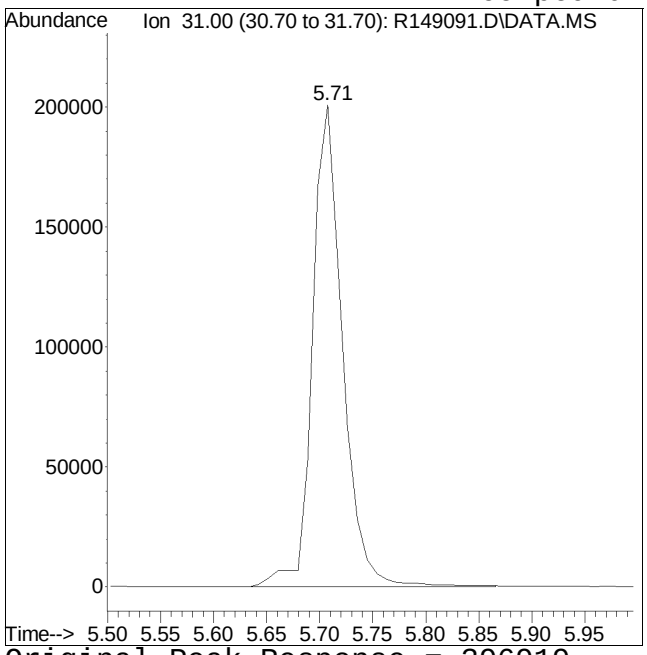


Manual Integration/Negative Proof Report

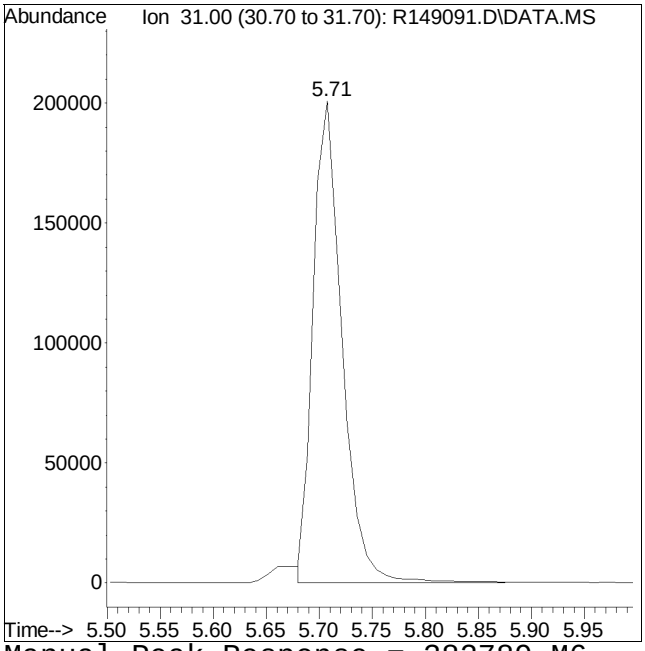
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R149091.D
Date Inj'd : 11/1/2016 9:51 am
Sample : WG947959-2,3,250,250

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 11/1/2016 10:15 am

Compound #15: ethanol



Original Peak Response = 396919



Manual Peak Response = 382789 M6

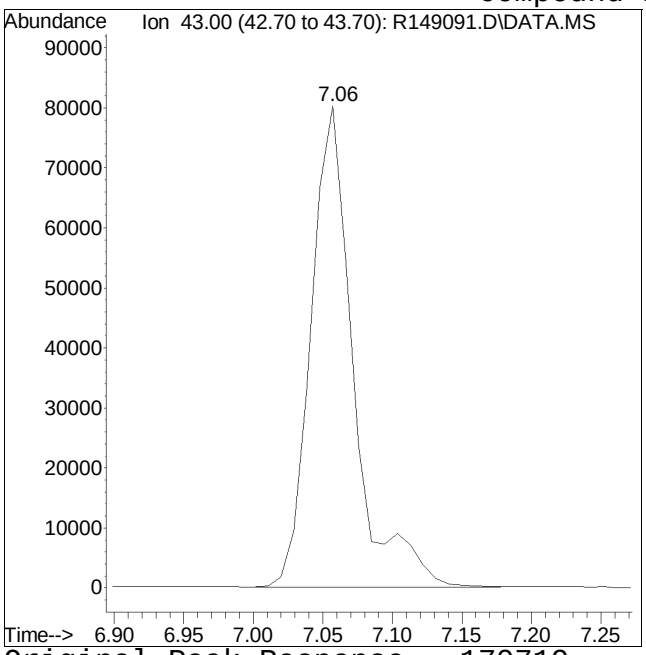
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

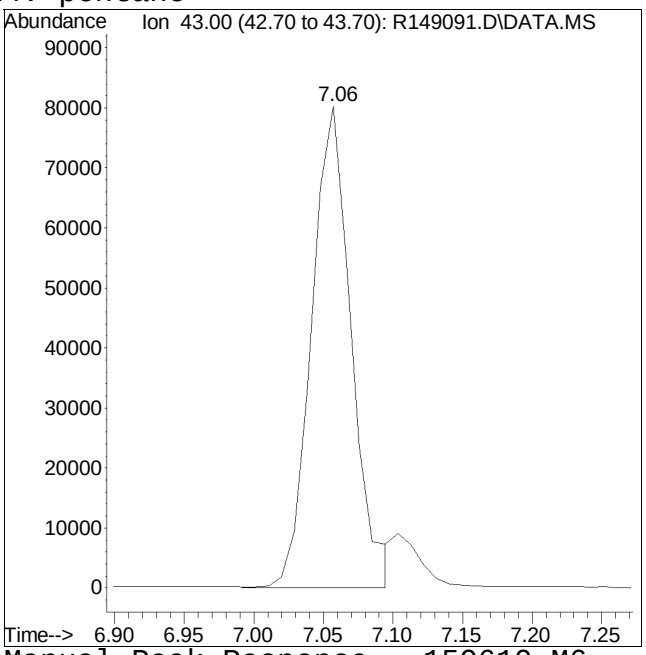
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R149091.D
Date Inj'd : 11/1/2016 9:51 am
Sample : WG947959-2,3,250,250

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 11/1/2016 10:15 am

Compound #24: pentane



Original Peak Response = 170719



Manual Peak Response = 159619 M6

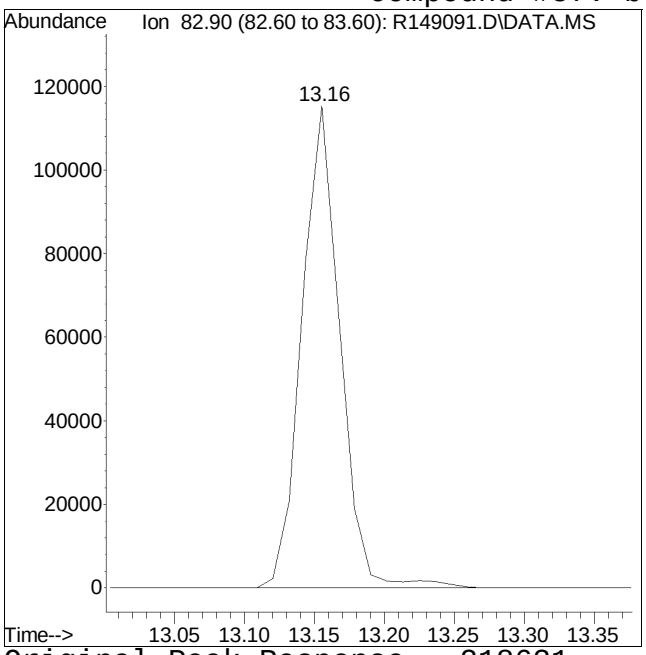
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

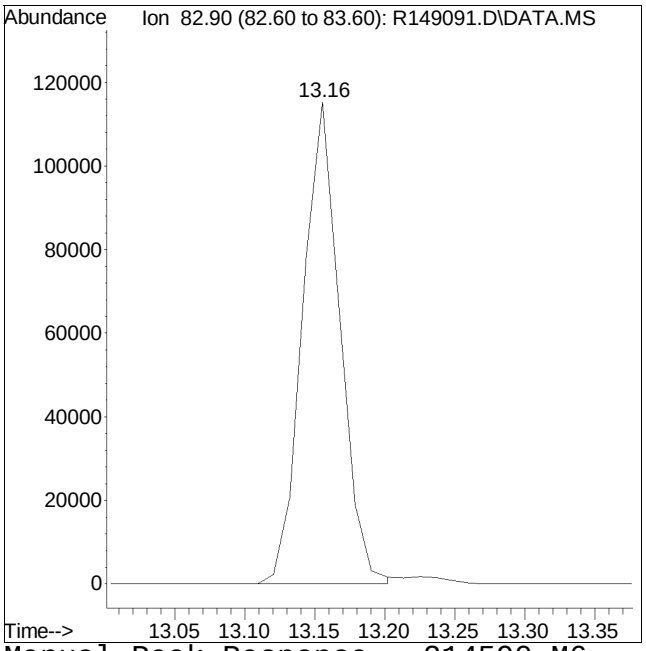
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R149091.D
Date Inj'd : 11/1/2016 9:51 am
Sample : WG947959-2,3,250,250

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 11/1/2016 10:15 am

Compound #57: bromodichloromethane



Original Peak Response = 218631



Manual Peak Response = 214590 M6

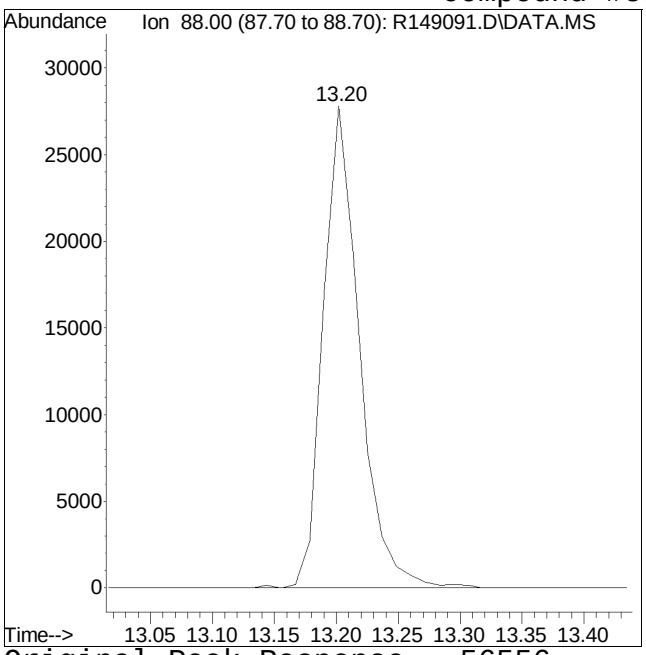
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

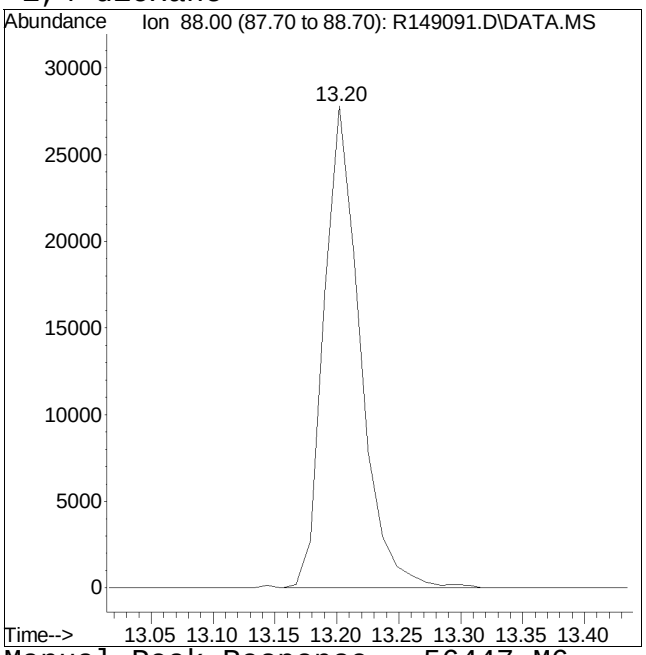
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R149091.D
Date Inj'd : 11/1/2016 9:51 am
Sample : WG947959-2,3,250,250

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 11/1/2016 10:15 am

Compound #58: 1,4-dioxane



Original Peak Response = 56556



Manual Peak Response = 56447 M6

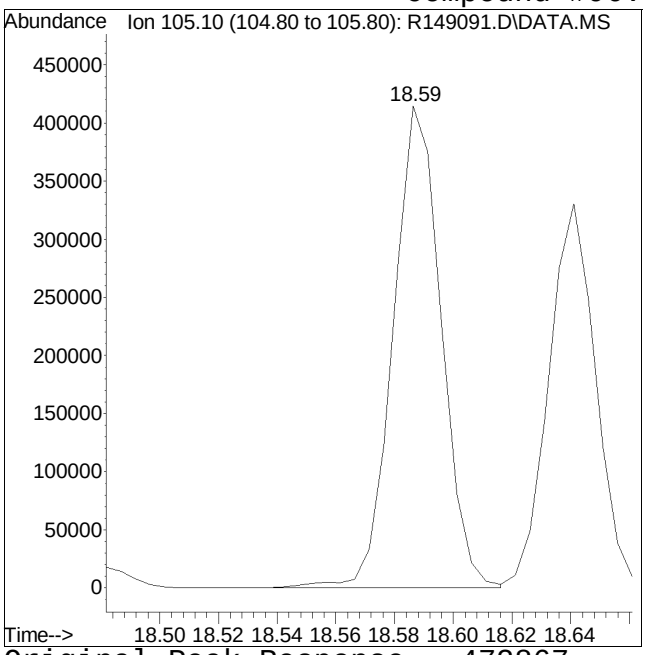
M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Manual Integration/Negative Proof Report

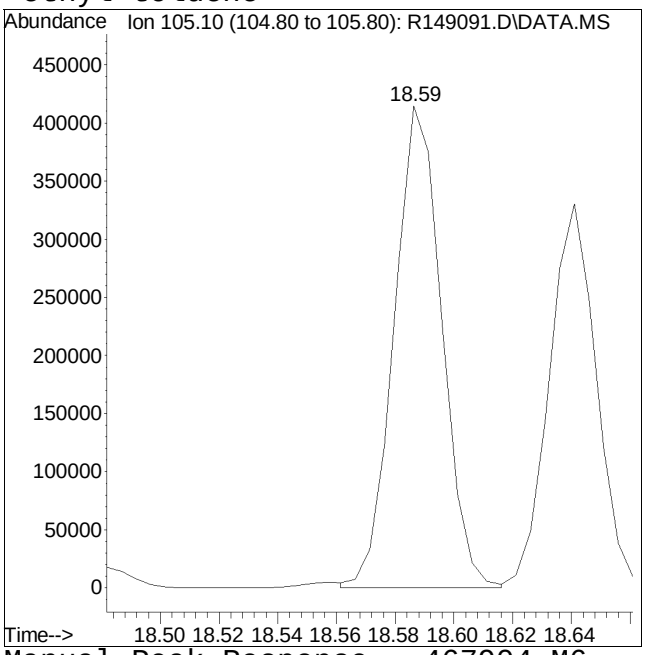
Data Path : O:\Forensics\Data\AIR1\2016Q
Data File : R149091.D
Date Inj'd : 11/1/2016 9:51 am
Sample : WG947959-2,3,250,250

Method : TALL161012.M
Operator : AIRPIANO1:RY
Instrument : Air Piano 1
Quant Date : 11/1/2016 10:15 am

Compound #96: 4-ethyl toluene



Original Peak Response = 472867



Manual Peak Response = 467904 M6

M6 = Misassignment of peak valley by automated integration (poor split of 2 peaks).

Internal Standard Area and RT Summary
Form 8

Client	: NewFields	**Lab Number**	: L1634001
Project Name	: WINTER STREET HAVERHILL	**Project Number**	: 01.0172397.00
Instrument ID	: AIRPIANO1	**Analysis Date**	: 11/01/16 09:51
Sample No	: WG947959-2	**Lab File ID**	: R149091

	Bromochloromethane		1,4-Difluorobenzene		Chlorobenzene-d5	
	Area	RT	Area	RT	Area	RT
WG947959-2	153282	10.19	240182	12.41	64184	16.82
Upper Limit	214595	10.52	336255	12.74	89858	17.15
Lower Limit	91969	9.86	144109	12.08	38510	16.49
Sample ID						
WG947959-3 LCS	154281	10.20	245074	12.41	65266	16.82
WG947959-4 LCSD	152214	10.19	239972	12.41	63980	16.82
WG947959-5 BLANK	138852	10.19	229390	12.40	61227	16.82
NFAA-01	137858	10.19	226207	12.41	61309	16.82
NFSV-04	141026	10.20	231064	12.41	63024	16.82
NFSV-07	145746	10.19	241217	12.41	67378	16.82
NFSV-05	149585	10.19	244102	12.41	66756	16.82
NFSV-05 DUP	145000	10.19	238025	12.41	65073	16.82
NFSV-06	138834	10.19	225342	12.41	61583	16.82
NFSV-08	139846	10.19	230584	12.41	62902	16.82
NFSV-03	141820	10.19	235058	12.41	64153	16.82
NFSV-02	144210	10.19	233160	12.41	64082	16.82
NFSV-01	143665	10.19	235663	12.41	67595	16.82
DUP101916	149093	10.19	246413	12.41	67892	16.82

Area Upper Limit = +40% of internal standard area
Area Lower Limit = - 40% of internal standard area

RT Upper Limit = +0.33 minutes of internal standard RT
RT Lower Limit = -0.33 minutes of internal standard RT

* Values outside of QC limits

PIANO Volatiles in Air by TO15-SIM

Leak Check

---------- Leak Check Report ----------

11/8/2016 4:50:29 PM
Leak Check for C:\Smart\161108PIANO.SEQ
Report File: C:\Smart\161108PIANO.LCR
Leak Check Method: Evacuation
Pressurize/Evacuate time(sec) 5
Equilibration time(sec) 10
Maintanance time(sec) 30

	Sample Inlet	Auto1	Auto2	Auto3	Start	End	Rate(PSI/Min.)	
L1634001-01	1	5	---	---	---	1.6	1.6	0.00
02	1	6	---	---	---	0.8	0.9	0.20
03	1	7	---	---	---	0.7	0.9	0.40
04	1	8	---	---	---	0.8	0.9	0.20
05	1	9	---	---	---	0.8	0.9	0.20
06	1	10	---	---	---	0.7	0.9	0.40
07	1	11	---	---	---	0.7	0.8	0.20
08	1	12	---	---	---	0.8	1.0	0.40
09	1	13	---	---	---	1.0	1.2	0.40
10	1	14	---	---	---	1.0	1.2	0.40

Canister Dilution Worksheet

Alpha Analytical, Inc.
Canister Dilution Worksheet

	NJDEP Required Information							Pressurization Dilution				Can Dilution				Instrument Dilution				
Sample ID	Can size, L	$P_{1,}$ in Hg	$P_{1,}$ atm	$V_{1,}$ L	$P_{2,}$ in Hg	$P_{2,}$ atm	$V_{2,}$ L	$P_{1,}$ psia	$P_{2,}$ psia	Dilution factor	Gas Used*	Volume injected, mL	Final Pressure, psia	Volume of Dilution Gas in Can, L	Can dilution factor	Volume of Bag or Can Analyzed, mL	Instrument Dilution Factor	Final Dilution Factor	Final Volume Injected, mL	Analyst Initials
L1634001-01D	6.0	-18.31	0.39	2.33	-9.74	0.67	4.05	5.7	9.9	1.74	N2	1000	14.7	1.00	1.00	250	1.00	1.74	143.9394	MJB

*N2 = Nitrogen and H2= Hydrogen

Analyst data input fields

Analyst Comments:

in Hg = ((psia/14.67)*29.94)-29.94 atm =psia/14.67 psig=psia - 14.67 psia = dilution instrument reading

Form# 117-05
11/02/2016 10:38:54

Work Group

ALPHA ANALYTICAL LABORATORIES, INC.

Alpha WORK GROUP REPORT (wk02)

Nov 10 2016, 02:30 pm

Work Group: WG948457 for Department: 3 GC/MS

Created: 02-NOV-16 Due: Operator: ry

Sample	Client ID	C	Product	Matrix	Stat	UA	HOLD	DUE	PR	Location
L1634001-01	NFAA-01	S	NF-TO15SIM-PIANO	AIR	DONE	U	1118	1111	S0	Can-6
L1634001-02	NFSV-04	S	NF-TO15SIM-PIANO	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1634001-03	NFSV-07	S	NF-TO15SIM-PIANO	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1634001-04	NFSV-05	S	NF-TO15SIM-PIANO	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1634001-05	NFSV-06	S	NF-TO15SIM-PIANO	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1634001-06	NFSV-08	S	NF-TO15SIM-PIANO	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1634001-07	NFSV-03	S	NF-TO15SIM-PIANO	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1634001-08	NFSV-02	S	NF-TO15SIM-PIANO	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1634001-09	NFSV-01	S	NF-TO15SIM-PIANO	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
L1634001-10	DUP101916	S	NF-TO15SIM-PIANO	SOIL_VAPOR	DONE	U	1118	1111	S0	Can-2.7
WG948457-1	MS BFB Tune Standard	S	NF-TO15SIM-PIANO	SOIL_VAPOR	DONE	U				
WG948457-1	MS BFB Tune Standard	S	NF-TO15SIM-PIANO	AIR	DONE	U				
WG948457-2	Continuing Calibrati	S	NF-TO15SIM-PIANO	SOIL_VAPOR	DONE	U				
WG948457-2	Continuing Calibrati	S	NF-TO15SIM-PIANO	AIR	DONE	U				
WG948457-3	Laboratory Control S	S	NF-TO15SIM-PIANO	AIR	DONE	U				
WG948457-3	Laboratory Control S	S	NF-TO15SIM-PIANO	SOIL_VAPOR	DONE	U				
WG948457-4	LCS Duplicate	S	NF-TO15SIM-PIANO	AIR	DONE	U				
WG948457-4	LCS Duplicate	S	NF-TO15SIM-PIANO	SOIL_VAPOR	DONE	U				
WG948457-5	Laboratory Method Bl	S	NF-TO15SIM-PIANO	SOIL_VAPOR	DONE	U				
WG948457-5	Laboratory Method Bl	S	NF-TO15SIM-PIANO	AIR	DONE	U				
WG948457-6	Duplicate Sample	S	NF-TO15SIM-PIANO	AIR	DONE	U				
WG948457-6	Duplicate Sample	S	NF-TO15SIM-PIANO	SOIL_VAPOR	DONE	U				
WG948457-7	Continuing Calibrati	S	NF-TO15SIM-PIANO	SOIL_VAPOR	DONE	U				
WG948457-7	Continuing Calibrati	S	NF-TO15SIM-PIANO	AIR	DONE	U				

Comments:

WG948457-4	WG948457-3
WG948457-6	L1634001-04

Sequence Logs

----------SEQUENCE TABLE ----------

Sequence Name: C:\Smart\161028PIANO_ICAL.SEQ
Date: 11-10-2016
Time: 10:42:29
Int. Std Volume: 100 cc

Sample Name	Inlet #	Auto Pos	Samp Vol.	Cal Std Vol.	Method	Time
TA1102801	1	1	250	100	C:\Smart\Alpha-TO15.CTD	12:00
INFTO15PIANO0.025	1	5	125	100	C:\Smart\Alpha-PIANO.CTD	12:00
INFTO15PIANO0.05	1	5	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
INFTO15PIANO0.1	1	6	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
INFTO15PIANO0.5	1	7	125	100	C:\Smart\Alpha-PIANO.CTD	12:00
INFTO15PIANO1.0	1	7	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
INFTO15PIANO1.0	1	7	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
INFTO15PIANO2.5	1	8	125	100	C:\Smart\Alpha-PIANO.CTD	12:00
INFTO15PIANO5.0	1	8	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
INFTO15PIANO10.0	1	9	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
INFTO15PIANO25.0	1	10	125	100	C:\Smart\Alpha-PIANO.CTD	12:00
INFTO15PIANO50.0	1	10	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
BA1102801	1	1	250	100	C:\Smart\Alpha-TO15.CTD	12:00
BA1102802	1	1	250	100	C:\Smart\Alpha-TO15.CTD	12:00
CNFTO15PIANO5.0	1	2	125	100	C:\Smart\Alpha-PIANO.CTD	12:00

Alpha Analytical Air Lab
Instrument Run Log

Instrument ID: Airpiano 1

Internal Standard/Surrogate IDs: SS16-022 / CSS15-001

Date: 10/28/16

Internal Standard/Surrogate Volume: 100 ml

Analyst Initials: RY/MR

Sequence File Name: 161028.S

SIM ICAL# 12988 PIANO ICAL # Full Scan ICAL# 12987 TO12 ICAL# APH ICAL#

AS Position #	Sample ID	Acquisition Method	Data File ID	Standard ID or Batch ID #, ICAL Ref #	Comment (s)	Product/s ublist	Check Pass ? Y/N
1	TA1102801	TO15_SFS	R149057	250ml	TUNE		
5	INF-TO15SIM-PIANO0.025	PIANO	R149058	SS16-031F 125ML 0.025			
5	INF-TO15SIM-PIANO0.05	PIANO	R149059	SS16-031F 250ML 0.05			
6	INF-TO15SIM-PIANO0.1	PIANO	R149060	SS16-031E 250ML 0.1			
7	INF-TO15SIM-PIANO0.5	PIANO	R149061	SS16-031D 125ML 0.5	CHEMSTATION SHUT DOWN		
7	INF-TO15SIM-PIANO1.0	PIANO	R149062	SS16-031D 250ML 1.0	RE-RUN DNU		
7	INF-TO15SIM-PIANO1.0	PIANO	R149063	SS16-031D 250ML 1.0			
8	INF-TO15SIM-PIANO2.5	PIANO	R149064	SS16-031C 125ML 2.5			
8	INF-TO15SIM-PIANO5.0	PIANO	R149065	SS16-031C 250ML 5.0			
9	INF-TO15SIM-PIANO10	PIANO	R149066	SS16-031B 250ML 10.0			
10	INF-TO15SIM-PIANO25	PIANO	R149067	SS16-031A 125ML 25.0			
10	INF-TO15SIM-PIANO50	PIANO	R149068	SS16-031A 250ML 50.0			
1	BA1102801	TO15_SFS	R149069	250ml			
8		Pause					
1	BA1102802	TO15_SFS	R149070	250ml			
2	CNF-TO15SIM-PIANO5.0	PIANO	R149071	SS16-029B 125ML 5.0			

Alpha Analytical Air Lab
Instrument Run Log

Date(s) of Initial Calibration: Refer to Initial Calibration Summary Form 6

Date Acquired: see Instrument Performance Check Summary and/or quantitation report.

Sample ID information: L1301234-01,3,250,2{ Lab sample ID, dept #, actual volume analyzed (mL), nominal volume analyzed (mL) }

Dilution Factor: See Form 1 report, or divide nominal volume by actual volume analyzed

----------SEQUENCE TABLE ----------

Sequence Name: C:\Smart\161108PIANO.SEQ
Date: 11-09-2016
Time: 12:29:01
Int. Std Volume: 100 cc

Sample Name	Inlet #	Auto Pos	Samp Vol.	Cal Std Vol.	Method	Time
TA1110801	1	1	250	100	C:\Smart\Alpha-TO15.CTD	12:00
CNFTO15PIANO5.0	1	2	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
LCSNFTO15PIANO5.0	1	3	125	100	C:\Smart\Alpha-PIANO.CTD	12:00
LCSDNFTO15PIANO5.0	1	3	125	100	C:\Smart\Alpha-PIANO.CTD	12:00
BA1110801	1	1	250	100	C:\Smart\Alpha-TO15.CTD	12:00
BA1110802	1	1	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
L1634001-01	1	5	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
L1634001-02	1	6	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
L1634001-03	1	7	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
L1634001-04	1	8	25	100	C:\Smart\Alpha-PIANO.CTD	12:00
L1634001-04DUP	1	8	25	100	C:\Smart\Alpha-PIANO.CTD	12:00
L1634001-05	1	9	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
L1634001-06	1	10	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
L1634001-07	1	11	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
L1634001-08	1	12	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
L1634001-09	1	13	25	100	C:\Smart\Alpha-PIANO.CTD	12:00
L1634001-10	1	14	25	100	C:\Smart\Alpha-PIANO.CTD	12:00
L1634001-01	1	5	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
L1634001-02	1	6	250	100	C:\Smart\Alpha-PIANO.CTD	12:00
CNFTO15PIANO5.0	1	2	250	100	C:\Smart\Alpha-PIANO.CTD	12:00

Alpha Analytical Air Lab
Instrument Run Log

ID: Airpiano 1

Date: 11/08/16

Analyst Initials: AR

Internal Standard/Surrogate IDs: SS16-022 / CSS15-001

Internal Standard/Surrogate Volume: 100 ml

Sequence File Name: 161108.S

SIM ICAL# 12988 PIANO ICAL # Full Scan ICAL# 12987 TO12 ICAL# APH ICAL#

AS Position #	Sample ID	Acquisition Method	Data File ID	Standard ID or Batch ID #, ICAL Ref #	Comment (s)	Product/ sublist	Check Pass ? Y/N
1	TA1110801	TO15_SFS	R149169	250ml	TUNE		NA
2	CNF-TO15SIM-PIANO5.0	PIANO	R149170	SS16-031C 250ML 5.0	CC		NA
		Pause					NA
3	LCSNF-TO15SIM-PIANO5.0	PIANO	R149171	SS16-032A 125ML 5.0	LCS		NA
3	LCSDNF-TO15SIM-PIANO5.0	PIANO	R149172	SS16-032A 125ML 5.0	LCSD		NA
		Pause					NA
4	BA1110801	TO15_SFS	R149173	250ml			NA
4	BA1110802	PIANO	R149174	250ml	BLANK		NA
		Pause					NA
5	L1634001-01D,3,143.9394,250	PIANO	R149175	WG948457,ICAL13049		NF PIANO	Y
6	L1634001-02,3,250,250	PIANO	R149176	WG948457,ICAL13049		NF PIANO	Y
7	L1634001-03,3,250,250	PIANO	R149177	WG948457,ICAL13049		NF PIANO	Y
8	L1634001-04D,3,25,250	PIANO	R149178	WG948457,ICAL13049		NF PIANO	Y
8	WG948457-6D,3,25,250	PIANO	R149179	WG948457,ICAL13049	DUP OF L1634001-04	NF PIANO	Y
9	L1634001-05,3,250,250	PIANO	R149180	WG948457,ICAL13049		NF PIANO	Y
10	L1634001-06,3,250,250	PIANO	R149181	WG948457,ICAL13049		NF PIANO	Y
11	L1634001-07,3,250,250	PIANO	R149182	WG948457,ICAL13049		NF PIANO	Y
12	L1634001-08,3,250,250	PIANO	R149183	WG948457,ICAL13049		NF PIANO	Y
13	L1634001-09D,3,25,250	PIANO	R149184	WG948457,ICAL13049		NF PIANO	Y
14	L1634001-10D,3,25,250	PIANO	R149185	WG948457,ICAL13049		NF PIANO	Y
2	CNF-TO15SIM-PIANO5.0	PIANO	R149186	SS16-031C 250ML 5.0	CLOSING CC	NF PIANO	Y

Alpha Analytical Air Lab
Instrument Run Log

Date(s) of Initial Calibration: Refer to Initial Calibration Summary Form 6

Date Acquired: see Instrument Performance Check Summary and/or quantitation report.

Sample ID information: L1301234-01,3,250,2 { Lab sample ID, dept #, actual volume analyzed (mL), nominal volume analyzed (mL) }

Dilution Factor: See Form 1 report, or divide nominal volume by actual volume analyzed

Sample Raw Data and Results Summary

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-01D	Date Collected	: 10/19/16 18:42
Client ID	: NFAA-01	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 17:24
Sample Matrix	: AIR	Dilution Factor	: 1.737
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149175	Instrument ID	: AIRPIANO1
Sample Amount	: 144 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
106-99-0	1,3-Butadiene	0.021	0.043	0.017	0.046	0.096	0.039	J
78-78-4	Isopentane	1.34	0.043	0.017	3.95	0.128	0.051	
109-67-1	1-Pentene	0.064	0.043	0.017	0.184	0.124	0.050	
563-46-2	2-Methyl-1-Butene	0.106	0.043	0.017	0.304	0.124	0.050	
109-66-0	Pentane	0.580	0.043	0.017	1.71	0.128	0.051	
646-04-8	trans-2-Pentene	0.111	0.043	0.017	0.318	0.124	0.050	
627-20-3	cis-2-Pentene	0.064	0.043	0.017	0.184	0.124	0.050	
75-65-0	Tertiary Butanol	0.040	0.043	0.017	0.121	0.132	0.053	J
287-92-3	Cyclopentane	ND	0.043	0.017	ND	0.124	0.050	U
79-29-8	2,3-Dimethylbutane	ND	0.043	0.017	ND	0.153	0.061	U
107-83-5	2-Methylpentane	0.245	0.043	0.017	0.864	0.153	0.061	
1634-04-4	Methyl tert butyl ether	ND	0.043	0.017	ND	0.156	0.063	U
96-14-0	3-Methylpentane	0.142	0.043	0.017	0.501	0.153	0.061	
592-41-6	1-Hexene	ND	0.043	0.017	ND	0.149	0.060	U
110-54-3	n-Hexane	0.175	0.043	0.017	0.617	0.153	0.061	
108-20-3	Isopropyl Ether	ND	0.043	0.017	ND	0.181	0.073	U
637-92-3	Ethyl-Tert-Butyl-Ether	ND	0.043	0.017	ND	0.181	0.073	U
590-35-2	2,2-Dimethylpentane	ND	0.043	0.017	ND	0.178	0.071	U
96-37-7	Methylcyclopentane	0.111	0.043	0.017	0.382	0.149	0.060	
108-08-7	2,4-Dimethylpentane	0.031	0.043	0.017	0.128	0.178	0.071	J
107-06-2	1,2-Dichloroethane	ND	0.043	0.017	ND	0.176	0.070	U
110-82-7	Cyclohexane	0.054	0.043	0.017	0.185	0.149	0.060	
591-76-4	2-Methylhexane	0.083	0.043	0.017	0.342	0.178	0.071	
71-43-2	Benzene	0.189	0.043	0.017	0.604	0.139	0.056	
565-59-3	2,3-Dimethylpentane	0.043	0.043	0.017	0.178	0.178	0.071	
110-02-1	Thiophene	ND	0.043	0.017	ND	0.149	0.060	U
589-34-4	3-Methylhexane	0.106	0.043	0.017	0.434	0.178	0.071	
994-05-8	Tertiary-Amyl Methyl Ether	ND	0.043	0.017	ND	0.181	0.073	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-01D	Date Collected	: 10/19/16 18:42
Client ID	: NFAA-01	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 17:24
Sample Matrix	: AIR	Dilution Factor	: 1.737
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149175	Instrument ID	: AIRPIANO1
Sample Amount	: 144 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
592-76-7	1-Heptene	ND	0.043	0.017	ND	0.174	0.070	U
540-84-1	Isooctane	0.122	0.043	0.017	0.570	0.203	0.081	
142-82-5	Heptane	0.087	0.043	0.017	0.356	0.178	0.071	
108-87-2	Methylcyclohexane	0.049	0.043	0.017	0.195	0.174	0.070	
592-13-2	2,5-Dimethylhexane	ND	0.043	0.017	ND	0.203	0.081	U
589-43-5/564-02-3	2,4-Dimethylhexane/2,2,3-Trimethylpen	ND	0.087	0.043	ND	0.405	0.203	U
565-75-3	2,3,4-Trimethylpentane	0.037	0.043	0.017	0.170	0.203	0.081	J
560-21-4	2,3,3-Trimethylpentane	0.049	0.043	0.017	0.227	0.203	0.081	
584-94-1	2,3-Dimethylhexane	ND	0.043	0.017	ND	0.203	0.081	U
619-99-8	3-Ethylhexane	ND	0.043	0.017	ND	0.203	0.081	U
592-27-8	2-Methylheptane	0.021	0.043	0.017	0.097	0.203	0.081	J
589-81-1	3-Methylheptane	0.017	0.043	0.017	0.081	0.203	0.081	J
108-88-3	Toluene	0.462	0.043	0.017	1.74	0.164	0.066	
554-14-3	2-Methylthiophene	ND	0.043	0.017	ND	0.174	0.070	U
616-44-4	3-Methylthiophene	ND	0.043	0.017	ND	0.174	0.070	U
111-66-0	1-Octene	ND	0.043	0.017	ND	0.199	0.080	U
16747-50-5	1-Ethyl-1-Methylcyclopentane	ND	0.043	0.017	ND	0.199	0.080	U
111-65-9	Octane	0.059	0.043	0.017	0.276	0.203	0.081	
106-93-4	1,2-Dibromoethane	ND	0.043	0.017	ND	0.334	0.134	U
100-41-4	Ethylbenzene	0.066	0.043	0.017	0.287	0.189	0.076	
872-55-9	2-Ethylthiophene	ND	0.043	0.017	ND	0.199	0.080	U
179601-23-1	p/m-Xylene	0.172	0.087	0.017	0.747	0.377	0.076	
124-11-8	1-Nonene	ND	0.043	0.017	ND	0.224	0.090	U
111-84-2	Nonane (C9)	0.038	0.043	0.017	0.200	0.228	0.091	J
100-42-5	Styrene	ND	0.043	0.017	ND	0.185	0.074	U
95-47-6	o-Xylene	0.068	0.087	0.017	0.294	0.377	0.076	J
98-82-8	Isopropylbenzene	ND	0.043	0.017	ND	0.213	0.086	U
103-65-1	n-Propylbenzene	ND	0.043	0.017	ND	0.213	0.086	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-01D	Date Collected	: 10/19/16 18:42
Client ID	: NFAA-01	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 17:24
Sample Matrix	: AIR	Dilution Factor	: 1.737
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149175	Instrument ID	: AIRPIANO1
Sample Amount	: 144 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
620-14-4	1-Methyl-3-Ethylbenzene	ND	0.087	0.043	ND	0.427	0.213	U
622-96-8	1-Methyl-4-Ethylbenzene	ND	0.043	0.017	ND	0.213	0.086	U
108-67-8	1,3,5-Trimethylbenzene	ND	0.043	0.017	ND	0.213	0.086	U
872-05-9	1-Decene	ND	0.087	0.043	ND	0.498	0.249	U
611-14-3	1-Methyl-2-Ethylbenzene	ND	0.087	0.043	ND	0.427	0.213	U
124-18-5	Decane (C10)	0.109	0.087	0.043	0.634	0.505	0.253	
95-63-6	1,2,4-Trimethylbenzene	0.050	0.087	0.043	0.248	0.427	0.213	J
135-98-8	sec-Butylbenzene	ND	0.087	0.043	ND	0.476	0.238	U
535-77-3	1-Methyl-3-Isopropylbenzene	ND	0.087	0.043	ND	0.476	0.238	U
99-87-6	1-Methyl-4-Isopropylbenzene	ND	0.087	0.043	ND	0.476	0.238	U
527-84-4	1-Methyl-2-Isopropylbenzene	ND	0.087	0.043	ND	0.476	0.238	U
496-11-7	Indane	ND	0.087	0.043	ND	0.420	0.210	U
95-13-6	Indene	ND	0.087	0.043	ND	0.413	0.206	U
1074-43-7	1-Methyl-3-N-Propylbenzene	ND	0.087	0.043	ND	0.476	0.238	U
1074-55-1	1-Methyl-4-N-Propylbenzene	ND	0.087	0.043	ND	0.476	0.238	U
104-51-8	n-Butylbenzene	ND	0.087	0.043	ND	0.476	0.238	U
934-80-5	1,2-Dimethyl-4-Ethylbenzene	ND	0.087	0.043	ND	0.476	0.238	U
135-01-3	1,2-Diethylbenzene	ND	0.087	0.043	ND	0.476	0.238	U
1074-17-5	1-Methyl-2-N-Propylbenzene	ND	0.087	0.043	ND	0.476	0.238	U
1758-88-9	1,4-Dimethyl-2-Ethylbenzene	ND	0.087	0.043	ND	0.476	0.238	U
1120-21-4	Undecane	ND	0.087	0.043	ND	0.555	0.277	U
874-41-9	1,3-Dimethyl-4-Ethylbenzene	ND	0.087	0.043	ND	0.476	0.238	U
934-74-7	1,3-Dimethyl-5-Ethylbenzene	ND	0.087	0.043	ND	0.476	0.238	U
2870-04-4	1,3-Dimethyl-2-Ethylbenzene	ND	0.087	0.043	ND	0.476	0.238	U
933-98-2	1,2-Dimethyl-3-Ethylbenzene	ND	0.087	0.043	ND	0.476	0.238	U
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.087	0.043	ND	0.476	0.238	U
538-68-1	N-Pentylbenzene	ND	0.087	0.043	ND	0.526	0.263	U
112-40-3	Dodecane (C12)	0.094	0.174	0.087	0.653	1.21	0.605	J

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-01D	Date Collected	: 10/19/16 18:42
Client ID	: NFAA-01	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 17:24
Sample Matrix	: AIR	Dilution Factor	: 1.737
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149175	Instrument ID	: AIRPIANO1
Sample Amount	: 144 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
91-20-3	Naphthalene	ND	0.087	0.043	ND	0.455	0.228	U
95-15-8	Benzothiophene	ND	0.174	0.087	ND	0.955	0.476	U
12108-13-3	MMT	ND	0.174	0.087	ND	1.55	0.774	U
629-50-5	Tridecane	ND	1.74	0.087	ND	13.1	0.655	U
91-57-6	2-Methylnaphthalene	ND	0.868	0.087	ND	5.05	0.505	U
90-12-0	1-Methylnaphthalene	ND	0.868	0.087	ND	5.05	0.505	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149175.D
Acq On : 8 Nov 2016 5:24 pm
Operator : AIRPIANO1:RY
Sample : L1634001-01D,3,143.9394,250
Misc : WG948457,ICAL13049
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 10 10:47:31 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.202	49	131433	10.000	ppbV	0.00
Standard Area = 123393			Recovery = 106.52%			
27) 1,4-difluorbenzene	14.201	114	276659	10.000	ppbV	0.00
Standard Area = 263318			Recovery = 105.07%			
54) chlorobenzene-D5	27.633	117	206153	10.000	ppbV	0.00
Standard Area = 190793			Recovery = 108.05%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.619	65	80425	9.792	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 97.92%			
46) Toluene-D8	20.948	98	208100	9.859	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.59%			
62) 4-Bromofluorobenzene (...	34.334	95	104952	9.281	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 92.81%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.710	54	84	0.012	ppbV #	5
4) Isopentane	5.878	41	9814	0.771	ppbV	95
5) 1-Pentene	6.194	42	530	0.037	ppbV	96
6) 2-Methyl-1-butene	6.362	55	1042	0.061	ppbV	86
7) Pentane	6.468	43	7273	0.334	ppbV	98
9) 2-Pentene (trans)	6.668	55	1056	0.064	ppbV	87
10) 2-Pentene (cis)	6.889	55	567	0.037	ppbV	79
11) Tertiary butanol	6.920	59	565	0.023	ppbV #	15
12) Cyclopentane	0.000		0	N.D.	d	
13) 2,3-Dimethylbutane	0.000		0	N.D.	d	
14) 2-Methylpentane	8.820	43	3482M6	0.141	ppbV	
15) MTBE	0.000		0	N.D.	d	
16) 3-Methylpentane	9.465	57	1336	0.082	ppbV	92
17) 1-Hexene	0.000		0	N.D.	d	
18) Hexane	10.286	57	1407	0.101	ppbV #	59
19) Diisopropyl ether	0.000		0	N.D.	d	
20) Ethyl tertiary butyl e...	0.000		0	N.D.	d	
21) 2,2-Dimethylpentane	0.000		0	N.D.	d	
23) Methylcyclopentane	11.831	56	1103	0.064	ppbV	83
24) 2,4-Dimethylpentane	11.986	43	399	0.018	ppbV	96
25) 1,2-Dichloroethane	0.000		0	N.D.	d	
26) Cyclohexane	13.909	56	416	0.031	ppbV	92
28) 2-Methylhexane	14.391	43	1128	0.048	ppbV	72

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149175.D
Acq On : 8 Nov 2016 5:24 pm
Operator : AIRPIANO1:RY
Sample : L1634001-01D,3,143.9394,250
Misc : WG948457,ICAL13049
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 10 10:47:31 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
29) Benzene	13.316	78	2878	0.109	ppbV	88
30) 2,3-Dimethylpentane	14.548	56	421	0.025	ppbV #	31
31) Thiophene	0.000		0	N.D.	d	
32) 3-Methylhexane	15.018	43	1118	0.061	ppbV	87
33) TAME	0.000		0	N.D.	d	
34) 1-Heptene	0.000		0	N.D.	d	
35) Isooctane	15.993	57	2911	0.070	ppbV	88
36) Heptane	16.788	43	893	0.050	ppbV	87
37) Methylcyclohexane	18.479	83	381	0.028	ppbV	83
38) 2,5-Dimethylhexane	19.308		0	N.D.		
39) 2,4-Dimethyhexane / 2,...	19.487	57	290	0.011	ppbV #	31
40) 2,3,4-Trimethylpentane	20.850	43	592	0.021	ppbV	85
41) 2,3,3-Trimethylpentane	21.244	43	760	0.028	ppbV	84
42) 2,3-Dimethylhexane	21.706		0	N.D.		
43) 3-Ethylhexane	0.000		0	N.D.	d	
44) 2-Methylheptane	22.169	57	238	0.012	ppbV #	80
45) 3-Methylheptane	22.818	43	218	0.010	ppbV	98
47) Toluene	21.273	91	8175	0.266	ppbV	99
48) 2-Methylthiophene	0.000		0	N.D.	d	
49) 3-Methylthiophene	0.000		0	N.D.	d	
50) 1-Octene	0.000		0	N.D.	d	
51) 1-ethyl-1-methylcyclop...	0.000		0	N.D.	d	
52) Octane	25.081	43	837M4	0.034	ppbV	
53) 1,2-Dibromoethane	0.000		0	N.D.	d	
55) Ethylbenzene	29.493	91	1109	0.038	ppbV	78
56) 2-Ethylthiophene	0.000		0	N.D.	d	
57) p/m-Xylene	30.248	91	2216M1	0.099	ppbV	
58) 1-Nonene	0.000		0	N.D.	d	
59) Nonane	33.901	43	481	0.022	ppbV	97
60) Styrene	31.869		0	N.D.		
61) o-Xylene	32.265	91	898	0.039	ppbV	85
63) Isopropylbenzene	0.000		0	N.D.	d	
64) n-Propylbenzene	37.698		0	N.D.		
65) 1-Methyl-3-ethylbenzene	38.347	105	540	0.019	ppbV #	62
66) 1-Methyl-4-ethylbenzene	38.527		0	N.D.		
67) 1,3,5-Trimethylbenzene	39.008		0	N.D.		
68) 1-Decene	0.000		0	N.D.	d	
69) 1-Methyl-2-ethylbenzene	39.885		0	N.D.		
70) Decane	42.529	43	1401	0.063	ppbV	86
71) 1,2,4-Trimethylbenzene	41.159	105	725	0.029	ppbV	77

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149175.D
Acq On : 8 Nov 2016 5:24 pm
Operator : AIRPIANO1:RY
Sample : L1634001-01D,3,143.9394,250
Misc : WG948457,ICAL13049
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 10 10:47:31 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

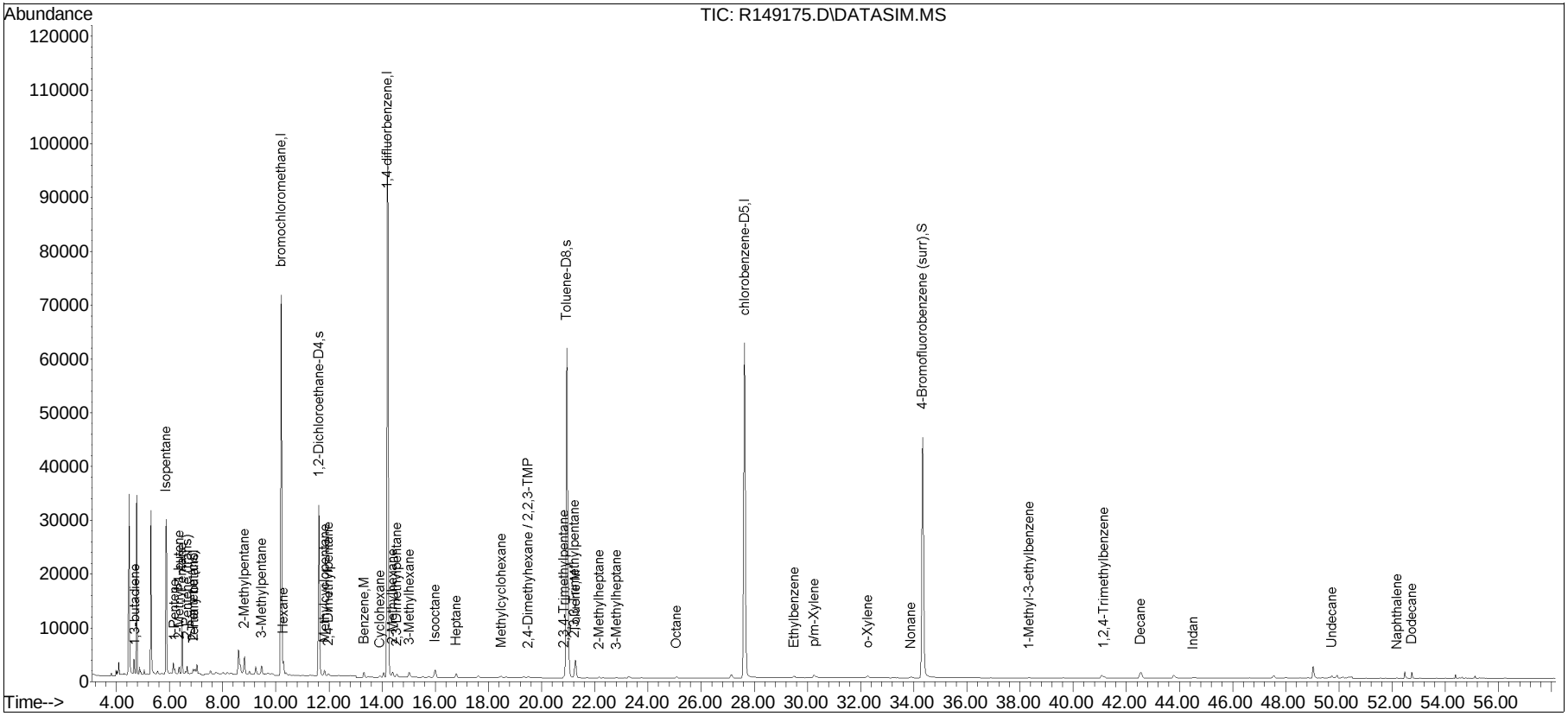
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
72) sec-Butylbenzene	0.000		0	N.D.	d	
73) 1-Methyl-3-isopropylbe...	0.000		0	N.D.	d	
74) 1-Methyl-4-isopropylbe...	0.000		0	N.D.	d	
75) 1-Methyl-2-isopropylbe...	0.000		0	N.D.	d	
76) Indan	44.511	117	301	0.016	ppbV	75
77) Indene	0.000		0	N.D.	d	
78) 1-Methyl-3-propylbenzene	0.000		0	N.D.	d	
79) 1-Methyl-4-propylbenzene	0.000		0	N.D.	d	
80) n-Butylbenzene	0.000		0	N.D.	d	
81) 1,2-Dimethyl-4-ethylbe...	46.506		0	N.D.		
82) 1,2-Diethylbenzene	46.758		0	N.D.		
83) 1-Methyl-2-propylbenzene	47.263		0	N.D.		
84) 1,4-Dimethyl-2-ethylbe...	48.032		0	N.D.		
85) Undecane	49.738	57	345M4	0.015	ppbV	
86) 1,3-Dimethyl-4-ethylbe...	48.152		0	N.D.		
87) 1,3-Dimethyl-5-ethylbe...	48.525		0	N.D.		
88) 1,3-Dimethyl-2-ethylbe...	48.897		0	N.D.		
89) 1,2-Dimethyl-3-ethylbe...	49.582		0	N.D.		
90) 1,2,4,5-Tetramethylben...	50.111		0	N.D.		
91) Pentylbenzene	51.478		0	N.D.		
92) Dodecane	52.738	43	1347	0.054	ppbV	94
93) Naphthalene	52.180	128	612	0.018	ppbV	55
94) Benzothiophene	52.325		0	N.D.		
95) MMT	0.000		0	N.D.	d	
96) Tridecane	0.000		0	N.D.	d	
97) 2-Methylnaphthalene	54.587		0	N.D.		
98) 1-Methylnaphthalene	54.886		0	N.D.		

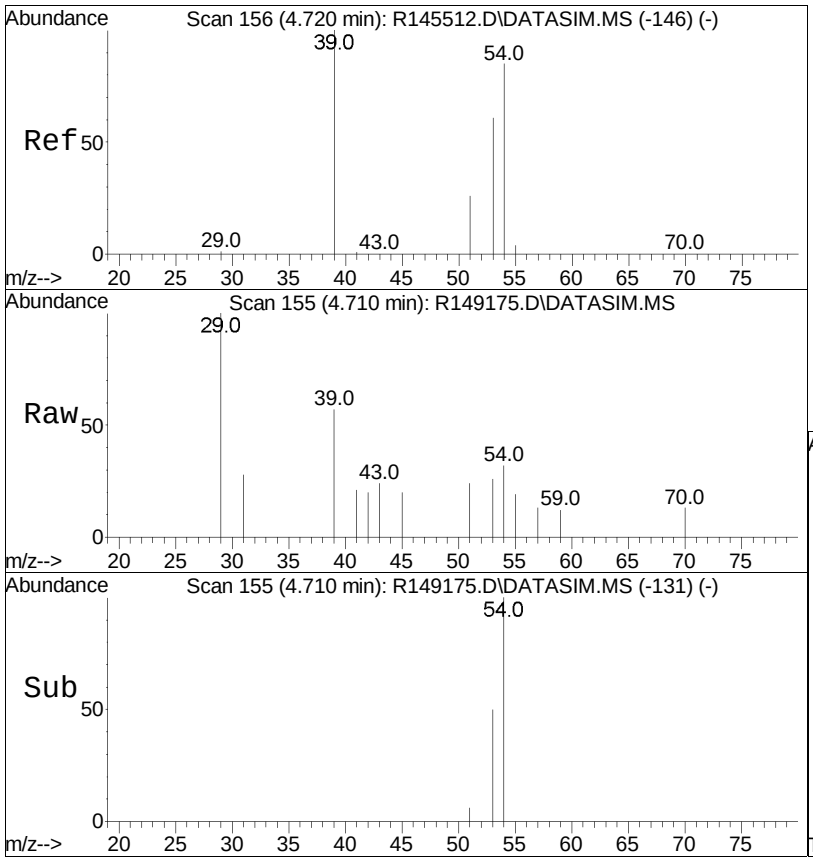
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : AIR-NF-PIANO - NF PIANO LIST161108PIANO\R149170.D

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149175.D
Acq On : 8 Nov 2016 5:24 pm
Operator : AIRPIANO1:RY
Sample : L1634001-01D,3,143.9394,250
Misc : WG948457,ICAL13049
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 10 10:47:31 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

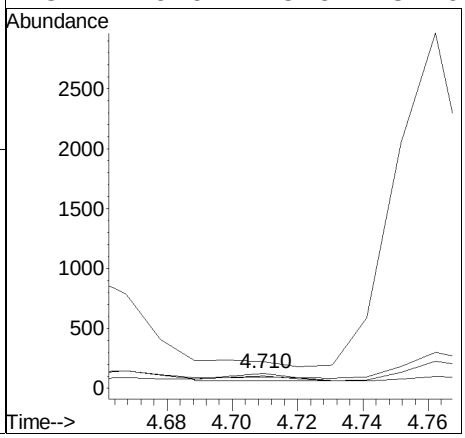


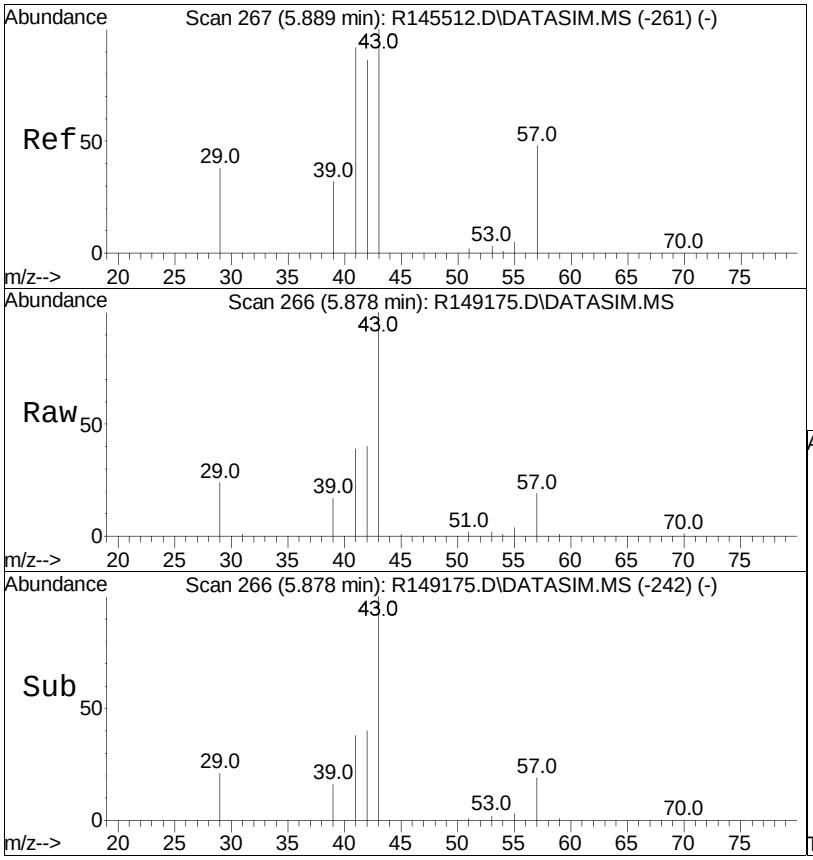


#2
1,3-butadiene
Concen: 0.01 ppbV
RT: 4.710 min Scan# 155
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 54 Resp: 84

Ion	Ratio	Lower	Upper
54	100		
39	0.0	100.0	150.0#
53	0.0	57.0	85.6#
51	0.0	25.0	37.6#

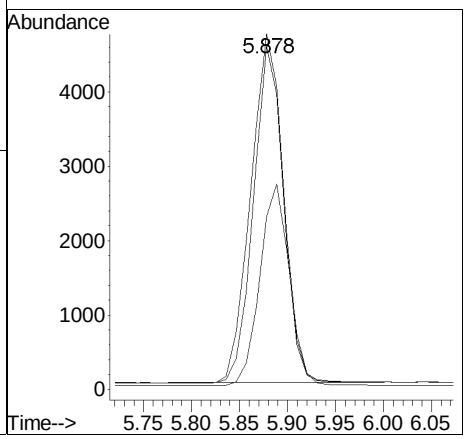


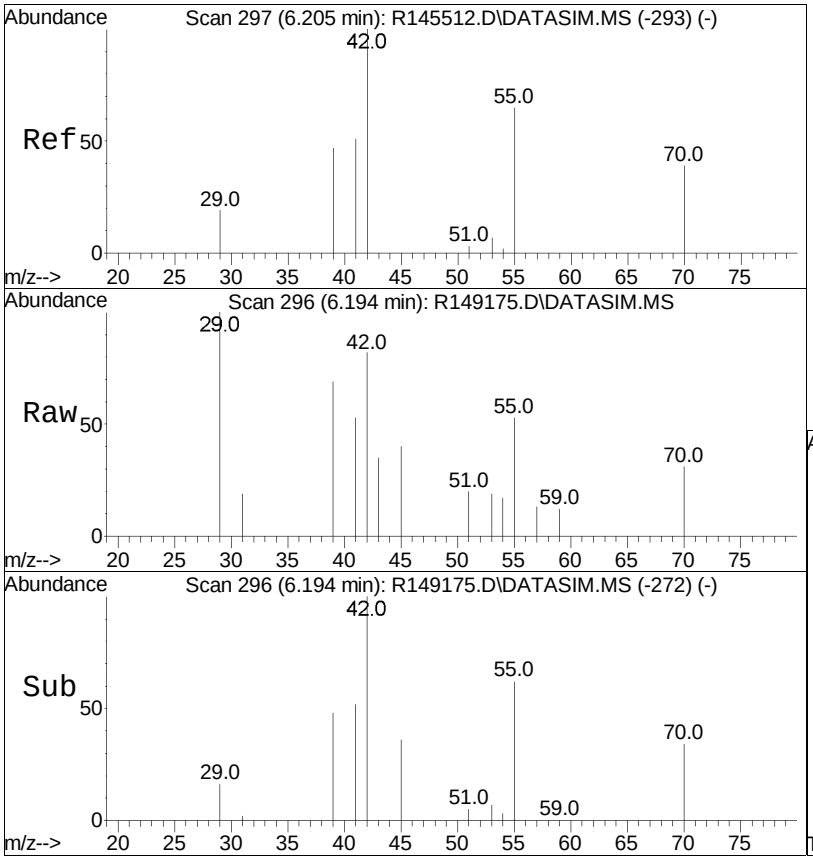


#4
Isopentane
Concen: 0.77 ppbV
RT: 5.878 min Scan# 266
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 41 Resp: 9814

Ion	Ratio	Lower	Upper
41	100		
57	50.3	31.8	71.8
42	103.5	76.7	116.7

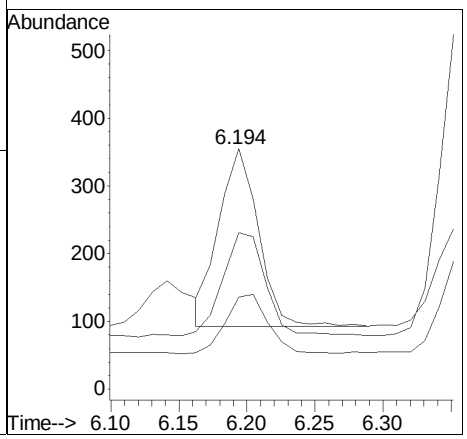


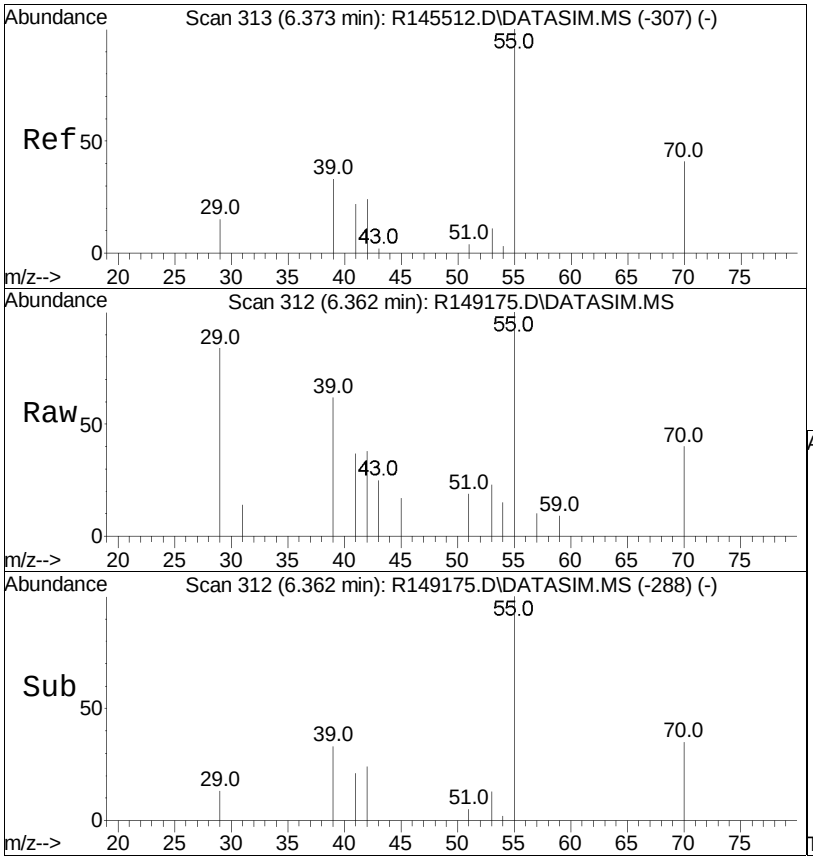


#5
1-Pentene
Concen: 0.04 ppbV
RT: 6.194 min Scan# 296
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 42 Resp: 530

Ion	Ratio	Lower	Upper
42	100		
55	65.1	43.2	83.2
70	38.3	13.6	53.6

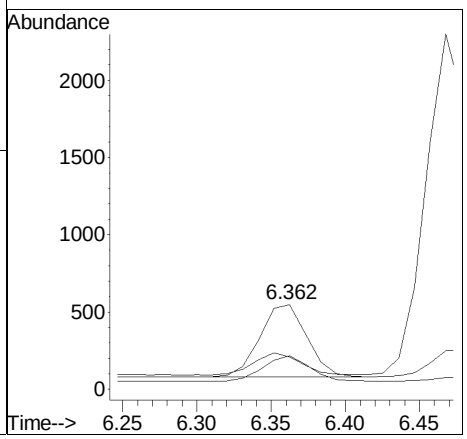


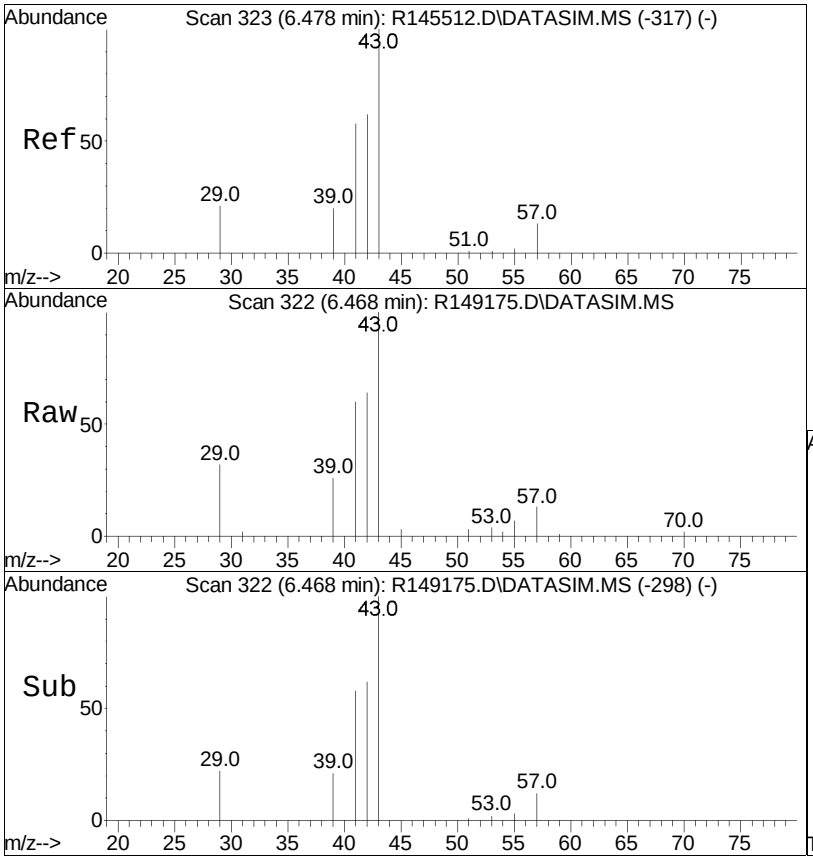


#6
2-Methyl-1-butene
Concen: 0.06 ppbV
RT: 6.362 min Scan# 312
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 55 Resp: 1042

Ion	Ratio	Lower	Upper
55	100		
70	39.8	16.1	56.1
42	38.3	5.4	45.4

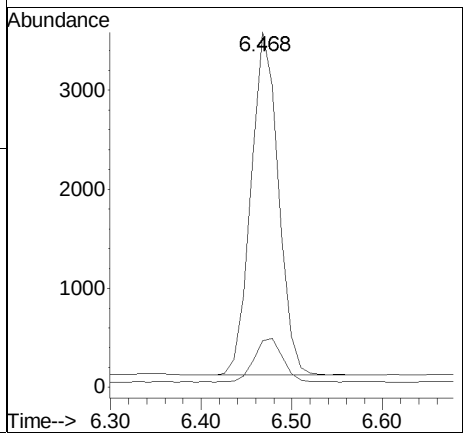


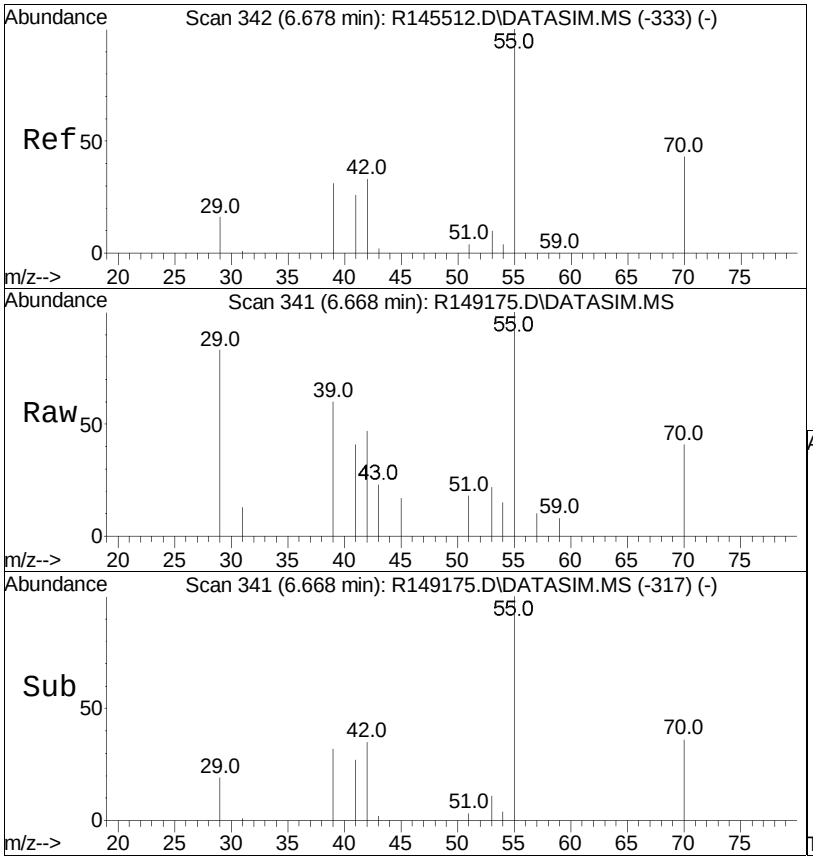


#7
Pentane
Concen: 0.33 ppbV
RT: 6.468 min Scan# 322
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 43 Resp: 7273

Ion	Ratio	Lower	Upper
43	100		
57	13.1	0.0	32.2

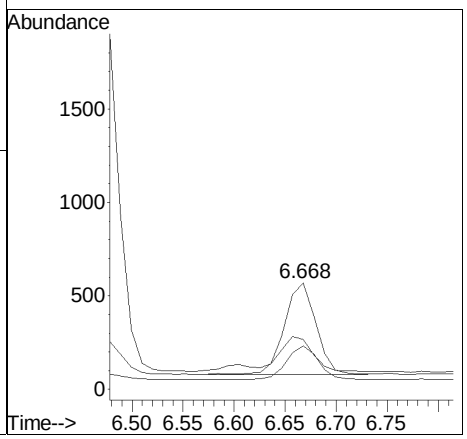


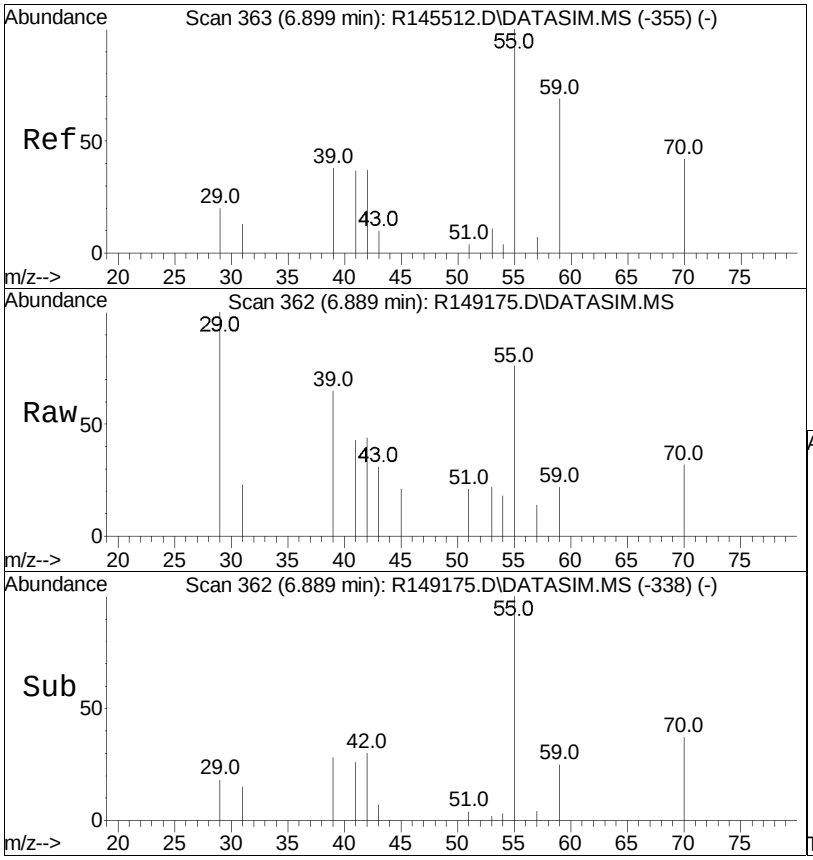


#9
2-Pentene (trans)
Concen: 0.06 ppbV
RT: 6.668 min Scan# 341
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 55 Resp: 1056

Ion	Ratio	Lower	Upper
55	100		
70	40.9	17.7	57.7
42	46.9	14.5	54.5

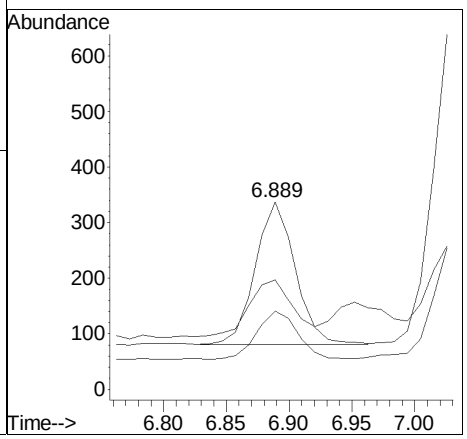


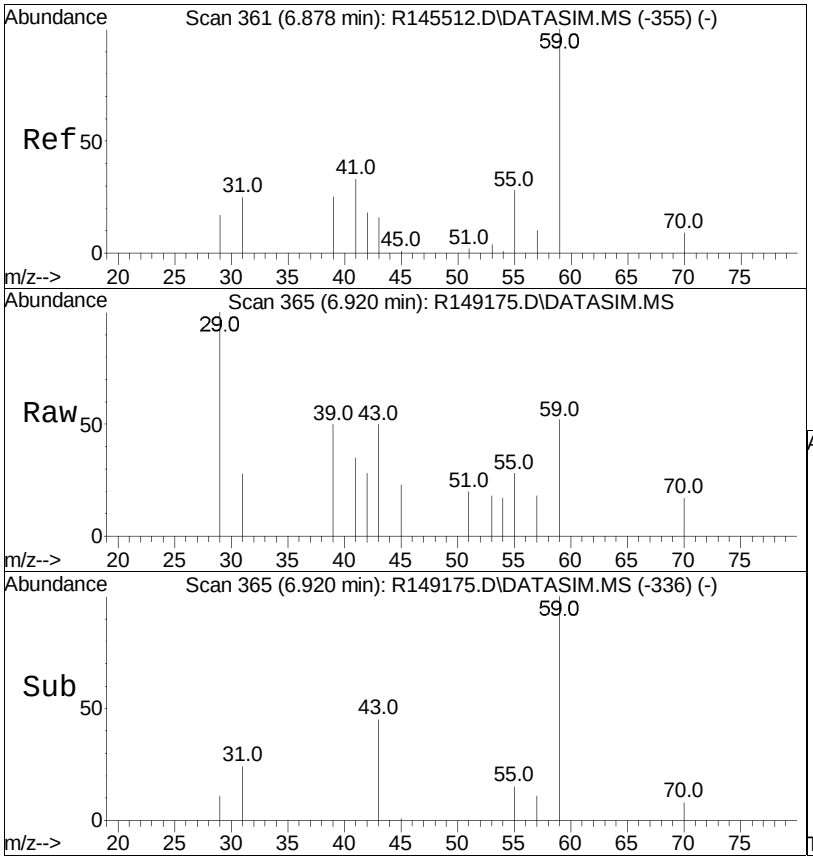


#10
2-Pentene (cis)
Concen: 0.04 ppbV
RT: 6.889 min Scan# 362
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 55 Resp: 567

Ion	Ratio	Lower	Upper
55	100		
70	41.8	16.4	56.4
42	58.5	19.4	59.4

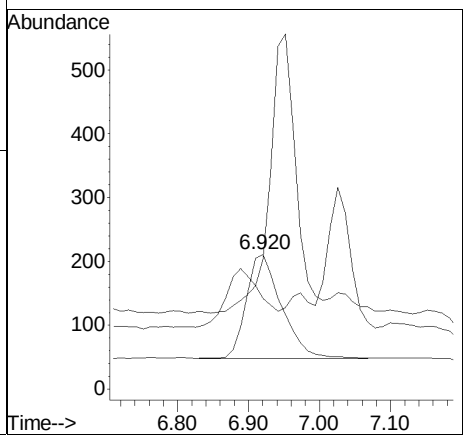


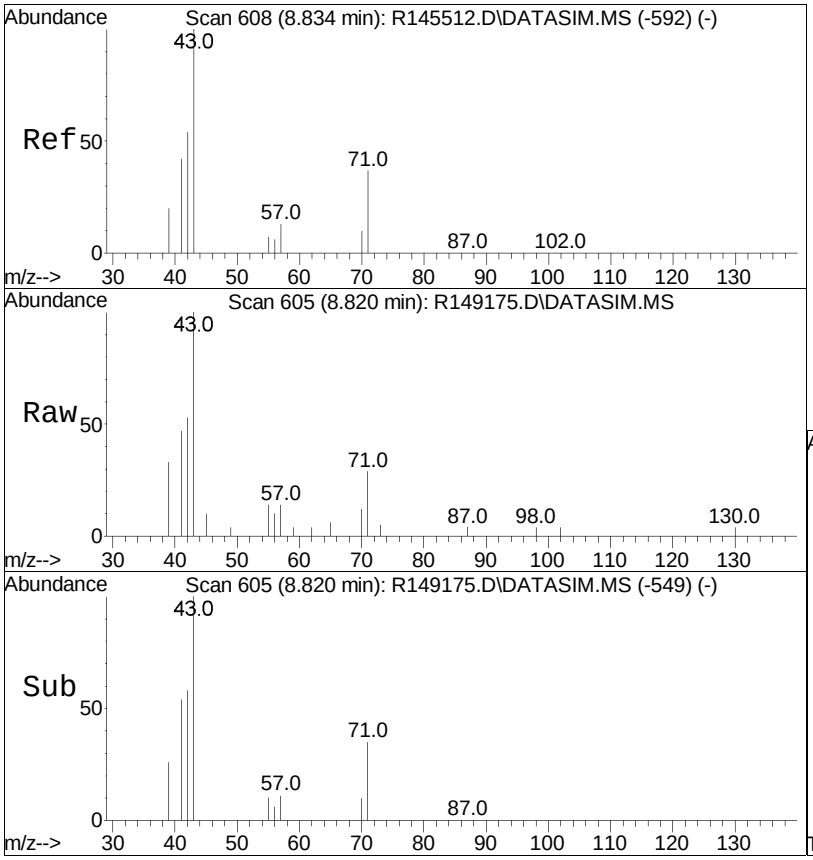


#11
Tertiary butanol
Concen: 0.02 ppbV
RT: 6.920 min Scan# 365
Delta R.T. 0.053 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 59 Resp: 565

Ion	Ratio	Lower	Upper
59	100		
41	67.3	20.2	60.2#
43	96.7	0.0	38.4#

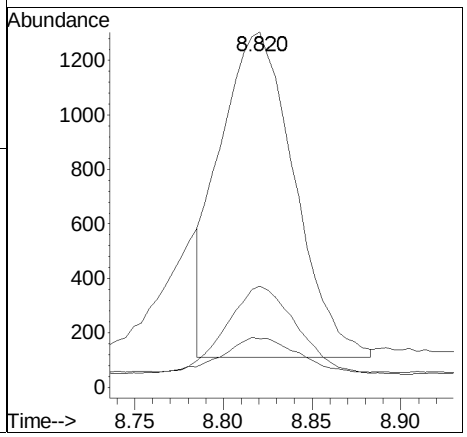


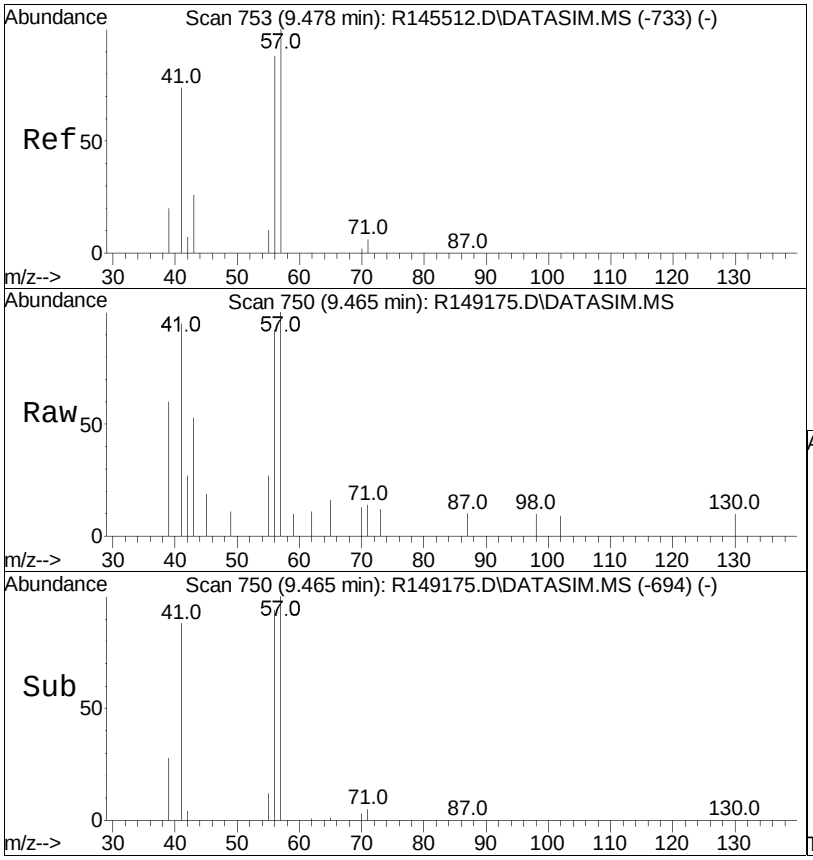


#14
2-Methylpentane
Concen: 0.14 ppbV m
RT: 8.820 min Scan# 605
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 43 Resp: 3482

Ion	Ratio	Lower	Upper
43	100		
71	28.5	8.8	48.8
57	13.7	0.0	31.6

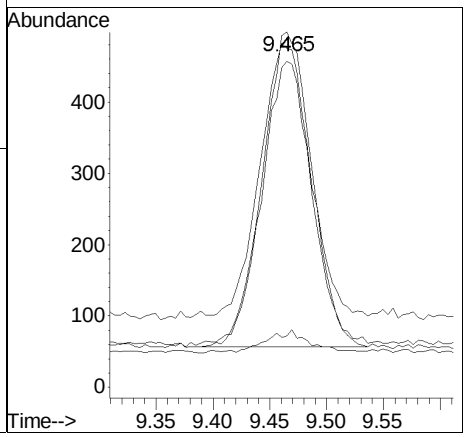


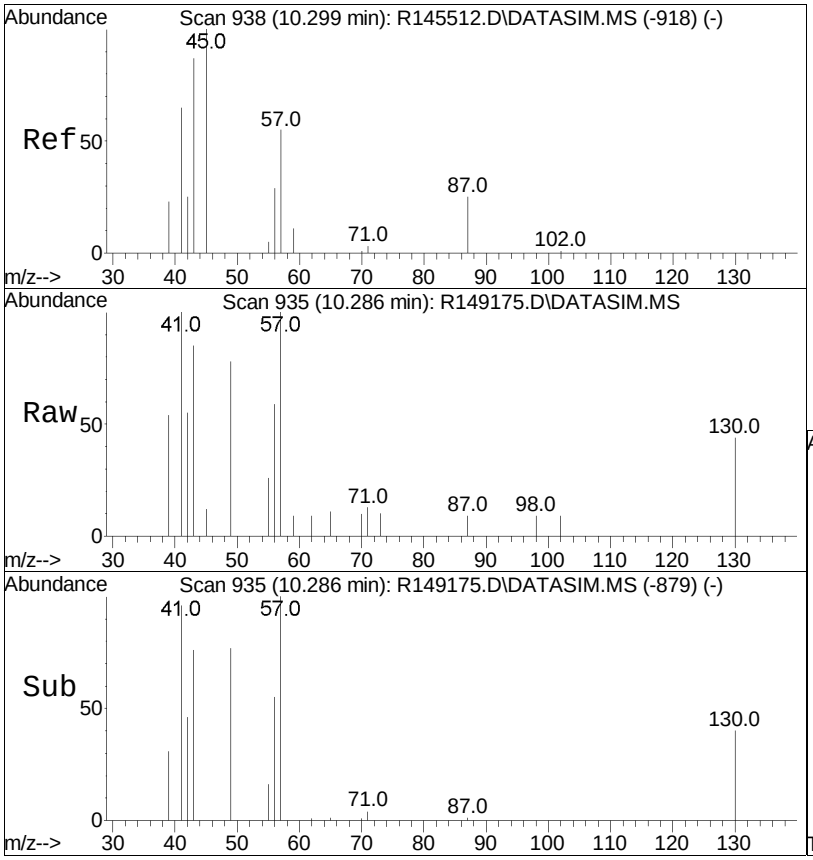


#16
3-Methylpentane
Concen: 0.08 ppbV
RT: 9.465 min Scan# 750
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 57 Resp: 1336

Ion	Ratio	Lower	Upper
57	100		
56	91.8	69.5	109.5
71	14.5	0.0	25.5
41	95.4	63.4	103.4

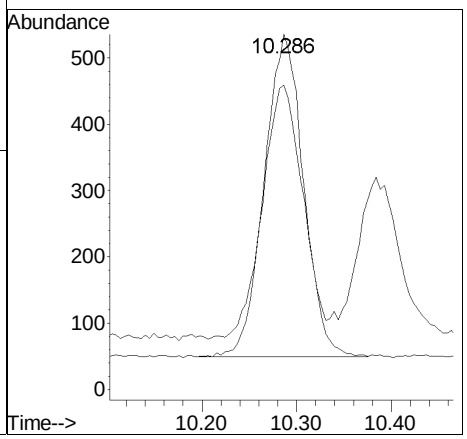


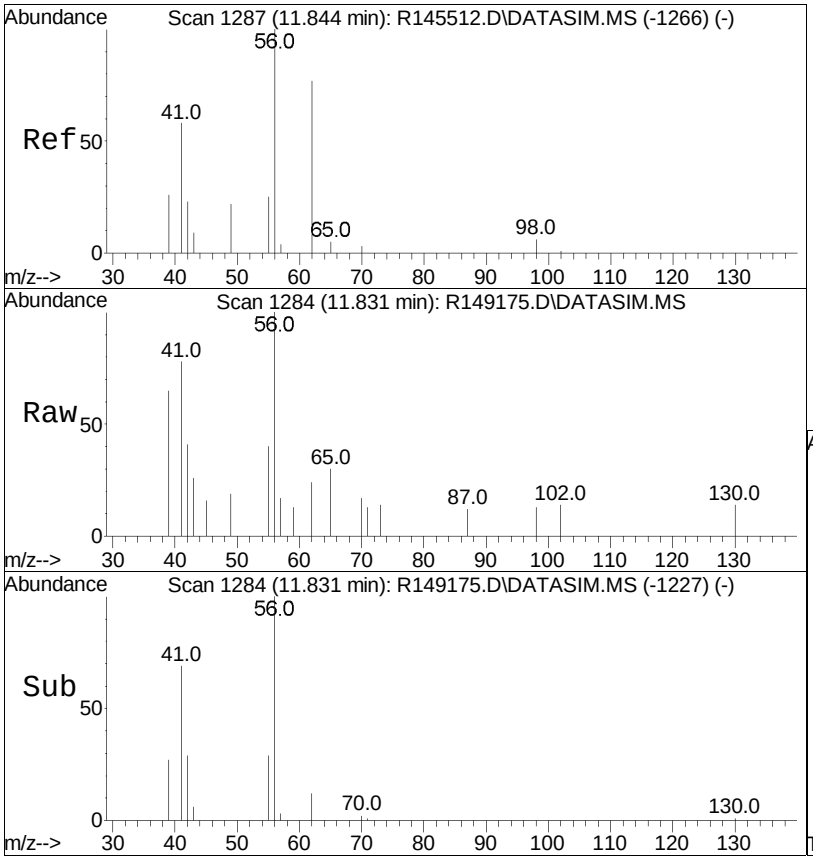


#18
Hexane
Concen: 0.10 ppbV
RT: 10.286 min Scan# 935
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 57 Resp: 1407

Ion	Ratio	Lower	Upper
57	100		
43	85.6	114.8	154.8#

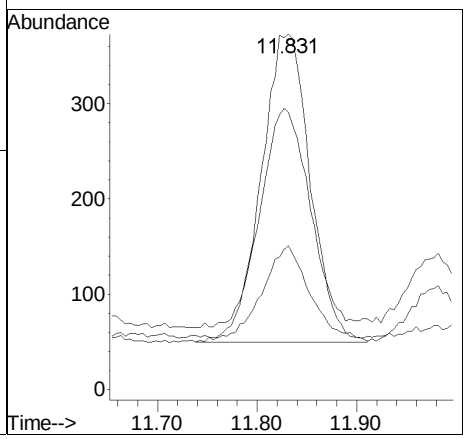


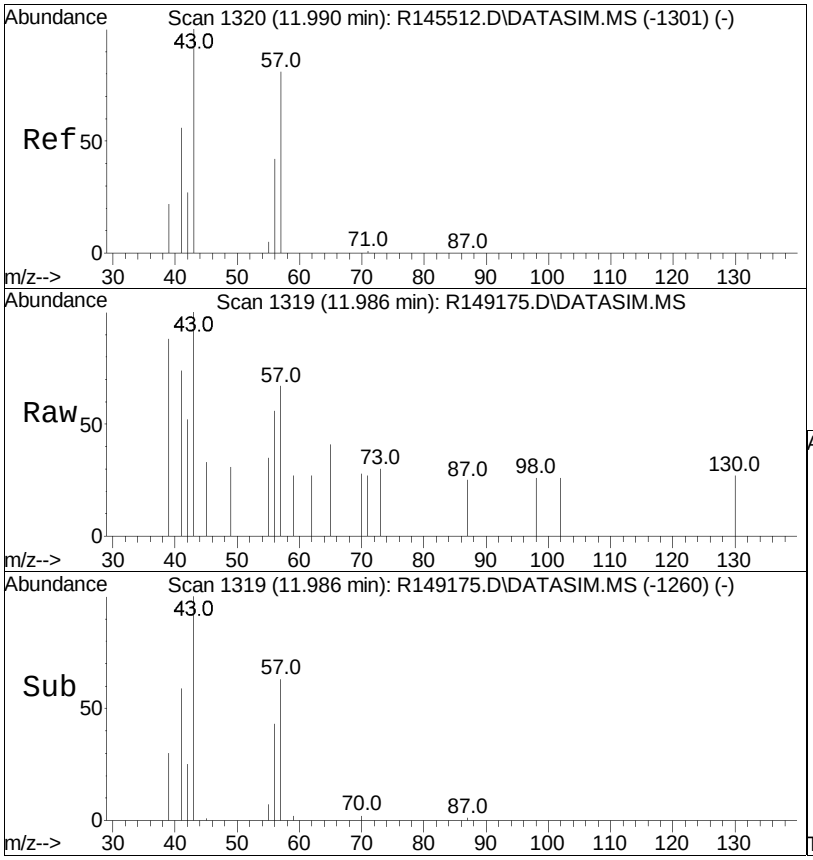


#23
Methylcyclopentane
Concen: 0.06 ppbV
RT: 11.831 min Scan# 1284
Delta R.T. 0.004 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 56 Resp: 1103

Ion	Ratio	Lower	Upper
56	100		
55	40.5	6.8	46.8
41	78.0	47.8	87.8

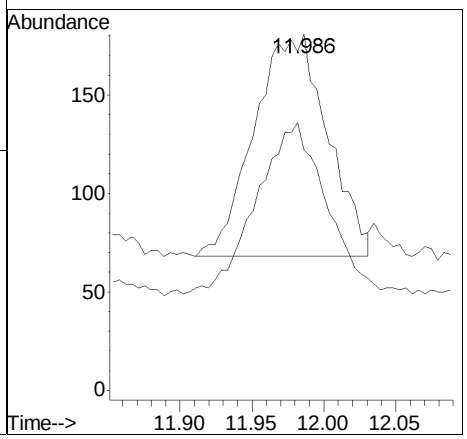


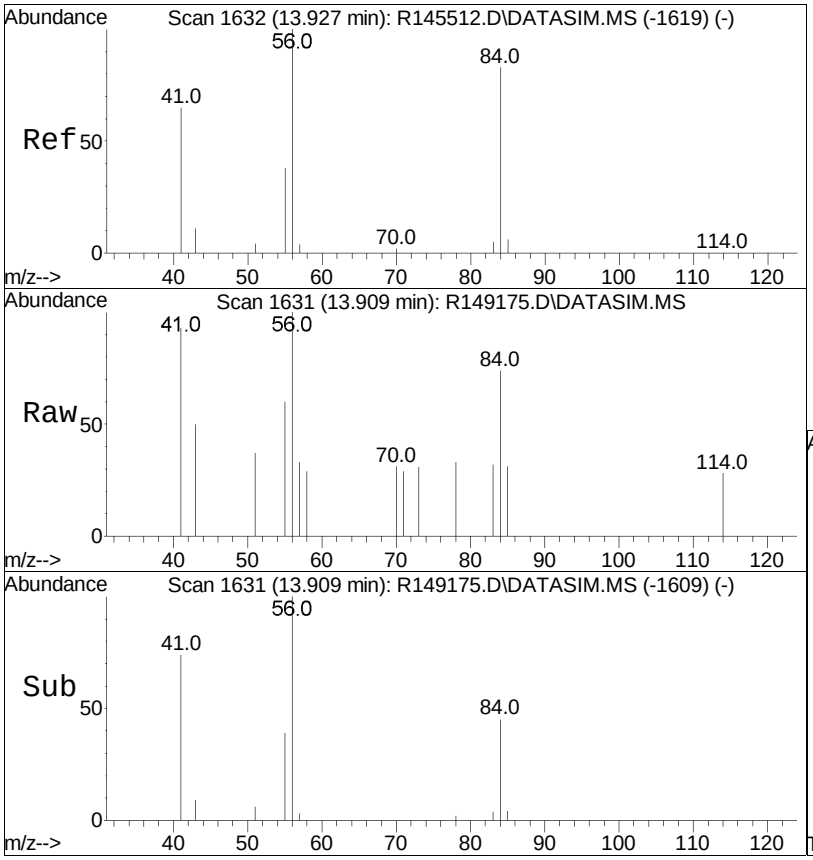


#24
2,4-Dimethylpentane
Concen: 0.02 ppbV
RT: 11.986 min Scan# 1319
Delta R.T. 0.013 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 43 Resp: 399

Ion	Ratio	Lower	Upper
43	100		
57	67.4	50.5	90.5

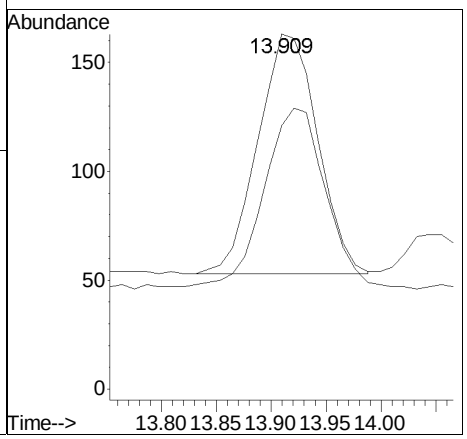


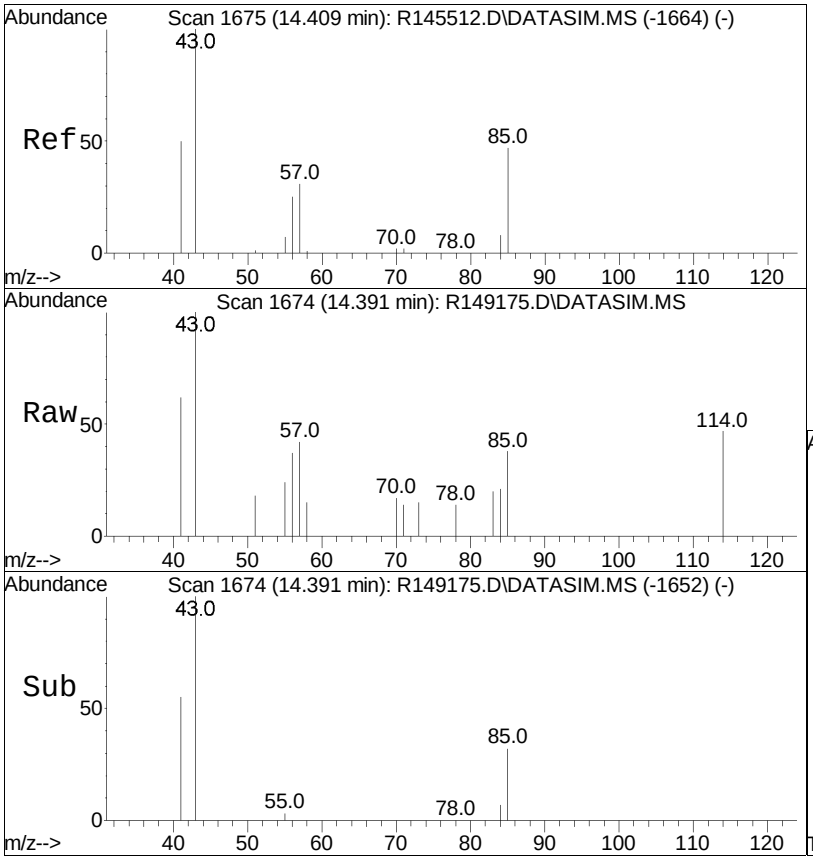


#26
Cyclohexane
Concen: 0.03 ppbV
RT: 13.909 min Scan# 1631
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 56 Resp: 416

Ion	Ratio	Lower	Upper
56	100		
84	74.2	47.9	87.9

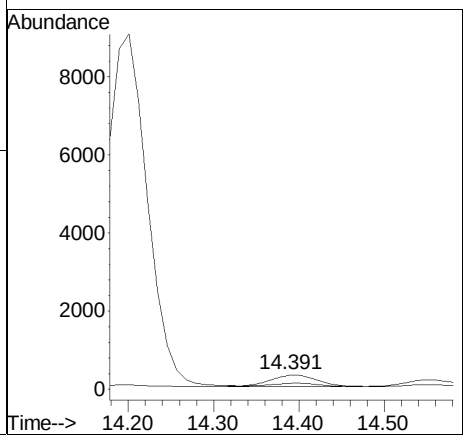


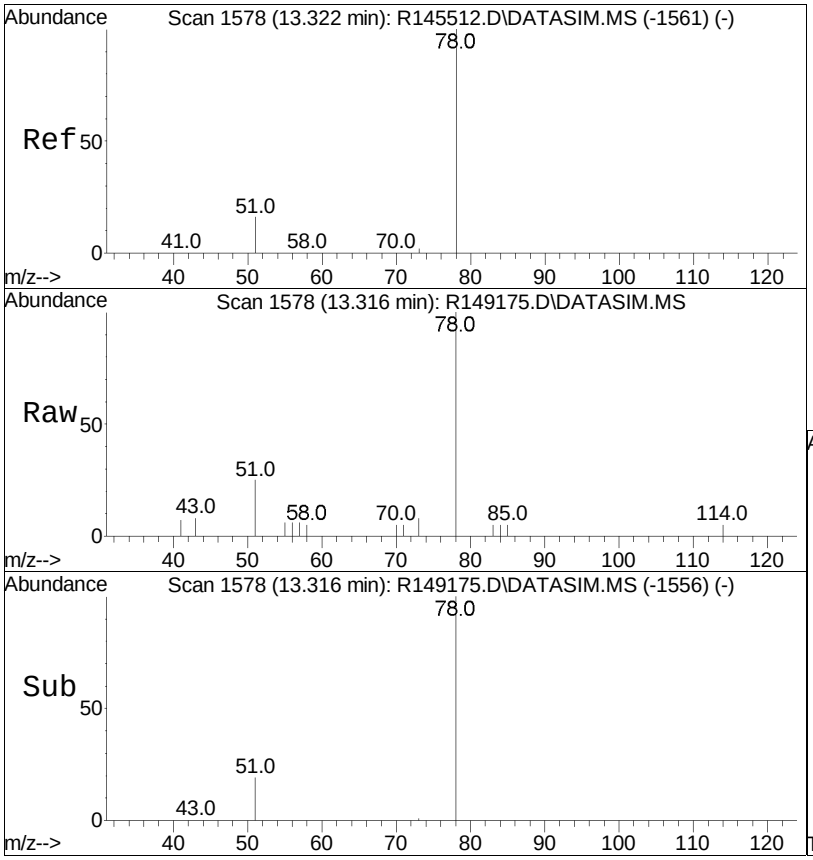


#28
2-Methylhexane
Concen: 0.05 ppbV
RT: 14.391 min Scan# 1674
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 43 Resp: 1128

Ion	Ratio	Lower	Upper
43	100		
57	42.4	7.8	47.8

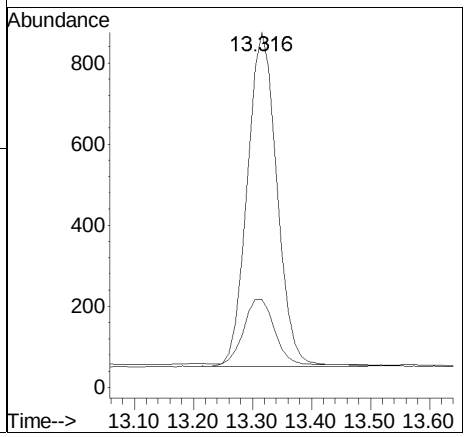


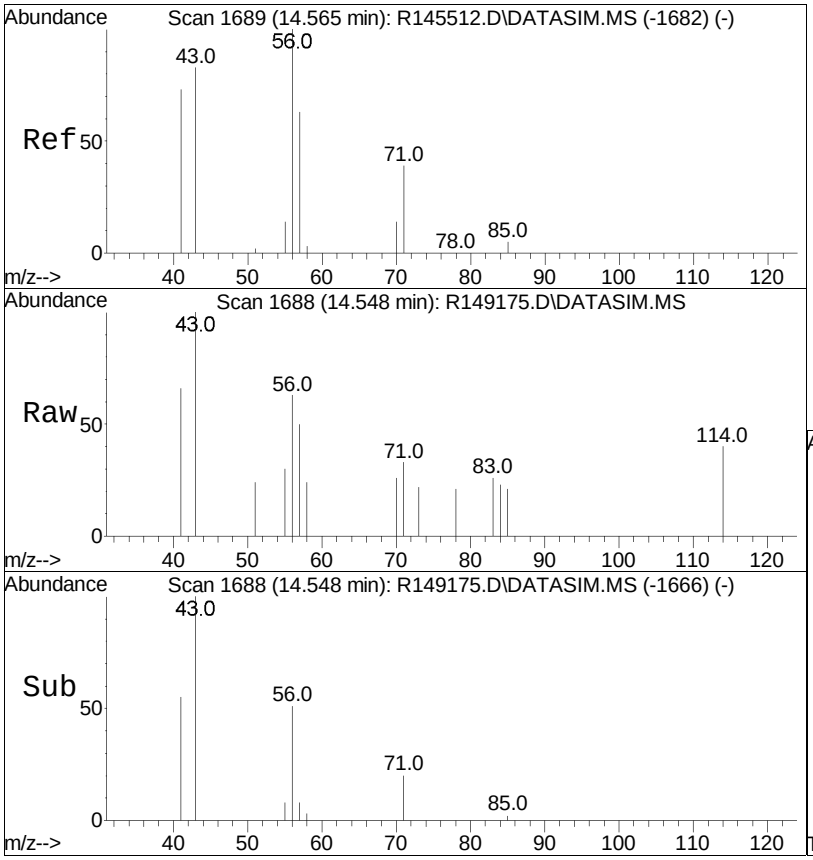


#29
Benzene
Concen: 0.11 ppbV
RT: 13.316 min Scan# 1578
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 78 Resp: 2878

Ion	Ratio	Lower	Upper
78	100		
51	24.8	0.0	39.4

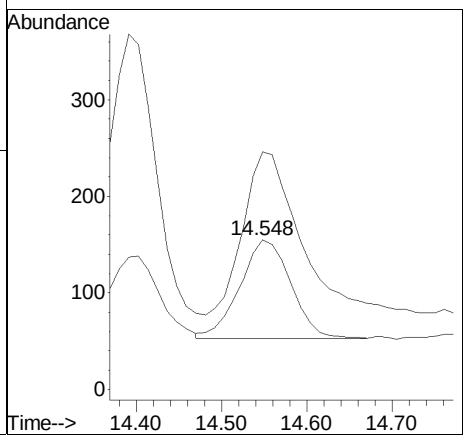


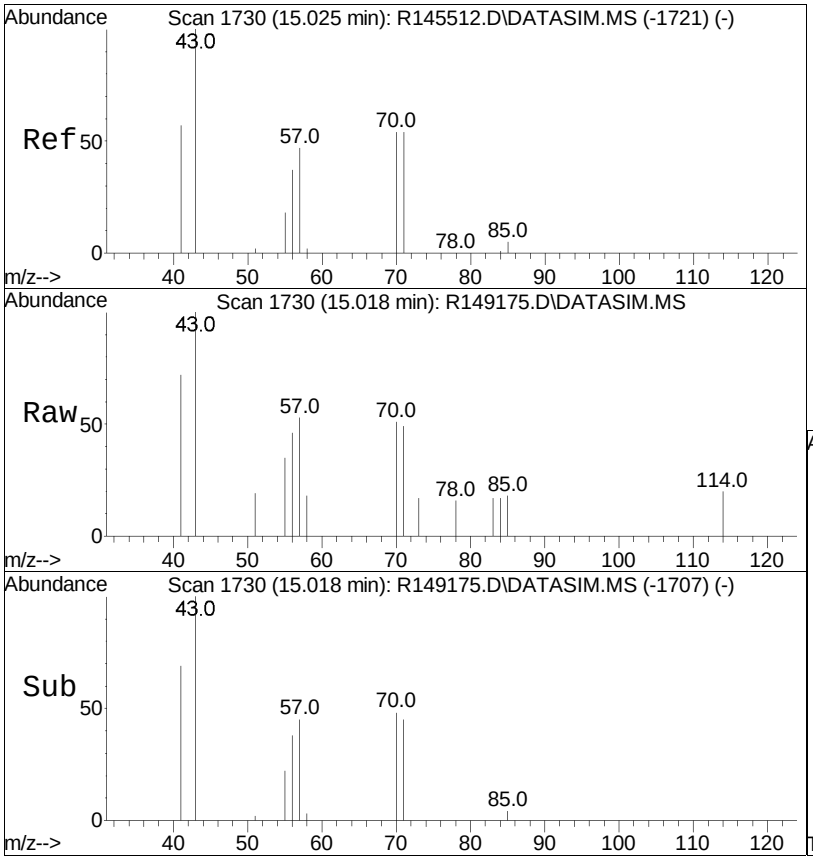


#30
2,3-Dimethylpentane
Concen: 0.03 ppbV
RT: 14.548 min Scan# 1688
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 56 Resp: 421

Ion	Ratio	Lower	Upper
56	100		
43	158.7	72.3	112.3#

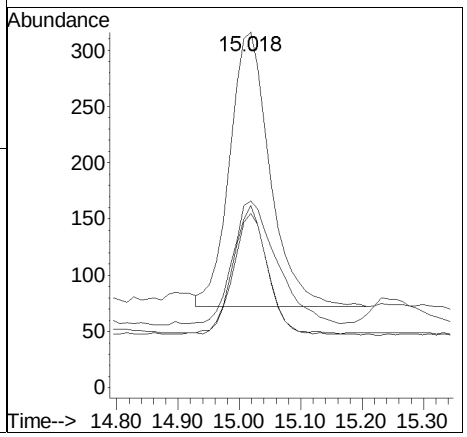


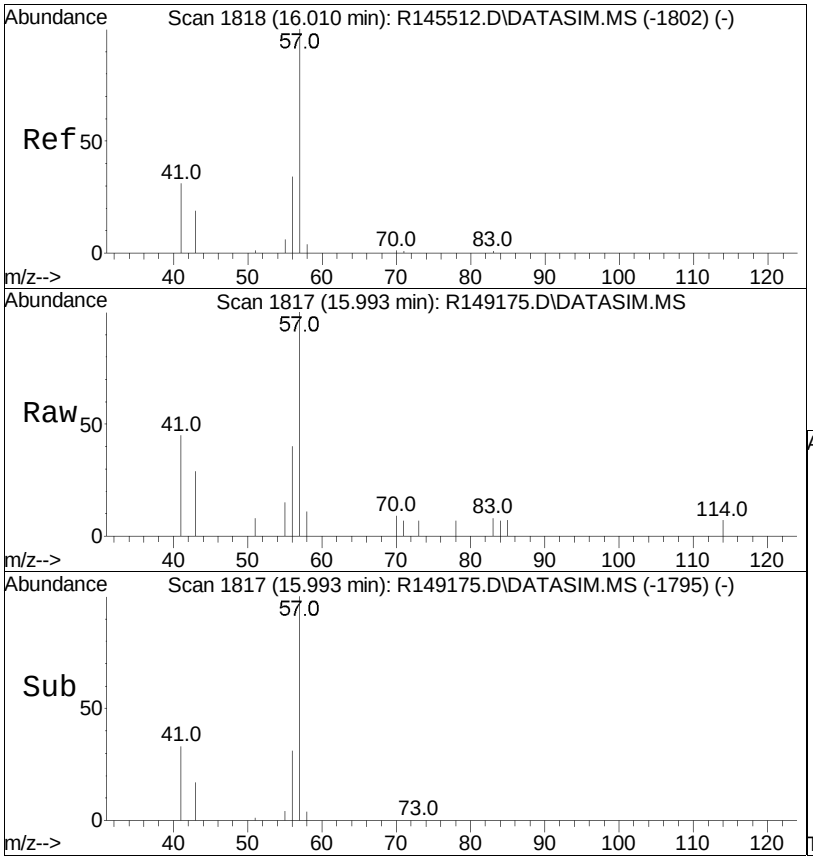


#32
3-Methylhexane
Concen: 0.06 ppbV
RT: 15.018 min Scan# 1730
Delta R.T. 0.011 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 43 Resp: 1118

Ion	Ratio	Lower	Upper
43	100		
57	52.5	23.4	63.4
70	51.3	22.5	62.5
71	49.1	22.4	62.4

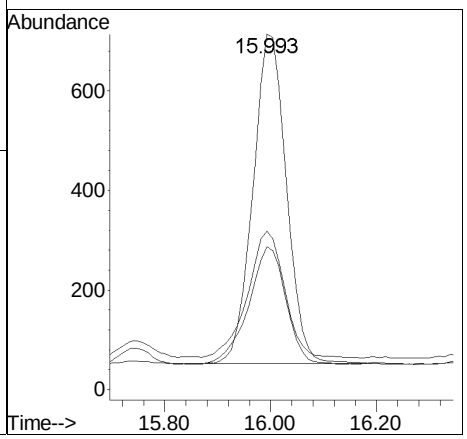


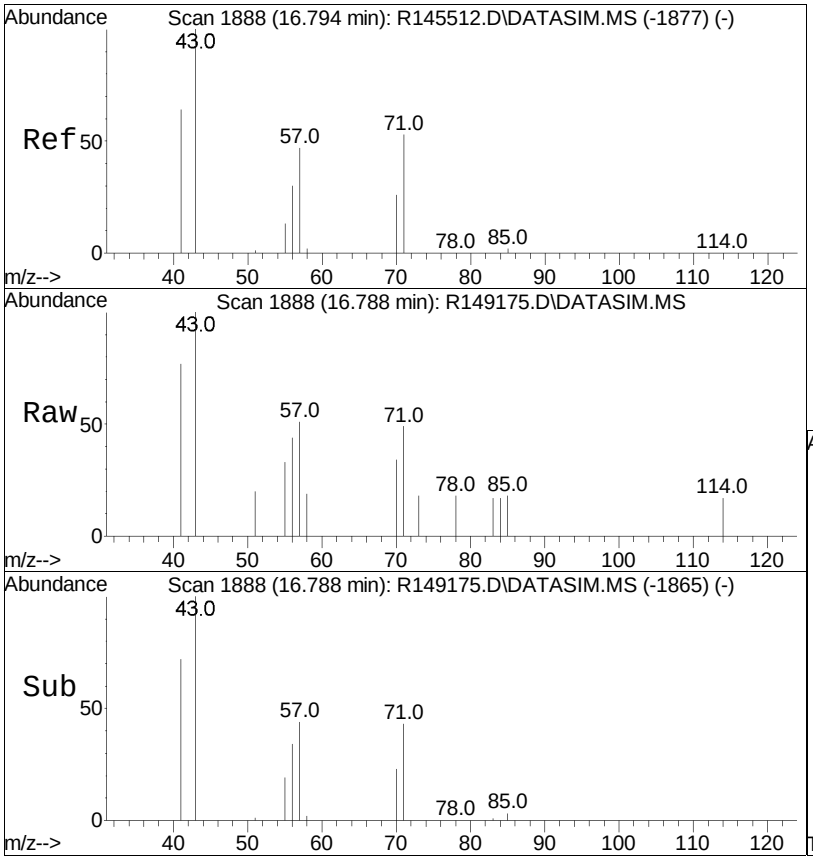


#35
Isooctane
Concen: 0.07 ppbV
RT: 15.993 min Scan# 1817
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 57 Resp: 2911

Ion	Ratio	Lower	Upper
57	100		
56	40.2	14.9	54.9
41	44.5	16.0	56.0

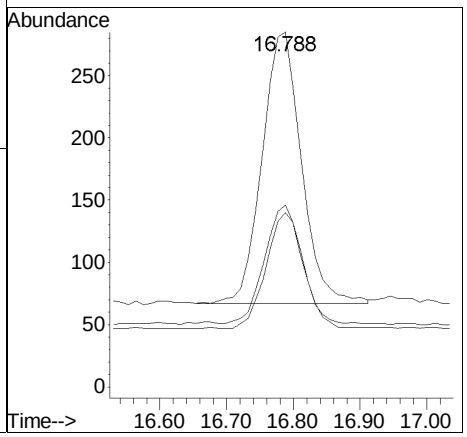


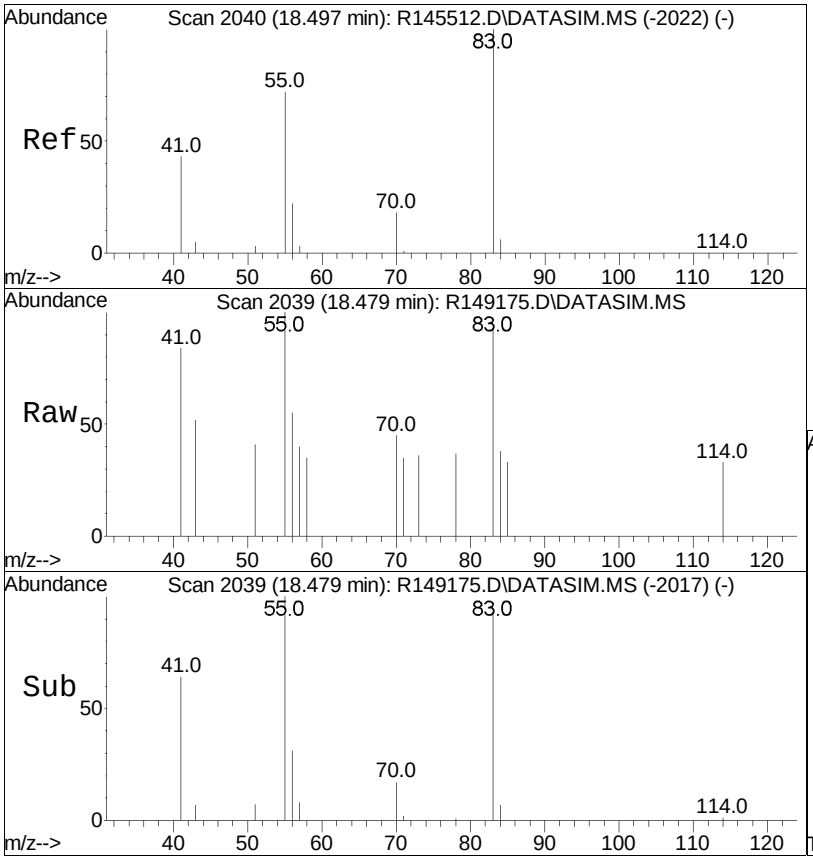


#36
Heptane
Concen: 0.05 ppbV
RT: 16.788 min Scan# 1888
Delta R.T. 0.011 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 43 Resp: 893

Ion	Ratio	Lower	Upper
43	100		
57	51.2	23.3	63.3
71	49.1	21.1	61.1

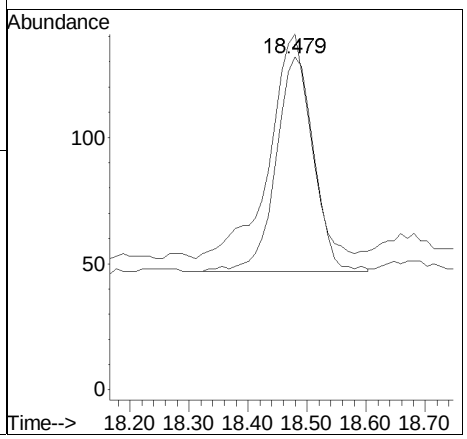


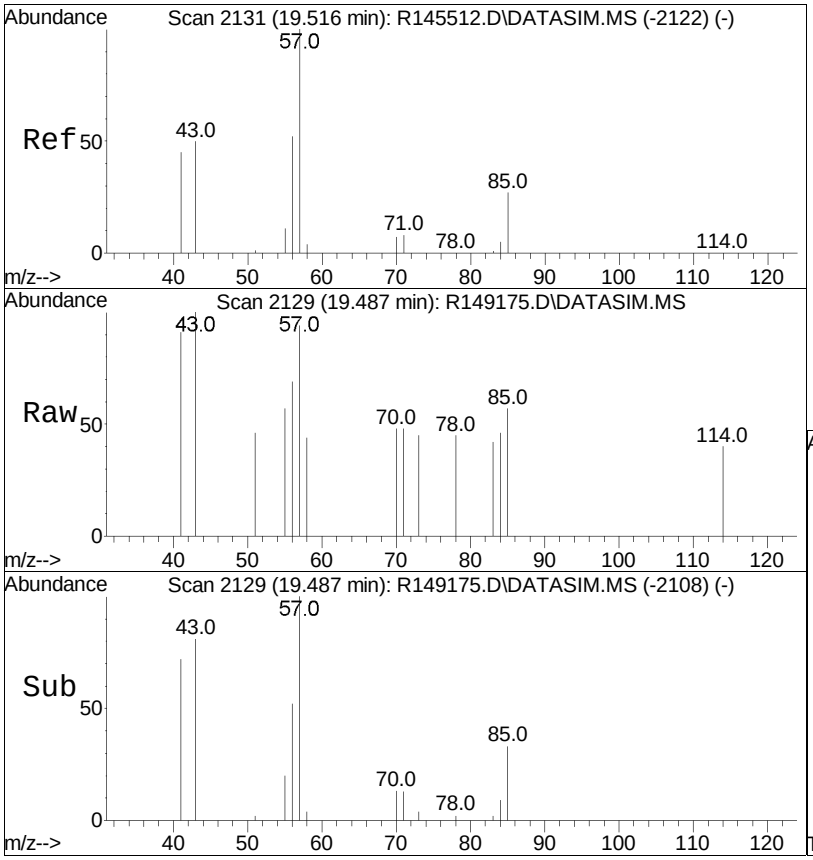


#37
Methylcyclohexane
Concen: 0.03 ppbV
RT: 18.479 min Scan# 2039
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 83 Resp: 381

Ion	Ratio	Lower	Upper
83	100		
55	106.8	70.7	110.7

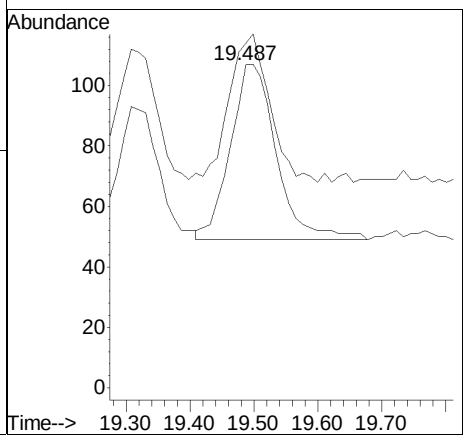


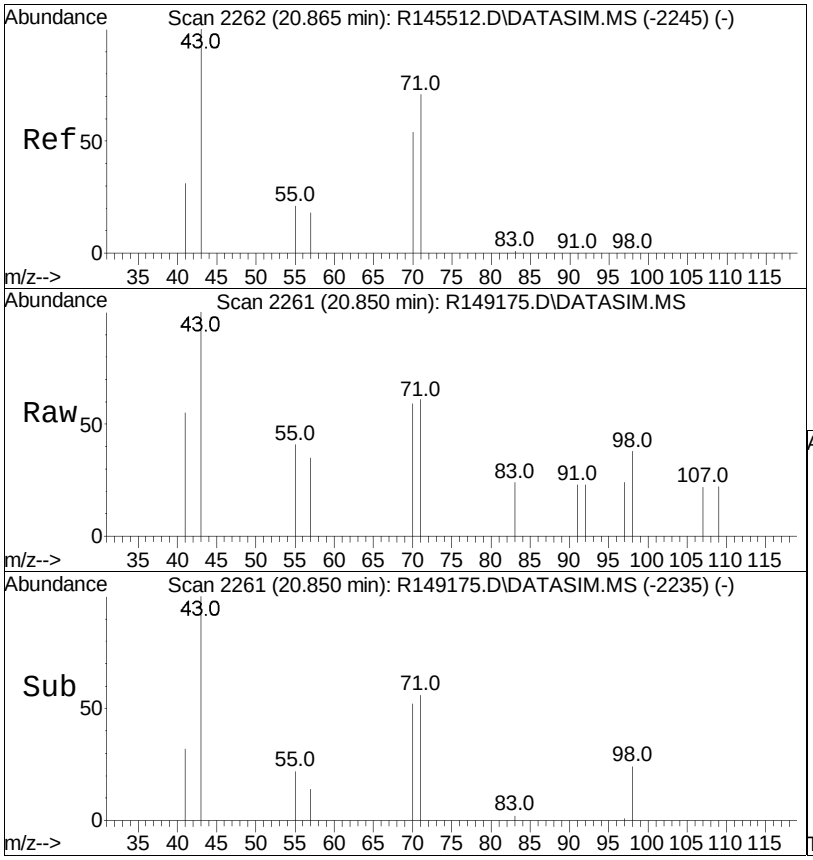


#39
2,4-Dimethyhexane / 2,2,3-TMP
Concen: 0.01 ppbV
RT: 19.487 min Scan# 2129
Delta R.T. -0.011 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 57 Resp: 290

Ion	Ratio	Lower	Upper
57	100		
43	106.5	36.1	76.1#

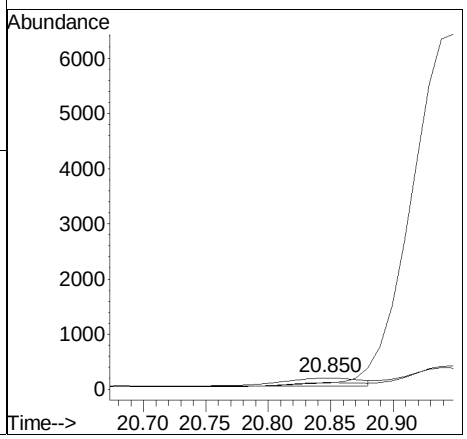


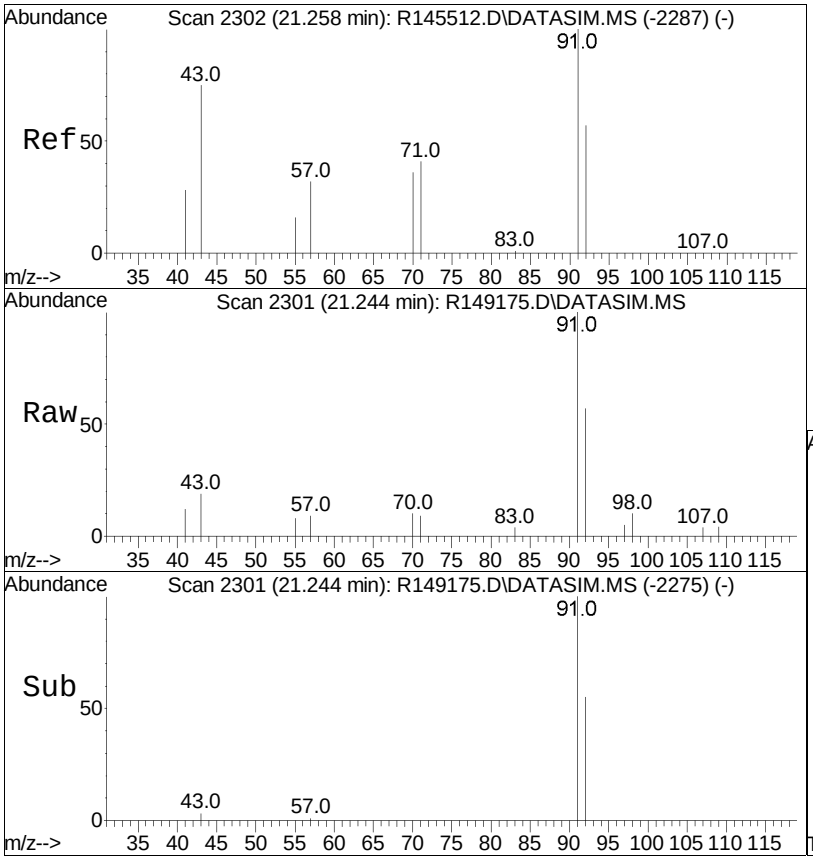


#40
2,3,4-Trimethylpentane
Concen: 0.02 ppbV
RT: 20.850 min Scan# 2261
Delta R.T. 0.010 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 43 Resp: 592

Ion	Ratio	Lower	Upper
43	100		
71	60.6	34.6	74.6
70	58.7	23.3	63.3

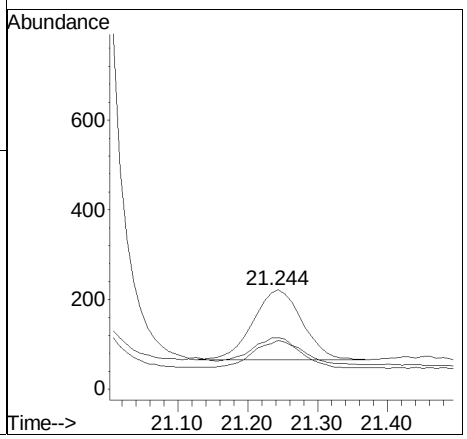


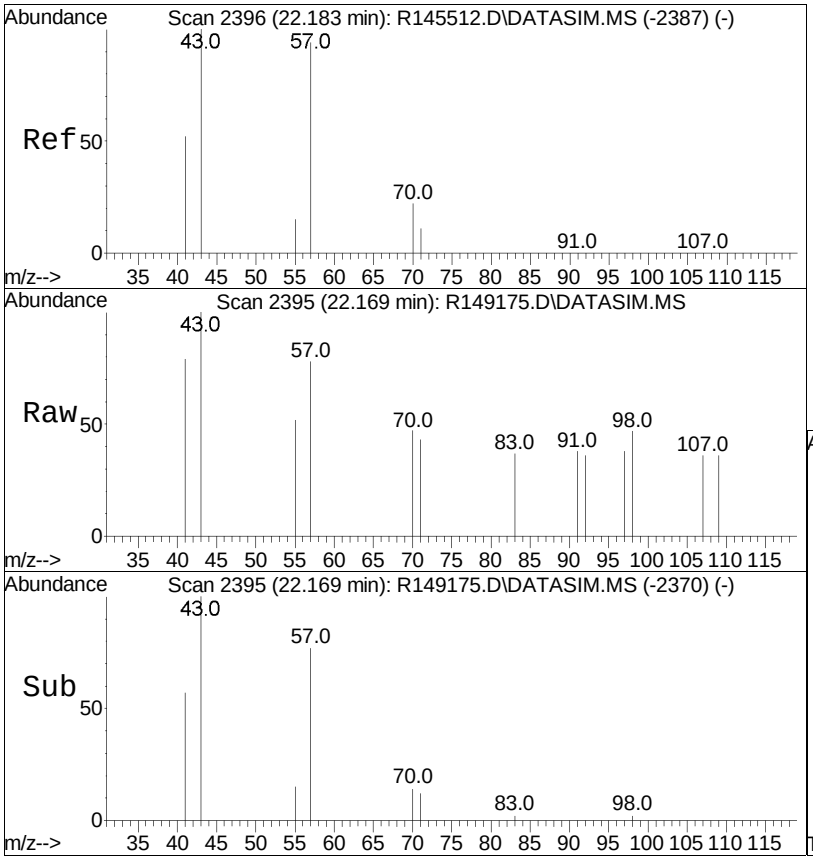


#41
2,3,3-Trimethylpentane
Concen: 0.03 ppbV
RT: 21.244 min Scan# 2301
Delta R.T. 0.010 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 43 Resp: 760

Ion	Ratio	Lower	Upper
43	100		
71	49.1	22.4	62.4
70	51.8	18.7	58.7

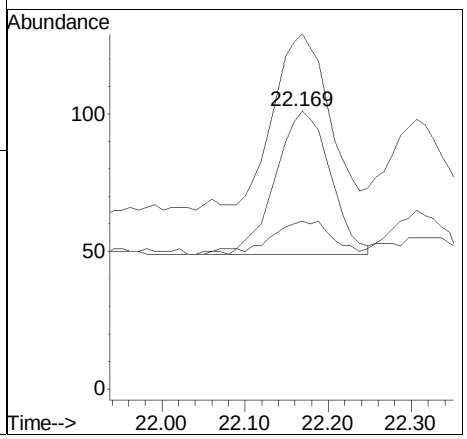


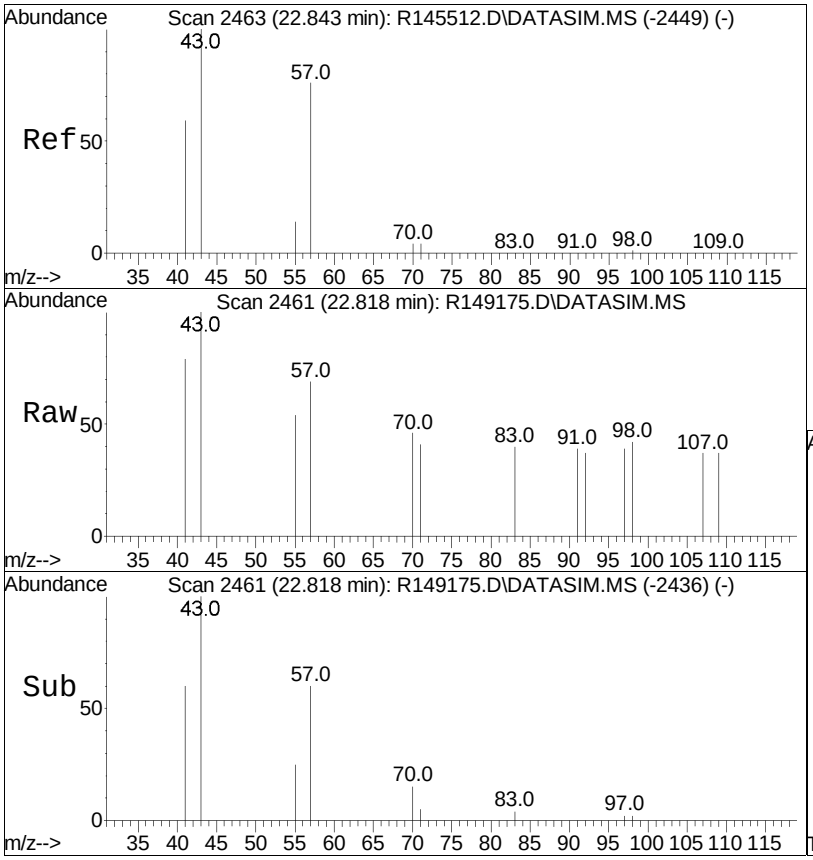


#44
2-Methylheptane
Concen: 0.01 ppbV
RT: 22.169 min Scan# 2395
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 57 Resp: 238

Ion	Ratio	Lower	Upper
57	100		
43	127.7	98.3	138.3
70	60.4	2.5	42.5#

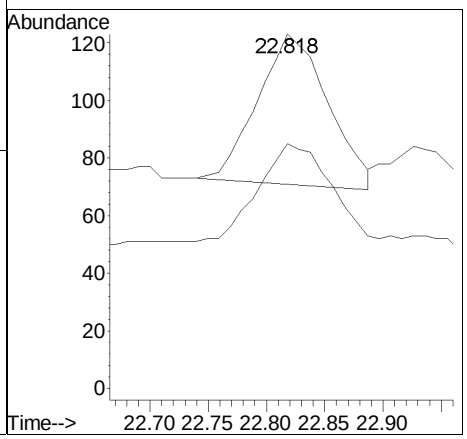


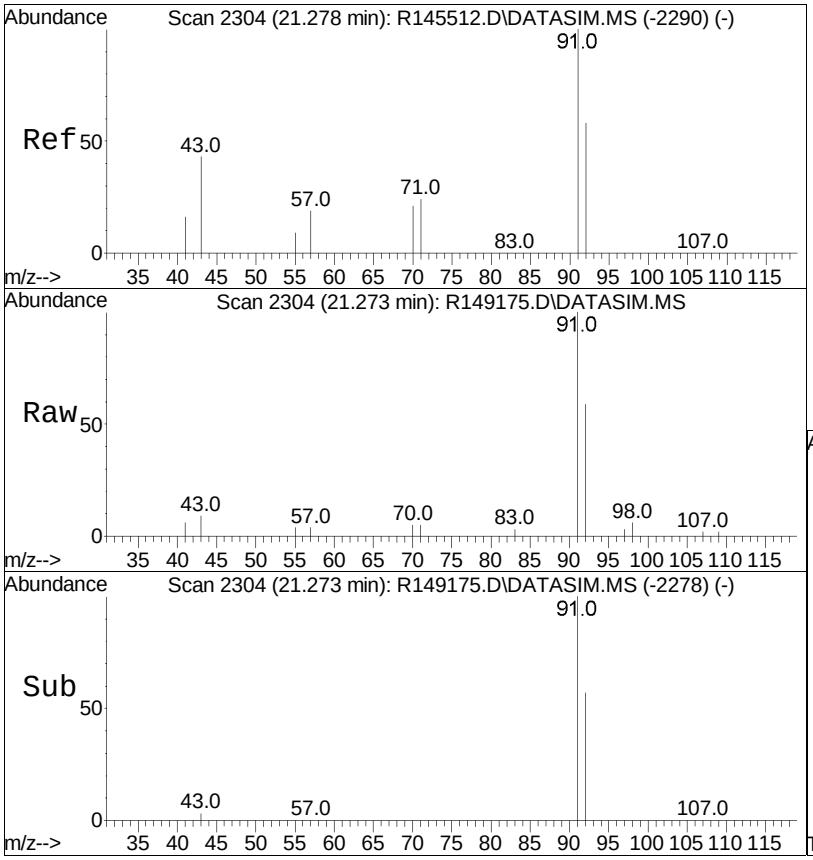


#45
3-Methylheptane
Concen: 0.01 ppbV
RT: 22.818 min Scan# 2461
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 43 Resp: 218

Ion	Ratio	Lower	Upper
43	100		
57	69.1	47.6	87.6

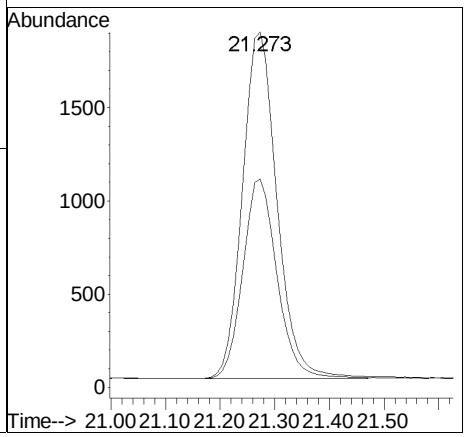


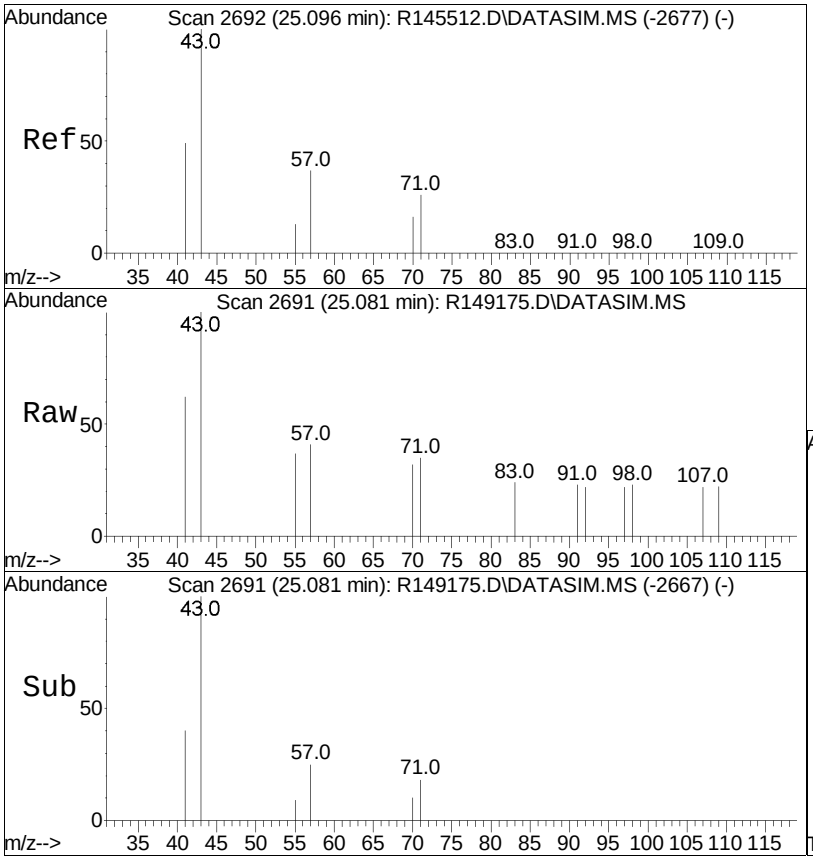


#47
Toluene
Concen: 0.27 ppbV
RT: 21.273 min Scan# 2304
Delta R.T. 0.010 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 91 Resp: 8175

Ion	Ratio	Lower	Upper
91	100		
92	58.6	37.6	77.6

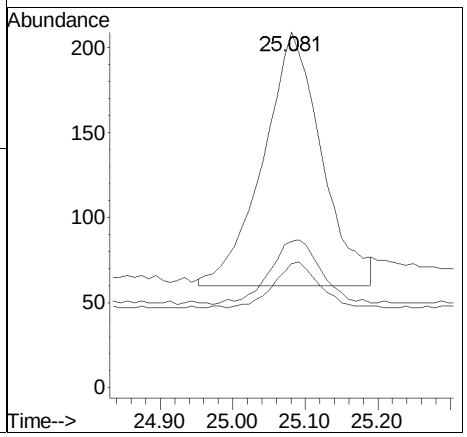


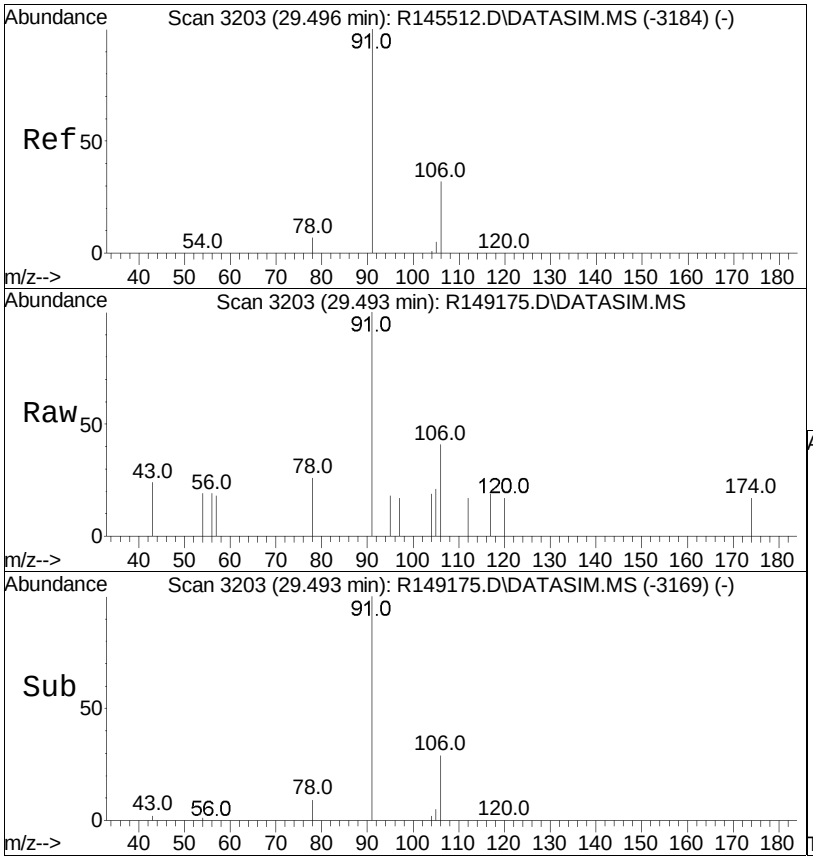


#52
Octane
Concen: 0.03 ppbV m
RT: 25.081 min Scan# 2691
Delta R.T. -0.000 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 43 Resp: 837

Ion	Ratio	Lower	Upper
43	100		
57	41.1	13.6	53.6
71	34.9	0.9	40.9

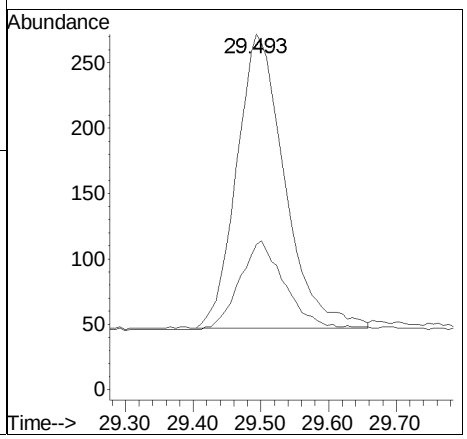


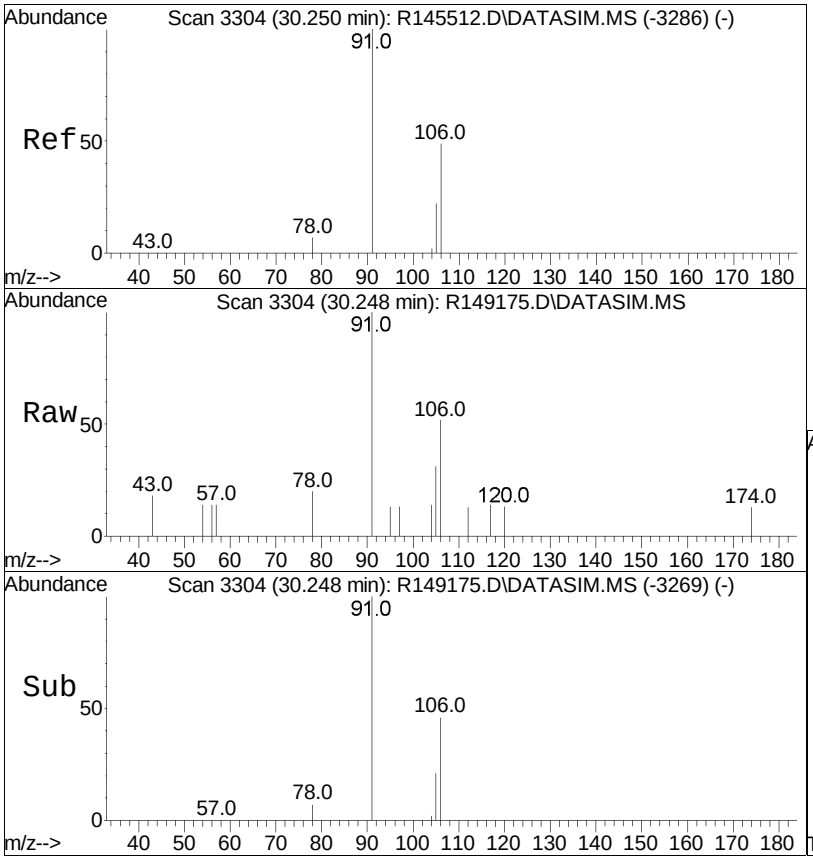


#55
Ethylbenzene
Concen: 0.04 ppbV
RT: 29.493 min Scan# 3203
Delta R.T. 0.007 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 91 Resp: 1109

Ion	Ratio	Lower	Upper
91	100		
106	40.8	9.1	49.1

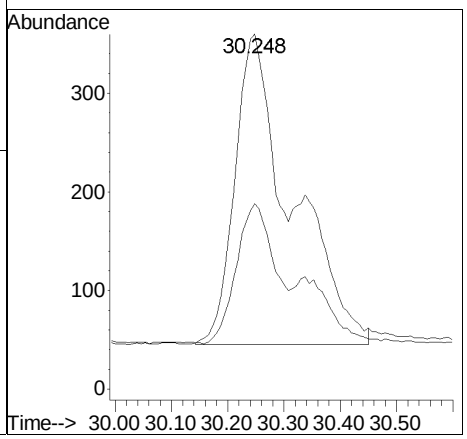


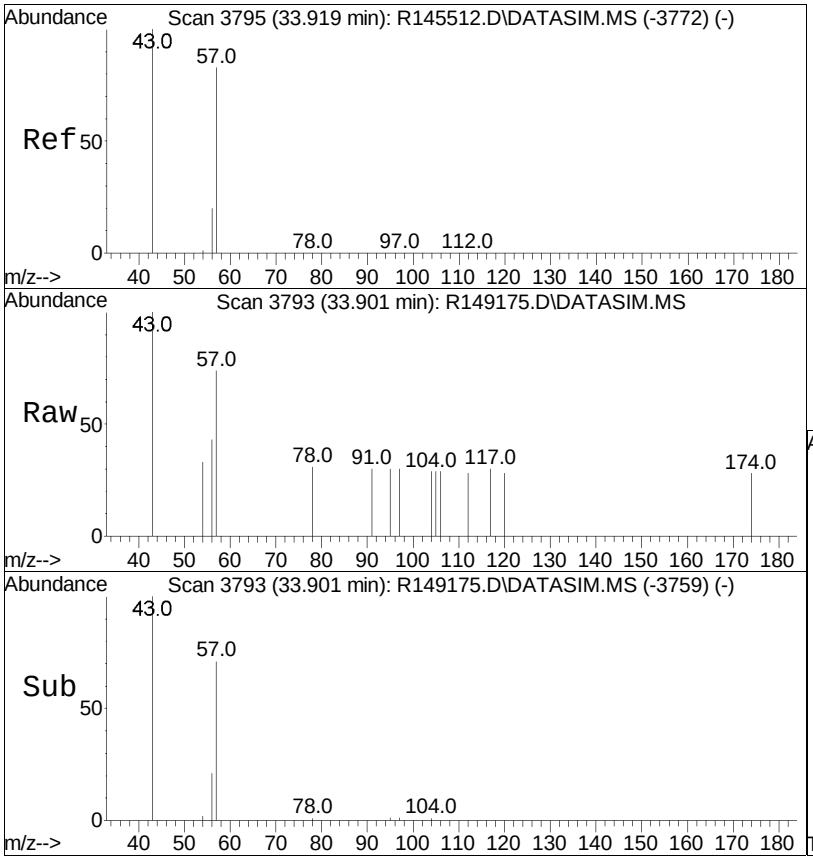


#57
p/m-Xylene
Concen: 0.10 ppbV m
RT: 30.248 min Scan# 3304
Delta R.T. 0.015 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 91 Resp: 2216

Ion	Ratio	Lower	Upper
91	100		
106	52.2	25.5	65.5

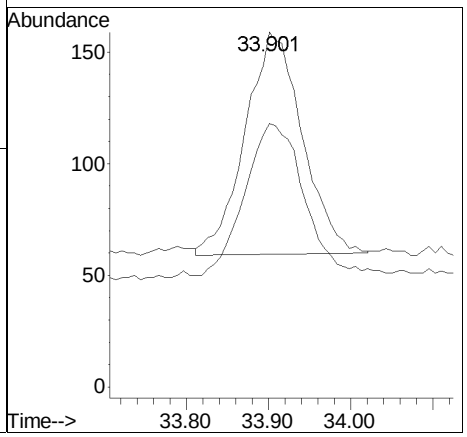


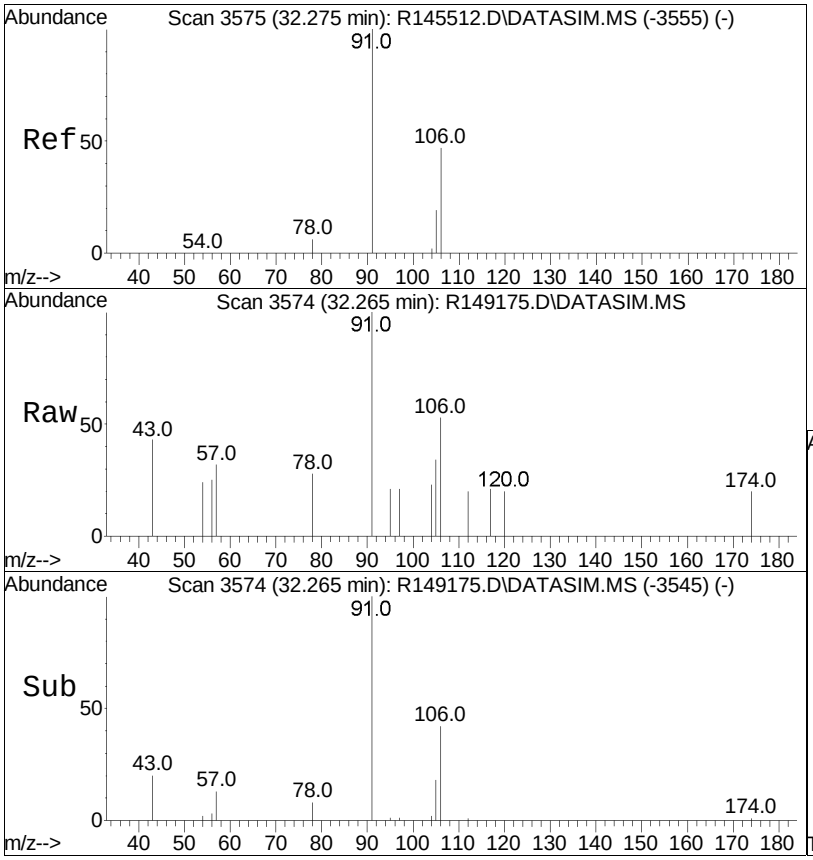


#59
Nonane
Concen: 0.02 ppbV
RT: 33.901 min Scan# 3793
Delta R.T. 0.007 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 43 Resp: 481

Ion	Ratio	Lower	Upper
43	100		
57	74.2	51.4	91.4

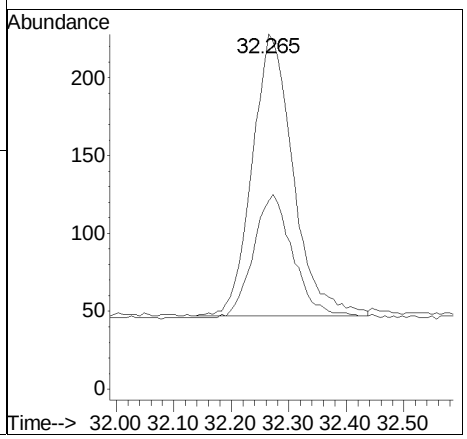


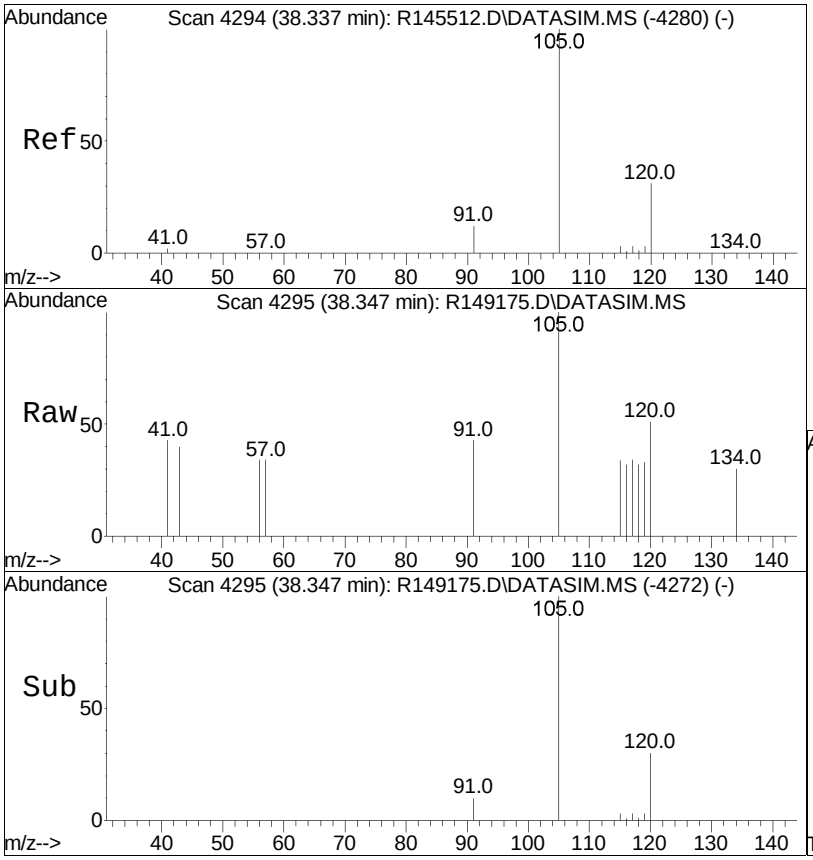


#61
o-Xylene
Concen: 0.04 ppbV
RT: 32.265 min Scan# 3574
Delta R.T. 0.007 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 91 Resp: 898

Ion	Ratio	Lower	Upper
91	100		
106	53.1	23.5	63.5

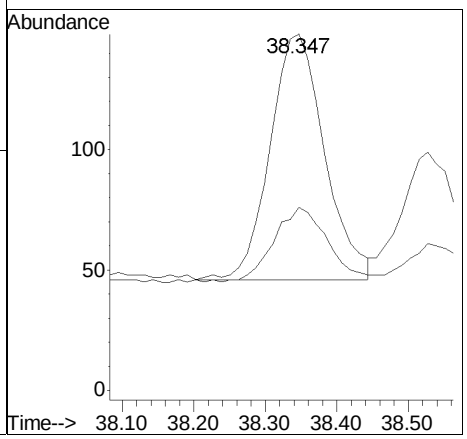


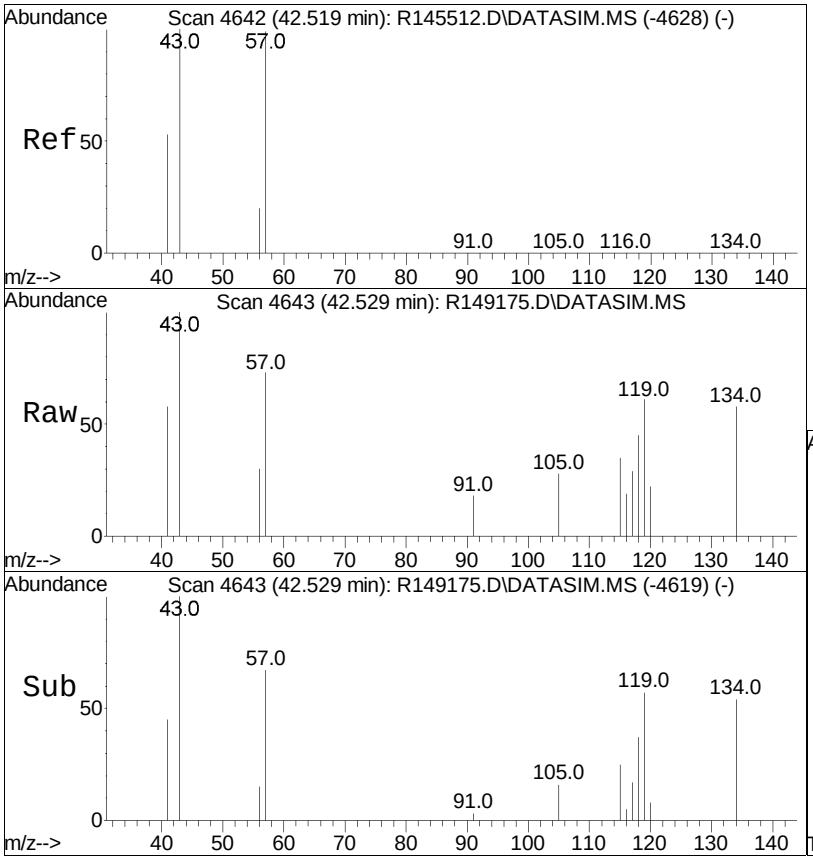


#65
1-Methyl-3-ethylbenzene
Concen: 0.02 ppbV
RT: 38.347 min Scan# 4295
Delta R.T. 0.024 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion:105 Resp: 540

Ion	Ratio	Lower	Upper
105	100		
120	51.4	10.4	50.4#

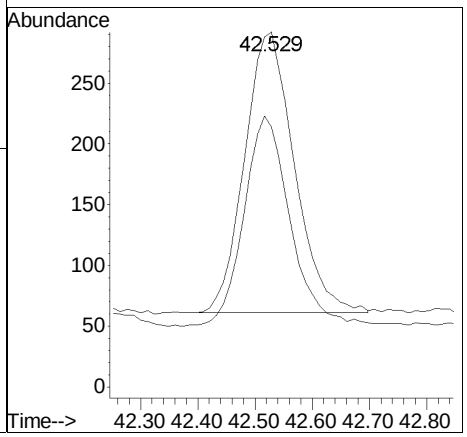


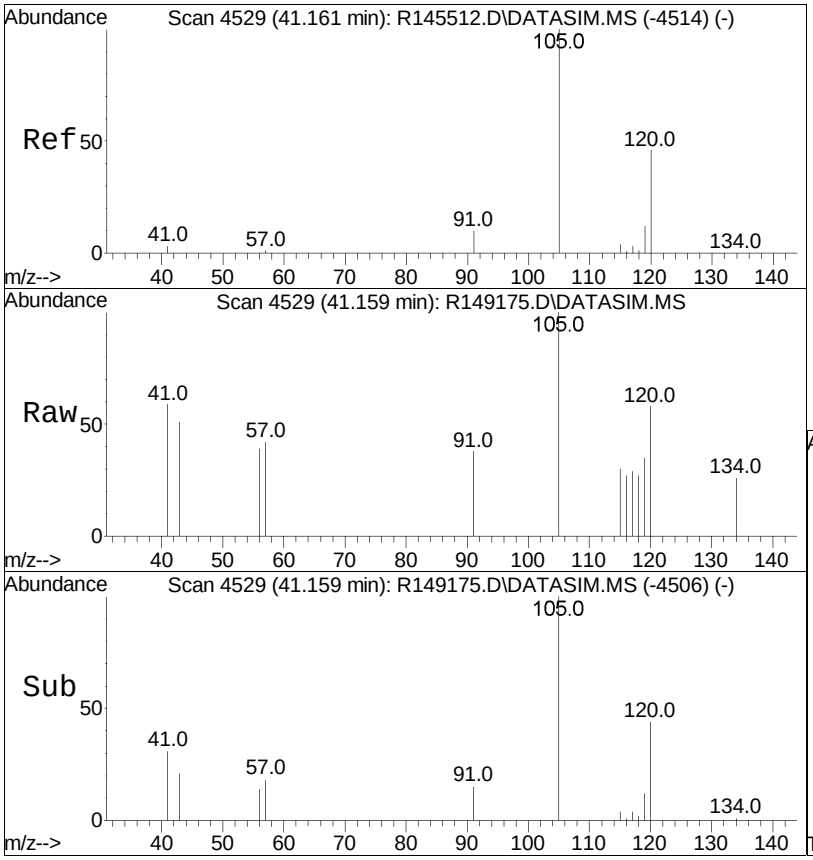


#70
Decane
Concen: 0.06 ppbV
RT: 42.529 min Scan# 4643
Delta R.T. 0.036 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 43 Resp: 1401

Ion	Ratio	Lower	Upper
43	100		
57	73.3	66.4	106.4

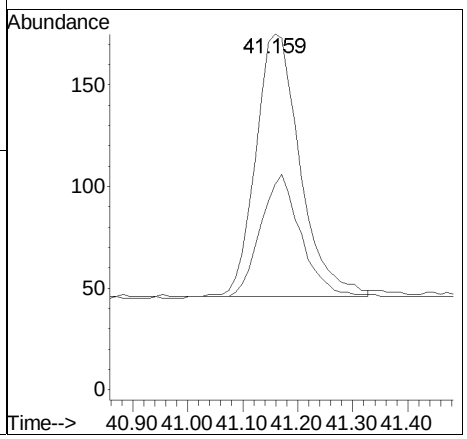


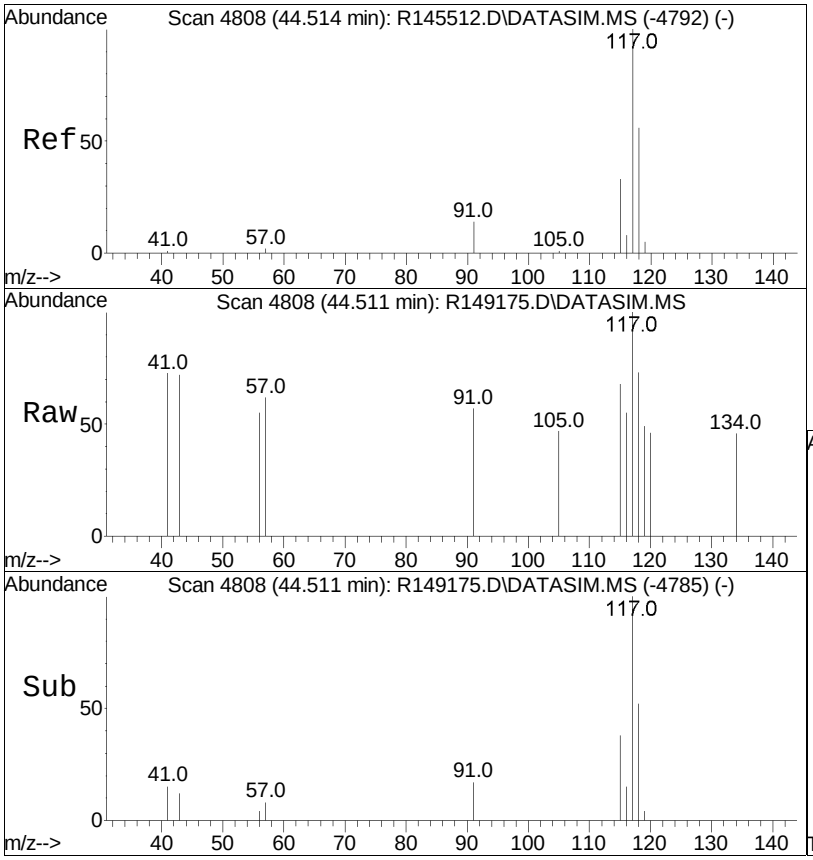


#71
1,2,4-Trimethylbenzene
Concen: 0.03 ppbV
RT: 41.159 min Scan# 4529
Delta R.T. 0.024 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion:105 Resp: 725

Ion	Ratio	Lower	Upper
105	100		
120	57.7	23.0	63.0

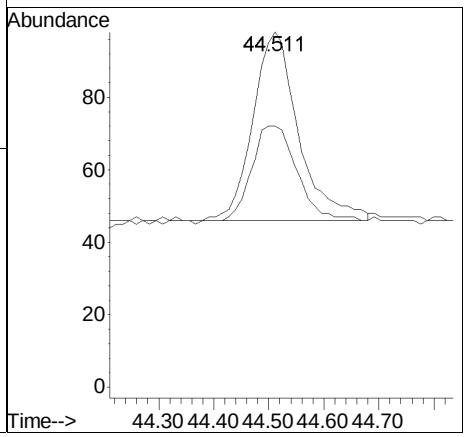


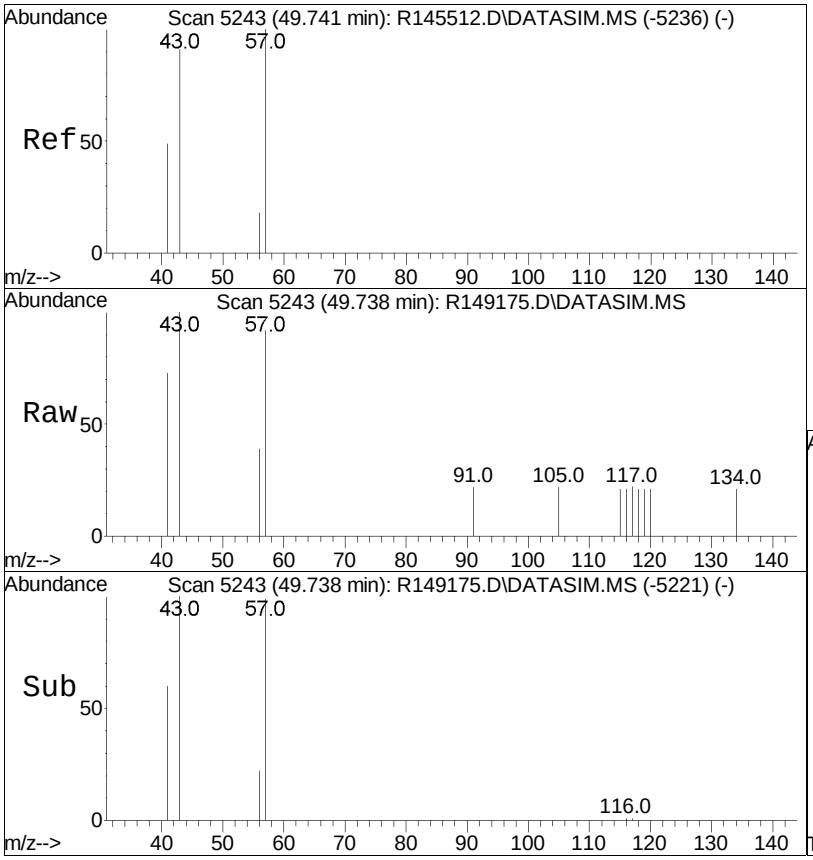


#76
Indan
Concen: 0.02 ppbV
RT: 44.511 min Scan# 4808
Delta R.T. 0.024 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion:117 Resp: 301

Ion	Ratio	Lower	Upper
117	100		
118	73.5	35.5	75.5

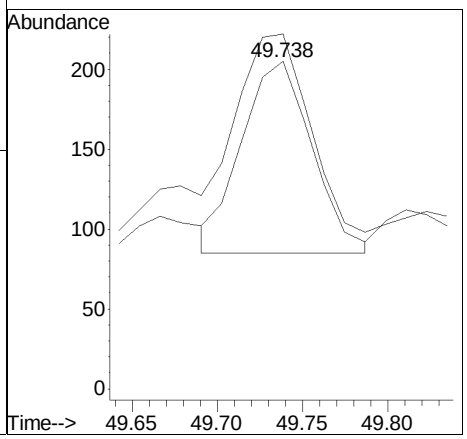


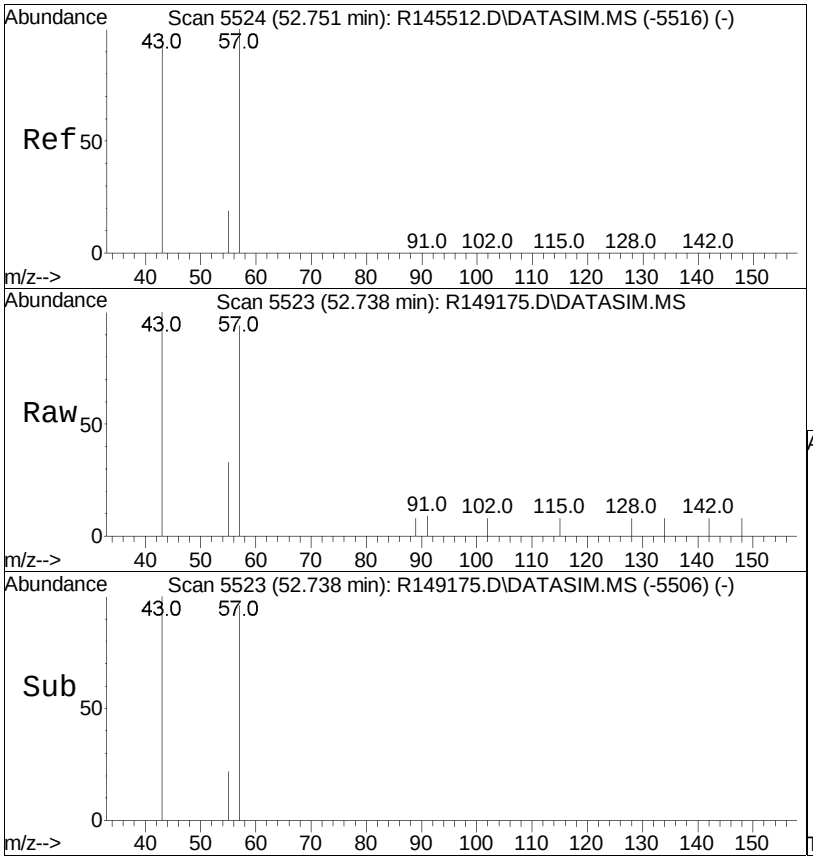


#85
Undecane
Concen: 0.02 ppbV m
RT: 49.738 min Scan# 5243
Delta R.T. 0.012 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 57 Resp: 345

Ion	Ratio	Lower	Upper
57	100		
43	108.3	79.1	119.1

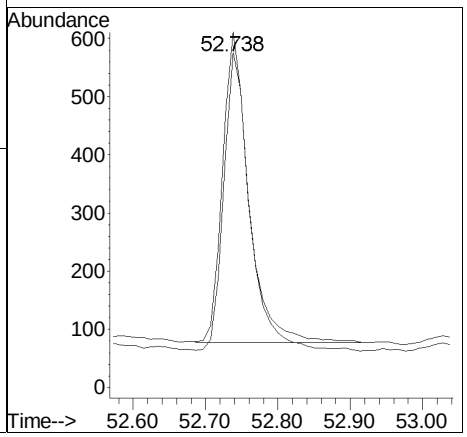


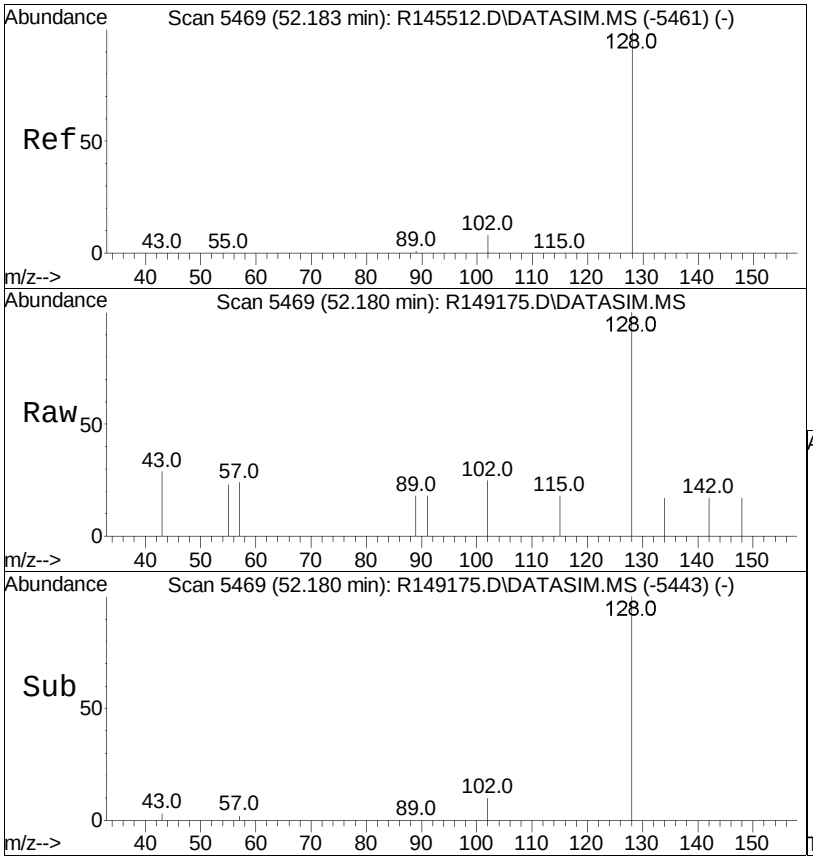


#92
Dodecane
Concen: 0.05 ppbV
RT: 52.738 min Scan# 5523
Delta R.T. 0.010 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion: 43 Resp: 1347

Ion	Ratio	Lower	Upper
43	100		
57	94.3	80.2	120.2

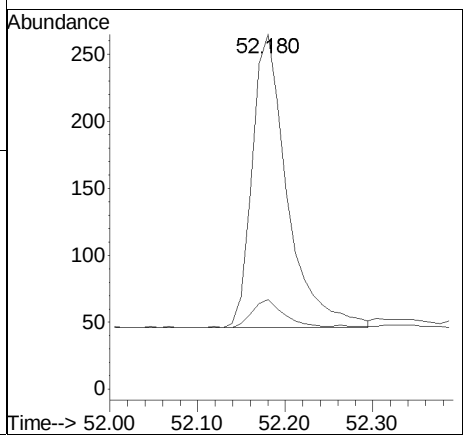




#93
Naphthalene
Concen: 0.02 ppbV
RT: 52.180 min Scan# 5469
Delta R.T. 0.021 min
Lab File: R149175.D
Acq: 8 Nov 2016 5:24 pm

Tgt Ion:128 Resp: 612

Ion	Ratio	Lower	Upper
128	100		
102	25.3	0.0	28.9



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-02	Date Collected	: 10/19/16 08:56
Client ID	: NFSV-04	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 18:31
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149176	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
106-99-0	1,3-Butadiene	0.026	0.025	0.010	0.058	0.055	0.022	
78-78-4	Isopentane	0.249	0.025	0.010	0.735	0.074	0.030	
109-67-1	1-Pentene	0.072	0.025	0.010	0.207	0.072	0.029	
563-46-2	2-Methyl-1-Butene	0.086	0.025	0.010	0.247	0.072	0.029	
109-66-0	Pentane	0.178	0.025	0.010	0.525	0.074	0.030	
646-04-8	trans-2-Pentene	0.049	0.025	0.010	0.141	0.072	0.029	
627-20-3	cis-2-Pentene	ND	0.025	0.010	ND	0.072	0.029	U
75-65-0	Tertiary Butanol	1.01	0.025	0.010	3.06	0.076	0.030	
287-92-3	Cyclopentane	ND	0.025	0.010	ND	0.072	0.029	U
79-29-8	2,3-Dimethylbutane	ND	0.025	0.010	ND	0.088	0.035	U
107-83-5	2-Methylpentane	0.061	0.025	0.010	0.215	0.088	0.035	
1634-04-4	Methyl tert butyl ether	0.192	0.025	0.010	0.692	0.090	0.036	
96-14-0	3-Methylpentane	ND	0.025	0.010	ND	0.088	0.035	U
592-41-6	1-Hexene	0.024	0.025	0.010	0.083	0.086	0.034	J
110-54-3	n-Hexane	0.055	0.025	0.010	0.194	0.088	0.035	
108-20-3	Isopropyl Ether	ND	0.025	0.010	ND	0.104	0.042	U
637-92-3	Ethyl-Tert-Butyl-Ether	ND	0.025	0.010	ND	0.104	0.042	U
590-35-2	2,2-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041	U
96-37-7	Methylcyclopentane	0.032	0.025	0.010	0.110	0.086	0.034	
108-08-7	2,4-Dimethylpentane	0.011	0.025	0.010	0.045	0.102	0.041	J
107-06-2	1,2-Dichloroethane	ND	0.025	0.010	ND	0.101	0.041	U
110-82-7	Cyclohexane	0.023	0.025	0.010	0.079	0.086	0.034	J
591-76-4	2-Methylhexane	0.013	0.025	0.010	0.053	0.102	0.041	J
71-43-2	Benzene	0.173	0.025	0.010	0.553	0.080	0.032	
565-59-3	2,3-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041	U
110-02-1	Thiophene	ND	0.025	0.010	ND	0.086	0.034	U
589-34-4	3-Methylhexane	ND	0.025	0.010	ND	0.102	0.041	U
994-05-8	Tertiary-Amyl Methyl Ether	ND	0.025	0.010	ND	0.104	0.042	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-02	Date Collected	: 10/19/16 08:56
Client ID	: NFSV-04	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 18:31
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149176	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
592-76-7	1-Heptene	ND	0.025	0.010	ND	0.100	0.040	U
540-84-1	Isooctane	0.018	0.025	0.010	0.084	0.117	0.047	J
142-82-5	Heptane	0.027	0.025	0.010	0.111	0.102	0.041	
108-87-2	Methylcyclohexane	ND	0.025	0.010	ND	0.100	0.040	U
592-13-2	2,5-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
589-43-5/564-02-3	2,4-Dimethylhexane/2,2,3-Trimethylpen	ND	0.050	0.025	ND	0.234	0.117	U
565-75-3	2,3,4-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047	U
560-21-4	2,3,3-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047	U
584-94-1	2,3-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
619-99-8	3-Ethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
592-27-8	2-Methylheptane	ND	0.025	0.010	ND	0.117	0.047	U
589-81-1	3-Methylheptane	ND	0.025	0.010	ND	0.117	0.047	U
108-88-3	Toluene	1.15	0.025	0.010	4.33	0.094	0.038	
554-14-3	2-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040	U
616-44-4	3-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040	U
111-66-0	1-Octene	0.026	0.025	0.010	0.119	0.115	0.046	
16747-50-5	1-Ethyl-1-Methylcyclopentane	ND	0.025	0.010	ND	0.115	0.046	U
111-65-9	Octane	0.041	0.025	0.010	0.192	0.117	0.047	
106-93-4	1,2-Dibromoethane	ND	0.025	0.010	ND	0.192	0.077	U
100-41-4	Ethylbenzene	0.134	0.025	0.010	0.582	0.109	0.043	
872-55-9	2-Ethylthiophene	ND	0.025	0.010	ND	0.115	0.046	U
179601-23-1	p/m-Xylene	0.572	0.050	0.010	2.48	0.217	0.043	
124-11-8	1-Nonene	ND	0.025	0.010	ND	0.129	0.052	U
111-84-2	Nonane (C9)	0.043	0.025	0.010	0.226	0.131	0.053	
100-42-5	Styrene	0.025	0.025	0.010	0.106	0.106	0.043	
95-47-6	o-Xylene	0.286	0.050	0.010	1.24	0.217	0.043	
98-82-8	Isopropylbenzene	ND	0.025	0.010	ND	0.123	0.049	U
103-65-1	n-Propylbenzene	0.035	0.025	0.010	0.172	0.123	0.049	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-02	Date Collected	: 10/19/16 08:56
Client ID	: NFSV-04	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 18:31
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149176	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
620-14-4	1-Methyl-3-Ethylbenzene	0.139	0.050	0.025	0.683	0.246	0.123	
622-96-8	1-Methyl-4-Ethylbenzene	0.083	0.025	0.010	0.408	0.123	0.049	
108-67-8	1,3,5-Trimethylbenzene	0.076	0.025	0.010	0.374	0.123	0.049	
872-05-9	1-Decene	0.030	0.050	0.025	0.172	0.287	0.143	J
611-14-3	1-Methyl-2-Ethylbenzene	0.074	0.050	0.025	0.364	0.246	0.123	
124-18-5	Decane (C10)	0.472	0.050	0.025	2.75	0.291	0.146	
95-63-6	1,2,4-Trimethylbenzene	0.239	0.050	0.025	1.17	0.246	0.123	
135-98-8	sec-Butylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
535-77-3	1-Methyl-3-Isopropylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
99-87-6	1-Methyl-4-Isopropylbenzene	0.257	0.050	0.025	1.41	0.274	0.137	
527-84-4	1-Methyl-2-Isopropylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
496-11-7	Indane	0.034	0.050	0.025	0.164	0.242	0.121	J
95-13-6	Indene	ND	0.050	0.025	ND	0.238	0.119	U
1074-43-7	1-Methyl-3-N-Propylbenzene	0.061	0.050	0.025	0.335	0.274	0.137	
1074-55-1	1-Methyl-4-N-Propylbenzene	0.026	0.050	0.025	0.143	0.274	0.137	J
104-51-8	n-Butylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
934-80-5	1,2-Dimethyl-4-Ethylbenzene	0.045	0.050	0.025	0.247	0.274	0.137	J
135-01-3	1,2-Diethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1074-17-5	1-Methyl-2-N-Propylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1758-88-9	1,4-Dimethyl-2-Ethylbenzene	0.032	0.050	0.025	0.176	0.274	0.137	J
1120-21-4	Undecane	0.193	0.050	0.025	1.23	0.320	0.160	
874-41-9	1,3-Dimethyl-4-Ethylbenzene	0.025	0.050	0.025	0.137	0.274	0.137	J
934-74-7	1,3-Dimethyl-5-Ethylbenzene	0.049	0.050	0.025	0.269	0.274	0.137	J
2870-04-4	1,3-Dimethyl-2-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
933-98-2	1,2-Dimethyl-3-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
538-68-1	N-Pentylbenzene	ND	0.050	0.025	ND	0.303	0.152	U
112-40-3	Dodecane (C12)	4.13	0.100	0.050	28.8	0.697	0.348	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-02	Date Collected	: 10/19/16 08:56
Client ID	: NFSV-04	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 18:31
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149176	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
91-20-3	Naphthalene	0.088	0.050	0.025	0.461	0.262	0.131	
95-15-8	Benzothiophene	ND	0.100	0.050	ND	0.549	0.274	U
12108-13-3	MMT	ND	0.100	0.050	ND	0.892	0.446	U
629-50-5	Tridecane	0.129	1.00	0.050	0.973	7.54	0.377	J
91-57-6	2-Methylnaphthalene	ND	0.500	0.050	ND	2.91	0.291	U
90-12-0	1-Methylnaphthalene	ND	0.500	0.050	ND	2.91	0.291	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149176.D
Acq On : 8 Nov 2016 6:31 pm
Operator : AIRPIANO1:RY
Sample : L1634001-02,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 10 10:59:39 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.193	49	128578	10.000	ppbV	0.00
Standard Area = 123393			Recovery = 104.20%			
27) 1,4-difluorbenzene	14.201	114	273607	10.000	ppbV	0.00
Standard Area = 263318			Recovery = 103.91%			
54) chlorobenzene-D5	27.633	117	202526	10.000	ppbV	0.00
Standard Area = 190793			Recovery = 106.15%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.614	65	80246	9.988	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.88%			
46) Toluene-D8	20.948	98	207705	9.951	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.51%			
62) 4-Bromofluorobenzene (...	34.334	95	103620	9.327	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 93.27%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.709	54	174	0.026	ppbV #	5
4) Isopentane	5.878	41	3096M6	0.249	ppbV	
5) 1-Pentene	6.194	42	1010	0.072	ppbV	95
6) 2-Methyl-1-butene	6.352	55	1433	0.086	ppbV	87
7) Pentane	6.468	43	3790	0.178	ppbV	93
9) 2-Pentene (trans)	6.657	55	784	0.049	ppbV #	81
10) 2-Pentene (cis)	0.000		0	N.D.	d	
11) Tertiary butanol	6.878	59	24367	1.007	ppbV	87
12) Cyclopentane	0.000		0	N.D.	d	
13) 2,3-Dimethylbutane	0.000		0	N.D.	d	
14) 2-Methylpentane	8.807	43	1474M6	0.061	ppbV	
15) MTBE	8.687	73	4721	0.192	ppbV #	69
16) 3-Methylpentane	0.000		0	N.D.	d	
17) 1-Hexene	9.723	56	219M3	0.024	ppbV	
18) Hexane	10.286	57	746	0.055	ppbV #	64
19) Diisopropyl ether	0.000		0	N.D.	d	
20) Ethyl tertiary butyl e...	0.000		0	N.D.	d	
21) 2,2-Dimethylpentane	0.000		0	N.D.	d	
23) Methylcyclopentane	11.827	56	534	0.032	ppbV	77
24) 2,4-Dimethylpentane	11.968	43	231	0.011	ppbV	78
25) 1,2-Dichloroethane	0.000		0	N.D.	d	
26) Cyclohexane	13.921	56	298	0.023	ppbV	93
28) 2-Methylhexane	14.391	43	292M3	0.013	ppbV	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149176.D
Acq On : 8 Nov 2016 6:31 pm
Operator : AIRPIANO1:RY
Sample : L1634001-02,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 10 10:59:39 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
29) Benzene	13.316	78	4519	0.173	ppbV	92
30) 2,3-Dimethylpentane	0.000		0	N.D.	d	
31) Thiophene	0.000		0	N.D.	d	
32) 3-Methylhexane	0.000		0	N.D.	d	
33) TAME	0.000		0	N.D.	d	
34) 1-Heptene	0.000		0	N.D.	d	
35) Isooctane	16.004	57	742M6	0.018	ppbV	
36) Heptane	16.788	43	484M4	0.027	ppbV	
37) Methylcyclohexane	0.000		0	N.D.	d	
38) 2,5-Dimethylhexane	0.000		0	N.D.	d	
39) 2,4-Dimethyhexane / 2,...	0.000		0	N.D.	d	
40) 2,3,4-Trimethylpentane	0.000		0	N.D.	d	
41) 2,3,3-Trimethylpentane	0.000		0	N.D.	d	
42) 2,3-Dimethylhexane	0.000		0	N.D.	d	
43) 3-Ethylhexane	0.000		0	N.D.	d	
44) 2-Methylheptane	0.000		0	N.D.	d	
45) 3-Methylheptane	0.000		0	N.D.		
47) Toluene	21.263	91	35114	1.154	ppbV	100
48) 2-Methylthiophene	0.000		0	N.D.	d	
49) 3-Methylthiophene	0.000		0	N.D.	d	
50) 1-Octene	24.087	55	234M6	0.026	ppbV	
51) 1-ethyl-1-methylcyclop...	0.000		0	N.D.	d	
52) Octane	25.091	43	999M6	0.041	ppbV	
53) 1,2-Dibromoethane	0.000		0	N.D.	d	
55) Ethylbenzene	29.493	91	3828	0.134	ppbV	92
56) 2-Ethylthiophene	0.000		0	N.D.	d	
57) p/m-Xylene	30.233	91	12587M4	0.572	ppbV	
58) 1-Nonene	0.000		0	N.D.	d	
59) Nonane	33.908	43	908	0.043	ppbV	100
60) Styrene	31.854	104	370	0.025	ppbV #	66
61) o-Xylene	32.257	91	6456	0.286	ppbV	98
63) Isopropylbenzene	0.000		0	N.D.	d	
64) n-Propylbenzene	37.686	120	274	0.035	ppbV #	35
65) 1-Methyl-3-ethylbenzene	38.335	105	3878	0.139	ppbV	95
66) 1-Methyl-4-ethylbenzene	38.515	105	2500	0.083	ppbV	90
67) 1,3,5-Trimethylbenzene	38.996	105	1859	0.076	ppbV	91
68) 1-Decene	41.531	41	363M4	0.030	ppbV	
69) 1-Methyl-2-ethylbenzene	39.873	105	2100	0.074	ppbV	89
70) Decane	42.504	43	10396	0.472	ppbV	92
71) 1,2,4-Trimethylbenzene	41.147	105	5818	0.239	ppbV	94

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149176.D
Acq On : 8 Nov 2016 6:31 pm
Operator : AIRPIANO1:RY
Sample : L1634001-02,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 10 10:59:39 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

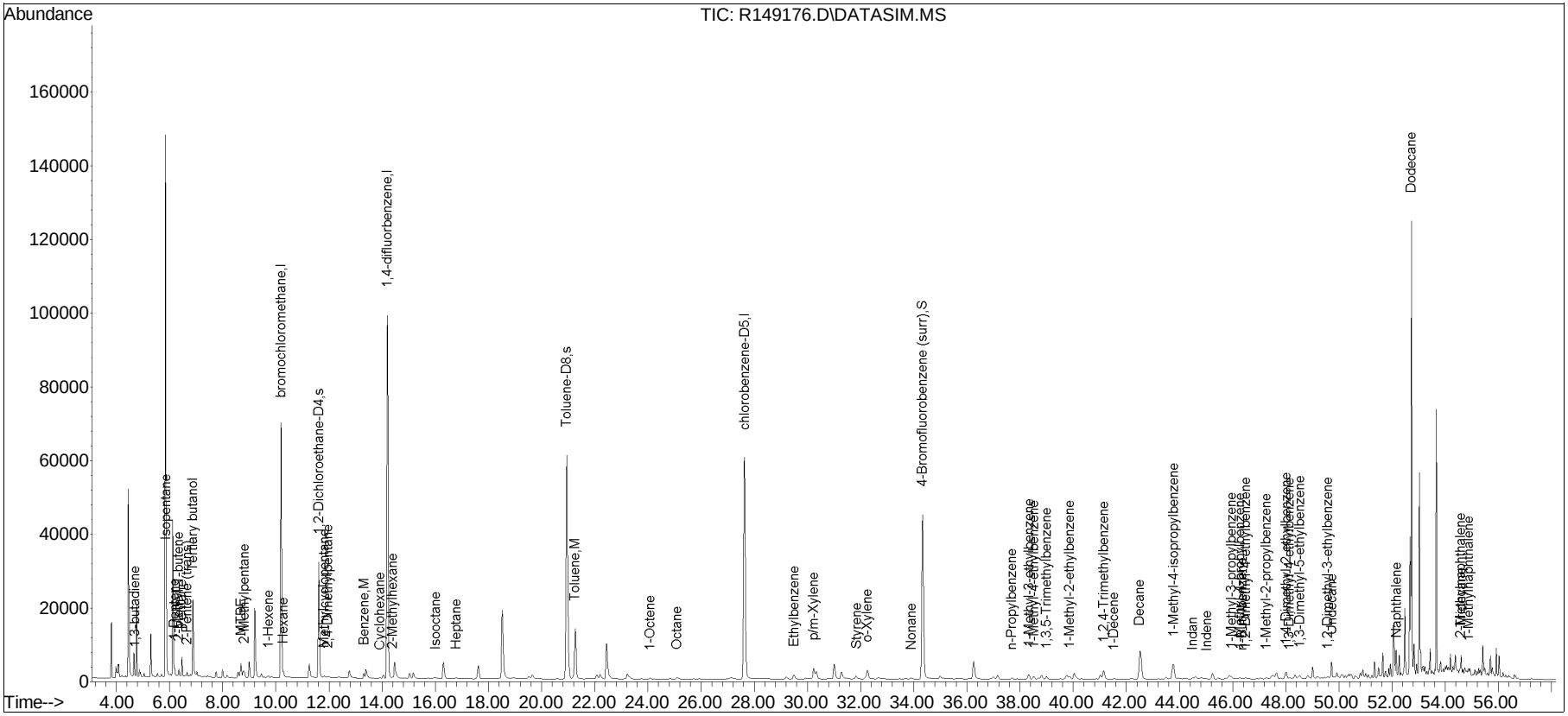
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
72) sec-Butylbenzene	0.000		0	N.D.	d		
73) 1-Methyl-3-isopropylbe...	0.000		0	N.D.	d		
74) 1-Methyl-4-isopropylbe...	43.778	119	6756	0.257	ppbV		93
75) 1-Methyl-2-isopropylbe...	0.000		0	N.D.	d		
76) Indan	44.499	117	653	0.034	ppbV		86
77) Indene	45.028	115	138	0.012	ppbV		93
78) 1-Methyl-3-propylbenzene	45.953	105	2149	0.061	ppbV		89
79) 1-Methyl-4-propylbenzene	46.278	105	1120	0.026	ppbV		62
80) n-Butylbenzene	46.362	91	472M4	0.014	ppbV		
81) 1,2-Dimethyl-4-ethylbe...	46.482	119	1211	0.045	ppbV		76
82) 1,2-Diethylbenzene	46.758		0	N.D.			
83) 1-Methyl-2-propylbenzene	47.263	105	786	0.021	ppbV		61
84) 1,4-Dimethyl-2-ethylbe...	48.020	119	885	0.032	ppbV		72
85) Undecane	49.726	57	4295M4	0.193	ppbV		
86) 1,3-Dimethyl-4-ethylbe...	48.140	119	819	0.025	ppbV	#	65
87) 1,3-Dimethyl-5-ethylbe...	48.525	119	1498	0.049	ppbV		80
88) 1,3-Dimethyl-2-ethylbe...	48.897		0	N.D.			
89) 1,2-Dimethyl-3-ethylbe...	49.582	119	350M6	0.012	ppbV		
90) 1,2,4,5-Tetramethylben...	50.099		0	N.D.			
91) Pentylbenzene	51.468		0	N.D.			
92) Dodecane	52.728	43	100501	4.128	ppbV		99
93) Naphthalene	52.170	128	2904	0.088	ppbV		90
94) Benzothiophene	52.325		0	N.D.			
95) MMT	0.000		0	N.D.	d		
96) Tridecane	54.597	57	4443M4	0.129	ppbV		
97) 2-Methylnaphthalene	54.576	142	409	0.018	ppbV		68
98) 1-Methylnaphthalene	54.876	142	344	0.013	ppbV	#	63

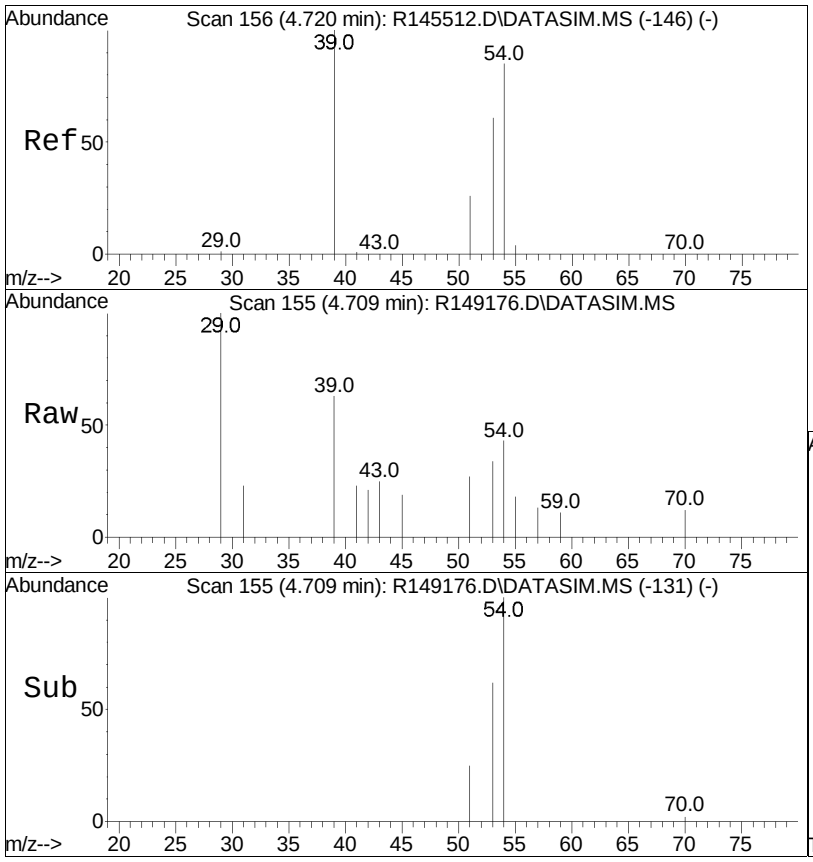
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : AIR-NF-PIANO - NF PIANO LIST161108PIANO\R149170.D

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149176.D
Acq On : 8 Nov 2016 6:31 pm
Operator : AIRPIANO1:RY
Sample : L1634001-02,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 10 10:59:39 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

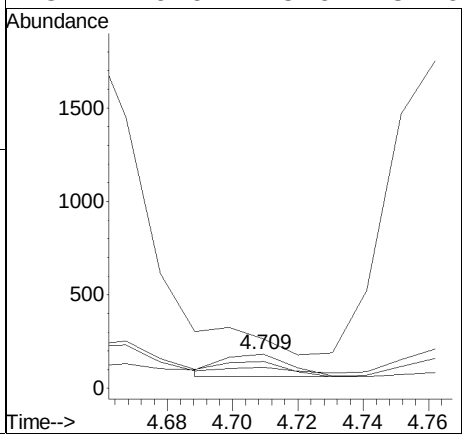


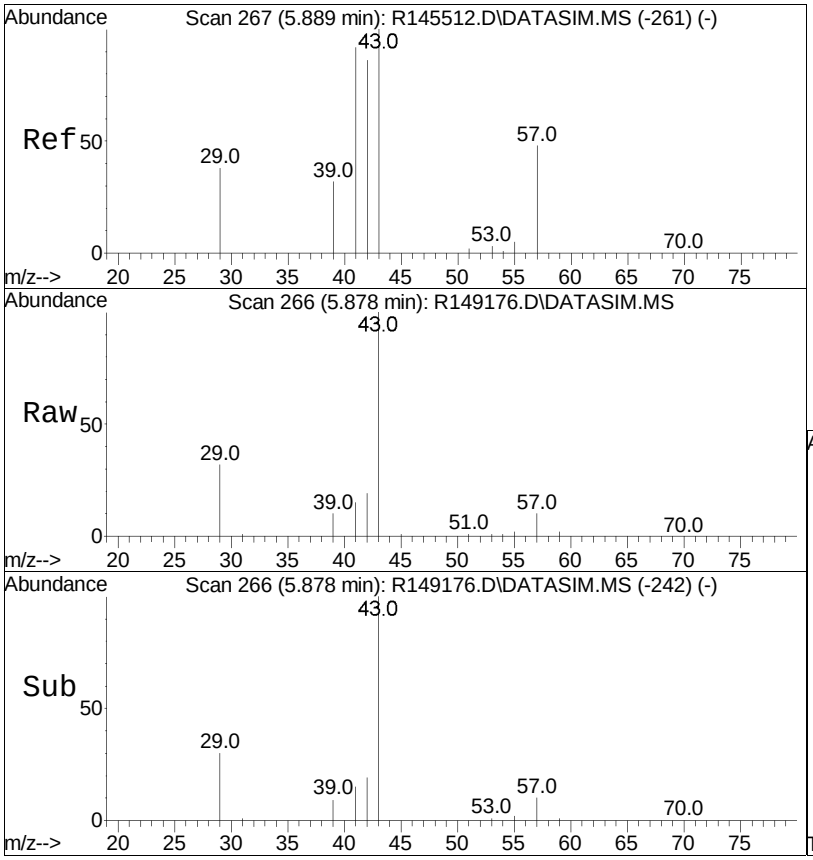


#2
1,3-butadiene
Concen: 0.03 ppbV
RT: 4.709 min Scan# 155
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 54 Resp: 174

Ion	Ratio	Lower	Upper
54	100		
39	0.0	100.0	150.0#
53	0.0	57.0	85.6#
51	0.0	25.0	37.6#

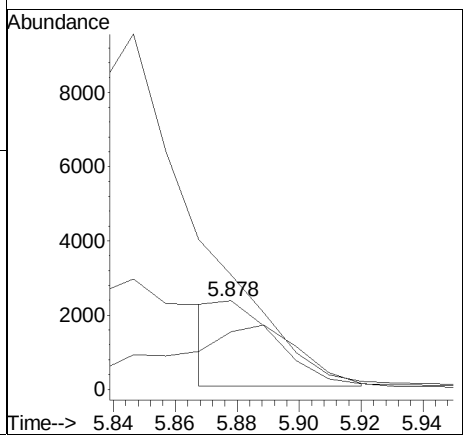


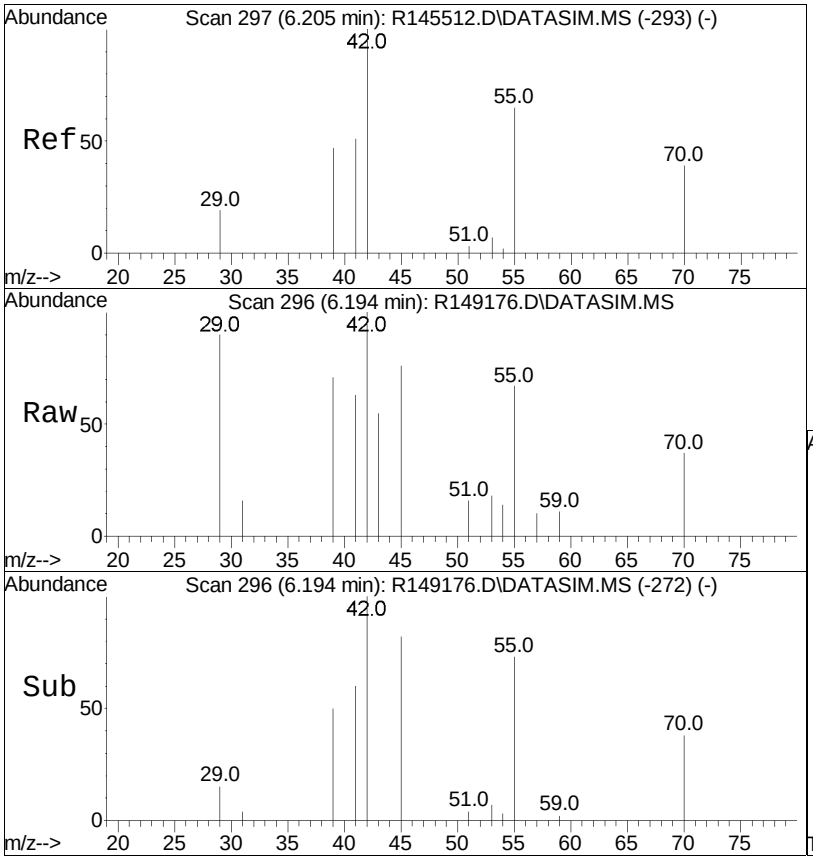


#4
Isopentane
Concen: 0.25 ppbV m
RT: 5.878 min Scan# 266
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 41 Resp: 3096

Ion	Ratio	Lower	Upper
41	100		
57	65.0	31.8	71.8
42	129.0	76.7	116.7#

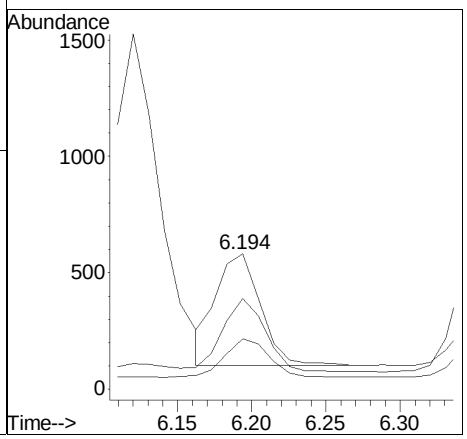


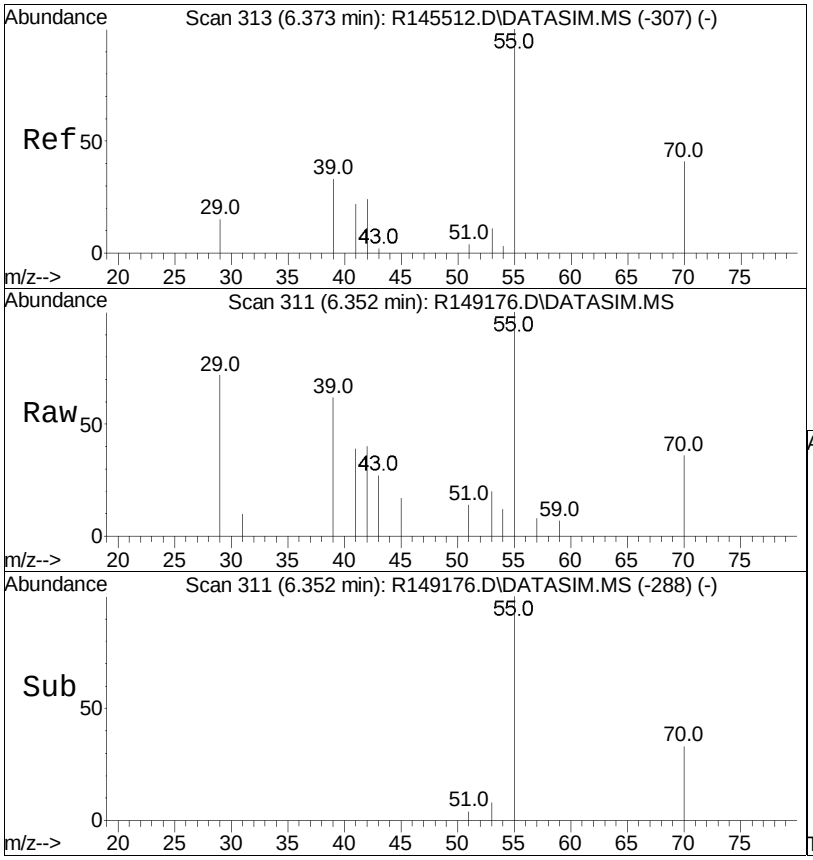


#5
1-Pentene
Concen: 0.07 ppbV
RT: 6.194 min Scan# 296
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 42 Resp: 1010

Ion	Ratio	Lower	Upper
42	100		
55	67.0	43.2	83.2
70	37.3	13.6	53.6

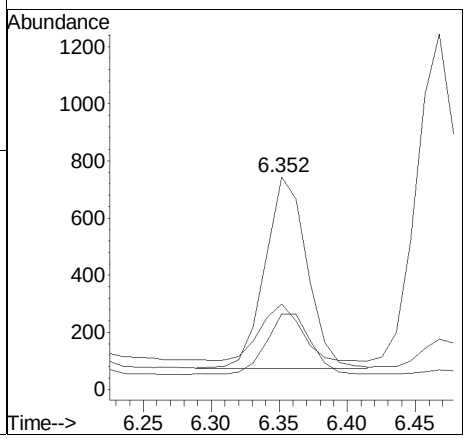


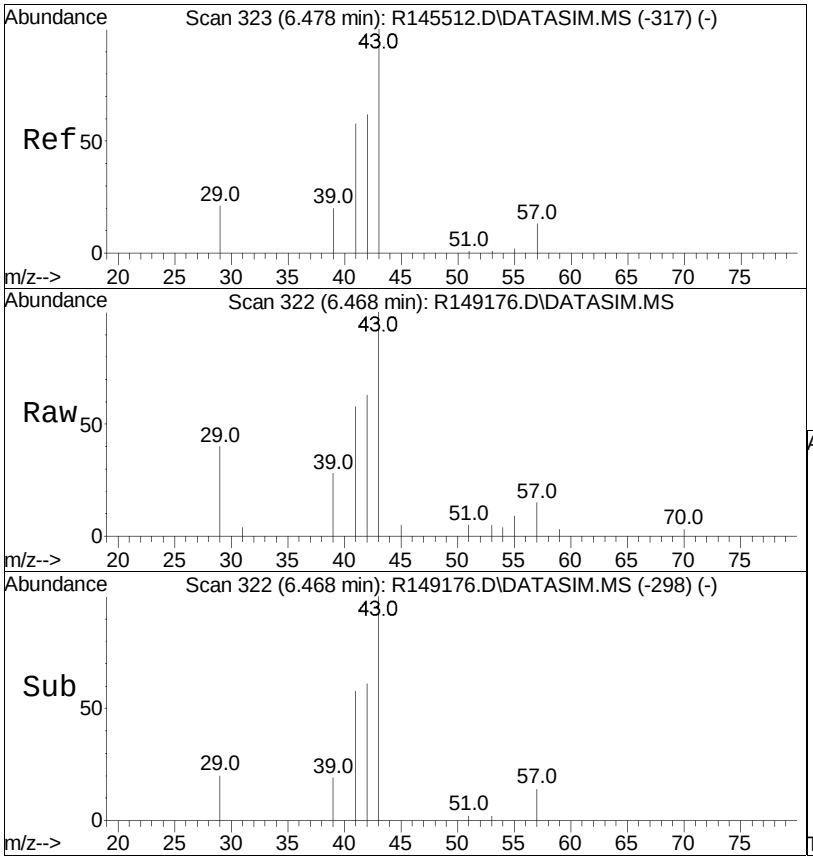


#6
2-Methyl-1-butene
Concen: 0.09 ppbV
RT: 6.352 min Scan# 311
Delta R.T. -0.011 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 55 Resp: 1433

Ion	Ratio	Lower	Upper
55	100		
70	35.6	16.1	56.1
42	40.2	5.4	45.4

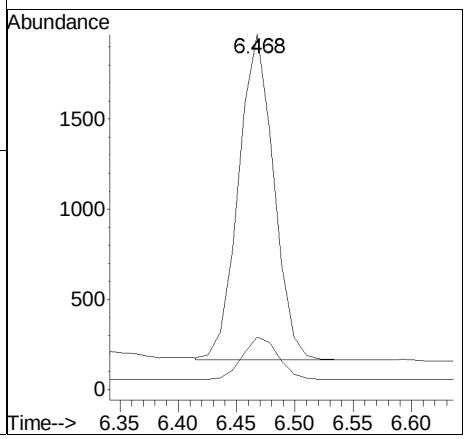


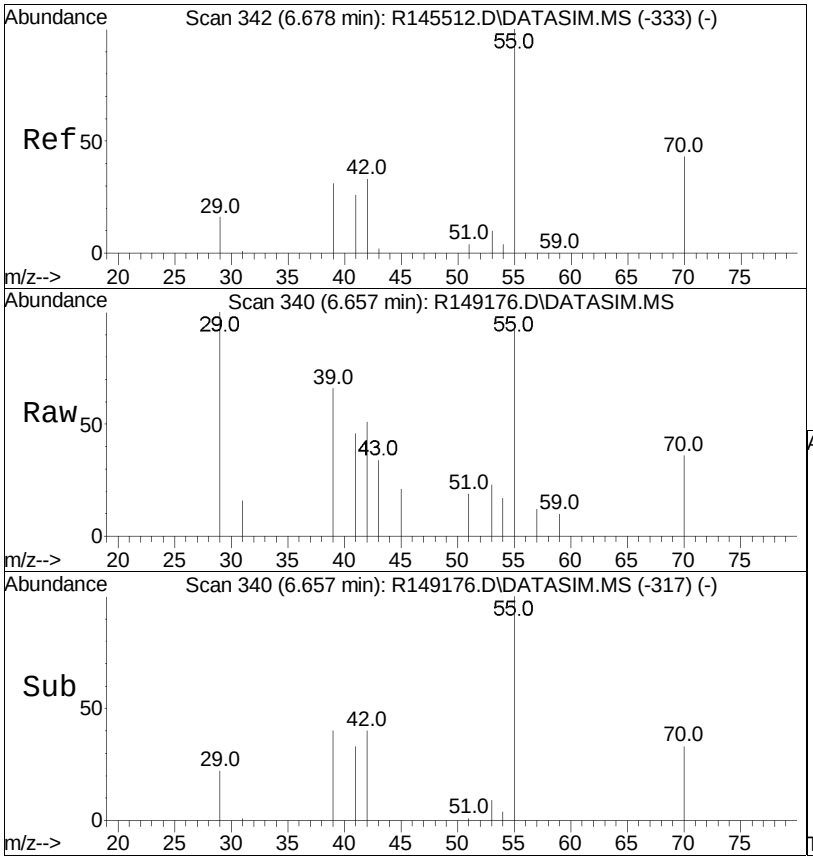


#7
Pentane
Concen: 0.18 ppbV
RT: 6.468 min Scan# 322
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 43 Resp: 3790

Ion	Ratio	Lower	Upper
43	100		
57	14.8	0.0	32.2

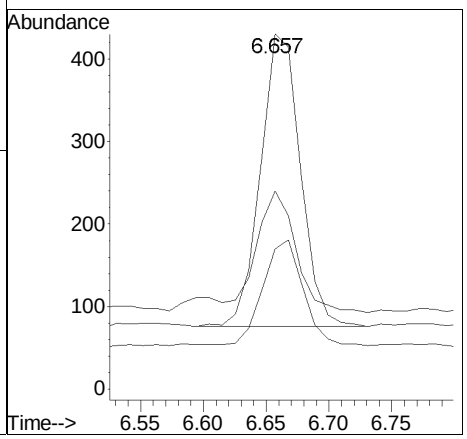


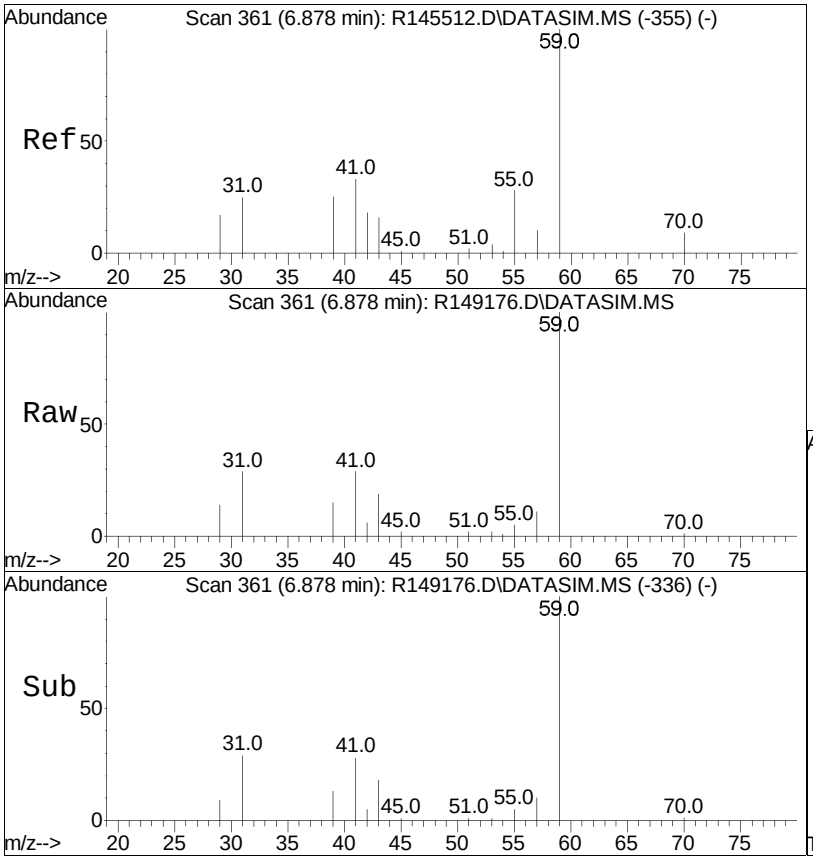


#9
2-Pentene (trans)
Concen: 0.05 ppbV
RT: 6.657 min Scan# 340
Delta R.T. -0.011 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 55 Resp: 784

Ion	Ratio	Lower	Upper
55	100		
70	39.5	17.7	57.7
42	55.8	14.5	54.5#

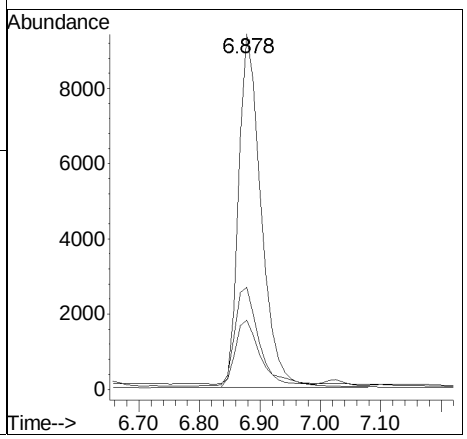


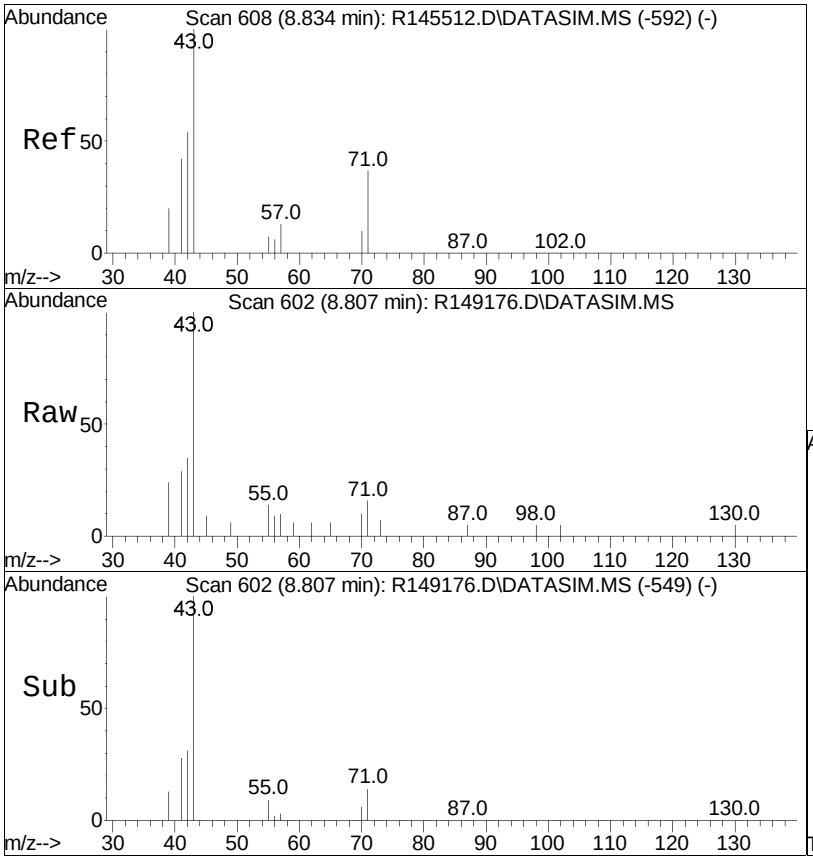


#11
Tertiary butanol
Concen: 1.01 ppbV
RT: 6.878 min Scan# 361
Delta R.T. 0.010 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 59 Resp: 24367

Ion	Ratio	Lower	Upper
59	100		
41	28.7	20.2	60.2
43	19.5	0.0	38.4

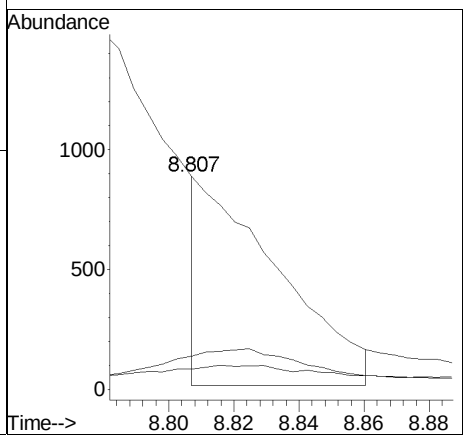


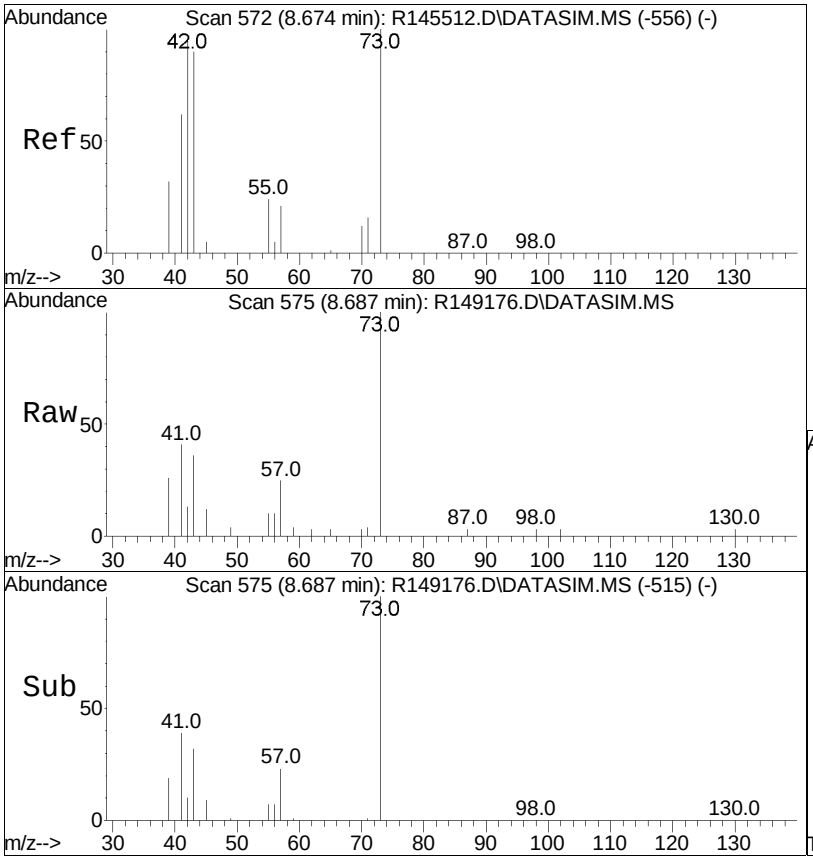


#14
2-Methylpentane
Concen: 0.06 ppbV m
RT: 8.807 min Scan# 602
Delta R.T. -0.014 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 43 Resp: 1474

Ion	Ratio	Lower	Upper
43	100		
71	15.6	8.8	48.8
57	9.6	0.0	31.6

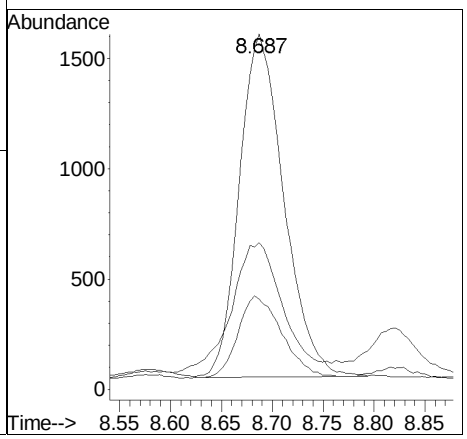


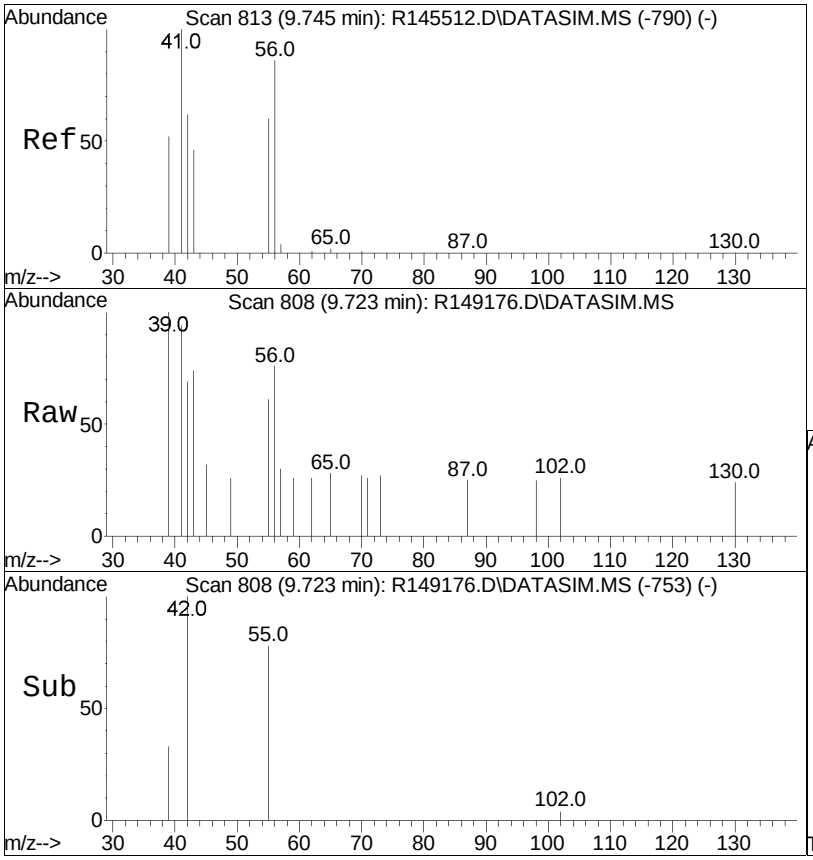


#15
MTBE
Concen: 0.19 ppbV
RT: 8.687 min Scan# 575
Delta R.T. 0.018 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 73 Resp: 4721

Ion	Ratio	Lower	Upper
73	100		
41	41.3	54.6	94.6#
57	25.4	3.7	43.7

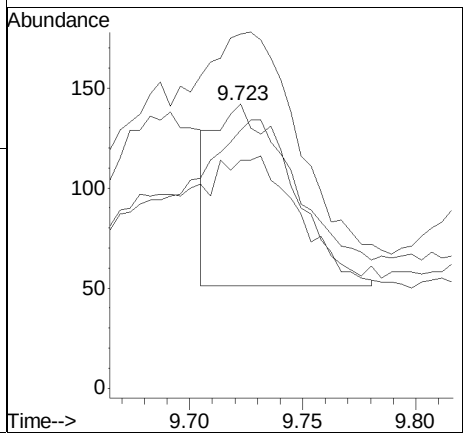


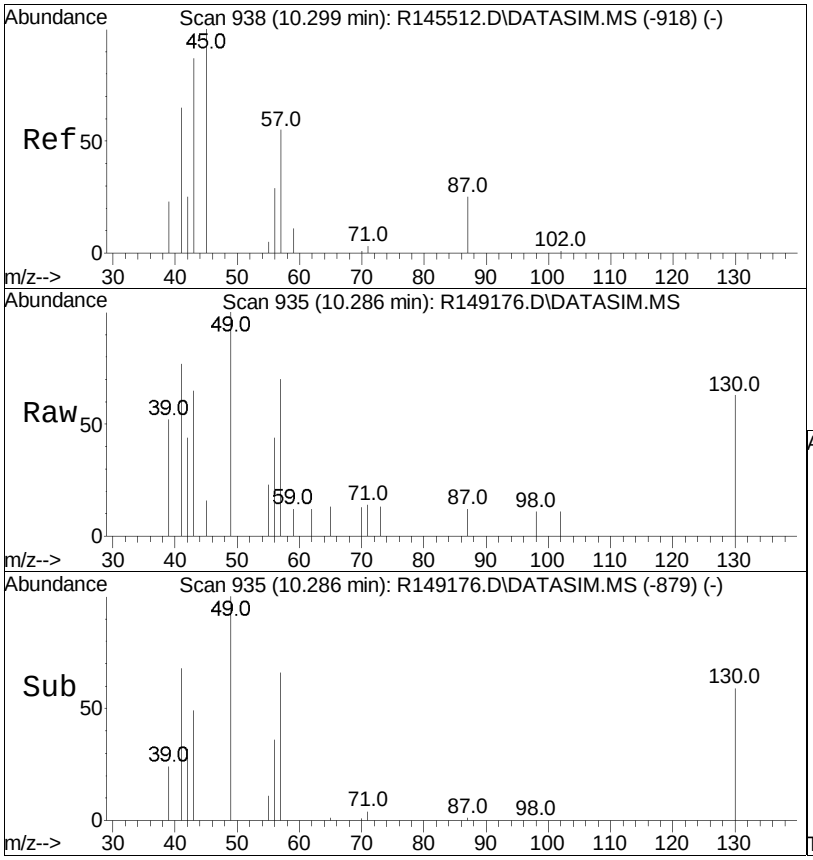


#17
1-Hexene
Concen: 0.02 ppbV m
RT: 9.723 min Scan# 808
Delta R.T. -0.005 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 56 Resp: 219

Ion	Ratio	Lower	Upper
56	100		
41	124.6	111.5	151.5
55	80.3	51.2	91.2
42	90.8	62.3	102.3

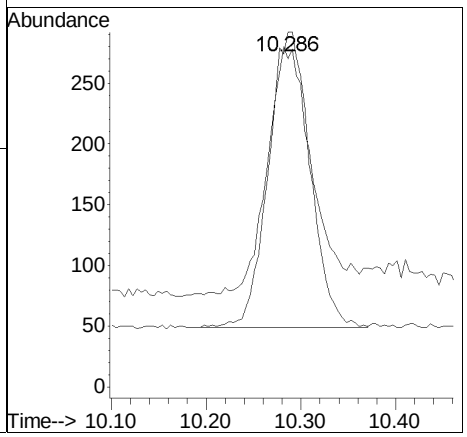


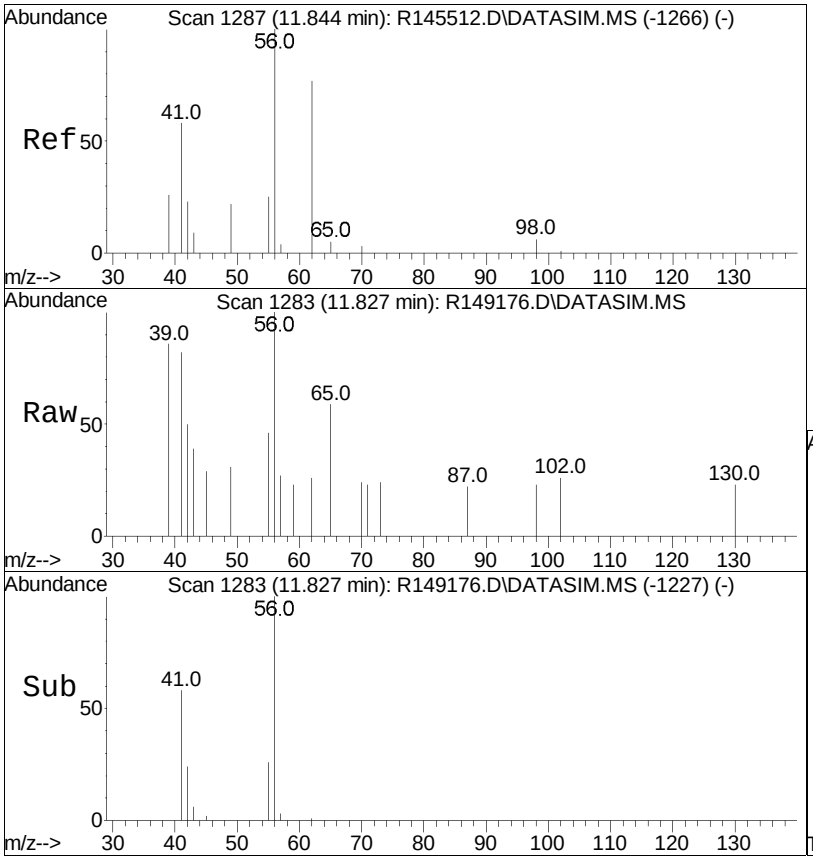


#18
Hexane
Concen: 0.05 ppbV
RT: 10.286 min Scan# 935
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 57 Resp: 746

Ion	Ratio	Lower	Upper
57	100		
43	92.5	114.8	154.8#

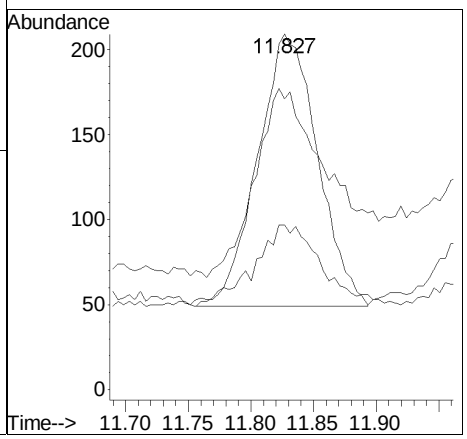


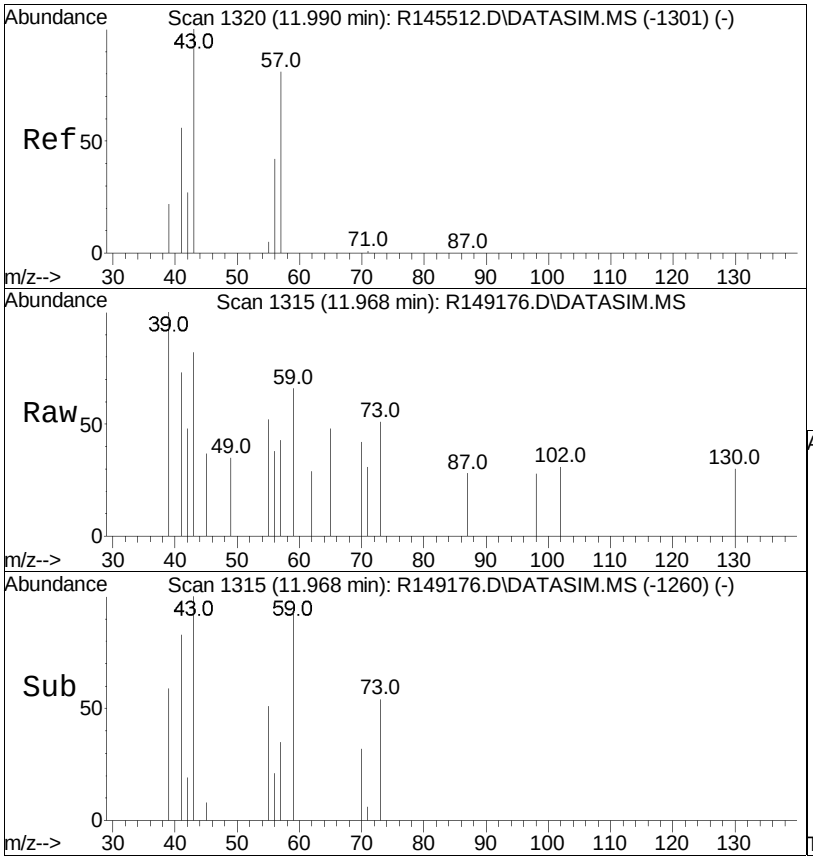


#23
Methylcyclopentane
Concen: 0.03 ppbV
RT: 11.827 min Scan# 1283
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 56 Resp: 534

Ion	Ratio	Lower	Upper
56	100		
55	46.4	6.8	46.8
41	81.8	47.8	87.8

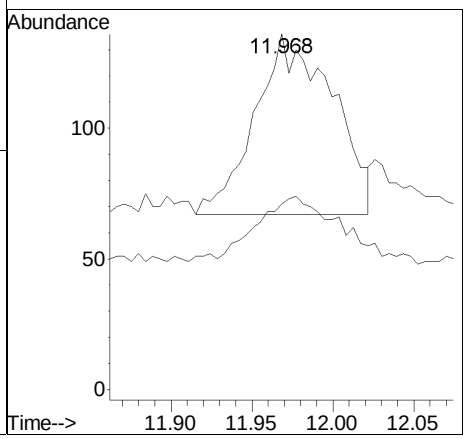


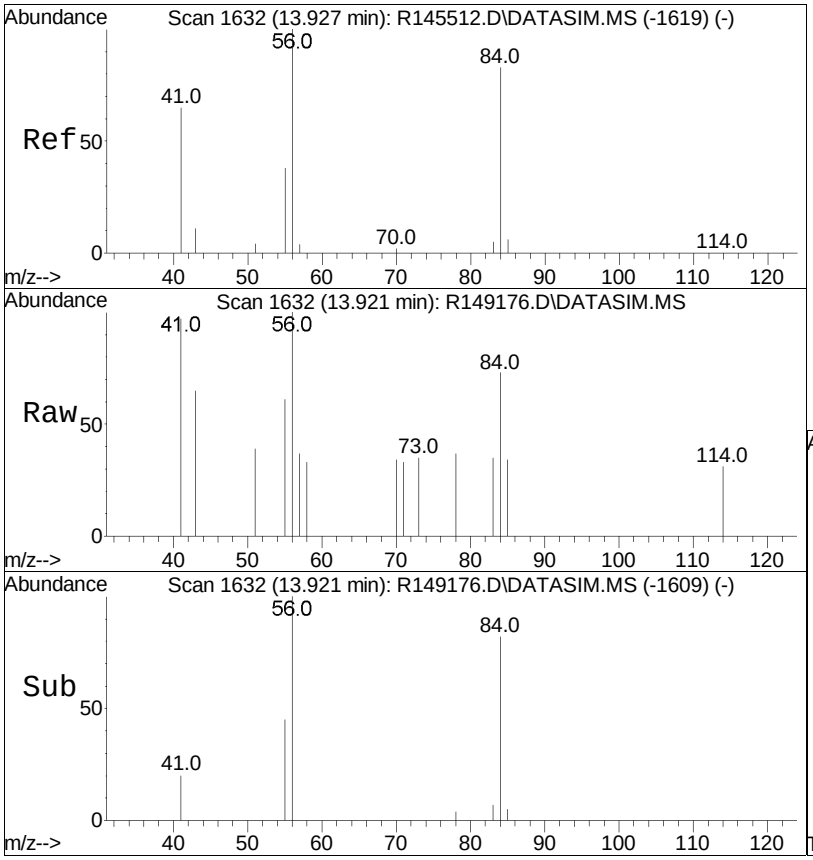


#24
2,4-Dimethylpentane
Concen: 0.01 ppbV
RT: 11.968 min Scan# 1315
Delta R.T. -0.005 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 43 Resp: 231

Ion	Ratio	Lower	Upper
43	100		
57	52.2	50.5	90.5

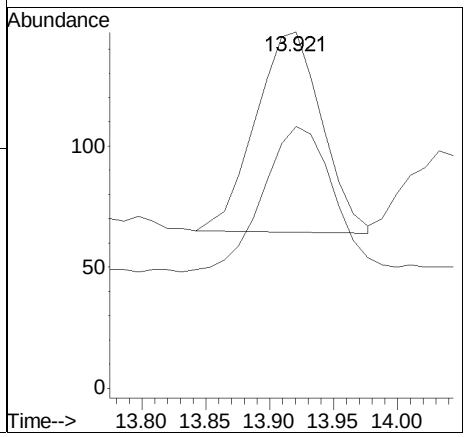


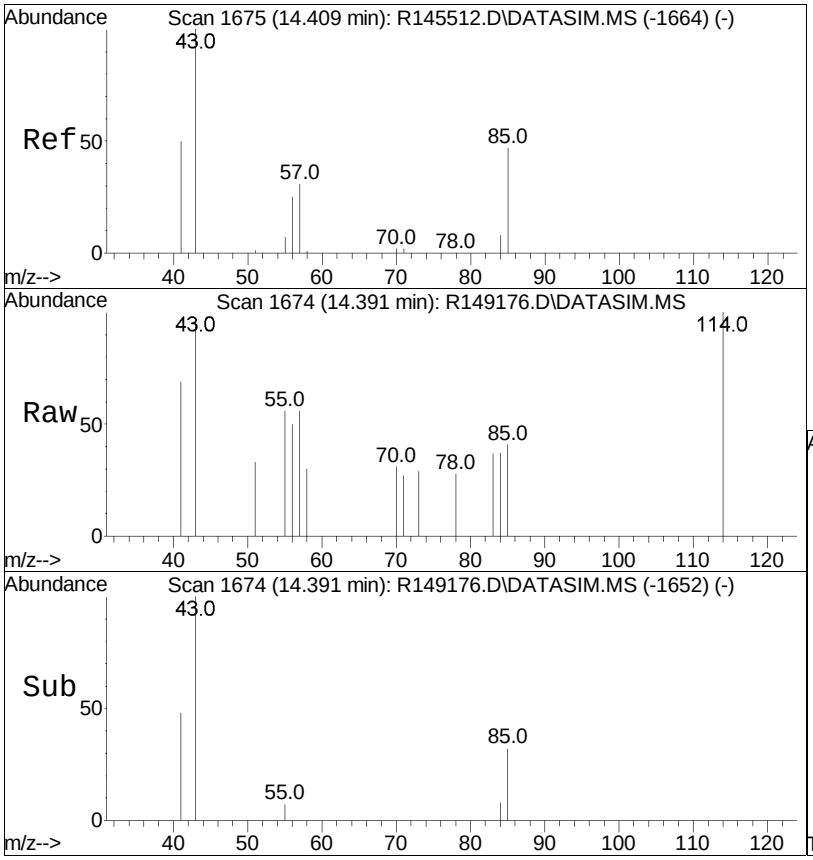


#26
Cyclohexane
Concen: 0.02 ppbV
RT: 13.921 min Scan# 1632
Delta R.T. 0.011 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 56 Resp: 298

Ion	Ratio	Lower	Upper
56	100		
84	73.5	47.9	87.9

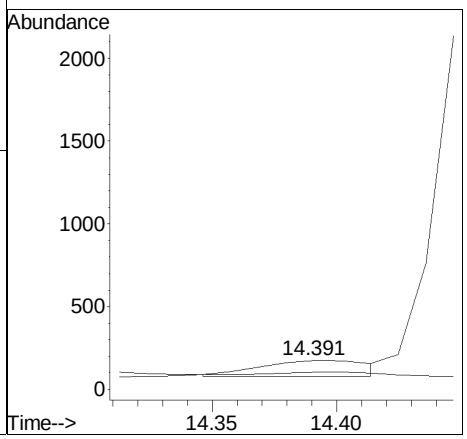


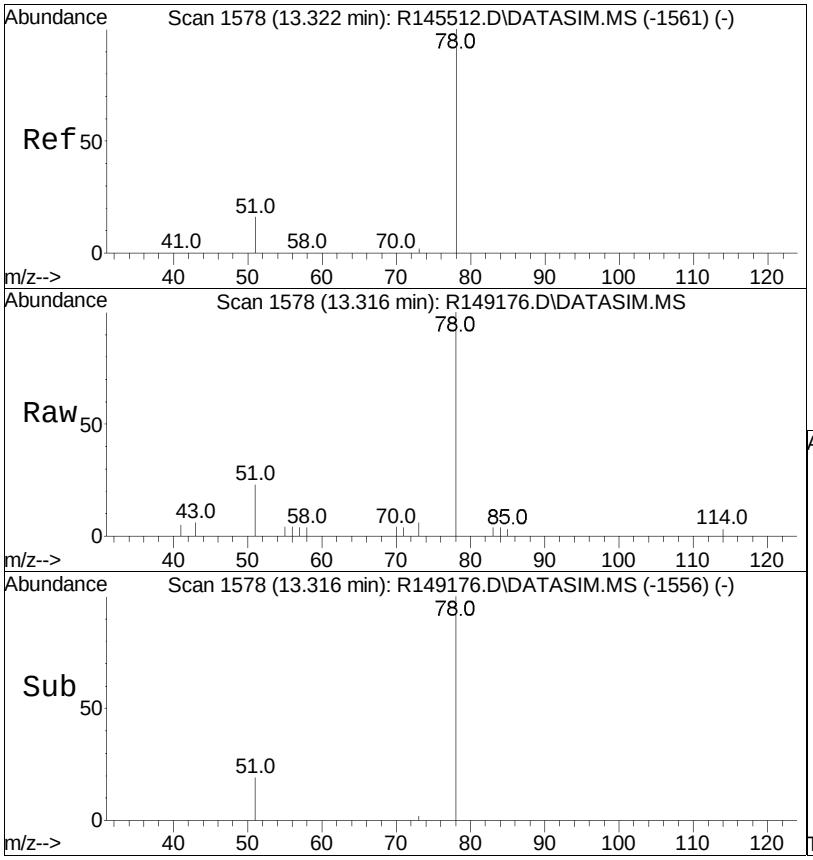


#28
2-Methylhexane
Concen: 0.01 ppbV m
RT: 14.391 min Scan# 1674
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 43 Resp: 292

Ion	Ratio	Lower	Upper
43	100		
57	59.4	7.8	47.8#

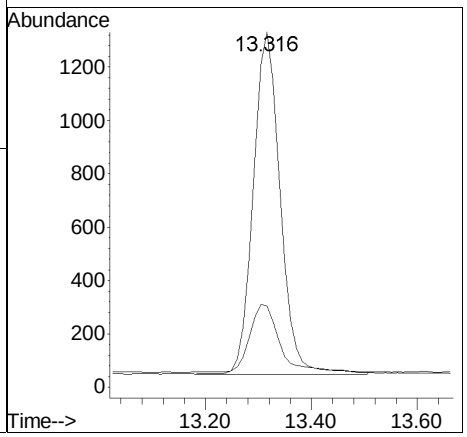


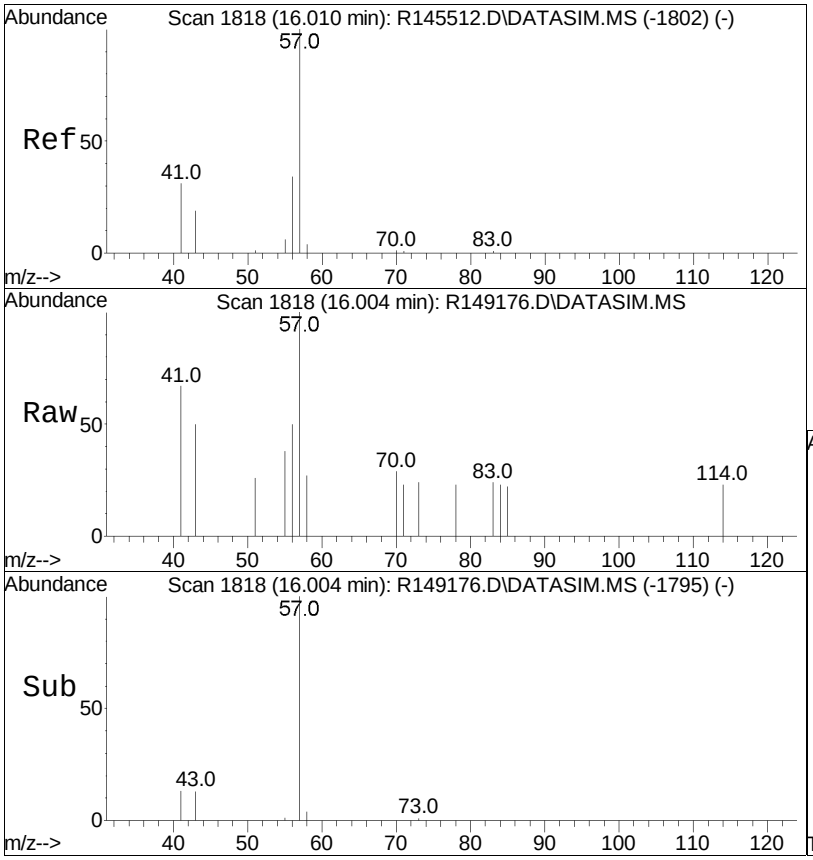


#29
Benzene
Concen: 0.17 ppbV
RT: 13.316 min Scan# 1578
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 78 Resp: 4519

Ion	Ratio	Lower	Upper
78	100		
51	22.9	0.0	39.4

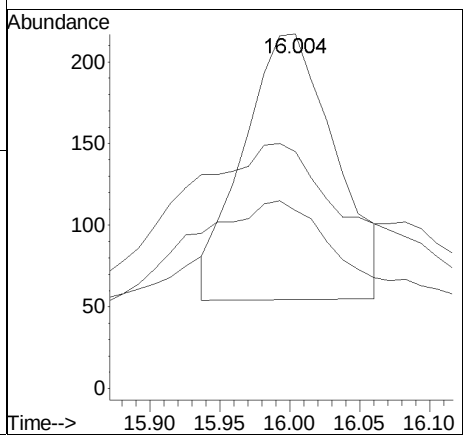


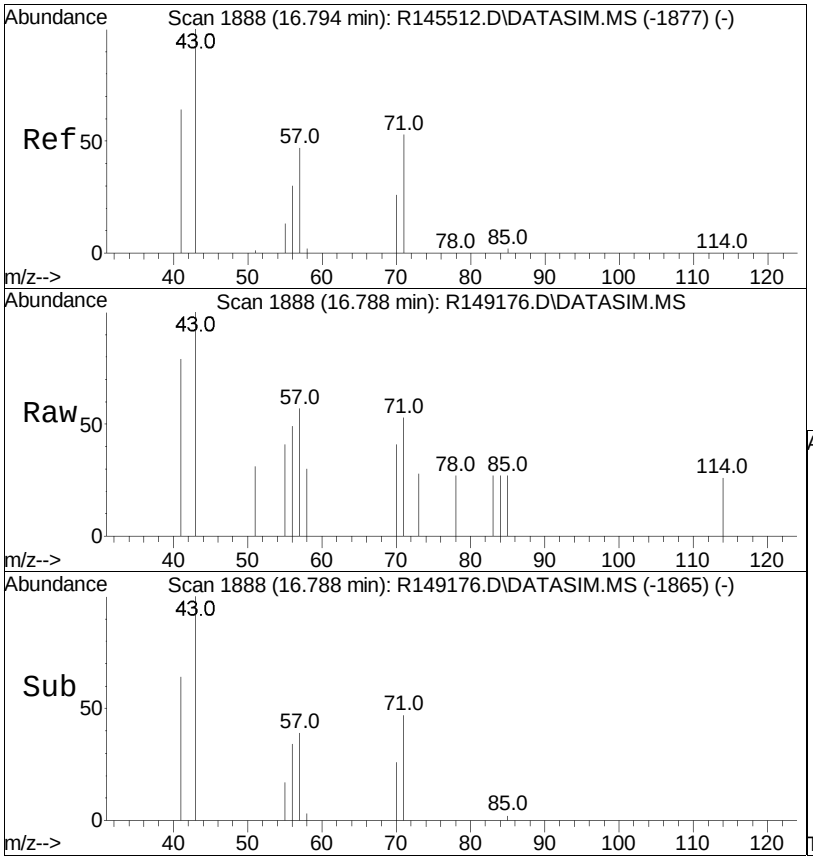


#35
Isooctane
Concen: 0.02 ppbV m
RT: 16.004 min Scan# 1818
Delta R.T. 0.011 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 57 Resp: 742

Ion	Ratio	Lower	Upper
57	100		
56	50.2	14.9	54.9
41	66.8	16.0	56.0#

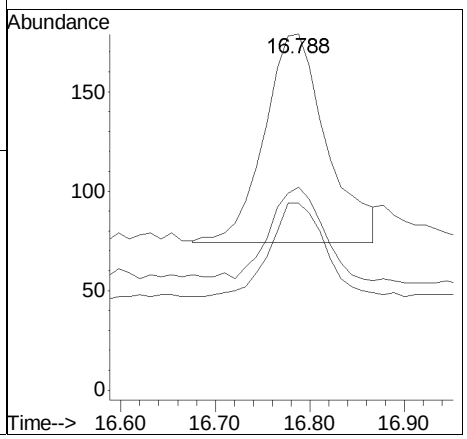


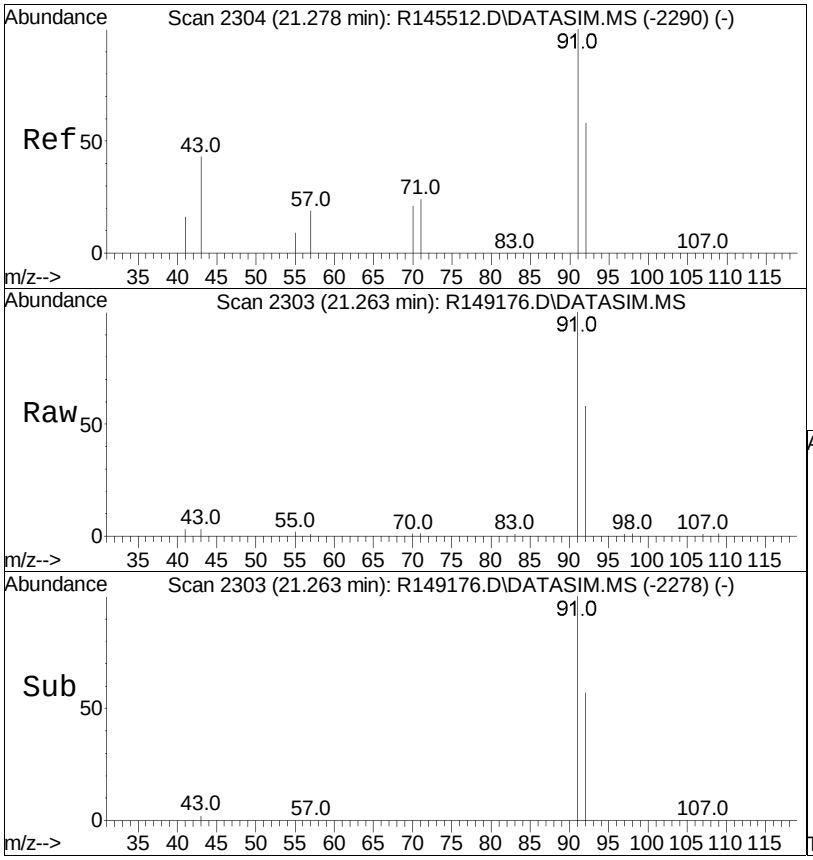


#36
Heptane
Concen: 0.03 ppbV m
RT: 16.788 min Scan# 1888
Delta R.T. 0.011 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 43 Resp: 484

Ion	Ratio	Lower	Upper
43	100		
57	57.0	23.3	63.3
71	52.5	21.1	61.1

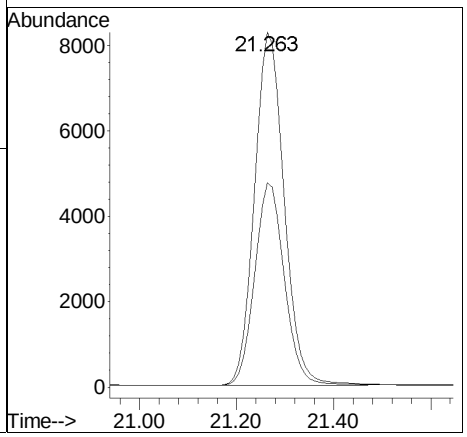


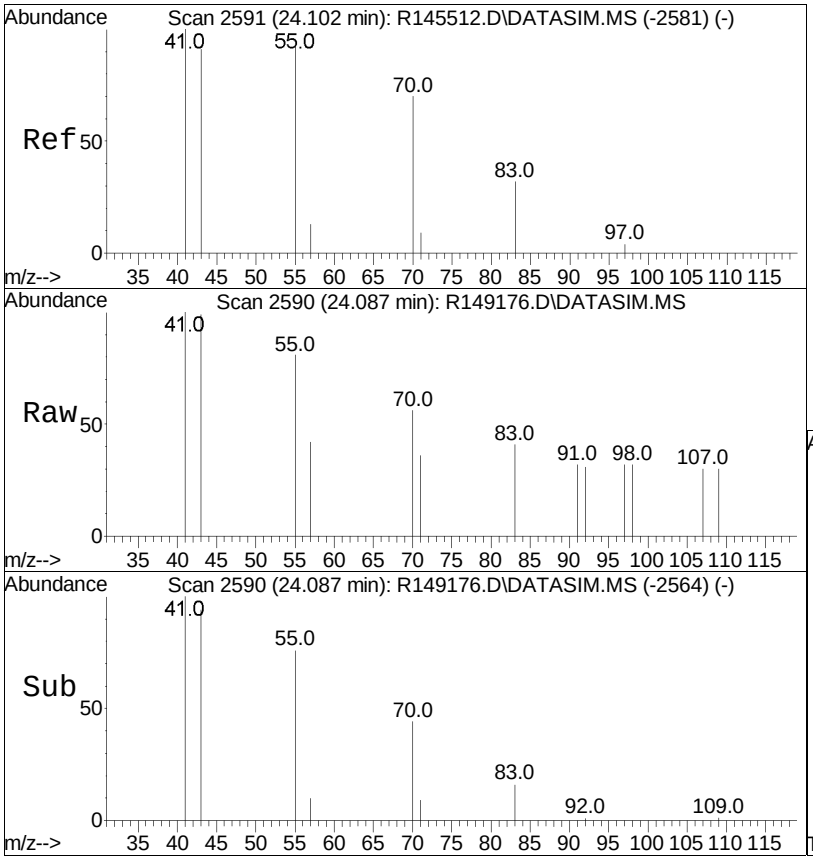


#47
Toluene
Concen: 1.15 ppbV
RT: 21.263 min Scan# 2303
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 91 Resp: 35114

Ion	Ratio	Lower	Upper
91	100		
92	57.6	37.6	77.6

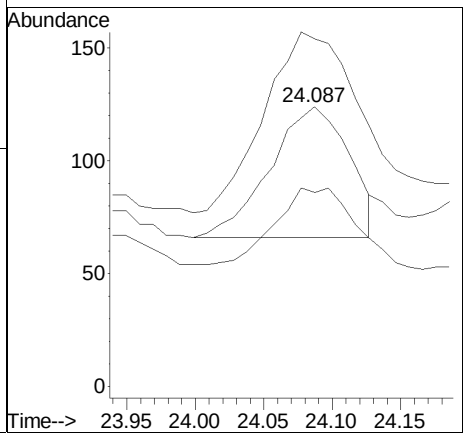


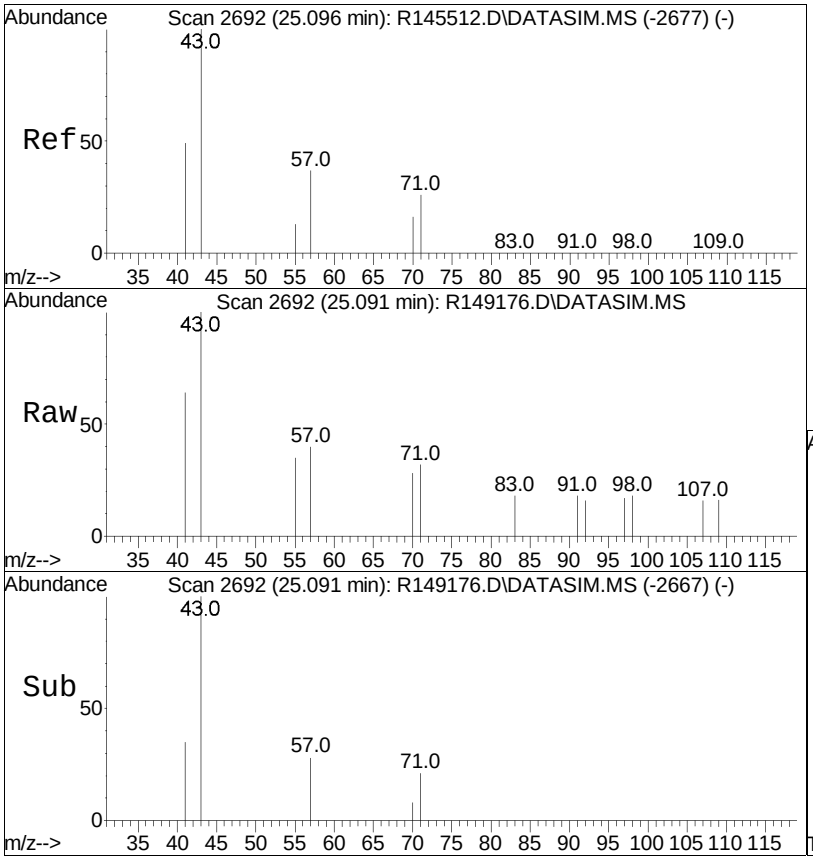


#50
1-Octene
Concen: 0.03 ppbV m
RT: 24.087 min Scan# 2590
Delta R.T. 0.010 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 55 Resp: 234

Ion	Ratio	Lower	Upper
55	100		
41	124.2	102.4	142.4
70	69.4	45.2	85.2

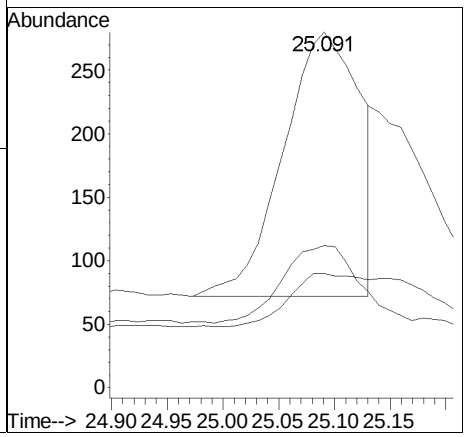


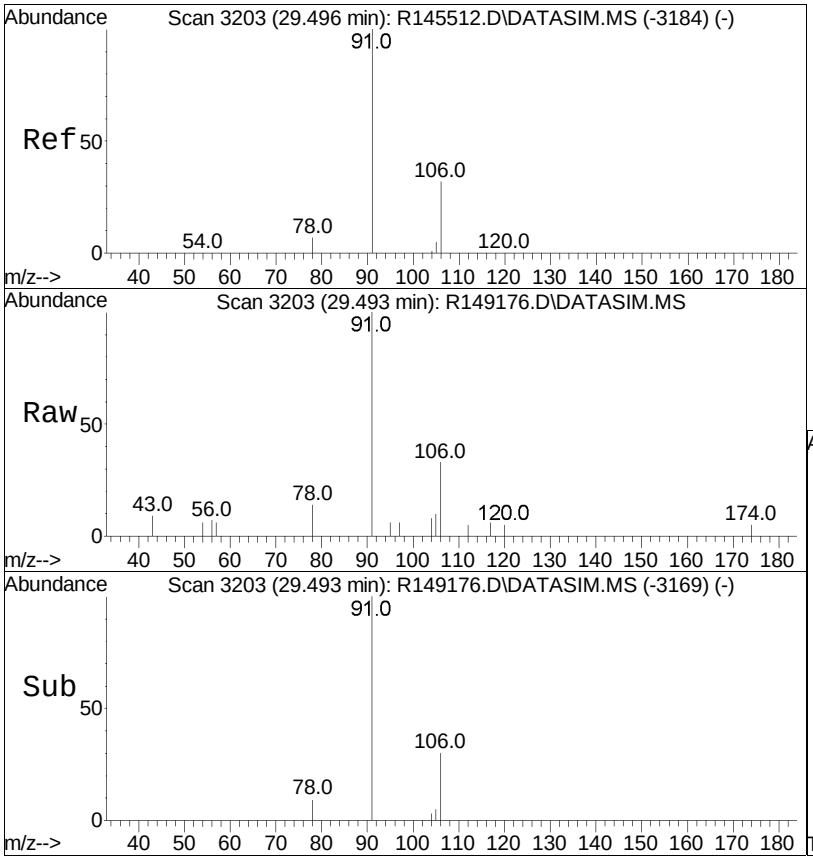


#52
Octane
Concen: 0.04 ppbV m
RT: 25.091 min Scan# 2692
Delta R.T. 0.010 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 43 Resp: 999

Ion	Ratio	Lower	Upper
43	100		
57	40.0	13.6	53.6
71	32.1	0.9	40.9

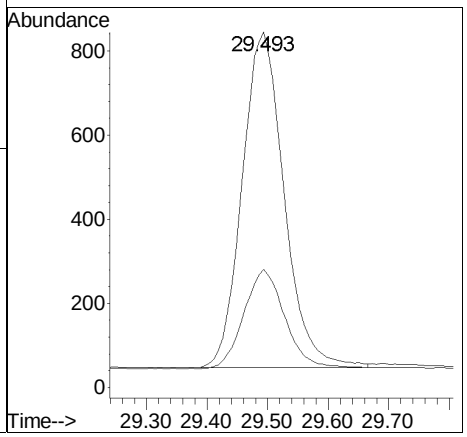


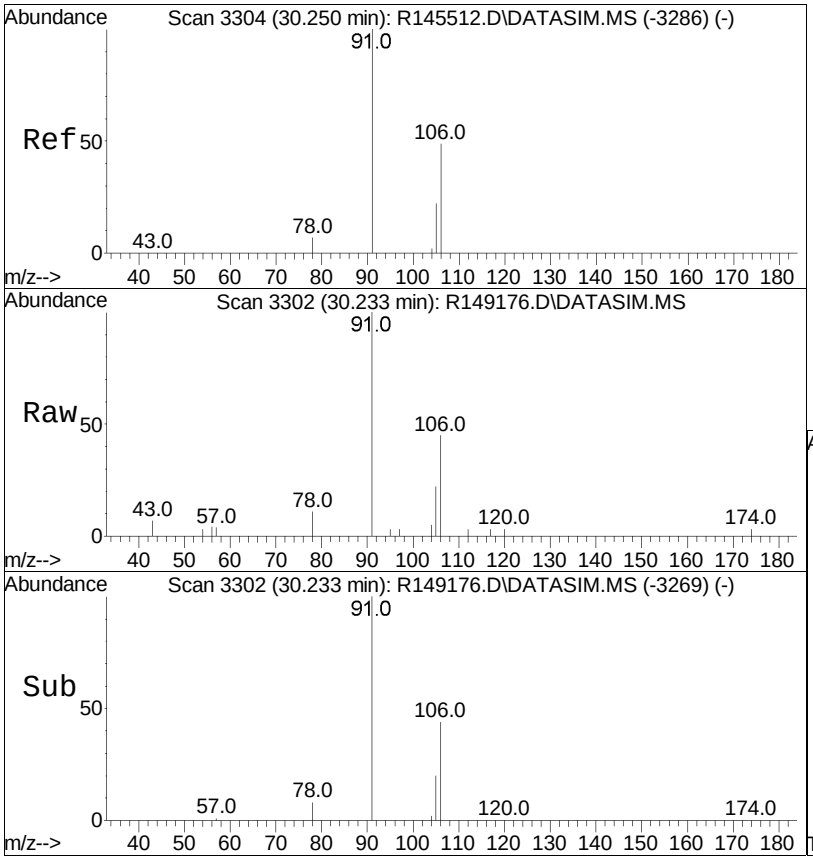


#55
Ethylbenzene
Concen: 0.13 ppbV
RT: 29.493 min Scan# 3203
Delta R.T. 0.007 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 91 Resp: 3828

Ion	Ratio	Lower	Upper
91	100		
106	33.3	9.1	49.1

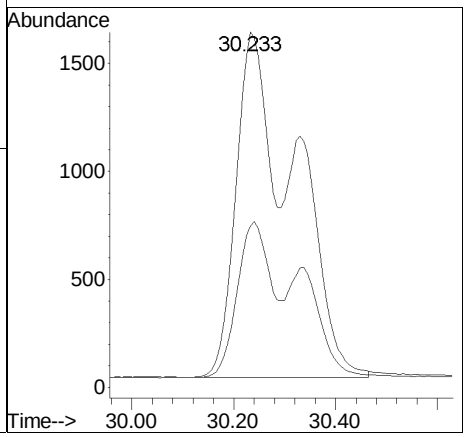


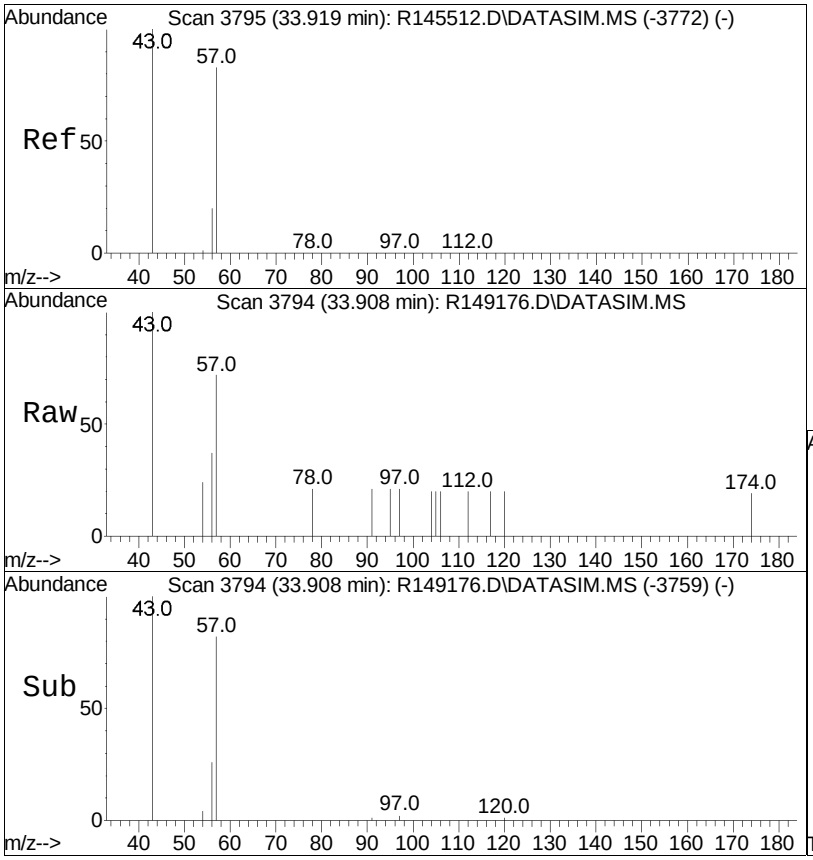


#57
p/m-Xylene
Concen: 0.57 ppbV m
RT: 30.233 min Scan# 3302
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 91 Resp: 12587

Ion	Ratio	Lower	Upper
91	100		
106	45.5	25.5	65.5

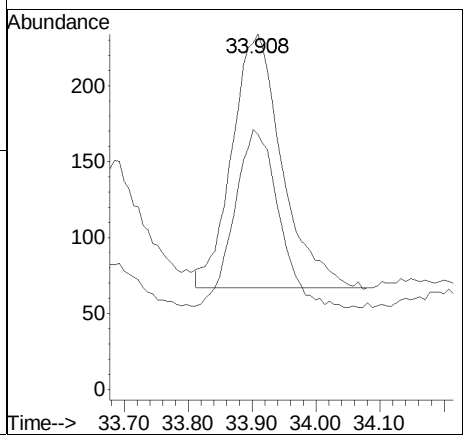


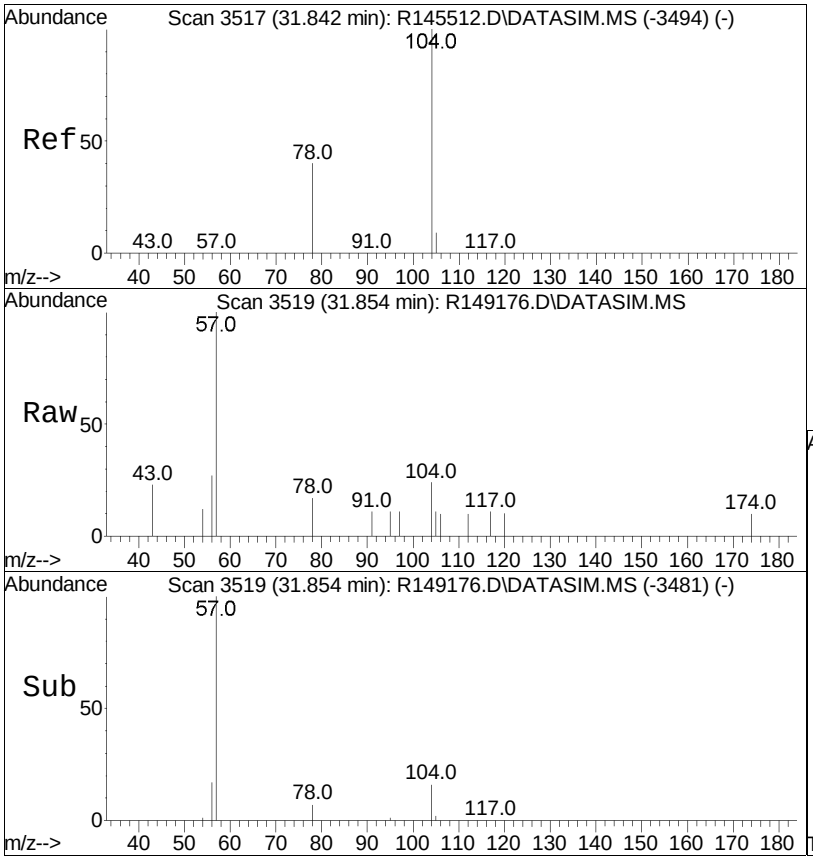


#59
Nonane
Concen: 0.04 ppbV
RT: 33.908 min Scan# 3794
Delta R.T. 0.015 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 43 Resp: 908

Ion	Ratio	Lower	Upper
43	100		
57	71.8	51.4	91.4

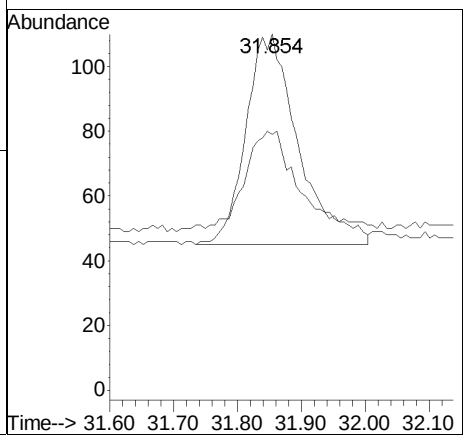


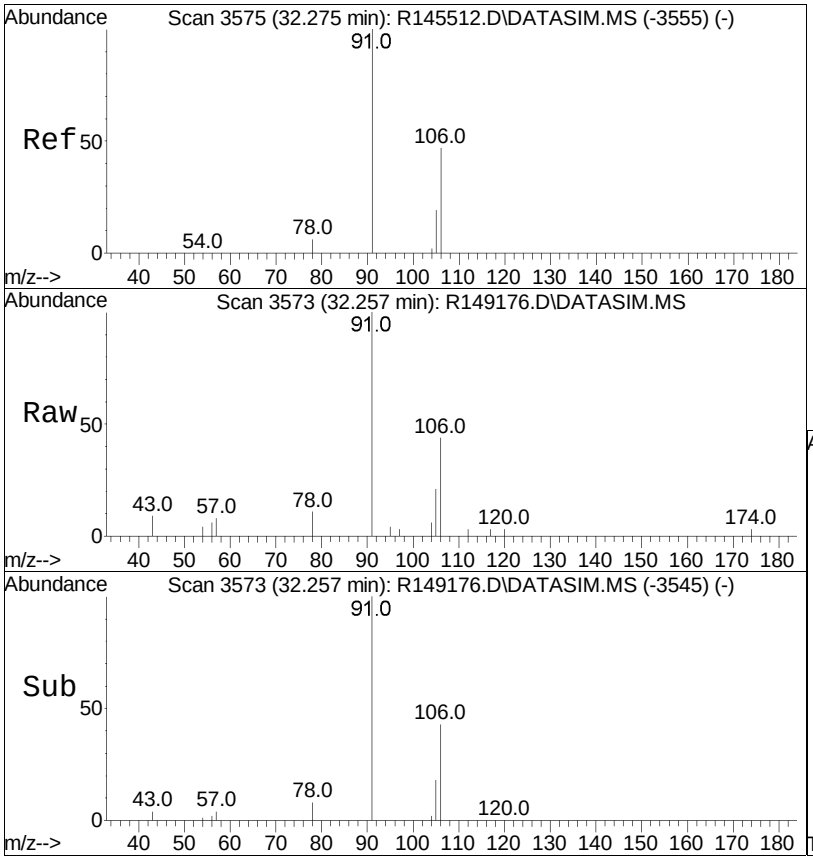


#60
Styrene
Concen: 0.03 ppbV
RT: 31.854 min Scan# 3519
Delta R.T. 0.037 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:104 Resp: 370

Ion	Ratio	Lower	Upper
104	100		
78	71.8	28.5	68.5#

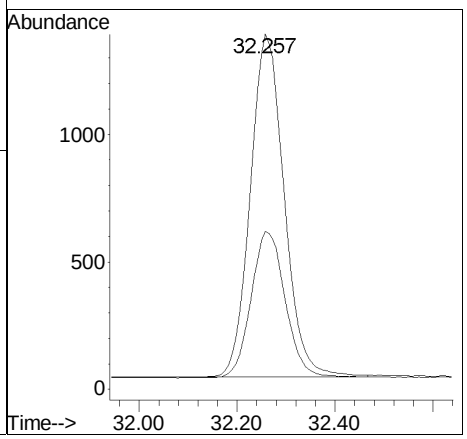


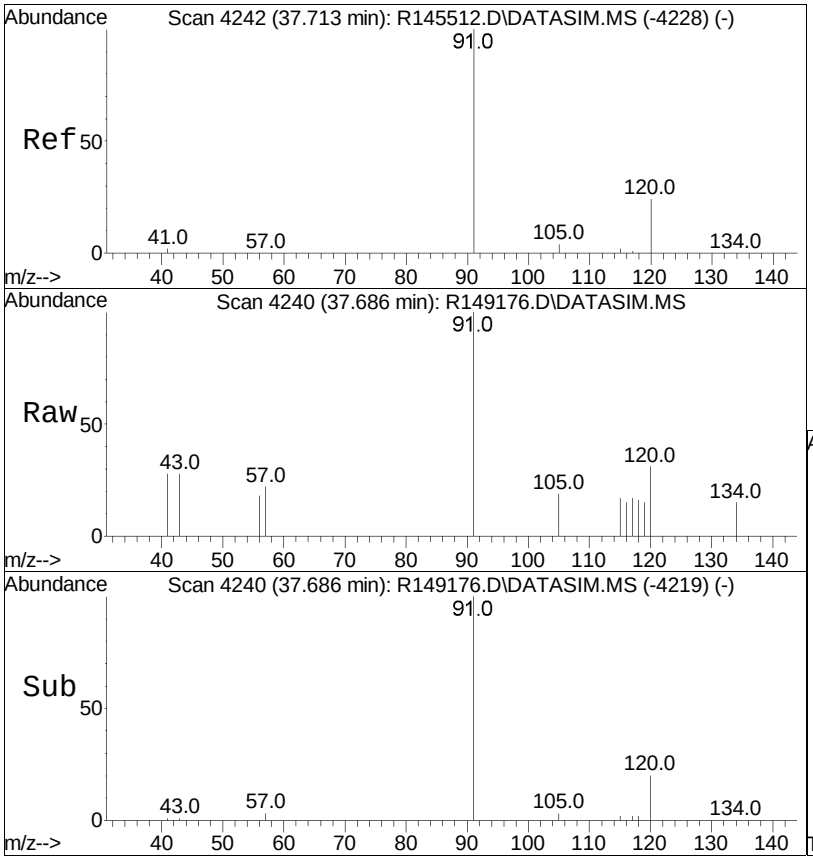


#61
o-Xylene
Concen: 0.29 ppbV
RT: 32.257 min Scan# 3573
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 91 Resp: 6456

Ion	Ratio	Lower	Upper
91	100		
106	44.5	23.5	63.5

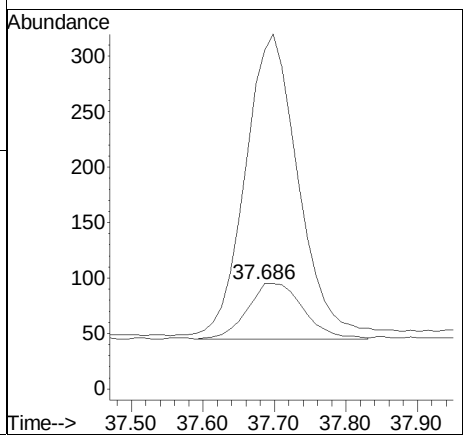


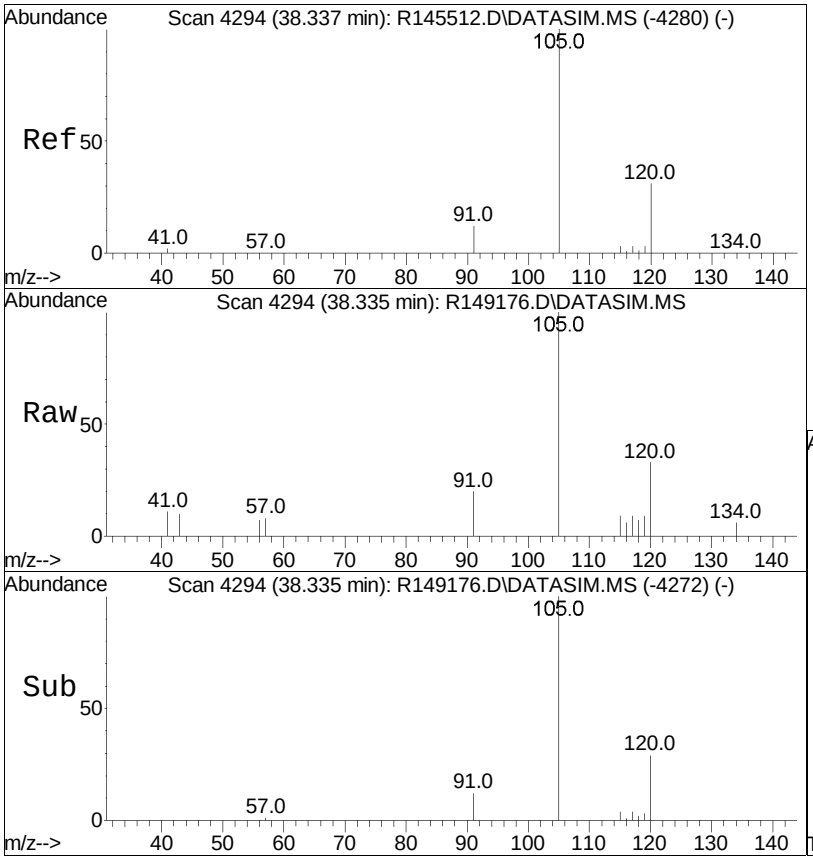


#64
n-Propylbenzene
Concen: 0.04 ppbV
RT: 37.686 min Scan# 4240
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:120 Resp: 274

Ion	Ratio	Lower	Upper
120	100		
91	321.1	480.0	520.0#

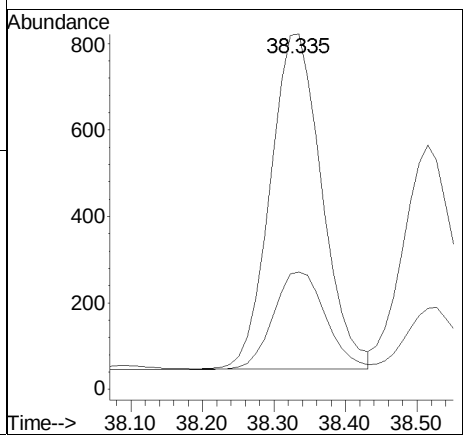


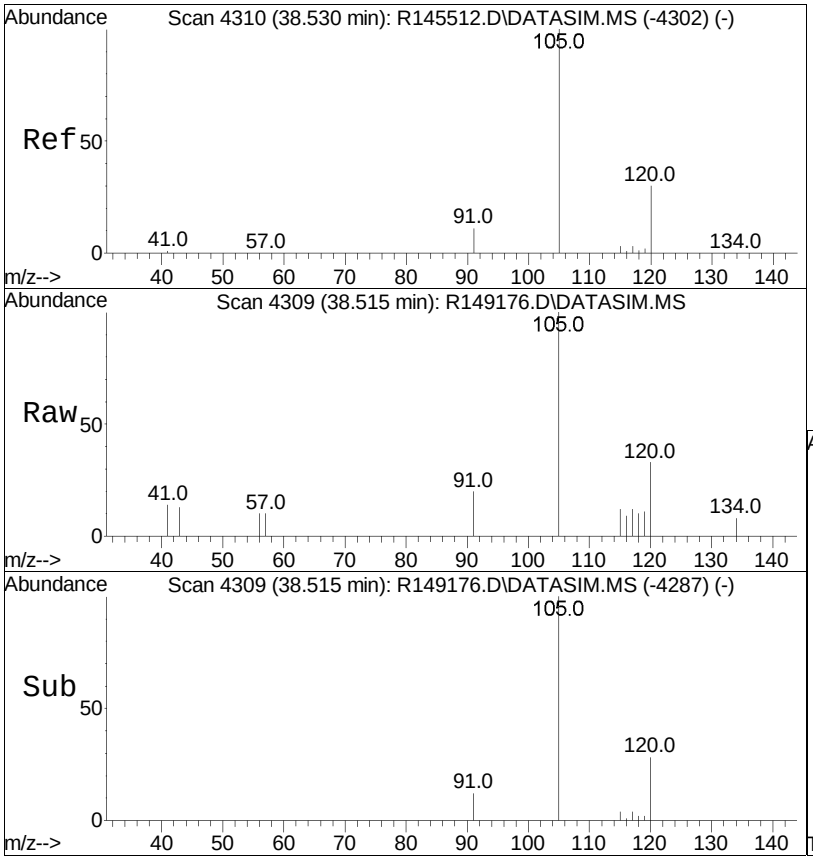


#65
1-Methyl-3-ethylbenzene
Concen: 0.14 ppbV
RT: 38.335 min Scan# 4294
Delta R.T. 0.012 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:105 Resp: 3878

Ion	Ratio	Lower	Upper
105	100		
120	33.0	10.4	50.4

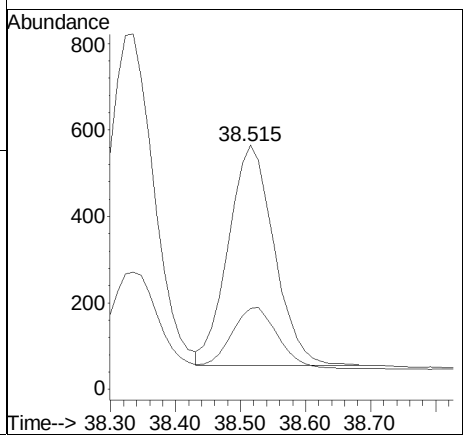


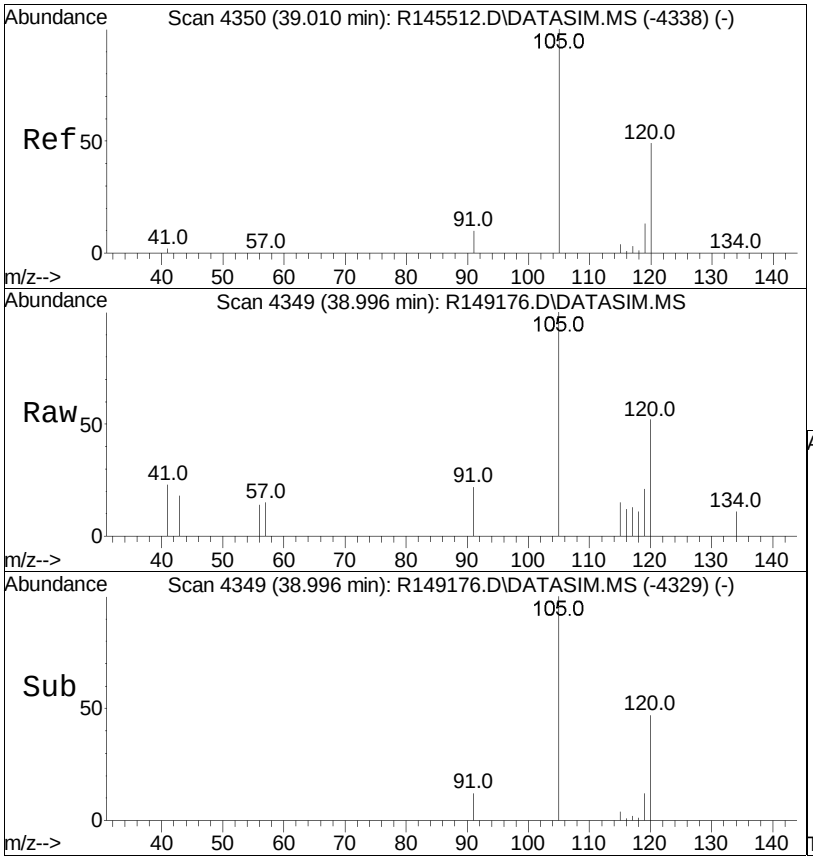


#66
1-Methyl-4-ethylbenzene
Concen: 0.08 ppbV
RT: 38.515 min Scan# 4309
Delta R.T. 0.012 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:105 Resp: 2500

Ion	Ratio	Lower	Upper
105	100		
120	33.1	7.8	47.8

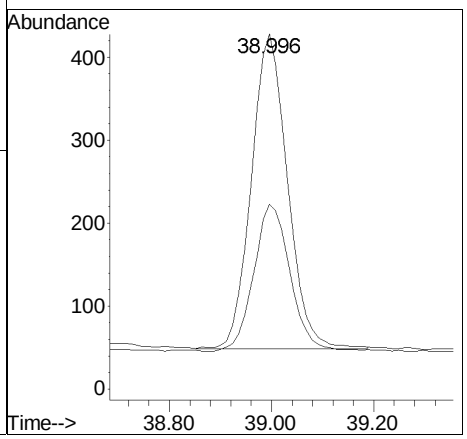


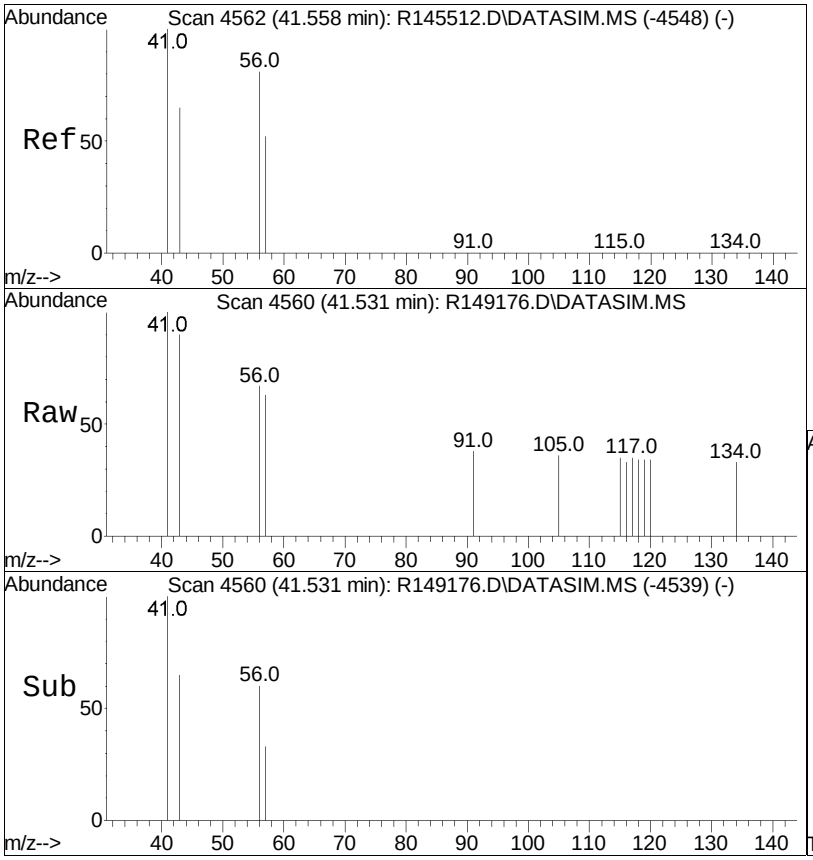


#67
1,3,5-Trimethylbenzene
Concen: 0.08 ppbV
RT: 38.996 min Scan# 4349
Delta R.T. 0.012 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:105 Resp: 1859

Ion	Ratio	Lower	Upper
105	100		
120	52.1	25.9	65.9

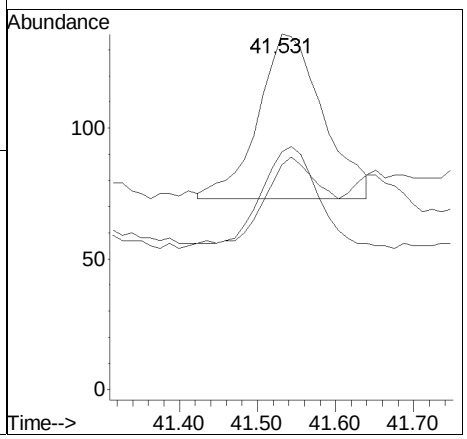


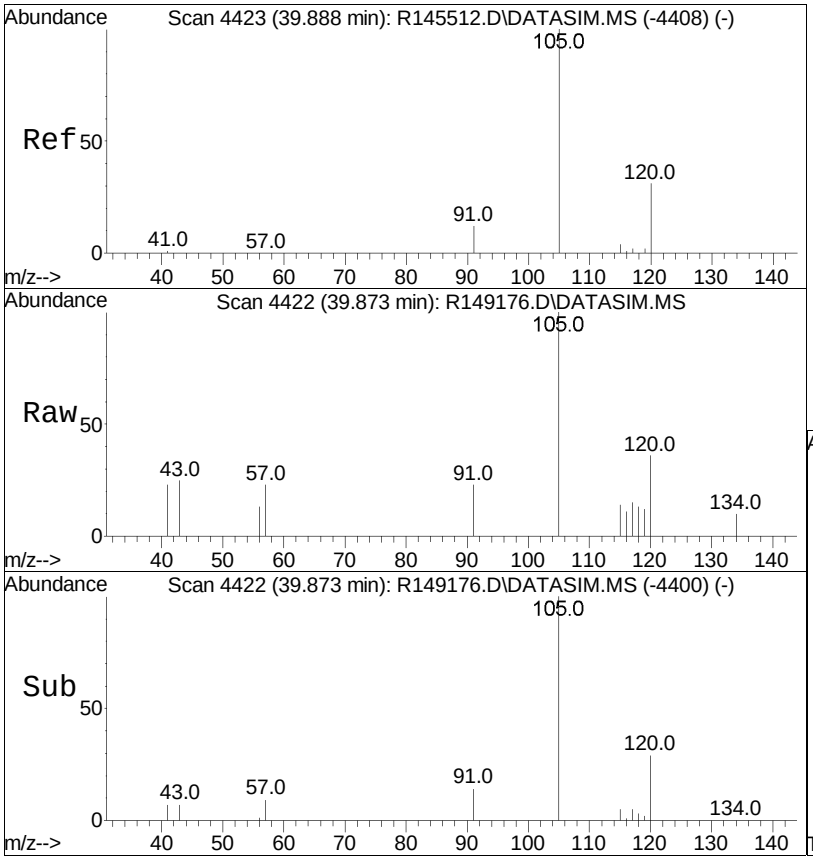


#68
1-Decene
Concen: 0.03 ppbV m
RT: 41.531 min Scan# 4560
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 41 Resp: 363

Ion	Ratio	Lower	Upper
41	100		
57	63.2	25.1	65.1
56	66.9	51.9	91.9

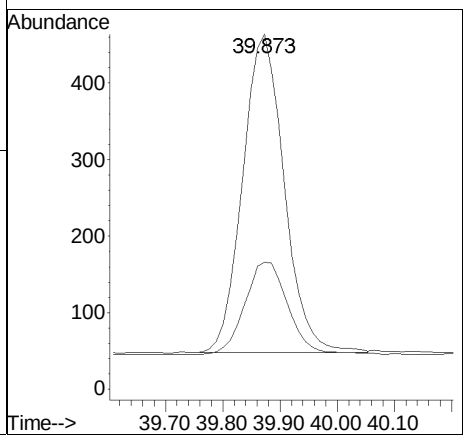


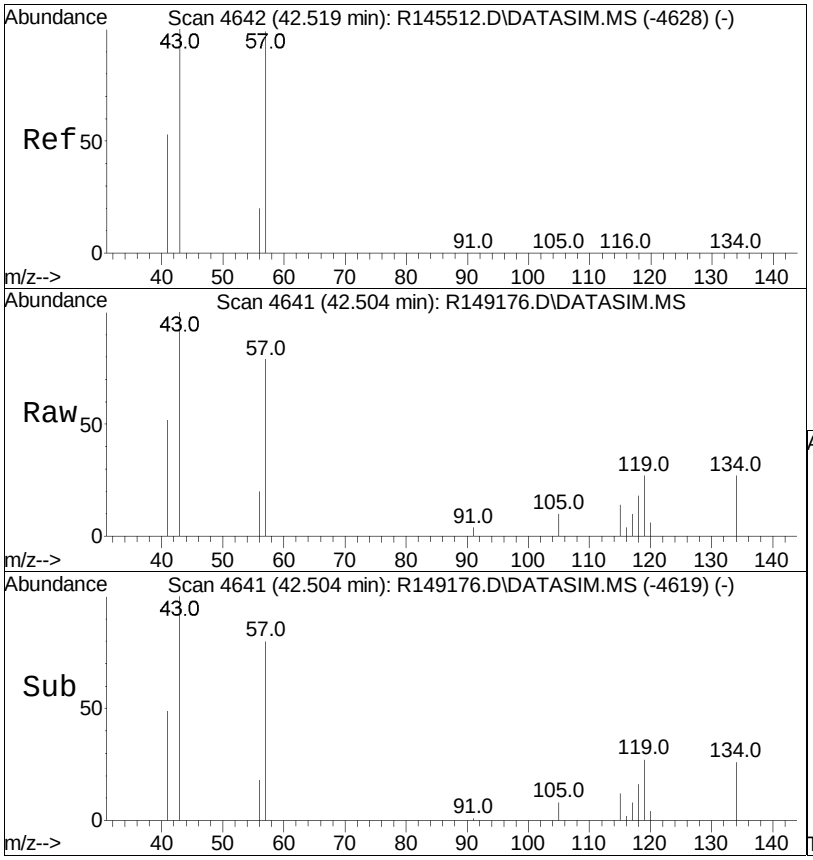


#69
1-Methyl-2-ethylbenzene
Concen: 0.07 ppbV
RT: 39.873 min Scan# 4422
Delta R.T. 0.012 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:105 Resp: 2100

Ion	Ratio	Lower	Upper
105	100		
120	35.8	9.6	49.6

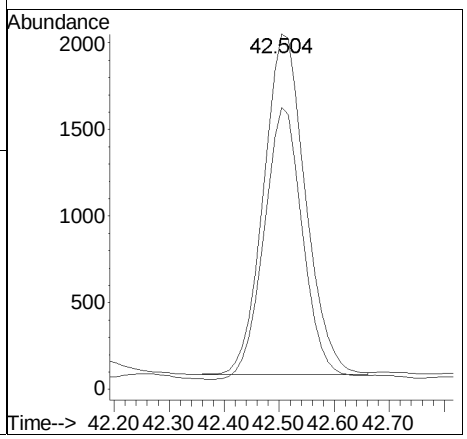


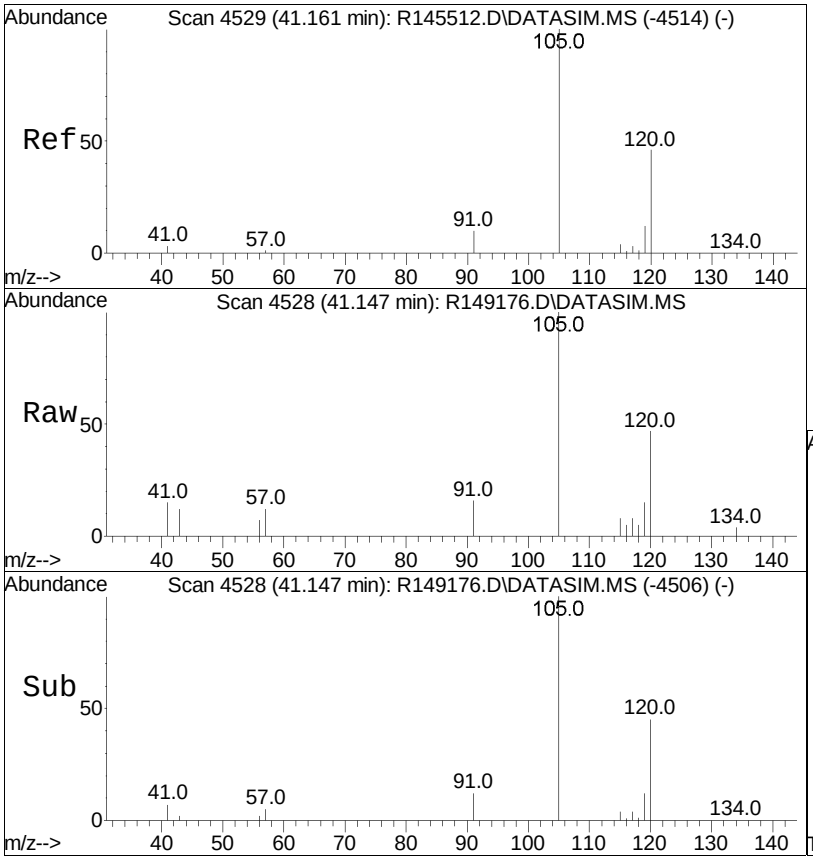


#70
Decane
Concen: 0.47 ppbV
RT: 42.504 min Scan# 4641
Delta R.T. 0.012 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 43 Resp: 10396

Ion	Ratio	Lower	Upper
43	100		
57	79.4	66.4	106.4

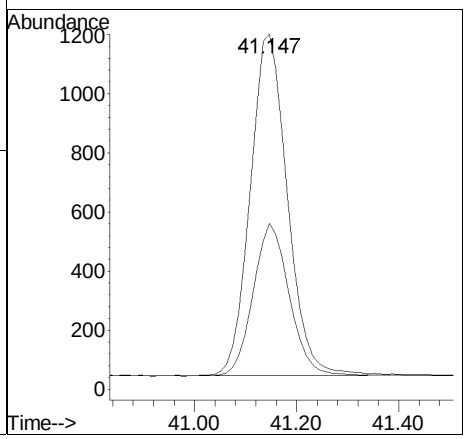


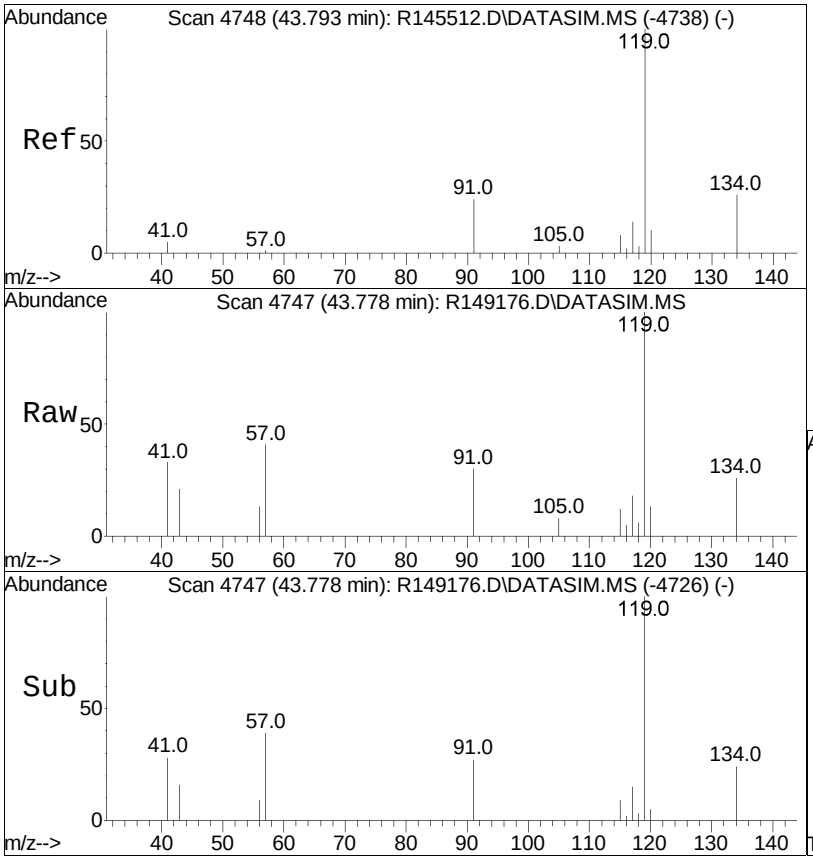


#71
1,2,4-Trimethylbenzene
Concen: 0.24 ppbV
RT: 41.147 min Scan# 4528
Delta R.T. 0.012 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:105 Resp: 5818

Ion	Ratio	Lower	Upper
105	100		
120	46.8	23.0	63.0

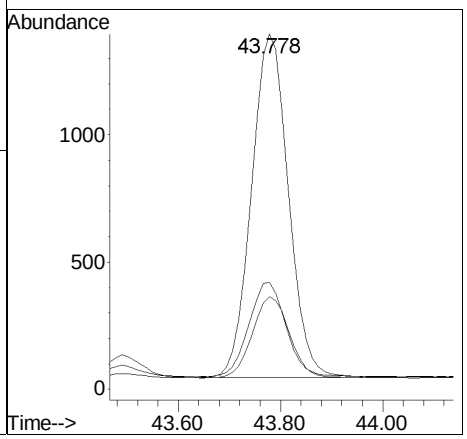


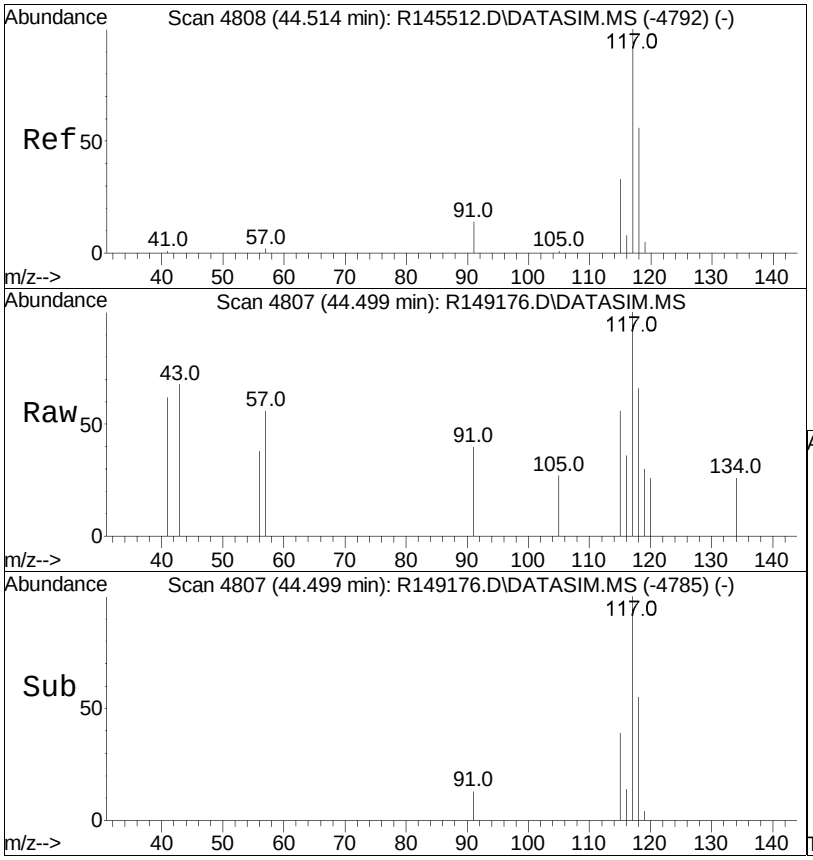


#74
1-Methyl-4-isopropylbenzene
Concen: 0.26 ppbV
RT: 43.778 min Scan# 4747
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:119 Resp: 6756

Ion	Ratio	Lower	Upper
119	100		
134	26.1	4.2	44.2
91	30.2	5.6	45.6

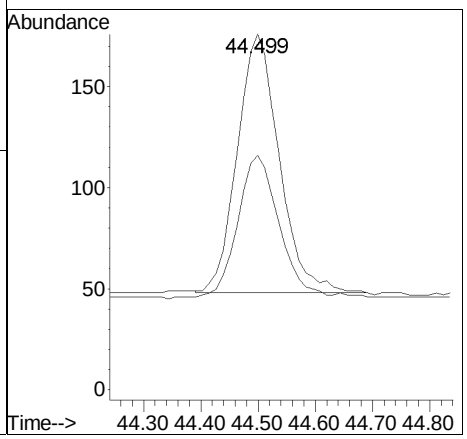


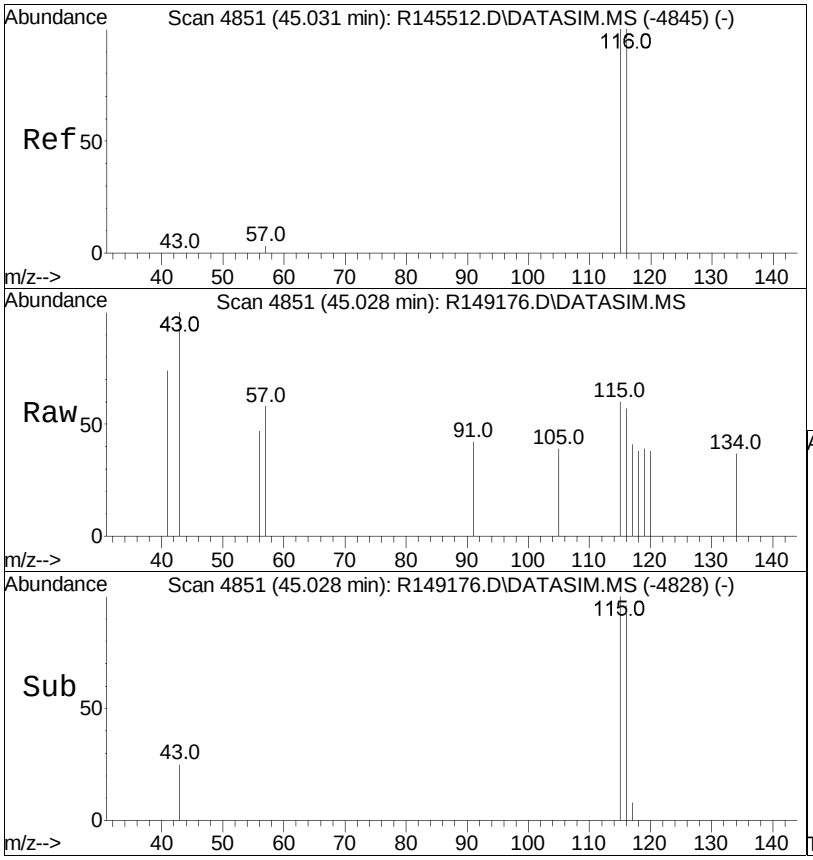


#76
Indan
Concen: 0.03 ppbV
RT: 44.499 min Scan# 4807
Delta R.T. 0.012 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:117 Resp: 653

Ion	Ratio	Lower	Upper
117	100		
118	65.9	35.5	75.5

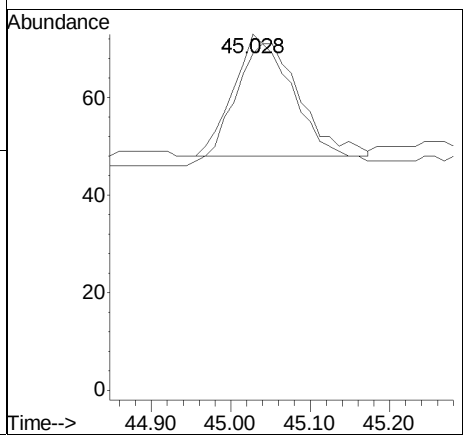


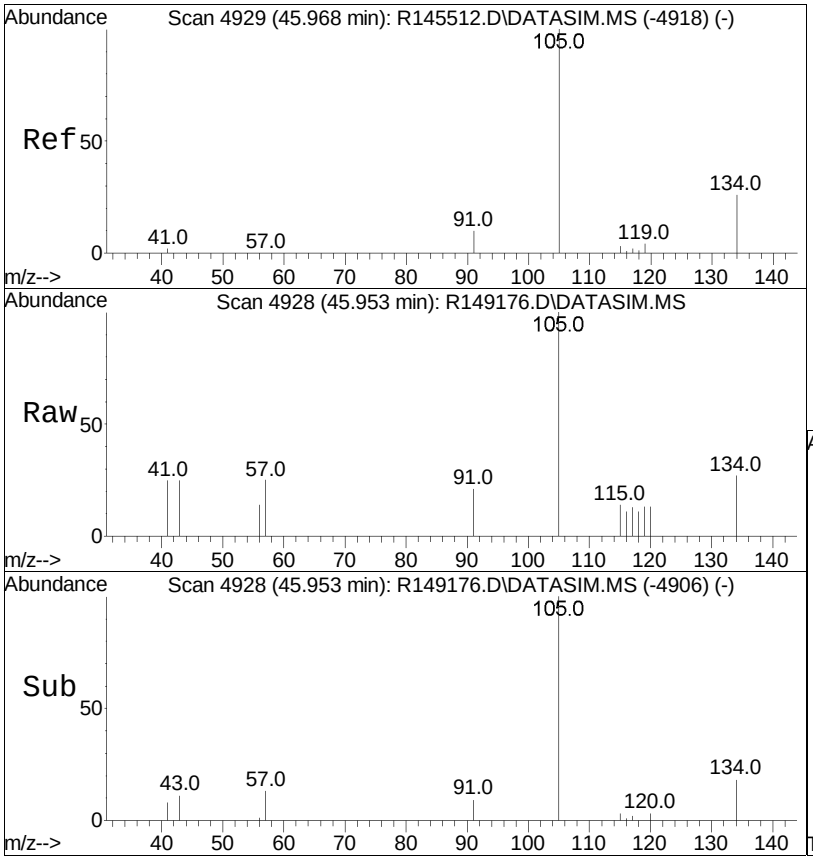


#77
Indene
Concen: 0.01 ppbV
RT: 45.028 min Scan# 4851
Delta R.T. 0.024 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:115 Resp: 138

Ion	Ratio	Lower	Upper
115	100		
116	101.4	75.9	113.9

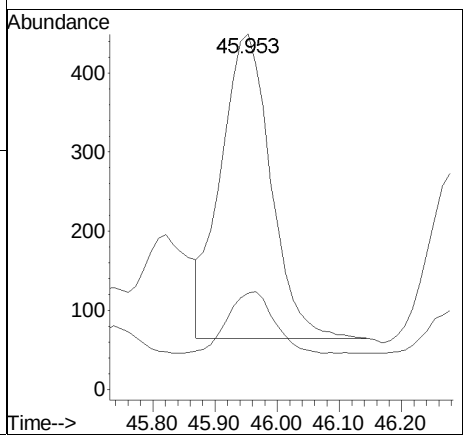


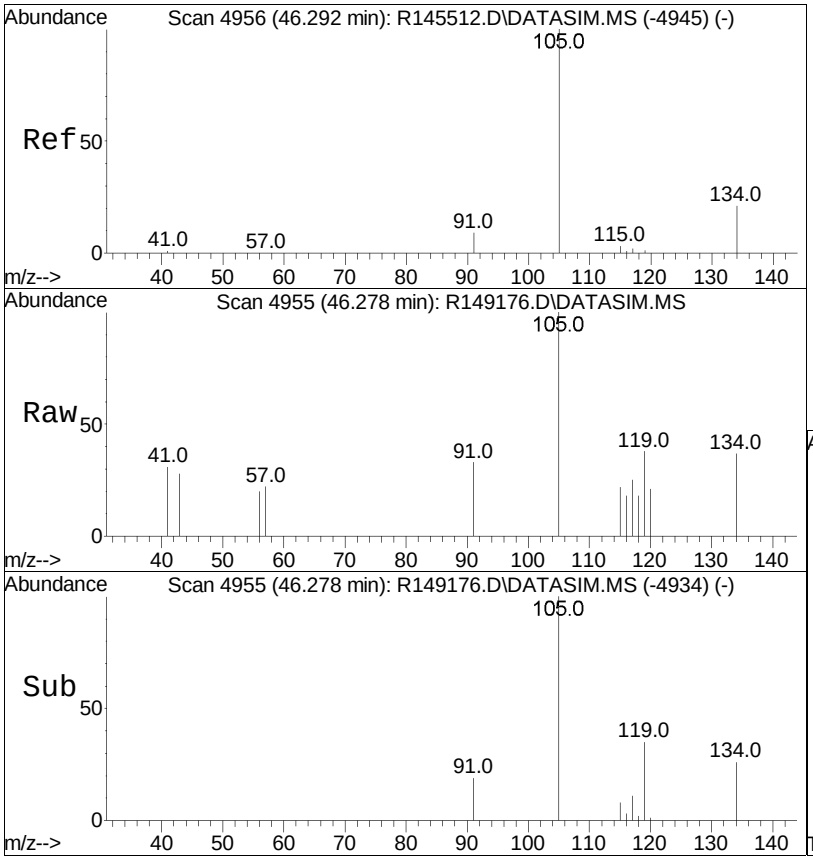


#78
1-Methyl-3-propylbenzene
Concen: 0.06 ppbV
RT: 45.953 min Scan# 4928
Delta R.T. 0.012 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:105 Resp: 2149

Ion	Ratio	Lower	Upper
105	100		
134	27.2	1.9	41.9

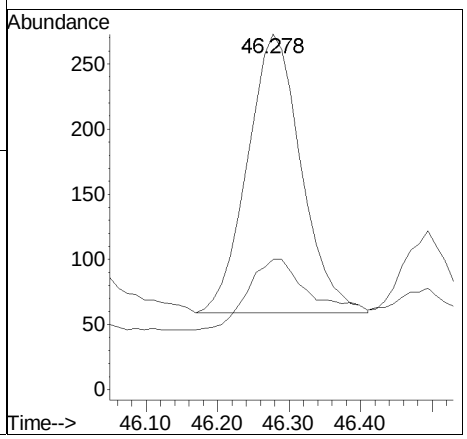


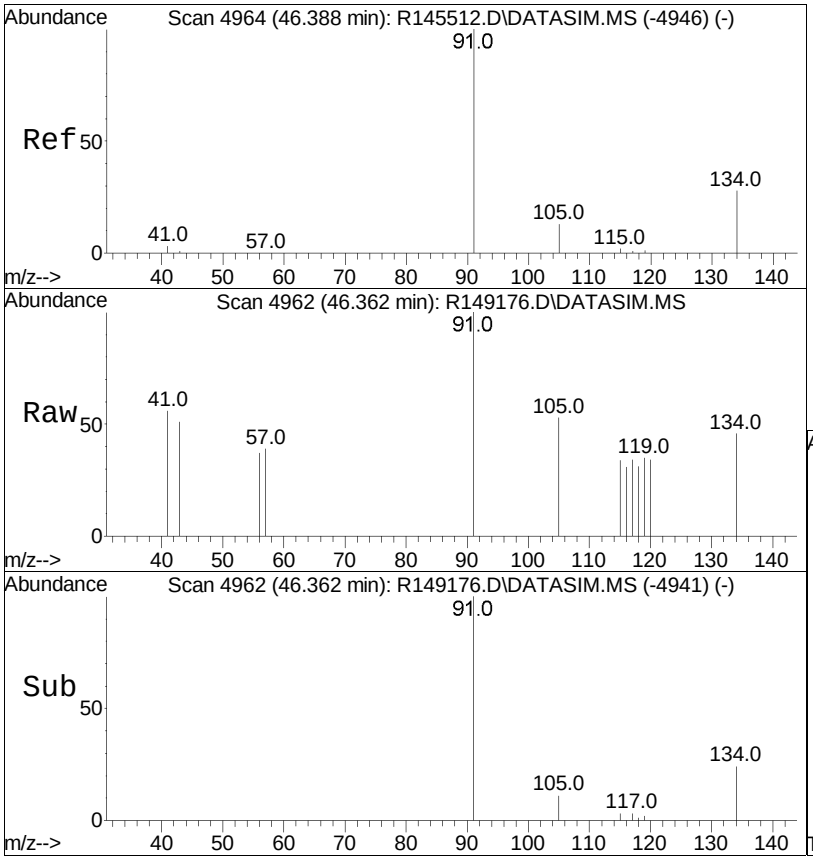


#79
1-Methyl-4-propylbenzene
Concen: 0.03 ppbV
RT: 46.278 min Scan# 4955
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:105 Resp: 1120

Ion	Ratio	Lower	Upper
105	100		
134	36.6	0.0	39.5

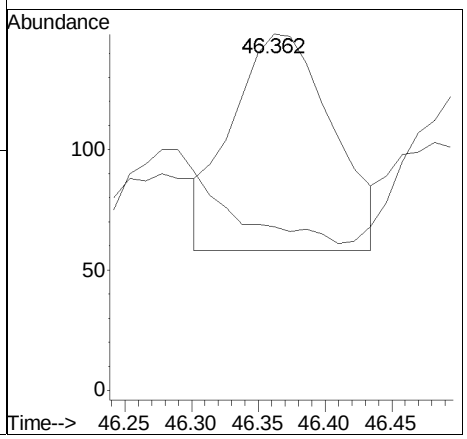


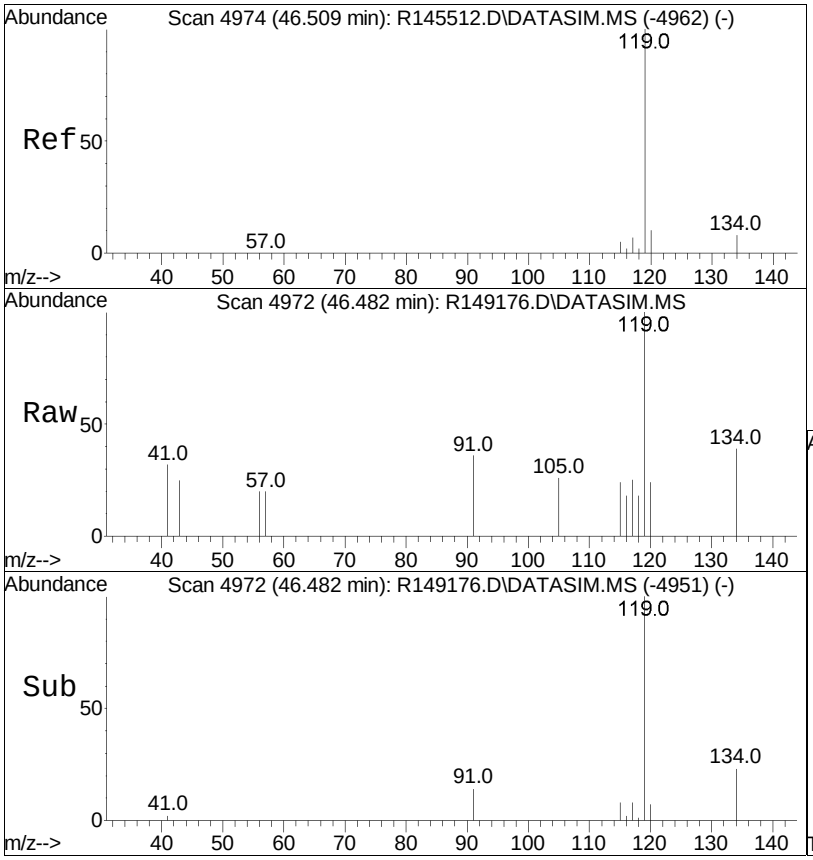


#80
n-Butylbenzene
Concen: 0.01 ppbV m
RT: 46.362 min Scan# 4962
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 91 Resp: 472

Ion	Ratio	Lower	Upper
91	100		
134	45.9	1.9	41.9#

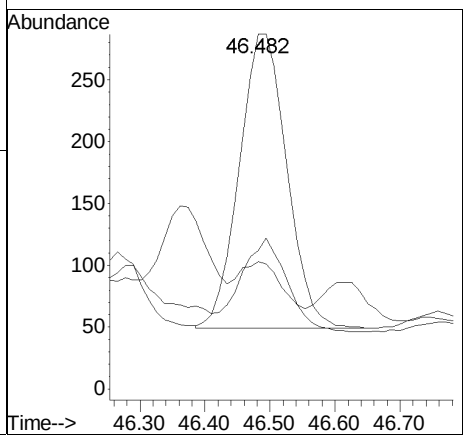


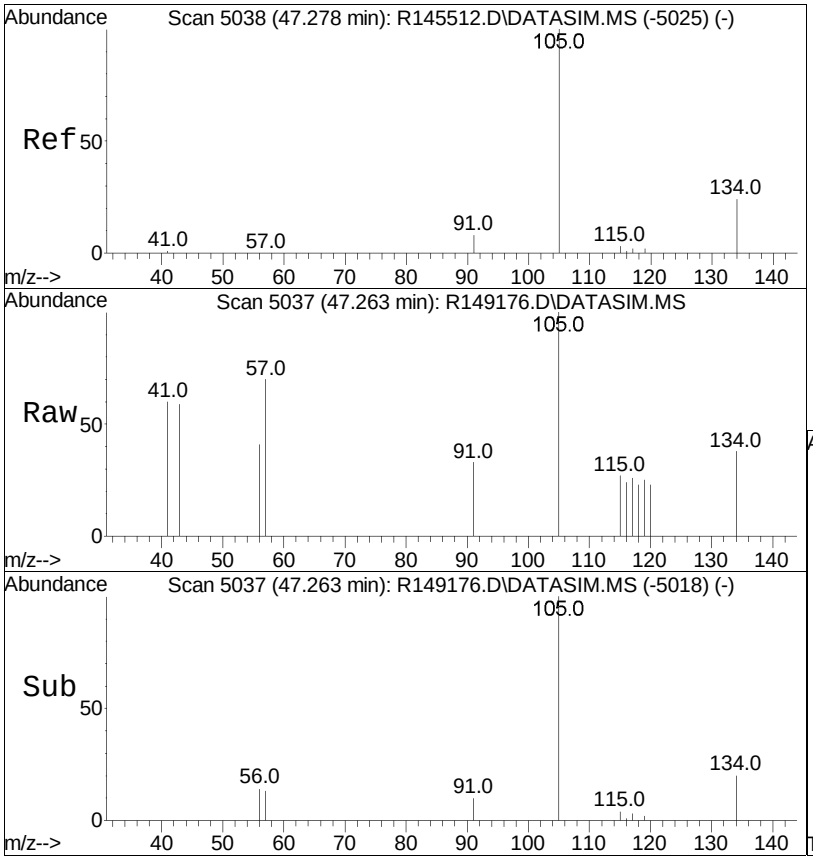


#81
1,2-Dimethyl-4-ethylbenzene
Concen: 0.05 ppbV
RT: 46.482 min Scan# 4972
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:119 Resp: 1211

Ion	Ratio	Lower	Upper
119	100		
134	39.0	9.8	49.8
91	35.9	0.0	39.8

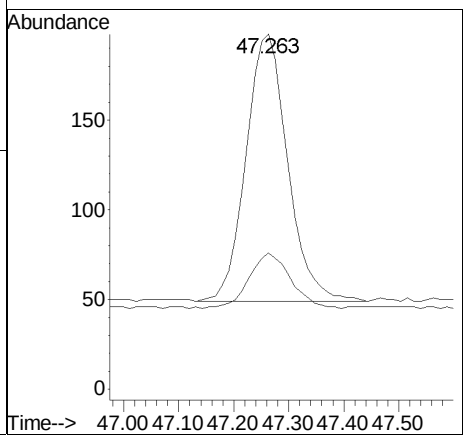


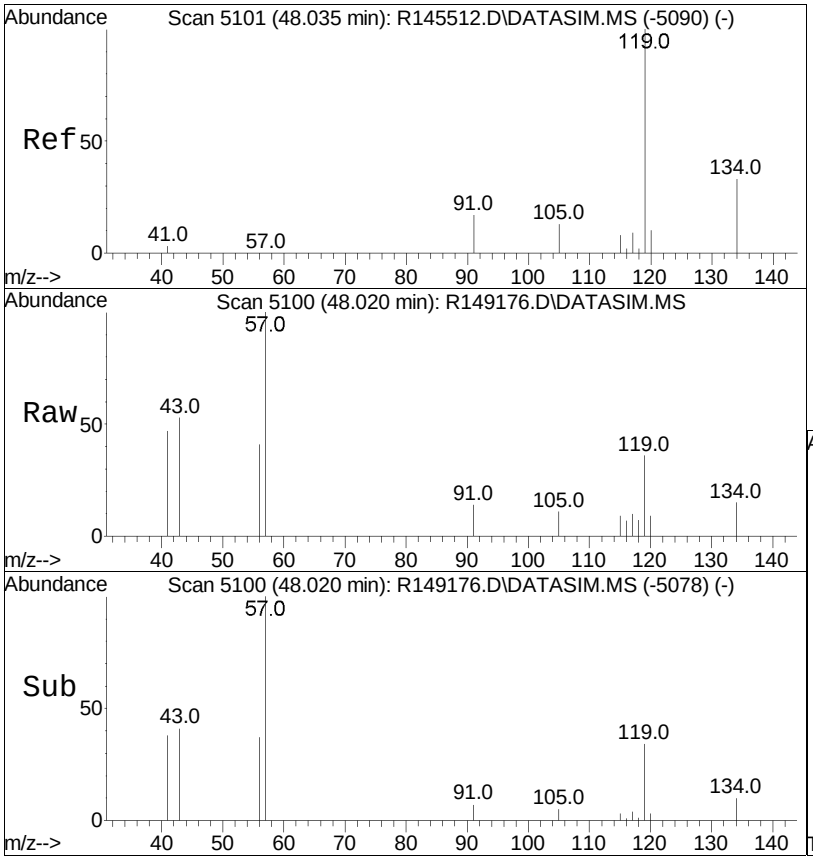


#83
1-Methyl-2-propylbenzene
Concen: 0.02 ppbV
RT: 47.263 min Scan# 5037
Delta R.T. 0.012 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:105 Resp: 786

Ion	Ratio	Lower	Upper
105	100		
134	38.4	0.5	40.5

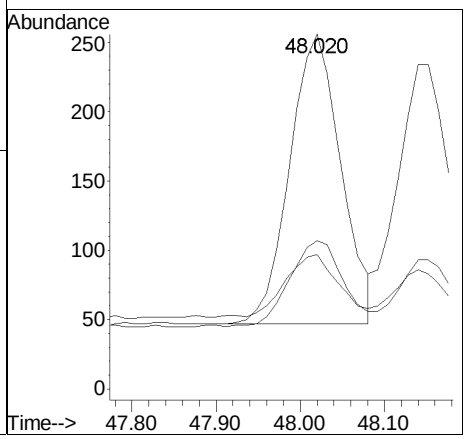


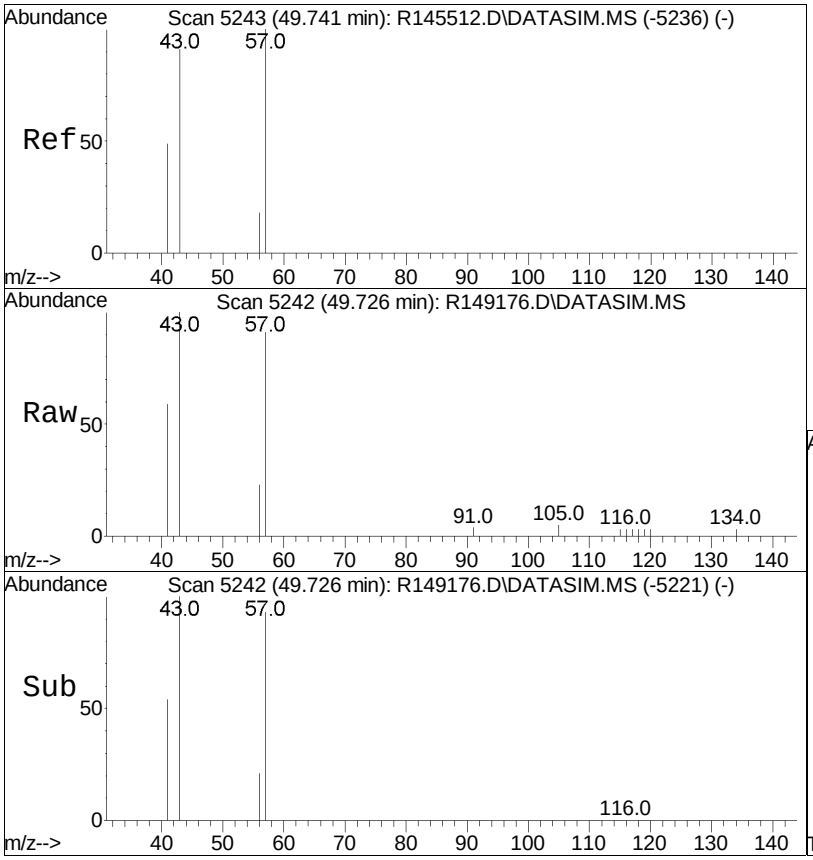


#84
1,4-Dimethyl-2-ethylbenzene
Concen: 0.03 ppbV
RT: 48.020 min Scan# 5100
Delta R.T. 0.012 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:119 Resp: 885

Ion	Ratio	Lower	Upper
119	100		
134	41.8	10.4	50.4
91	37.9	0.1	40.1

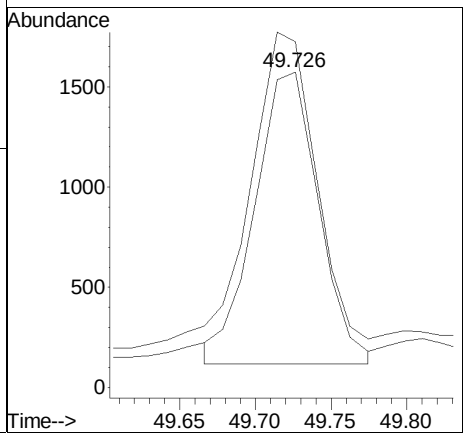


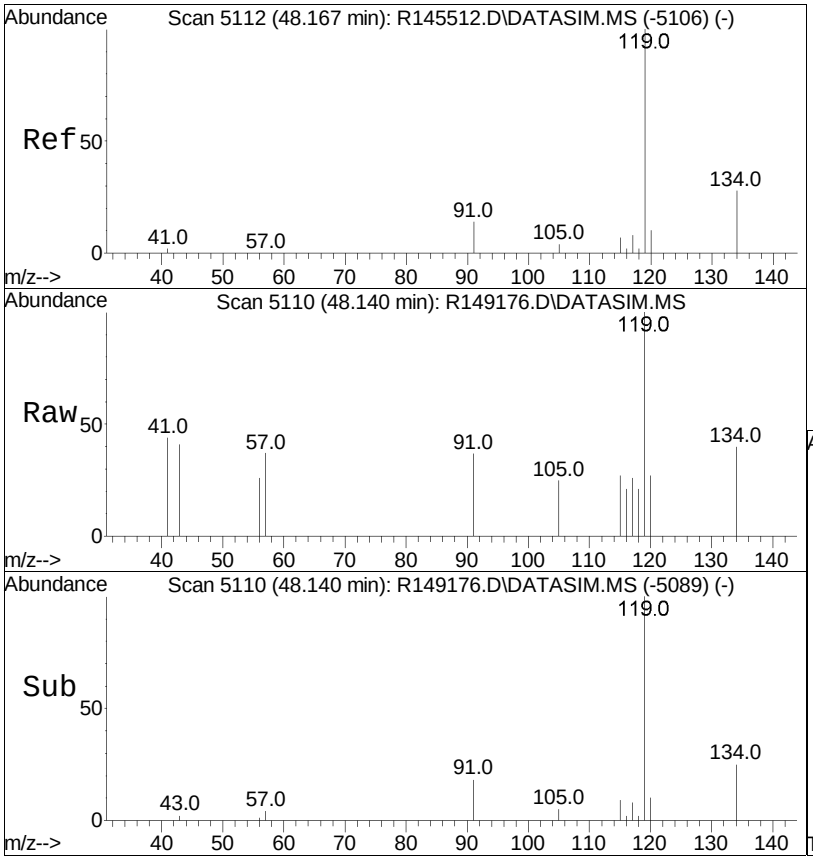


#85
Undecane
Concen: 0.19 ppbV m
RT: 49.726 min Scan# 5242
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 57 Resp: 4295

Ion	Ratio	Lower	Upper
57	100		
43	109.6	79.1	119.1

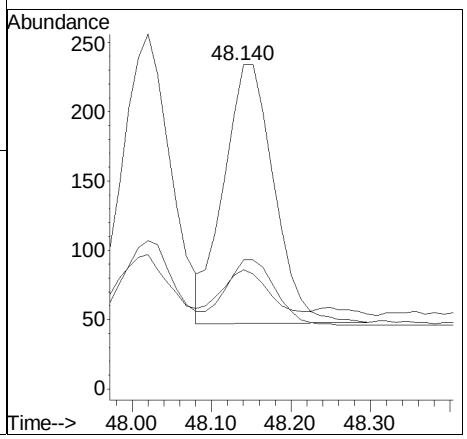


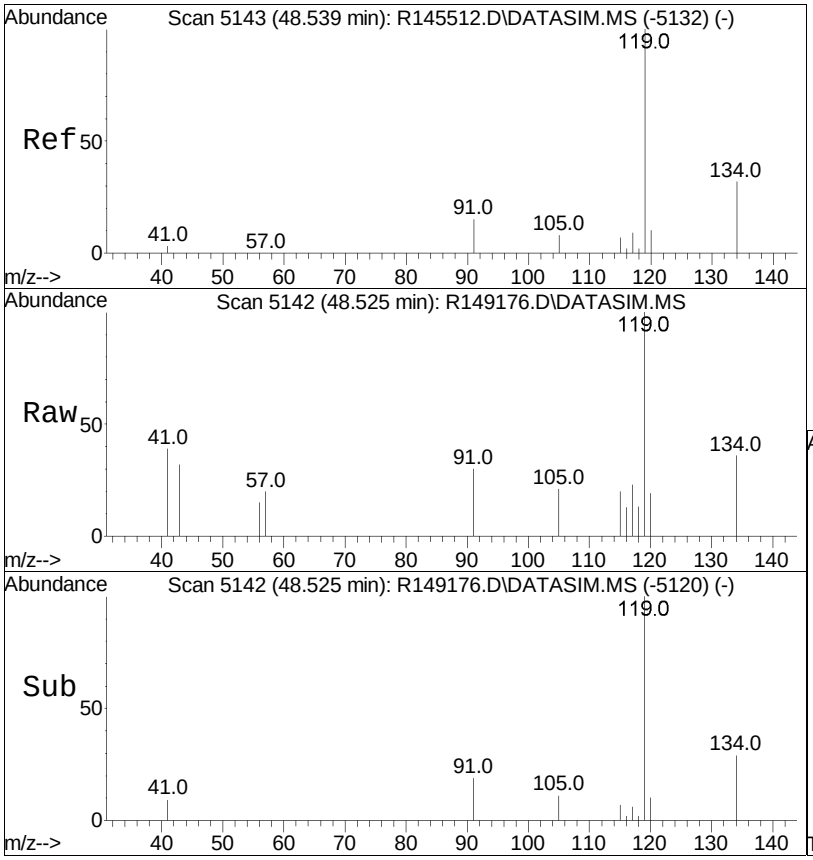


#86
1,3-Dimethyl-4-ethylbenzene
Concen: 0.03 ppbV
RT: 48.140 min Scan# 5110
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:119 Resp: 819

Ion	Ratio	Lower	Upper
119	100		
134	39.7	6.2	46.2
91	36.8	0.0	36.4#

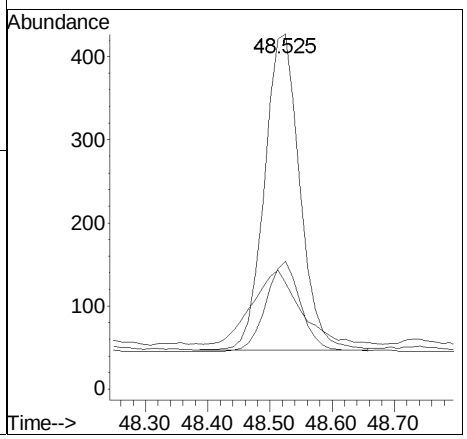


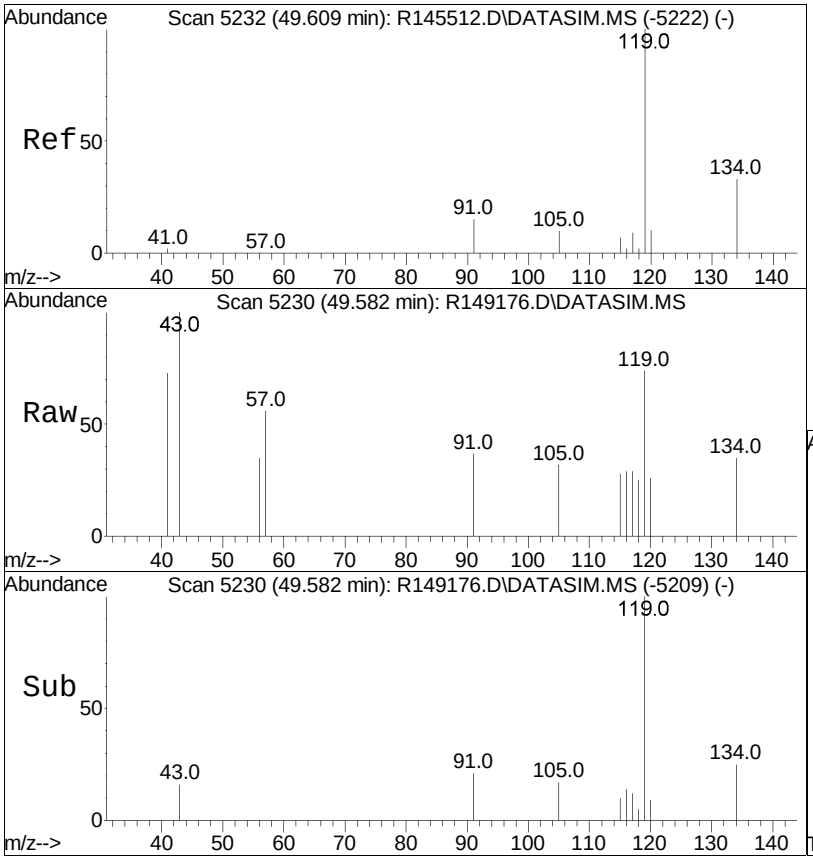


#87
1,3-Dimethyl-5-ethylbenzene
Concen: 0.05 ppbV
RT: 48.525 min Scan# 5142
Delta R.T. 0.012 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:119 Resp: 1498

Ion	Ratio	Lower	Upper
119	100		
134	36.1	7.8	47.8
91	30.0	0.0	38.0

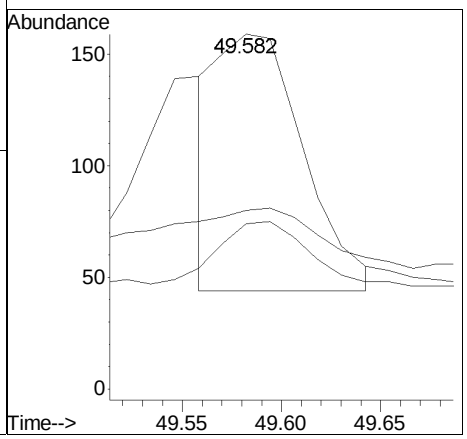


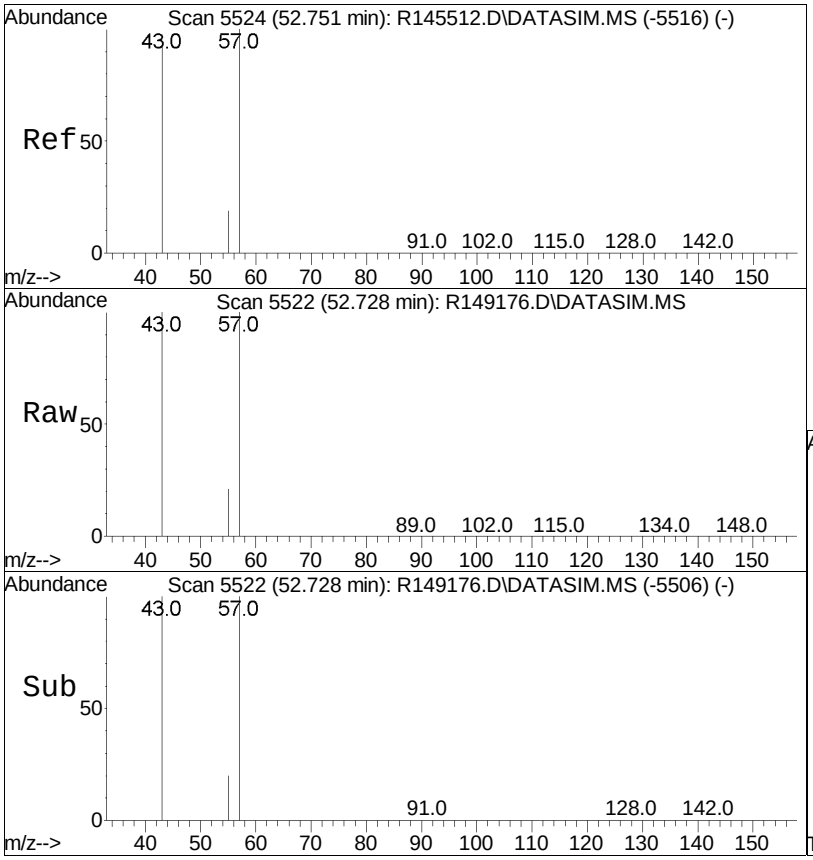


#89
1,2-Dimethyl-3-ethylbenzene
Concen: 0.01 ppbV m
RT: 49.582 min Scan# 5230
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:119 Resp: 350

Ion	Ratio	Lower	Upper
119	100		
134	46.5	8.0	48.0
91	50.3	0.0	39.5#

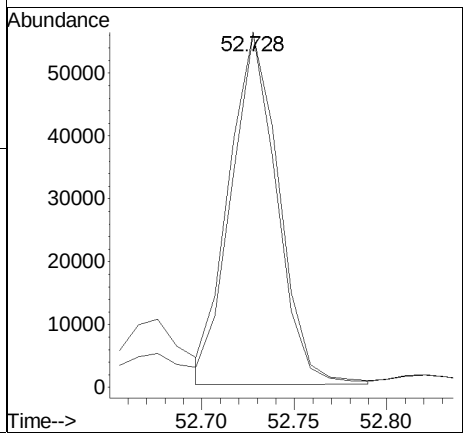


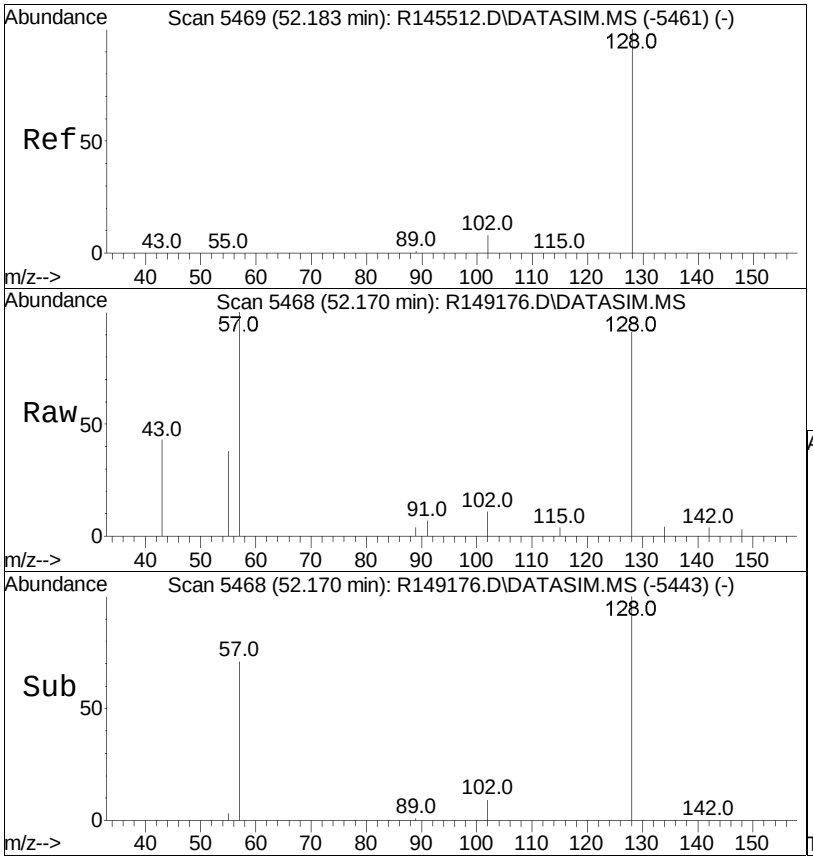


#92
Dodecane
Concen: 4.13 ppbV
RT: 52.728 min Scan# 5522
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 43 Resp: 100501

Ion	Ratio	Lower	Upper
43	100		
57	99.5	80.2	120.2

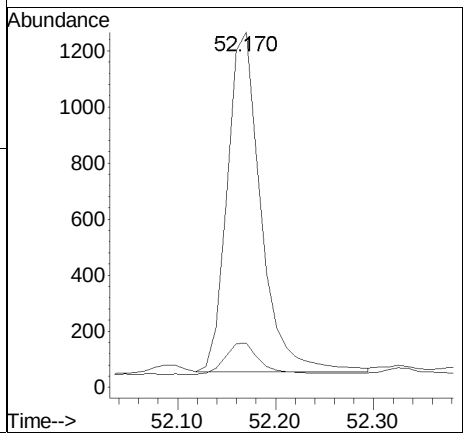


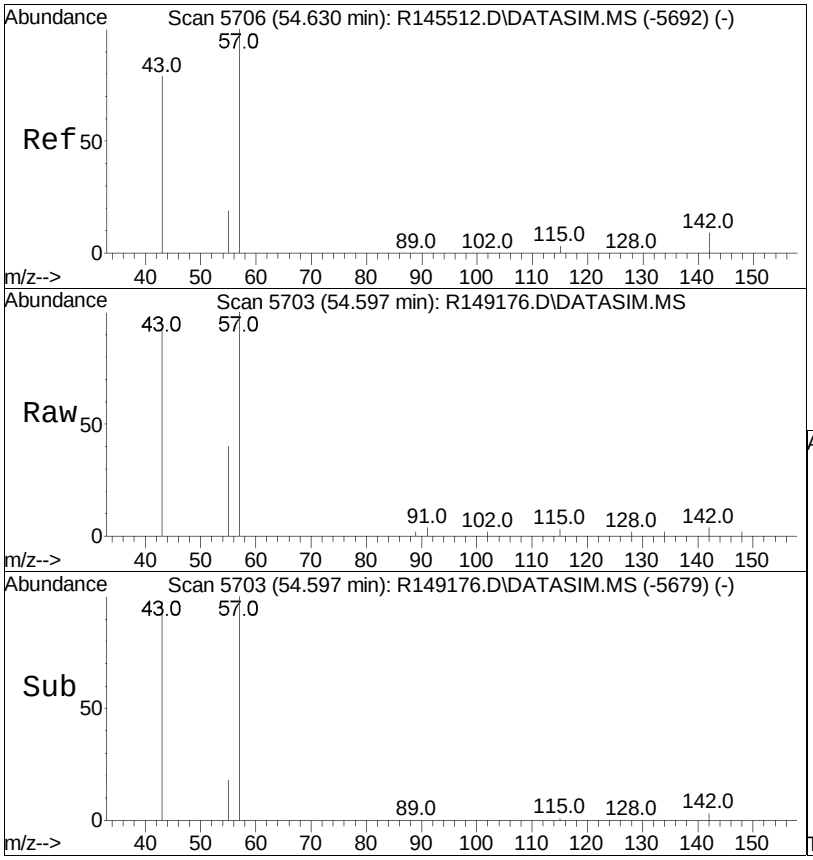


#93
Naphthalene
Concen: 0.09 ppbV
RT: 52.170 min Scan# 5468
Delta R.T. 0.010 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:128 Resp: 2904

Ion	Ratio	Lower	Upper
128	100		
102	12.5	0.0	28.9

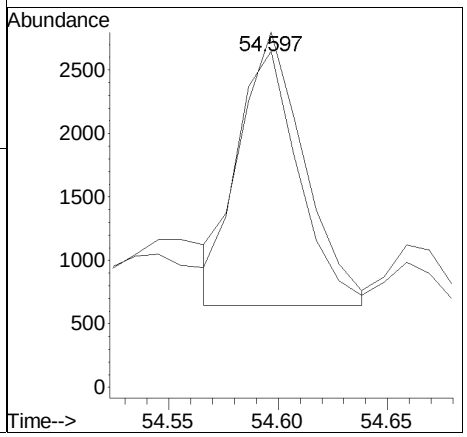


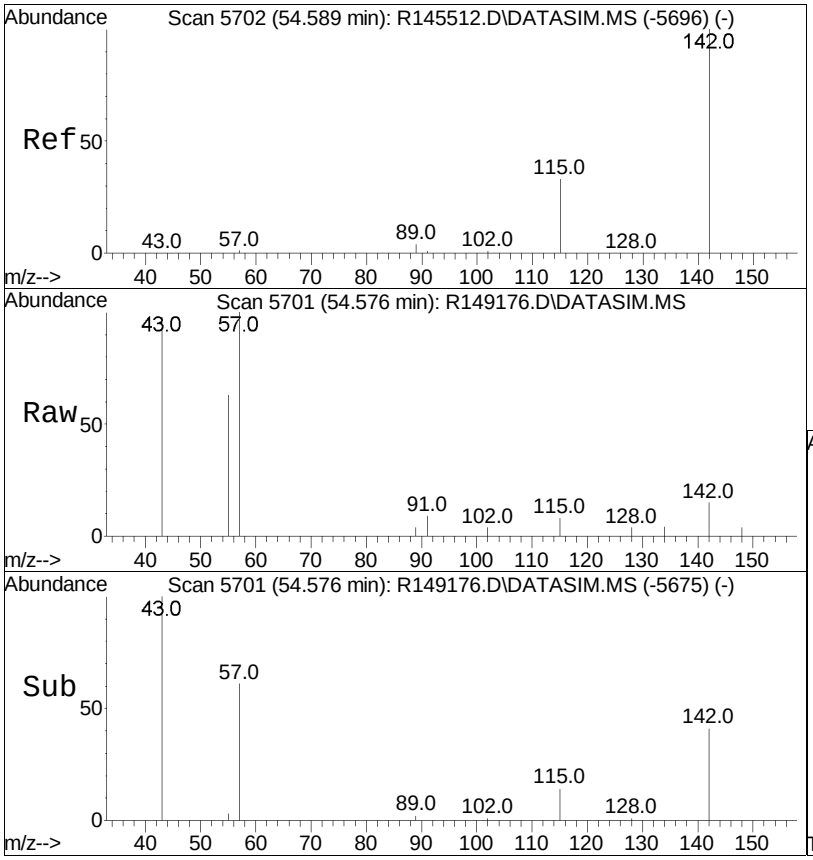


#96
Tridecane
Concen: 0.13 ppbV m
RT: 54.597 min Scan# 5703
Delta R.T. -0.000 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion: 57 Resp: 4443

Ion	Ratio	Lower	Upper
57	100		
43	94.6	72.3	112.3

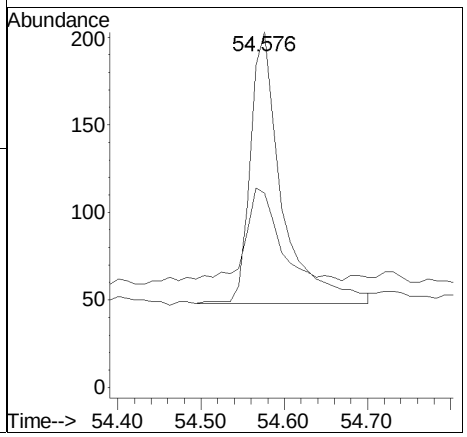


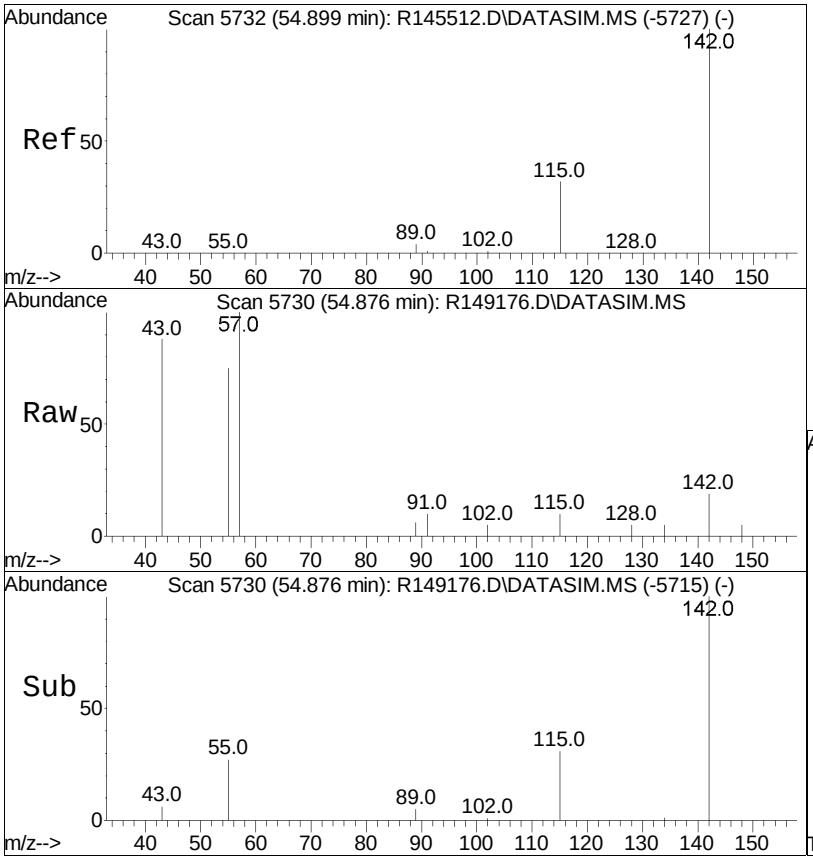


#97
2-Methylnaphthalene
Concen: 0.02 ppbV
RT: 54.576 min Scan# 5701
Delta R.T. 0.020 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:142 Resp: 409

Ion	Ratio	Lower	Upper
142	100		
115	54.7	15.8	55.8

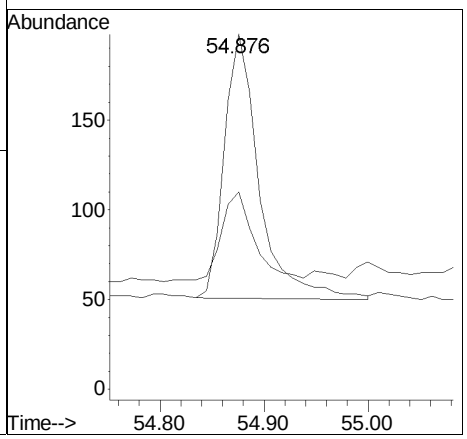




#98
1-Methylnaphthalene
Concen: 0.01 ppbV
RT: 54.876 min Scan# 5730
Delta R.T. 0.010 min
Lab File: R149176.D
Acq: 8 Nov 2016 6:31 pm

Tgt Ion:142 Resp: 344

Ion	Ratio	Lower	Upper
142	100		
115	55.6	14.1	54.1#



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-03	Date Collected	: 10/19/16 09:45
Client ID	: NFSV-07	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 19:38
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149177	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
106-99-0	1,3-Butadiene	0.230	0.025	0.010	0.509	0.055	0.022	
78-78-4	Isopentane	5.38	0.025	0.010	15.9	0.074	0.030	
109-67-1	1-Pentene	1.46	0.025	0.010	4.19	0.072	0.029	
563-46-2	2-Methyl-1-Butene	2.07	0.025	0.010	5.94	0.072	0.029	
109-66-0	Pentane	2.32	0.025	0.010	6.85	0.074	0.030	
646-04-8	trans-2-Pentene	0.570	0.025	0.010	1.63	0.072	0.029	
627-20-3	cis-2-Pentene	0.717	0.025	0.010	2.06	0.072	0.029	
75-65-0	Tertiary Butanol	1.90	0.025	0.010	5.76	0.076	0.030	
287-92-3	Cyclopentane	ND	0.025	0.010	ND	0.072	0.029	U
79-29-8	2,3-Dimethylbutane	0.136	0.025	0.010	0.479	0.088	0.035	
107-83-5	2-Methylpentane	0.390	0.025	0.010	1.37	0.088	0.035	
1634-04-4	Methyl tert butyl ether	0.080	0.025	0.010	0.288	0.090	0.036	
96-14-0	3-Methylpentane	0.368	0.025	0.010	1.30	0.088	0.035	
592-41-6	1-Hexene	0.438	0.025	0.010	1.51	0.086	0.034	
110-54-3	n-Hexane	0.439	0.025	0.010	1.55	0.088	0.035	
108-20-3	Isopropyl Ether	ND	0.025	0.010	ND	0.104	0.042	U
637-92-3	Ethyl-Tert-Butyl-Ether	ND	0.025	0.010	ND	0.104	0.042	U
590-35-2	2,2-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041	U
96-37-7	Methylcyclopentane	0.188	0.025	0.010	0.647	0.086	0.034	
108-08-7	2,4-Dimethylpentane	0.040	0.025	0.010	0.164	0.102	0.041	
107-06-2	1,2-Dichloroethane	ND	0.025	0.010	ND	0.101	0.041	U
110-82-7	Cyclohexane	0.205	0.025	0.010	0.706	0.086	0.034	
591-76-4	2-Methylhexane	ND	0.025	0.010	ND	0.102	0.041	U
71-43-2	Benzene	1.91	0.025	0.010	6.10	0.080	0.032	
565-59-3	2,3-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041	U
110-02-1	Thiophene	0.107	0.025	0.010	0.368	0.086	0.034	
589-34-4	3-Methylhexane	0.207	0.025	0.010	0.848	0.102	0.041	
994-05-8	Tertiary-Amyl Methyl Ether	ND	0.025	0.010	ND	0.104	0.042	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-03	Date Collected	: 10/19/16 09:45
Client ID	: NFSV-07	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 19:38
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149177	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
592-76-7	1-Heptene	ND	0.025	0.010	ND	0.100	0.040	U
540-84-1	Isooctane	0.193	0.025	0.010	0.901	0.117	0.047	
142-82-5	Heptane	0.161	0.025	0.010	0.660	0.102	0.041	
108-87-2	Methylcyclohexane	ND	0.025	0.010	ND	0.100	0.040	U
592-13-2	2,5-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
589-43-5/564-02-3	2,4-Dimethylhexane/2,2,3-Trimethylpen	0.181	0.050	0.025	0.845	0.234	0.117	
565-75-3	2,3,4-Trimethylpentane	0.158	0.025	0.010	0.738	0.117	0.047	
560-21-4	2,3,3-Trimethylpentane	0.294	0.025	0.010	1.37	0.117	0.047	
584-94-1	2,3-Dimethylhexane	0.047	0.025	0.010	0.220	0.117	0.047	
619-99-8	3-Ethylhexane	0.023	0.025	0.010	0.107	0.117	0.047	J
592-27-8	2-Methylheptane	ND	0.025	0.010	ND	0.117	0.047	U
589-81-1	3-Methylheptane	0.029	0.025	0.010	0.135	0.117	0.047	
108-88-3	Toluene	1.44	0.025	0.010	5.43	0.094	0.038	
554-14-3	2-Methylthiophene	0.021	0.025	0.010	0.084	0.100	0.040	J
616-44-4	3-Methylthiophene	0.024	0.025	0.010	0.096	0.100	0.040	J
111-66-0	1-Octene	0.128	0.025	0.010	0.587	0.115	0.046	
16747-50-5	1-Ethyl-1-Methylcyclopentane	ND	0.025	0.010	ND	0.115	0.046	U
111-65-9	Octane	0.112	0.025	0.010	0.523	0.117	0.047	
106-93-4	1,2-Dibromoethane	ND	0.025	0.010	ND	0.192	0.077	U
100-41-4	Ethylbenzene	0.420	0.025	0.010	1.82	0.109	0.043	
872-55-9	2-Ethylthiophene	ND	0.025	0.010	ND	0.115	0.046	U
179601-23-1	p/m-Xylene	0.663	0.050	0.010	2.88	0.217	0.043	
124-11-8	1-Nonene	ND	0.025	0.010	ND	0.129	0.052	U
111-84-2	Nonane (C9)	0.099	0.025	0.010	0.519	0.131	0.053	
100-42-5	Styrene	0.097	0.025	0.010	0.413	0.106	0.043	
95-47-6	o-Xylene	0.286	0.050	0.010	1.24	0.217	0.043	
98-82-8	Isopropylbenzene	0.038	0.025	0.010	0.187	0.123	0.049	
103-65-1	n-Propylbenzene	0.051	0.025	0.010	0.251	0.123	0.049	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-03	Date Collected	: 10/19/16 09:45
Client ID	: NFSV-07	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 19:38
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149177	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
620-14-4	1-Methyl-3-Ethylbenzene	0.229	0.050	0.025	1.13	0.246	0.123	
622-96-8	1-Methyl-4-Ethylbenzene	0.153	0.025	0.010	0.752	0.123	0.049	
108-67-8	1,3,5-Trimethylbenzene	0.097	0.025	0.010	0.477	0.123	0.049	
872-05-9	1-Decene	0.124	0.050	0.025	0.711	0.287	0.143	
611-14-3	1-Methyl-2-Ethylbenzene	0.176	0.050	0.025	0.865	0.246	0.123	
124-18-5	Decane (C10)	1.87	0.050	0.025	10.9	0.291	0.146	
95-63-6	1,2,4-Trimethylbenzene	0.302	0.050	0.025	1.48	0.246	0.123	
135-98-8	sec-Butylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
535-77-3	1-Methyl-3-Isopropylbenzene	0.028	0.050	0.025	0.154	0.274	0.137	J
99-87-6	1-Methyl-4-Isopropylbenzene	0.601	0.050	0.025	3.30	0.274	0.137	
527-84-4	1-Methyl-2-Isopropylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
496-11-7	Indane	0.196	0.050	0.025	0.948	0.242	0.121	
95-13-6	Indene	0.082	0.050	0.025	0.390	0.238	0.119	
1074-43-7	1-Methyl-3-N-Propylbenzene	0.062	0.050	0.025	0.340	0.274	0.137	
1074-55-1	1-Methyl-4-N-Propylbenzene	0.034	0.050	0.025	0.187	0.274	0.137	J
104-51-8	n-Butylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
934-80-5	1,2-Dimethyl-4-Ethylbenzene	0.078	0.050	0.025	0.428	0.274	0.137	
135-01-3	1,2-Diethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1074-17-5	1-Methyl-2-N-Propylbenzene	0.029	0.050	0.025	0.159	0.274	0.137	J
1758-88-9	1,4-Dimethyl-2-Ethylbenzene	0.060	0.050	0.025	0.329	0.274	0.137	
1120-21-4	Undecane	1.06	0.050	0.025	6.78	0.320	0.160	
874-41-9	1,3-Dimethyl-4-Ethylbenzene	0.046	0.050	0.025	0.252	0.274	0.137	J
934-74-7	1,3-Dimethyl-5-Ethylbenzene	0.178	0.050	0.025	0.977	0.274	0.137	
2870-04-4	1,3-Dimethyl-2-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
933-98-2	1,2-Dimethyl-3-Ethylbenzene	0.033	0.050	0.025	0.181	0.274	0.137	J
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
538-68-1	N-Pentylbenzene	ND	0.050	0.025	ND	0.303	0.152	U
112-40-3	Dodecane (C12)	28.2	0.100	0.050	196	0.697	0.348	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-03	Date Collected	: 10/19/16 09:45
Client ID	: NFSV-07	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 19:38
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149177	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
91-20-3	Naphthalene	0.336	0.050	0.025	1.76	0.262	0.131	
95-15-8	Benzothiophene	ND	0.100	0.050	ND	0.549	0.274	U
12108-13-3	MMT	ND	0.100	0.050	ND	0.892	0.446	U
629-50-5	Tridecane	1.55	1.00	0.050	11.7	7.54	0.377	
91-57-6	2-Methylnaphthalene	0.060	0.500	0.050	0.349	2.91	0.291	J
90-12-0	1-Methylnaphthalene	ND	0.500	0.050	ND	2.91	0.291	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149177.D
Acq On : 8 Nov 2016 7:38 pm
Operator : AIRPIANO1:RY
Sample : L1634001-03,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 10 11:13:07 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.198	49	130237	10.000	ppbV	0.00
Standard Area = 123393			Recovery = 105.55%			
27) 1,4-difluorbenzene	14.201	114	273245	10.000	ppbV	0.00
Standard Area = 263318			Recovery = 103.77%			
54) chlorobenzene-D5	27.633	117	203361	10.000	ppbV	0.00
Standard Area = 190793			Recovery = 106.59%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.614	65	82851	10.180	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.80%			
46) Toluene-D8	20.949	98	215614	10.343	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 103.43%			
62) 4-Bromofluorobenzene (...	34.334	95	110301	9.888	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.88%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.710	54	1587	0.230	ppbV #	5
4) Isopentane	5.878	41	67867M6	5.381	ppbV	
5) 1-Pentene	6.194	42	20770	1.455	ppbV	96
6) 2-Methyl-1-butene	6.352	55	34994	2.073	ppbV	92
7) Pentane	6.468	43	50175	2.325	ppbV	98
9) 2-Pentene (trans)	6.657	55	9315	0.570	ppbV	90
10) 2-Pentene (cis)	6.889	55	10776	0.717	ppbV	96
11) Tertiary butanol	6.868	59	46560	1.899	ppbV	91
12) Cyclopentane	0.000		0	N.D.	d	
13) 2,3-Dimethylbutane	8.665	71	613	0.136	ppbV #	79
14) 2-Methylpentane	8.812	43	9551M6	0.390	ppbV	
15) MTBE	8.687	73	1987	0.080	ppbV #	1
16) 3-Methylpentane	9.460	57	5928	0.368	ppbV	92
17) 1-Hexene	9.723	56	4064M3	0.438	ppbV	
18) Hexane	10.286	57	6045	0.439	ppbV #	51
19) Diisopropyl ether	0.000		0	N.D.	d	
20) Ethyl tertiary butyl e...	0.000		0	N.D.	d	
21) 2,2-Dimethylpentane	0.000		0	N.D.	d	
23) Methylcyclopentane	11.831	56	3224	0.188	ppbV	87
24) 2,4-Dimethylpentane	11.973	43	895	0.040	ppbV #	74
25) 1,2-Dichloroethane	0.000		0	N.D.	d	
26) Cyclohexane	13.910	56	2738M6	0.205	ppbV	
28) 2-Methylhexane	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149177.D
Acq On : 8 Nov 2016 7:38 pm
Operator : AIRPIANO1:RY
Sample : L1634001-03,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 10 11:13:07 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
29) Benzene	13.316	78	49700	1.907	ppbV		100
30) 2,3-Dimethylpentane	0.000		0	N.D.	d		
31) Thiophene	13.596	84	1200	0.107	ppbV		96
32) 3-Methylhexane	15.018	43	3739	0.207	ppbV	#	69
33) TAME	0.000		0	N.D.	d		
34) 1-Heptene	0.000		0	N.D.	d		
35) Isooctane	15.993	57	7898	0.193	ppbV	#	74
36) Heptane	16.777	43	2841	0.161	ppbV		99
37) Methylcyclohexane	0.000		0	N.D.	d		
38) 2,5-Dimethylhexane	0.000		0	N.D.	d		
39) 2,4-Dimethyhexane / 2,...	19.499	57	4563	0.181	ppbV	#	58
40) 2,3,4-Trimethylpentane	20.840	43	4476	0.158	ppbV		97
41) 2,3,3-Trimethylpentane	21.234	43	7809M6	0.294	ppbV		
42) 2,3-Dimethylhexane	21.706	43	1203M4	0.047	ppbV		
43) 3-Ethylhexane	22.926	43	722	0.023	ppbV		61
44) 2-Methylheptane	0.000		0	N.D.	d		
45) 3-Methylheptane	22.818	43	610M4	0.029	ppbV		
47) Toluene	21.263	91	43705	1.438	ppbV		100
48) 2-Methylthiophene	21.470	97	422	0.021	ppbV	#	54
49) 3-Methylthiophene	22.070	97	463	0.024	ppbV		75
50) 1-Octene	24.077	55	1176	0.128	ppbV		97
51) 1-ethyl-1-methylcyclop...	0.000		0	N.D.	d		
52) Octane	25.101	43	2694M6	0.112	ppbV		
53) 1,2-Dibromoethane	0.000		0	N.D.	d		
55) Ethylbenzene	29.486	91	12056	0.420	ppbV		98
56) 2-Ethylthiophene	0.000		0	N.D.	d		
57) p/m-Xylene	30.233	91	14656M4	0.663	ppbV		
58) 1-Nonene	0.000		0	N.D.	d		
59) Nonane	33.909	43	2121	0.099	ppbV		98
60) Styrene	31.832	104	1407	0.097	ppbV		87
61) o-Xylene	32.258	91	6470	0.286	ppbV		100
63) Isopropylbenzene	35.119	105	1139	0.038	ppbV		75
64) n-Propylbenzene	37.698	120	398	0.051	ppbV	#	47
65) 1-Methyl-3-ethylbenzene	38.323	105	6436	0.229	ppbV		97
66) 1-Methyl-4-ethylbenzene	38.503	105	4619	0.153	ppbV		94
67) 1,3,5-Trimethylbenzene	38.996	105	2391	0.097	ppbV		92
68) 1-Decene	41.531	41	1527M4	0.124	ppbV		
69) 1-Methyl-2-ethylbenzene	39.861	105	5050	0.176	ppbV		96
70) Decane	42.505	43	41394	1.873	ppbV		100
71) 1,2,4-Trimethylbenzene	41.147	105	7368	0.302	ppbV		96

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149177.D
Acq On : 8 Nov 2016 7:38 pm
Operator : AIRPIANO1:RY
Sample : L1634001-03,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 10 11:13:07 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

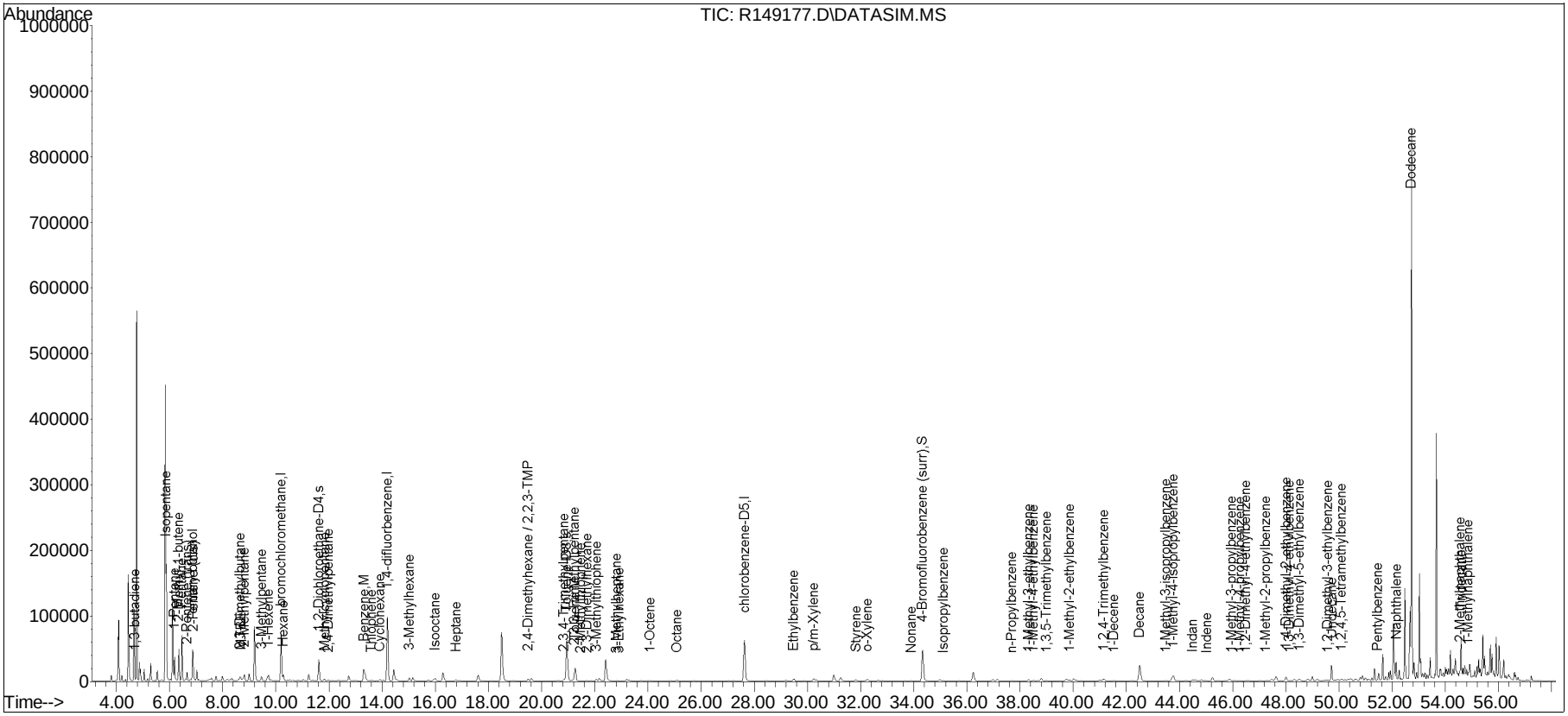
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
72) sec-Butylbenzene	0.000		0	N.D.	d	
73) 1-Methyl-3-isopropylbe...	43.490	119	885	0.028	ppbV #	57
74) 1-Methyl-4-isopropylbe...	43.766	119	15844	0.601	ppbV	96
75) 1-Methyl-2-isopropylbe...	0.000		0	N.D.	d	
76) Indan	44.487	117	3738	0.196	ppbV	97
77) Indene	45.028	115	940	0.082	ppbV	97
78) 1-Methyl-3-propylbenzene	45.953	105	2201	0.062	ppbV	86
79) 1-Methyl-4-propylbenzene	46.266	105	1477	0.034	ppbV	58
80) n-Butylbenzene	0.000		0	N.D.	d	
81) 1,2-Dimethyl-4-ethylbe...	46.482	119	2094	0.078	ppbV	84
82) 1,2-Diethylbenzene	46.758		0	N.D.		
83) 1-Methyl-2-propylbenzene	47.251	105	1107	0.029	ppbV	73
84) 1,4-Dimethyl-2-ethylbe...	48.020	119	1678	0.060	ppbV	82
85) Undecane	49.727	57	23845	1.065	ppbV	94
86) 1,3-Dimethyl-4-ethylbe...	48.140	119	1493	0.046	ppbV	79
87) 1,3-Dimethyl-5-ethylbe...	48.513	119	5457	0.178	ppbV	92
88) 1,3-Dimethyl-2-ethylbe...	0.000		0	N.D.	d	
89) 1,2-Dimethyl-3-ethylbe...	49.582	119	993M6	0.033	ppbV	
90) 1,2,4,5-Tetramethylben...	50.099	119	1890	0.019	ppbV	89
91) Pentylbenzene	51.458	91	587	0.018	ppbV	67
92) Dodecane	52.728	43	689026M6	28.184	ppbV	
93) Naphthalene	52.160	128	11111	0.336	ppbV	98
94) Benzothiophene	52.315		0	N.D.		
95) MMT	0.000		0	N.D.	d	
96) Tridecane	54.597	57	53475M6	1.550	ppbV	
97) 2-Methylnaphthalene	54.566	142	1413	0.060	ppbV	85
98) 1-Methylnaphthalene	54.865	142	1285	0.049	ppbV	79

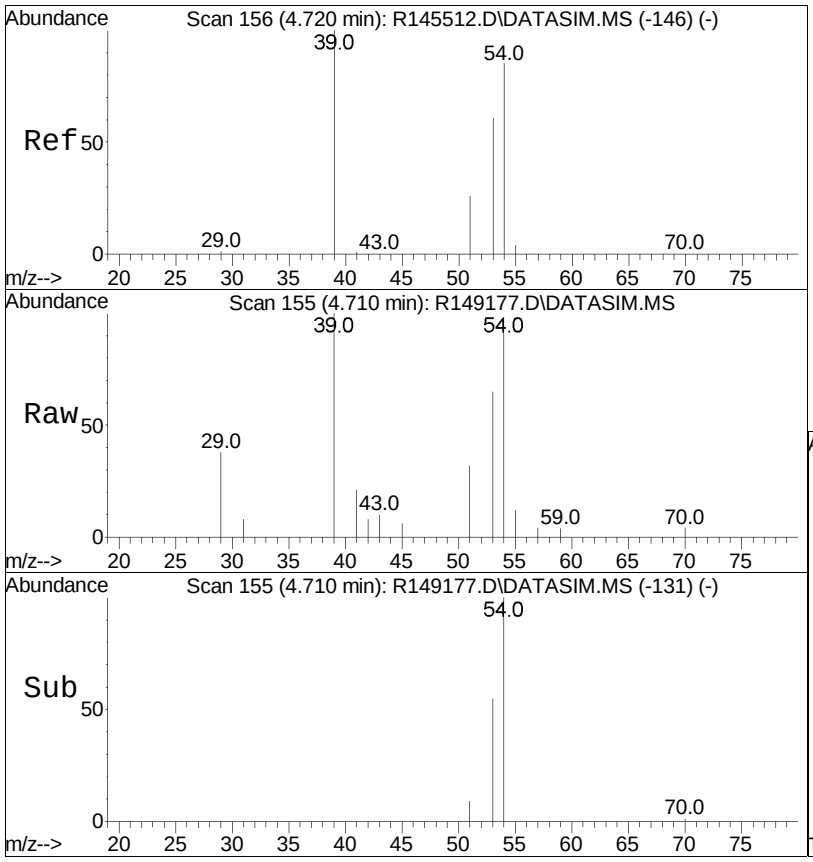
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : AIR-NF-PIANO - NF PIANO LIST161108PIANO\R149170.D

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149177.D
Acq On : 8 Nov 2016 7:38 pm
Operator : AIRPIANO1:RY
Sample : L1634001-03,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 10 11:13:07 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

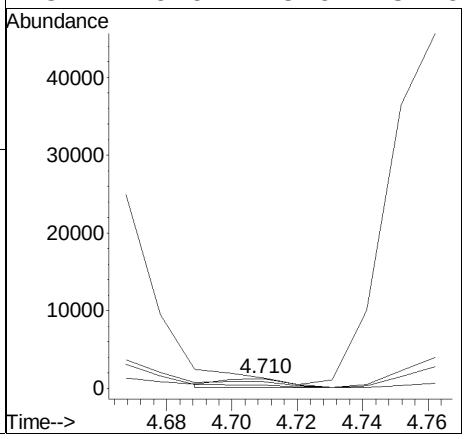


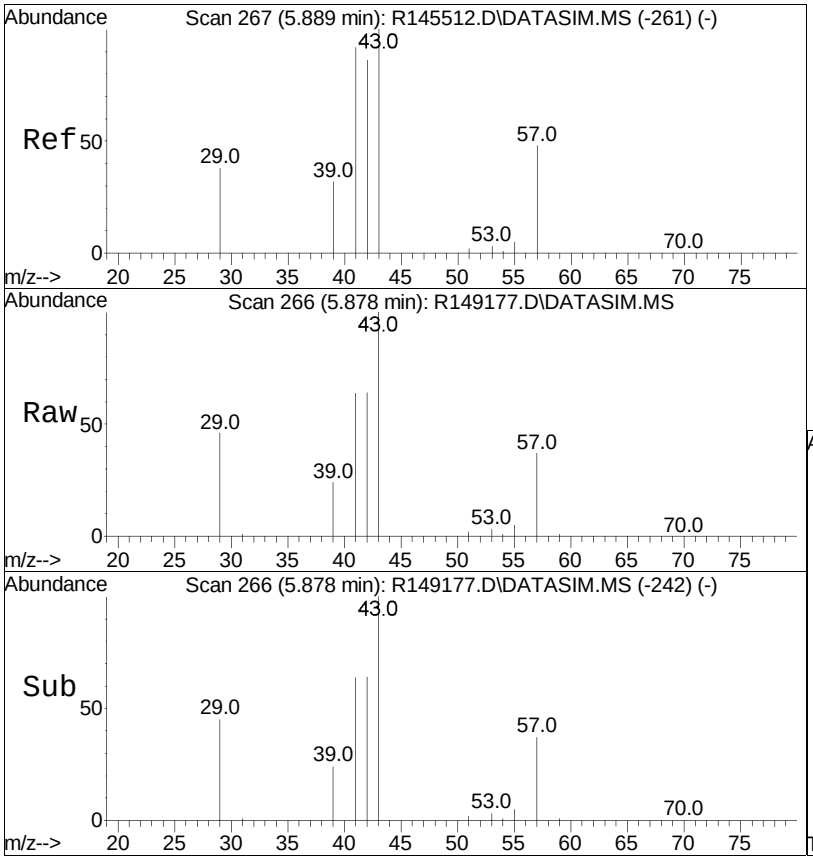


#2
1,3-butadiene
Concen: 0.23 ppbV
RT: 4.710 min Scan# 155
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 54 Resp: 1587

Ion	Ratio	Lower	Upper
54	100		
39	0.0	100.0	150.0#
53	0.0	57.0	85.6#
51	0.0	25.0	37.6#

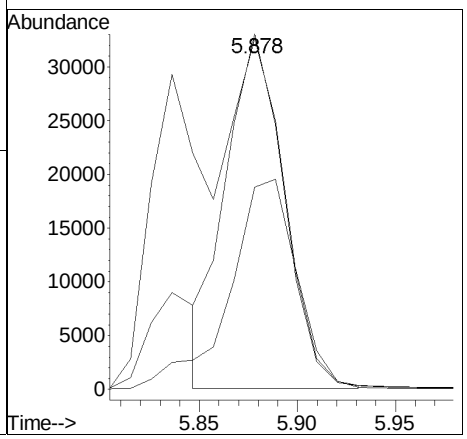


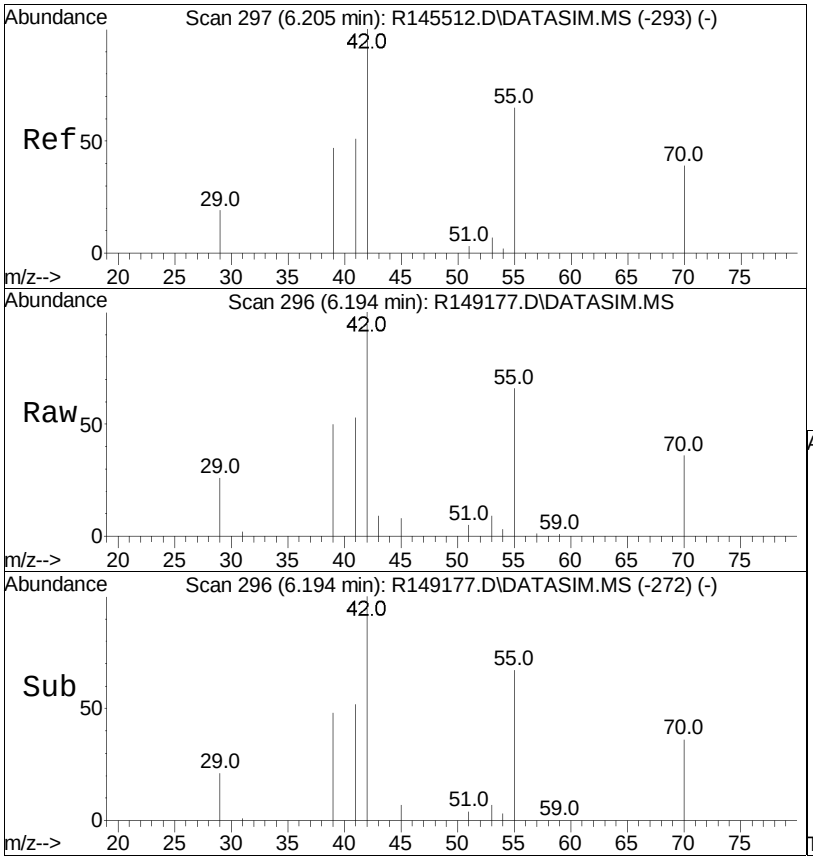


#4
Isopentane
Concen: 5.38 ppbV m
RT: 5.878 min Scan# 266
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 41 Resp: 67867

Ion	Ratio	Lower	Upper
41	100		
57	56.9	31.8	71.8
42	98.8	76.7	116.7

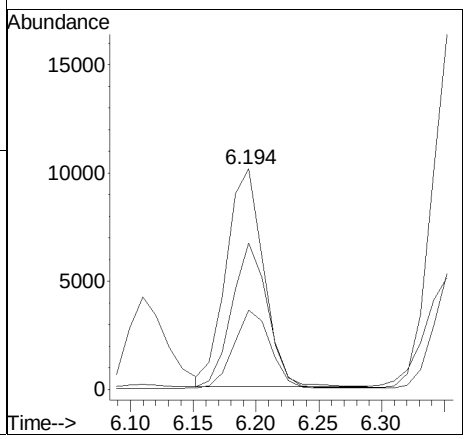


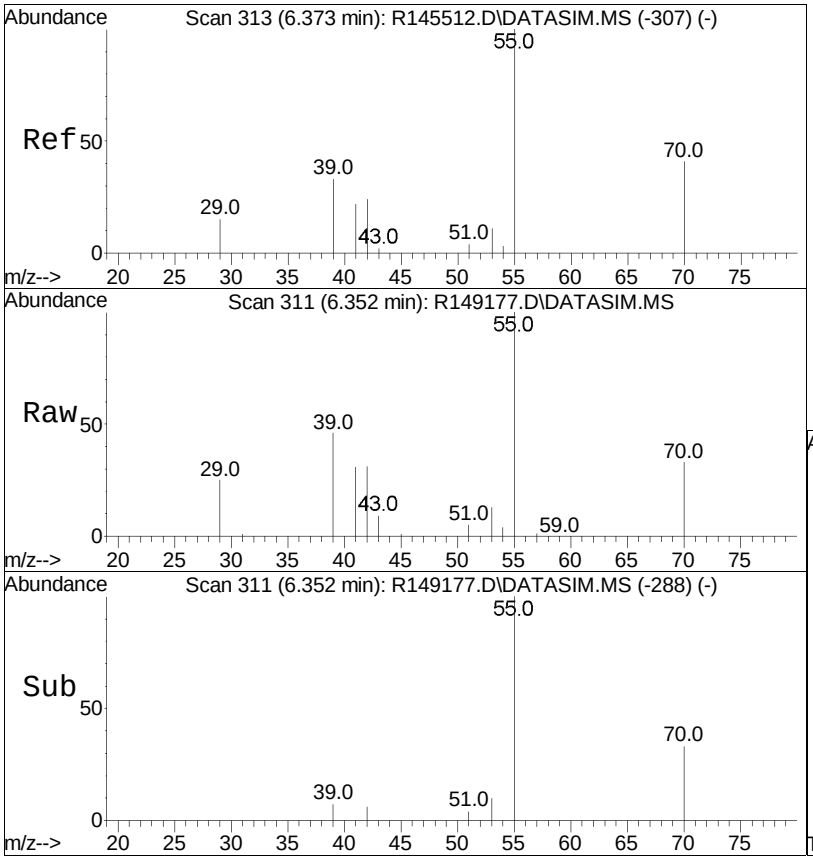


#5
1-Pentene
Concen: 1.46 ppbV
RT: 6.194 min Scan# 296
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 42 Resp: 20770

Ion	Ratio	Lower	Upper
42	100		
55	66.4	43.2	83.2
70	35.9	13.6	53.6

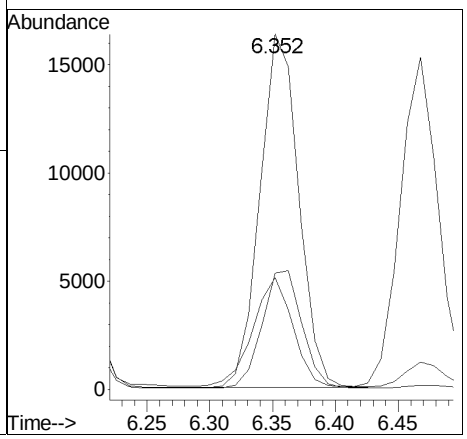


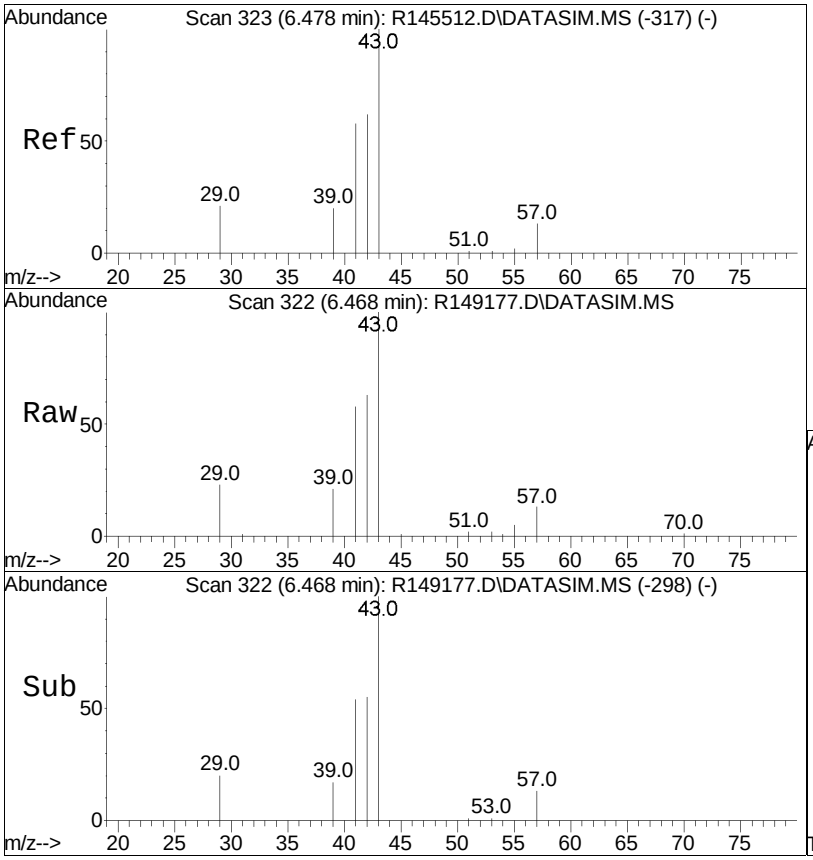


#6
2-Methyl-1-butene
Concen: 2.07 ppbV
RT: 6.352 min Scan# 311
Delta R.T. -0.011 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 55 Resp: 34994

Ion	Ratio	Lower	Upper
55	100		
70	32.7	16.1	56.1
42	31.5	5.4	45.4

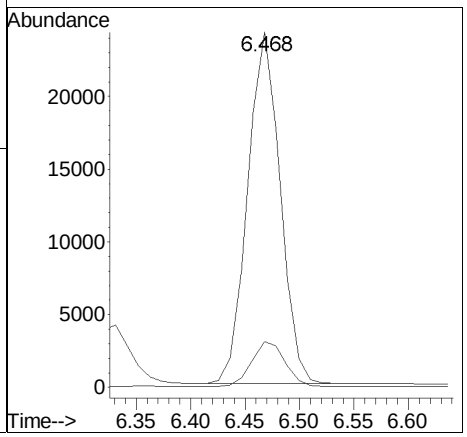


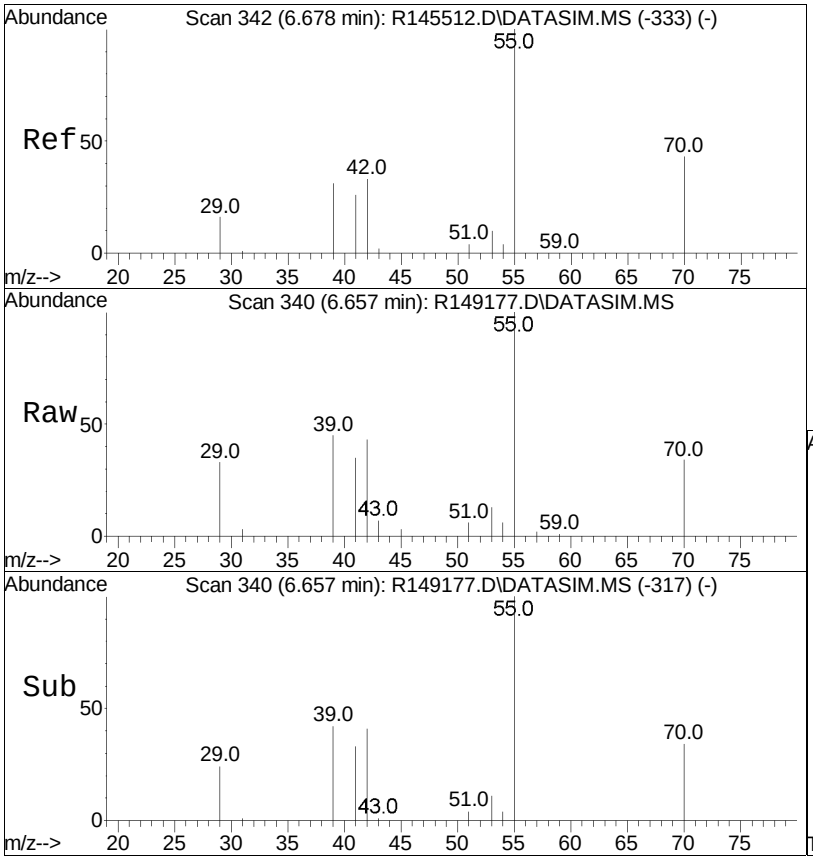


#7
Pentane
Concen: 2.32 ppbV
RT: 6.468 min Scan# 322
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 43 Resp: 50175

Ion	Ratio	Lower	Upper
43	100		
57	12.9	0.0	32.2

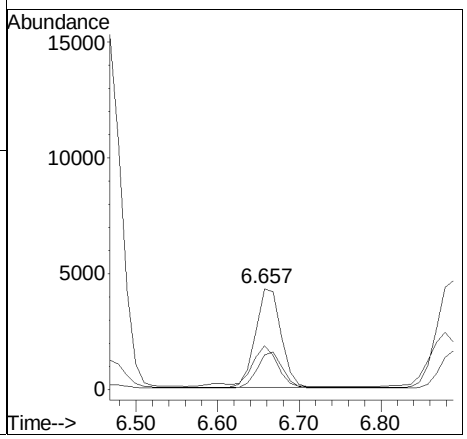


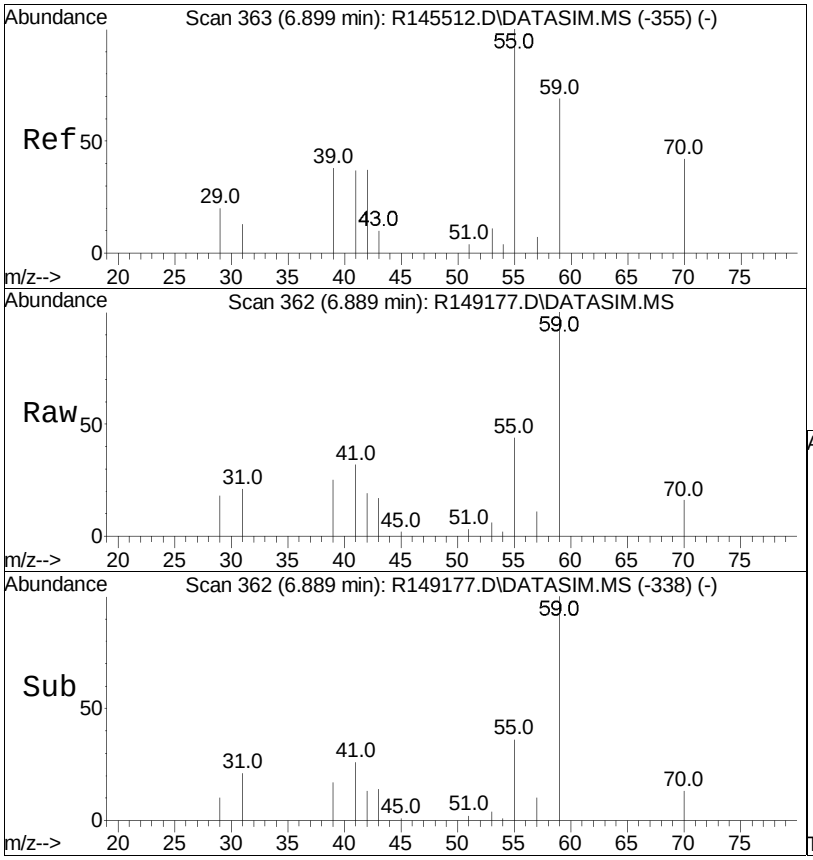


#9
2-Pentene (trans)
Concen: 0.57 ppbV
RT: 6.657 min Scan# 340
Delta R.T. -0.011 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 55 Resp: 9315

Ion	Ratio	Lower	Upper
55	100		
70	34.5	17.7	57.7
42	43.5	14.5	54.5

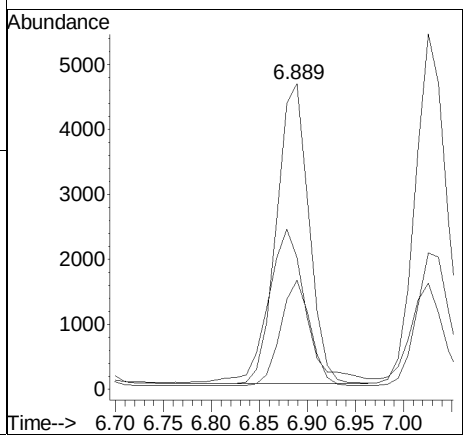


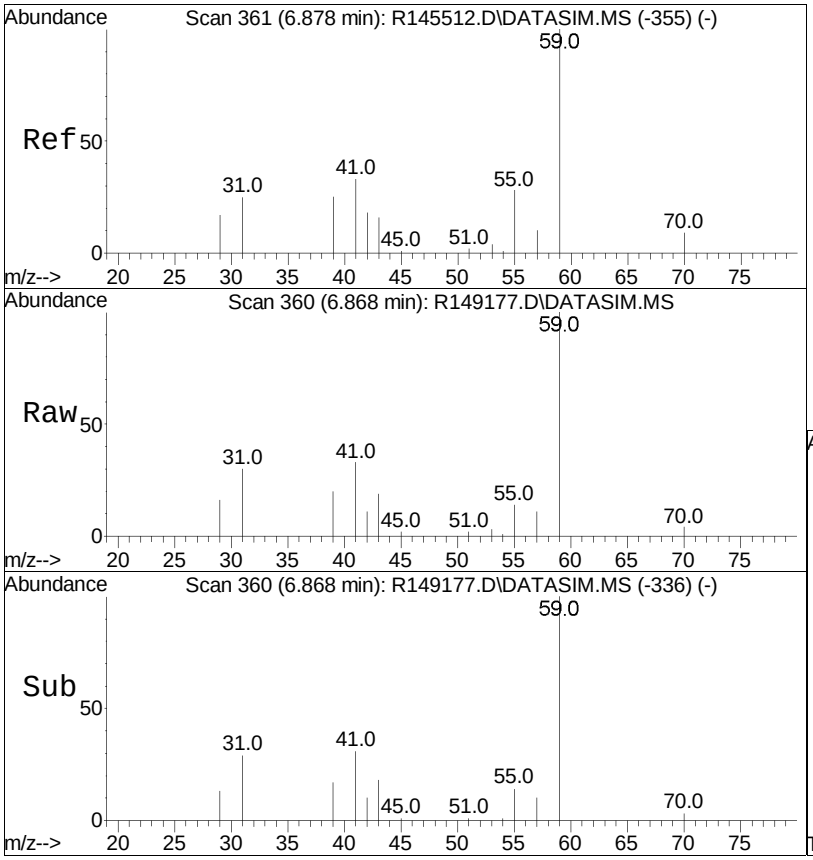


#10
2-Pentene (cis)
Concen: 0.72 ppbV
RT: 6.889 min Scan# 362
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 55 Resp: 10776

Ion	Ratio	Lower	Upper
55	100		
70	35.7	16.4	56.4
42	43.2	19.4	59.4

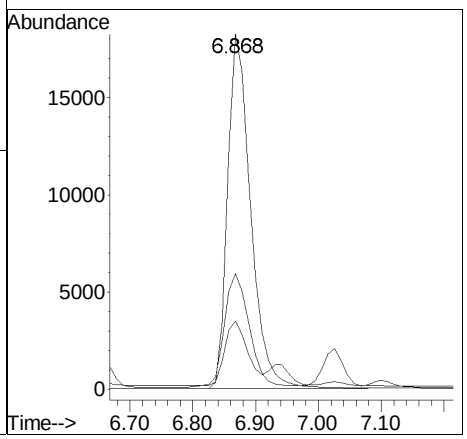


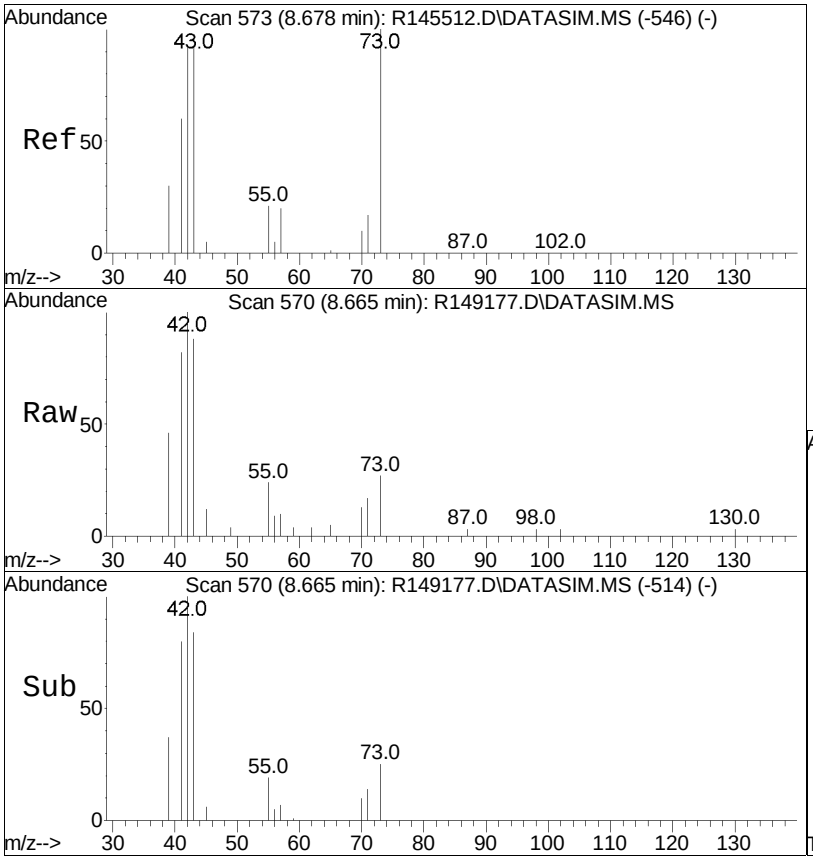


#11
Tertiary butanol
Concen: 1.90 ppbV
RT: 6.868 min Scan# 360
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 59 Resp: 46560

Ion	Ratio	Lower	Upper
59	100		
41	32.6	20.2	60.2
43	19.3	0.0	38.4

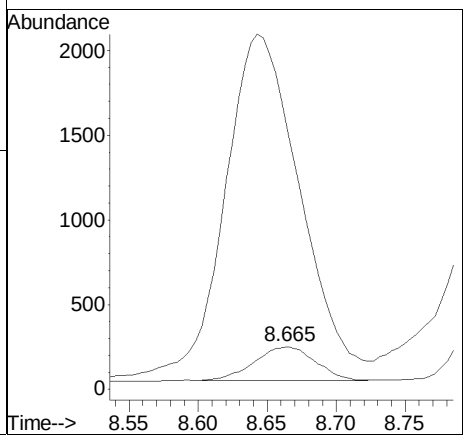


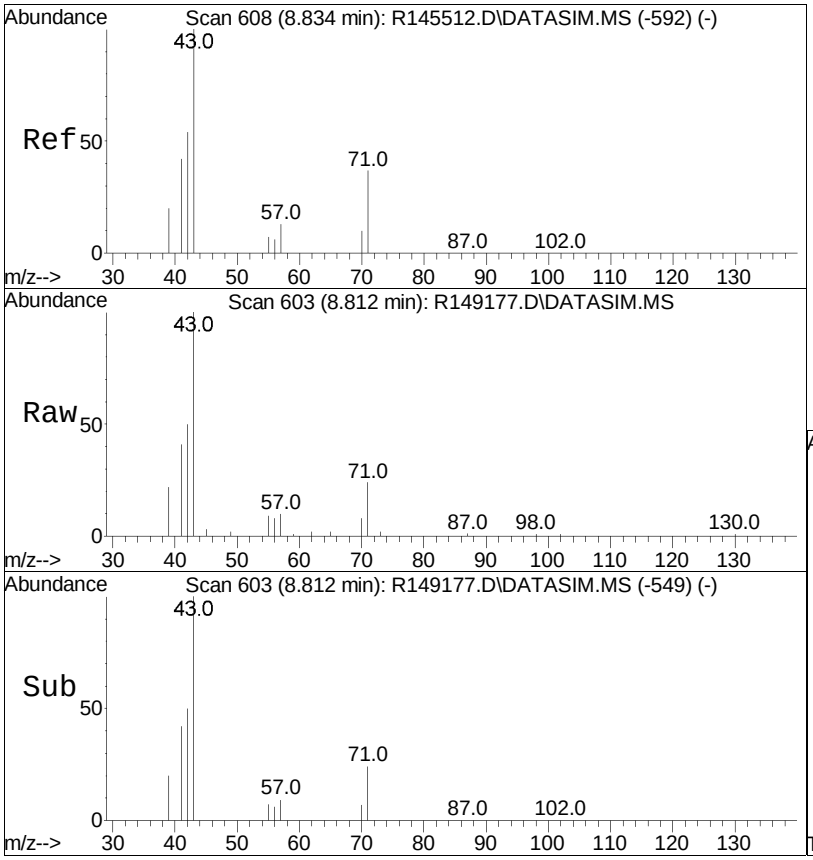


#13
2,3-Dimethylbutane
Concen: 0.14 ppbV
RT: 8.665 min Scan# 570
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 71 Resp: 613

Ion	Ratio	Lower	Upper
71	100		
42	601.6	652.6	692.6#

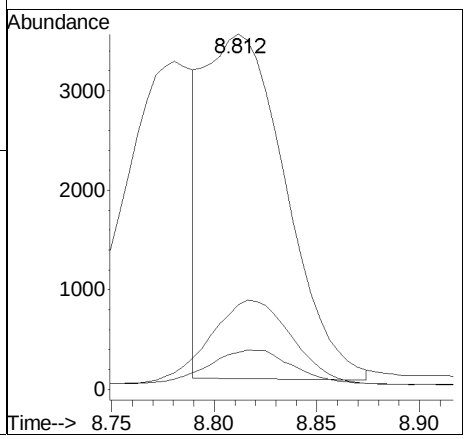


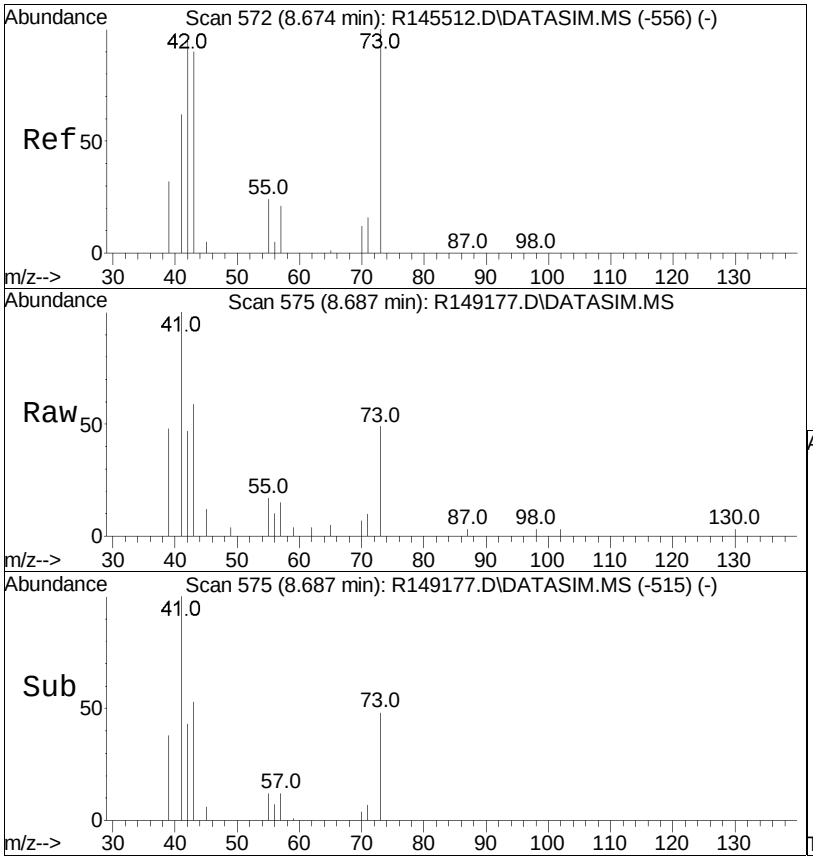


#14
2-Methylpentane
Concen: 0.39 ppbV m
RT: 8.812 min Scan# 603
Delta R.T. -0.009 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 43 Resp: 9551

Ion	Ratio	Lower	Upper
43	100		
71	23.8	8.8	48.8
57	10.4	0.0	31.6

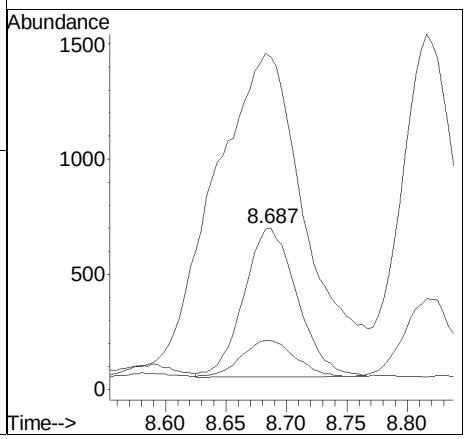


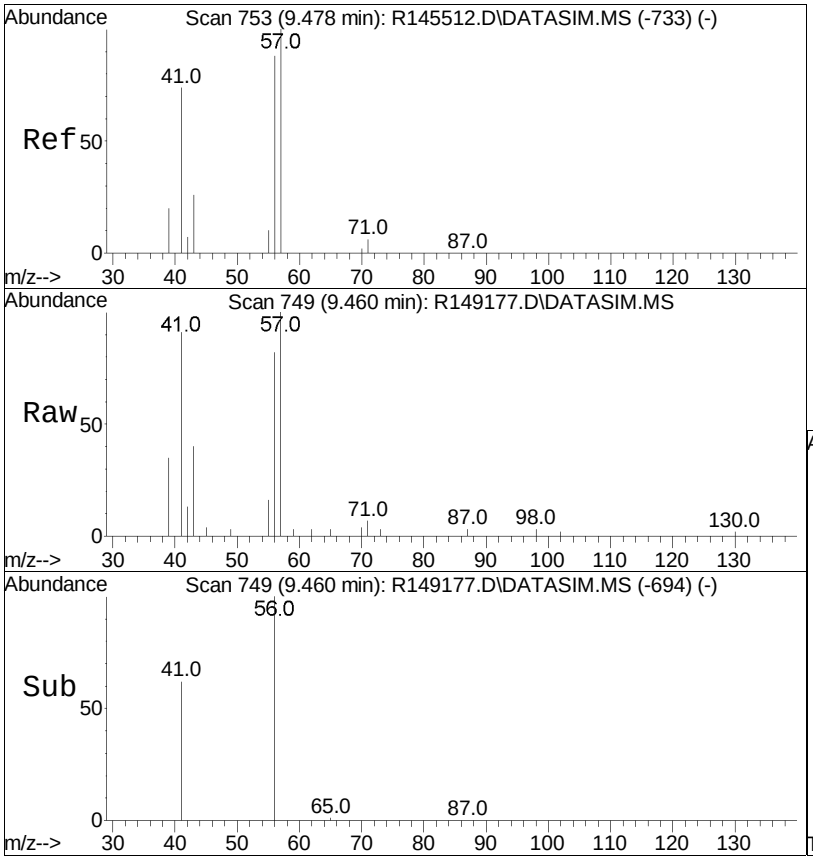


#15
MTBE
Concen: 0.08 ppbV
RT: 8.687 min Scan# 575
Delta R.T. 0.018 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 73 Resp: 1987

Ion	Ratio	Lower	Upper
73	100		
41	205.7	54.6	94.6#
57	30.2	3.7	43.7

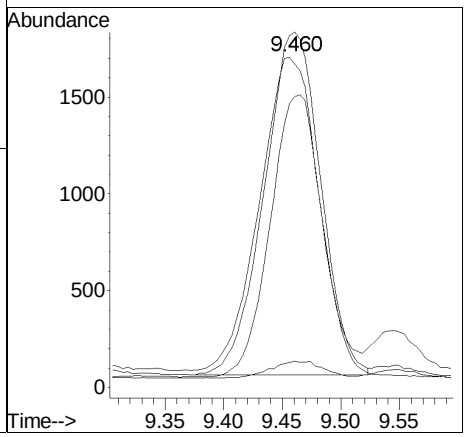


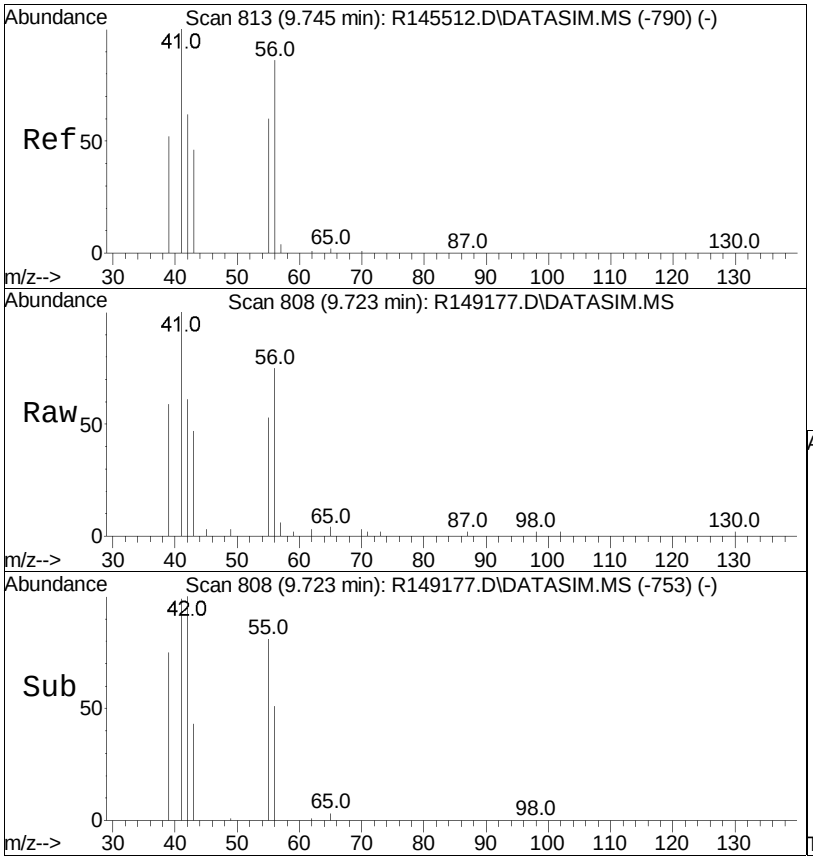


#16
3-Methylpentane
Concen: 0.37 ppbV
RT: 9.460 min Scan# 749
Delta R.T. -0.004 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 57 Resp: 5928

Ion	Ratio	Lower	Upper
57	100		
56	81.9	69.5	109.5
71	7.4	0.0	25.5
41	91.0	63.4	103.4

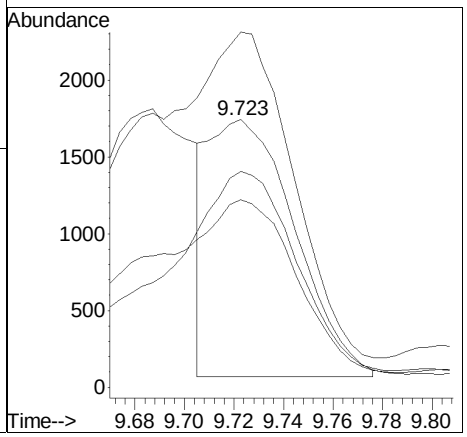


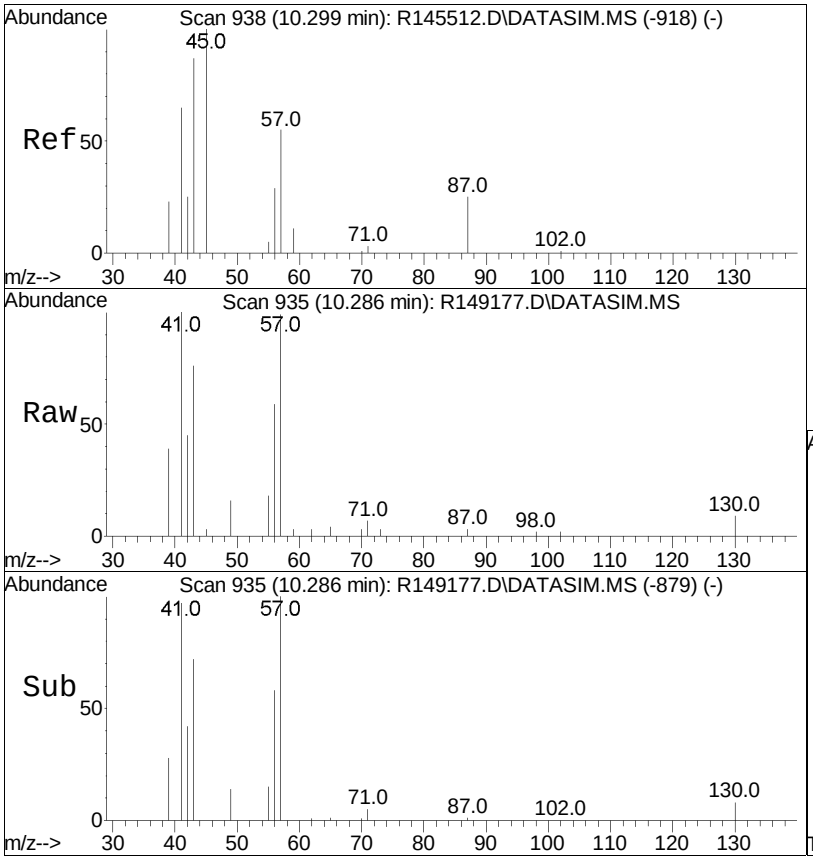


#17
1-Hexene
Concen: 0.44 ppbV m
RT: 9.723 min Scan# 808
Delta R.T. -0.004 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 56 Resp: 4064

Ion	Ratio	Lower	Upper
56	100		
41	132.6	111.5	151.5
55	70.0	51.2	91.2
42	80.6	62.3	102.3

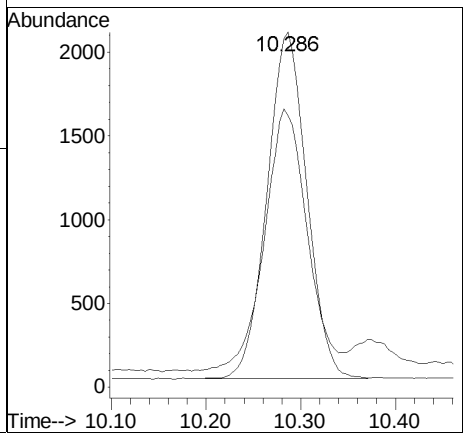


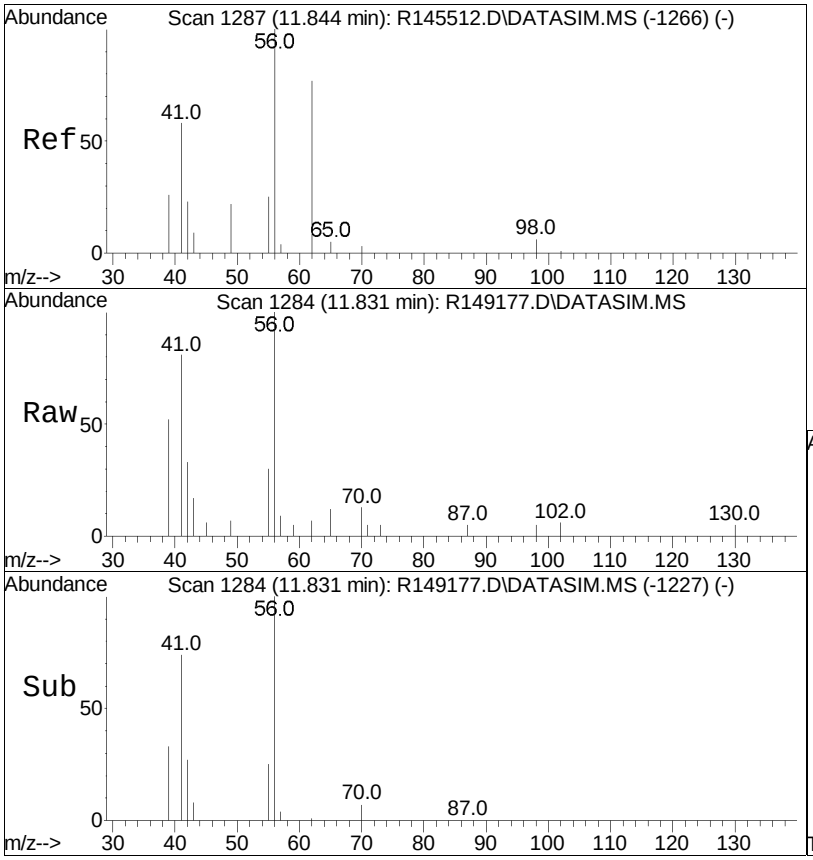


#18
Hexane
Concen: 0.44 ppbV
RT: 10.286 min Scan# 935
Delta R.T. -0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 57 Resp: 6045

Ion	Ratio	Lower	Upper
57	100		
43	76.5	114.8	154.8#

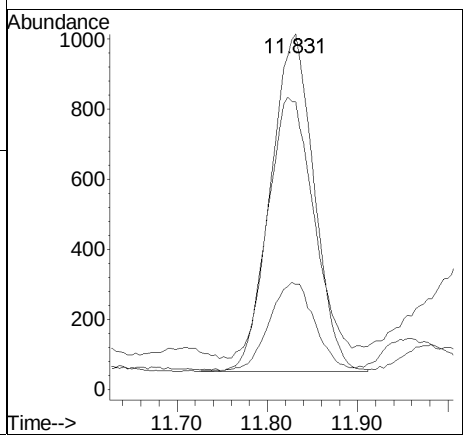


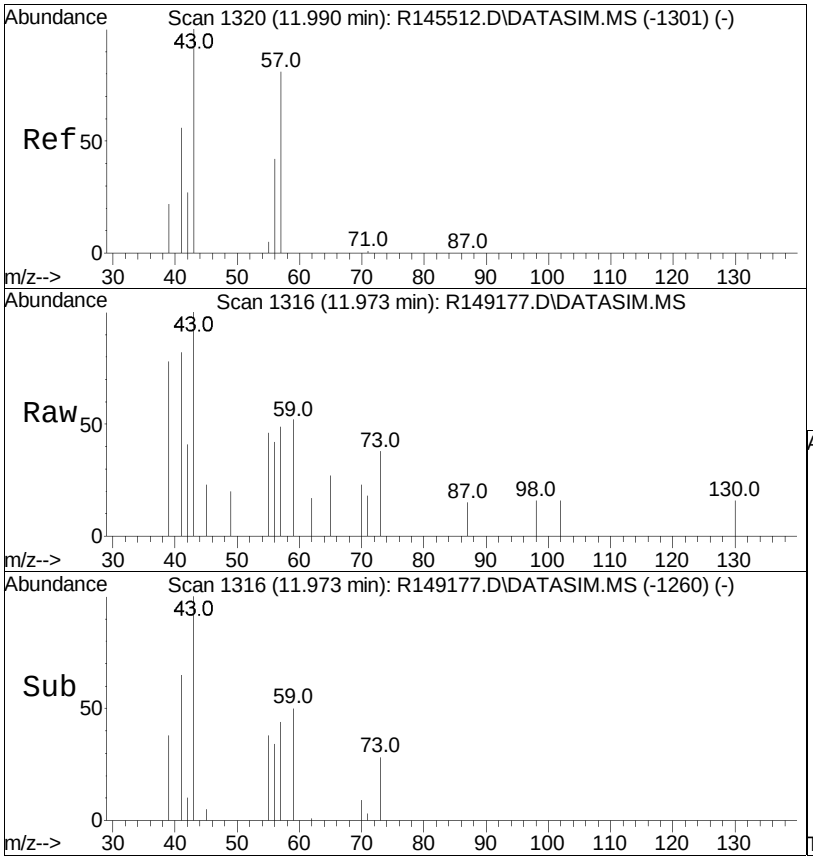


#23
Methylcyclopentane
Concen: 0.19 ppbV
RT: 11.831 min Scan# 1284
Delta R.T. 0.004 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 56 Resp: 3224

Ion	Ratio	Lower	Upper
56	100		
55	29.6	6.8	46.8
41	80.9	47.8	87.8

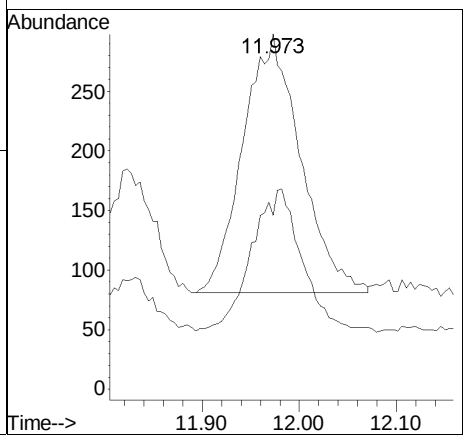


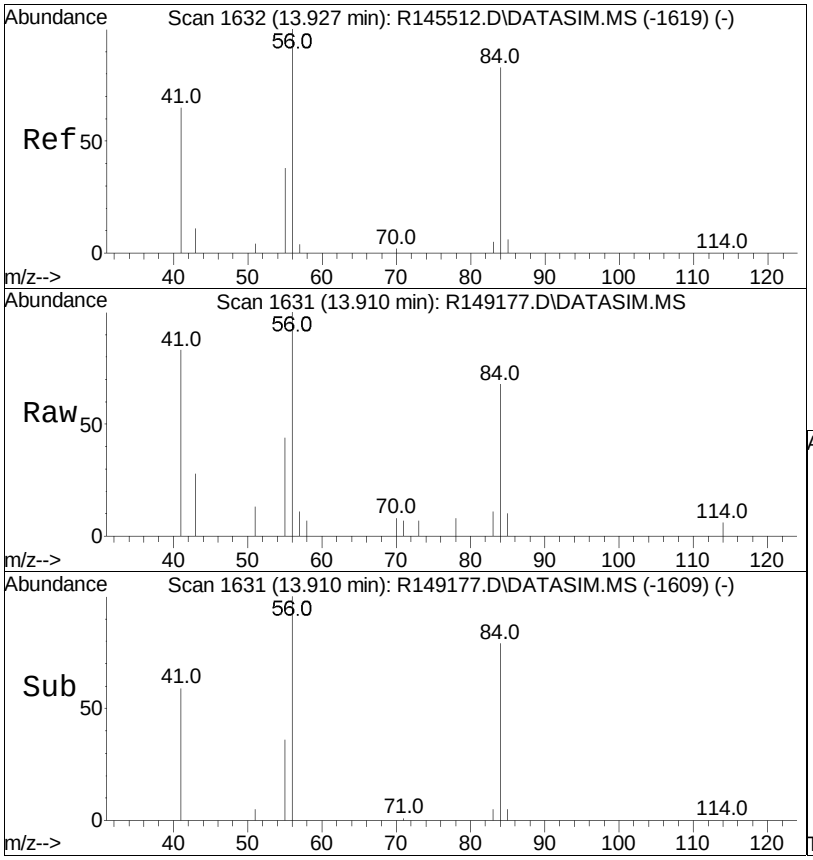


#24
2,4-Dimethylpentane
Concen: 0.04 ppbV
RT: 11.973 min Scan# 1316
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 43 Resp: 895

Ion	Ratio	Lower	Upper
43	100		
57	49.0	50.5	90.5#

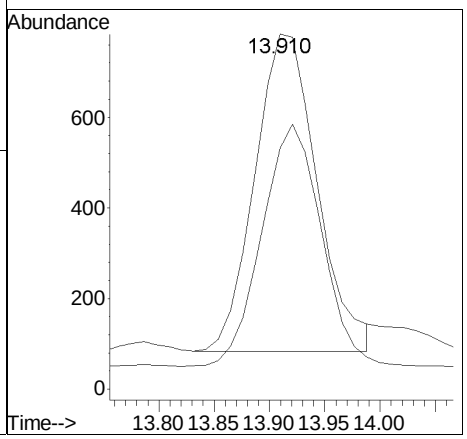


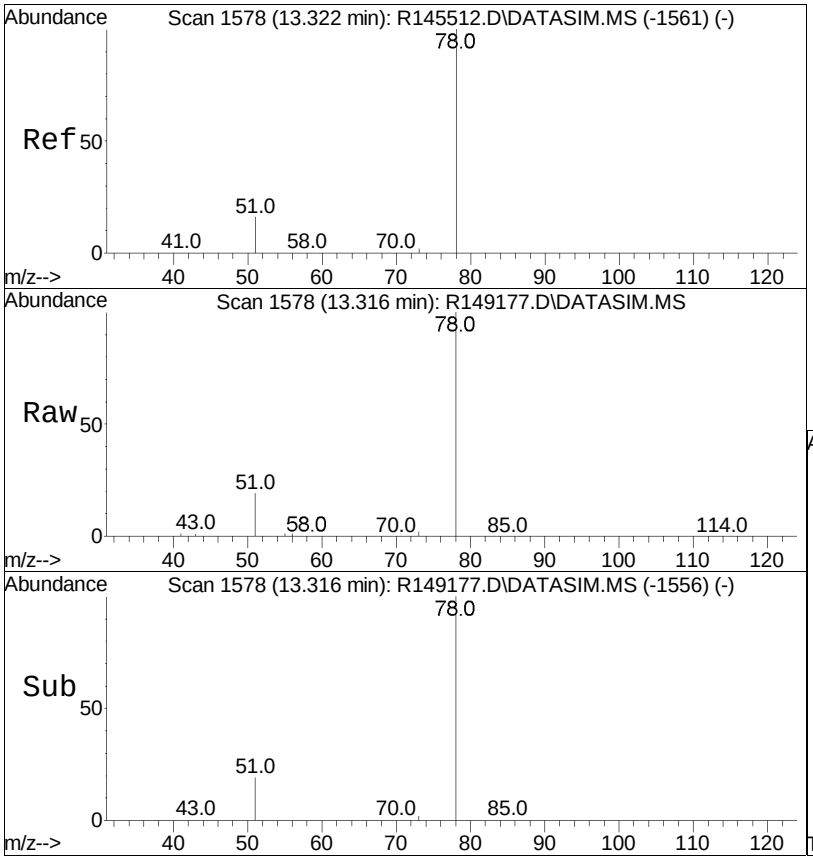


#26
Cyclohexane
Concen: 0.20 ppbV m
RT: 13.910 min Scan# 1631
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 56 Resp: 2738

Ion	Ratio	Lower	Upper
56	100		
84	67.9	47.9	87.9

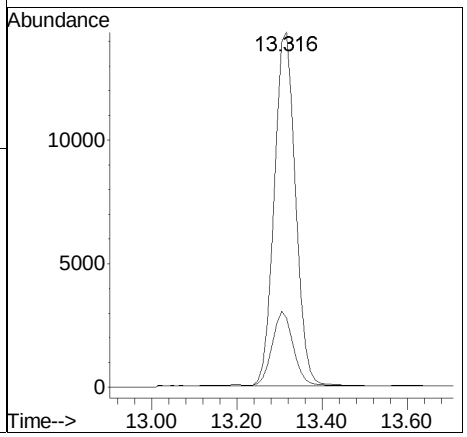


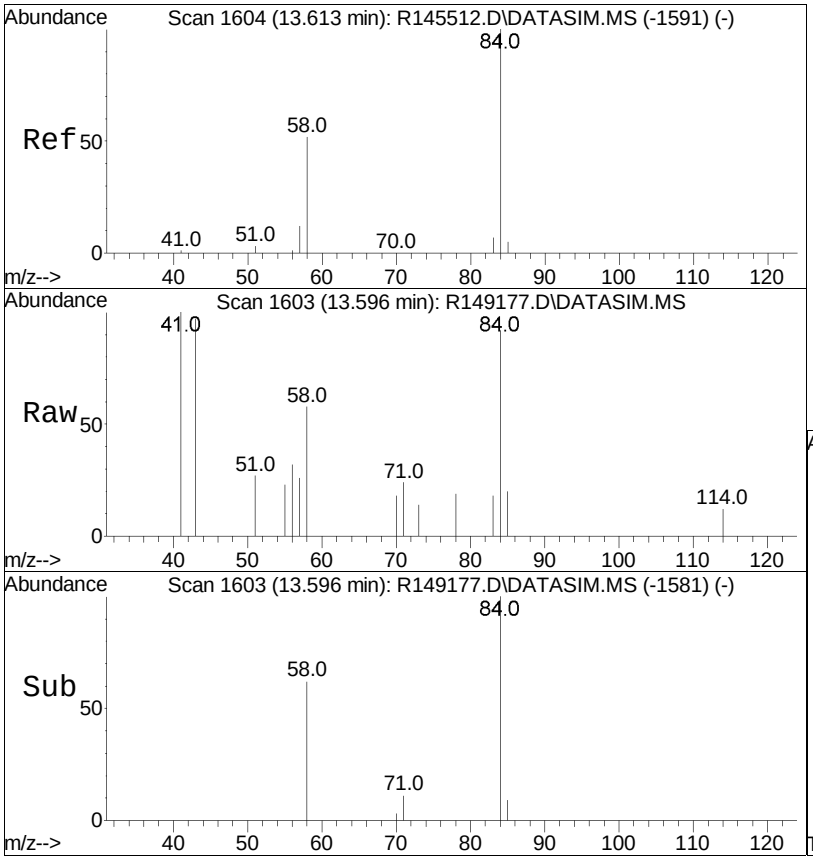


#29
Benzene
Concen: 1.91 ppbV
RT: 13.316 min Scan# 1578
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 78 Resp: 49700

Ion	Ratio	Lower	Upper
78	100		
51	19.5	0.0	39.4

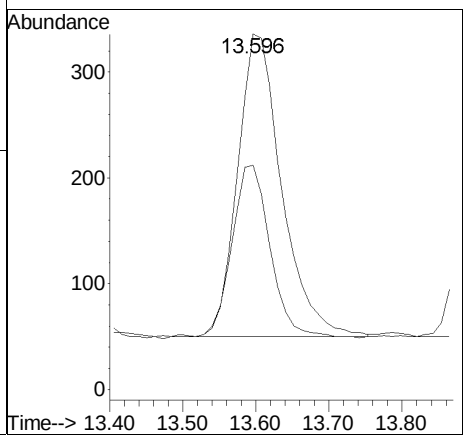


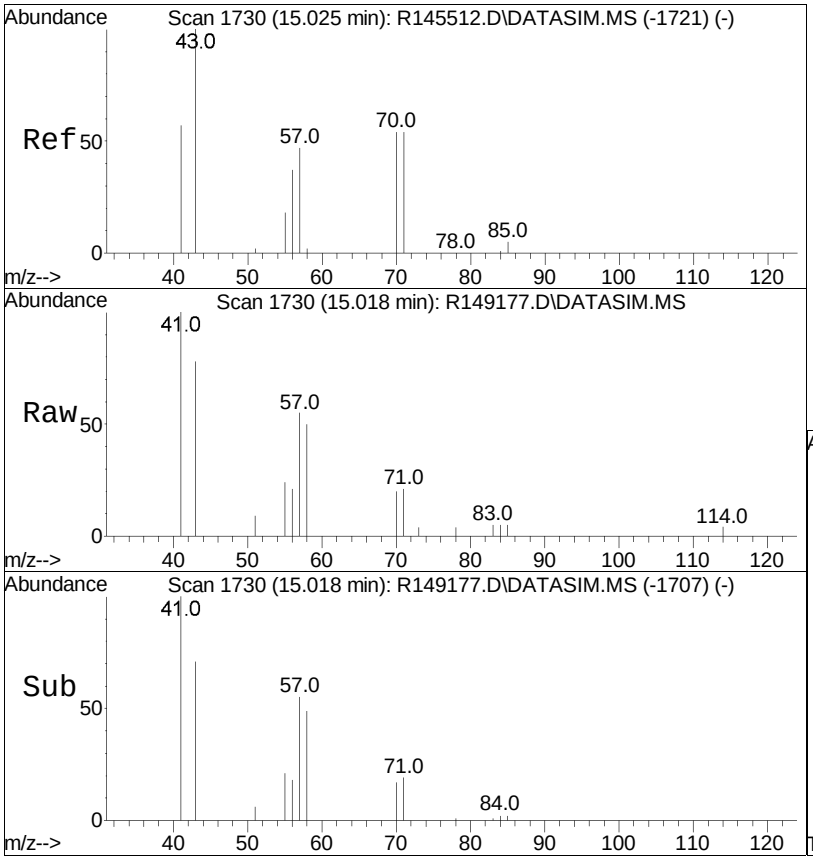


#31
Thiophene
Concen: 0.11 ppbV
RT: 13.596 min Scan# 1603
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 84 Resp: 1200

Ion	Ratio	Lower	Upper
84	100		
58	63.1	46.4	86.4

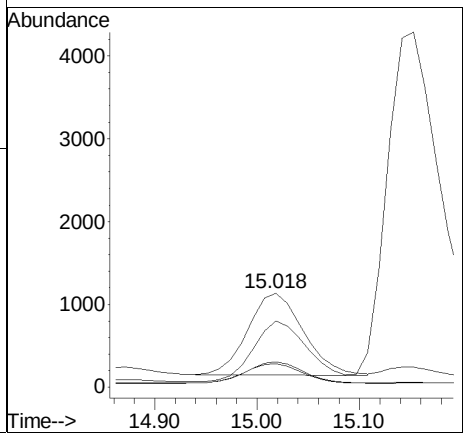


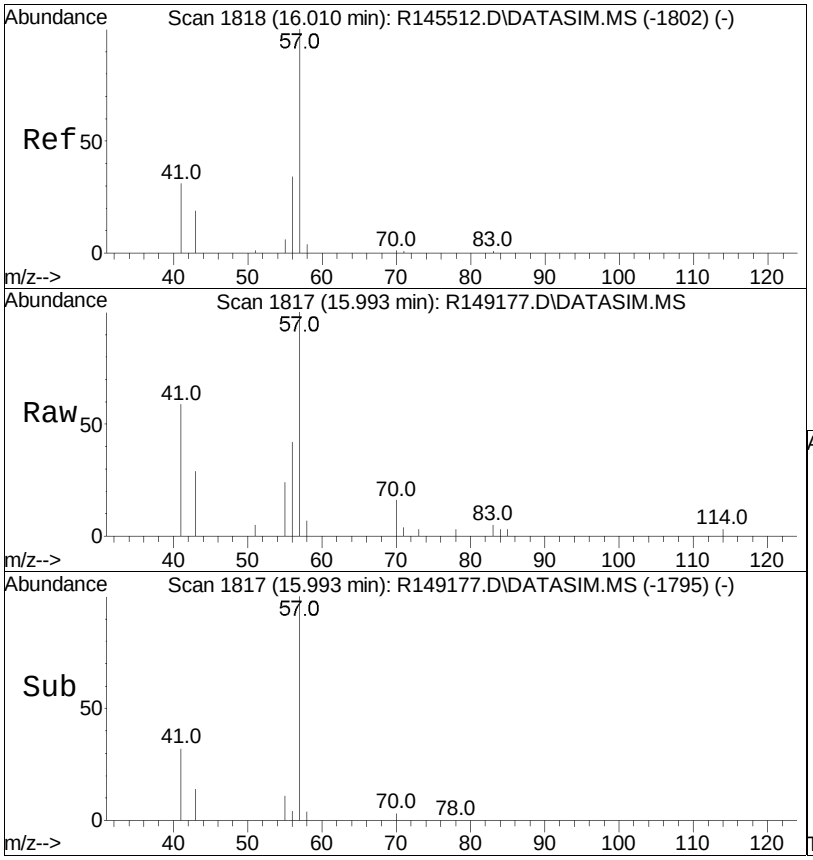


#32
3-Methylhexane
Concen: 0.21 ppbV
RT: 15.018 min Scan# 1730
Delta R.T. 0.011 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 43 Resp: 3739

Ion	Ratio	Lower	Upper
43	100		
57	70.7	23.4	63.4#
70	25.1	22.5	62.5
71	27.1	22.4	62.4

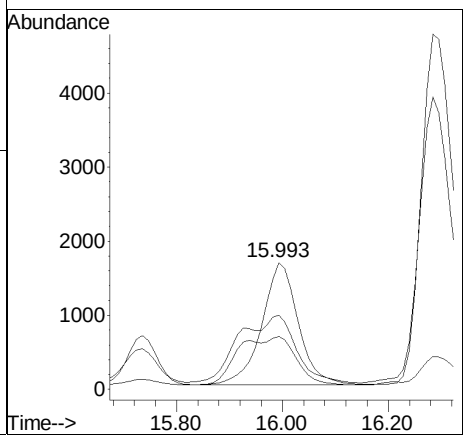


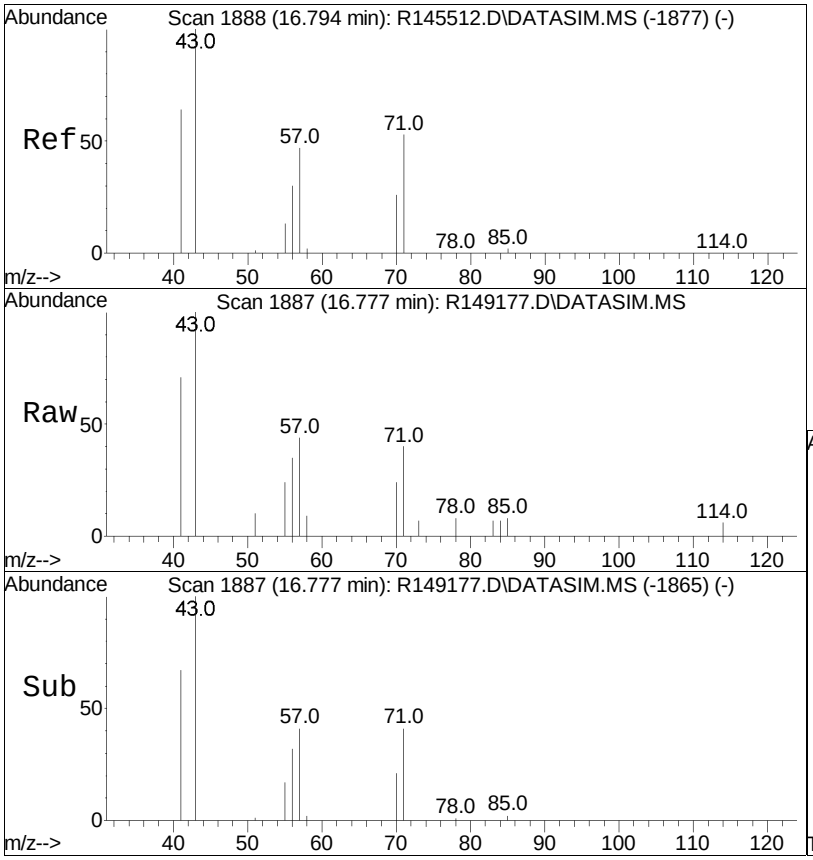


#35
Isooctane
Concen: 0.19 ppbV
RT: 15.993 min Scan# 1817
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 57 Resp: 7898

Ion	Ratio	Lower	Upper
57	100		
56	41.8	14.9	54.9
41	58.7	16.0	56.0#

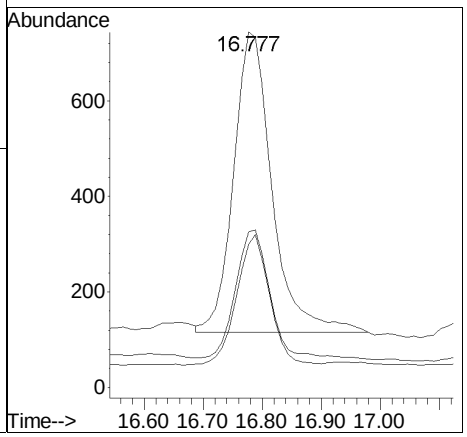


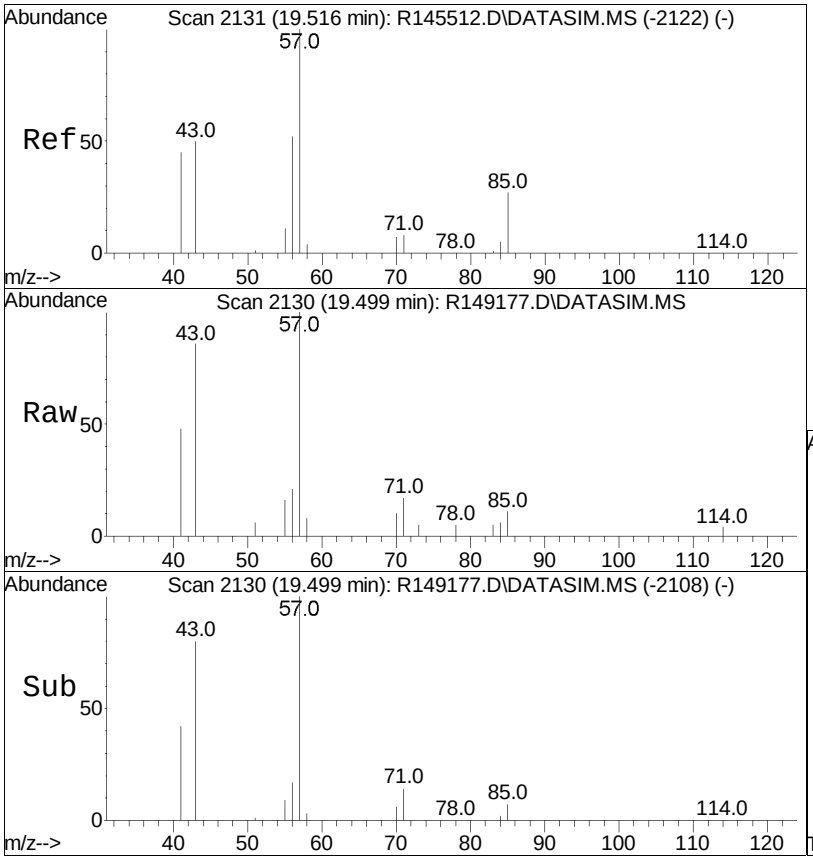


#36
Heptane
Concen: 0.16 ppbV
RT: 16.777 min Scan# 1887
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 43 Resp: 2841

Ion	Ratio	Lower	Upper
43	100		
57	43.8	23.3	63.3
71	40.3	21.1	61.1

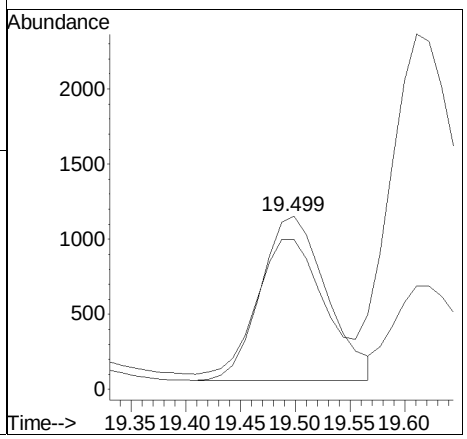


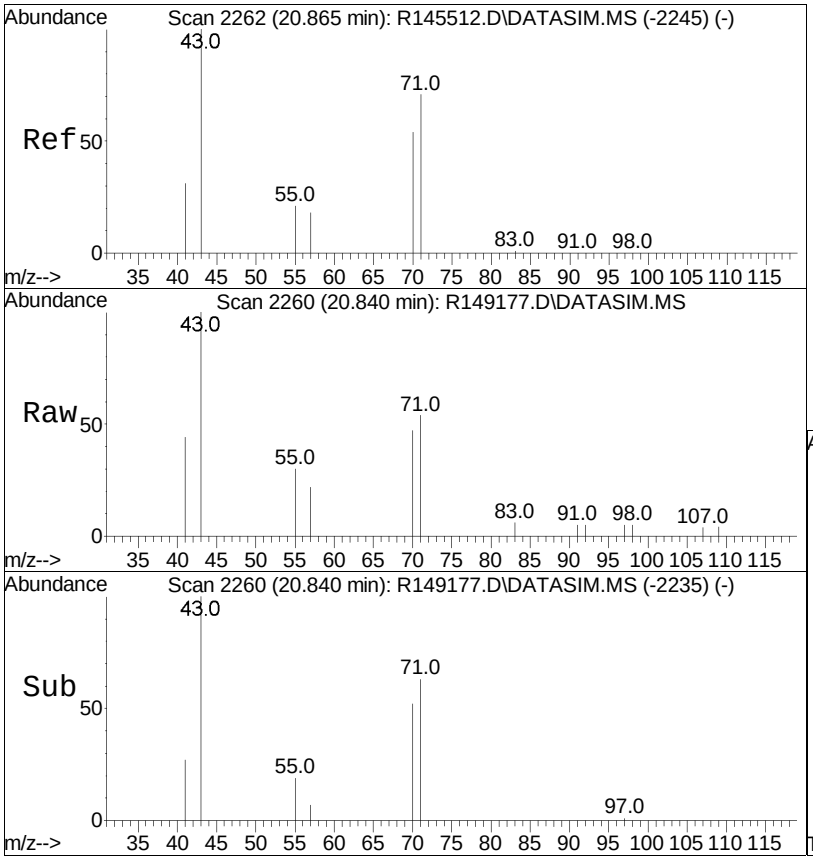


#39
2,4-Dimethyhexane / 2,2,3-TMP
Concen: 0.18 ppbV
RT: 19.499 min Scan# 2130
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 57 Resp: 4563

Ion	Ratio	Lower	Upper
57	100		
43	86.5	36.1	76.1#

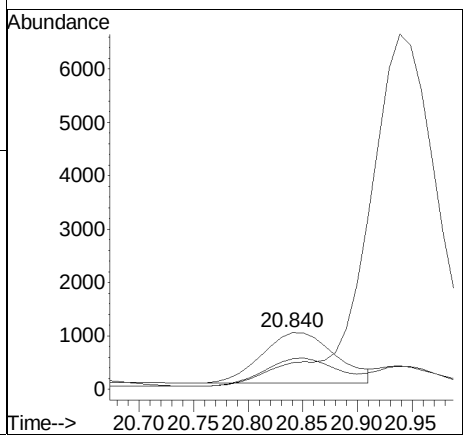


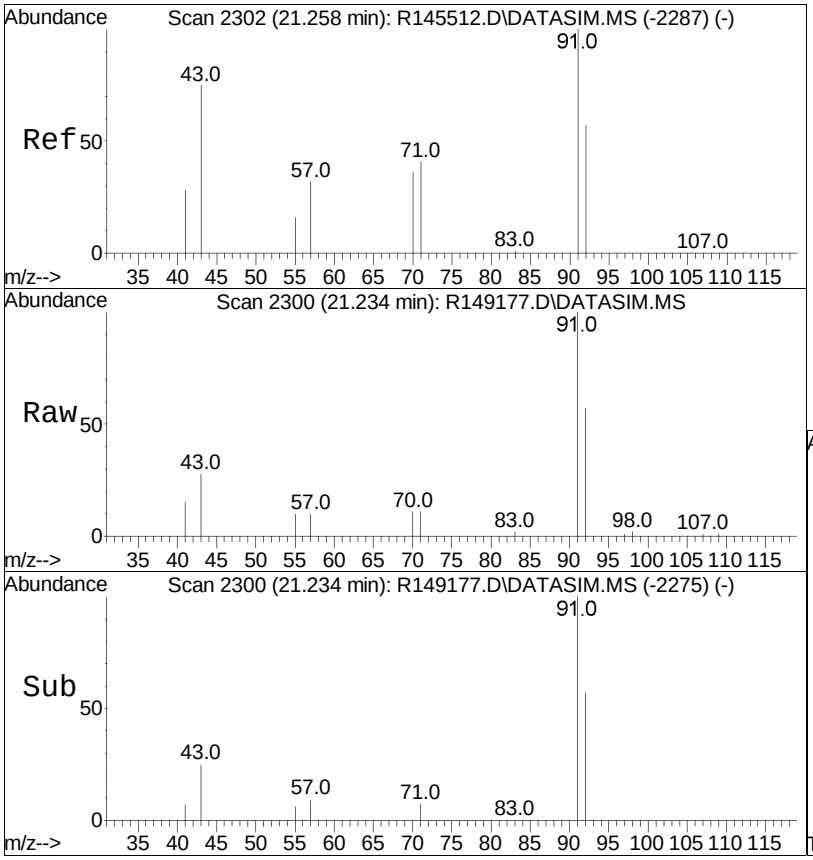


#40
2,3,4-Trimethylpentane
Concen: 0.16 ppbV
RT: 20.840 min Scan# 2260
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 43 Resp: 4476

Ion	Ratio	Lower	Upper
43	100		
71	53.8	34.6	74.6
70	47.0	23.3	63.3

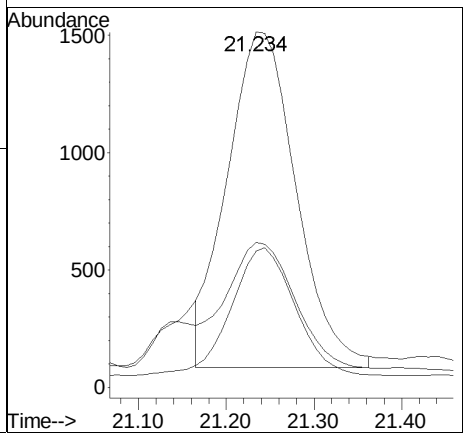


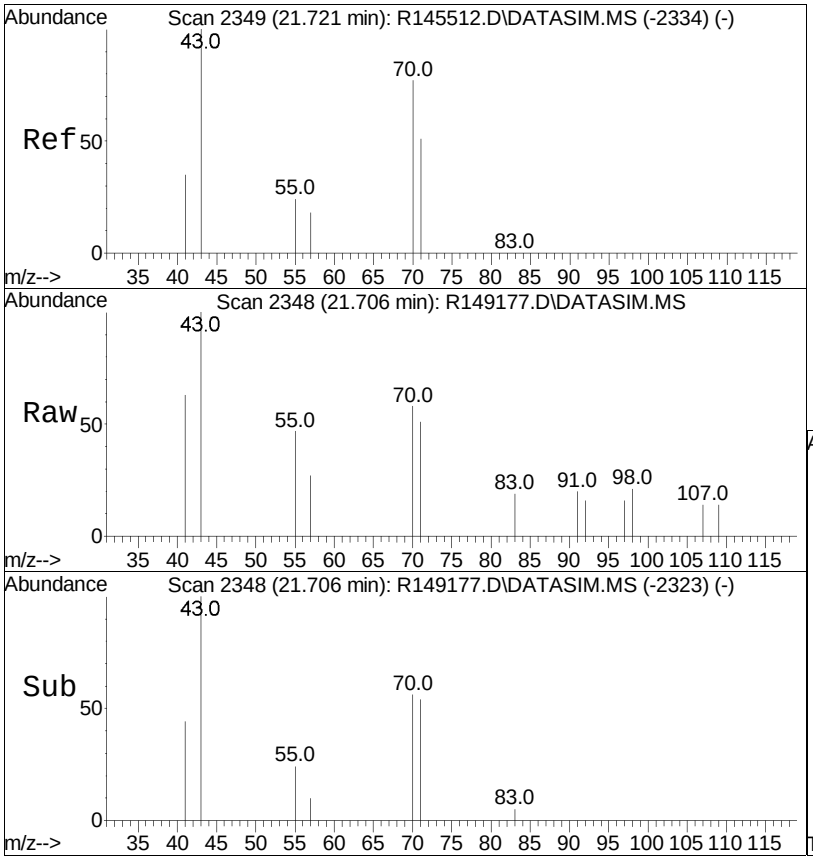


#41
2,3,3-Trimethylpentane
Concen: 0.29 ppbV m
RT: 21.234 min Scan# 2300
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 43 Resp: 7809

Ion	Ratio	Lower	Upper
43	100		
71	38.4	22.4	62.4
70	40.8	18.7	58.7

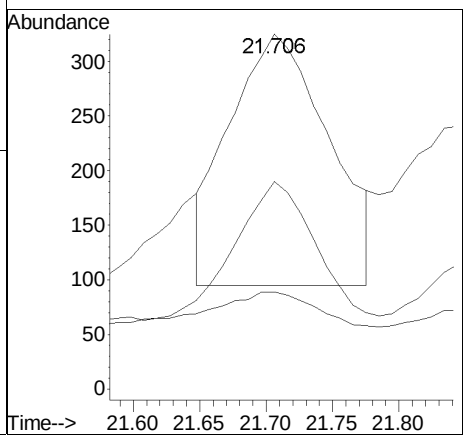


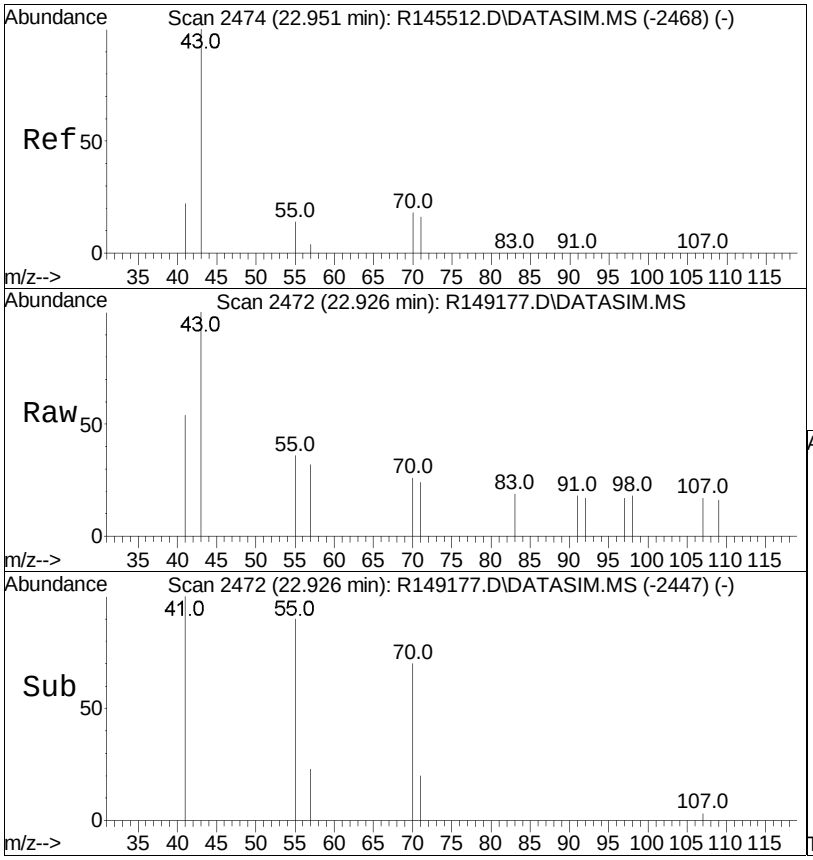


#42
2,3-Dimethylhexane
Concen: 0.05 ppbV m
RT: 21.706 min Scan# 2348
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 43 Resp: 1203

Ion	Ratio	Lower	Upper
43	100		
70	58.5	41.8	81.8
57	27.4	0.0	36.6

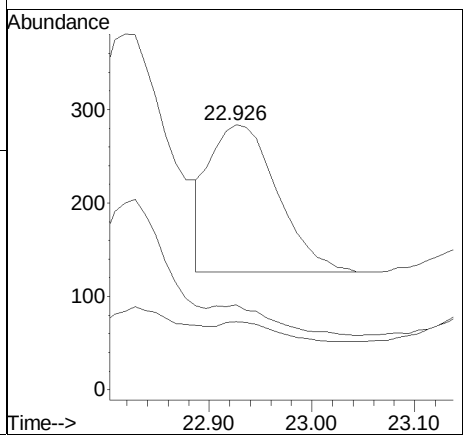


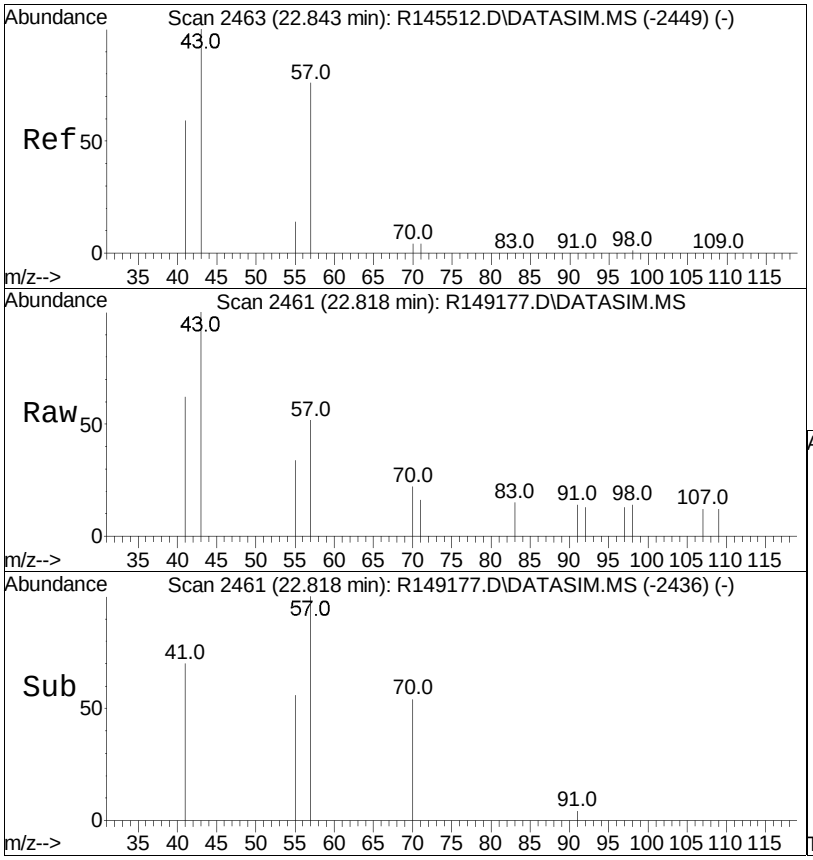


#43
3-Ethylhexane
Concen: 0.02 ppbV
RT: 22.926 min Scan# 2472
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 43 Resp: 722

Ion	Ratio	Lower	Upper
43	100		
70	25.7	0.0	32.6
57	32.0	0.0	34.2

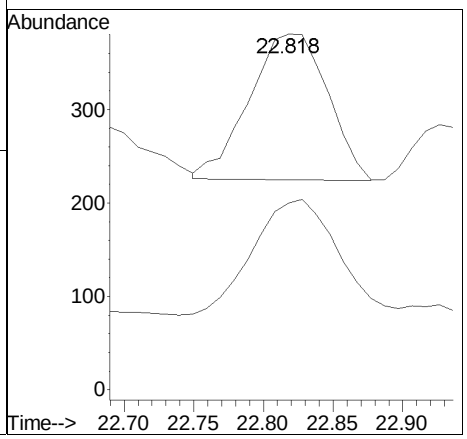


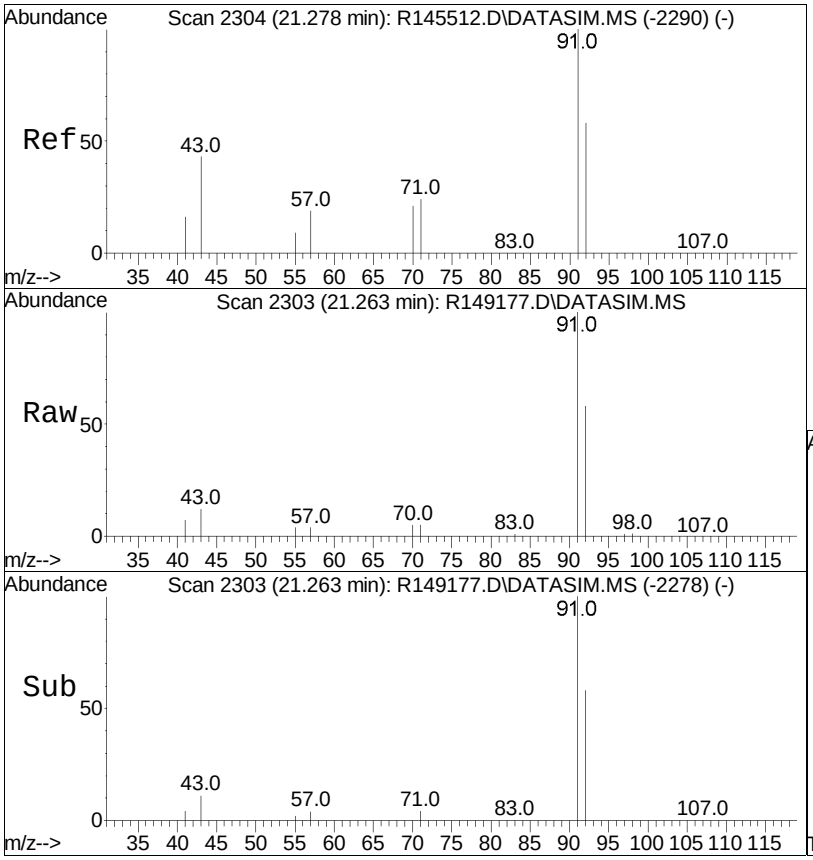


#45
3-Methylheptane
Concen: 0.03 ppbV m
RT: 22.818 min Scan# 2461
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 43 Resp: 610

Ion	Ratio	Lower	Upper
43	100		
57	52.5	47.6	87.6

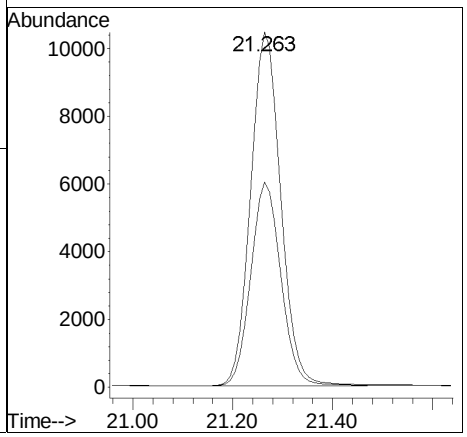


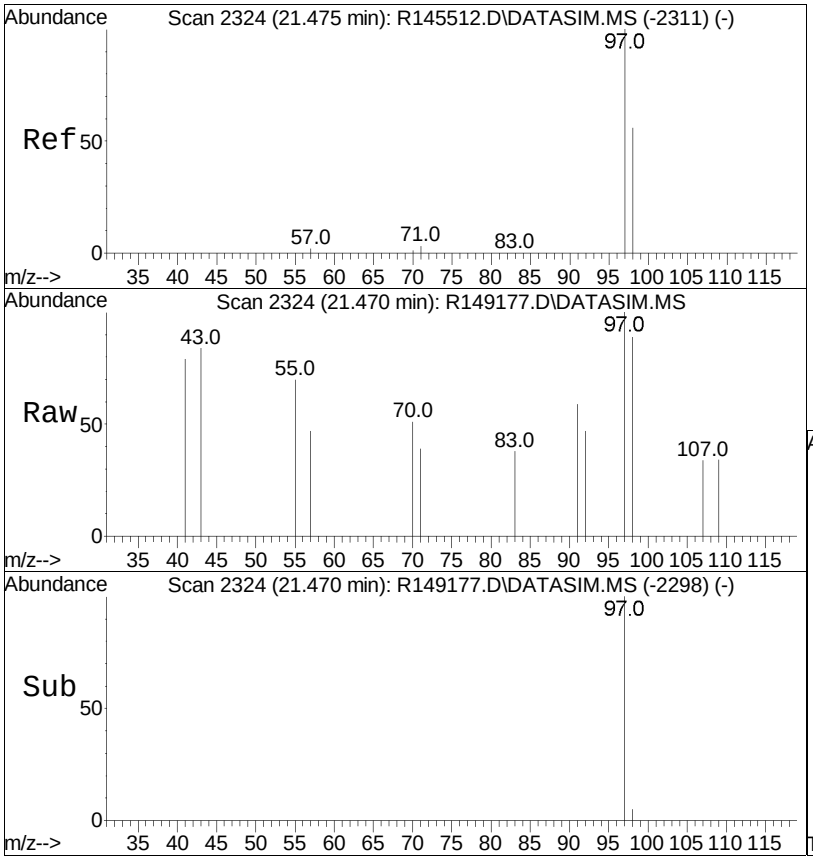


#47
Toluene
Concen: 1.44 ppbV
RT: 21.263 min Scan# 2303
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 91 Resp: 43705

Ion	Ratio	Lower	Upper
91	100		
92	57.8	37.6	77.6

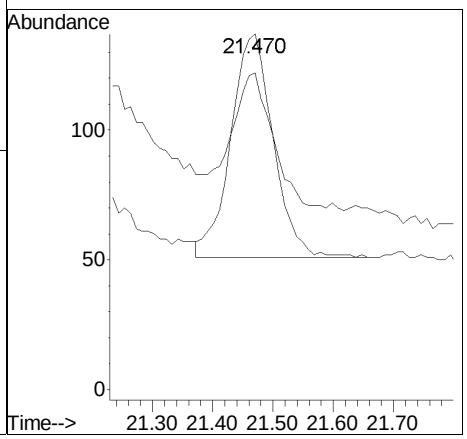


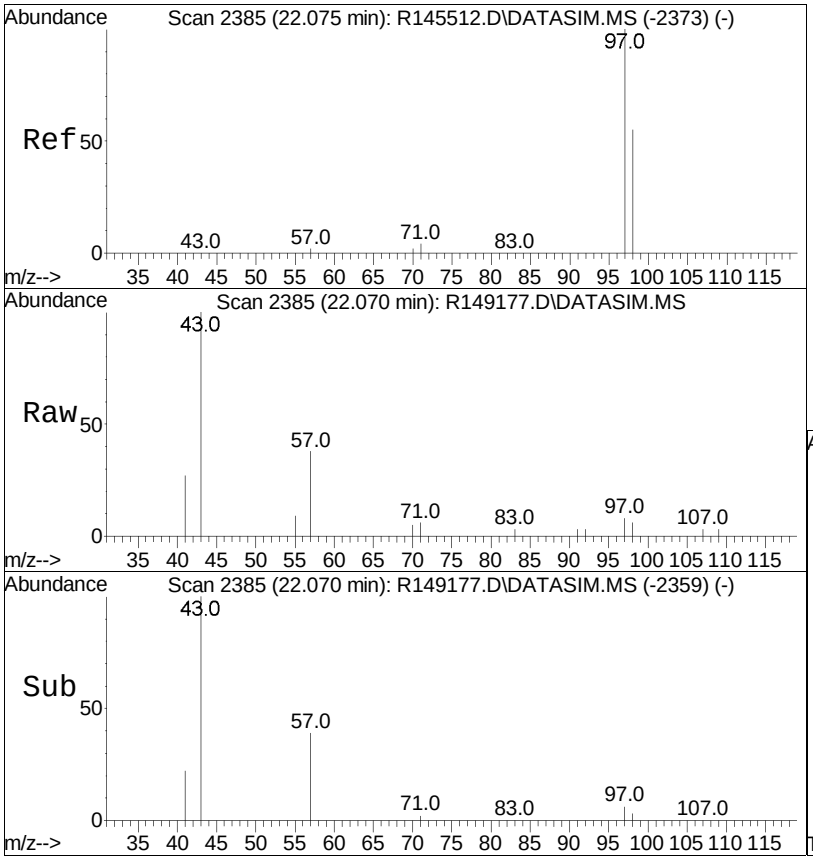


#48
2-Methylthiophene
Concen: 0.02 ppbV
RT: 21.470 min Scan# 2324
Delta R.T. 0.010 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 97 Resp: 422

Ion	Ratio	Lower	Upper
97	100		
98	89.1	35.4	75.4#

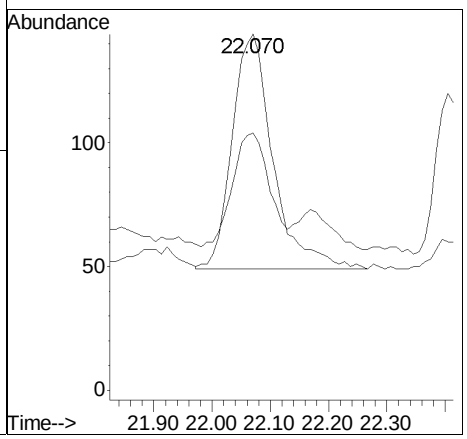


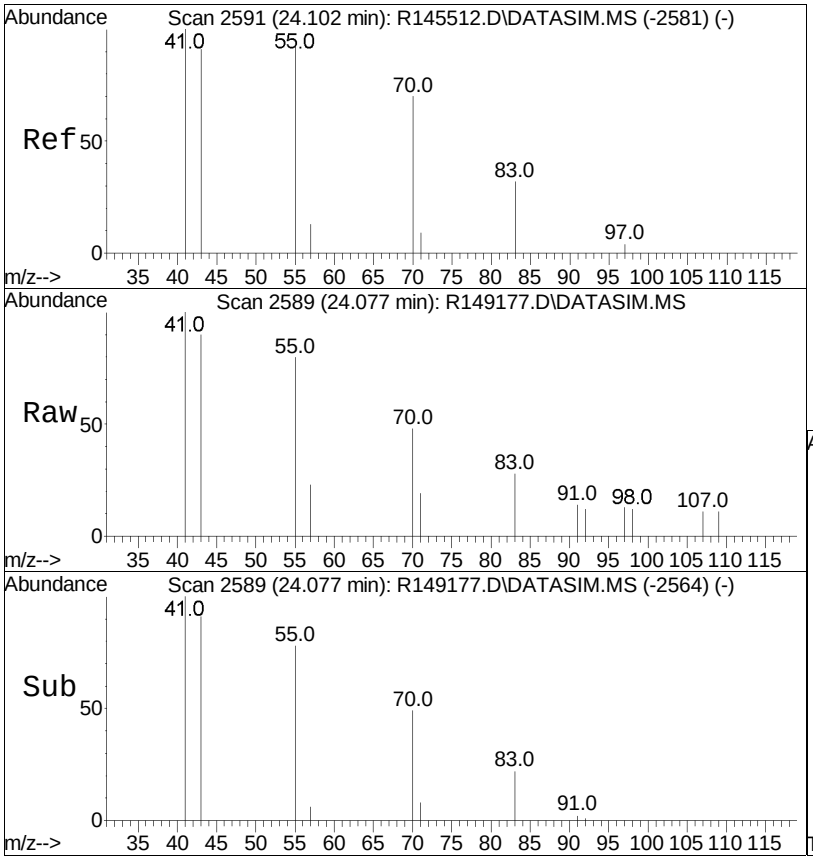


#49
3-Methylthiophene
Concen: 0.02 ppbV
RT: 22.070 min Scan# 2385
Delta R.T. 0.010 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 97 Resp: 463

Ion	Ratio	Lower	Upper
97	100		
98	72.2	34.1	74.1

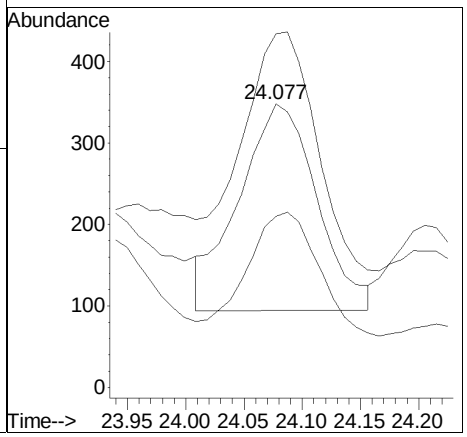


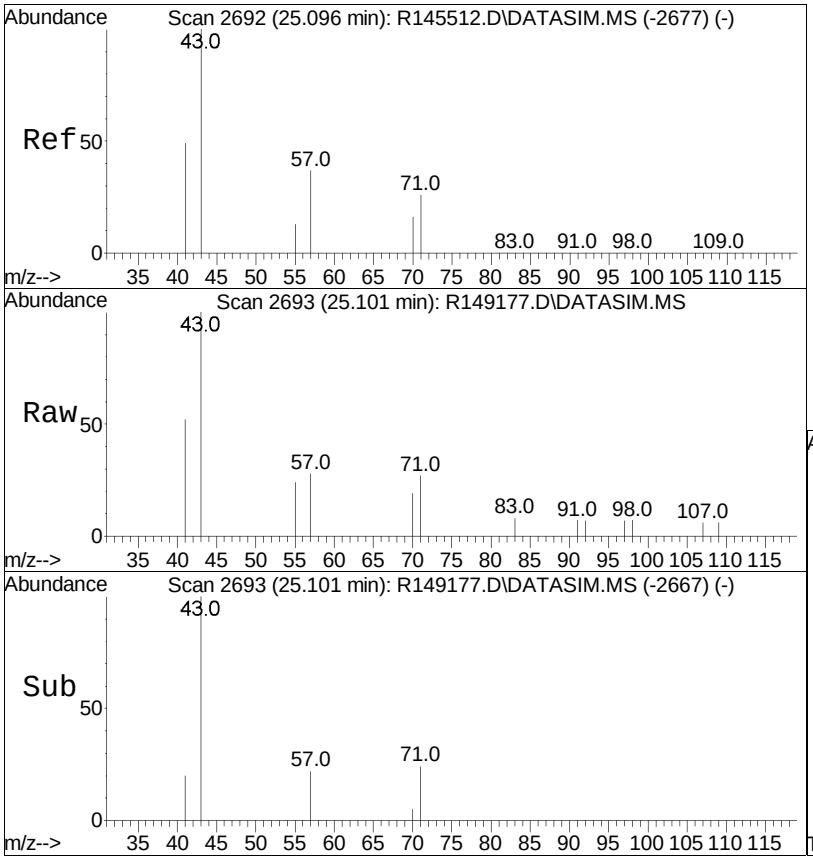


#50
1-Octene
Concen: 0.13 ppbV
RT: 24.077 min Scan# 2589
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 55 Resp: 1176

Ion	Ratio	Lower	Upper
55	100		
41	124.7	102.4	142.4
70	60.3	45.2	85.2

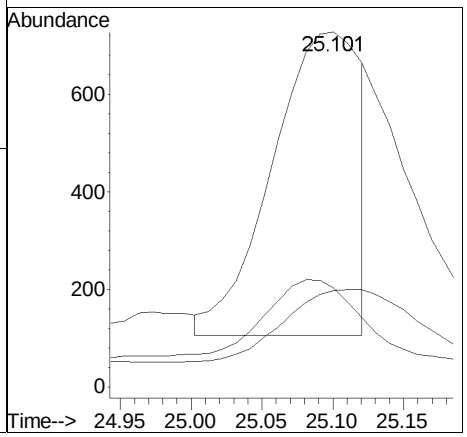


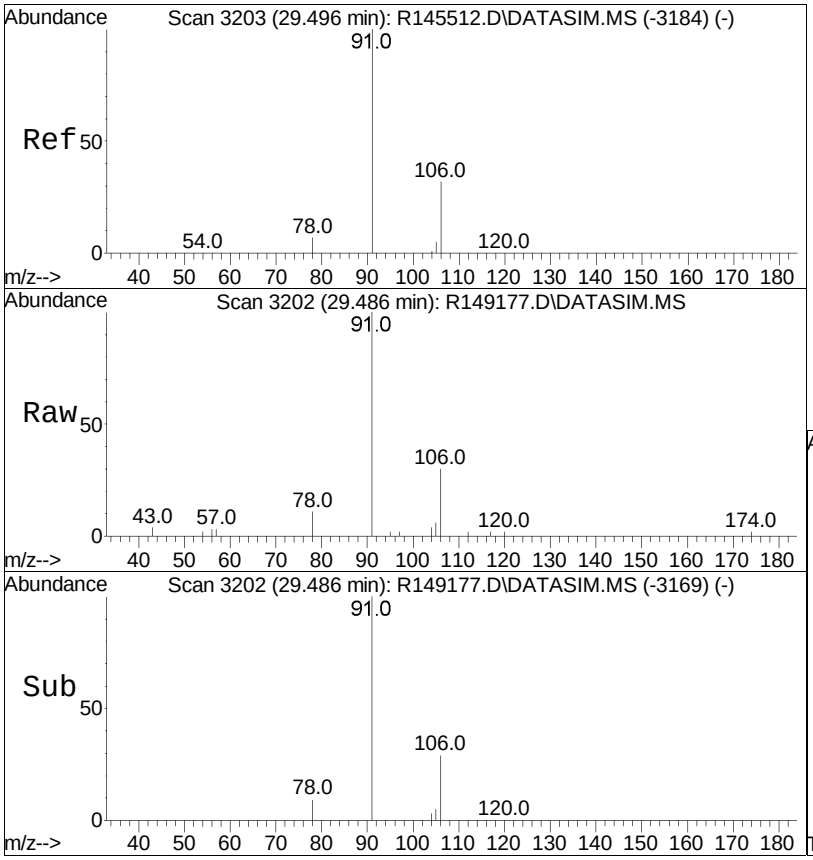


#52
Octane
Concen: 0.11 ppbV m
RT: 25.101 min Scan# 2693
Delta R.T. 0.020 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 43 Resp: 2694

Ion	Ratio	Lower	Upper
43	100		
57	27.9	13.6	53.6
71	27.2	0.9	40.9

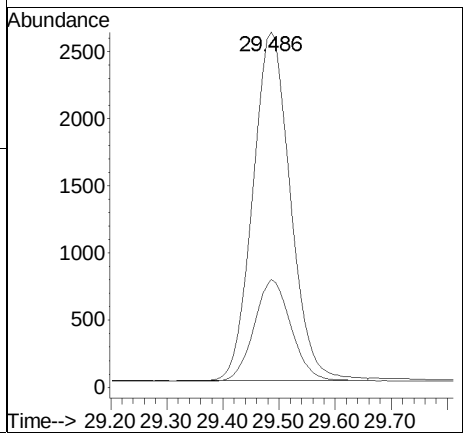


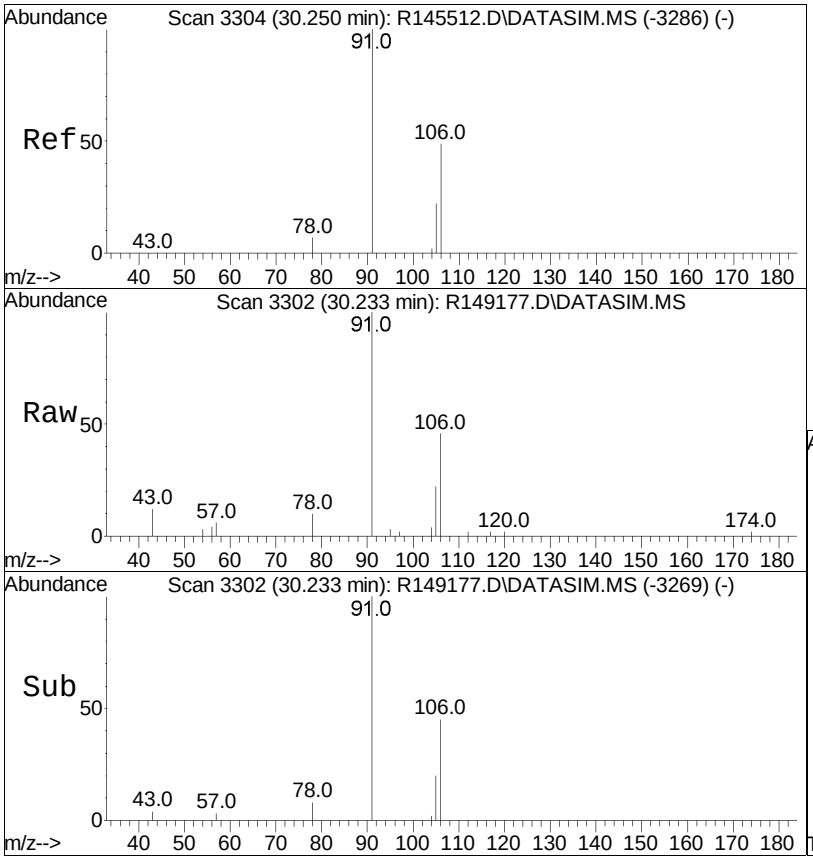


#55
Ethylbenzene
Concen: 0.42 ppbV
RT: 29.486 min Scan# 3202
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 91 Resp: 12056

Ion	Ratio	Lower	Upper
91	100		
106	30.4	9.1	49.1

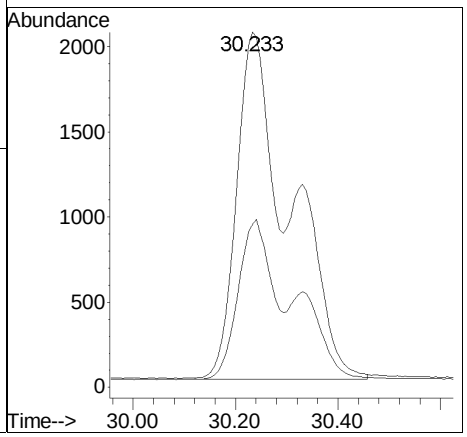


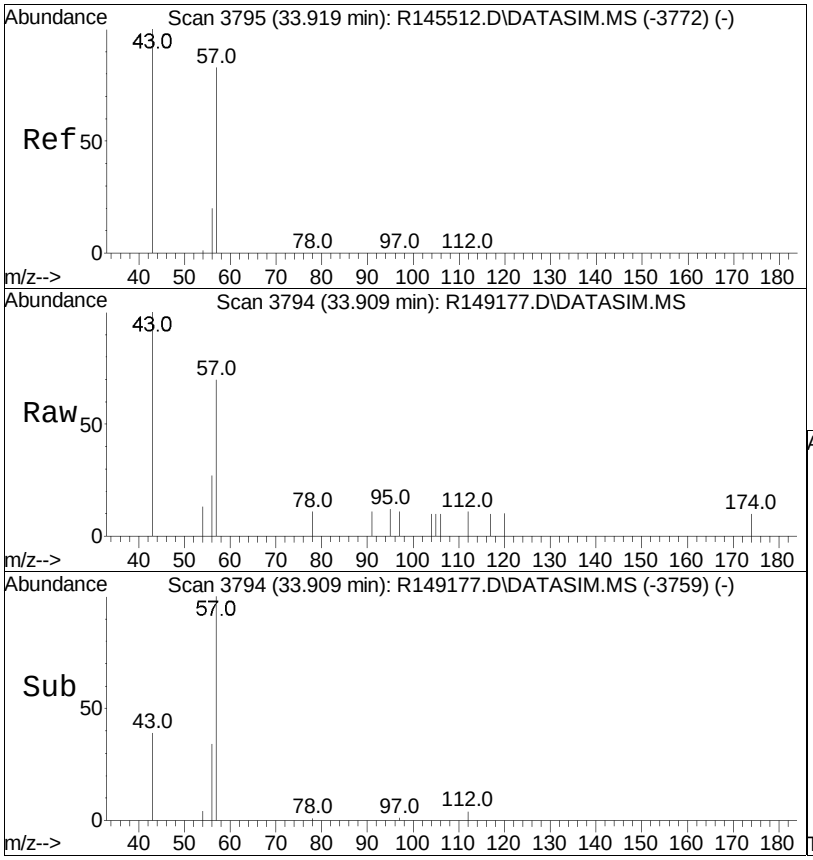


#57
p/m-Xylene
Concen: 0.66 ppbV m
RT: 30.233 min Scan# 3302
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 91 Resp: 14656

Ion	Ratio	Lower	Upper
91	100		
106	45.9	25.5	65.5

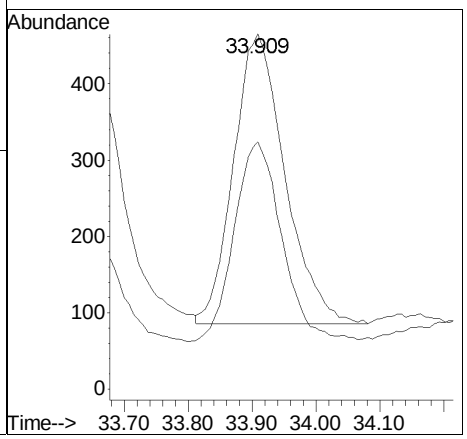


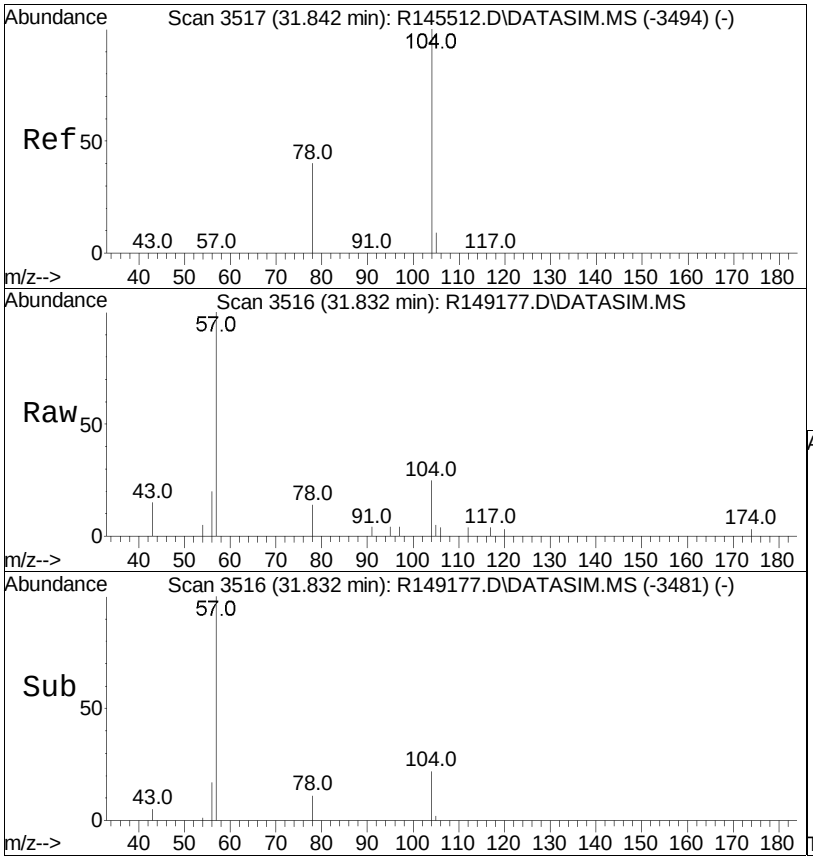


#59
Nonane
Concen: 0.10 ppbV
RT: 33.909 min Scan# 3794
Delta R.T. 0.015 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 43 Resp: 2121

Ion	Ratio	Lower	Upper
43	100		
57	69.7	51.4	91.4

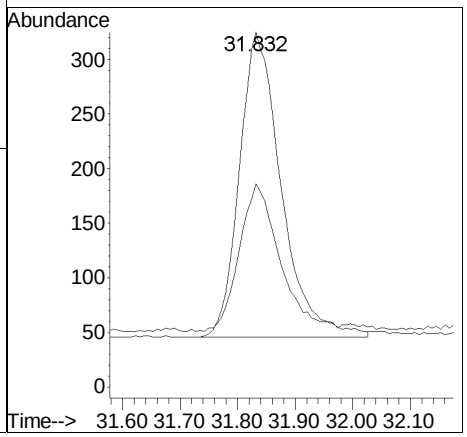


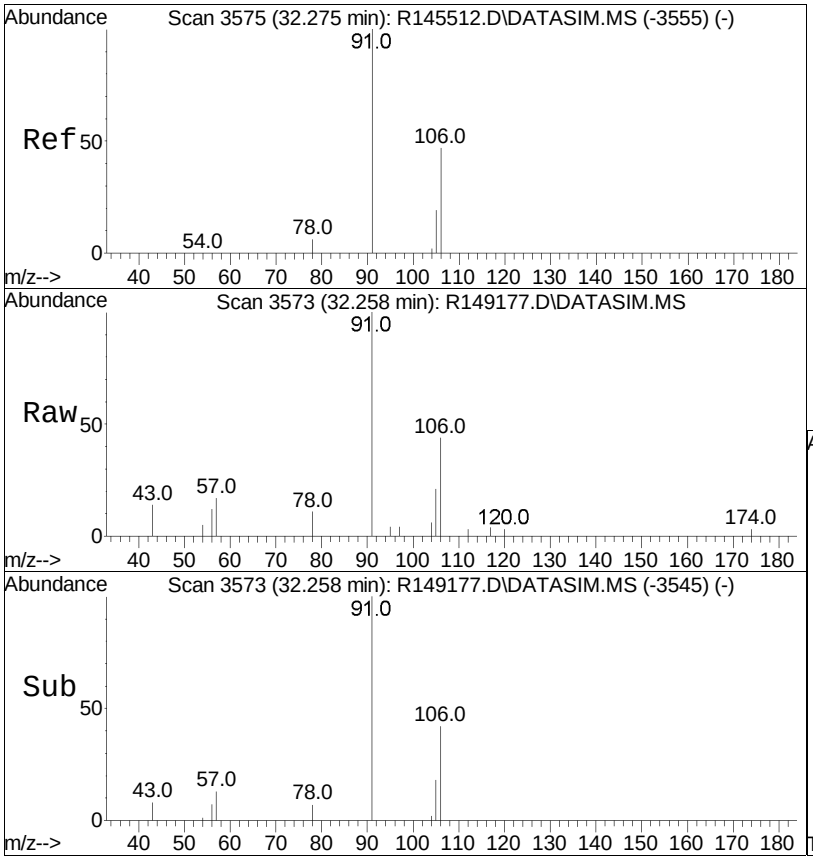


#60
Styrene
Concen: 0.10 ppbV
RT: 31.832 min Scan# 3516
Delta R.T. 0.015 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:104 Resp: 1407

Ion	Ratio	Lower	Upper
104	100		
78	57.2	28.5	68.5

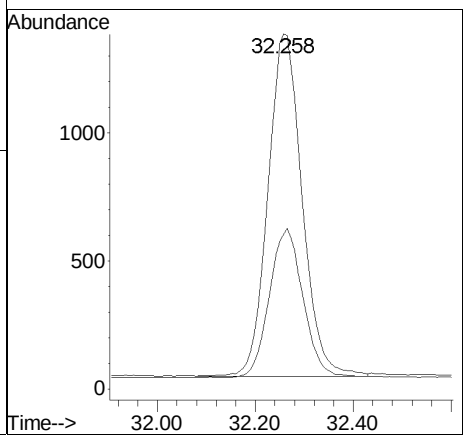


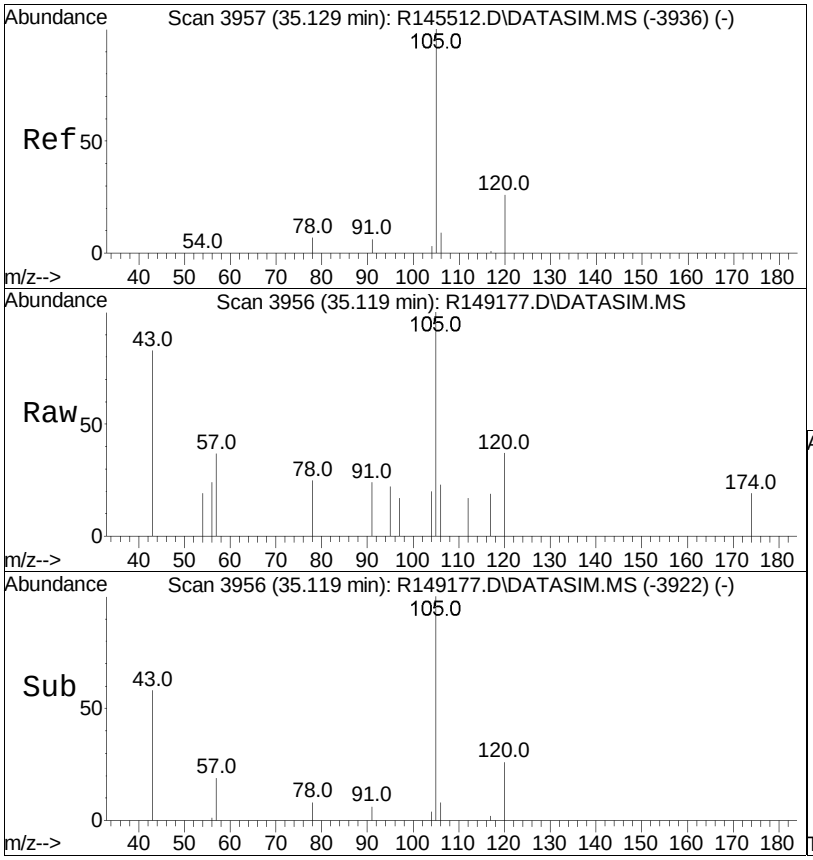


#61
o-Xylene
Concen: 0.29 ppbV
RT: 32.258 min Scan# 3573
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 91 Resp: 6470

Ion	Ratio	Lower	Upper
91	100		
106	43.7	23.5	63.5

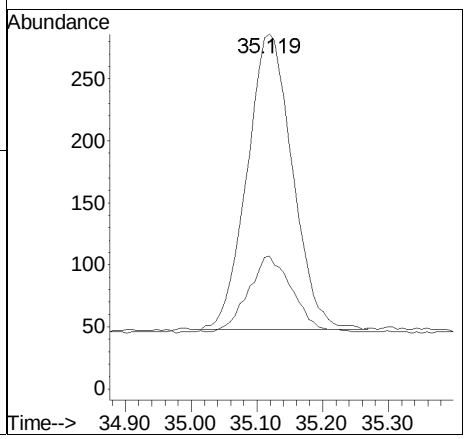


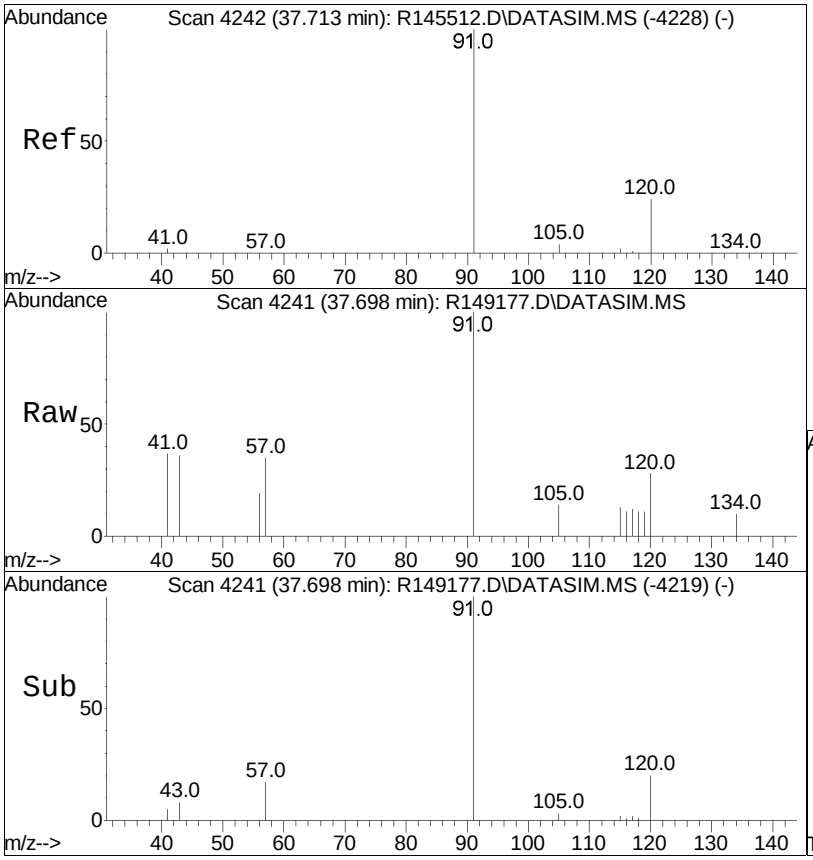


#63
Isopropylbenzene
Concen: 0.04 ppbV
RT: 35.119 min Scan# 3956
Delta R.T. 0.007 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:105 Resp: 1139

Ion	Ratio	Lower	Upper
105	100		
120	37.4	4.8	44.8

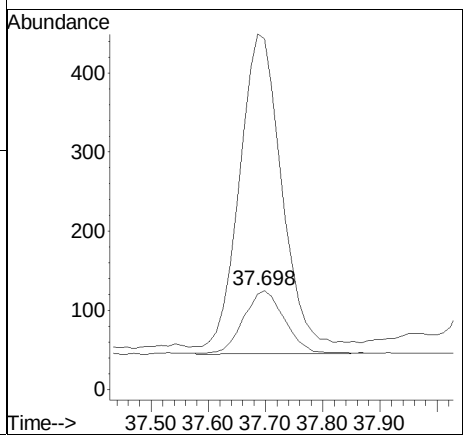


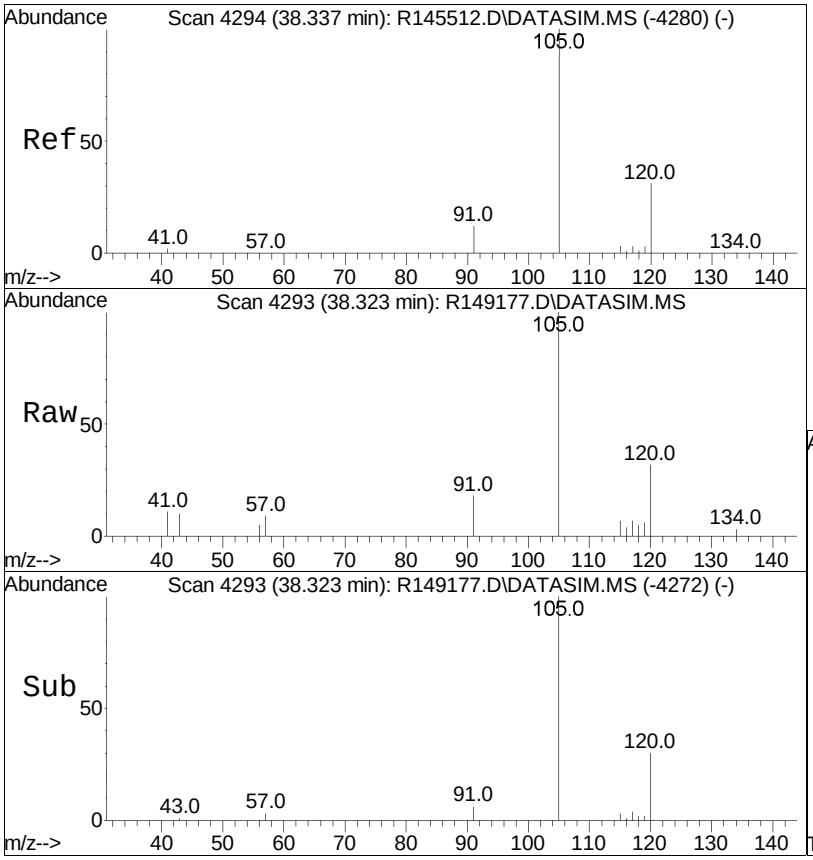


#64
n-Propylbenzene
Concen: 0.05 ppbV
RT: 37.698 min Scan# 4241
Delta R.T. 0.012 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:120 Resp: 398

Ion	Ratio	Lower	Upper
120	100		
91	354.4	480.0	520.0#

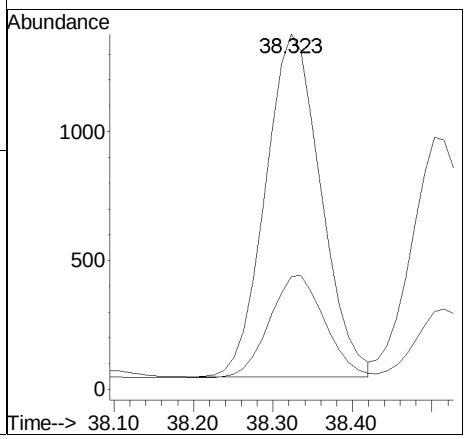


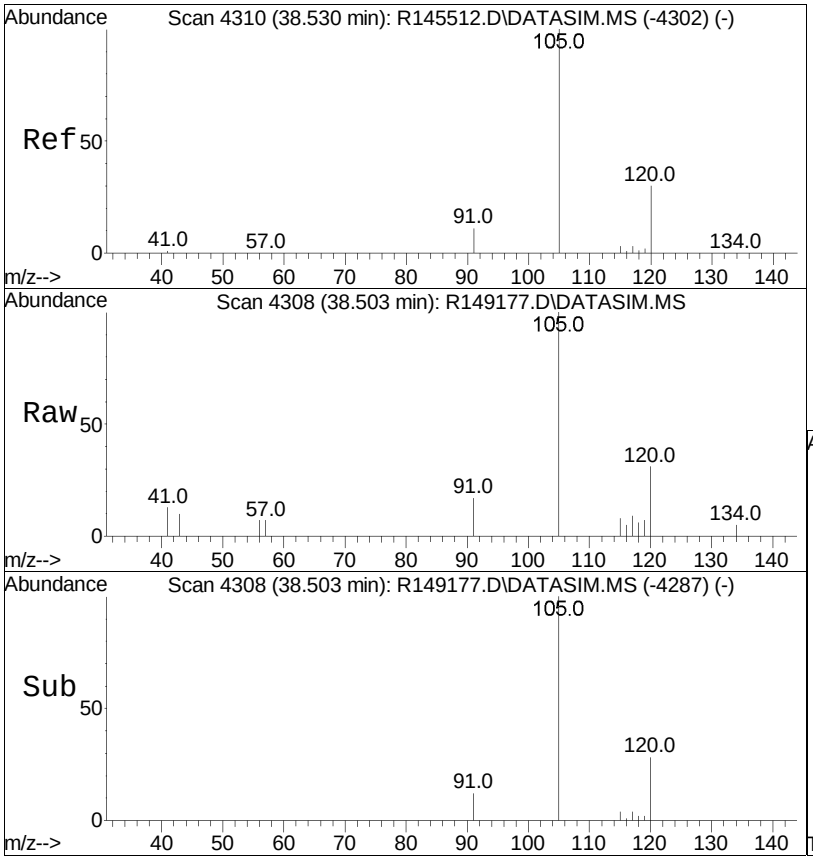


#65
1-Methyl-3-ethylbenzene
Concen: 0.23 ppbV
RT: 38.323 min Scan# 4293
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:105 Resp: 6436

Ion	Ratio	Lower	Upper
105	100		
120	31.8	10.4	50.4

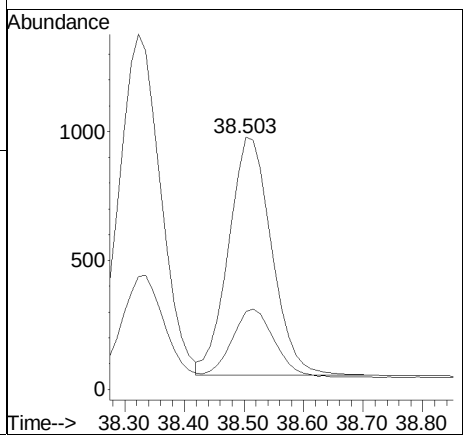


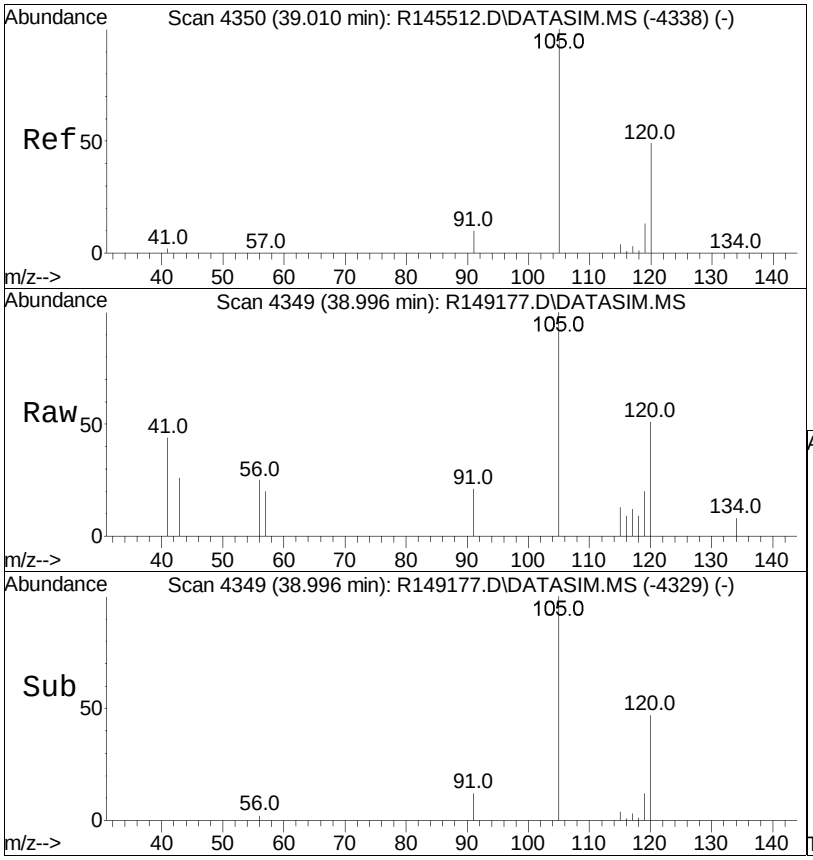


#66
1-Methyl-4-ethylbenzene
Concen: 0.15 ppbV
RT: 38.503 min Scan# 4308
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:105 Resp: 4619

Ion	Ratio	Lower	Upper
105	100		
120	30.9	7.8	47.8

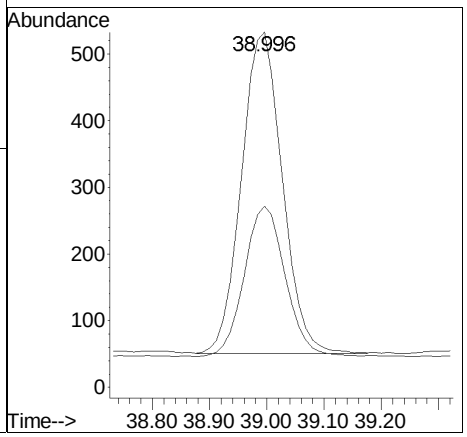


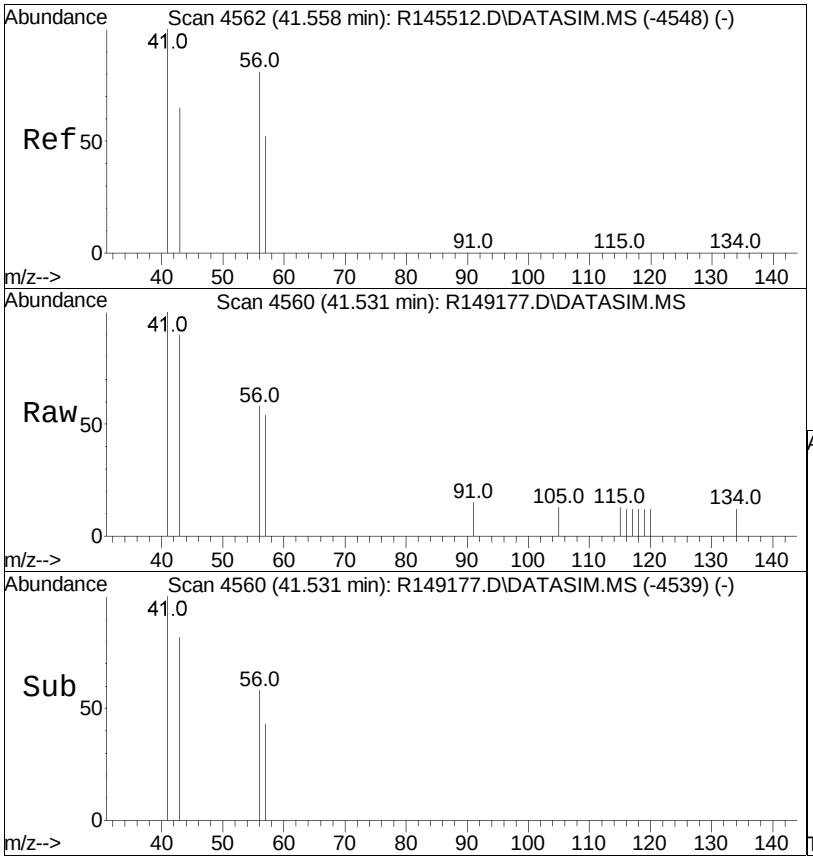


#67
1,3,5-Trimethylbenzene
Concen: 0.10 ppbV
RT: 38.996 min Scan# 4349
Delta R.T. 0.012 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:105 Resp: 2391

Ion	Ratio	Lower	Upper
105	100		
120	51.0	25.9	65.9

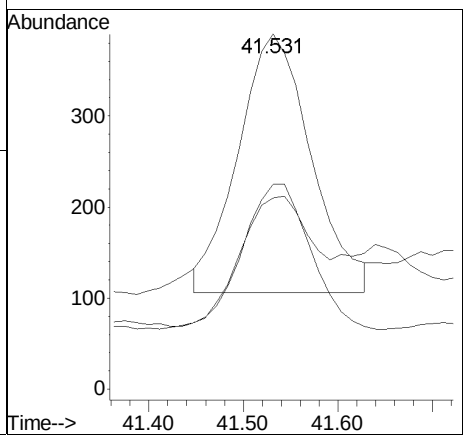


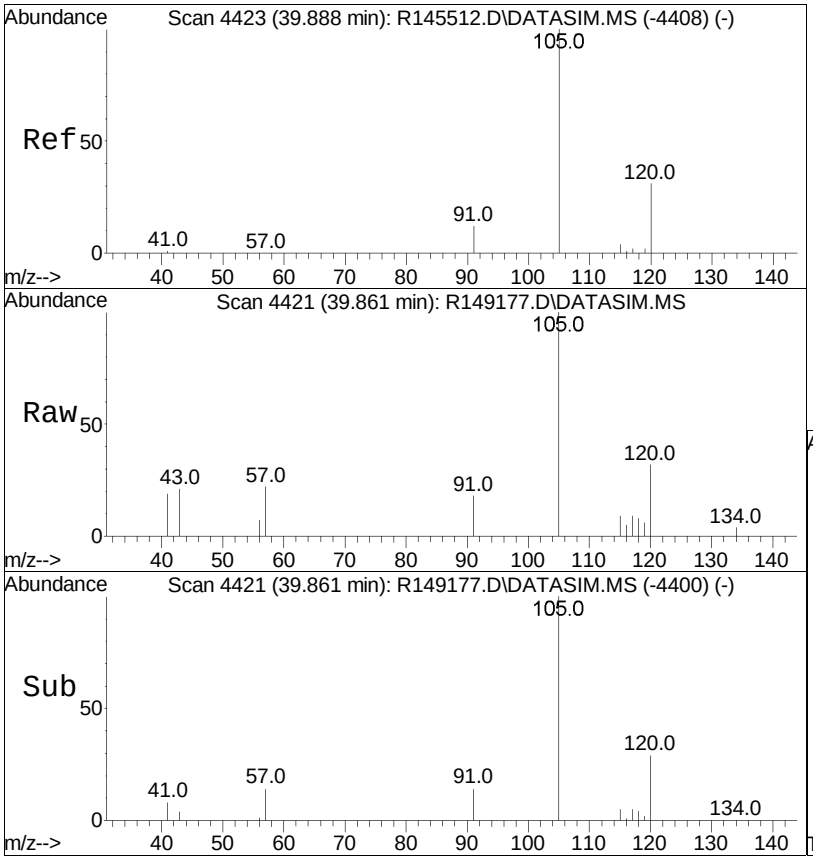


#68
1-Decene
Concen: 0.12 ppbV m
RT: 41.531 min Scan# 4560
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 41 Resp: 1527

Ion	Ratio	Lower	Upper
41	100		
57	53.8	25.1	65.1
56	57.7	51.9	91.9

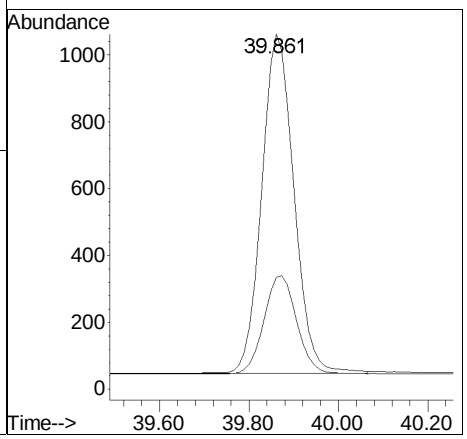


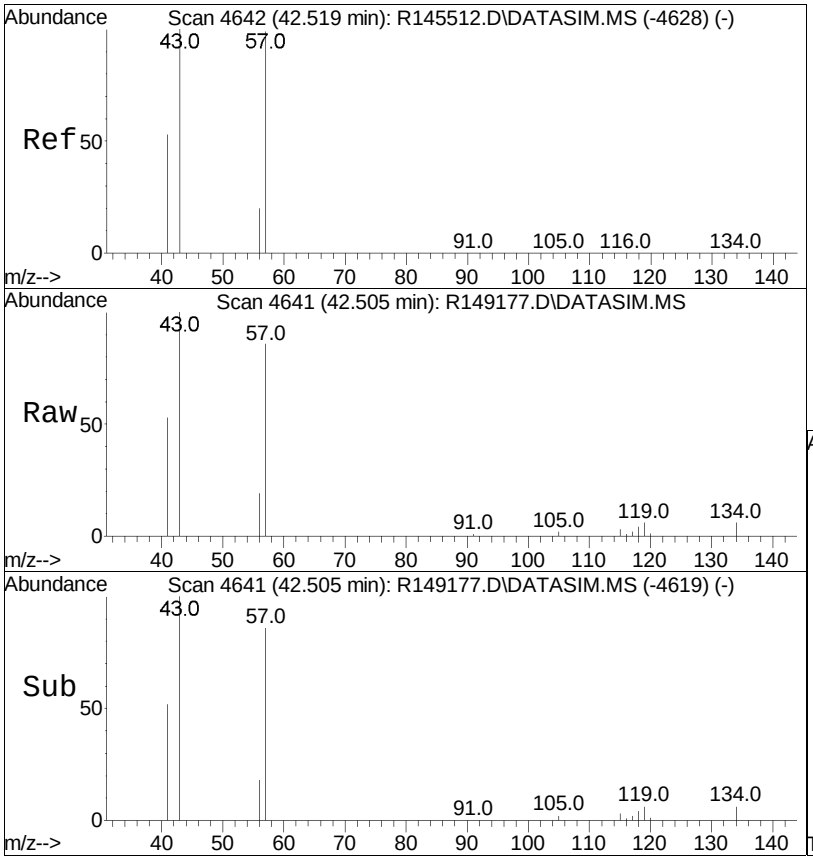


#69
1-Methyl-2-ethylbenzene
Concen: 0.18 ppbV
RT: 39.861 min Scan# 4421
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:105 Resp: 5050

Ion	Ratio	Lower	Upper
105	100		
120	31.5	9.6	49.6

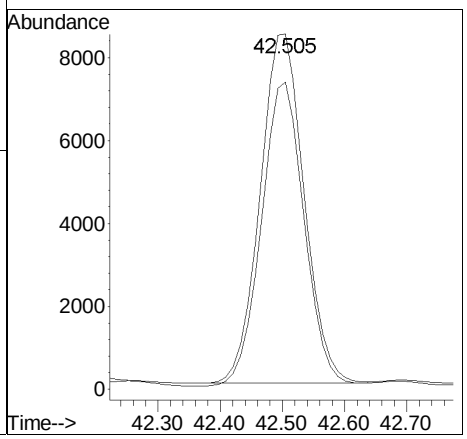


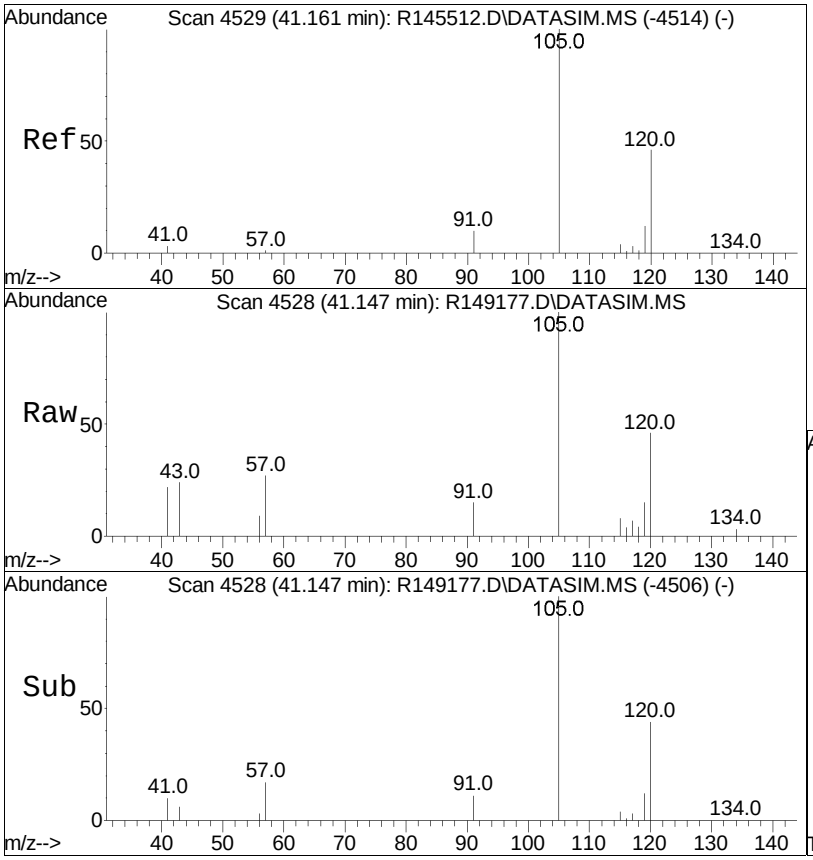


#70
Decane
Concen: 1.87 ppbV
RT: 42.505 min Scan# 4641
Delta R.T. 0.012 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 43 Resp: 41394

Ion	Ratio	Lower	Upper
43	100		
57	86.5	66.4	106.4

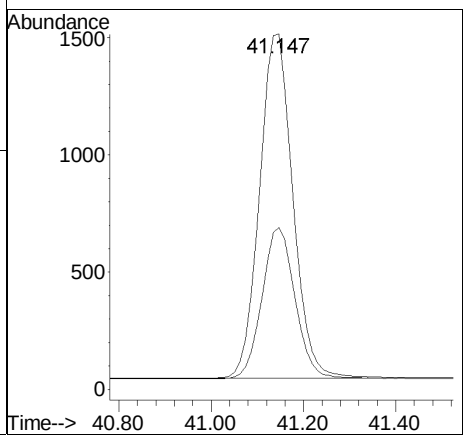


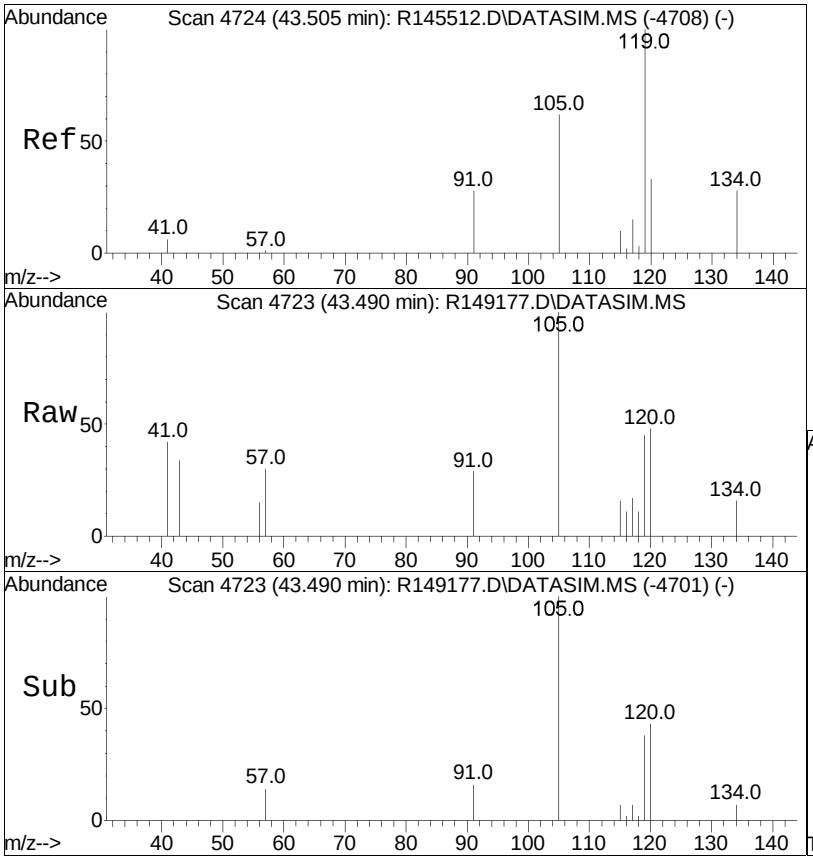


#71
1,2,4-Trimethylbenzene
Concen: 0.30 ppbV
RT: 41.147 min Scan# 4528
Delta R.T. 0.012 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:105 Resp: 7368

Ion	Ratio	Lower	Upper
105	100		
120	45.6	23.0	63.0

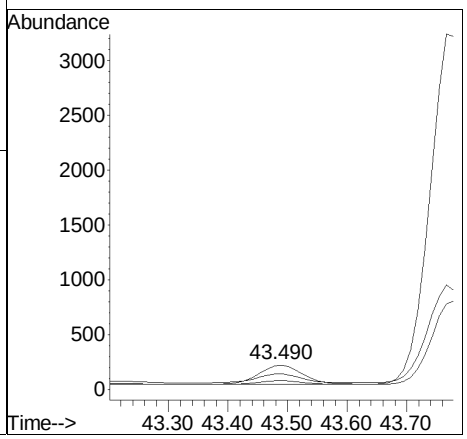


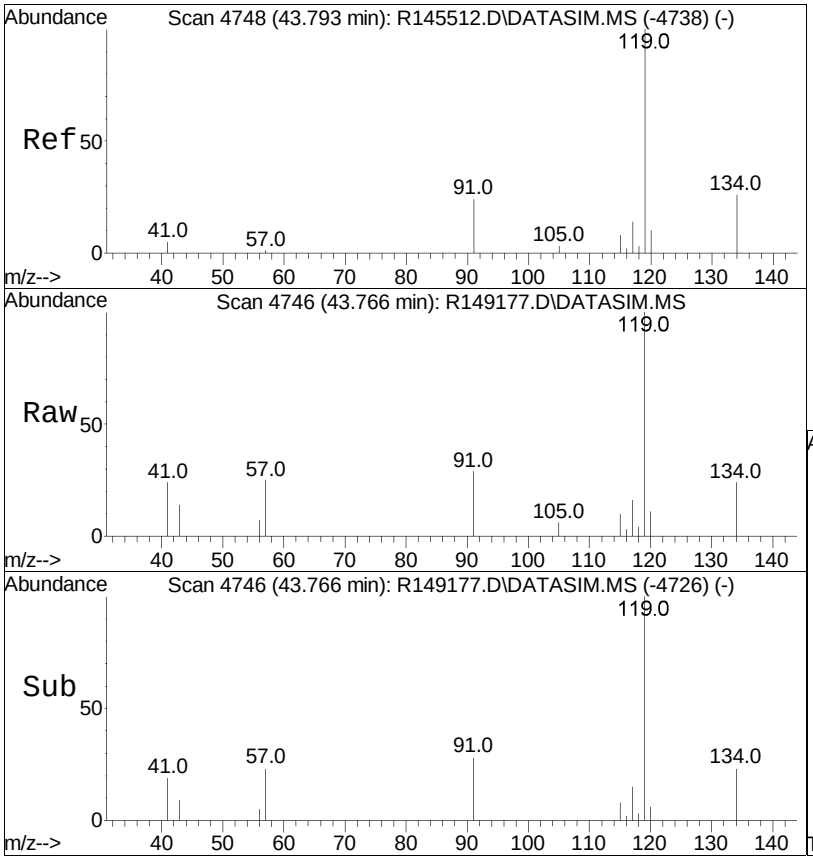


#73
1-Methyl-3-isopropylbenzene
Concen: 0.03 ppbV
RT: 43.490 min Scan# 4723
Delta R.T. 0.012 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:119 Resp: 885

Ion	Ratio	Lower	Upper
119	100		
134	36.3	4.5	44.5
91	64.6	12.0	52.0#

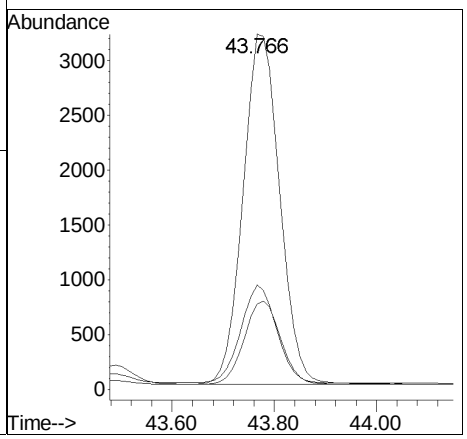


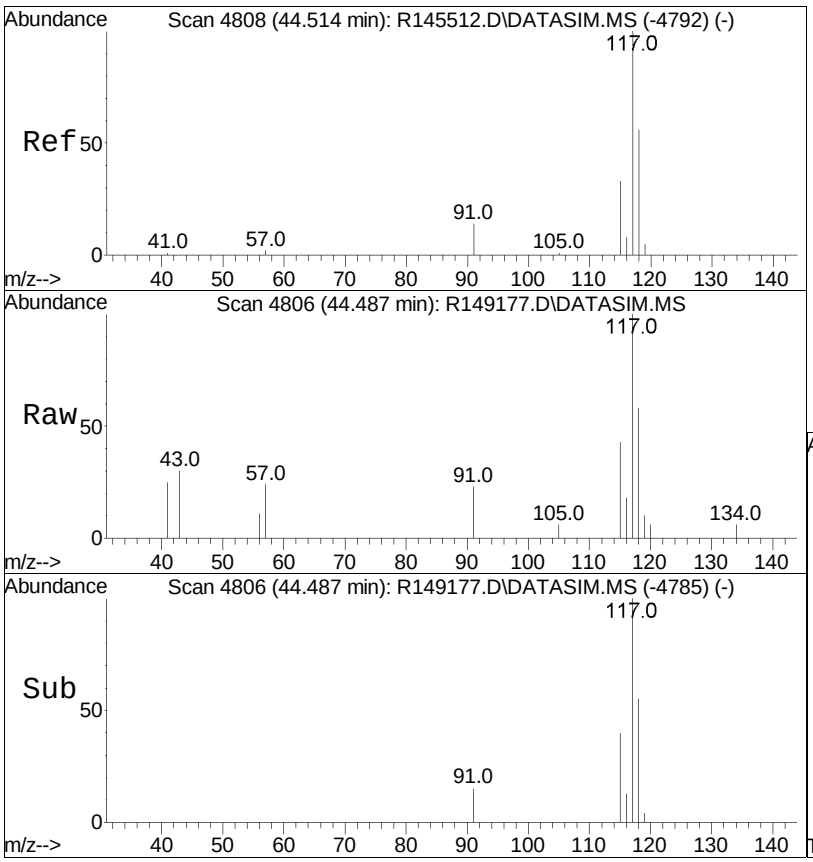


#74
1-Methyl-4-isopropylbenzene
Concen: 0.60 ppbV
RT: 43.766 min Scan# 4746
Delta R.T. -0.012 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:119 Resp: 15844

Ion	Ratio	Lower	Upper
119	100		
134	24.1	4.2	44.2
91	29.4	5.6	45.6

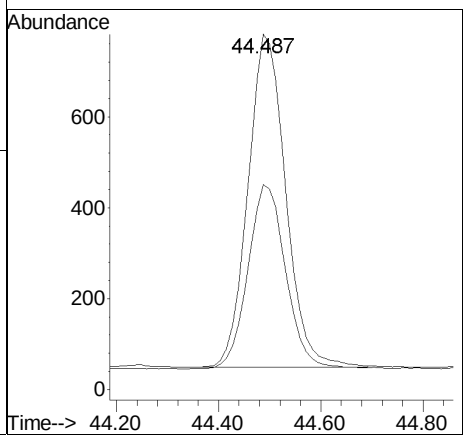


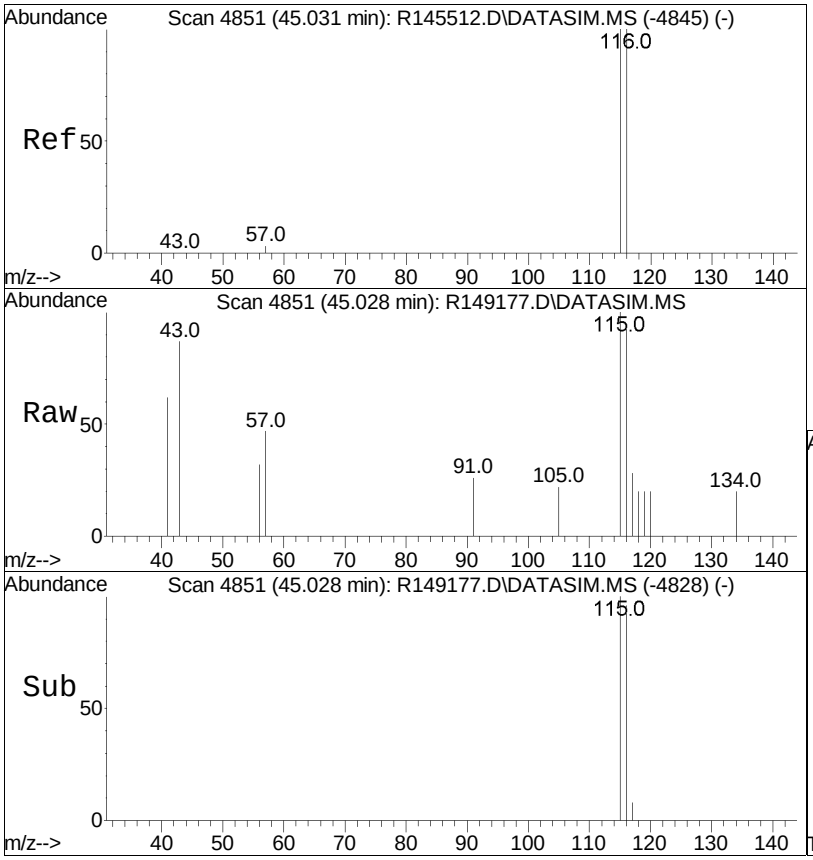


#76
Indan
Concen: 0.20 ppbV
RT: 44.487 min Scan# 4806
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:117 Resp: 3738

Ion	Ratio	Lower	Upper
117	100		
118	57.7	35.5	75.5

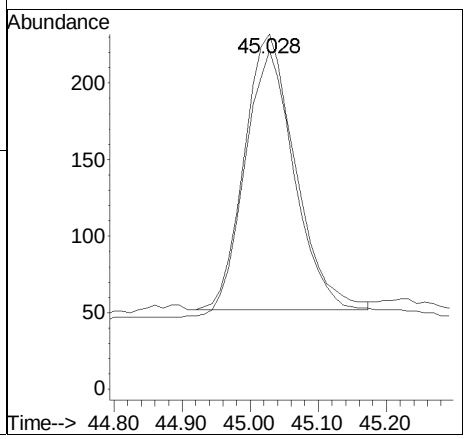


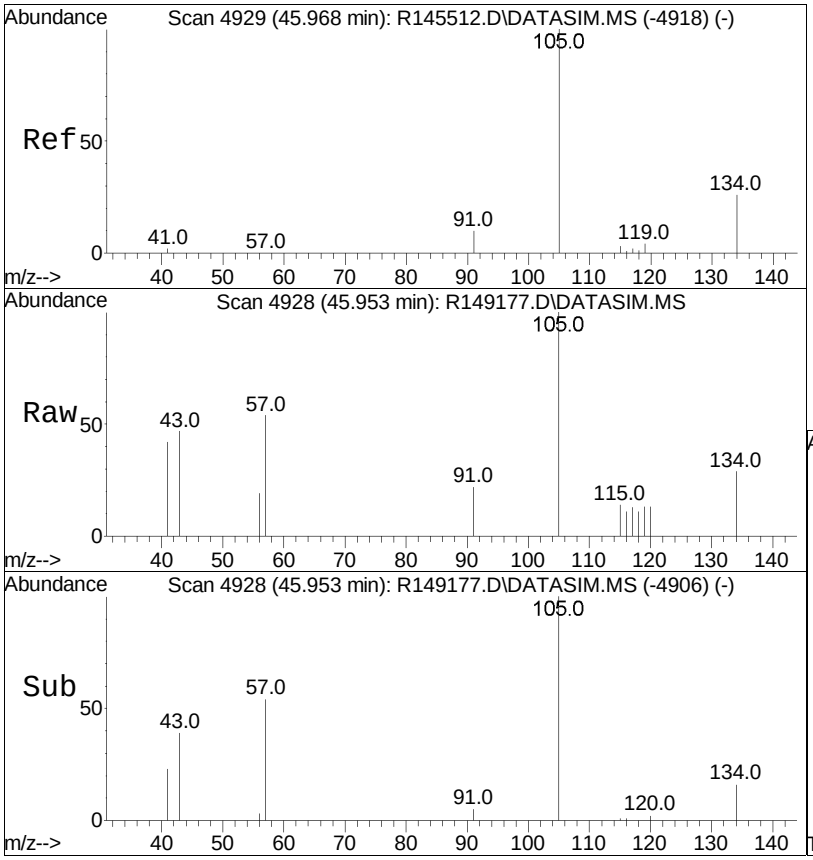


#77
Indene
Concen: 0.08 ppbV
RT: 45.028 min Scan# 4851
Delta R.T. 0.024 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:115 Resp: 940

Ion	Ratio	Lower	Upper
115	100		
116	98.1	75.9	113.9

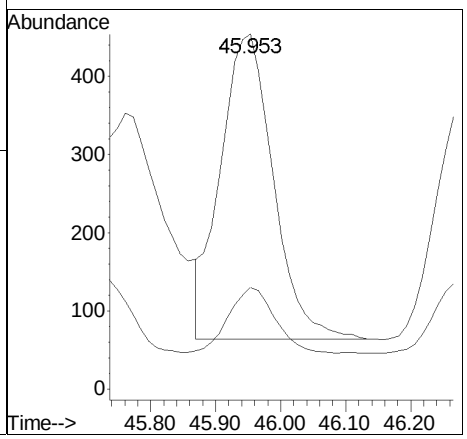


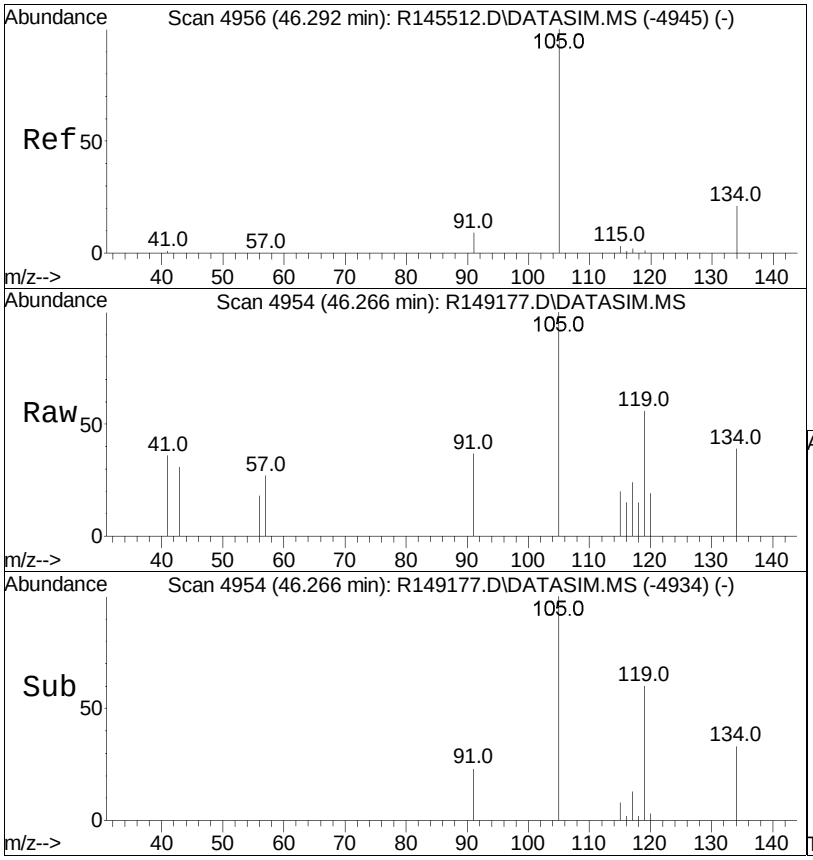


#78
1-Methyl-3-propylbenzene
Concen: 0.06 ppbV
RT: 45.953 min Scan# 4928
Delta R.T. 0.012 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:105 Resp: 2201

Ion	Ratio	Lower	Upper
105	100		
134	28.6	1.9	41.9

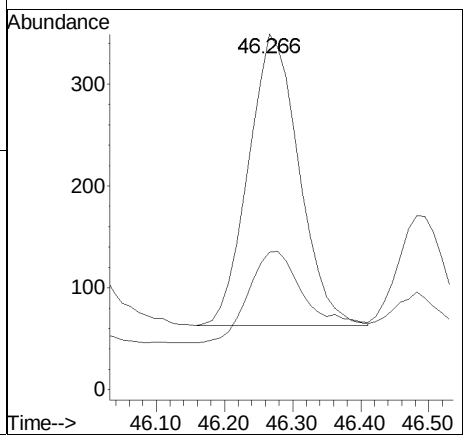


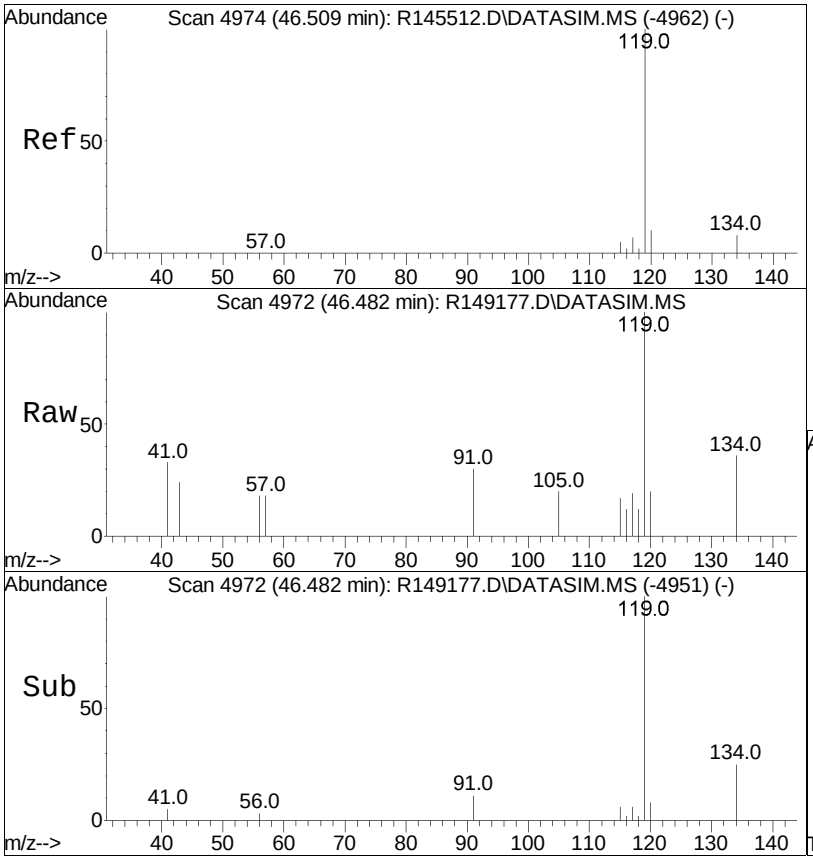


#79
1-Methyl-4-propylbenzene
Concen: 0.03 ppbV
RT: 46.266 min Scan# 4954
Delta R.T. -0.012 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:105 Resp: 1477

Ion	Ratio	Lower	Upper
105	100		
134	38.7	0.0	39.5

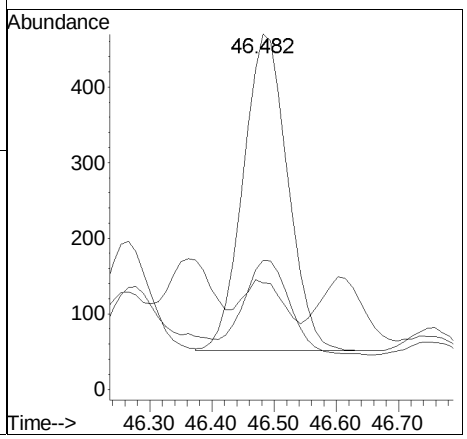


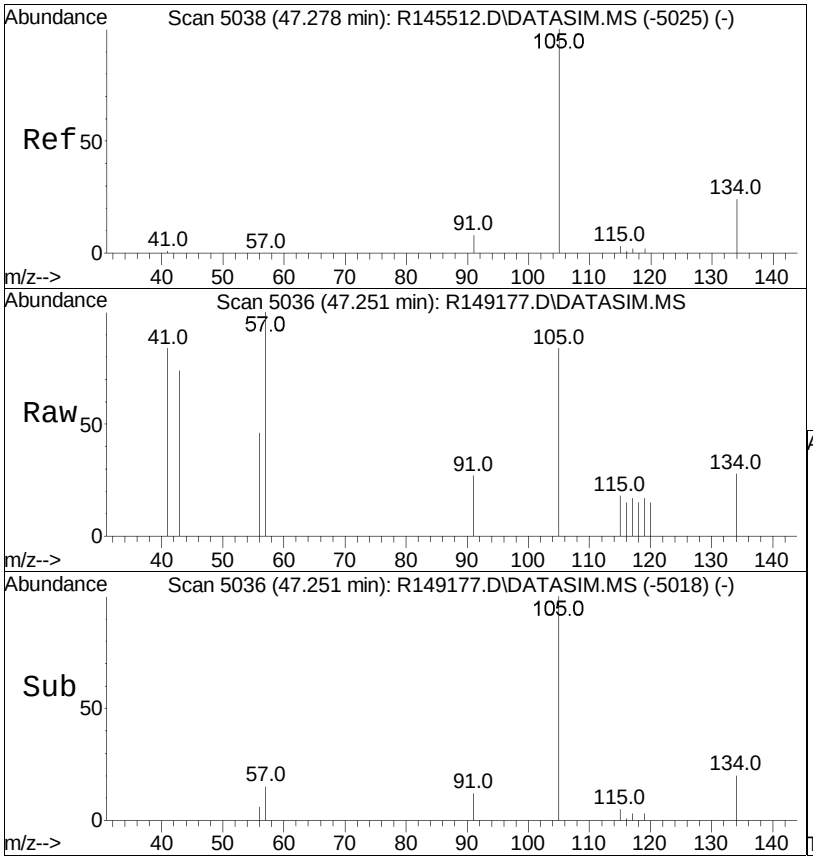


#81
1,2-Dimethyl-4-ethylbenzene
Concen: 0.08 ppbV
RT: 46.482 min Scan# 4972
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:119 Resp: 2094

Ion	Ratio	Lower	Upper
119	100		
134	36.4	9.8	49.8
91	30.0	0.0	39.8

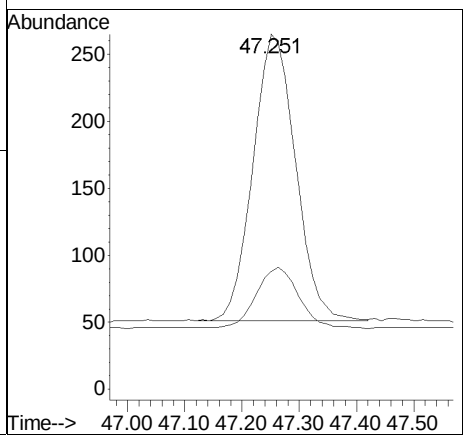


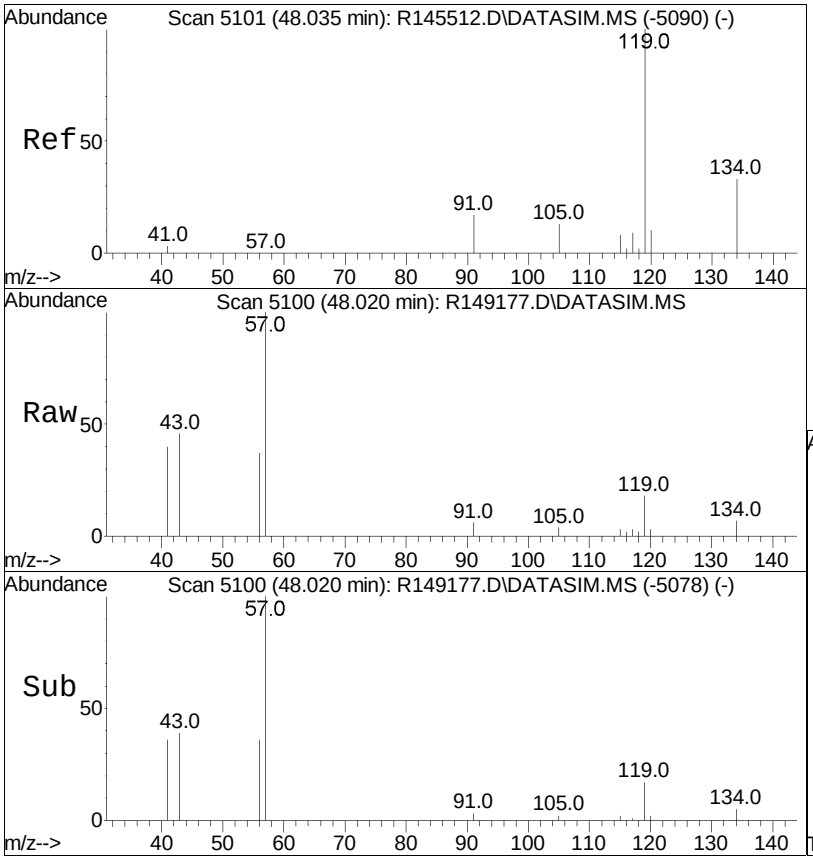


#83
1-Methyl-2-propylbenzene
Concen: 0.03 ppbV
RT: 47.251 min Scan# 5036
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:105 Resp: 1107

Ion	Ratio	Lower	Upper
105	100		
134	33.2	0.5	40.5

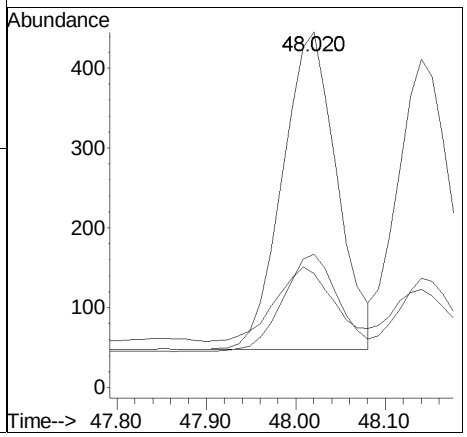


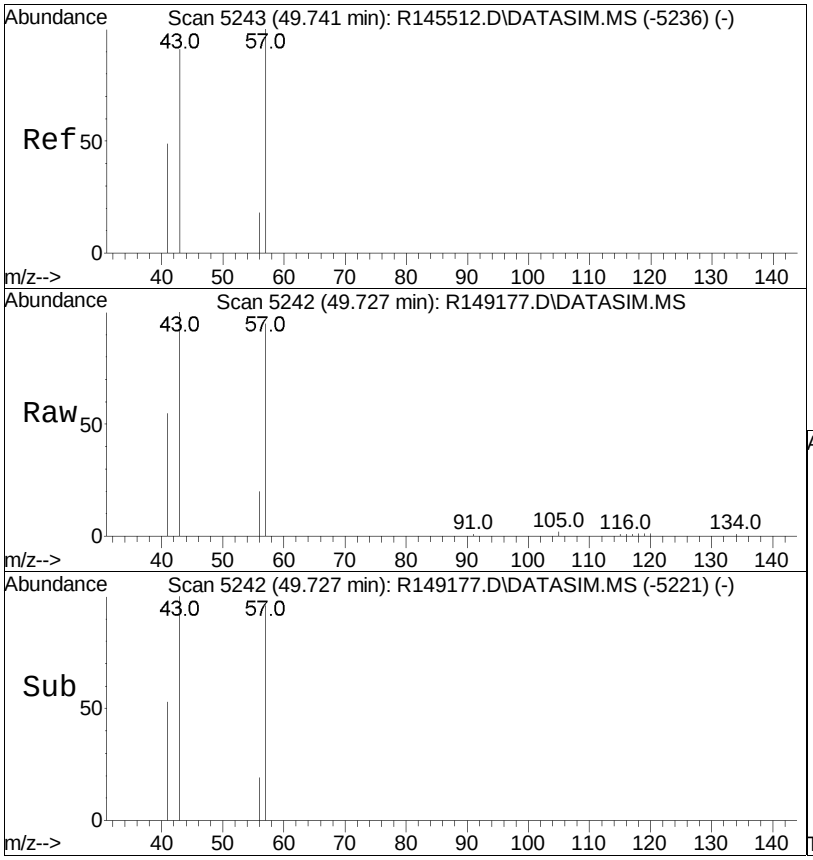


#84
1,4-Dimethyl-2-ethylbenzene
Concen: 0.06 ppbV
RT: 48.020 min Scan# 5100
Delta R.T. 0.012 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:119 Resp: 1678

Ion	Ratio	Lower	Upper
119	100		
134	37.5	10.4	50.4
91	32.1	0.1	40.1

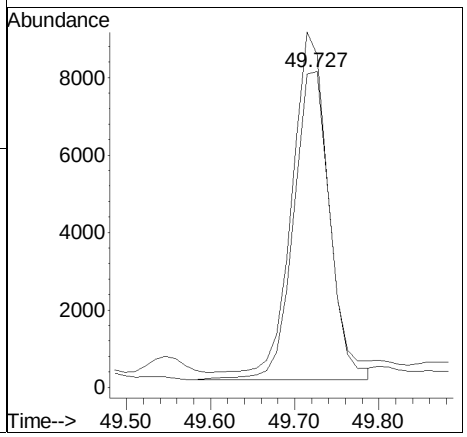


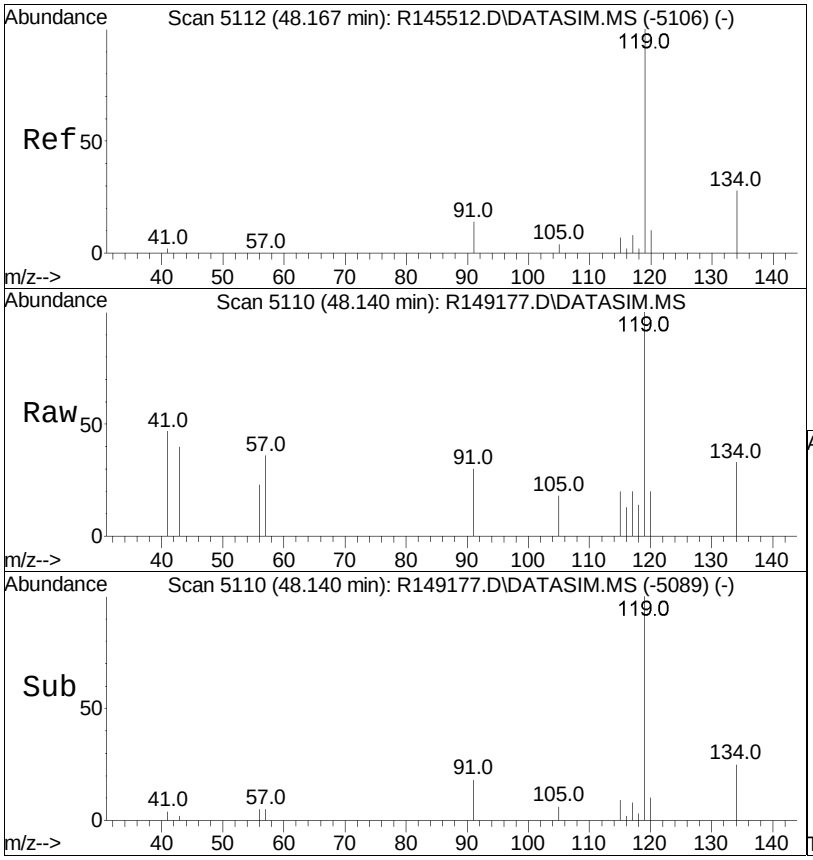


#85
Undecane
Concen: 1.06 ppbV
RT: 49.727 min Scan# 5242
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 57 Resp: 23845

Ion	Ratio	Lower	Upper
57	100		
43	105.3	79.1	119.1

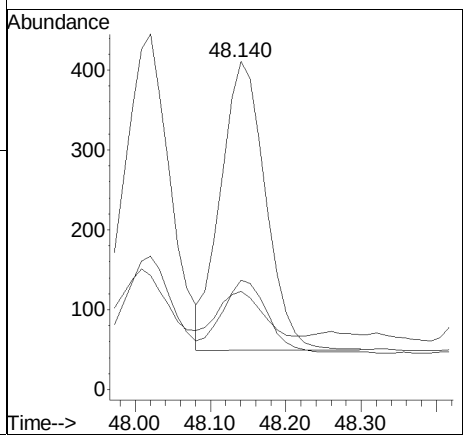


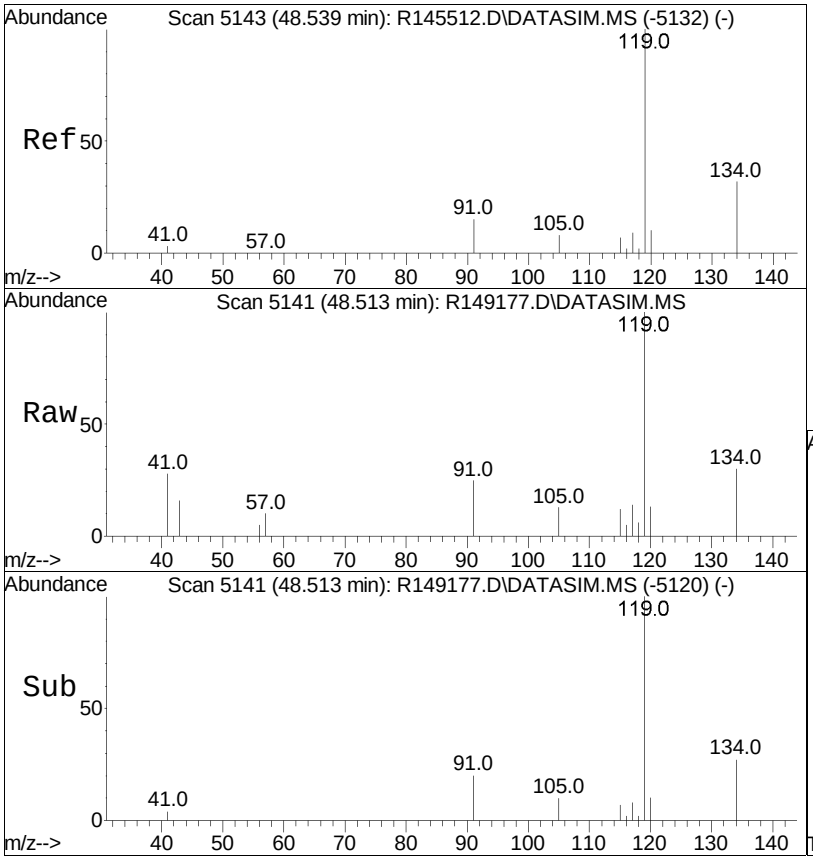


#86
1,3-Dimethyl-4-ethylbenzene
Concen: 0.05 ppbV
RT: 48.140 min Scan# 5110
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:119 Resp: 1493

Ion	Ratio	Lower	Upper
119	100		
134	33.3	6.2	46.2
91	29.9	0.0	36.4

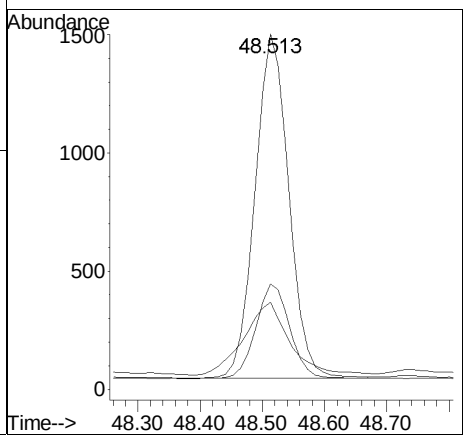


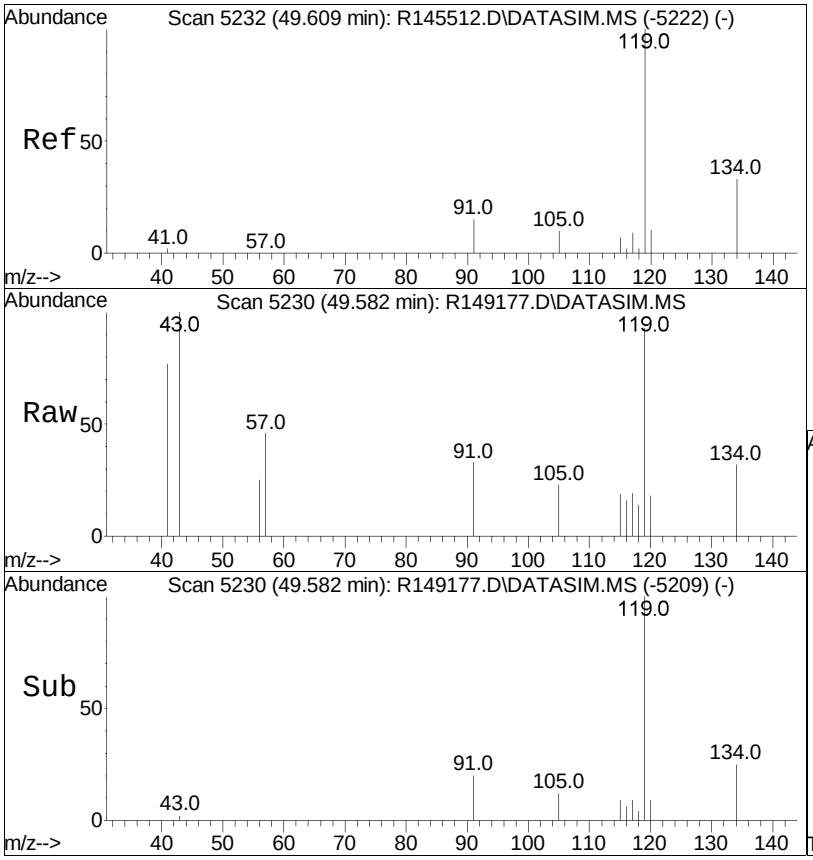


#87
1,3-Dimethyl-5-ethylbenzene
Concen: 0.18 ppbV
RT: 48.513 min Scan# 5141
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:119 Resp: 5457

Ion	Ratio	Lower	Upper
119	100		
134	29.7	7.8	47.8
91	24.6	0.0	38.0

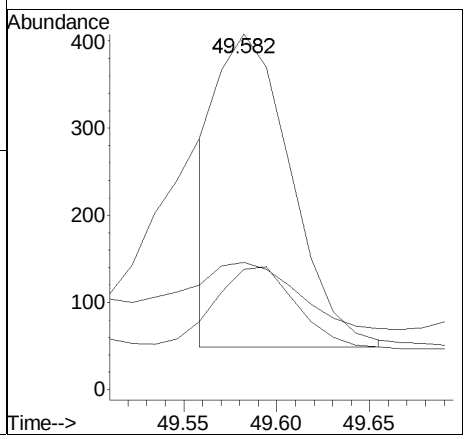


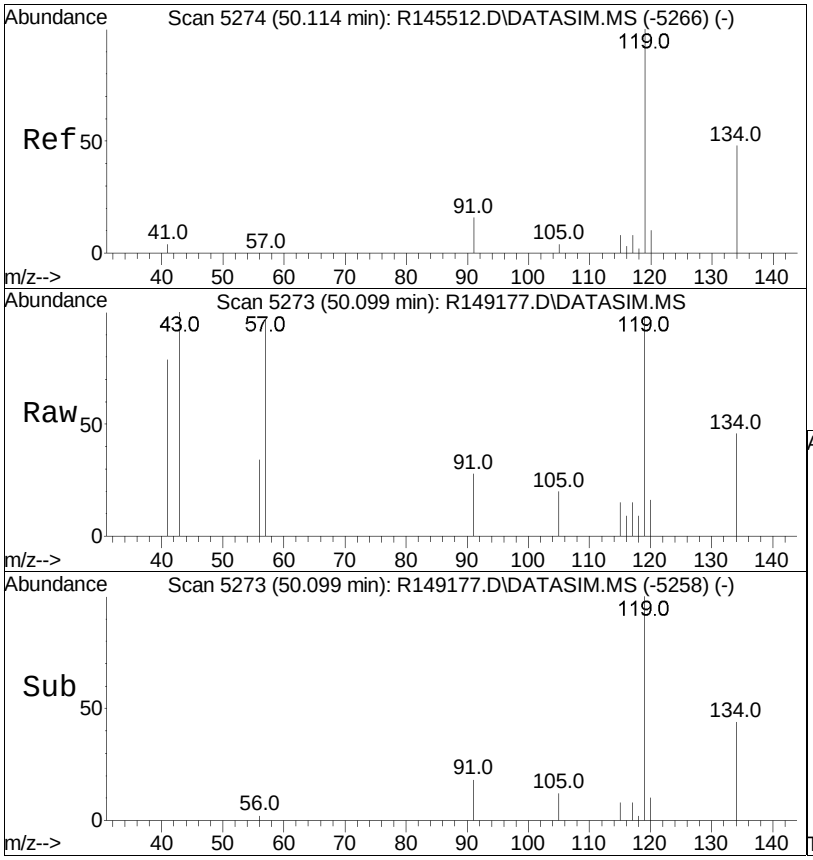


#89
1,2-Dimethyl-3-ethylbenzene
Concen: 0.03 ppbV m
RT: 49.582 min Scan# 5230
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:119 Resp: 993

Ion	Ratio	Lower	Upper
119	100		
134	33.8	8.0	48.0
91	35.8	0.0	39.5

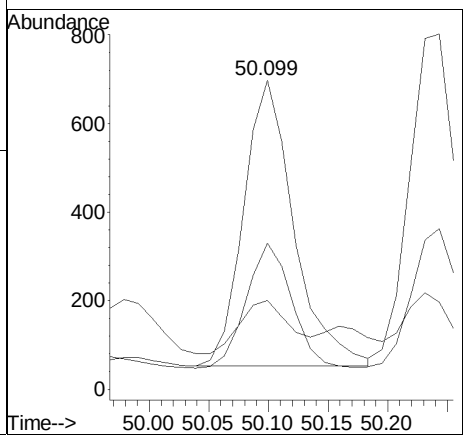


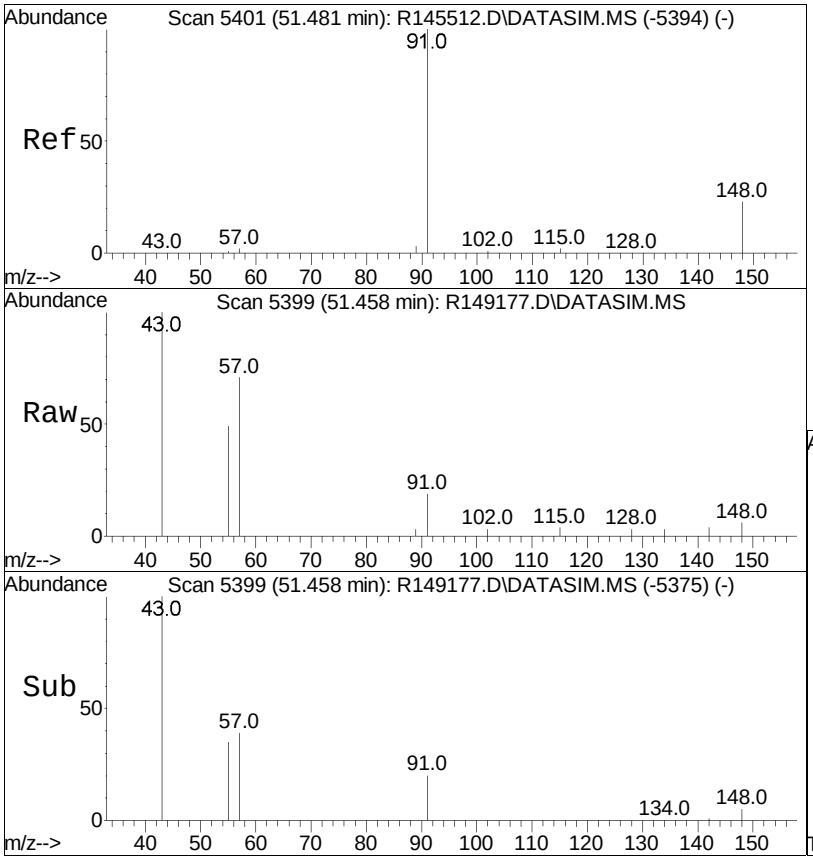


#90
1,2,4,5-Tetramethylbenzene
Concen: 0.02 ppbV
RT: 50.099 min Scan# 5273
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:119 Resp: 1890

Ion	Ratio	Lower	Upper
119	100		
134	47.3	24.1	64.1
91	28.8	0.0	36.7

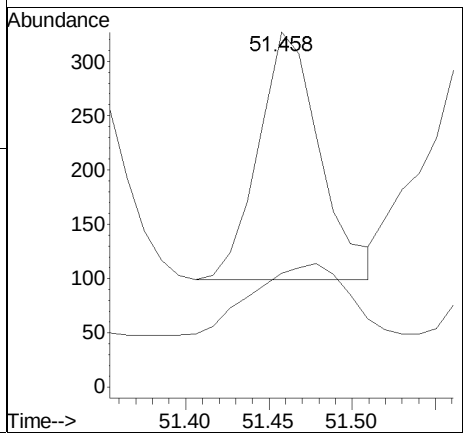


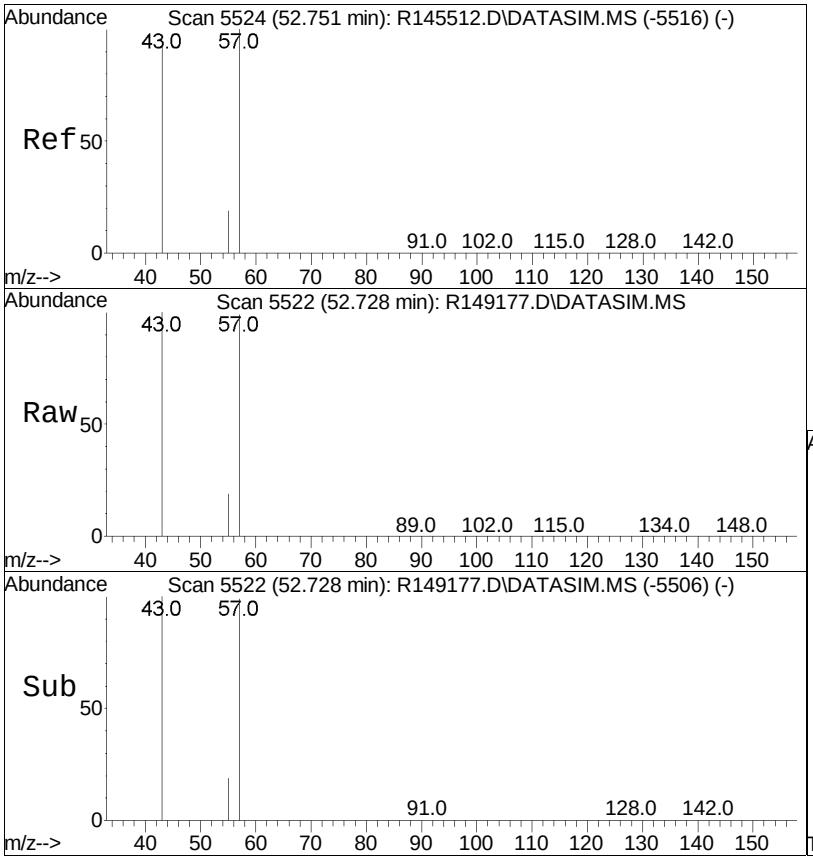


#91
Pentylbenzene
Concen: 0.02 ppbV
RT: 51.458 min Scan# 5399
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 91 Resp: 587

Ion	Ratio	Lower	Upper
91	100		
148	32.1	0.0	37.6

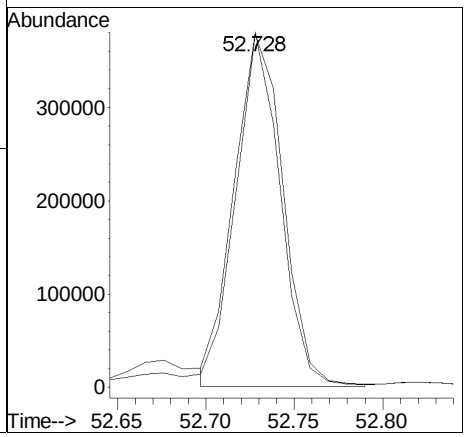


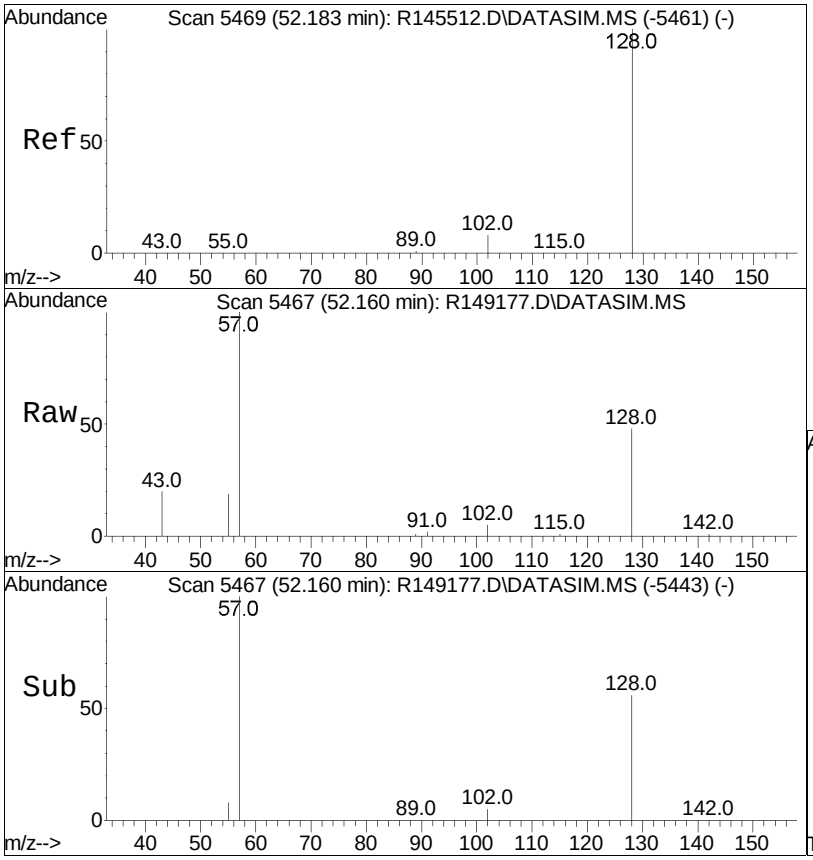


#92
Dodecane
Concen: 28.18 ppbV m
RT: 52.728 min Scan# 5522
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 43 Resp: 689026

Ion	Ratio	Lower	Upper
43	100		
57	99.4	80.2	120.2

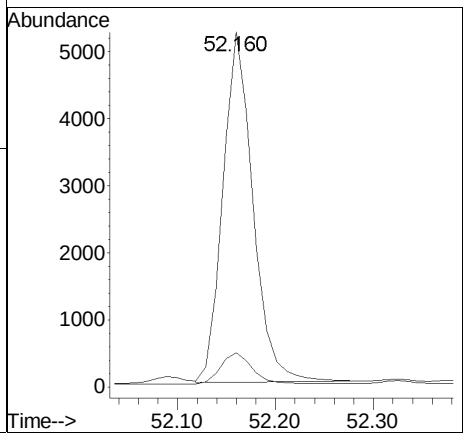


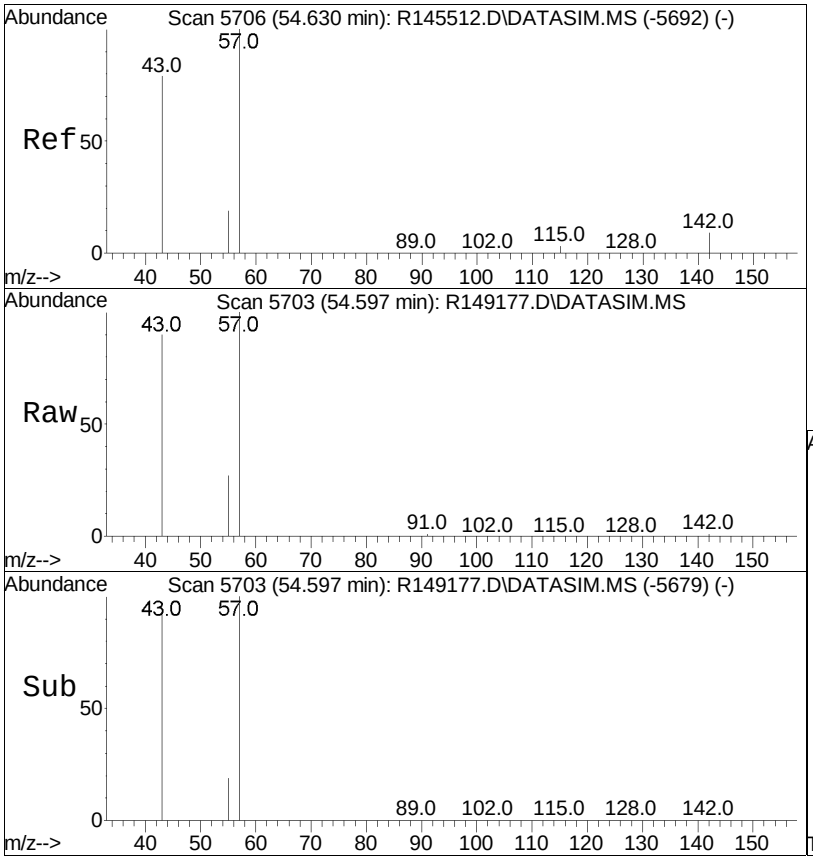


#93
Naphthalene
Concen: 0.34 ppbV
RT: 52.160 min Scan# 5467
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:128 Resp: 11111

Ion	Ratio	Lower	Upper
128	100		
102	9.8	0.0	28.9

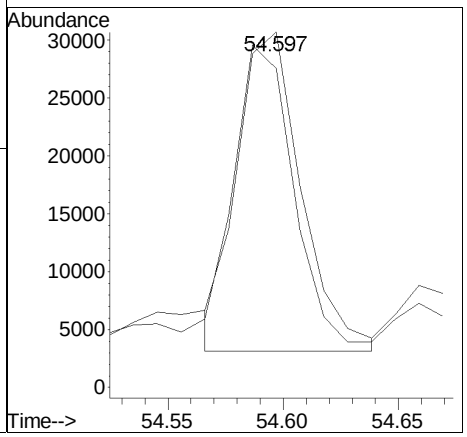


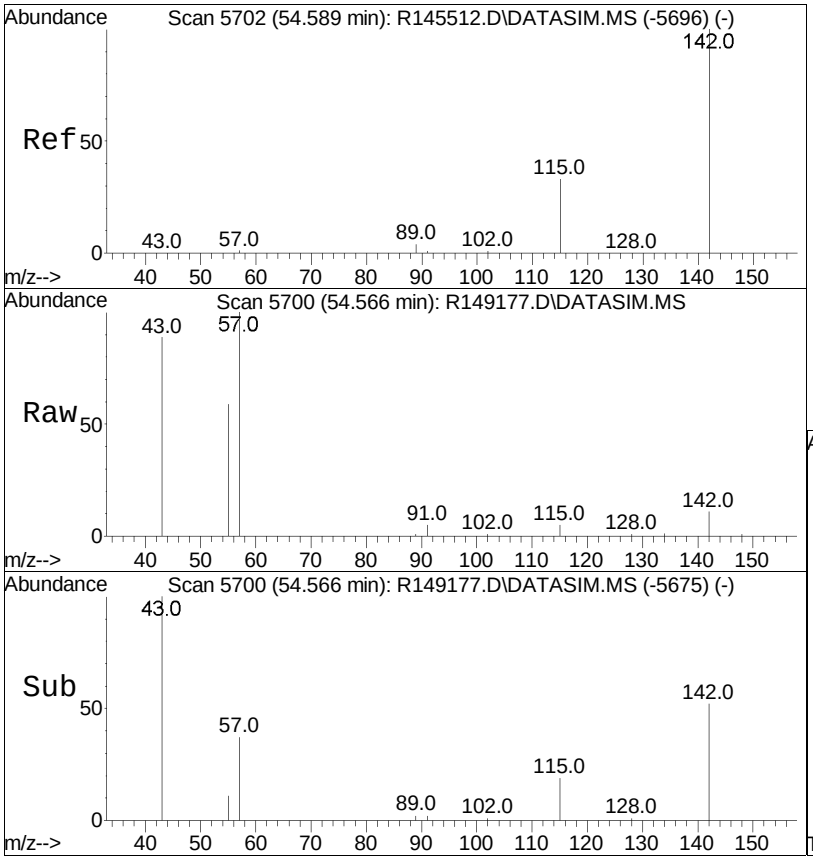


#96
Tridecane
Concen: 1.55 ppbV m
RT: 54.597 min Scan# 5703
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion: 57 Resp: 53475

Ion	Ratio	Lower	Upper
57	100		
43	89.7	72.3	112.3

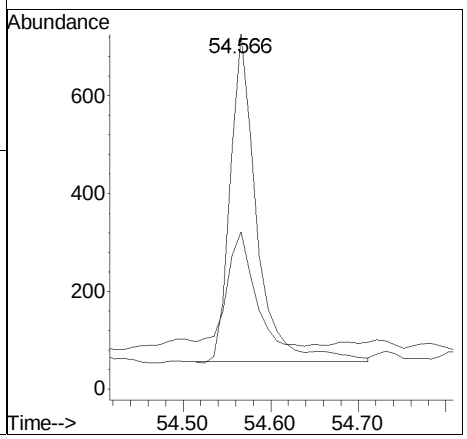


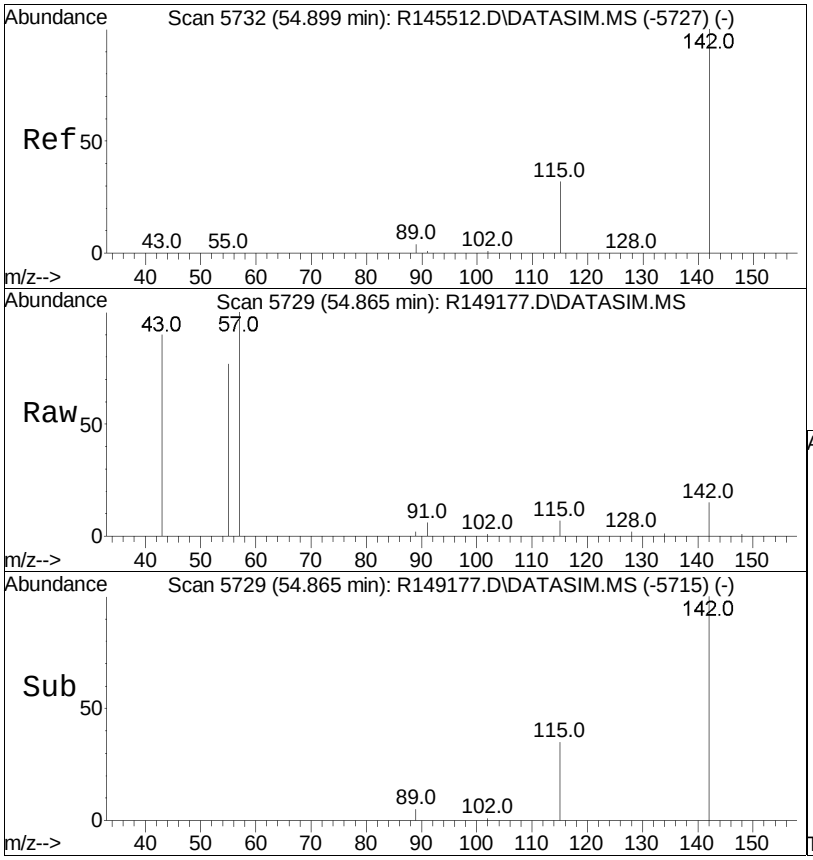


#97
2-Methylnaphthalene
Concen: 0.06 ppbV
RT: 54.566 min Scan# 5700
Delta R.T. 0.010 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:142 Resp: 1413

Ion	Ratio	Lower	Upper
142	100		
115	44.4	15.8	55.8

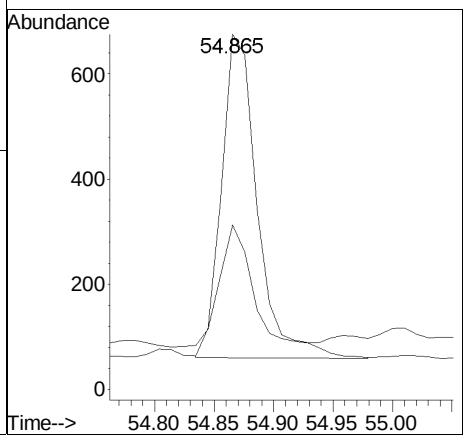




#98
1-Methylnaphthalene
Concen: 0.05 ppbV
RT: 54.865 min Scan# 5729
Delta R.T. 0.000 min
Lab File: R149177.D
Acq: 8 Nov 2016 7:38 pm

Tgt Ion:142 Resp: 1285

Ion	Ratio	Lower	Upper
142	100		
115	46.3	14.1	54.1



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-04D	Date Collected	: 10/19/16 10:46
Client ID	: NFSV-05	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 20:44
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149178	Instrument ID	: AIRPIANO1
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
106-99-0	1,3-Butadiene	ND	0.250	0.100	ND	0.553	0.221	U
78-78-4	Isopentane	24.3	0.250	0.100	71.7	0.738	0.295	
109-67-1	1-Pentene	1.91	0.250	0.100	5.48	0.717	0.287	
563-46-2	2-Methyl-1-Butene	2.65	0.250	0.100	7.60	0.717	0.287	
109-66-0	Pentane	34.6	0.250	0.100	102	0.738	0.295	
646-04-8	trans-2-Pentene	3.11	0.250	0.100	8.92	0.717	0.287	
627-20-3	cis-2-Pentene	0.710	0.250	0.100	2.04	0.717	0.287	
75-65-0	Tertiary Butanol	1.62	0.250	0.100	4.91	0.758	0.303	
287-92-3	Cyclopentane	3.32	0.250	0.100	9.52	0.717	0.287	
79-29-8	2,3-Dimethylbutane	1.83	0.250	0.100	6.45	0.881	0.353	
107-83-5	2-Methylpentane	5.84	0.250	0.100	20.6	0.881	0.352	
1634-04-4	Methyl tert butyl ether	40.3	0.250	0.100	145	0.901	0.361	
96-14-0	3-Methylpentane	3.92	0.250	0.100	13.8	0.881	0.352	
592-41-6	1-Hexene	0.380	0.250	0.100	1.31	0.861	0.344	
110-54-3	n-Hexane	13.4	0.250	0.100	47.2	0.881	0.352	
108-20-3	Isopropyl Ether	ND	0.250	0.100	ND	1.04	0.418	U
637-92-3	Ethyl-Tert-Butyl-Ether	0.180	0.250	0.100	0.752	1.04	0.418	J
590-35-2	2,2-Dimethylpentane	ND	0.250	0.100	ND	1.02	0.410	U
96-37-7	Methylcyclopentane	4.83	0.250	0.100	16.6	0.861	0.344	
108-08-7	2,4-Dimethylpentane	0.710	0.250	0.100	2.91	1.02	0.410	
107-06-2	1,2-Dichloroethane	ND	0.250	0.100	ND	1.01	0.405	U
110-82-7	Cyclohexane	0.730	0.250	0.100	2.51	0.861	0.344	
591-76-4	2-Methylhexane	1.62	0.250	0.100	6.64	1.02	0.410	
71-43-2	Benzene	133	0.250	0.100	425	0.799	0.319	
565-59-3	2,3-Dimethylpentane	1.76	0.250	0.100	7.21	1.02	0.410	
110-02-1	Thiophene	0.520	0.250	0.100	1.79	0.860	0.344	
589-34-4	3-Methylhexane	2.05	0.250	0.100	8.40	1.02	0.410	
994-05-8	Tertiary-Amyl Methyl Ether	0.460	0.250	0.100	1.92	1.04	0.418	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-04D	Date Collected	: 10/19/16 10:46
Client ID	: NFSV-05	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 20:44
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149178	Instrument ID	: AIRPIANO1
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
592-76-7	1-Heptene	ND	0.250	0.100	ND	1.00	0.402	U
540-84-1	Isooctane	1.87	0.250	0.100	8.73	1.17	0.467	
142-82-5	Heptane	3.47	0.250	0.100	14.2	1.02	0.410	
108-87-2	Methylcyclohexane	0.960	0.250	0.100	3.85	1.00	0.402	
592-13-2	2,5-Dimethylhexane	0.230	0.250	0.100	1.07	1.17	0.467	J
589-43-5/564-02-3	2,4-Dimethylhexane/2,2,3-Trimethylpen	0.340	0.500	0.250	1.59	2.34	1.17	J
565-75-3	2,3,4-Trimethylpentane	1.26	0.250	0.100	5.89	1.17	0.467	
560-21-4	2,3,3-Trimethylpentane	ND	0.250	0.100	ND	1.17	0.467	U
584-94-1	2,3-Dimethylhexane	0.420	0.250	0.100	1.96	1.17	0.467	
619-99-8	3-Ethylhexane	0.200	0.250	0.100	0.934	1.17	0.467	J
592-27-8	2-Methylheptane	0.660	0.250	0.100	3.08	1.17	0.467	
589-81-1	3-Methylheptane	0.760	0.250	0.100	3.55	1.17	0.467	
108-88-3	Toluene	182	0.250	0.100	686	0.942	0.377	
554-14-3	2-Methylthiophene	ND	0.250	0.100	ND	1.00	0.402	U
616-44-4	3-Methylthiophene	0.210	0.250	0.100	0.843	1.00	0.402	J
111-66-0	1-Octene	ND	0.250	0.100	ND	1.15	0.459	U
16747-50-5	1-Ethyl-1-Methylcyclopentane	ND	0.250	0.100	ND	1.15	0.459	U
111-65-9	Octane	1.03	0.250	0.100	4.81	1.17	0.467	
106-93-4	1,2-Dibromoethane	ND	0.250	0.100	ND	1.92	0.769	U
100-41-4	Ethylbenzene	15.4	0.250	0.100	66.9	1.09	0.434	
872-55-9	2-Ethylthiophene	ND	0.250	0.100	ND	1.15	0.459	U
179601-23-1	p/m-Xylene	86.8	0.500	0.100	377	2.17	0.434	
124-11-8	1-Nonene	ND	0.250	0.100	ND	1.29	0.516	U
111-84-2	Nonane (C9)	0.620	0.250	0.100	3.25	1.31	0.525	
100-42-5	Styrene	ND	0.250	0.100	ND	1.06	0.426	U
95-47-6	o-Xylene	24.6	0.500	0.100	107	2.17	0.434	
98-82-8	Isopropylbenzene	0.370	0.250	0.100	1.82	1.23	0.492	
103-65-1	n-Propylbenzene	1.40	0.250	0.100	6.88	1.23	0.492	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-04D	Date Collected	: 10/19/16 10:46
Client ID	: NFSV-05	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 20:44
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149178	Instrument ID	: AIRPIANO1
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
620-14-4	1-Methyl-3-Ethylbenzene	7.65	0.500	0.250	37.6	2.46	1.23	
622-96-8	1-Methyl-4-Ethylbenzene	3.42	0.250	0.100	16.8	1.23	0.492	
108-67-8	1,3,5-Trimethylbenzene	5.54	0.250	0.100	27.2	1.23	0.492	
872-05-9	1-Decene	ND	0.500	0.250	ND	2.87	1.43	U
611-14-3	1-Methyl-2-Ethylbenzene	5.16	0.500	0.250	25.4	2.46	1.23	
124-18-5	Decane (C10)	0.940	0.500	0.250	5.47	2.91	1.46	
95-63-6	1,2,4-Trimethylbenzene	14.0	0.500	0.250	68.8	2.46	1.23	
135-98-8	sec-Butylbenzene	ND	0.500	0.250	ND	2.74	1.37	U
535-77-3	1-Methyl-3-Isopropylbenzene	0.470	0.500	0.250	2.58	2.74	1.37	J
99-87-6	1-Methyl-4-Isopropylbenzene	ND	0.500	0.250	ND	2.74	1.37	U
527-84-4	1-Methyl-2-Isopropylbenzene	ND	0.500	0.250	ND	2.74	1.37	U
496-11-7	Indane	1.13	0.500	0.250	5.46	2.42	1.21	
95-13-6	Indene	ND	0.500	0.250	ND	2.38	1.19	U
1074-43-7	1-Methyl-3-N-Propylbenzene	0.940	0.500	0.250	5.16	2.74	1.37	
1074-55-1	1-Methyl-4-N-Propylbenzene	0.340	0.500	0.250	1.87	2.74	1.37	J
104-51-8	n-Butylbenzene	ND	0.500	0.250	ND	2.74	1.37	U
934-80-5	1,2-Dimethyl-4-Ethylbenzene	1.25	0.500	0.250	6.86	2.74	1.37	
135-01-3	1,2-Diethylbenzene	ND	0.500	0.250	ND	2.74	1.37	U
1074-17-5	1-Methyl-2-N-Propylbenzene	0.470	0.500	0.250	2.58	2.74	1.37	J
1758-88-9	1,4-Dimethyl-2-Ethylbenzene	0.630	0.500	0.250	3.46	2.74	1.37	
1120-21-4	Undecane	0.450	0.500	0.250	2.88	3.20	1.60	J
874-41-9	1,3-Dimethyl-4-Ethylbenzene	0.520	0.500	0.250	2.85	2.74	1.37	
934-74-7	1,3-Dimethyl-5-Ethylbenzene	0.920	0.500	0.250	5.05	2.74	1.37	
2870-04-4	1,3-Dimethyl-2-Ethylbenzene	ND	0.500	0.250	ND	2.74	1.37	U
933-98-2	1,2-Dimethyl-3-Ethylbenzene	ND	0.500	0.250	ND	2.74	1.37	U
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.500	0.250	ND	2.74	1.37	U
538-68-1	N-Pentylbenzene	ND	0.500	0.250	ND	3.03	1.52	U
112-40-3	Dodecane (C12)	1.18	1.00	0.500	8.22	6.97	3.48	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-04D	Date Collected	: 10/19/16 10:46
Client ID	: NFSV-05	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 20:44
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149178	Instrument ID	: AIRPIANO1
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
91-20-3	Naphthalene	1.15	0.500	0.250	6.03	2.62	1.31	
95-15-8	Benzothiophene	ND	1.00	0.500	ND	5.49	2.74	U
12108-13-3	MMT	ND	1.00	0.500	ND	8.92	4.46	U
629-50-5	Tridecane	ND	10.0	0.500	ND	75.4	3.77	U
91-57-6	2-Methylnaphthalene	ND	5.00	0.500	ND	29.1	2.91	U
90-12-0	1-Methylnaphthalene	ND	5.00	0.500	ND	29.1	2.91	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149178.D
Acq On : 8 Nov 2016 8:44 pm
Operator : AIRPIANO1:RY
Sample : L1634001-04D,3,25,250
Misc : WG948457,ICAL13049
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 10 12:04:51 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.198	49	123383	10.000	ppbV	0.00
Standard Area = 123393			Recovery = 99.99%			
27) 1,4-difluorbenzene	14.201	114	279932	10.000	ppbV	0.00
Standard Area = 263318			Recovery = 106.31%			
54) chlorobenzene-D5	27.633	117	204307	10.000	ppbV	0.00
Standard Area = 190793			Recovery = 107.08%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.619	65	84429	10.951	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 109.51%			
46) Toluene-D8	20.949	98	224190	10.498	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 104.98%			
62) 4-Bromofluorobenzene (...	34.334	95	114072	10.179	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.79%			
Target Compounds						Qvalue
2) 1,3-butadiene	0.000		0	N.D.	d	
4) Isopentane	5.878	41	29024	2.429	ppbV	99
5) 1-Pentene	6.194	42	2576	0.191	ppbV	96
6) 2-Methyl-1-butene	6.352	55	4232	0.265	ppbV	91
7) Pentane	6.468	43	70706	3.458	ppbV	99
9) 2-Pentene (trans)	6.668	55	4820	0.311	ppbV	97
10) 2-Pentene (cis)	6.889	55	1007M3	0.071	ppbV	
11) Tertiary butanol	6.899	59	3754	0.162	ppbV	93
12) Cyclopentane	8.638	70	1533	0.332	ppbV #	61
13) 2,3-Dimethylbutane	8.669	71	780M4	0.183	ppbV	
14) 2-Methylpentane	8.816	43	13547	0.584	ppbV	99
15) MTBE	8.674	73	95309	4.033	ppbV #	62
16) 3-Methylpentane	9.460	57	5992	0.392	ppbV	97
17) 1-Hexene	9.709	56	334M6	0.038	ppbV	
18) Hexane	10.286	57	17539	1.343	ppbV #	53
19) Diisopropyl ether	0.000		0	N.D.	d	
20) Ethyl tertiary butyl e...	11.353	59	464	0.018	ppbV	70
21) 2,2-Dimethylpentane	0.000		0	N.D.	d	
23) Methylcyclopentane	11.822	56	7826	0.483	ppbV	97
24) 2,4-Dimethylpentane	11.973	43	1484	0.071	ppbV	94
25) 1,2-Dichloroethane	0.000		0	N.D.	d	
26) Cyclohexane	13.909	56	922	0.073	ppbV	97
28) 2-Methylhexane	14.391	43	3856	0.162	ppbV	89

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149178.D
Acq On : 8 Nov 2016 8:44 pm
Operator : AIRPIANO1:RY
Sample : L1634001-04D,3,25,250
Misc : WG948457,ICAL13049
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 10 12:04:51 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
29) Benzene	13.316	78	355608	13.319	ppbV	99
30) 2,3-Dimethylpentane	14.548	56	2944	0.176	ppbV #	76
31) Thiophene	13.596	84	591	0.052	ppbV	89
32) 3-Methylhexane	15.007	43	3804	0.205	ppbV	97
33) TAME	14.850	73	1070	0.046	ppbV #	69
34) 1-Heptene	0.000		0	N.D.	d	
35) Isooctane	15.993	57	7852	0.187	ppbV	93
36) Heptane	16.777	43	6267	0.347	ppbV	98
37) Methylcyclohexane	18.479	83	1312M4	0.096	ppbV	
38) 2,5-Dimethylhexane	19.319	57	481M3	0.023	ppbV	
39) 2,4-Dimethyhexane / 2,...	19.499	57	881	0.034	ppbV #	47
40) 2,3,4-Trimethylpentane	20.840	43	3655	0.126	ppbV	96
41) 2,3,3-Trimethylpentane	0.000		0	N.D.	d	
42) 2,3-Dimethylhexane	21.706	43	1106	0.042	ppbV	93
43) 3-Ethylhexane	22.936	43	628	0.020	ppbV	51
44) 2-Methylheptane	22.169	57	1302	0.066	ppbV	93
45) 3-Methylheptane	22.828	43	1639M4	0.076	ppbV	
47) Toluene	21.263	91	567583	18.229	ppbV	100
48) 2-Methylthiophene	0.000		0	N.D.	d	
49) 3-Methylthiophene	22.070	97	421	0.021	ppbV #	70
50) 1-Octene	0.000		0	N.D.	d	
51) 1-ethyl-1-methylcyclop...	0.000		0	N.D.	d	
52) Octane	25.081	43	2558	0.103	ppbV	90
53) 1,2-Dibromoethane	0.000		0	N.D.	d	
55) Ethylbenzene	29.486	91	44350	1.538	ppbV	100
56) 2-Ethylthiophene	0.000		0	N.D.	d	
57) p/m-Xylene	30.233	91	192545M4	8.675	ppbV	
58) 1-Nonene	0.000		0	N.D.	d	
59) Nonane	33.901	43	1326	0.062	ppbV	97
60) Styrene	0.000		0	N.D.	d	
61) o-Xylene	32.258	91	55926	2.459	ppbV	100
63) Isopropylbenzene	35.119	105	1119	0.037	ppbV	75
64) n-Propylbenzene	37.698	120	1096	0.140	ppbV #	68
65) 1-Methyl-3-ethylbenzene	38.323	105	21581	0.765	ppbV	100
66) 1-Methyl-4-ethylbenzene	38.515	105	10386	0.342	ppbV	95
67) 1,3,5-Trimethylbenzene	38.996	105	13659	0.554	ppbV	97
68) 1-Decene	0.000		0	N.D.	d	
69) 1-Methyl-2-ethylbenzene	39.861	105	14862	0.516	ppbV	99
70) Decane	42.505	43	2093M4	0.094	ppbV	
71) 1,2,4-Trimethylbenzene	41.147	105	34422	1.402	ppbV	99

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149178.D
Acq On : 8 Nov 2016 8:44 pm
Operator : AIRPIANO1:RY
Sample : L1634001-04D,3,25,250
Misc : WG948457,ICAL13049
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 10 12:04:51 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

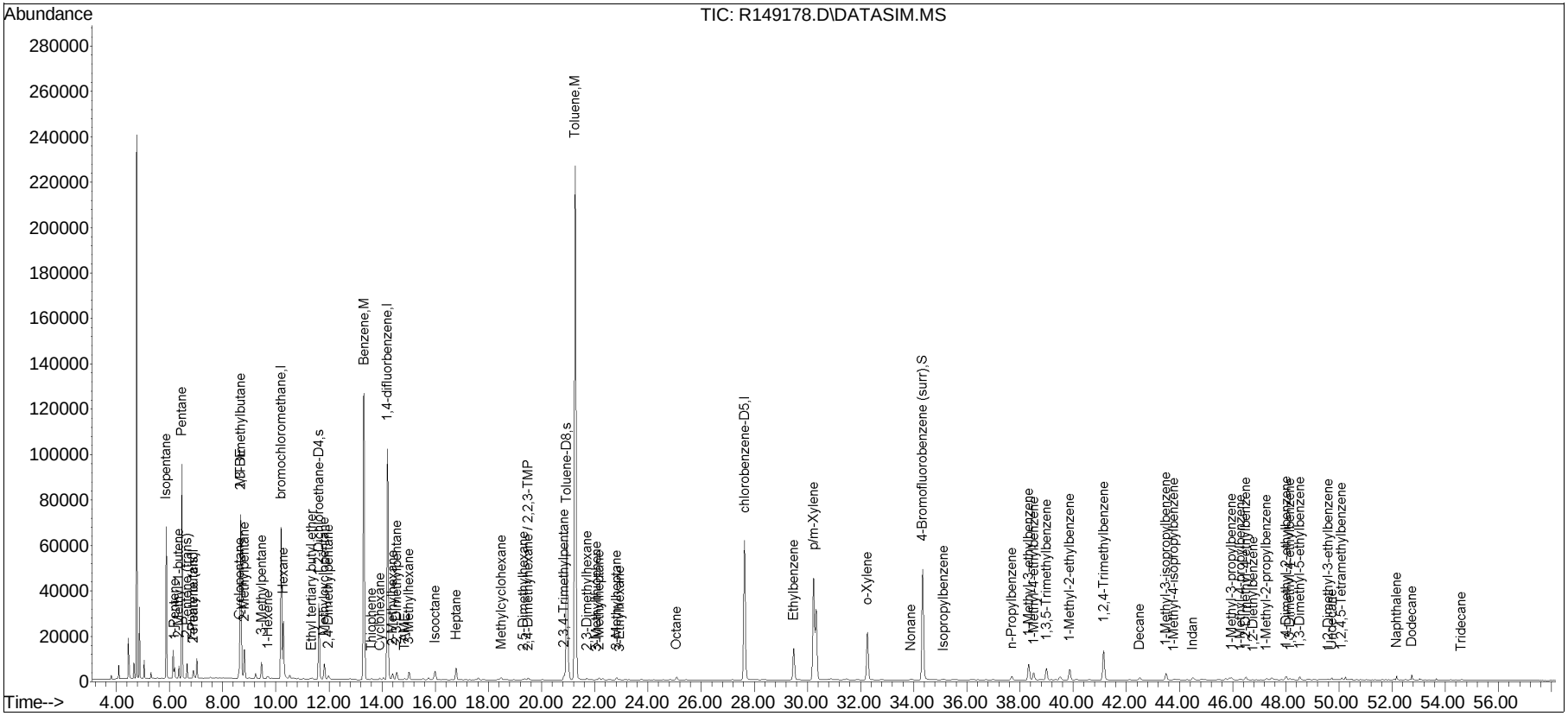
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
72) sec-Butylbenzene	0.000		0	N.D.	d	
73) 1-Methyl-3-isopropylbe...	43.490	119	1510M4	0.047	ppbV	
74) 1-Methyl-4-isopropylbe...	43.790	119	340	0.013	ppbV #	33
75) 1-Methyl-2-isopropylbe...	0.000		0	N.D.	d	
76) Indan	44.499	117	2175	0.113	ppbV	97
77) Indene	0.000		0	N.D.	d	
78) 1-Methyl-3-propylbenzene	45.953	105	3329	0.094	ppbV	91
79) 1-Methyl-4-propylbenzene	46.290	105	1461	0.034	ppbV	65
80) n-Butylbenzene	0.000		0	N.D.	d	
81) 1,2-Dimethyl-4-ethylbe...	46.494	119	3369	0.125	ppbV	90
82) 1,2-Diethylbenzene	46.770	119	214	0.015	ppbV #	82
83) 1-Methyl-2-propylbenzene	47.263	105	1776	0.047	ppbV	82
84) 1,4-Dimethyl-2-ethylbe...	48.020	119	1784M4	0.063	ppbV	
85) Undecane	49.726	57	1017M4	0.045	ppbV	
86) 1,3-Dimethyl-4-ethylbe...	48.152	119	1706	0.052	ppbV	83
87) 1,3-Dimethyl-5-ethylbe...	48.525	119	2823	0.092	ppbV	89
88) 1,3-Dimethyl-2-ethylbe...	48.897		0	N.D.		
89) 1,2-Dimethyl-3-ethylbe...	49.594	119	676M6	0.022	ppbV	
90) 1,2,4,5-Tetramethylben...	50.099	119	1163	0.012	ppbV	87
91) Pentylbenzene	0.000		0	N.D.	d	
92) Dodecane	52.738	43	2886M4	0.118	ppbV	
93) Naphthalene	52.170	128	3818	0.115	ppbV	92
94) Benzothiophene	52.325		0	N.D.		
95) MMT	0.000		0	N.D.	d	
96) Tridecane	54.607	57	476M4	0.014	ppbV	
97) 2-Methylnaphthalene	54.587		0	N.D.		
98) 1-Methylnaphthalene	54.886		0	N.D.		

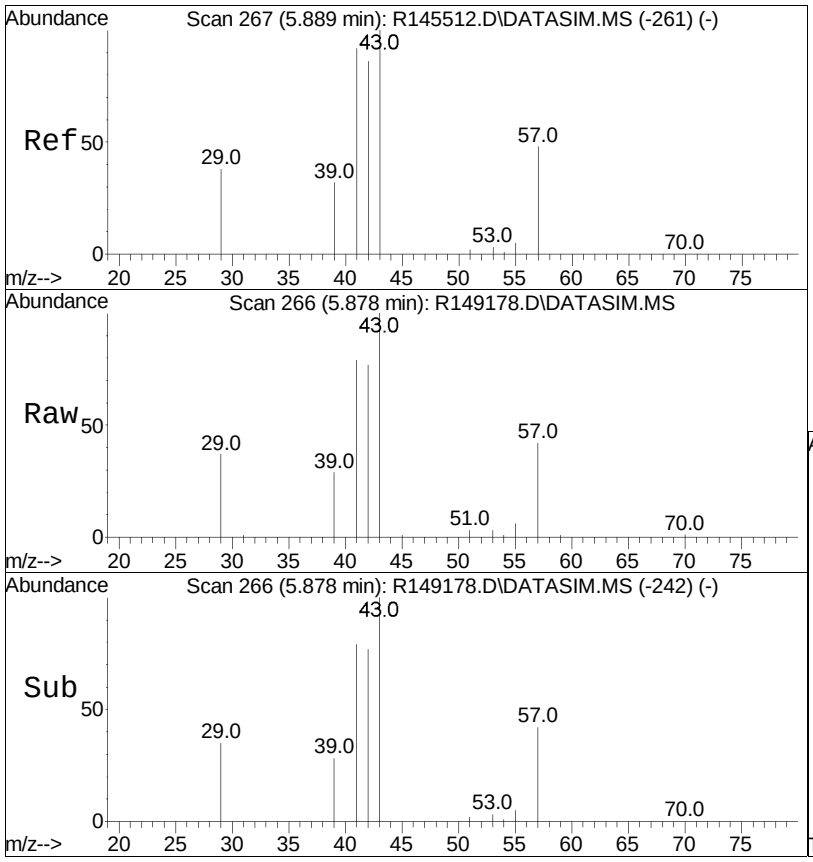
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : AIR-NF-PIANO - NF PIANO LIST161108PIANO\R149170.D

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149178.D
Acq On : 8 Nov 2016 8:44 pm
Operator : AIRPIANO1:RY
Sample : L1634001-04D,3,25,250
Misc : WG948457,ICAL13049
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 10 12:04:51 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

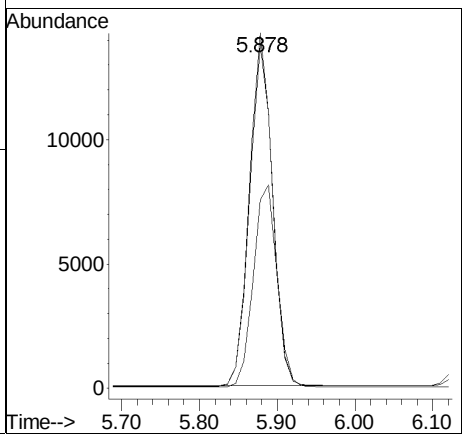


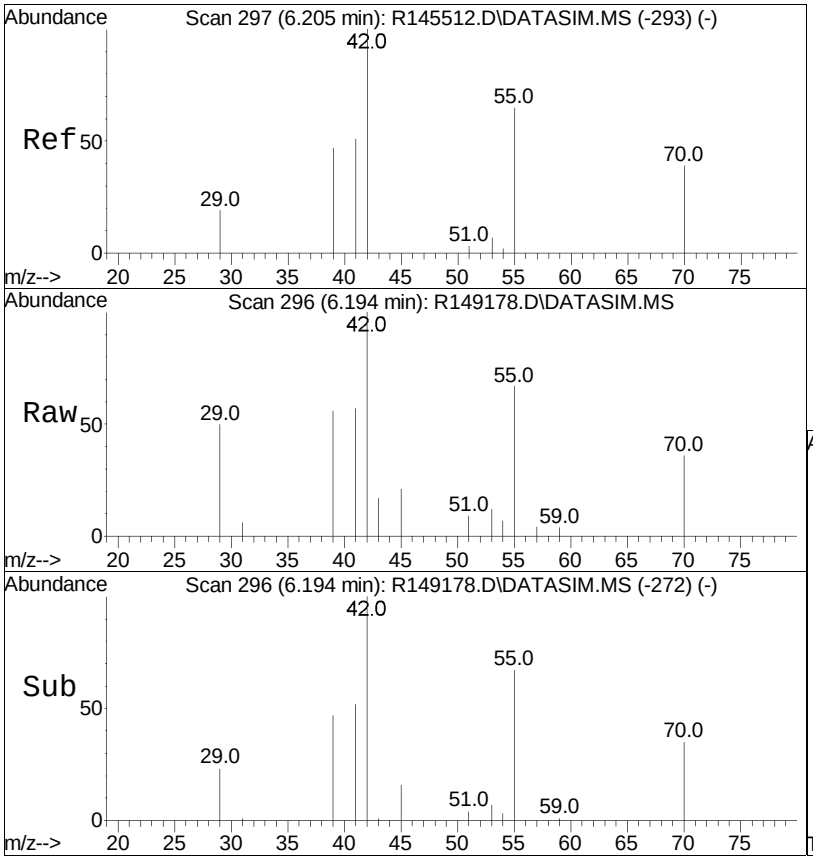


#4
Isopentane
Concen: 2.43 ppbV
RT: 5.878 min Scan# 266
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 41 Resp: 29024

Ion	Ratio	Lower	Upper
41	100		
57	53.0	31.8	71.8
42	96.6	76.7	116.7

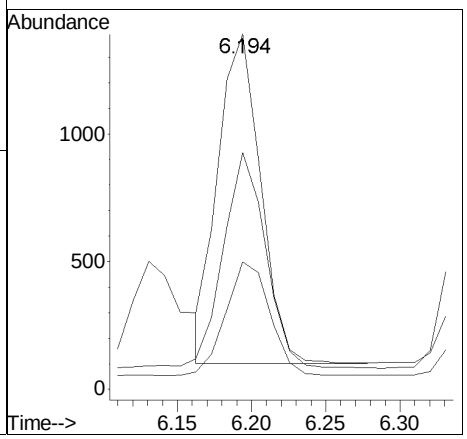


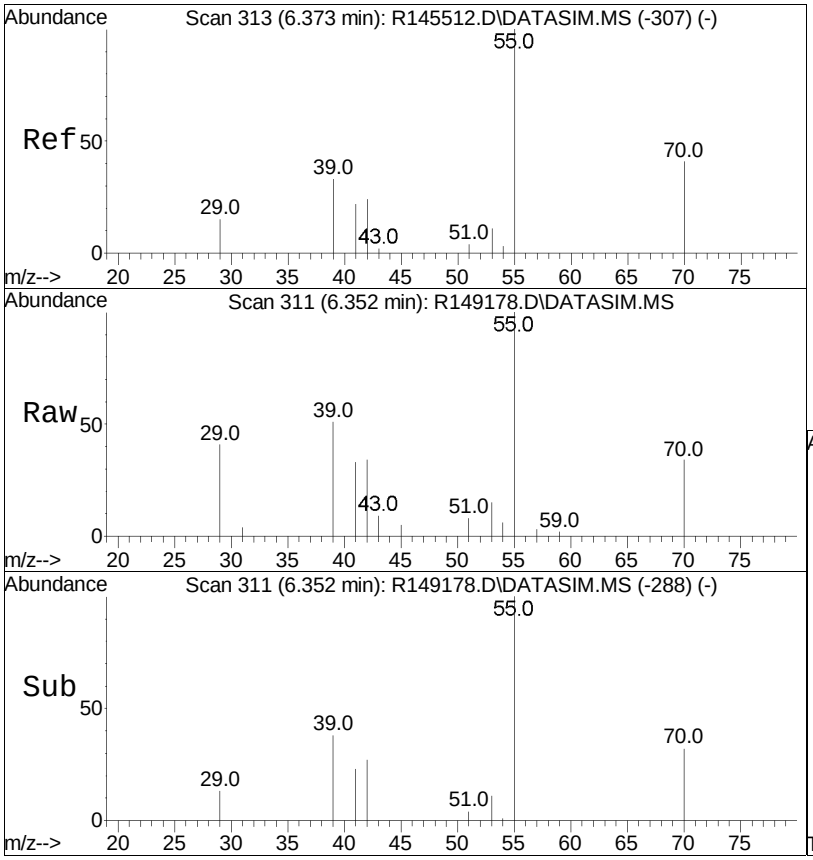


#5
1-Pentene
Concen: 0.19 ppbV
RT: 6.194 min Scan# 296
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 42 Resp: 2576

Ion	Ratio	Lower	Upper
42	100		
55	66.6	43.2	83.2
70	35.9	13.6	53.6

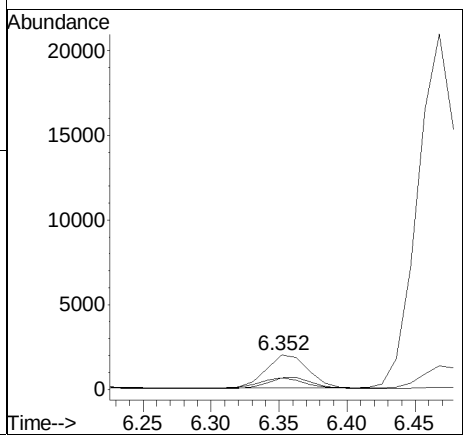


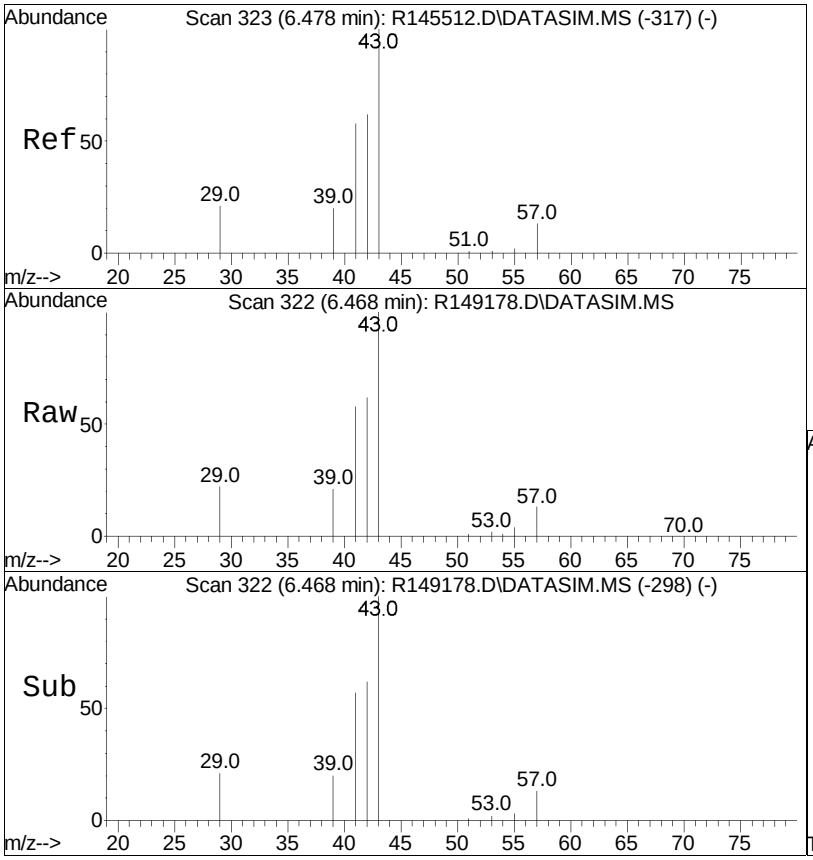


#6
2-Methyl-1-butene
Concen: 0.26 ppbV
RT: 6.352 min Scan# 311
Delta R.T. -0.011 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 55 Resp: 4232

Ion	Ratio	Lower	Upper
55	100		
70	33.6	16.1	56.1
42	33.8	5.4	45.4

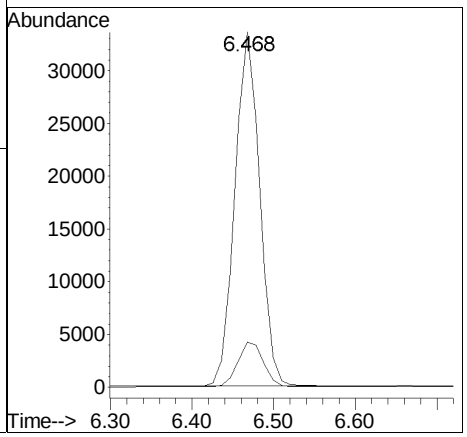


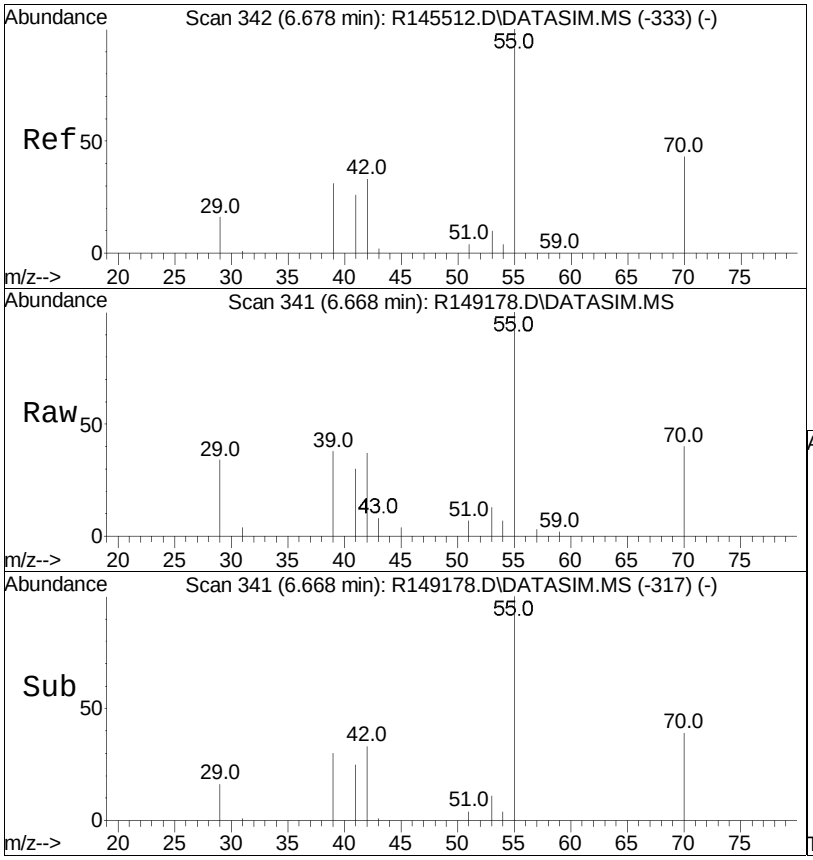


#7
Pentane
Concen: 3.46 ppbV
RT: 6.468 min Scan# 322
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 43 Resp: 70706

Ion	Ratio	Lower	Upper
43	100		
57	12.8	0.0	32.2

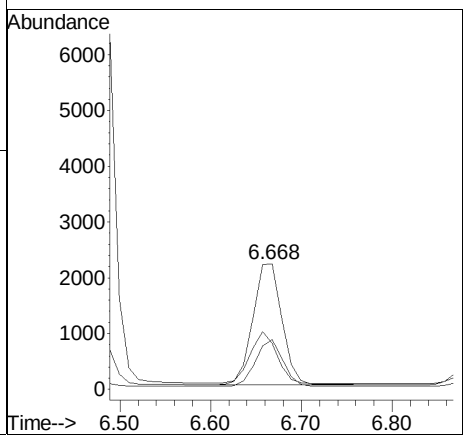


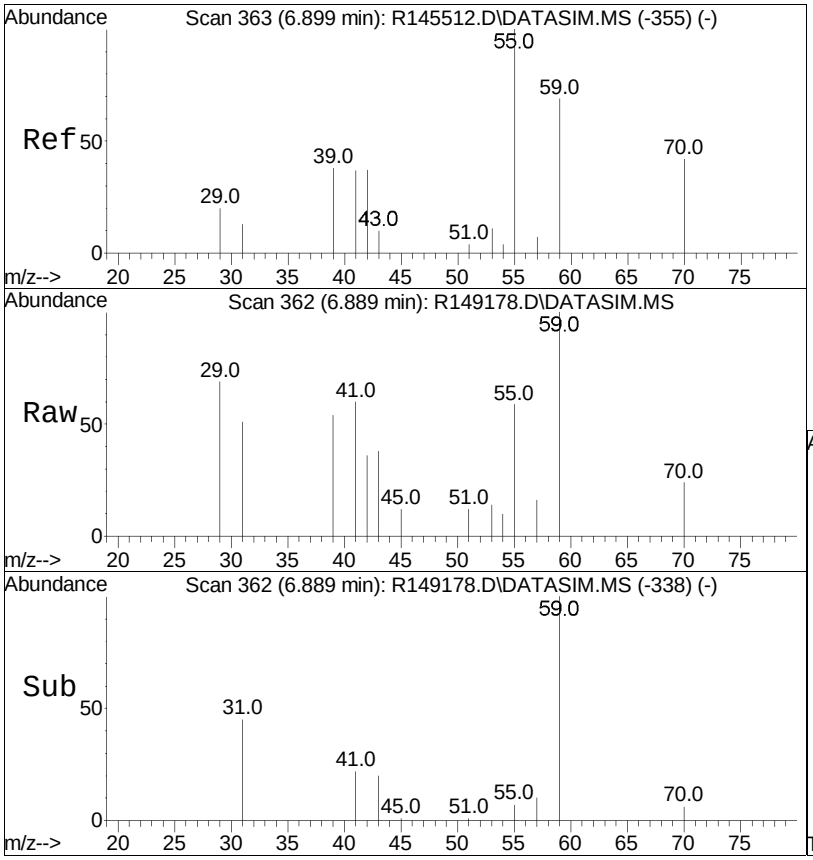


#9
2-Pentene (trans)
Concen: 0.31 ppbV
RT: 6.668 min Scan# 341
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 55 Resp: 4820

Ion	Ratio	Lower	Upper
55	100		
70	39.7	17.7	57.7
42	36.6	14.5	54.5

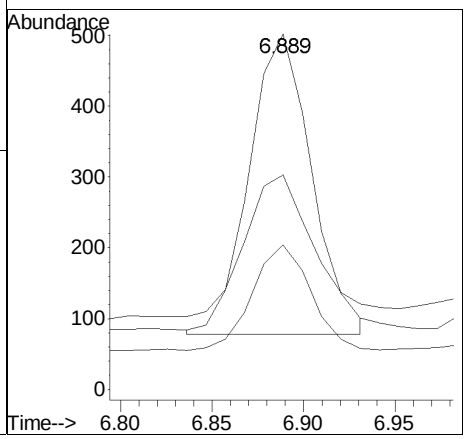


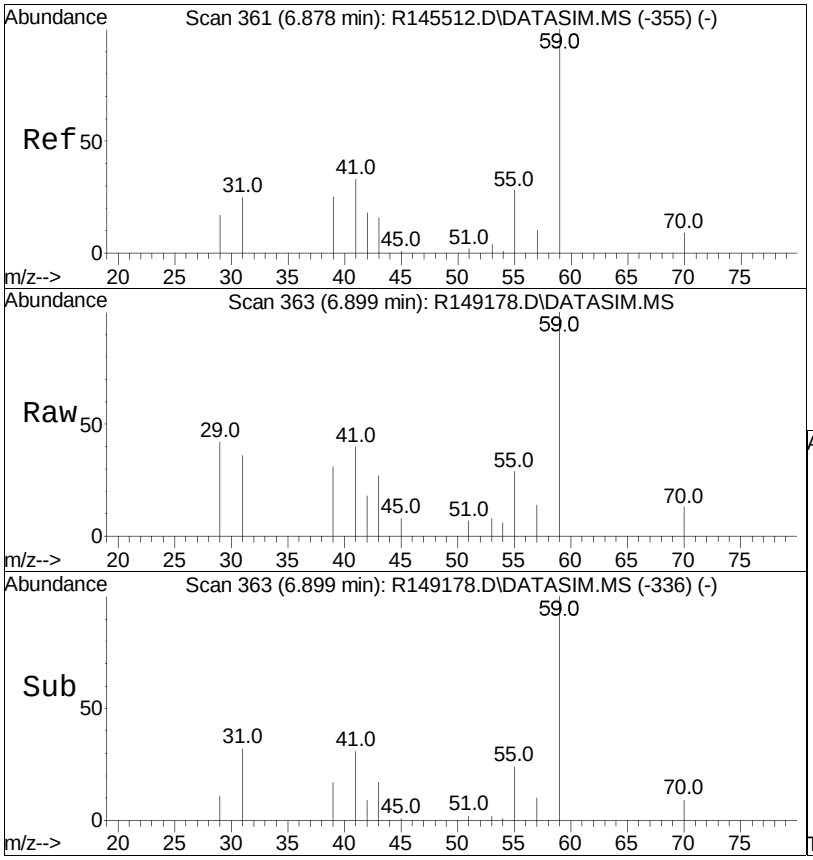


#10
2-Pentene (cis)
Concen: 0.07 ppbV m
RT: 6.889 min Scan# 362
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 55 Resp: 1007

Ion	Ratio	Lower	Upper
55	100		
70	40.6	16.4	56.4
42	60.4	19.4	59.4#

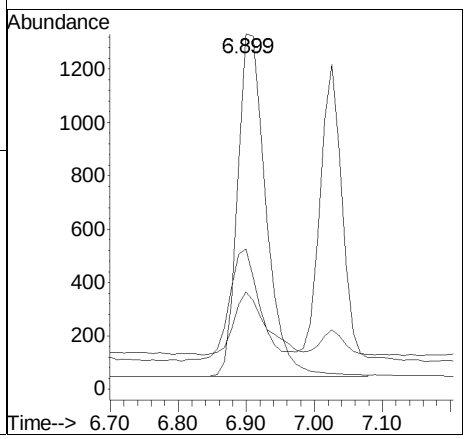


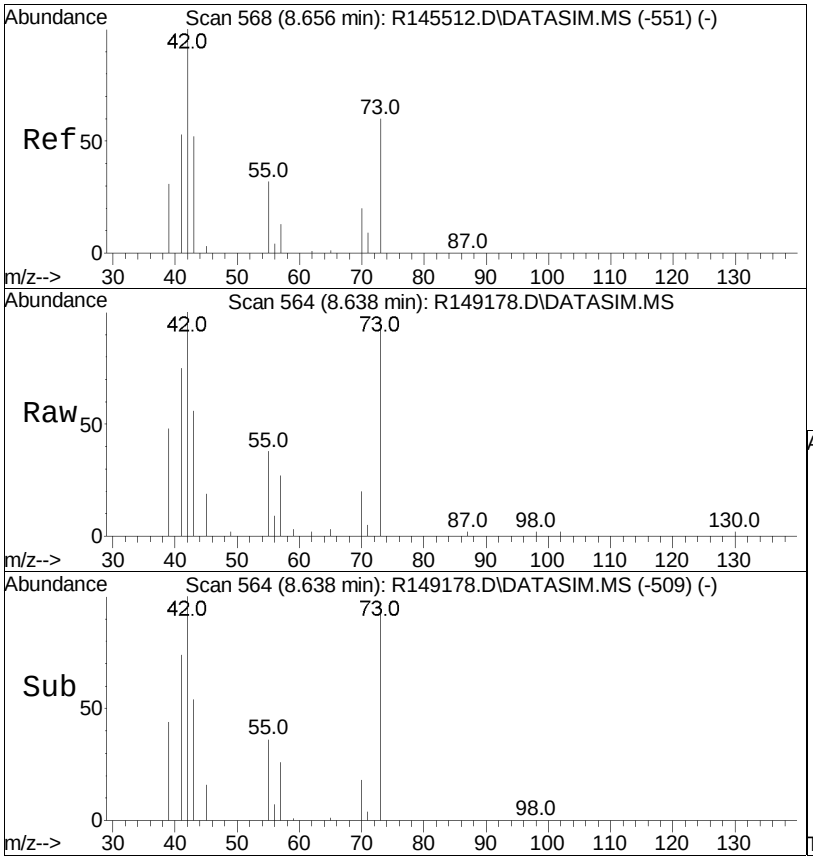


#11
Tertiary butanol
Concen: 0.16 ppbV
RT: 6.899 min Scan# 363
Delta R.T. 0.032 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 59 Resp: 3754

Ion	Ratio	Lower	Upper
59	100		
41	39.5	20.2	60.2
43	27.4	0.0	38.4

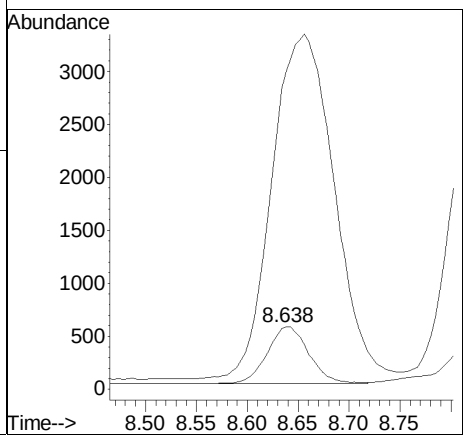


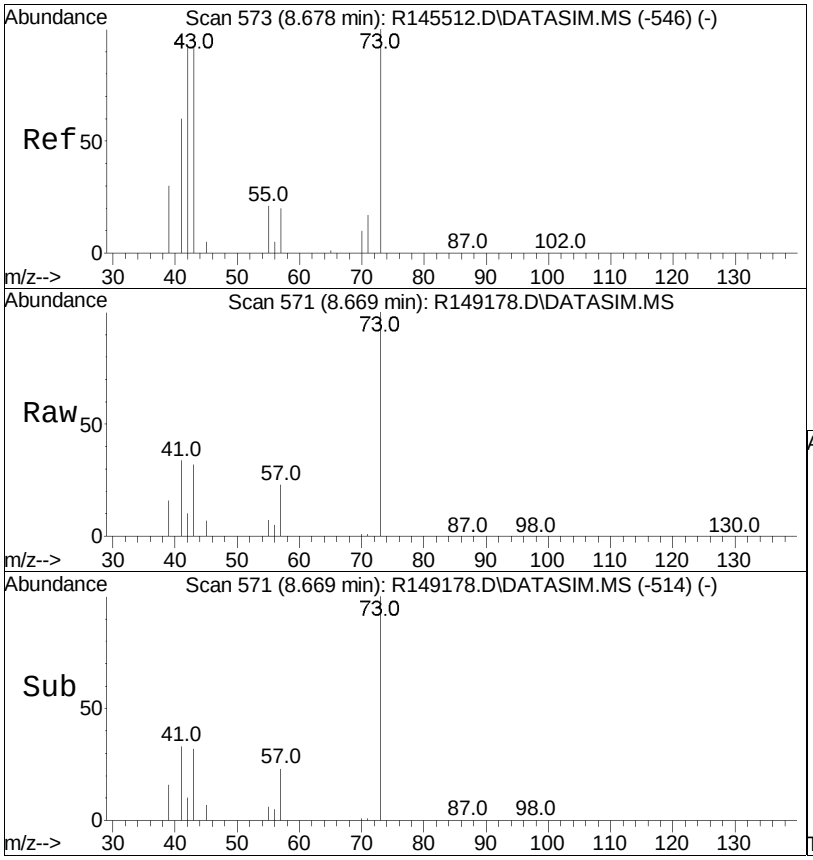


#12
Cyclopentane
Concen: 0.33 ppbV
RT: 8.638 min Scan# 564
Delta R.T. -0.005 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 70 Resp: 1533

Ion	Ratio	Lower	Upper
70	100		
42	509.5	617.9	657.9#

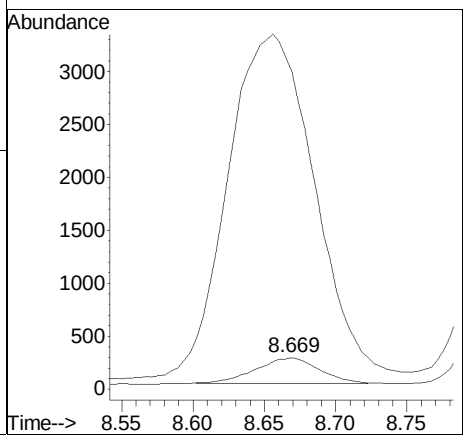


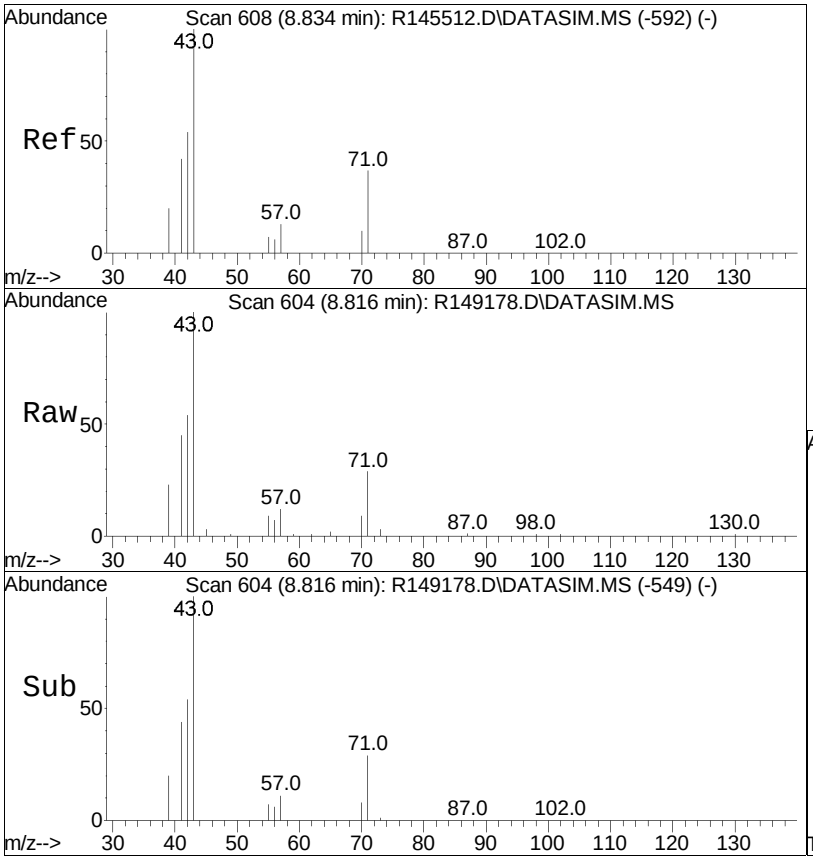


#13
2,3-Dimethylbutane
Concen: 0.18 ppbV m
RT: 8.669 min Scan# 571
Delta R.T. 0.004 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 71 Resp: 780

Ion	Ratio	Lower	Upper
71	100		
42	1005.7	652.6	692.6#

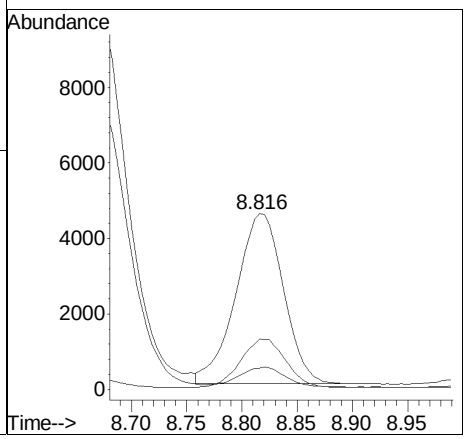


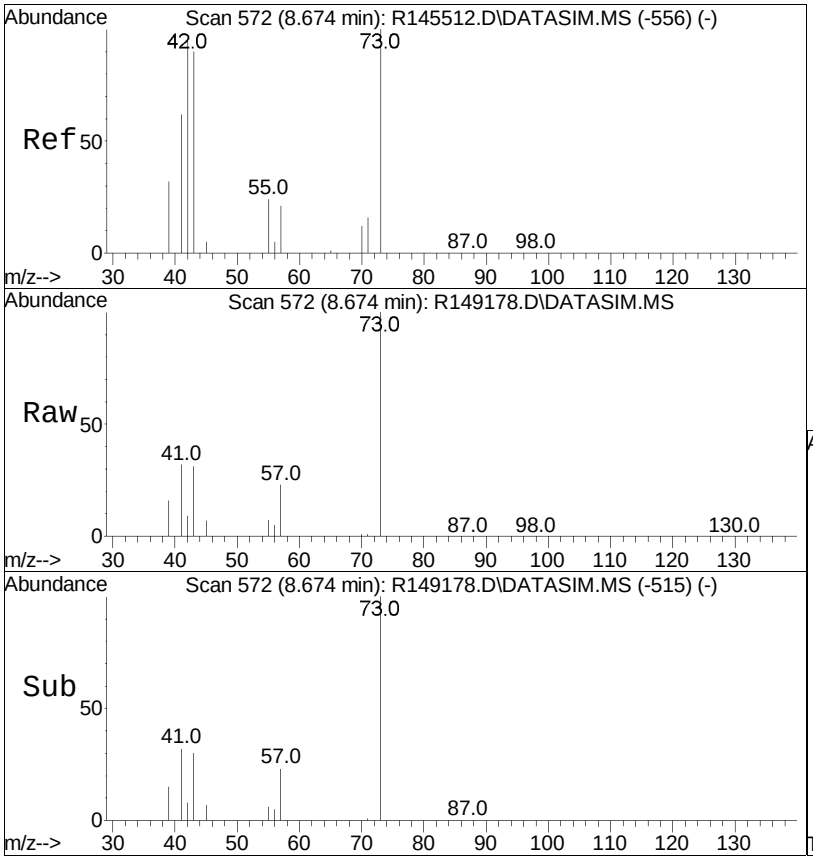


#14
2-Methylpentane
Concen: 0.58 ppbV
RT: 8.816 min Scan# 604
Delta R.T. -0.005 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 43 Resp: 13547

Ion	Ratio	Lower	Upper
43	100		
71	28.6	8.8	48.8
57	12.1	0.0	31.6

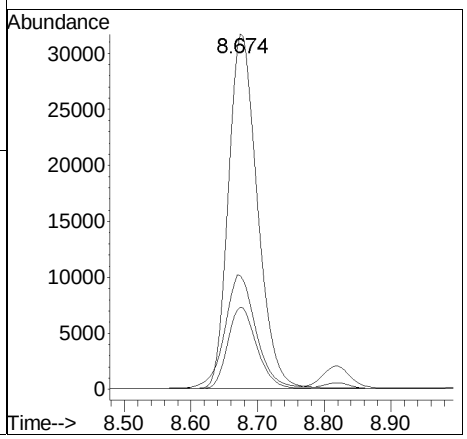


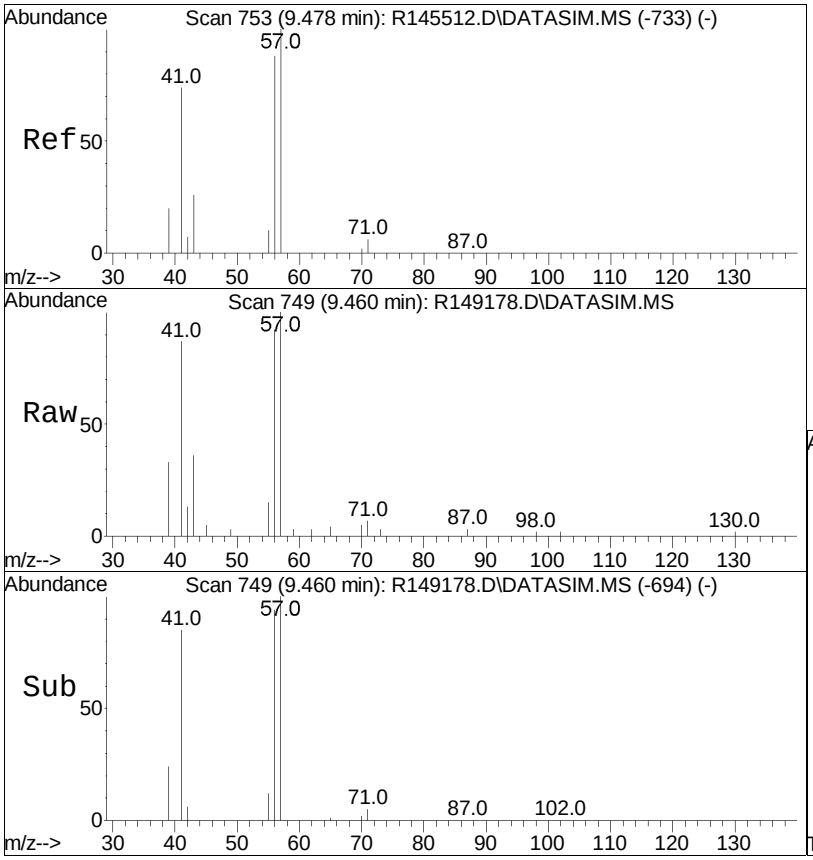


#15
MTBE
Concen: 4.03 ppbV
RT: 8.674 min Scan# 572
Delta R.T. 0.004 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 73 Resp: 95309

Ion	Ratio	Lower	Upper
73	100		
41	32.0	54.6	94.6#
57	23.1	3.7	43.7

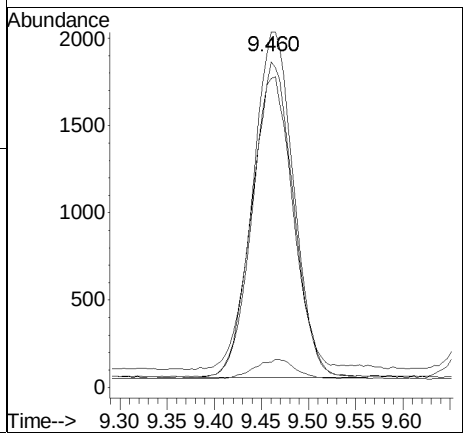


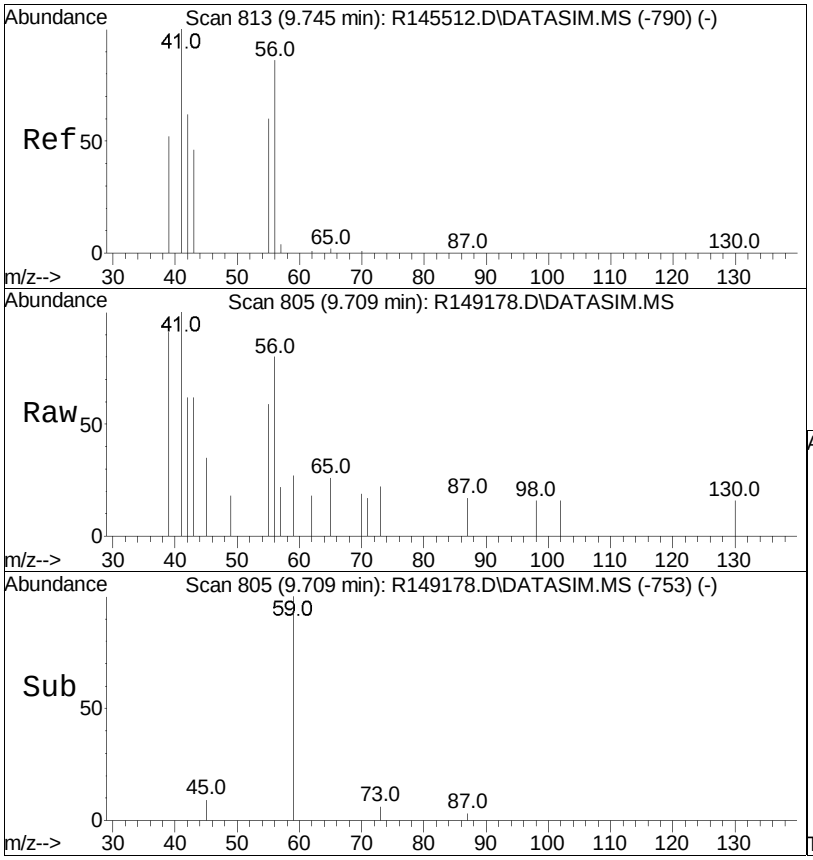


#16
3-Methylpentane
Concen: 0.39 ppbV
RT: 9.460 min Scan# 749
Delta R.T. -0.005 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 57 Resp: 5992

Ion	Ratio	Lower	Upper
57	100		
56	91.6	69.5	109.5
71	7.1	0.0	25.5
41	86.9	63.4	103.4

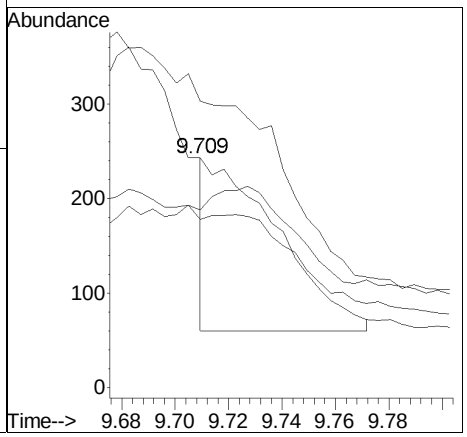


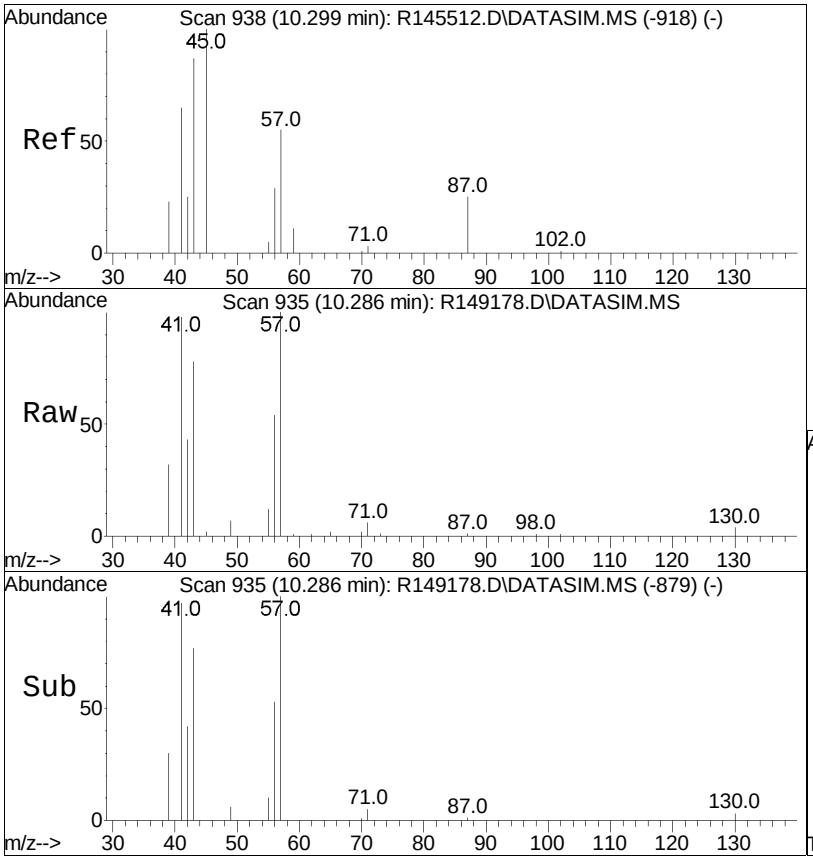


#17
1-Hexene
Concen: 0.04 ppbV m
RT: 9.709 min Scan# 805
Delta R.T. -0.018 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 56 Resp: 334

Ion	Ratio	Lower	Upper
56	100		
41	124.7	111.5	151.5
55	73.3	51.2	91.2
42	77.4	62.3	102.3

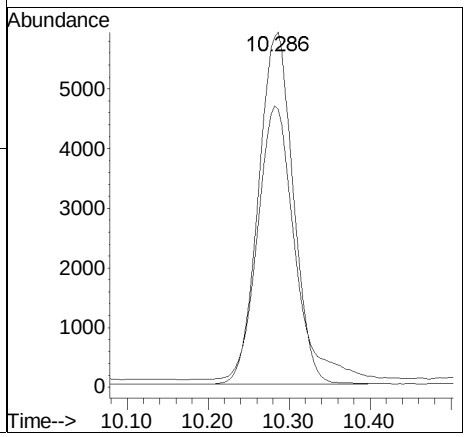


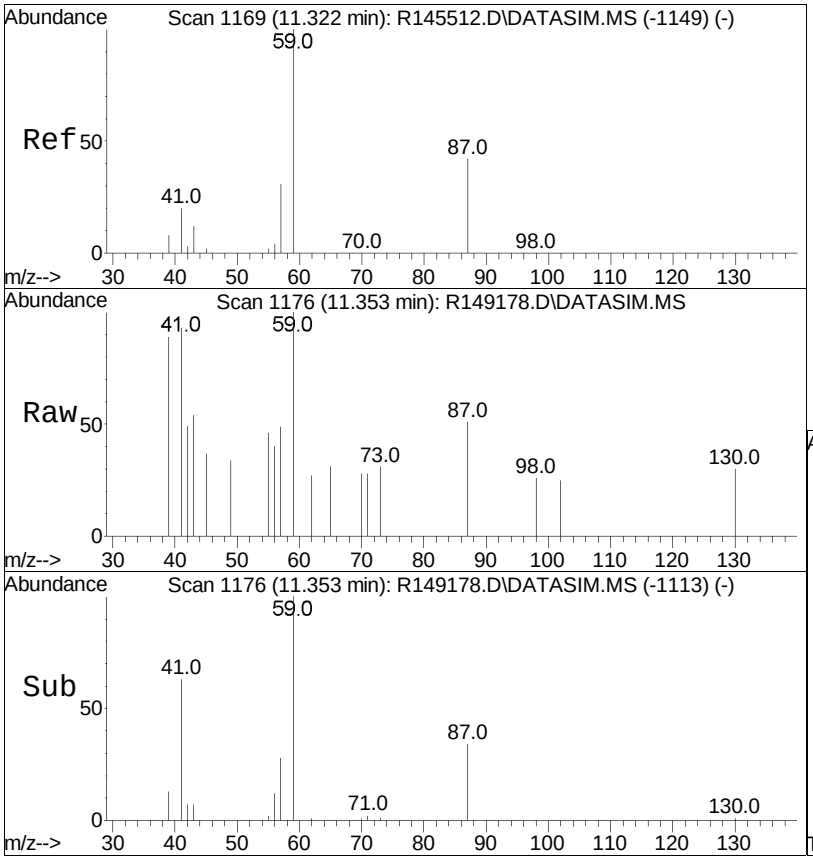


#18
Hexane
Concen: 1.34 ppbV
RT: 10.286 min Scan# 935
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 57 Resp: 17539

Ion	Ratio	Lower	Upper
57	100		
43	78.3	114.8	154.8#

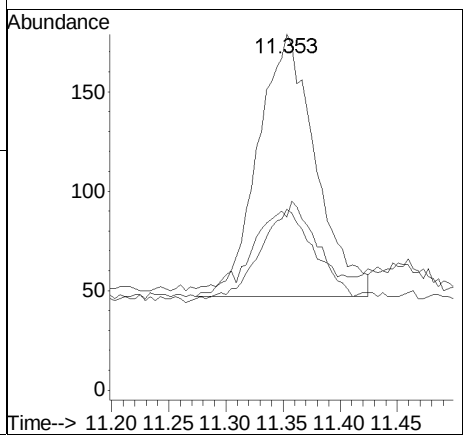


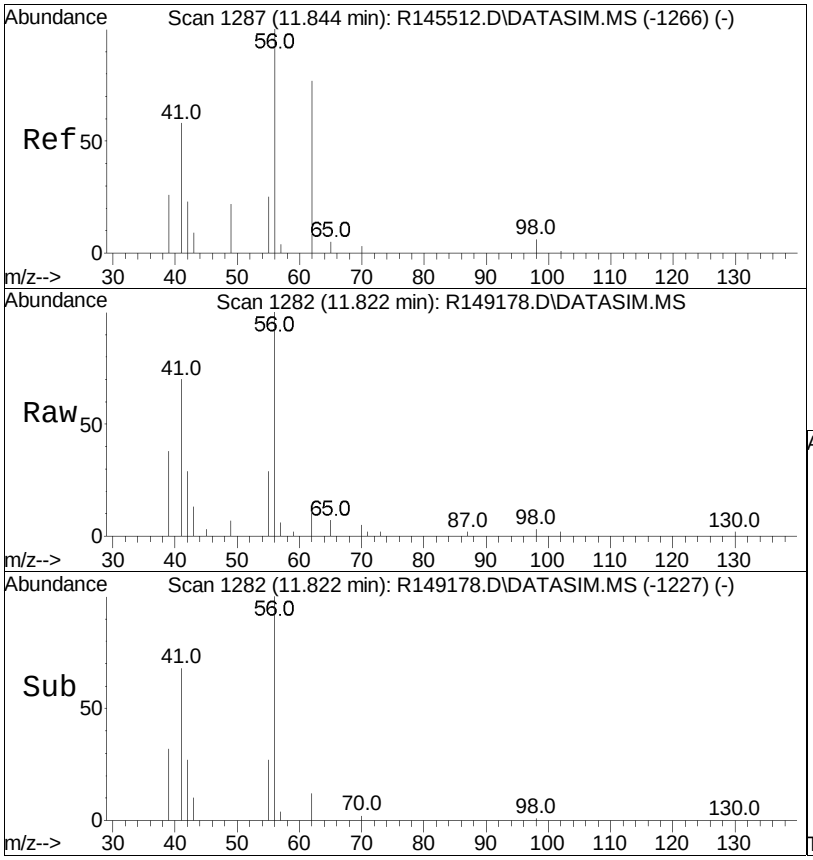


#20
Ethyl tertiary butyl ether
Concen: 0.02 ppbV
RT: 11.353 min Scan# 1176
Delta R.T. 0.031 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 59 Resp: 464

Ion	Ratio	Lower	Upper
59	100		
87	50.8	13.6	53.6
57	48.6	11.7	51.7

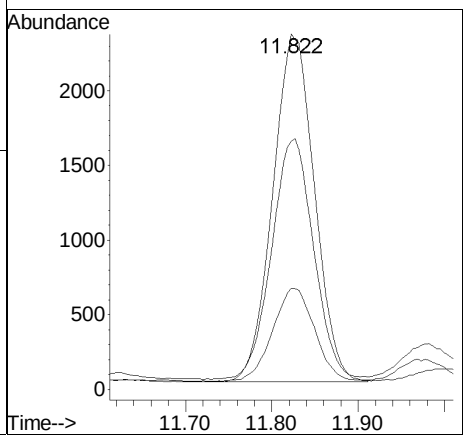


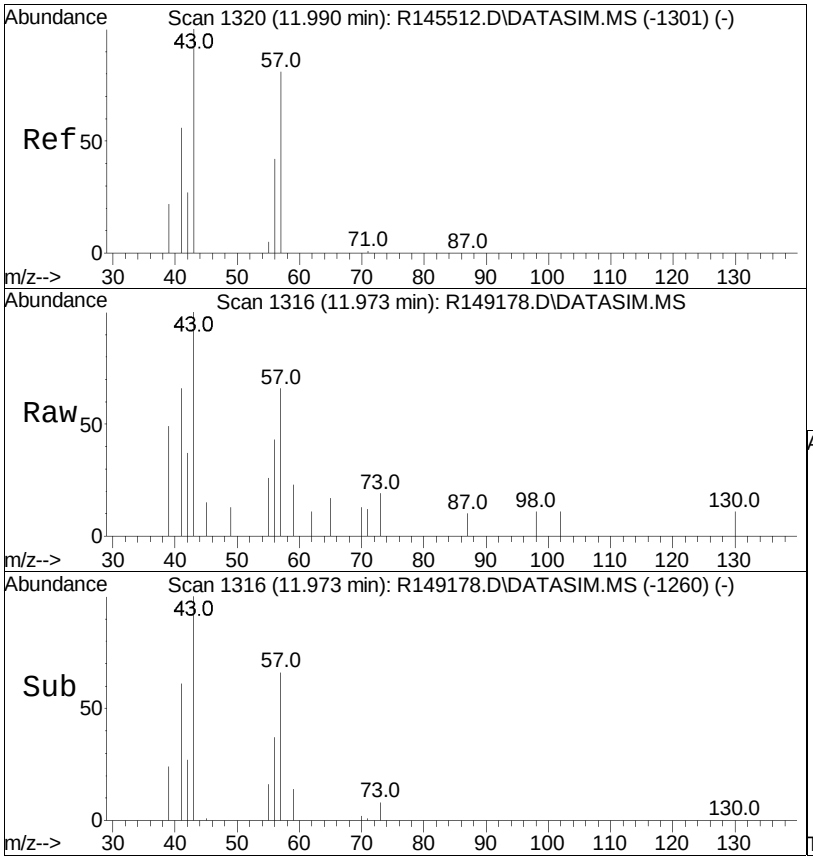


#23
Methylcyclopentane
Concen: 0.48 ppbV
RT: 11.822 min Scan# 1282
Delta R.T. -0.004 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 56 Resp: 7826

Ion	Ratio	Lower	Upper
56	100		
55	28.5	6.8	46.8
41	69.8	47.8	87.8

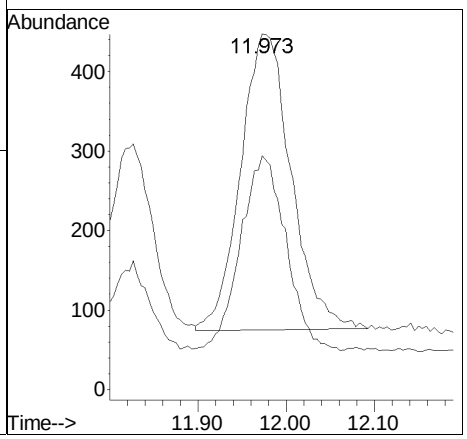


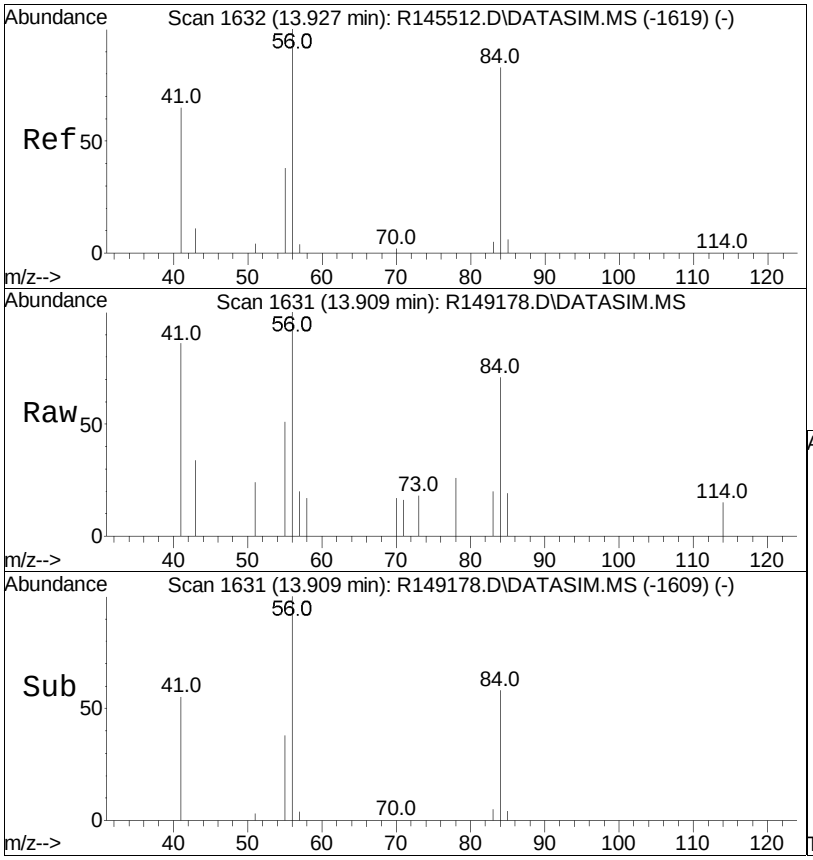


#24
2,4-Dimethylpentane
Concen: 0.07 ppbV
RT: 11.973 min Scan# 1316
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 43 Resp: 1484

Ion	Ratio	Lower	Upper
43	100		
57	65.8	50.5	90.5

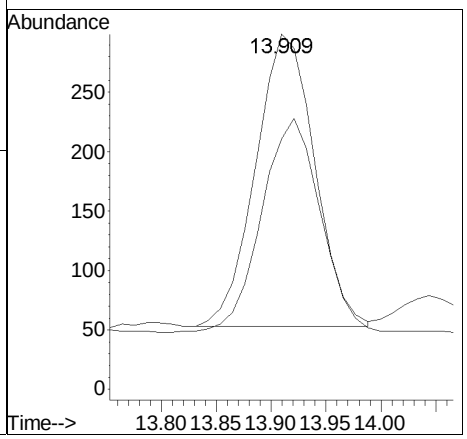


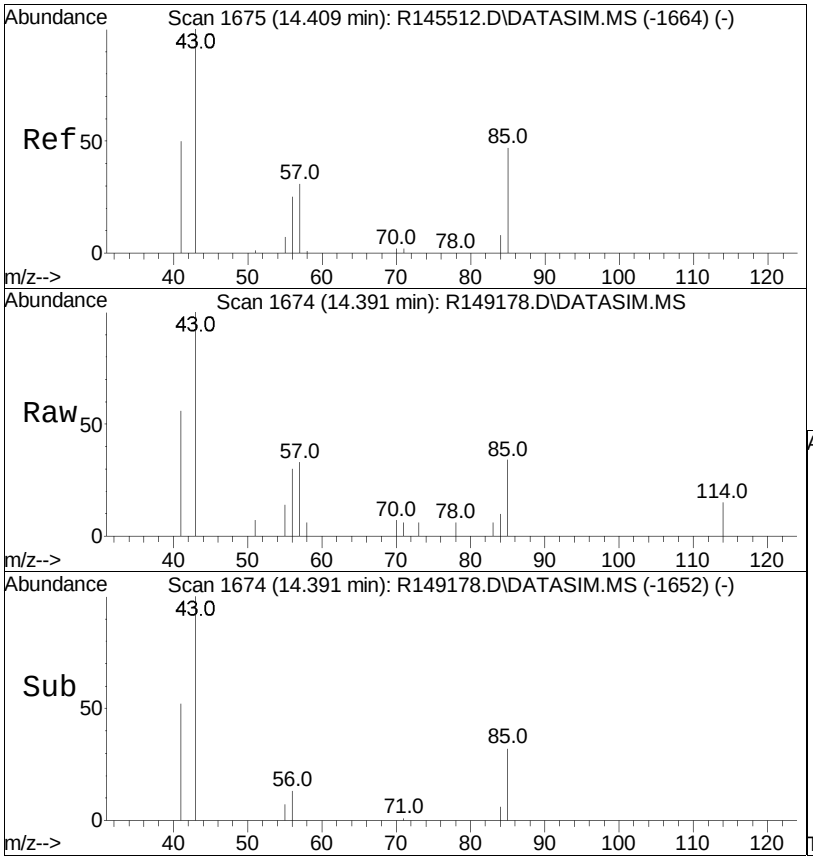


#26
Cyclohexane
Concen: 0.07 ppbV
RT: 13.909 min Scan# 1631
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 56 Resp: 922

Ion	Ratio	Lower	Upper
56	100		
84	70.6	47.9	87.9

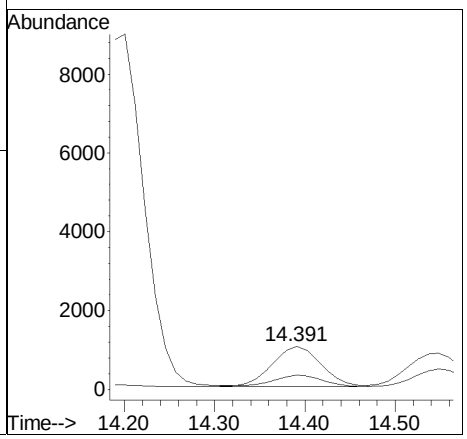


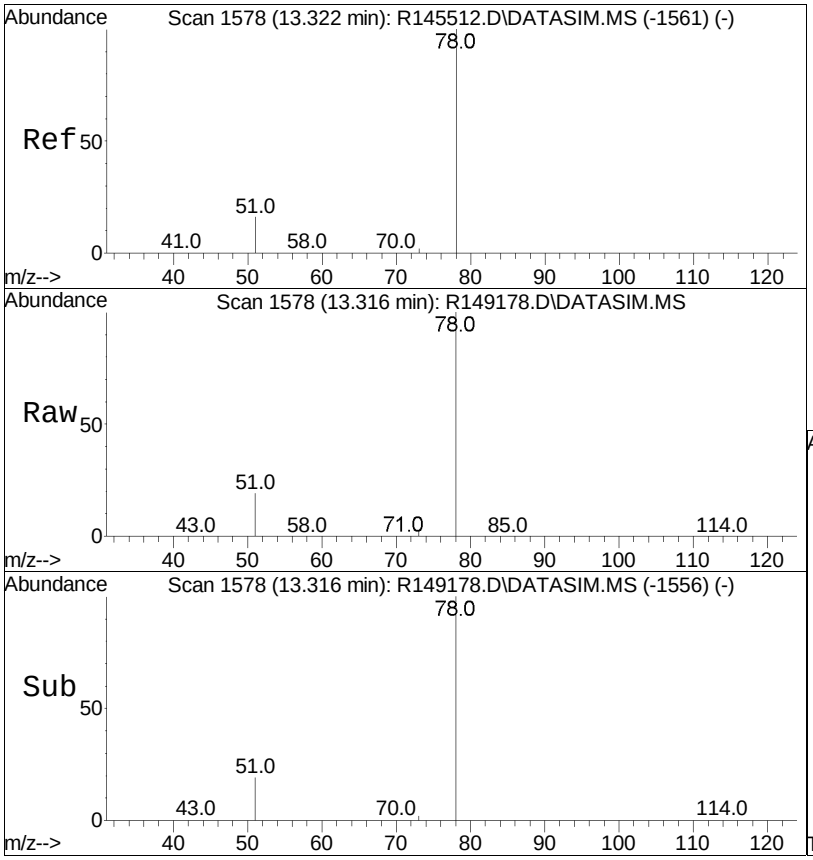


#28
2-Methylhexane
Concen: 0.16 ppbV
RT: 14.391 min Scan# 1674
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 43 Resp: 3856

Ion	Ratio	Lower	Upper
43	100		
57	33.4	7.8	47.8

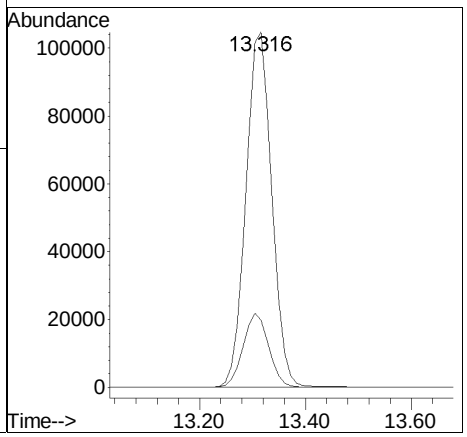


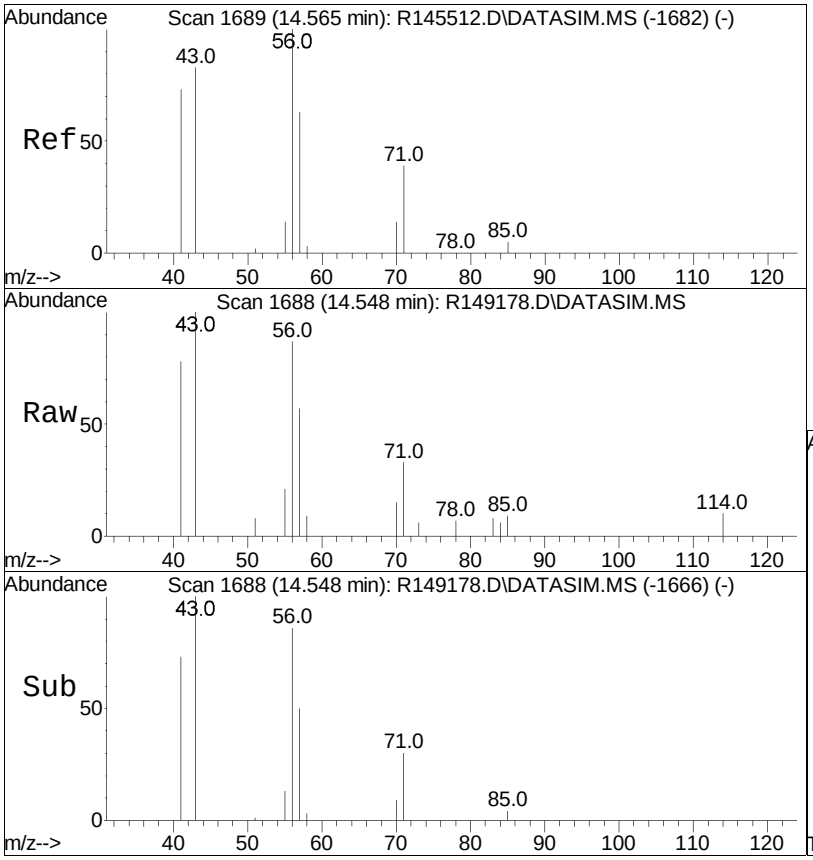


#29
Benzene
Concen: 13.32 ppbV
RT: 13.316 min Scan# 1578
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 78 Resp: 355608

Ion	Ratio	Lower	Upper
78	100		
51	18.9	0.0	39.4

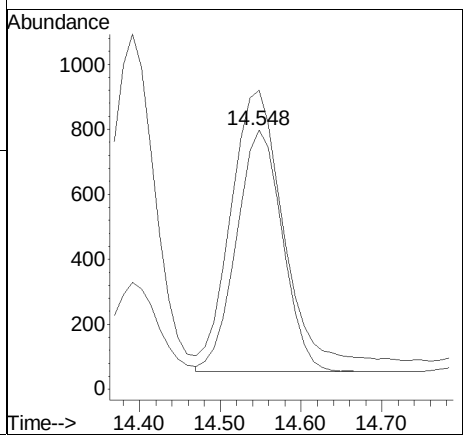


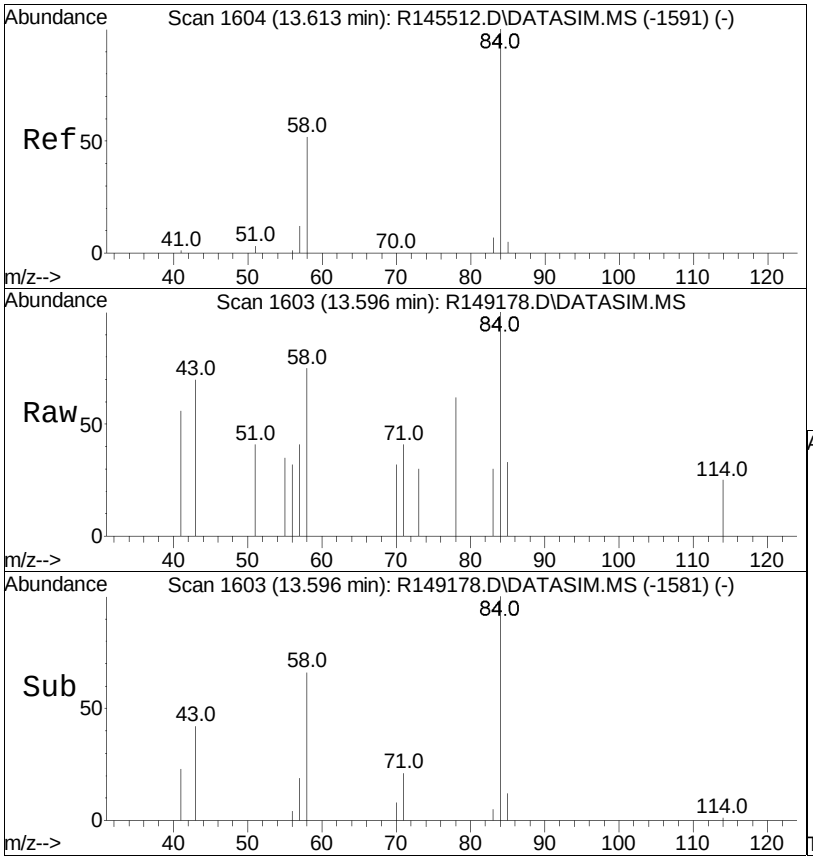


#30
2,3-Dimethylpentane
Concen: 0.18 ppbV
RT: 14.548 min Scan# 1688
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 56 Resp: 2944

Ion	Ratio	Lower	Upper
56	100		
43	115.3	72.3	112.3#

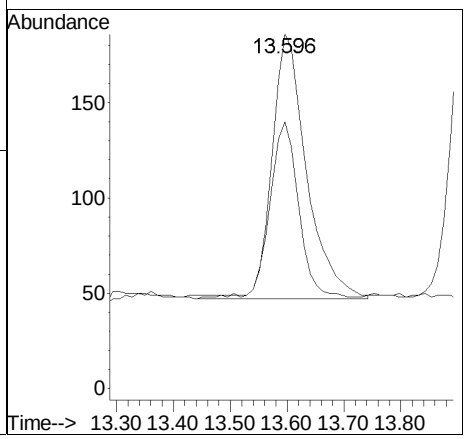


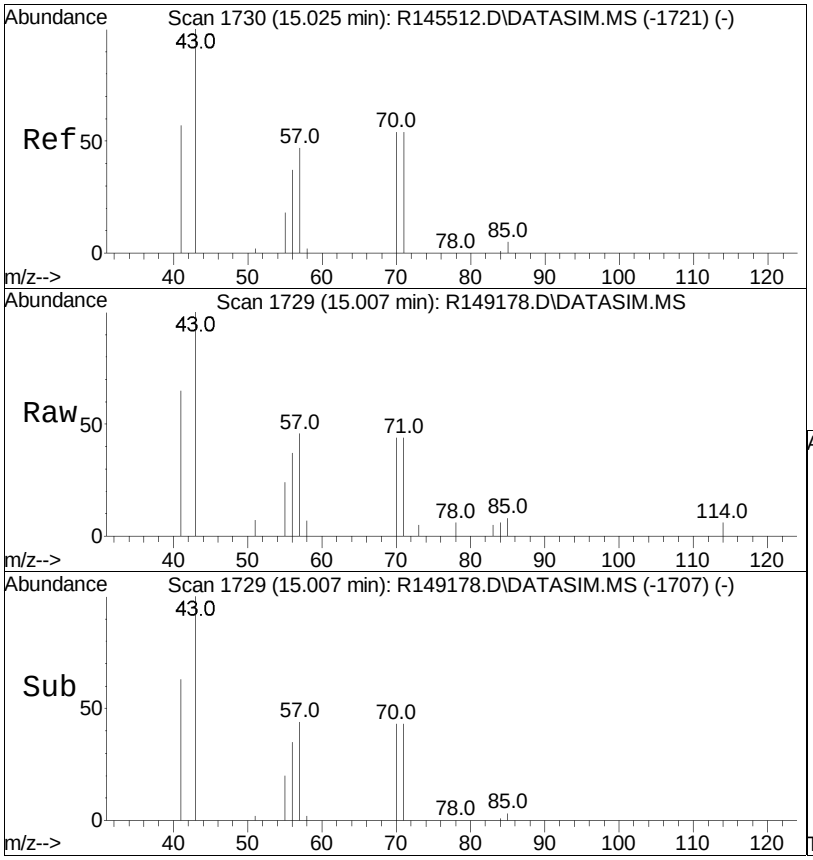


#31
Thiophene
Concen: 0.05 ppbV
RT: 13.596 min Scan# 1603
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 84 Resp: 591

Ion	Ratio	Lower	Upper
84	100		
58	75.3	46.4	86.4

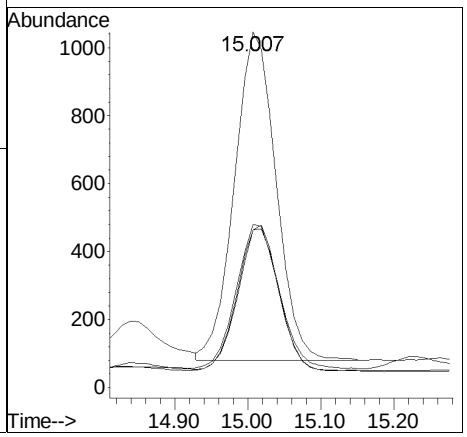


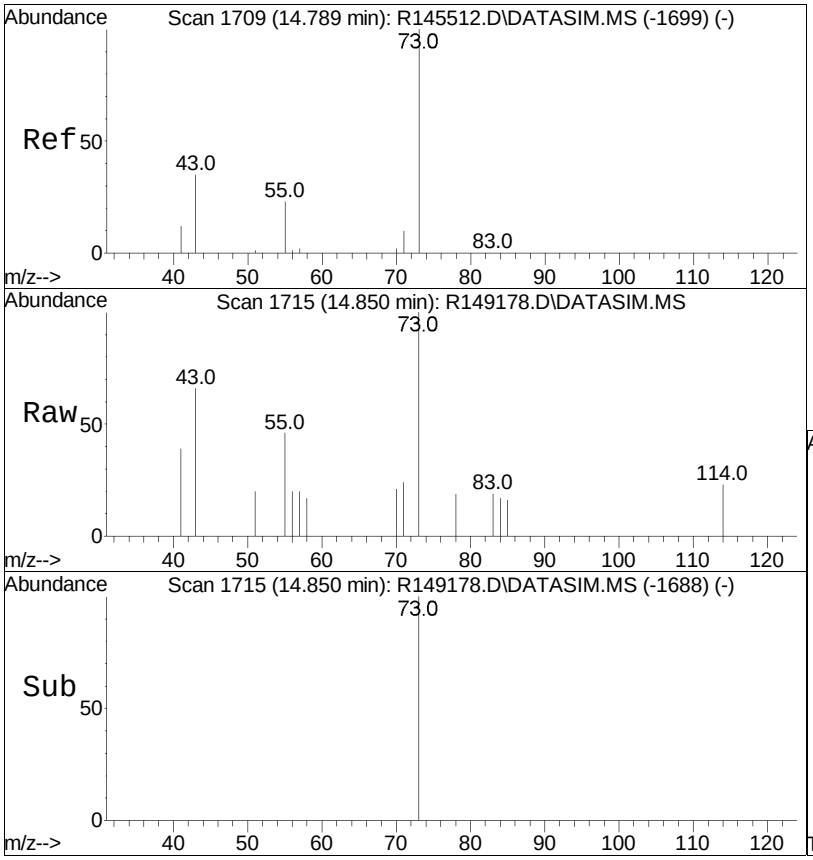


#32
3-Methylhexane
Concen: 0.21 ppbV
RT: 15.007 min Scan# 1729
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 43 Resp: 3804

Ion	Ratio	Lower	Upper
43	100		
57	45.9	23.4	63.4
70	44.4	22.5	62.5
71	44.4	22.4	62.4

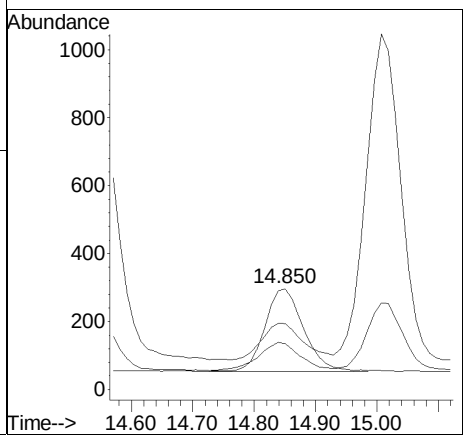


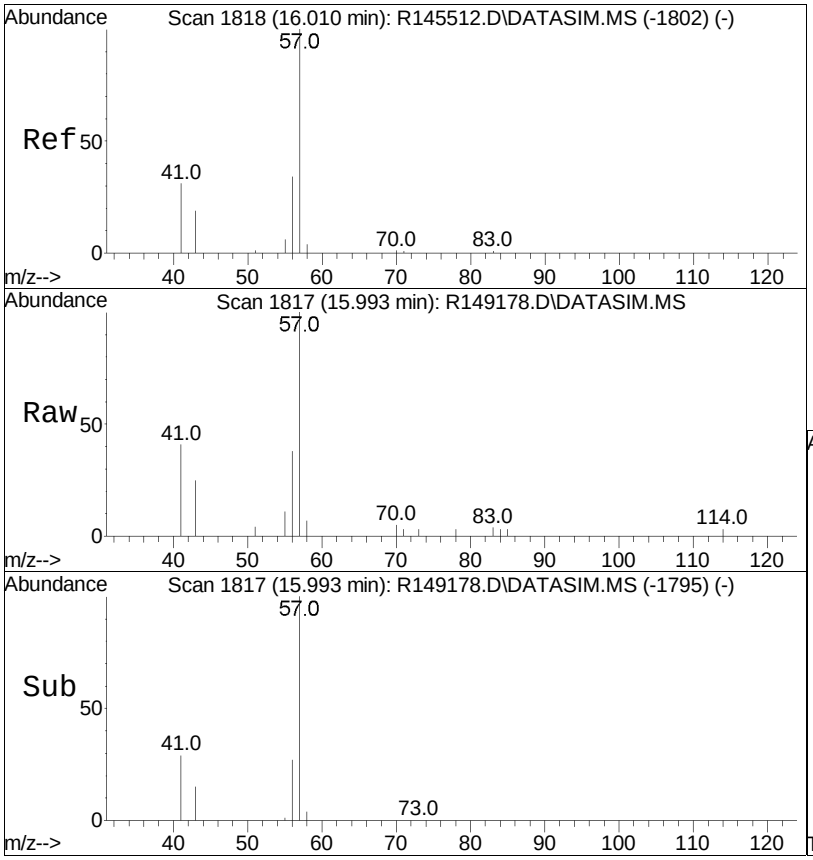


#33
TAME
Concen: 0.05 ppbV
RT: 14.850 min Scan# 1715
Delta R.T. 0.056 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 73 Resp: 1070

Ion	Ratio	Lower	Upper
73	100		
43	65.5	24.9	64.9#
55	45.6	9.6	49.6

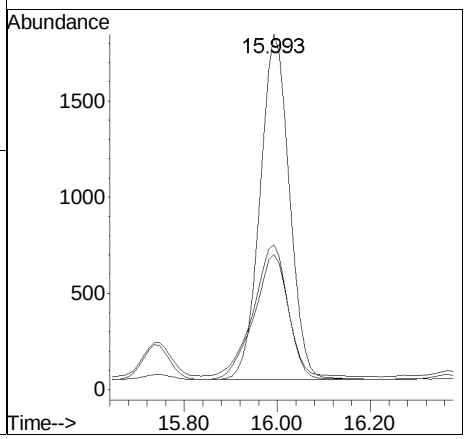


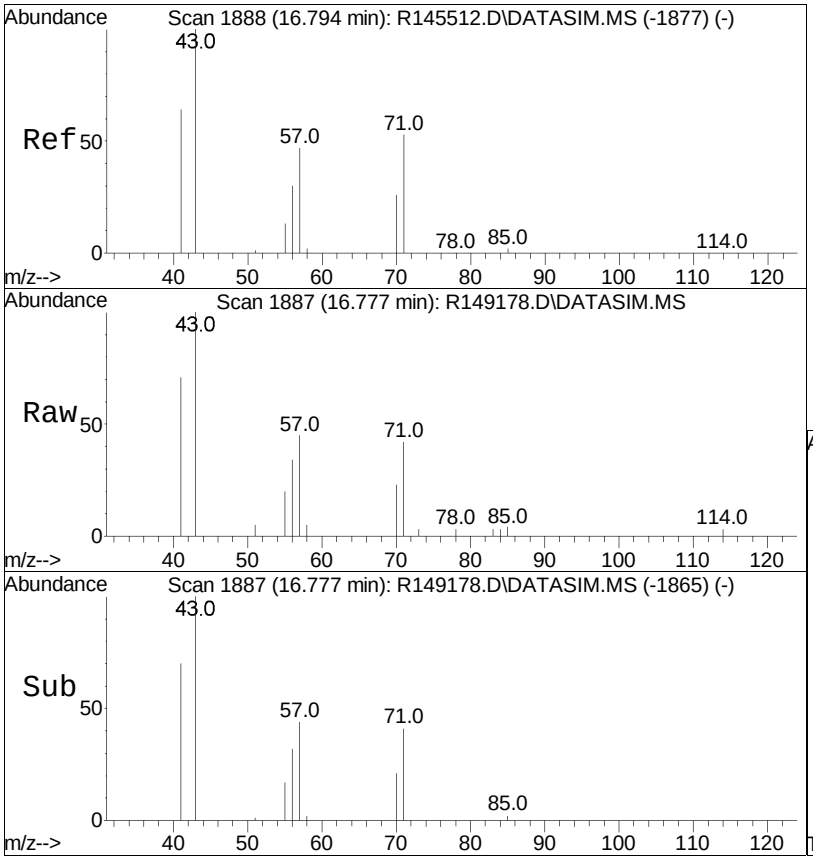


#35
Isooctane
Concen: 0.19 ppbV
RT: 15.993 min Scan# 1817
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 57 Resp: 7852

Ion	Ratio	Lower	Upper
57	100		
56	37.9	14.9	54.9
41	40.7	16.0	56.0

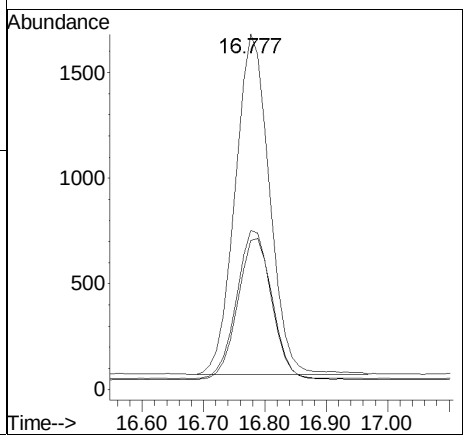


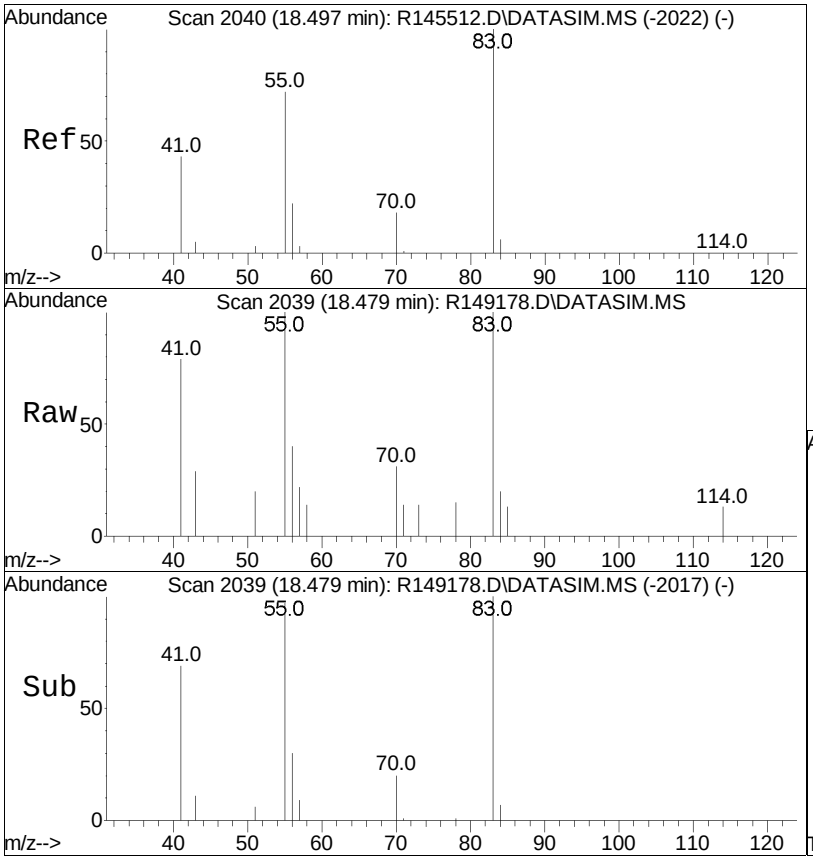


#36
Heptane
Concen: 0.35 ppbV
RT: 16.777 min Scan# 1887
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 43 Resp: 6267

Ion	Ratio	Lower	Upper
43	100		
57	44.8	23.3	63.3
71	41.9	21.1	61.1

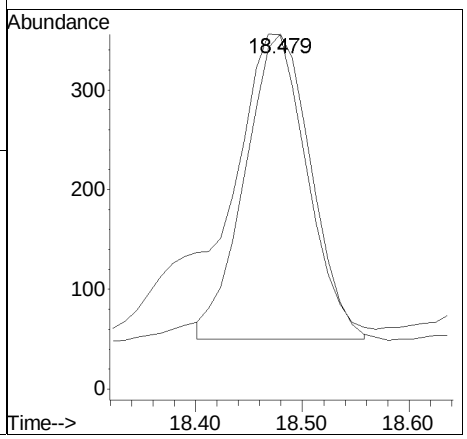


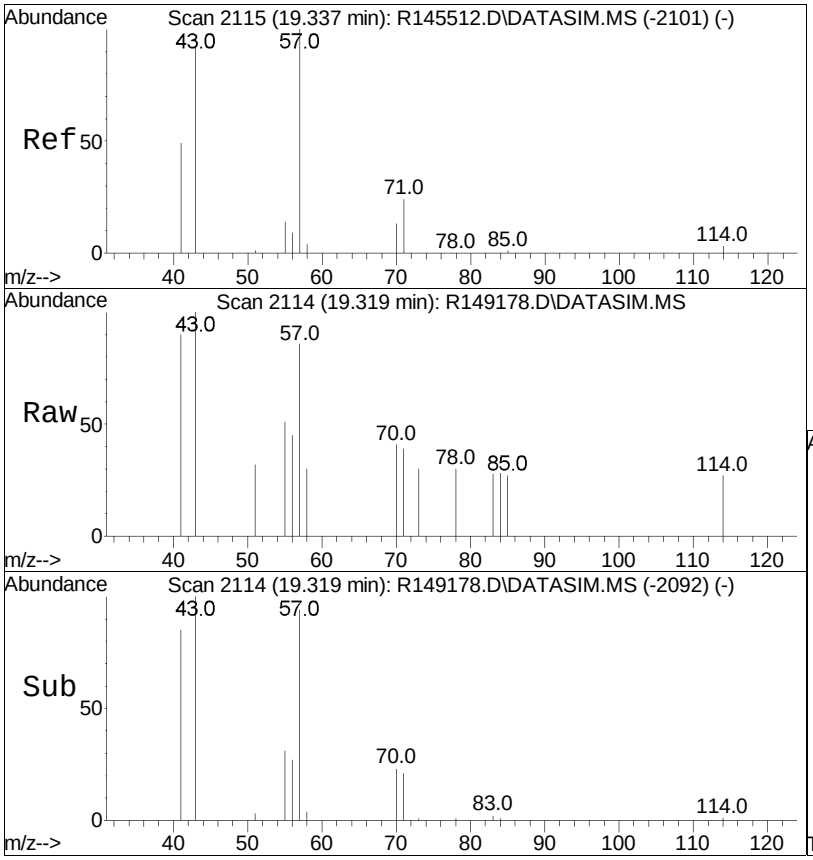


#37
Methylcyclohexane
Concen: 0.10 ppbV m
RT: 18.479 min Scan# 2039
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 83 Resp: 1312

Ion	Ratio	Lower	Upper
83	100		
55	99.7	70.7	110.7

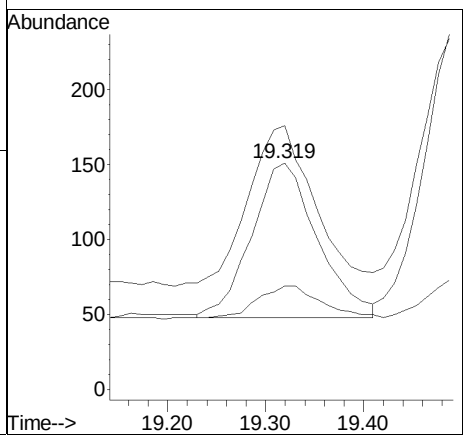


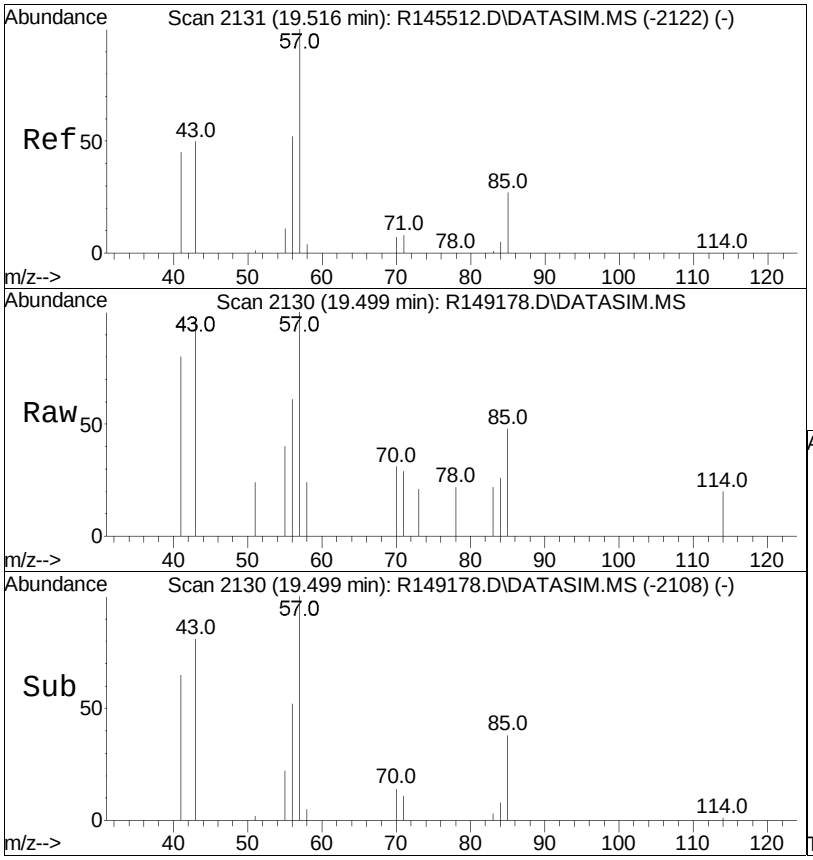


#38
2,5-Dimethylhexane
Concen: 0.02 ppbV m
RT: 19.319 min Scan# 2114
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 57 Resp: 481

Ion	Ratio	Lower	Upper
57	100		
43	116.6	86.5	126.5
71	45.7	0.8	40.8#

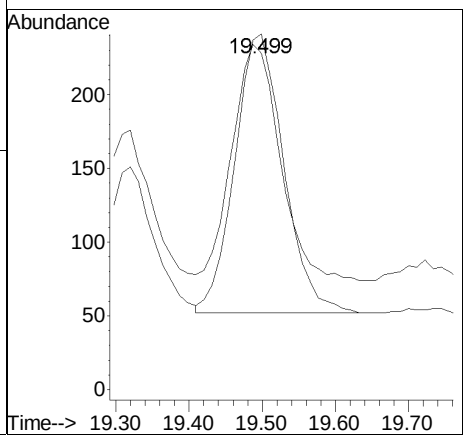


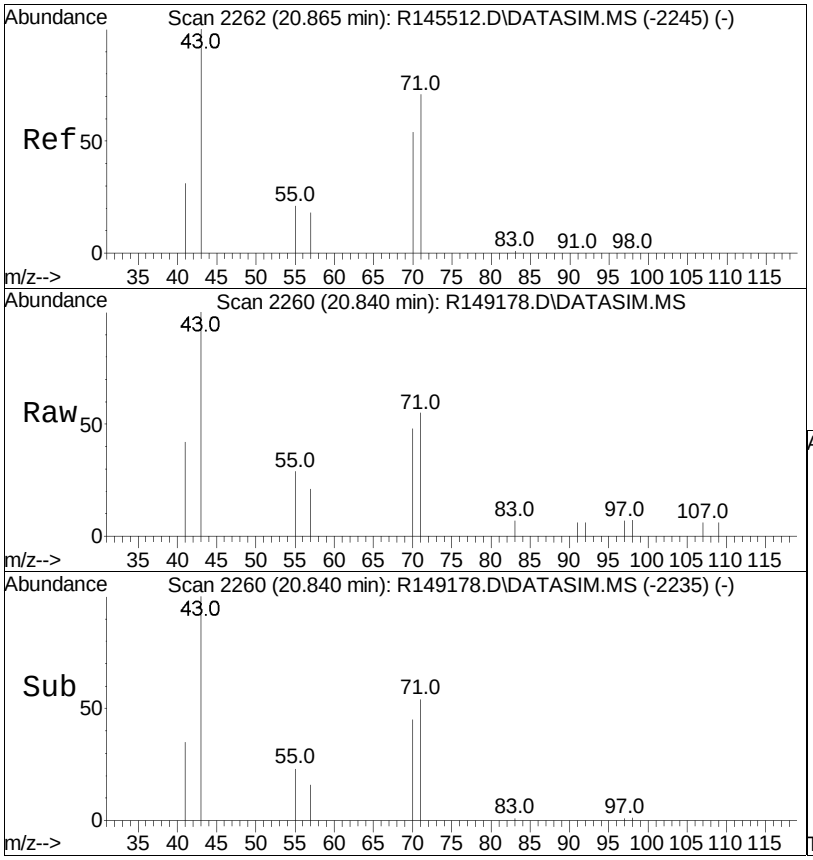


#39
2,4-Dimethyhexane / 2,2,3-TMP
Concen: 0.03 ppbV
RT: 19.499 min Scan# 2130
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 57 Resp: 881

Ion	Ratio	Lower	Upper
57	100		
43	94.6	36.1	76.1#

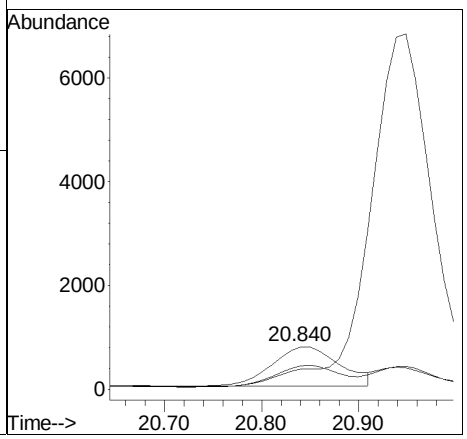


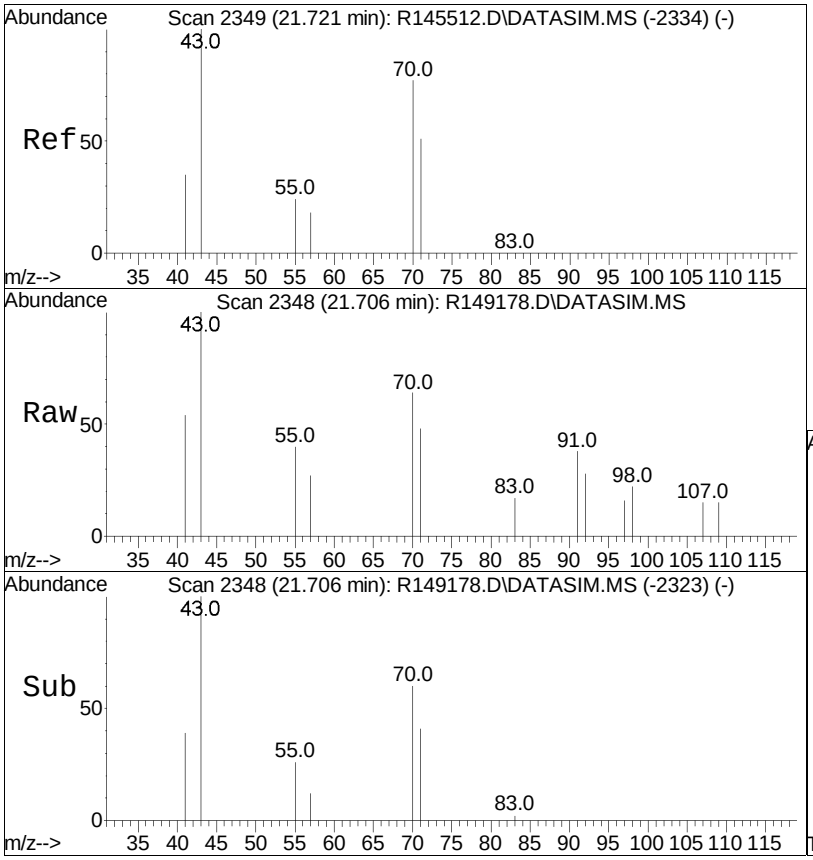


#40
2,3,4-Trimethylpentane
Concen: 0.13 ppbV
RT: 20.840 min Scan# 2260
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 43 Resp: 3655

Ion	Ratio	Lower	Upper
43	100		
71	55.5	34.6	74.6
70	47.8	23.3	63.3

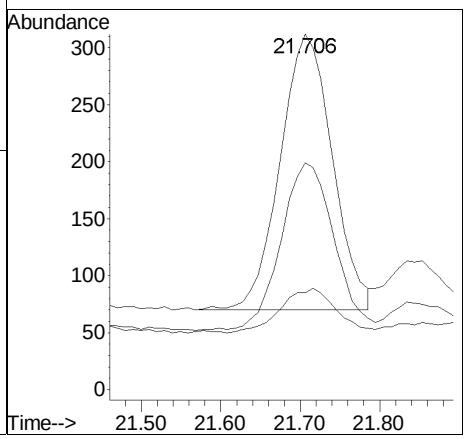


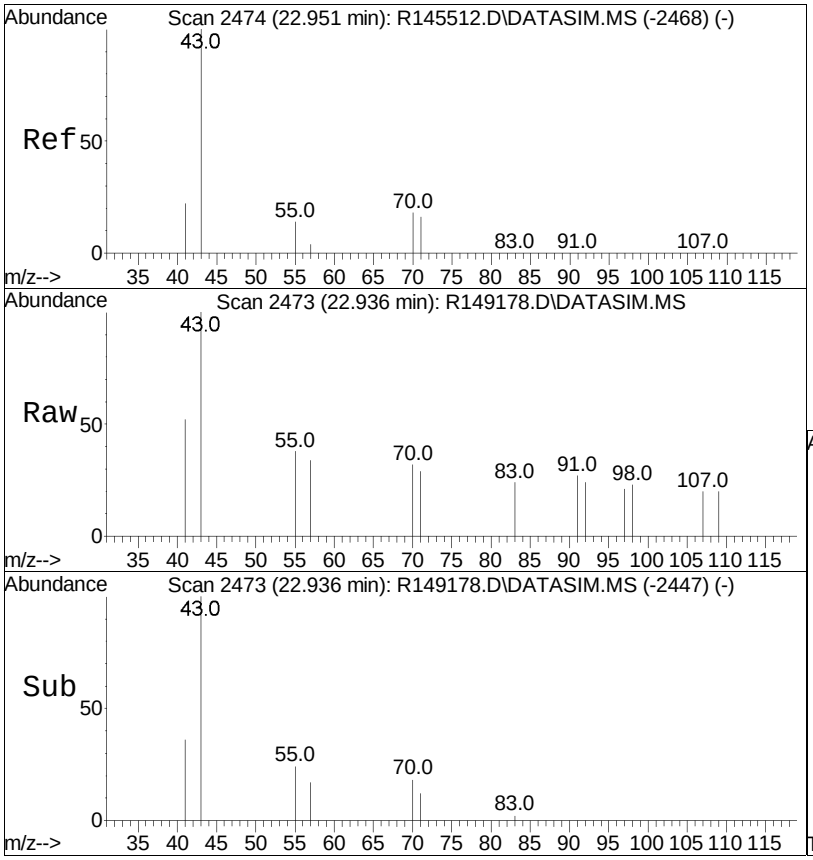


#42
2,3-Dimethylhexane
Concen: 0.04 ppbV
RT: 21.706 min Scan# 2348
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 43 Resp: 1106

Ion	Ratio	Lower	Upper
43	100		
70	63.8	41.8	81.8
57	27.2	0.0	36.6

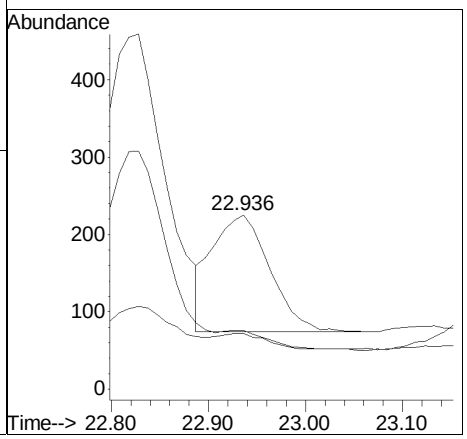


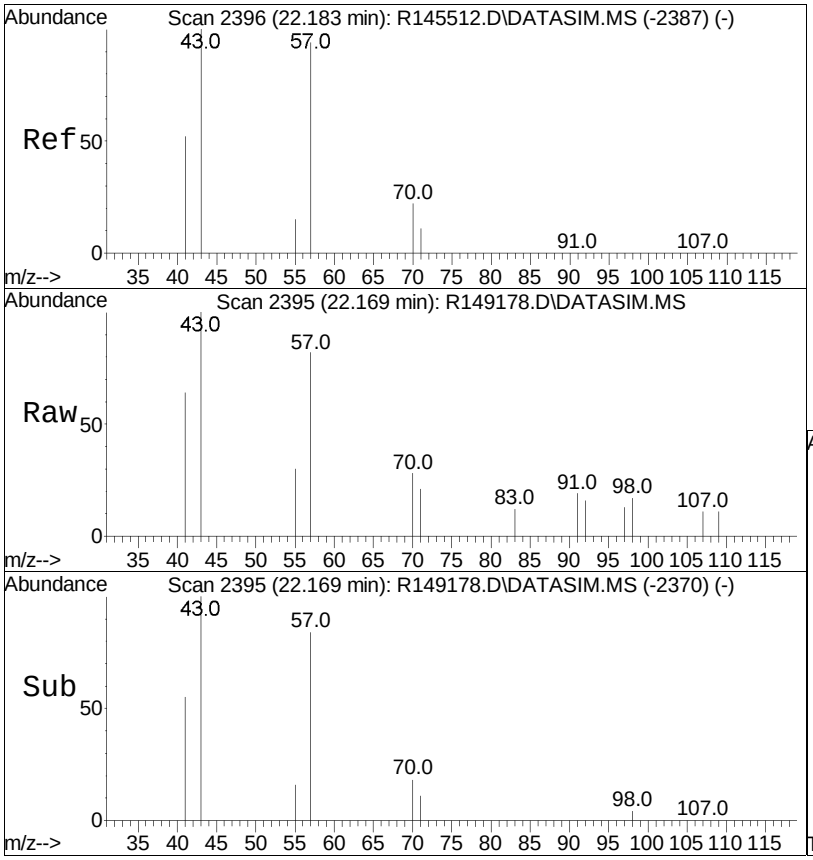


#43
3-Ethylhexane
Concen: 0.02 ppbV
RT: 22.936 min Scan# 2473
Delta R.T. 0.010 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 43 Resp: 628

Ion	Ratio	Lower	Upper
43	100		
70	32.0	0.0	32.6
57	33.8	0.0	34.2

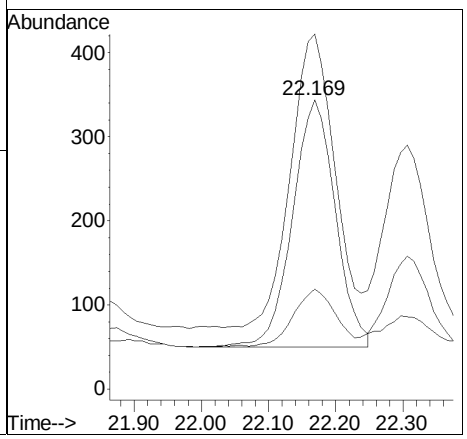


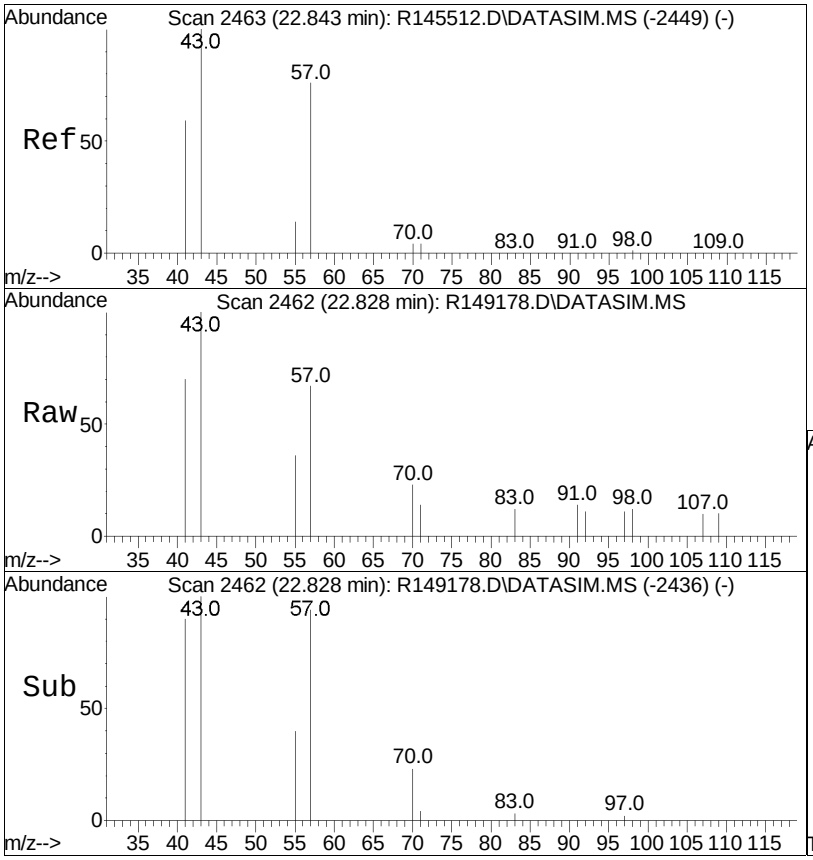


#44
2-Methylheptane
Concen: 0.07 ppbV
RT: 22.169 min Scan# 2395
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 57 Resp: 1302

Ion	Ratio	Lower	Upper
57	100		
43	122.7	98.3	138.3
70	34.6	2.5	42.5

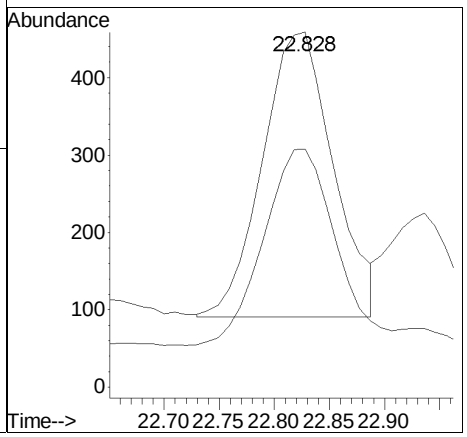


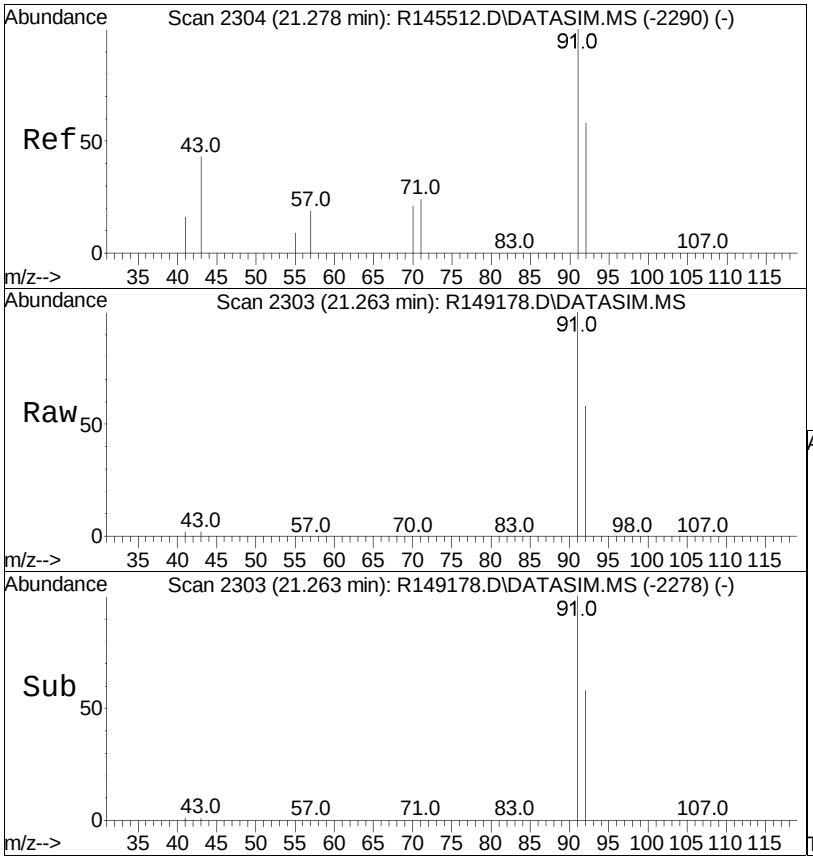


#45
3-Methylheptane
Concen: 0.08 ppbV m
RT: 22.828 min Scan# 2462
Delta R.T. 0.010 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 43 Resp: 1639

Ion	Ratio	Lower	Upper
43	100		
57	67.1	47.6	87.6

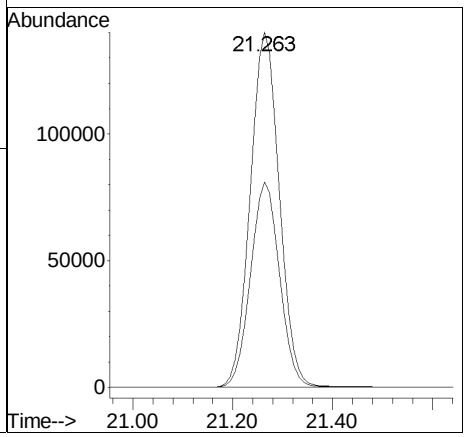


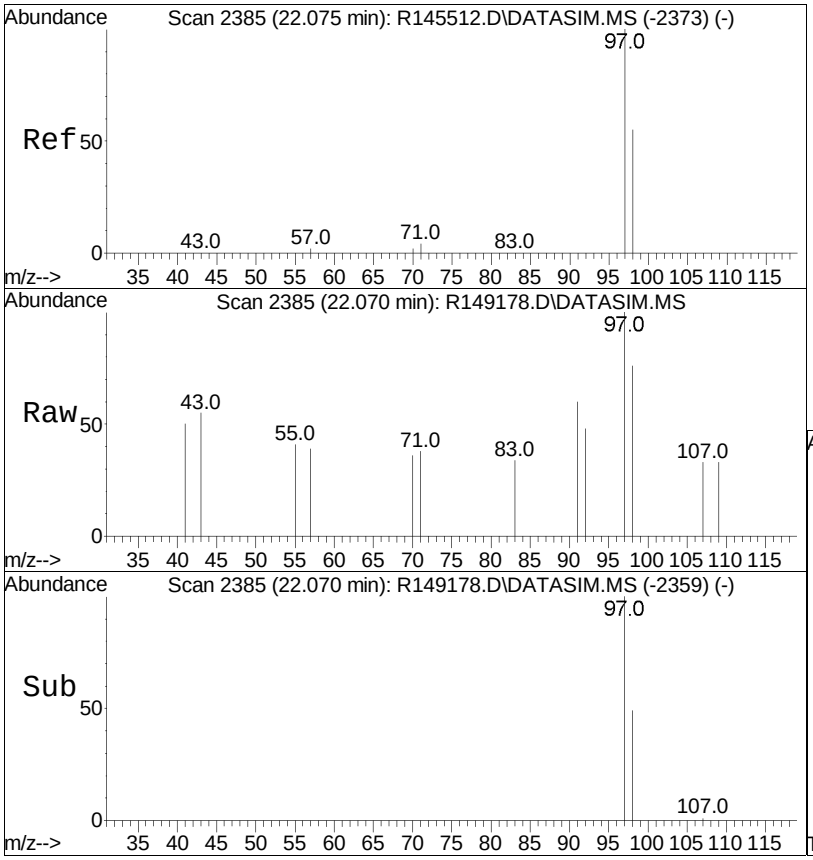


#47
Toluene
Concen: 18.23 ppbV
RT: 21.263 min Scan# 2303
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 91 Resp: 567583

Ion	Ratio	Lower	Upper
91	100		
92	57.9	37.6	77.6

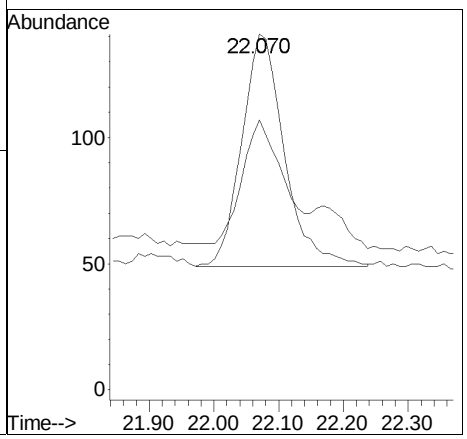


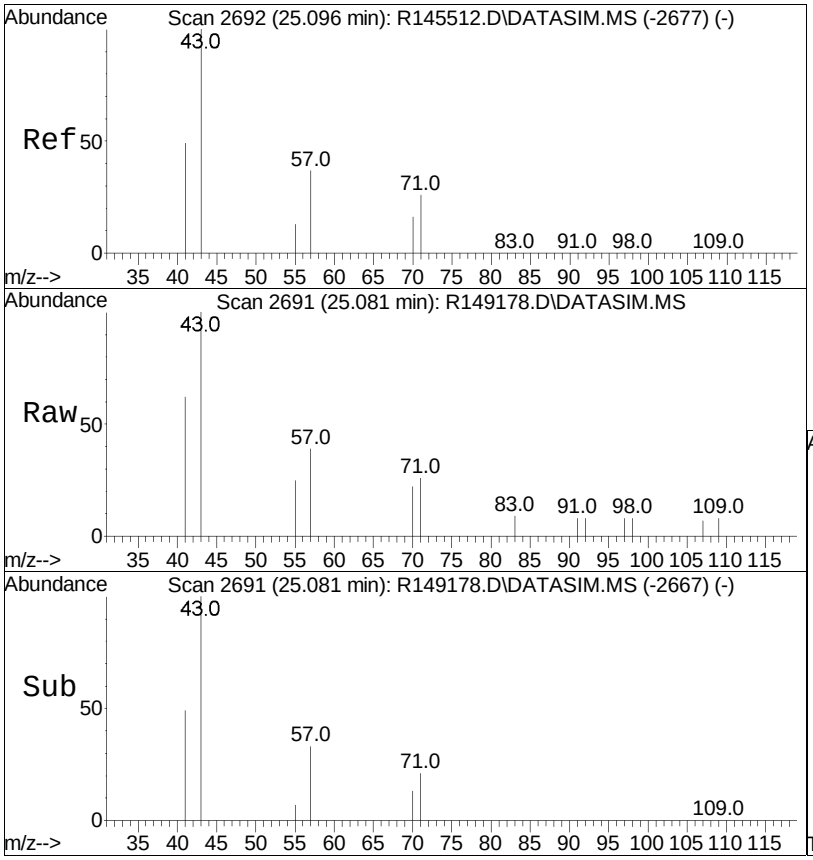


#49
3-Methylthiophene
Concen: 0.02 ppbV
RT: 22.070 min Scan# 2385
Delta R.T. 0.010 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 97 Resp: 421

Ion	Ratio	Lower	Upper
97	100		
98	75.9	34.1	74.1#

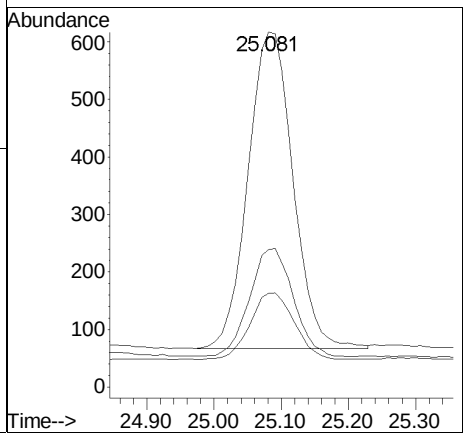


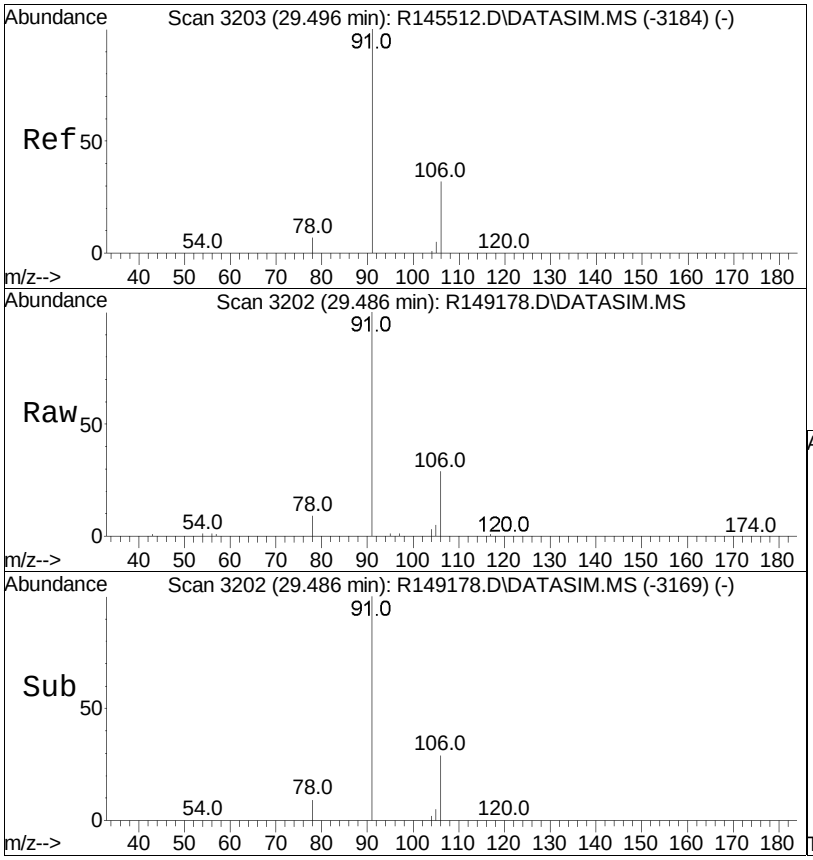


#52
Octane
Concen: 0.10 ppbV
RT: 25.081 min Scan# 2691
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 43 Resp: 2558

Ion	Ratio	Lower	Upper
43	100		
57	38.7	13.6	53.6
71	26.4	0.9	40.9

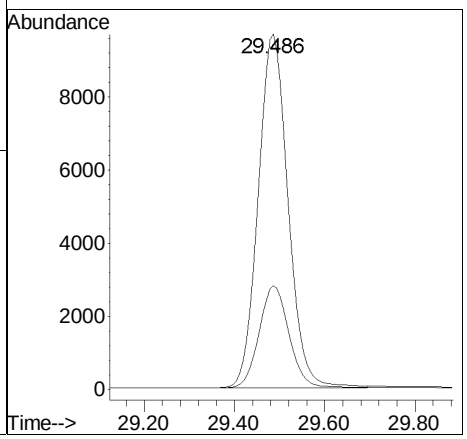


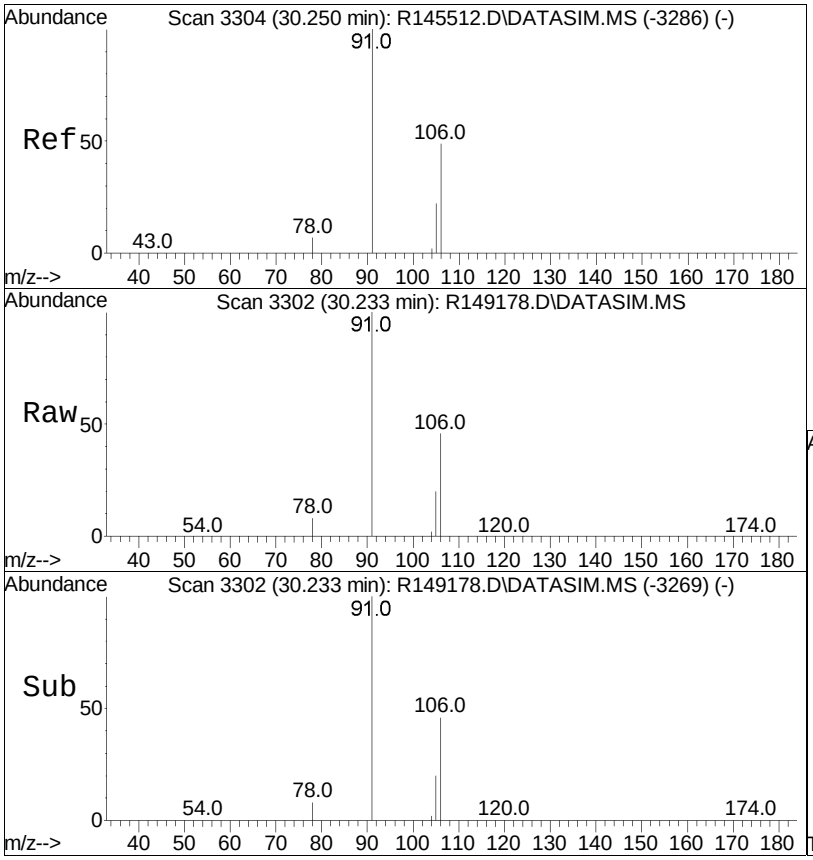


#55
Ethylbenzene
Concen: 1.54 ppbV
RT: 29.486 min Scan# 3202
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 91 Resp: 44350

Ion	Ratio	Lower	Upper
91	100		
106	29.2	9.1	49.1

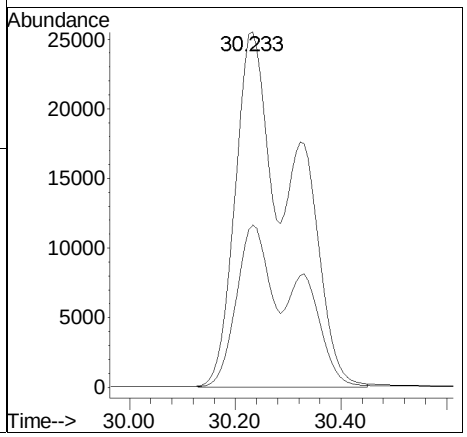


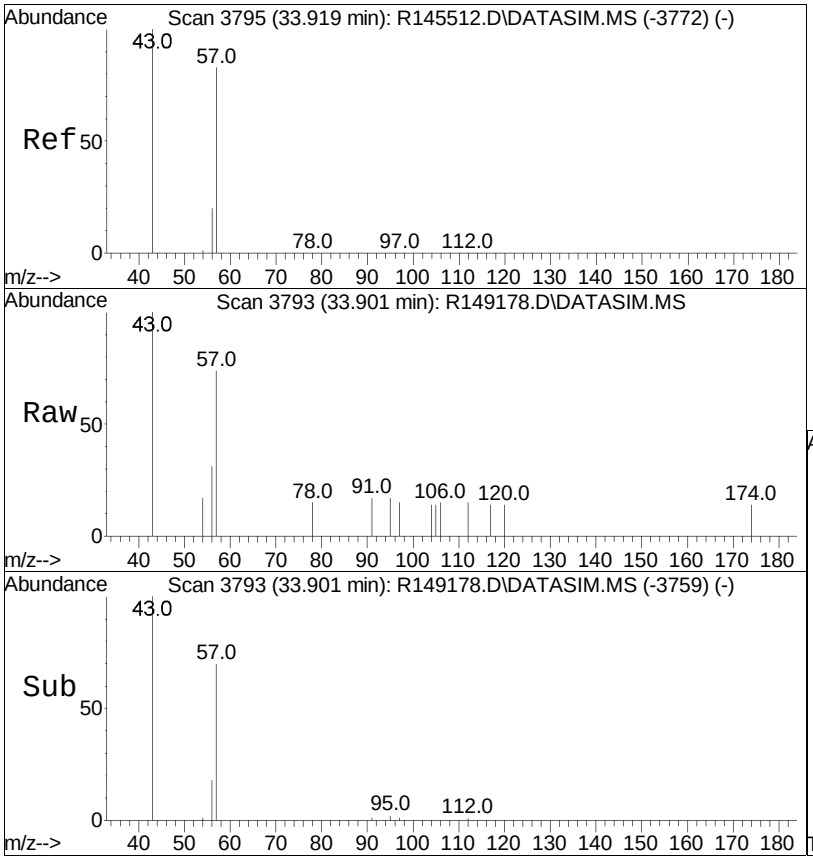


#57
p/m-Xylene
Concen: 8.68 ppbV m
RT: 30.233 min Scan# 3302
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 91 Resp: 192545

Ion	Ratio	Lower	Upper
91	100		
106	45.7	25.5	65.5

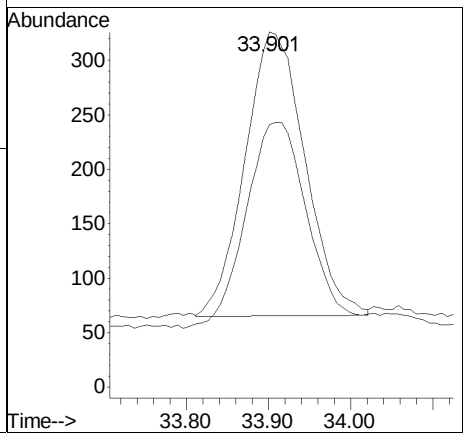


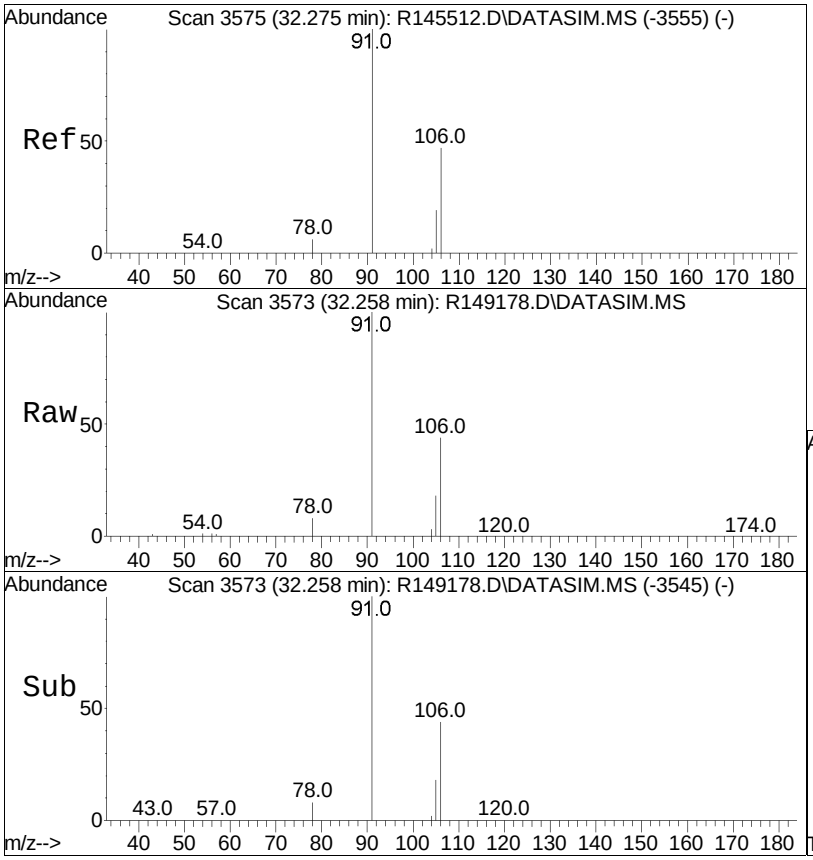


#59
Nonane
Concen: 0.06 ppbV
RT: 33.901 min Scan# 3793
Delta R.T. 0.007 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 43 Resp: 1326

Ion	Ratio	Lower	Upper
43	100		
57	73.9	51.4	91.4

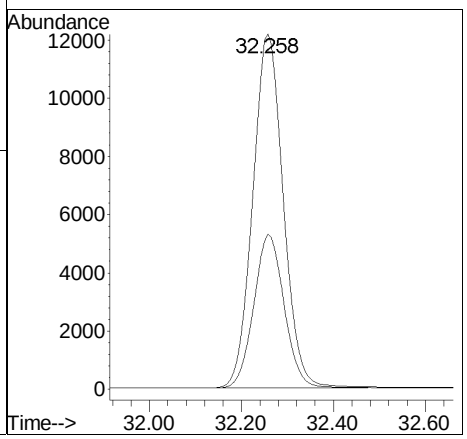


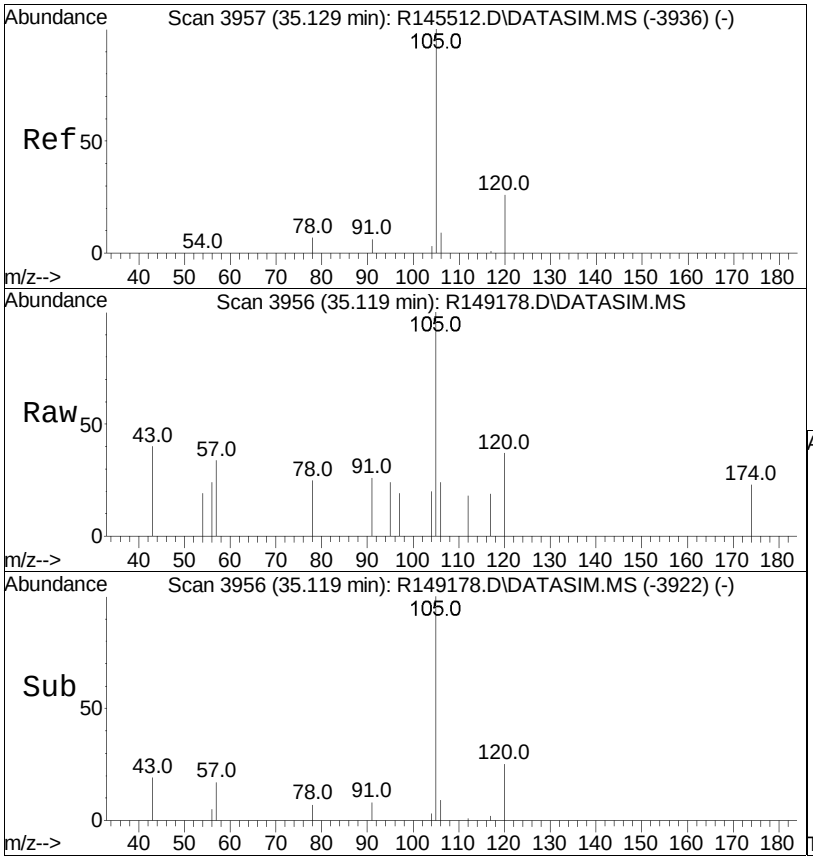


#61
o-Xylene
Concen: 2.46 ppbV
RT: 32.258 min Scan# 3573
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 91 Resp: 55926

Ion	Ratio	Lower	Upper
91	100		
106	43.7	23.5	63.5

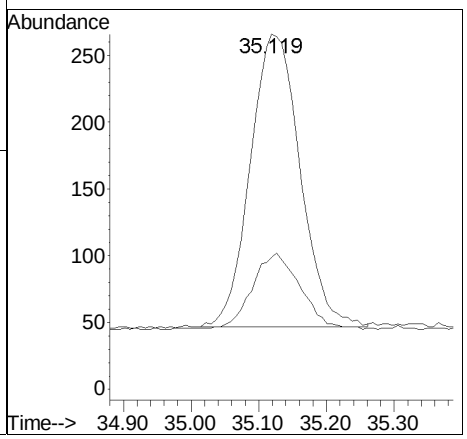


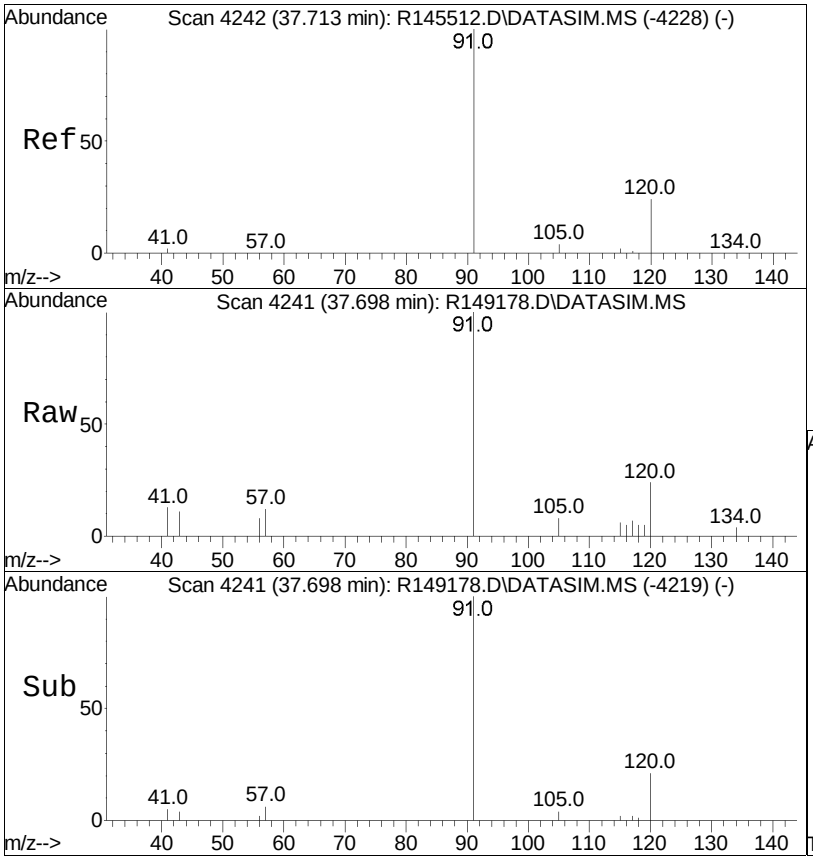


#63
Isopropylbenzene
Concen: 0.04 ppbV
RT: 35.119 min Scan# 3956
Delta R.T. 0.007 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:105 Resp: 1119

Ion	Ratio	Lower	Upper
105	100		
120	37.2	4.8	44.8

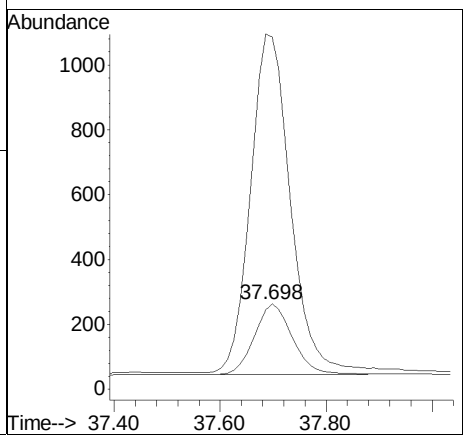


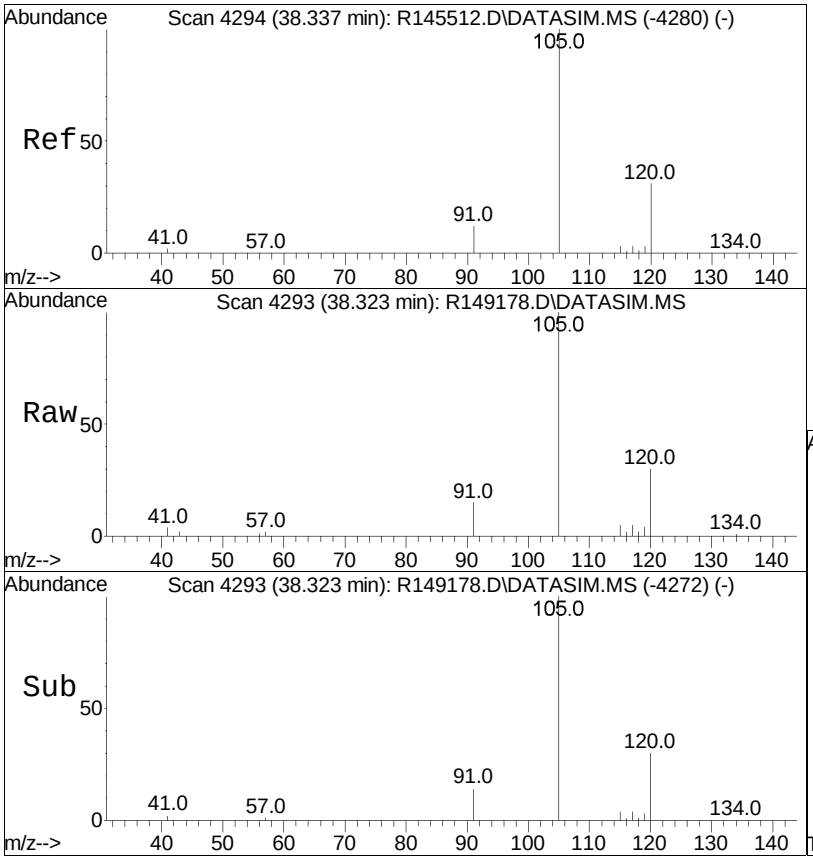


#64
n-Propylbenzene
Concen: 0.14 ppbV
RT: 37.698 min Scan# 4241
Delta R.T. 0.012 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:120 Resp: 1096

Ion	Ratio	Lower	Upper
120	100		
91	411.4	480.0	520.0#

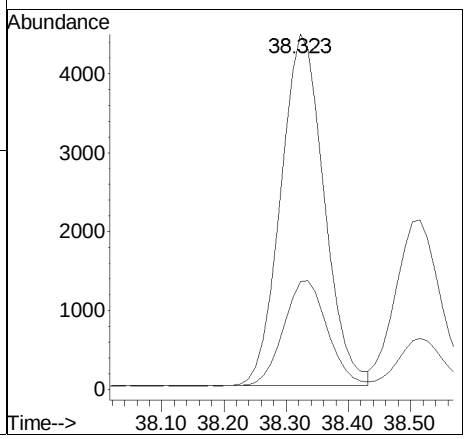


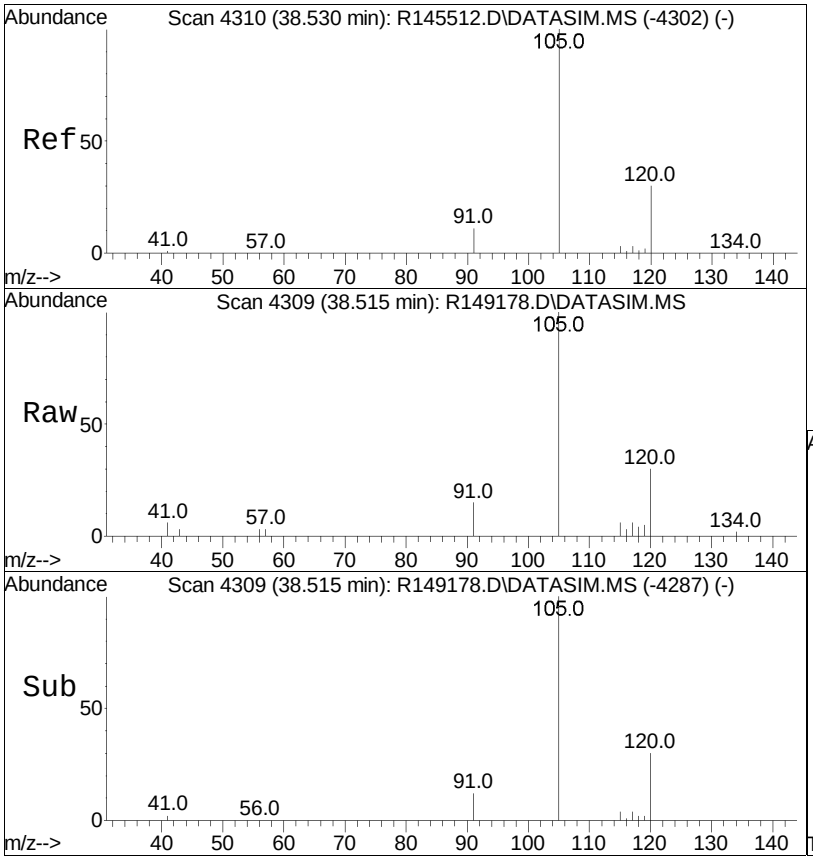


#65
1-Methyl-3-ethylbenzene
Concen: 0.76 ppbV
RT: 38.323 min Scan# 4293
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:105 Resp: 21581

Ion	Ratio	Lower	Upper
105	100		
120	30.3	10.4	50.4

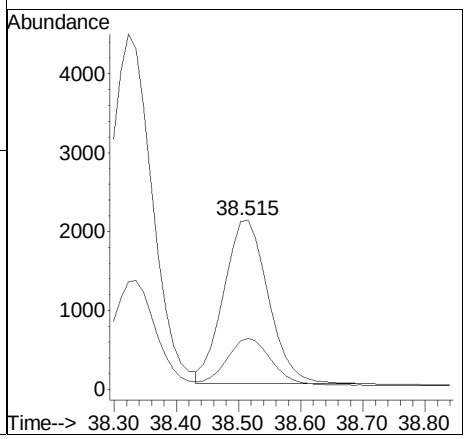


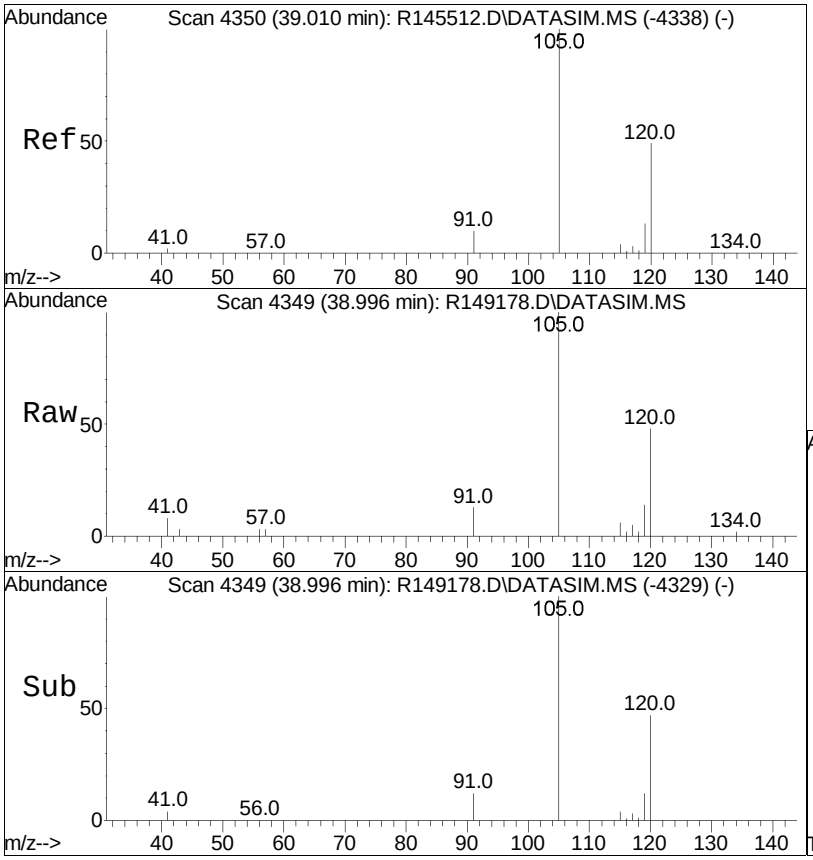


#66
1-Methyl-4-ethylbenzene
Concen: 0.34 ppbV
RT: 38.515 min Scan# 4309
Delta R.T. 0.012 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:105 Resp: 10386

Ion	Ratio	Lower	Upper
105	100		
120	30.2	7.8	47.8

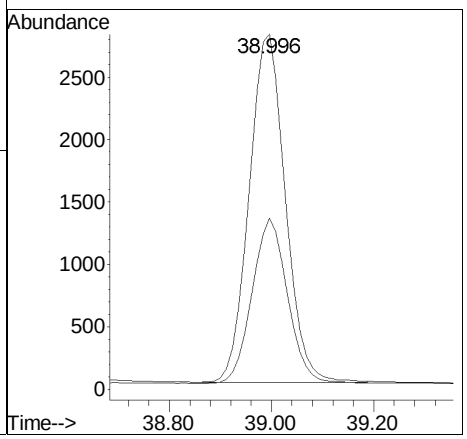


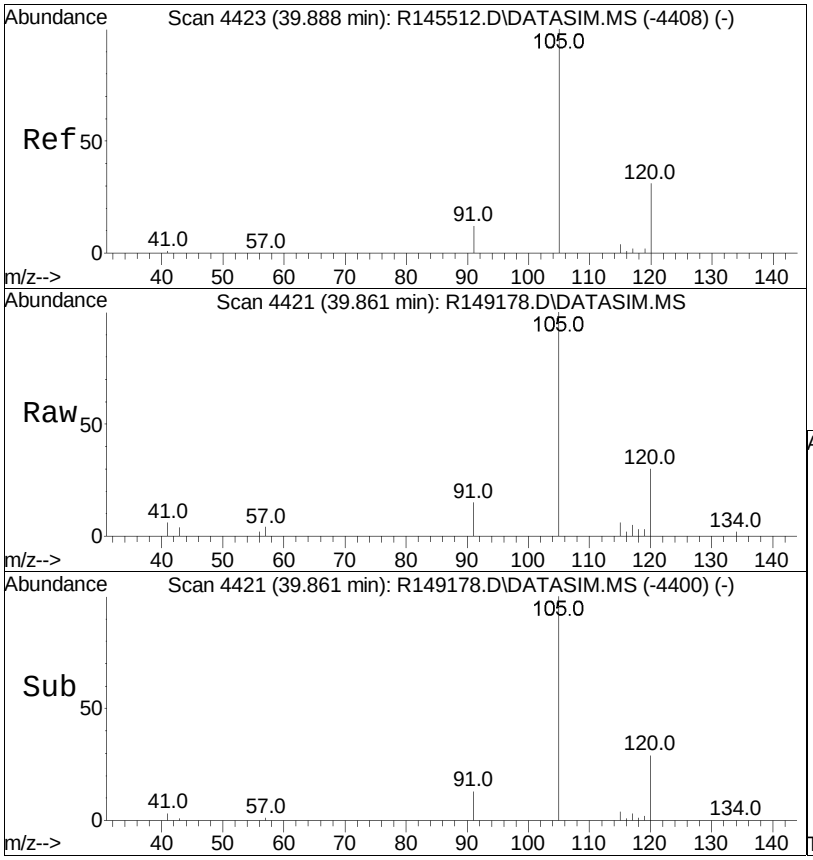


#67
1,3,5-Trimethylbenzene
Concen: 0.55 ppbV
RT: 38.996 min Scan# 4349
Delta R.T. 0.012 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:105 Resp: 13659

Ion	Ratio	Lower	Upper
105	100		
120	48.2	25.9	65.9

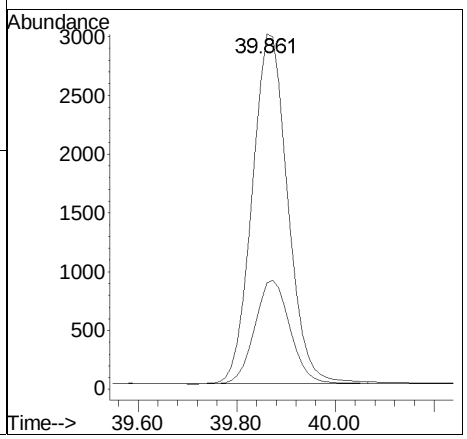


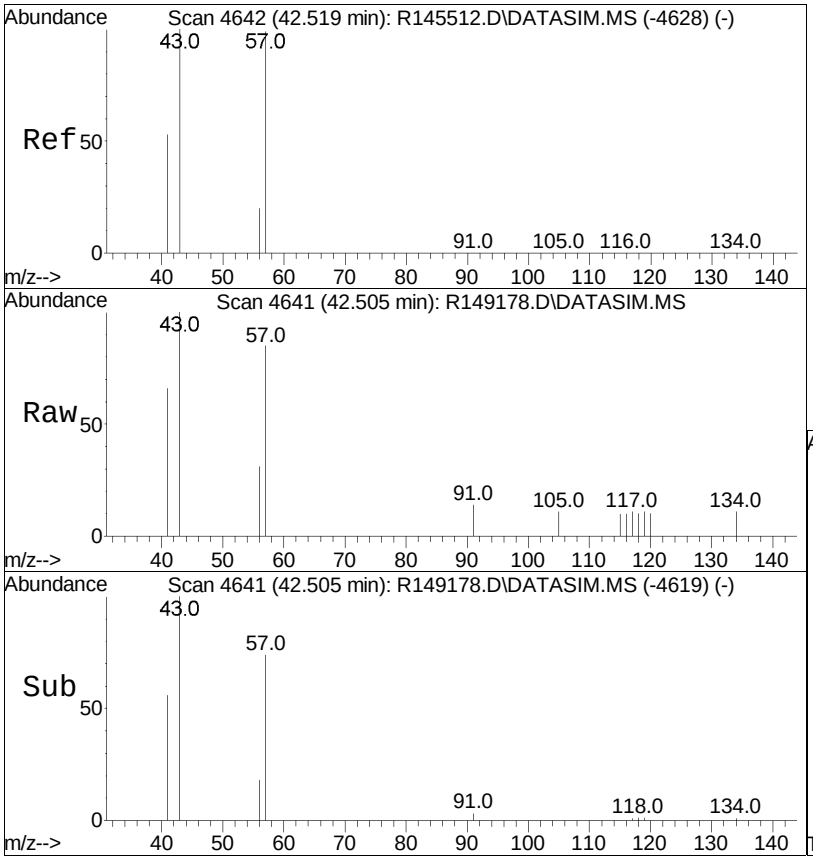


#69
1-Methyl-2-ethylbenzene
Concen: 0.52 ppbV
RT: 39.861 min Scan# 4421
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:105 Resp: 14862

Ion	Ratio	Lower	Upper
105	100		
120	30.0	9.6	49.6

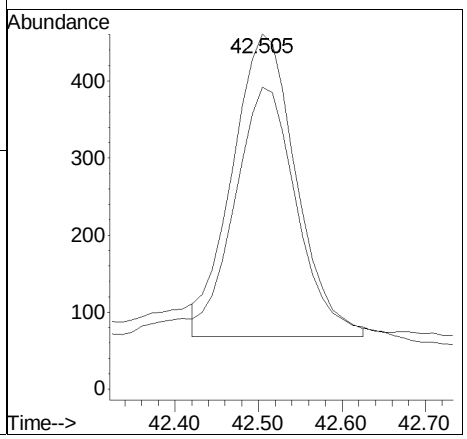


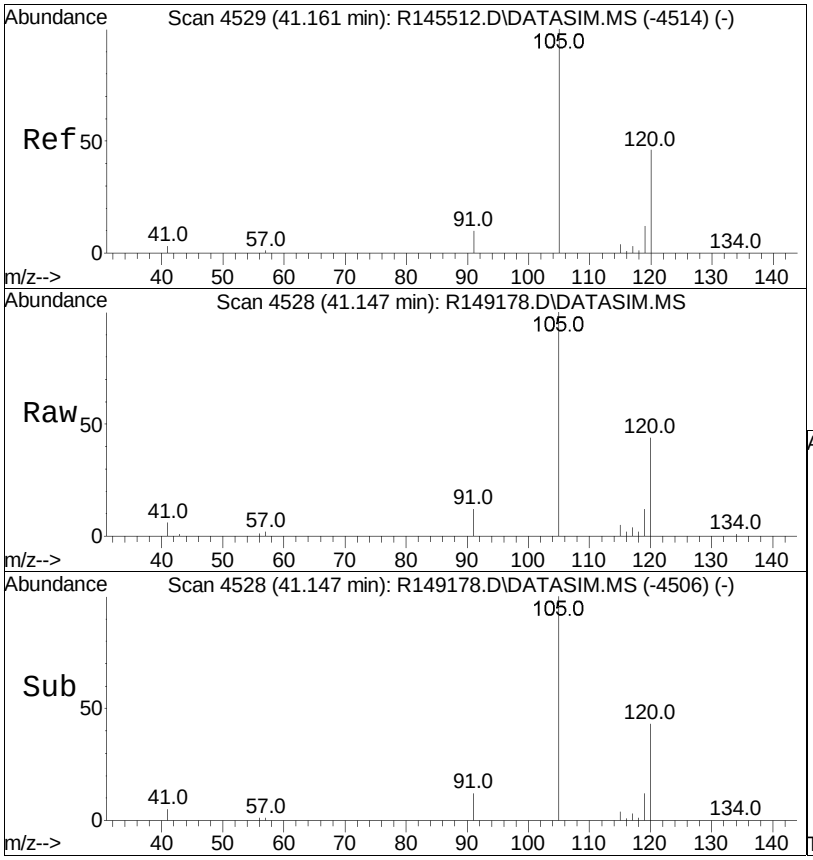


#70
Decane
Concen: 0.09 ppbV m
RT: 42.505 min Scan# 4641
Delta R.T. 0.012 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 43 Resp: 2093

Ion	Ratio	Lower	Upper
43	100		
57	85.0	66.4	106.4

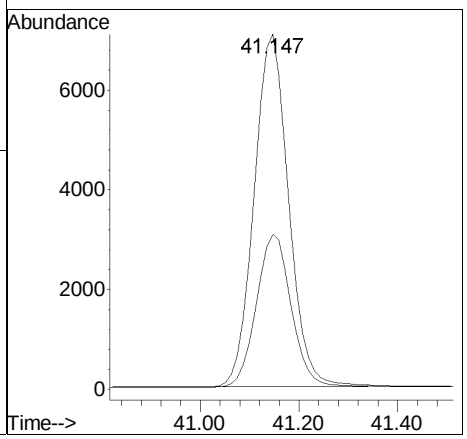


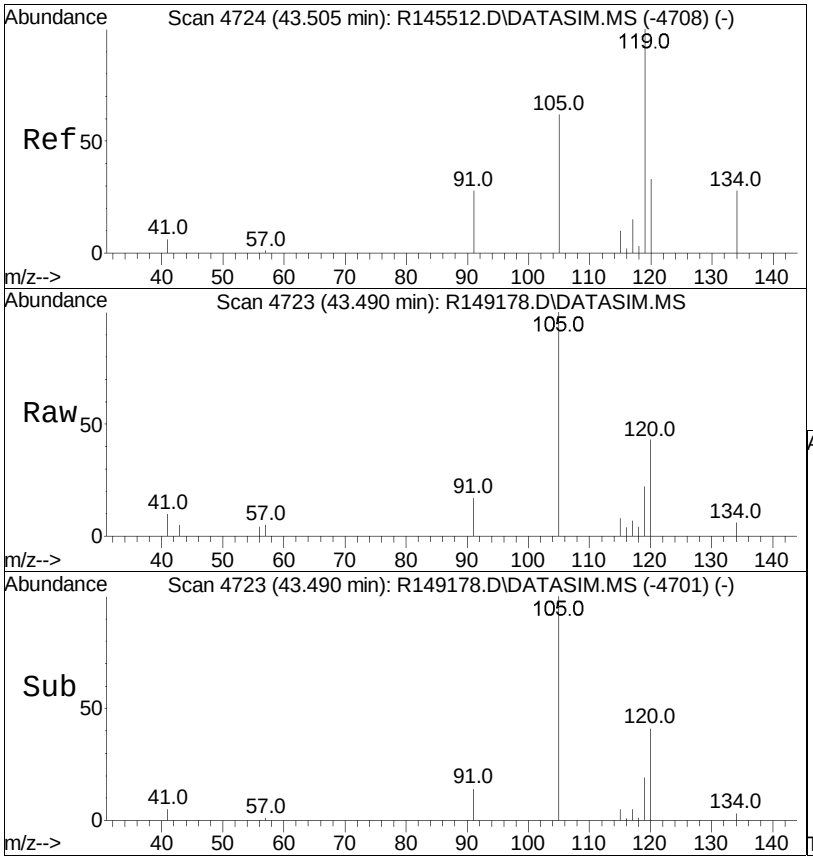


#71
1,2,4-Trimethylbenzene
Concen: 1.40 ppbV
RT: 41.147 min Scan# 4528
Delta R.T. 0.012 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:105 Resp: 34422

Ion	Ratio	Lower	Upper
105	100		
120	43.6	23.0	63.0

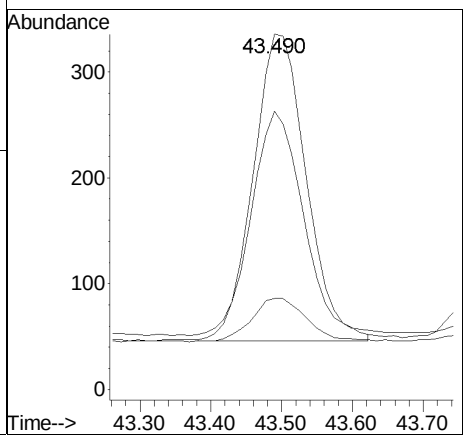


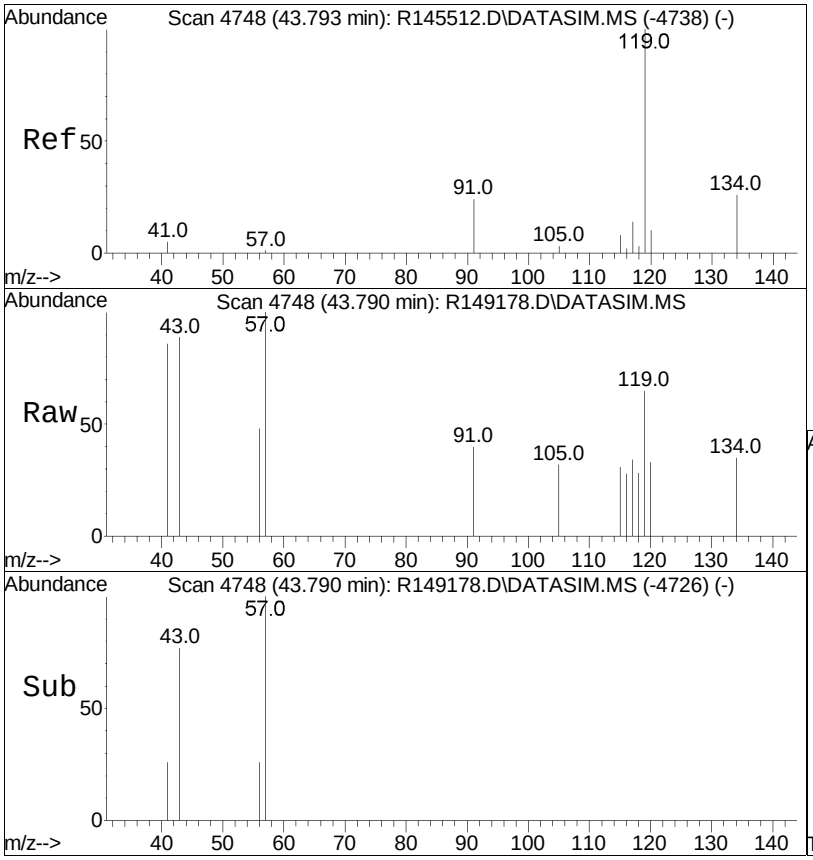


#73
1-Methyl-3-isopropylbenzene
Concen: 0.05 ppbV m
RT: 43.490 min Scan# 4723
Delta R.T. 0.012 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:119 Resp: 1510

Ion	Ratio	Lower	Upper
119	100		
134	25.6	4.5	44.5
91	78.3	12.0	52.0#

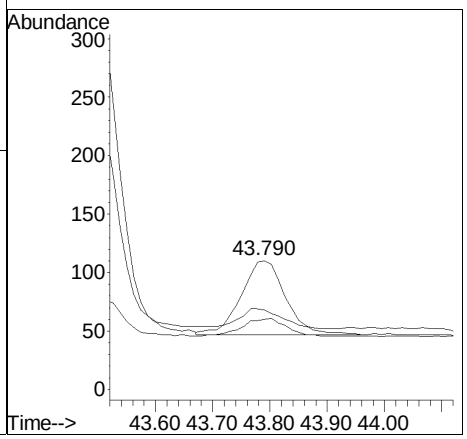


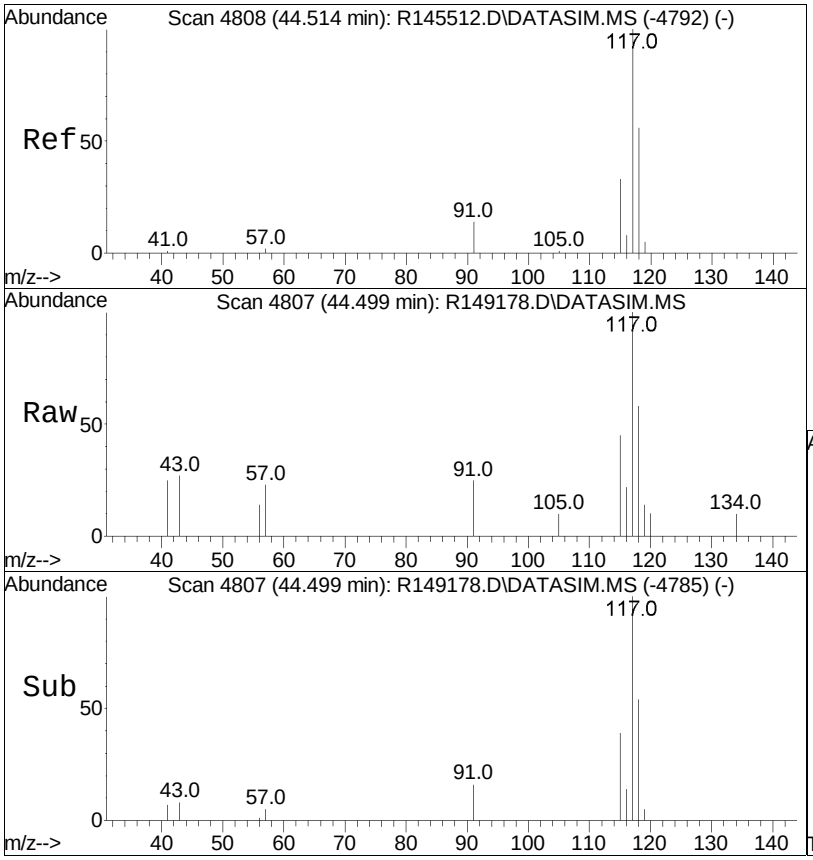


#74
1-Methyl-4-isopropylbenzene
Concen: 0.01 ppbV
RT: 43.790 min Scan# 4748
Delta R.T. 0.012 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:119 Resp: 340

Ion	Ratio	Lower	Upper
119	100		
134	54.5	4.2	44.2#
91	61.8	5.6	45.6#

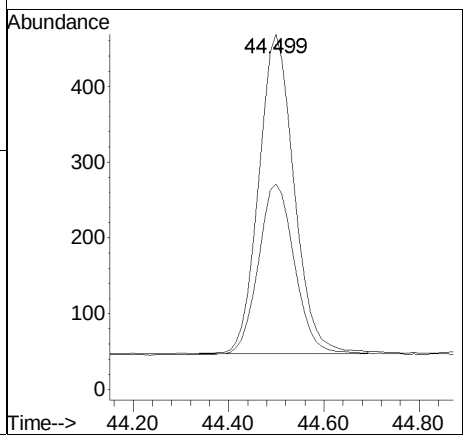


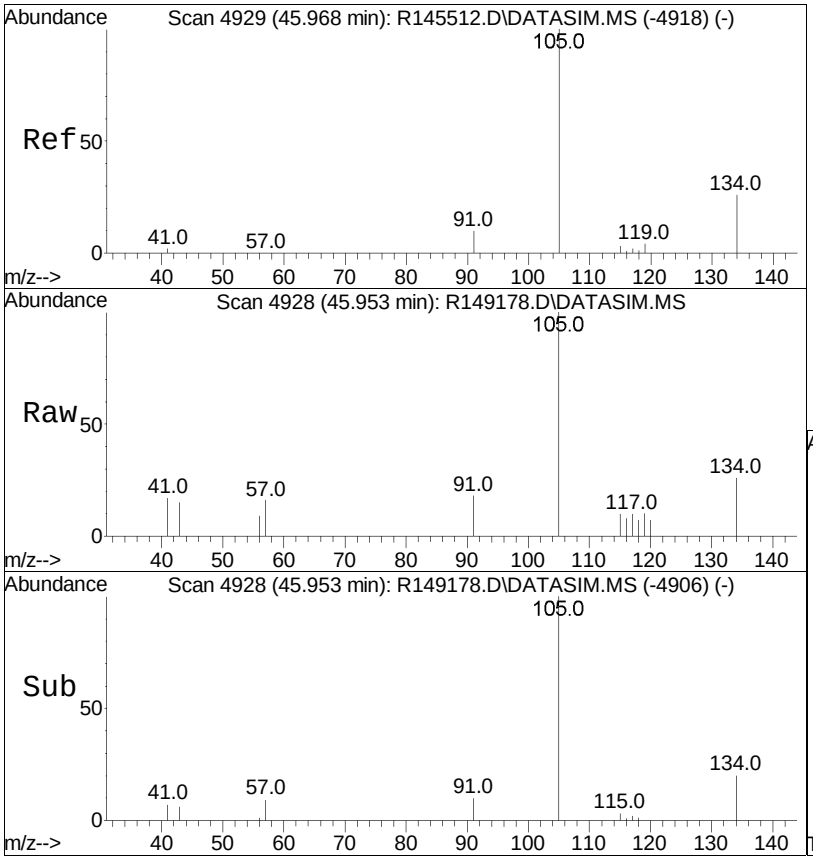


#76
Indan
Concen: 0.11 ppbV
RT: 44.499 min Scan# 4807
Delta R.T. 0.012 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:117 Resp: 2175

Ion	Ratio	Lower	Upper
117	100		
118	57.8	35.5	75.5

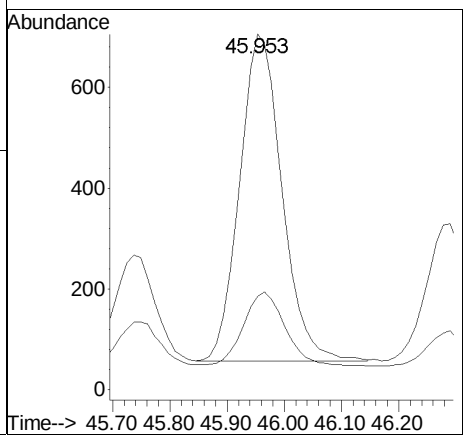


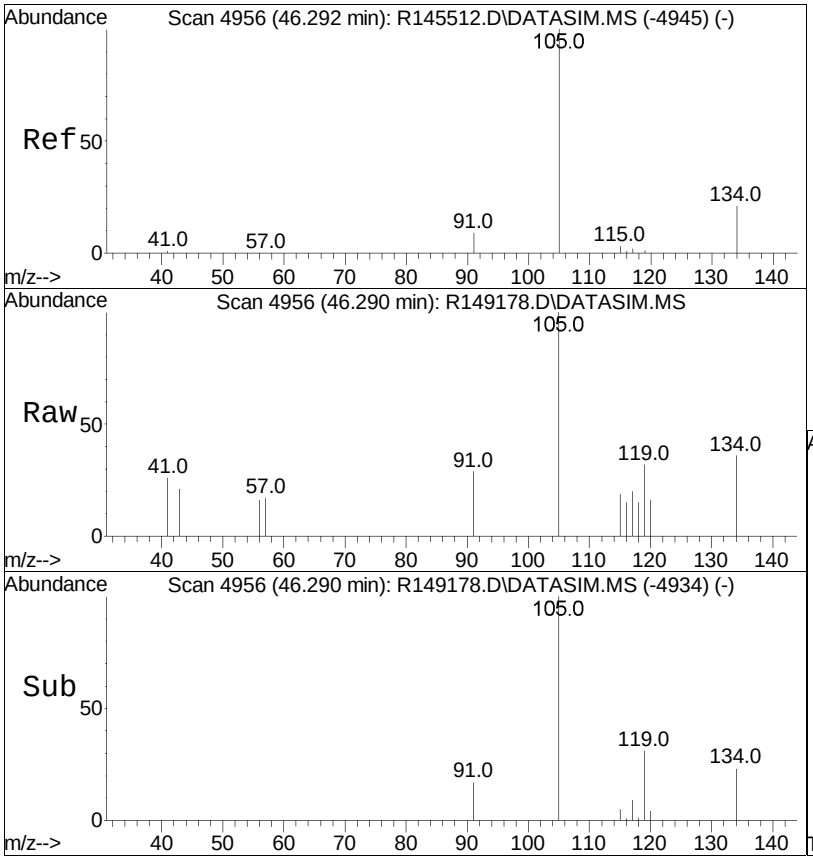


#78
1-Methyl-3-propylbenzene
Concen: 0.09 ppbV
RT: 45.953 min Scan# 4928
Delta R.T. 0.012 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:105 Resp: 3329

Ion	Ratio	Lower	Upper
105	100		
134	26.2	1.9	41.9

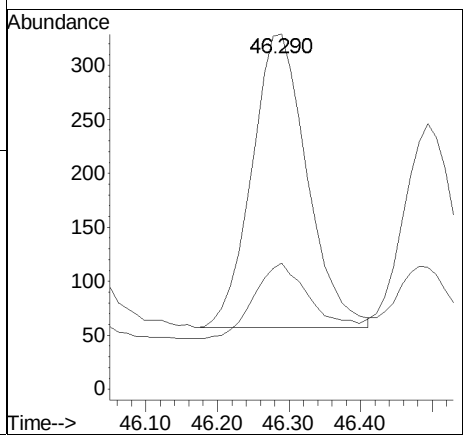


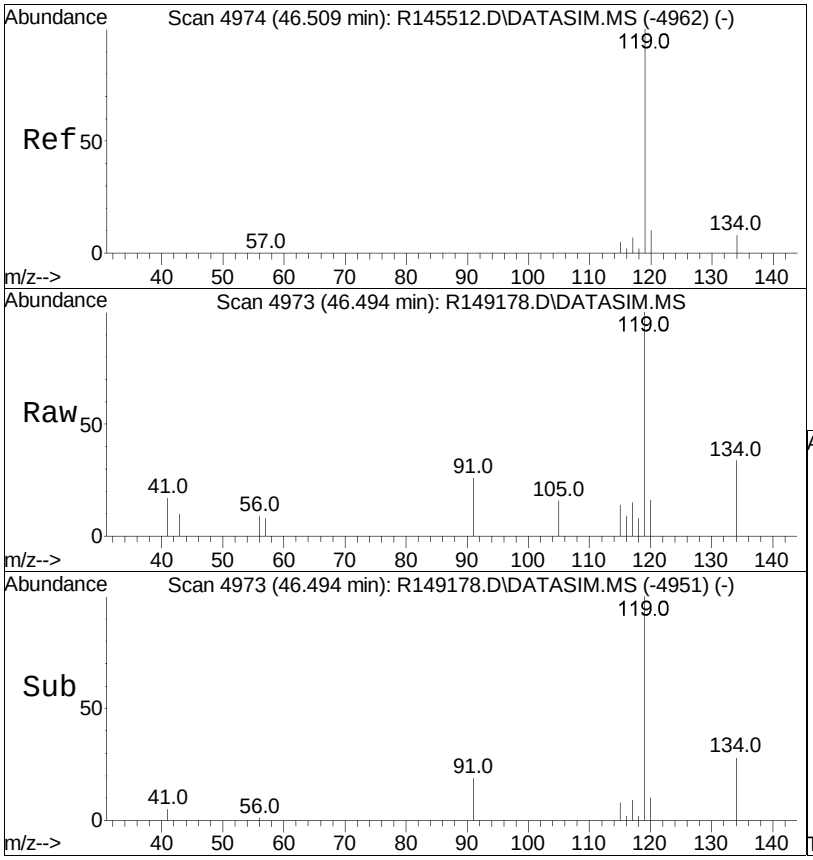


#79
1-Methyl-4-propylbenzene
Concen: 0.03 ppbV
RT: 46.290 min Scan# 4956
Delta R.T. 0.012 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:105 Resp: 1461

Ion	Ratio	Lower	Upper
105	100		
134	35.6	0.0	39.5

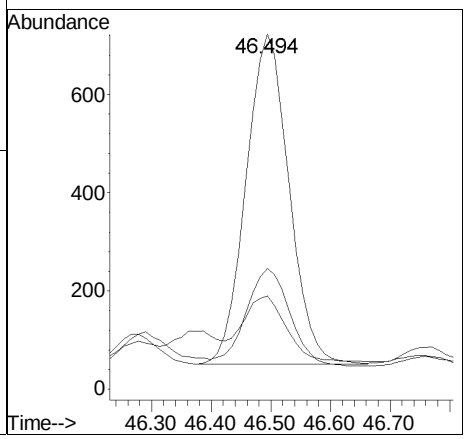


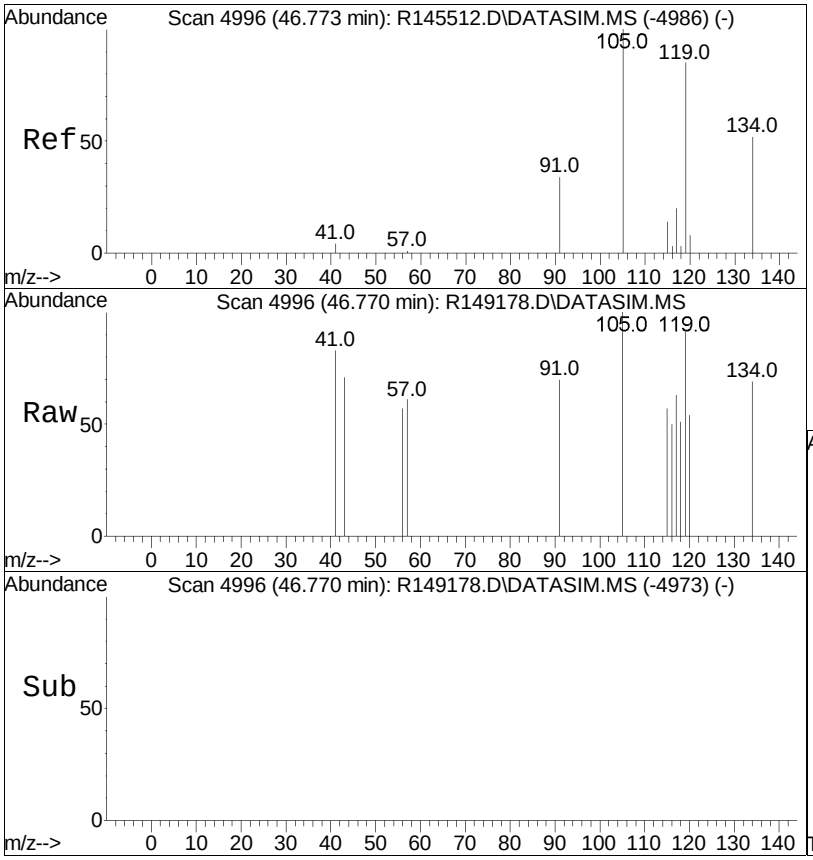


#81
1,2-Dimethyl-4-ethylbenzene
Concen: 0.12 ppbV
RT: 46.494 min Scan# 4973
Delta R.T. 0.012 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:119 Resp: 3369

Ion	Ratio	Lower	Upper
119	100		
134	34.0	9.8	49.8
91	26.3	0.0	39.8

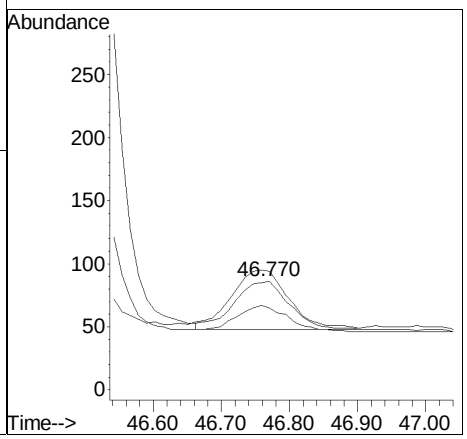


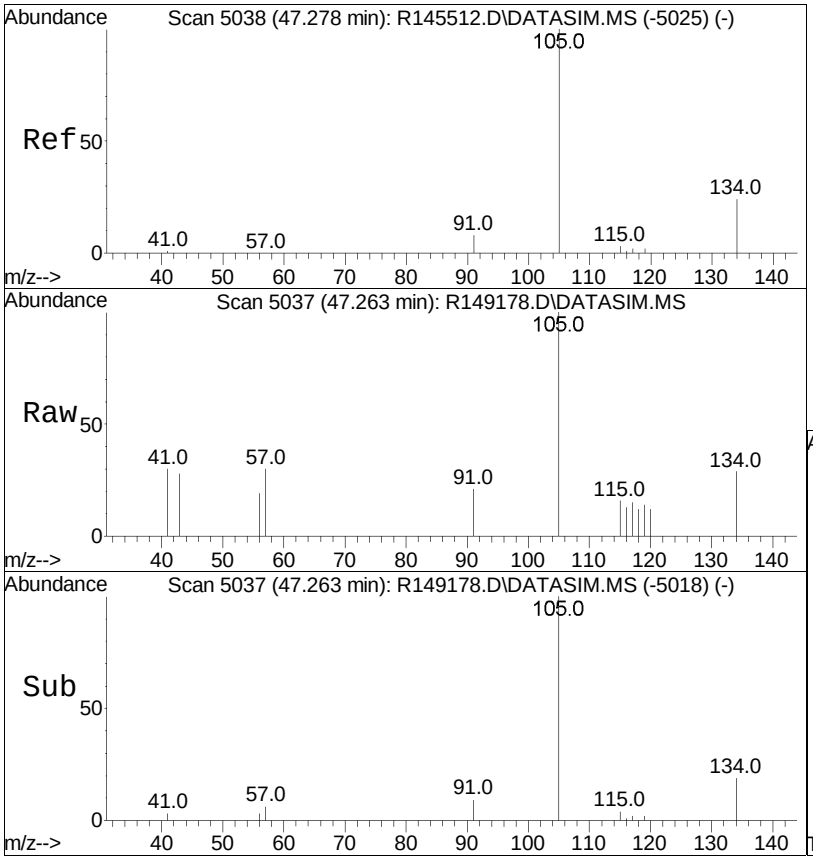


#82
1,2-Diethylbenzene
Concen: 0.01 ppbV
RT: 46.770 min Scan# 4996
Delta R.T. 0.024 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:119 Resp: 214

Ion	Ratio	Lower	Upper
119	100		
105	109.3	103.0	143.0
134	75.6	33.7	73.7#

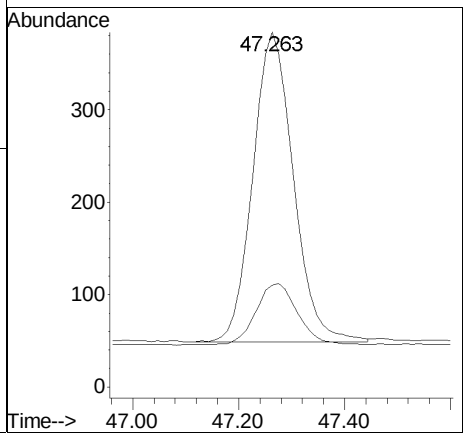


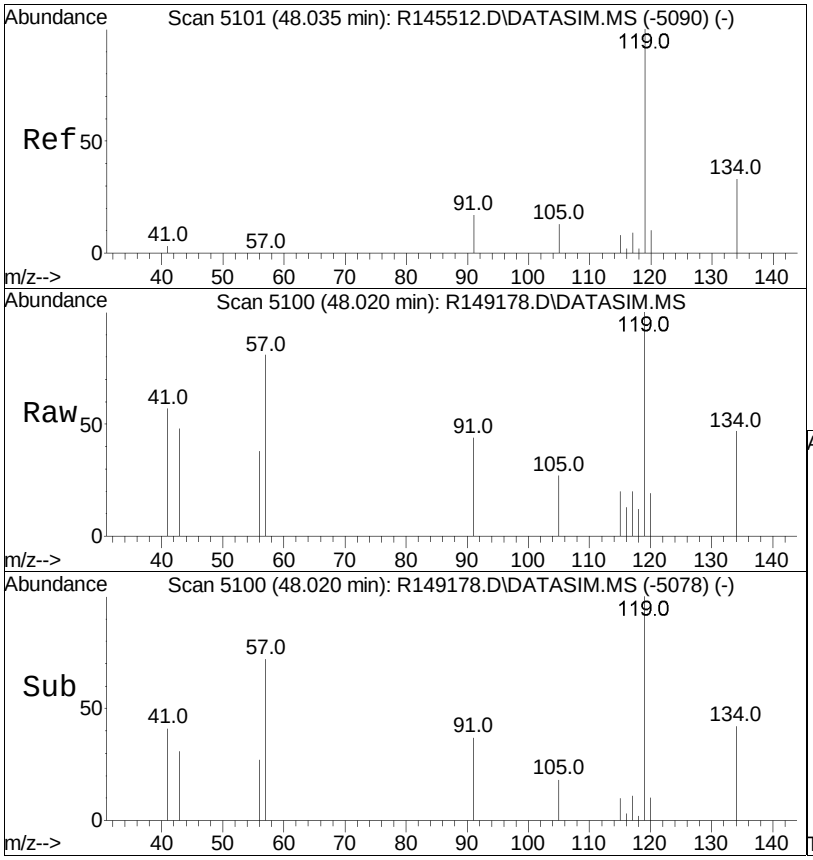


#83
1-Methyl-2-propylbenzene
Concen: 0.05 ppbV
RT: 47.263 min Scan# 5037
Delta R.T. 0.012 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:105 Resp: 1776

Ion	Ratio	Lower	Upper
105	100		
134	28.6	0.5	40.5

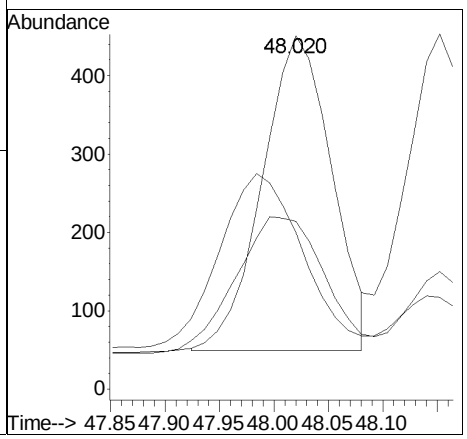


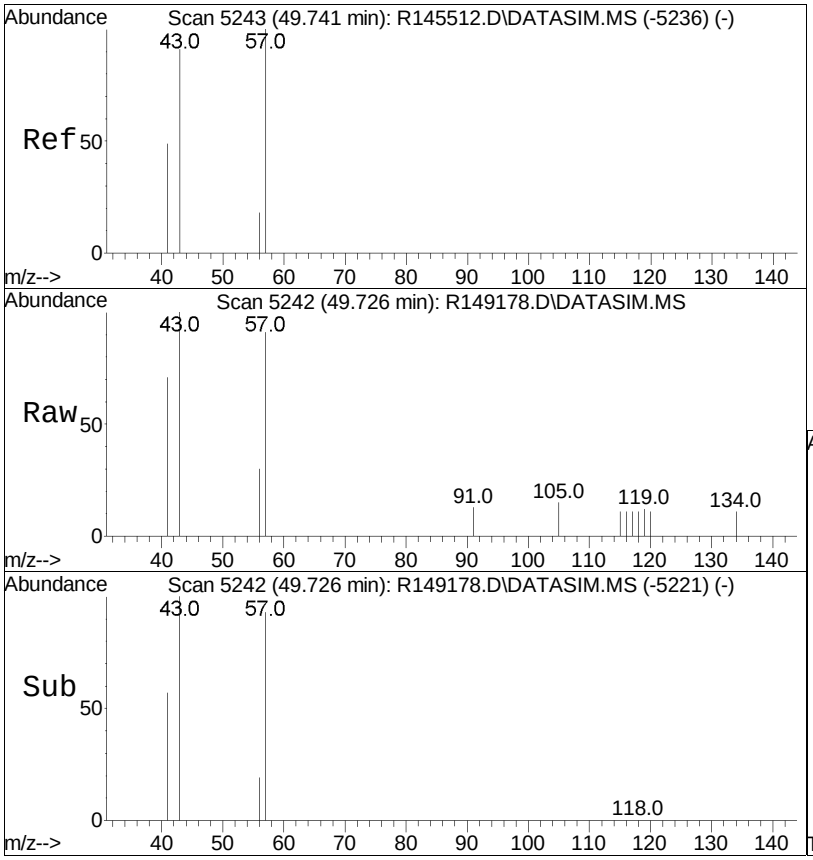


#84
1,4-Dimethyl-2-ethylbenzene
Concen: 0.06 ppbV m
RT: 48.020 min Scan# 5100
Delta R.T. 0.012 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:119 Resp: 1784

Ion	Ratio	Lower	Upper
119	100		
134	47.5	10.4	50.4
91	44.3	0.1	40.1#

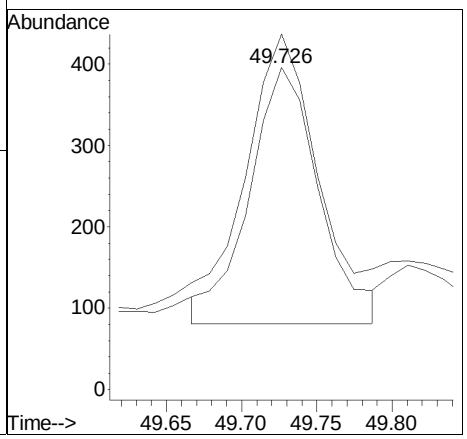


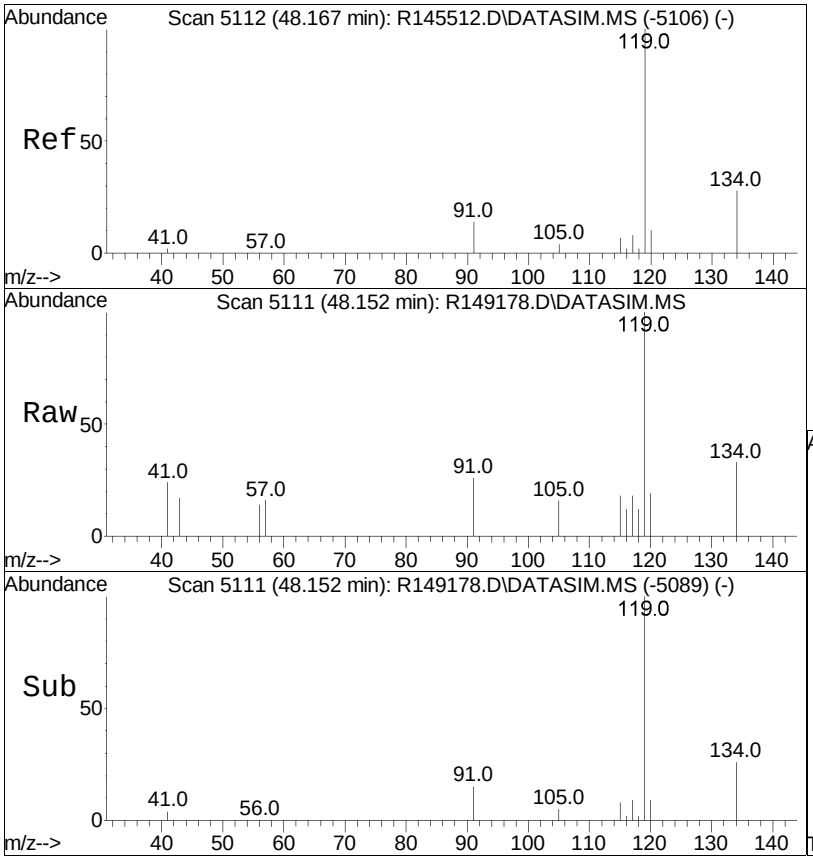


#85
Undecane
Concen: 0.05 ppbV m
RT: 49.726 min Scan# 5242
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 57 Resp: 1017

Ion	Ratio	Lower	Upper
57	100		
43	110.4	79.1	119.1

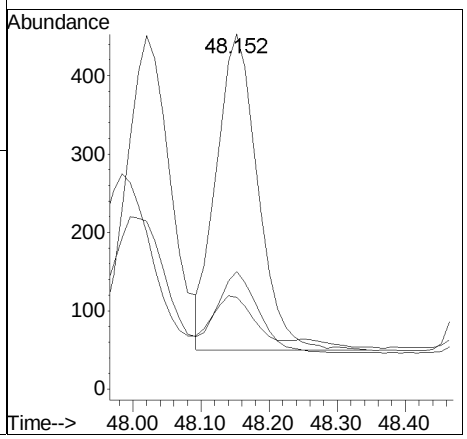


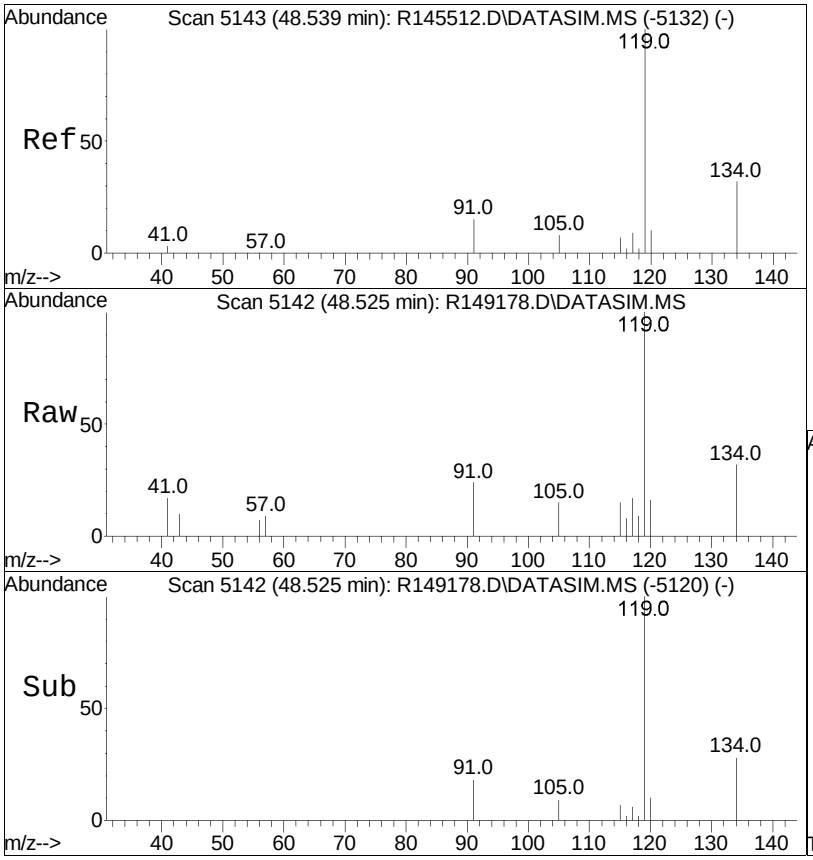


#86
1,3-Dimethyl-4-ethylbenzene
Concen: 0.05 ppbV
RT: 48.152 min Scan# 5111
Delta R.T. 0.012 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:119 Resp: 1706

Ion	Ratio	Lower	Upper
119	100		
134	33.1	6.2	46.2
91	25.8	0.0	36.4

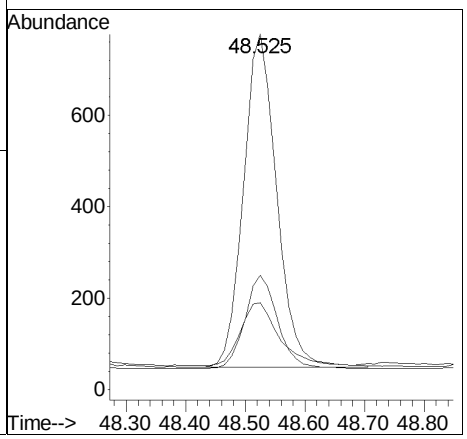


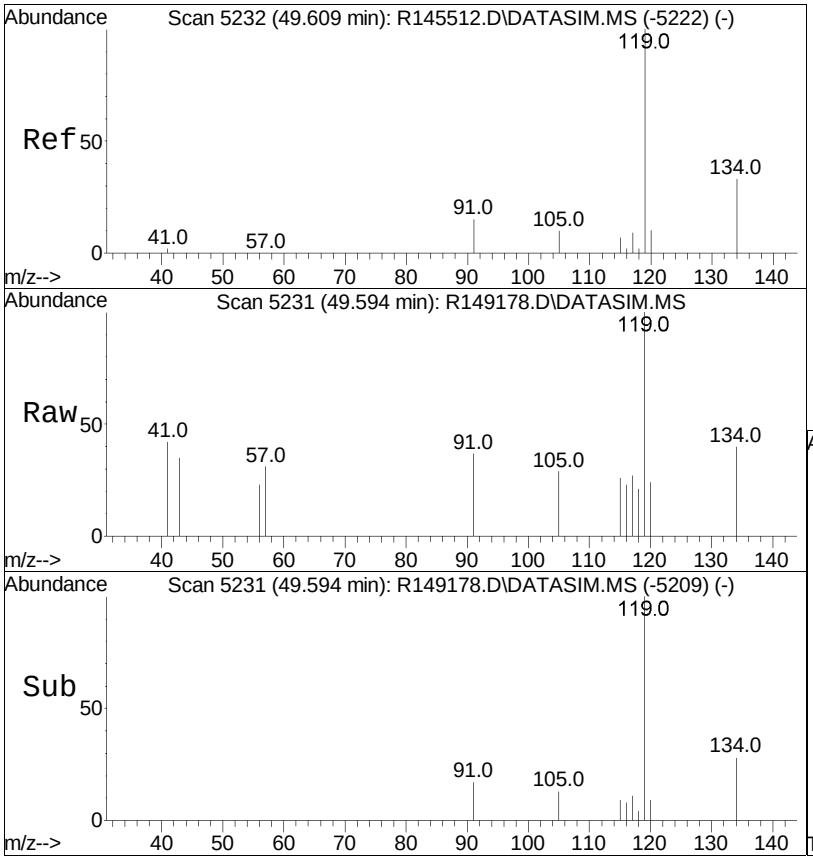


#87
1,3-Dimethyl-5-ethylbenzene
Concen: 0.09 ppbV
RT: 48.525 min Scan# 5142
Delta R.T. 0.012 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:119 Resp: 2823

Ion	Ratio	Lower	Upper
119	100		
134	32.1	7.8	47.8
91	24.4	0.0	38.0

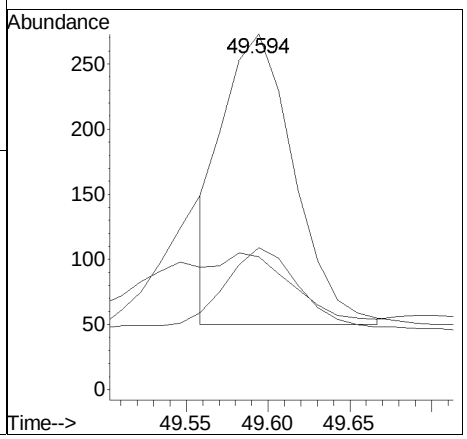


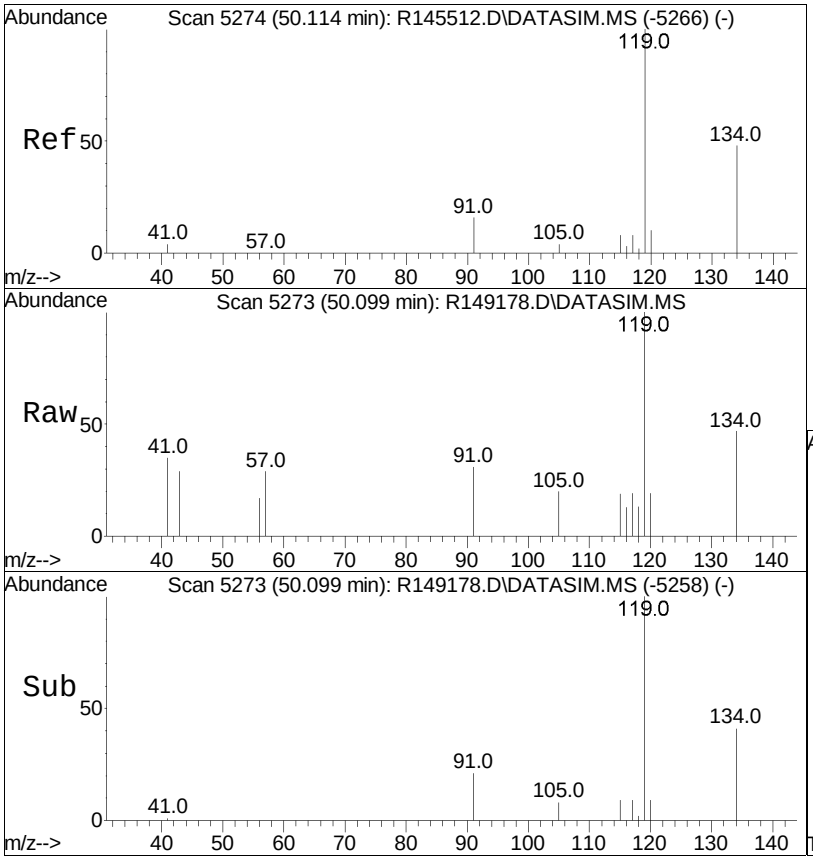


#89
1,2-Dimethyl-3-ethylbenzene
Concen: 0.02 ppbV m
RT: 49.594 min Scan# 5231
Delta R.T. 0.012 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:119 Resp: 676

Ion	Ratio	Lower	Upper
119	100		
134	39.9	8.0	48.0
91	37.4	0.0	39.5

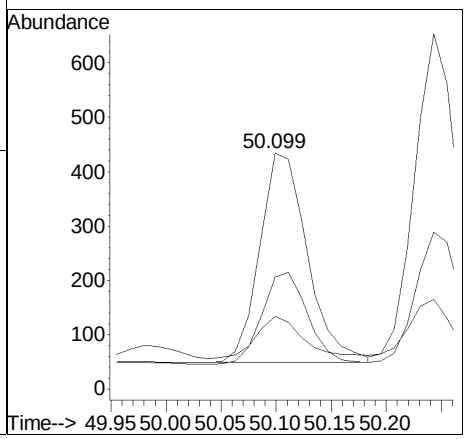


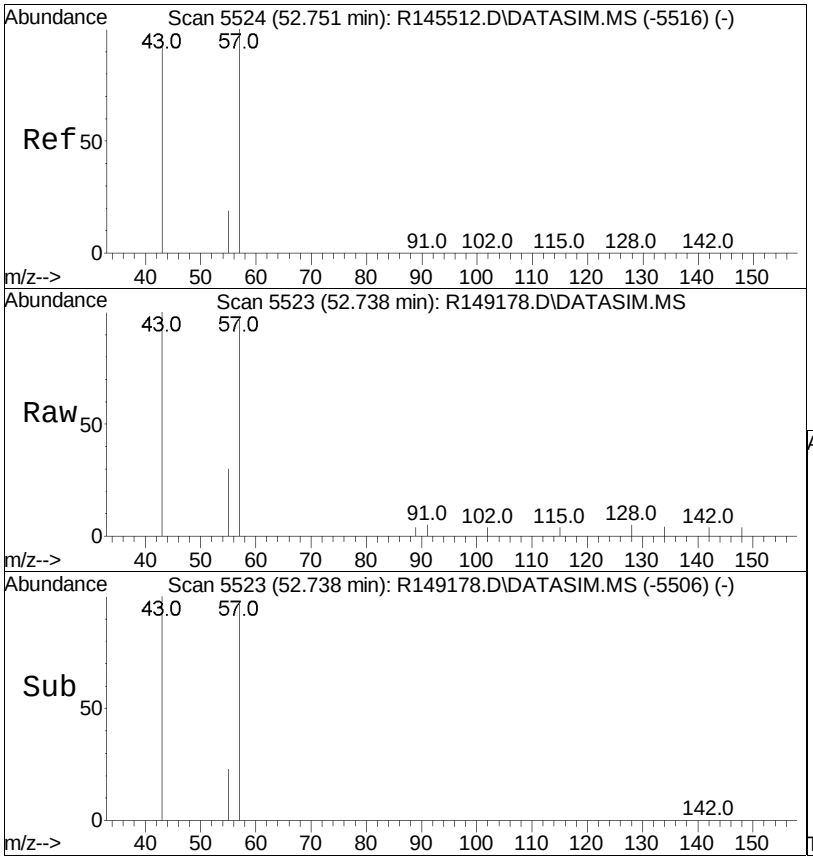


#90
1,2,4,5-Tetramethylbenzene
Concen: 0.01 ppbV
RT: 50.099 min Scan# 5273
Delta R.T. -0.000 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:119 Resp: 1163

Ion	Ratio	Lower	Upper
119	100		
134	47.5	24.1	64.1
91	30.9	0.0	36.7

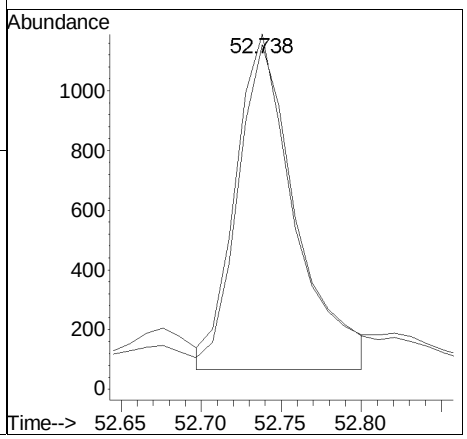


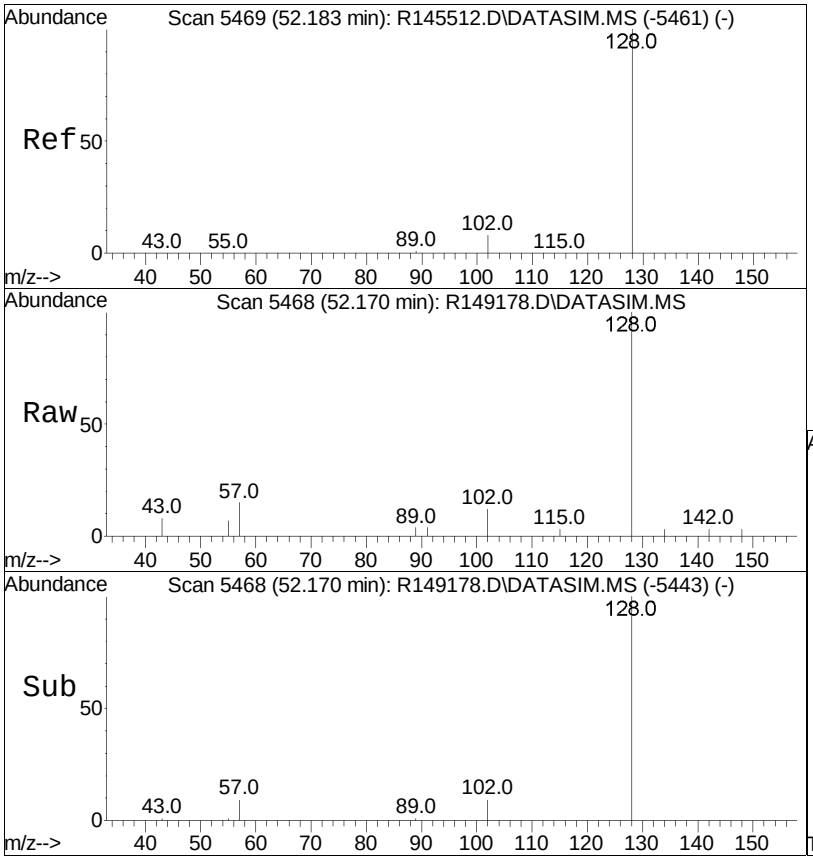


#92
Dodecane
Concen: 0.12 ppbV m
RT: 52.738 min Scan# 5523
Delta R.T. 0.010 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 43 Resp: 2886

Ion	Ratio	Lower	Upper
43	100		
57	97.1	80.2	120.2

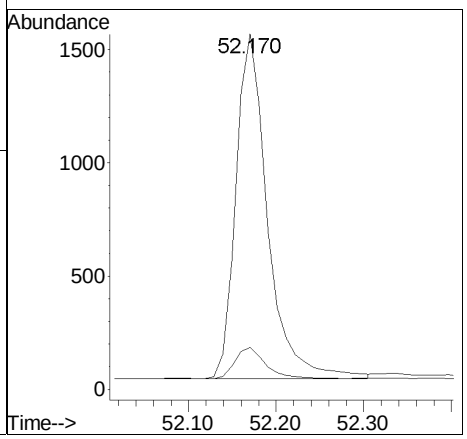


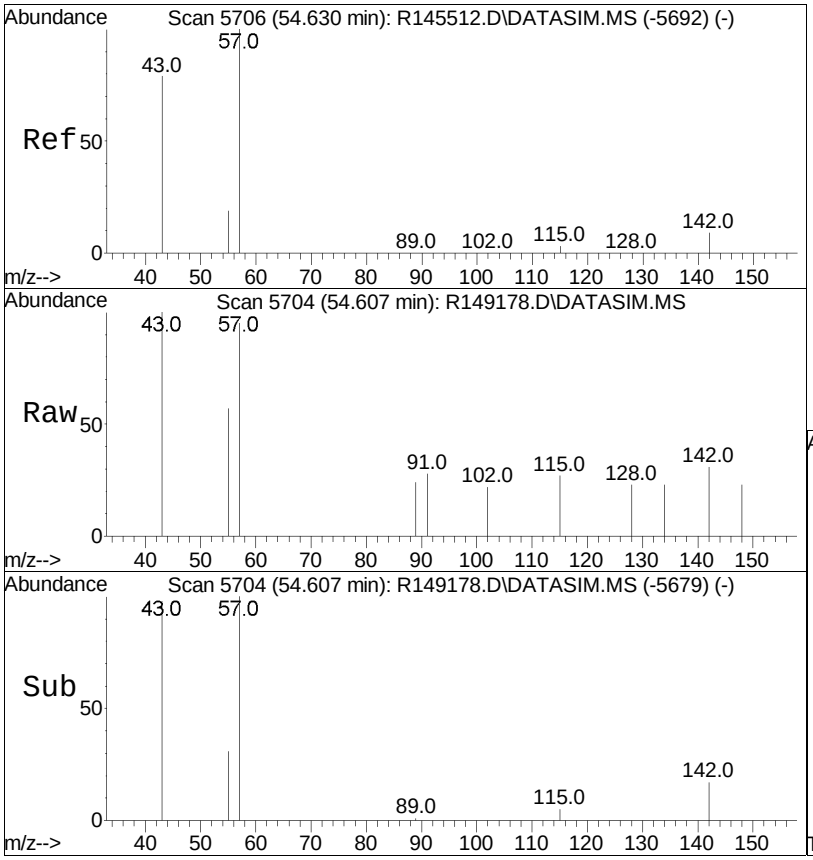


#93
Naphthalene
Concen: 0.12 ppbV
RT: 52.170 min Scan# 5468
Delta R.T. 0.010 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion:128 Resp: 3818

Ion	Ratio	Lower	Upper
128	100		
102	11.8	0.0	28.9

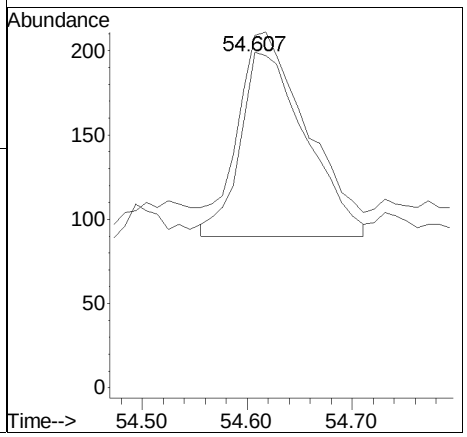




#96
Tridecane
Concen: 0.01 ppbV m
RT: 54.607 min Scan# 5704
Delta R.T. 0.010 min
Lab File: R149178.D
Acq: 8 Nov 2016 8:44 pm

Tgt Ion: 57 Resp: 476

Ion	Ratio	Lower	Upper
57	100		
43	105.0	72.3	112.3



Lab Duplicates
Form 3

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Client Sample ID	: NFSV-05	Matrix	: SOIL_VAPOR
Lab Sample ID	: L1634001-04	Analysis Date	: 11/08/16 20:44
Lab File ID	: R149178	DUP File ID	: R149179
Dup Sample ID	: WG948457-6	DUP Analysis Date	: 11/08/16 21:51

Parameter	Sample Concentration (ppbV)	Duplicate Concentration (ppbV)	RPD	RPD Limit
1,3-Butadiene	ND	ND	NC	25
Isopentane	24.3	25.0	3	25
1-Pentene	1.91	1.93	1	25
2-Methyl-1-Butene	2.65	2.64	0	25
Pentane	34.6	35.9	4	25
trans-2-Pentene	3.11	3.16	2	25
cis-2-Pentene	0.710	0.710	0	25
Tertiary Butanol	1.62	1.62	0	25
Cyclopentane	3.32	3.42	3	25
2,3-Dimethylbutane	1.83	1.88	3	25
2-Methylpentane	5.84	6.10	4	25
Methyl tert butyl ether	40.3	41.5	3	25
3-Methylpentane	3.92	4.03	3	25
1-Hexene	0.380	0.400	5	25
n-Hexane	13.4	13.8	3	25
Isopropyl Ether	ND	ND	NC	25
Ethyl-Tert-Butyl-Ether	0.180J	0.180J	NC	25
2,2-Dimethylpentane	ND	ND	NC	25
Methylcyclopentane	4.83	4.92	2	25
2,4-Dimethylpentane	0.710	0.670	6	25
1,2-Dichloroethane	ND	ND	NC	25
Cyclohexane	0.730	0.750	3	25
2-Methylhexane	1.62	1.69	4	25
Benzene	133	140	5	25
2,3-Dimethylpentane	1.76	1.81	3	25
Thiophene	0.520	0.520	0	25
3-Methylhexane	2.05	2.12	3	25

Lab Duplicates
Form 3

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Client Sample ID	: NFSV-05	Matrix	: SOIL_VAPOR
Lab Sample ID	: L1634001-04	Analysis Date	: 11/08/16 20:44
Lab File ID	: R149178	DUP File ID	: R149179
Dup Sample ID	: WG948457-6	DUP Analysis Date	: 11/08/16 21:51

Parameter	Sample Concentration (ppbV)	Duplicate Concentration (ppbV)	RPD	RPD Limit
Tertiary-Amyl Methyl Ether	0.460	0.460	0	25
1-Heptene	ND	ND	NC	25
Isooctane	1.87	1.94	4	25
Heptane	3.47	3.59	3	25
Methylcyclohexane	0.960	1.01	5	25
2,5-Dimethylhexane	0.230J	0.220J	NC	25
2,4-Dimethylhexane/2,2,3-Trimethylpentan	0.340J	0.350J	NC	25
2,3,4-Trimethylpentane	1.26	1.28	2	25
2,3,3-Trimethylpentane	ND	ND	NC	25
2,3-Dimethylhexane	0.420	0.440	5	25
3-Ethylhexane	0.200J	0.200J	NC	25
2-Methylheptane	0.660	0.680	3	25
3-Methylheptane	0.760	0.780	3	25
Toluene	182	191	5	25
2-Methylthiophene	ND	ND	NC	25
3-Methylthiophene	0.210J	0.220J	NC	25
1-Octene	ND	ND	NC	25
1-Ethyl-1-Methylcyclopentane	ND	ND	NC	25
Octane	1.03	1.07	4	25
1,2-Dibromoethane	ND	ND	NC	25
Ethylbenzene	15.4	15.9	3	25
2-Ethylthiophene	ND	ND	NC	25
p/m-Xylene	86.8	91.4	5	25
1-Nonene	ND	ND	NC	25
Nonane (C9)	0.620	0.670	8	25
Styrene	ND	ND	NC	25
o-Xylene	24.6	25.7	4	25

Lab Duplicates
Form 3

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Client Sample ID	: NFSV-05	Matrix	: SOIL_VAPOR
Lab Sample ID	: L1634001-04	Analysis Date	: 11/08/16 20:44
Lab File ID	: R149178	DUP File ID	: R149179
Dup Sample ID	: WG948457-6	DUP Analysis Date	: 11/08/16 21:51

Parameter	Sample Concentration (ppbV)	Duplicate Concentration (ppbV)	RPD	RPD Limit
Isopropylbenzene	0.370	0.400	8	25
n-Propylbenzene	1.40	1.44	3	25
1-Methyl-3-Ethylbenzene	7.65	8.10	6	25
1-Methyl-4-Ethylbenzene	3.42	3.58	5	25
1,3,5-Trimethylbenzene	5.54	5.95	7	25
1-Decene	ND	ND	NC	25
1-Methyl-2-Ethylbenzene	5.16	5.51	7	25
Decane (C10)	0.940	1.00	6	25
1,2,4-Trimethylbenzene	14.0	15.1	8	25
sec-Butylbenzene	ND	ND	NC	25
1-Methyl-3-Isopropylbenzene	0.470J	0.530	NC	25
1-Methyl-4-Isopropylbenzene	ND	ND	NC	25
1-Methyl-2-Isopropylbenzene	ND	ND	NC	25
Indane	1.13	1.24	9	25
Indene	ND	ND	NC	25
1-Methyl-3-N-Propylbenzene	0.940	1.06	12	25
1-Methyl-4-N-Propylbenzene	0.340J	0.370J	NC	25
n-Butylbenzene	ND	ND	NC	25
1,2-Dimethyl-4-Ethylbenzene	1.25	1.42	13	25
1,2-Diethylbenzene	ND	ND	NC	25
1-Methyl-2-N-Propylbenzene	0.470J	0.530	NC	25
1,4-Dimethyl-2-Ethylbenzene	0.630	0.750	17	25
Undecane	0.450J	0.530	NC	25
1,3-Dimethyl-4-Ethylbenzene	0.520	0.590	13	25
1,3-Dimethyl-5-Ethylbenzene	0.920	1.06	14	25
1,3-Dimethyl-2-Ethylbenzene	ND	ND	NC	25
1,2-Dimethyl-3-Ethylbenzene	ND	ND	NC	25

Lab Duplicates
Form 3

Client	: NewFields	**Lab Number**	: L1634001
Project Name	: WINTER STREET HAVERHILL	**Project Number**	: 01.0172397.00
Client Sample ID	: NFSV-05	**Matrix**	: SOIL_VAPOR
Lab Sample ID	: L1634001-04	**Analysis Date**	: 11/08/16 20:44
Lab File ID	: R149178	**DUP File ID**	: R149179
Dup Sample ID	: WG948457-6	**DUP Analysis Date**	: 11/08/16 21:51

Parameter	Sample Concentration (ppbV)	Duplicate Concentration (ppbV)	RPD	RPD Limit
1,2,4,5-Tetramethylbenzene	ND	ND	NC	25
N-Pentylbenzene	ND	ND	NC	25
Dodecane (C12)	1.18	1.12	5	25
Naphthalene	1.15	1.38	18	25
Benzothiophene	ND	ND	NC	25
MMT	ND	ND	NC	25
Tridecane	ND	ND	NC	25
2-Methylnaphthalene	ND	ND	NC	25
1-Methylnaphthalene	ND	ND	NC	25

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: WG948457-6D	Date Collected	: 10/19/16 10:46
Client ID	: NFSV-05DUP	Date Received	: 10/21/16
Sample Location	:	Date Analyzed	: 11/08/16 21:51
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149179	Instrument ID	: AIRPIANO1
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
106-99-0	1,3-Butadiene	ND	0.250	0.100	ND	0.553	.025	U
78-78-4	Isopentane	25.0	0.250	0.100	73.8	0.738	.025	
109-67-1	1-Pentene	1.93	0.250	0.100	5.54	0.717	.025	
563-46-2	2-Methyl-1-Butene	2.64	0.250	0.100	7.57	0.717	.025	
109-66-0	Pentane	35.9	0.250	0.100	106.	0.738	.025	
646-04-8	trans-2-Pentene	3.16	0.250	0.100	9.06	0.717	.025	
627-20-3	cis-2-Pentene	0.710	0.250	0.100	2.04	0.717	.025	
75-65-0	Tertiary Butanol	1.62	0.250	0.100	4.91	0.758	.025	
287-92-3	Cyclopentane	3.42	0.250	0.100	9.81	0.717	.025	
79-29-8	2,3-Dimethylbutane	1.88	0.250	0.100	6.63	0.881	.025	
107-83-5	2-Methylpentane	6.10	0.250	0.100	21.5	0.881	.025	
1634-04-4	Methyl tert butyl ether	41.5	0.250	0.100	150.	0.901	.025	
96-14-0	3-Methylpentane	4.03	0.250	0.100	14.2	0.881	.025	
592-41-6	1-Hexene	0.400	0.250	0.100	1.38	0.861	.025	
110-54-3	n-Hexane	13.8	0.250	0.100	48.6	0.881	.025	
108-20-3	Isopropyl Ether	ND	0.250	0.100	ND	1.04	.025	U
637-92-3	Ethyl-Tert-Butyl-Ether	0.180	0.250	0.100	0.752	1.04	.025	J
590-35-2	2,2-Dimethylpentane	ND	0.250	0.100	ND	1.02	.025	U
96-37-7	Methylcyclopentane	4.92	0.250	0.100	16.9	0.861	.025	
108-08-7	2,4-Dimethylpentane	0.670	0.250	0.100	2.75	1.02	.025	
107-06-2	1,2-Dichloroethane	ND	0.250	0.100	ND	1.01	.025	U
110-82-7	Cyclohexane	0.750	0.250	0.100	2.58	0.861	.025	
591-76-4	2-Methylhexane	1.69	0.250	0.100	6.93	1.02	.025	
71-43-2	Benzene	140.	0.250	0.100	447.	0.799	.025	
565-59-3	2,3-Dimethylpentane	1.81	0.250	0.100	7.42	1.02	.025	
110-02-1	Thiophene	0.520	0.250	0.100	1.79	0.860	.025	
589-34-4	3-Methylhexane	2.12	0.250	0.100	8.69	1.02	.025	
994-05-8	Tertiary-Amyl Methyl Ether	0.460	0.250	0.100	1.92	1.04	.025	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: WG948457-6D	Date Collected	: 10/19/16 10:46
Client ID	: NFSV-05DUP	Date Received	: 10/21/16
Sample Location	:	Date Analyzed	: 11/08/16 21:51
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149179	Instrument ID	: AIRPIANO1
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
592-76-7	1-Heptene	ND	0.250	0.100	ND	1.00	.025	U
540-84-1	Isooctane	1.94	0.250	0.100	9.06	1.17	.025	
142-82-5	Heptane	3.59	0.250	0.100	14.7	1.02	.025	
108-87-2	Methylcyclohexane	1.01	0.250	0.100	4.06	1.00	.025	
592-13-2	2,5-Dimethylhexane	0.220	0.250	0.100	1.03	1.17	.025	J
589-43-5/564-02-3	2,4-Dimethylhexane/2,2,3-Trimethylpen	0.350	0.500	0.250	1.63	2.34	.05	J
565-75-3	2,3,4-Trimethylpentane	1.28	0.250	0.100	5.98	1.17	.025	
560-21-4	2,3,3-Trimethylpentane	ND	0.250	0.100	ND	1.17	.025	U
584-94-1	2,3-Dimethylhexane	0.440	0.250	0.100	2.06	1.17	.025	
619-99-8	3-Ethylhexane	0.200	0.250	0.100	0.934	1.17	.025	J
592-27-8	2-Methylheptane	0.680	0.250	0.100	3.18	1.17	.025	
589-81-1	3-Methylheptane	0.780	0.250	0.100	3.64	1.17	.025	
108-88-3	Toluene	191.	0.250	0.100	720.	0.942	.025	
554-14-3	2-Methylthiophene	ND	0.250	0.100	ND	1.00	.025	U
616-44-4	3-Methylthiophene	0.220	0.250	0.100	0.883	1.00	.025	J
111-66-0	1-Octene	ND	0.250	0.100	ND	1.15	.025	U
16747-50-5	1-Ethyl-1-Methylcyclopentane	ND	0.250	0.100	ND	1.15	.025	U
111-65-9	Octane	1.07	0.250	0.100	5.00	1.17	.025	
106-93-4	1,2-Dibromoethane	ND	0.250	0.100	ND	1.92	.025	U
100-41-4	Ethylbenzene	15.9	0.250	0.100	69.1	1.09	.025	
872-55-9	2-Ethylthiophene	ND	0.250	0.100	ND	1.15	.025	U
179601-23-1	p/m-Xylene	91.4	0.500	0.100	397.	2.17	.05	
124-11-8	1-Nonene	ND	0.250	0.100	ND	1.29	.025	U
111-84-2	Nonane (C9)	0.670	0.250	0.100	3.52	1.31	.025	
100-42-5	Styrene	ND	0.250	0.100	ND	1.06	.025	U
95-47-6	o-Xylene	25.7	0.500	0.100	112.	2.17	.05	
98-82-8	Isopropylbenzene	0.400	0.250	0.100	1.97	1.23	.025	
103-65-1	n-Propylbenzene	1.44	0.250	0.100	7.08	1.23	.025	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: WG948457-6D	Date Collected	: 10/19/16 10:46
Client ID	: NFSV-05DUP	Date Received	: 10/21/16
Sample Location	:	Date Analyzed	: 11/08/16 21:51
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149179	Instrument ID	: AIRPIANO1
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
620-14-4	1-Methyl-3-Ethylbenzene	8.10	0.500	0.250	39.8	2.46	.05	
622-96-8	1-Methyl-4-Ethylbenzene	3.58	0.250	0.100	17.6	1.23	.025	
108-67-8	1,3,5-Trimethylbenzene	5.95	0.250	0.100	29.3	1.23	.025	
872-05-9	1-Decene	ND	0.500	0.250	ND	2.87	.05	U
611-14-3	1-Methyl-2-Ethylbenzene	5.51	0.500	0.250	27.1	2.46	.05	
124-18-5	Decane (C10)	1.00	0.500	0.250	5.82	2.91	.05	
95-63-6	1,2,4-Trimethylbenzene	15.1	0.500	0.250	74.2	2.46	.05	
135-98-8	sec-Butylbenzene	ND	0.500	0.250	ND	2.74	.05	U
535-77-3	1-Methyl-3-Isopropylbenzene	0.530	0.500	0.250	2.91	2.74	.05	
99-87-6	1-Methyl-4-Isopropylbenzene	ND	0.500	0.250	ND	2.74	.05	U
527-84-4	1-Methyl-2-Isopropylbenzene	ND	0.500	0.250	ND	2.74	.05	U
496-11-7	Indane	1.24	0.500	0.250	5.99	2.42	.05	
95-13-6	Indene	ND	0.500	0.250	ND	2.38	.05	U
1074-43-7	1-Methyl-3-N-Propylbenzene	1.06	0.500	0.250	5.82	2.74	.05	
1074-55-1	1-Methyl-4-N-Propylbenzene	0.370	0.500	0.250	2.03	2.74	.05	J
104-51-8	n-Butylbenzene	ND	0.500	0.250	ND	2.74	.05	U
934-80-5	1,2-Dimethyl-4-Ethylbenzene	1.42	0.500	0.250	7.79	2.74	.05	
135-01-3	1,2-Diethylbenzene	ND	0.500	0.250	ND	2.74	.05	U
1074-17-5	1-Methyl-2-N-Propylbenzene	0.530	0.500	0.250	2.91	2.74	.05	
1758-88-9	1,4-Dimethyl-2-Ethylbenzene	0.750	0.500	0.250	4.12	2.74	.05	
1120-21-4	Undecane	0.530	0.500	0.250	3.39	3.20	.05	
874-41-9	1,3-Dimethyl-4-Ethylbenzene	0.590	0.500	0.250	3.24	2.74	.05	
934-74-7	1,3-Dimethyl-5-Ethylbenzene	1.06	0.500	0.250	5.82	2.74	.05	
2870-04-4	1,3-Dimethyl-2-Ethylbenzene	ND	0.500	0.250	ND	2.74	.05	U
933-98-2	1,2-Dimethyl-3-Ethylbenzene	ND	0.500	0.250	ND	2.74	.05	U
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.500	0.250	ND	2.74	.05	U
538-68-1	N-Pentylbenzene	ND	0.500	0.250	ND	3.03	.05	U
112-40-3	Dodecane (C12)	1.12	1.00	0.500	7.80	6.97	.1	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: WG948457-6D	Date Collected	: 10/19/16 10:46
Client ID	: NFSV-05DUP	Date Received	: 10/21/16
Sample Location	:	Date Analyzed	: 11/08/16 21:51
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149179	Instrument ID	: AIRPIANO1
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
91-20-3	Naphthalene	1.38	0.500	0.250	7.24	2.62	.05	
95-15-8	Benzothiophene	ND	1.00	0.500	ND	5.49	.1	U
12108-13-3	MMT	ND	1.00	0.500	ND	8.92	.1	U
629-50-5	Tridecane	ND	10.0	0.500	ND	75.4	1	U
91-57-6	2-Methylnaphthalene	ND	5.00	0.500	ND	29.1	.5	U
90-12-0	1-Methylnaphthalene	ND	5.00	0.500	ND	29.1	.5	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149179.D
Acq On : 8 Nov 2016 9:51 pm
Operator : AIRPIANO1:RY
Sample : WG948457-6D,3,25,250
Misc : WG948457,ICAL13049
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 10 12:04:22 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:33:15 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.198	49	120631	10.000	ppbV	0.00
Standard Area = 123393			Recovery = 97.76%			
27) 1,4-difluorbenzene	14.201	114	272540	10.000	ppbV	0.00
Standard Area = 263318			Recovery = 103.50%			
54) chlorobenzene-D5	27.633	117	198724	10.000	ppbV	0.00
Standard Area = 190793			Recovery = 104.16%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.623	65	83915	11.132	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 111.32%			
46) Toluene-D8	20.948	98	222153	10.684	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 106.84%			
62) 4-Bromofluorobenzene (...	34.334	95	113117	10.377	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 103.77%			
Target Compounds						Qvalue
2) 1,3-butadiene	0.000		0	N.D.	d	
4) Isopentane	5.878	41	29251	2.504	ppbV	100
5) 1-Pentene	6.194	42	2558	0.193	ppbV	97
6) 2-Methyl-1-butene	6.352	55	4123	0.264	ppbV	90
7) Pentane	6.468	43	71734	3.588	ppbV	99
9) 2-Pentene (trans)	6.668	55	4784	0.316	ppbV	97
10) 2-Pentene (cis)	6.889	55	988	0.071	ppbV	80
11) Tertiary butanol	6.910	59	3670	0.162	ppbV	86
12) Cyclopentane	8.643	70	1546	0.342	ppbV #	71
13) 2,3-Dimethylbutane	8.669	71	784M4	0.188	ppbV	
14) 2-Methylpentane	8.816	43	13833	0.610	ppbV	99
15) MTBE	8.674	73	95875	4.149	ppbV #	62
16) 3-Methylpentane	9.460	57	6020	0.403	ppbV	96
17) 1-Hexene	9.709	56	342M6	0.040	ppbV	
18) Hexane	10.286	57	17668	1.384	ppbV #	53
19) Diisopropyl ether	0.000		0	N.D.	d	
20) Ethyl tertiary butyl e...	11.353	59	453	0.018	ppbV #	59
21) 2,2-Dimethylpentane	0.000		0	N.D.	d	
23) Methylcyclopentane	11.827	56	7805	0.492	ppbV	96
24) 2,4-Dimethylpentane	11.973	43	1369	0.067	ppbV	92
25) 1,2-Dichloroethane	0.000		0	N.D.	d	
26) Cyclohexane	13.909	56	926	0.075	ppbV	93
28) 2-Methylhexane	14.391	43	3909	0.169	ppbV	91

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149179.D
Acq On : 8 Nov 2016 9:51 pm
Operator : AIRPIANO1:RY
Sample : WG948457-6D,3,25,250
Misc : WG948457,ICAL13049
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 10 12:04:22 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:33:15 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
29) Benzene	13.316	78	363729	13.993	ppbV	99
30) 2,3-Dimethylpentane	14.548	56	2948	0.181	ppbV #	78
31) Thiophene	13.596	84	578	0.052	ppbV	90
32) 3-Methylhexane	15.007	43	3834	0.212	ppbV	96
33) TAME	14.850	73	1036	0.046	ppbV	75
34) 1-Heptene	0.000		0	N.D.	d	
35) Isooctane	15.993	57	7911	0.194	ppbV	92
36) Heptane	16.777	43	6312	0.359	ppbV	98
37) Methylcyclohexane	18.479	83	1344M6	0.101	ppbV	
38) 2,5-Dimethylhexane	19.308	57	454M3	0.022	ppbV	
39) 2,4-Dimethyhexane / 2,...	19.487	57	875	0.035	ppbV #	40
40) 2,3,4-Trimethylpentane	20.840	43	3621	0.128	ppbV	96
41) 2,3,3-Trimethylpentane	0.000		0	N.D.	d	
42) 2,3-Dimethylhexane	21.706	43	1113	0.044	ppbV	90
43) 3-Ethylhexane	22.926	43	612	0.020	ppbV	51
44) 2-Methylheptane	22.169	57	1310	0.068	ppbV	91
45) 3-Methylheptane	22.818	43	1657	0.078	ppbV	98
47) Toluene	21.263	91	578205	19.074	ppbV	100
48) 2-Methylthiophene	0.000		0	N.D.	d	
49) 3-Methylthiophene	22.080	97	426	0.022	ppbV #	71
50) 1-Octene	0.000		0	N.D.	d	
51) 1-ethyl-1-methylcyclop...	0.000		0	N.D.	d	
52) Octane	25.081	43	2573	0.107	ppbV	90
53) 1,2-Dibromoethane	0.000		0	N.D.	d	
55) Ethylbenzene	29.486	91	44592	1.590	ppbV	100
56) 2-Ethylthiophene	0.000		0	N.D.	d	
57) p/m-Xylene	30.233	91	197207M4	9.135	ppbV	
58) 1-Nonene	0.000		0	N.D.	d	
59) Nonane	33.901	43	1399	0.067	ppbV	100
60) Styrene	0.000		0	N.D.	d	
61) o-Xylene	32.257	91	56814	2.568	ppbV	100
63) Isopropylbenzene	35.126	105	1151	0.040	ppbV	78
64) n-Propylbenzene	37.698	120	1090	0.144	ppbV #	74
65) 1-Methyl-3-ethylbenzene	38.323	105	22234	0.810	ppbV	99
66) 1-Methyl-4-ethylbenzene	38.515	105	10581	0.358	ppbV	95
67) 1,3,5-Trimethylbenzene	38.996	105	14263	0.595	ppbV	98
68) 1-Decene	0.000		0	N.D.	d	
69) 1-Methyl-2-ethylbenzene	39.861	105	15437	0.551	ppbV	100
70) Decane	42.504	43	2153M6	0.100	ppbV	
71) 1,2,4-Trimethylbenzene	41.147	105	36124	1.513	ppbV	98

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149179.D
Acq On : 8 Nov 2016 9:51 pm
Operator : AIRPIANO1:RY
Sample : WG948457-6D,3,25,250
Misc : WG948457,ICAL13049
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 10 12:04:22 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:33:15 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

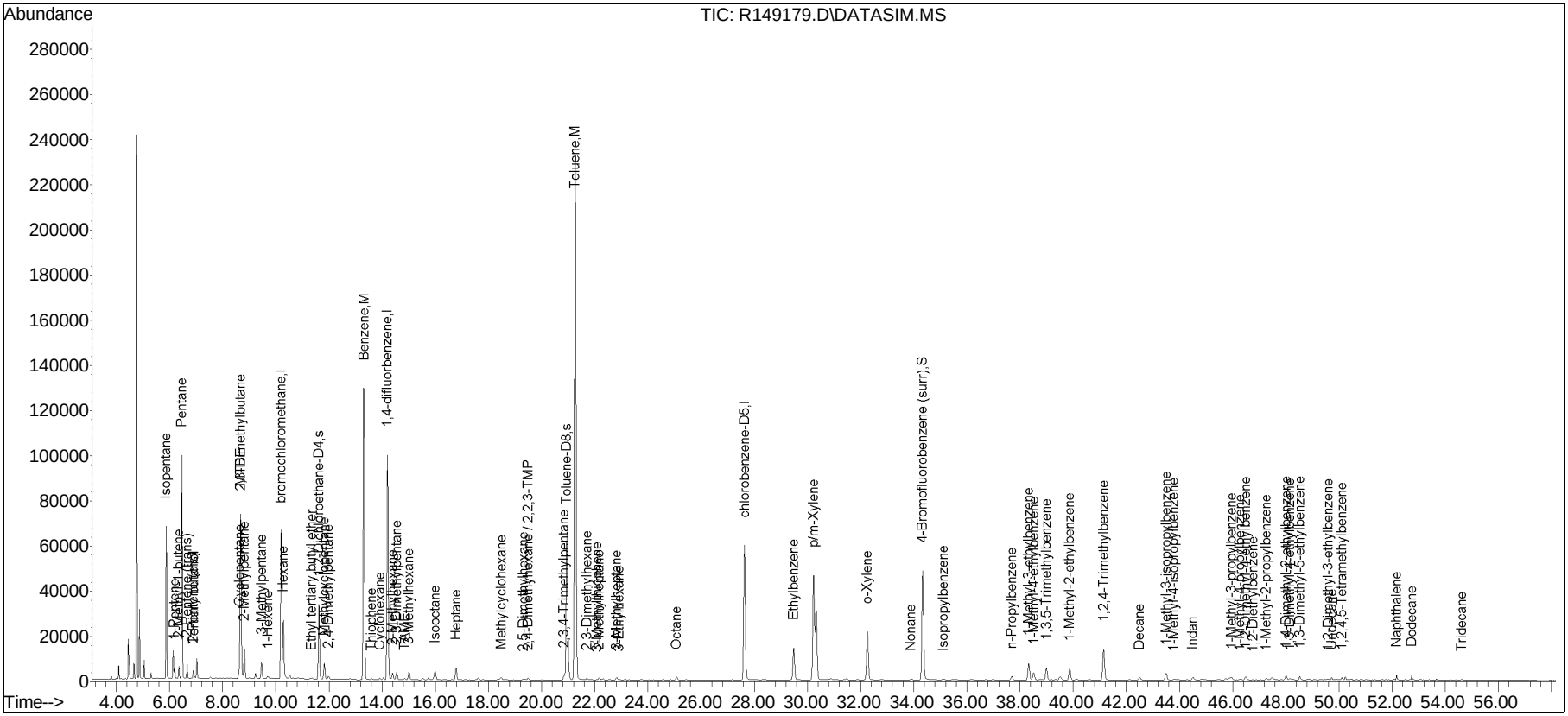
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
72) sec-Butylbenzene	0.000		0	N.D.	d	
73) 1-Methyl-3-isopropylbe...	43.502	119	1641	0.053	ppbV #	56
74) 1-Methyl-4-isopropylbe...	43.778	119	342	0.013	ppbV #	31
75) 1-Methyl-2-isopropylbe...	44.884		0	N.D.		
76) Indan	44.499	117	2323	0.124	ppbV	96
77) Indene	0.000		0	N.D.	d	
78) 1-Methyl-3-propylbenzene	45.953	105	3656	0.106	ppbV	90
79) 1-Methyl-4-propylbenzene	46.278	105	1585	0.037	ppbV	71
80) n-Butylbenzene	0.000		0	N.D.	d	
81) 1,2-Dimethyl-4-ethylbe...	46.494	119	3726	0.142	ppbV	92
82) 1,2-Diethylbenzene	46.758	119	231	0.017	ppbV #	86
83) 1-Methyl-2-propylbenzene	47.263	105	1954	0.053	ppbV	82
84) 1,4-Dimethyl-2-ethylbe...	48.020	119	2076M3	0.075	ppbV	
85) Undecane	49.726	57	1165M6	0.053	ppbV	
86) 1,3-Dimethyl-4-ethylbe...	48.152	119	1888	0.059	ppbV	84
87) 1,3-Dimethyl-5-ethylbe...	48.525	119	3179	0.106	ppbV	91
88) 1,3-Dimethyl-2-ethylbe...	0.000		0	N.D.	d	
89) 1,2-Dimethyl-3-ethylbe...	49.594	119	655M6	0.022	ppbV	
90) 1,2,4,5-Tetramethylben...	50.111	119	1308	0.013	ppbV	88
91) Pentylbenzene	0.000		0	N.D.	d	
92) Dodecane	52.738	43	2681M4	0.112	ppbV	
93) Naphthalene	52.170	128	4462	0.138	ppbV	94
94) Benzothiophene	52.325		0	N.D.		
95) MMT	0.000		0	N.D.	d	
96) Tridecane	54.618	57	487	0.014	ppbV	89
97) 2-Methylnaphthalene	54.587		0	N.D.		
98) 1-Methylnaphthalene	54.886		0	N.D.		

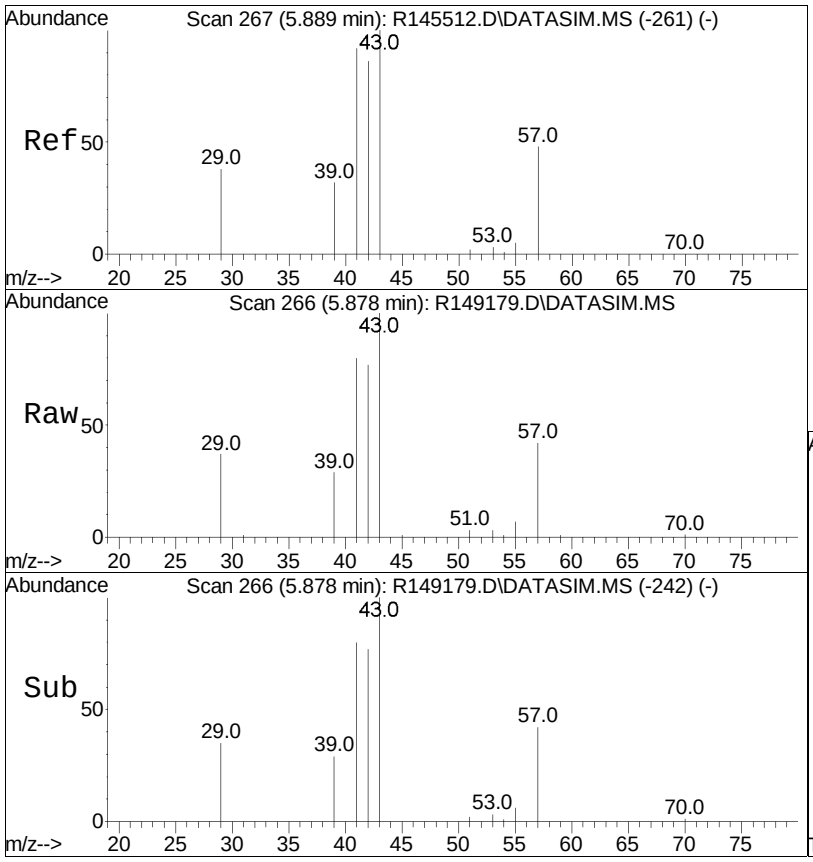
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : AIR-NF-PIANO - NF PIANO LIST161108PIANO\R149170.D

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149179.D
Acq On : 8 Nov 2016 9:51 pm
Operator : AIRPIANO1:RY
Sample : WG948457-6D,3,25,250
Misc : WG948457,ICAL13049
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 10 12:04:22 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:33:15 2016
Response via : Initial Calibration

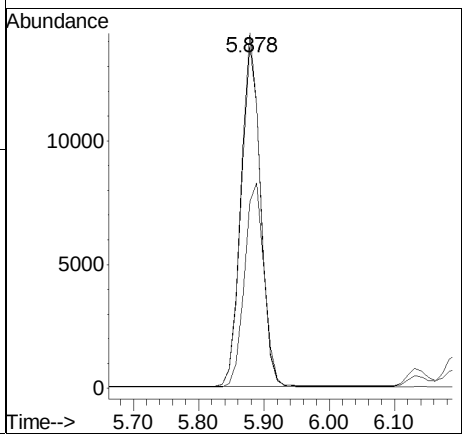


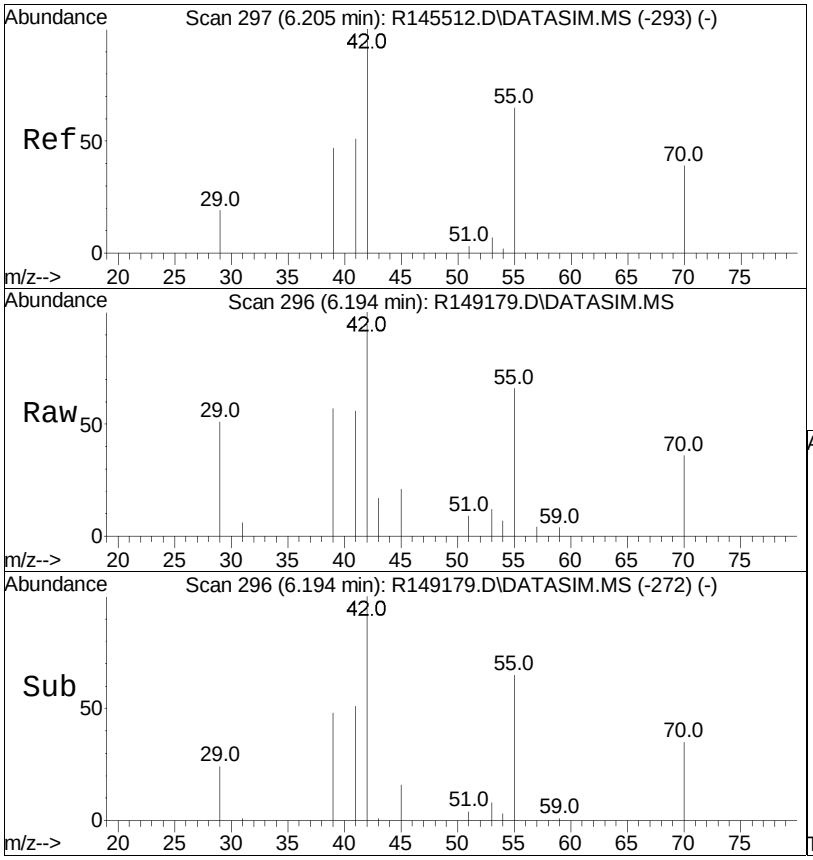


#4
Isopentane
Concen: 2.50 ppbV
RT: 5.878 min Scan# 266
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 41 Resp: 29251

Ion	Ratio	Lower	Upper
41	100		
57	52.5	31.8	71.8
42	96.5	76.7	116.7

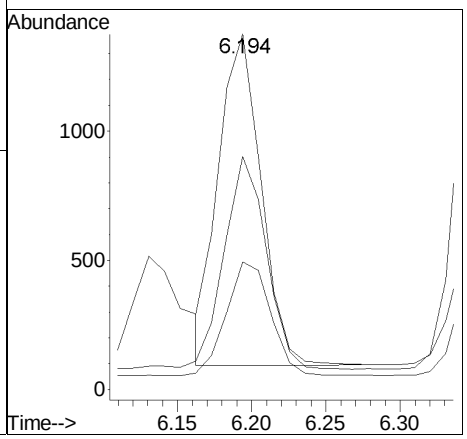


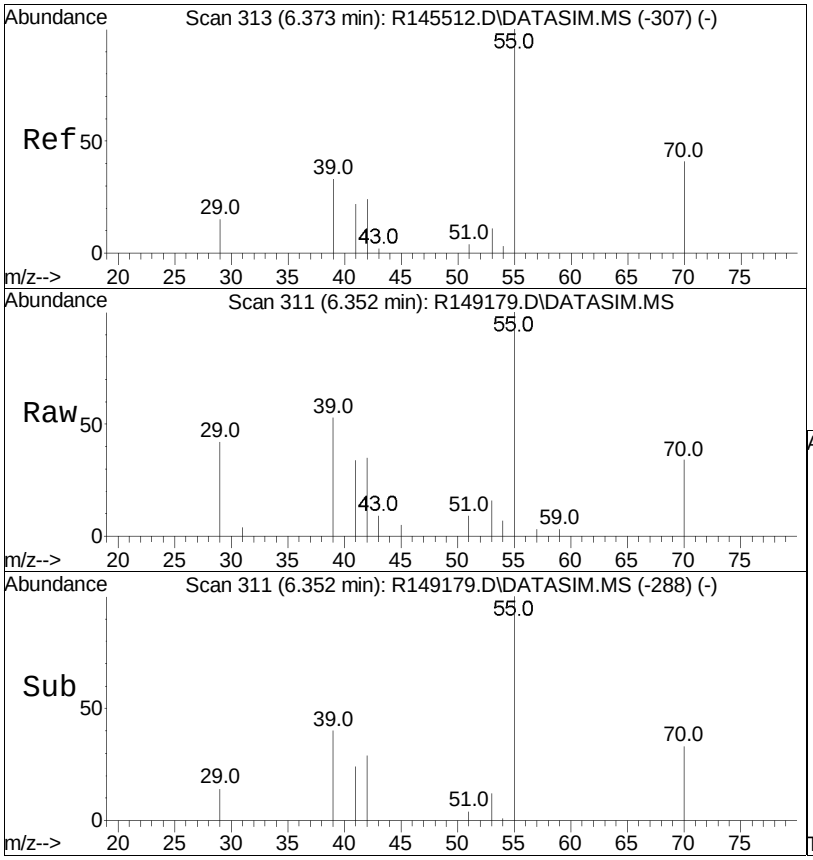


#5
1-Pentene
Concen: 0.19 ppbV
RT: 6.194 min Scan# 296
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 42 Resp: 2558

Ion	Ratio	Lower	Upper
42	100		
55	65.6	43.2	83.2
70	35.9	13.6	53.6

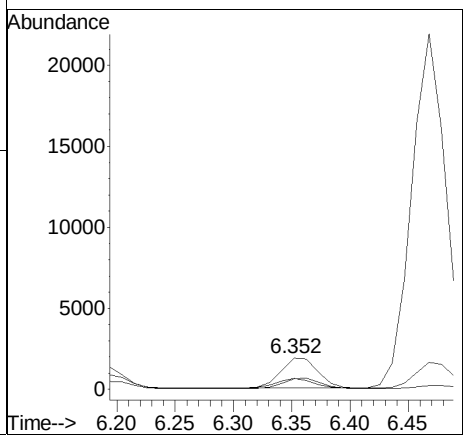


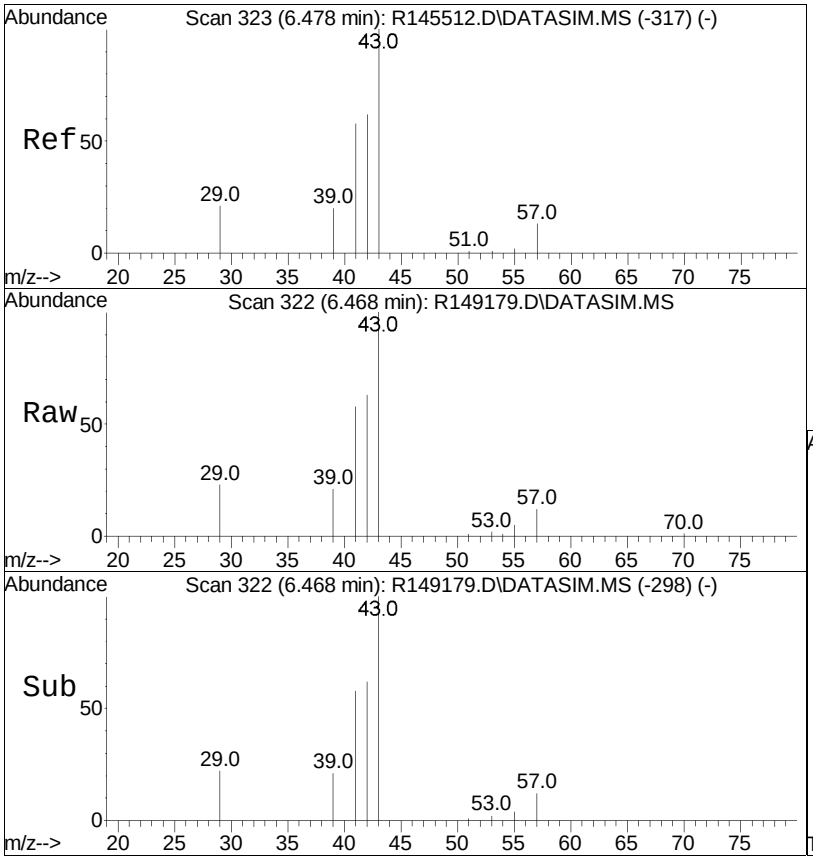


#6
2-Methyl-1-butene
Concen: 0.26 ppbV
RT: 6.352 min Scan# 311
Delta R.T. -0.011 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 55 Resp: 4123

Ion	Ratio	Lower	Upper
55	100		
70	33.9	16.1	56.1
42	35.5	5.4	45.4

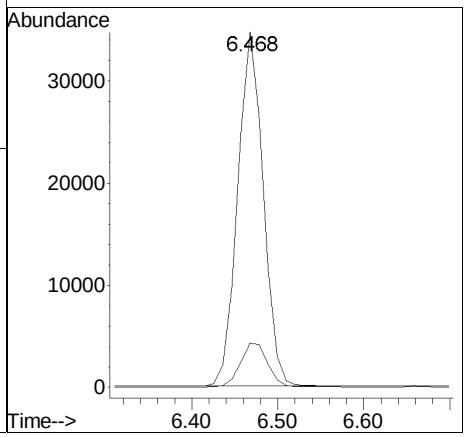


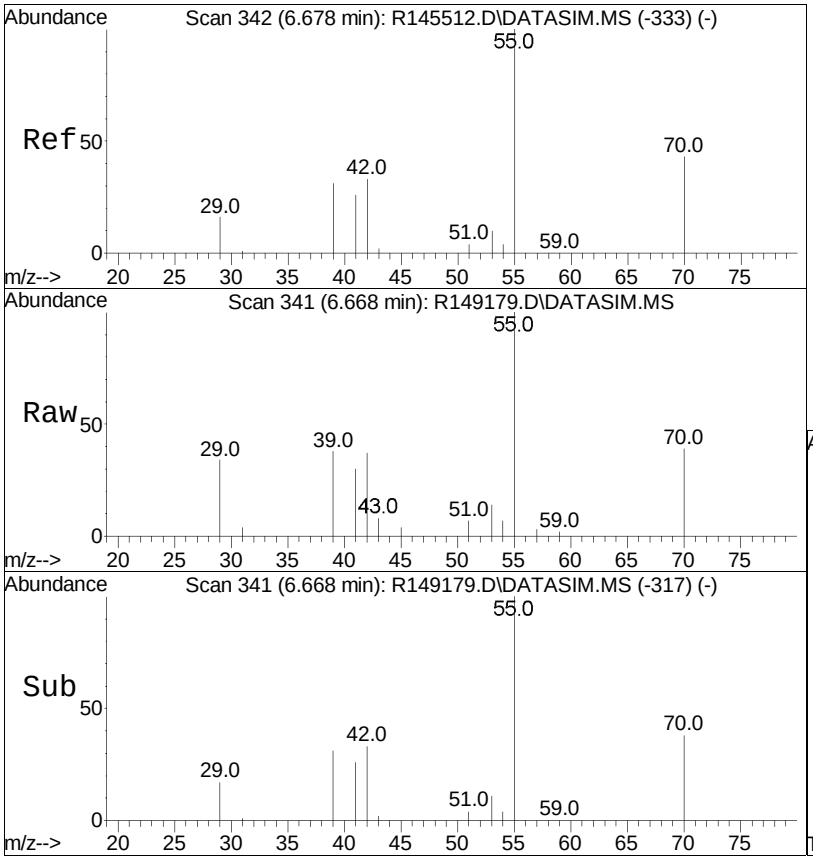


#7
Pentane
Concen: 3.59 ppbV
RT: 6.468 min Scan# 322
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 43 Resp: 71734

Ion	Ratio	Lower	Upper
43	100		
57	12.5	0.0	32.2

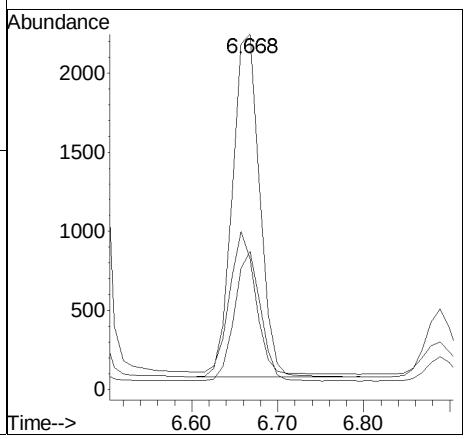


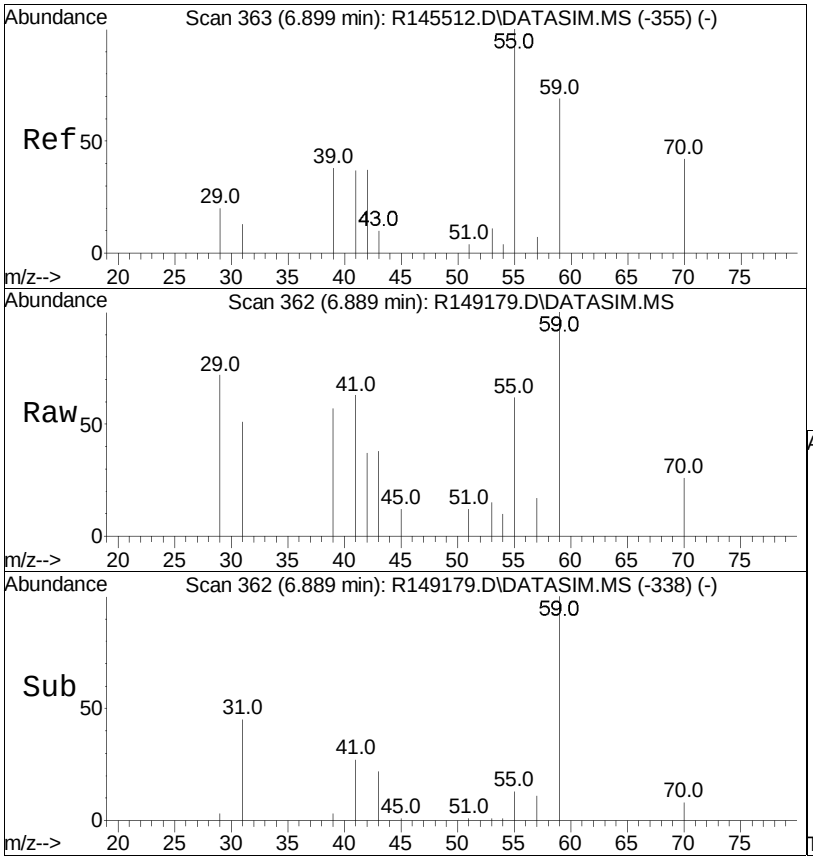


#9
2-Pentene (trans)
Concen: 0.32 ppbV
RT: 6.668 min Scan# 341
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 55 Resp: 4784

Ion	Ratio	Lower	Upper
55	100		
70	38.9	17.7	57.7
42	36.8	14.5	54.5

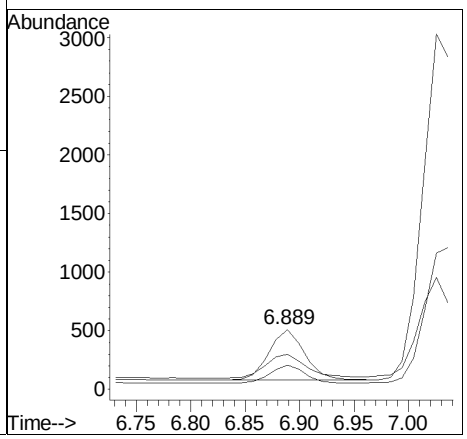


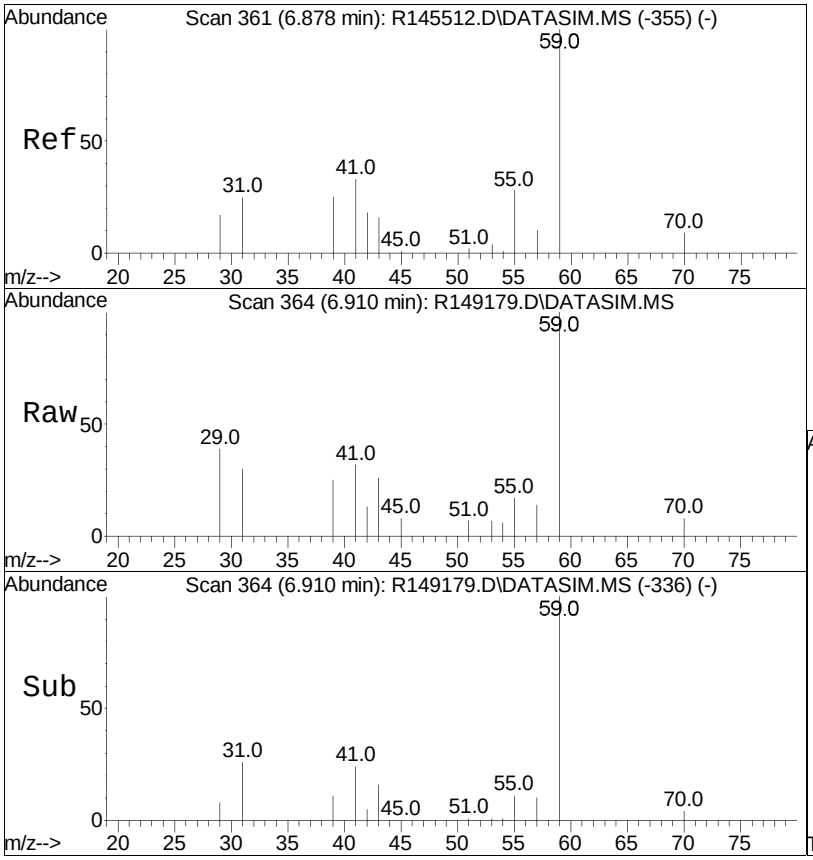


#10
2-Pentene (cis)
Concen: 0.07 ppbV
RT: 6.889 min Scan# 362
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 55 Resp: 988

Ion	Ratio	Lower	Upper
55	100		
70	40.9	16.4	56.4
42	58.9	19.4	59.4

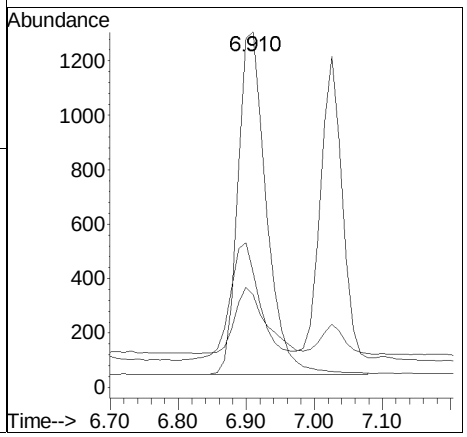


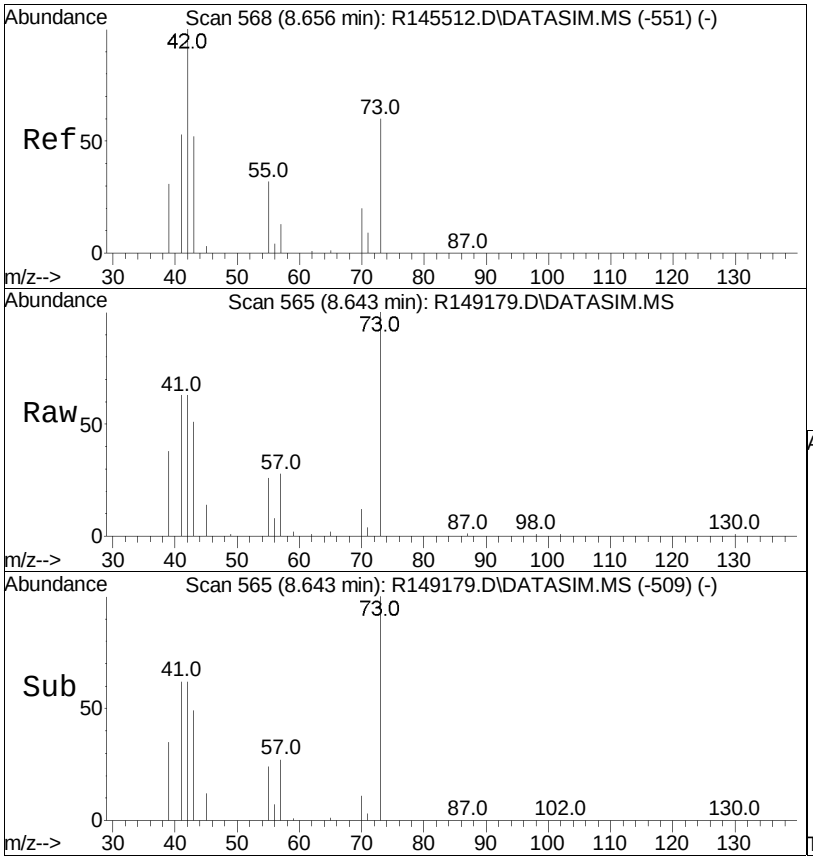


#11
Tertiary butanol
Concen: 0.16 ppbV
RT: 6.910 min Scan# 364
Delta R.T. 0.042 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 59 Resp: 3670

Ion	Ratio	Lower	Upper
59	100		
41	32.4	20.2	60.2
43	26.1	0.0	38.4

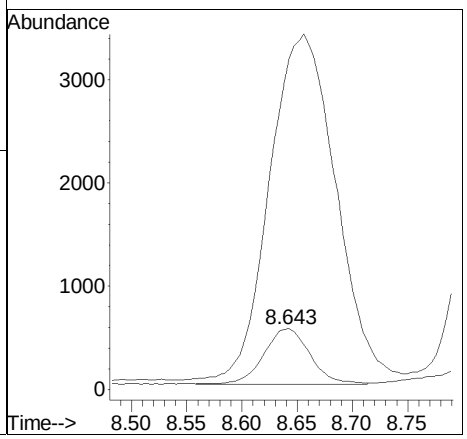


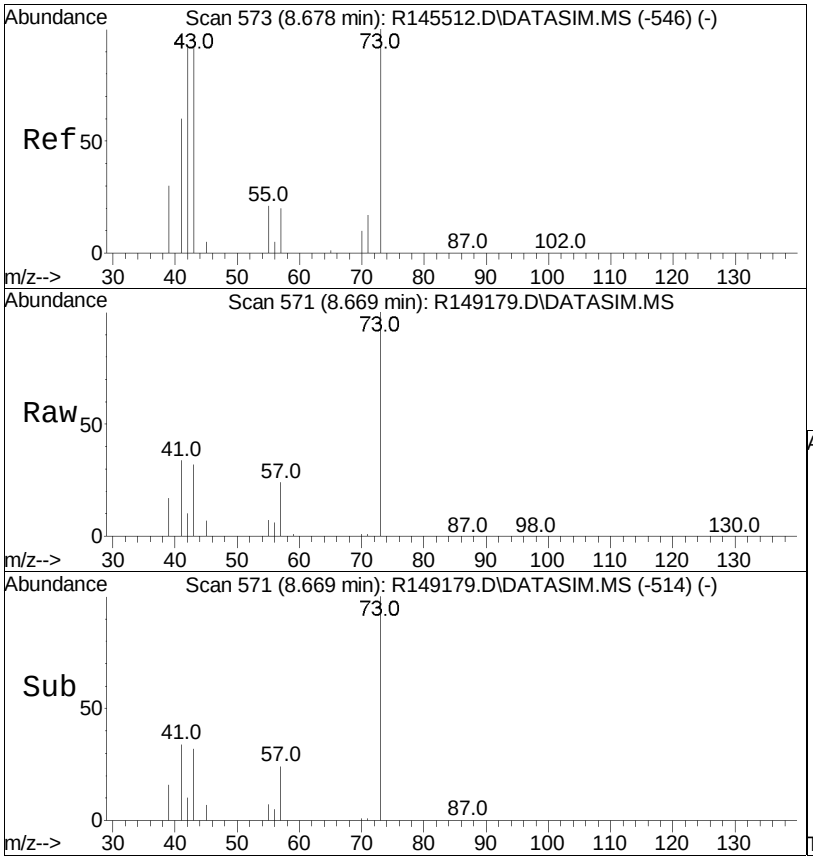


#12
Cyclopentane
Concen: 0.34 ppbV
RT: 8.643 min Scan# 565
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 70 Resp: 1546

Ion	Ratio	Lower	Upper
70	100		
42	544.7	617.9	657.9#

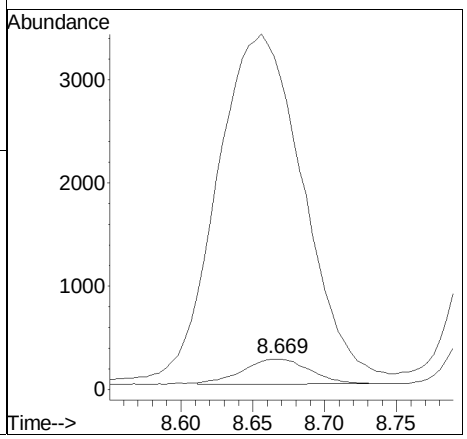


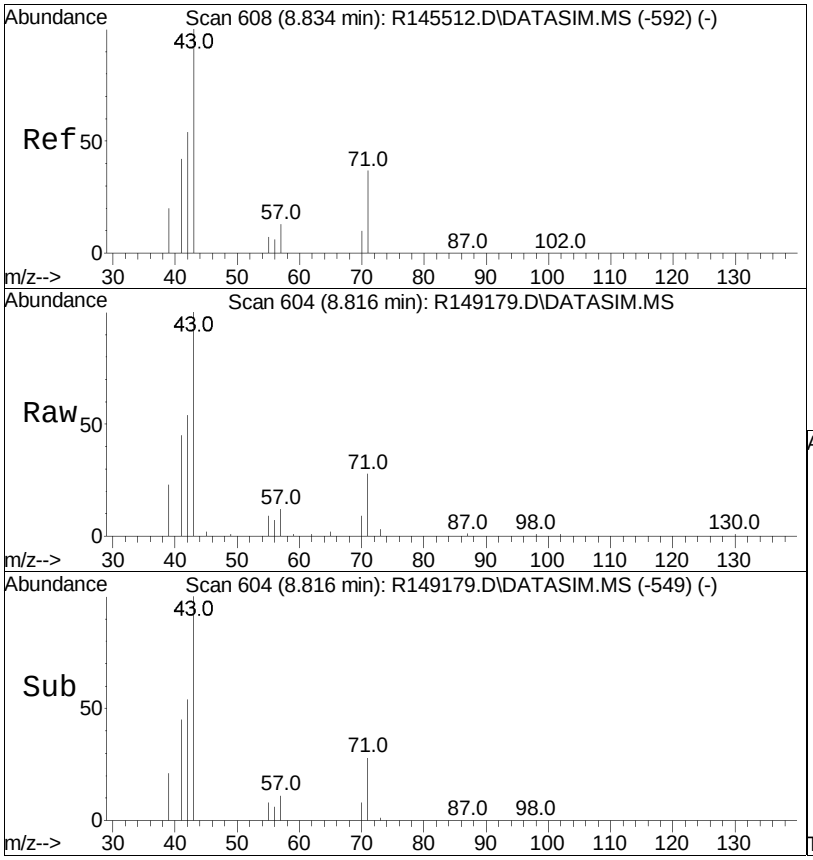


#13
2,3-Dimethylbutane
Concen: 0.19 ppbV m
RT: 8.669 min Scan# 571
Delta R.T. 0.004 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 71 Resp: 784

Ion	Ratio	Lower	Upper
71	100		
42	1025.9	652.6	692.6#

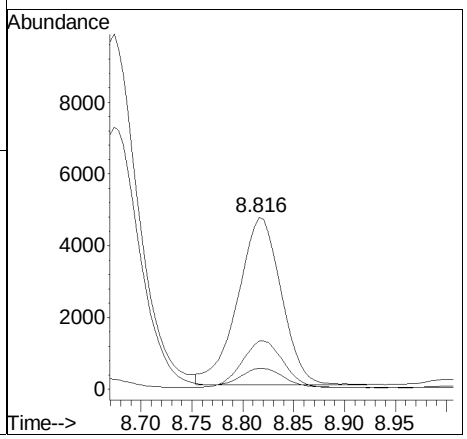


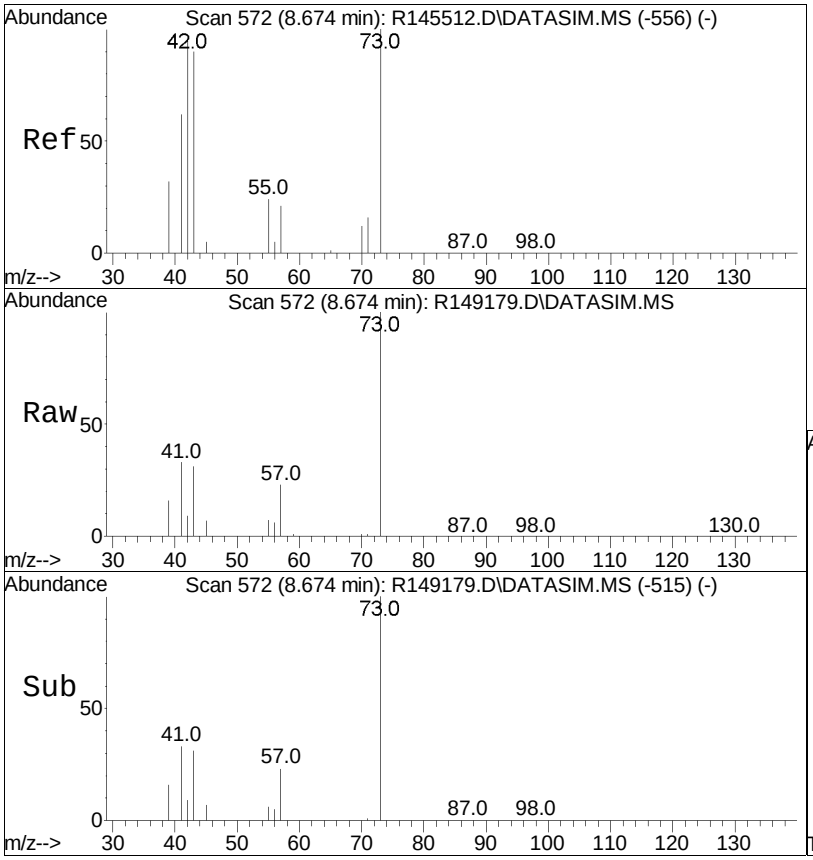


#14
2-Methylpentane
Concen: 0.61 ppbV
RT: 8.816 min Scan# 604
Delta R.T. -0.005 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 43 Resp: 13833

Ion	Ratio	Lower	Upper
43	100		
71	28.1	8.8	48.8
57	12.2	0.0	31.6

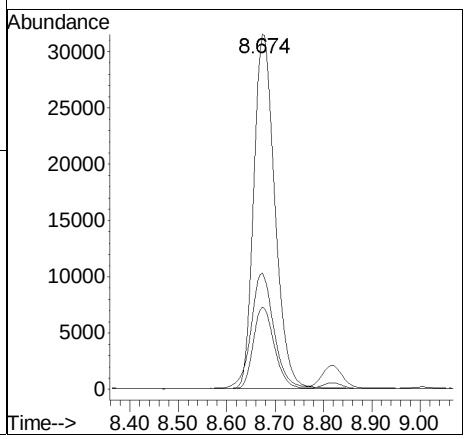


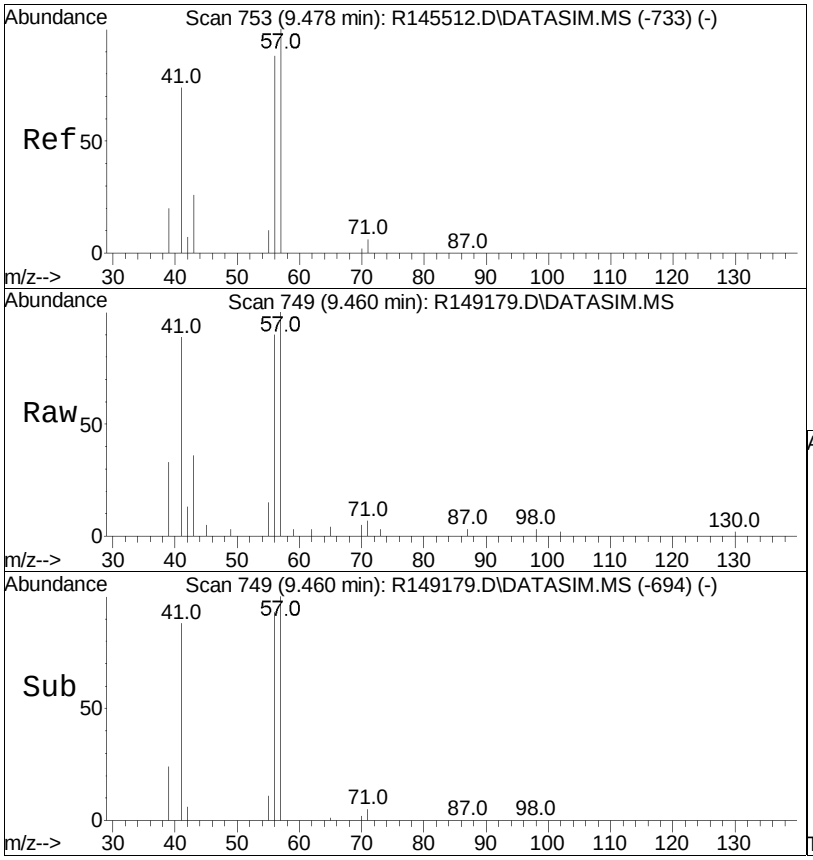


#15
MTBE
Concen: 4.15 ppbV
RT: 8.674 min Scan# 572
Delta R.T. 0.004 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 73 Resp: 95875

Ion	Ratio	Lower	Upper
73	100		
41	32.8	54.6	94.6#
57	23.2	3.7	43.7

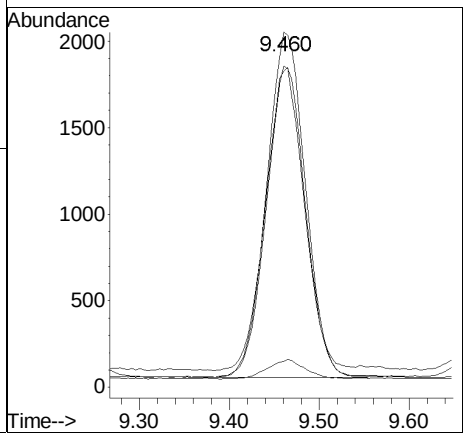


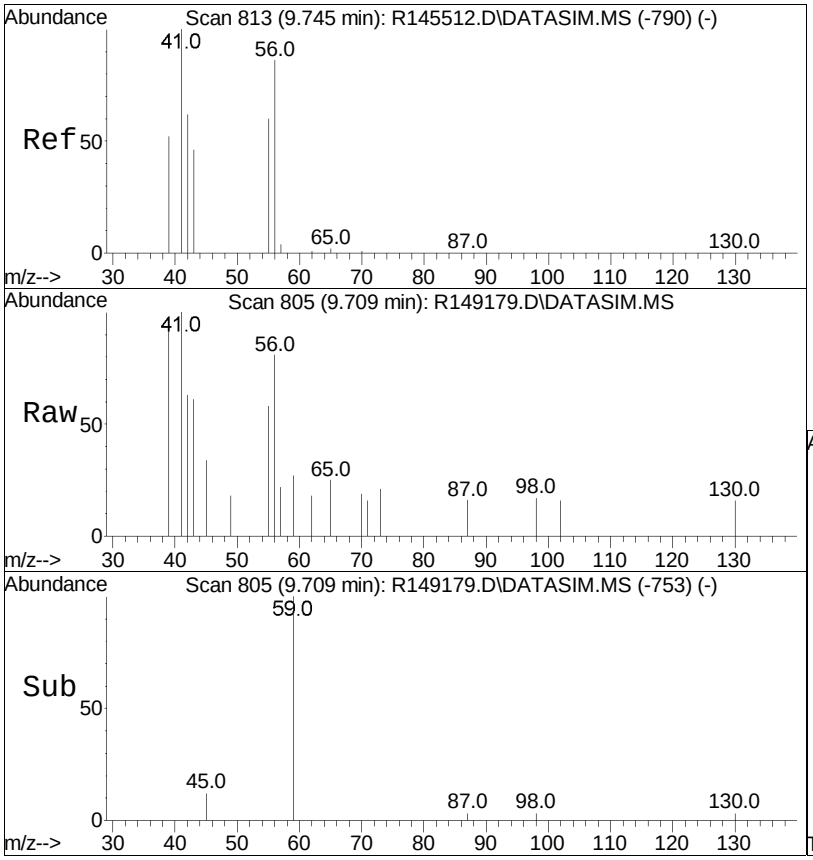


#16
3-Methylpentane
Concen: 0.40 ppbV
RT: 9.460 min Scan# 749
Delta R.T. -0.005 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 57 Resp: 6020

Ion	Ratio	Lower	Upper
57	100		
56	90.5	69.5	109.5
71	7.3	0.0	25.5
41	89.0	63.4	103.4

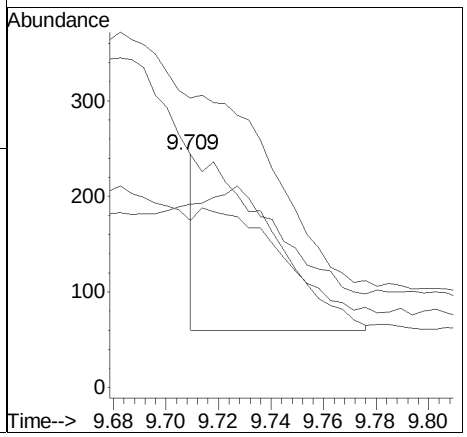


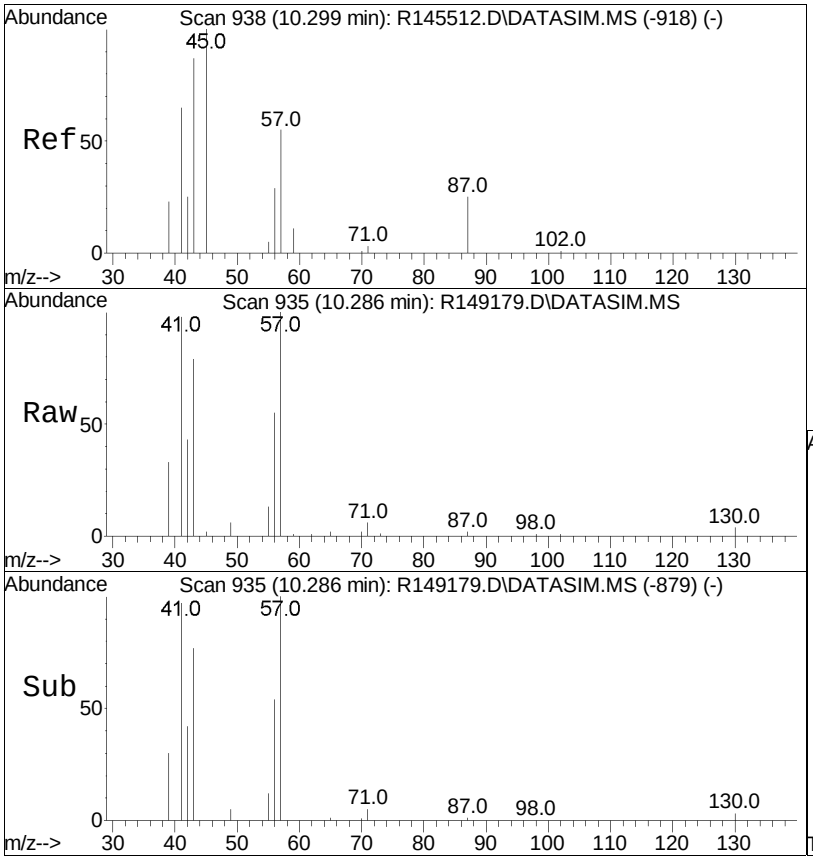


#17
1-Hexene
Concen: 0.04 ppbV m
RT: 9.709 min Scan# 805
Delta R.T. -0.018 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 56 Resp: 342

Ion	Ratio	Lower	Upper
56	100		
41	124.2	111.5	151.5
55	71.7	51.2	91.2
42	78.7	62.3	102.3

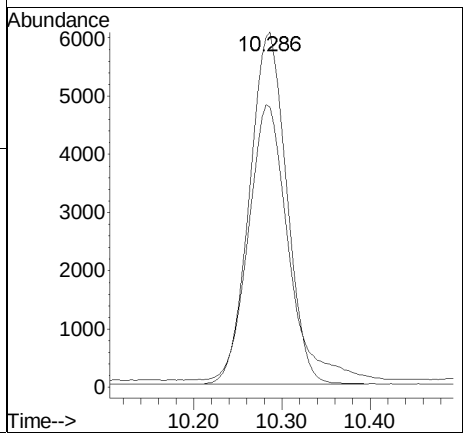


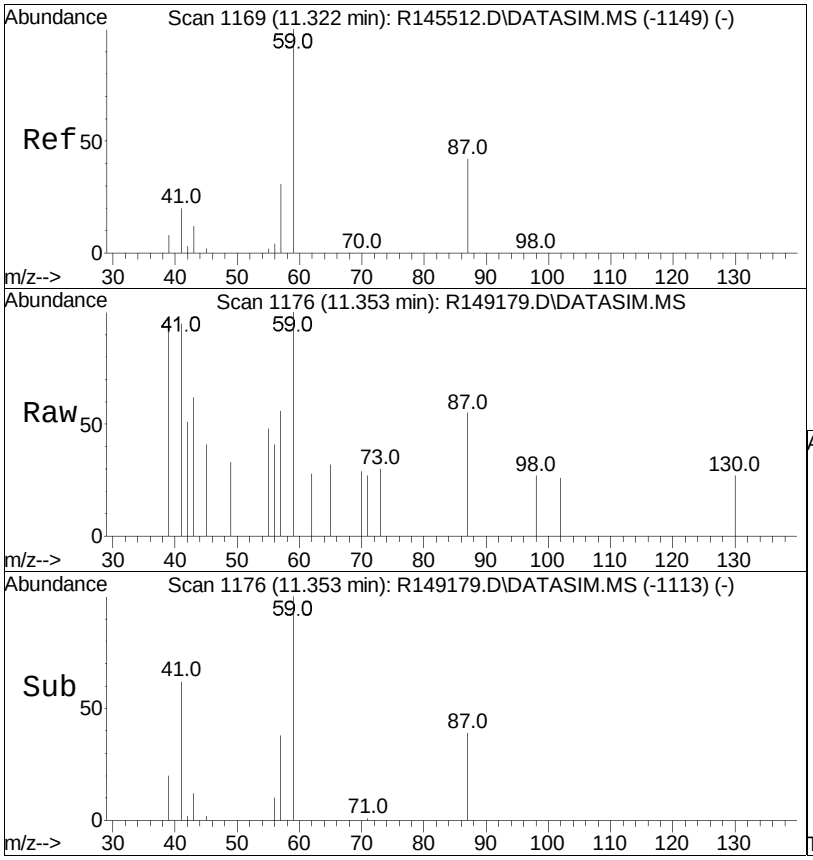


#18
Hexane
Concen: 1.38 ppbV
RT: 10.286 min Scan# 935
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 57 Resp: 17668

Ion	Ratio	Lower	Upper
57	100		
43	78.9	114.8	154.8#

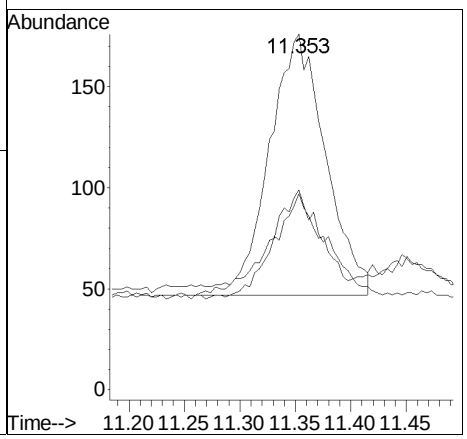


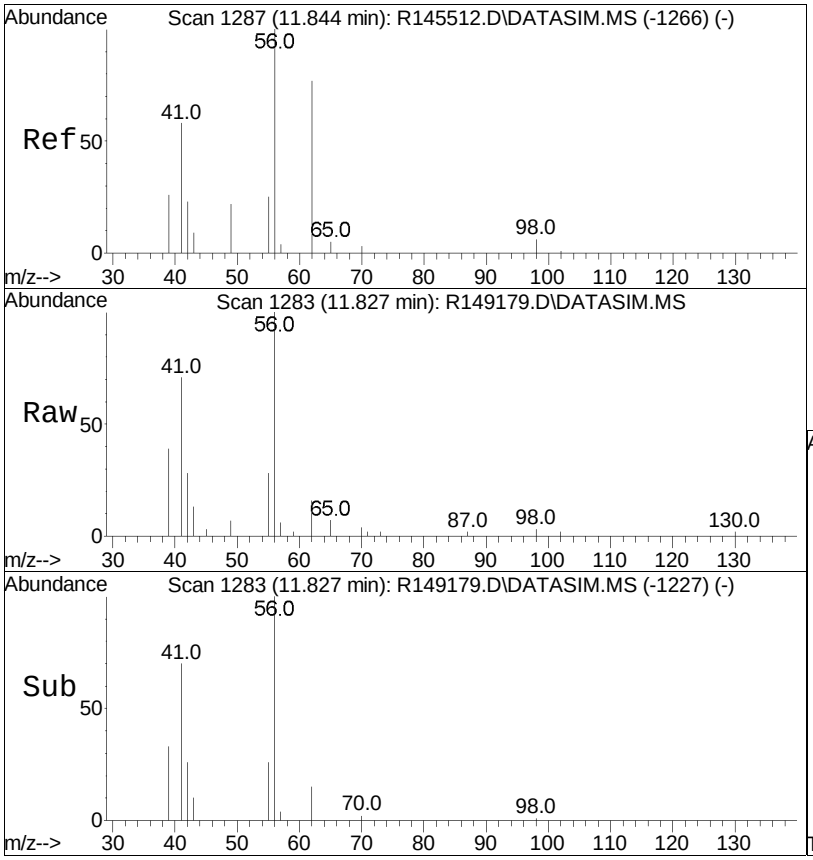


#20
Ethyl tertiary butyl ether
Concen: 0.02 ppbV
RT: 11.353 min Scan# 1176
Delta R.T. 0.031 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 59 Resp: 453

Ion	Ratio	Lower	Upper
59	100		
87	55.1	13.6	53.6#
57	56.3	11.7	51.7#

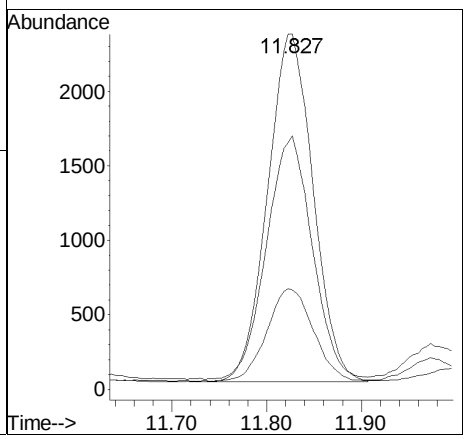


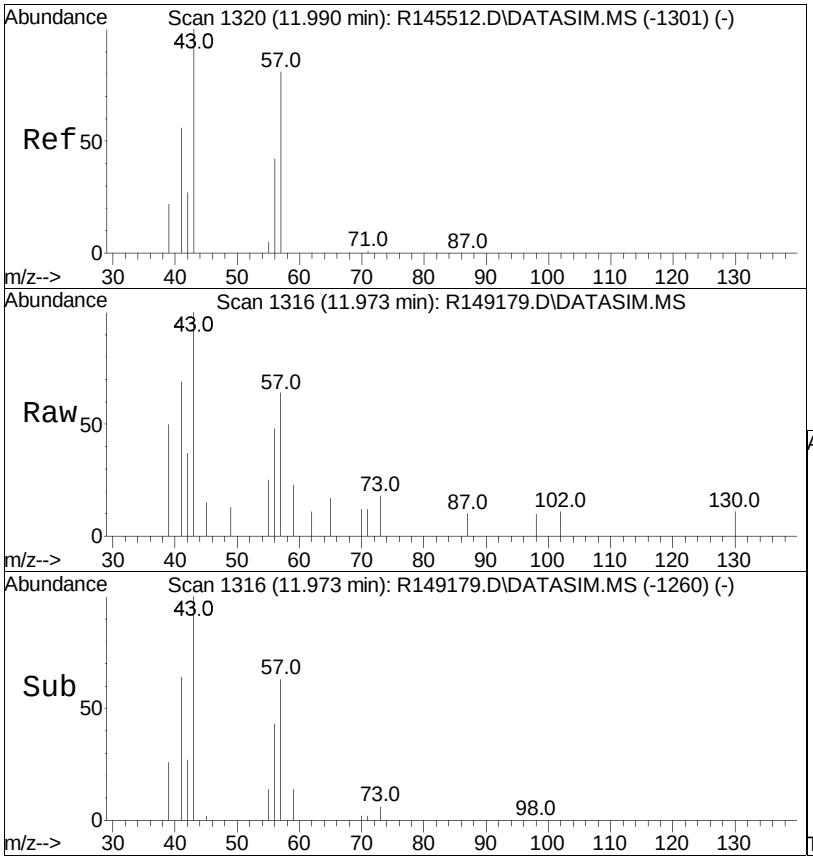


#23
Methylcyclopentane
Concen: 0.49 ppbV
RT: 11.827 min Scan# 1283
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 56 Resp: 7805

Ion	Ratio	Lower	Upper
56	100		
55	28.0	6.8	46.8
41	71.4	47.8	87.8

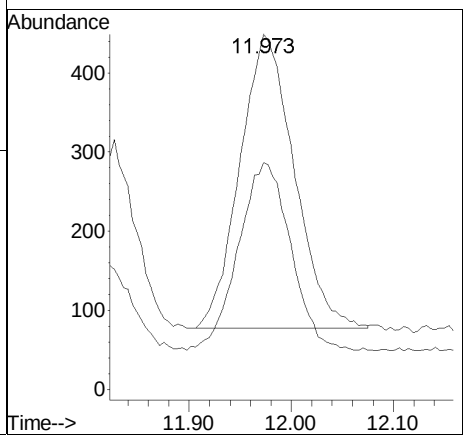


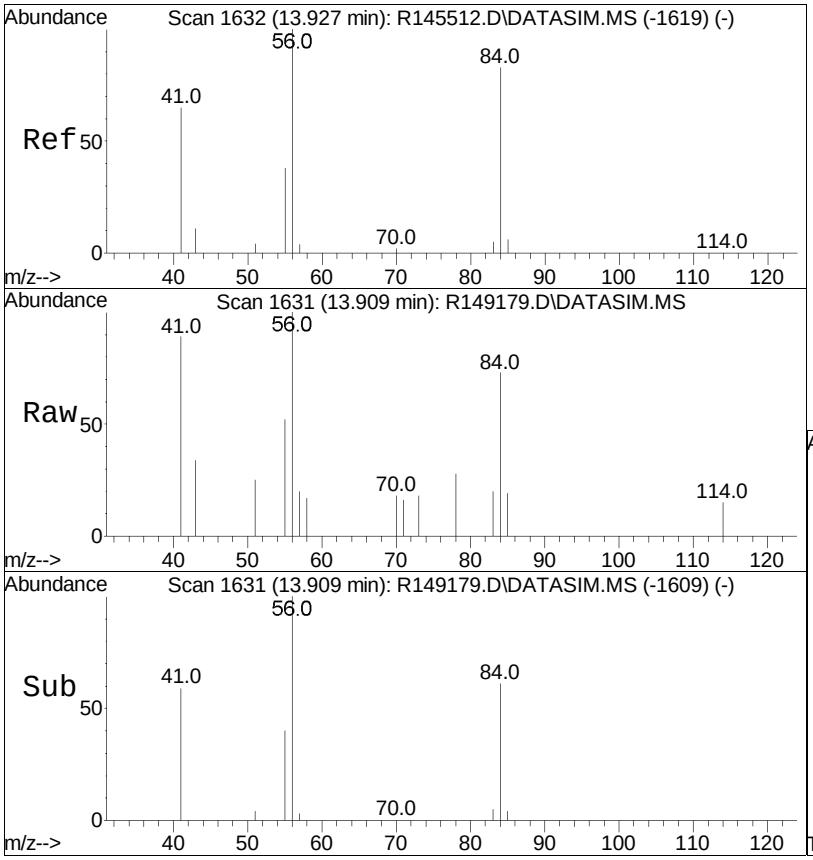


#24
2,4-Dimethylpentane
Concen: 0.07 ppbV
RT: 11.973 min Scan# 1316
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 43 Resp: 1369

Ion	Ratio	Lower	Upper
43	100		
57	63.9	50.5	90.5

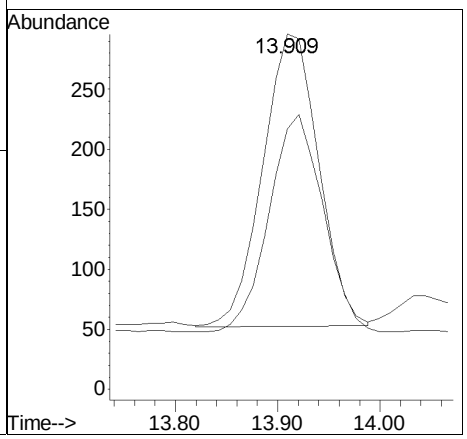


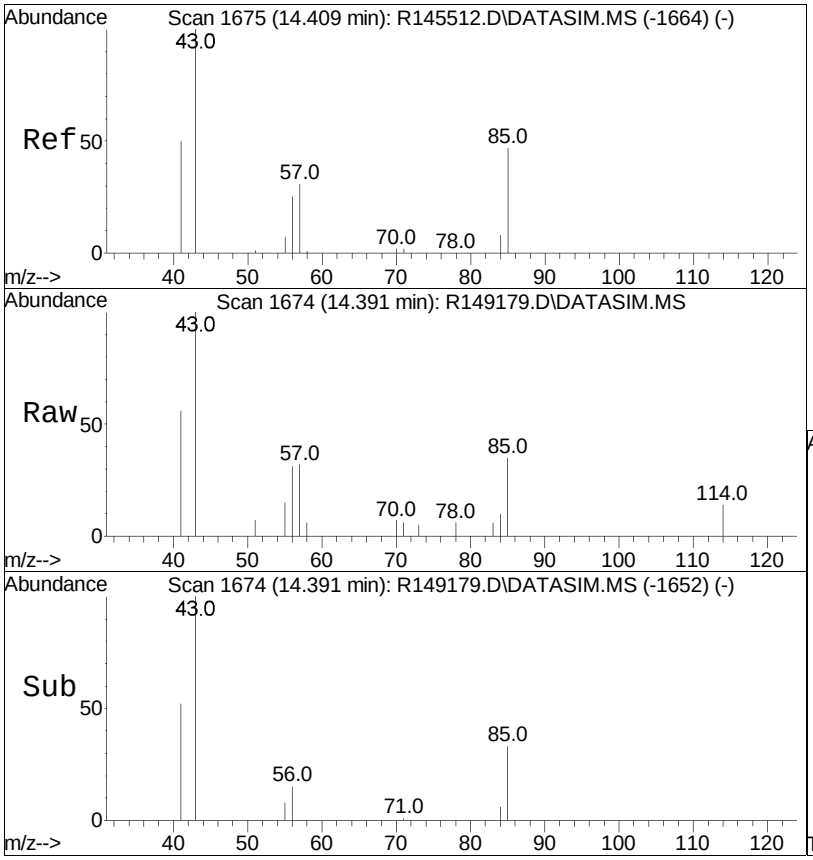


#26
Cyclohexane
Concen: 0.07 ppbV
RT: 13.909 min Scan# 1631
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 56 Resp: 926

Ion	Ratio	Lower	Upper
56	100		
84	73.3	47.9	87.9

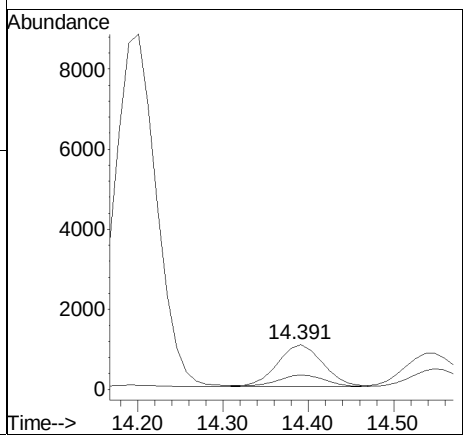


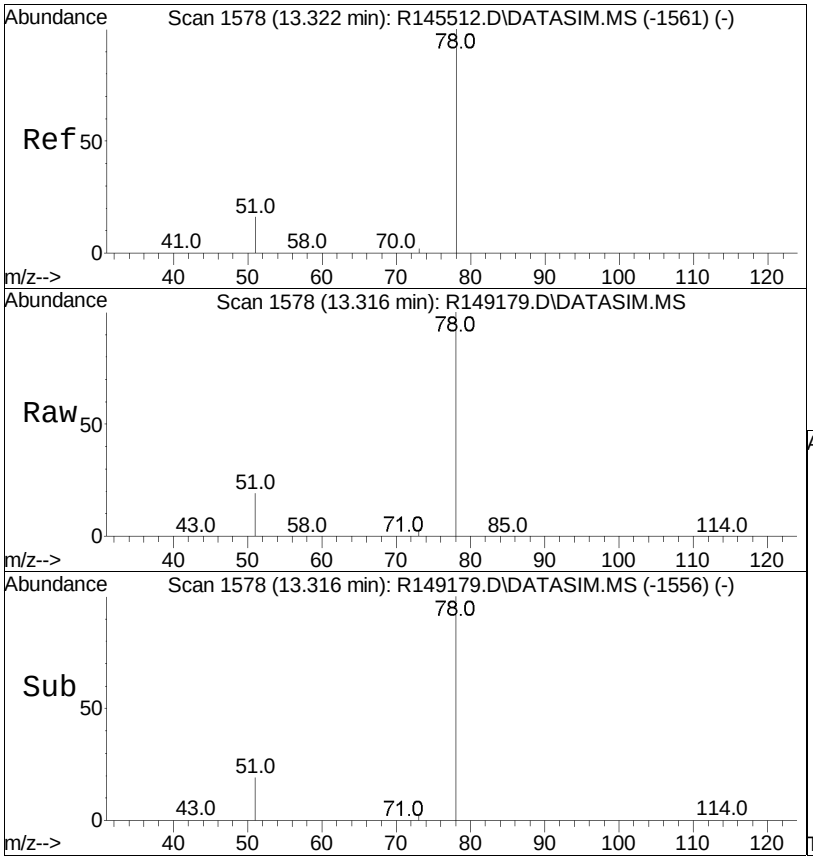


#28
2-Methylhexane
Concen: 0.17 ppbV
RT: 14.391 min Scan# 1674
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 43 Resp: 3909

Ion	Ratio	Lower	Upper
43	100		
57	32.4	7.8	47.8

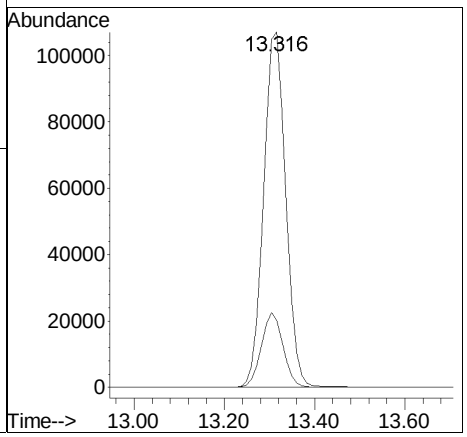


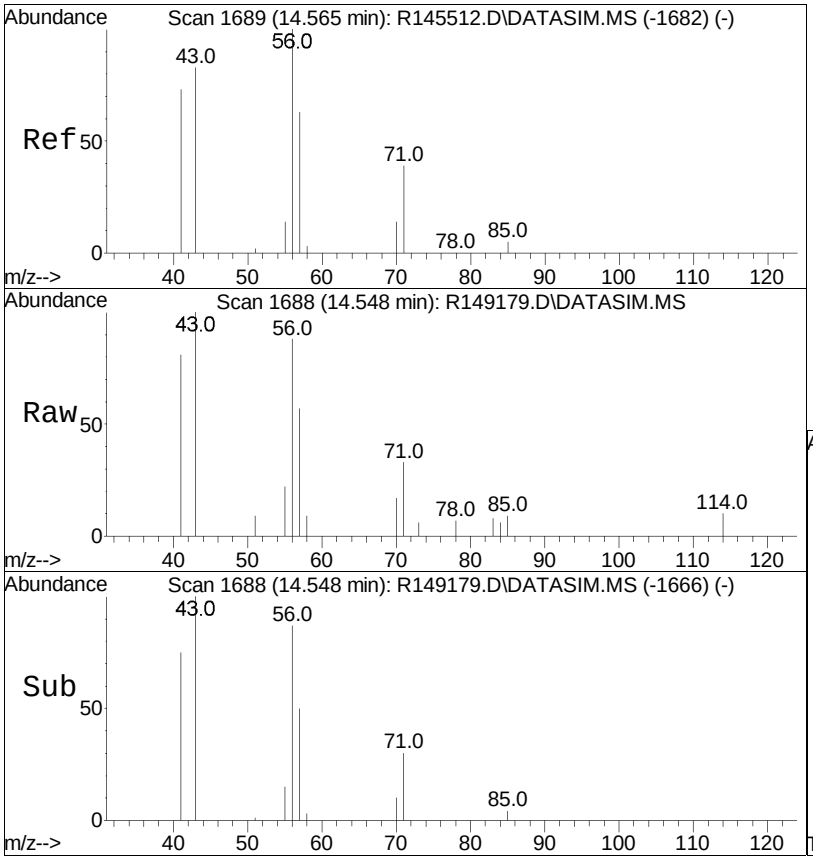


#29
Benzene
Concen: 13.99 ppbV
RT: 13.316 min Scan# 1578
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 78 Resp: 363729

Ion	Ratio	Lower	Upper
78	100		
51	18.9	0.0	39.4

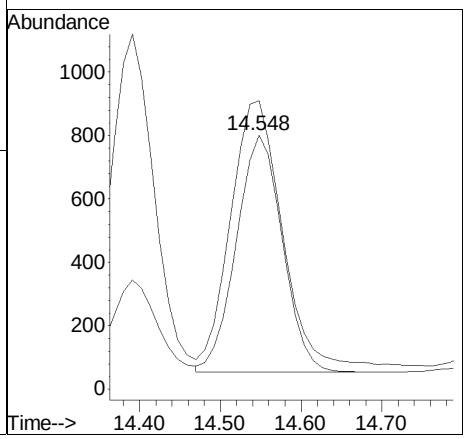


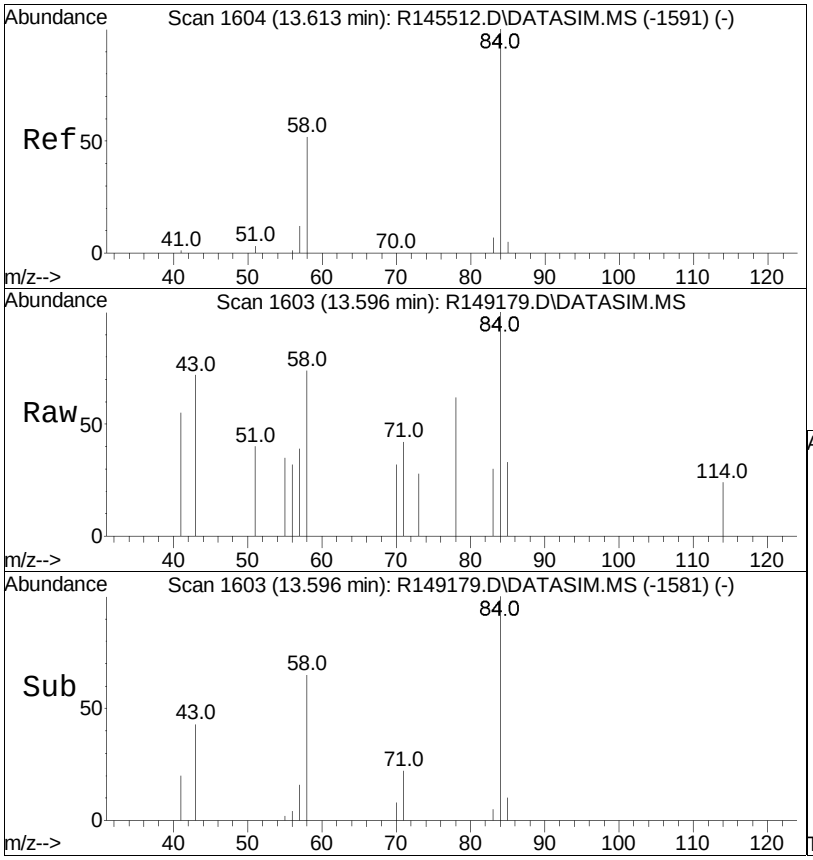


#30
2,3-Dimethylpentane
Concen: 0.18 ppbV
RT: 14.548 min Scan# 1688
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 56 Resp: 2948

Ion	Ratio	Lower	Upper
56	100		
43	113.6	72.3	112.3#

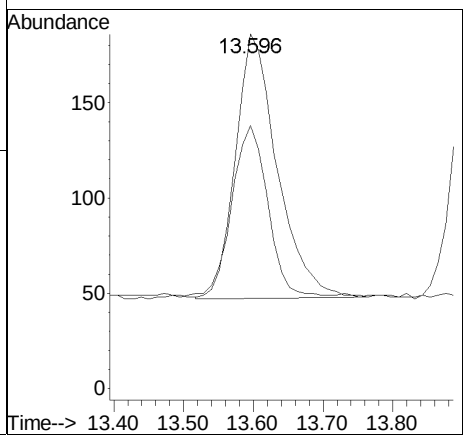


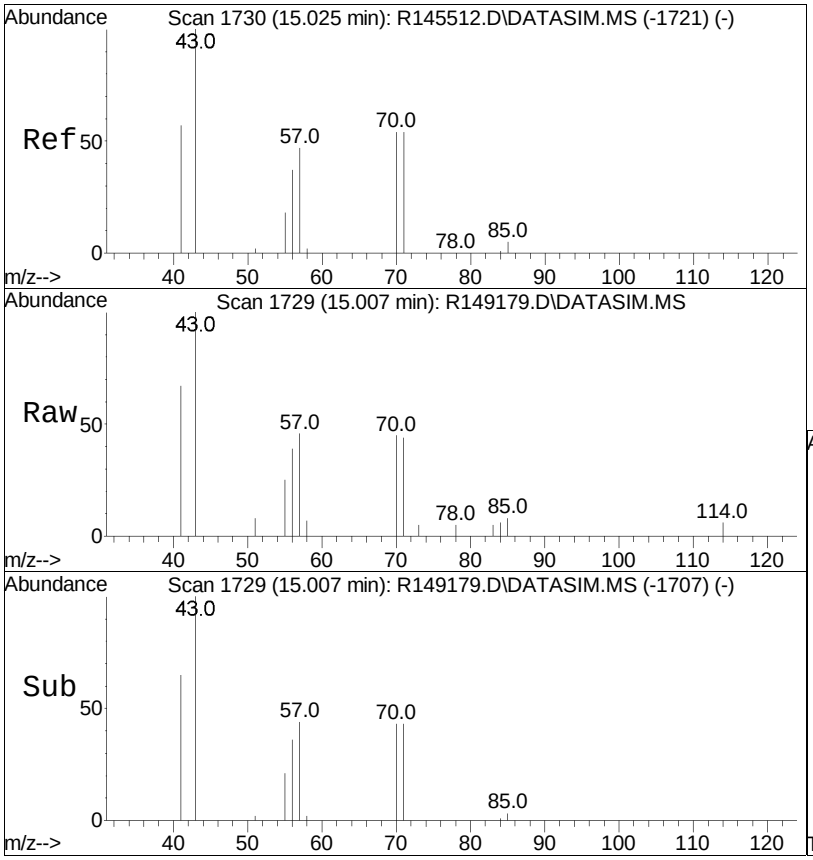


#31
Thiophene
Concen: 0.05 ppbV
RT: 13.596 min Scan# 1603
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 84 Resp: 578

Ion	Ratio	Lower	Upper
84	100		
58	74.2	46.4	86.4

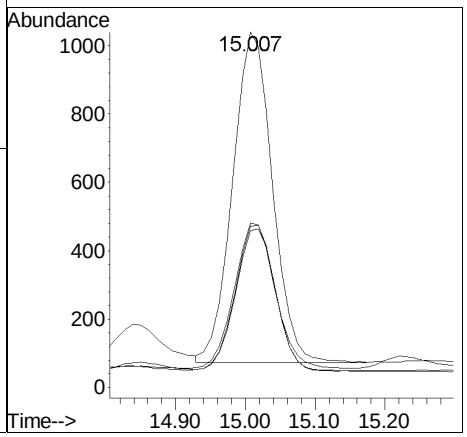


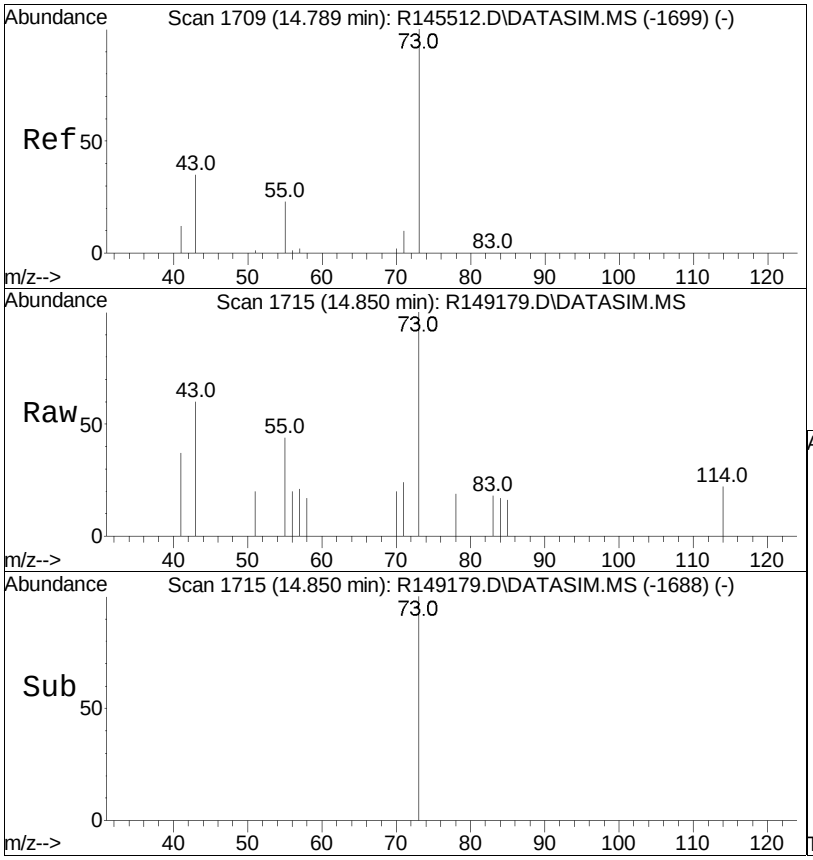


#32
3-Methylhexane
Concen: 0.21 ppbV
RT: 15.007 min Scan# 1729
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 43 Resp: 3834

Ion	Ratio	Lower	Upper
43	100		
57	46.3	23.4	63.4
70	45.4	22.5	62.5
71	44.1	22.4	62.4

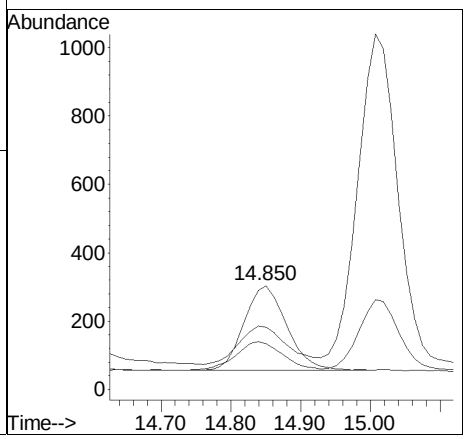


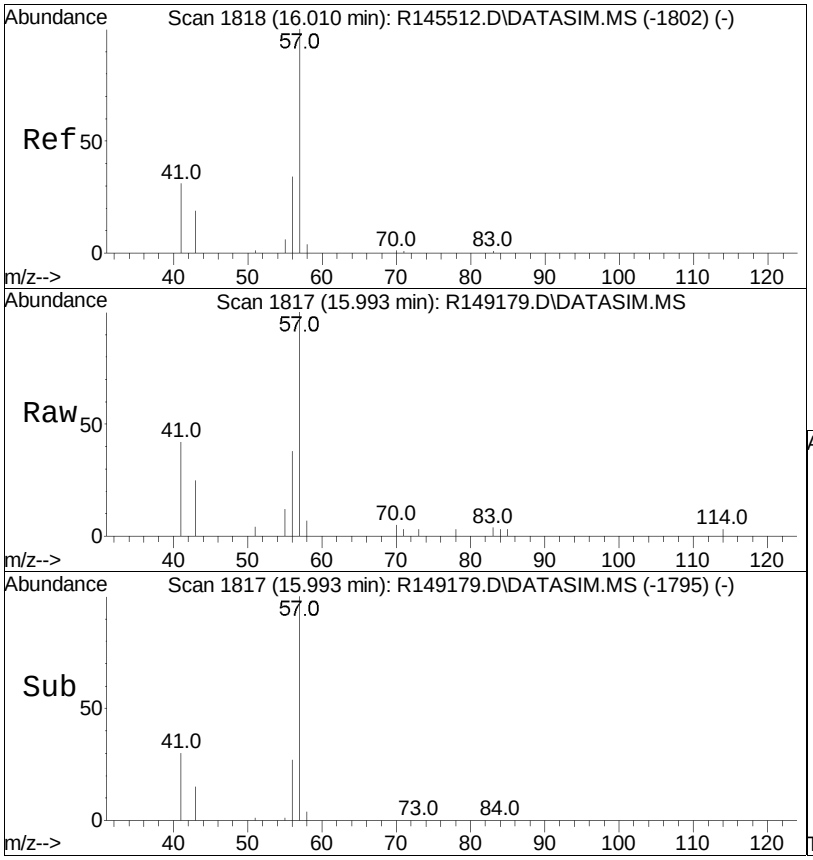


#33
TAME
Concen: 0.05 ppbV
RT: 14.850 min Scan# 1715
Delta R.T. 0.056 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 73 Resp: 1036

Ion	Ratio	Lower	Upper
73	100		
43	60.1	24.9	64.9
55	44.2	9.6	49.6

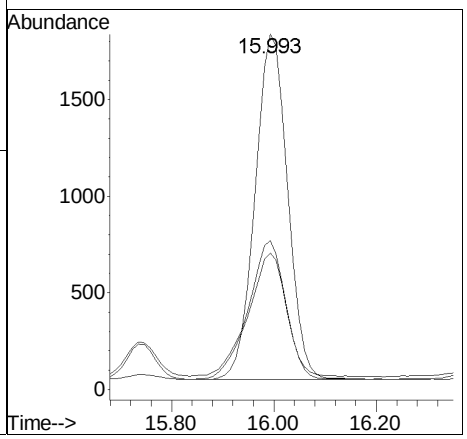


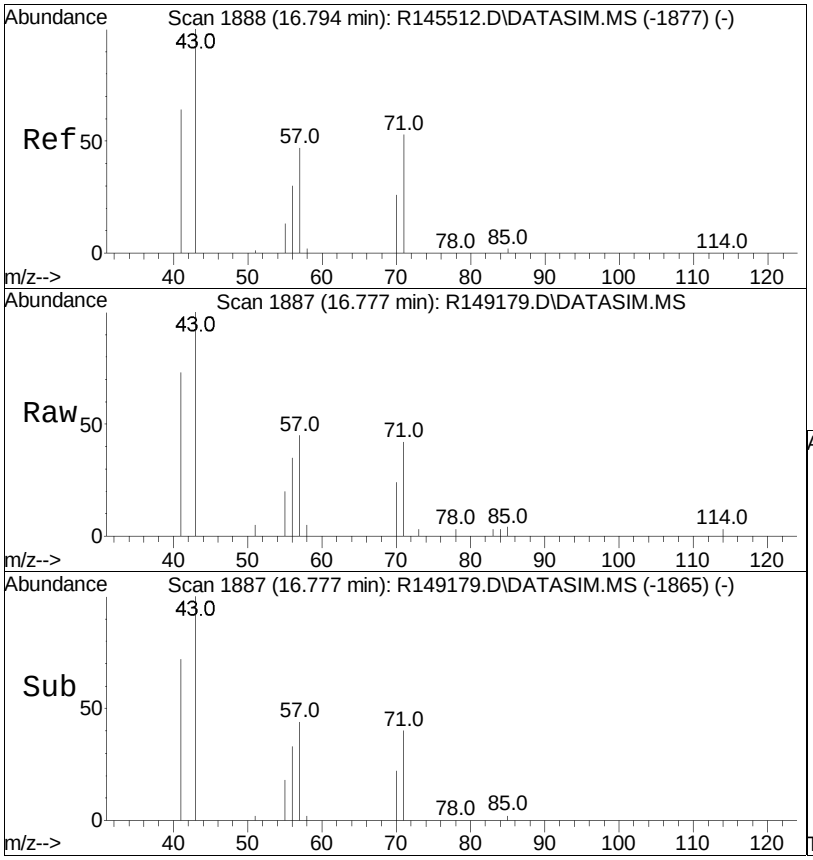


#35
Isooctane
Concen: 0.19 ppbV
RT: 15.993 min Scan# 1817
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 57 Resp: 7911

Ion	Ratio	Lower	Upper
57	100		
56	38.4	14.9	54.9
41	41.9	16.0	56.0

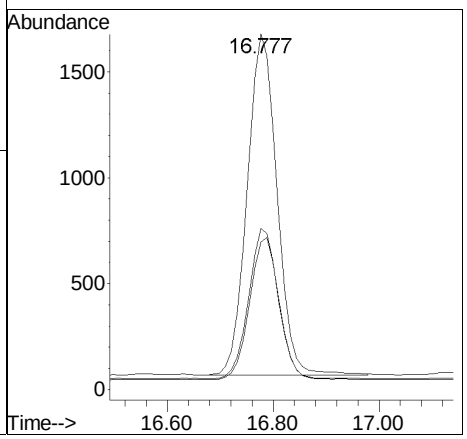


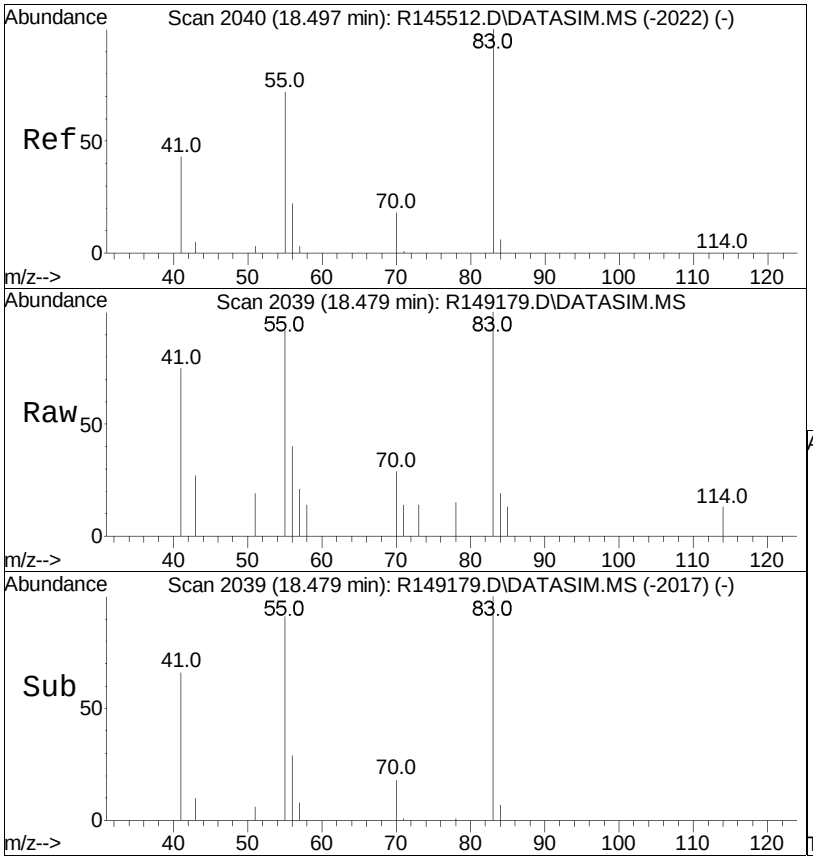


#36
Heptane
Concen: 0.36 ppbV
RT: 16.777 min Scan# 1887
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 43 Resp: 6312

Ion	Ratio	Lower	Upper
43	100		
57	45.3	23.3	63.3
71	41.5	21.1	61.1

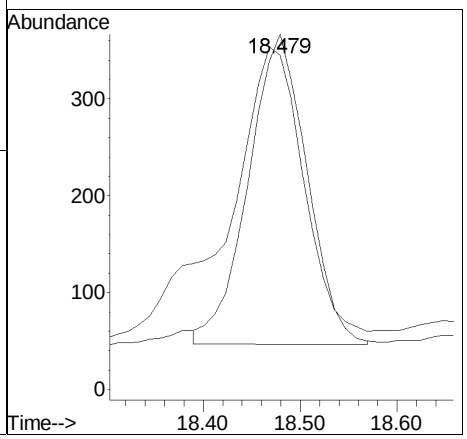


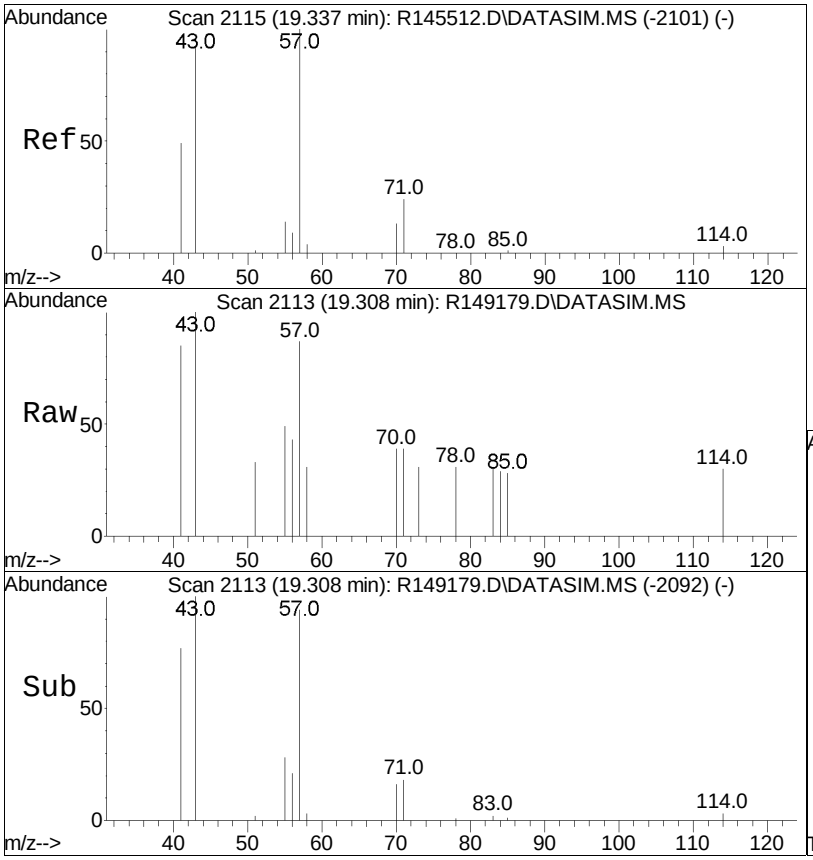


#37
Methylcyclohexane
Concen: 0.10 ppbV m
RT: 18.479 min Scan# 2039
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 83 Resp: 1344

Ion	Ratio	Lower	Upper
83	100		
55	94.0	70.7	110.7

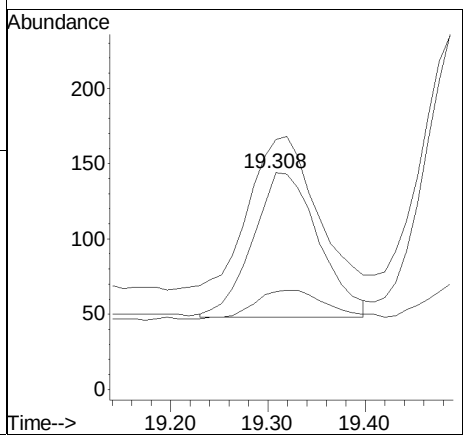


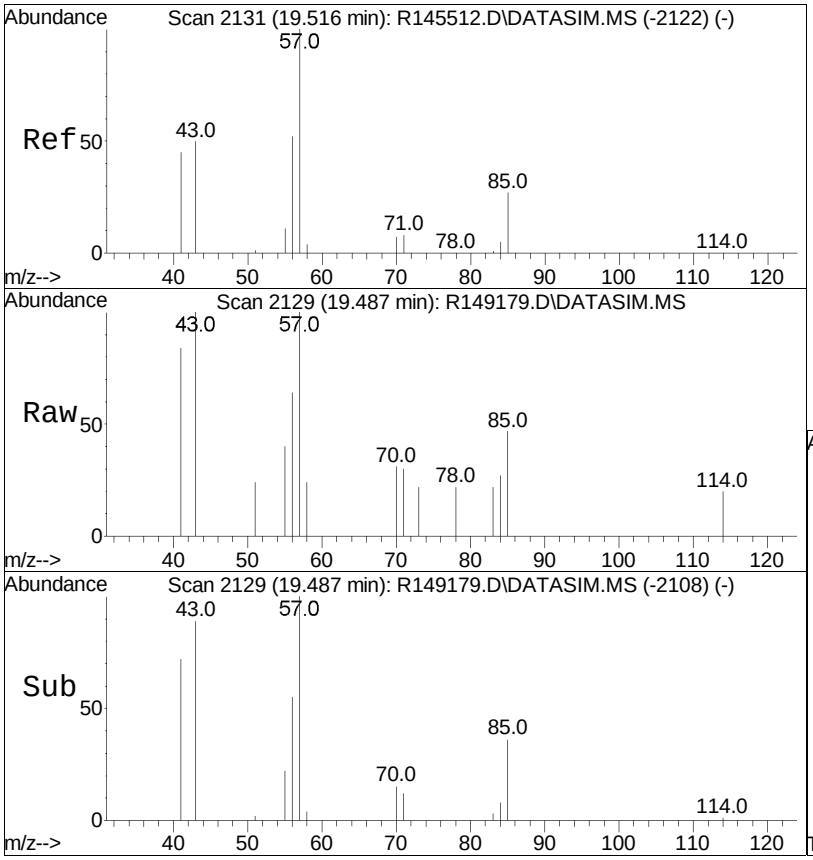


#38
2,5-Dimethylhexane
Concen: 0.02 ppbV m
RT: 19.308 min Scan# 2113
Delta R.T. -0.011 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 57 Resp: 454

Ion	Ratio	Lower	Upper
57	100		
43	115.3	86.5	126.5
71	45.1	0.8	40.8#

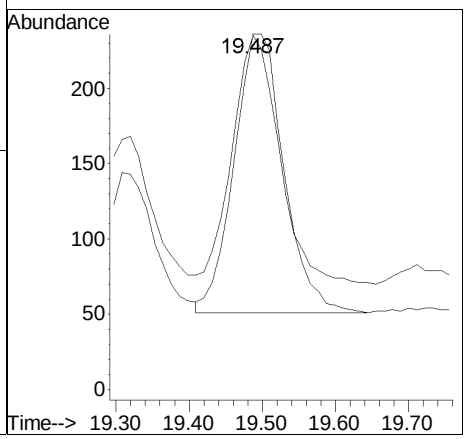


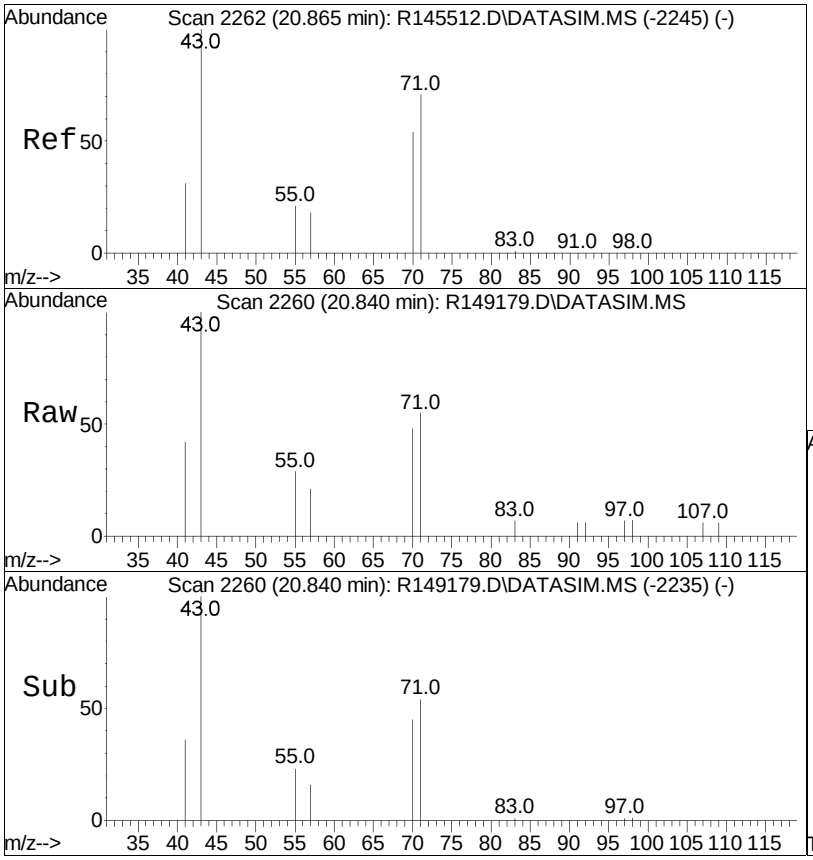


#39
2,4-Dimethyhexane / 2,2,3-TMP
Concen: 0.03 ppbV
RT: 19.487 min Scan# 2129
Delta R.T. -0.011 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 57 Resp: 875

Ion	Ratio	Lower	Upper
57	100		
43	99.6	36.1	76.1#

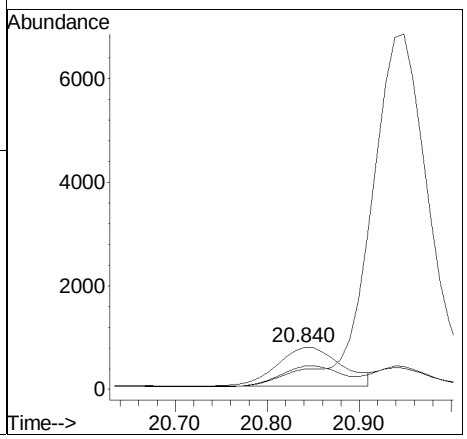


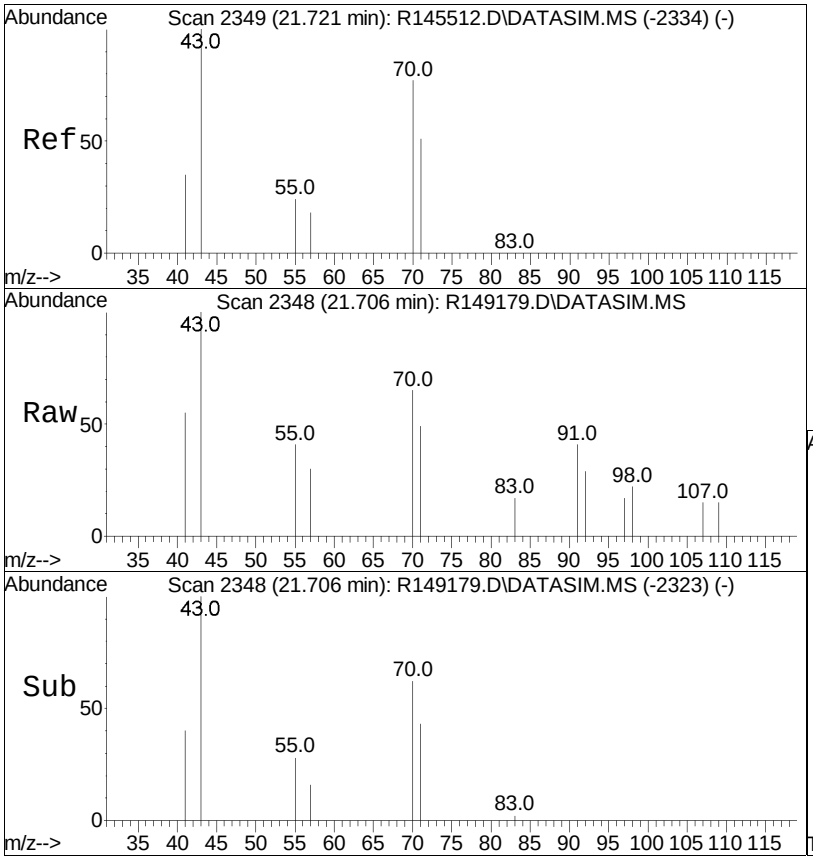


#40
2,3,4-Trimethylpentane
Concen: 0.13 ppbV
RT: 20.840 min Scan# 2260
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 43 Resp: 3621

Ion	Ratio	Lower	Upper
43	100		
71	55.4	34.6	74.6
70	48.1	23.3	63.3

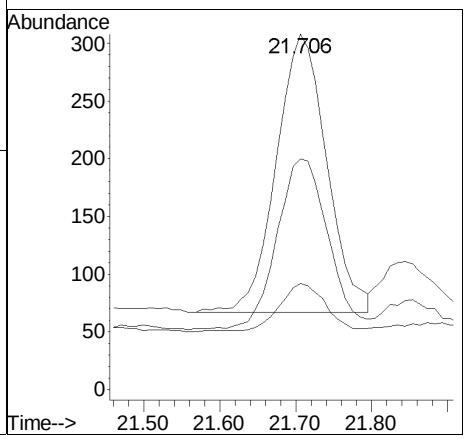


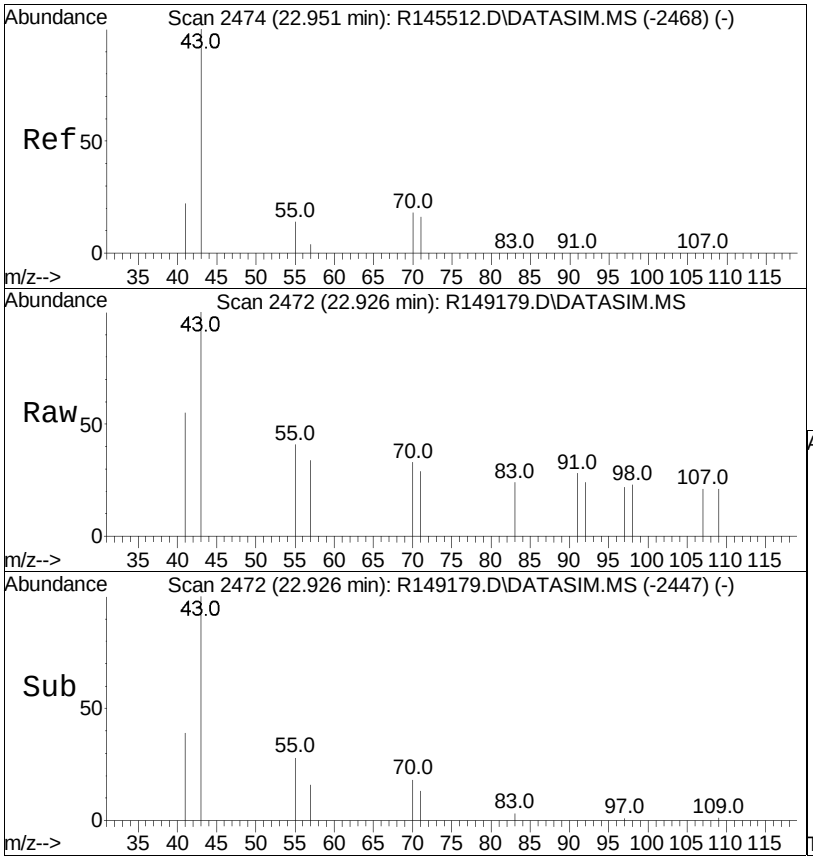


#42
2,3-Dimethylhexane
Concen: 0.04 ppbV
RT: 21.706 min Scan# 2348
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 43 Resp: 1113

Ion	Ratio	Lower	Upper
43	100		
70	64.9	41.8	81.8
57	29.9	0.0	36.6

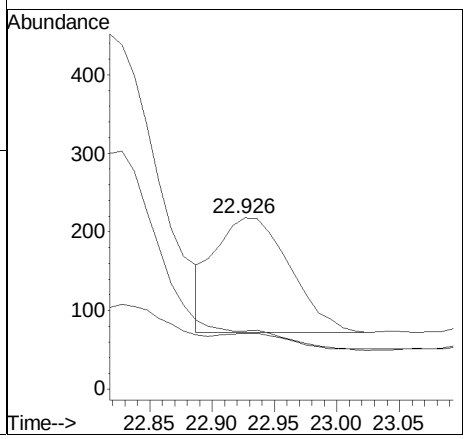


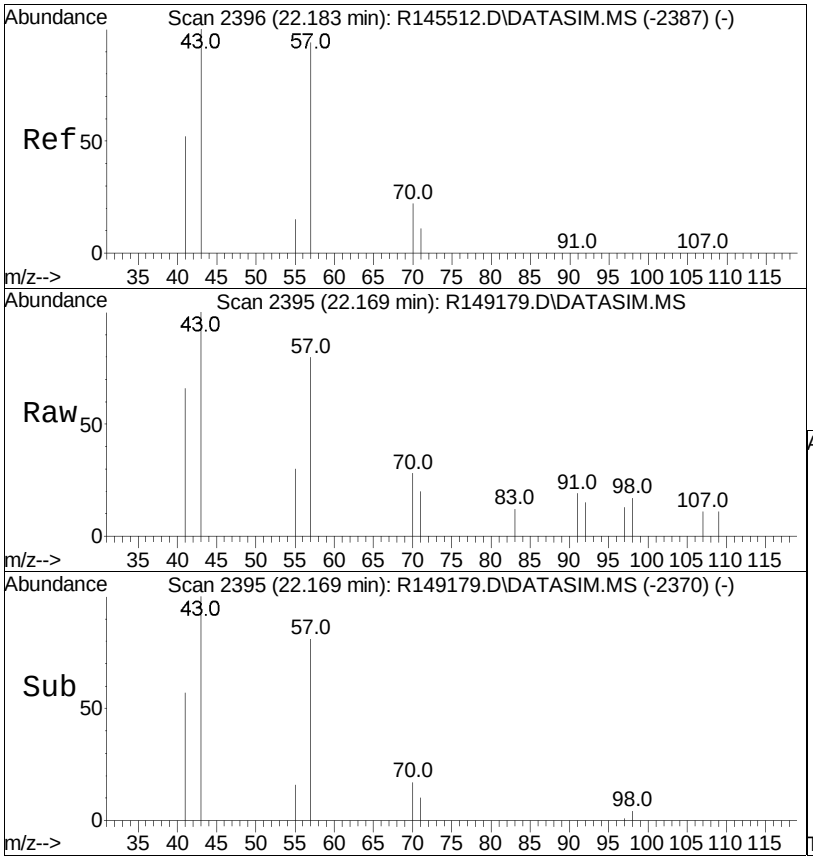


#43
3-Ethylhexane
Concen: 0.02 ppbV
RT: 22.926 min Scan# 2472
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 43 Resp: 612

Ion	Ratio	Lower	Upper
43	100		
70	32.6	0.0	32.6
57	33.9	0.0	34.2

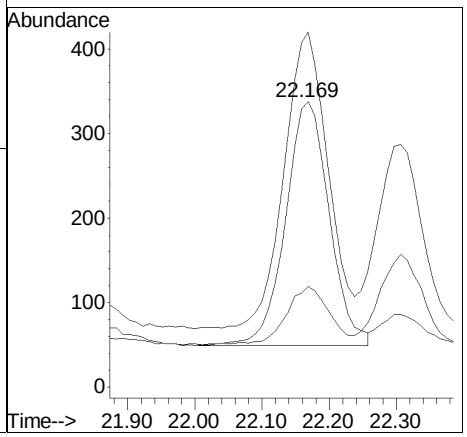


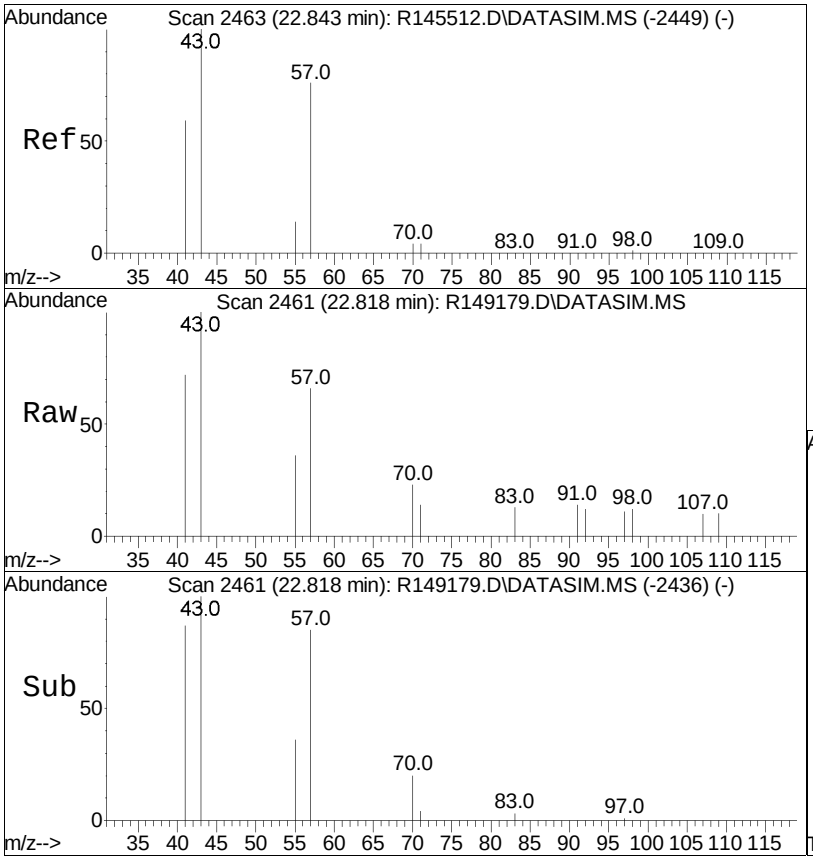


#44
2-Methylheptane
Concen: 0.07 ppbV
RT: 22.169 min Scan# 2395
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 57 Resp: 1310

Ion	Ratio	Lower	Upper
57	100		
43	124.3	98.3	138.3
70	35.2	2.5	42.5

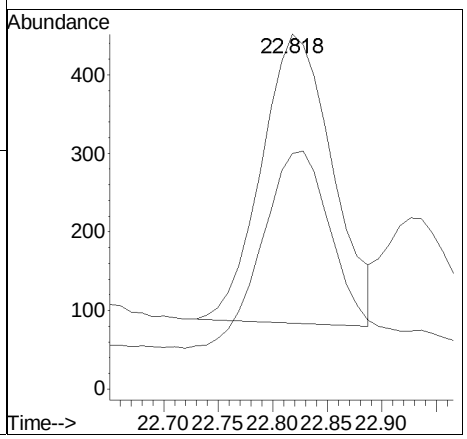


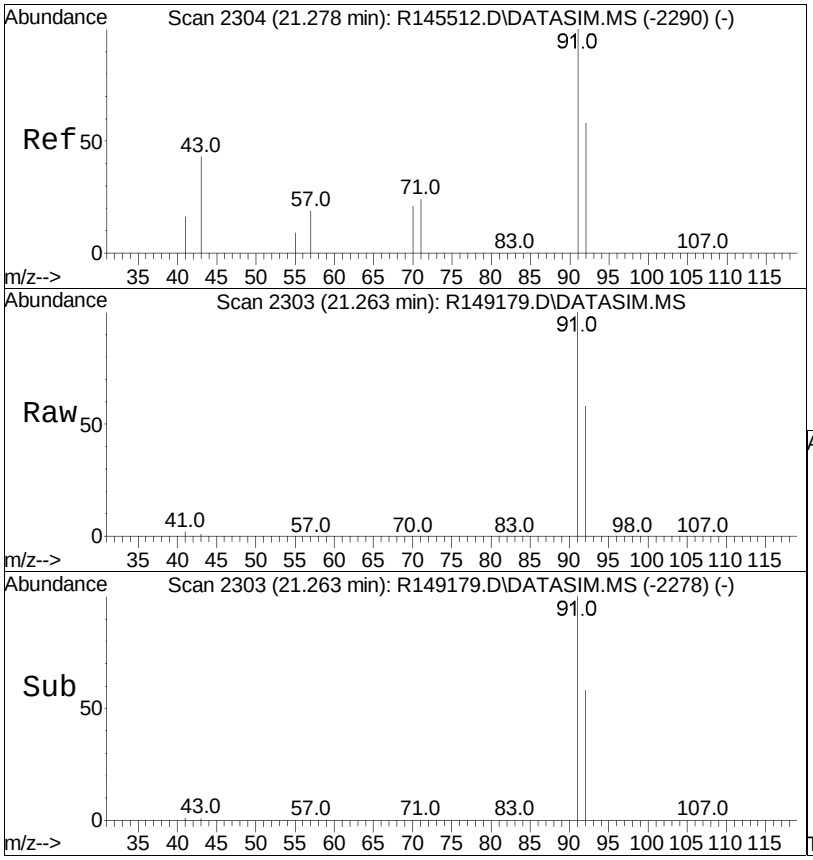


#45
3-Methylheptane
Concen: 0.08 ppbV
RT: 22.818 min Scan# 2461
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 43 Resp: 1657

Ion	Ratio	Lower	Upper
43	100		
57	66.4	47.6	87.6

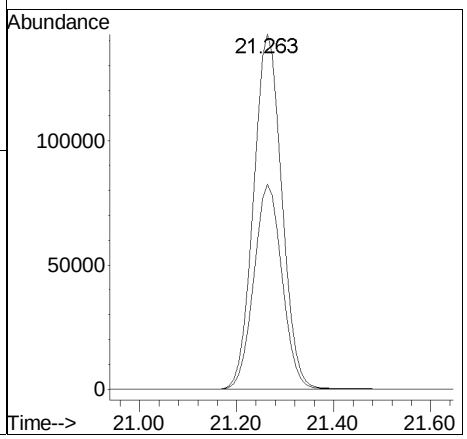


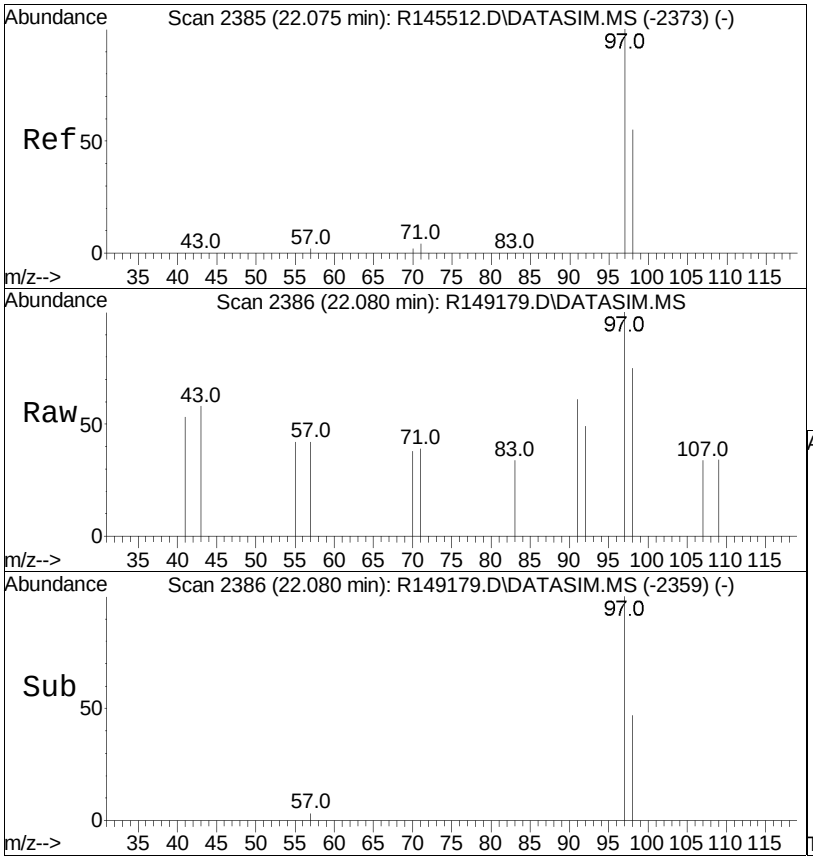


#47
Toluene
Concen: 19.07 ppbV
RT: 21.263 min Scan# 2303
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 91 Resp: 578205

Ion	Ratio	Lower	Upper
91	100		
92	57.7	37.6	77.6

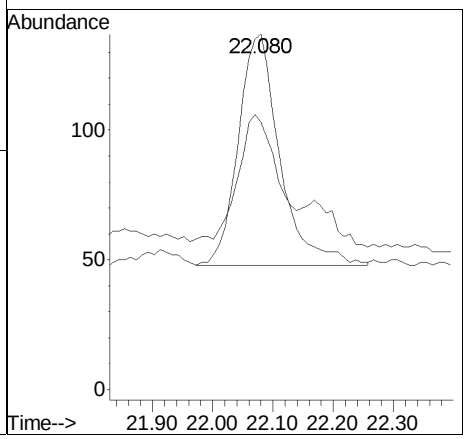


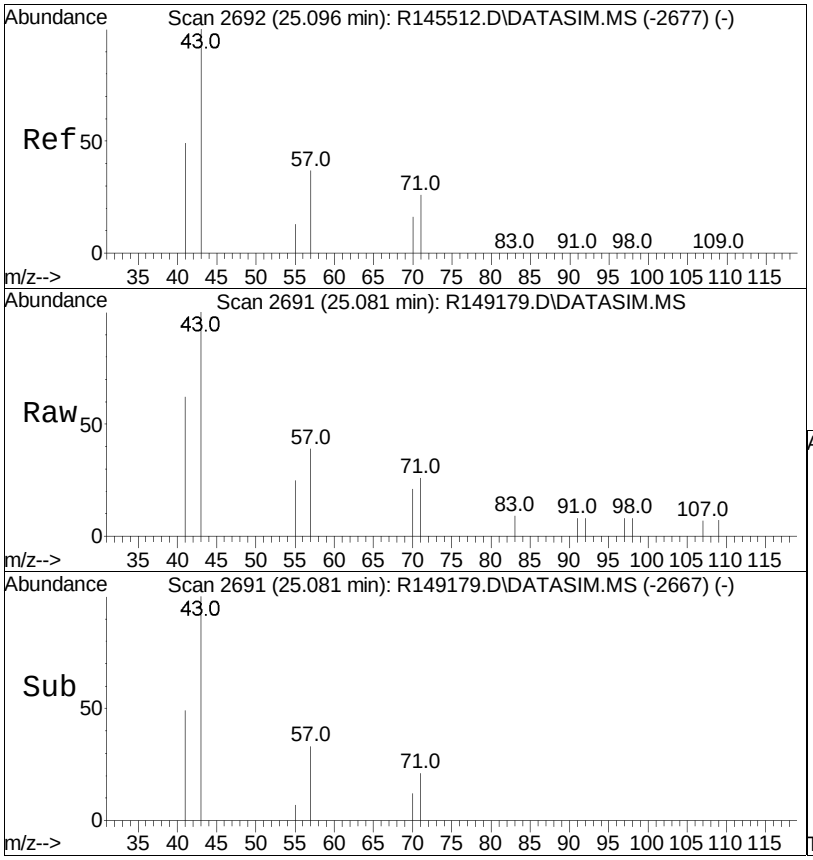


#49
3-Methylthiophene
Concen: 0.02 ppbV
RT: 22.080 min Scan# 2386
Delta R.T. 0.020 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 97 Resp: 426

Ion	Ratio	Lower	Upper
97	100		
98	75.2	34.1	74.1#

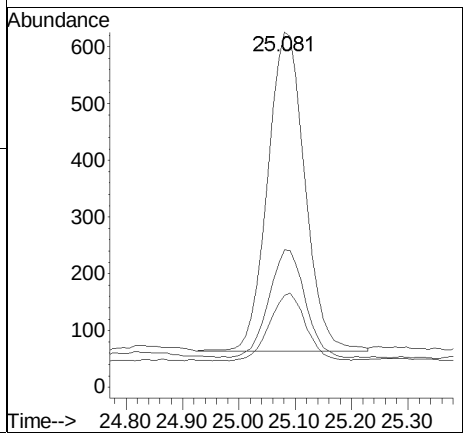


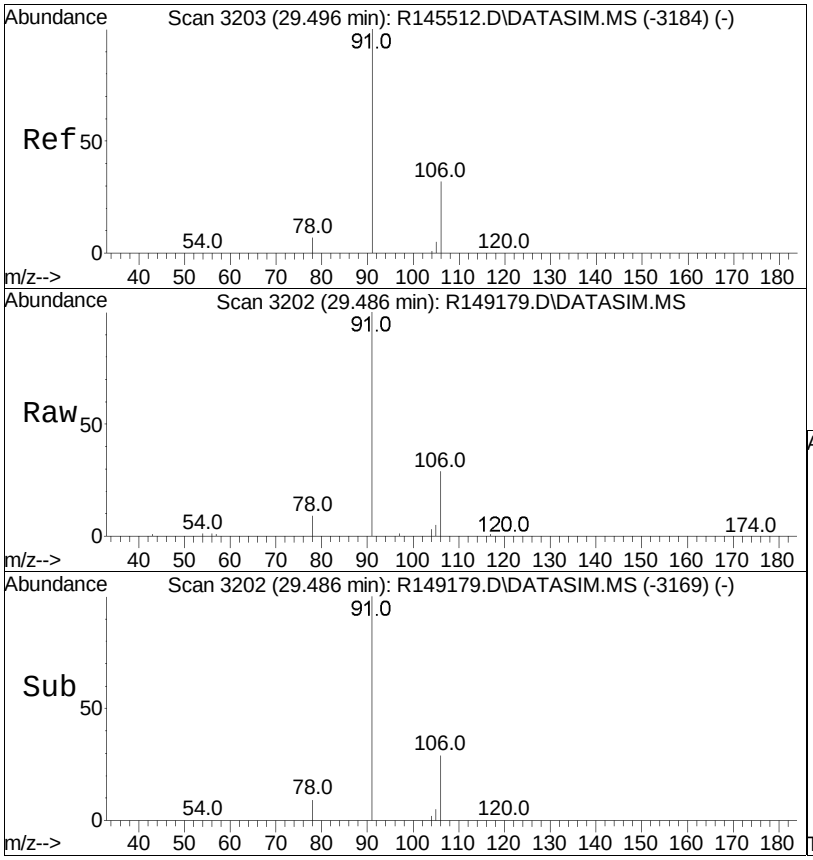


#52
Octane
Concen: 0.11 ppbV
RT: 25.081 min Scan# 2691
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 43 Resp: 2573

Ion	Ratio	Lower	Upper
43	100		
57	38.7	13.6	53.6
71	25.9	0.9	40.9

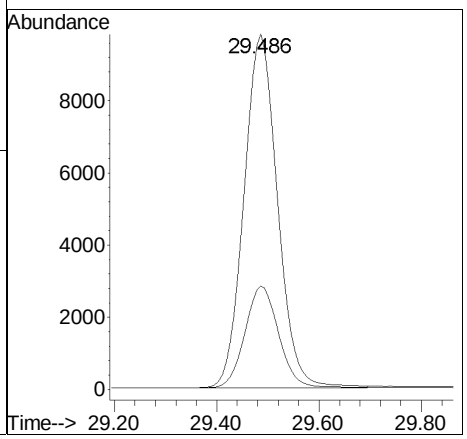


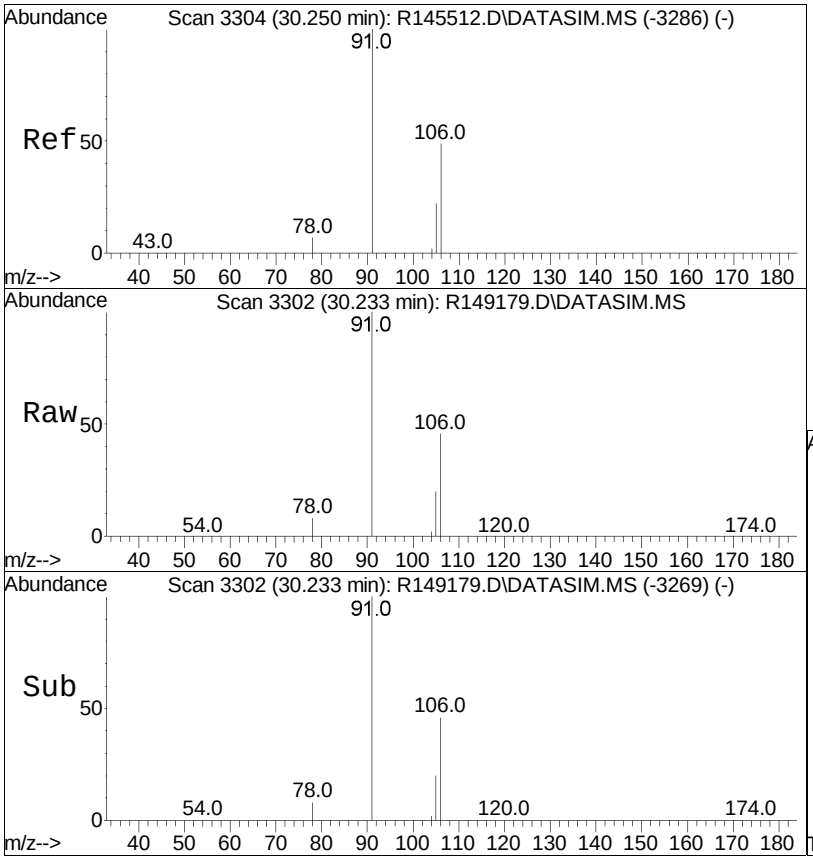


#55
Ethylbenzene
Concen: 1.59 ppbV
RT: 29.486 min Scan# 3202
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 91 Resp: 44592

Ion	Ratio	Lower	Upper
91	100		
106	29.1	9.1	49.1

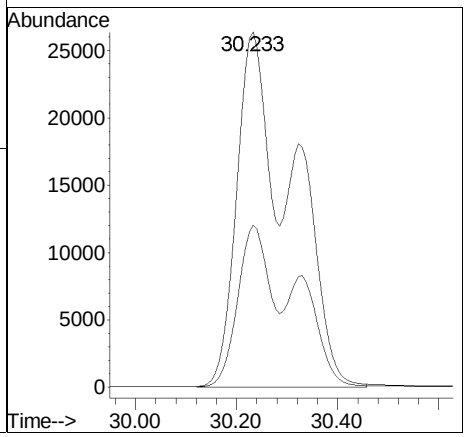


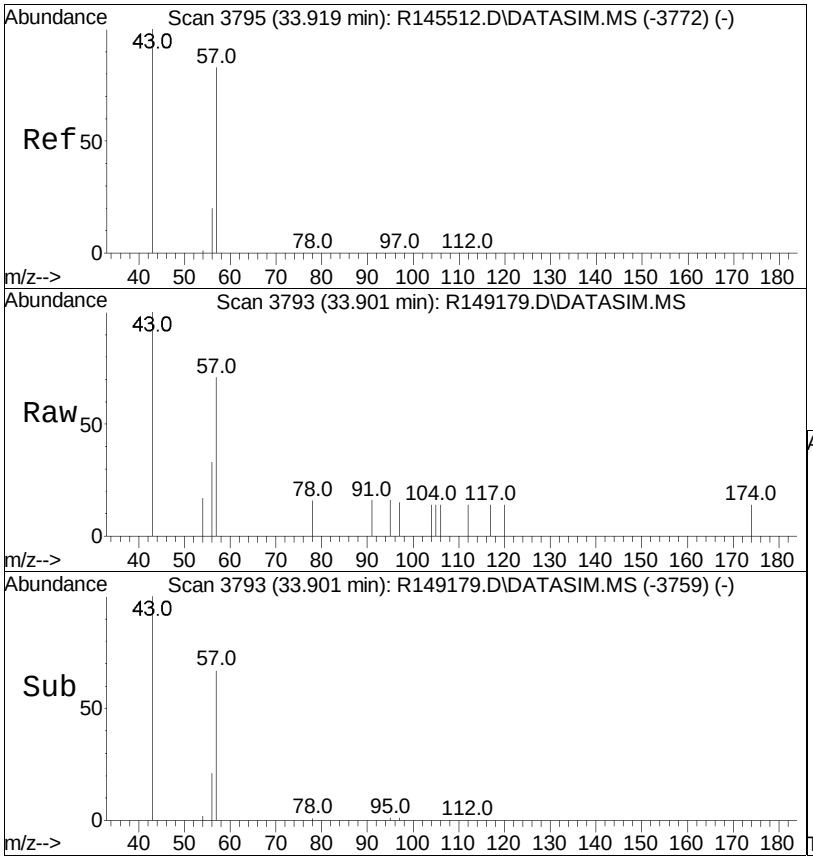


#57
p/m-Xylene
Concen: 9.13 ppbV m
RT: 30.233 min Scan# 3302
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 91 Resp: 197207

Ion	Ratio	Lower	Upper
91	100		
106	45.7	25.5	65.5

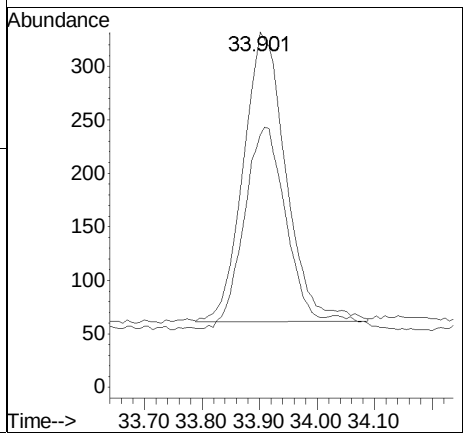


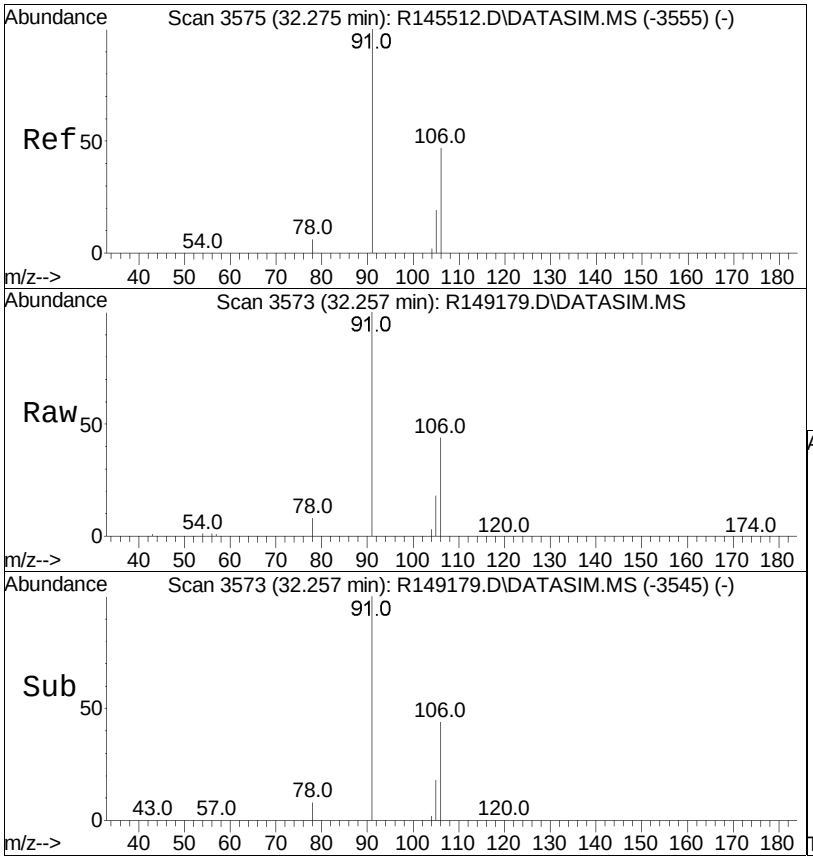


#59
Nonane
Concen: 0.07 ppbV
RT: 33.901 min Scan# 3793
Delta R.T. 0.007 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 43 Resp: 1399

Ion	Ratio	Lower	Upper
43	100		
57	71.1	51.4	91.4

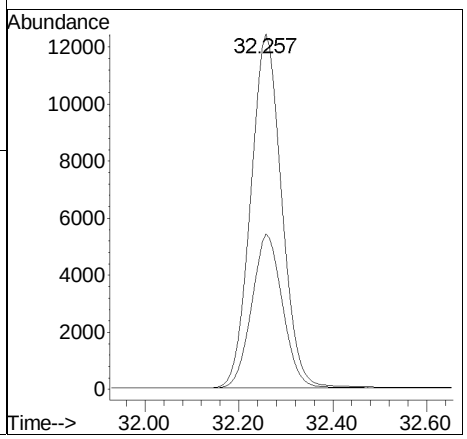


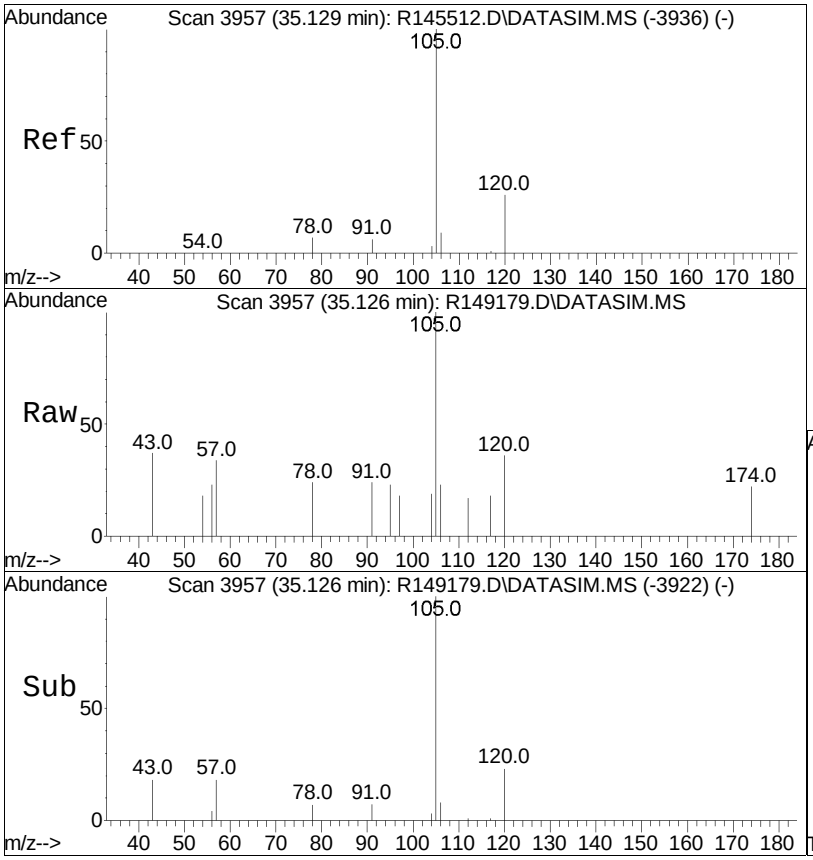


#61
o-Xylene
Concen: 2.57 ppbV
RT: 32.257 min Scan# 3573
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 91 Resp: 56814

Ion	Ratio	Lower	Upper
91	100		
106	43.7	23.5	63.5

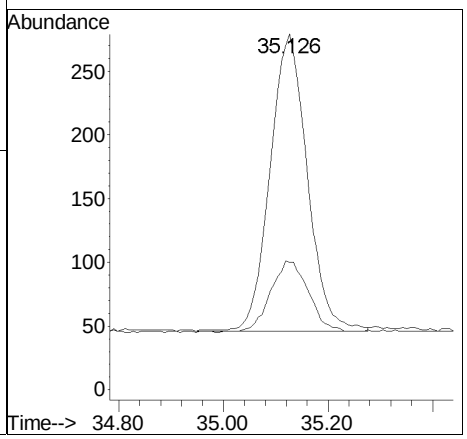


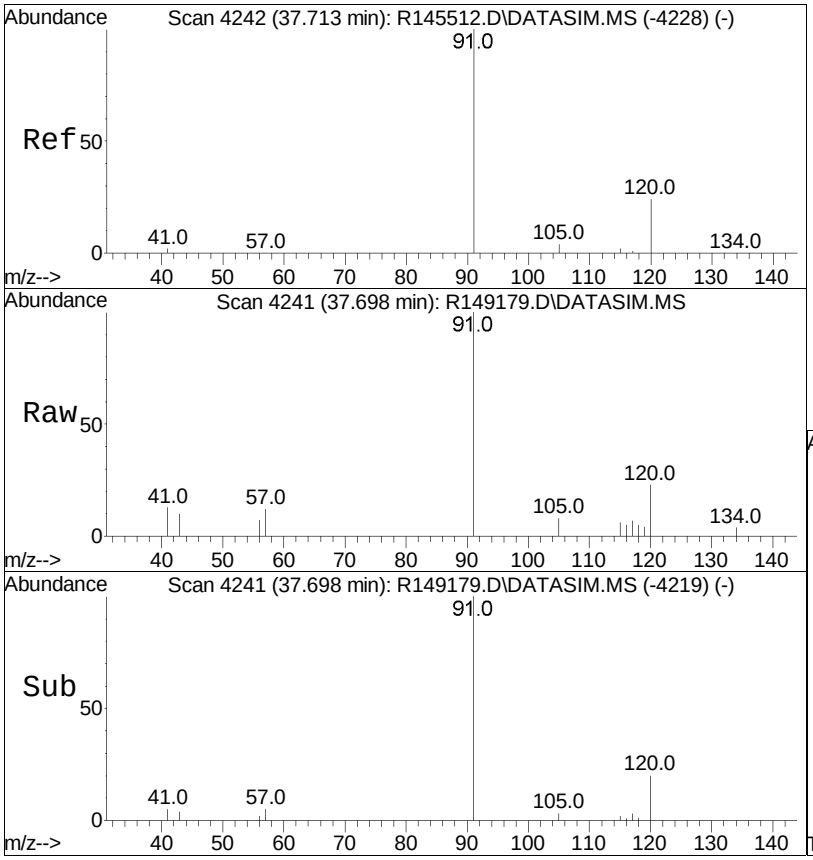


#63
Isopropylbenzene
Concen: 0.04 ppbV
RT: 35.126 min Scan# 3957
Delta R.T. 0.015 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:105 Resp: 1151

Ion	Ratio	Lower	Upper
105	100		
120	35.8	4.8	44.8

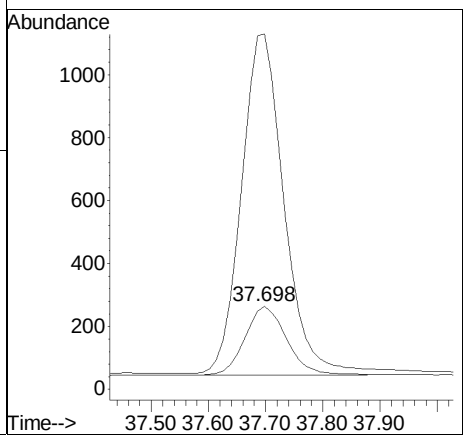


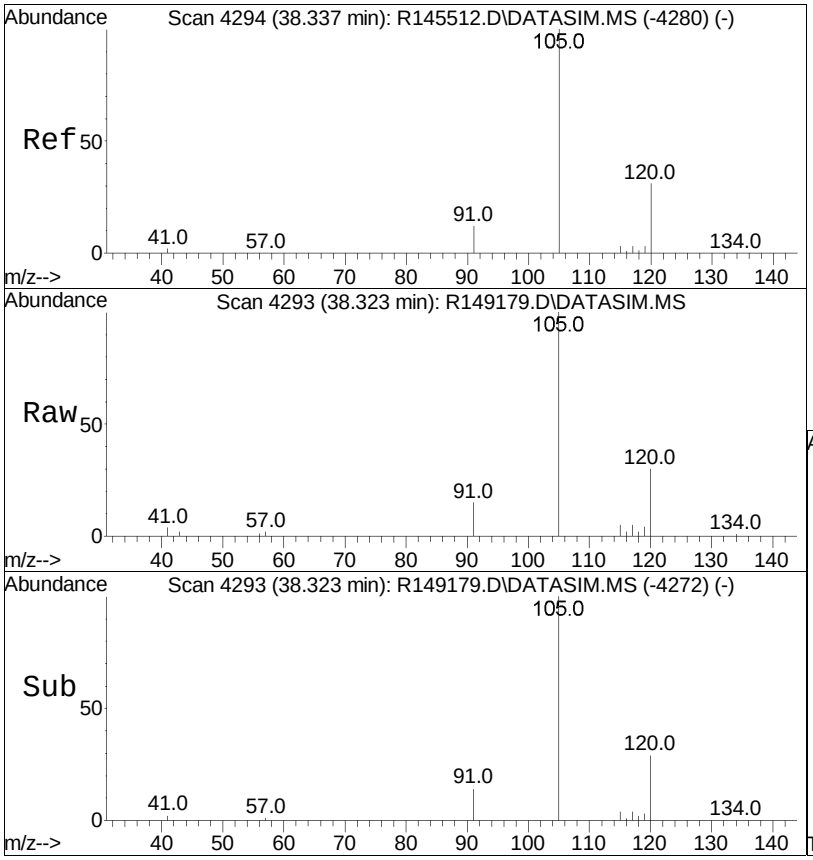


#64
n-Propylbenzene
Concen: 0.14 ppbV
RT: 37.698 min Scan# 4241
Delta R.T. 0.012 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:120 Resp: 1090

Ion	Ratio	Lower	Upper
120	100		
91	427.7	480.0	520.0#

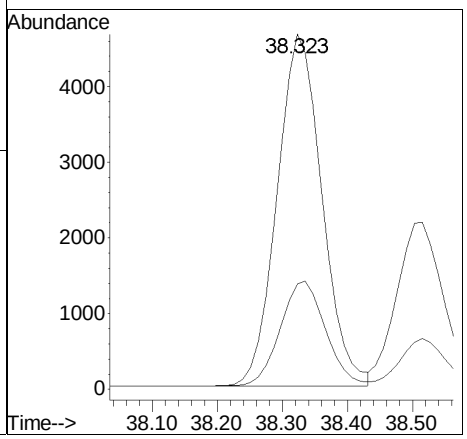


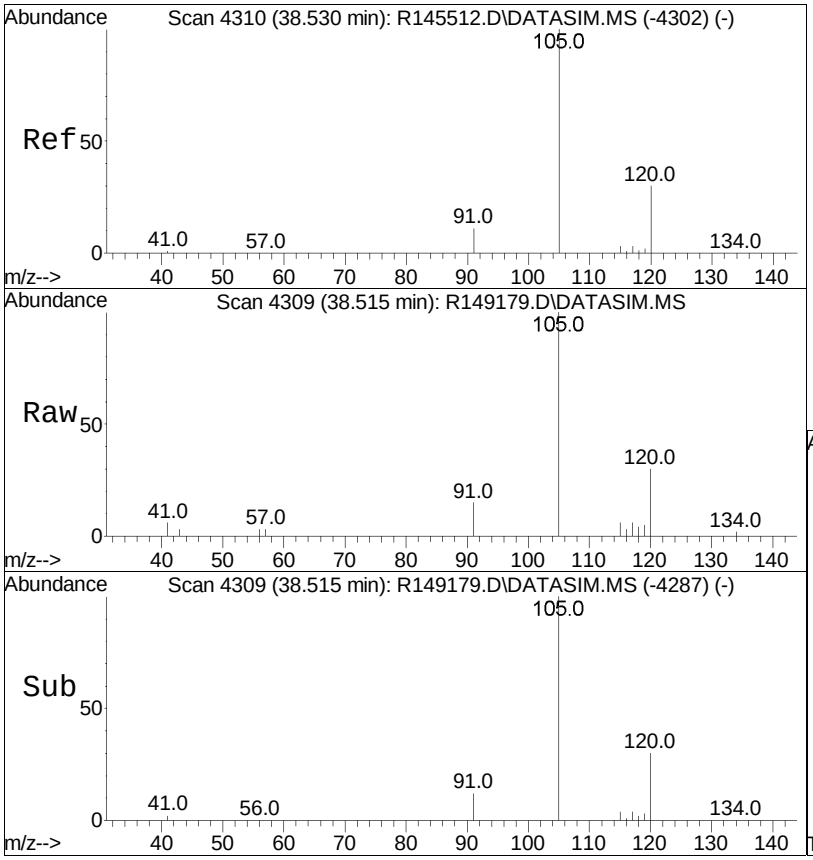


#65
1-Methyl-3-ethylbenzene
Concen: 0.81 ppbV
RT: 38.323 min Scan# 4293
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:105 Resp: 22234

Ion	Ratio	Lower	Upper
105	100		
120	29.7	10.4	50.4

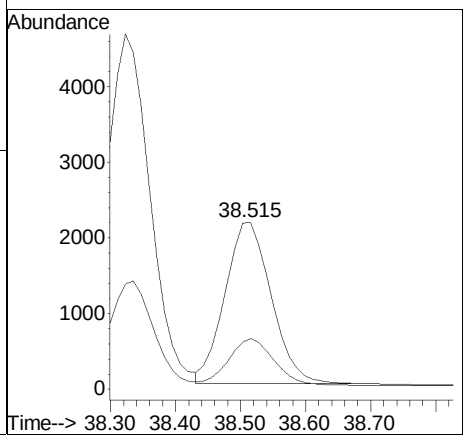


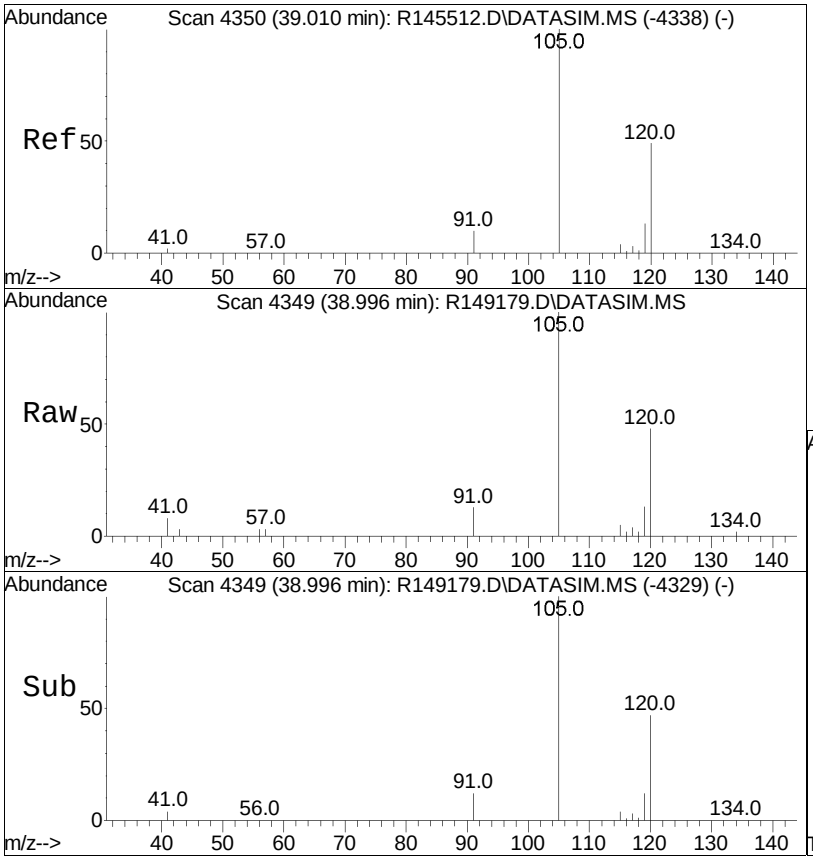


#66
1-Methyl-4-ethylbenzene
Concen: 0.36 ppbV
RT: 38.515 min Scan# 4309
Delta R.T. 0.012 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:105 Resp: 10581

Ion	Ratio	Lower	Upper
105	100		
120	30.5	7.8	47.8

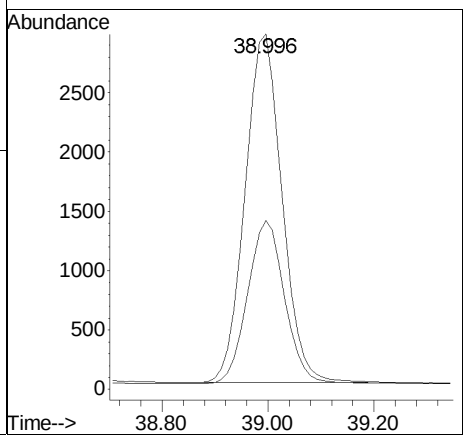


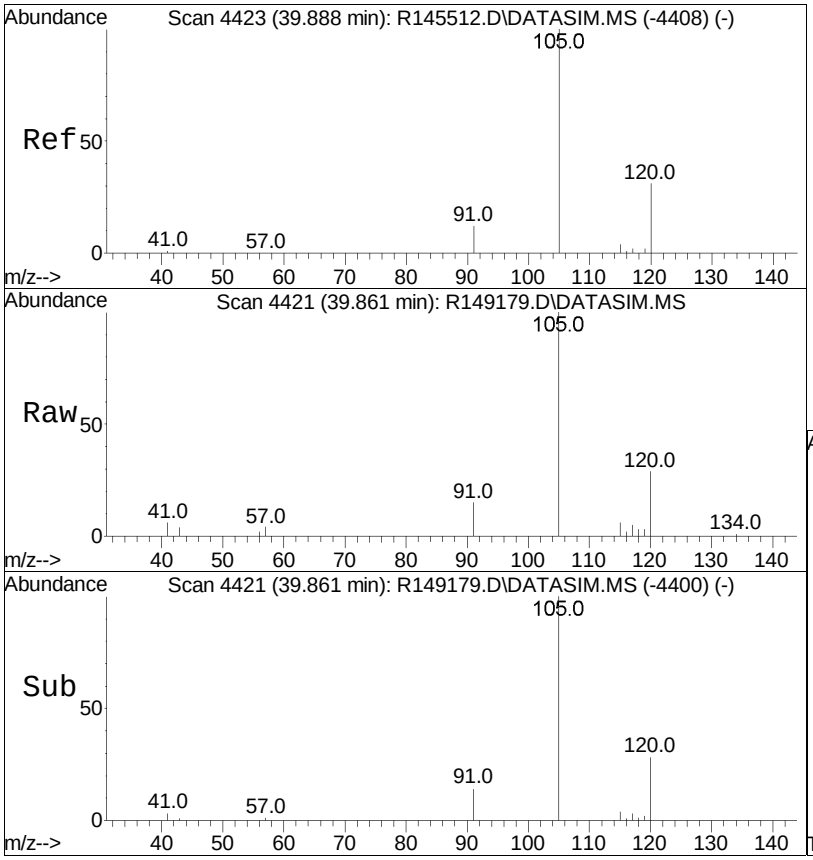


#67
1,3,5-Trimethylbenzene
Concen: 0.59 ppbV
RT: 38.996 min Scan# 4349
Delta R.T. 0.012 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:105 Resp: 14263

Ion	Ratio	Lower	Upper
105	100		
120	47.5	25.9	65.9

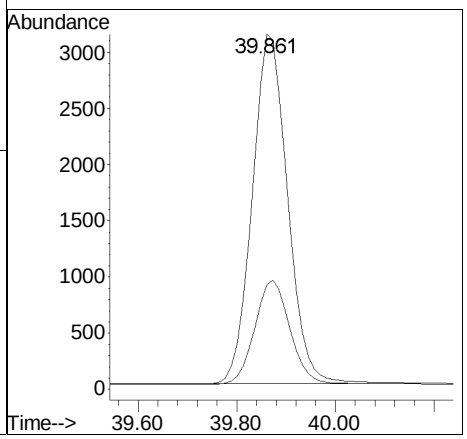


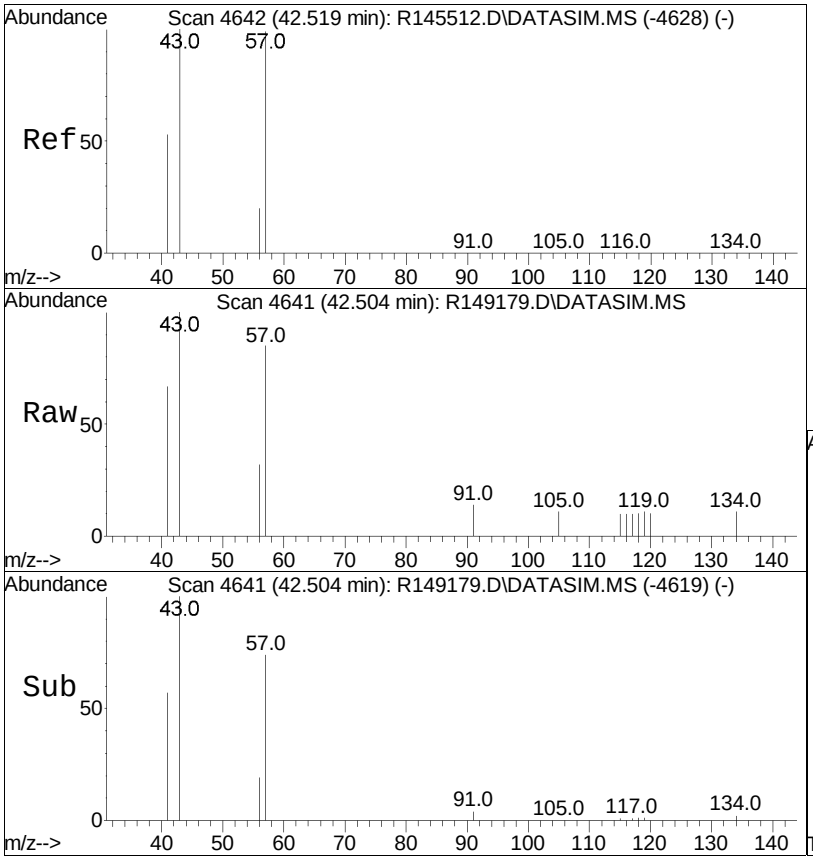


#69
1-Methyl-2-ethylbenzene
Concen: 0.55 ppbV
RT: 39.861 min Scan# 4421
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:105 Resp: 15437

Ion	Ratio	Lower	Upper
105	100		
120	29.5	9.6	49.6

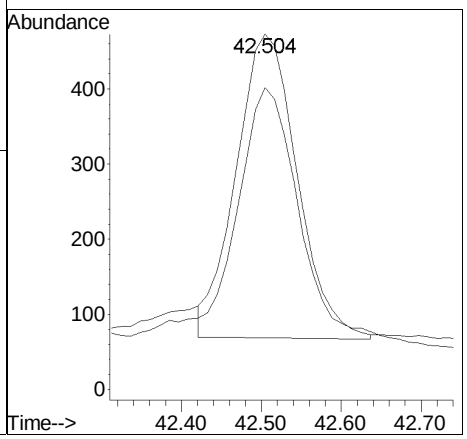


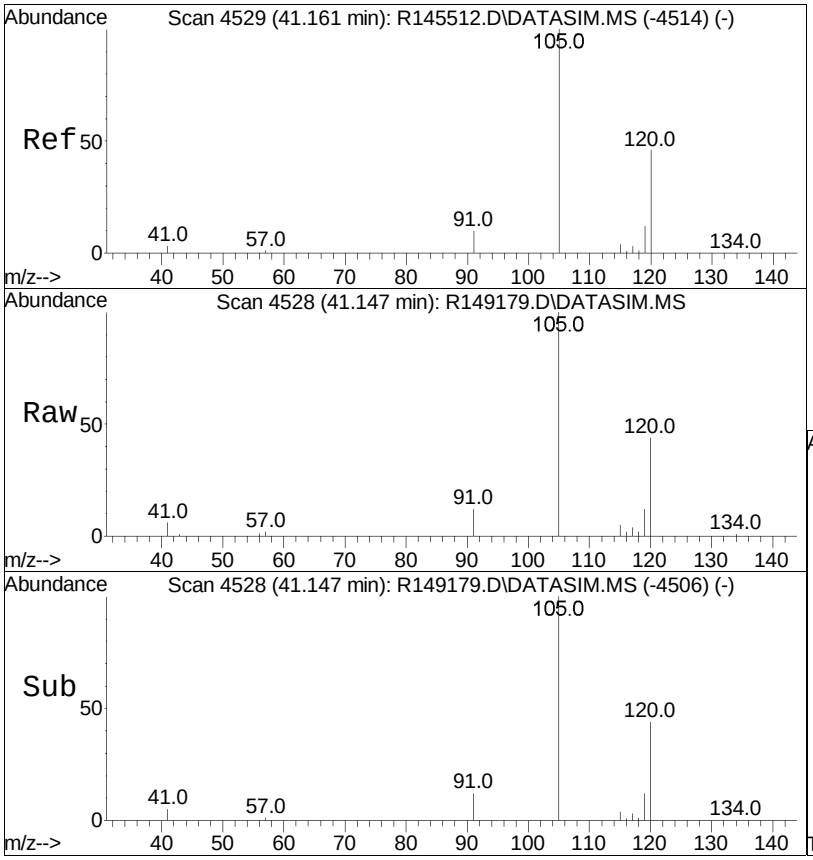


#70
Decane
Concen: 0.10 ppbV m
RT: 42.504 min Scan# 4641
Delta R.T. 0.012 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 43 Resp: 2153

Ion	Ratio	Lower	Upper
43	100		
57	85.0	66.4	106.4

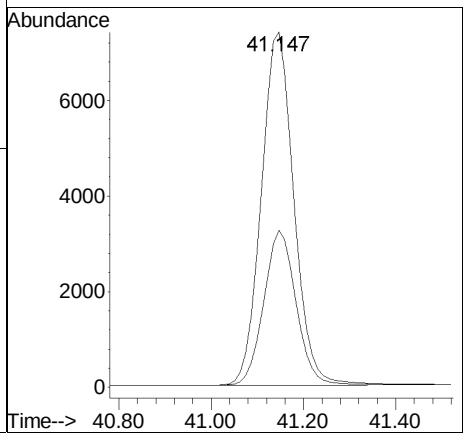


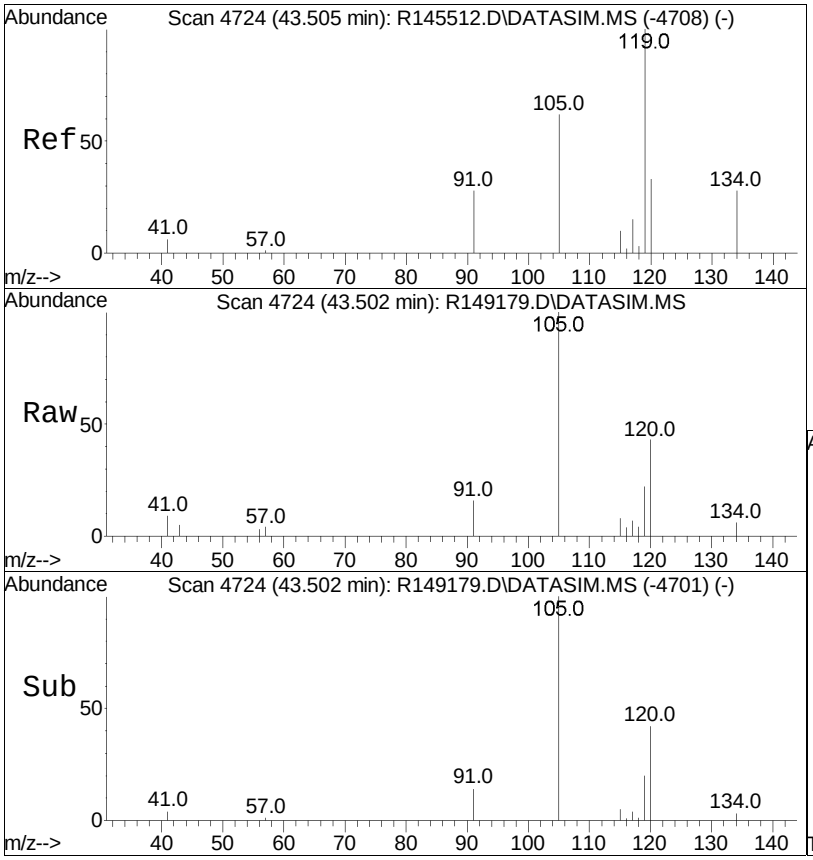


#71
1,2,4-Trimethylbenzene
Concen: 1.51 ppbV
RT: 41.147 min Scan# 4528
Delta R.T. 0.012 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:105 Resp: 36124

Ion	Ratio	Lower	Upper
105	100		
120	44.2	23.0	63.0

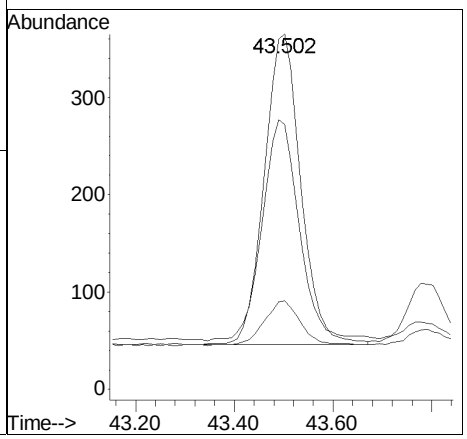


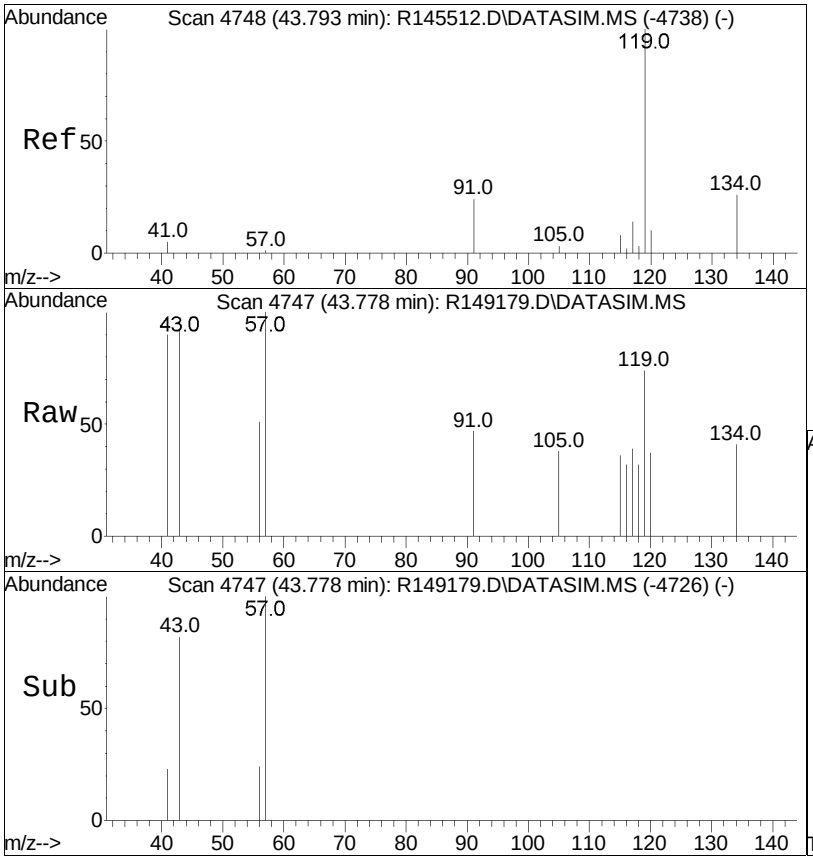


#73
1-Methyl-3-isopropylbenzene
Concen: 0.05 ppbV
RT: 43.502 min Scan# 4724
Delta R.T. 0.024 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:119 Resp: 1641

Ion	Ratio	Lower	Upper
119	100		
134	24.9	4.5	44.5
91	74.5	12.0	52.0#

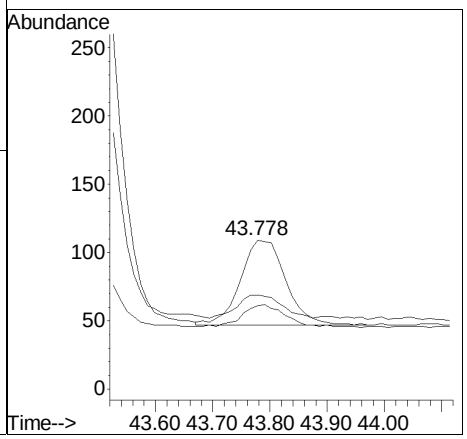


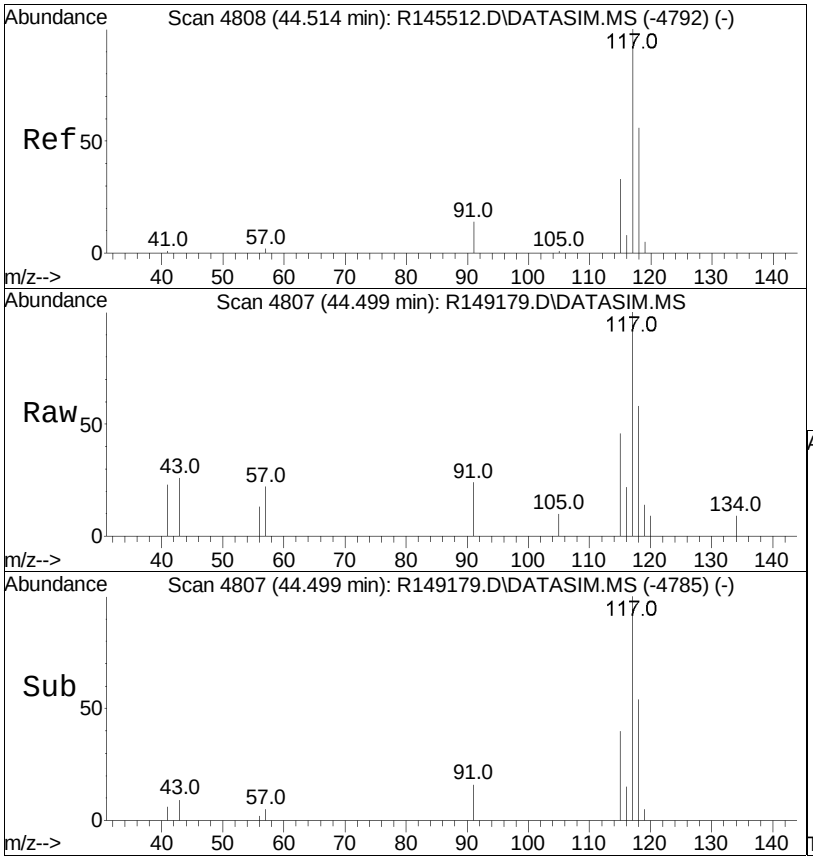


#74
1-Methyl-4-isopropylbenzene
Concen: 0.01 ppbV
RT: 43.778 min Scan# 4747
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:119 Resp: 342

Ion	Ratio	Lower	Upper
119	100		
134	56.0	4.2	44.2#
91	63.3	5.6	45.6#

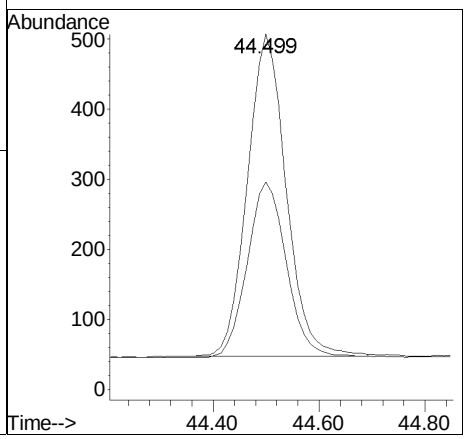


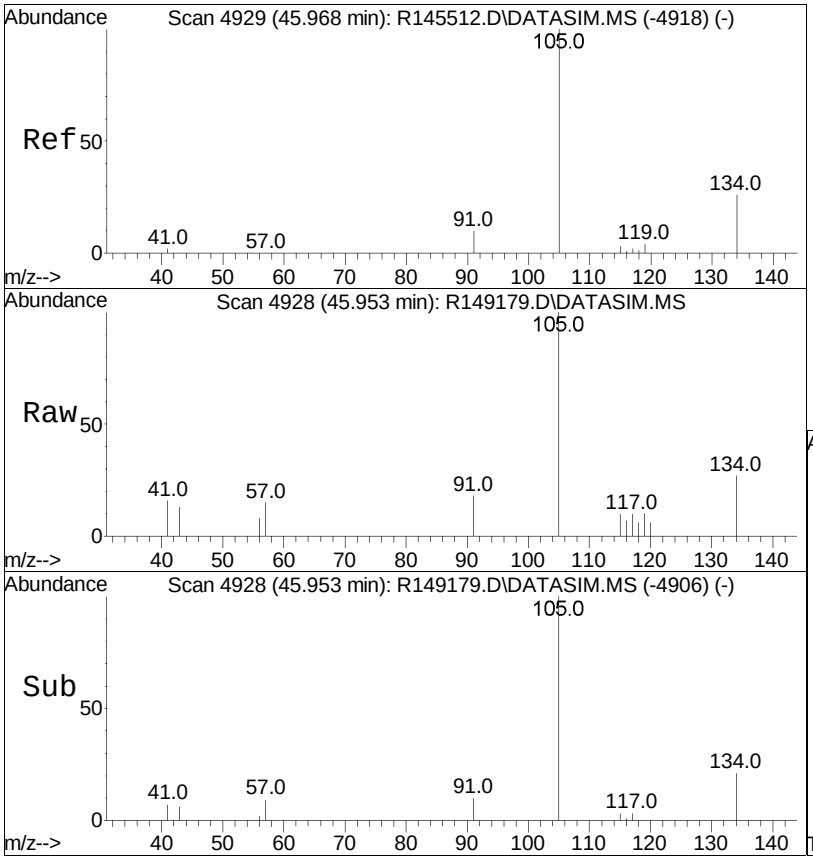


#76
Indan
Concen: 0.12 ppbV
RT: 44.499 min Scan# 4807
Delta R.T. 0.012 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:117 Resp: 2323

Ion	Ratio	Lower	Upper
117	100		
118	58.4	35.5	75.5

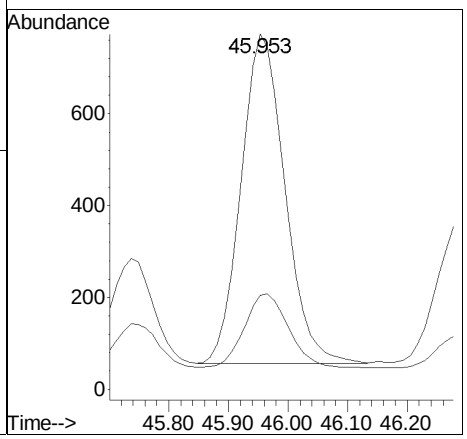


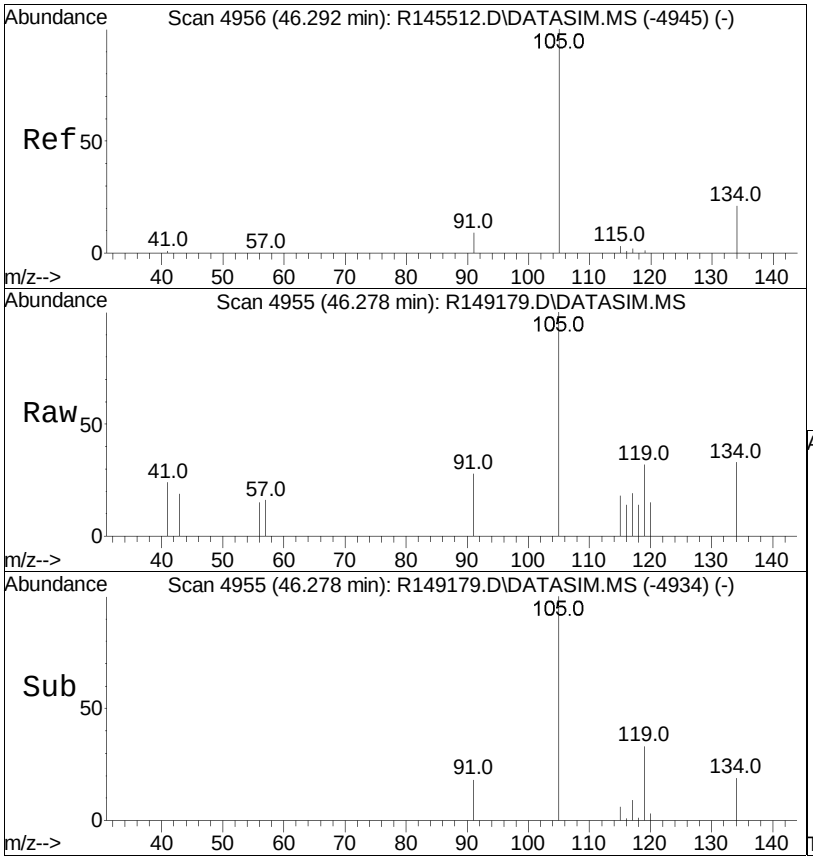


#78
1-Methyl-3-propylbenzene
Concen: 0.11 ppbV
RT: 45.953 min Scan# 4928
Delta R.T. 0.012 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:105 Resp: 3656

Ion	Ratio	Lower	Upper
105	100		
134	26.5	1.9	41.9

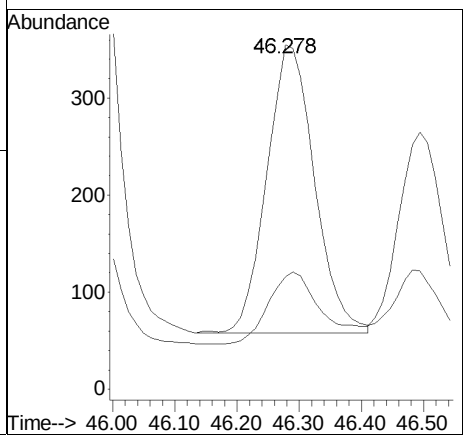


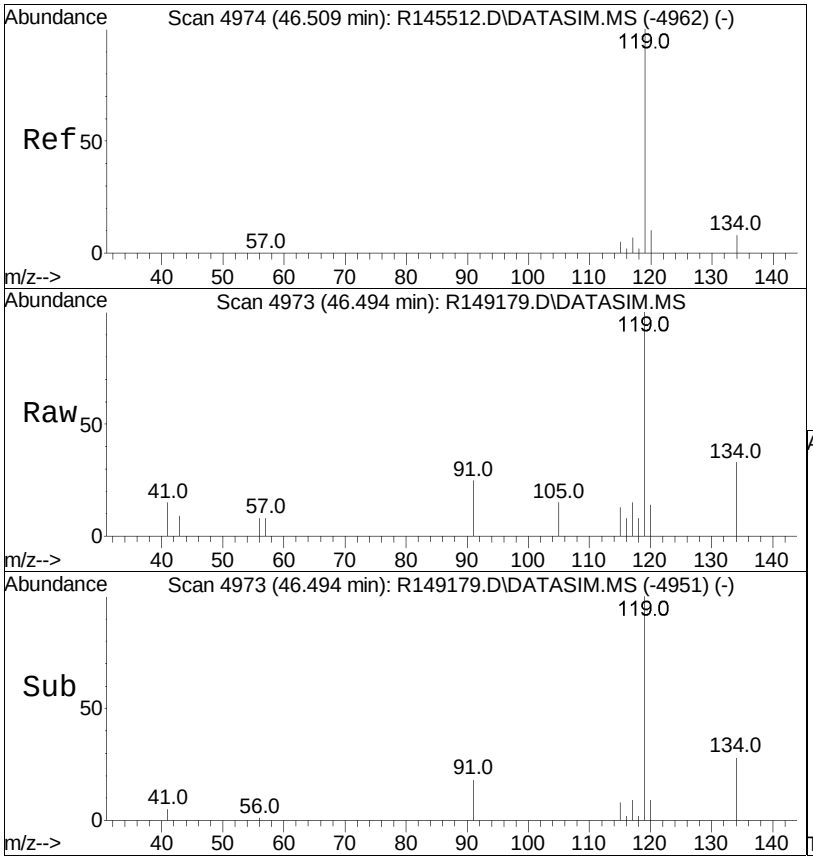


#79
1-Methyl-4-propylbenzene
Concen: 0.04 ppbV
RT: 46.278 min Scan# 4955
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:105 Resp: 1585

Ion	Ratio	Lower	Upper
105	100		
134	32.7	0.0	39.5

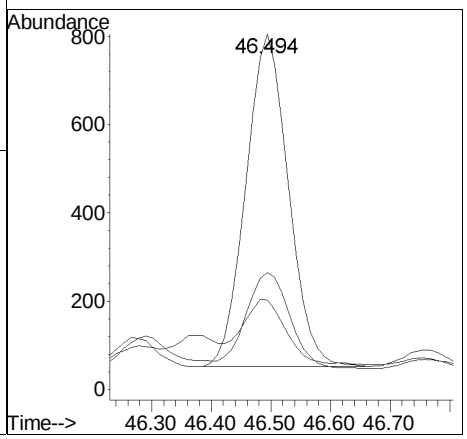


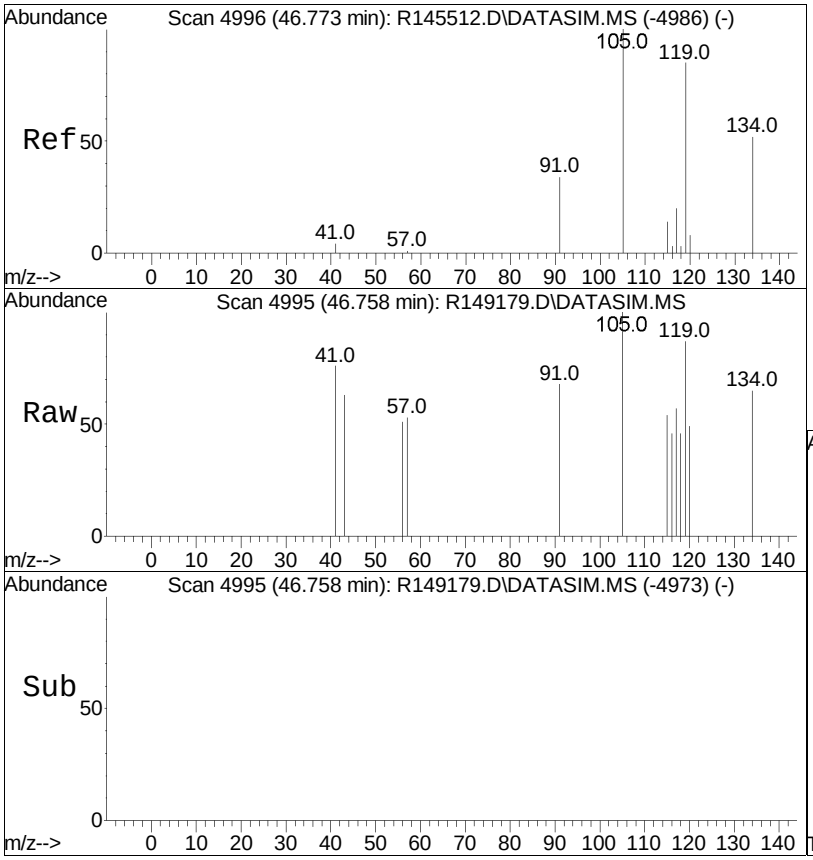


#81
1,2-Dimethyl-4-ethylbenzene
Concen: 0.14 ppbV
RT: 46.494 min Scan# 4973
Delta R.T. 0.012 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:119 Resp: 3726

Ion	Ratio	Lower	Upper
119	100		
134	32.9	9.8	49.8
91	25.2	0.0	39.8

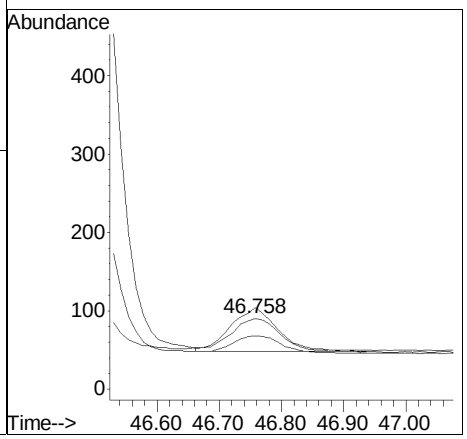


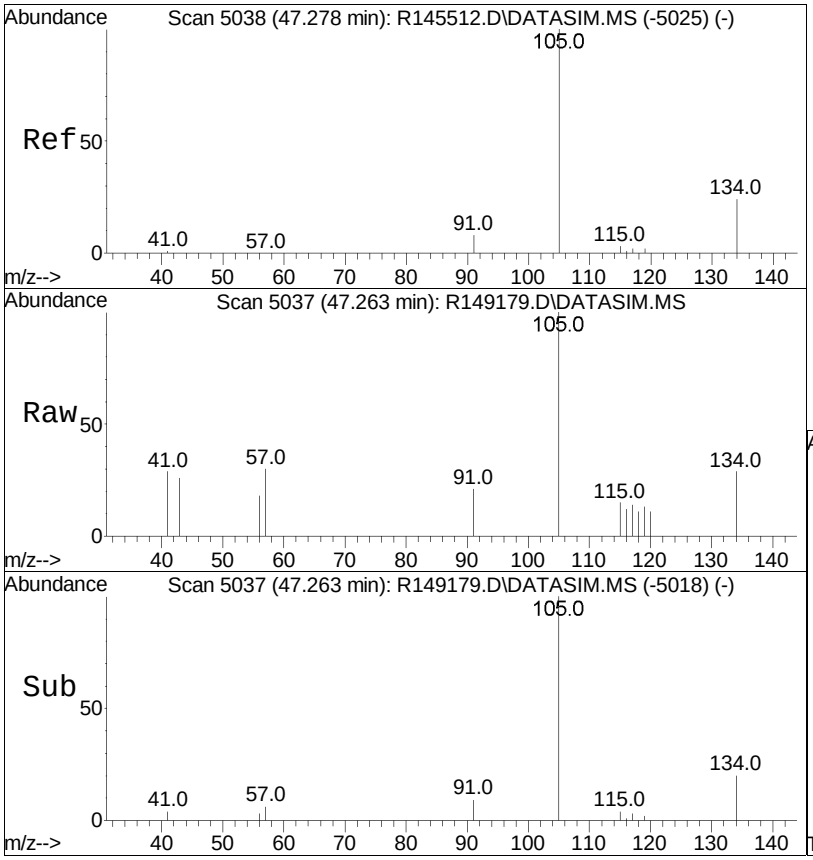


#82
1,2-Diethylbenzene
Concen: 0.02 ppbV
RT: 46.758 min Scan# 4995
Delta R.T. 0.012 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:119 Resp: 231

Ion	Ratio	Lower	Upper
119	100		
105	115.6	103.0	143.0
134	75.6	33.7	73.7#

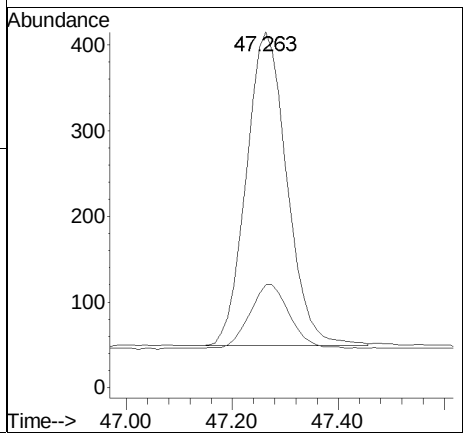


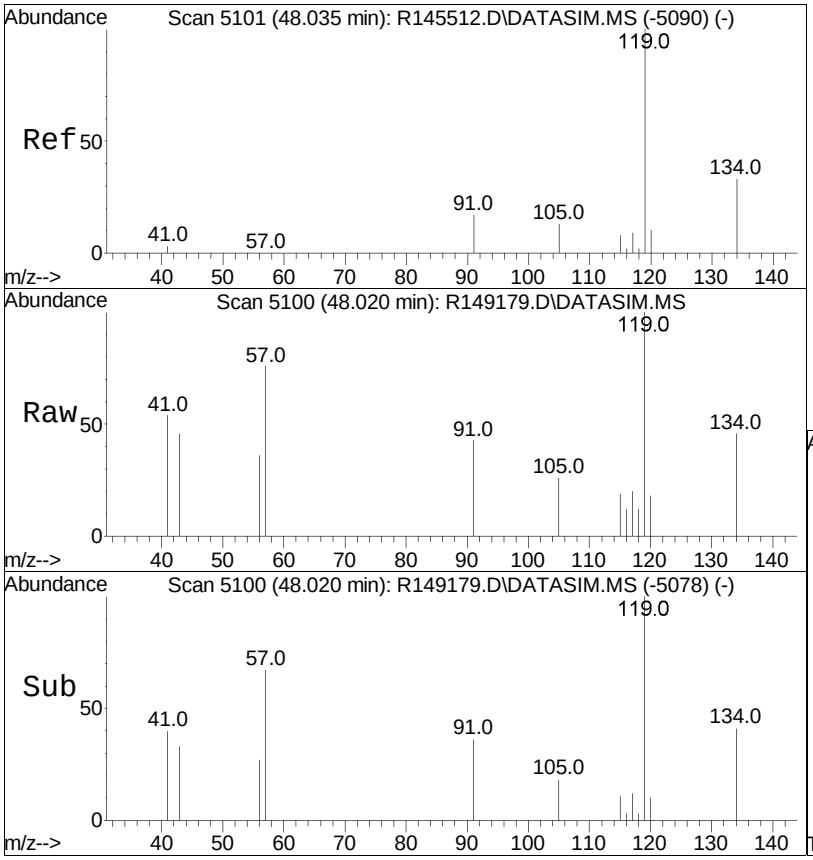


#83
1-Methyl-2-propylbenzene
Concen: 0.05 ppbV
RT: 47.263 min Scan# 5037
Delta R.T. 0.012 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:105 Resp: 1954

Ion	Ratio	Lower	Upper
105	100		
134	28.9	0.5	40.5

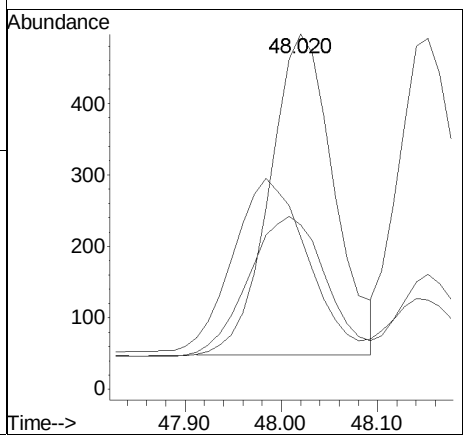


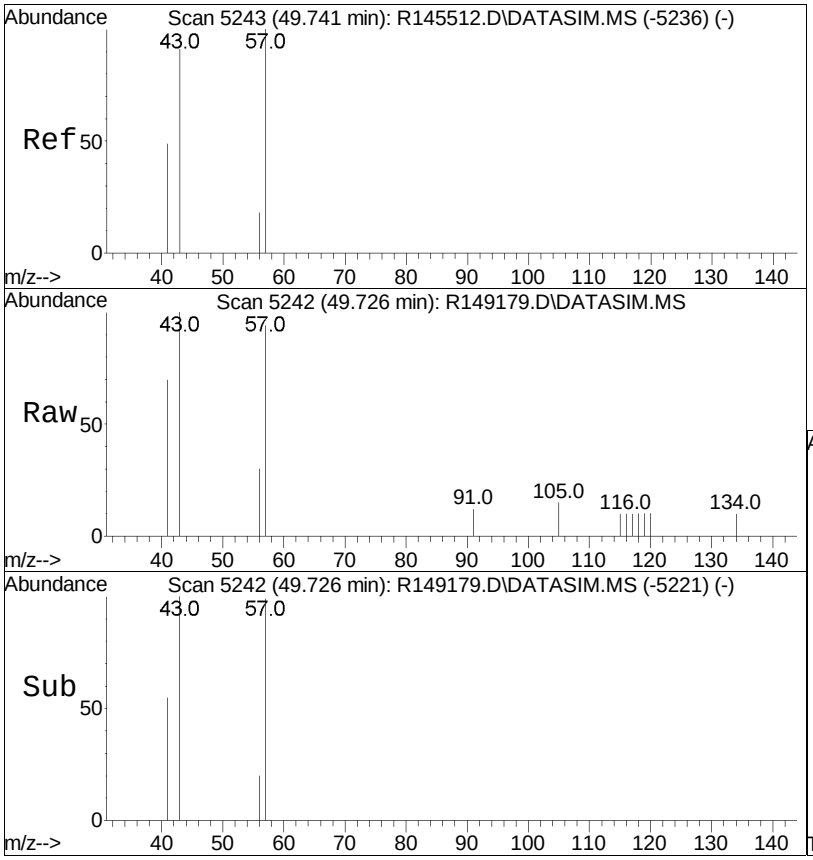


#84
1,4-Dimethyl-2-ethylbenzene
Concen: 0.08 ppbV m
RT: 48.020 min Scan# 5100
Delta R.T. 0.012 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:119 Resp: 2076

Ion	Ratio	Lower	Upper
119	100		
134	46.3	10.4	50.4
91	42.9	0.1	40.1#

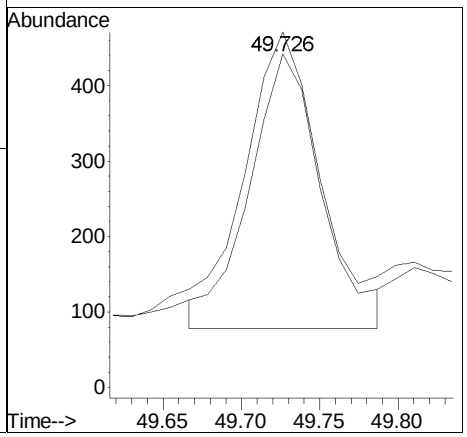


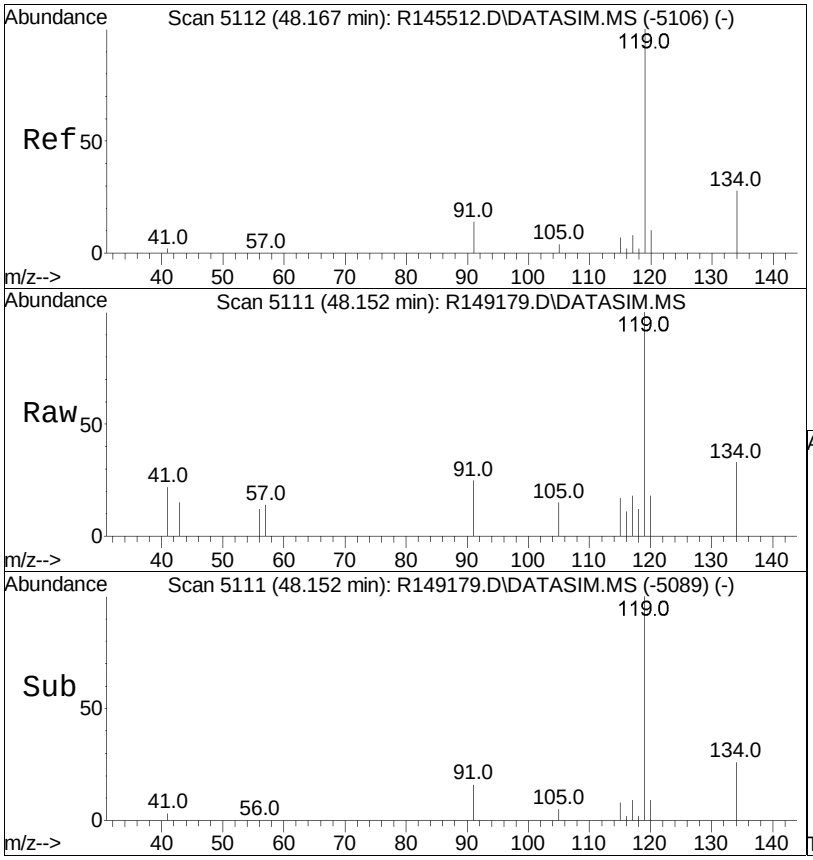


#85
Undecane
Concen: 0.05 ppbV m
RT: 49.726 min Scan# 5242
Delta R.T. -0.000 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 57 Resp: 1165

Ion	Ratio	Lower	Upper
57	100		
43	106.6	79.1	119.1

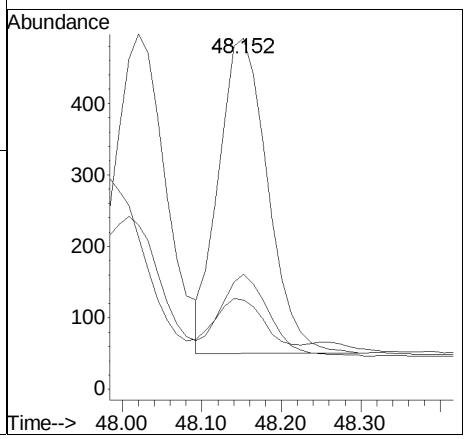


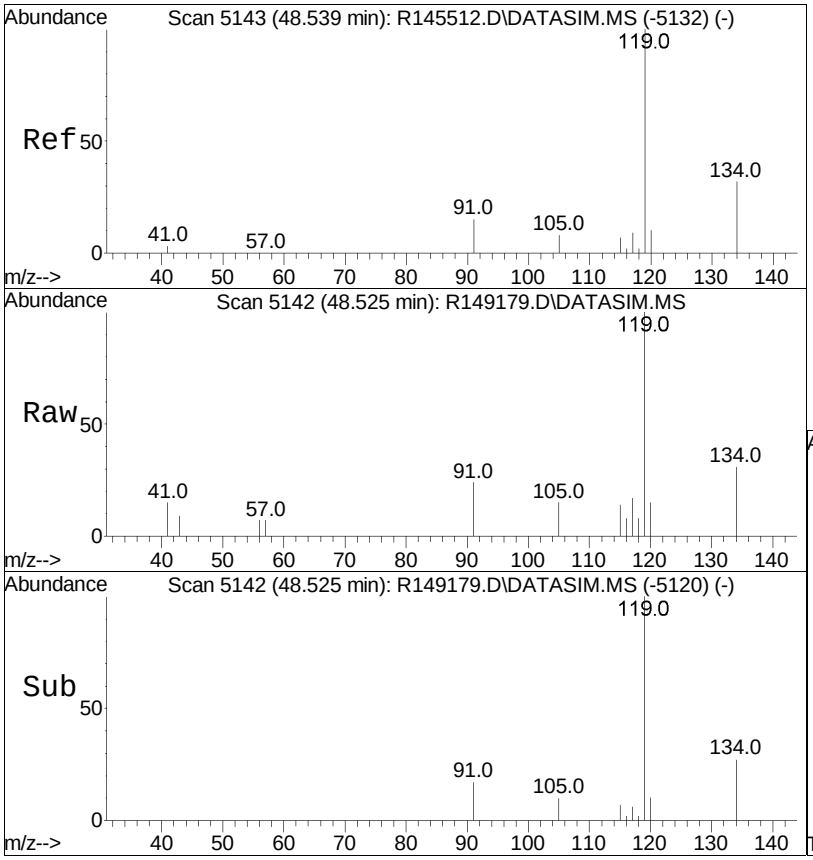


#86
1,3-Dimethyl-4-ethylbenzene
Concen: 0.06 ppbV
RT: 48.152 min Scan# 5111
Delta R.T. 0.012 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:119 Resp: 1888

Ion	Ratio	Lower	Upper
119	100		
134	32.8	6.2	46.2
91	25.5	0.0	36.4

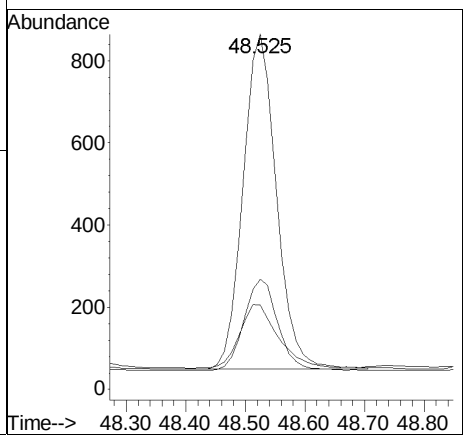


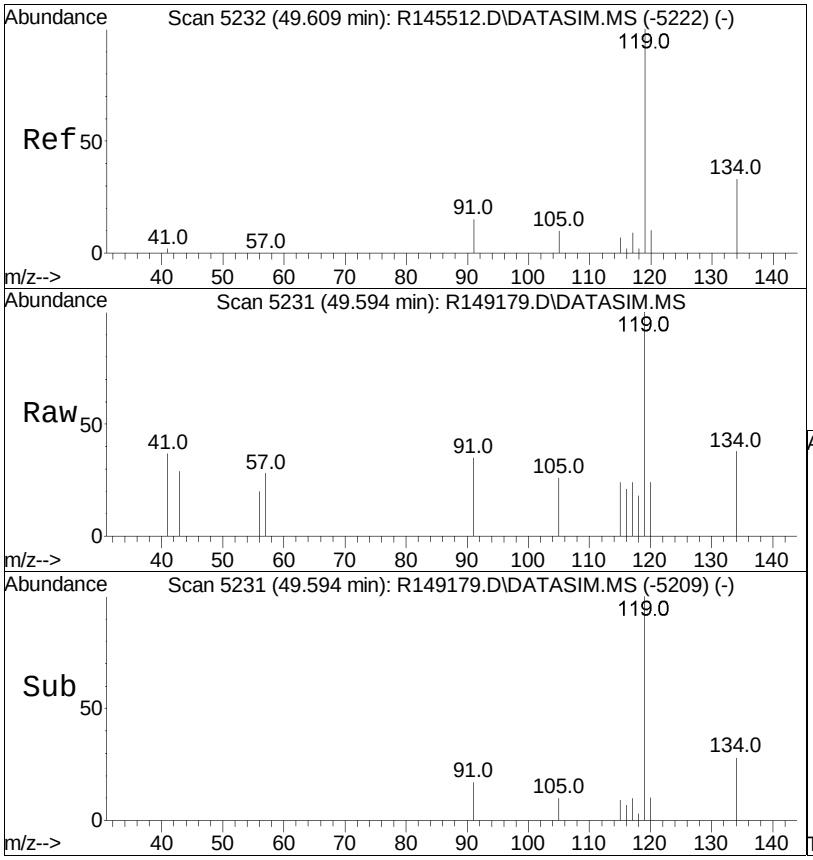


#87
1,3-Dimethyl-5-ethylbenzene
Concen: 0.11 ppbV
RT: 48.525 min Scan# 5142
Delta R.T. 0.012 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:119 Resp: 3179

Ion	Ratio	Lower	Upper
119	100		
134	31.0	7.8	47.8
91	23.7	0.0	38.0

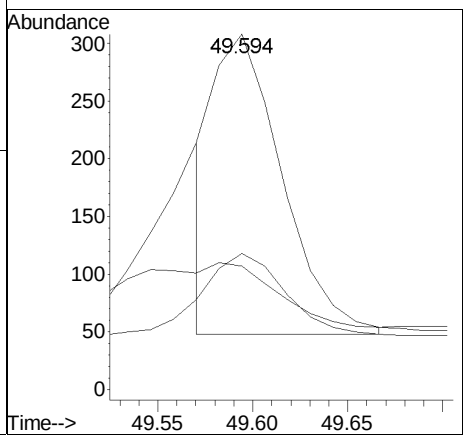


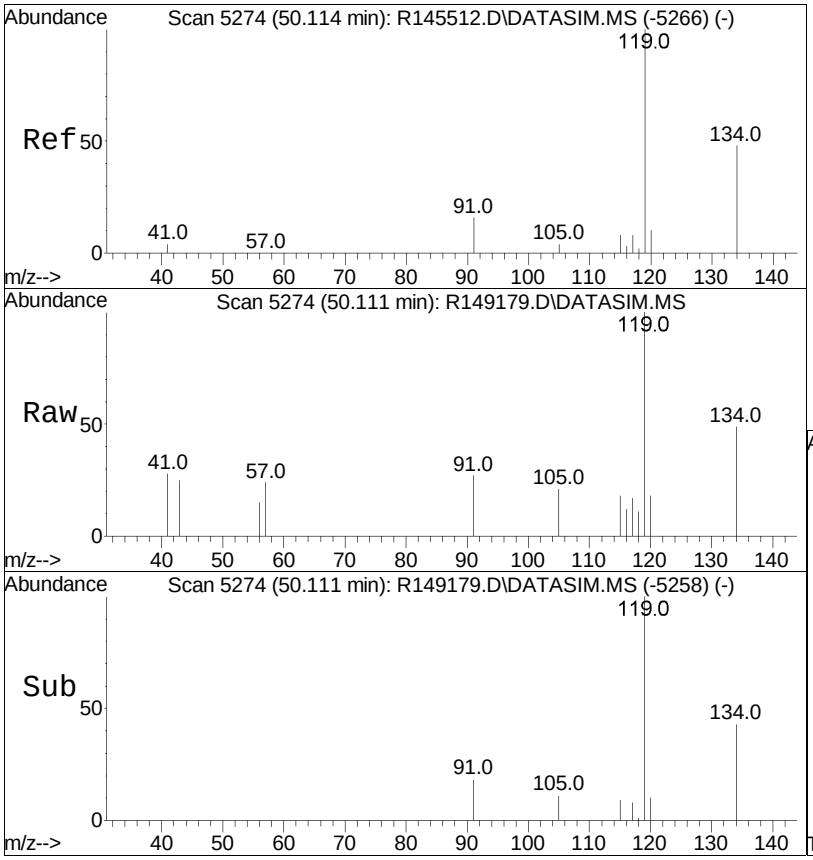


#89
1,2-Dimethyl-3-ethylbenzene
Concen: 0.02 ppbV m
RT: 49.594 min Scan# 5231
Delta R.T. 0.012 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:119 Resp: 655

Ion	Ratio	Lower	Upper
119	100		
134	38.3	8.0	48.0
91	34.7	0.0	39.5

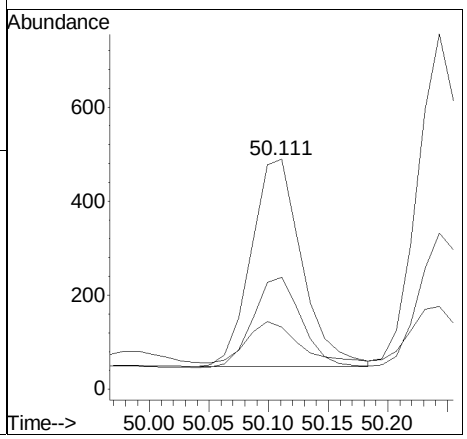


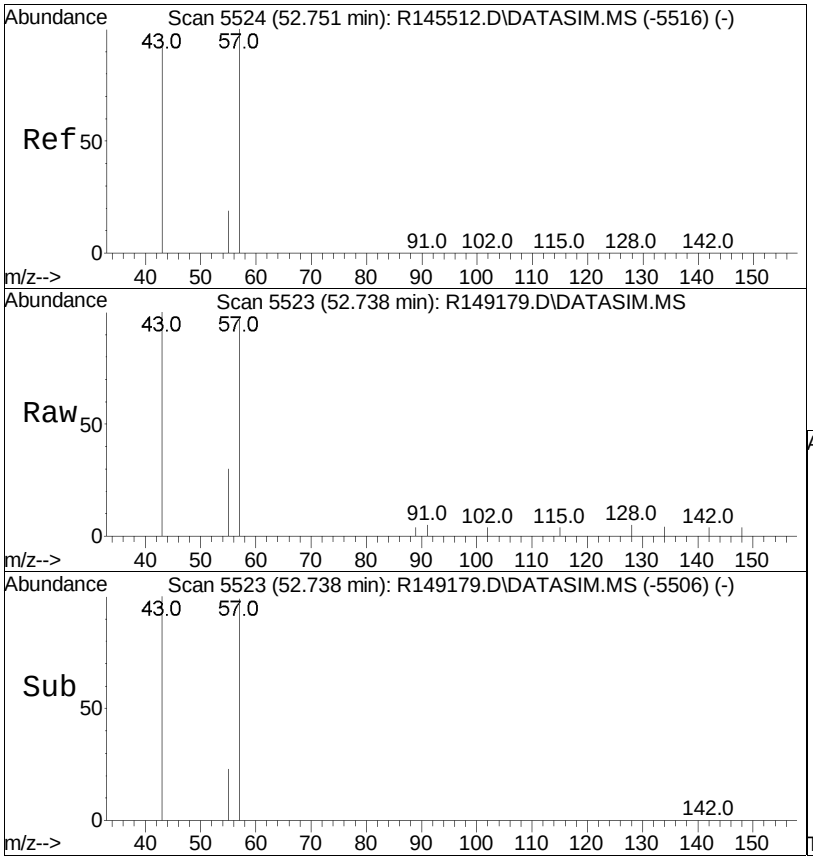


#90
1,2,4,5-Tetramethylbenzene
Concen: 0.01 ppbV
RT: 50.111 min Scan# 5274
Delta R.T. 0.012 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:119 Resp: 1308

Ion	Ratio	Lower	Upper
119	100		
134	48.7	24.1	64.1
91	27.0	0.0	36.7

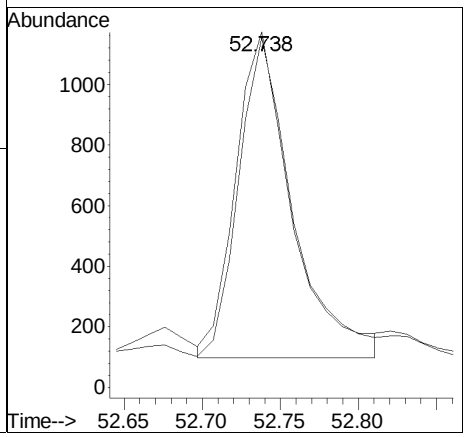


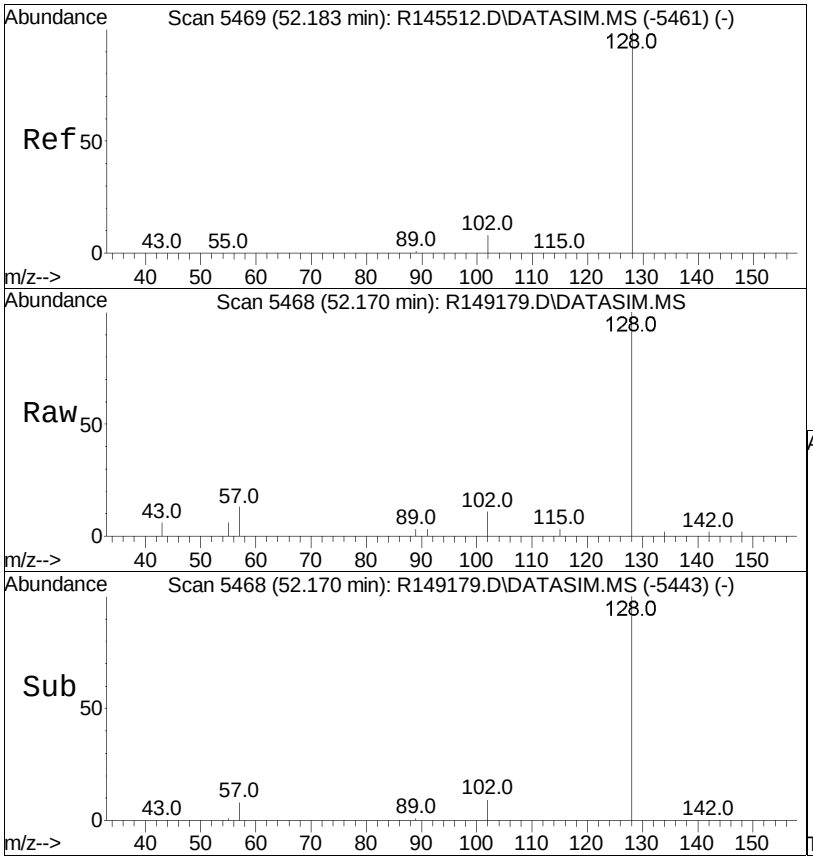


#92
Dodecane
Concen: 0.11 ppbV m
RT: 52.738 min Scan# 5523
Delta R.T. 0.010 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 43 Resp: 2681

Ion	Ratio	Lower	Upper
43	100		
57	98.5	80.2	120.2

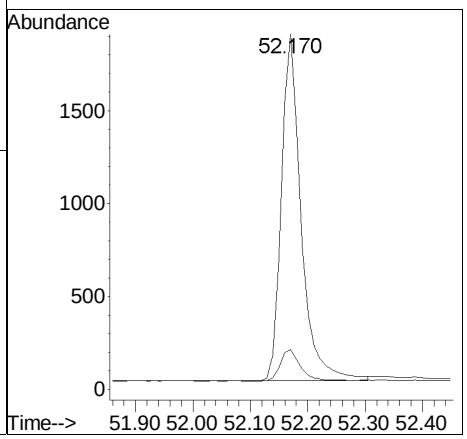


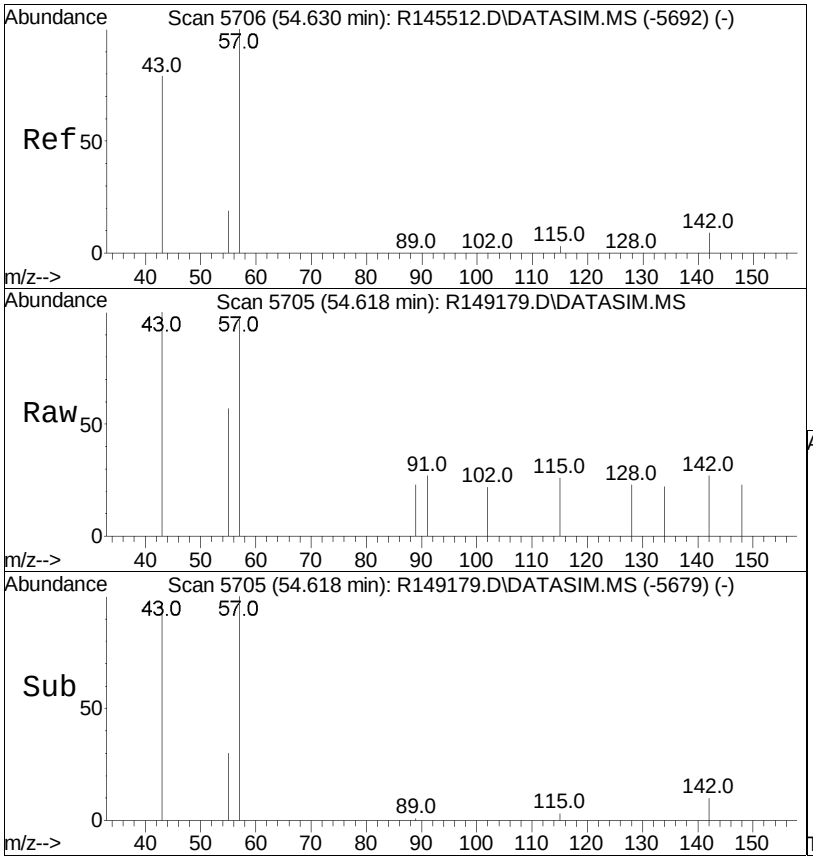


#93
Naphthalene
Concen: 0.14 ppbV
RT: 52.170 min Scan# 5468
Delta R.T. 0.010 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion:128 Resp: 4462

Ion	Ratio	Lower	Upper
128	100		
102	11.2	0.0	28.9

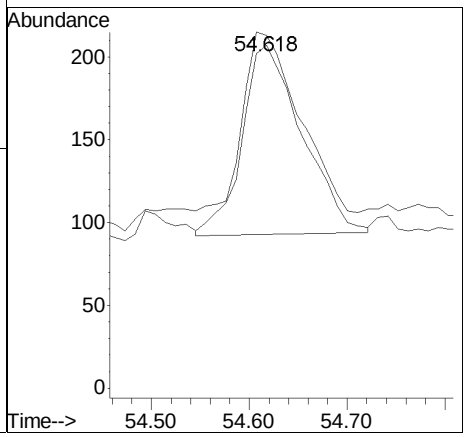




#96
Tridecane
Concen: 0.01 ppbV
RT: 54.618 min Scan# 5705
Delta R.T. 0.021 min
Lab File: R149179.D
Acq: 8 Nov 2016 9:51 pm

Tgt Ion: 57 Resp: 487

Ion	Ratio	Lower	Upper
57	100		
43	102.9	72.3	112.3



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-05	Date Collected	: 10/19/16 11:48
Client ID	: NFSV-06	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 22:57
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149180	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
106-99-0	1,3-Butadiene	ND	0.025	0.010	ND	0.055	0.022	U
78-78-4	Isopentane	2.54	0.025	0.010	7.50	0.074	0.030	
109-67-1	1-Pentene	0.071	0.025	0.010	0.204	0.072	0.029	
563-46-2	2-Methyl-1-Butene	0.055	0.025	0.010	0.158	0.072	0.029	
109-66-0	Pentane	1.48	0.025	0.010	4.37	0.074	0.030	
646-04-8	trans-2-Pentene	0.017	0.025	0.010	0.049	0.072	0.029	J
627-20-3	cis-2-Pentene	ND	0.025	0.010	ND	0.072	0.029	U
75-65-0	Tertiary Butanol	1.37	0.025	0.010	4.15	0.076	0.030	
287-92-3	Cyclopentane	0.068	0.025	0.010	0.195	0.072	0.029	
79-29-8	2,3-Dimethylbutane	0.114	0.025	0.010	0.402	0.088	0.035	
107-83-5	2-Methylpentane	0.369	0.025	0.010	1.30	0.088	0.035	
1634-04-4	Methyl tert butyl ether	0.556	0.025	0.010	2.00	0.090	0.036	
96-14-0	3-Methylpentane	0.396	0.025	0.010	1.40	0.088	0.035	
592-41-6	1-Hexene	0.032	0.025	0.010	0.110	0.086	0.034	
110-54-3	n-Hexane	0.340	0.025	0.010	1.20	0.088	0.035	
108-20-3	Isopropyl Ether	ND	0.025	0.010	ND	0.104	0.042	U
637-92-3	Ethyl-Tert-Butyl-Ether	ND	0.025	0.010	ND	0.104	0.042	U
590-35-2	2,2-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041	U
96-37-7	Methylcyclopentane	0.063	0.025	0.010	0.217	0.086	0.034	
108-08-7	2,4-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041	U
107-06-2	1,2-Dichloroethane	ND	0.025	0.010	ND	0.101	0.041	U
110-82-7	Cyclohexane	0.025	0.025	0.010	0.086	0.086	0.034	
591-76-4	2-Methylhexane	0.066	0.025	0.010	0.270	0.102	0.041	
71-43-2	Benzene	0.208	0.025	0.010	0.664	0.080	0.032	
565-59-3	2,3-Dimethylpentane	0.040	0.025	0.010	0.164	0.102	0.041	
110-02-1	Thiophene	ND	0.025	0.010	ND	0.086	0.034	U
589-34-4	3-Methylhexane	0.134	0.025	0.010	0.549	0.102	0.041	
994-05-8	Tertiary-Amyl Methyl Ether	ND	0.025	0.010	ND	0.104	0.042	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-05	Date Collected	: 10/19/16 11:48
Client ID	: NFSV-06	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 22:57
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149180	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
592-76-7	1-Heptene	ND	0.025	0.010	ND	0.100	0.040	U
540-84-1	Isooctane	0.041	0.025	0.010	0.192	0.117	0.047	
142-82-5	Heptane	0.113	0.025	0.010	0.463	0.102	0.041	
108-87-2	Methylcyclohexane	ND	0.025	0.010	ND	0.100	0.040	U
592-13-2	2,5-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
589-43-5/564-02-3	2,4-Dimethylhexane/2,2,3-Trimethylpen	0.037	0.050	0.025	0.173	0.234	0.117	J
565-75-3	2,3,4-Trimethylpentane	0.021	0.025	0.010	0.098	0.117	0.047	J
560-21-4	2,3,3-Trimethylpentane	0.074	0.025	0.010	0.346	0.117	0.047	
584-94-1	2,3-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
619-99-8	3-Ethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
592-27-8	2-Methylheptane	ND	0.025	0.010	ND	0.117	0.047	U
589-81-1	3-Methylheptane	0.026	0.025	0.010	0.121	0.117	0.047	
108-88-3	Toluene	0.343	0.025	0.010	1.29	0.094	0.038	
554-14-3	2-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040	U
616-44-4	3-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040	U
111-66-0	1-Octene	0.031	0.025	0.010	0.142	0.115	0.046	
16747-50-5	1-Ethyl-1-Methylcyclopentane	ND	0.025	0.010	ND	0.115	0.046	U
111-65-9	Octane	0.077	0.025	0.010	0.360	0.117	0.047	
106-93-4	1,2-Dibromoethane	ND	0.025	0.010	ND	0.192	0.077	U
100-41-4	Ethylbenzene	0.084	0.025	0.010	0.365	0.109	0.043	
872-55-9	2-Ethylthiophene	ND	0.025	0.010	ND	0.115	0.046	U
179601-23-1	p/m-Xylene	0.357	0.050	0.010	1.55	0.217	0.043	
124-11-8	1-Nonene	ND	0.025	0.010	ND	0.129	0.052	U
111-84-2	Nonane (C9)	0.060	0.025	0.010	0.315	0.131	0.053	
100-42-5	Styrene	0.014	0.025	0.010	0.060	0.106	0.043	J
95-47-6	o-Xylene	0.210	0.050	0.010	0.912	0.217	0.043	
98-82-8	Isopropylbenzene	ND	0.025	0.010	ND	0.123	0.049	U
103-65-1	n-Propylbenzene	0.027	0.025	0.010	0.133	0.123	0.049	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-05	Date Collected	: 10/19/16 11:48
Client ID	: NFSV-06	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 22:57
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149180	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
620-14-4	1-Methyl-3-Ethylbenzene	0.102	0.050	0.025	0.501	0.246	0.123	
622-96-8	1-Methyl-4-Ethylbenzene	0.075	0.025	0.010	0.369	0.123	0.049	
108-67-8	1,3,5-Trimethylbenzene	0.087	0.025	0.010	0.428	0.123	0.049	
872-05-9	1-Decene	ND	0.050	0.025	ND	0.287	0.143	U
611-14-3	1-Methyl-2-Ethylbenzene	0.108	0.050	0.025	0.531	0.246	0.123	
124-18-5	Decane (C10)	0.355	0.050	0.025	2.07	0.291	0.146	
95-63-6	1,2,4-Trimethylbenzene	0.251	0.050	0.025	1.23	0.246	0.123	
135-98-8	sec-Butylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
535-77-3	1-Methyl-3-Isopropylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
99-87-6	1-Methyl-4-Isopropylbenzene	0.112	0.050	0.025	0.615	0.274	0.137	
527-84-4	1-Methyl-2-Isopropylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
496-11-7	Indane	0.036	0.050	0.025	0.174	0.242	0.121	J
95-13-6	Indene	ND	0.050	0.025	ND	0.238	0.119	U
1074-43-7	1-Methyl-3-N-Propylbenzene	0.075	0.050	0.025	0.412	0.274	0.137	
1074-55-1	1-Methyl-4-N-Propylbenzene	0.071	0.050	0.025	0.390	0.274	0.137	
104-51-8	n-Butylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
934-80-5	1,2-Dimethyl-4-Ethylbenzene	0.059	0.050	0.025	0.324	0.274	0.137	
135-01-3	1,2-Diethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1074-17-5	1-Methyl-2-N-Propylbenzene	0.035	0.050	0.025	0.192	0.274	0.137	J
1758-88-9	1,4-Dimethyl-2-Ethylbenzene	0.039	0.050	0.025	0.214	0.274	0.137	J
1120-21-4	Undecane	0.180	0.050	0.025	1.15	0.320	0.160	
874-41-9	1,3-Dimethyl-4-Ethylbenzene	0.035	0.050	0.025	0.192	0.274	0.137	J
934-74-7	1,3-Dimethyl-5-Ethylbenzene	0.074	0.050	0.025	0.406	0.274	0.137	
2870-04-4	1,3-Dimethyl-2-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
933-98-2	1,2-Dimethyl-3-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
538-68-1	N-Pentylbenzene	ND	0.050	0.025	ND	0.303	0.152	U
112-40-3	Dodecane (C12)	2.24	0.100	0.050	15.6	0.697	0.348	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-05	Date Collected	: 10/19/16 11:48
Client ID	: NFSV-06	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/08/16 22:57
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149180	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
91-20-3	Naphthalene	0.079	0.050	0.025	0.414	0.262	0.131	
95-15-8	Benzothiophene	ND	0.100	0.050	ND	0.549	0.274	U
12108-13-3	MMT	ND	0.100	0.050	ND	0.892	0.446	U
629-50-5	Tridecane	ND	1.00	0.050	ND	7.54	0.377	U
91-57-6	2-Methylnaphthalene	ND	0.500	0.050	ND	2.91	0.291	U
90-12-0	1-Methylnaphthalene	ND	0.500	0.050	ND	2.91	0.291	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149180.D
Acq On : 8 Nov 2016 10:57 pm
Operator : AIRPIANO1:RY
Sample : L1634001-05,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 10 11:55:42 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.193	49	128450	10.000	ppbV	0.00
Standard Area = 123393			Recovery = 104.10%			
27) 1,4-difluorbenzene	14.201	114	276341	10.000	ppbV	0.00
Standard Area = 263318			Recovery = 104.95%			
54) chlorobenzene-D5	27.633	117	201809	10.000	ppbV	0.00
Standard Area = 190793			Recovery = 105.77%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.614	65	80750	10.060	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.60%			
46) Toluene-D8	20.948	98	214640	10.181	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.81%			
62) 4-Bromofluorobenzene (...	34.334	95	108504	9.802	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.02%			
Target Compounds						Qvalue
2) 1,3-butadiene	0.000		0	N.D.	d	
4) Isopentane	5.878	41	31657	2.545	ppbV	96
5) 1-Pentene	6.194	42	1005	0.071	ppbV	96
6) 2-Methyl-1-butene	6.352	55	910	0.055	ppbV #	82
7) Pentane	6.468	43	31527	1.481	ppbV	98
9) 2-Pentene (trans)	6.668	55	275	0.017	ppbV #	61
10) 2-Pentene (cis)	0.000		0	N.D.	d	
11) Tertiary butanol	6.878	59	33184	1.373	ppbV	86
12) Cyclopentane	8.647	70	325	0.068	ppbV #	93
13) 2,3-Dimethylbutane	8.665	71	504M4	0.114	ppbV	
14) 2-Methylpentane	8.816	43	8916M6	0.369	ppbV	
15) MTBE	8.682	73	13671	0.556	ppbV #	70
16) 3-Methylpentane	9.460	57	6296	0.396	ppbV	93
17) 1-Hexene	9.723	56	290M6	0.032	ppbV	
18) Hexane	10.286	57	4616	0.340	ppbV #	57
19) Diisopropyl ether	0.000		0	N.D.	d	
20) Ethyl tertiary butyl e...	0.000		0	N.D.	d	
21) 2,2-Dimethylpentane	0.000		0	N.D.	d	
23) Methylcyclopentane	11.831	56	1056	0.063	ppbV	88
24) 2,4-Dimethylpentane	0.000		0	N.D.	d	
25) 1,2-Dichloroethane	0.000		0	N.D.	d	
26) Cyclohexane	13.909	56	331	0.025	ppbV	95
28) 2-Methylhexane	14.391	43	1543	0.066	ppbV	80

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149180.D
Acq On : 8 Nov 2016 10:57 pm
Operator : AIRPIANO1:RY
Sample : L1634001-05,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 10 11:55:42 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
29) Benzene	13.316	78	5495	0.208	ppbV	93
30) 2,3-Dimethylpentane	14.548	56	663	0.040	ppbV #	1
31) Thiophene	0.000		0	N.D.	d	
32) 3-Methylhexane	15.018	43	2460	0.134	ppbV	86
33) TAME	0.000		0	N.D.	d	
34) 1-Heptene	0.000		0	N.D.	d	
35) Isooctane	16.004	57	1709M6	0.041	ppbV	
36) Heptane	16.777	43	2022M4	0.113	ppbV	
37) Methylcyclohexane	0.000		0	N.D.	d	
38) 2,5-Dimethylhexane	0.000		0	N.D.	d	
39) 2,4-Dimethyhexane / 2,...	19.521	57	956	0.037	ppbV #	49
40) 2,3,4-Trimethylpentane	20.850	43	593	0.021	ppbV	88
41) 2,3,3-Trimethylpentane	21.234	43	1995	0.074	ppbV	91
42) 2,3-Dimethylhexane	0.000		0	N.D.	d	
43) 3-Ethylhexane	0.000		0	N.D.	d	
44) 2-Methylheptane	0.000		0	N.D.	d	
45) 3-Methylheptane	22.818	43	564M4	0.026	ppbV	
47) Toluene	21.273	91	10555	0.343	ppbV	99
48) 2-Methylthiophene	0.000		0	N.D.	d	
49) 3-Methylthiophene	0.000		0	N.D.	d	
50) 1-Octene	24.077	55	289M3	0.031	ppbV	
51) 1-ethyl-1-methylcyclop...	0.000		0	N.D.	d	
52) Octane	25.091	43	1889M4	0.077	ppbV	
53) 1,2-Dibromoethane	0.000		0	N.D.	d	
55) Ethylbenzene	29.493	91	2394	0.084	ppbV	91
56) 2-Ethylthiophene	0.000		0	N.D.	d	
57) p/m-Xylene	30.337	91	7821M4	0.357	ppbV	
58) 1-Nonene	0.000		0	N.D.	d	
59) Nonane	33.901	43	1271	0.060	ppbV	100
60) Styrene	31.869	104	204	0.014	ppbV #	57
61) o-Xylene	32.265	91	4718	0.210	ppbV	97
63) Isopropylbenzene	0.000		0	N.D.	d	
64) n-Propylbenzene	37.698	120	211	0.027	ppbV #	26
65) 1-Methyl-3-ethylbenzene	38.335	105	2839	0.102	ppbV	90
66) 1-Methyl-4-ethylbenzene	38.515	105	2256	0.075	ppbV	86
67) 1,3,5-Trimethylbenzene	38.996	105	2115	0.087	ppbV	93
68) 1-Decene	0.000		0	N.D.	d	
69) 1-Methyl-2-ethylbenzene	39.873	105	3074	0.108	ppbV	91
70) Decane	42.504	43	7779M4	0.355	ppbV	
71) 1,2,4-Trimethylbenzene	41.147	105	6089	0.251	ppbV	94

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149180.D
Acq On : 8 Nov 2016 10:57 pm
Operator : AIRPIANO1:RY
Sample : L1634001-05,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 10 11:55:42 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

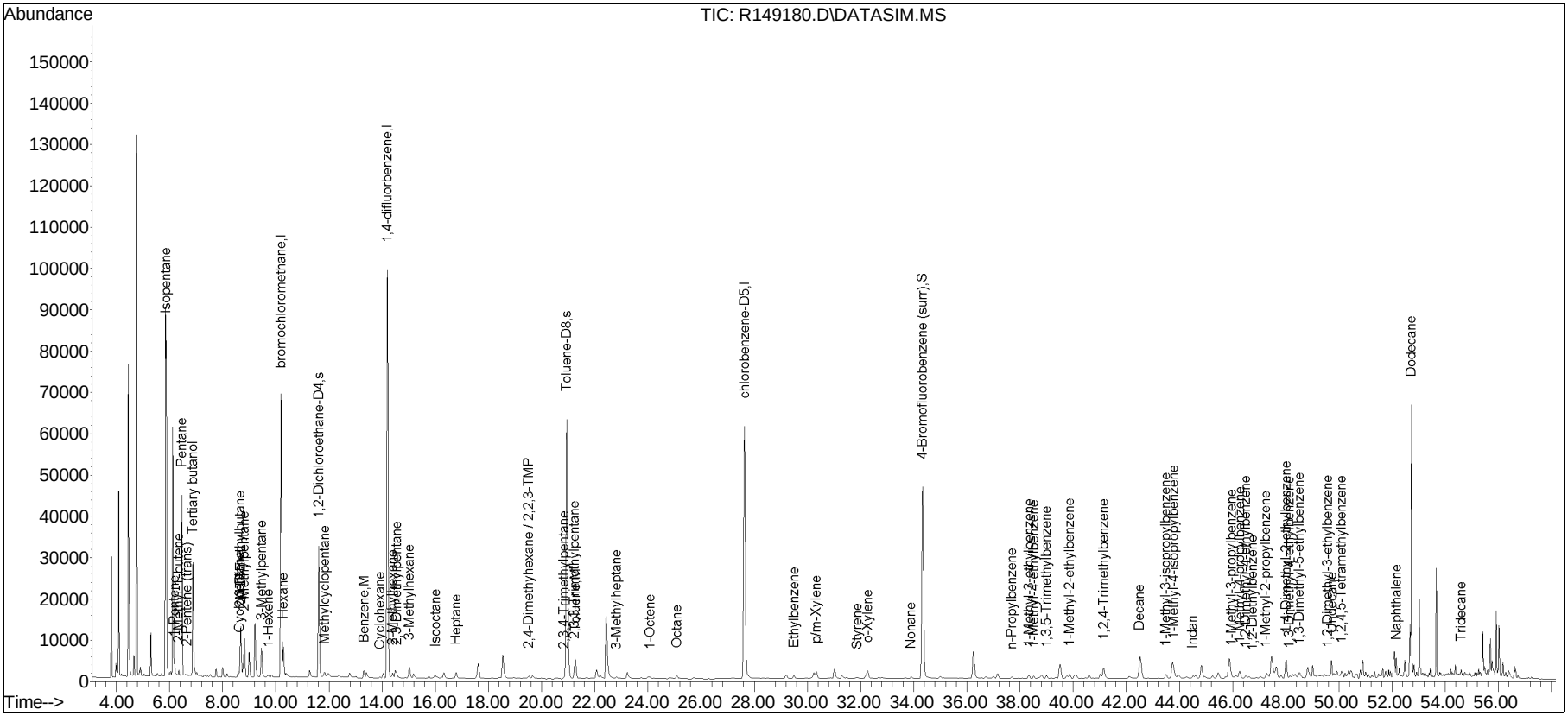
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
72) sec-Butylbenzene	0.000		0	N.D.	d	
73) 1-Methyl-3-isopropylbe...	43.490	119	712	0.022	ppbV #	49
74) 1-Methyl-4-isopropylbe...	43.778	119	2940	0.112	ppbV	87
75) 1-Methyl-2-isopropylbe...	0.000		0	N.D.	d	
76) Indan	44.499	117	689	0.036	ppbV	86
77) Indene	45.040		0	N.D.		
78) 1-Methyl-3-propylbenzene	45.953	105	2648	0.075	ppbV	90
79) 1-Methyl-4-propylbenzene	46.266	105	3038	0.071	ppbV #	47
80) n-Butylbenzene	0.000		0	N.D.	d	
81) 1,2-Dimethyl-4-ethylbe...	46.494	119	1587	0.059	ppbV	81
82) 1,2-Diethylbenzene	46.746	119	157	0.011	ppbV #	83
83) 1-Methyl-2-propylbenzene	47.251	105	1309	0.035	ppbV	76
84) 1,4-Dimethyl-2-ethylbe...	48.020	119	1097	0.039	ppbV	72
85) Undecane	49.726	57	3994M6	0.180	ppbV	
86) 1,3-Dimethyl-4-ethylbe...	48.140	119	1145	0.035	ppbV	75
87) 1,3-Dimethyl-5-ethylbe...	48.513	119	2257	0.074	ppbV	84
88) 1,3-Dimethyl-2-ethylbe...	0.000		0	N.D.	d	
89) 1,2-Dimethyl-3-ethylbe...	49.582	119	577M6	0.019	ppbV	
90) 1,2,4,5-Tetramethylben...	50.099	119	1007	0.010	ppbV	85
91) Pentylbenzene	0.000		0	N.D.	d	
92) Dodecane	52.728	43	54355	2.240	ppbV	98
93) Naphthalene	52.170	128	2585	0.079	ppbV	89
94) Benzothiophene	52.325		0	N.D.		
95) MMT	0.000		0	N.D.	d	
96) Tridecane	54.597	57	1450M4	0.042	ppbV	
97) 2-Methylnaphthalene	54.576		0	N.D.		
98) 1-Methylnaphthalene	54.876		0	N.D.		

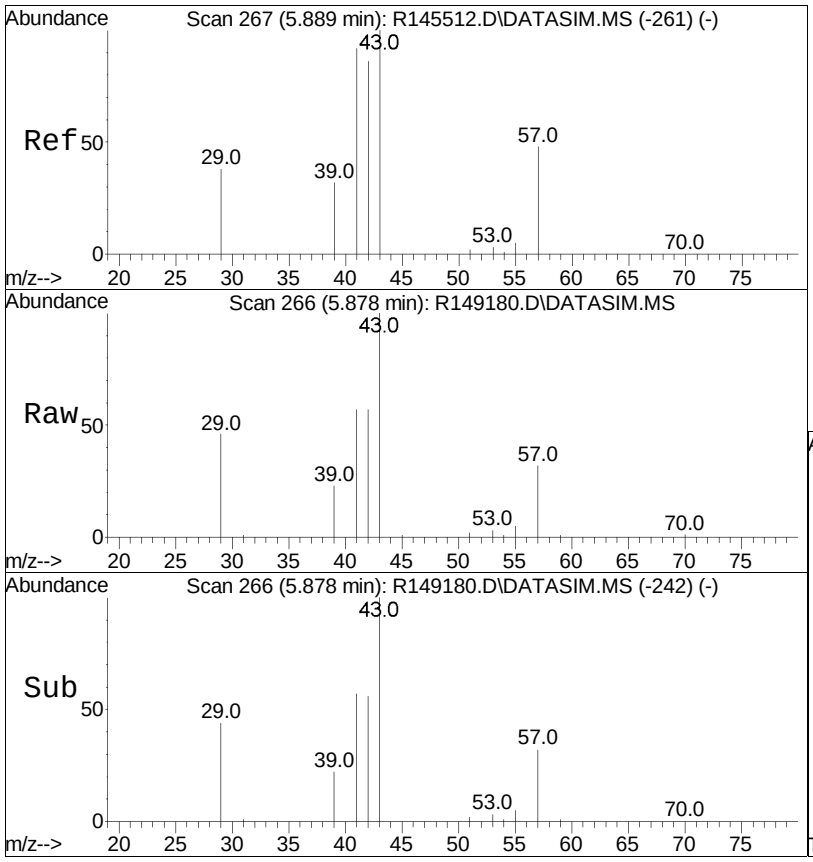
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : AIR-NF-PIANO - NF PIANO LIST161108PIANO\R149170.D

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149180.D
Acq On : 8 Nov 2016 10:57 pm
Operator : AIRPIANO1:RY
Sample : L1634001-05,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 10 11:55:42 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

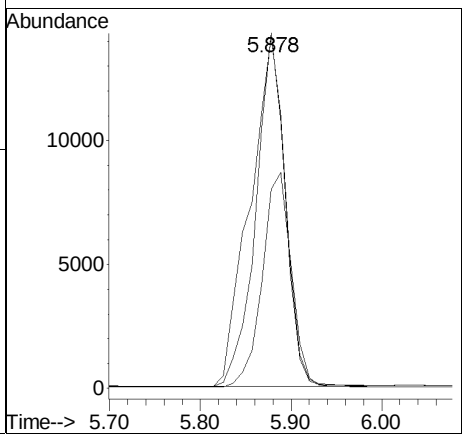


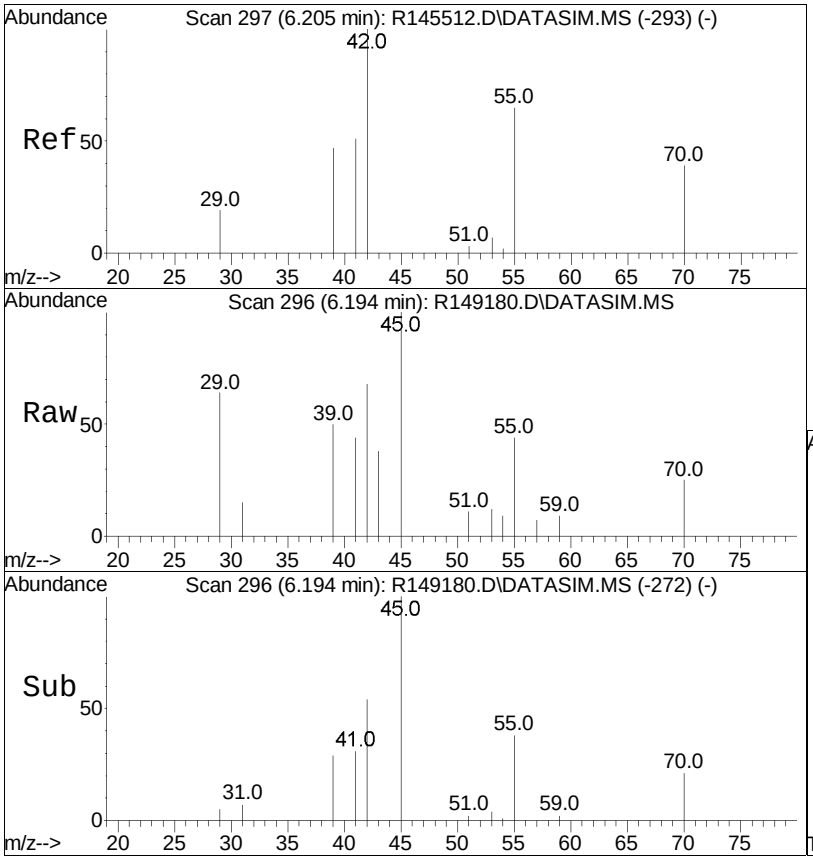


#4
Isopentane
Concen: 2.55 ppbV
RT: 5.878 min Scan# 266
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 41 Resp: 31657

Ion	Ratio	Lower	Upper
41	100		
57	56.1	31.8	71.8
42	99.2	76.7	116.7

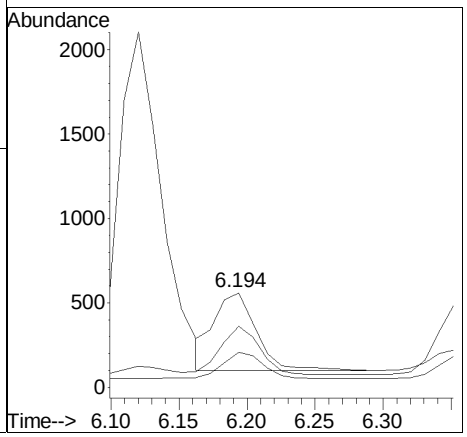


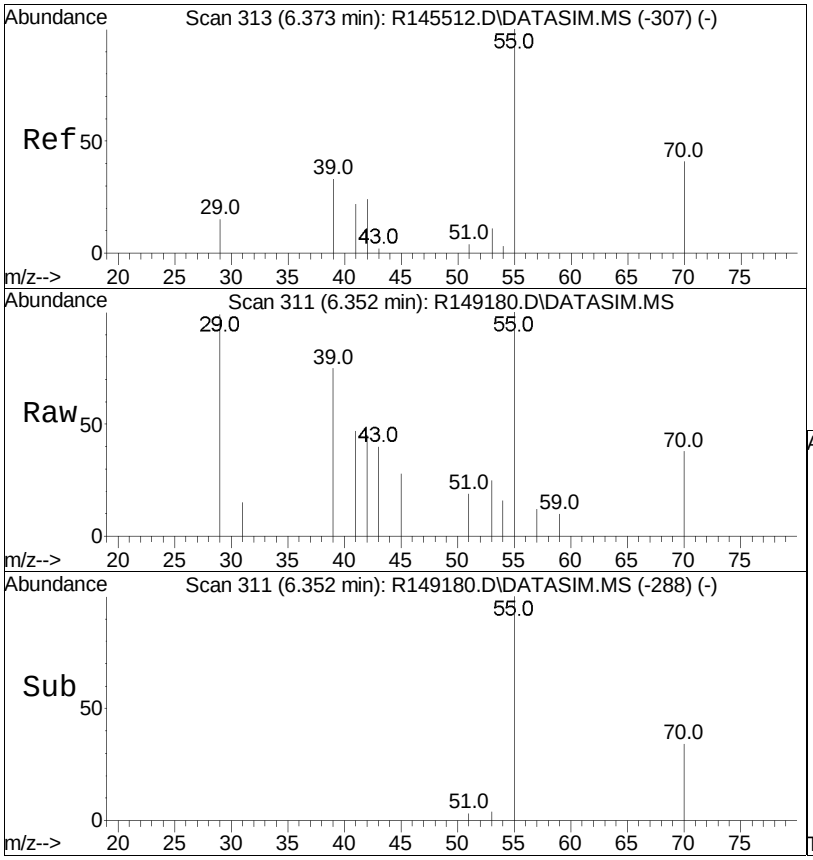


#5
1-Pentene
Concen: 0.07 ppbV
RT: 6.194 min Scan# 296
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 42 Resp: 1005

Ion	Ratio	Lower	Upper
42	100		
55	64.8	43.2	83.2
70	37.2	13.6	53.6

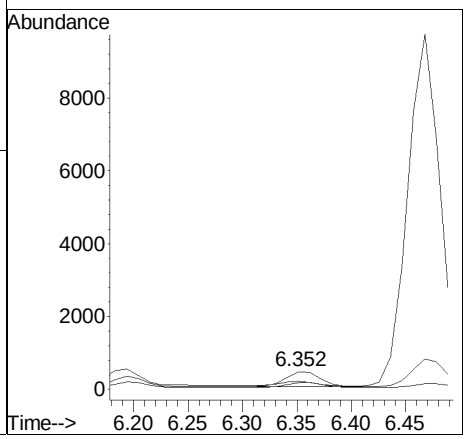


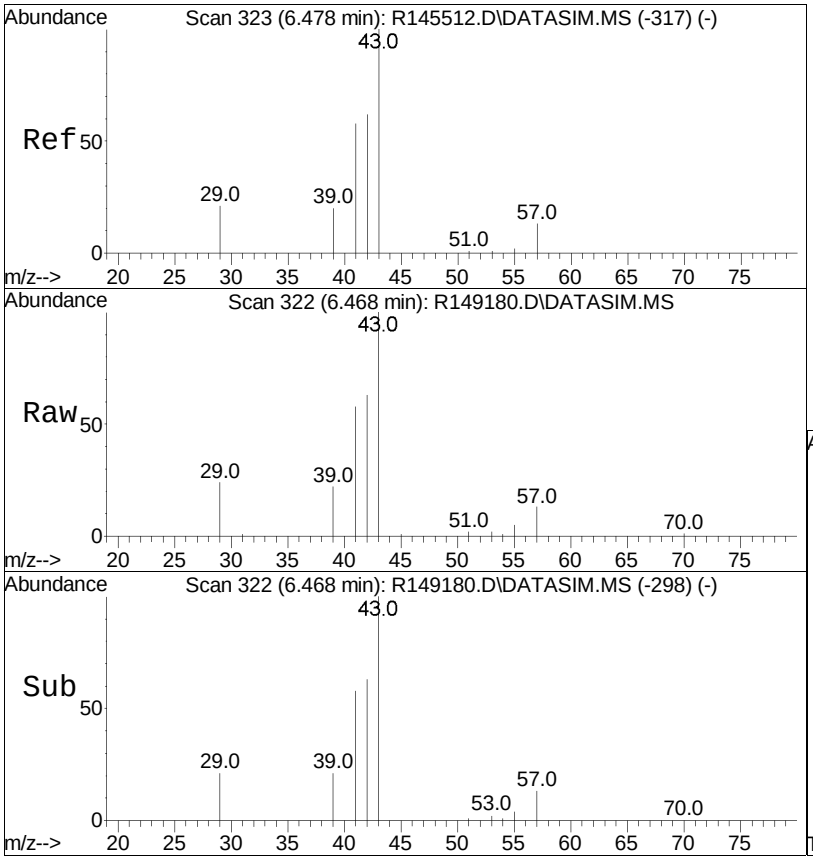


#6
2-Methyl-1-butene
Concen: 0.05 ppbV
RT: 6.352 min Scan# 311
Delta R.T. -0.011 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 55 Resp: 910

Ion	Ratio	Lower	Upper
55	100		
70	37.9	16.1	56.1
42	45.5	5.4	45.4#

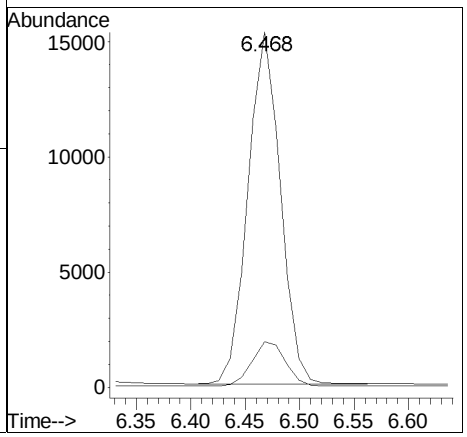


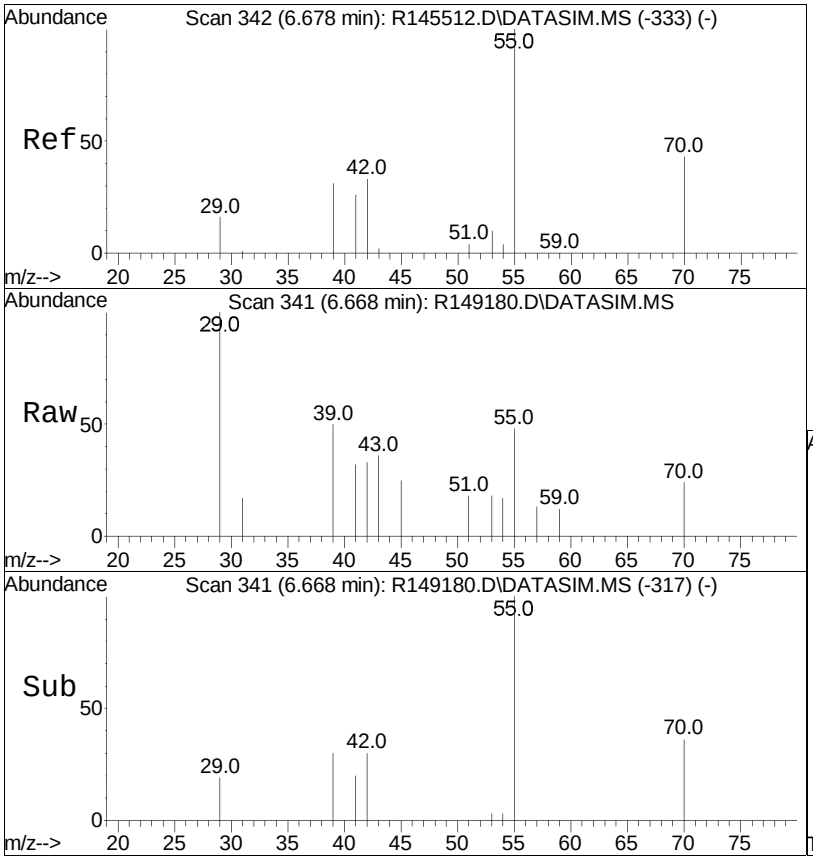


#7
Pentane
Concen: 1.48 ppbV
RT: 6.468 min Scan# 322
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 43 Resp: 31527

Ion	Ratio	Lower	Upper
43	100		
57	12.8	0.0	32.2

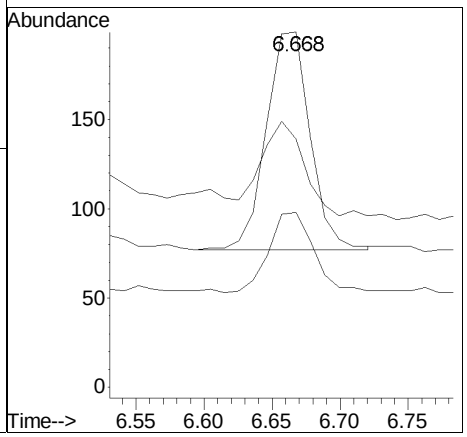


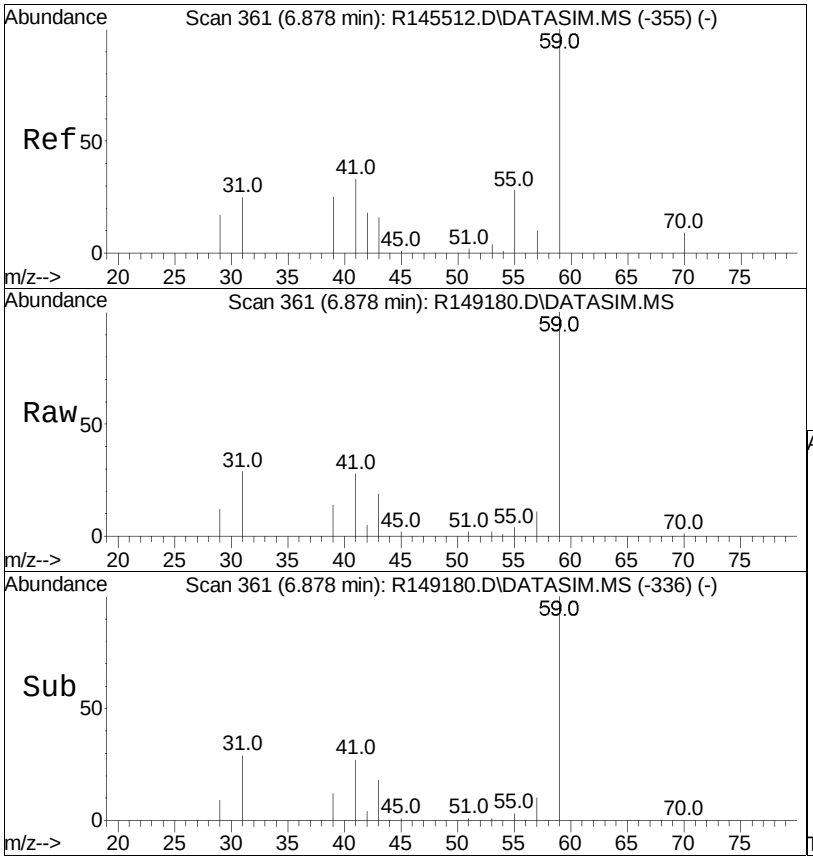


#9
2-Pentene (trans)
Concen: 0.02 ppbV
RT: 6.668 min Scan# 341
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 55 Resp: 275

Ion	Ratio	Lower	Upper
55	100		
70	49.2	17.7	57.7
42	69.8	14.5	54.5#

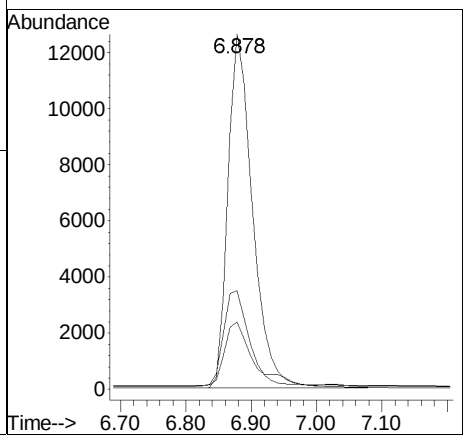


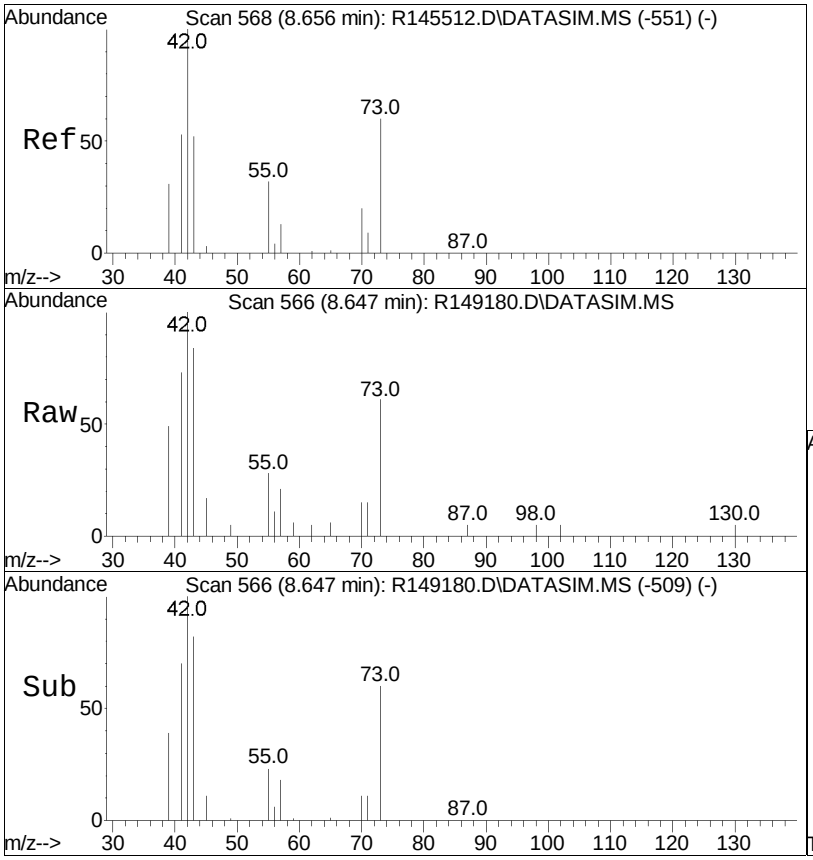


#11
Tertiary butanol
Concen: 1.37 ppbV
RT: 6.878 min Scan# 361
Delta R.T. 0.010 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 59 Resp: 33184

Ion	Ratio	Lower	Upper
59	100		
41	27.8	20.2	60.2
43	18.9	0.0	38.4

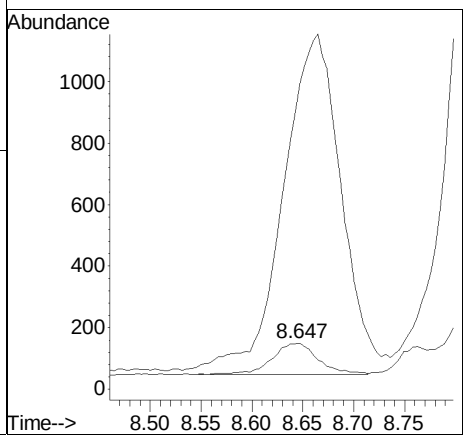


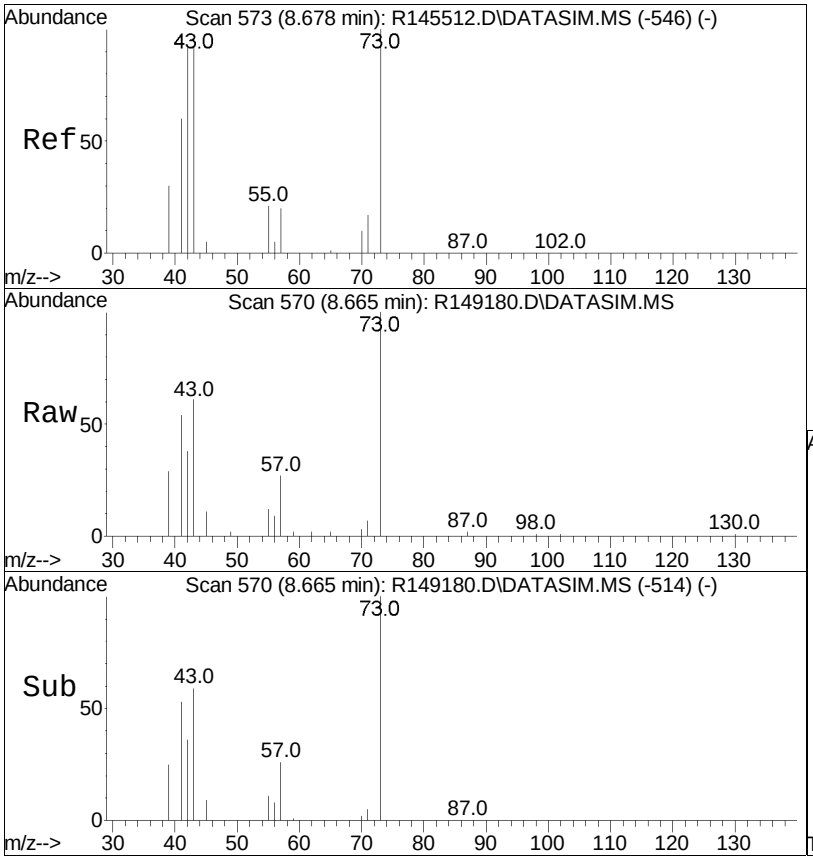


#12
Cyclopentane
Concen: 0.07 ppbV
RT: 8.647 min Scan# 566
Delta R.T. 0.004 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 70 Resp: 325

Ion	Ratio	Lower	Upper
70	100		
42	661.3	617.9	657.9#

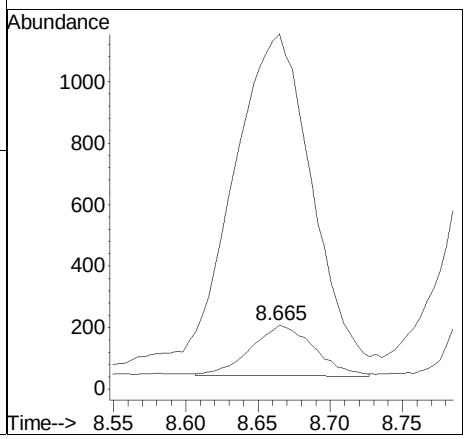


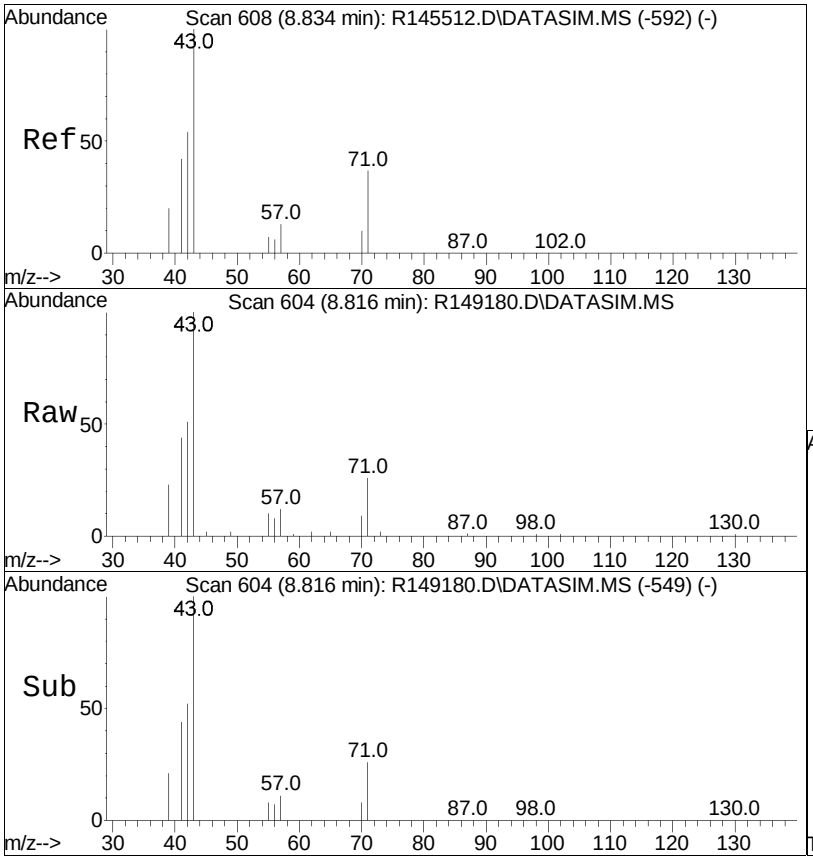


#13
2,3-Dimethylbutane
Concen: 0.11 ppbV m
RT: 8.665 min Scan# 570
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 71 Resp: 504

Ion	Ratio	Lower	Upper
71	100		
42	554.8	652.6	692.6#

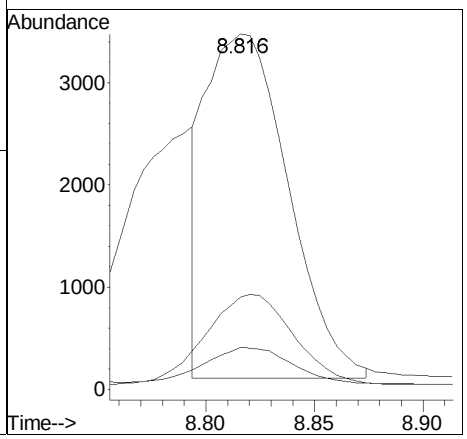


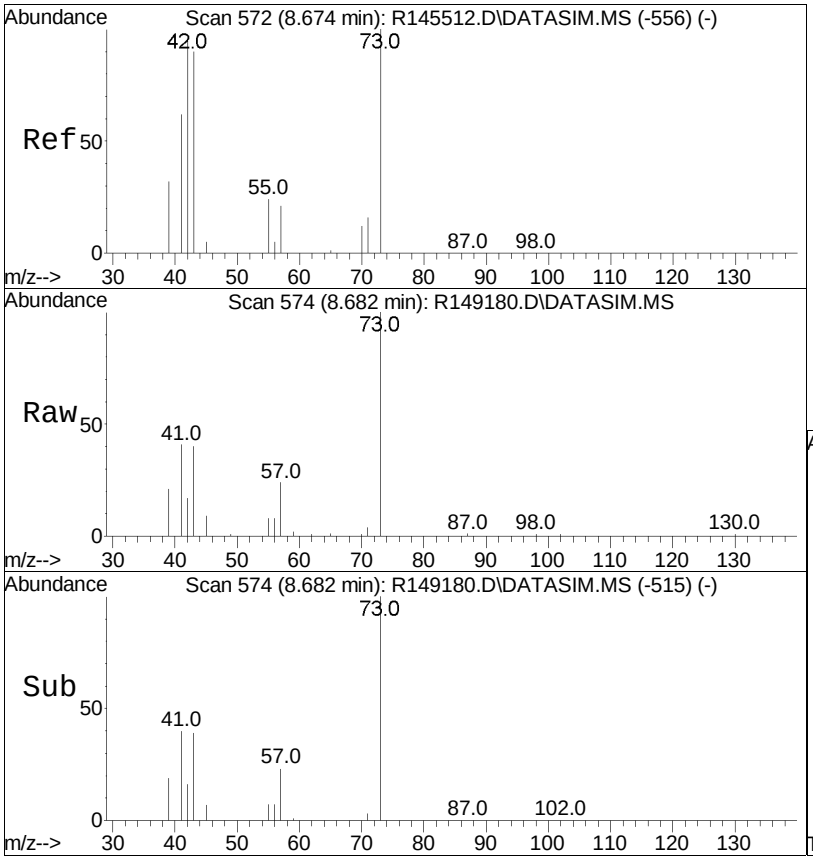


#14
2-Methylpentane
Concen: 0.37 ppbV m
RT: 8.816 min Scan# 604
Delta R.T. -0.005 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 43 Resp: 8916

Ion	Ratio	Lower	Upper
43	100		
71	25.9	8.8	48.8
57	11.8	0.0	31.6

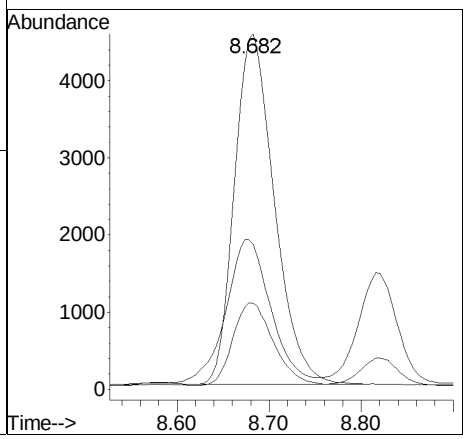


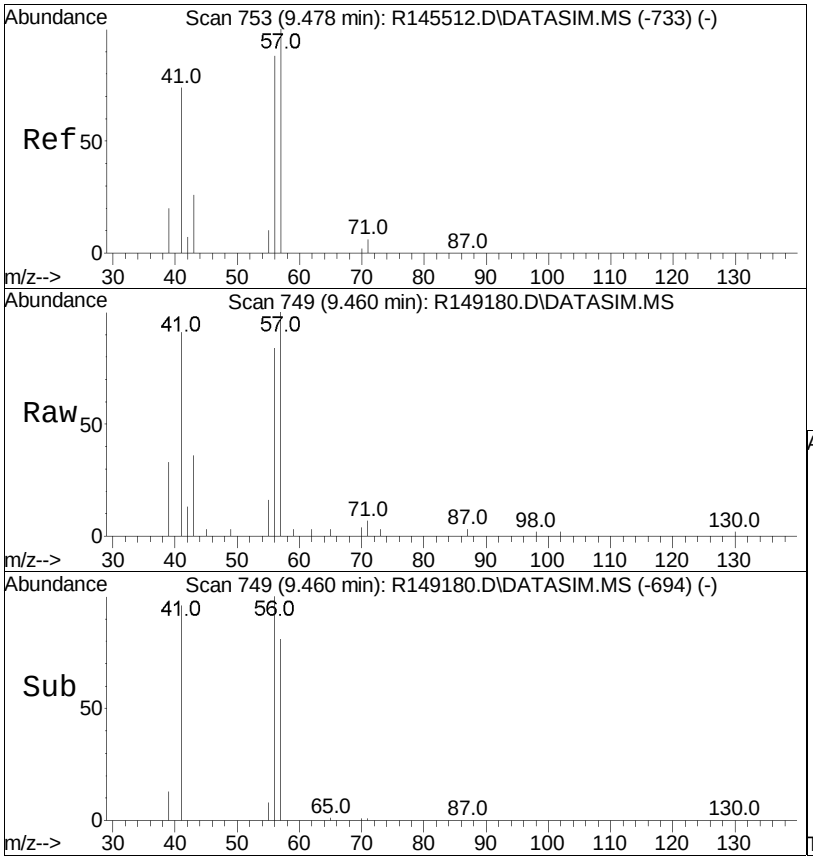


#15
MTBE
Concen: 0.56 ppbV
RT: 8.682 min Scan# 574
Delta R.T. 0.013 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 73 Resp: 13671

Ion	Ratio	Lower	Upper
73	100		
41	40.9	54.6	94.6#
57	24.2	3.7	43.7

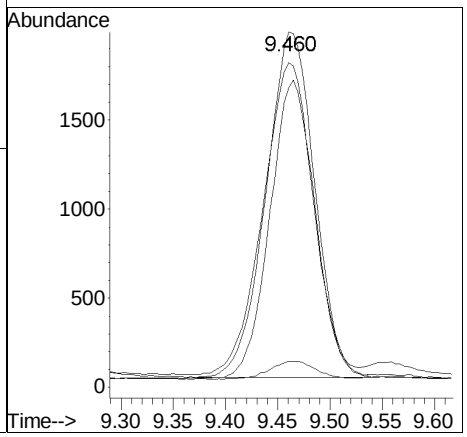


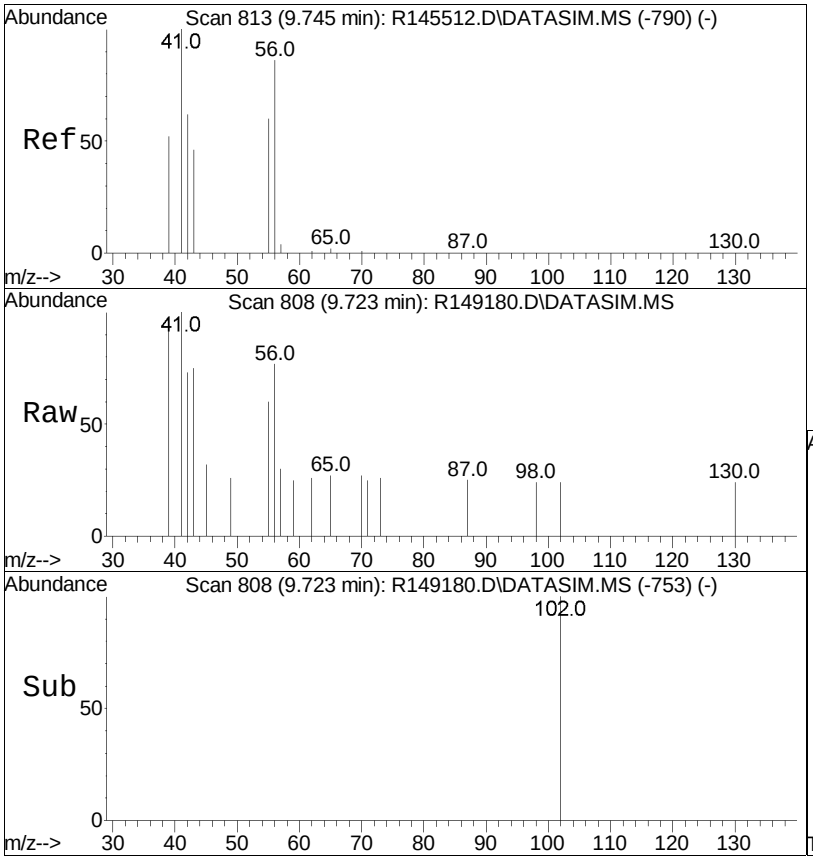


#16
3-Methylpentane
Concen: 0.40 ppbV
RT: 9.460 min Scan# 749
Delta R.T. -0.005 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 57 Resp: 6296

Ion	Ratio	Lower	Upper
57	100		
56	84.3	69.5	109.5
71	7.4	0.0	25.5
41	91.4	63.4	103.4

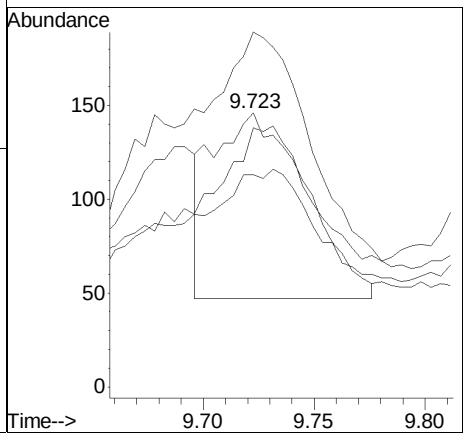


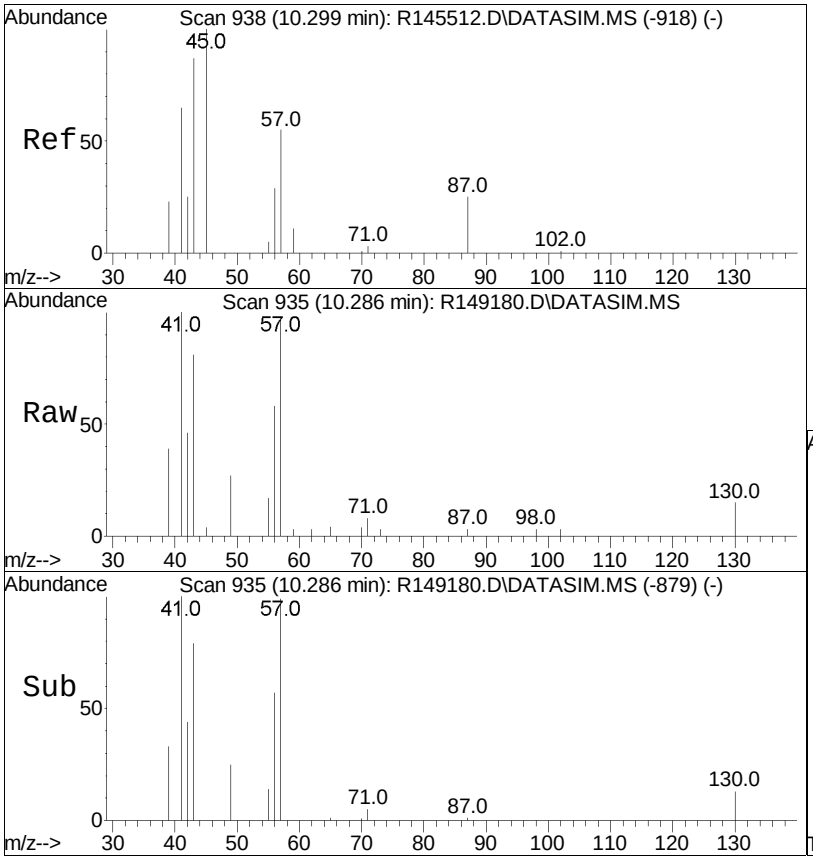


#17
1-Hexene
Concen: 0.03 ppbV m
RT: 9.723 min Scan# 808
Delta R.T. -0.005 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 56 Resp: 290

Ion	Ratio	Lower	Upper
56	100		
41	129.5	111.5	151.5
55	77.4	51.2	91.2
42	94.5	62.3	102.3

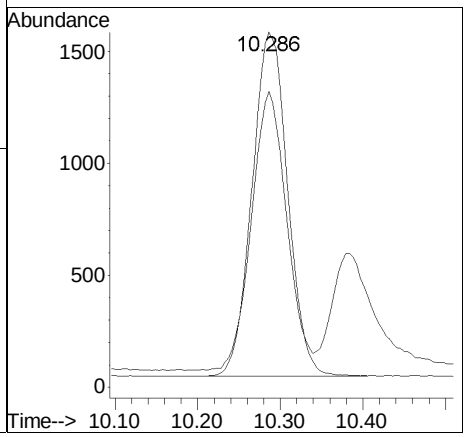


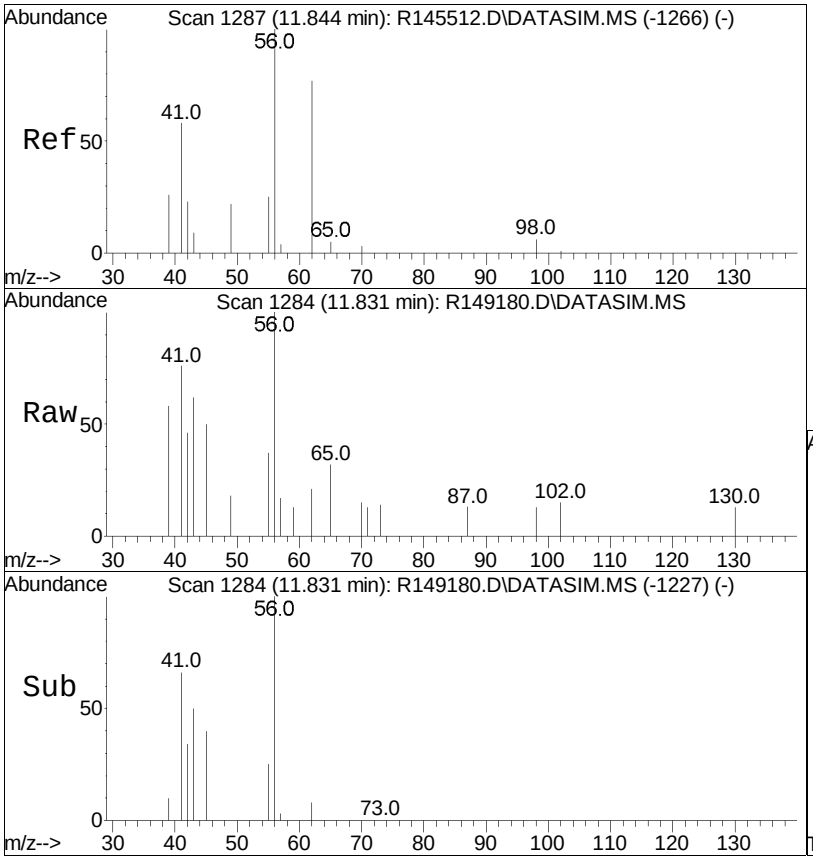


#18
Hexane
Concen: 0.34 ppbV
RT: 10.286 min Scan# 935
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 57 Resp: 4616

Ion	Ratio	Lower	Upper
57	100		
43	83.3	114.8	154.8#

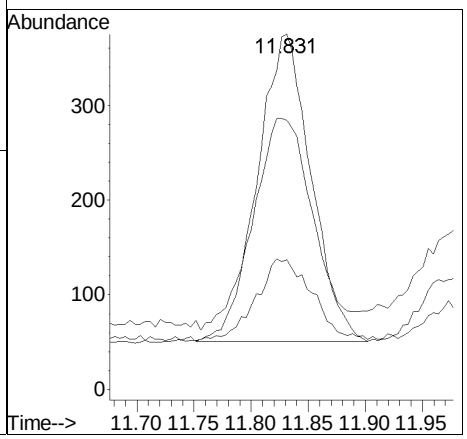


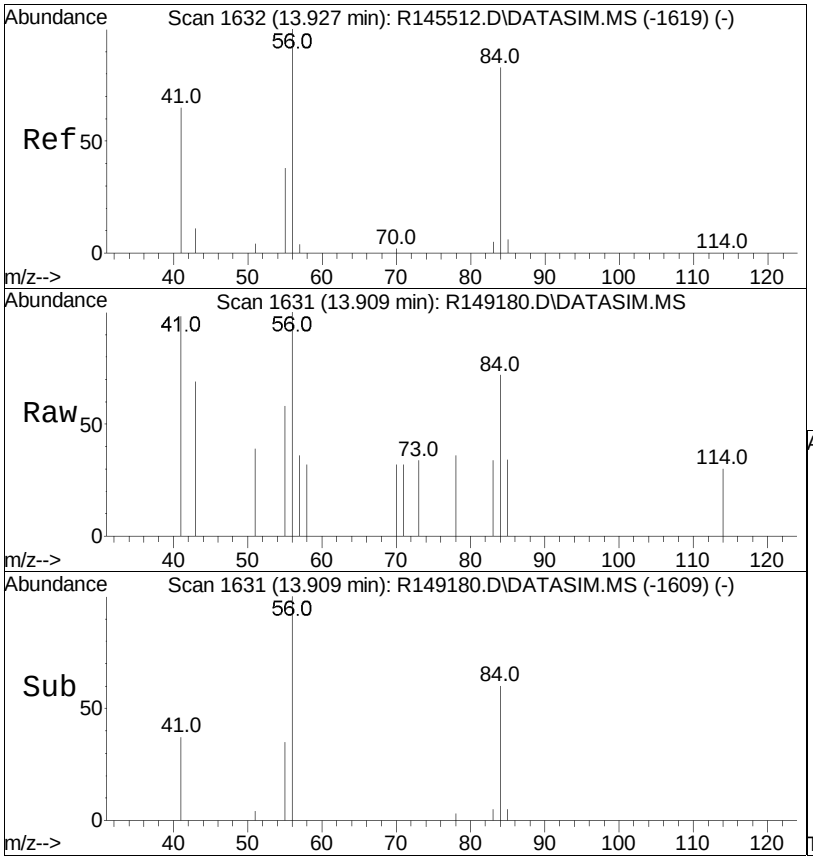


#23
Methylcyclopentane
Concen: 0.06 ppbV
RT: 11.831 min Scan# 1284
Delta R.T. 0.004 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 56 Resp: 1056

Ion	Ratio	Lower	Upper
56	100		
55	36.5	6.8	46.8
41	75.7	47.8	87.8

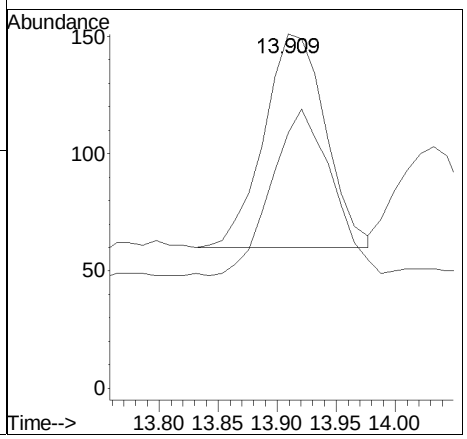


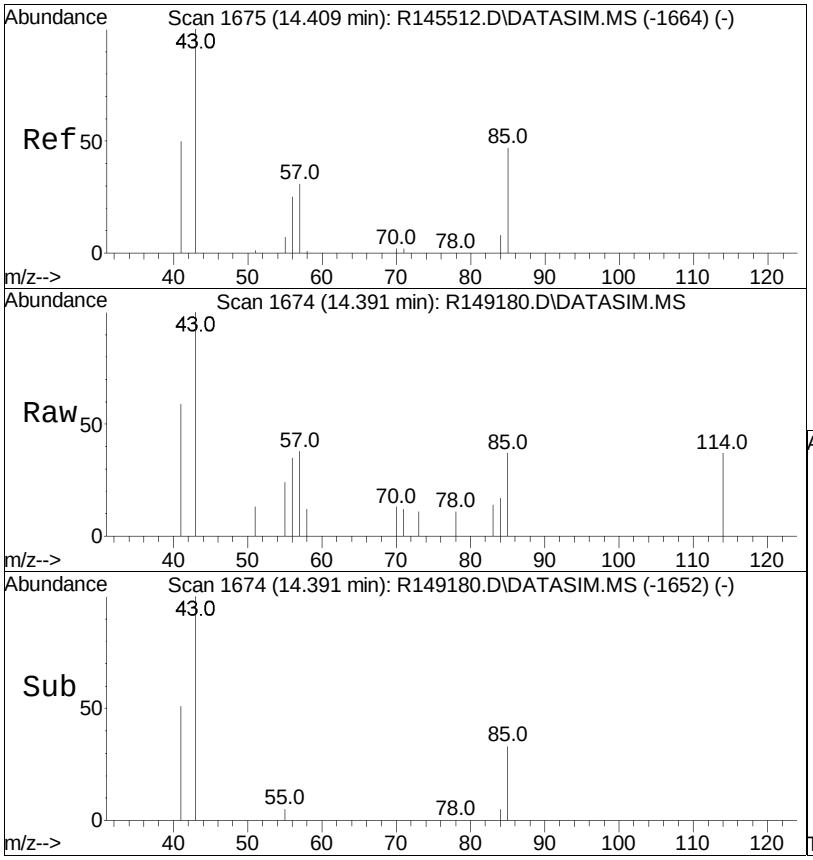


#26
Cyclohexane
Concen: 0.03 ppbV
RT: 13.909 min Scan# 1631
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 56 Resp: 331

Ion	Ratio	Lower	Upper
56	100		
84	72.2	47.9	87.9

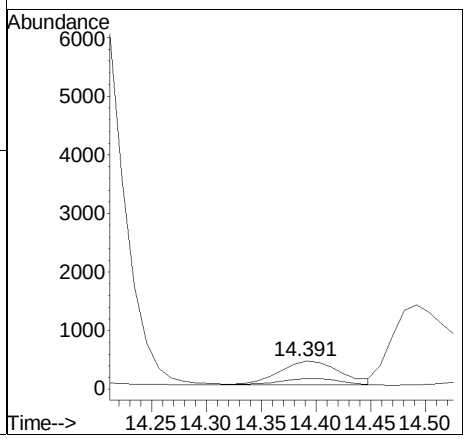


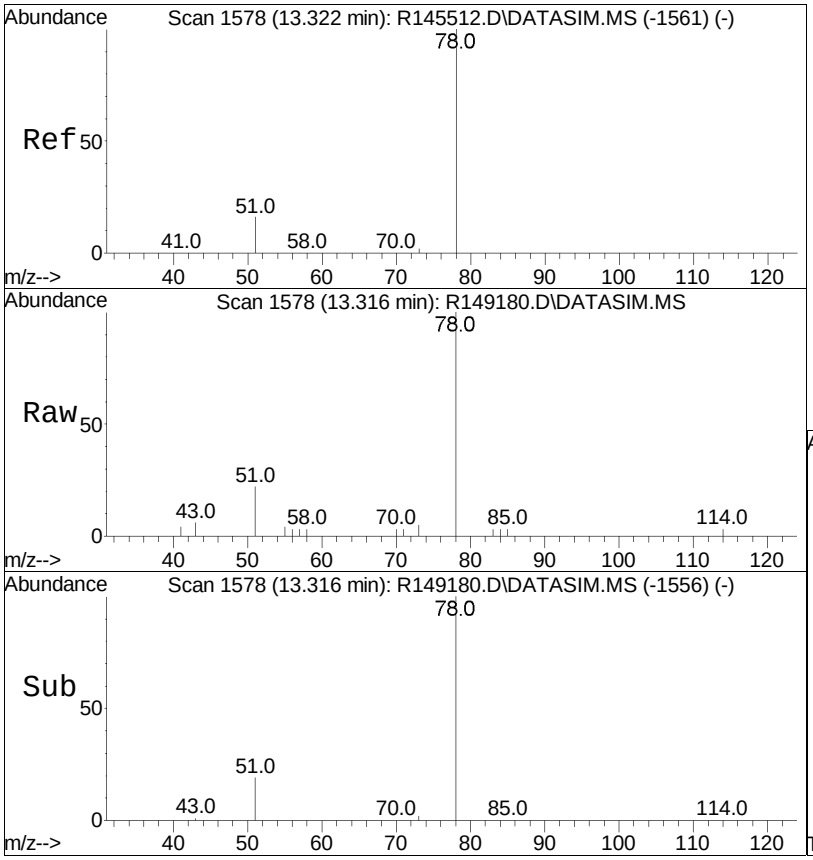


#28
2-Methylhexane
Concen: 0.07 ppbV
RT: 14.391 min Scan# 1674
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 43 Resp: 1543

Ion	Ratio	Lower	Upper
43	100		
57	38.3	7.8	47.8

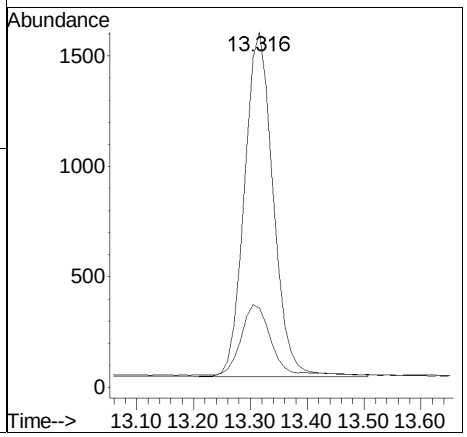


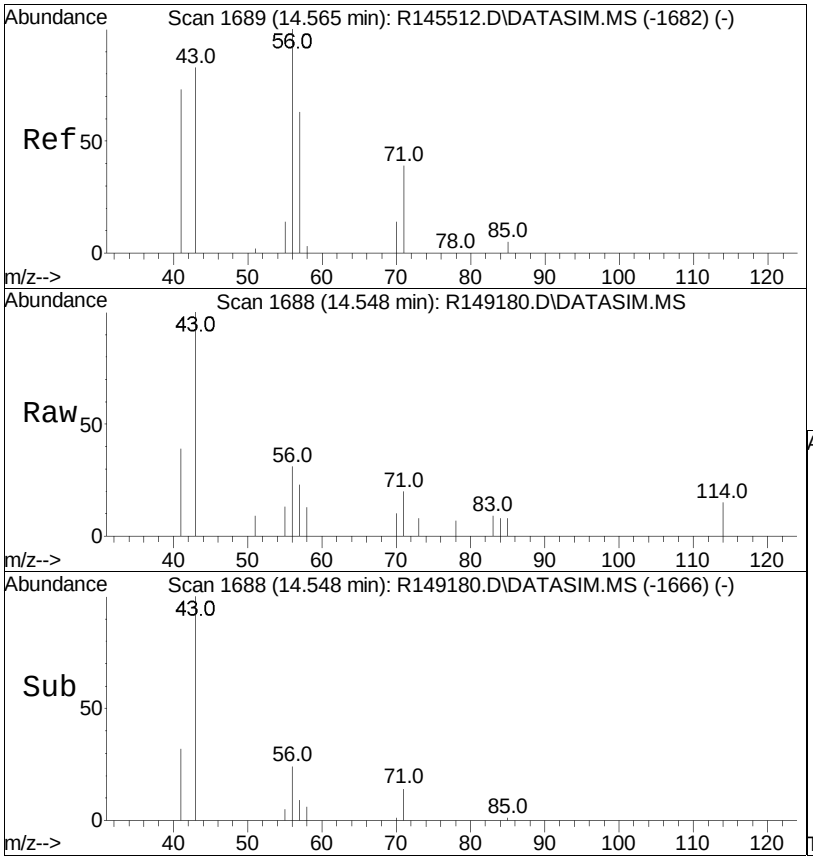


#29
Benzene
Concen: 0.21 ppbV
RT: 13.316 min Scan# 1578
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 78 Resp: 5495

Ion	Ratio	Lower	Upper
78	100		
51	22.4	0.0	39.4

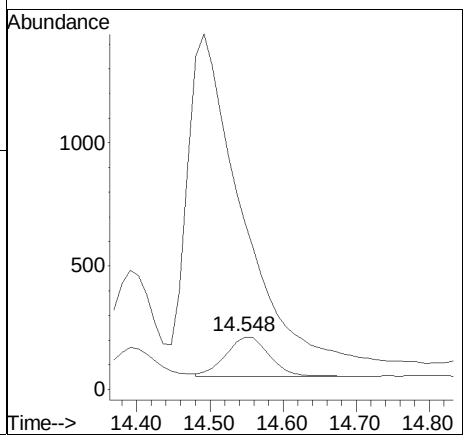


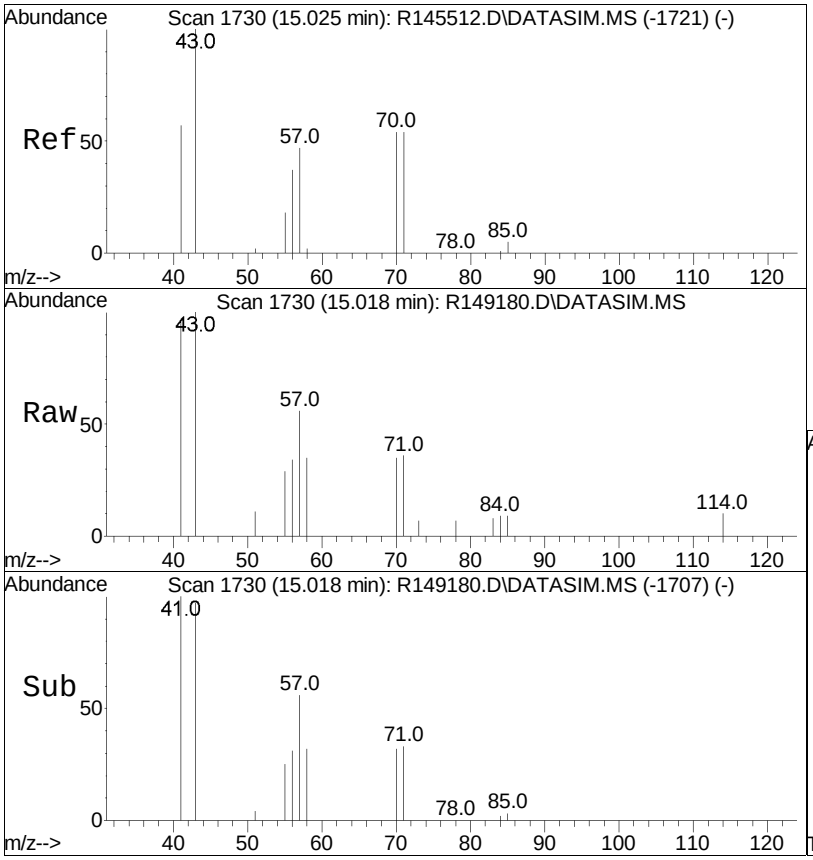


#30
2,3-Dimethylpentane
Concen: 0.04 ppbV
RT: 14.548 min Scan# 1688
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 56 Resp: 663

Ion	Ratio	Lower	Upper
56	100		
43	319.3	72.3	112.3#

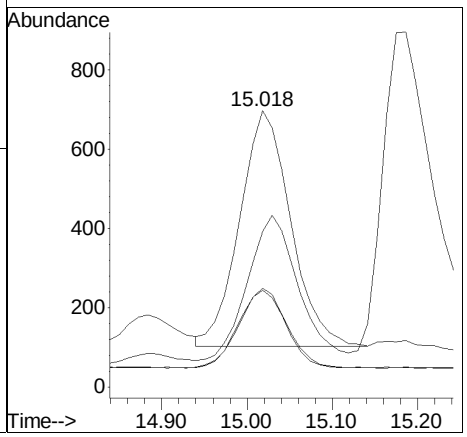


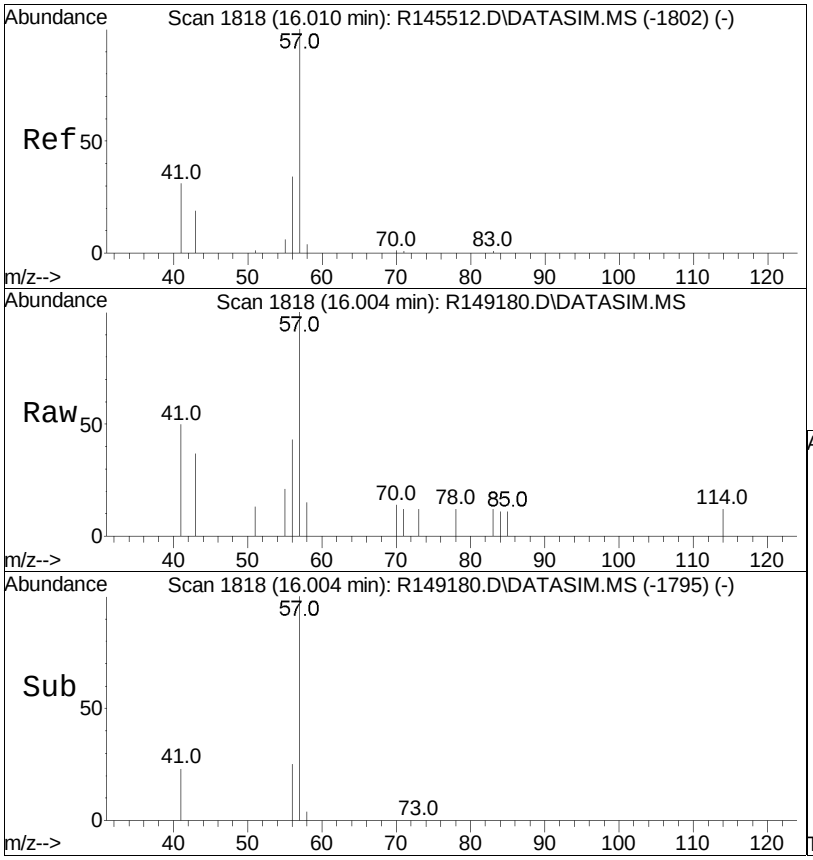


#32
3-Methylhexane
Concen: 0.13 ppbV
RT: 15.018 min Scan# 1730
Delta R.T. 0.011 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 43 Resp: 2460

Ion	Ratio	Lower	Upper
43	100		
57	56.3	23.4	63.4
70	35.1	22.5	62.5
71	35.8	22.4	62.4

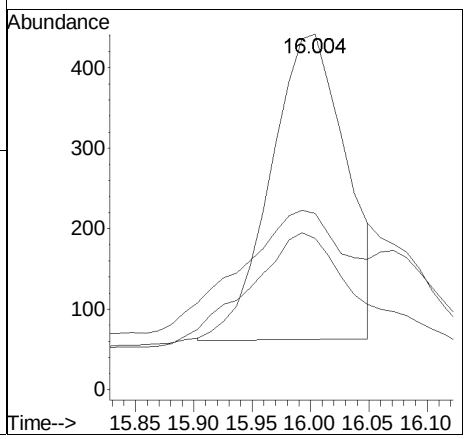


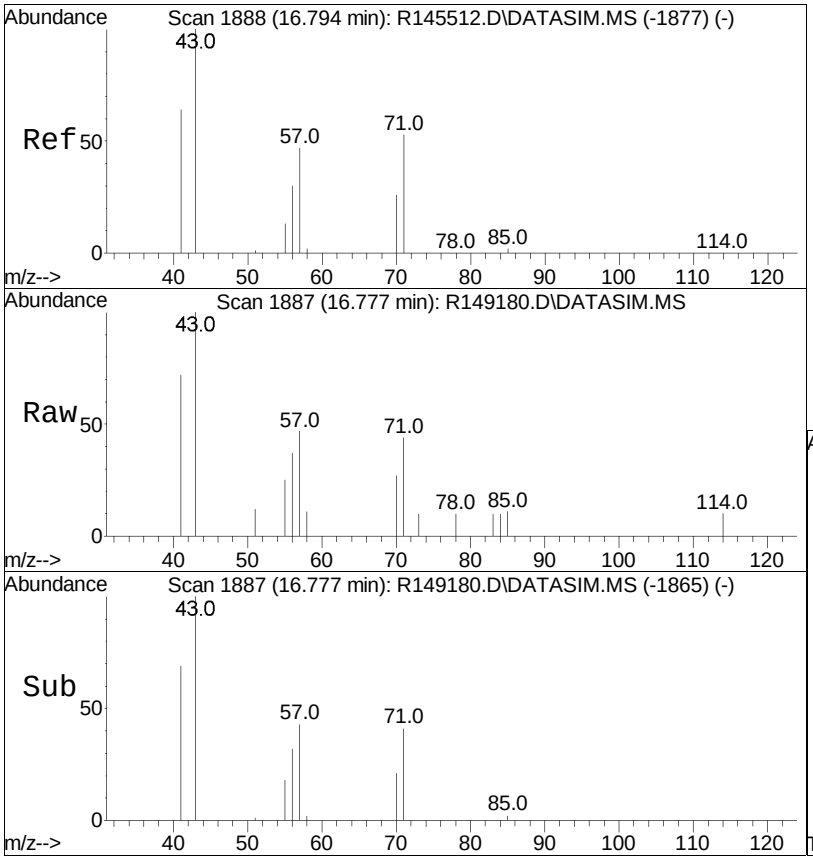


#35
Isooctane
Concen: 0.04 ppbV m
RT: 16.004 min Scan# 1818
Delta R.T. 0.011 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 57 Resp: 1709

Ion	Ratio	Lower	Upper
57	100		
56	42.5	14.9	54.9
41	49.5	16.0	56.0

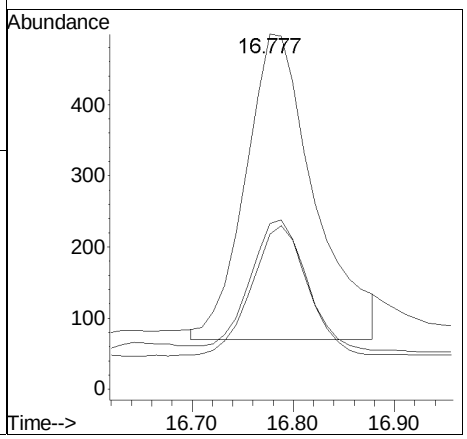


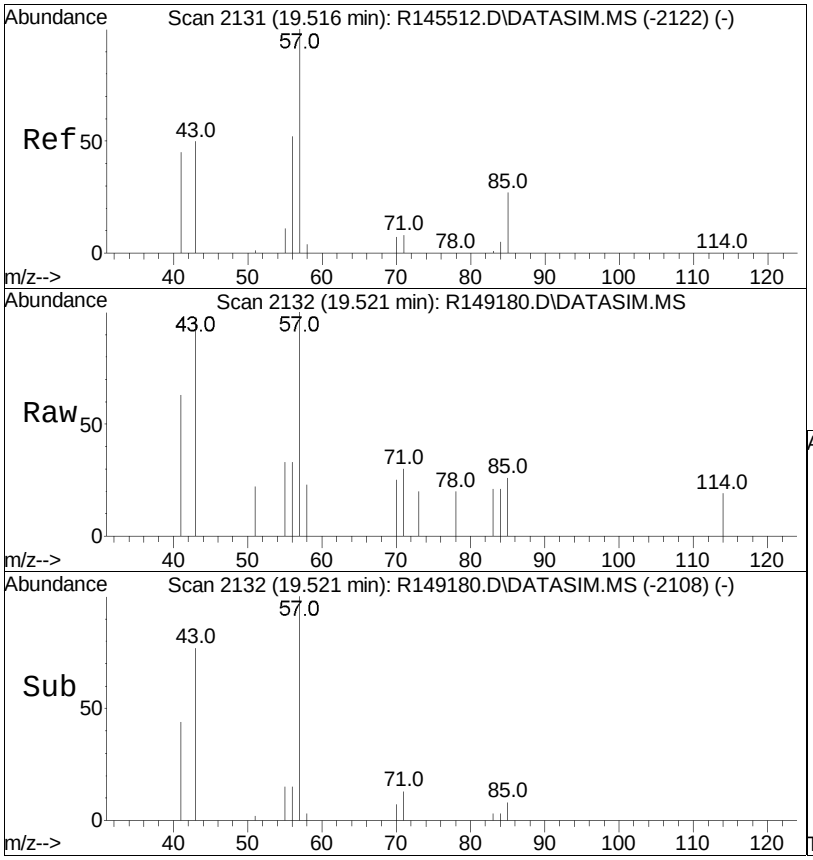


#36
Heptane
Concen: 0.11 ppbV m
RT: 16.777 min Scan# 1887
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 43 Resp: 2022

Ion	Ratio	Lower	Upper
43	100		
57	46.7	23.3	63.3
71	43.7	21.1	61.1

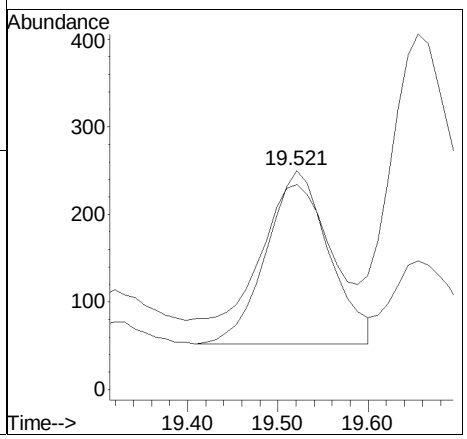


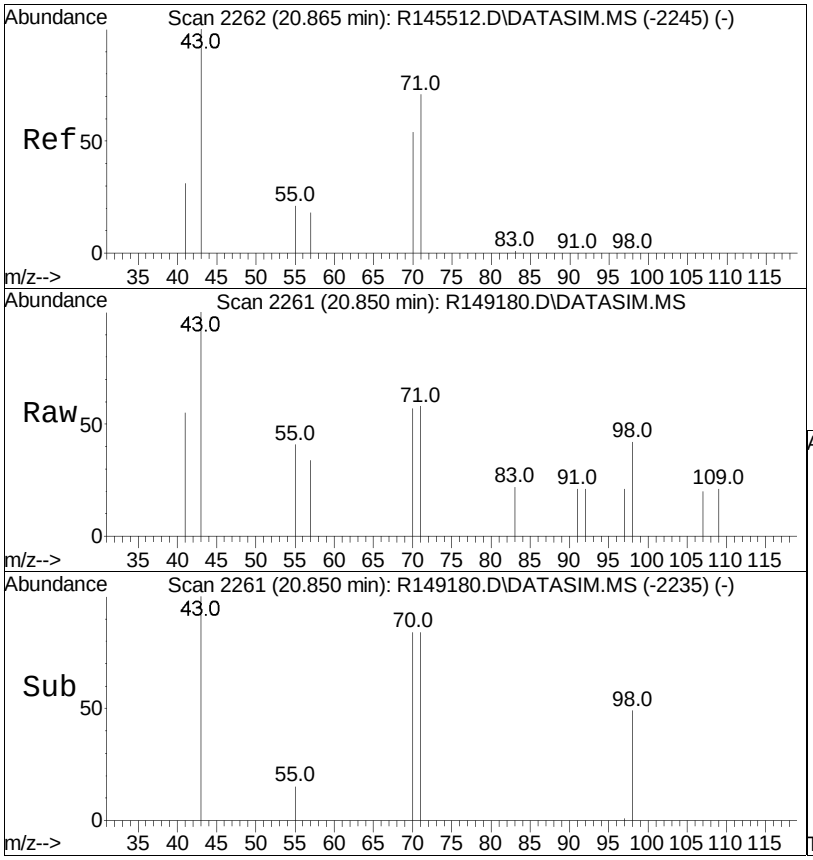


#39
2,4-Dimethyhexane / 2,2,3-TMP
Concen: 0.04 ppbV
RT: 19.521 min Scan# 2132
Delta R.T. 0.022 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 57 Resp: 956

Ion	Ratio	Lower	Upper
57	100		
43	93.6	36.1	76.1#

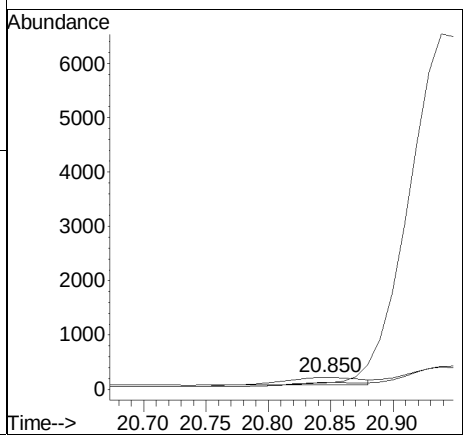


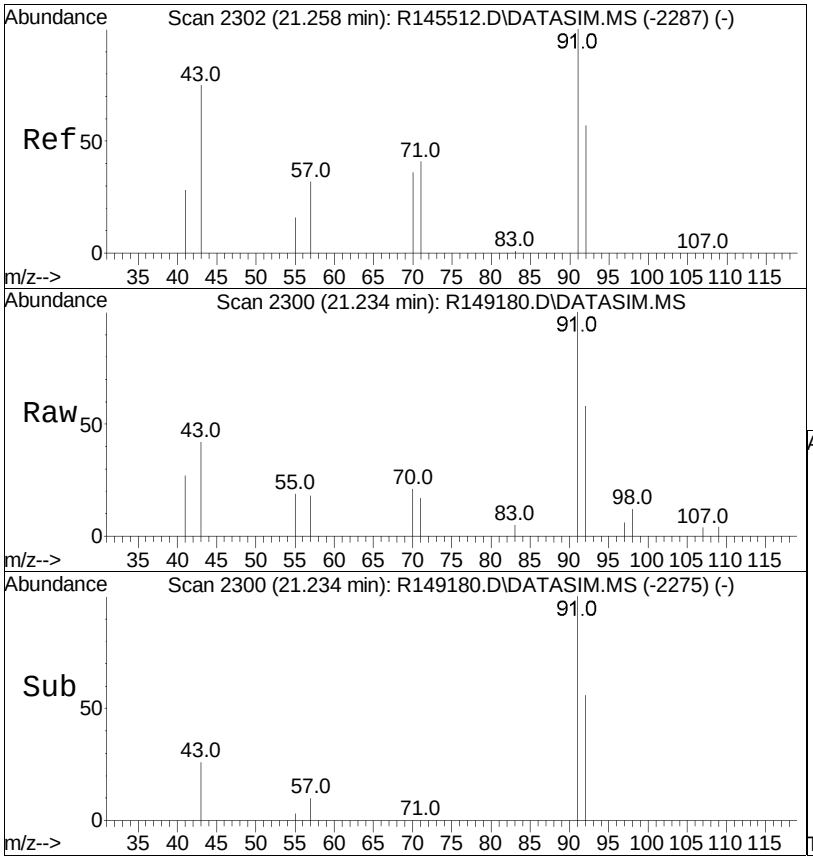


#40
2,3,4-Trimethylpentane
Concen: 0.02 ppbV
RT: 20.850 min Scan# 2261
Delta R.T. 0.010 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 43 Resp: 593

Ion	Ratio	Lower	Upper
43	100		
71	58.0	34.6	74.6
70	56.7	23.3	63.3

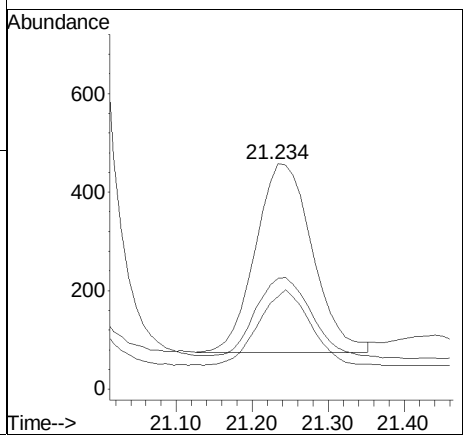


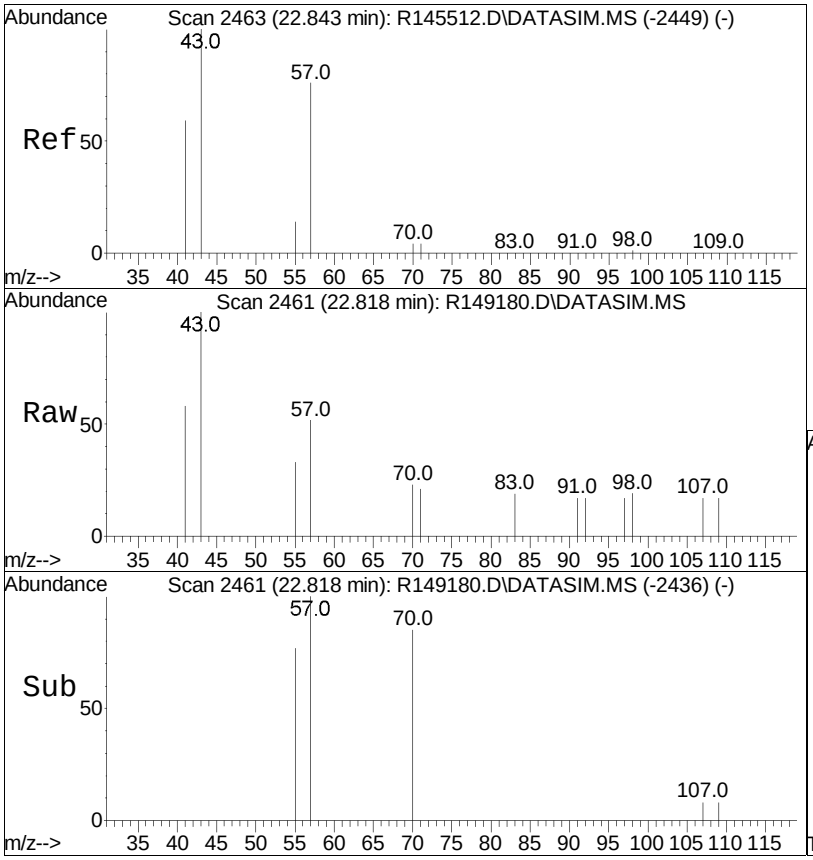


#41
2,3,3-Trimethylpentane
Concen: 0.07 ppbV
RT: 21.234 min Scan# 2300
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 43 Resp: 1995

Ion	Ratio	Lower	Upper
43	100		
71	41.0	22.4	62.4
70	49.1	18.7	58.7

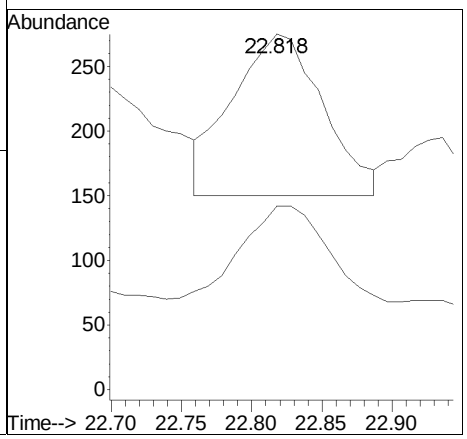


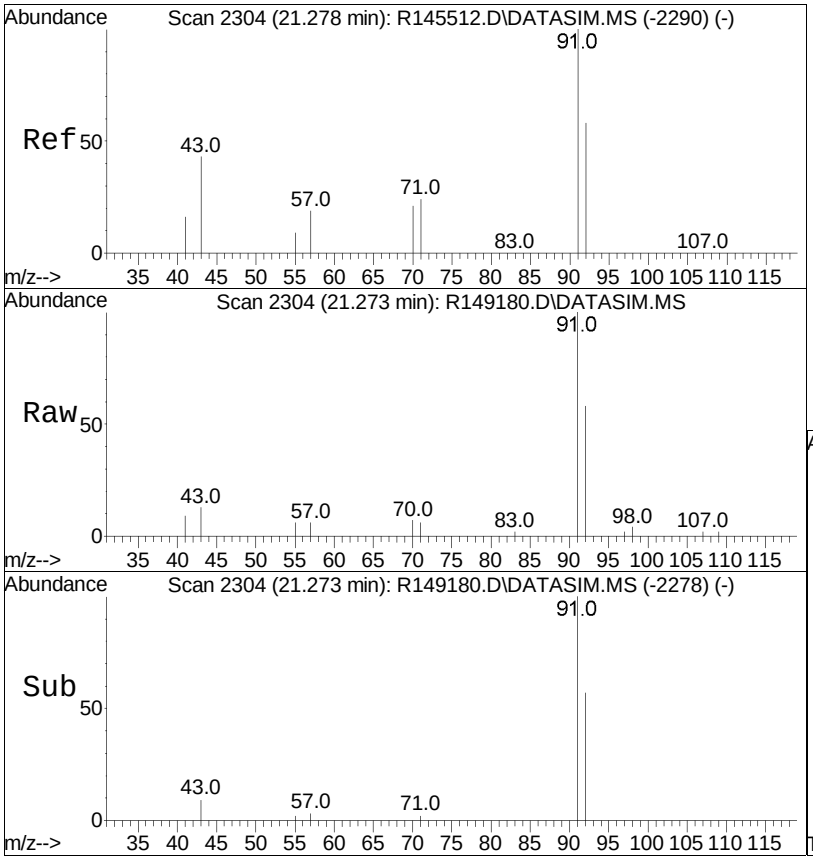


#45
3-Methylheptane
Concen: 0.03 ppbV m
RT: 22.818 min Scan# 2461
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 43 Resp: 564

Ion	Ratio	Lower	Upper
43	100		
57	51.6	47.6	87.6

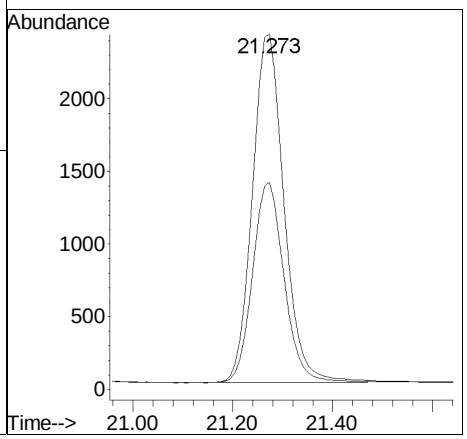


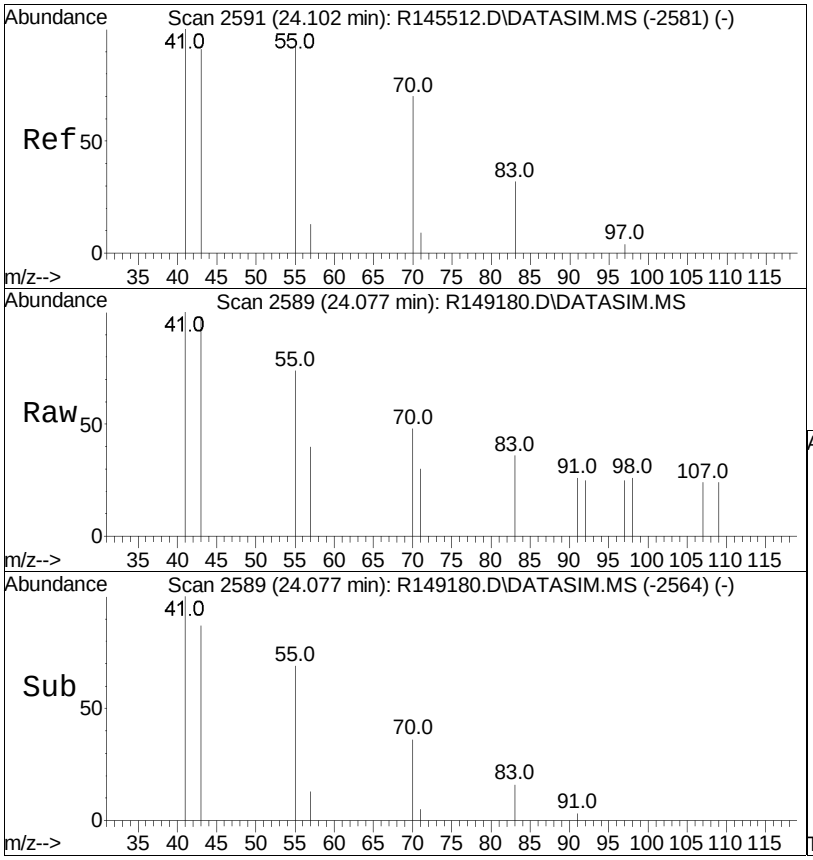


#47
Toluene
Concen: 0.34 ppbV
RT: 21.273 min Scan# 2304
Delta R.T. 0.010 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 91 Resp: 10555

Ion	Ratio	Lower	Upper
91	100		
92	58.4	37.6	77.6

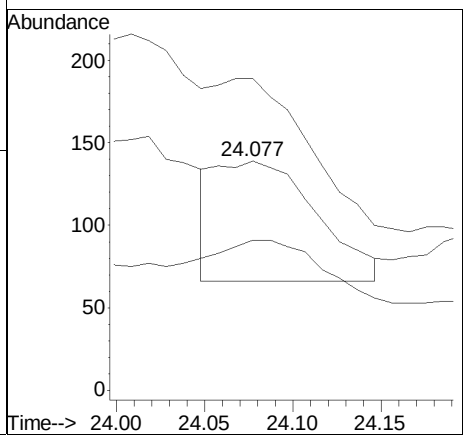


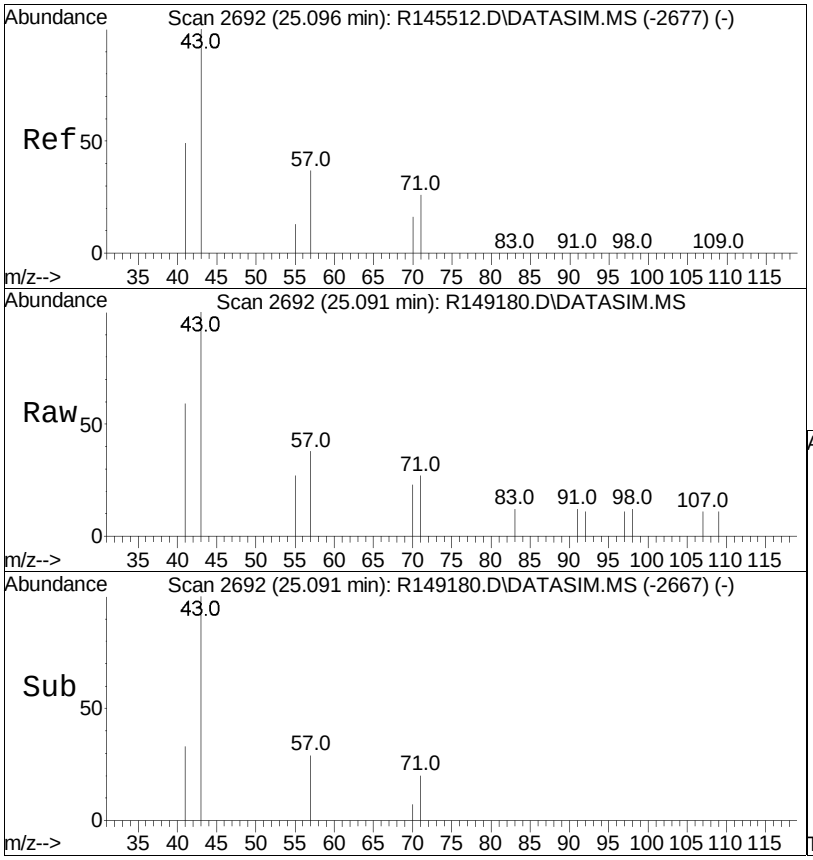


#50
1-Octene
Concen: 0.03 ppbV m
RT: 24.077 min Scan# 2589
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 55 Resp: 289

Ion	Ratio	Lower	Upper
55	100		
41	136.0	102.4	142.4
70	65.5	45.2	85.2

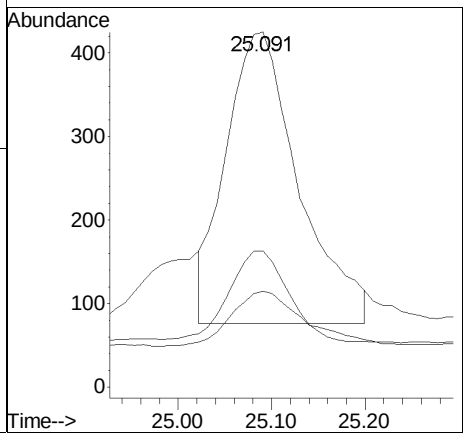


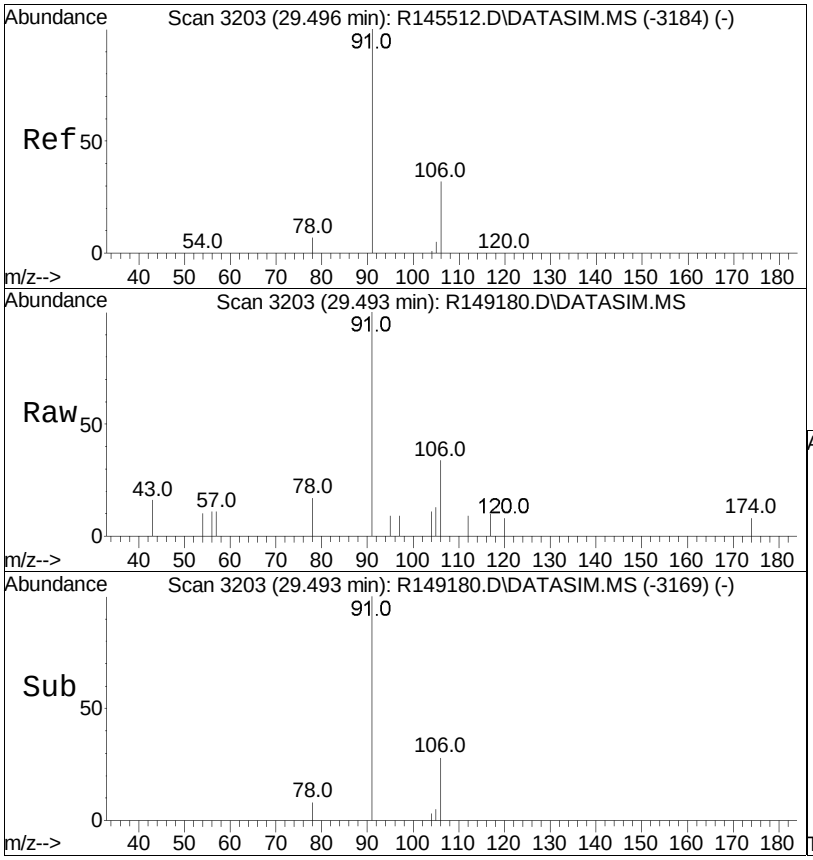


#52
Octane
Concen: 0.08 ppbV m
RT: 25.091 min Scan# 2692
Delta R.T. 0.010 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 43 Resp: 1889

Ion	Ratio	Lower	Upper
43	100		
57	38.4	13.6	53.6
71	27.1	0.9	40.9

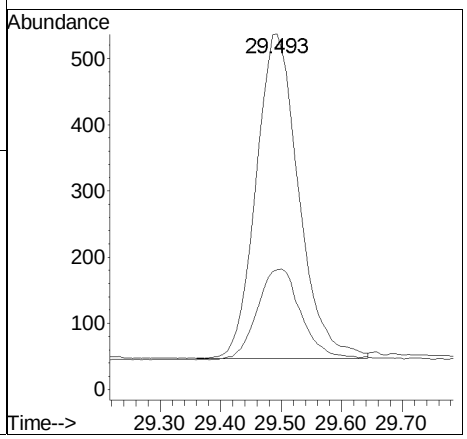


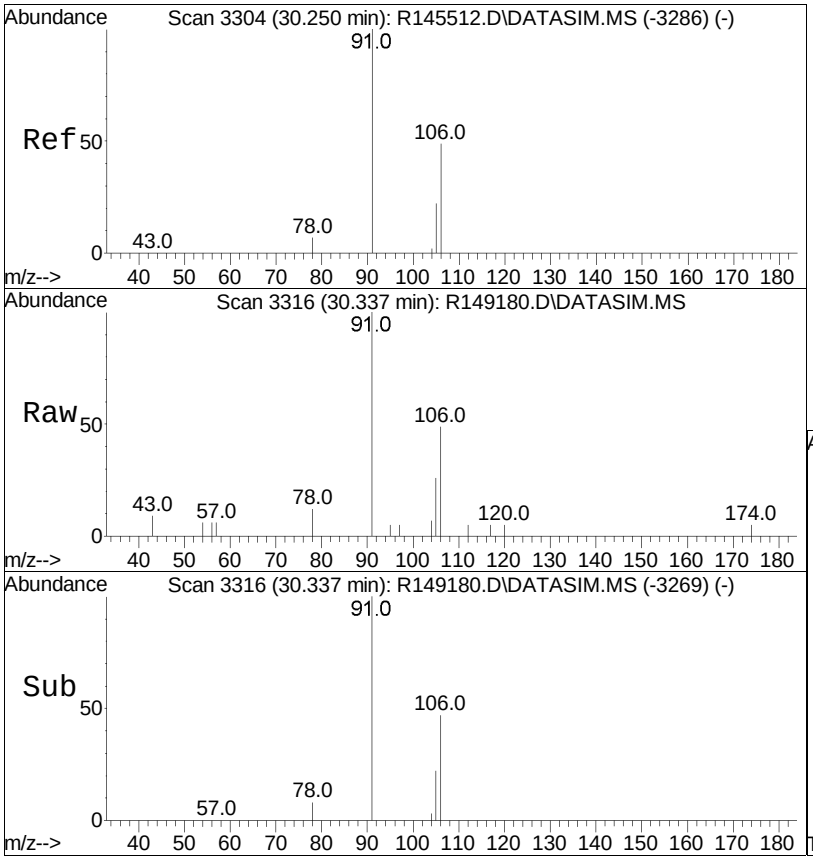


#55
Ethylbenzene
Concen: 0.08 ppbV
RT: 29.493 min Scan# 3203
Delta R.T. 0.007 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 91 Resp: 2394

Ion	Ratio	Lower	Upper
91	100		
106	33.7	9.1	49.1

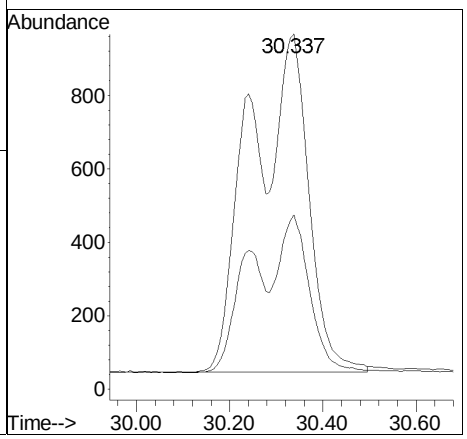


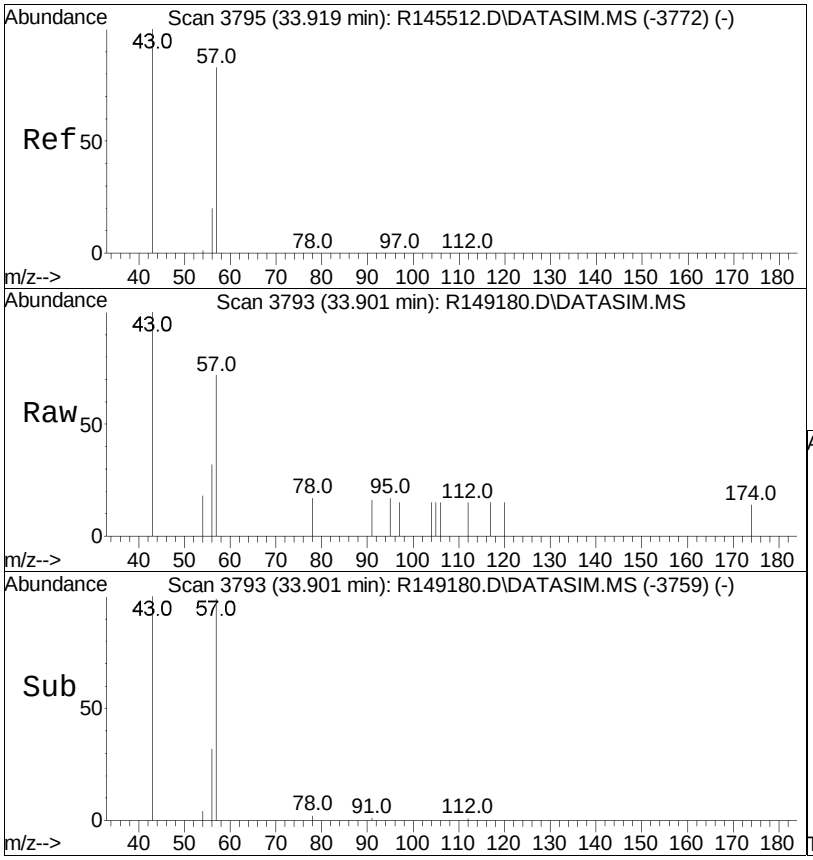


#57
p/m-Xylene
Concen: 0.36 ppbV m
RT: 30.337 min Scan# 3316
Delta R.T. 0.104 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 91 Resp: 7821

Ion	Ratio	Lower	Upper
91	100		
106	49.1	25.5	65.5

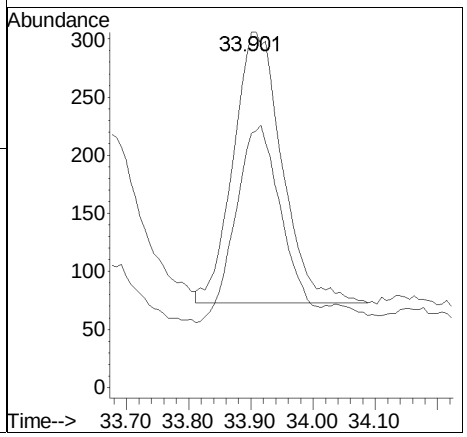


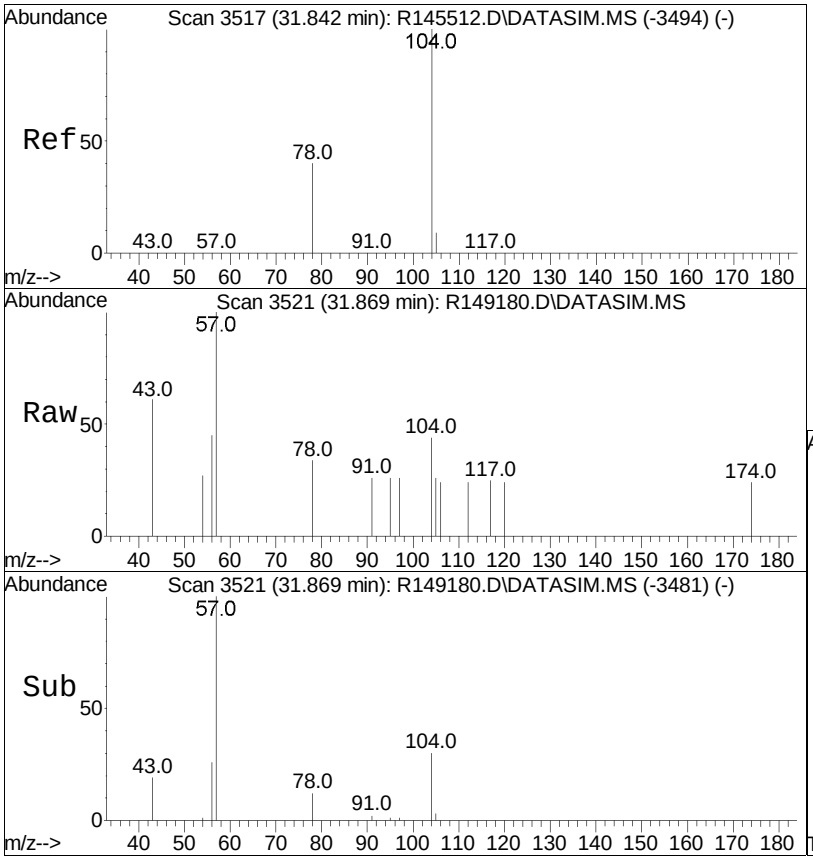


#59
Nonane
Concen: 0.06 ppbV
RT: 33.901 min Scan# 3793
Delta R.T. 0.007 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 43 Resp: 1271

Ion	Ratio	Lower	Upper
43	100		
57	71.6	51.4	91.4

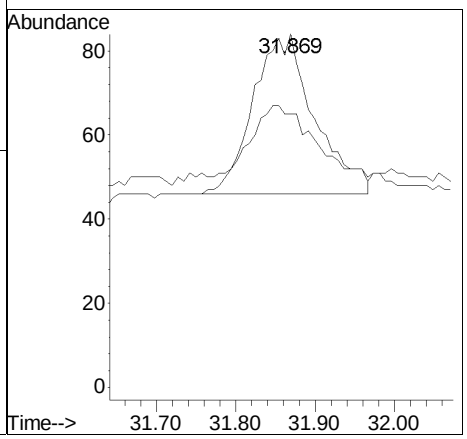


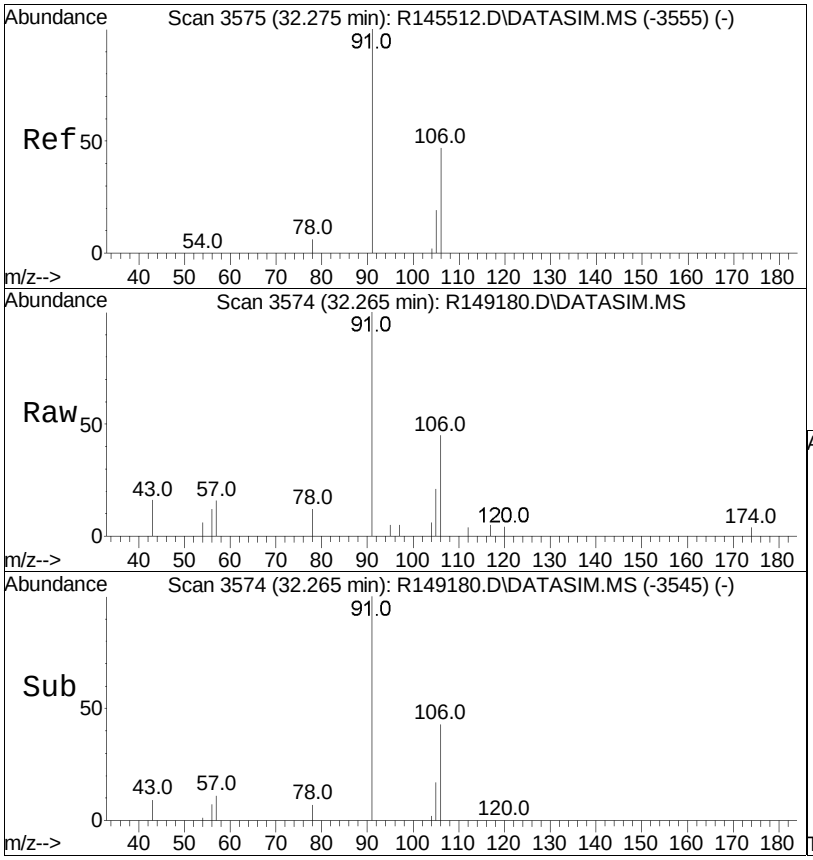


#60
Styrene
Concen: 0.01 ppbV
RT: 31.869 min Scan# 3521
Delta R.T. 0.052 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:104 Resp: 204

Ion	Ratio	Lower	Upper
104	100		
78	77.4	28.5	68.5#

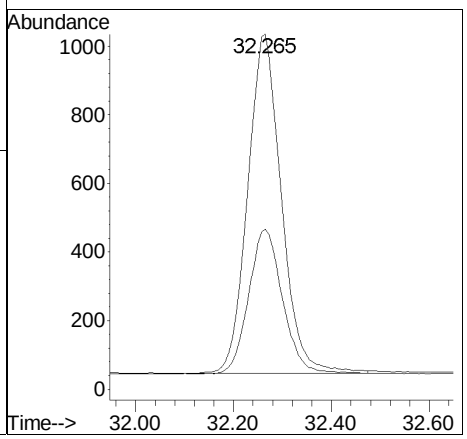


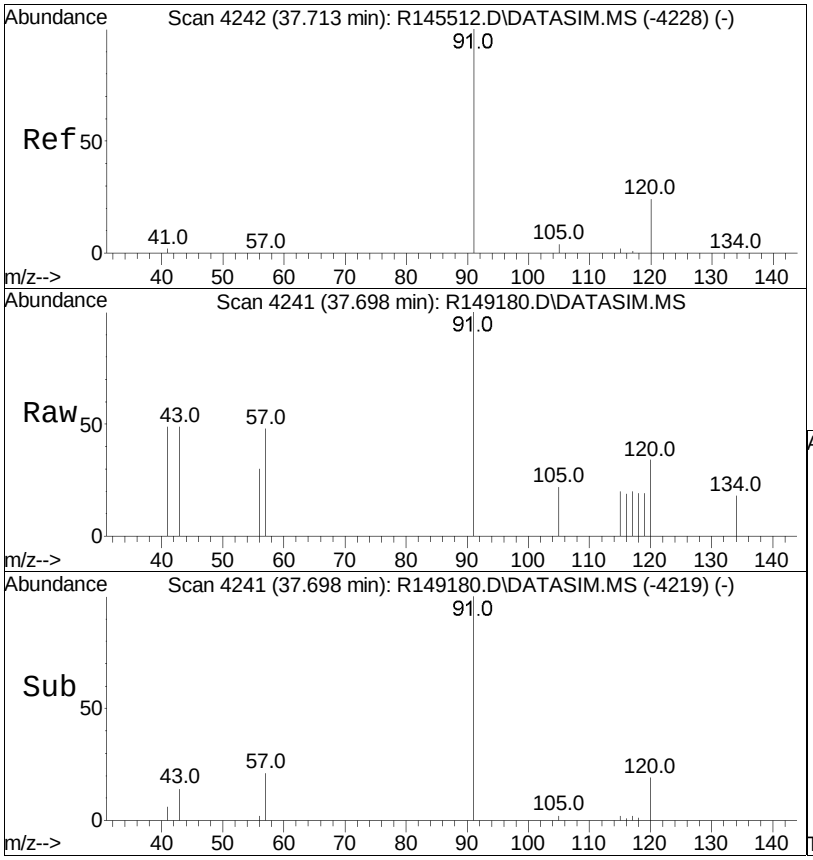


#61
o-Xylene
Concen: 0.21 ppbV
RT: 32.265 min Scan# 3574
Delta R.T. 0.007 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 91 Resp: 4718

Ion	Ratio	Lower	Upper
91	100		
106	45.1	23.5	63.5

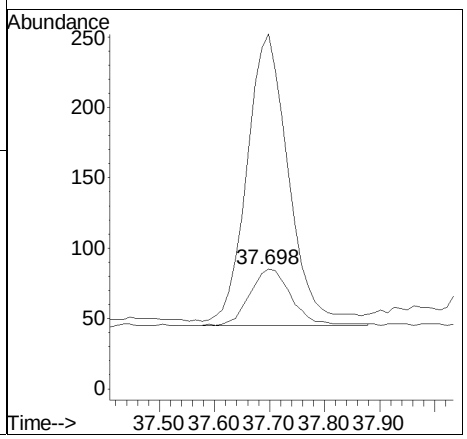


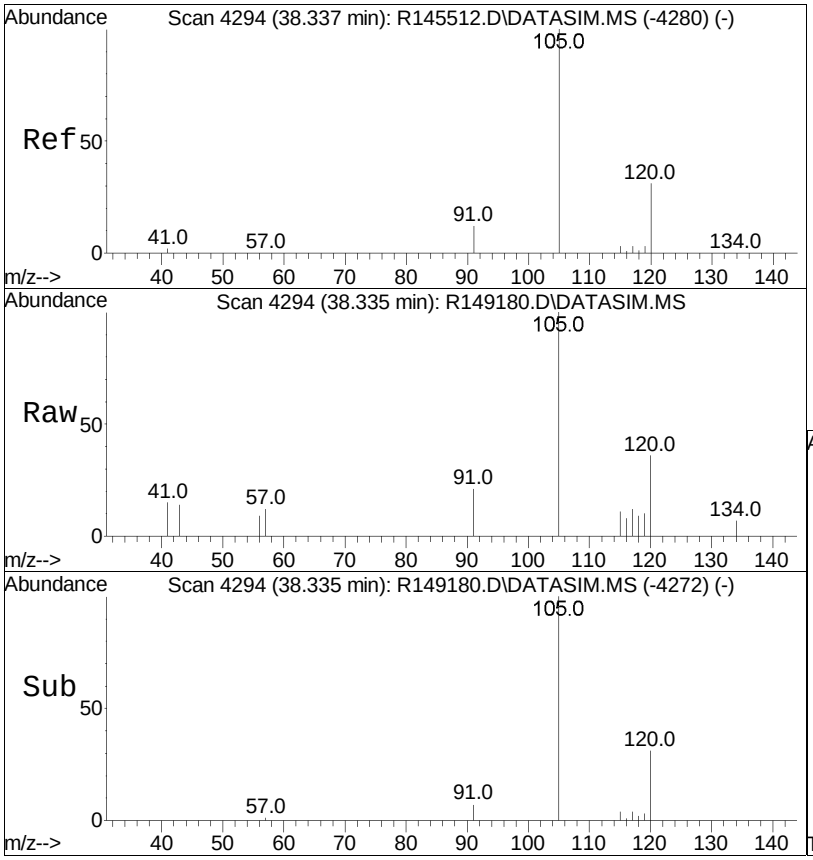


#64
n-Propylbenzene
Concen: 0.03 ppbV
RT: 37.698 min Scan# 4241
Delta R.T. 0.012 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:120 Resp: 211

Ion	Ratio	Lower	Upper
120	100		
91	296.5	480.0	520.0#

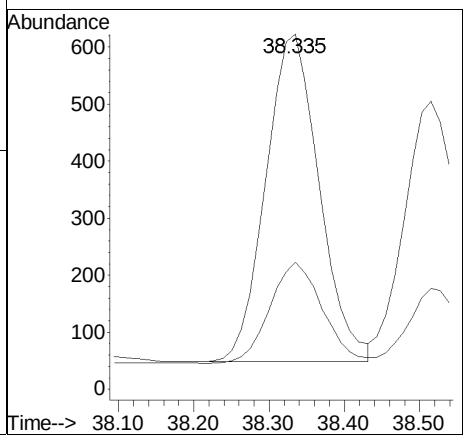


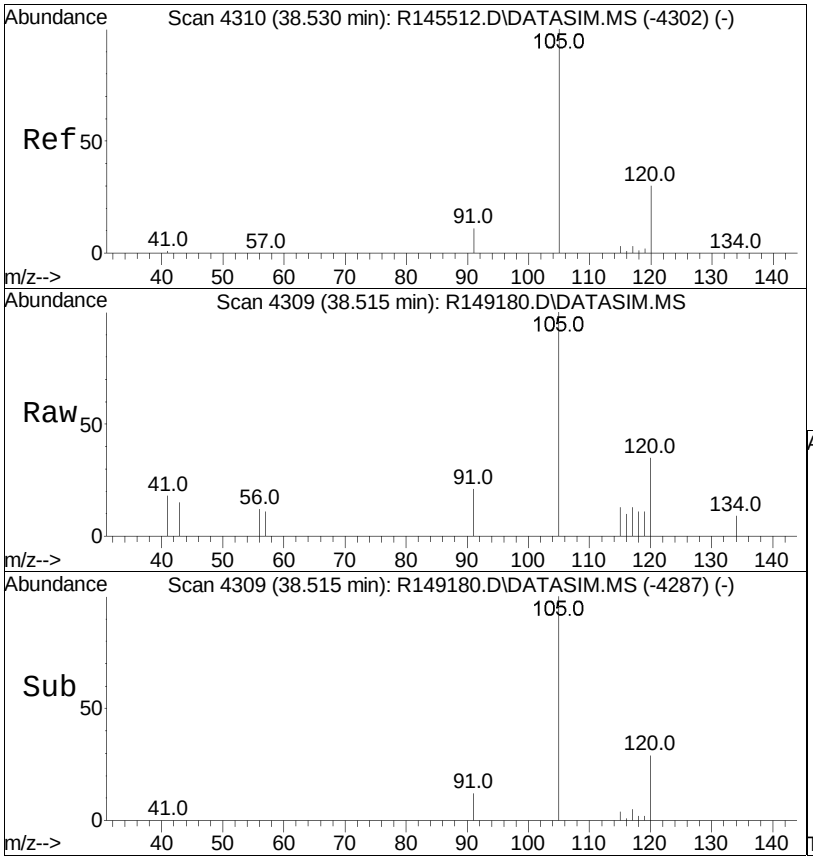


#65
1-Methyl-3-ethylbenzene
Concen: 0.10 ppbV
RT: 38.335 min Scan# 4294
Delta R.T. 0.012 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:105 Resp: 2839

Ion	Ratio	Lower	Upper
105	100		
120	35.8	10.4	50.4

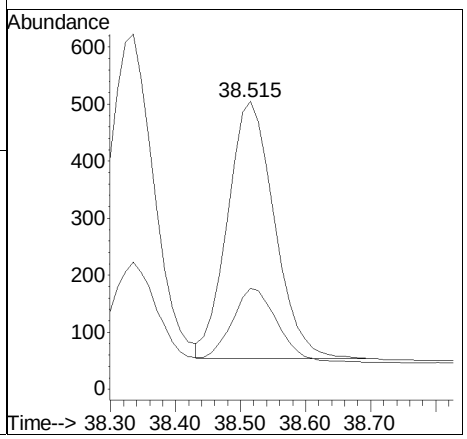


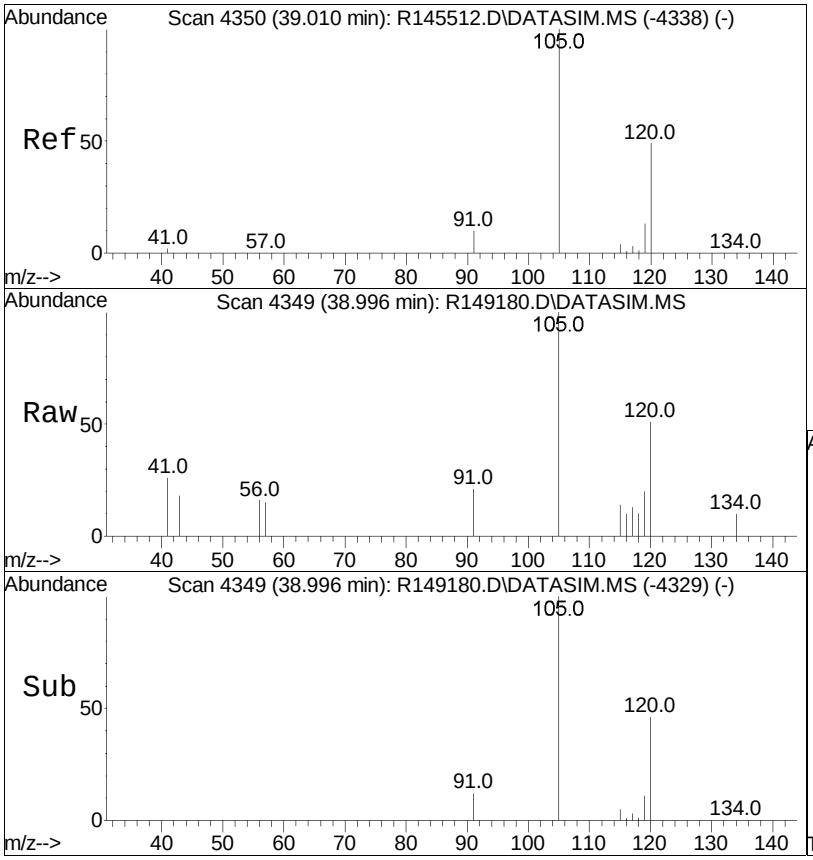


#66
1-Methyl-4-ethylbenzene
Concen: 0.08 ppbV
RT: 38.515 min Scan# 4309
Delta R.T. 0.012 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:105 Resp: 2256

Ion	Ratio	Lower	Upper
105	100		
120	35.0	7.8	47.8

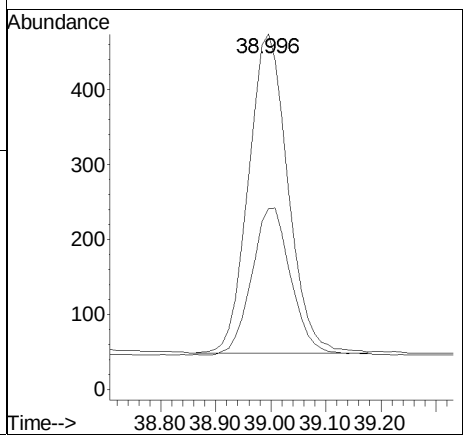


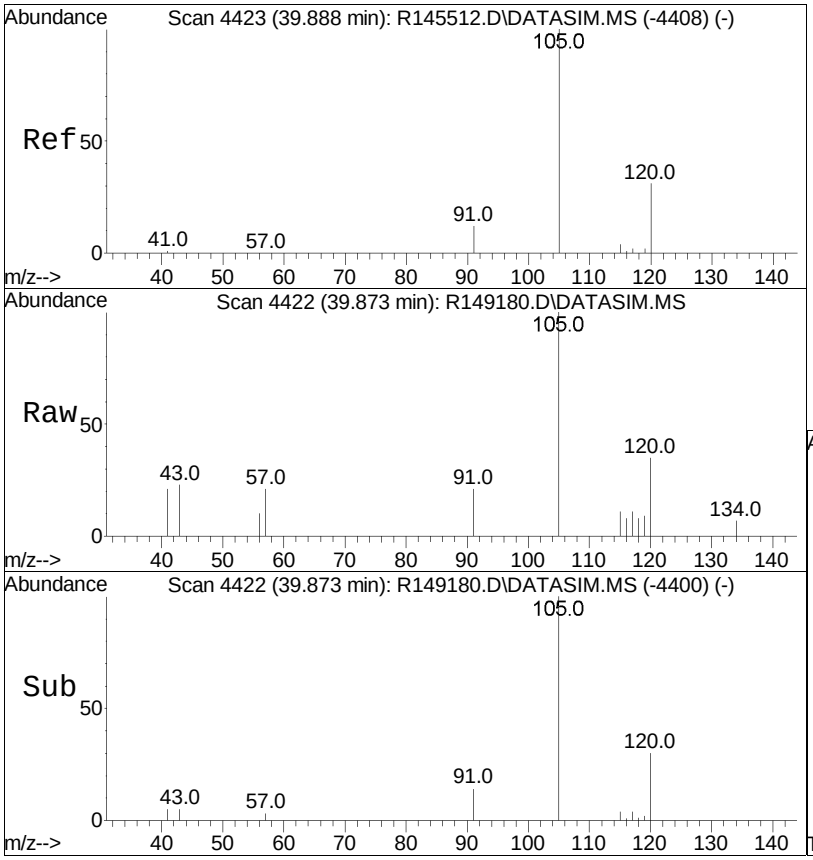


#67
1,3,5-Trimethylbenzene
Concen: 0.09 ppbV
RT: 38.996 min Scan# 4349
Delta R.T. 0.012 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:105 Resp: 2115

Ion	Ratio	Lower	Upper
105	100		
120	50.8	25.9	65.9

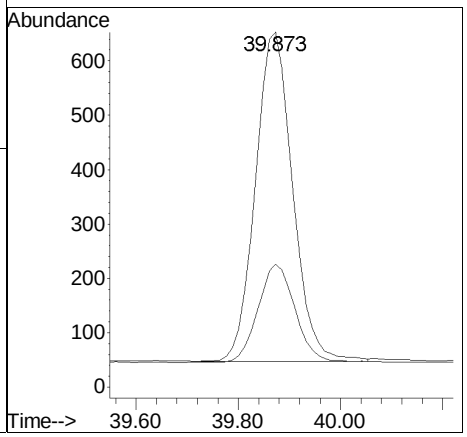


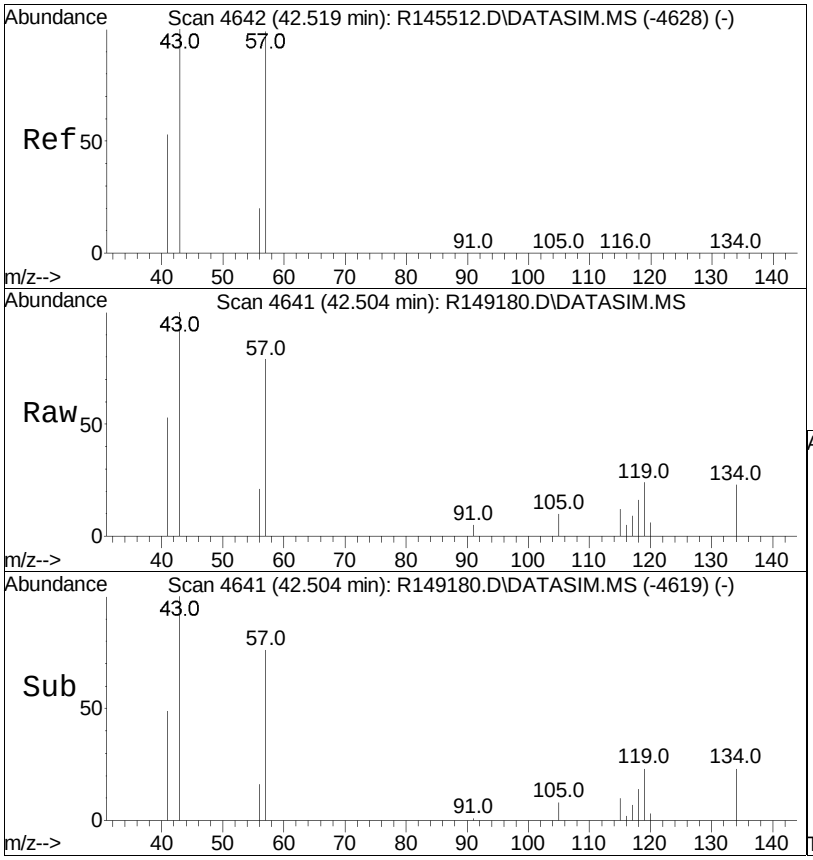


#69
1-Methyl-2-ethylbenzene
Concen: 0.11 ppbV
RT: 39.873 min Scan# 4422
Delta R.T. 0.012 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:105 Resp: 3074

Ion	Ratio	Lower	Upper
105	100		
120	34.6	9.6	49.6

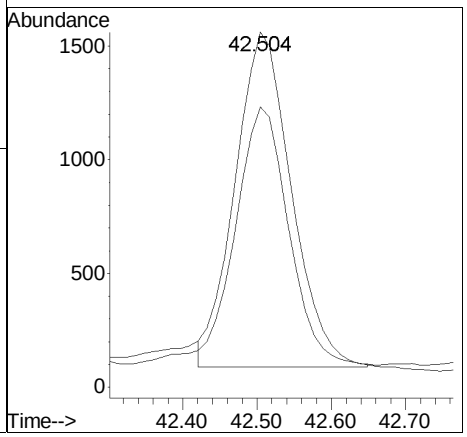


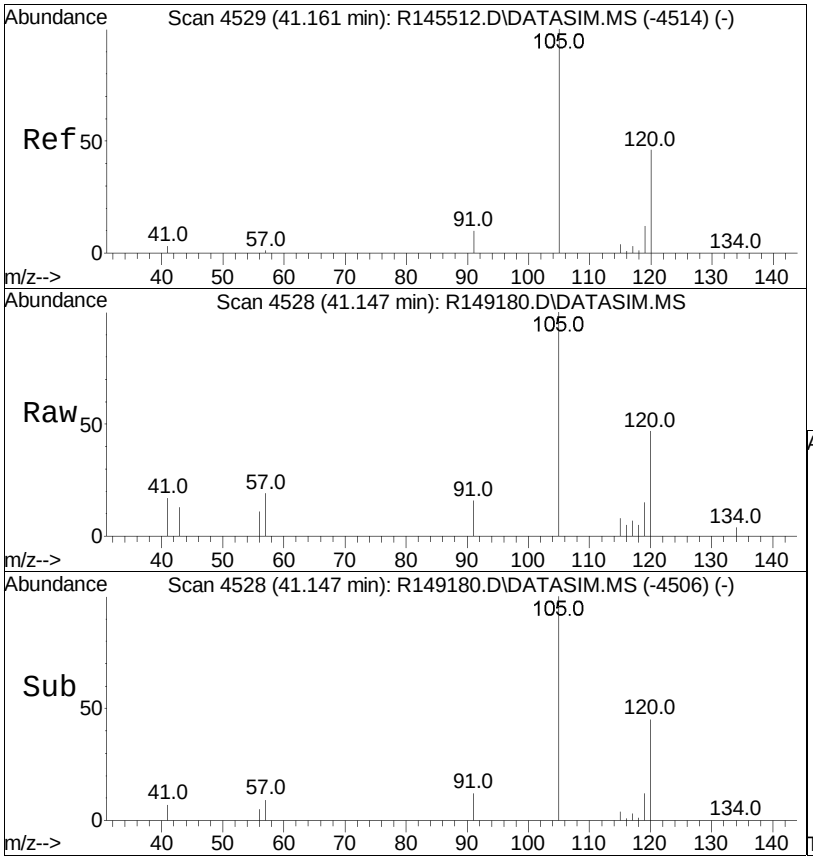


#70
Decane
Concen: 0.35 ppbV m
RT: 42.504 min Scan# 4641
Delta R.T. 0.012 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 43 Resp: 7779

Ion	Ratio	Lower	Upper
43	100		
57	78.9	66.4	106.4

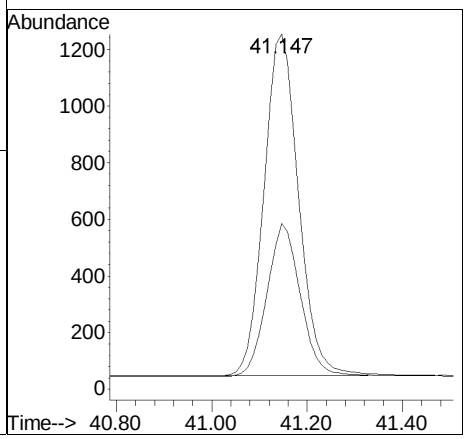


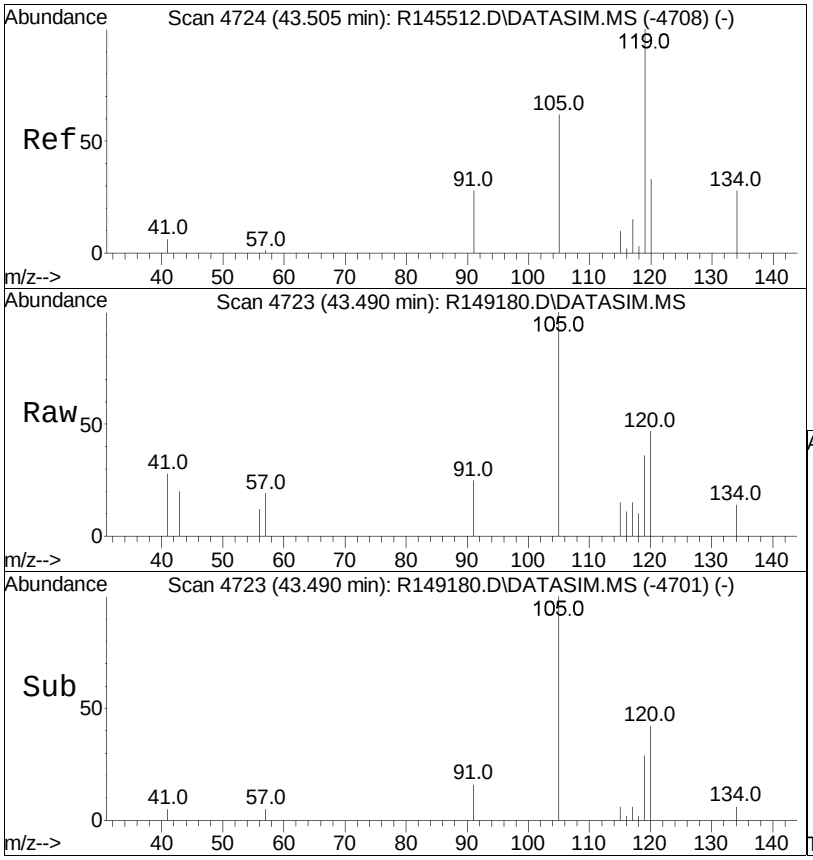


#71
1,2,4-Trimethylbenzene
Concen: 0.25 ppbV
RT: 41.147 min Scan# 4528
Delta R.T. 0.012 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:105 Resp: 6089

Ion	Ratio	Lower	Upper
105	100		
120	46.7	23.0	63.0

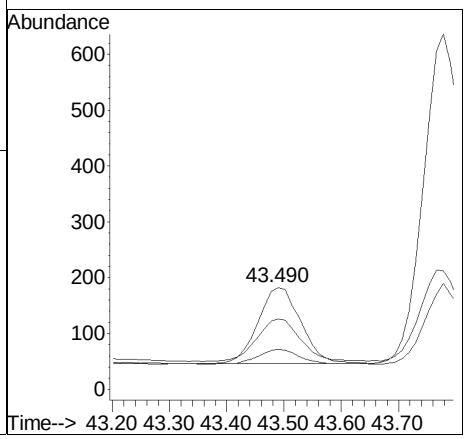


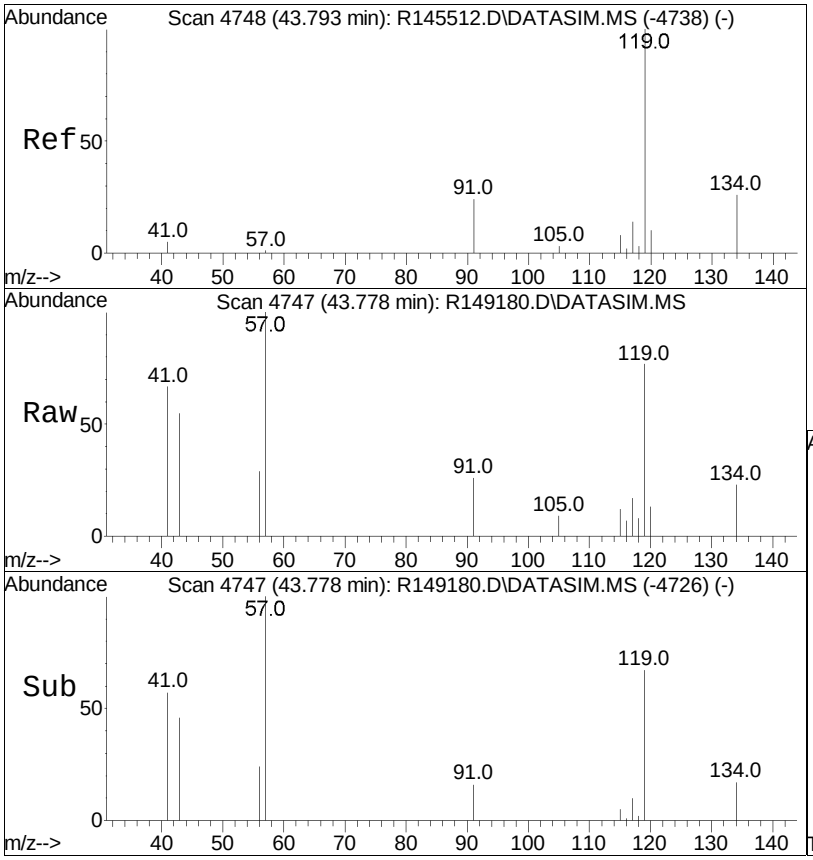


#73
1-Methyl-3-isopropylbenzene
Concen: 0.02 ppbV
RT: 43.490 min Scan# 4723
Delta R.T. 0.012 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:119 Resp: 712

Ion	Ratio	Lower	Upper
119	100		
134	39.6	4.5	44.5
91	69.2	12.0	52.0#

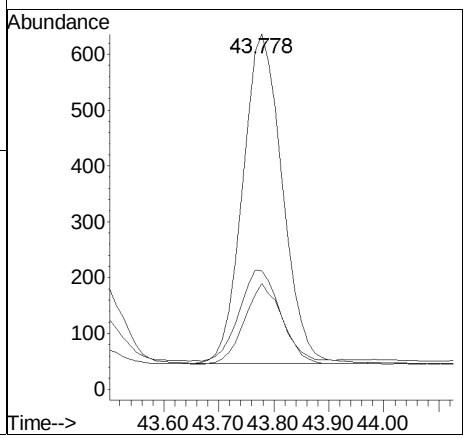


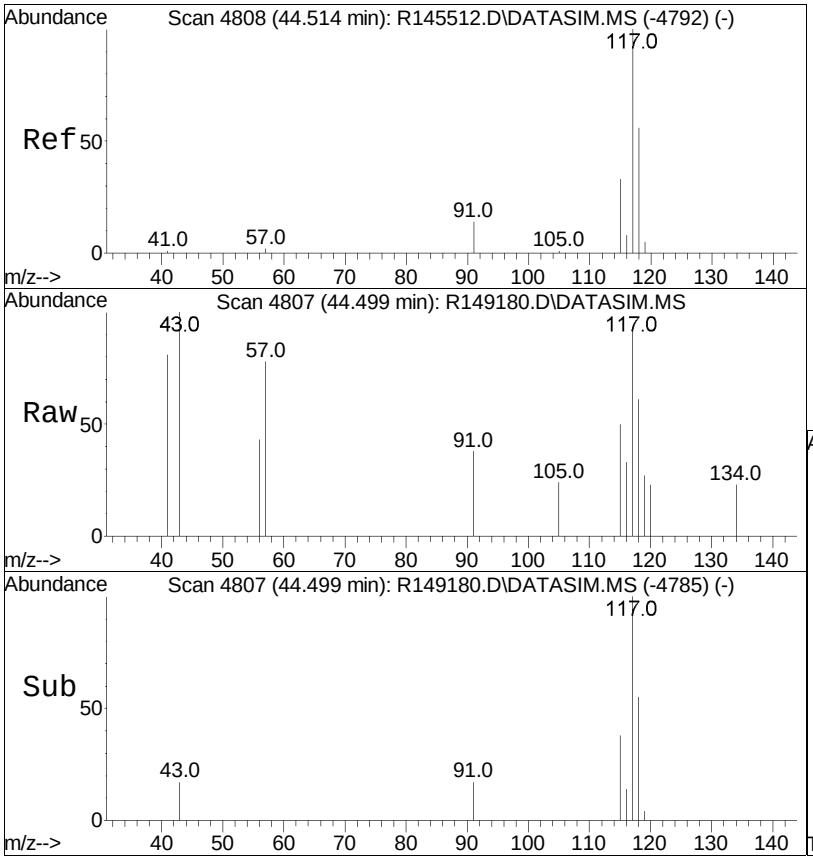


#74
1-Methyl-4-isopropylbenzene
Concen: 0.11 ppbV
RT: 43.778 min Scan# 4747
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:119 Resp: 2940

Ion	Ratio	Lower	Upper
119	100		
134	29.9	4.2	44.2
91	33.3	5.6	45.6

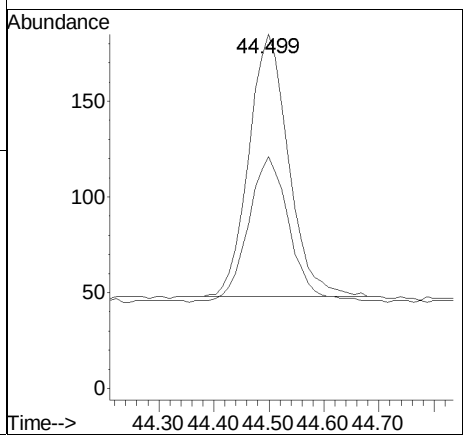


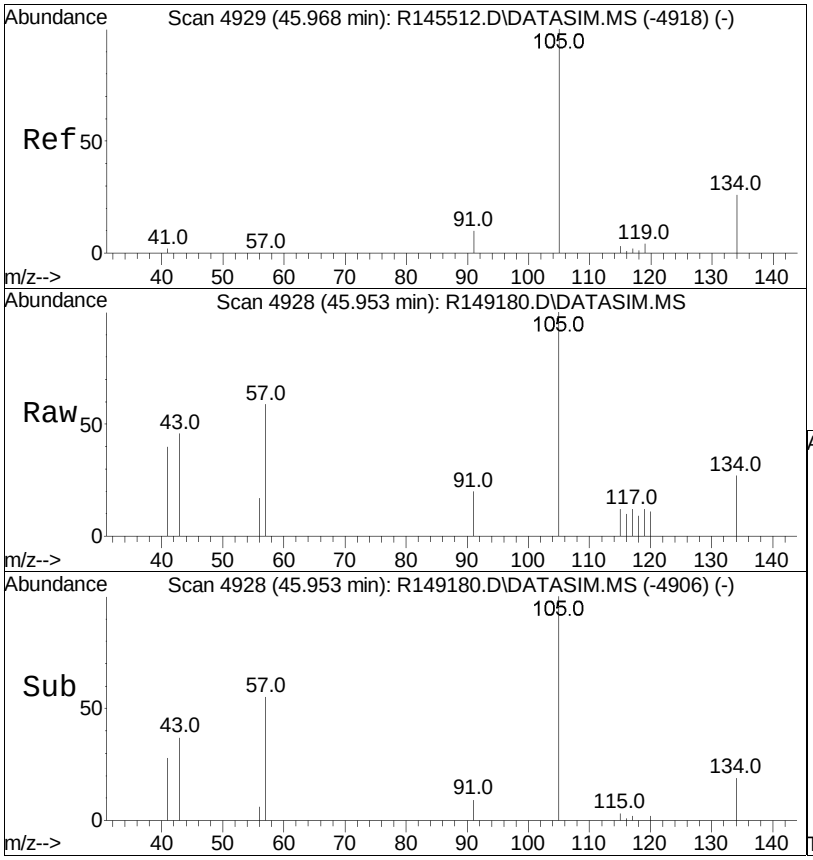


#76
Indan
Concen: 0.04 ppbV
RT: 44.499 min Scan# 4807
Delta R.T. 0.012 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:117 Resp: 689

Ion	Ratio	Lower	Upper
117	100		
118	65.4	35.5	75.5

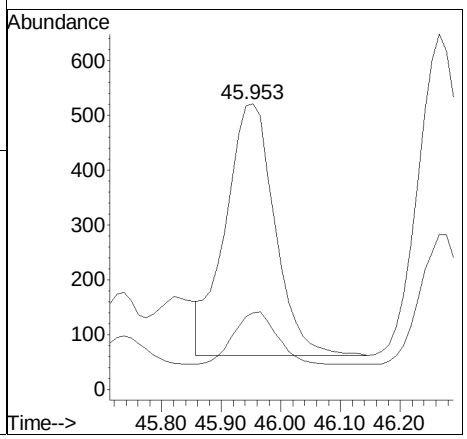


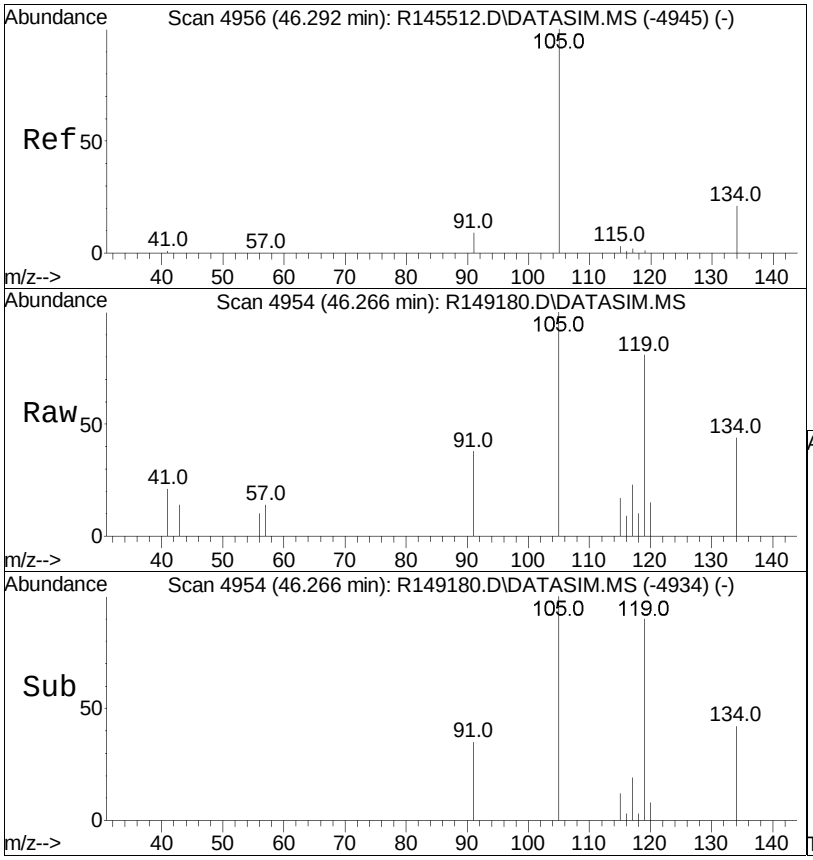


#78
1-Methyl-3-propylbenzene
Concen: 0.08 ppbV
RT: 45.953 min Scan# 4928
Delta R.T. 0.012 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:105 Resp: 2648

Ion	Ratio	Lower	Upper
105	100		
134	26.9	1.9	41.9

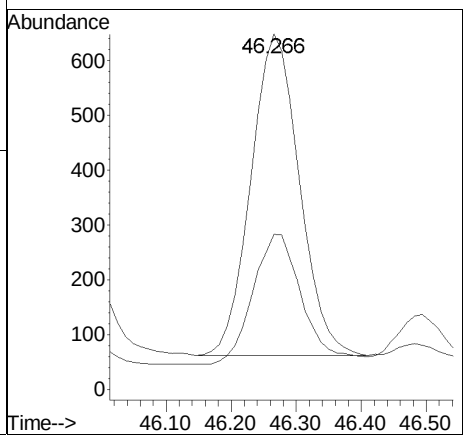


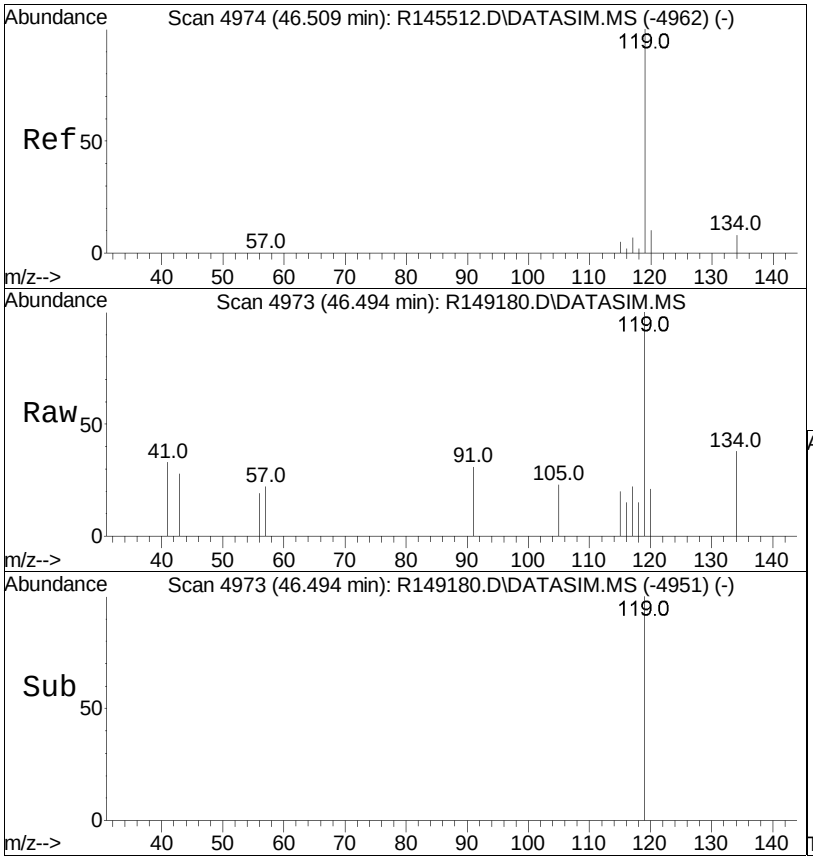


#79
1-Methyl-4-propylbenzene
Concen: 0.07 ppbV
RT: 46.266 min Scan# 4954
Delta R.T. -0.012 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:105 Resp: 3038

Ion	Ratio	Lower	Upper
105	100		
134	43.7	0.0	39.5#

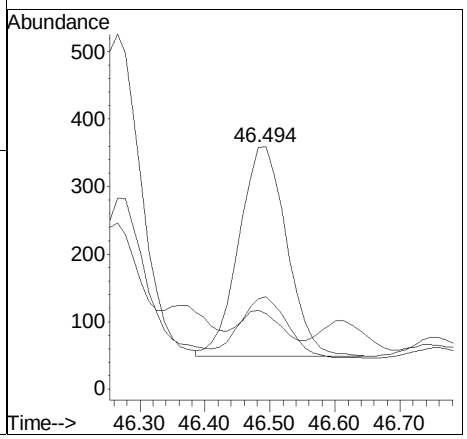


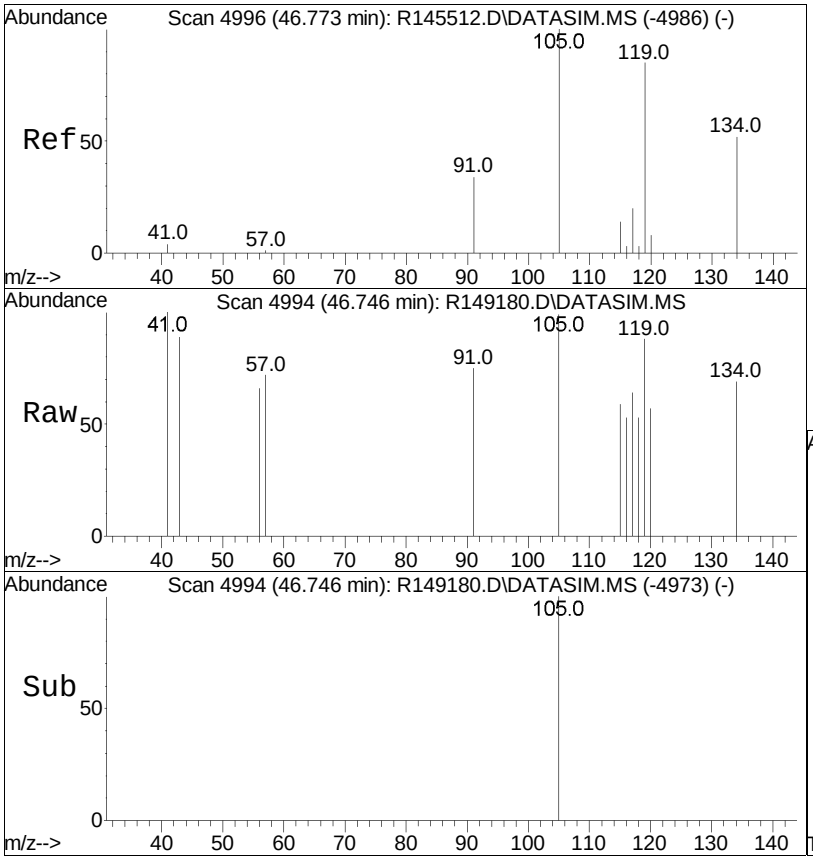


#81
1,2-Dimethyl-4-ethylbenzene
Concen: 0.06 ppbV
RT: 46.494 min Scan# 4973
Delta R.T. 0.012 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:119 Resp: 1587

Ion	Ratio	Lower	Upper
119	100		
134	38.2	9.8	49.8
91	31.2	0.0	39.8

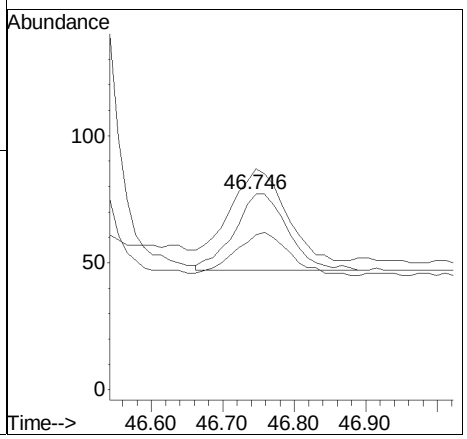


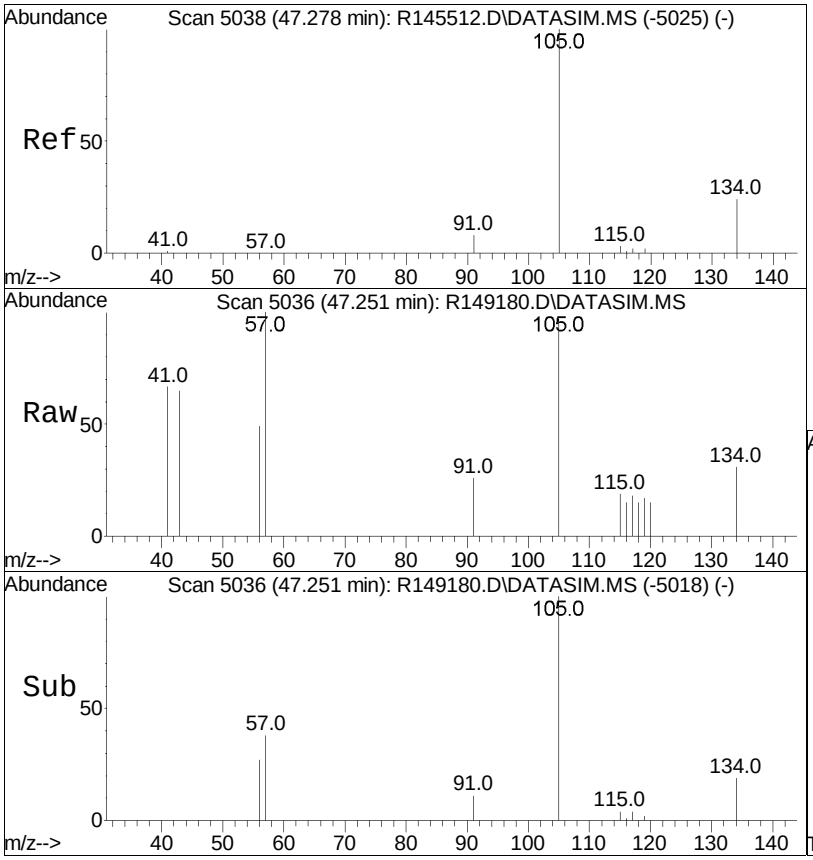


#82
1,2-Diethylbenzene
Concen: 0.01 ppbV
RT: 46.746 min Scan# 4994
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:119 Resp: 157

Ion	Ratio	Lower	Upper
119	100		
105	113.0	103.0	143.0
134	79.2	33.7	73.7#

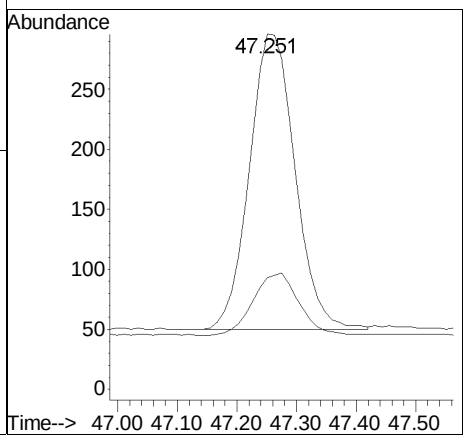


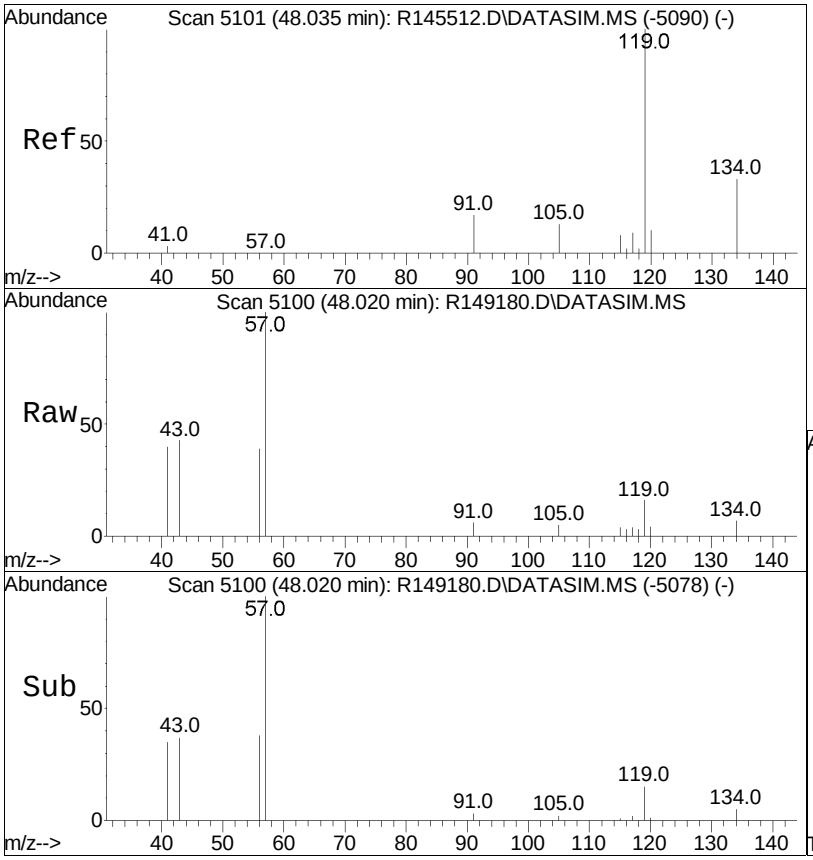


#83
1-Methyl-2-propylbenzene
Concen: 0.03 ppbV
RT: 47.251 min Scan# 5036
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:105 Resp: 1309

Ion	Ratio	Lower	Upper
105	100		
134	31.4	0.5	40.5

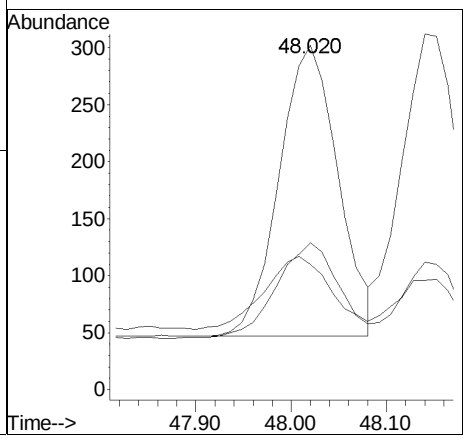


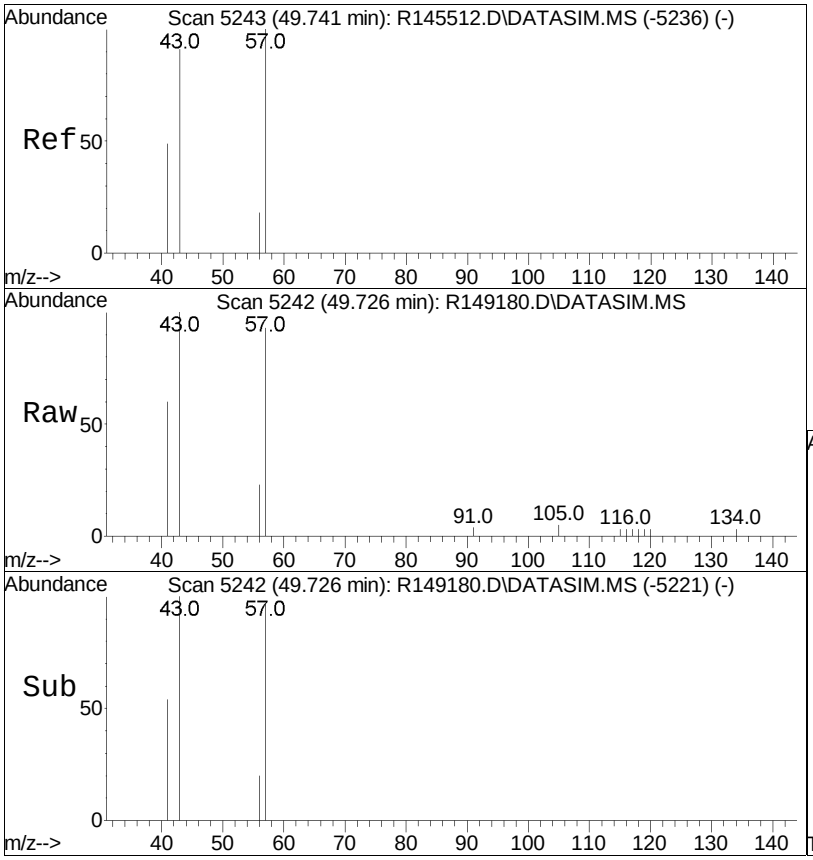


#84
1,4-Dimethyl-2-ethylbenzene
Concen: 0.04 ppbV
RT: 48.020 min Scan# 5100
Delta R.T. 0.012 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:119 Resp: 1097

Ion	Ratio	Lower	Upper
119	100		
134	42.7	10.4	50.4
91	36.4	0.1	40.1

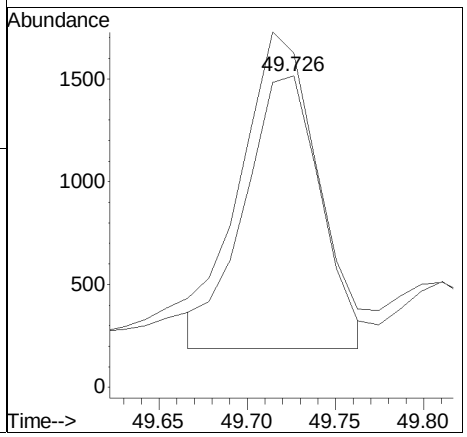


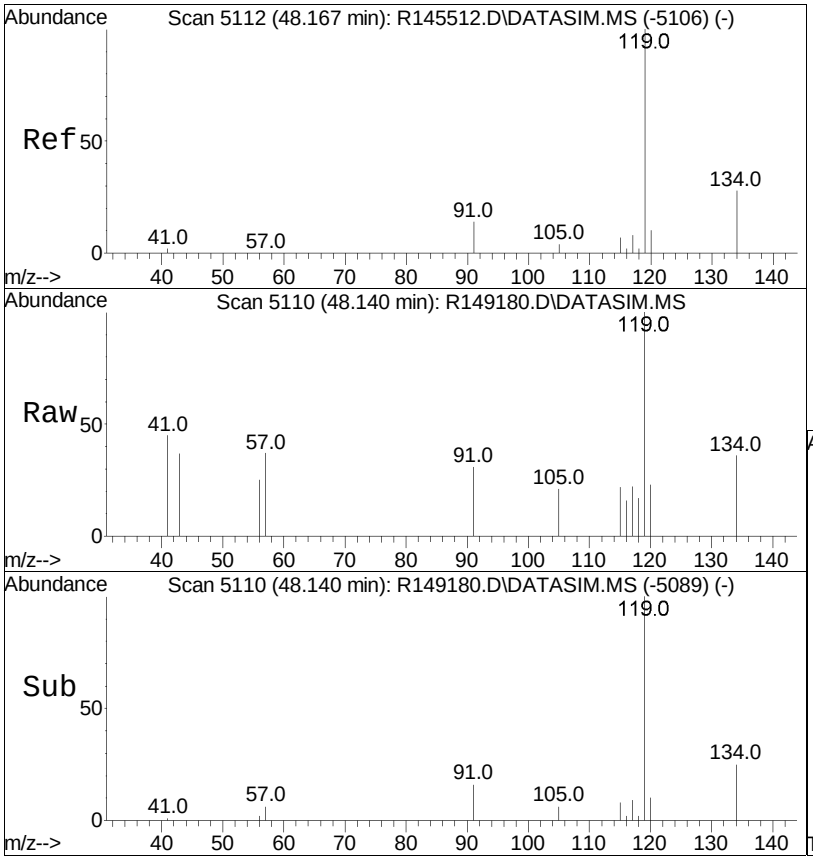


#85
Undecane
Concen: 0.18 ppbV m
RT: 49.726 min Scan# 5242
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 57 Resp: 3994

Ion	Ratio	Lower	Upper
57	100		
43	107.3	79.1	119.1

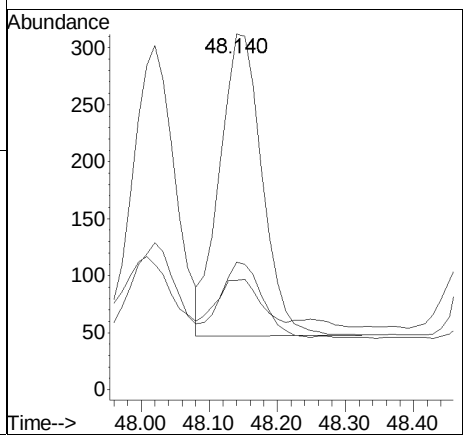


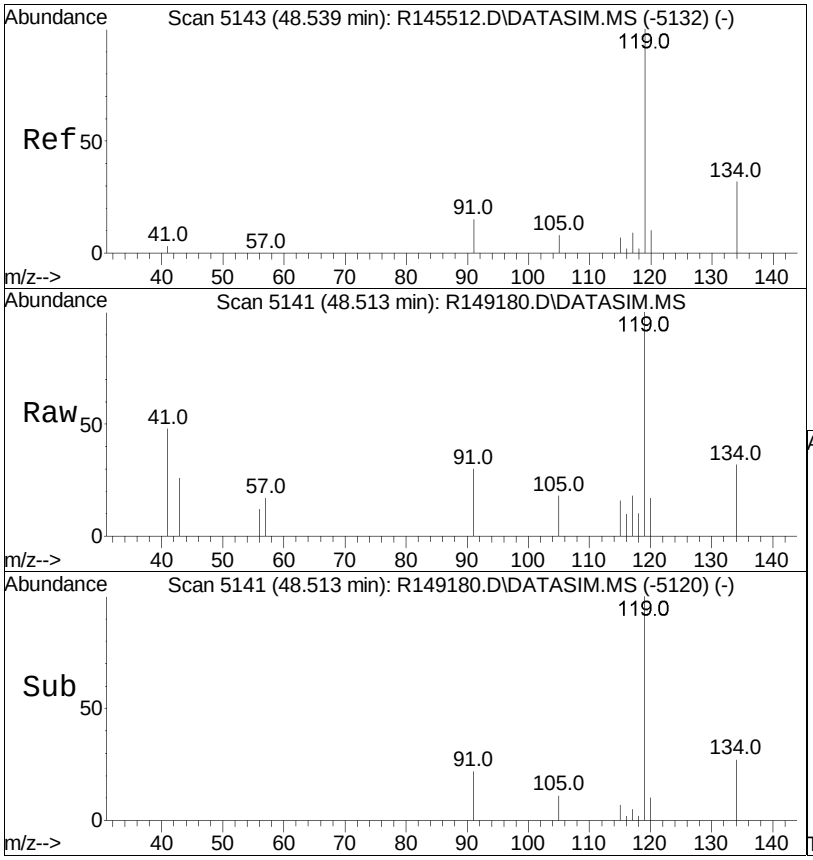


#86
1,3-Dimethyl-4-ethylbenzene
Concen: 0.04 ppbV
RT: 48.140 min Scan# 5110
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:119 Resp: 1145

Ion	Ratio	Lower	Upper
119	100		
134	35.9	6.2	46.2
91	30.8	0.0	36.4

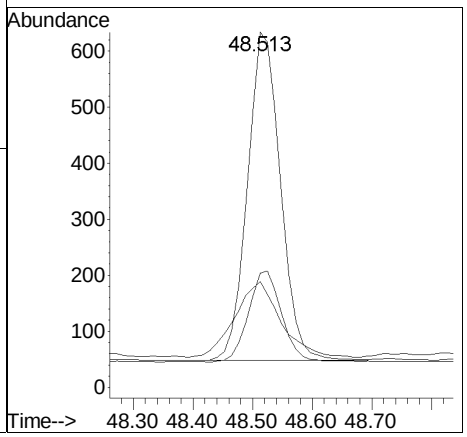


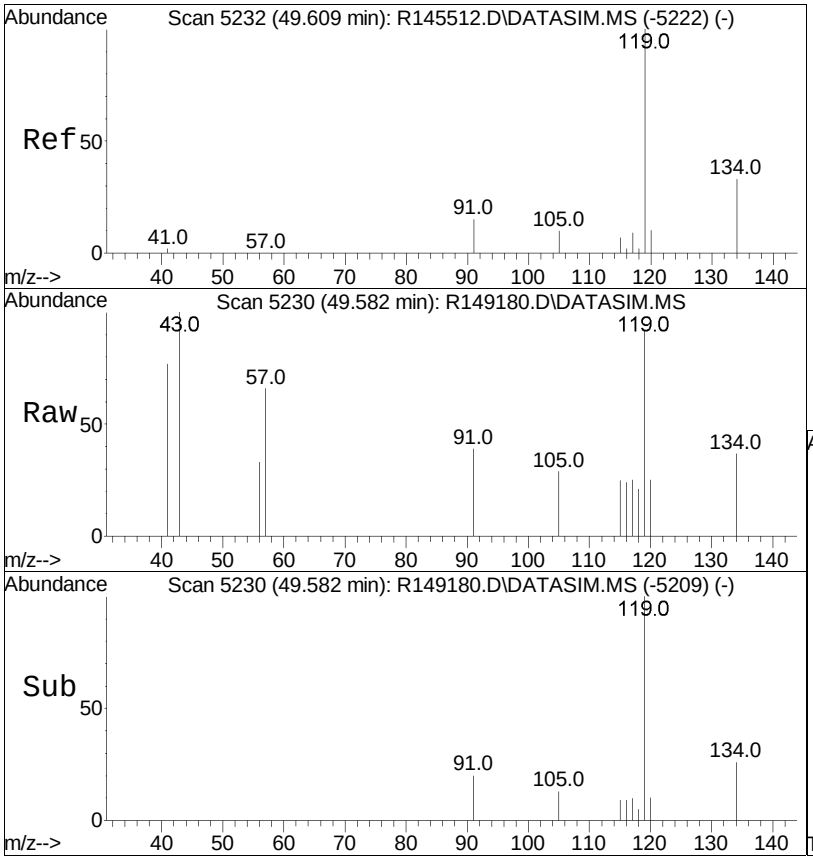


#87
1,3-Dimethyl-5-ethylbenzene
Concen: 0.07 ppbV
RT: 48.513 min Scan# 5141
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:119 Resp: 2257

Ion	Ratio	Lower	Upper
119	100		
134	32.2	7.8	47.8
91	29.8	0.0	38.0

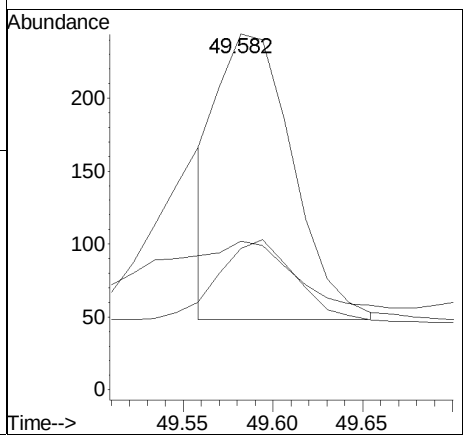


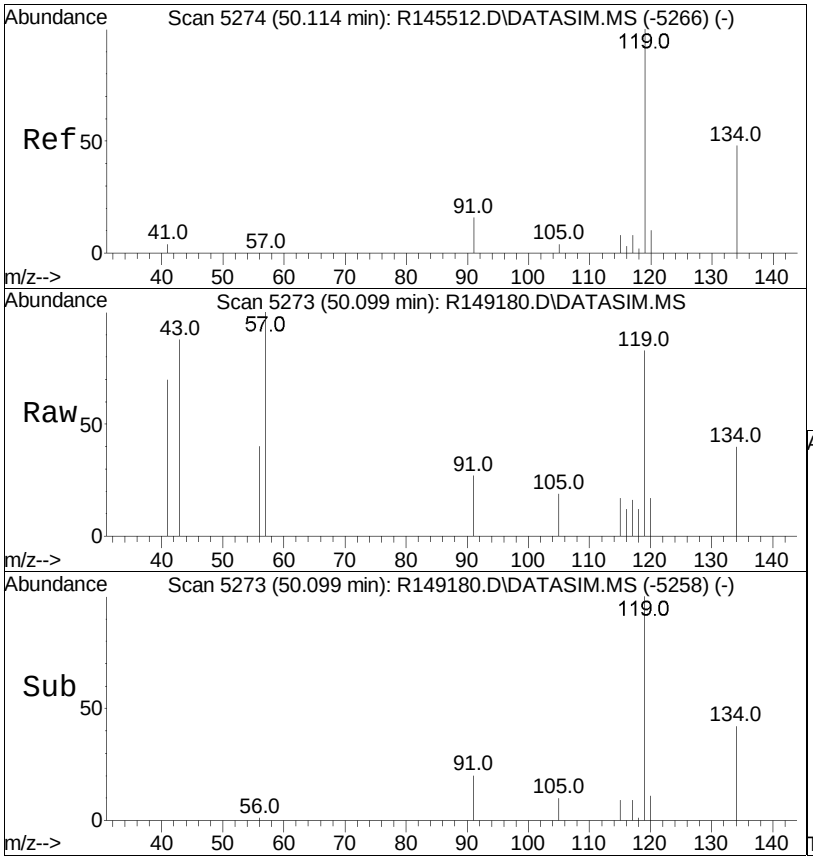


#89
1,2-Dimethyl-3-ethylbenzene
Concen: 0.02 ppbV m
RT: 49.582 min Scan# 5230
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:119 Resp: 577

Ion	Ratio	Lower	Upper
119	100		
134	39.8	8.0	48.0
91	41.8	0.0	39.5#

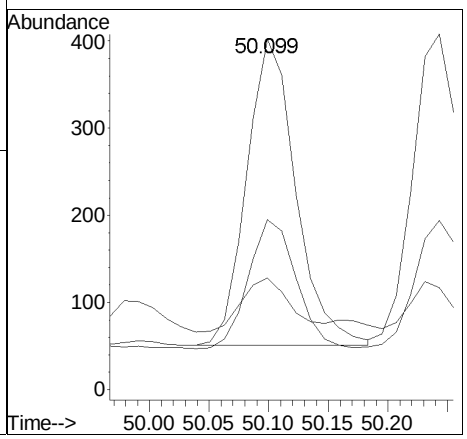


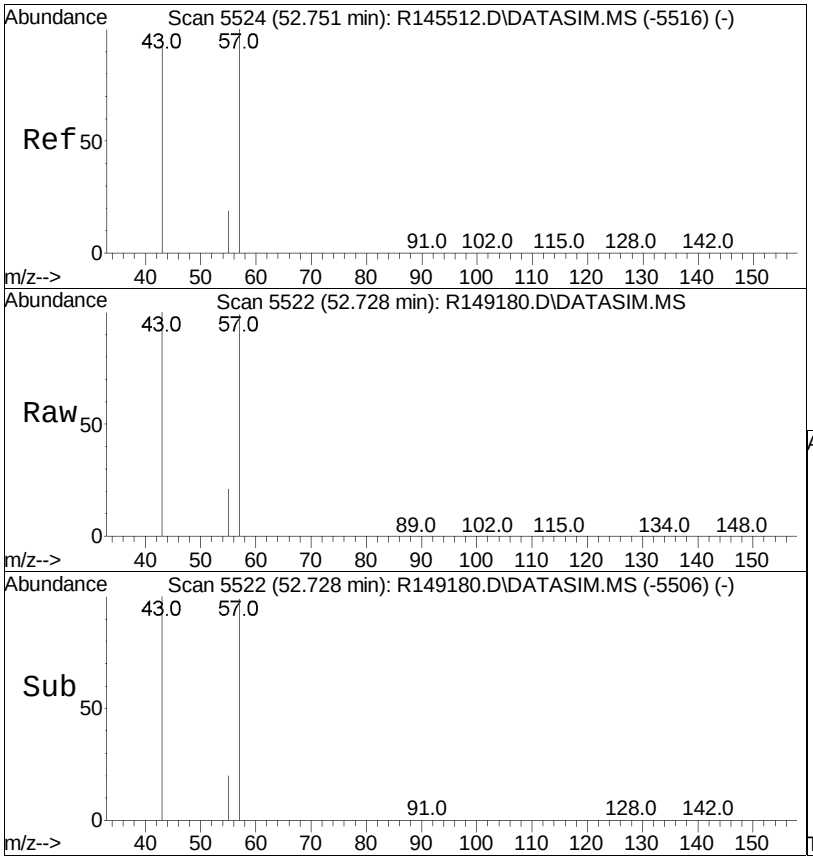


#90
1,2,4,5-Tetramethylbenzene
Concen: 0.01 ppbV
RT: 50.099 min Scan# 5273
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:119 Resp: 1007

Ion	Ratio	Lower	Upper
119	100		
134	48.5	24.1	64.1
91	31.8	0.0	36.7

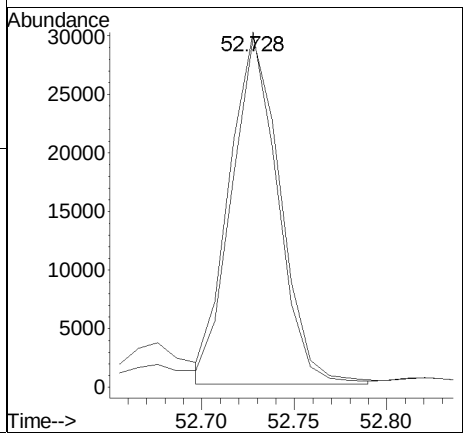


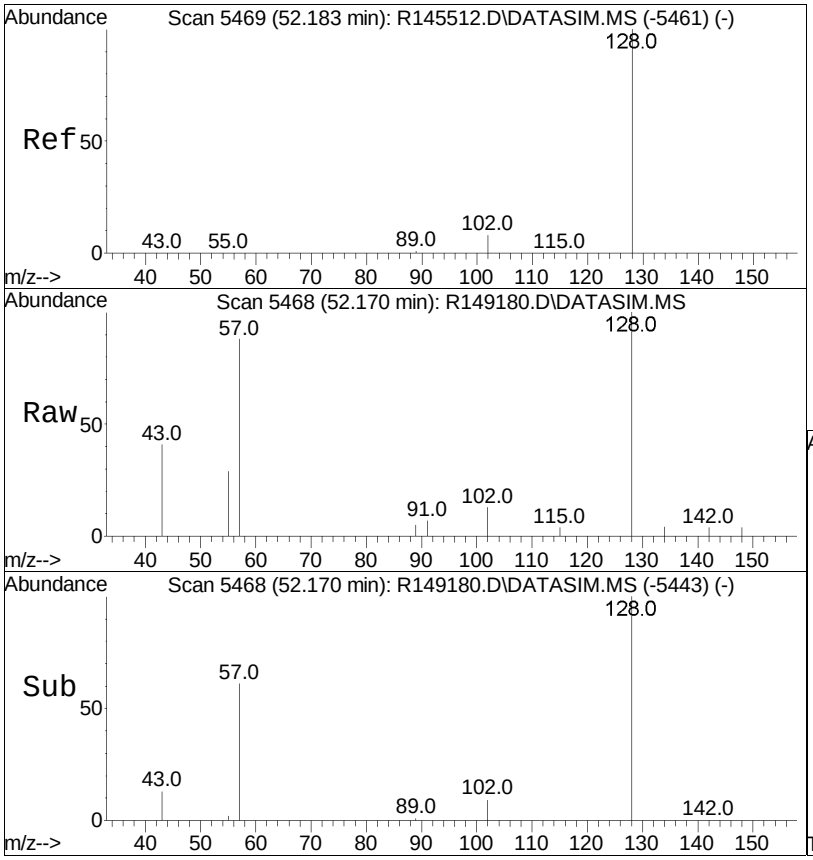


#92
Dodecane
Concen: 2.24 ppbV
RT: 52.728 min Scan# 5522
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 43 Resp: 54355

Ion	Ratio	Lower	Upper
43	100		
57	98.6	80.2	120.2

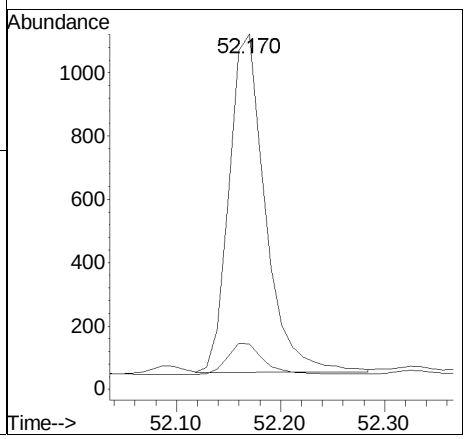


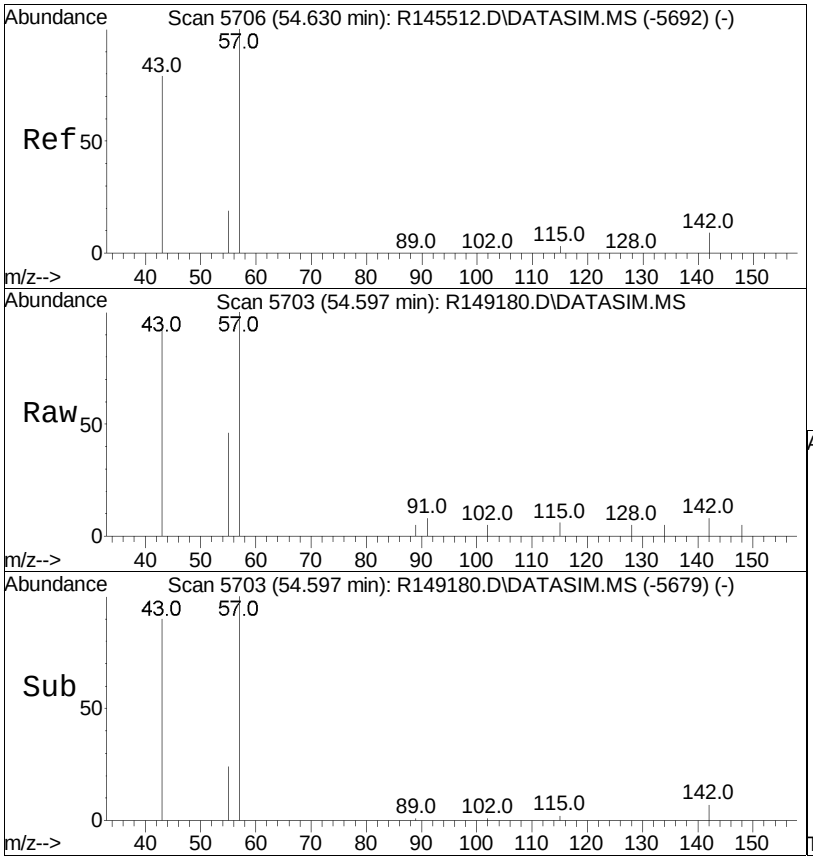


#93
Naphthalene
Concen: 0.08 ppbV
RT: 52.170 min Scan# 5468
Delta R.T. 0.010 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion:128 Resp: 2585

Ion	Ratio	Lower	Upper
128	100		
102	12.7	0.0	28.9

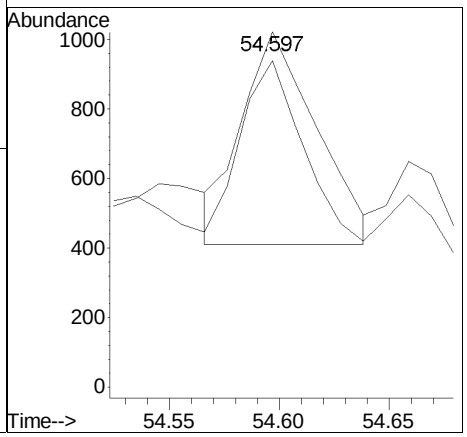




#96
Tridecane
Concen: 0.04 ppbV m
RT: 54.597 min Scan# 5703
Delta R.T. -0.000 min
Lab File: R149180.D
Acq: 8 Nov 2016 10:57 pm

Tgt Ion: 57 Resp: 1450

Ion	Ratio	Lower	Upper
57	100		
43	92.0	72.3	112.3



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-06	Date Collected	: 10/19/16 12:54
Client ID	: NFSV-08	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 00:04
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149181	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
106-99-0	1,3-Butadiene	0.246	0.025	0.010	0.544	0.055	0.022	
78-78-4	Isopentane	3.20	0.025	0.010	9.44	0.074	0.030	
109-67-1	1-Pentene	1.07	0.025	0.010	3.07	0.072	0.029	
563-46-2	2-Methyl-1-Butene	0.986	0.025	0.010	2.83	0.072	0.029	
109-66-0	Pentane	0.973	0.025	0.010	2.87	0.074	0.030	
646-04-8	trans-2-Pentene	0.192	0.025	0.010	0.551	0.072	0.029	
627-20-3	cis-2-Pentene	0.390	0.025	0.010	1.12	0.072	0.029	
75-65-0	Tertiary Butanol	2.03	0.025	0.010	6.15	0.076	0.030	
287-92-3	Cyclopentane	ND	0.025	0.010	ND	0.072	0.029	U
79-29-8	2,3-Dimethylbutane	ND	0.025	0.010	ND	0.088	0.035	U
107-83-5	2-Methylpentane	0.305	0.025	0.010	1.08	0.088	0.035	
1634-04-4	Methyl tert butyl ether	0.167	0.025	0.010	0.602	0.090	0.036	
96-14-0	3-Methylpentane	0.319	0.025	0.010	1.12	0.088	0.035	
592-41-6	1-Hexene	0.392	0.025	0.010	1.35	0.086	0.034	
110-54-3	n-Hexane	0.254	0.025	0.010	0.895	0.088	0.035	
108-20-3	Isopropyl Ether	ND	0.025	0.010	ND	0.104	0.042	U
637-92-3	Ethyl-Tert-Butyl-Ether	ND	0.025	0.010	ND	0.104	0.042	U
590-35-2	2,2-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041	U
96-37-7	Methylcyclopentane	0.103	0.025	0.010	0.355	0.086	0.034	
108-08-7	2,4-Dimethylpentane	0.052	0.025	0.010	0.213	0.102	0.041	
107-06-2	1,2-Dichloroethane	ND	0.025	0.010	ND	0.101	0.041	U
110-82-7	Cyclohexane	0.112	0.025	0.010	0.386	0.086	0.034	
591-76-4	2-Methylhexane	ND	0.025	0.010	ND	0.102	0.041	U
71-43-2	Benzene	0.471	0.025	0.010	1.50	0.080	0.032	
565-59-3	2,3-Dimethylpentane	0.093	0.025	0.010	0.381	0.102	0.041	
110-02-1	Thiophene	0.037	0.025	0.010	0.127	0.086	0.034	
589-34-4	3-Methylhexane	0.127	0.025	0.010	0.520	0.102	0.041	
994-05-8	Tertiary-Amyl Methyl Ether	ND	0.025	0.010	ND	0.104	0.042	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-06	Date Collected	: 10/19/16 12:54
Client ID	: NFSV-08	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 00:04
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149181	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
592-76-7	1-Heptene	ND	0.025	0.010	ND	0.100	0.040	U
540-84-1	Isooctane	0.620	0.025	0.010	2.90	0.117	0.047	
142-82-5	Heptane	0.101	0.025	0.010	0.414	0.102	0.041	
108-87-2	Methylcyclohexane	ND	0.025	0.010	ND	0.100	0.040	U
592-13-2	2,5-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
589-43-5/564-02-3	2,4-Dimethylhexane/2,2,3-Trimethylpen	0.119	0.050	0.025	0.556	0.234	0.117	
565-75-3	2,3,4-Trimethylpentane	0.214	0.025	0.010	1.00	0.117	0.047	
560-21-4	2,3,3-Trimethylpentane	0.749	0.025	0.010	3.50	0.117	0.047	
584-94-1	2,3-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
619-99-8	3-Ethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
592-27-8	2-Methylheptane	ND	0.025	0.010	ND	0.117	0.047	U
589-81-1	3-Methylheptane	ND	0.025	0.010	ND	0.117	0.047	U
108-88-3	Toluene	0.368	0.025	0.010	1.39	0.094	0.038	
554-14-3	2-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040	U
616-44-4	3-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040	U
111-66-0	1-Octene	0.067	0.025	0.010	0.307	0.115	0.046	
16747-50-5	1-Ethyl-1-Methylcyclopentane	ND	0.025	0.010	ND	0.115	0.046	U
111-65-9	Octane	0.071	0.025	0.010	0.332	0.117	0.047	
106-93-4	1,2-Dibromoethane	ND	0.025	0.010	ND	0.192	0.077	U
100-41-4	Ethylbenzene	0.079	0.025	0.010	0.343	0.109	0.043	
872-55-9	2-Ethylthiophene	ND	0.025	0.010	ND	0.115	0.046	U
179601-23-1	p/m-Xylene	0.170	0.050	0.010	0.738	0.217	0.043	
124-11-8	1-Nonene	ND	0.025	0.010	ND	0.129	0.052	U
111-84-2	Nonane (C9)	0.060	0.025	0.010	0.315	0.131	0.053	
100-42-5	Styrene	0.048	0.025	0.010	0.204	0.106	0.043	
95-47-6	o-Xylene	0.074	0.050	0.010	0.321	0.217	0.043	
98-82-8	Isopropylbenzene	ND	0.025	0.010	ND	0.123	0.049	U
103-65-1	n-Propylbenzene	0.018	0.025	0.010	0.089	0.123	0.049	J

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-06	Date Collected	: 10/19/16 12:54
Client ID	: NFSV-08	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 00:04
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149181	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
620-14-4	1-Methyl-3-Ethylbenzene	0.043	0.050	0.025	0.211	0.246	0.123	J
622-96-8	1-Methyl-4-Ethylbenzene	0.023	0.025	0.010	0.113	0.123	0.049	J
108-67-8	1,3,5-Trimethylbenzene	0.025	0.025	0.010	0.123	0.123	0.049	
872-05-9	1-Decene	0.056	0.050	0.025	0.321	0.287	0.143	
611-14-3	1-Methyl-2-Ethylbenzene	0.026	0.050	0.025	0.128	0.246	0.123	J
124-18-5	Decane (C10)	0.531	0.050	0.025	3.09	0.291	0.146	
95-63-6	1,2,4-Trimethylbenzene	0.079	0.050	0.025	0.388	0.246	0.123	
135-98-8	sec-Butylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
535-77-3	1-Methyl-3-Isopropylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
99-87-6	1-Methyl-4-Isopropylbenzene	0.186	0.050	0.025	1.02	0.274	0.137	
527-84-4	1-Methyl-2-Isopropylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
496-11-7	Indane	0.026	0.050	0.025	0.126	0.242	0.121	J
95-13-6	Indene	0.062	0.050	0.025	0.295	0.238	0.119	
1074-43-7	1-Methyl-3-N-Propylbenzene	0.033	0.050	0.025	0.181	0.274	0.137	J
1074-55-1	1-Methyl-4-N-Propylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
104-51-8	n-Butylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
934-80-5	1,2-Dimethyl-4-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
135-01-3	1,2-Diethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1074-17-5	1-Methyl-2-N-Propylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1758-88-9	1,4-Dimethyl-2-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1120-21-4	Undecane	0.215	0.050	0.025	1.37	0.320	0.160	
874-41-9	1,3-Dimethyl-4-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
934-74-7	1,3-Dimethyl-5-Ethylbenzene	0.032	0.050	0.025	0.176	0.274	0.137	J
2870-04-4	1,3-Dimethyl-2-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
933-98-2	1,2-Dimethyl-3-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
538-68-1	N-Pentylbenzene	ND	0.050	0.025	ND	0.303	0.152	U
112-40-3	Dodecane (C12)	4.18	0.100	0.050	29.1	0.697	0.348	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-06	Date Collected	: 10/19/16 12:54
Client ID	: NFSV-08	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 00:04
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149181	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
91-20-3	Naphthalene	0.166	0.050	0.025	0.870	0.262	0.131	
95-15-8	Benzothiophene	ND	0.100	0.050	ND	0.549	0.274	U
12108-13-3	MMT	ND	0.100	0.050	ND	0.892	0.446	U
629-50-5	Tridecane	0.861	1.00	0.050	6.49	7.54	0.377	J
91-57-6	2-Methylnaphthalene	0.072	0.500	0.050	0.419	2.91	0.291	J
90-12-0	1-Methylnaphthalene	ND	0.500	0.050	ND	2.91	0.291	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149181.D
Acq On : 9 Nov 2016 12:04 am
Operator : AIRPIANO1:RY
Sample : L1634001-06,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 10 12:14:56 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.198	49	129289	10.000	ppbV	0.00
Standard Area = 123393			Recovery = 104.78%			
27) 1,4-difluorbenzene	14.201	114	269727	10.000	ppbV	0.00
Standard Area = 263318			Recovery = 102.43%			
54) chlorobenzene-D5	27.633	117	194706	10.000	ppbV	0.00
Standard Area = 190793			Recovery = 102.05%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.619	65	81698	10.112	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.12%			
46) Toluene-D8	20.949	98	215167	10.456	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 104.56%			
62) 4-Bromofluorobenzene (...	34.334	95	110202	10.318	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 103.18%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.710	54	1687	0.246	ppbV #	5
4) Isopentane	5.878	41	40119M6	3.205	ppbV	
5) 1-Pentene	6.194	42	15203	1.073	ppbV	98
6) 2-Methyl-1-butene	6.352	55	16532	0.986	ppbV	91
7) Pentane	6.468	43	20853	0.973	ppbV	99
9) 2-Pentene (trans)	6.668	55	3109	0.192	ppbV	94
10) 2-Pentene (cis)	6.889	55	5809	0.390	ppbV	86
11) Tertiary butanol	6.868	59	49443	2.032	ppbV	89
12) Cyclopentane	0.000		0	N.D.	d	
13) 2,3-Dimethylbutane	0.000		0	N.D.	d	
14) 2-Methylpentane	8.812	43	7409M6	0.305	ppbV	
15) MTBE	8.687	73	4142	0.167	ppbV #	29
16) 3-Methylpentane	9.460	57	5110	0.319	ppbV	96
17) 1-Hexene	9.723	56	3610M3	0.392	ppbV	
18) Hexane	10.286	57	3471	0.254	ppbV #	56
19) Diisopropyl ether	0.000		0	N.D.	d	
20) Ethyl tertiary butyl e...	0.000		0	N.D.	d	
21) 2,2-Dimethylpentane	0.000		0	N.D.	d	
23) Methylcyclopentane	11.827	56	1754	0.103	ppbV	81
24) 2,4-Dimethylpentane	11.973	43	1147	0.052	ppbV	81
25) 1,2-Dichloroethane	0.000		0	N.D.	d	
26) Cyclohexane	13.921	56	1489	0.112	ppbV	94
28) 2-Methylhexane	0.000		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149181.D
Acq On : 9 Nov 2016 12:04 am
Operator : AIRPIANO1:RY
Sample : L1634001-06,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 10 12:14:56 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
29) Benzene	13.316	78	12109	0.471	ppbV	97
30) 2,3-Dimethylpentane	14.548	56	1505	0.093	ppbV #	1
31) Thiophene	13.607	84	407M4	0.037	ppbV	
32) 3-Methylhexane	15.018	43	2268	0.127	ppbV	75
33) TAME	0.000		0	N.D.	d	
34) 1-Heptene	0.000		0	N.D.	d	
35) Isooctane	15.993	57	25076	0.620	ppbV	94
36) Heptane	16.788	43	1768M6	0.101	ppbV	
37) Methylcyclohexane	0.000		0	N.D.	d	
38) 2,5-Dimethylhexane	0.000		0	N.D.	d	
39) 2,4-Dimethyhexane / 2,...	19.510	57	2960	0.119	ppbV	82
40) 2,3,4-Trimethylpentane	20.850	43	5993	0.214	ppbV	97
41) 2,3,3-Trimethylpentane	21.244	43	19663	0.749	ppbV	98
42) 2,3-Dimethylhexane	0.000		0	N.D.	d	
43) 3-Ethylhexane	0.000		0	N.D.	d	
44) 2-Methylheptane	0.000		0	N.D.	d	
45) 3-Methylheptane	0.000		0	N.D.	d	
47) Toluene	21.263	91	11046	0.368	ppbV	99
48) 2-Methylthiophene	0.000		0	N.D.	d	
49) 3-Methylthiophene	0.000		0	N.D.	d	
50) 1-Octene	24.087	55	602M4	0.067	ppbV	
51) 1-ethyl-1-methylcyclop...	0.000		0	N.D.	d	
52) Octane	25.091	43	1705M4	0.071	ppbV	
53) 1,2-Dibromoethane	23.438		0	N.D.		
55) Ethylbenzene	29.493	91	2183	0.079	ppbV	88
56) 2-Ethylthiophene	0.000		0	N.D.	d	
57) p/m-Xylene	30.240	91	3592M4	0.170	ppbV	
58) 1-Nonene	0.000		0	N.D.	d	
59) Nonane	33.909	43	1238	0.060	ppbV	96
60) Styrene	31.839	104	676	0.048	ppbV	80
61) o-Xylene	32.265	91	1603	0.074	ppbV	92
63) Isopropylbenzene	35.119		0	N.D.		
64) n-Propylbenzene	37.698	120	137	0.018	ppbV #	14
65) 1-Methyl-3-ethylbenzene	38.323	105	1167	0.043	ppbV	84
66) 1-Methyl-4-ethylbenzene	38.515	105	655	0.023	ppbV	64
67) 1,3,5-Trimethylbenzene	38.996	105	586	0.025	ppbV	78
68) 1-Decene	41.543	41	663	0.056	ppbV	78
69) 1-Methyl-2-ethylbenzene	39.861	105	725	0.026	ppbV	71
70) Decane	42.505	43	11246	0.531	ppbV	98
71) 1,2,4-Trimethylbenzene	41.147	105	1837	0.079	ppbV	89

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149181.D
Acq On : 9 Nov 2016 12:04 am
Operator : AIRPIANO1:RY
Sample : L1634001-06,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 10 12:14:56 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

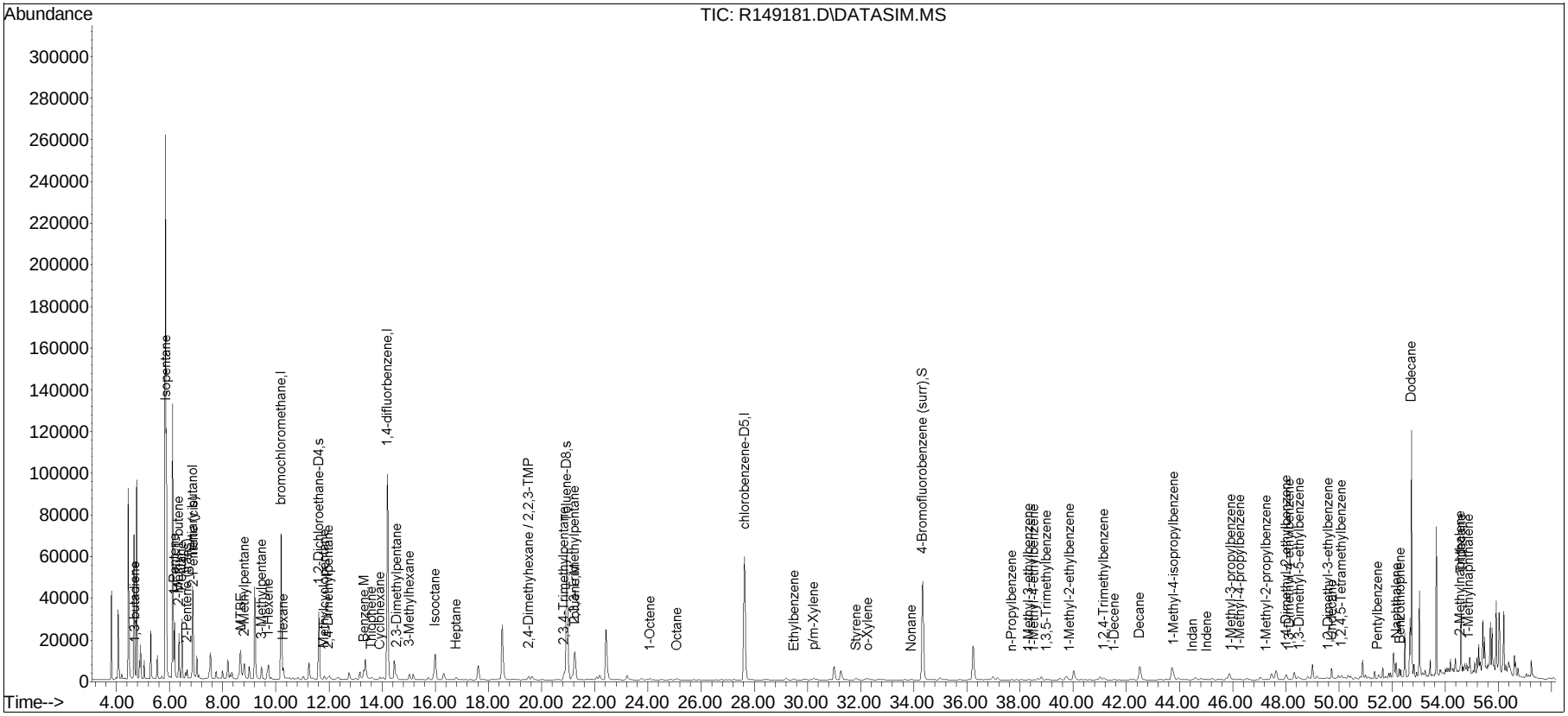
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
72) sec-Butylbenzene	0.000		0	N.D.	d	
73) 1-Methyl-3-isopropylbe...	0.000		0	N.D.	d	
74) 1-Methyl-4-isopropylbe...	43.778	119	4701	0.186	ppbV	90
75) 1-Methyl-2-isopropylbe...	0.000		0	N.D.	d	
76) Indan	44.499	117	480	0.026	ppbV	81
77) Indene	45.028	115	686	0.062	ppbV	95
78) 1-Methyl-3-propylbenzene	45.941	105	1102	0.033	ppbV	84
79) 1-Methyl-4-propylbenzene	46.266	105	946	0.023	ppbV #	50
80) n-Butylbenzene	0.000		0	N.D.	d	
81) 1,2-Dimethyl-4-ethylbe...	0.000		0	N.D.	d	
82) 1,2-Diethylbenzene	0.000		0	N.D.	d	
83) 1-Methyl-2-propylbenzene	47.263	105	491	0.014	ppbV #	52
84) 1,4-Dimethyl-2-ethylbe...	48.008	119	642	0.024	ppbV #	46
85) Undecane	49.727	57	4613	0.215	ppbV	81
86) 1,3-Dimethyl-4-ethylbe...	48.140	119	578	0.018	ppbV #	45
87) 1,3-Dimethyl-5-ethylbe...	48.513	119	950	0.032	ppbV #	61
88) 1,3-Dimethyl-2-ethylbe...	0.000		0	N.D.	d	
89) 1,2-Dimethyl-3-ethylbe...	49.594	119	404M6	0.014	ppbV	
90) 1,2,4,5-Tetramethylben...	50.099	119	1391	0.015	ppbV	84
91) Pentylbenzene	51.458	91	410	0.013	ppbV	76
92) Dodecane	52.728	43	97968	4.185	ppbV	97
93) Naphthalene	52.160	128	5245	0.166	ppbV	94
94) Benzothiophene	52.315	134	1281	0.019	ppbV #	17
95) MMT	0.000		0	N.D.	d	
96) Tridecane	54.597	57	28442M4	0.861	ppbV	
97) 2-Methylnaphthalene	54.566	142	1607	0.072	ppbV	85
98) 1-Methylnaphthalene	54.876	142	1065	0.043	ppbV	82

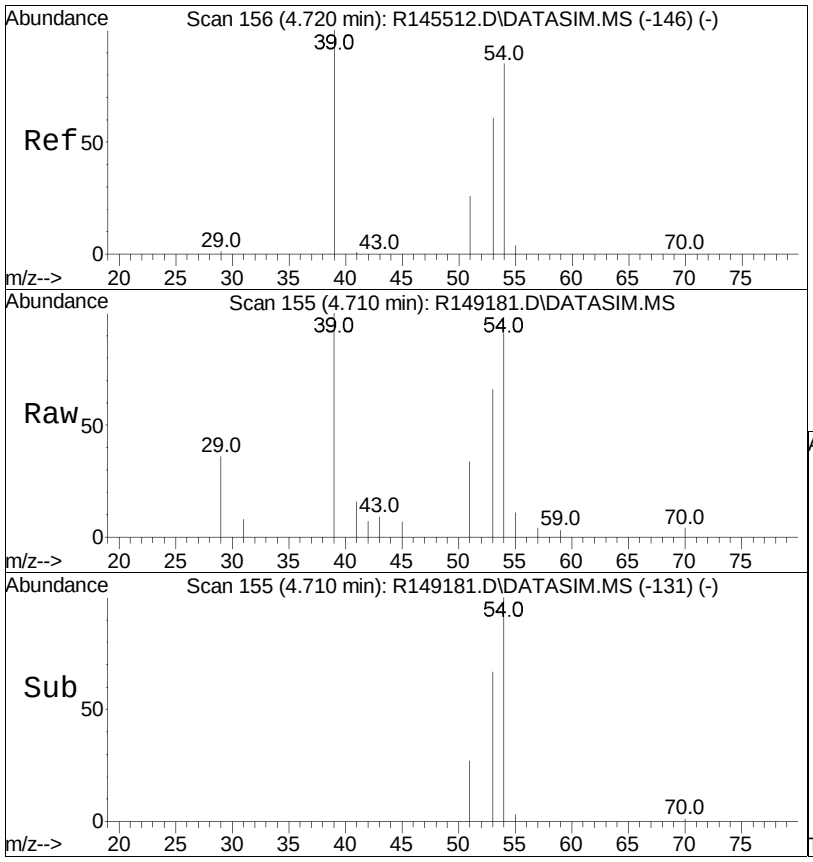
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : AIR-NF-PIANO - NF PIANO LIST161108PIANO\R149170.D

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149181.D
Acq On : 9 Nov 2016 12:04 am
Operator : AIRPIANO1:RY
Sample : L1634001-06,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 10 12:14:56 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

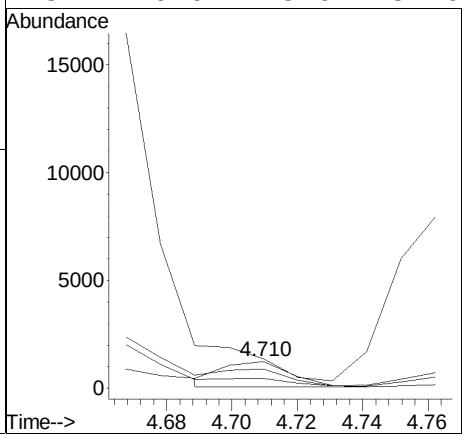


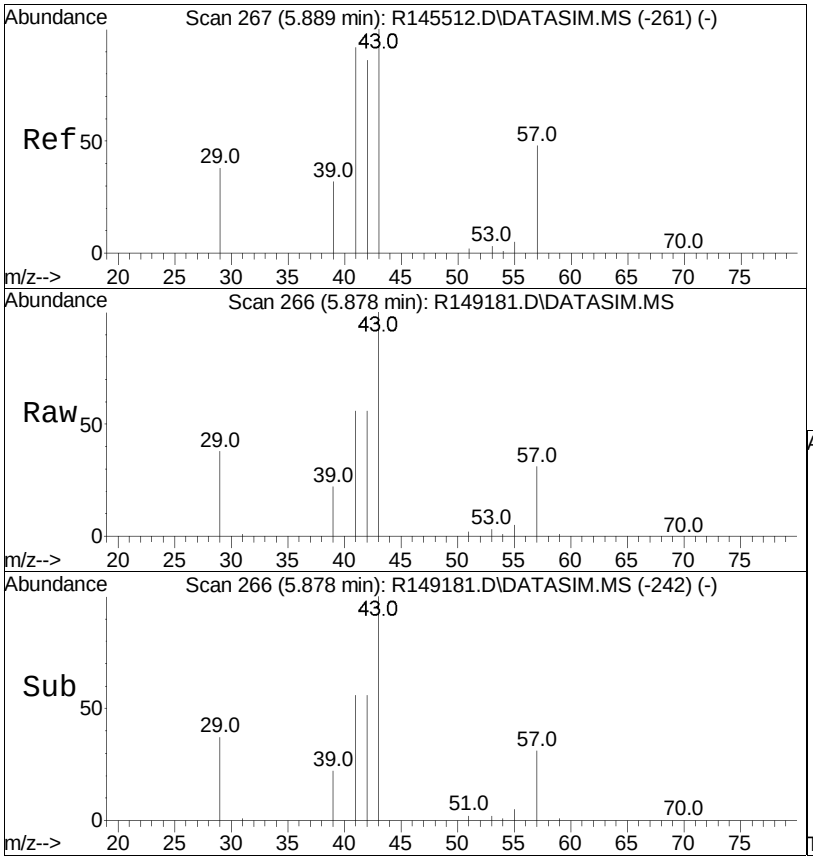


#2
1,3-butadiene
Concen: 0.25 ppbV
RT: 4.710 min Scan# 155
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 54 Resp: 1687

Ion	Ratio	Lower	Upper
54	100		
39	0.0	100.0	150.0#
53	0.0	57.0	85.6#
51	0.0	25.0	37.6#

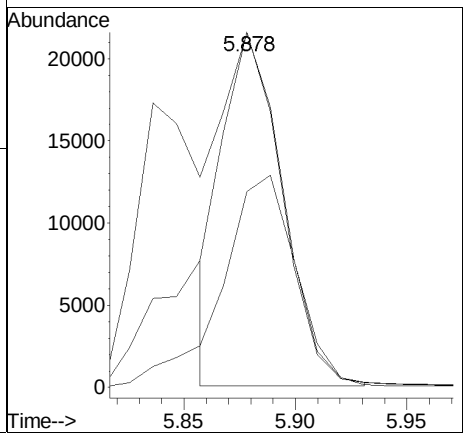


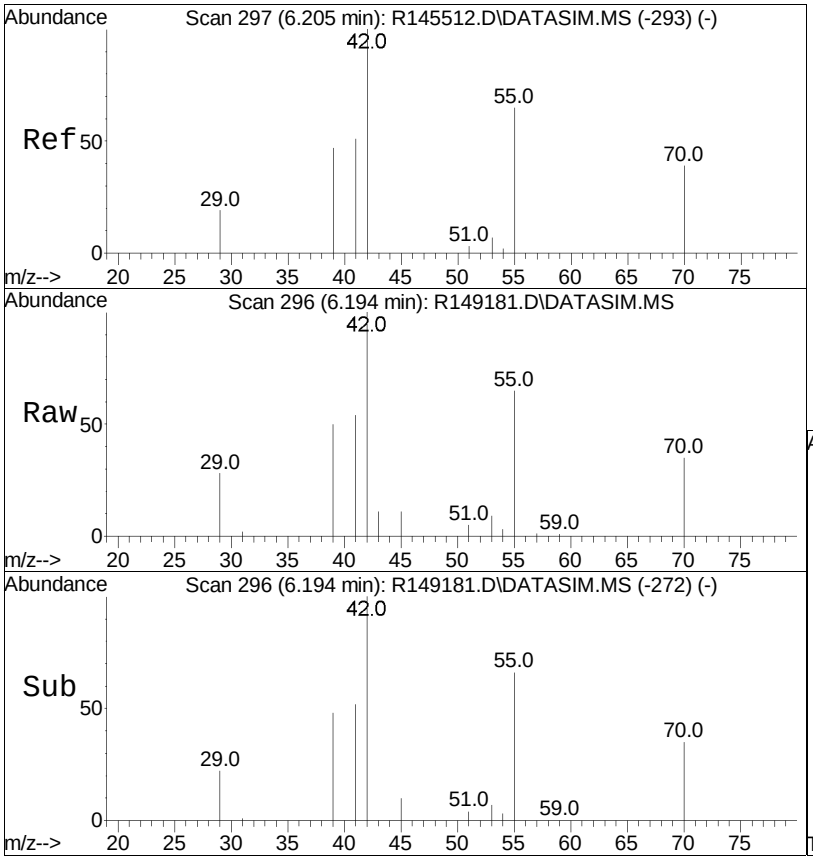


#4
Isopentane
Concen: 3.20 ppbV m
RT: 5.878 min Scan# 266
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 41 Resp: 40119

Ion	Ratio	Lower	Upper
41	100		
57	55.1	31.8	71.8
42	99.8	76.7	116.7

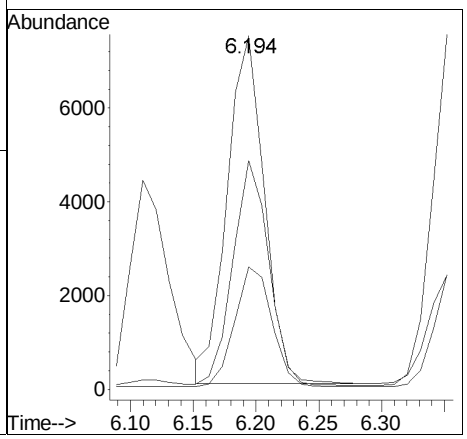


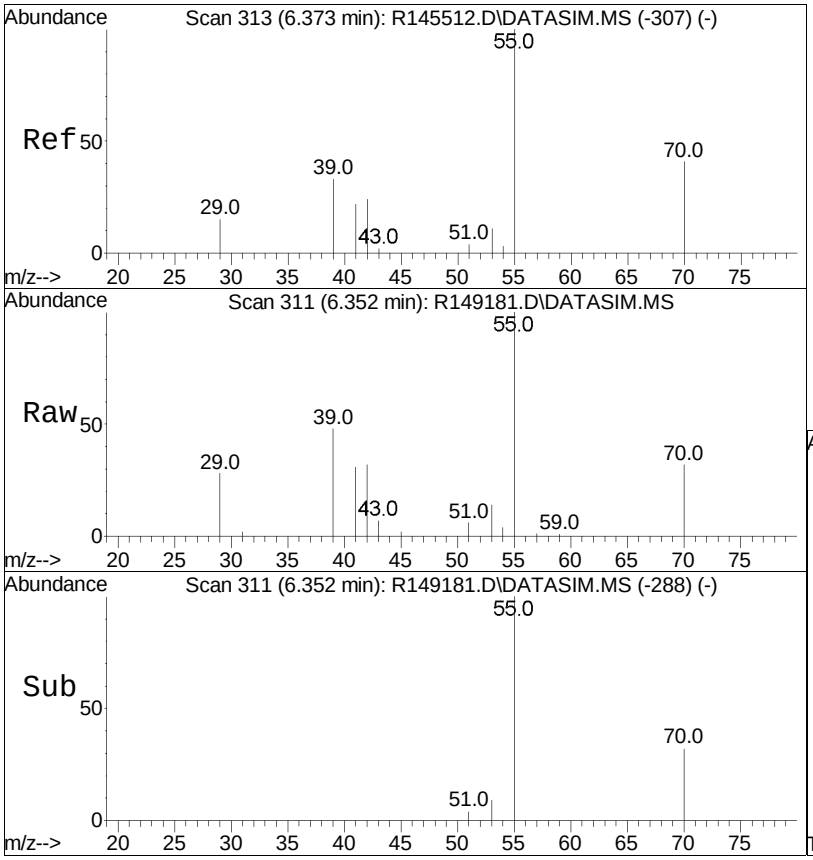


#5
1-Pentene
Concen: 1.07 ppbV
RT: 6.194 min Scan# 296
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 42 Resp: 15203

Ion	Ratio	Lower	Upper
42	100		
55	64.8	43.2	83.2
70	34.7	13.6	53.6

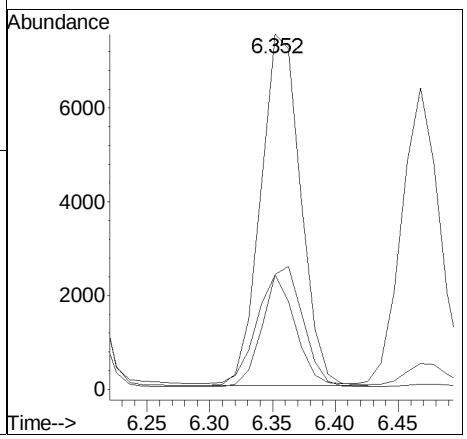


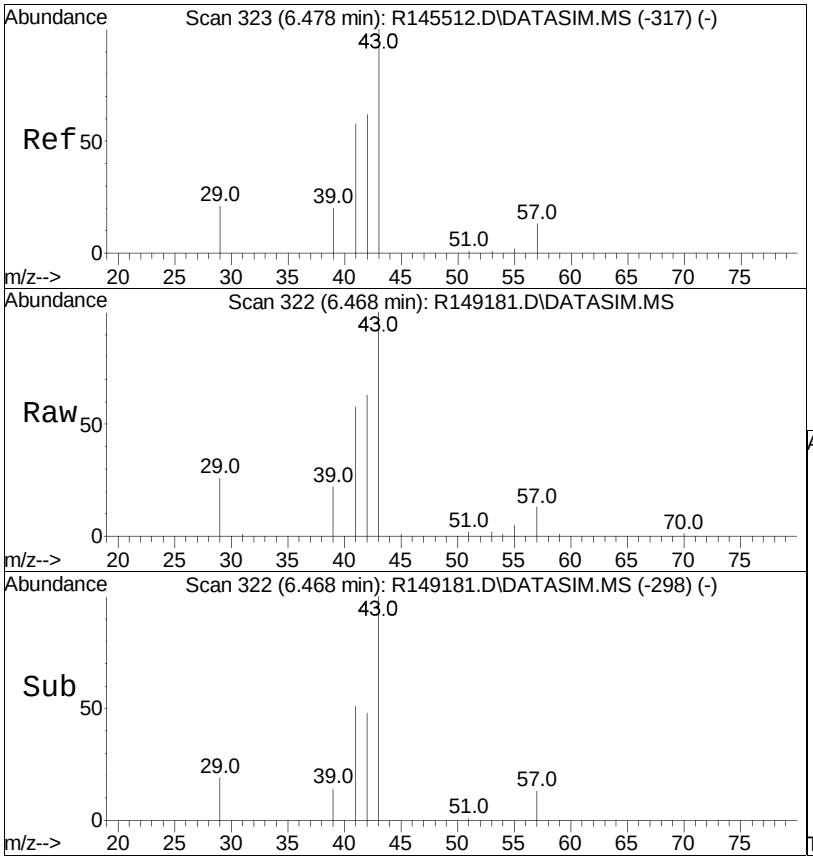


#6
2-Methyl-1-butene
Concen: 0.99 ppbV
RT: 6.352 min Scan# 311
Delta R.T. -0.011 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 55 Resp: 16532

Ion	Ratio	Lower	Upper
55	100		
70	32.3	16.1	56.1
42	32.2	5.4	45.4

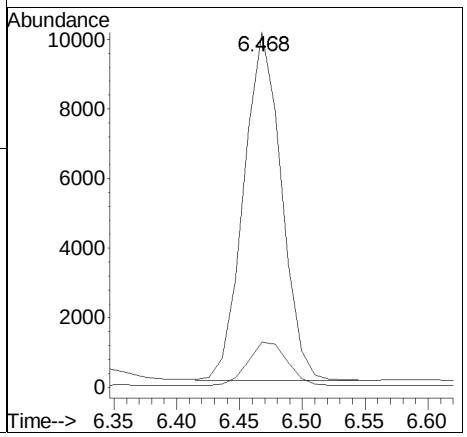


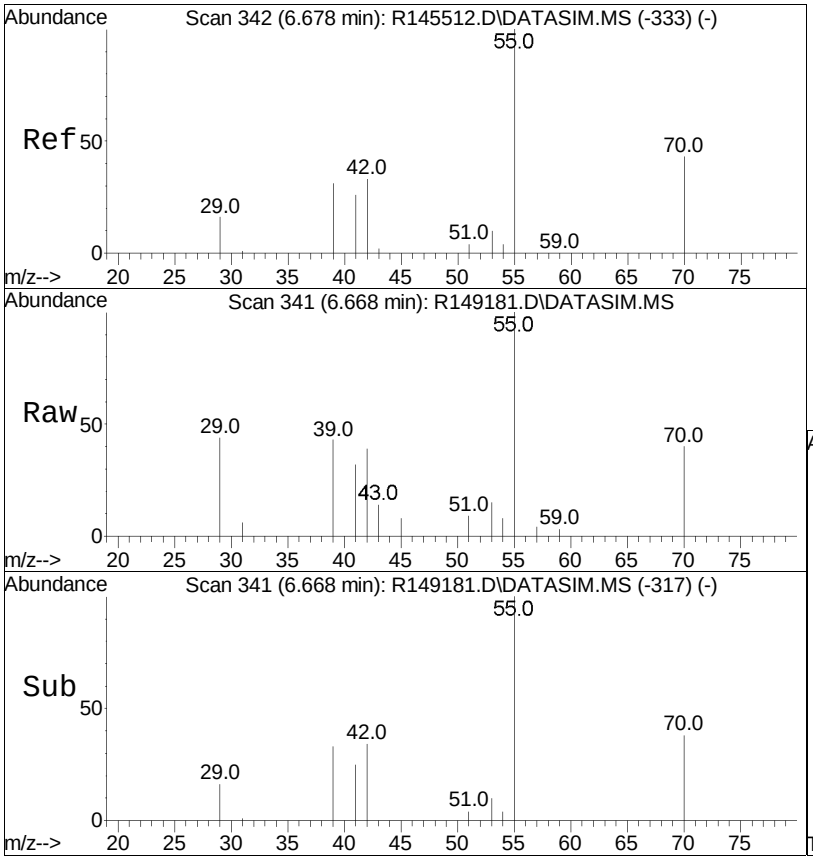


#7
Pentane
Concen: 0.97 ppbV
RT: 6.468 min Scan# 322
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 43 Resp: 20853

Ion	Ratio	Lower	Upper
43	100		
57	12.8	0.0	32.2

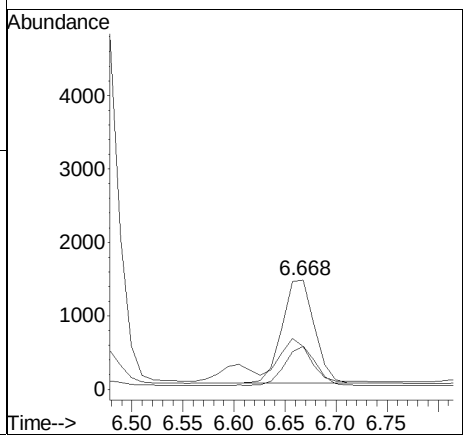


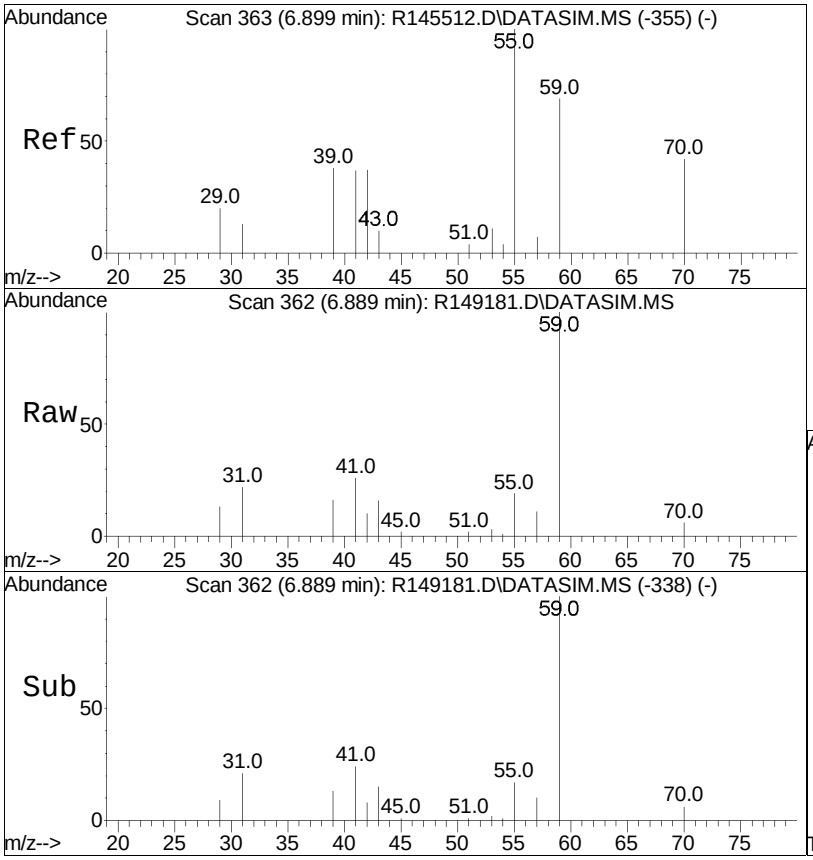


#9
2-Pentene (trans)
Concen: 0.19 ppbV
RT: 6.668 min Scan# 341
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 55 Resp: 3109

Ion	Ratio	Lower	Upper
55	100		
70	39.6	17.7	57.7
42	39.2	14.5	54.5

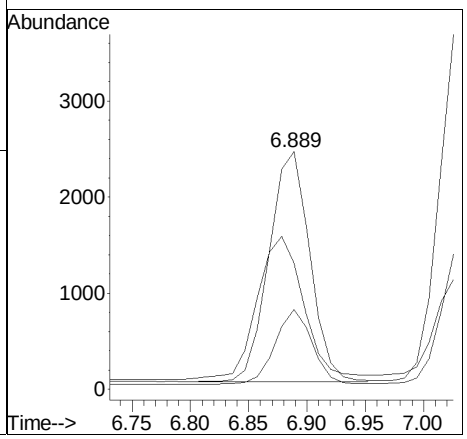


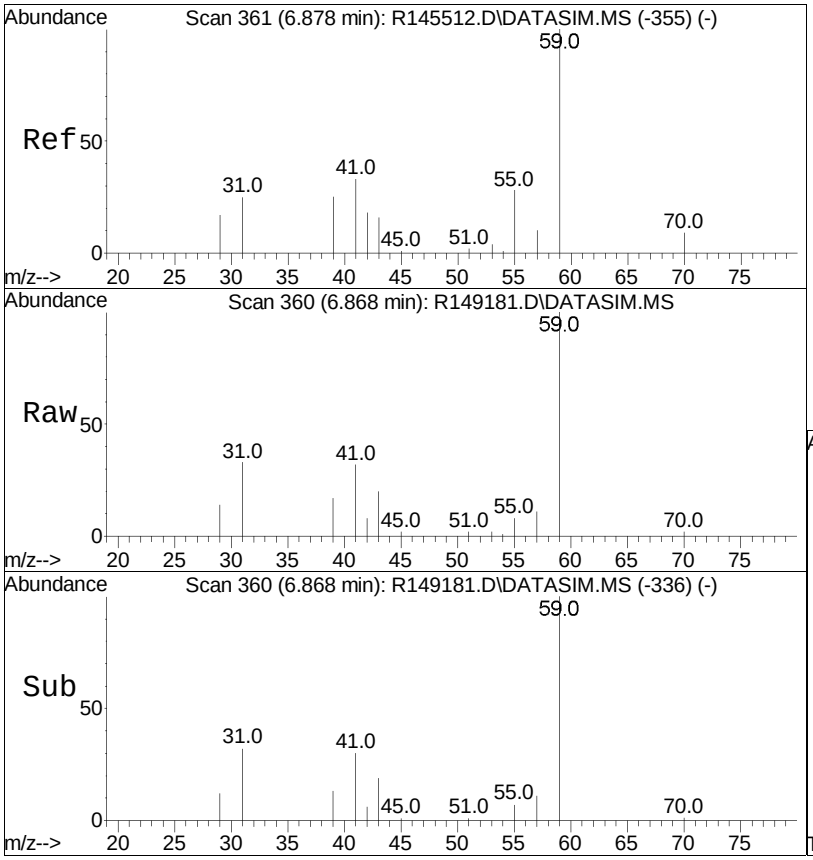


#10
2-Pentene (cis)
Concen: 0.39 ppbV
RT: 6.889 min Scan# 362
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 55 Resp: 5809

Ion	Ratio	Lower	Upper
55	100		
70	33.6	16.4	56.4
42	53.1	19.4	59.4

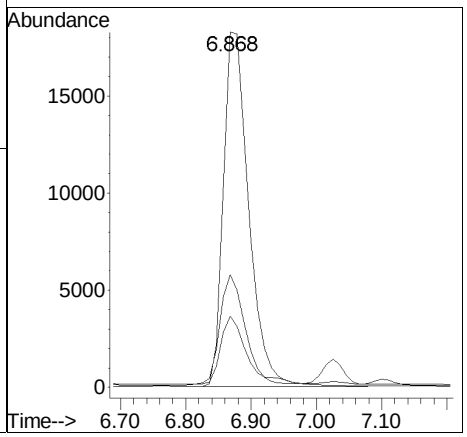


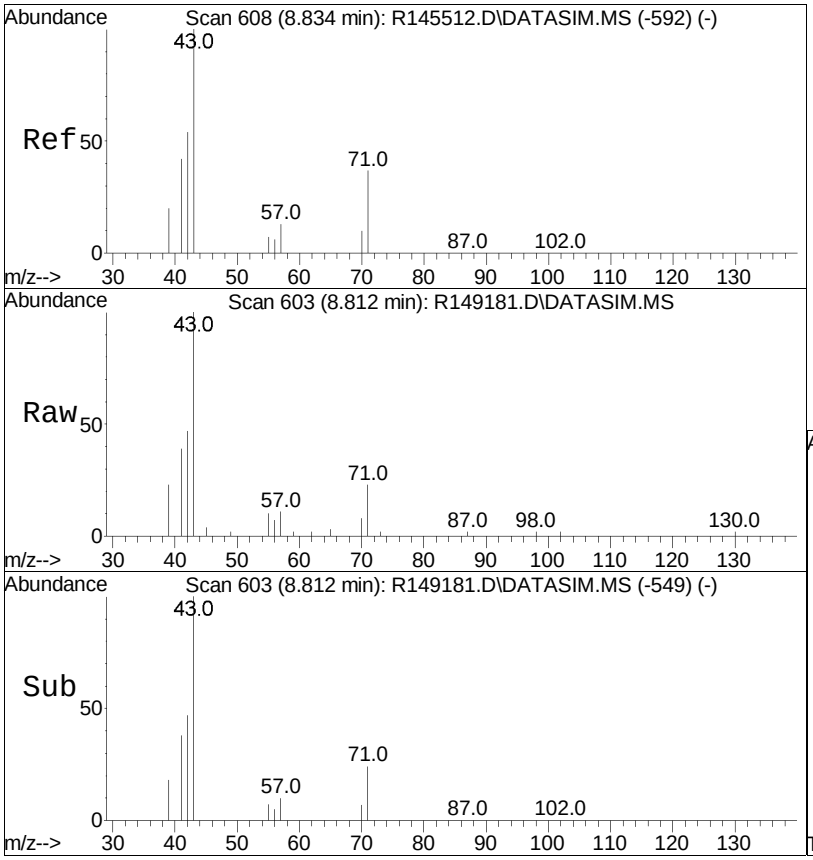


#11
Tertiary butanol
Concen: 2.03 ppbV
RT: 6.868 min Scan# 360
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 59 Resp: 49443

Ion	Ratio	Lower	Upper
59	100		
41	31.7	20.2	60.2
43	20.0	0.0	38.4

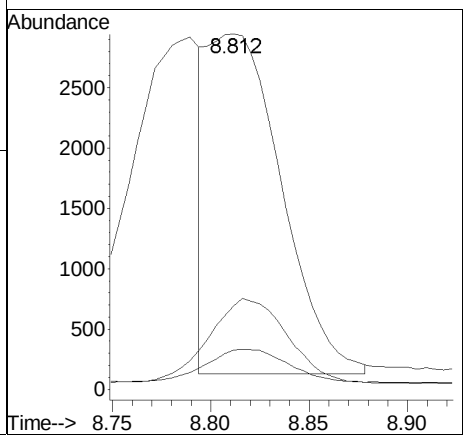


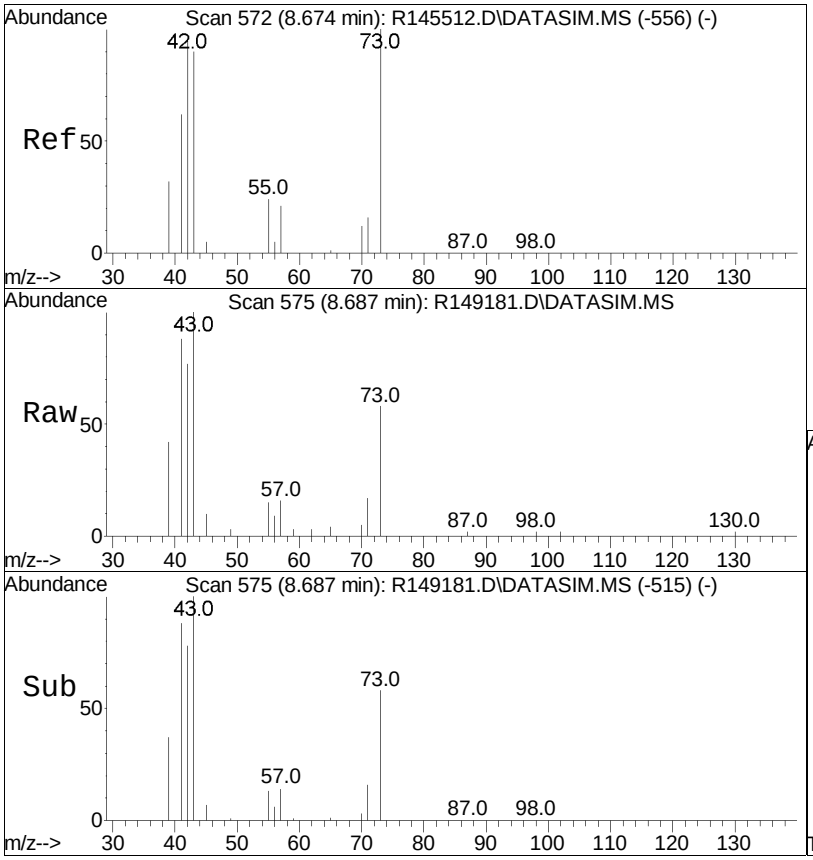


#14
2-Methylpentane
Concen: 0.31 ppbV m
RT: 8.812 min Scan# 603
Delta R.T. -0.009 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 43 Resp: 7409

Ion	Ratio	Lower	Upper
43	100		
71	23.5	8.8	48.8
57	11.1	0.0	31.6

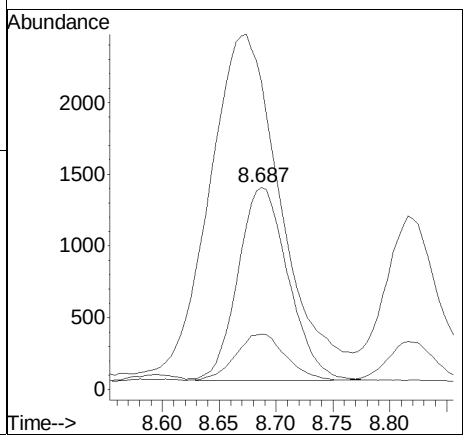


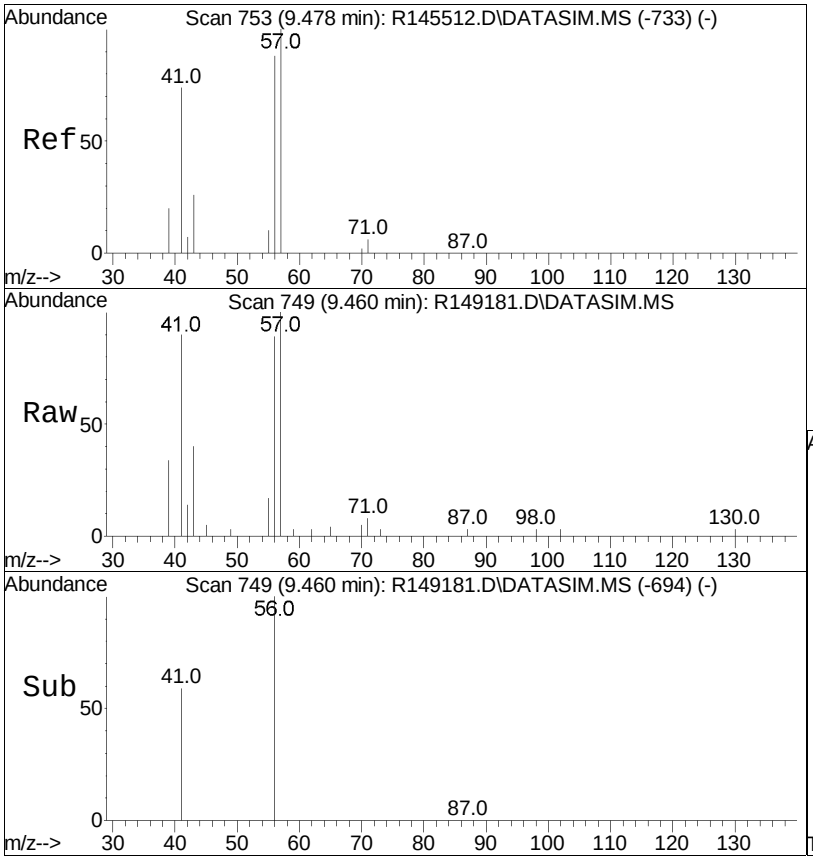


#15
MTBE
Concen: 0.17 ppbV
RT: 8.687 min Scan# 575
Delta R.T. 0.018 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 73 Resp: 4142

Ion	Ratio	Lower	Upper
73	100		
41	152.2	54.6	94.6#
57	27.5	3.7	43.7

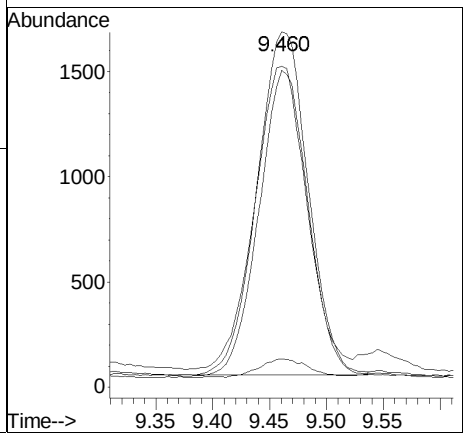


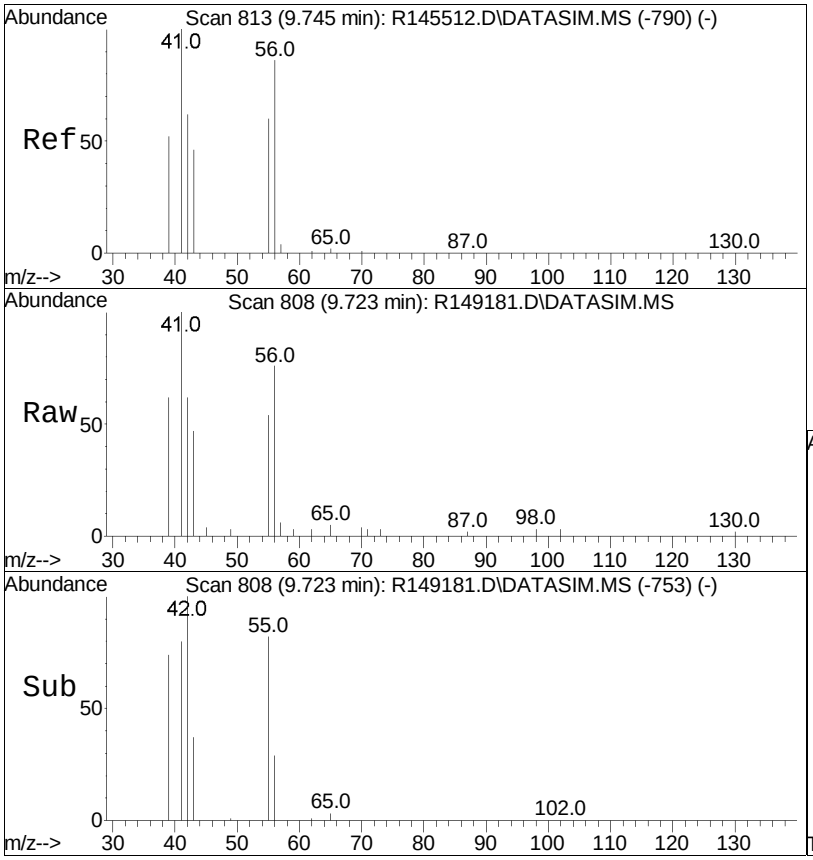


#16
3-Methylpentane
Concen: 0.32 ppbV
RT: 9.460 min Scan# 749
Delta R.T. -0.004 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 57 Resp: 5110

Ion	Ratio	Lower	Upper
57	100		
56	89.2	69.5	109.5
71	8.1	0.0	25.5
41	90.3	63.4	103.4

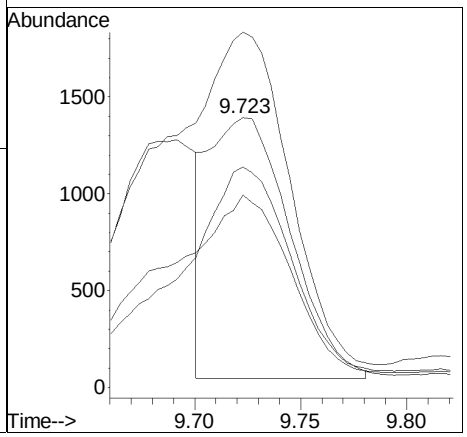


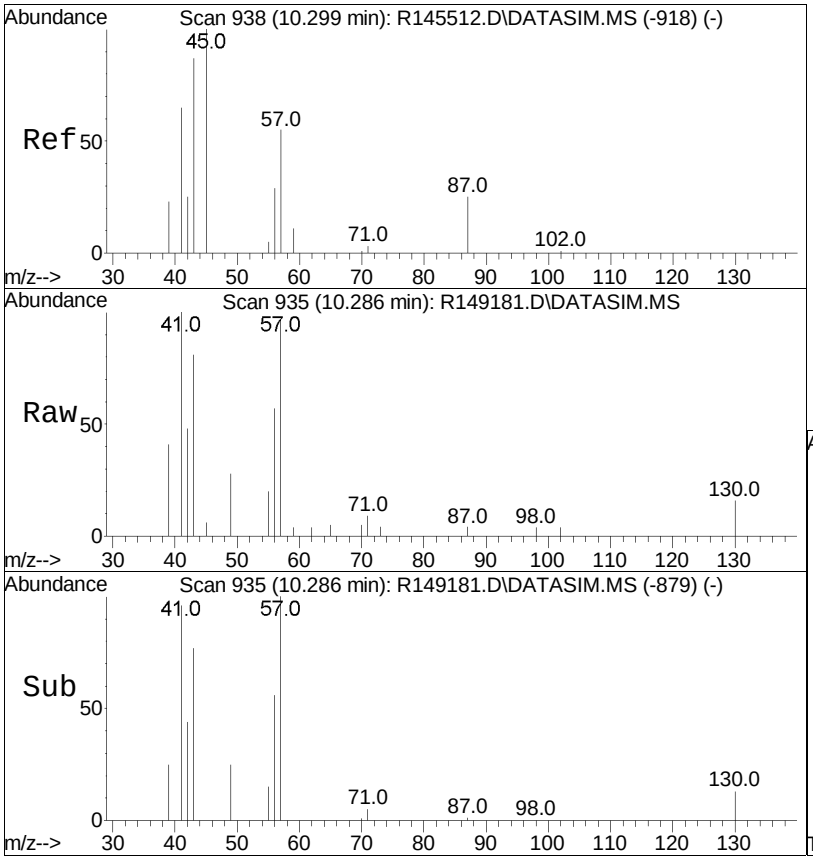


#17
1-Hexene
Concen: 0.39 ppbV m
RT: 9.723 min Scan# 808
Delta R.T. -0.004 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 56 Resp: 3610

Ion	Ratio	Lower	Upper
56	100		
41	131.7	111.5	151.5
55	71.4	51.2	91.2
42	81.7	62.3	102.3

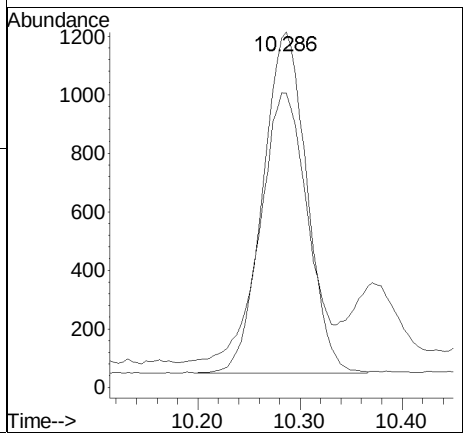


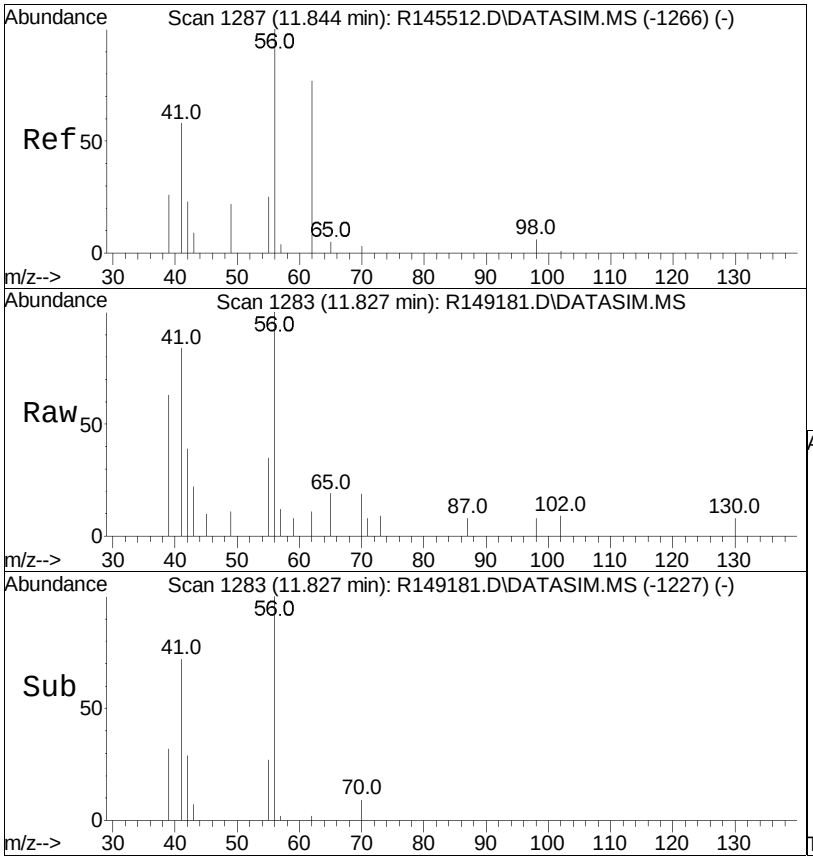


#18
Hexane
Concen: 0.25 ppbV
RT: 10.286 min Scan# 935
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 57 Resp: 3471

Ion	Ratio	Lower	Upper
57	100		
43	82.8	114.8	154.8#

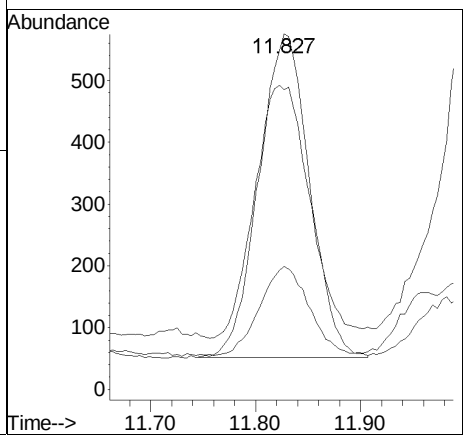


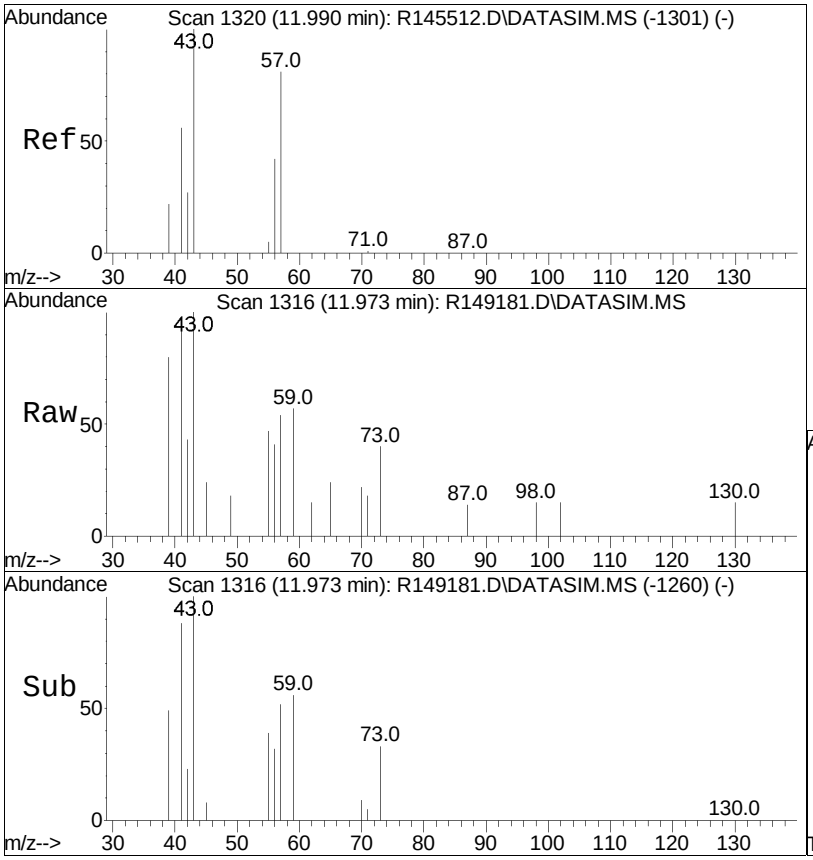


#23
Methylcyclopentane
Concen: 0.10 ppbV
RT: 11.827 min Scan# 1283
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 56 Resp: 1754

Ion	Ratio	Lower	Upper
56	100		
55	34.6	6.8	46.8
41	84.3	47.8	87.8

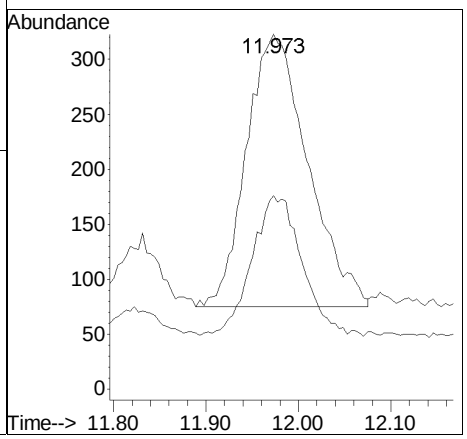


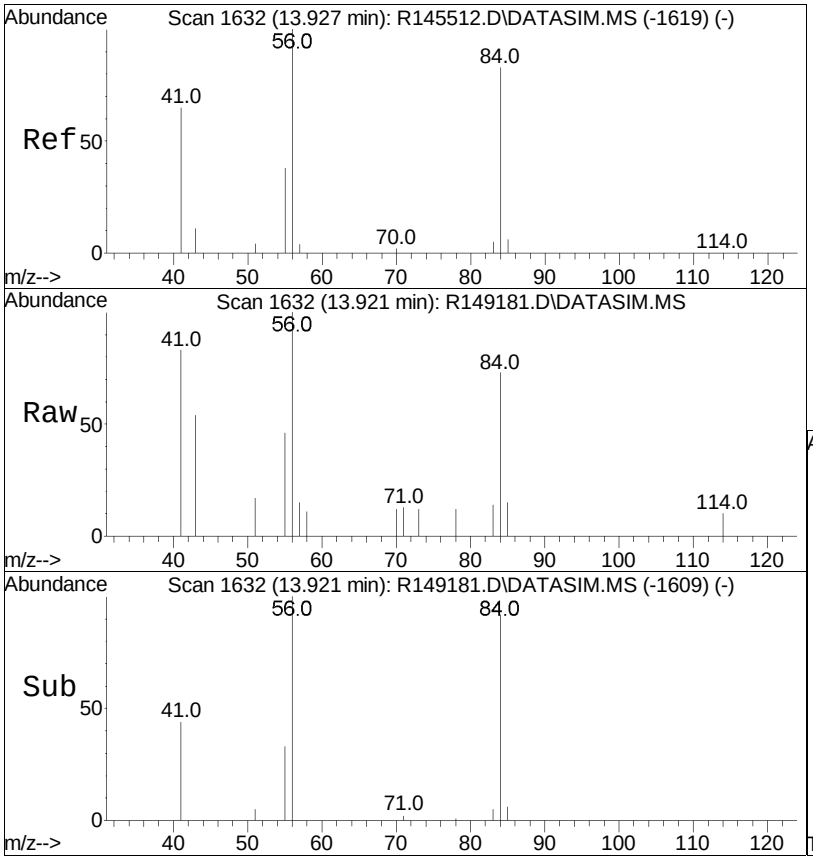


#24
2,4-Dimethylpentane
Concen: 0.05 ppbV
RT: 11.973 min Scan# 1316
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 43 Resp: 1147

Ion	Ratio	Lower	Upper
43	100		
57	54.5	50.5	90.5

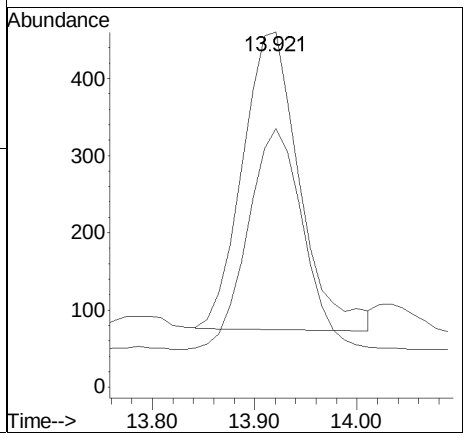


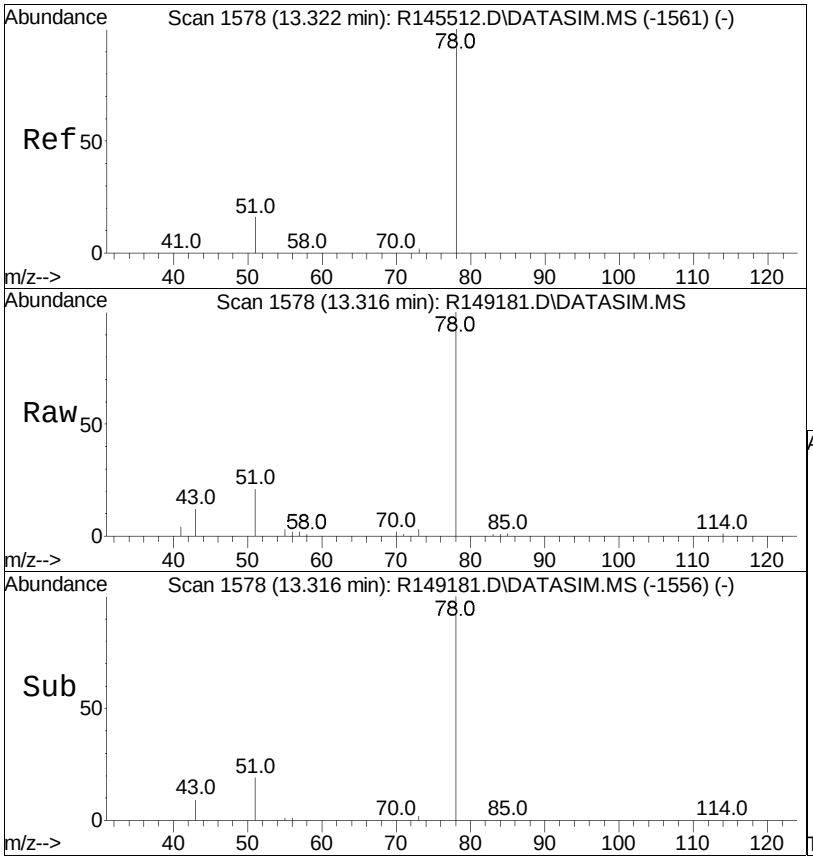


#26
Cyclohexane
Concen: 0.11 ppbV
RT: 13.921 min Scan# 1632
Delta R.T. 0.011 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 56 Resp: 1489

Ion	Ratio	Lower	Upper
56	100		
84	72.8	47.9	87.9

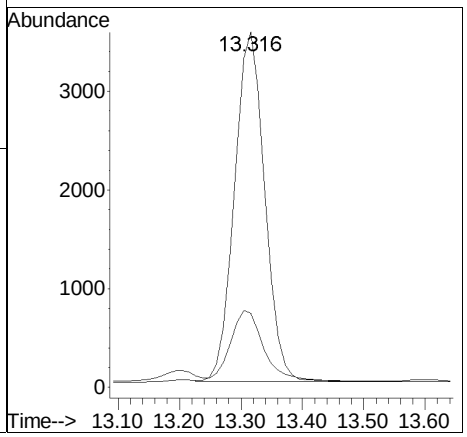


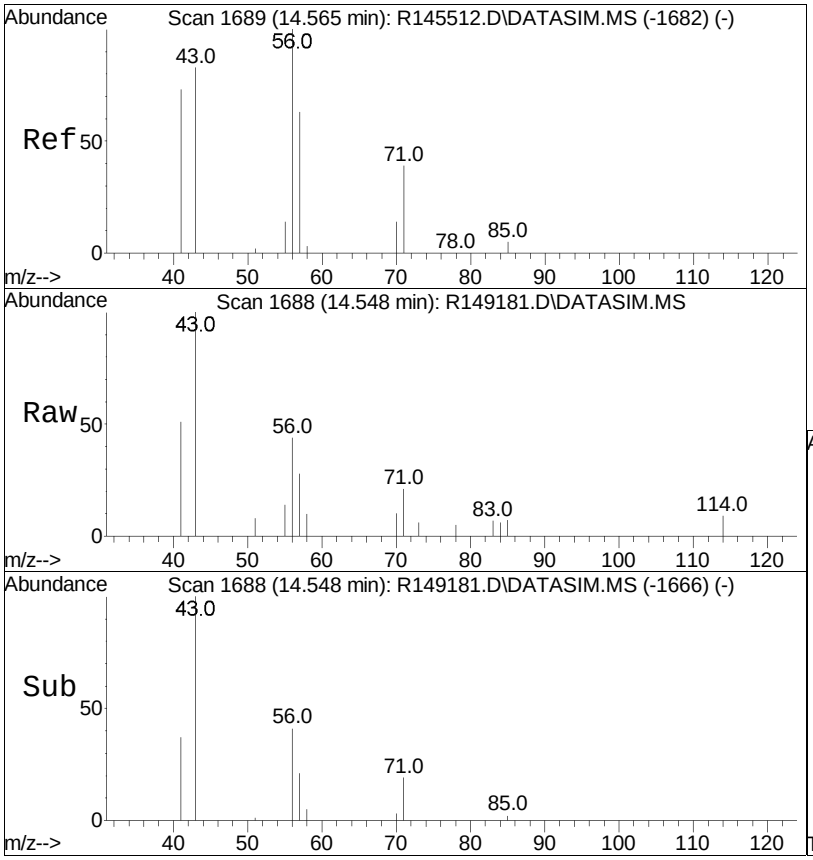


#29
Benzene
Concen: 0.47 ppbV
RT: 13.316 min Scan# 1578
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 78 Resp: 12109

Ion	Ratio	Lower	Upper
78	100		
51	20.9	0.0	39.4

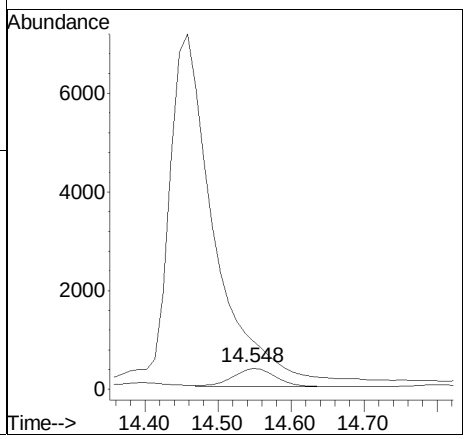


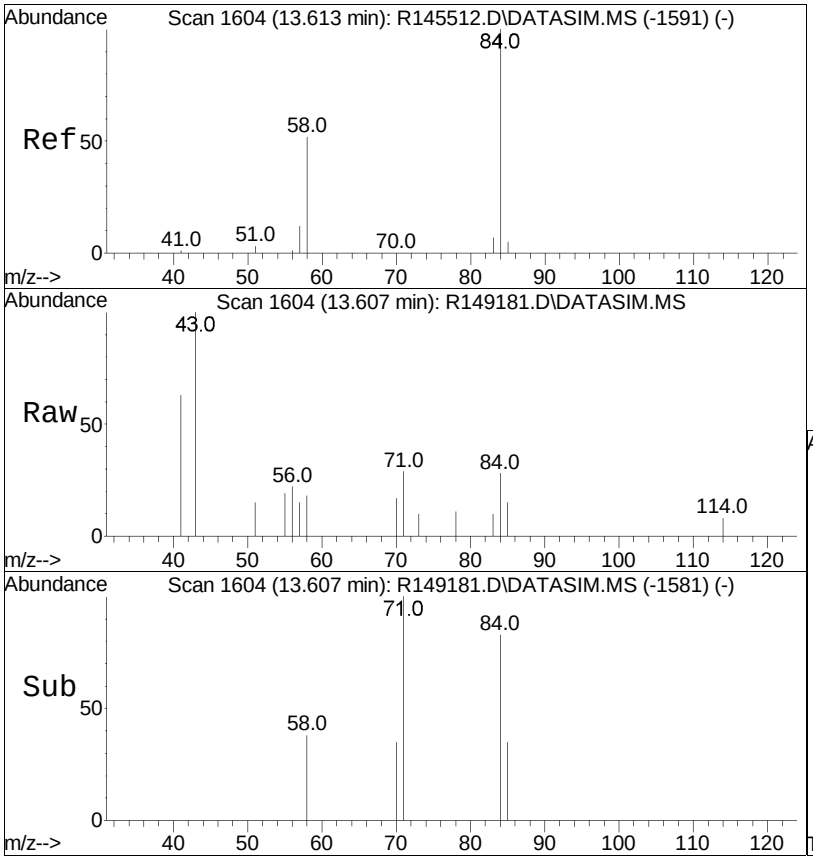


#30
2,3-Dimethylpentane
Concen: 0.09 ppbV
RT: 14.548 min Scan# 1688
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 56 Resp: 1505

Ion	Ratio	Lower	Upper
56	100		
43	229.7	72.3	112.3#

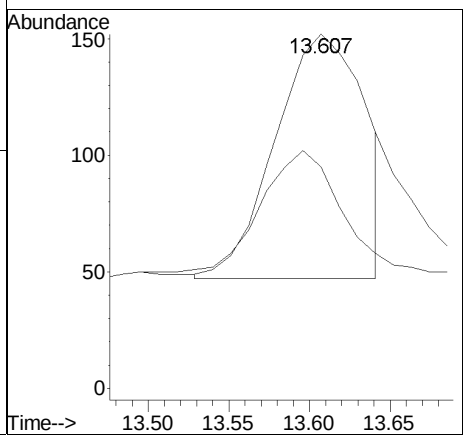


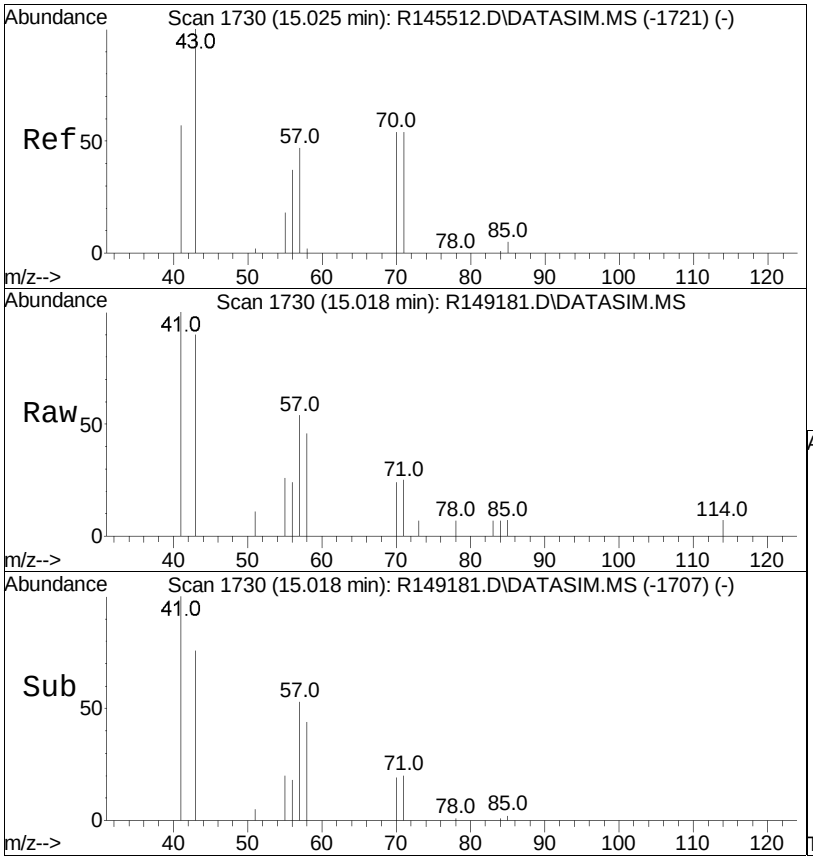


#31
Thiophene
Concen: 0.04 ppbV m
RT: 13.607 min Scan# 1604
Delta R.T. 0.011 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 84 Resp: 407

Ion	Ratio	Lower	Upper
84	100		
58	62.5	46.4	86.4

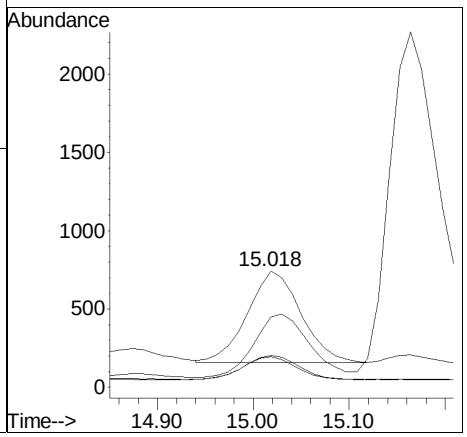


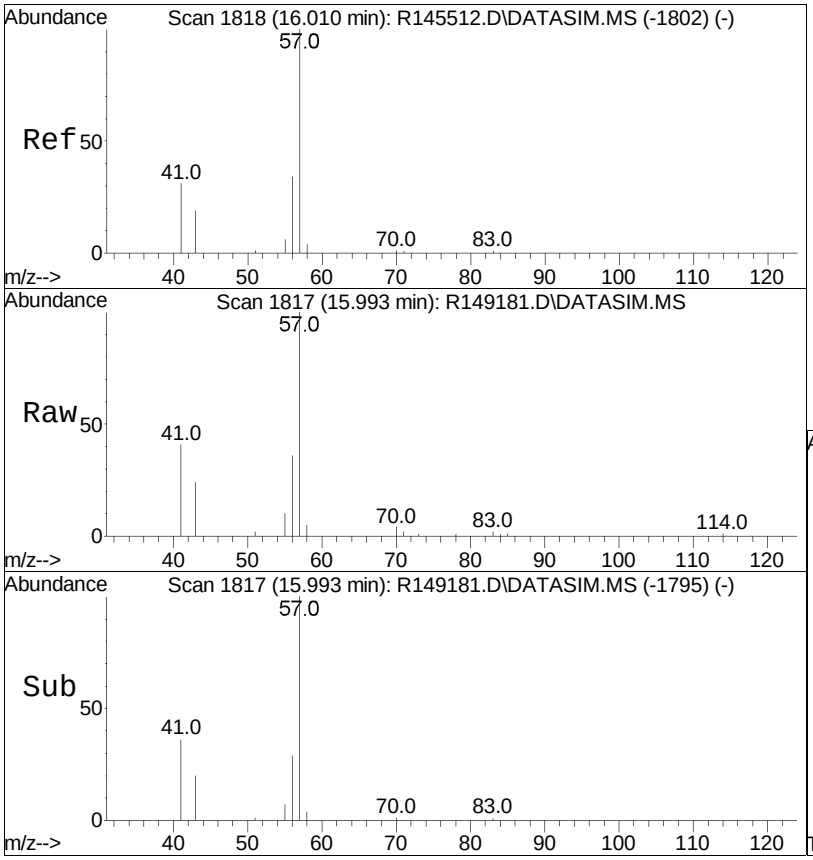


#32
3-Methylhexane
Concen: 0.13 ppbV
RT: 15.018 min Scan# 1730
Delta R.T. 0.011 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 43 Resp: 2268

Ion	Ratio	Lower	Upper
43	100		
57	60.6	23.4	63.4
70	26.4	22.5	62.5
71	27.5	22.4	62.4

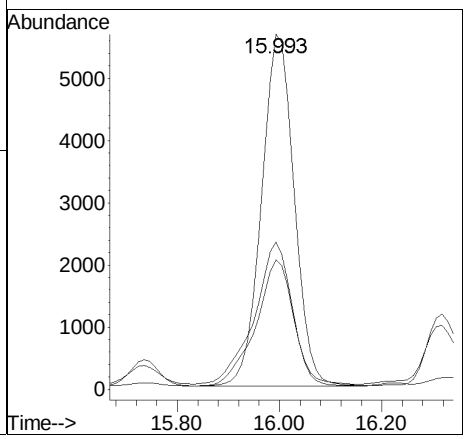


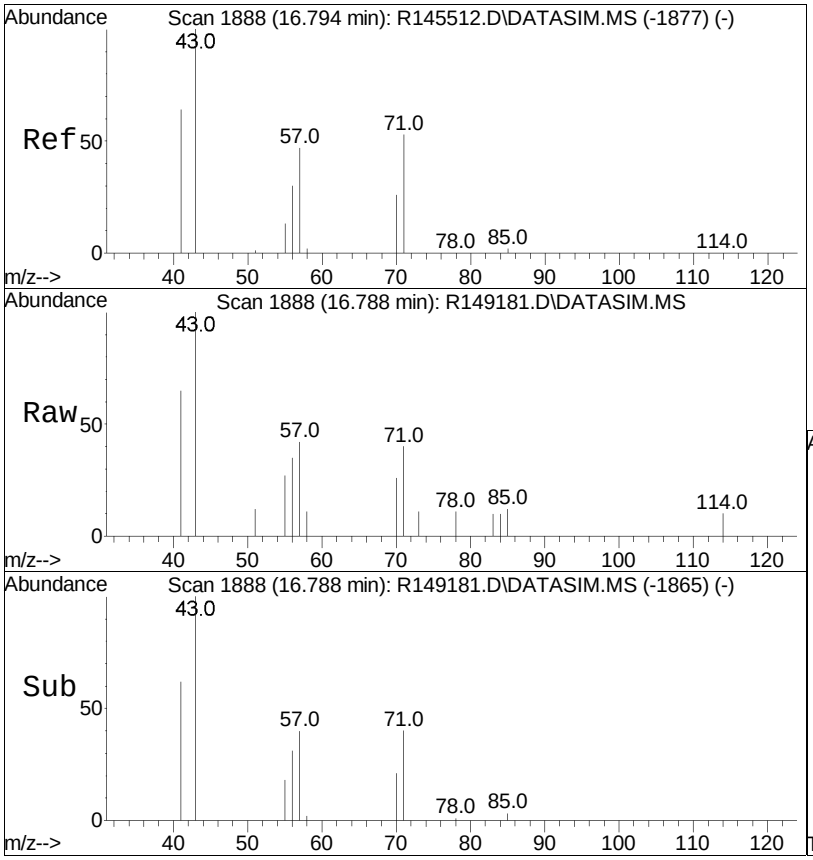


#35
Isooctane
Concen: 0.62 ppbV
RT: 15.993 min Scan# 1817
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 57 Resp: 25076

Ion	Ratio	Lower	Upper
57	100		
56	36.4	14.9	54.9
41	41.5	16.0	56.0

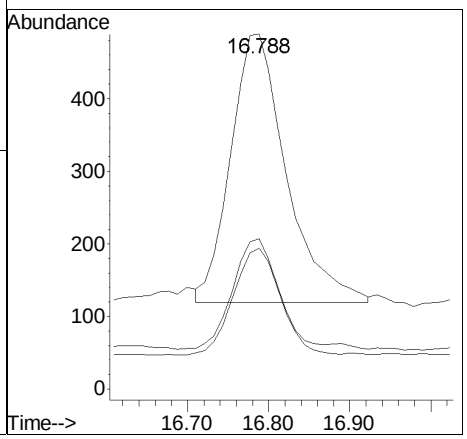


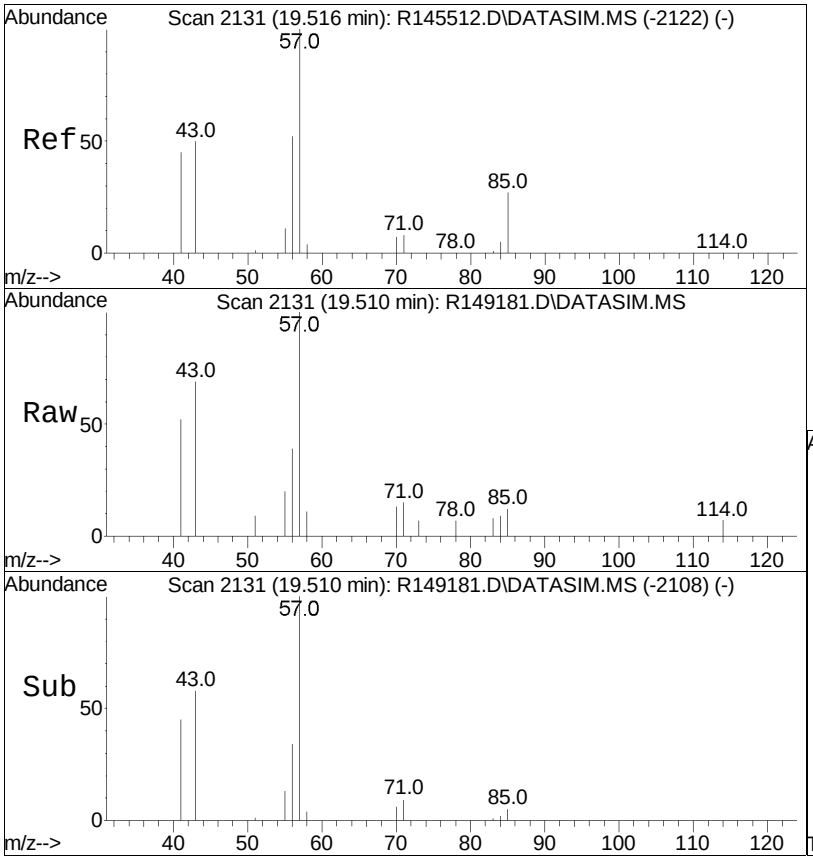


#36
Heptane
Concen: 0.10 ppbV m
RT: 16.788 min Scan# 1888
Delta R.T. 0.011 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 43 Resp: 1768

Ion	Ratio	Lower	Upper
43	100		
57	42.3	23.3	63.3
71	39.7	21.1	61.1

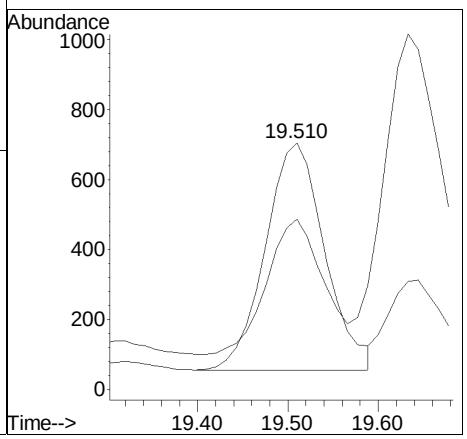


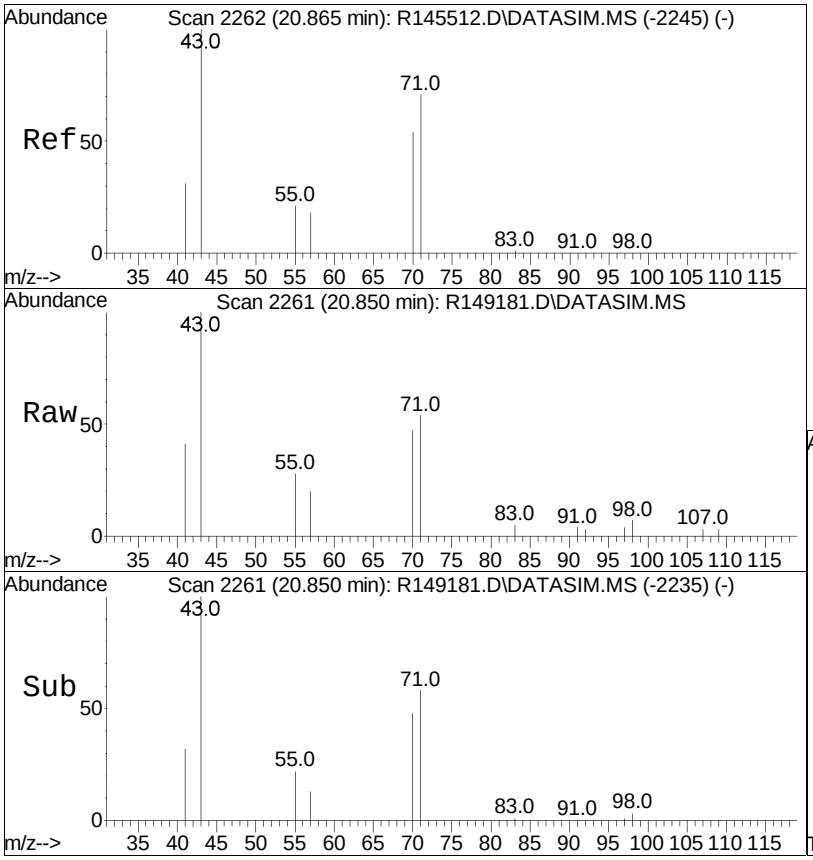


#39
2,4-Dimethyhexane / 2,2,3-TMP
Concen: 0.12 ppbV
RT: 19.510 min Scan# 2131
Delta R.T. 0.011 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 57 Resp: 2960

Ion	Ratio	Lower	Upper
57	100		
43	69.1	36.1	76.1

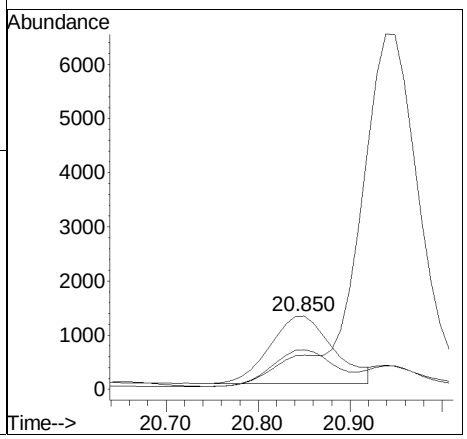


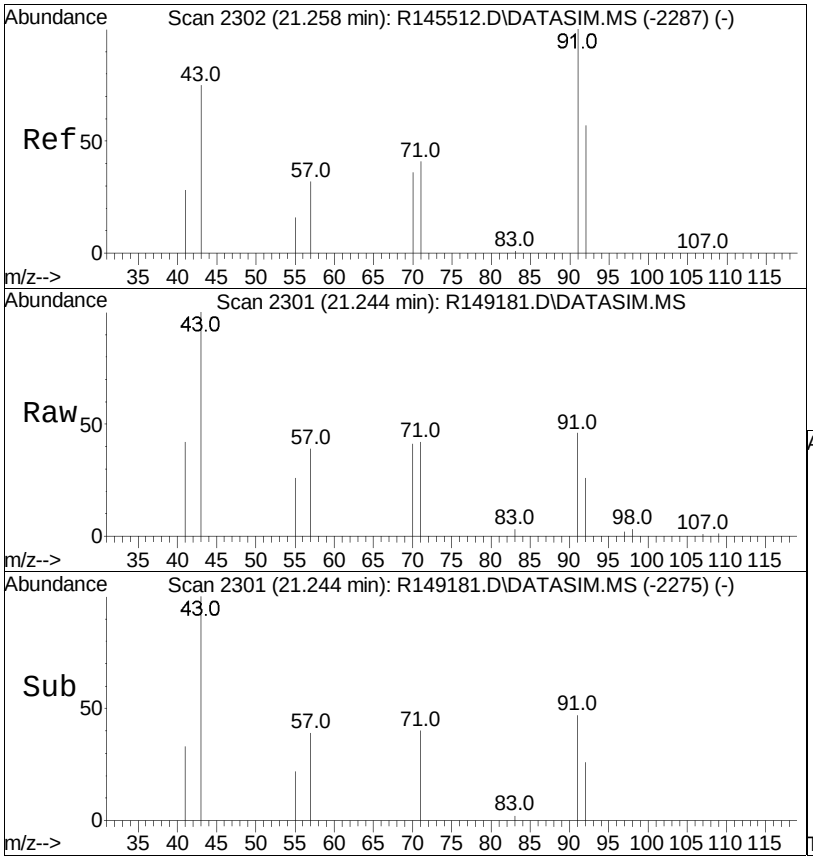


#40
2,3,4-Trimethylpentane
Concen: 0.21 ppbV
RT: 20.850 min Scan# 2261
Delta R.T. 0.010 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 43 Resp: 5993

Ion	Ratio	Lower	Upper
43	100		
71	54.2	34.6	74.6
70	46.7	23.3	63.3

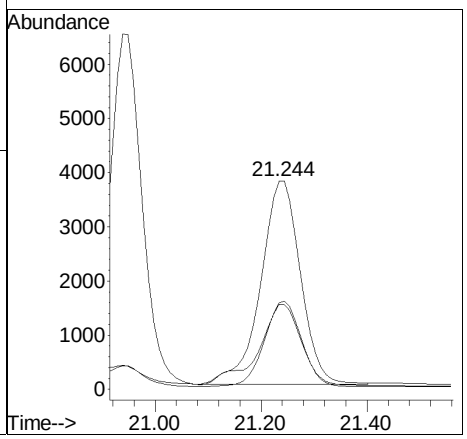


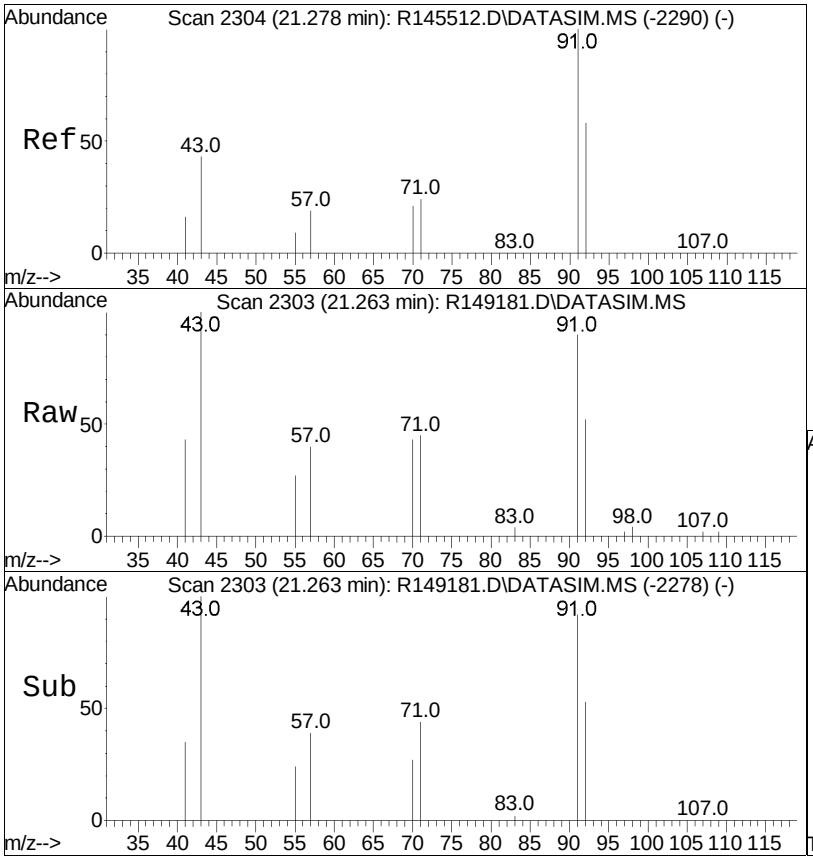


#41
2,3,3-Trimethylpentane
Concen: 0.75 ppbV
RT: 21.244 min Scan# 2301
Delta R.T. 0.010 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 43 Resp: 19663

Ion	Ratio	Lower	Upper
43	100		
71	42.4	22.4	62.4
70	40.7	18.7	58.7

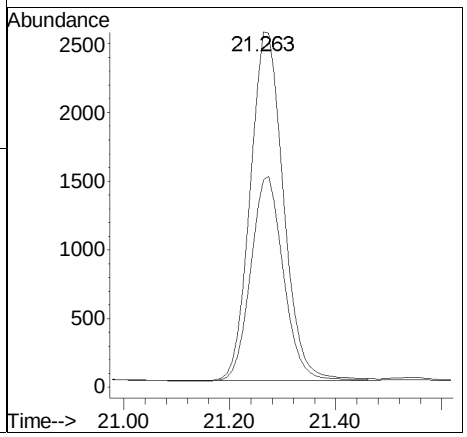


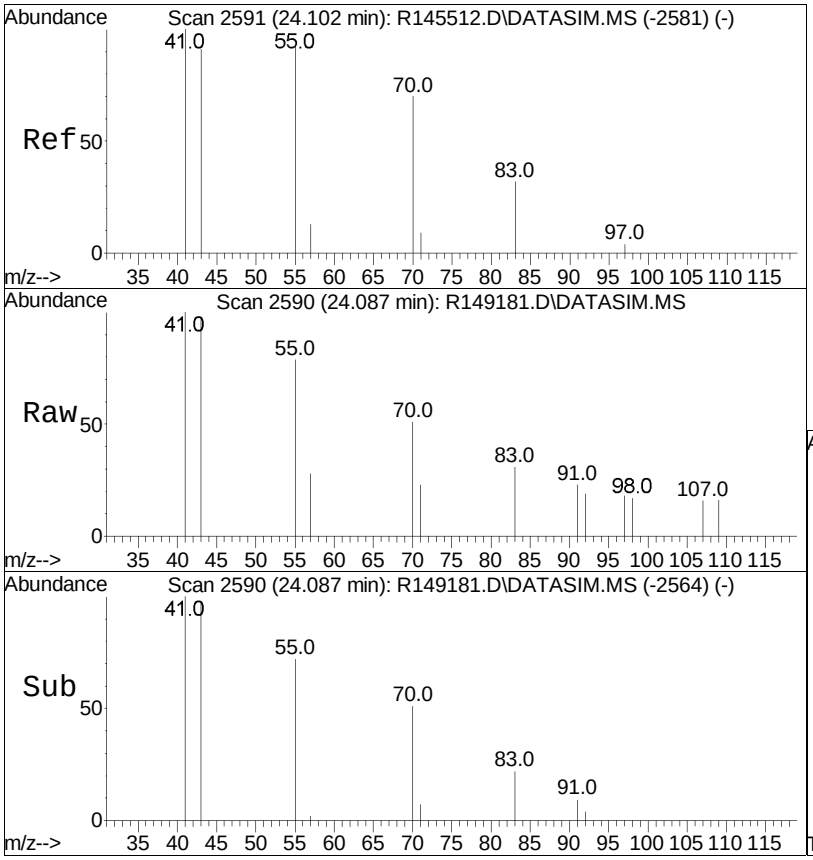


#47
Toluene
Concen: 0.37 ppbV
RT: 21.263 min Scan# 2303
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 91 Resp: 11046

Ion	Ratio	Lower	Upper
91	100		
92	58.4	37.6	77.6

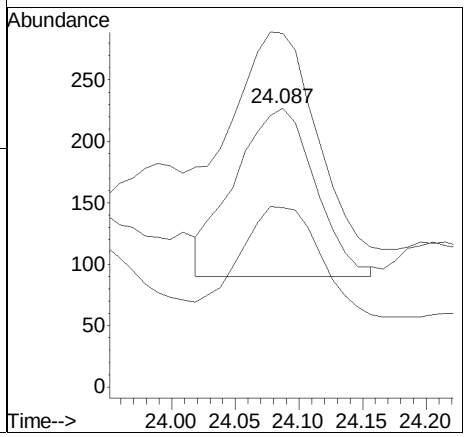


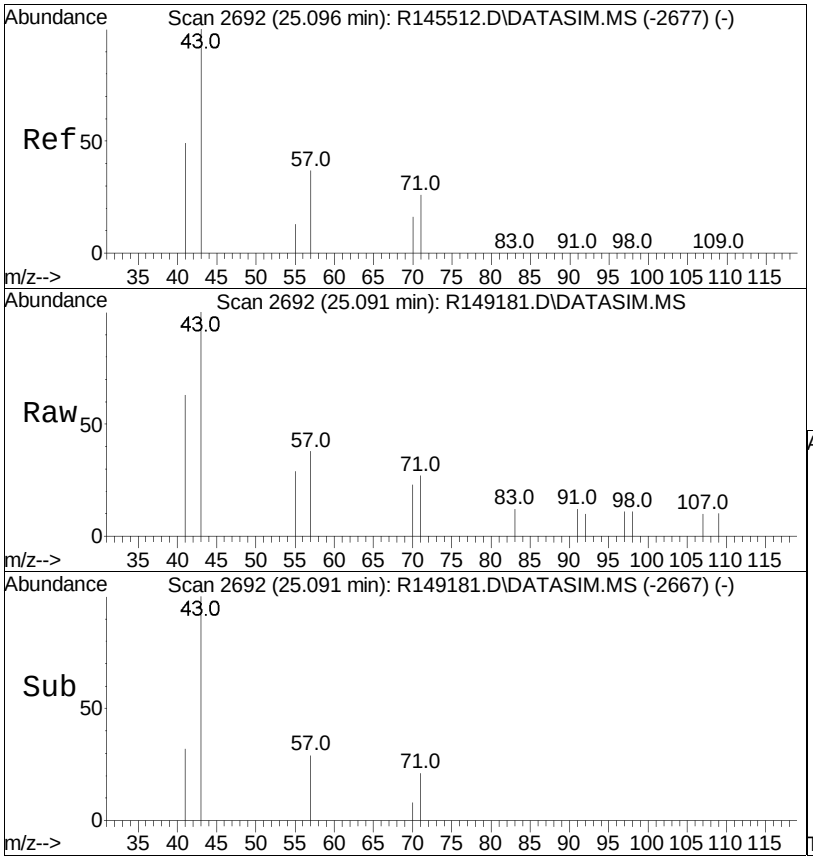


#50
1-Octene
Concen: 0.07 ppbV m
RT: 24.087 min Scan# 2590
Delta R.T. 0.010 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 55 Resp: 602

Ion	Ratio	Lower	Upper
55	100		
41	126.9	102.4	142.4
70	64.3	45.2	85.2

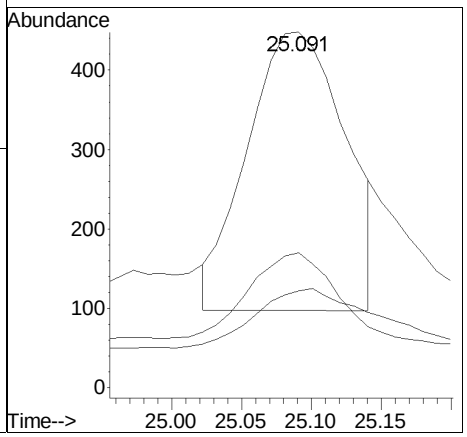


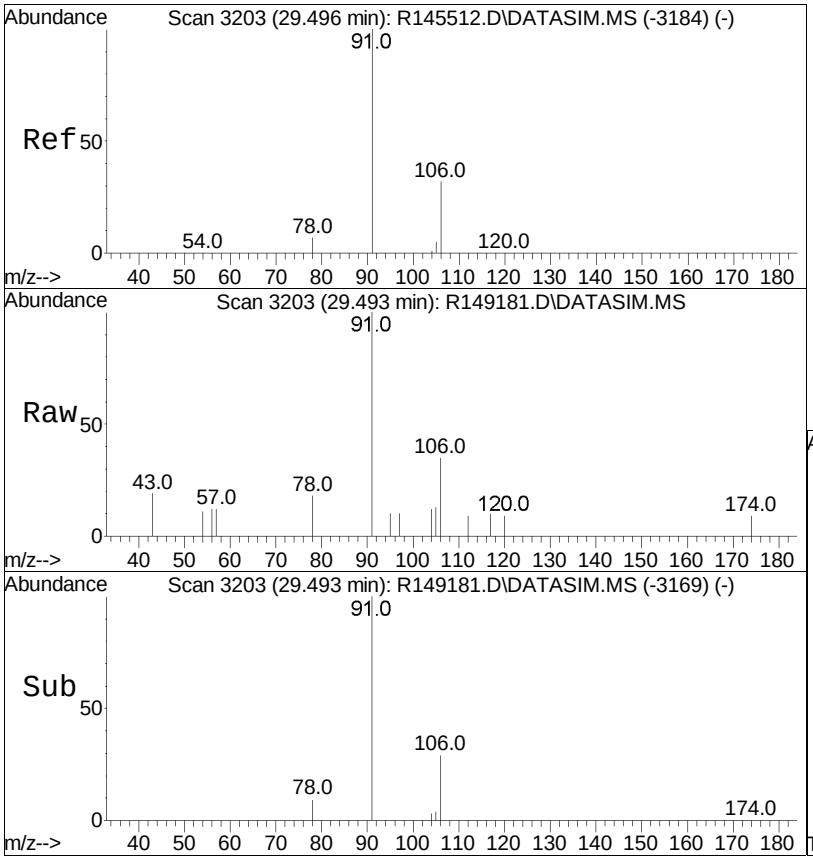


#52
Octane
Concen: 0.07 ppbV m
RT: 25.091 min Scan# 2692
Delta R.T. 0.010 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 43 Resp: 1705

Ion	Ratio	Lower	Upper
43	100		
57	37.9	13.6	53.6
71	27.2	0.9	40.9

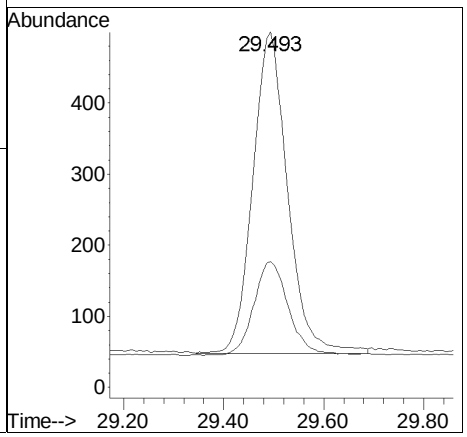


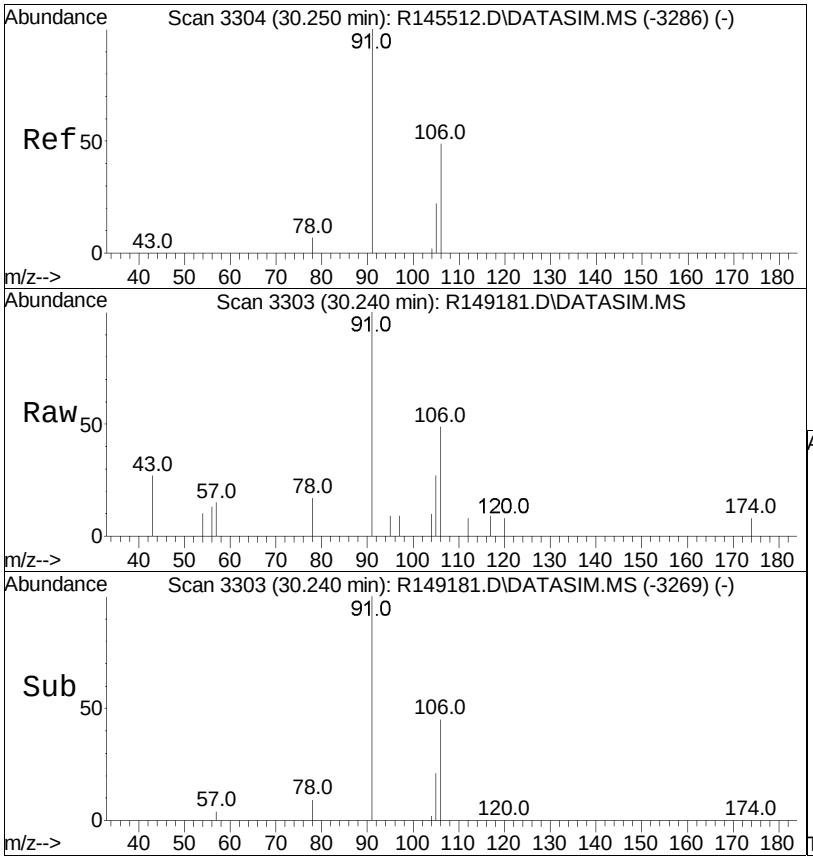


#55
Ethylbenzene
Concen: 0.08 ppbV
RT: 29.493 min Scan# 3203
Delta R.T. 0.007 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 91 Resp: 2183

Ion	Ratio	Lower	Upper
91	100		
106	35.4	9.1	49.1

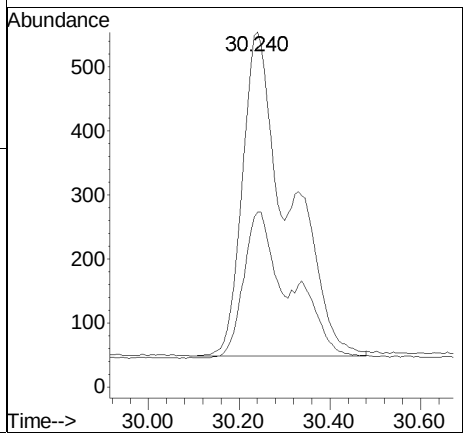


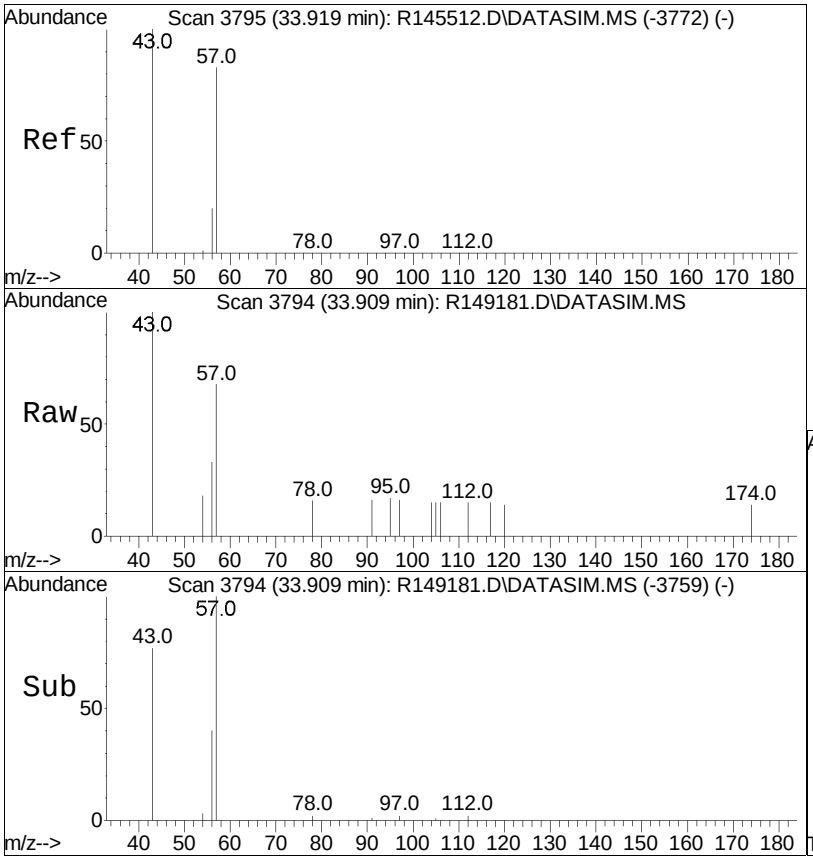


#57
p/m-Xylene
Concen: 0.17 ppbV m
RT: 30.240 min Scan# 3303
Delta R.T. 0.007 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 91 Resp: 3592

Ion	Ratio	Lower	Upper
91	100		
106	49.3	25.5	65.5

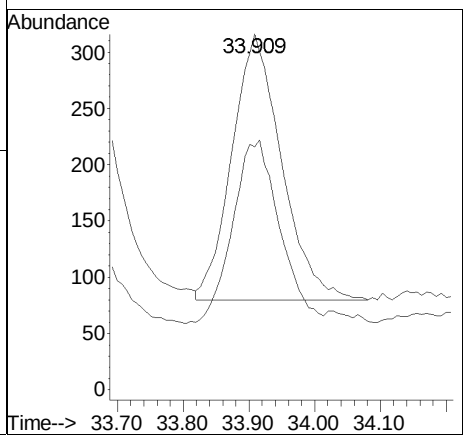


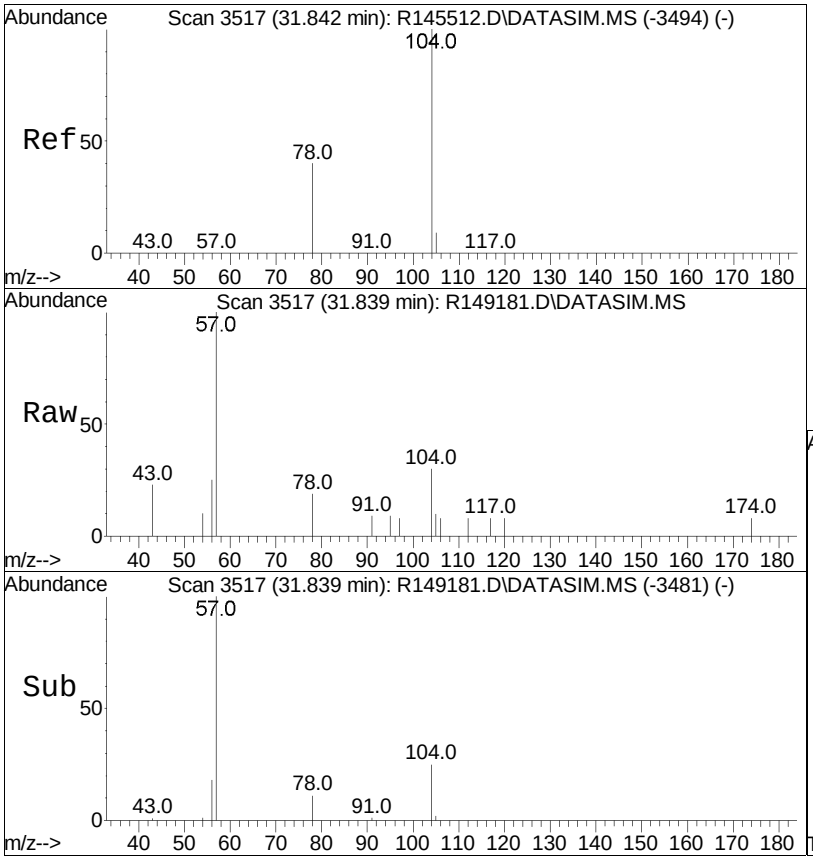


#59
Nonane
Concen: 0.06 ppbV
RT: 33.909 min Scan# 3794
Delta R.T. 0.015 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 43 Resp: 1238

Ion	Ratio	Lower	Upper
43	100		
57	68.4	51.4	91.4

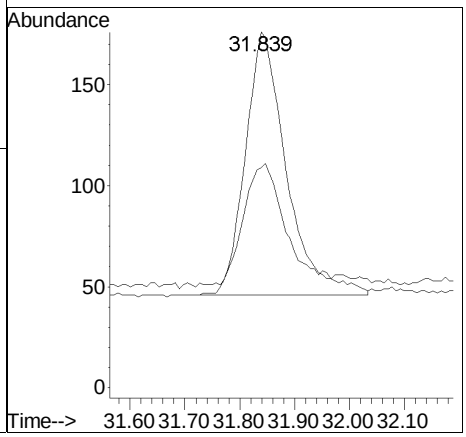


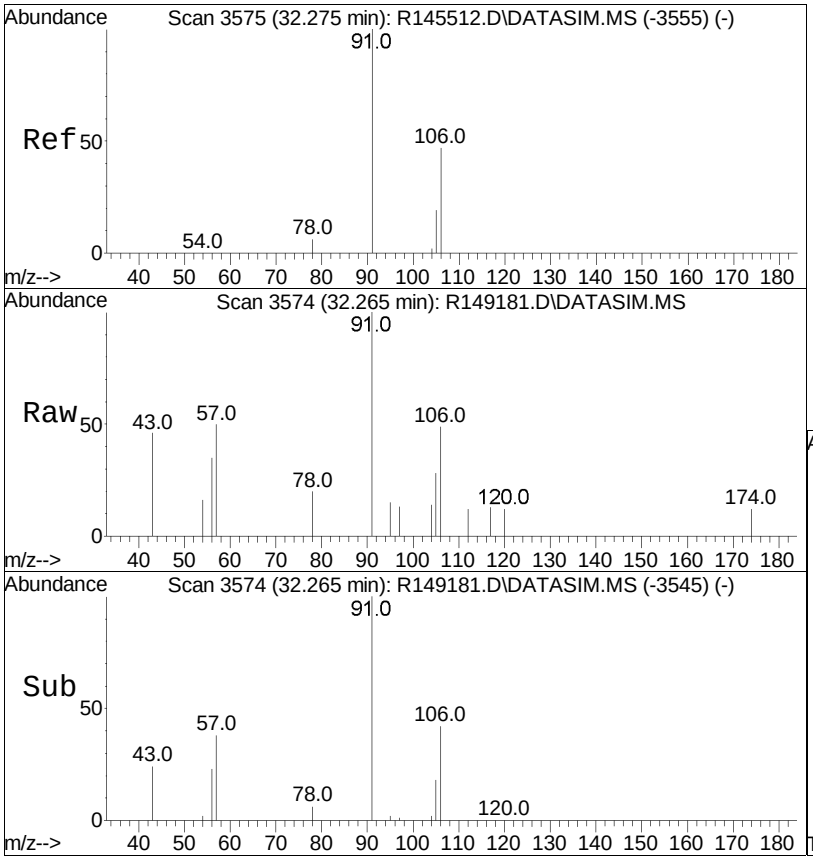


#60
Styrene
Concen: 0.05 ppbV
RT: 31.839 min Scan# 3517
Delta R.T. 0.022 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:104 Resp: 676

Ion	Ratio	Lower	Upper
104	100		
78	61.9	28.5	68.5

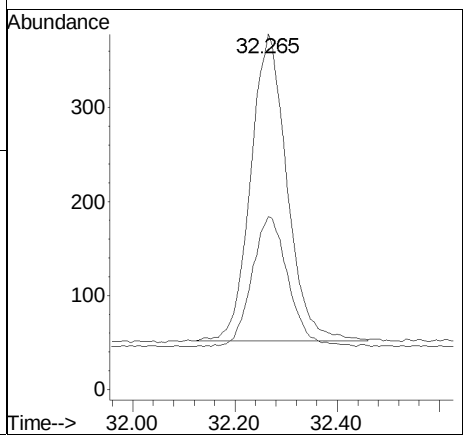


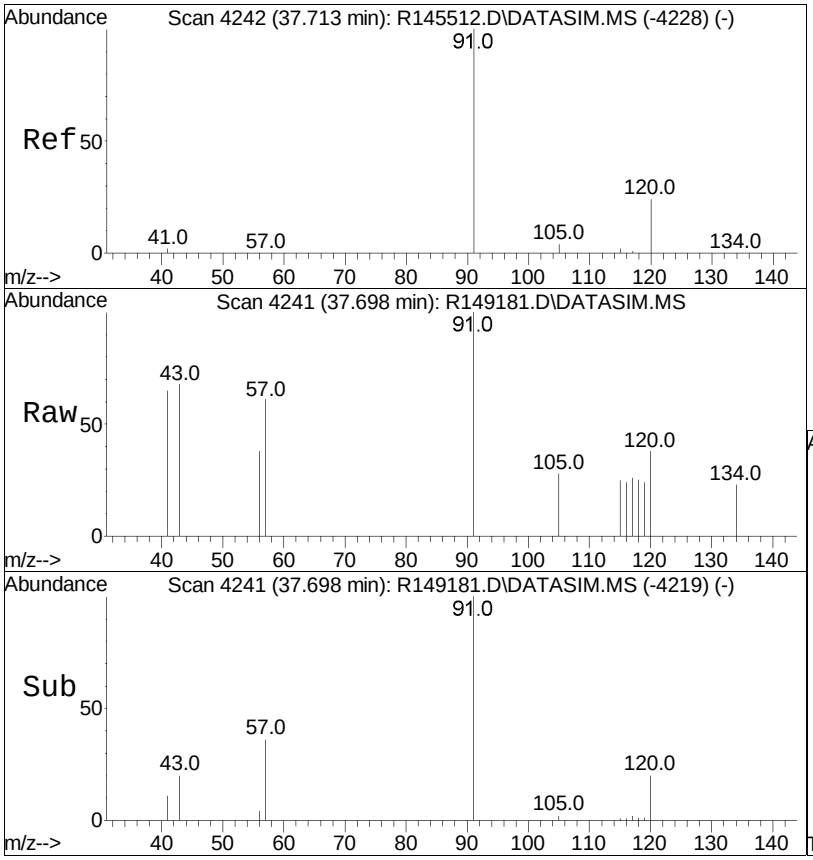


#61
o-Xylene
Concen: 0.07 ppbV
RT: 32.265 min Scan# 3574
Delta R.T. 0.007 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 91 Resp: 1603

Ion	Ratio	Lower	Upper
91	100		
106	48.7	23.5	63.5

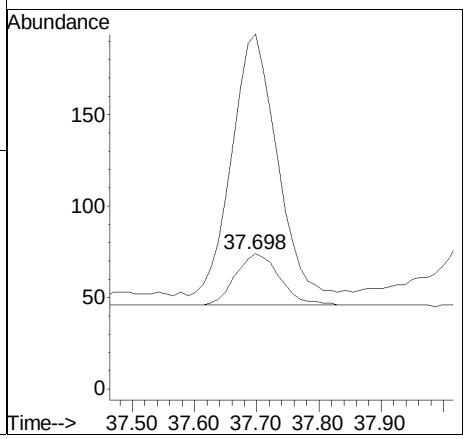


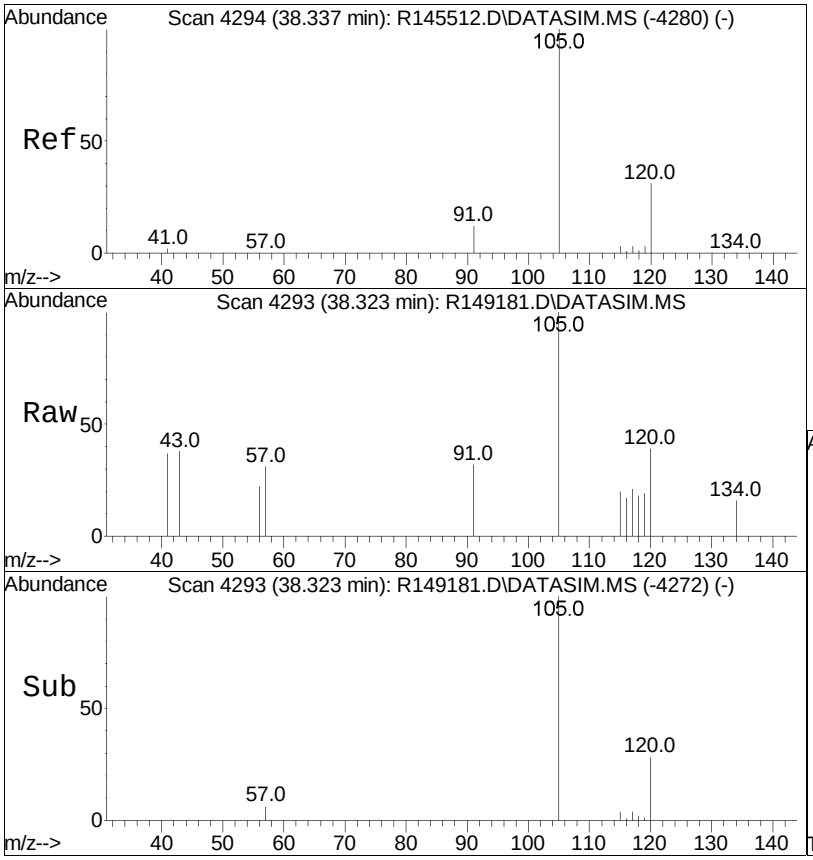


#64
n-Propylbenzene
Concen: 0.02 ppbV
RT: 37.698 min Scan# 4241
Delta R.T. 0.012 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:120 Resp: 137

Ion	Ratio	Lower	Upper
120	100		
91	262.2	480.0	520.0#

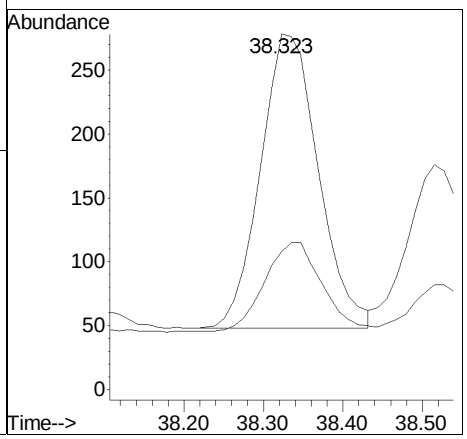


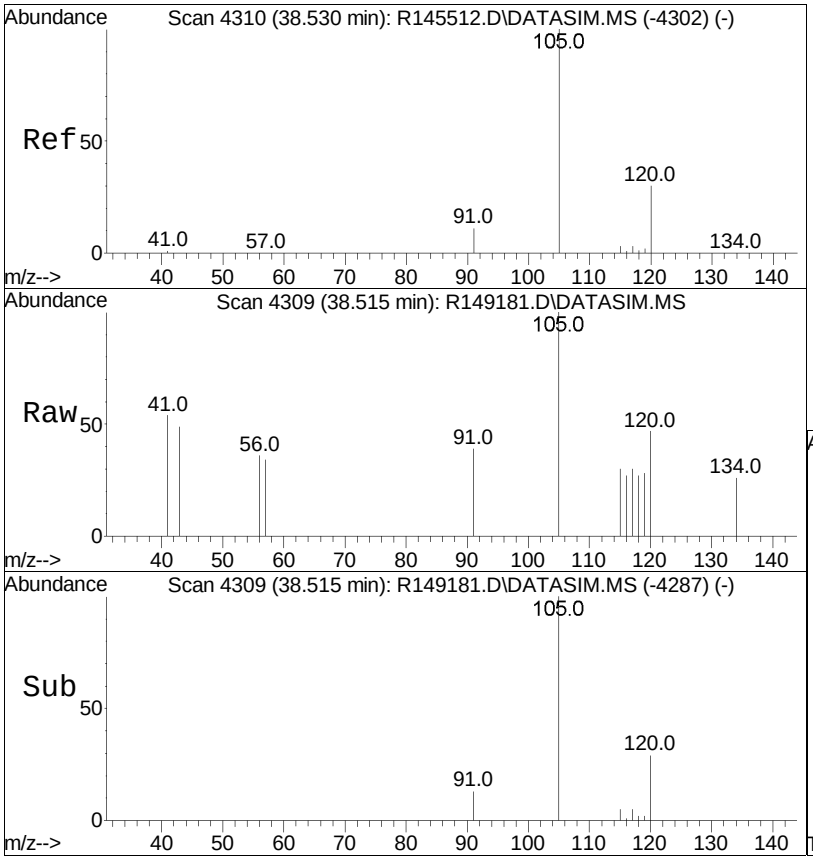


#65
1-Methyl-3-ethylbenzene
Concen: 0.04 ppbV
RT: 38.323 min Scan# 4293
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:105 Resp: 1167

Ion	Ratio	Lower	Upper
105	100		
120	38.8	10.4	50.4

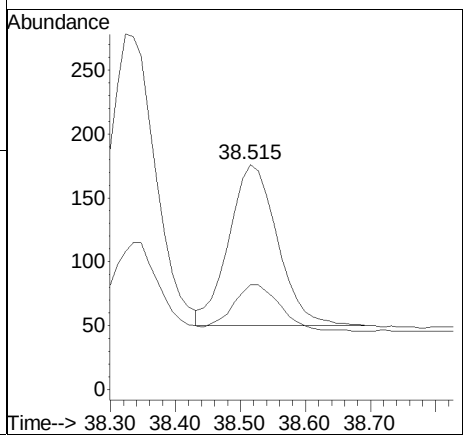


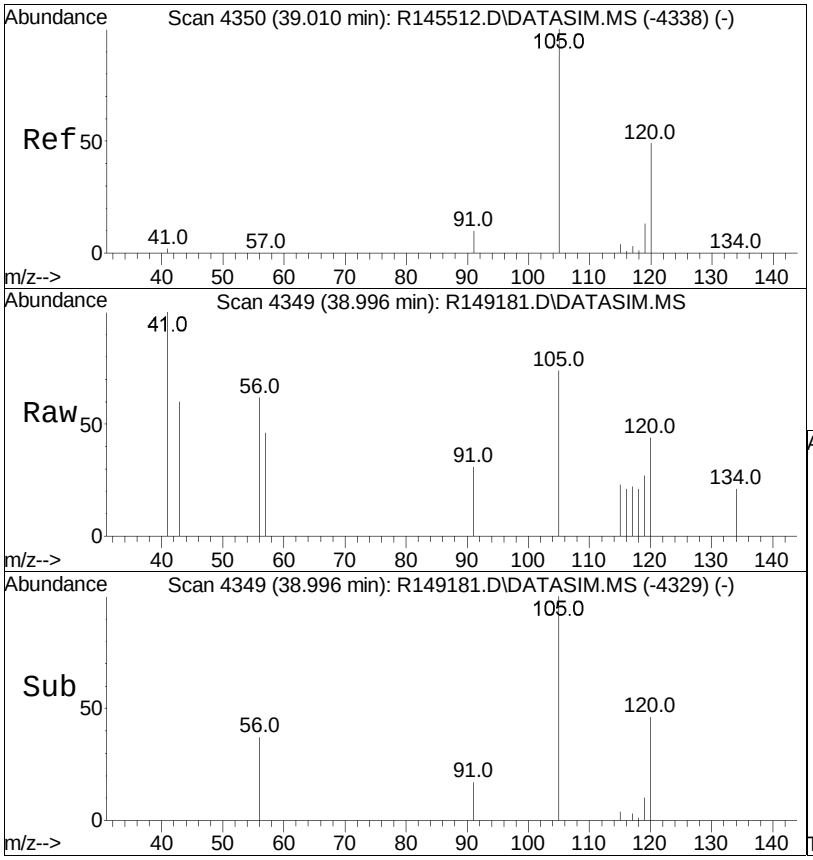


#66
1-Methyl-4-ethylbenzene
Concen: 0.02 ppbV
RT: 38.515 min Scan# 4309
Delta R.T. 0.012 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:105 Resp: 655

Ion	Ratio	Lower	Upper
105	100		
120	46.6	7.8	47.8

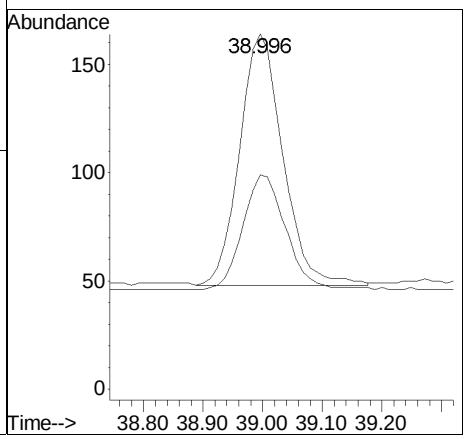


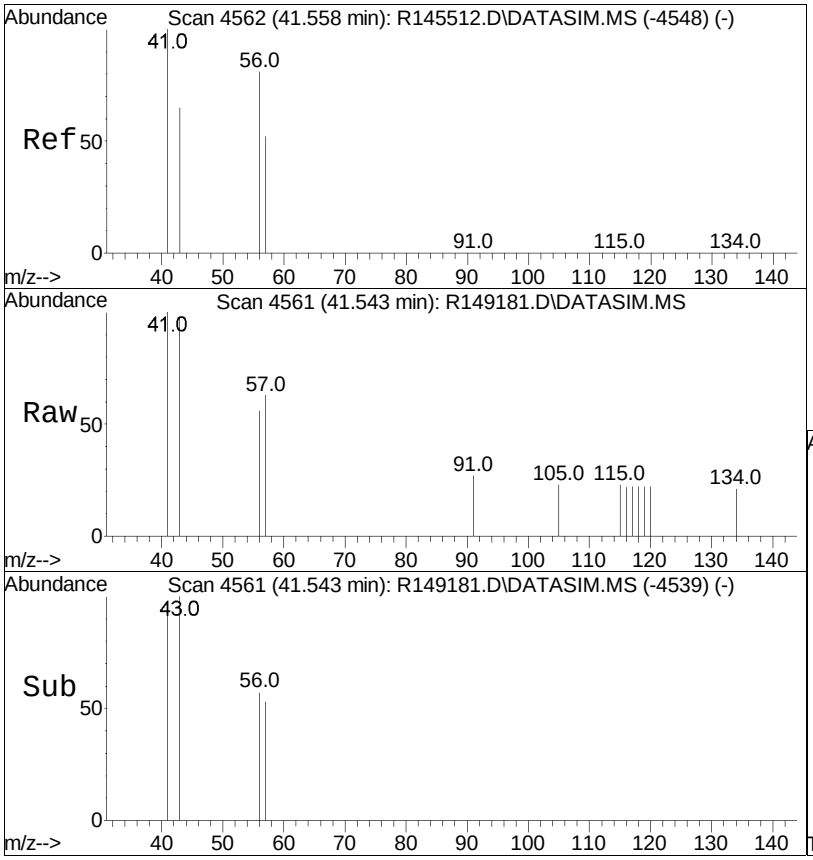


#67
1,3,5-Trimethylbenzene
Concen: 0.02 ppbV
RT: 38.996 min Scan# 4349
Delta R.T. 0.012 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:105 Resp: 586

Ion	Ratio	Lower	Upper
105	100		
120	60.4	25.9	65.9

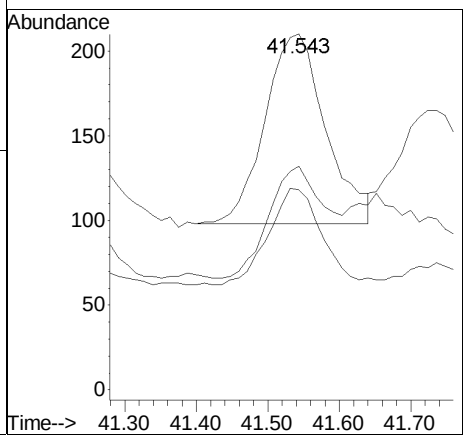


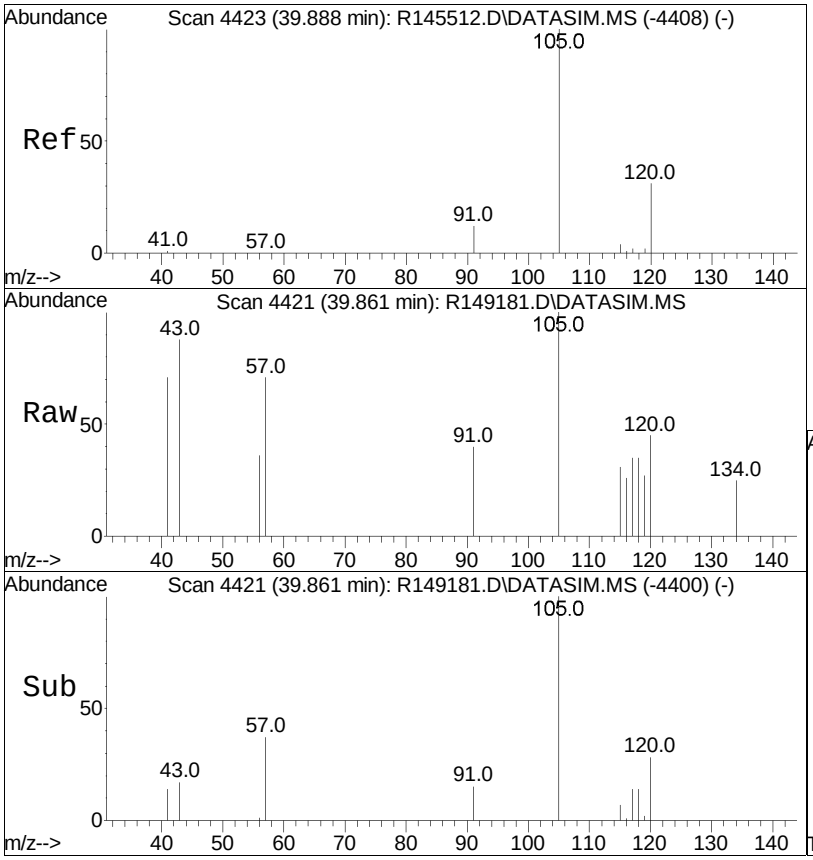


#68
1-Decene
Concen: 0.06 ppbV
RT: 41.543 min Scan# 4561
Delta R.T. 0.012 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 41 Resp: 663

Ion	Ratio	Lower	Upper
41	100		
57	62.9	25.1	65.1
56	56.2	51.9	91.9

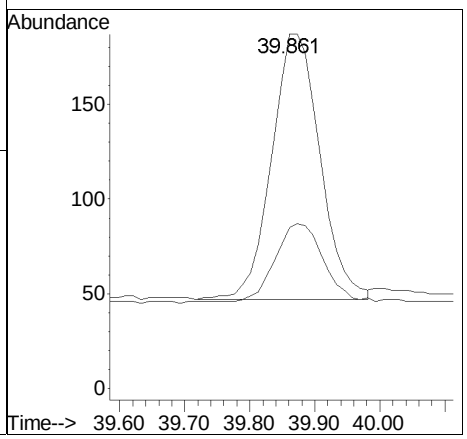


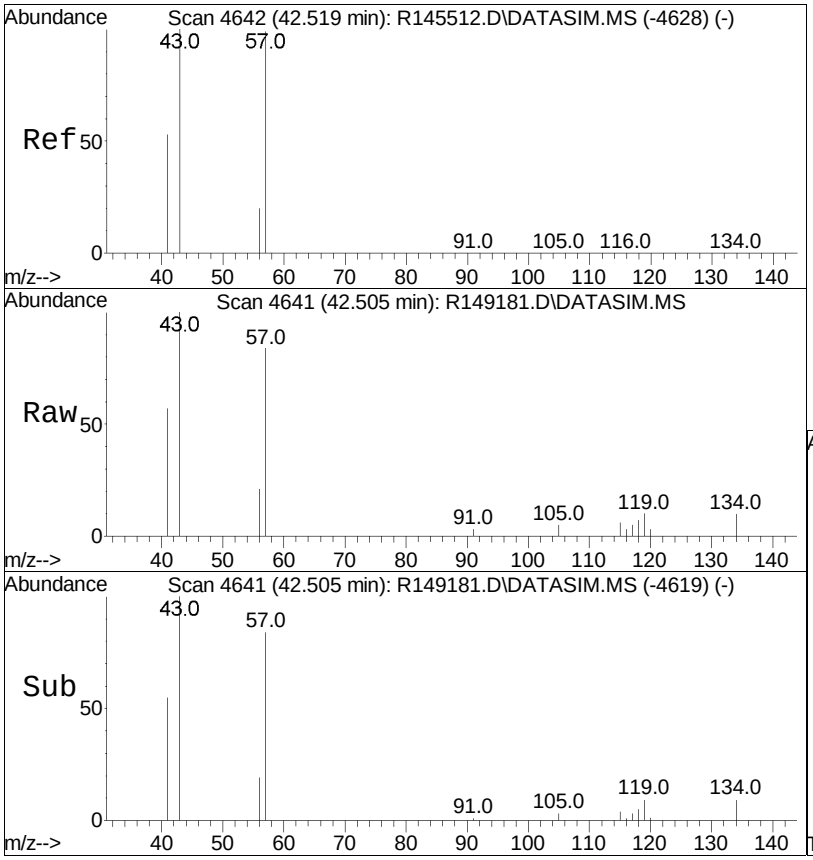


#69
1-Methyl-2-ethylbenzene
Concen: 0.03 ppbV
RT: 39.861 min Scan# 4421
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:105 Resp: 725

Ion	Ratio	Lower	Upper
105	100		
120	45.5	9.6	49.6

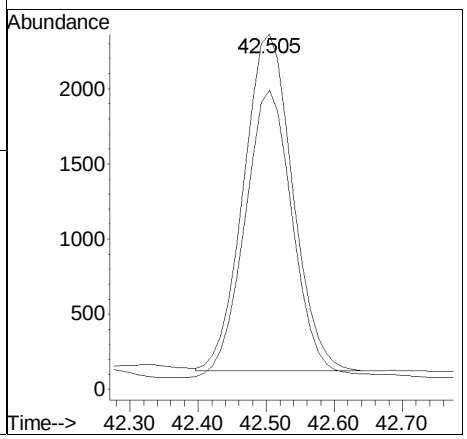


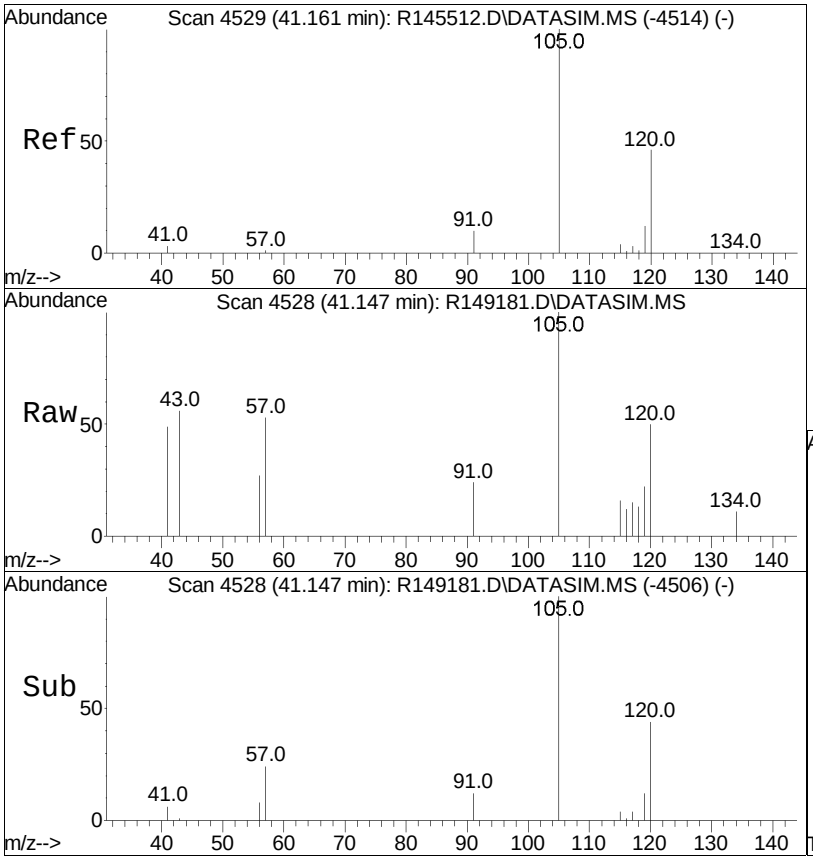


#70
Decane
Concen: 0.53 ppbV
RT: 42.505 min Scan# 4641
Delta R.T. 0.012 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 43 Resp: 11246

Ion	Ratio	Lower	Upper
43	100		
57	84.2	66.4	106.4

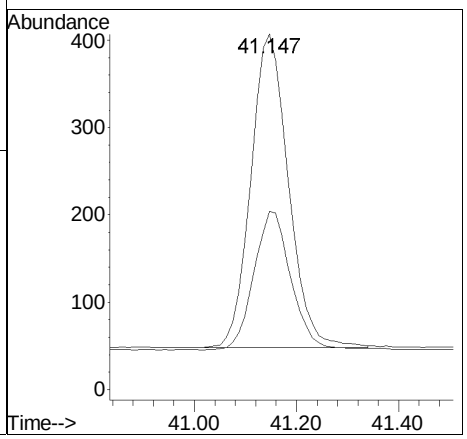


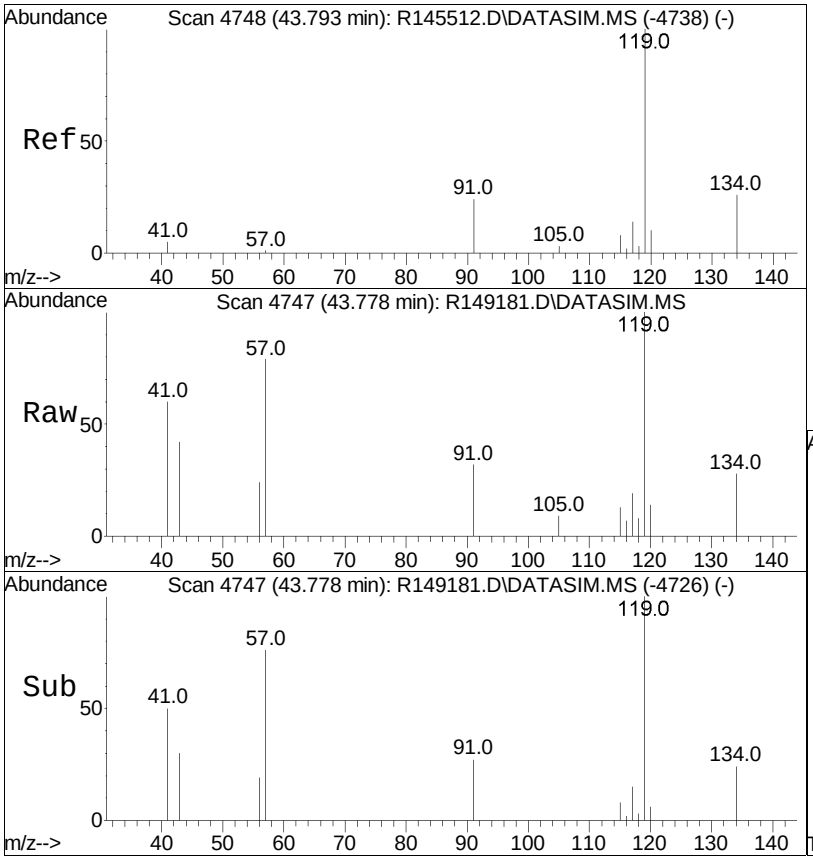


#71
1,2,4-Trimethylbenzene
Concen: 0.08 ppbV
RT: 41.147 min Scan# 4528
Delta R.T. 0.012 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:105 Resp: 1837

Ion	Ratio	Lower	Upper
105	100		
120	50.1	23.0	63.0

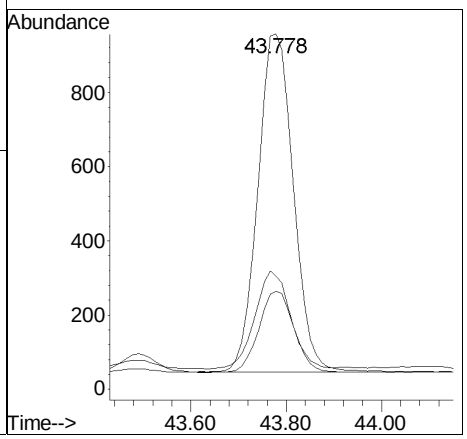


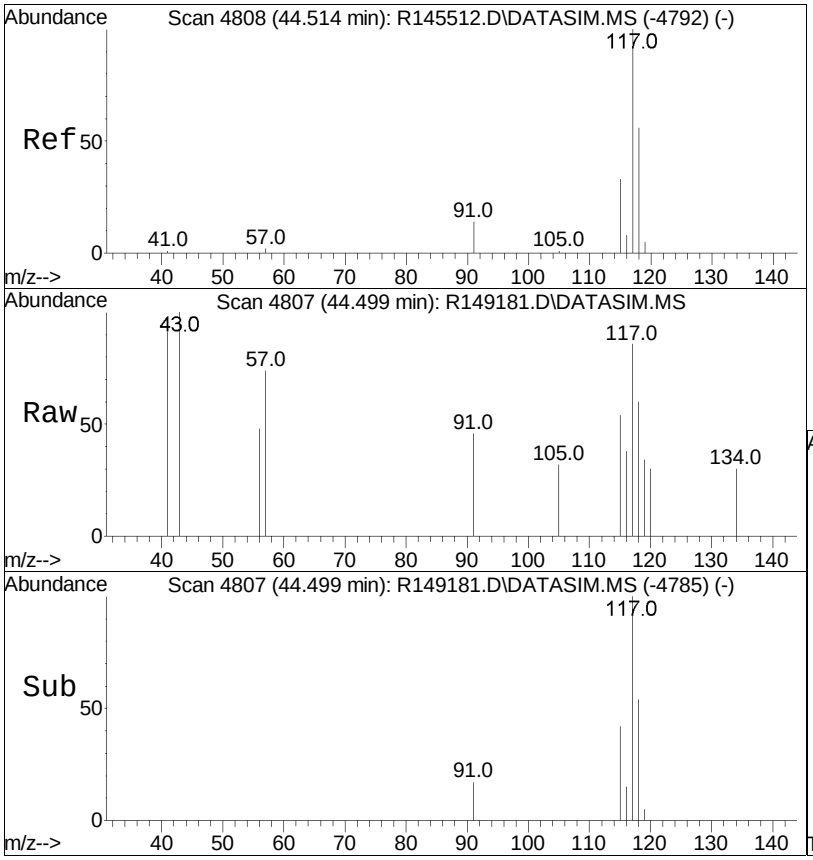


#74
1-Methyl-4-isopropylbenzene
Concen: 0.19 ppbV
RT: 43.778 min Scan# 4747
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:119 Resp: 4701

Ion	Ratio	Lower	Upper
119	100		
134	27.6	4.2	44.2
91	31.9	5.6	45.6

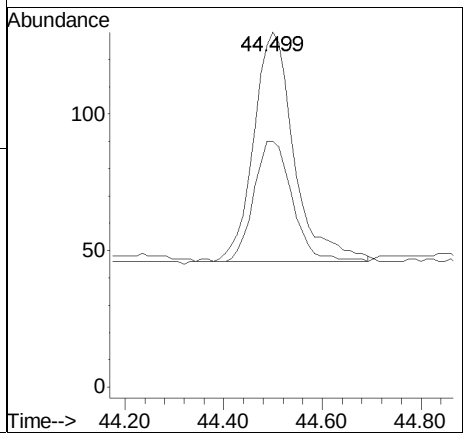


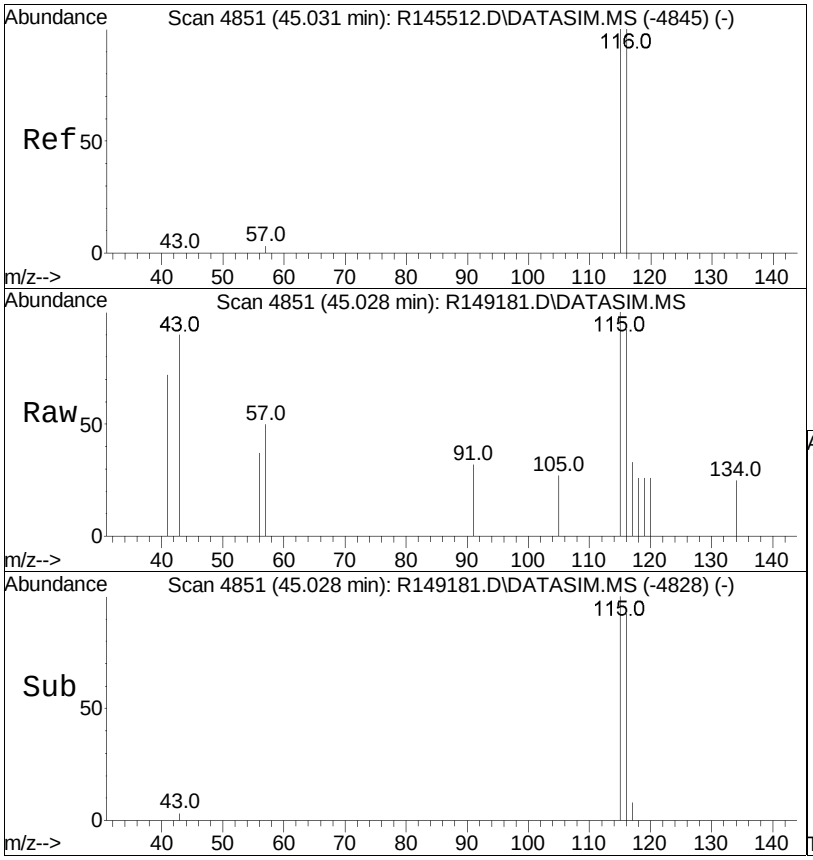


#76
Indan
Concen: 0.03 ppbV
RT: 44.499 min Scan# 4807
Delta R.T. 0.012 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:117 Resp: 480

Ion	Ratio	Lower	Upper
117	100		
118	69.2	35.5	75.5

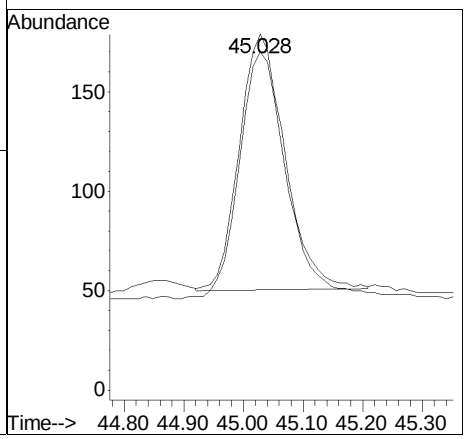


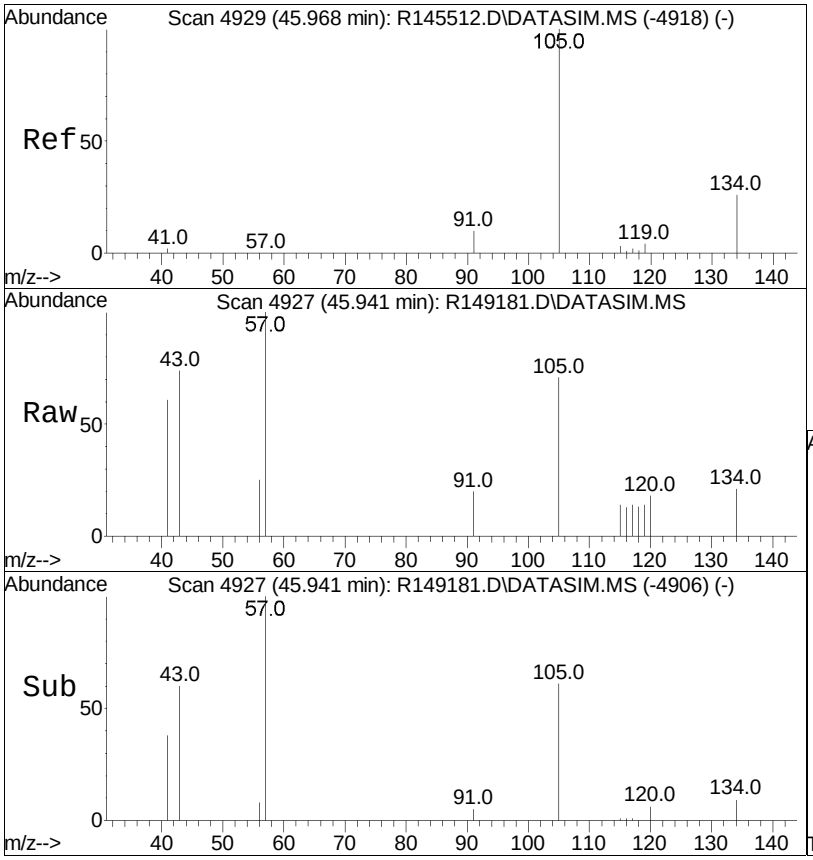


#77
Indene
Concen: 0.06 ppbV
RT: 45.028 min Scan# 4851
Delta R.T. 0.024 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:115 Resp: 686

Ion	Ratio	Lower	Upper
115	100		
116	100.0	75.9	113.9

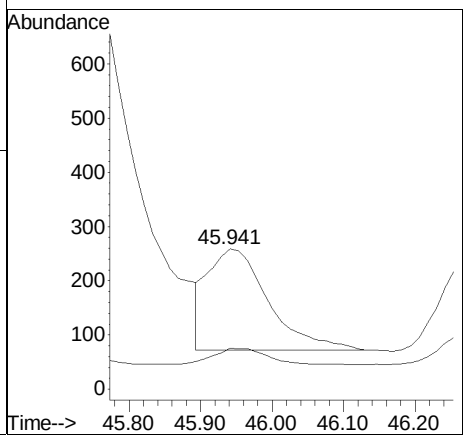


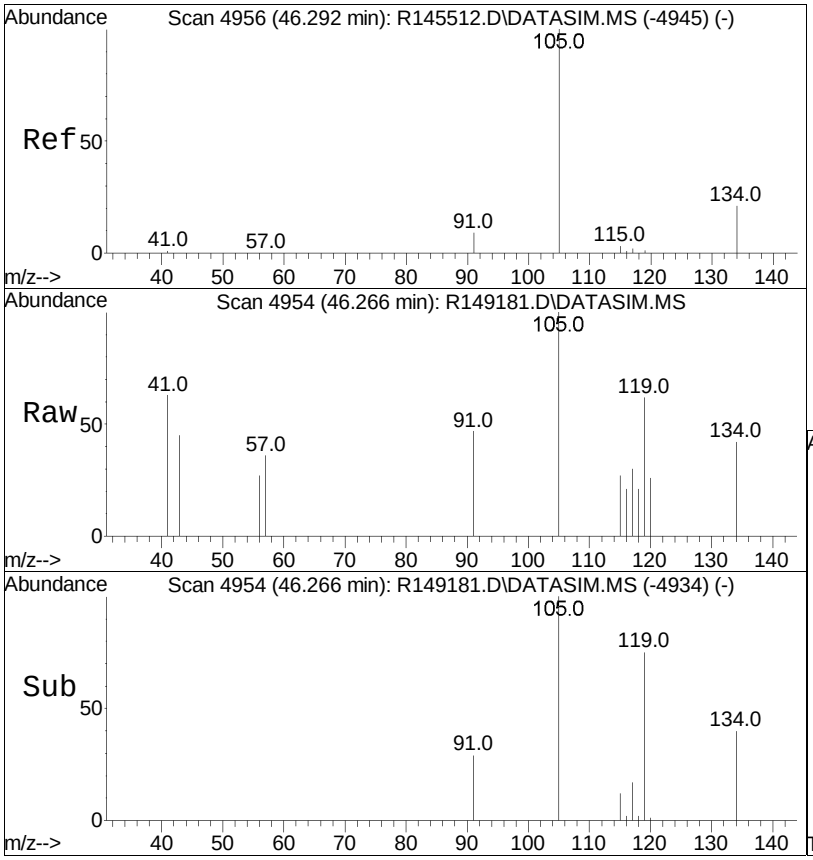


#78
1-Methyl-3-propylbenzene
Concen: 0.03 ppbV
RT: 45.941 min Scan# 4927
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:105 Resp: 1102

Ion	Ratio	Lower	Upper
105	100		
134	29.3	1.9	41.9

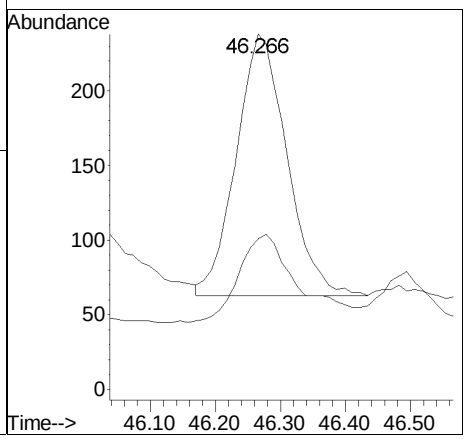


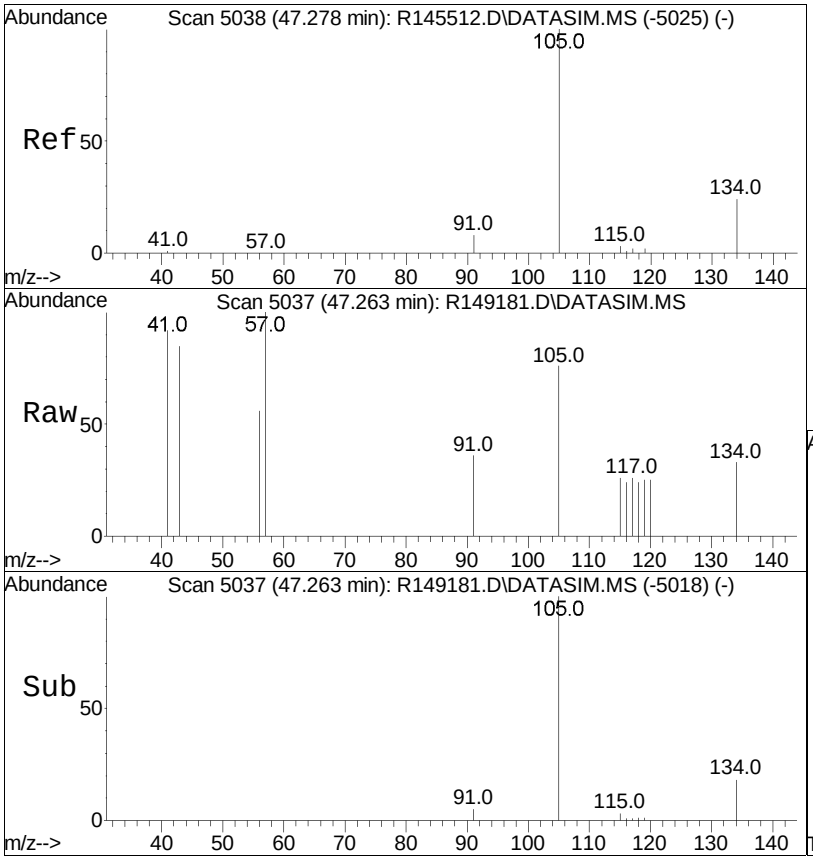


#79
1-Methyl-4-propylbenzene
Concen: 0.02 ppbV
RT: 46.266 min Scan# 4954
Delta R.T. -0.012 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:105 Resp: 946

Ion	Ratio	Lower	Upper
105	100		
134	42.4	0.0	39.5#

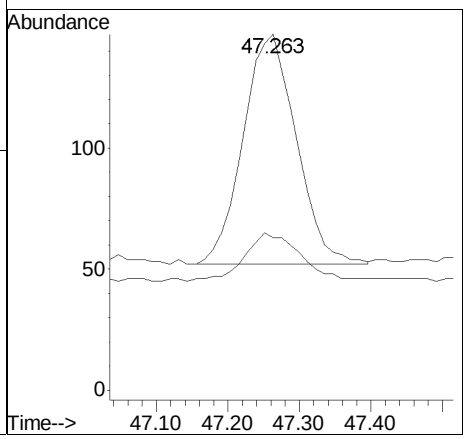


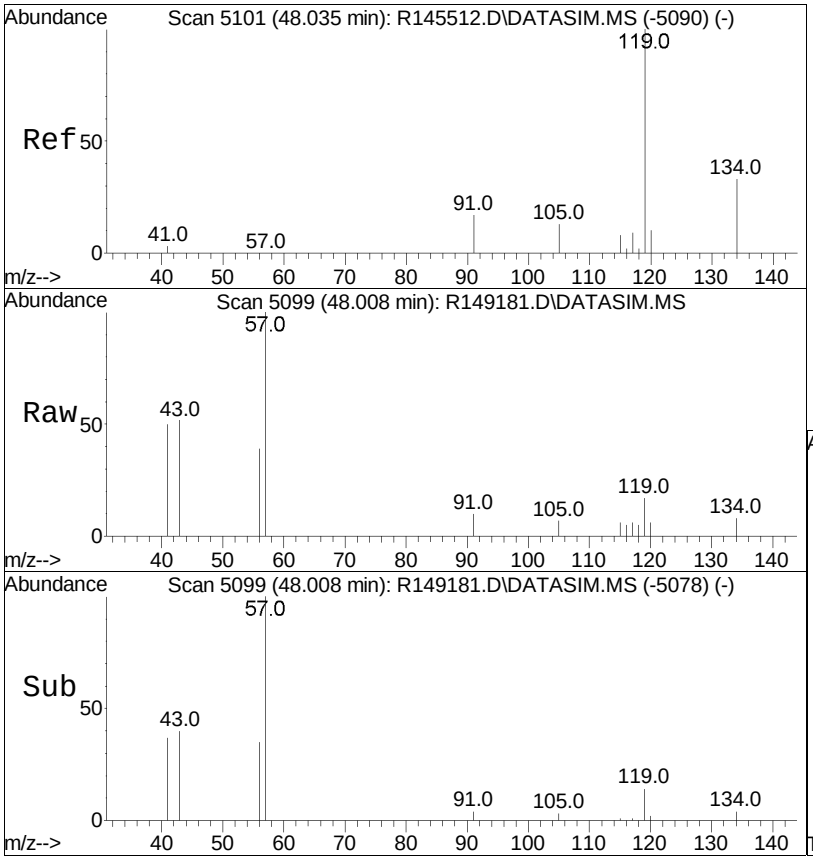


#83
1-Methyl-2-propylbenzene
Concen: 0.01 ppbV
RT: 47.263 min Scan# 5037
Delta R.T. 0.012 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:105 Resp: 491

Ion	Ratio	Lower	Upper
105	100		
134	42.9	0.5	40.5#

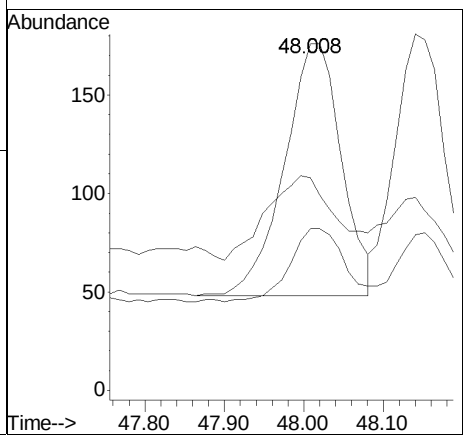


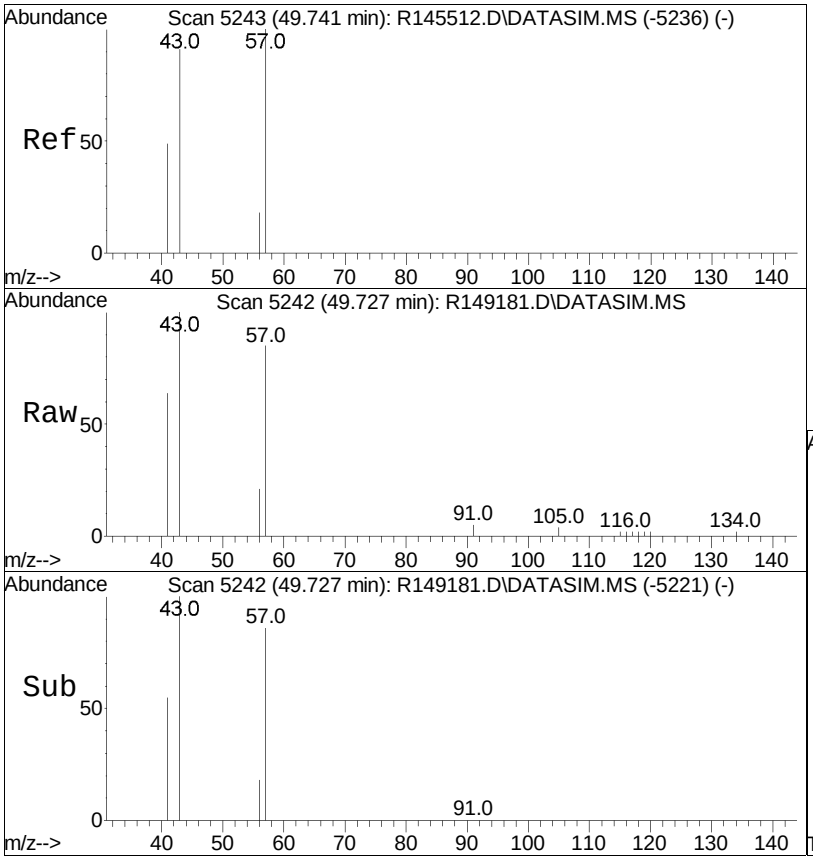


#84
1,4-Dimethyl-2-ethylbenzene
Concen: 0.02 ppbV
RT: 48.008 min Scan# 5099
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:119 Resp: 642

Ion	Ratio	Lower	Upper
119	100		
134	46.6	10.4	50.4
91	61.4	0.1	40.1#

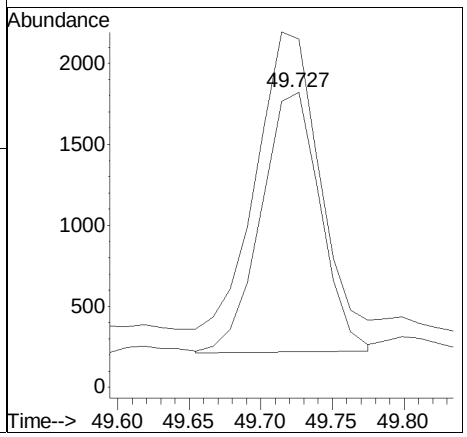


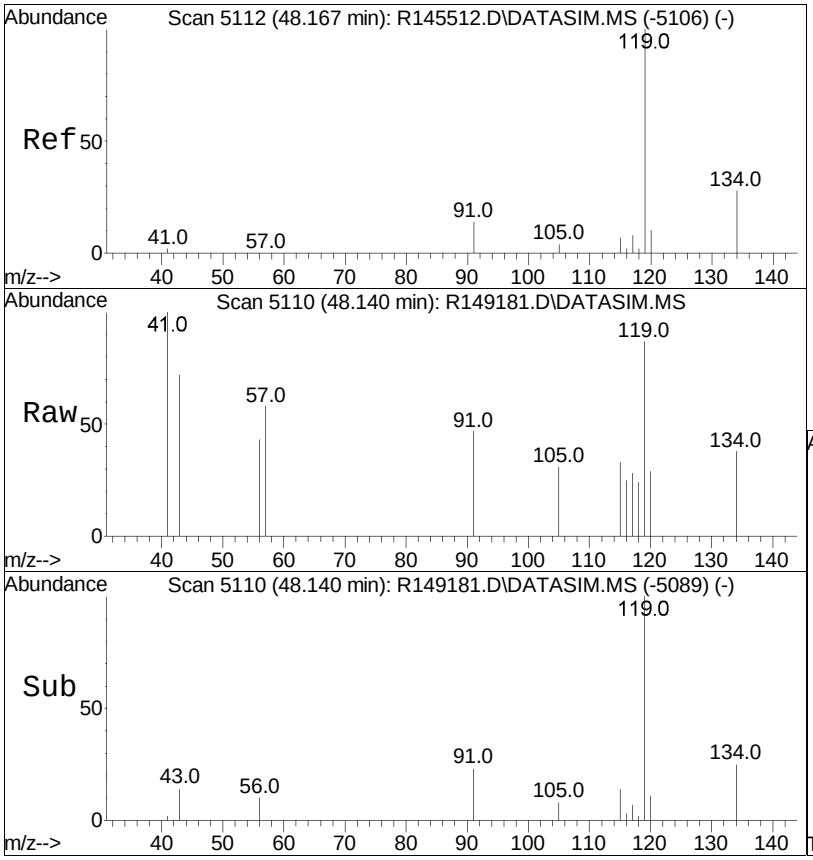


#85
Undecane
Concen: 0.22 ppbV
RT: 49.727 min Scan# 5242
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 57 Resp: 4613

Ion	Ratio	Lower	Upper
57	100		
43	118.1	79.1	119.1

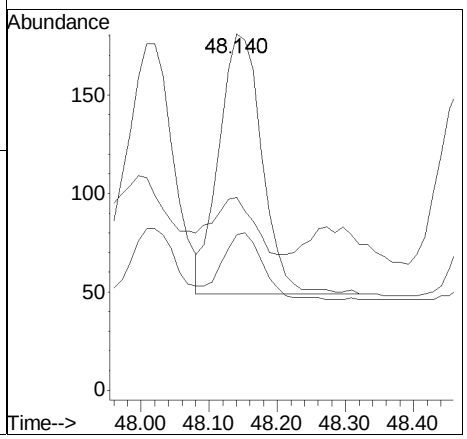


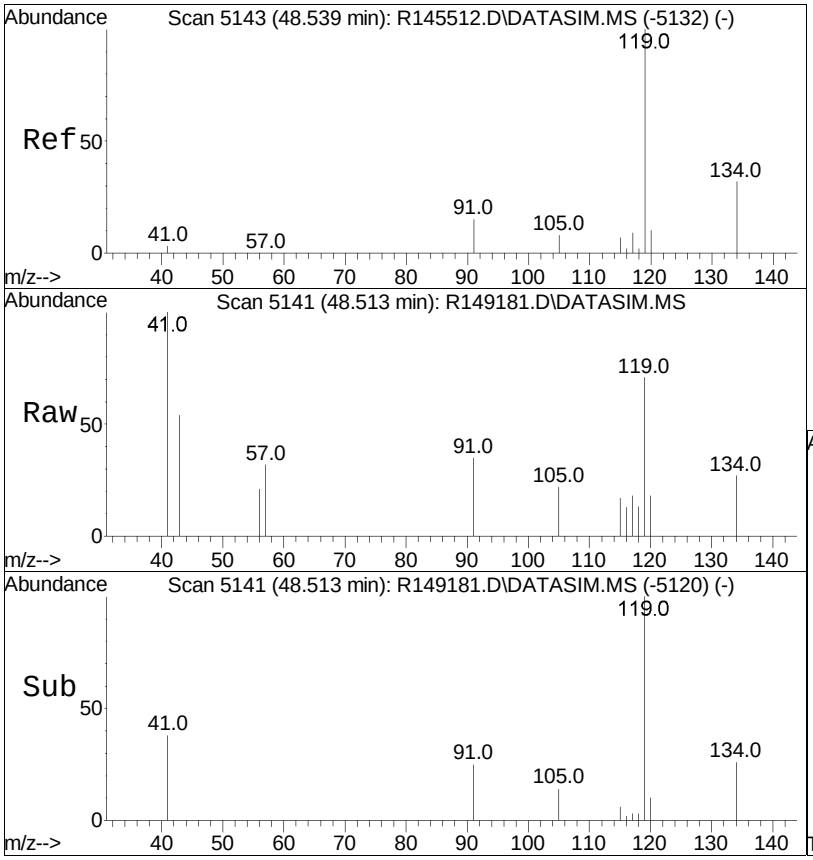


#86
1,3-Dimethyl-4-ethylbenzene
Concen: 0.02 ppbV
RT: 48.140 min Scan# 5110
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:119 Resp: 578

Ion	Ratio	Lower	Upper
119	100		
134	43.6	6.2	46.2
91	54.1	0.0	36.4#

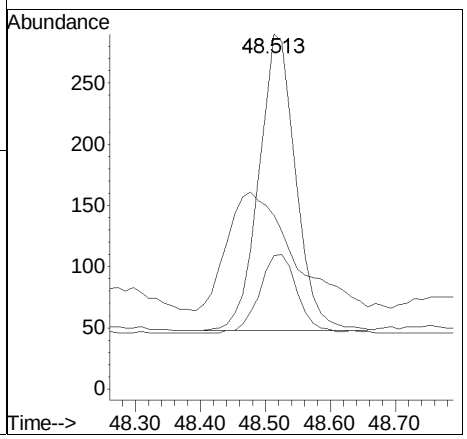


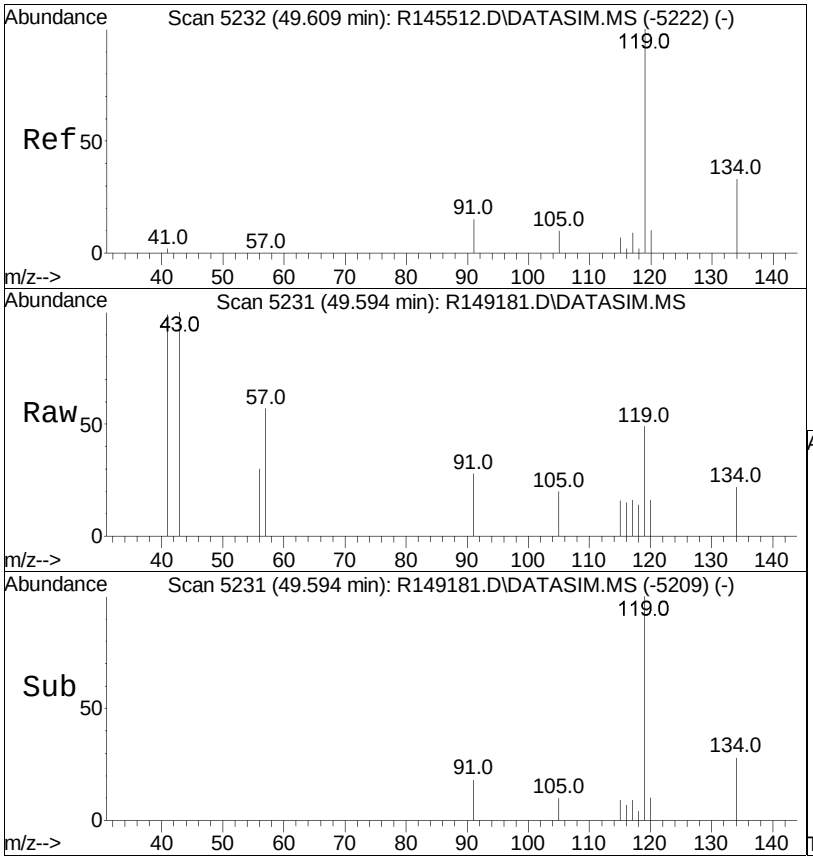


#87
1,3-Dimethyl-5-ethylbenzene
Concen: 0.03 ppbV
RT: 48.513 min Scan# 5141
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:119 Resp: 950

Ion	Ratio	Lower	Upper
119	100		
134	37.6	7.8	47.8
91	49.0	0.0	38.0#

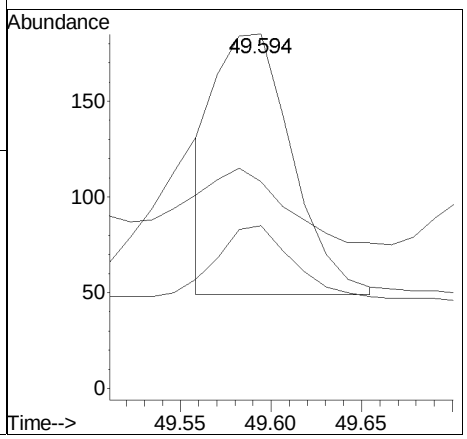


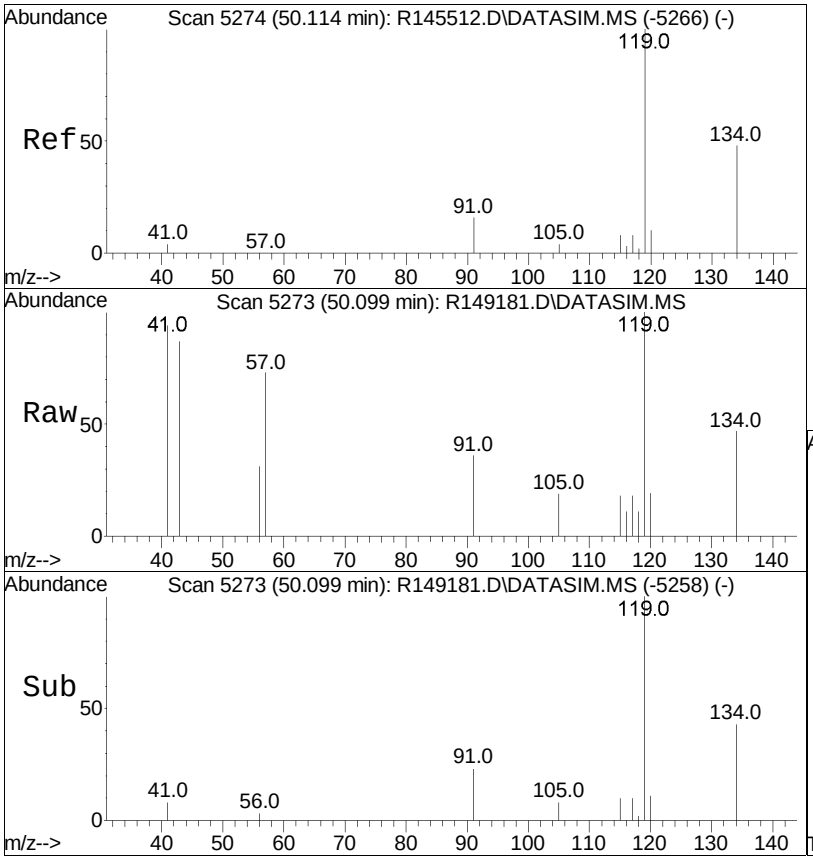


#89
1,2-Dimethyl-3-ethylbenzene
Concen: 0.01 ppbV m
RT: 49.594 min Scan# 5231
Delta R.T. 0.012 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:119 Resp: 404

Ion	Ratio	Lower	Upper
119	100		
134	45.9	8.0	48.0
91	58.4	0.0	39.5#

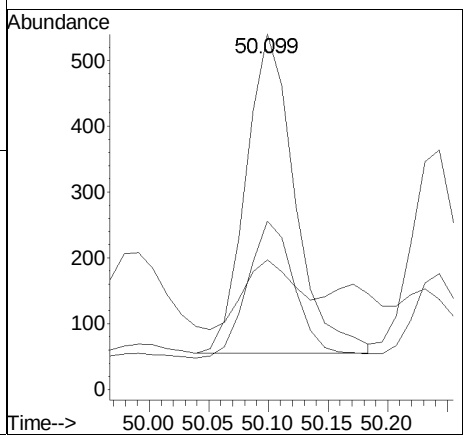


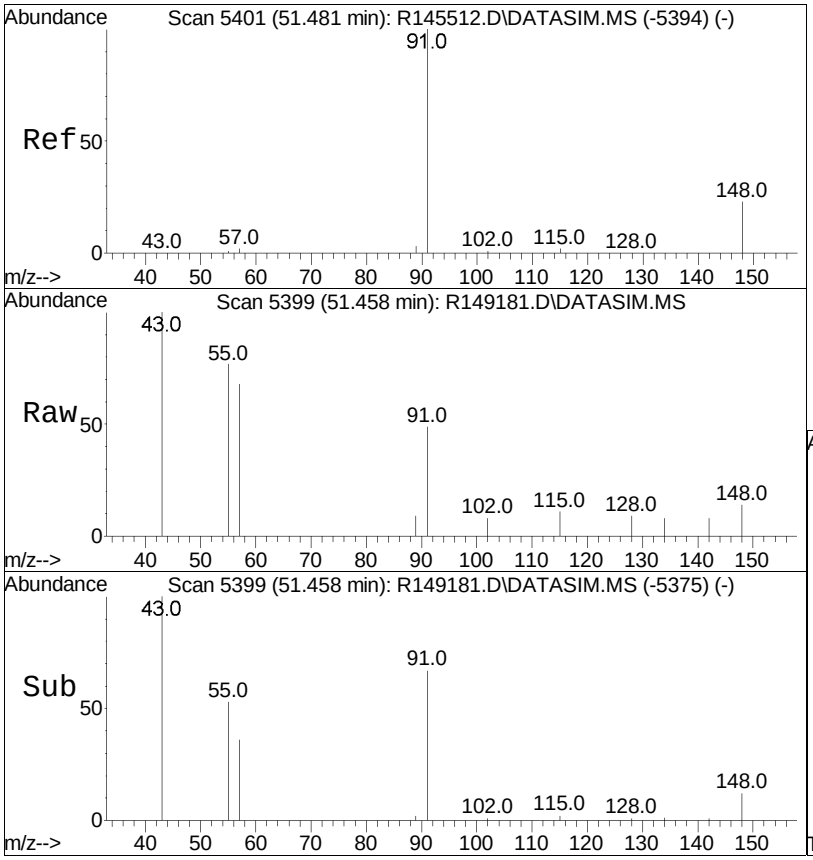


#90
1,2,4,5-Tetramethylbenzene
Concen: 0.01 ppbV
RT: 50.099 min Scan# 5273
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:119 Resp: 1391

Ion	Ratio	Lower	Upper
119	100		
134	47.4	24.1	64.1
91	36.5	0.0	36.7

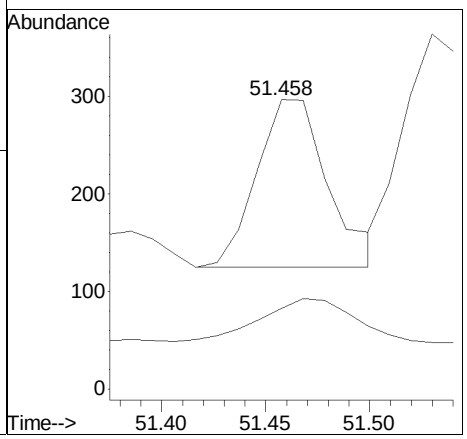


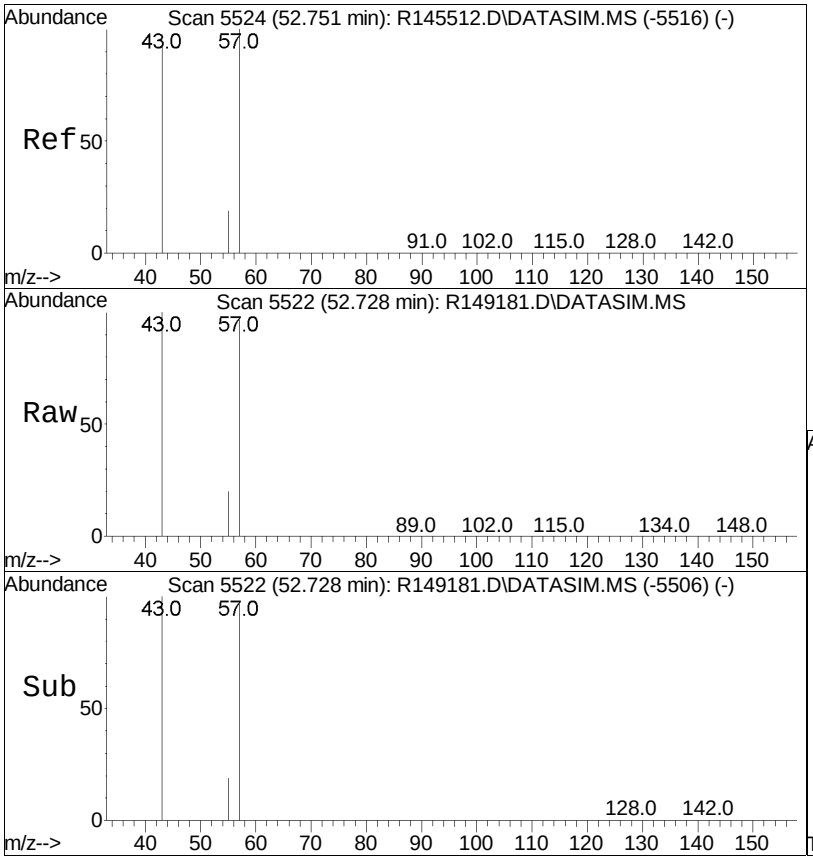


#91
Pentylbenzene
Concen: 0.01 ppbV
RT: 51.458 min Scan# 5399
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 91 Resp: 410

Ion	Ratio	Lower	Upper
91	100		
148	27.9	0.0	37.6

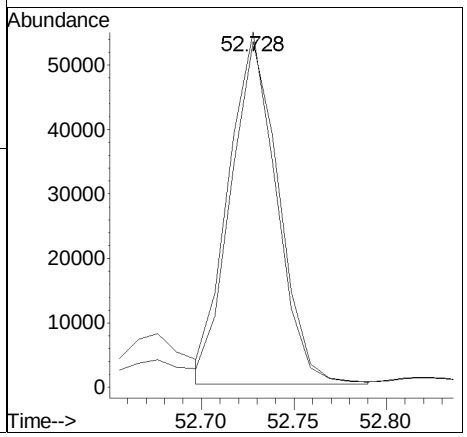


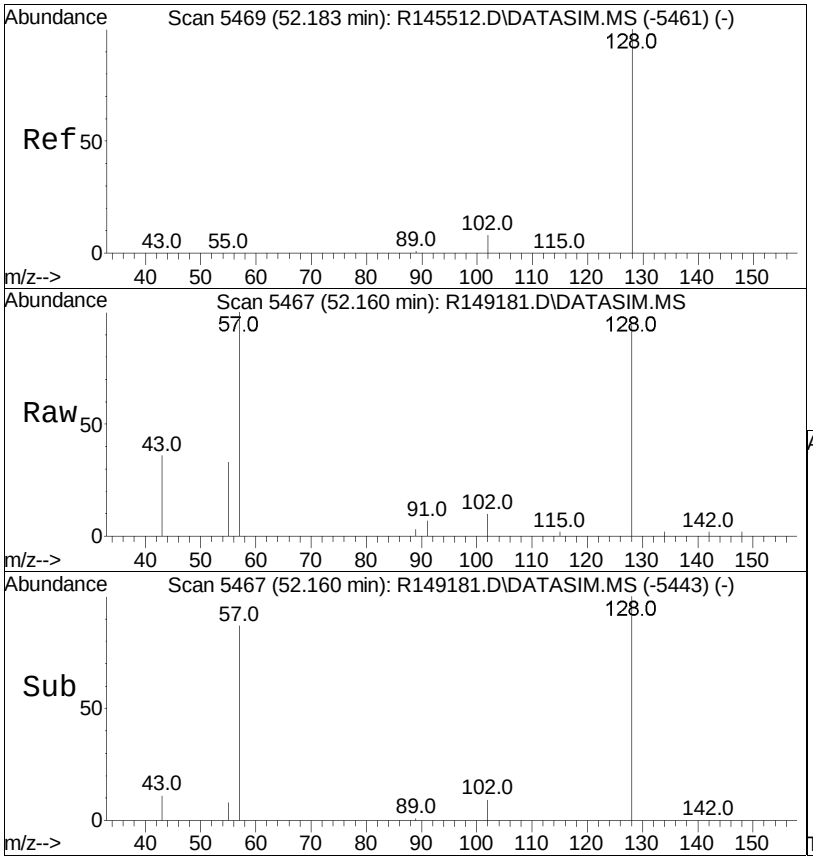


#92
Dodecane
Concen: 4.19 ppbV
RT: 52.728 min Scan# 5522
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 43 Resp: 97968

Ion	Ratio	Lower	Upper
43	100		
57	97.4	80.2	120.2

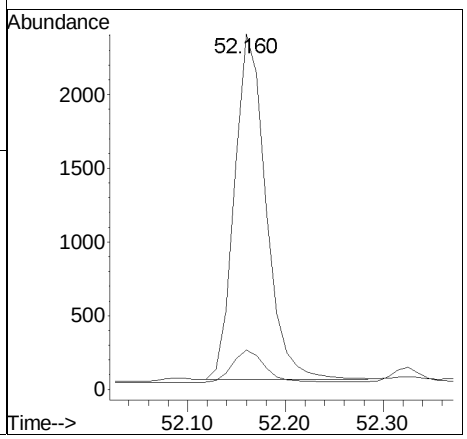


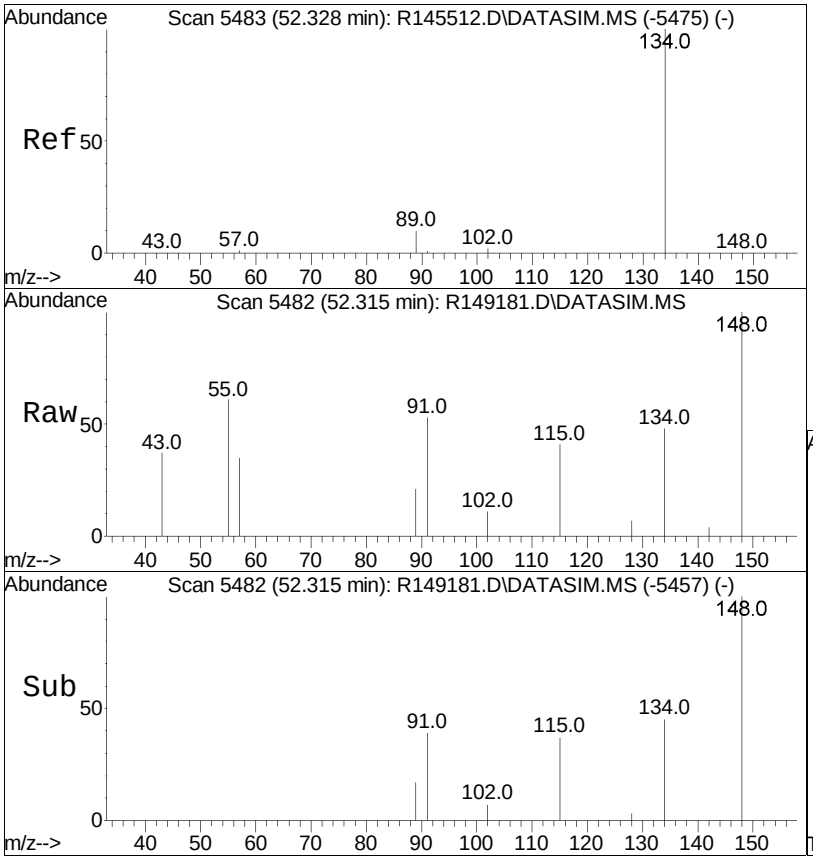


#93
Naphthalene
Concen: 0.17 ppbV
RT: 52.160 min Scan# 5467
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:128 Resp: 5245

Ion	Ratio	Lower	Upper
128	100		
102	11.1	0.0	28.9

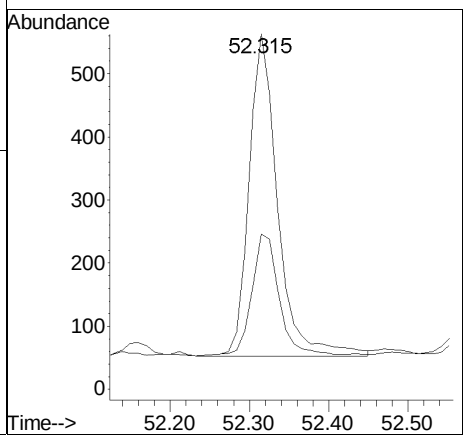


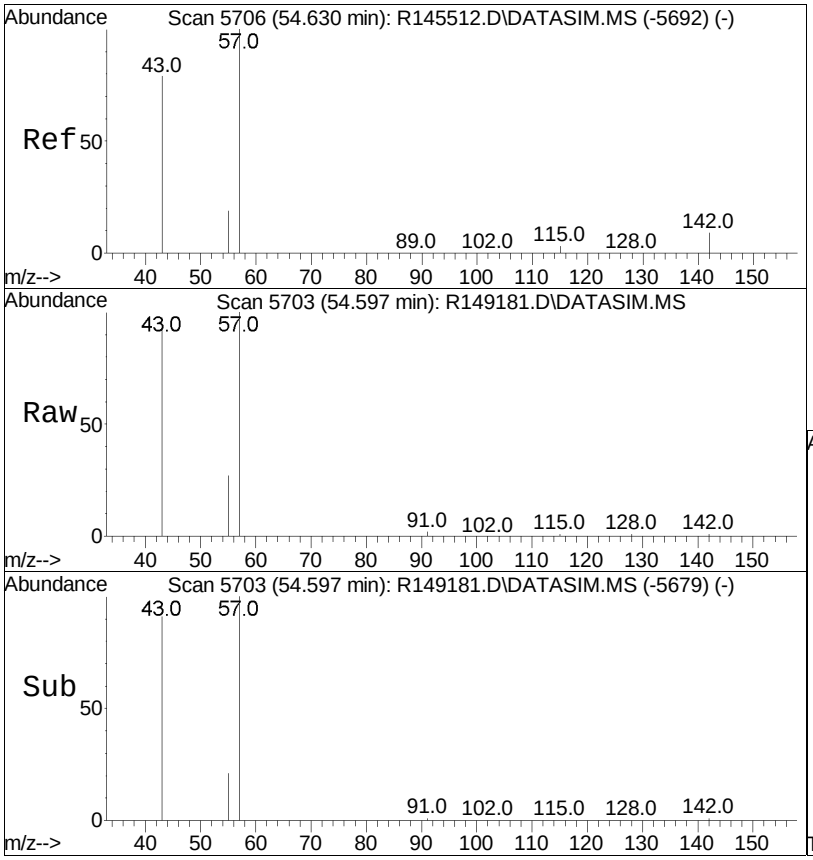


#94
Benzothiophene
Concen: 0.02 ppbV
RT: 52.315 min Scan# 5482
Delta R.T. 0.010 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:134 Resp: 1281

Ion	Ratio	Lower	Upper
134	100		
89	43.7	0.0	31.7#

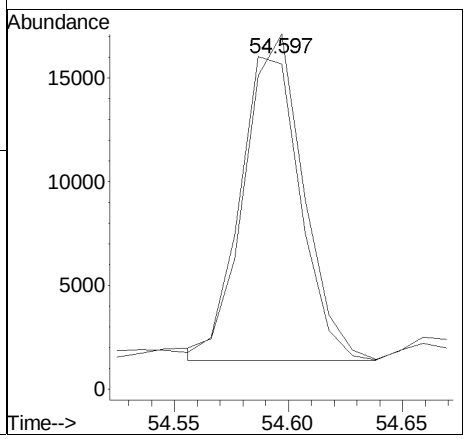


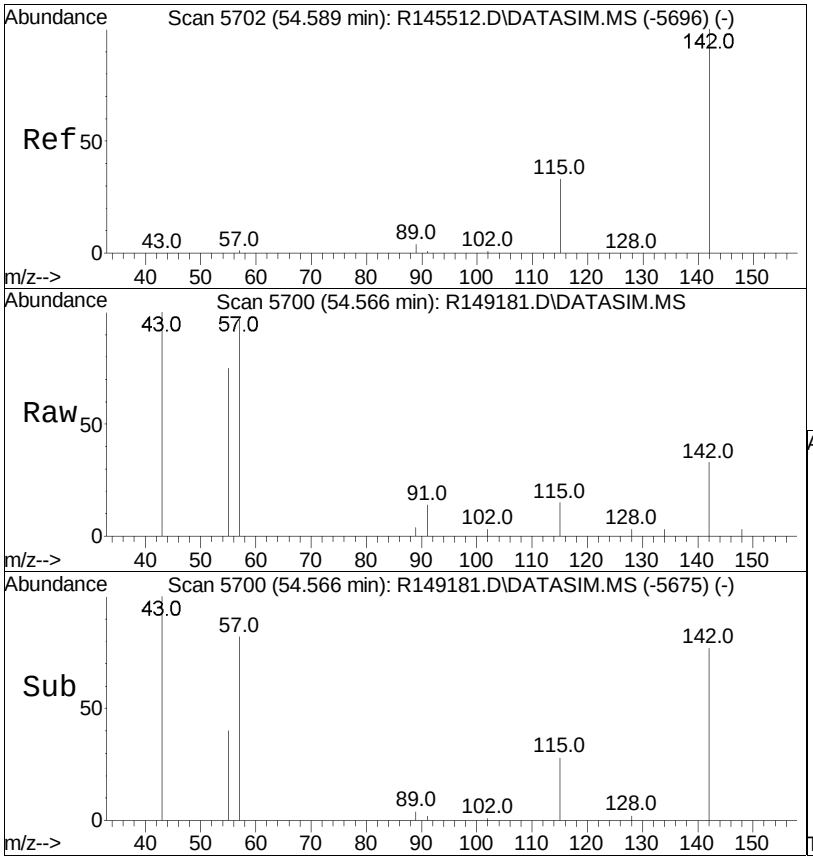


#96
Tridecane
Concen: 0.86 ppbV m
RT: 54.597 min Scan# 5703
Delta R.T. 0.000 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion: 57 Resp: 28442

Ion	Ratio	Lower	Upper
57	100		
43	91.6	72.3	112.3

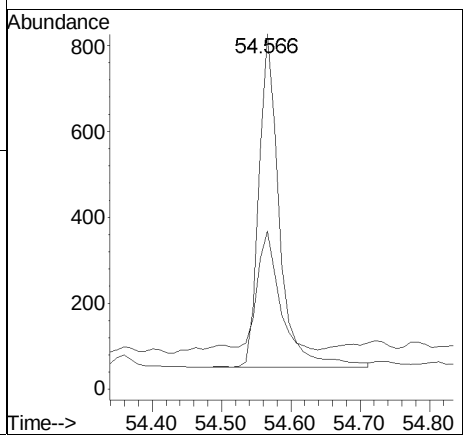


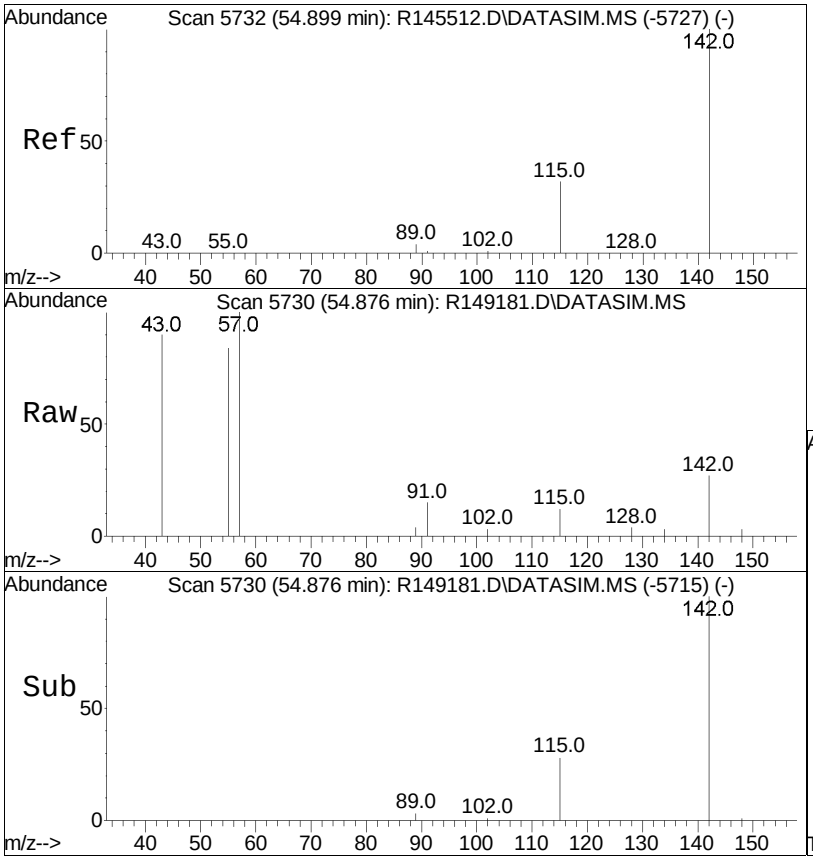


#97
2-Methylnaphthalene
Concen: 0.07 ppbV
RT: 54.566 min Scan# 5700
Delta R.T. 0.010 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:142 Resp: 1607

Ion	Ratio	Lower	Upper
142	100		
115	44.5	15.8	55.8

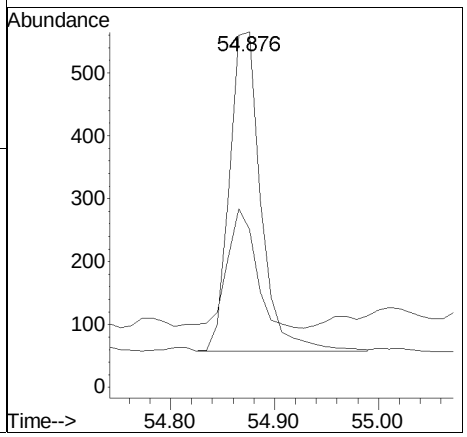




#98
1-Methylnaphthalene
Concen: 0.04 ppbV
RT: 54.876 min Scan# 5730
Delta R.T. 0.010 min
Lab File: R149181.D
Acq: 9 Nov 2016 12:04 am

Tgt Ion:142 Resp: 1065

Ion	Ratio	Lower	Upper
142	100		
115	44.4	14.1	54.1



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-07	Date Collected	: 10/19/16 15:58
Client ID	: NFSV-03	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 01:11
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149182	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
106-99-0	1,3-Butadiene	ND	0.025	0.010	ND	0.055	0.022	U
78-78-4	Isopentane	0.124	0.025	0.010	0.366	0.074	0.030	
109-67-1	1-Pentene	0.034	0.025	0.010	0.098	0.072	0.029	
563-46-2	2-Methyl-1-Butene	0.019	0.025	0.010	0.055	0.072	0.029	J
109-66-0	Pentane	0.094	0.025	0.010	0.277	0.074	0.030	B
646-04-8	trans-2-Pentene	0.015	0.025	0.010	0.043	0.072	0.029	J
627-20-3	cis-2-Pentene	0.032	0.025	0.010	0.092	0.072	0.029	
75-65-0	Tertiary Butanol	0.519	0.025	0.010	1.57	0.076	0.030	
287-92-3	Cyclopentane	ND	0.025	0.010	ND	0.072	0.029	U
79-29-8	2,3-Dimethylbutane	ND	0.025	0.010	ND	0.088	0.035	U
107-83-5	2-Methylpentane	0.043	0.025	0.010	0.152	0.088	0.035	
1634-04-4	Methyl tert butyl ether	0.055	0.025	0.010	0.198	0.090	0.036	
96-14-0	3-Methylpentane	ND	0.025	0.010	ND	0.088	0.035	U
592-41-6	1-Hexene	0.015	0.025	0.010	0.052	0.086	0.034	J
110-54-3	n-Hexane	0.036	0.025	0.010	0.127	0.088	0.035	
108-20-3	Isopropyl Ether	ND	0.025	0.010	ND	0.104	0.042	U
637-92-3	Ethyl-Tert-Butyl-Ether	ND	0.025	0.010	ND	0.104	0.042	U
590-35-2	2,2-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041	U
96-37-7	Methylcyclopentane	0.015	0.025	0.010	0.052	0.086	0.034	J
108-08-7	2,4-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041	U
107-06-2	1,2-Dichloroethane	ND	0.025	0.010	ND	0.101	0.041	U
110-82-7	Cyclohexane	0.015	0.025	0.010	0.052	0.086	0.034	J
591-76-4	2-Methylhexane	ND	0.025	0.010	ND	0.102	0.041	U
71-43-2	Benzene	0.042	0.025	0.010	0.134	0.080	0.032	
565-59-3	2,3-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041	U
110-02-1	Thiophene	ND	0.025	0.010	ND	0.086	0.034	U
589-34-4	3-Methylhexane	ND	0.025	0.010	ND	0.102	0.041	U
994-05-8	Tertiary-Amyl Methyl Ether	ND	0.025	0.010	ND	0.104	0.042	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-07	Date Collected	: 10/19/16 15:58
Client ID	: NFSV-03	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 01:11
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149182	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
592-76-7	1-Heptene	ND	0.025	0.010	ND	0.100	0.040	U
540-84-1	Isooctane	0.019	0.025	0.010	0.089	0.117	0.047	J
142-82-5	Heptane	0.038	0.025	0.010	0.156	0.102	0.041	
108-87-2	Methylcyclohexane	ND	0.025	0.010	ND	0.100	0.040	U
592-13-2	2,5-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
589-43-5/564-02-3	2,4-Dimethylhexane/2,2,3-Trimethylpen	ND	0.050	0.025	ND	0.234	0.117	U
565-75-3	2,3,4-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047	U
560-21-4	2,3,3-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047	U
584-94-1	2,3-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
619-99-8	3-Ethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
592-27-8	2-Methylheptane	ND	0.025	0.010	ND	0.117	0.047	U
589-81-1	3-Methylheptane	0.025	0.025	0.010	0.117	0.117	0.047	
108-88-3	Toluene	0.209	0.025	0.010	0.788	0.094	0.038	
554-14-3	2-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040	U
616-44-4	3-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040	U
111-66-0	1-Octene	0.049	0.025	0.010	0.225	0.115	0.046	
16747-50-5	1-Ethyl-1-Methylcyclopentane	ND	0.025	0.010	ND	0.115	0.046	U
111-65-9	Octane	0.072	0.025	0.010	0.336	0.117	0.047	
106-93-4	1,2-Dibromoethane	ND	0.025	0.010	ND	0.192	0.077	U
100-41-4	Ethylbenzene	0.020	0.025	0.010	0.087	0.109	0.043	J
872-55-9	2-Ethylthiophene	ND	0.025	0.010	ND	0.115	0.046	U
179601-23-1	p/m-Xylene	0.062	0.050	0.010	0.269	0.217	0.043	
124-11-8	1-Nonene	ND	0.025	0.010	ND	0.129	0.052	U
111-84-2	Nonane (C9)	0.063	0.025	0.010	0.331	0.131	0.053	
100-42-5	Styrene	ND	0.025	0.010	ND	0.106	0.043	U
95-47-6	o-Xylene	0.028	0.050	0.010	0.122	0.217	0.043	J
98-82-8	Isopropylbenzene	ND	0.025	0.010	ND	0.123	0.049	U
103-65-1	n-Propylbenzene	ND	0.025	0.010	ND	0.123	0.049	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-07	Date Collected	: 10/19/16 15:58
Client ID	: NFSV-03	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 01:11
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149182	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
620-14-4	1-Methyl-3-Ethylbenzene	ND	0.050	0.025	ND	0.246	0.123	U
622-96-8	1-Methyl-4-Ethylbenzene	0.028	0.025	0.010	0.138	0.123	0.049	
108-67-8	1,3,5-Trimethylbenzene	0.013	0.025	0.010	0.064	0.123	0.049	J
872-05-9	1-Decene	0.192	0.050	0.025	1.10	0.287	0.143	
611-14-3	1-Methyl-2-Ethylbenzene	ND	0.050	0.025	ND	0.246	0.123	U
124-18-5	Decane (C10)	0.628	0.050	0.025	3.65	0.291	0.146	
95-63-6	1,2,4-Trimethylbenzene	0.044	0.050	0.025	0.216	0.246	0.123	J
135-98-8	sec-Butylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
535-77-3	1-Methyl-3-Isopropylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
99-87-6	1-Methyl-4-Isopropylbenzene	0.025	0.050	0.025	0.137	0.274	0.137	J
527-84-4	1-Methyl-2-Isopropylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
496-11-7	Indane	ND	0.050	0.025	ND	0.242	0.121	U
95-13-6	Indene	ND	0.050	0.025	ND	0.238	0.119	U
1074-43-7	1-Methyl-3-N-Propylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1074-55-1	1-Methyl-4-N-Propylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
104-51-8	n-Butylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
934-80-5	1,2-Dimethyl-4-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
135-01-3	1,2-Diethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1074-17-5	1-Methyl-2-N-Propylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1758-88-9	1,4-Dimethyl-2-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1120-21-4	Undecane	0.115	0.050	0.025	0.735	0.320	0.160	
874-41-9	1,3-Dimethyl-4-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
934-74-7	1,3-Dimethyl-5-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
2870-04-4	1,3-Dimethyl-2-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
933-98-2	1,2-Dimethyl-3-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
538-68-1	N-Pentylbenzene	ND	0.050	0.025	ND	0.303	0.152	U
112-40-3	Dodecane (C12)	0.973	0.100	0.050	6.78	0.697	0.348	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-07	Date Collected	: 10/19/16 15:58
Client ID	: NFSV-03	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 01:11
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149182	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
91-20-3	Naphthalene	0.050	0.050	0.025	0.262	0.262	0.131	
95-15-8	Benzothiophene	ND	0.100	0.050	ND	0.549	0.274	U
12108-13-3	MMT	ND	0.100	0.050	ND	0.892	0.446	U
629-50-5	Tridecane	0.184	1.00	0.050	1.39	7.54	0.377	J
91-57-6	2-Methylnaphthalene	ND	0.500	0.050	ND	2.91	0.291	U
90-12-0	1-Methylnaphthalene	ND	0.500	0.050	ND	2.91	0.291	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149182.D
Acq On : 9 Nov 2016 1:11 am
Operator : AIRPIANO1:RY
Sample : L1634001-07,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 10 12:27:49 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.198	49	131672	10.000	ppbV	0.00
Standard Area = 123393			Recovery = 106.71%			
27) 1,4-difluorbenzene	14.201	114	277076	10.000	ppbV	0.00
Standard Area = 263318			Recovery = 105.22%			
54) chlorobenzene-D5	27.633	117	200099	10.000	ppbV	0.00
Standard Area = 190793			Recovery = 104.88%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.614	65	83480	10.146	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.46%			
46) Toluene-D8	20.948	98	219545	10.386	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 103.86%			
62) 4-Bromofluorobenzene (...	34.334	95	111770	10.183	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.83%			
Target Compounds						Qvalue
2) 1,3-butadiene	0.000		0	N.D.	d	
4) Isopentane	5.878	41	1583M6	0.124	ppbV	
5) 1-Pentene	6.183	42	487M6	0.034	ppbV	
6) 2-Methyl-1-butene	6.352	55	316	0.019	ppbV #	53
7) Pentane	6.468	43	2062	0.094	ppbV	90
9) 2-Pentene (trans)	6.668	55	241	0.015	ppbV #	56
10) 2-Pentene (cis)	6.889	55	484M6	0.032	ppbV	
11) Tertiary butanol	6.889	59	12871	0.519	ppbV	85
12) Cyclopentane	0.000		0	N.D.	d	
13) 2,3-Dimethylbutane	0.000		0	N.D.	d	
14) 2-Methylpentane	8.803	43	1075M4	0.043	ppbV	
15) MTBE	8.692	73	1382M4	0.055	ppbV	
16) 3-Methylpentane	0.000		0	N.D.	d	
17) 1-Hexene	9.727	56	138M6	0.015	ppbV	
18) Hexane	10.286	57	507	0.036	ppbV #	67
19) Diisopropyl ether	0.000		0	N.D.	d	
20) Ethyl tertiary butyl e...	0.000		0	N.D.	d	
21) 2,2-Dimethylpentane	0.000		0	N.D.	d	
23) Methylcyclopentane	11.827	56	258	0.015	ppbV #	59
24) 2,4-Dimethylpentane	0.000		0	N.D.	d	
25) 1,2-Dichloroethane	0.000		0	N.D.	d	
26) Cyclohexane	13.909	56	209	0.015	ppbV	92
28) 2-Methylhexane	0.000		0	N.D.	d	

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149182.D
Acq On : 9 Nov 2016 1:11 am
Operator : AIRPIANO1:RY
Sample : L1634001-07,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 10 12:27:49 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
29) Benzene	13.316	78	1112	0.042	ppbV	73
30) 2,3-Dimethylpentane	0.000		0	N.D.	d	
31) Thiophene	0.000		0	N.D.	d	
32) 3-Methylhexane	0.000		0	N.D.	d	
33) TAME	0.000		0	N.D.	d	
34) 1-Heptene	0.000		0	N.D.	d	
35) Isooctane	16.004	57	803M6	0.019	ppbV	
36) Heptane	16.788	43	677M6	0.038	ppbV	
37) Methylcyclohexane	0.000		0	N.D.	d	
38) 2,5-Dimethylhexane	0.000		0	N.D.	d	
39) 2,4-Dimethyhexane / 2,...	0.000		0	N.D.	d	
40) 2,3,4-Trimethylpentane	0.000		0	N.D.	d	
41) 2,3,3-Trimethylpentane	0.000		0	N.D.	d	
42) 2,3-Dimethylhexane	0.000		0	N.D.	d	
43) 3-Ethylhexane	0.000		0	N.D.	d	
44) 2-Methylheptane	0.000		0	N.D.	d	
45) 3-Methylheptane	22.818	43	538M6	0.025	ppbV	
47) Toluene	21.263	91	6434	0.209	ppbV	99
48) 2-Methylthiophene	0.000		0	N.D.	d	
49) 3-Methylthiophene	0.000		0	N.D.	d	
50) 1-Octene	24.077	55	452M4	0.049	ppbV	
51) 1-ethyl-1-methylcyclop...	0.000		0	N.D.	d	
52) Octane	25.081	43	1761	0.072	ppbV	90
53) 1,2-Dibromoethane	0.000		0	N.D.	d	
55) Ethylbenzene	29.493	91	555	0.020	ppbV #	60
56) 2-Ethylthiophene	0.000		0	N.D.	d	
57) p/m-Xylene	30.248	91	1357M4	0.062	ppbV	
58) 1-Nonene	0.000		0	N.D.	d	
59) Nonane	33.901	43	1327	0.063	ppbV	96
60) Styrene	0.000		0	N.D.	d	
61) o-Xylene	32.265	91	633	0.028	ppbV	77
63) Isopropylbenzene	35.119		0	N.D.		
64) n-Propylbenzene	37.698		0	N.D.		
65) 1-Methyl-3-ethylbenzene	38.335	105	513	0.019	ppbV	63
66) 1-Methyl-4-ethylbenzene	38.515	105	842	0.028	ppbV	74
67) 1,3,5-Trimethylbenzene	38.996	105	309	0.013	ppbV #	66
68) 1-Decene	41.531	41	2329	0.192	ppbV #	65
69) 1-Methyl-2-ethylbenzene	0.000		0	N.D.	d	
70) Decane	42.493	43	13663	0.628	ppbV	99
71) 1,2,4-Trimethylbenzene	41.147	105	1058	0.044	ppbV	84

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149182.D
Acq On : 9 Nov 2016 1:11 am
Operator : AIRPIANO1:RY
Sample : L1634001-07,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 10 12:27:49 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

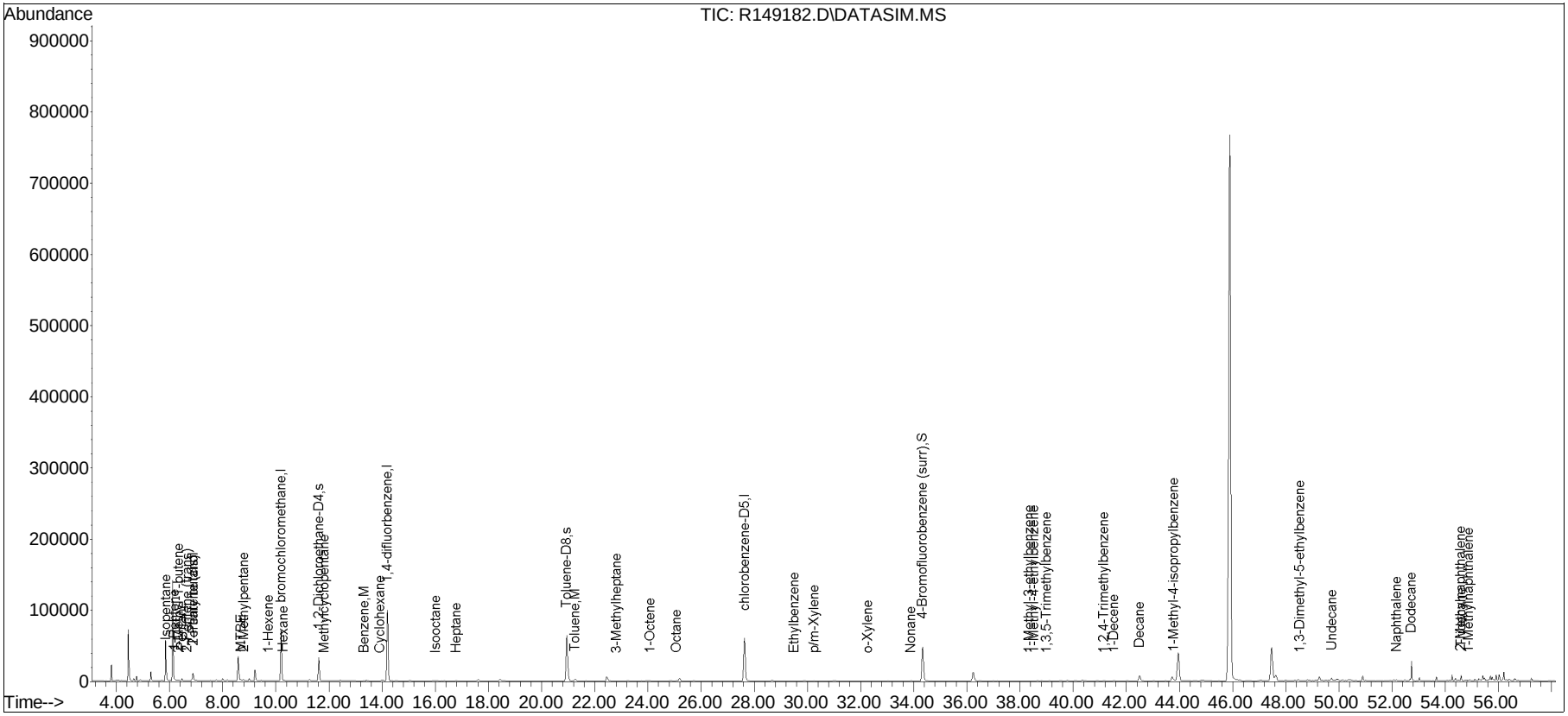
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
72) sec-Butylbenzene	0.000		0	N.D.	d	
73) 1-Methyl-3-isopropylbe...	0.000		0	N.D.	d	
74) 1-Methyl-4-isopropylbe...	43.778	119	640	0.025	ppbV #	51
75) 1-Methyl-2-isopropylbe...	0.000		0	N.D.	d	
76) Indan	44.499		0	N.D.		
77) Indene	0.000		0	N.D.	d	
78) 1-Methyl-3-propylbenzene	0.000		0	N.D.	d	
79) 1-Methyl-4-propylbenzene	0.000		0	N.D.	d	
80) n-Butylbenzene	0.000		0	N.D.	d	
81) 1,2-Dimethyl-4-ethylbe...	0.000		0	N.D.	d	
82) 1,2-Diethylbenzene	0.000		0	N.D.	d	
83) 1-Methyl-2-propylbenzene	0.000		0	N.D.	d	
84) 1,4-Dimethyl-2-ethylbe...	0.000		0	N.D.	d	
85) Undecane	49.726	57	2531	0.115	ppbV	85
86) 1,3-Dimethyl-4-ethylbe...	0.000		0	N.D.	d	
87) 1,3-Dimethyl-5-ethylbe...	48.525	119	397	0.013	ppbV #	27
88) 1,3-Dimethyl-2-ethylbe...	0.000		0	N.D.	d	
89) 1,2-Dimethyl-3-ethylbe...	0.000		0	N.D.	d	
90) 1,2,4,5-Tetramethylben...	50.099		0	N.D.		
91) Pentylbenzene	0.000		0	N.D.	d	
92) Dodecane	52.728	43	23395M4	0.973	ppbV	
93) Naphthalene	52.170	128	1620	0.050	ppbV	84
94) Benzothiophene	52.315		0	N.D.		
95) MMT	0.000		0	N.D.	d	
96) Tridecane	54.597	57	6251	0.184	ppbV	99
97) 2-Methylnaphthalene	54.576	142	454	0.020	ppbV	71
98) 1-Methylnaphthalene	54.876	142	454	0.018	ppbV	70

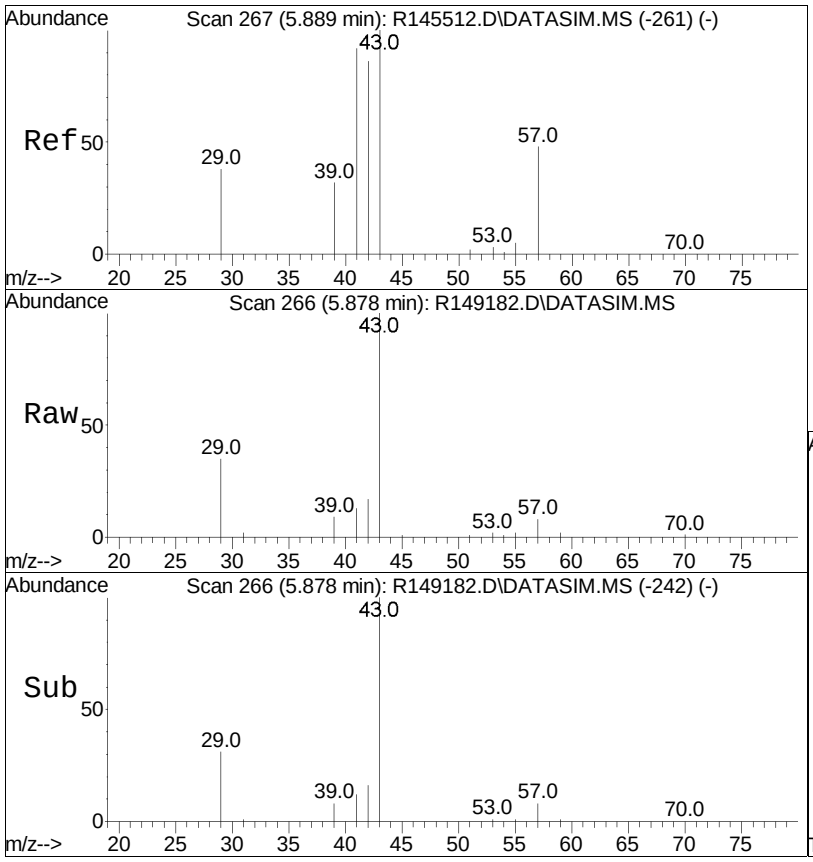
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : AIR-NF-PIANO - NF PIANO LIST161108PIANO\R149170.D

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149182.D
Acq On : 9 Nov 2016 1:11 am
Operator : AIRPIANO1:RY
Sample : L1634001-07,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 10 12:27:49 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

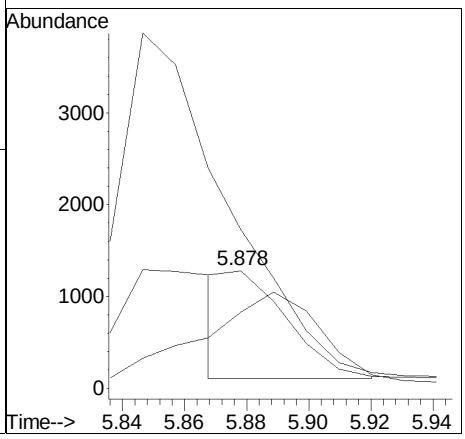


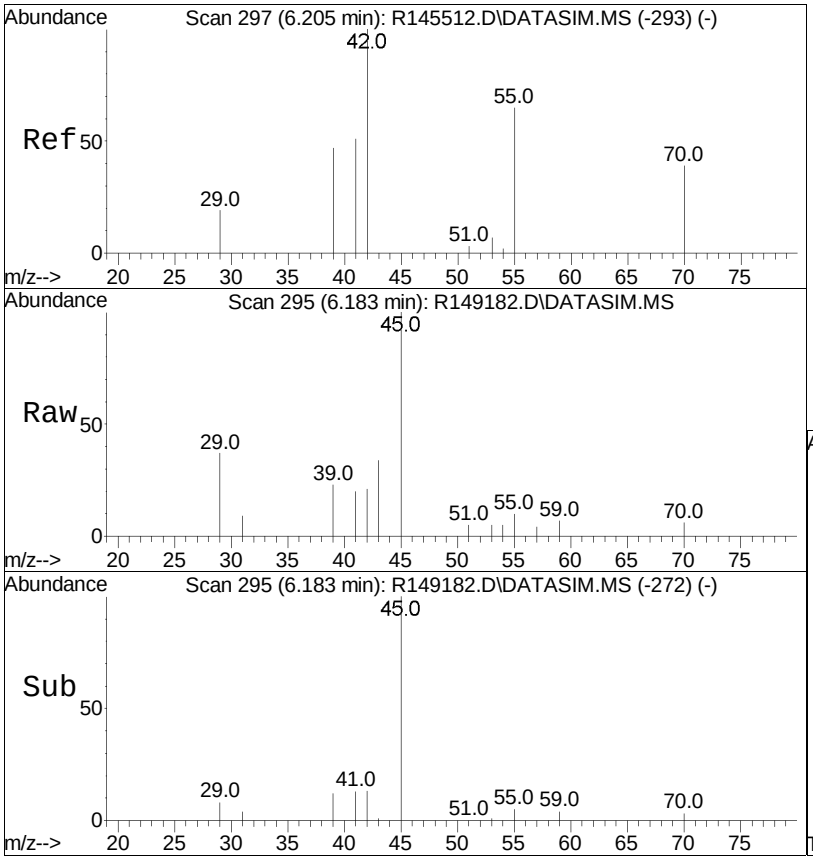


#4
Isopentane
Concen: 0.12 ppbV m
RT: 5.878 min Scan# 266
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 41 Resp: 1583

Ion	Ratio	Lower	Upper
41	100		
57	65.0	31.8	71.8
42	135.1	76.7	116.7#

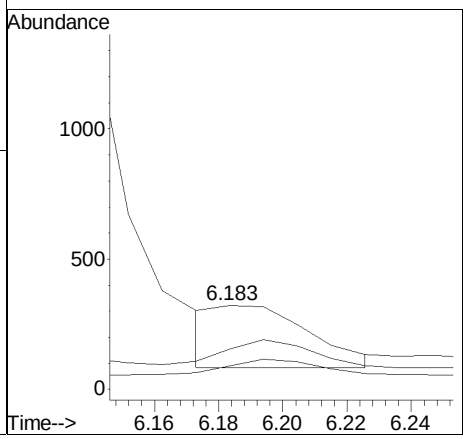


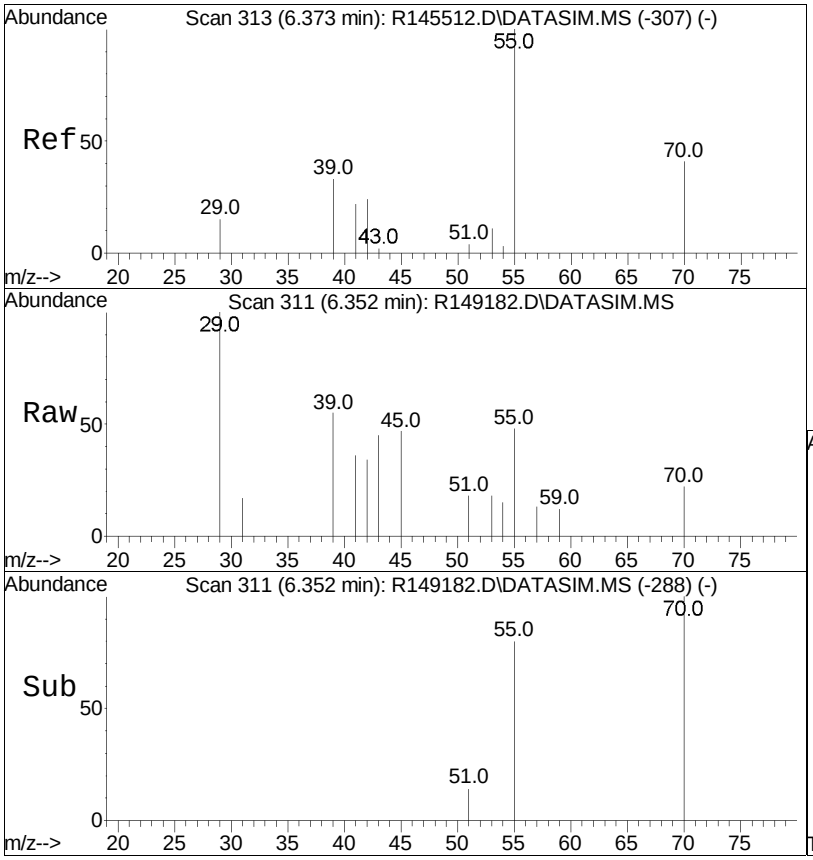


#5
1-Pentene
Concen: 0.03 ppbV m
RT: 6.183 min Scan# 295
Delta R.T. -0.011 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 42 Resp: 487

Ion	Ratio	Lower	Upper
42	100		
55	48.1	43.2	83.2
70	28.0	13.6	53.6

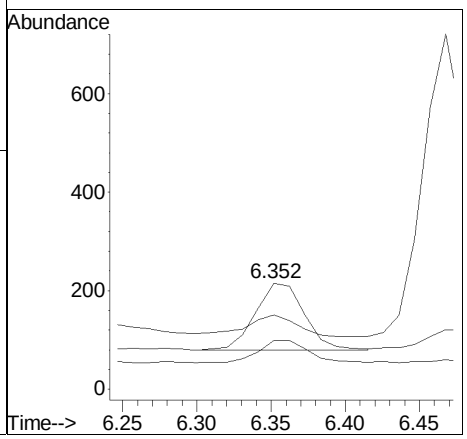


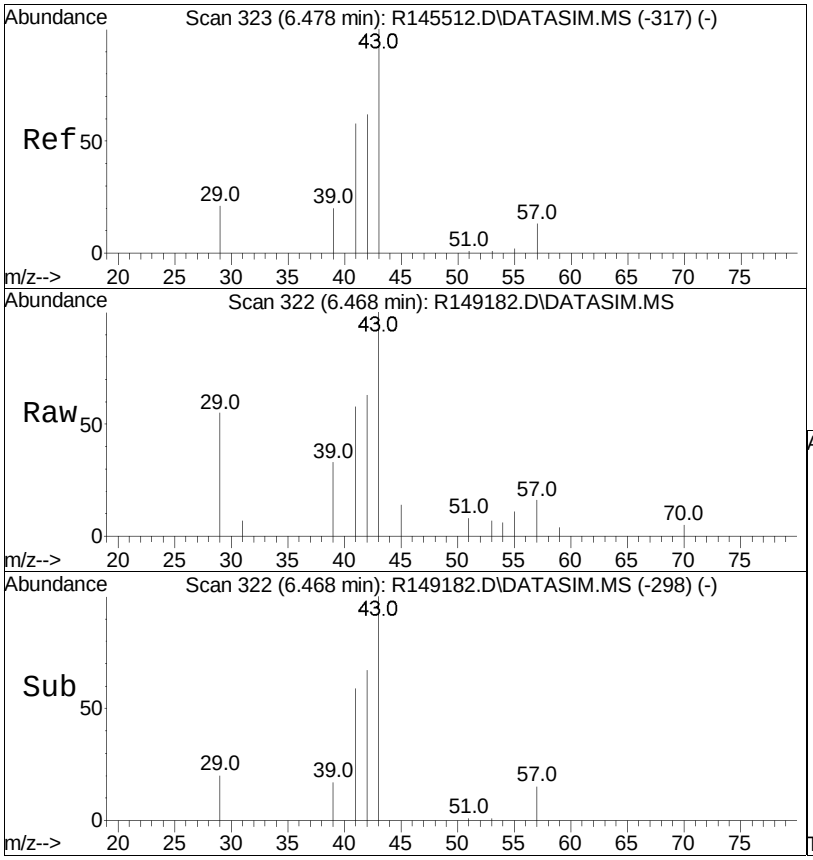


#6
2-Methyl-1-butene
Concen: 0.02 ppbV
RT: 6.352 min Scan# 311
Delta R.T. -0.011 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 55 Resp: 316

Ion	Ratio	Lower	Upper
55	100		
70	46.0	16.1	56.1
42	70.2	5.4	45.4#

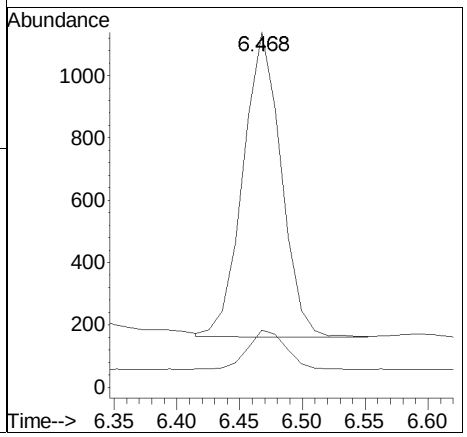


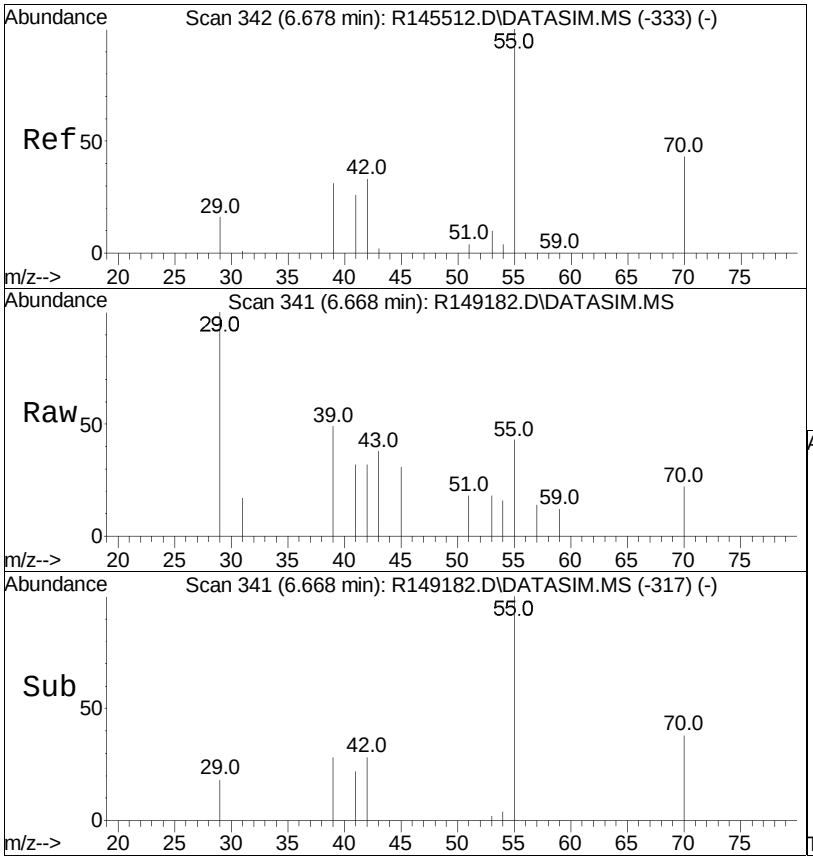


#7
Pentane
Concen: 0.09 ppbV
RT: 6.468 min Scan# 322
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 43 Resp: 2062

Ion	Ratio	Lower	Upper
43	100		
57	16.2	0.0	32.2

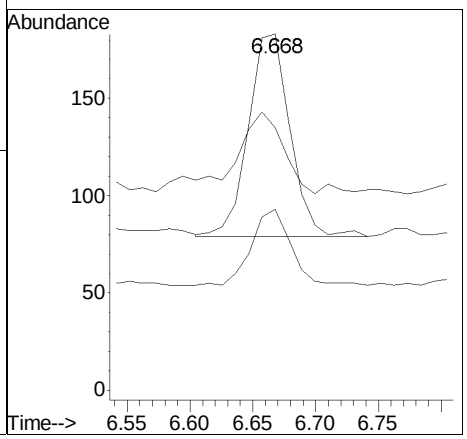


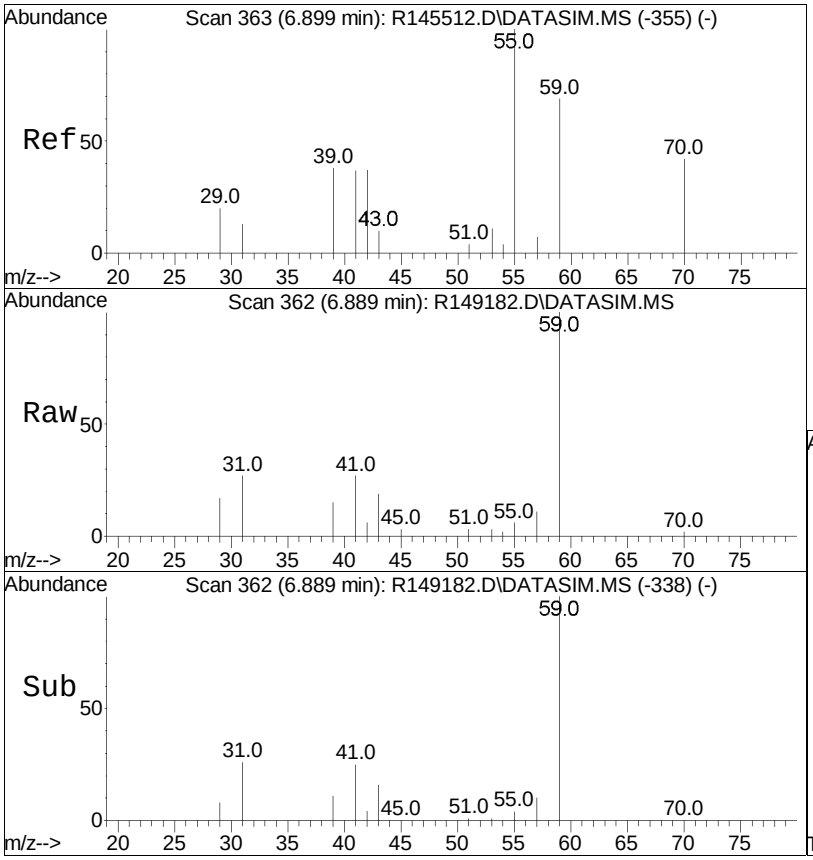


#9
2-Pentene (trans)
Concen: 0.01 ppbV
RT: 6.668 min Scan# 341
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 55 Resp: 241

Ion	Ratio	Lower	Upper
55	100		
70	50.8	17.7	57.7
42	73.8	14.5	54.5#

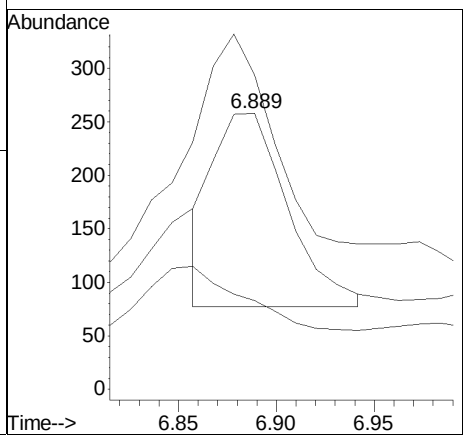


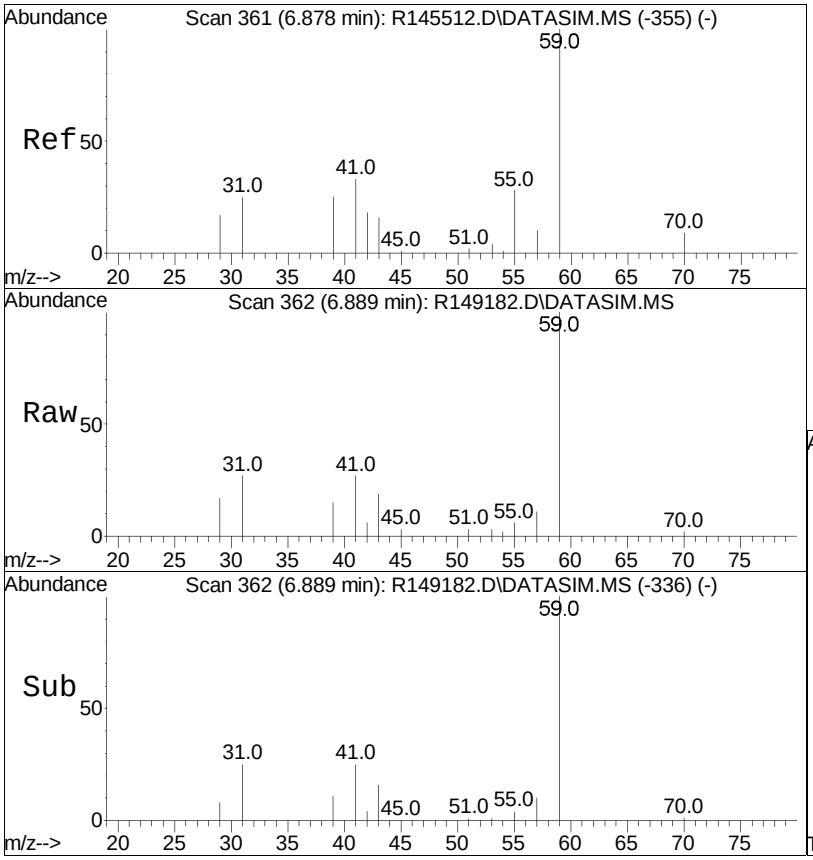


#10
2-Pentene (cis)
Concen: 0.03 ppbV m
RT: 6.889 min Scan# 362
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 55 Resp: 484

Ion	Ratio	Lower	Upper
55	100		
70	32.2	16.4	56.4
42	114.0	19.4	59.4#

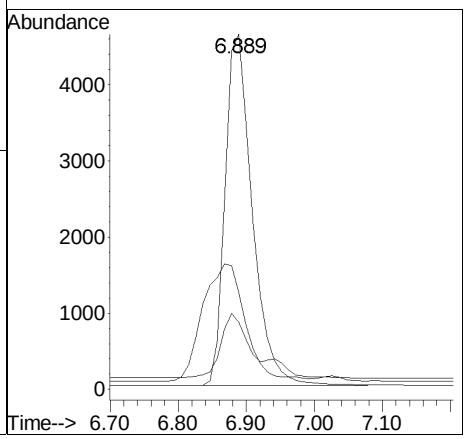


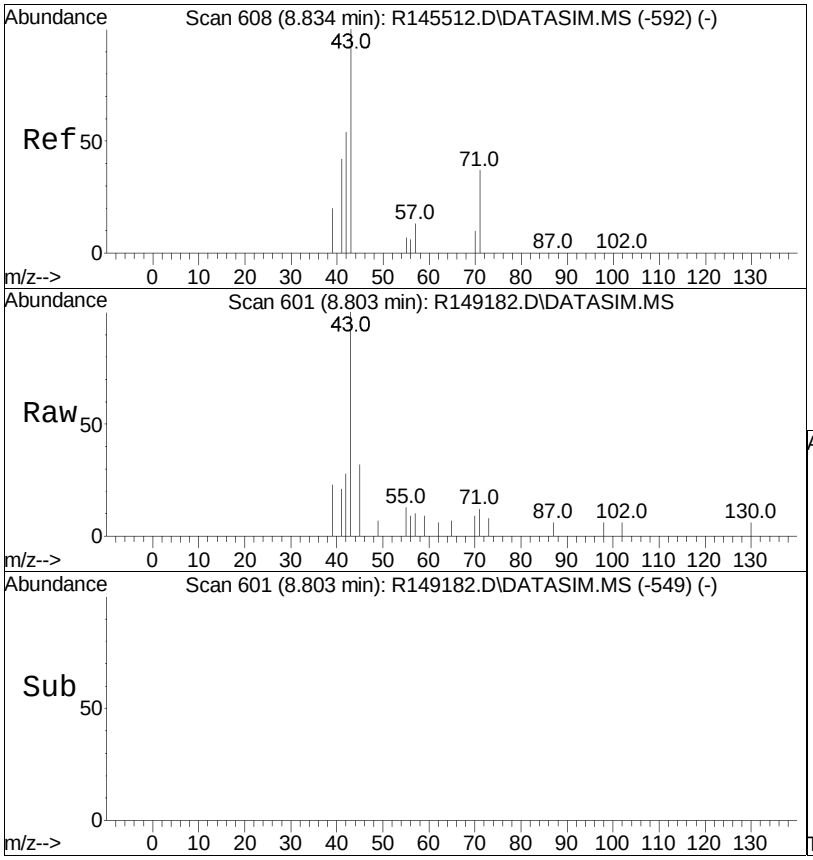


#11
Tertiary butanol
Concen: 0.52 ppbV
RT: 6.889 min Scan# 362
Delta R.T. 0.021 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 59 Resp: 12871

Ion	Ratio	Lower	Upper
59	100		
41	27.2	20.2	60.2
43	18.9	0.0	38.4

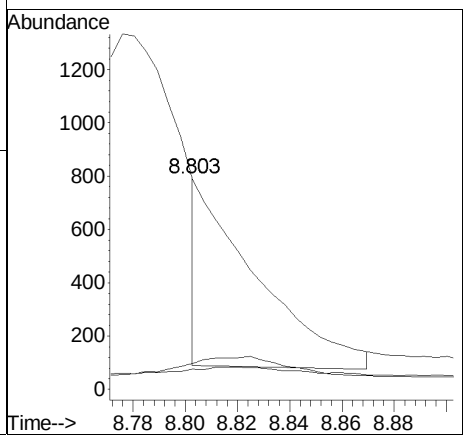


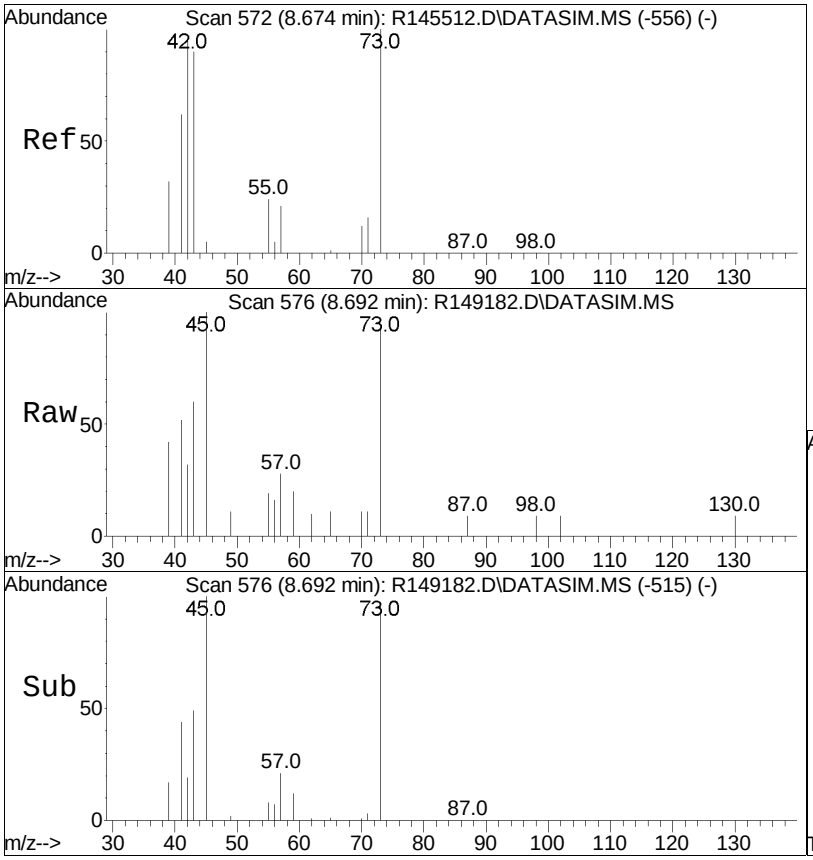


#14
2-Methylpentane
Concen: 0.04 ppbV m
RT: 8.803 min Scan# 601
Delta R.T. -0.018 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 43 Resp: 1075

Ion	Ratio	Lower	Upper
43	100		
71	12.3	8.8	48.8
57	9.6	0.0	31.6

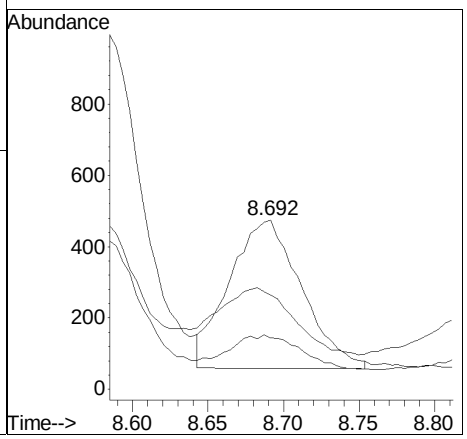


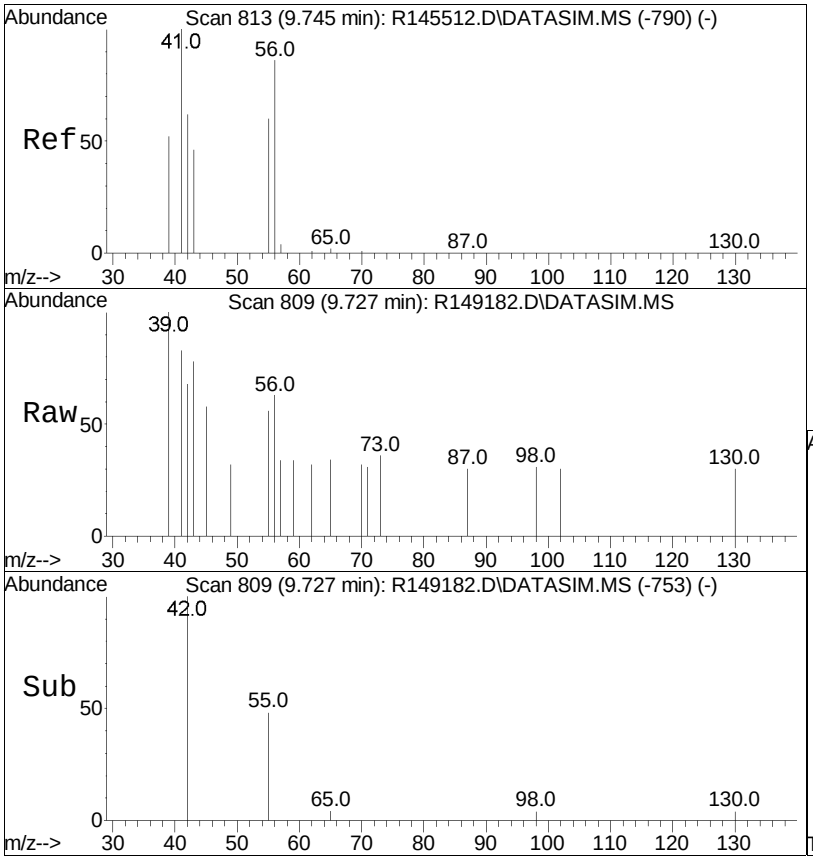


#15
MTBE
Concen: 0.05 ppbV m
RT: 8.692 min Scan# 576
Delta R.T. 0.022 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 73 Resp: 1382

Ion	Ratio	Lower	Upper
73	100		
41	55.7	54.6	94.6
57	30.4	3.7	43.7

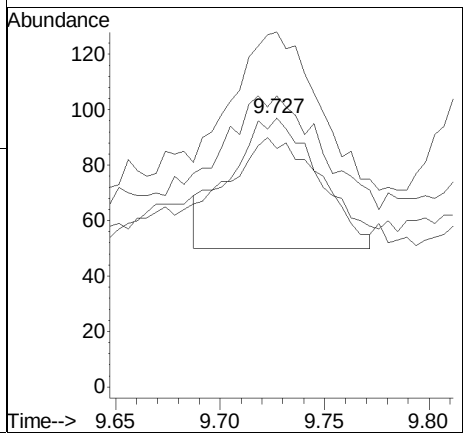


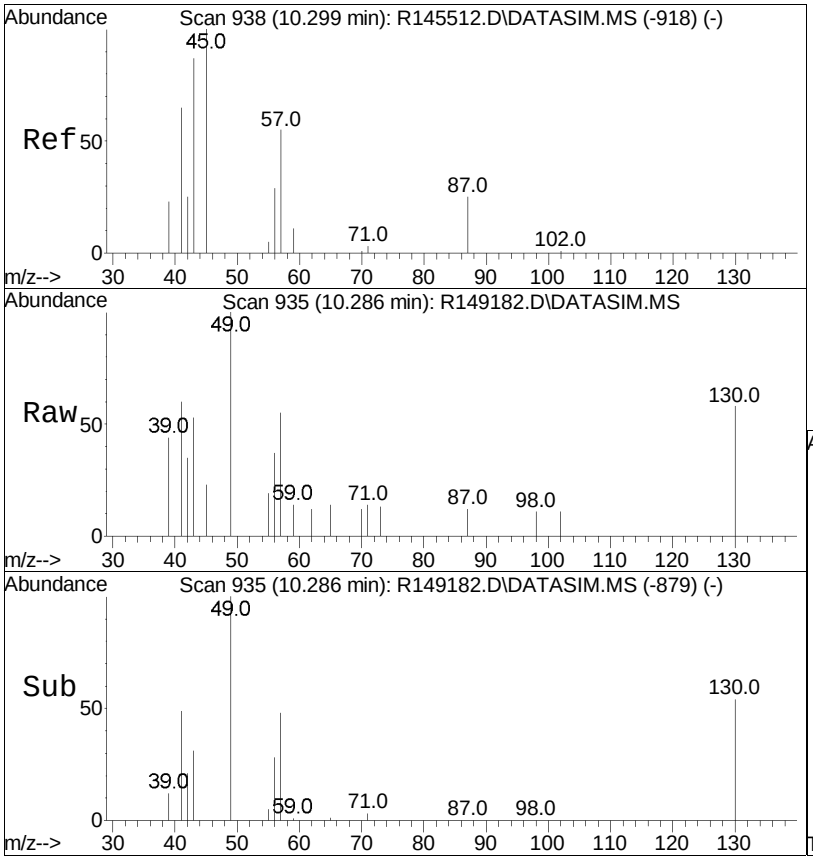


#17
1-Hexene
Concen: 0.01 ppbV m
RT: 9.727 min Scan# 809
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 56 Resp: 138

Ion	Ratio	Lower	Upper
56	100		
41	132.0	111.5	151.5
55	88.7	51.2	91.2
42	108.2	62.3	102.3#

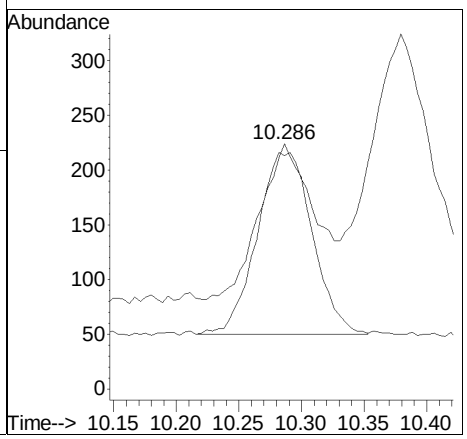


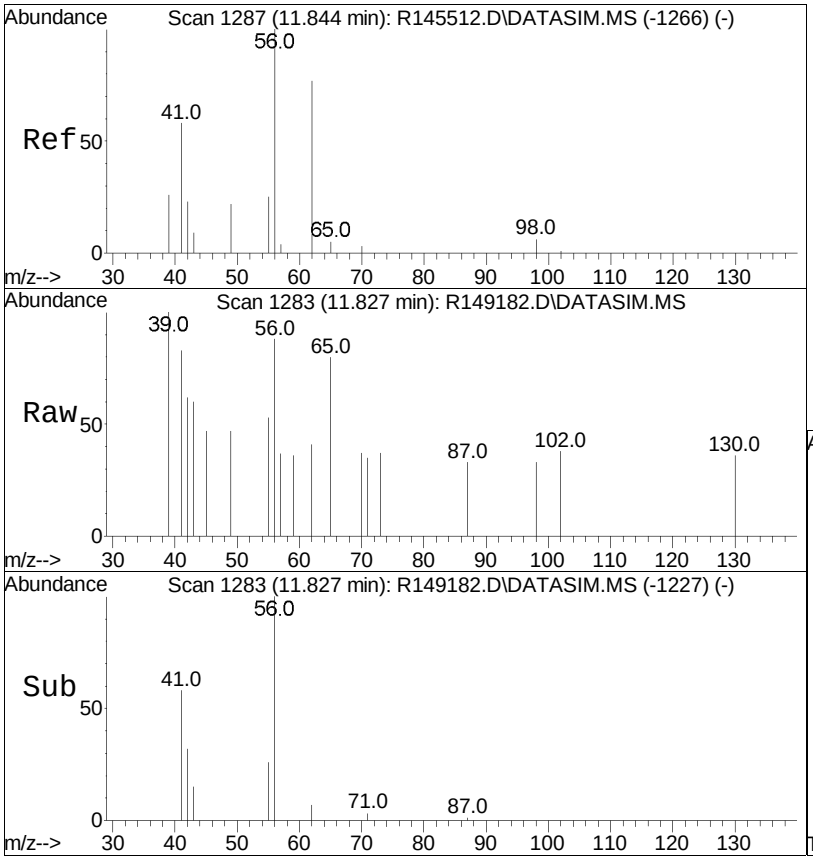


#18
Hexane
Concen: 0.04 ppbV
RT: 10.286 min Scan# 935
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 57 Resp: 507

Ion	Ratio	Lower	Upper
57	100		
43	95.1	114.8	154.8#

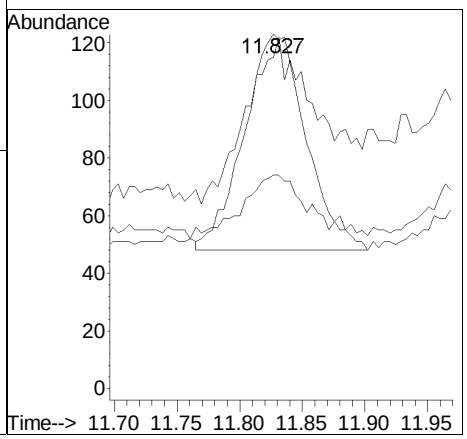


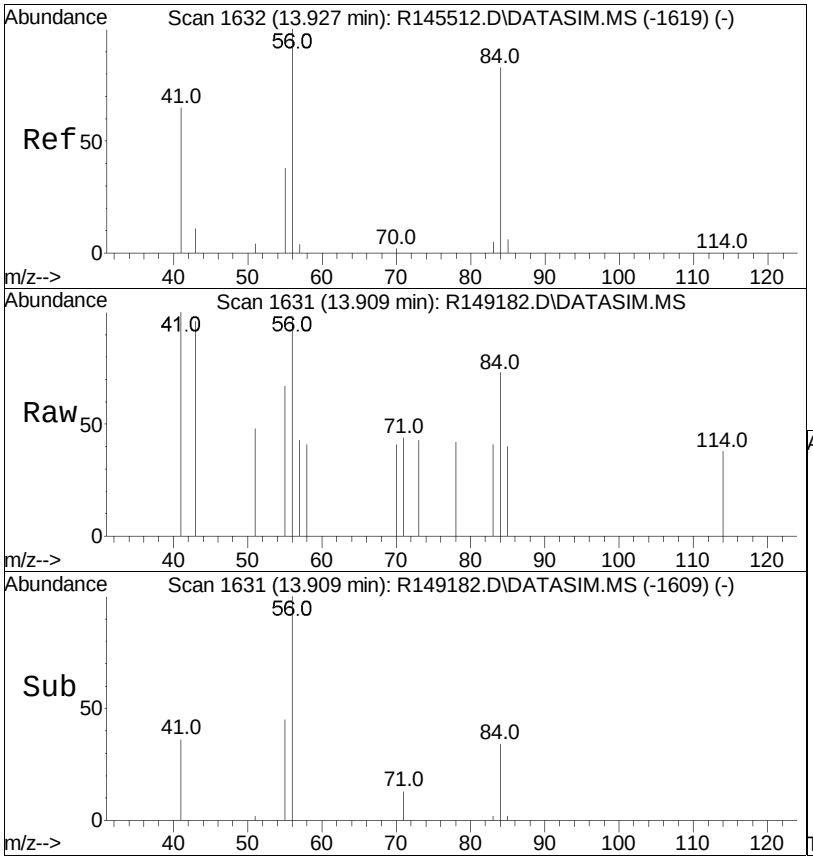


#23
Methylcyclopentane
Concen: 0.01 ppbV
RT: 11.827 min Scan# 1283
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 56 Resp: 258

Ion	Ratio	Lower	Upper
56	100		
55	60.2	6.8	46.8#
41	93.5	47.8	87.8#

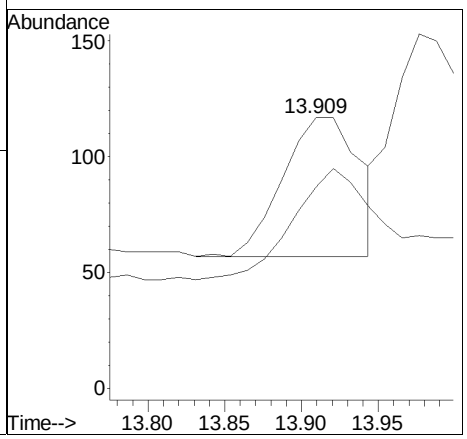


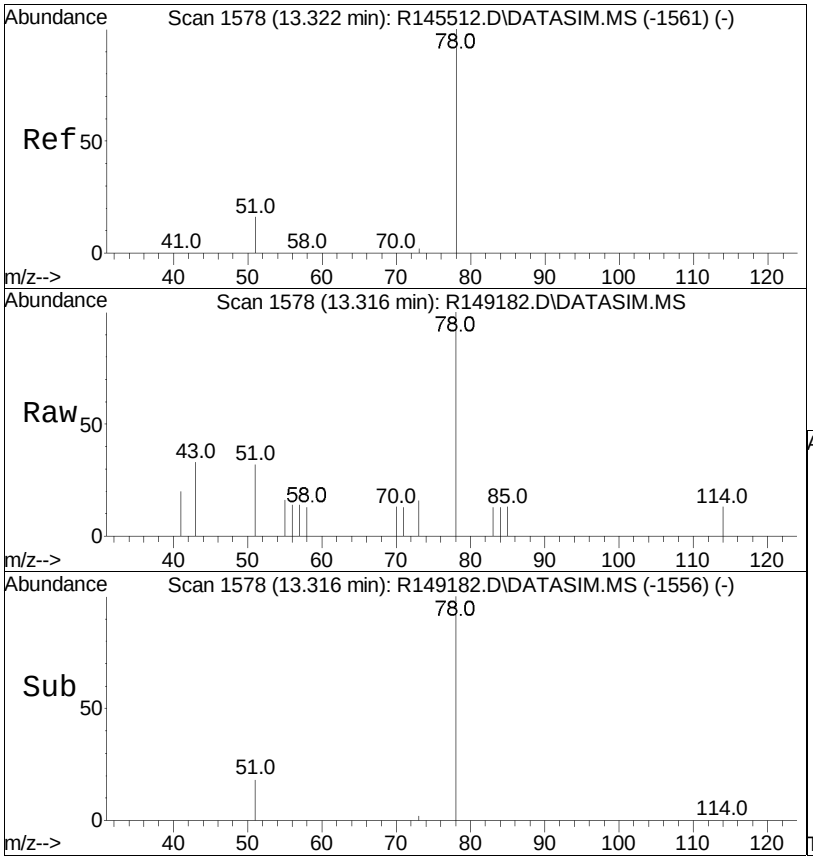


#26
Cyclohexane
Concen: 0.02 ppbV
RT: 13.909 min Scan# 1631
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 56 Resp: 209

Ion	Ratio	Lower	Upper
56	100		
84	74.4	47.9	87.9

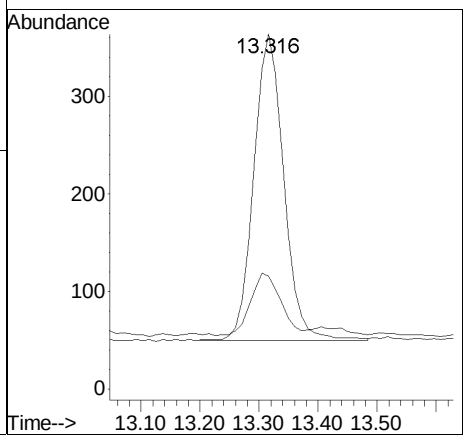


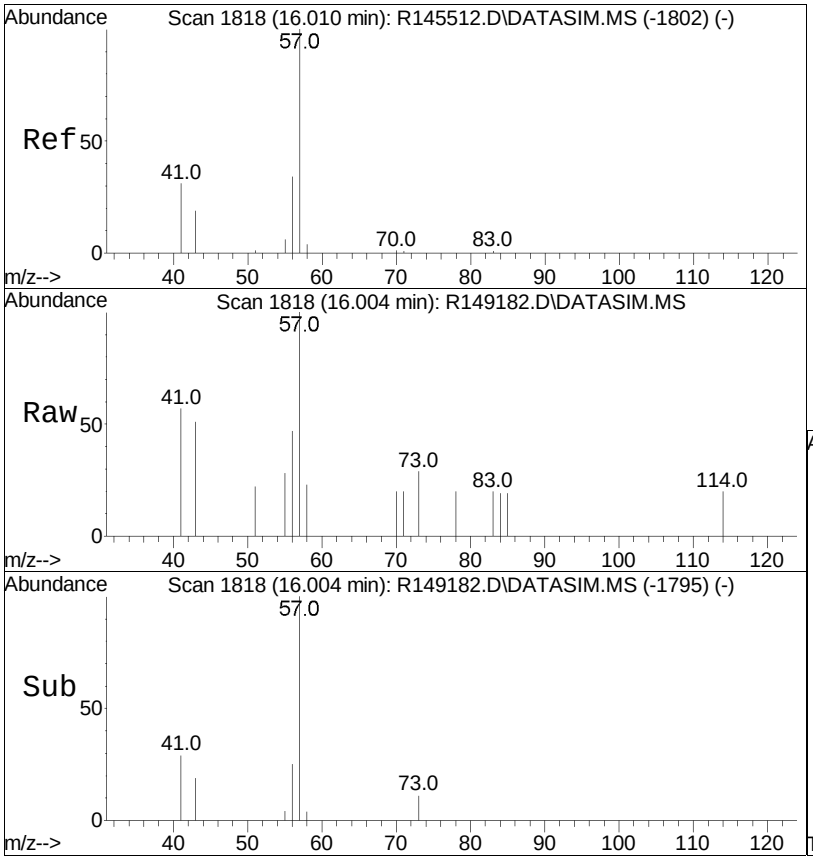


#29
Benzene
Concen: 0.04 ppbV
RT: 13.316 min Scan# 1578
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 78 Resp: 1112

Ion	Ratio	Lower	Upper
78	100		
51	31.9	0.0	39.4

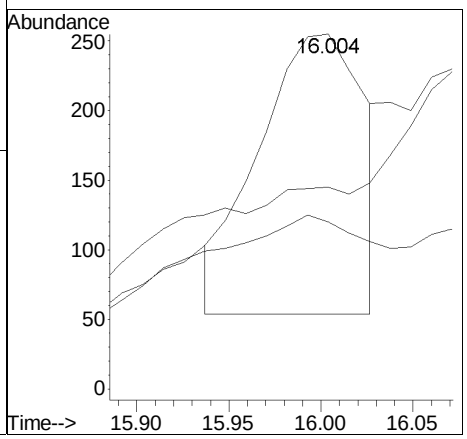


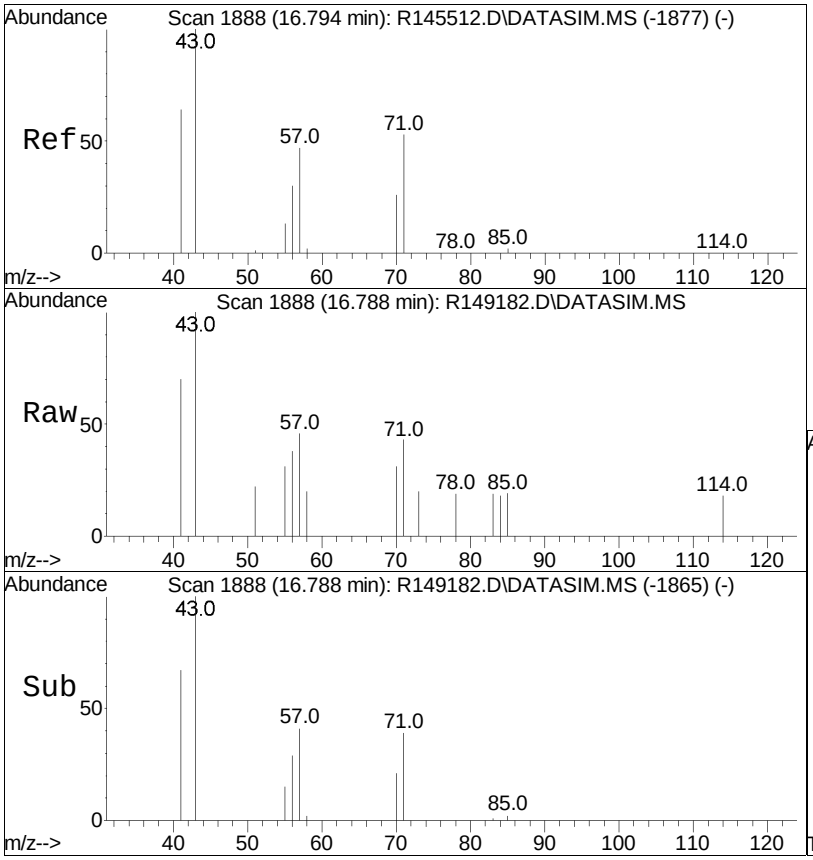


#35
Isooctane
Concen: 0.02 ppbV m
RT: 16.004 min Scan# 1818
Delta R.T. 0.011 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 57 Resp: 803

Ion	Ratio	Lower	Upper
57	100		
56	47.1	14.9	54.9
41	56.9	16.0	56.0#

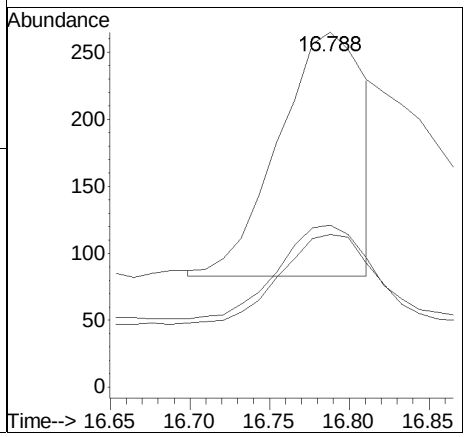


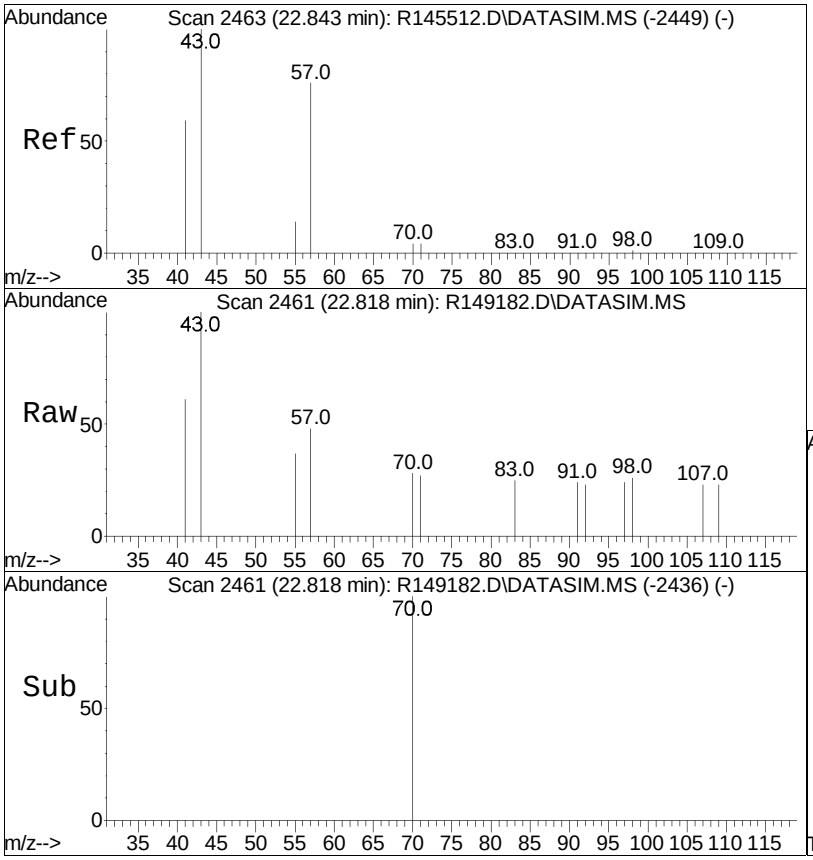


#36
Heptane
Concen: 0.04 ppbV m
RT: 16.788 min Scan# 1888
Delta R.T. 0.011 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 43 Resp: 677

Ion	Ratio	Lower	Upper
43	100		
57	45.7	23.3	63.3
71	43.0	21.1	61.1

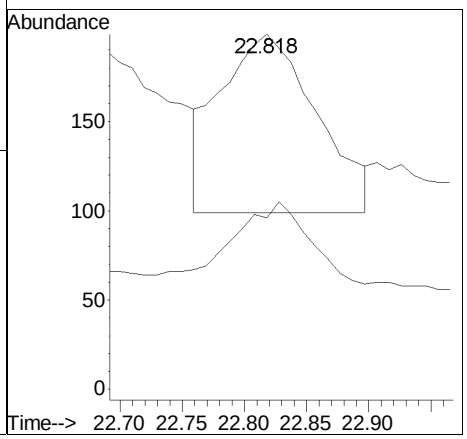


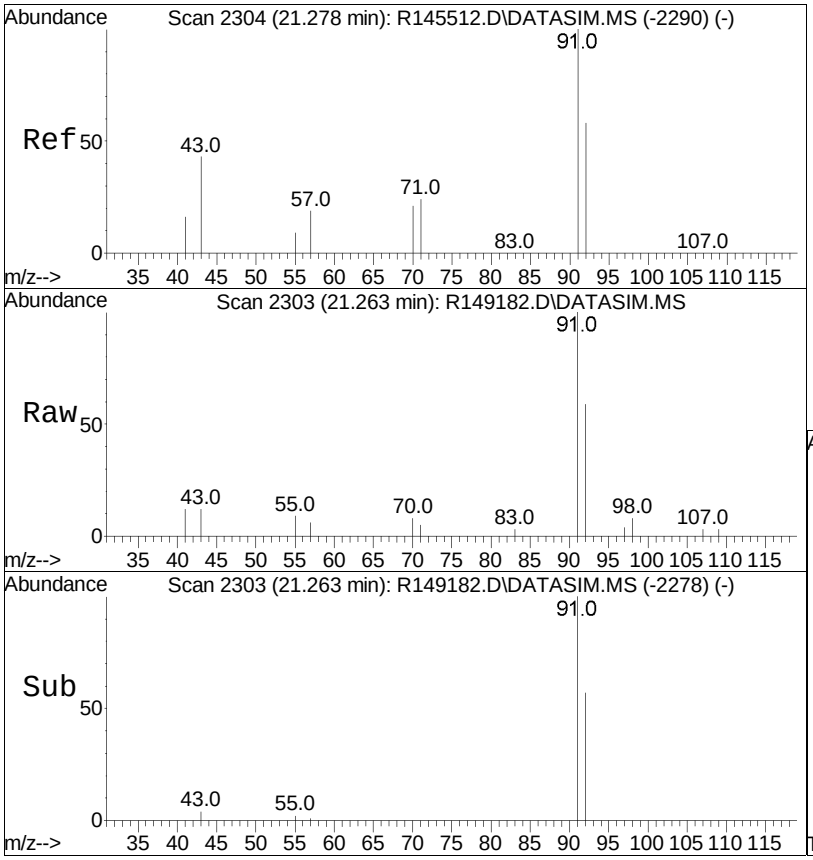


#45
3-Methylheptane
Concen: 0.03 ppbV m
RT: 22.818 min Scan# 2461
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 43 Resp: 538

Ion	Ratio	Lower	Upper
43	100		
57	48.2	47.6	87.6

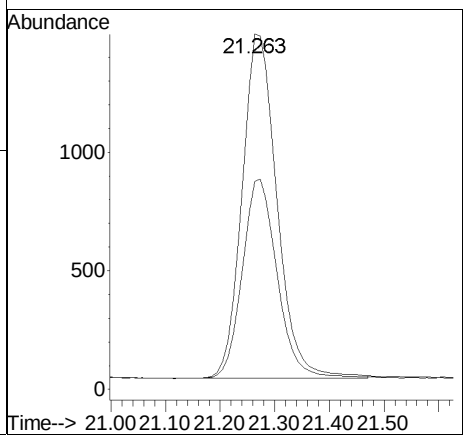


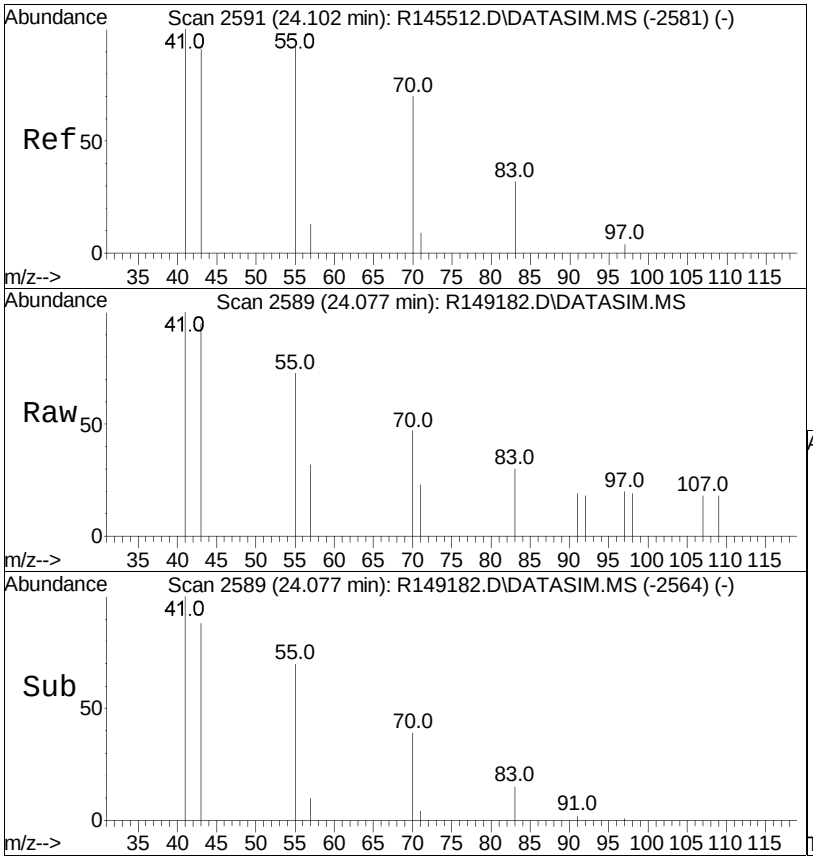


#47
Toluene
Concen: 0.21 ppbV
RT: 21.263 min Scan# 2303
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 91 Resp: 6434

Ion	Ratio	Lower	Upper
91	100		
92	58.5	37.6	77.6

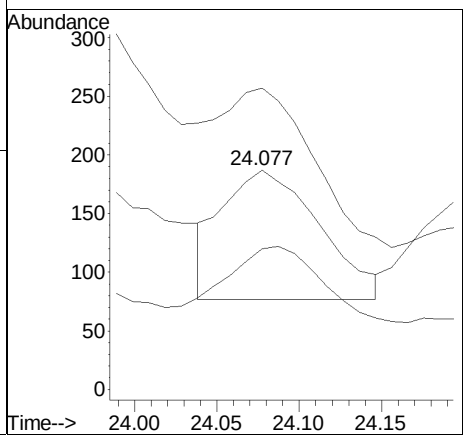


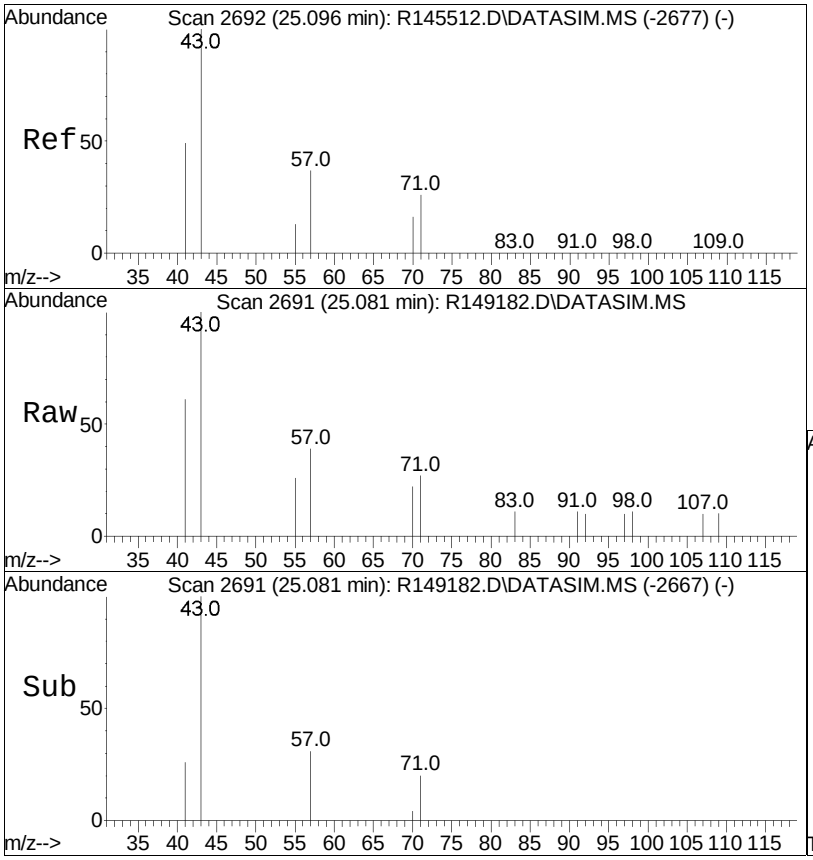


#50
1-Octene
Concen: 0.05 ppbV m
RT: 24.077 min Scan# 2589
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 55 Resp: 452

Ion	Ratio	Lower	Upper
55	100		
41	137.4	102.4	142.4
70	64.2	45.2	85.2

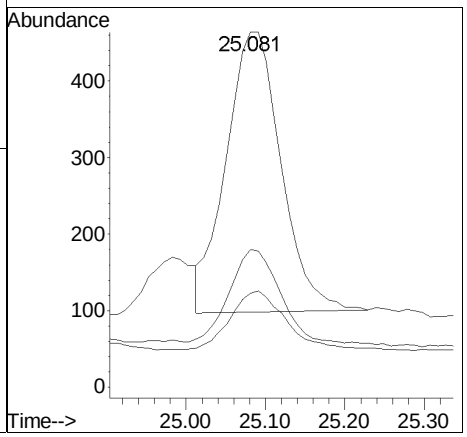


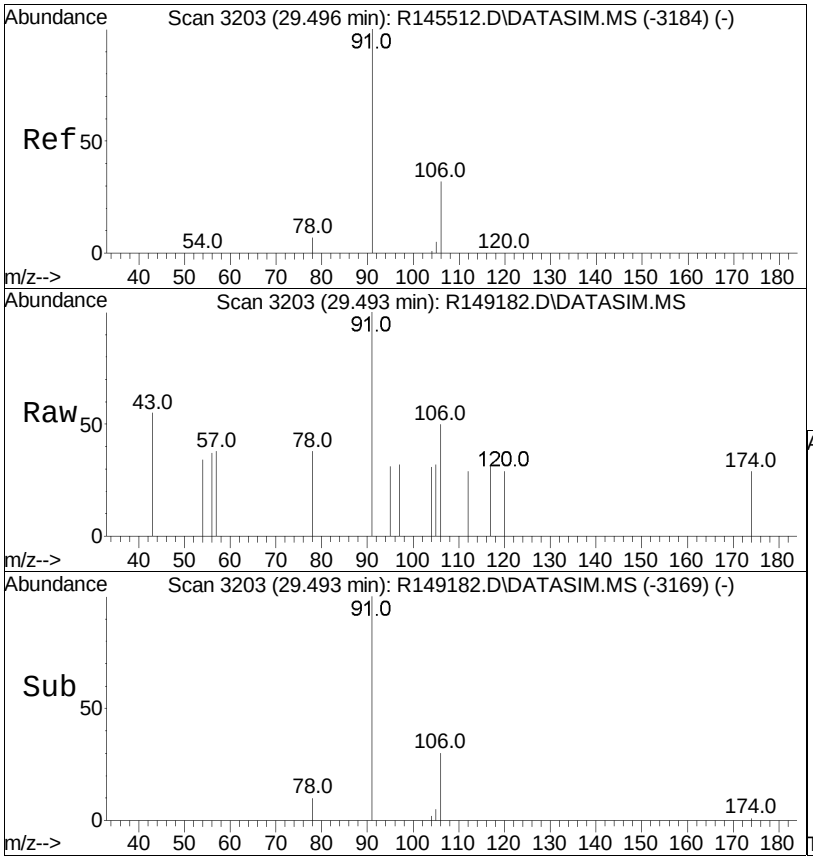


#52
Octane
Concen: 0.07 ppbV
RT: 25.081 min Scan# 2691
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 43 Resp: 1761

Ion	Ratio	Lower	Upper
43	100		
57	38.8	13.6	53.6
71	26.5	0.9	40.9

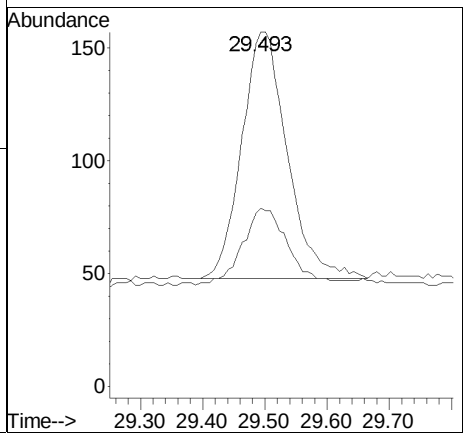


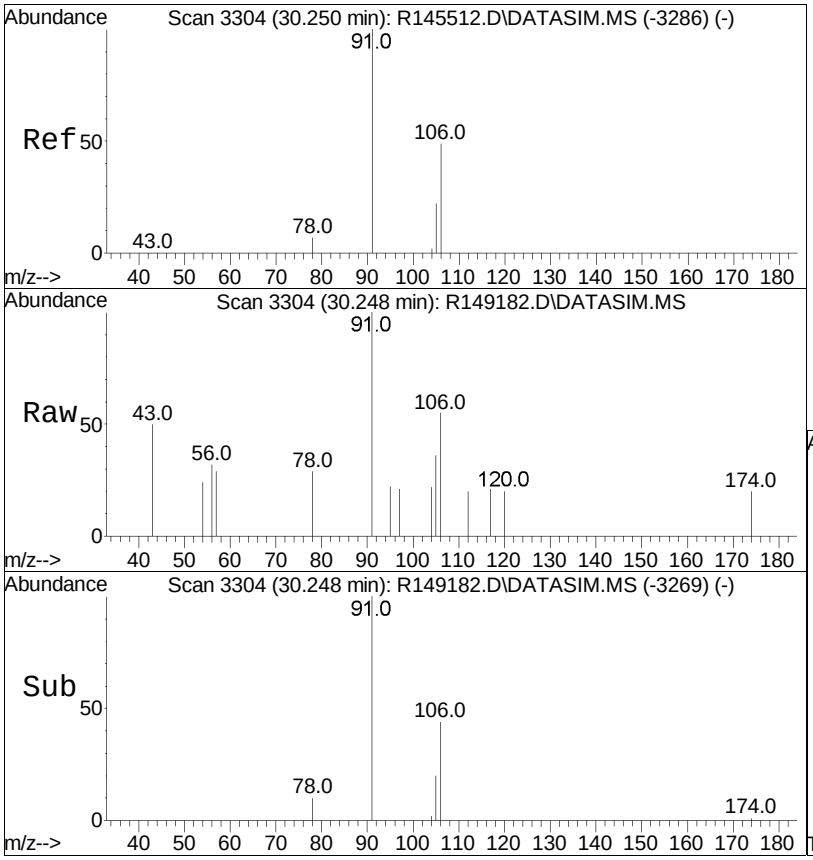


#55
Ethylbenzene
Concen: 0.02 ppbV
RT: 29.493 min Scan# 3203
Delta R.T. 0.007 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 91 Resp: 555

Ion	Ratio	Lower	Upper
91	100		
106	50.3	9.1	49.1#

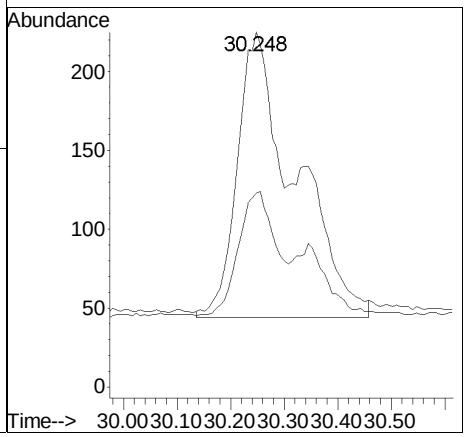


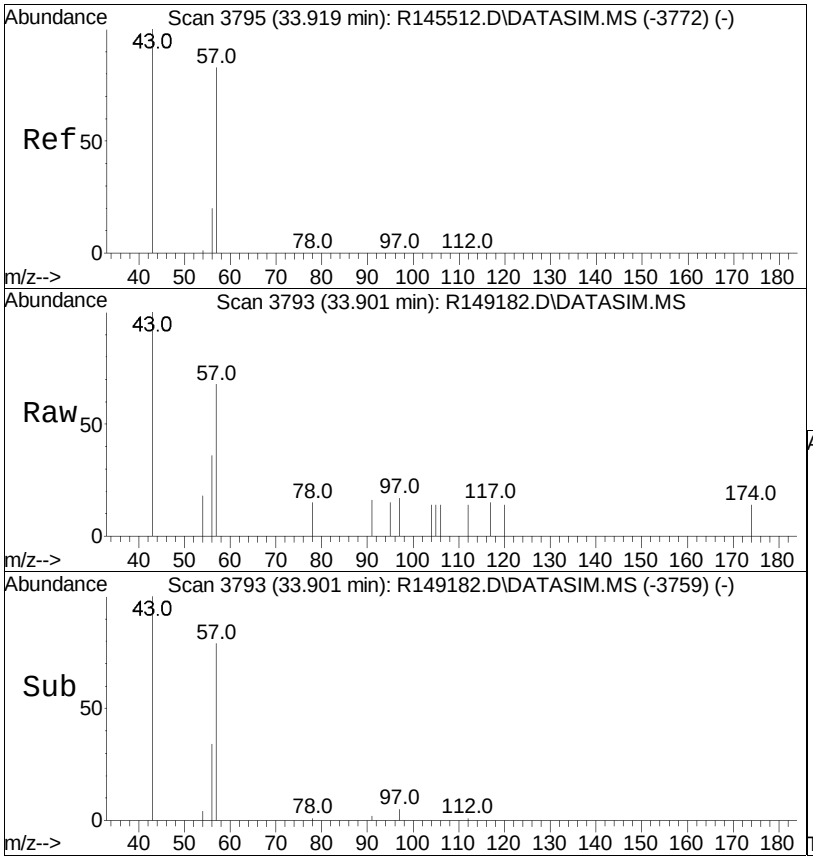


#57
p/m-Xylene
Concen: 0.06 ppbV m
RT: 30.248 min Scan# 3304
Delta R.T. 0.015 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 91 Resp: 1357

Ion	Ratio	Lower	Upper
91	100		
106	54.7	25.5	65.5

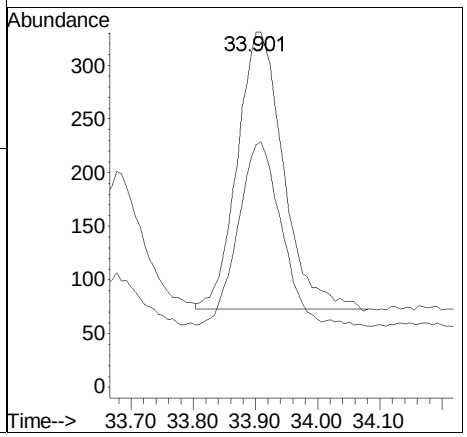


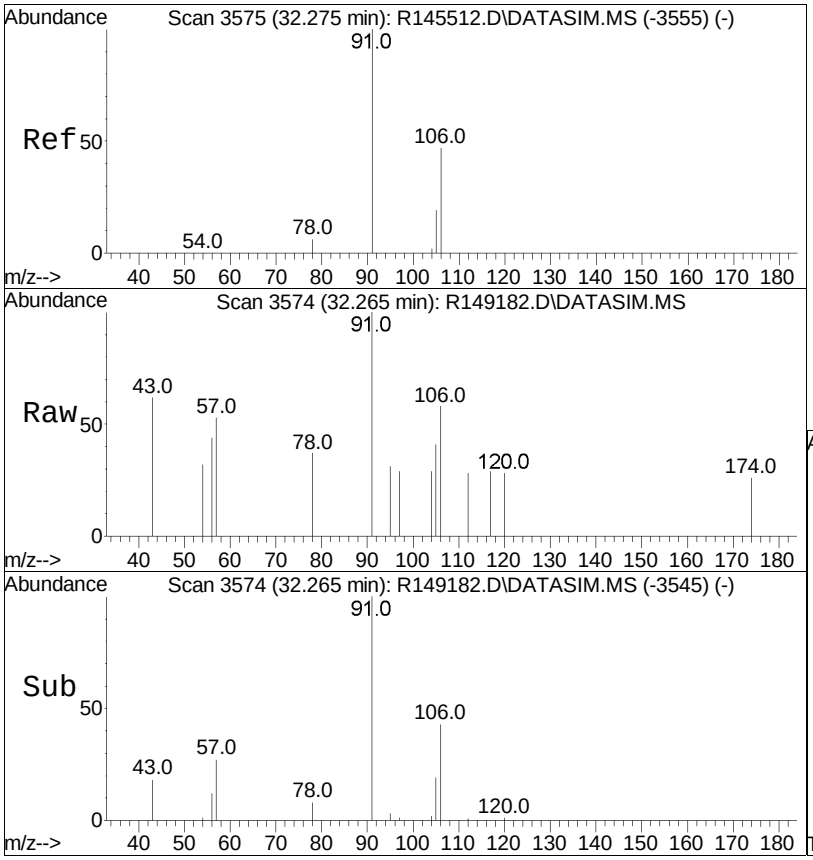


#59
Nonane
Concen: 0.06 ppbV
RT: 33.901 min Scan# 3793
Delta R.T. 0.007 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 43 Resp: 1327

Ion	Ratio	Lower	Upper
43	100		
57	68.3	51.4	91.4

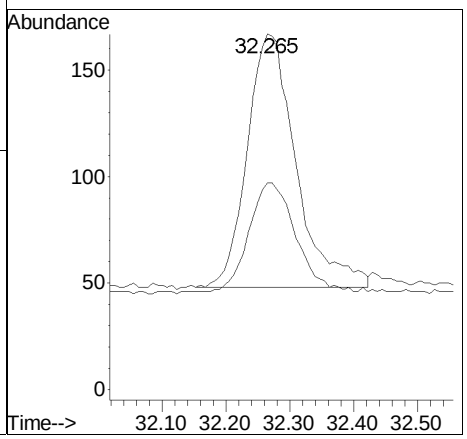


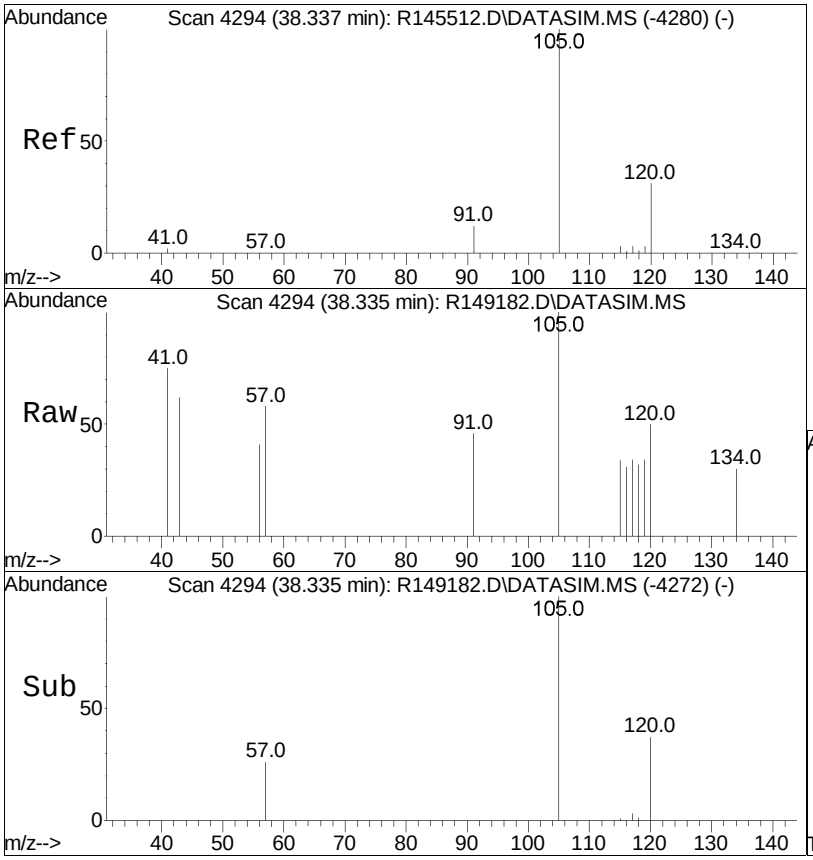


#61
o-Xylene
Concen: 0.03 ppbV
RT: 32.265 min Scan# 3574
Delta R.T. 0.007 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 91 Resp: 633

Ion	Ratio	Lower	Upper
91	100		
106	58.1	23.5	63.5

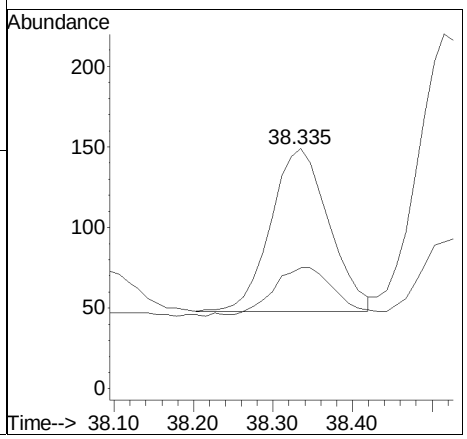


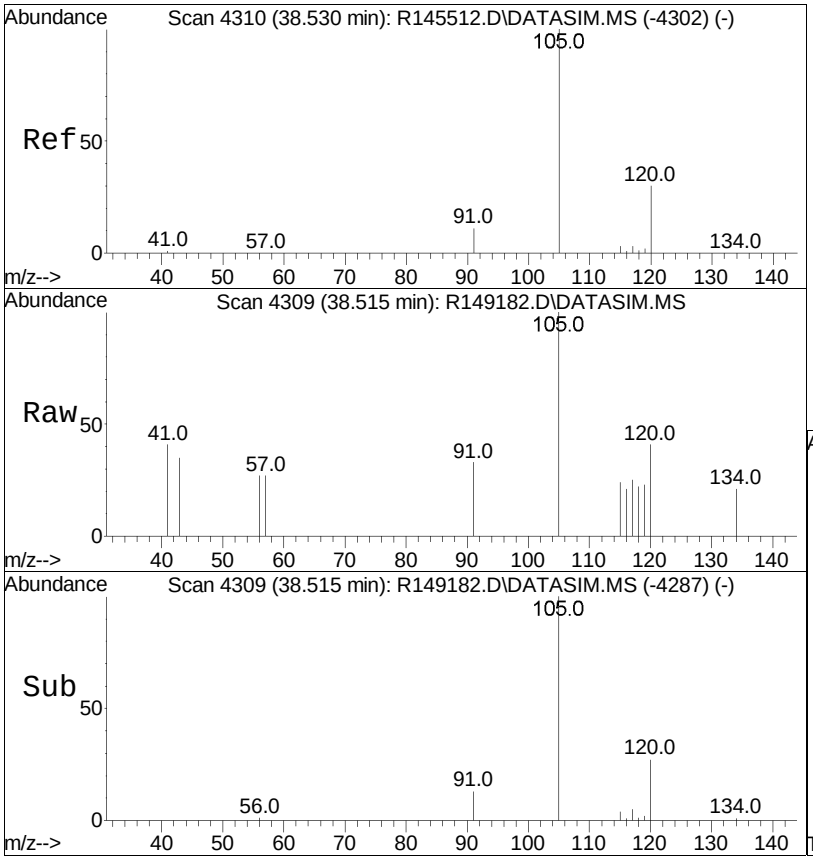


#65
1-Methyl-3-ethylbenzene
Concen: 0.02 ppbV
RT: 38.335 min Scan# 4294
Delta R.T. 0.012 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion:105 Resp: 513

Ion	Ratio	Lower	Upper
105	100		
120	50.3	10.4	50.4

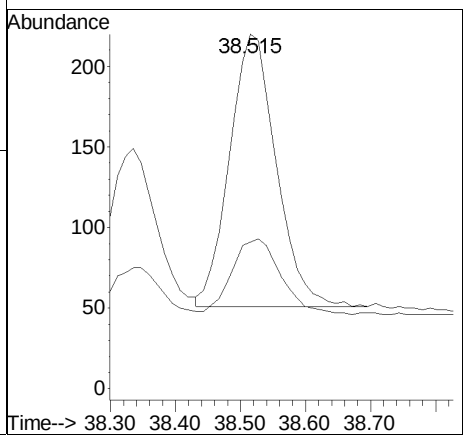


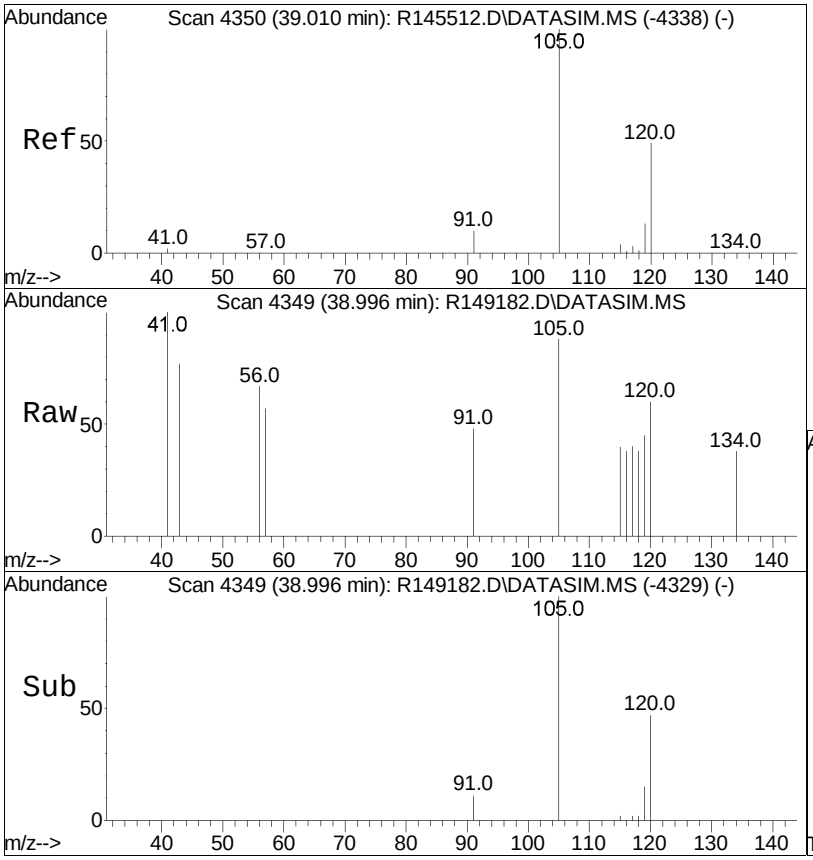


#66
1-Methyl-4-ethylbenzene
Concen: 0.03 ppbV
RT: 38.515 min Scan# 4309
Delta R.T. 0.012 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion:105 Resp: 842

Ion	Ratio	Lower	Upper
105	100		
120	41.4	7.8	47.8

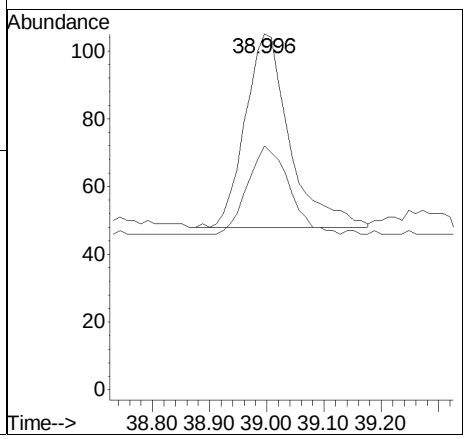


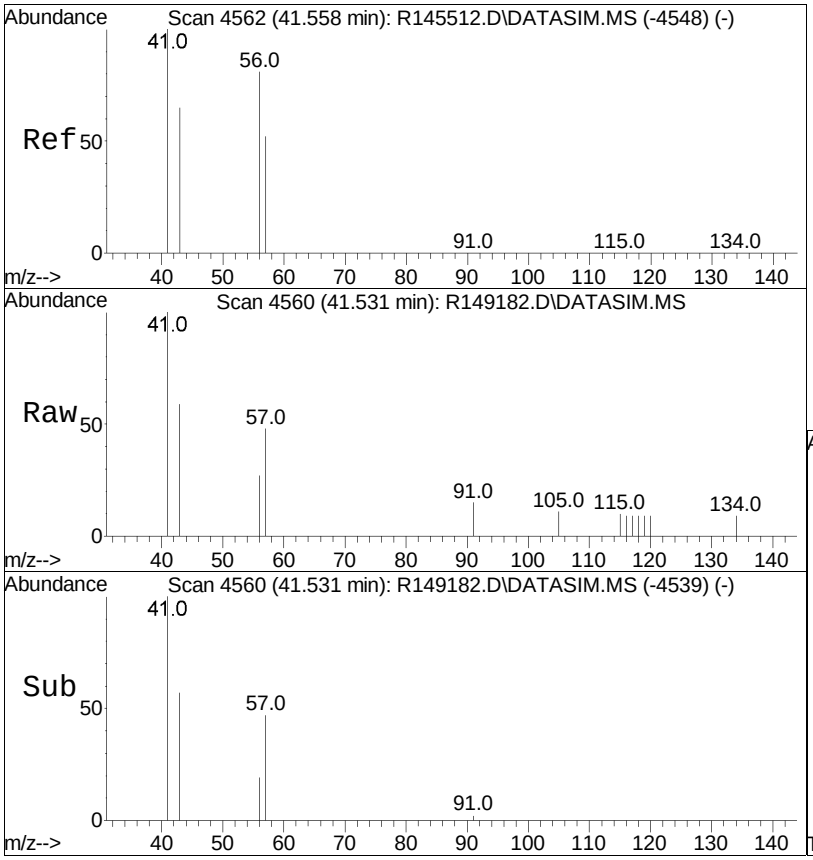


#67
1,3,5-Trimethylbenzene
Concen: 0.01 ppbV
RT: 38.996 min Scan# 4349
Delta R.T. 0.012 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion:105 Resp: 309

Ion	Ratio	Lower	Upper
105	100		
120	68.6	25.9	65.9#

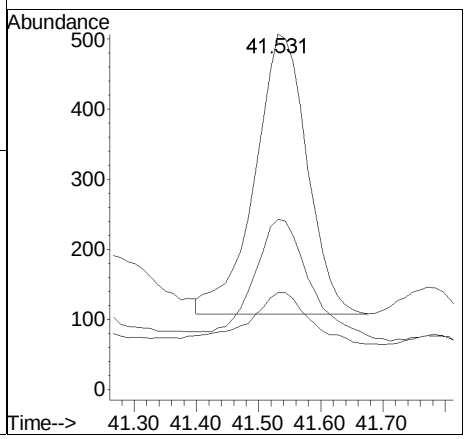


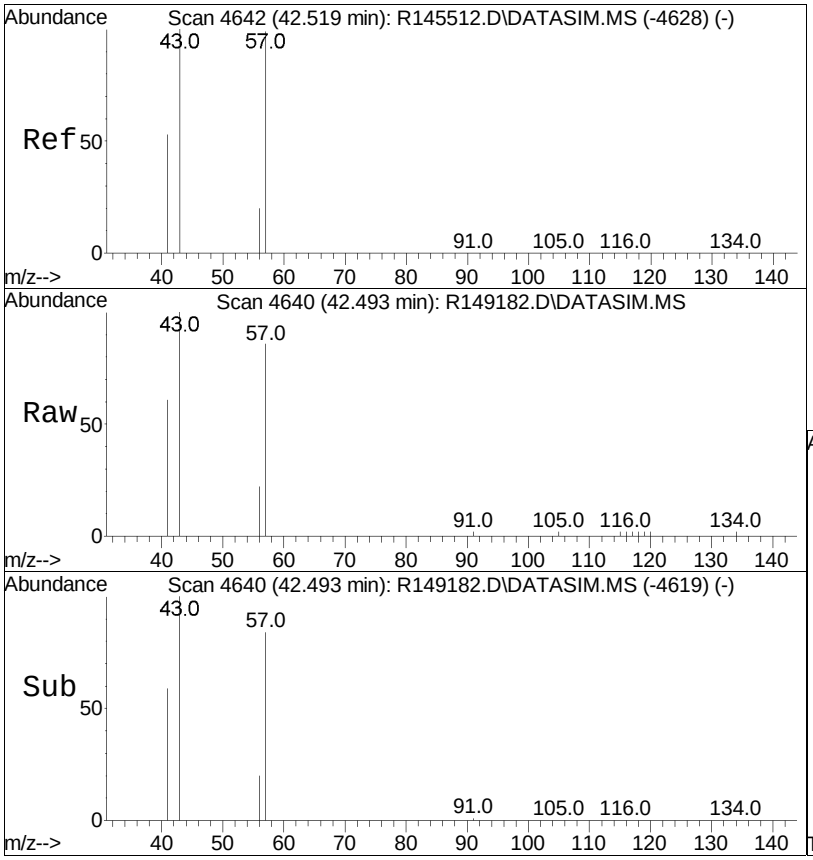


#68
1-Decene
Concen: 0.19 ppbV
RT: 41.531 min Scan# 4560
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 41 Resp: 2329

Ion	Ratio	Lower	Upper
41	100		
57	47.9	25.1	65.1
56	27.2	51.9	91.9#

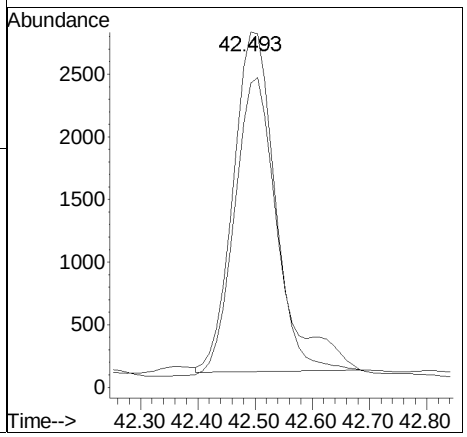


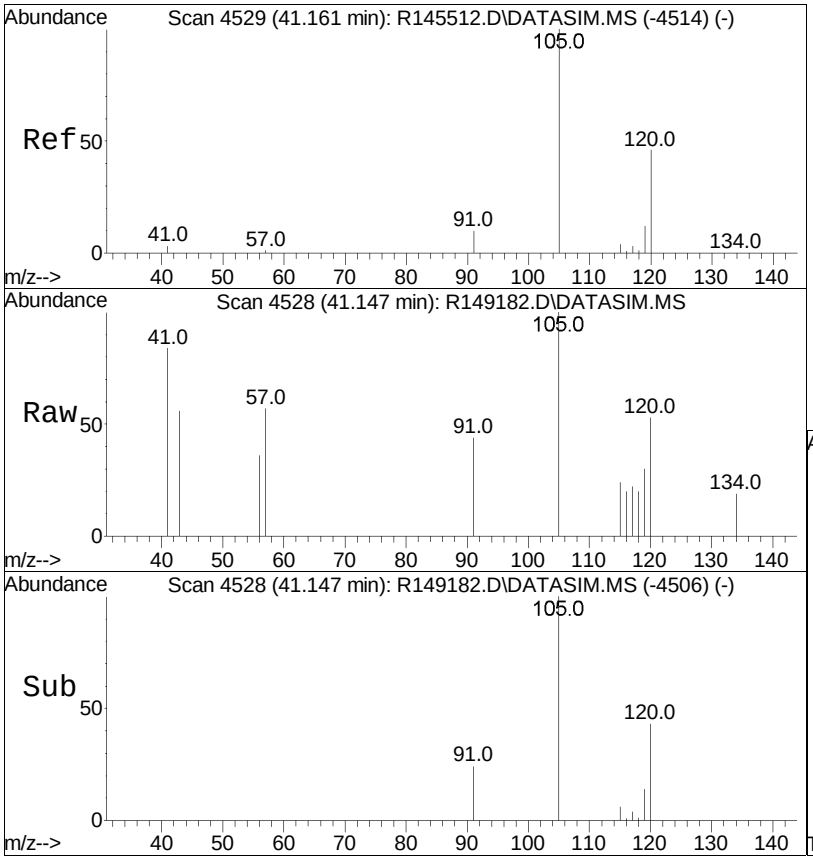


#70
Decane
Concen: 0.63 ppbV
RT: 42.493 min Scan# 4640
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 43 Resp: 13663

Ion	Ratio	Lower	Upper
43	100		
57	85.6	66.4	106.4

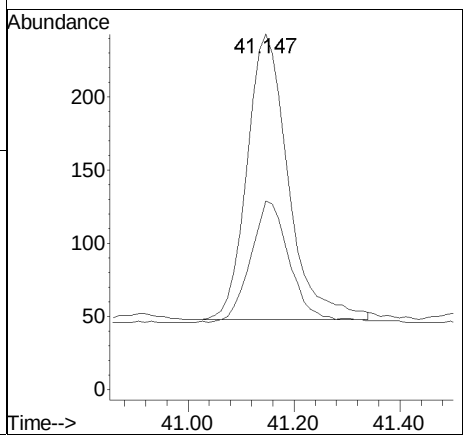


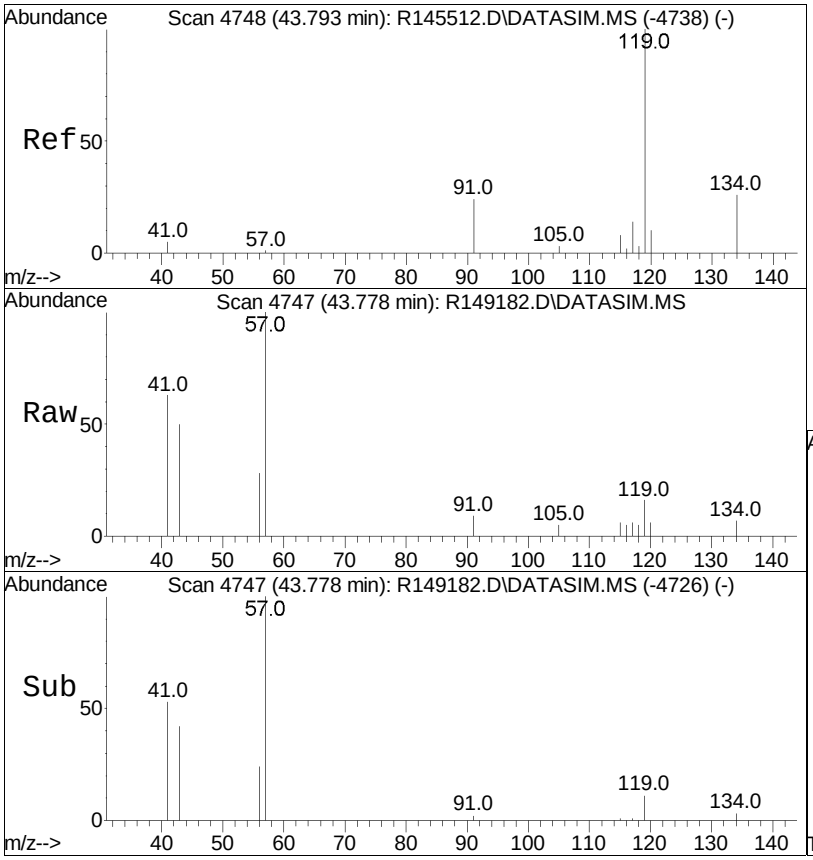


#71
1,2,4-Trimethylbenzene
Concen: 0.04 ppbV
RT: 41.147 min Scan# 4528
Delta R.T. 0.012 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion:105 Resp: 1058

Ion	Ratio	Lower	Upper
105	100		
120	53.1	23.0	63.0

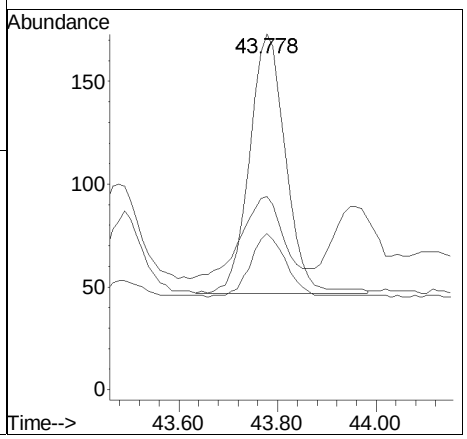


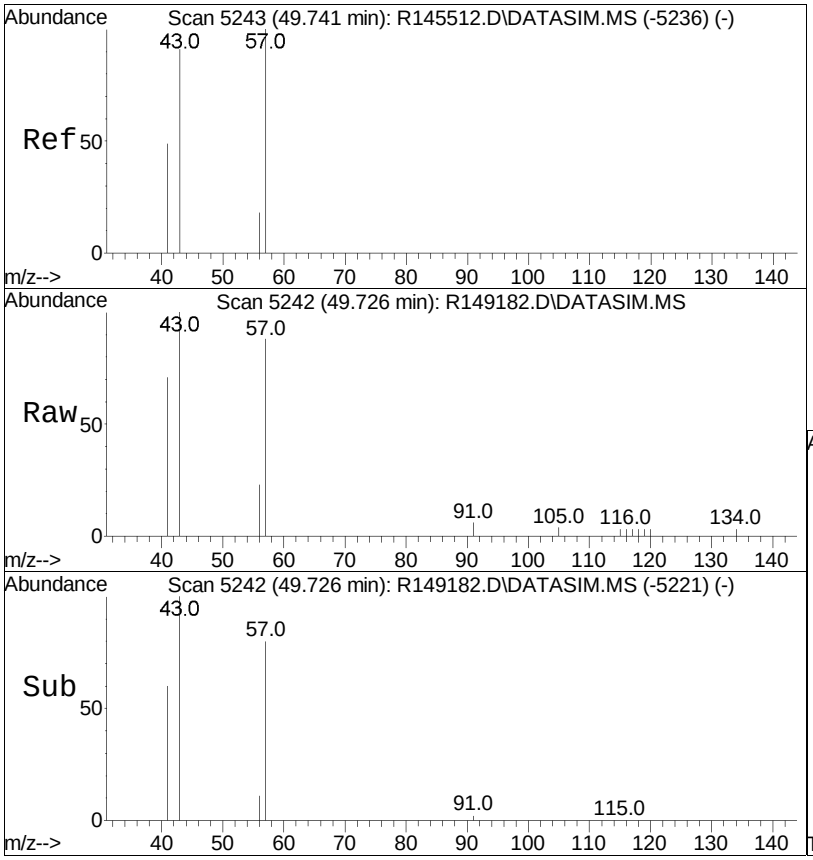


#74
1-Methyl-4-isopropylbenzene
Concen: 0.02 ppbV
RT: 43.778 min Scan# 4747
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion:119 Resp: 640

Ion	Ratio	Lower	Upper
119	100		
134	43.9	4.2	44.2
91	54.3	5.6	45.6#

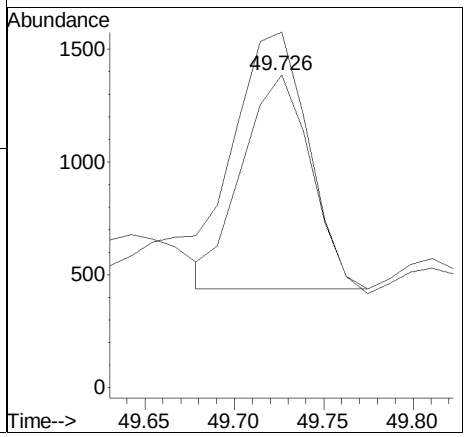


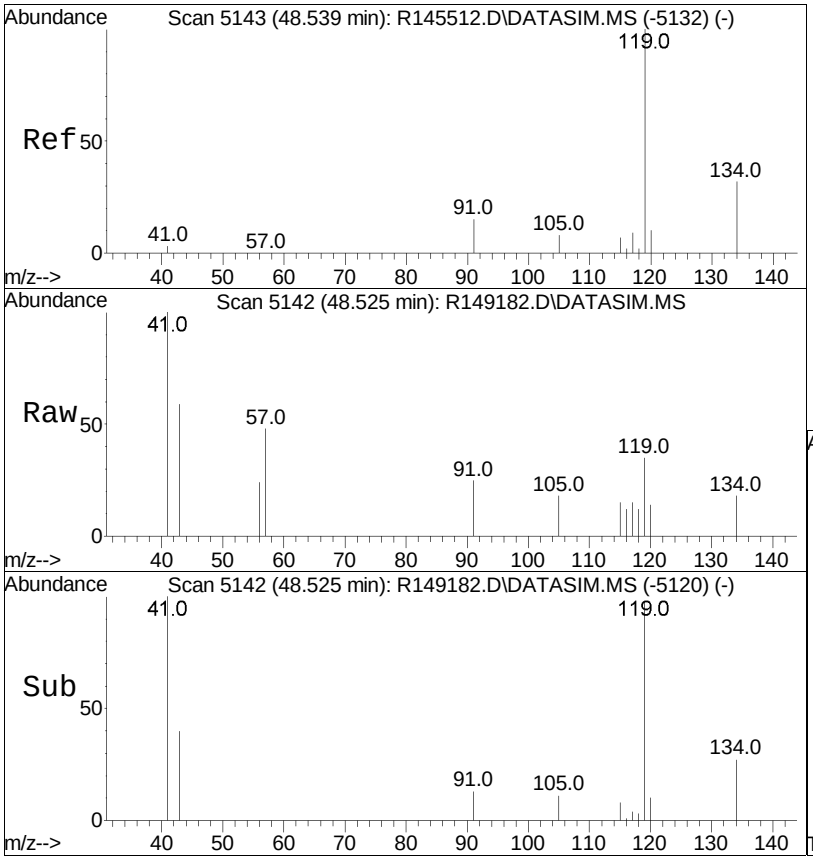


#85
Undecane
Concen: 0.11 ppbV
RT: 49.726 min Scan# 5242
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 57 Resp: 2531

Ion	Ratio	Lower	Upper
57	100		
43	113.8	79.1	119.1

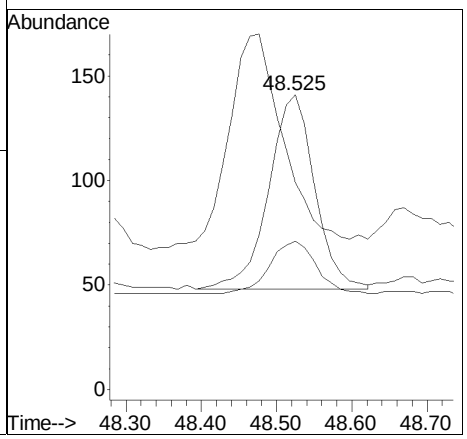


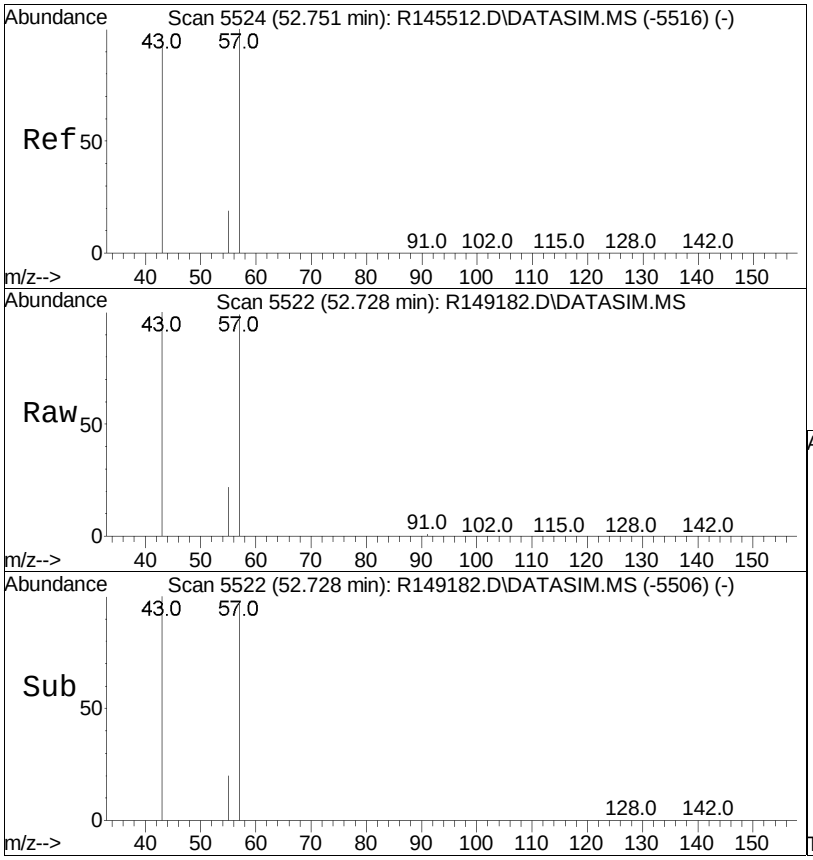


#87
1,3-Dimethyl-5-ethylbenzene
Concen: 0.01 ppbV
RT: 48.525 min Scan# 5142
Delta R.T. 0.012 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion:119 Resp: 397

Ion	Ratio	Lower	Upper
119	100		
134	50.4	7.8	47.8#
91	70.2	0.0	38.0#

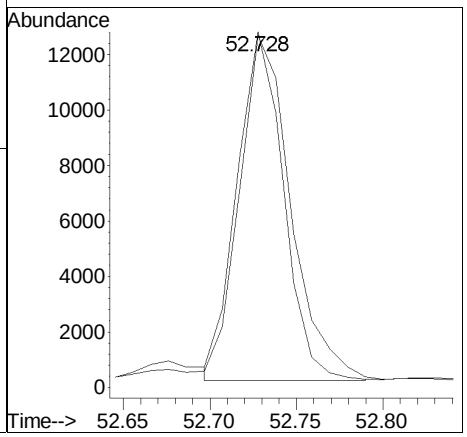


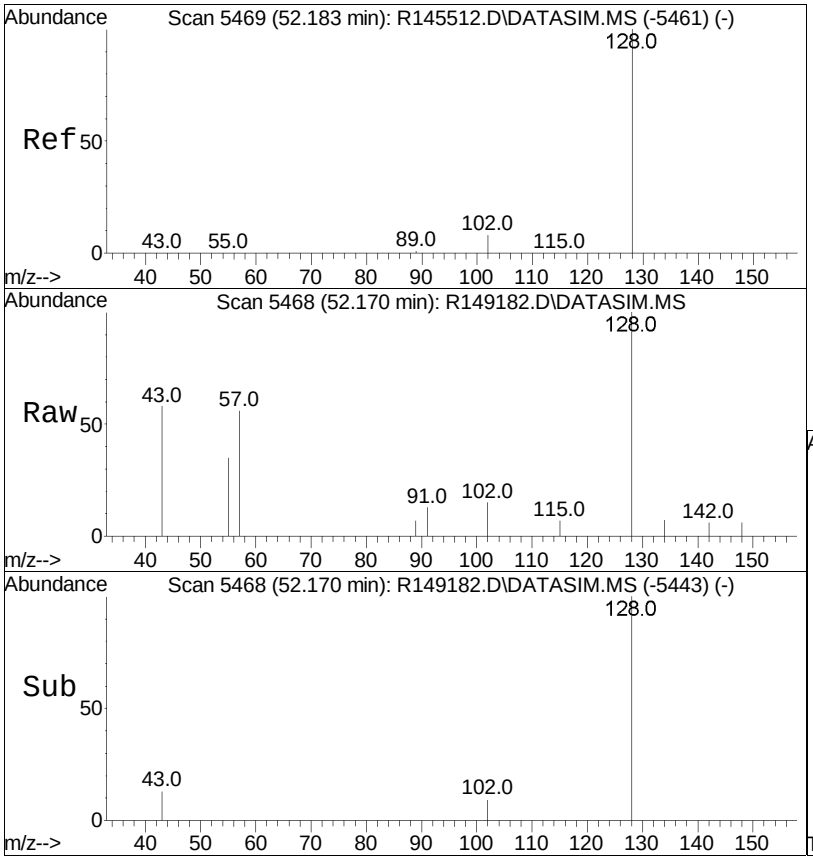


#92
Dodecane
Concen: 0.97 ppbV m
RT: 52.728 min Scan# 5522
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 43 Resp: 23395

Ion	Ratio	Lower	Upper
43	100		
57	99.1	80.2	120.2

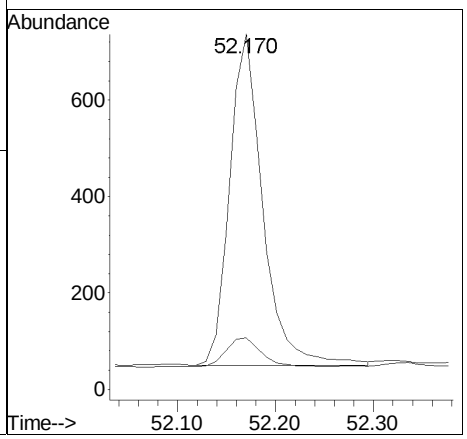


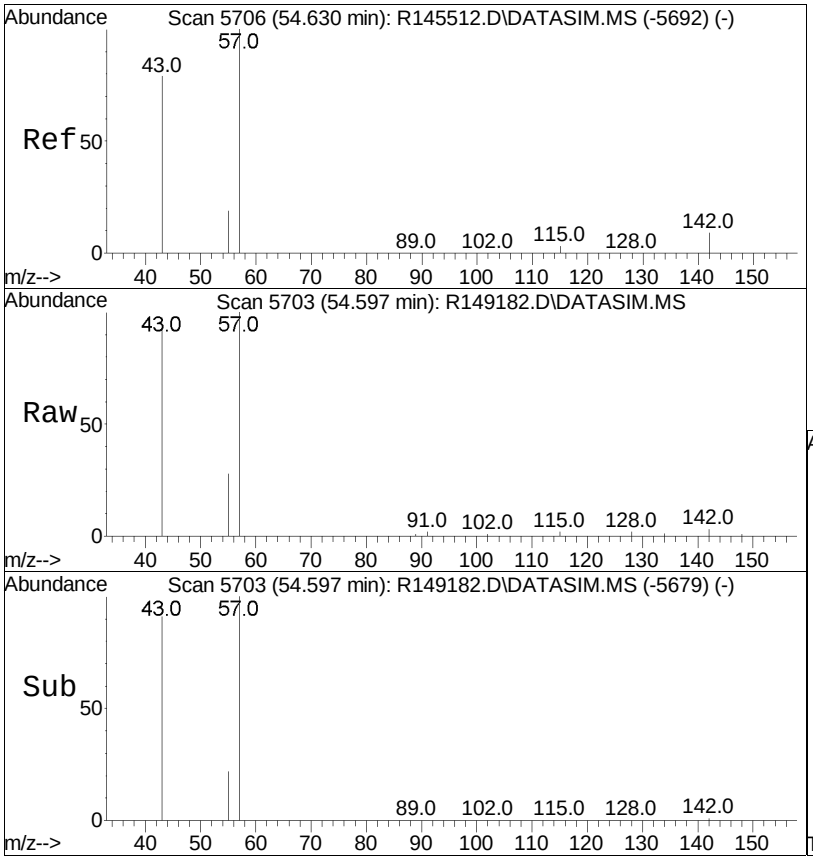


#93
Naphthalene
Concen: 0.05 ppbV
RT: 52.170 min Scan# 5468
Delta R.T. 0.010 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion:128 Resp: 1620

Ion	Ratio	Lower	Upper
128	100		
102	14.5	0.0	28.9

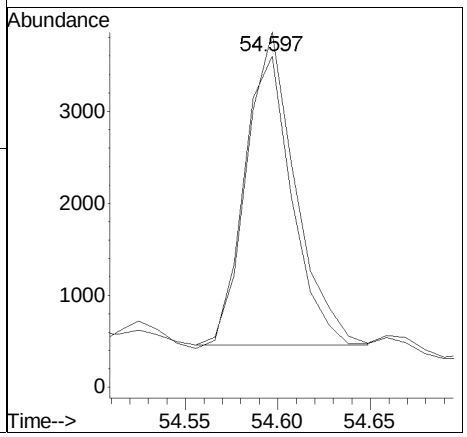


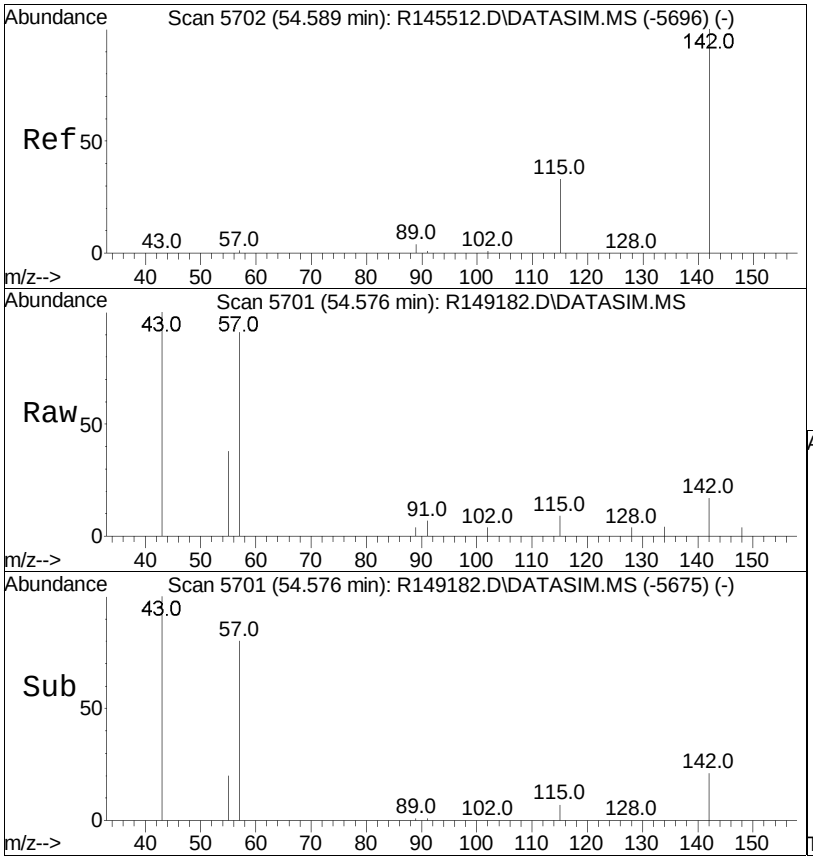


#96
Tridecane
Concen: 0.18 ppbV
RT: 54.597 min Scan# 5703
Delta R.T. -0.000 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion: 57 Resp: 6251

Ion	Ratio	Lower	Upper
57	100		
43	93.2	72.3	112.3

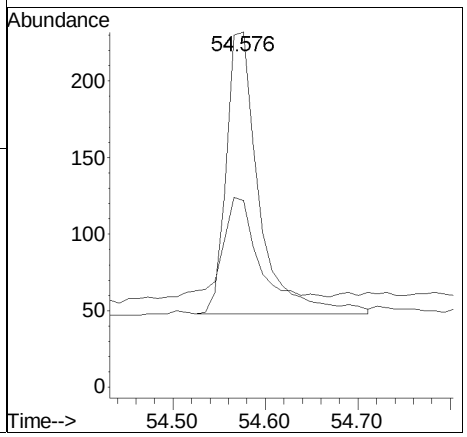


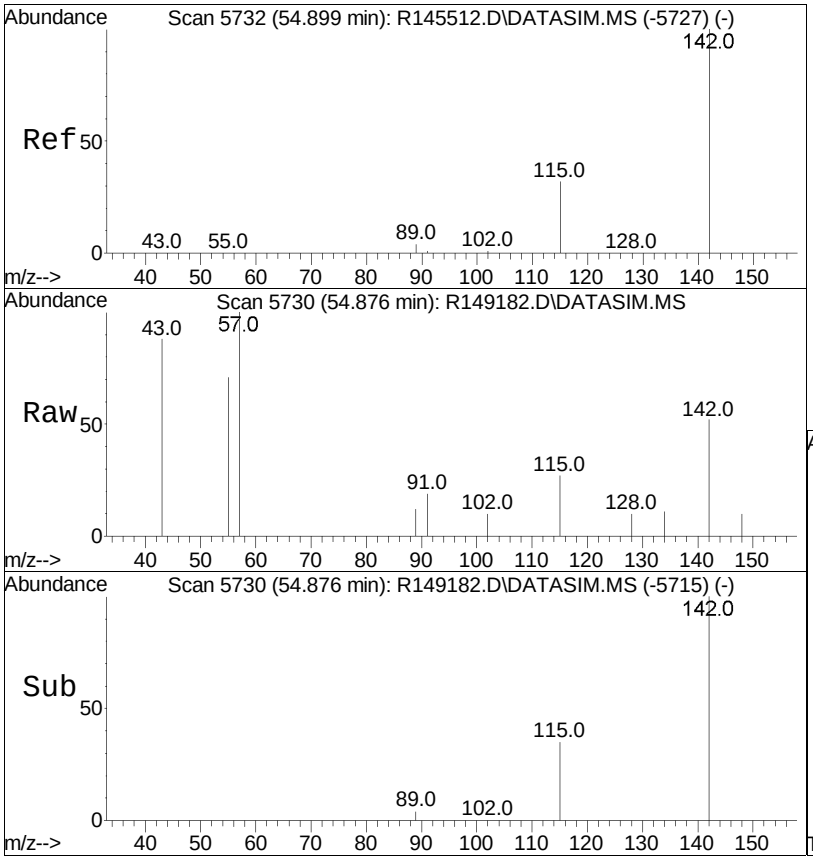


#97
2-Methylnaphthalene
Concen: 0.02 ppbV
RT: 54.576 min Scan# 5701
Delta R.T. 0.021 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion:142 Resp: 454

Ion	Ratio	Lower	Upper
142	100		
115	52.6	15.8	55.8

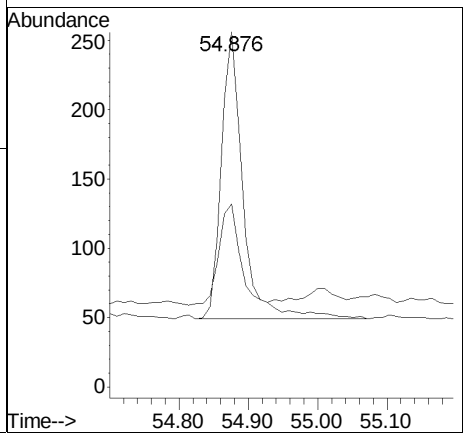




#98
1-Methylnaphthalene
Concen: 0.02 ppbV
RT: 54.876 min Scan# 5730
Delta R.T. 0.010 min
Lab File: R149182.D
Acq: 9 Nov 2016 1:11 am

Tgt Ion:142 Resp: 454

Ion	Ratio	Lower	Upper
142	100		
115	51.6	14.1	54.1



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-08	Date Collected	: 10/19/16 16:18
Client ID	: NFSV-02	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 02:17
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149183	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
106-99-0	1,3-Butadiene	ND	0.025	0.010	ND	0.055	0.022	U
78-78-4	Isopentane	1.67	0.025	0.010	4.93	0.074	0.030	
109-67-1	1-Pentene	0.123	0.025	0.010	0.353	0.072	0.029	
563-46-2	2-Methyl-1-Butene	0.190	0.025	0.010	0.545	0.072	0.029	
109-66-0	Pentane	0.568	0.025	0.010	1.68	0.074	0.030	
646-04-8	trans-2-Pentene	0.191	0.025	0.010	0.548	0.072	0.029	
627-20-3	cis-2-Pentene	ND	0.025	0.010	ND	0.072	0.029	U
75-65-0	Tertiary Butanol	1.69	0.025	0.010	5.12	0.076	0.030	
287-92-3	Cyclopentane	ND	0.025	0.010	ND	0.072	0.029	U
79-29-8	2,3-Dimethylbutane	ND	0.025	0.010	ND	0.088	0.035	U
107-83-5	2-Methylpentane	0.474	0.025	0.010	1.67	0.088	0.035	
1634-04-4	Methyl tert butyl ether	0.079	0.025	0.010	0.285	0.090	0.036	
96-14-0	3-Methylpentane	0.298	0.025	0.010	1.05	0.088	0.035	
592-41-6	1-Hexene	0.024	0.025	0.010	0.083	0.086	0.034	J
110-54-3	n-Hexane	0.292	0.025	0.010	1.03	0.088	0.035	
108-20-3	Isopropyl Ether	ND	0.025	0.010	ND	0.104	0.042	U
637-92-3	Ethyl-Tert-Butyl-Ether	ND	0.025	0.010	ND	0.104	0.042	U
590-35-2	2,2-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041	U
96-37-7	Methylcyclopentane	0.314	0.025	0.010	1.08	0.086	0.034	
108-08-7	2,4-Dimethylpentane	0.063	0.025	0.010	0.258	0.102	0.041	
107-06-2	1,2-Dichloroethane	ND	0.025	0.010	ND	0.101	0.041	U
110-82-7	Cyclohexane	0.146	0.025	0.010	0.503	0.086	0.034	
591-76-4	2-Methylhexane	0.156	0.025	0.010	0.639	0.102	0.041	
71-43-2	Benzene	0.149	0.025	0.010	0.476	0.080	0.032	
565-59-3	2,3-Dimethylpentane	0.073	0.025	0.010	0.299	0.102	0.041	
110-02-1	Thiophene	ND	0.025	0.010	ND	0.086	0.034	U
589-34-4	3-Methylhexane	0.206	0.025	0.010	0.844	0.102	0.041	
994-05-8	Tertiary-Amyl Methyl Ether	ND	0.025	0.010	ND	0.104	0.042	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-08	Date Collected	: 10/19/16 16:18
Client ID	: NFSV-02	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 02:17
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149183	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
592-76-7	1-Heptene	ND	0.025	0.010	ND	0.100	0.040	U
540-84-1	Isooctane	0.138	0.025	0.010	0.645	0.117	0.047	
142-82-5	Heptane	0.122	0.025	0.010	0.500	0.102	0.041	
108-87-2	Methylcyclohexane	0.132	0.025	0.010	0.530	0.100	0.040	
592-13-2	2,5-Dimethylhexane	0.021	0.025	0.010	0.098	0.117	0.047	J
589-43-5/564-02-3	2,4-Dimethylhexane/2,2,3-Trimethylpen	0.025	0.050	0.025	0.117	0.234	0.117	J
565-75-3	2,3,4-Trimethylpentane	0.041	0.025	0.010	0.192	0.117	0.047	
560-21-4	2,3,3-Trimethylpentane	0.059	0.025	0.010	0.276	0.117	0.047	
584-94-1	2,3-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
619-99-8	3-Ethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
592-27-8	2-Methylheptane	0.047	0.025	0.010	0.220	0.117	0.047	
589-81-1	3-Methylheptane	0.029	0.025	0.010	0.135	0.117	0.047	
108-88-3	Toluene	0.396	0.025	0.010	1.49	0.094	0.038	
554-14-3	2-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040	U
616-44-4	3-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040	U
111-66-0	1-Octene	ND	0.025	0.010	ND	0.115	0.046	U
16747-50-5	1-Ethyl-1-Methylcyclopentane	ND	0.025	0.010	ND	0.115	0.046	U
111-65-9	Octane	0.047	0.025	0.010	0.220	0.117	0.047	
106-93-4	1,2-Dibromoethane	ND	0.025	0.010	ND	0.192	0.077	U
100-41-4	Ethylbenzene	0.043	0.025	0.010	0.187	0.109	0.043	
872-55-9	2-Ethylthiophene	ND	0.025	0.010	ND	0.115	0.046	U
179601-23-1	p/m-Xylene	0.113	0.050	0.010	0.491	0.217	0.043	
124-11-8	1-Nonene	ND	0.025	0.010	ND	0.129	0.052	U
111-84-2	Nonane (C9)	0.024	0.025	0.010	0.126	0.131	0.053	J
100-42-5	Styrene	ND	0.025	0.010	ND	0.106	0.043	U
95-47-6	o-Xylene	0.046	0.050	0.010	0.200	0.217	0.043	J
98-82-8	Isopropylbenzene	ND	0.025	0.010	ND	0.123	0.049	U
103-65-1	n-Propylbenzene	ND	0.025	0.010	ND	0.123	0.049	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-08	Date Collected	: 10/19/16 16:18
Client ID	: NFSV-02	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 02:17
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149183	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
620-14-4	1-Methyl-3-Ethylbenzene	ND	0.050	0.025	ND	0.246	0.123	U
622-96-8	1-Methyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049	U
108-67-8	1,3,5-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049	U
872-05-9	1-Decene	ND	0.050	0.025	ND	0.287	0.143	U
611-14-3	1-Methyl-2-Ethylbenzene	ND	0.050	0.025	ND	0.246	0.123	U
124-18-5	Decane (C10)	0.158	0.050	0.025	0.920	0.291	0.146	
95-63-6	1,2,4-Trimethylbenzene	0.025	0.050	0.025	0.123	0.246	0.123	J
135-98-8	sec-Butylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
535-77-3	1-Methyl-3-Isopropylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
99-87-6	1-Methyl-4-Isopropylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
527-84-4	1-Methyl-2-Isopropylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
496-11-7	Indane	ND	0.050	0.025	ND	0.242	0.121	U
95-13-6	Indene	ND	0.050	0.025	ND	0.238	0.119	U
1074-43-7	1-Methyl-3-N-Propylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1074-55-1	1-Methyl-4-N-Propylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
104-51-8	n-Butylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
934-80-5	1,2-Dimethyl-4-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
135-01-3	1,2-Diethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1074-17-5	1-Methyl-2-N-Propylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1758-88-9	1,4-Dimethyl-2-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1120-21-4	Undecane	0.075	0.050	0.025	0.479	0.320	0.160	
874-41-9	1,3-Dimethyl-4-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
934-74-7	1,3-Dimethyl-5-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
2870-04-4	1,3-Dimethyl-2-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
933-98-2	1,2-Dimethyl-3-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
538-68-1	N-Pentylbenzene	ND	0.050	0.025	ND	0.303	0.152	U
112-40-3	Dodecane (C12)	0.864	0.100	0.050	6.02	0.697	0.348	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-08	Date Collected	: 10/19/16 16:18
Client ID	: NFSV-02	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 02:17
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149183	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
91-20-3	Naphthalene	0.037	0.050	0.025	0.194	0.262	0.131	J
95-15-8	Benzothiophene	ND	0.100	0.050	ND	0.549	0.274	U
12108-13-3	MMT	ND	0.100	0.050	ND	0.892	0.446	U
629-50-5	Tridecane	0.518	1.00	0.050	3.91	7.54	0.377	J
91-57-6	2-Methylnaphthalene	ND	0.500	0.050	ND	2.91	0.291	U
90-12-0	1-Methylnaphthalene	ND	0.500	0.050	ND	2.91	0.291	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149183.D
Acq On : 9 Nov 2016 2:17 am
Operator : AIRPIANO1:RY
Sample : L1634001-08,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 10 12:34:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.198	49	133905	10.000	ppbV	0.00
Standard Area = 123393			Recovery = 108.52%			
27) 1,4-difluorbenzene	14.201	114	281312	10.000	ppbV	0.00
Standard Area = 263318			Recovery = 106.83%			
54) chlorobenzene-D5	27.633	117	204540	10.000	ppbV	0.00
Standard Area = 190793			Recovery = 107.21%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.619	65	83917	10.029	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.29%			
46) Toluene-D8	20.948	98	225761	10.519	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 105.19%			
62) 4-Bromofluorobenzene (...	34.334	95	114326	10.190	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.90%			
Target Compounds						Qvalue
2) 1,3-butadiene	0.000		0	N.D.	d	
4) Isopentane	5.878	41	21676	1.672	ppbV	95
5) 1-Pentene	6.194	42	1806	0.123	ppbV	98
6) 2-Methyl-1-butene	6.352	55	3294	0.190	ppbV	89
7) Pentane	6.468	43	12596	0.568	ppbV	98
9) 2-Pentene (trans)	6.668	55	3208	0.191	ppbV	96
10) 2-Pentene (cis)	0.000		0	N.D.	d	
11) Tertiary butanol	6.878	59	42613	1.691	ppbV	86
12) Cyclopentane	0.000		0	N.D.	d	
13) 2,3-Dimethylbutane	0.000		0	N.D.	d	
14) 2-Methylpentane	8.816	43	11913M6	0.474	ppbV	
15) MTBE	8.696	73	2032	0.079	ppbV	96
16) 3-Methylpentane	9.460	57	4944	0.298	ppbV	96
17) 1-Hexene	9.709	56	230M6	0.024	ppbV	
18) Hexane	10.286	57	4141	0.292	ppbV #	55
19) Diisopropyl ether	0.000		0	N.D.	d	
20) Ethyl tertiary butyl e...	0.000		0	N.D.	d	
21) 2,2-Dimethylpentane	0.000		0	N.D.	d	
23) Methylcyclopentane	11.831	56	5520	0.314	ppbV	99
24) 2,4-Dimethylpentane	11.973	43	1445	0.063	ppbV	88
25) 1,2-Dichloroethane	0.000		0	N.D.	d	
26) Cyclohexane	13.909	56	2006	0.146	ppbV	100
28) 2-Methylhexane	14.391	43	3736	0.156	ppbV	92

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149183.D
Acq On : 9 Nov 2016 2:17 am
Operator : AIRPIANO1:RY
Sample : L1634001-08,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 10 12:34:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
29) Benzene	13.316	78	4001	0.149	ppbV		92
30) 2,3-Dimethylpentane	14.548	56	1237	0.073	ppbV	#	17
31) Thiophene	0.000		0	N.D.	d		
32) 3-Methylhexane	15.018	43	3843	0.206	ppbV		91
33) TAME	0.000		0	N.D.	d		
34) 1-Heptene	0.000		0	N.D.	d		
35) Isooctane	15.993	57	5798	0.138	ppbV		91
36) Heptane	16.777	43	2213	0.122	ppbV		99
37) Methylcyclohexane	18.479	83	1816	0.132	ppbV		92
38) 2,5-Dimethylhexane	19.319	57	444M3	0.021	ppbV		
39) 2,4-Dimethyhexane / 2,...	19.499	57	652	0.025	ppbV	#	24
40) 2,3,4-Trimethylpentane	20.850	43	1206	0.041	ppbV		92
41) 2,3,3-Trimethylpentane	21.244	43	1606M6	0.059	ppbV		
42) 2,3-Dimethylhexane	0.000		0	N.D.	d		
43) 3-Ethylhexane	0.000		0	N.D.	d		
44) 2-Methylheptane	22.169	57	939M3	0.047	ppbV		
45) 3-Methylheptane	22.818	43	623M4	0.029	ppbV		
47) Toluene	21.273	91	12403	0.396	ppbV		99
48) 2-Methylthiophene	0.000		0	N.D.	d		
49) 3-Methylthiophene	0.000		0	N.D.	d		
50) 1-Octene	0.000		0	N.D.	d		
51) 1-ethyl-1-methylcyclop...	0.000		0	N.D.	d		
52) Octane	25.081	43	1164M4	0.047	ppbV		
53) 1,2-Dibromoethane	0.000		0	N.D.	d		
55) Ethylbenzene	29.493	91	1245	0.043	ppbV		83
56) 2-Ethylthiophene	0.000		0	N.D.	d		
57) p/m-Xylene	30.240	91	2506M4	0.113	ppbV		
58) 1-Nonene	0.000		0	N.D.	d		
59) Nonane	33.908	43	509	0.024	ppbV		100
60) Styrene	0.000		0	N.D.	d		
61) o-Xylene	32.272	91	1051	0.046	ppbV		85
63) Isopropylbenzene	35.119		0	N.D.			
64) n-Propylbenzene	37.710		0	N.D.			
65) 1-Methyl-3-ethylbenzene	38.335	105	488	0.017	ppbV		63
66) 1-Methyl-4-ethylbenzene	0.000		0	N.D.	d		
67) 1,3,5-Trimethylbenzene	0.000		0	N.D.	d		
68) 1-Decene	0.000		0	N.D.	d		
69) 1-Methyl-2-ethylbenzene	39.873		0	N.D.			
70) Decane	42.517	43	3507	0.158	ppbV		85
71) 1,2,4-Trimethylbenzene	41.147	105	613	0.025	ppbV		77

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149183.D
Acq On : 9 Nov 2016 2:17 am
Operator : AIRPIANO1:RY
Sample : L1634001-08,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 10 12:34:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

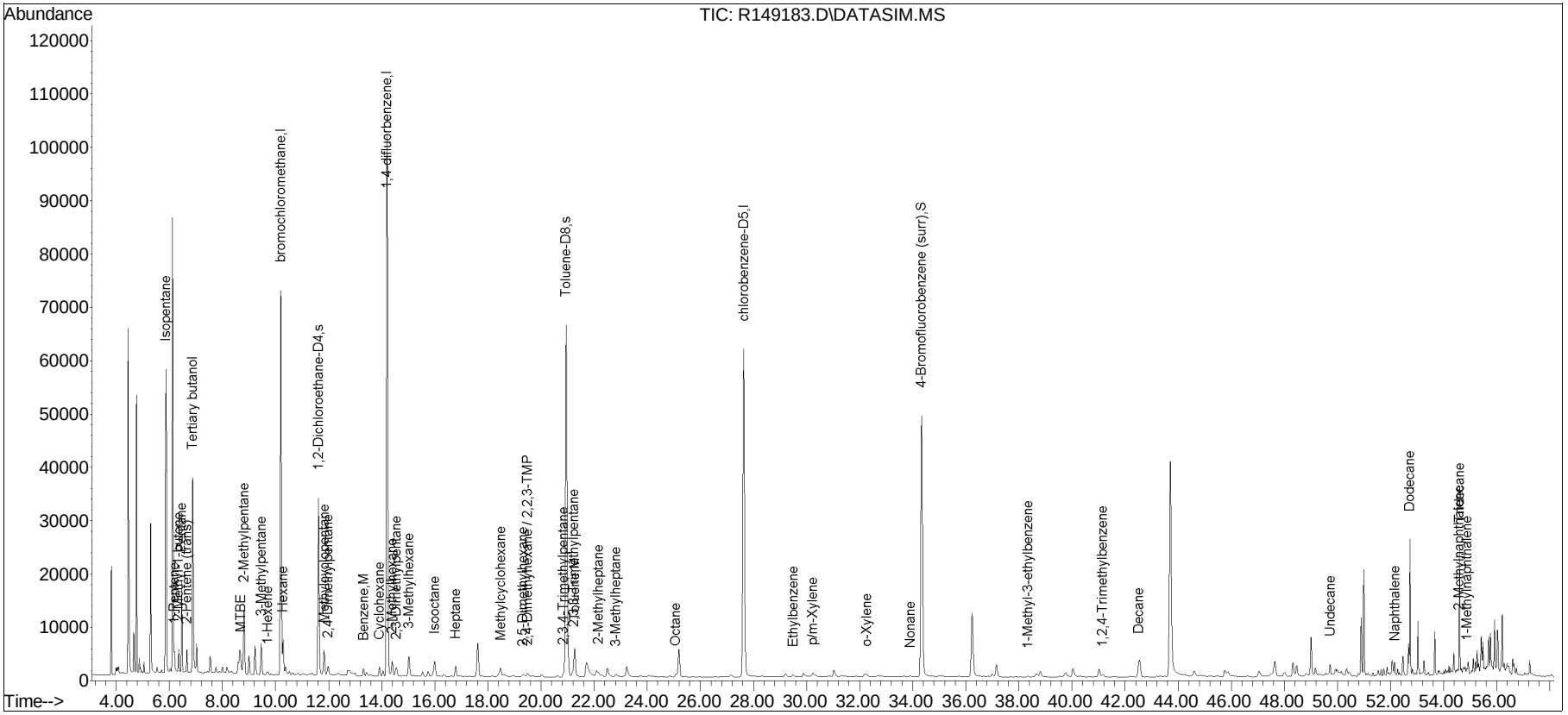
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
72) sec-Butylbenzene	0.000		0	N.D.	d	
73) 1-Methyl-3-isopropylbe...	0.000		0	N.D.	d	
74) 1-Methyl-4-isopropylbe...	0.000		0	N.D.	d	
75) 1-Methyl-2-isopropylbe...	0.000		0	N.D.	d	
76) Indan	0.000		0	N.D.	d	
77) Indene	0.000		0	N.D.	d	
78) 1-Methyl-3-propylbenzene	0.000		0	N.D.	d	
79) 1-Methyl-4-propylbenzene	0.000		0	N.D.	d	
80) n-Butylbenzene	0.000		0	N.D.	d	
81) 1,2-Dimethyl-4-ethylbe...	0.000		0	N.D.	d	
82) 1,2-Diethylbenzene	0.000		0	N.D.	d	
83) 1-Methyl-2-propylbenzene	0.000		0	N.D.	d	
84) 1,4-Dimethyl-2-ethylbe...	0.000		0	N.D.	d	
85) Undecane	49.726	57	1681M2	0.075	ppbV	
86) 1,3-Dimethyl-4-ethylbe...	0.000		0	N.D.	d	
87) 1,3-Dimethyl-5-ethylbe...	0.000		0	N.D.	d	
88) 1,3-Dimethyl-2-ethylbe...	0.000		0	N.D.	d	
89) 1,2-Dimethyl-3-ethylbe...	0.000		0	N.D.	d	
90) 1,2,4,5-Tetramethylben...	0.000		0	N.D.	d	
91) Pentylbenzene	0.000		0	N.D.	d	
92) Dodecane	52.728	43	21244	0.864	ppbV	97
93) Naphthalene	52.170	128	1227	0.037	ppbV	79
94) Benzothiophene	52.315		0	N.D.		
95) MMT	0.000		0	N.D.	d	
96) Tridecane	54.597	57	17973	0.518	ppbV	98
97) 2-Methylnaphthalene	54.576	142	414	0.018	ppbV	74
98) 1-Methylnaphthalene	54.876	142	306	0.012	ppbV #	62

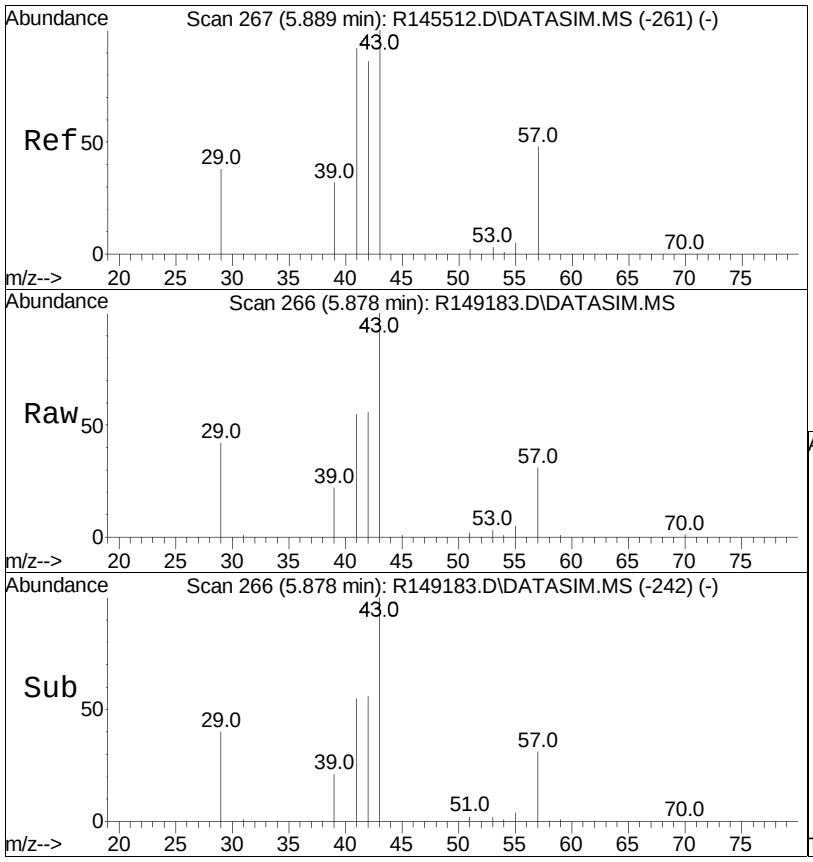
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : AIR-NF-PIANO - NF PIANO LIST161108PIANO\R149170.D

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149183.D
Acq On : 9 Nov 2016 2:17 am
Operator : AIRPIANO1:RY
Sample : L1634001-08,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 10 12:34:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

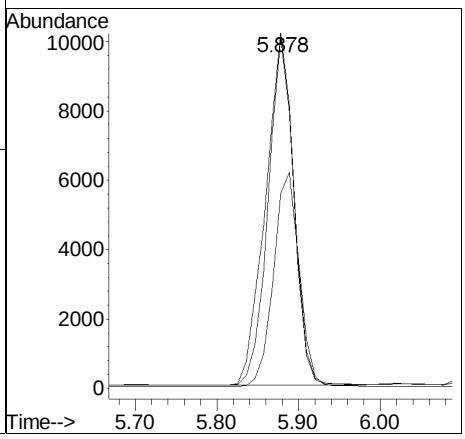


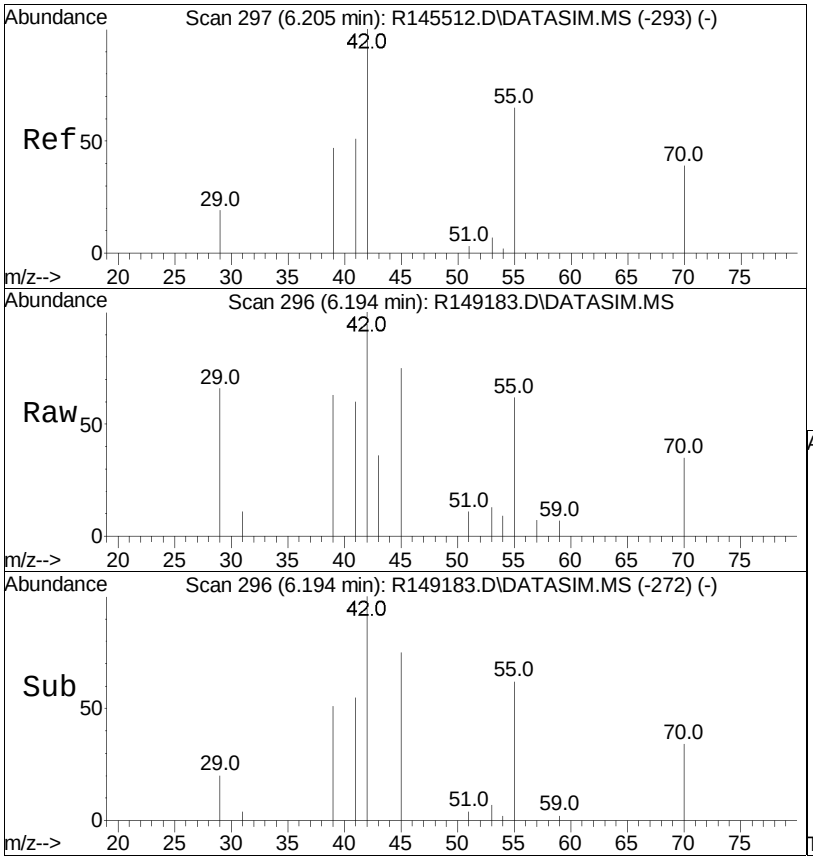


#4
Isopentane
Concen: 1.67 ppbV
RT: 5.878 min Scan# 266
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 41 Resp: 21676

Ion	Ratio	Lower	Upper
41	100		
57	55.7	31.8	71.8
42	101.4	76.7	116.7

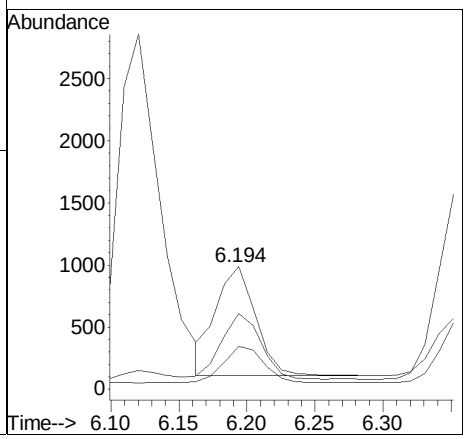


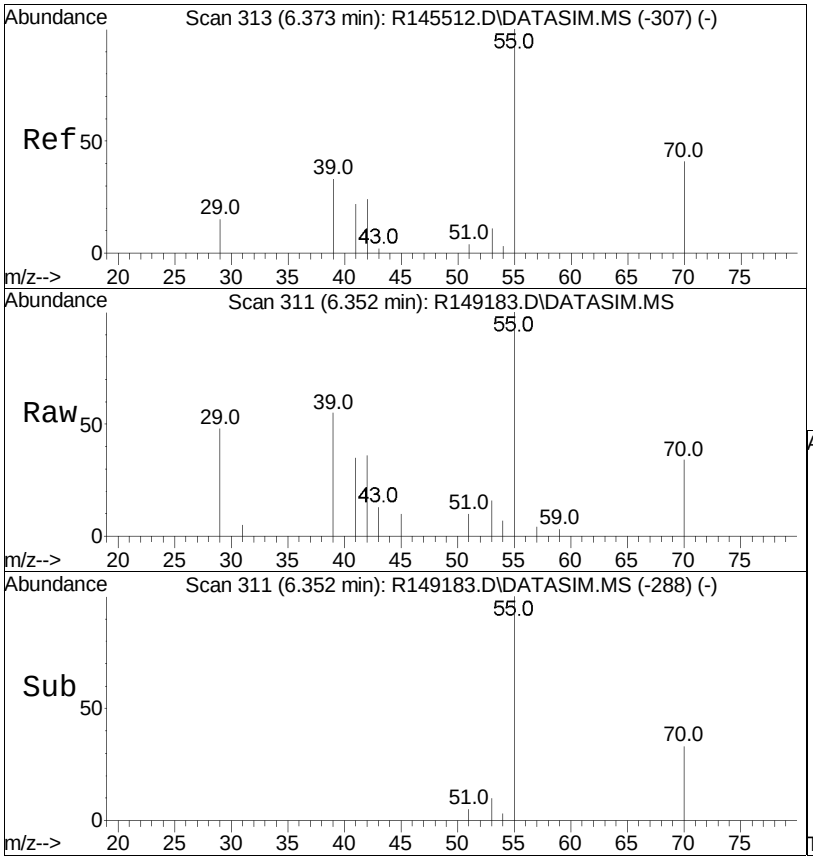


#5
1-Pentene
Concen: 0.12 ppbV
RT: 6.194 min Scan# 296
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 42 Resp: 1806

Ion	Ratio	Lower	Upper
42	100		
55	61.9	43.2	83.2
70	35.2	13.6	53.6

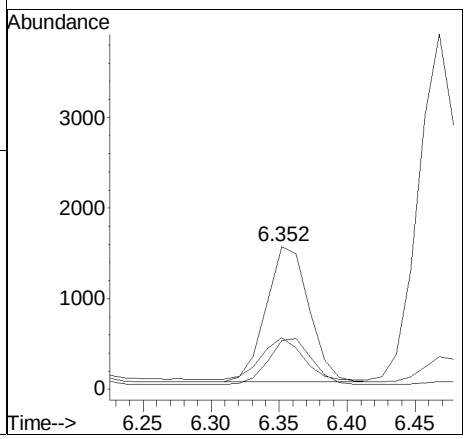


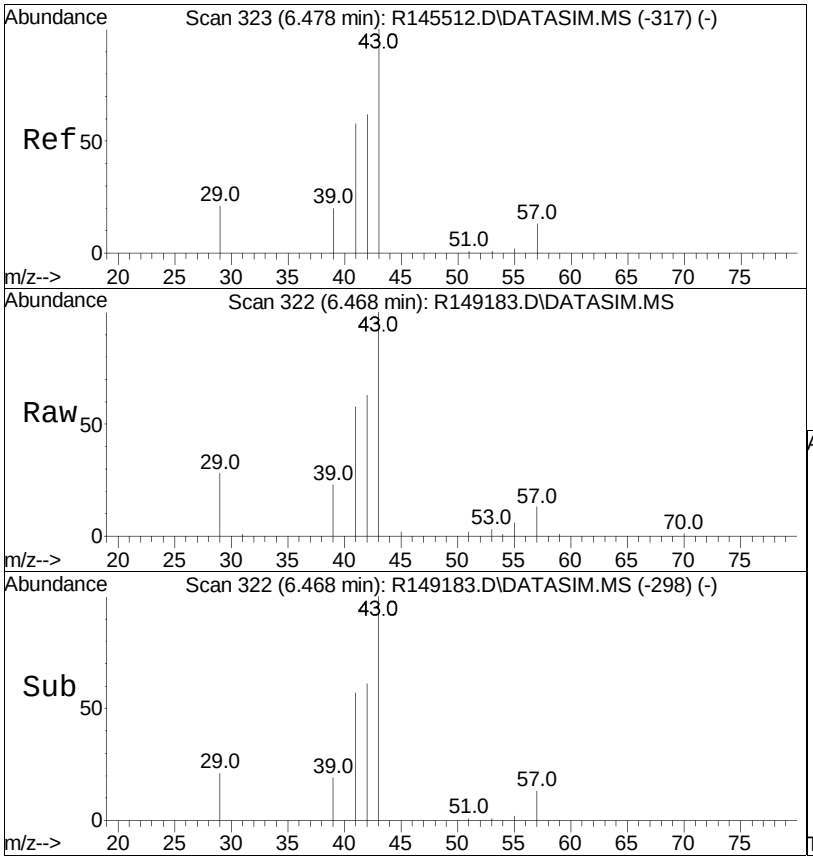


#6
2-Methyl-1-butene
Concen: 0.19 ppbV
RT: 6.352 min Scan# 311
Delta R.T. -0.011 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 55 Resp: 3294

Ion	Ratio	Lower	Upper
55	100		
70	34.2	16.1	56.1
42	36.4	5.4	45.4

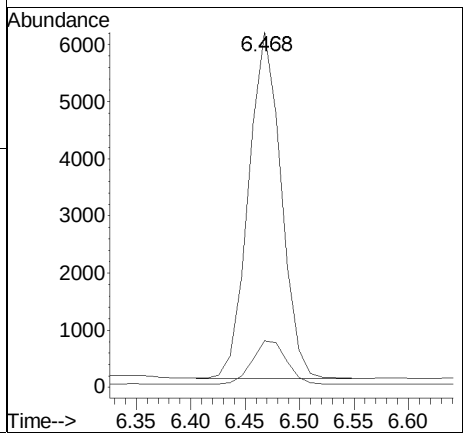


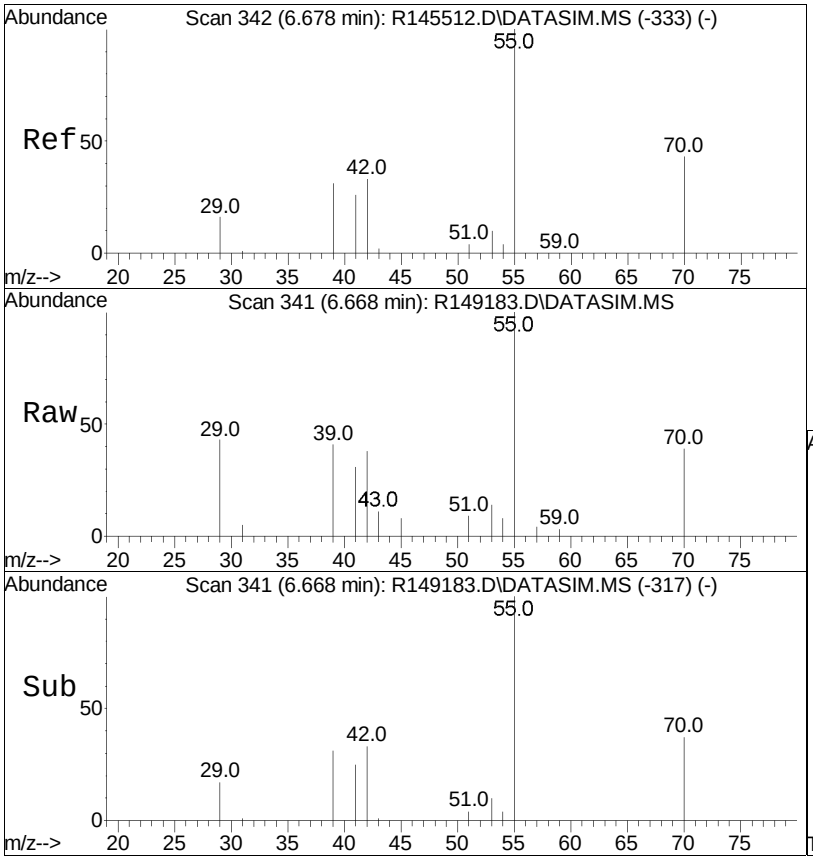


#7
Pentane
Concen: 0.57 ppbV
RT: 6.468 min Scan# 322
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 43 Resp: 12596

Ion	Ratio	Lower	Upper
43	100		
57	13.1	0.0	32.2

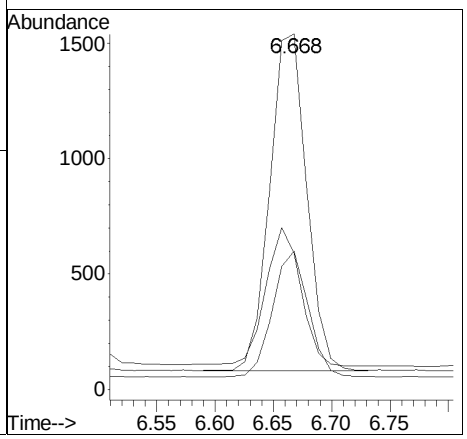


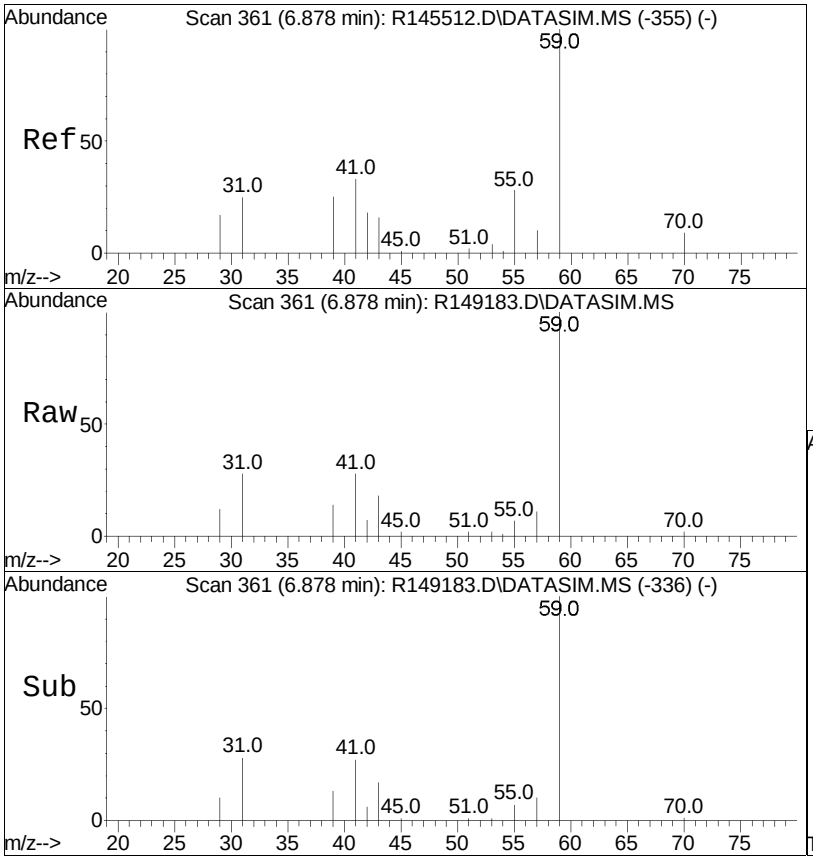


#9
2-Pentene (trans)
Concen: 0.19 ppbV
RT: 6.668 min Scan# 341
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 55 Resp: 3208

Ion	Ratio	Lower	Upper
55	100		
70	38.9	17.7	57.7
42	38.3	14.5	54.5

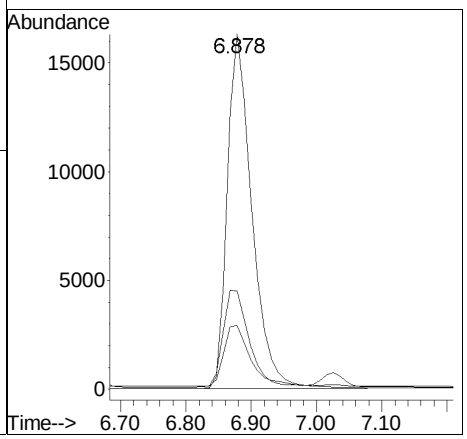


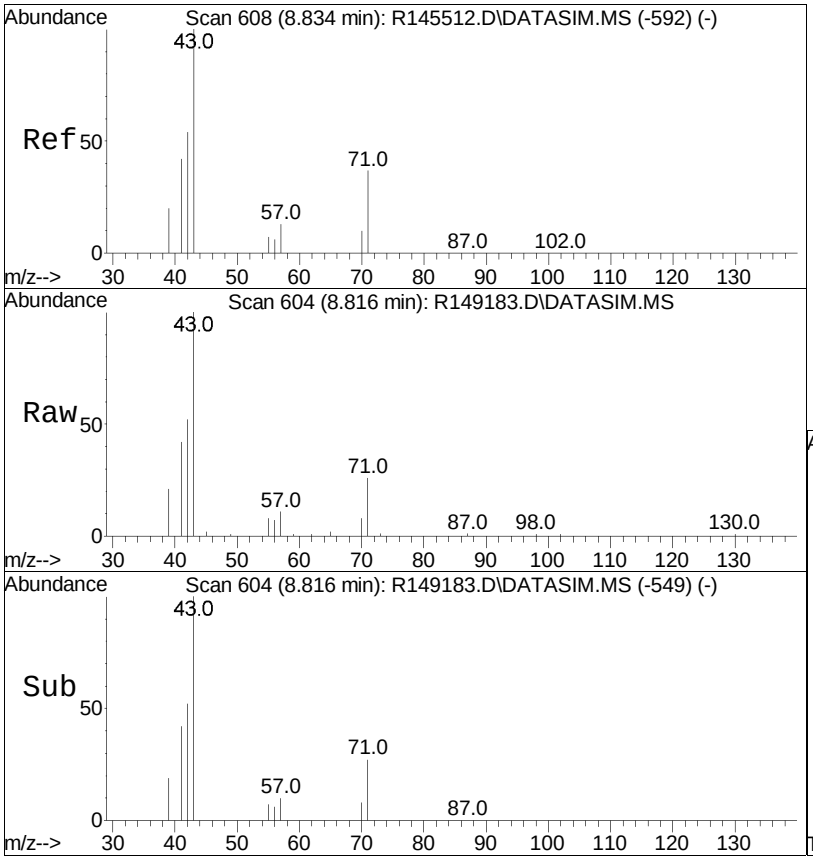


#11
Tertiary butanol
Concen: 1.69 ppbV
RT: 6.878 min Scan# 361
Delta R.T. 0.010 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 59 Resp: 42613

Ion	Ratio	Lower	Upper
59	100		
41	27.7	20.2	60.2
43	18.0	0.0	38.4

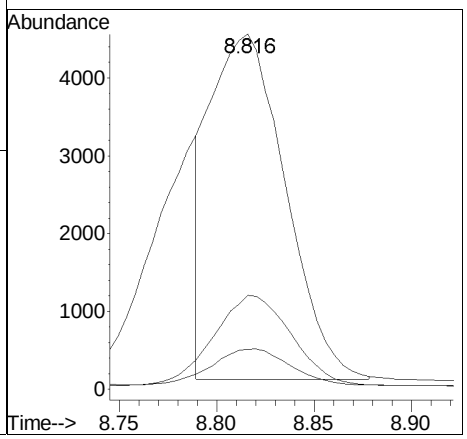


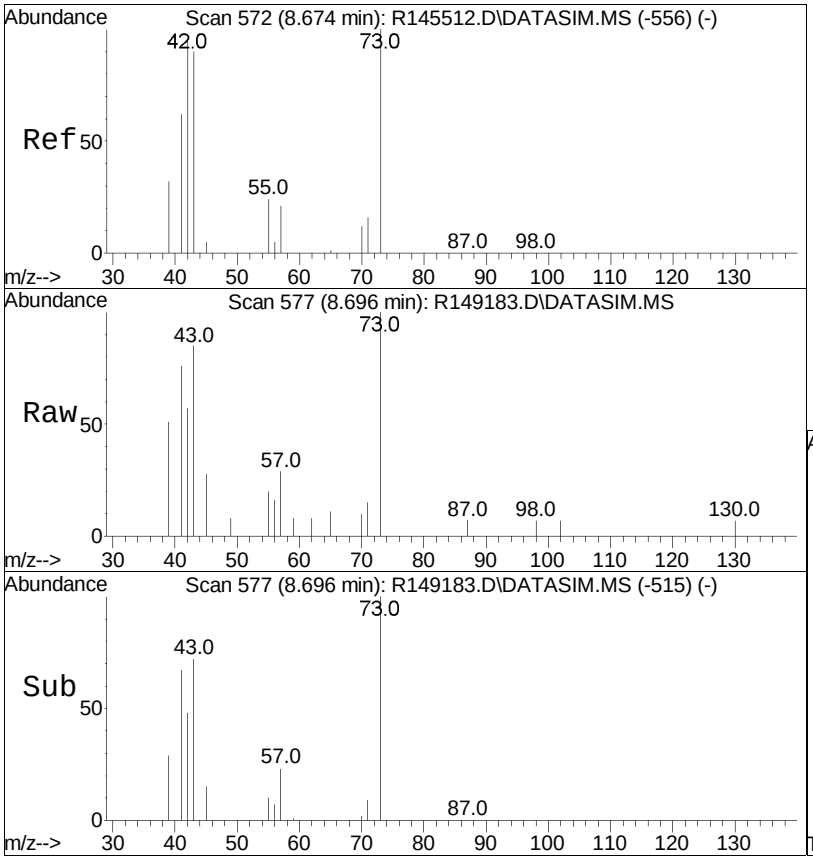


#14
2-Methylpentane
Concen: 0.47 ppbV m
RT: 8.816 min Scan# 604
Delta R.T. -0.005 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 43 Resp: 11913

Ion	Ratio	Lower	Upper
43	100		
71	26.5	8.8	48.8
57	11.3	0.0	31.6

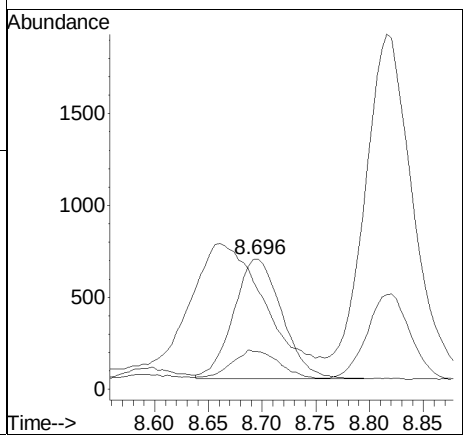


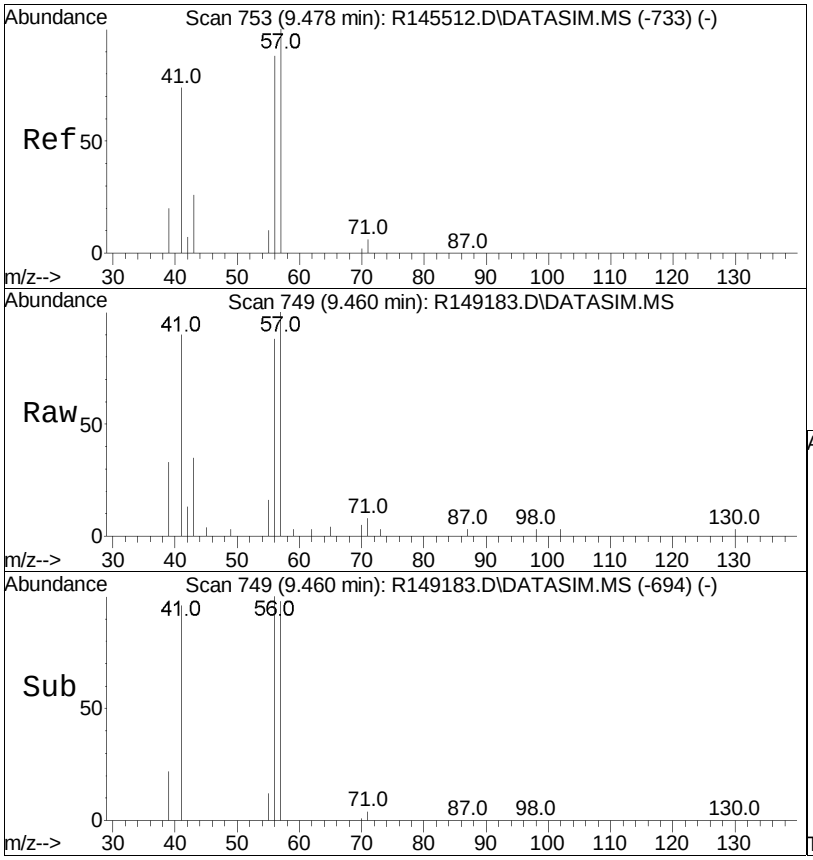


#15
MTBE
Concen: 0.08 ppbV
RT: 8.696 min Scan# 577
Delta R.T. 0.027 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 73 Resp: 2032

Ion	Ratio	Lower	Upper
73	100		
41	75.9	54.6	94.6
57	29.1	3.7	43.7

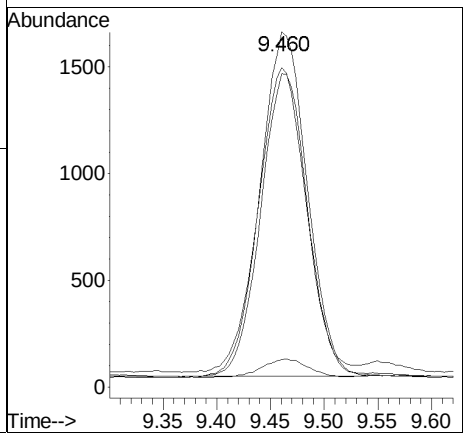


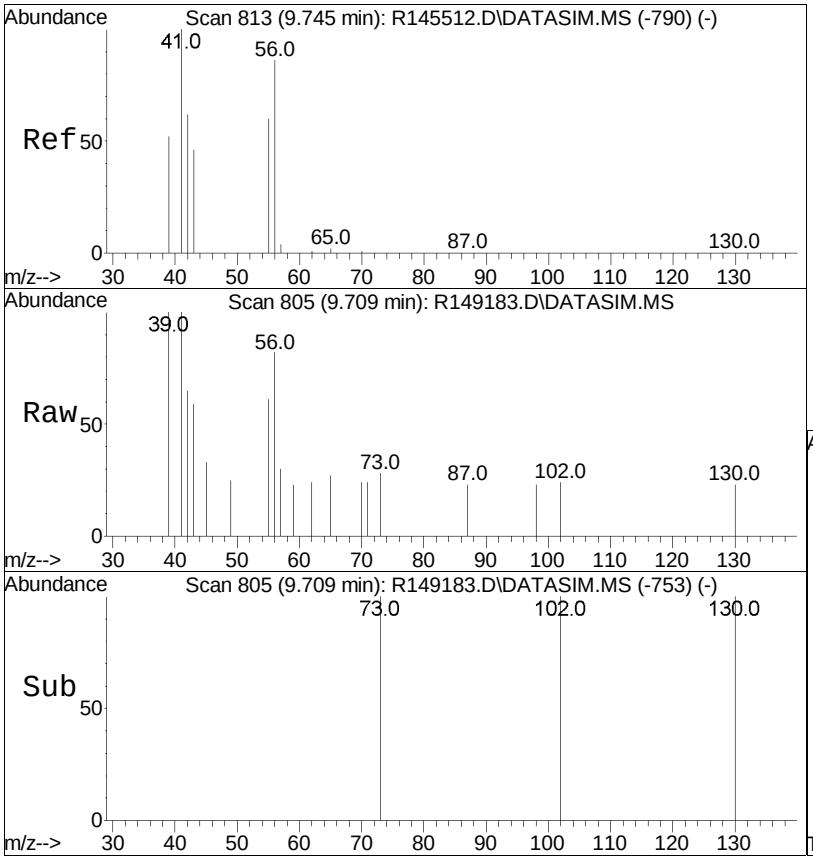


#16
3-Methylpentane
Concen: 0.30 ppbV
RT: 9.460 min Scan# 749
Delta R.T. -0.005 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 57 Resp: 4944

Ion	Ratio	Lower	Upper
57	100		
56	88.3	69.5	109.5
71	7.8	0.0	25.5
41	90.0	63.4	103.4

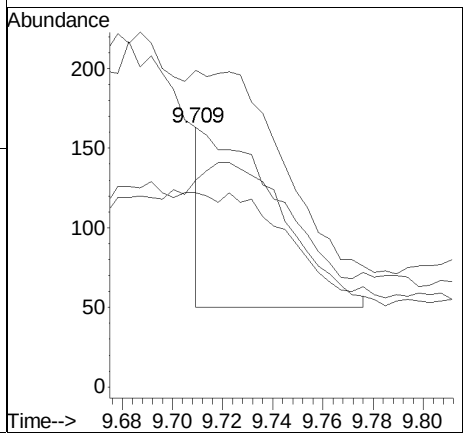


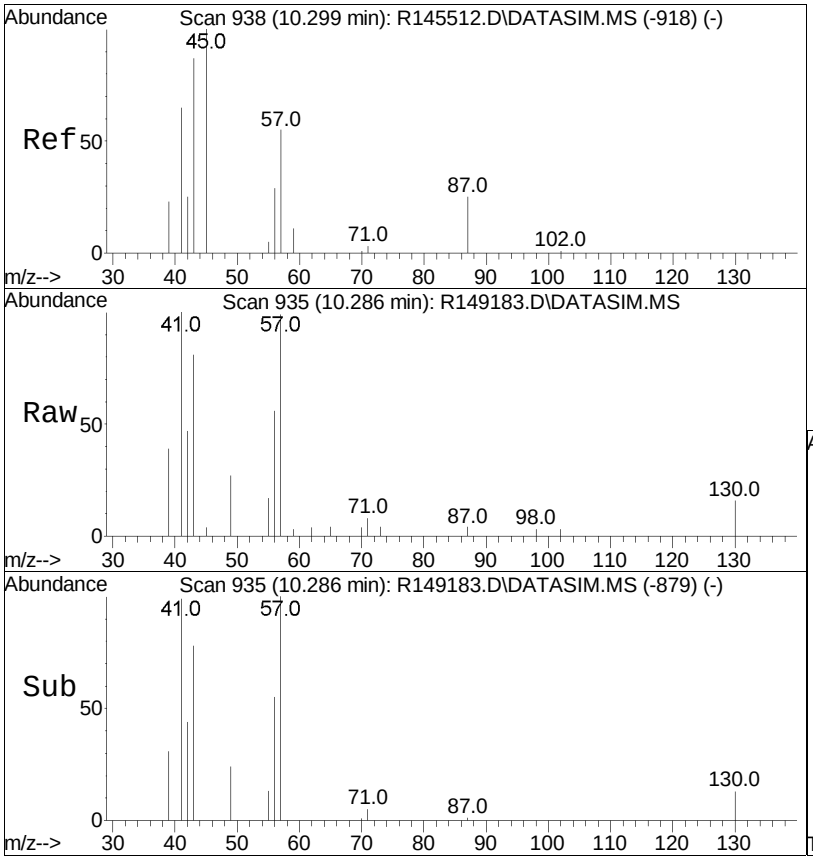


#17
1-Hexene
Concen: 0.02 ppbV m
RT: 9.709 min Scan# 805
Delta R.T. -0.018 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 56 Resp: 230

Ion	Ratio	Lower	Upper
56	100		
41	122.1	111.5	151.5
55	74.8	51.2	91.2
42	79.8	62.3	102.3

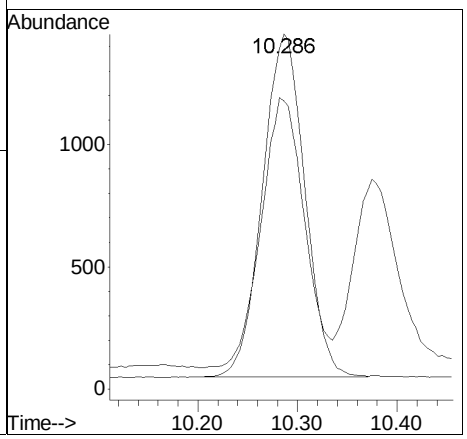


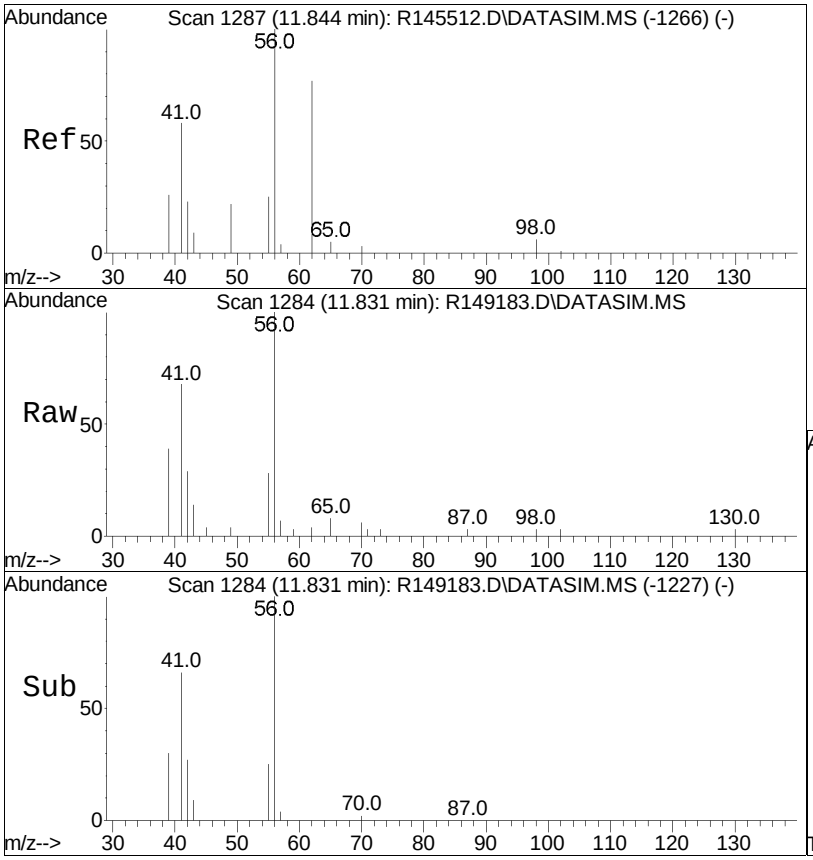


#18
Hexane
Concen: 0.29 ppbV
RT: 10.286 min Scan# 935
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 57 Resp: 4141

Ion	Ratio	Lower	Upper
57	100		
43	81.2	114.8	154.8#

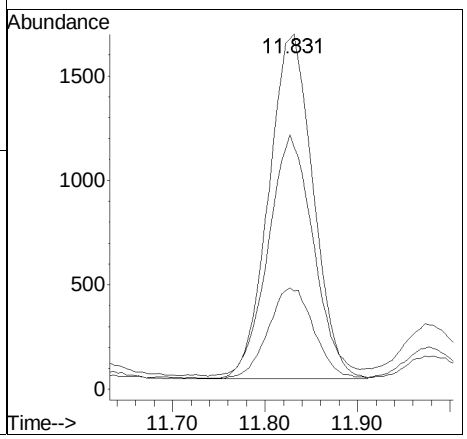


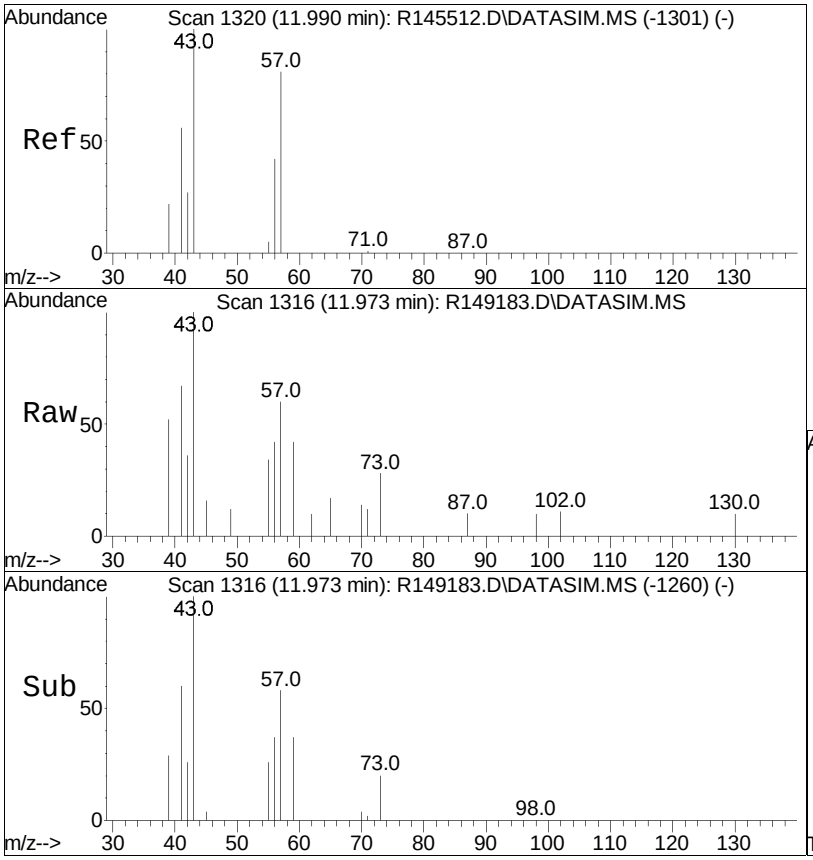


#23
Methylcyclopentane
Concen: 0.31 ppbV
RT: 11.831 min Scan# 1284
Delta R.T. 0.004 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 56 Resp: 5520

Ion	Ratio	Lower	Upper
56	100		
55	27.7	6.8	46.8
41	68.2	47.8	87.8

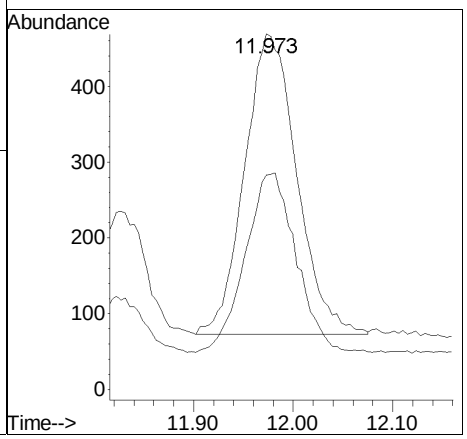


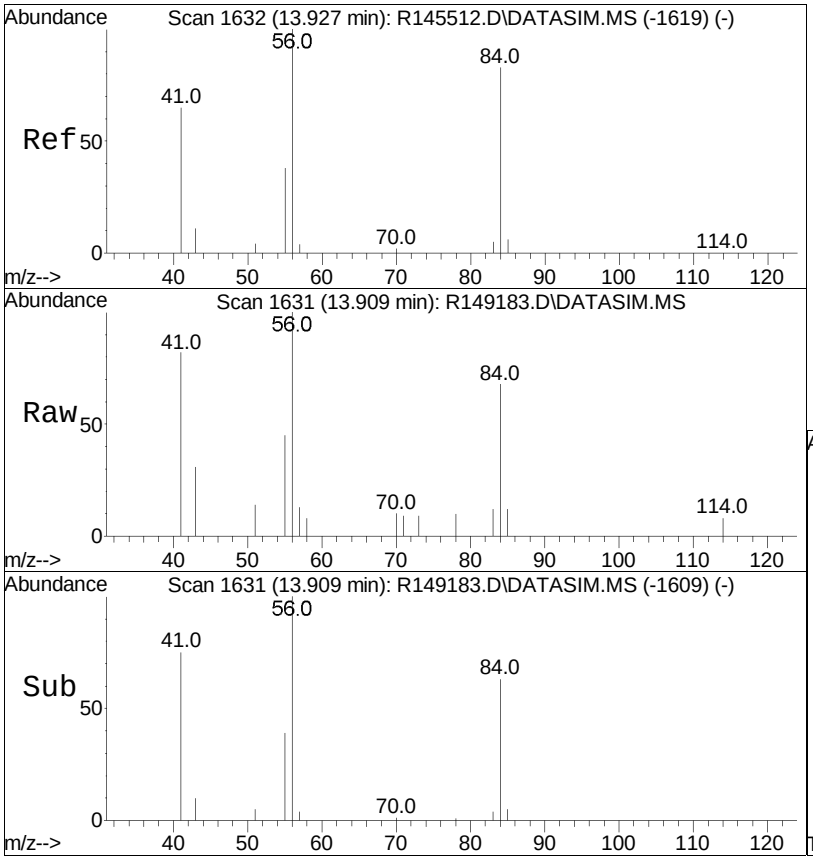


#24
2,4-Dimethylpentane
Concen: 0.06 ppbV
RT: 11.973 min Scan# 1316
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 43 Resp: 1445

Ion	Ratio	Lower	Upper
43	100		
57	60.3	50.5	90.5

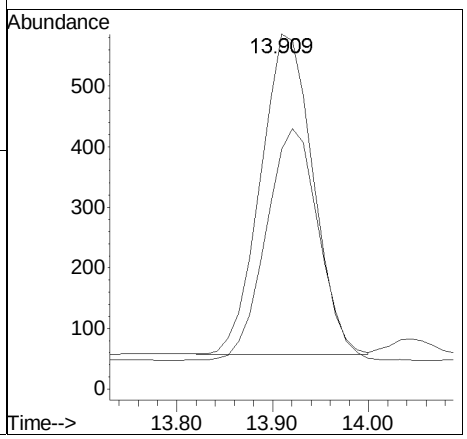


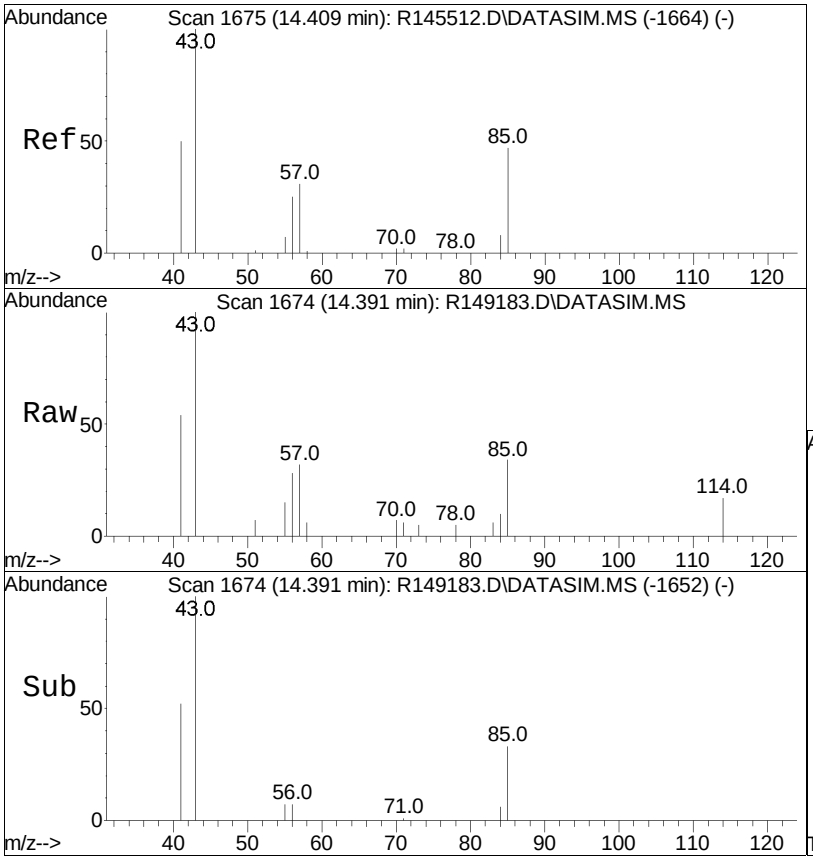


#26
Cyclohexane
Concen: 0.15 ppbV
RT: 13.909 min Scan# 1631
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 56 Resp: 2006

Ion	Ratio	Lower	Upper
56	100		
84	67.6	47.9	87.9

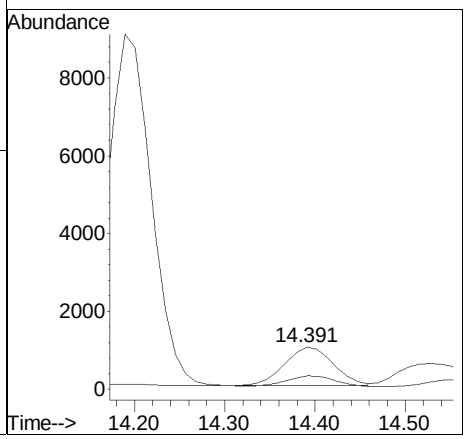


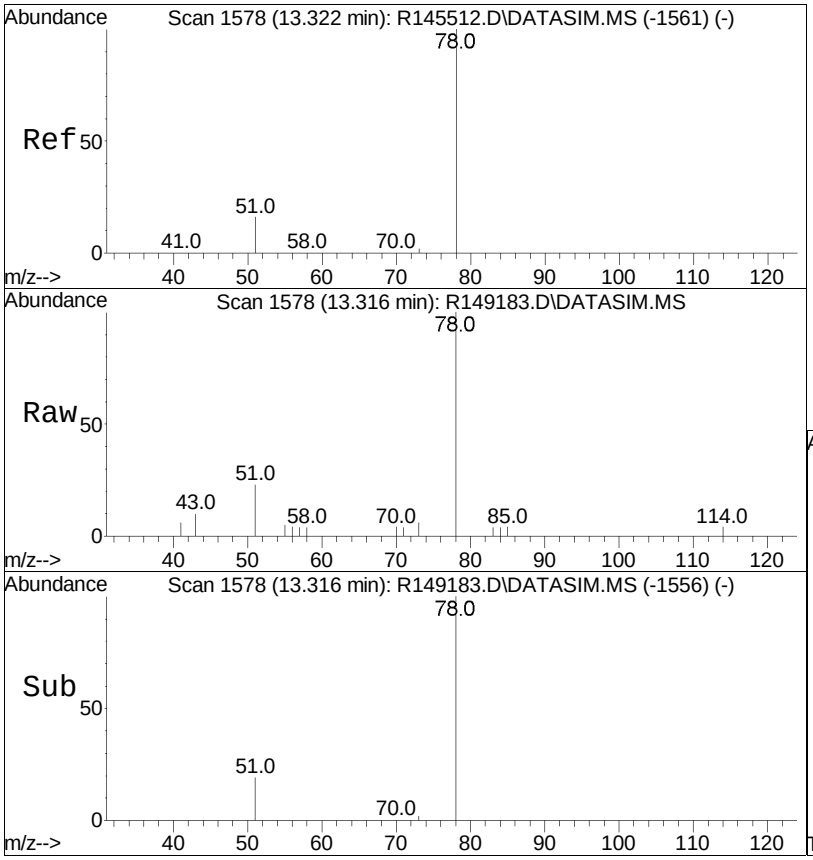


#28
2-Methylhexane
Concen: 0.16 ppbV
RT: 14.391 min Scan# 1674
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 43 Resp: 3736

Ion	Ratio	Lower	Upper
43	100		
57	31.9	7.8	47.8

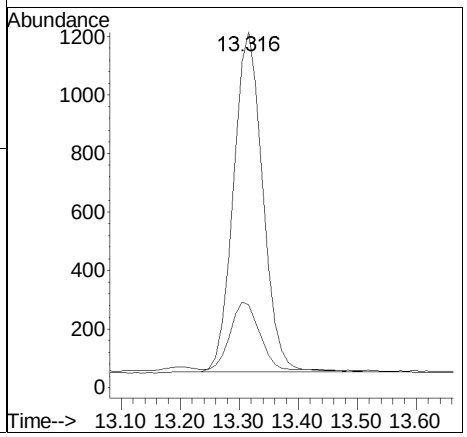


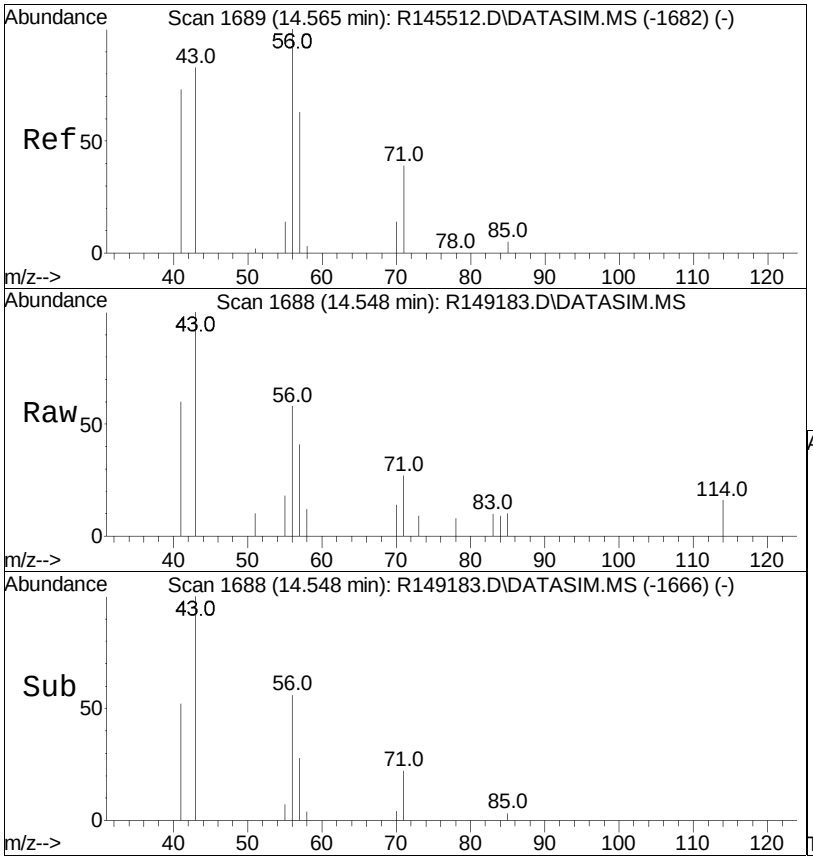


#29
Benzene
Concen: 0.15 ppbV
RT: 13.316 min Scan# 1578
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 78 Resp: 4001

Ion	Ratio	Lower	Upper
78	100		
51	23.2	0.0	39.4

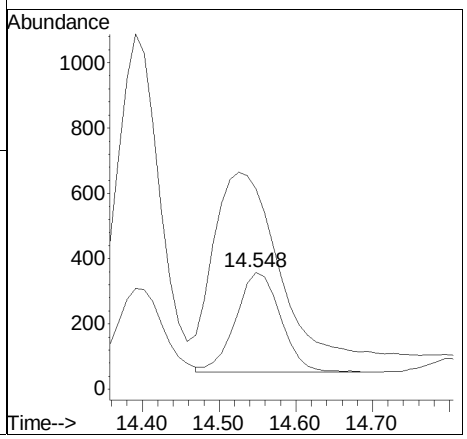


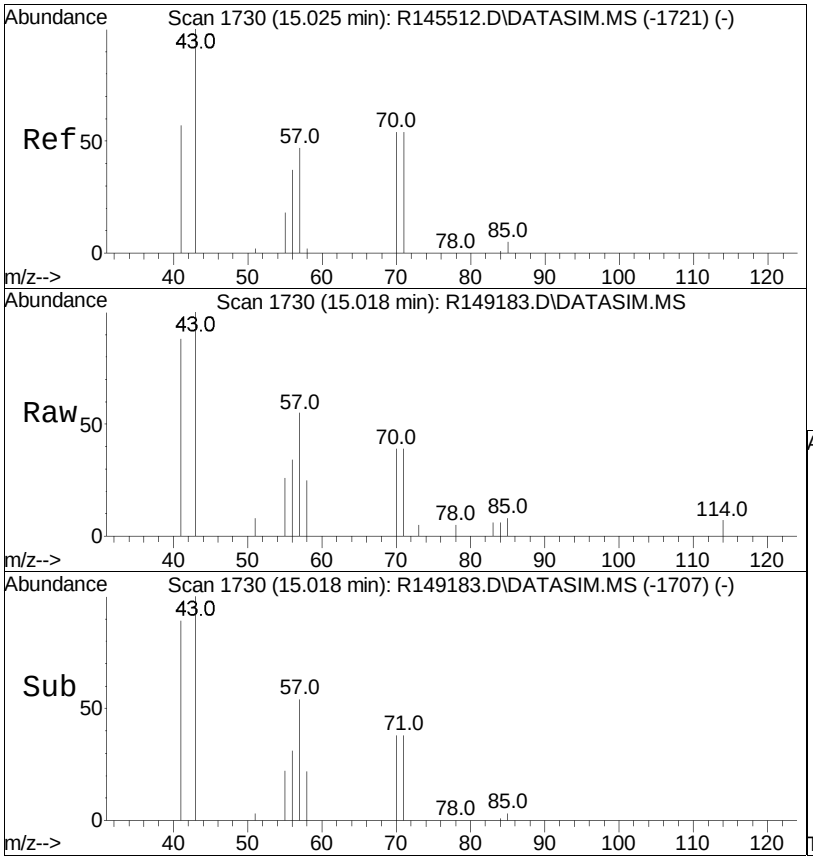


#30
2,3-Dimethylpentane
Concen: 0.07 ppbV
RT: 14.548 min Scan# 1688
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 56 Resp: 1237

Ion	Ratio	Lower	Upper
56	100		
43	171.5	72.3	112.3#

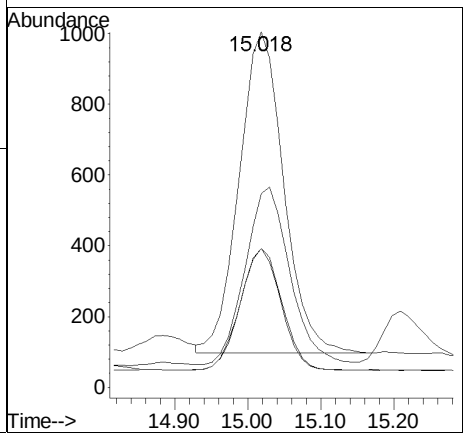


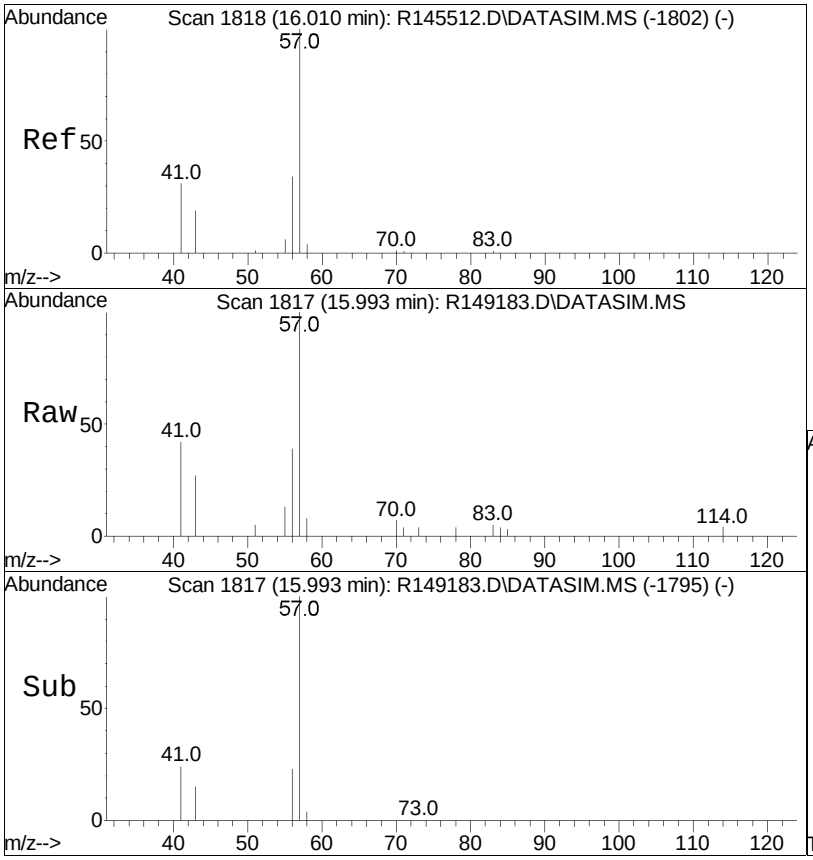


#32
3-Methylhexane
Concen: 0.21 ppbV
RT: 15.018 min Scan# 1730
Delta R.T. 0.011 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 43 Resp: 3843

Ion	Ratio	Lower	Upper
43	100		
57	54.6	23.4	63.4
70	39.1	22.5	62.5
71	39.1	22.4	62.4

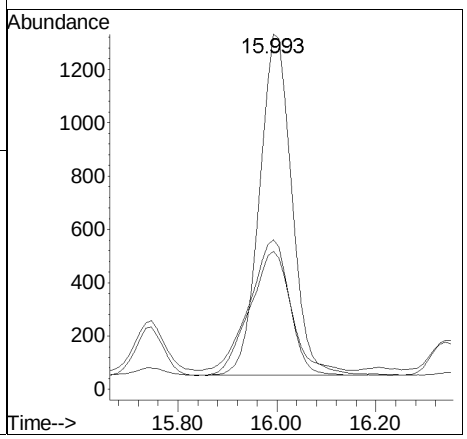


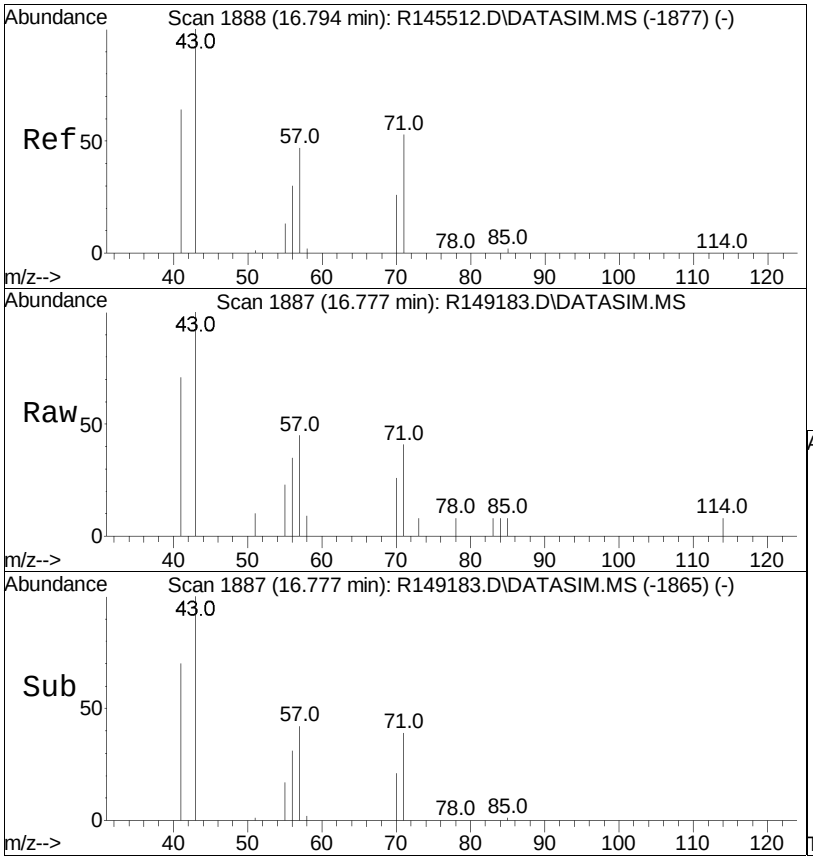


#35
Isooctane
Concen: 0.14 ppbV
RT: 15.993 min Scan# 1817
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 57 Resp: 5798

Ion	Ratio	Lower	Upper
57	100		
56	38.9	14.9	54.9
41	42.1	16.0	56.0

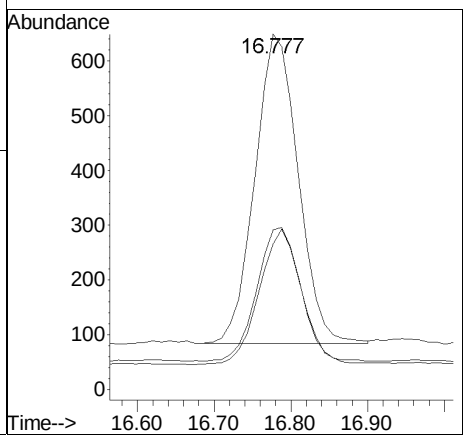


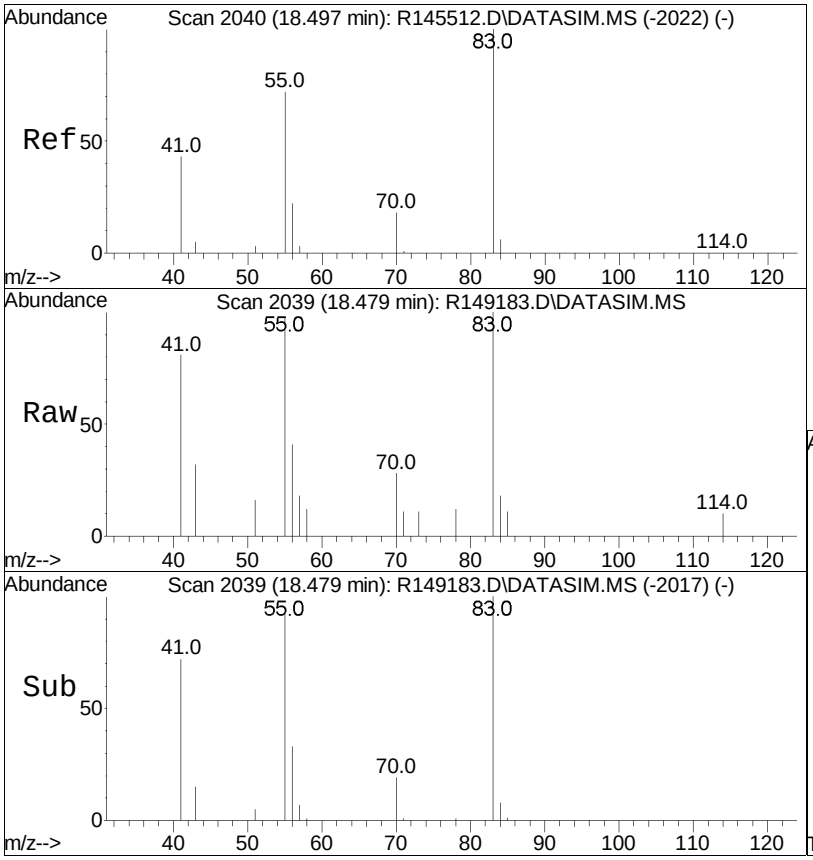


#36
Heptane
Concen: 0.12 ppbV
RT: 16.777 min Scan# 1887
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 43 Resp: 2213

Ion	Ratio	Lower	Upper
43	100		
57	45.0	23.3	63.3
71	41.0	21.1	61.1

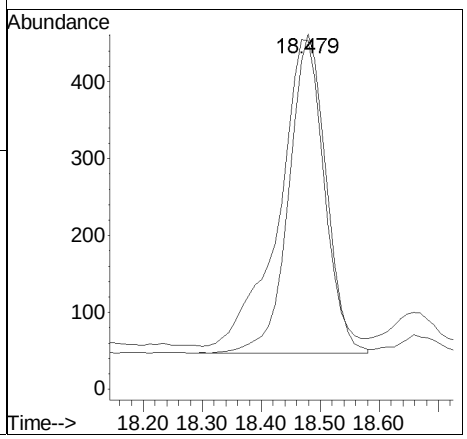


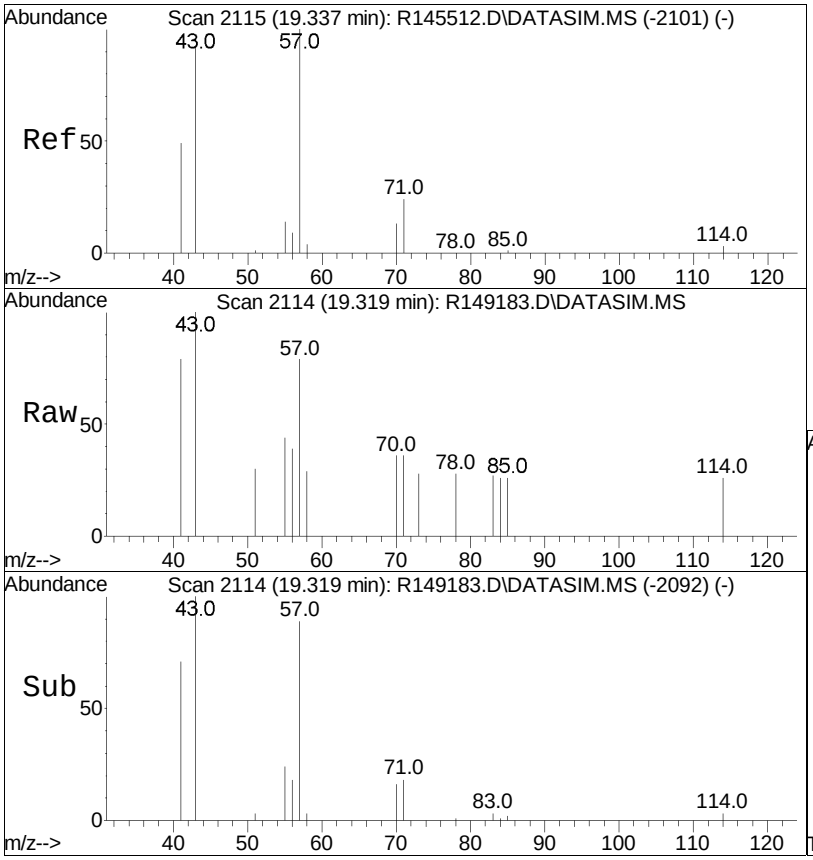


#37
Methylcyclohexane
Concen: 0.13 ppbV
RT: 18.479 min Scan# 2039
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 83 Resp: 1816

Ion	Ratio	Lower	Upper
83	100		
55	98.1	70.7	110.7

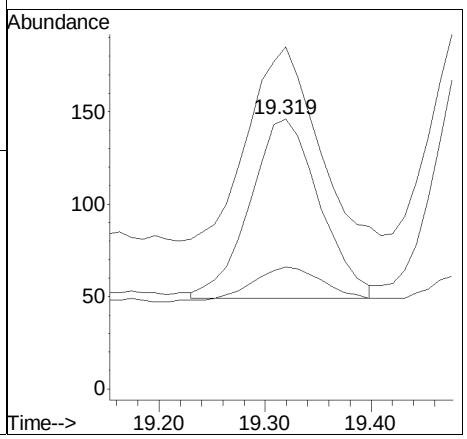


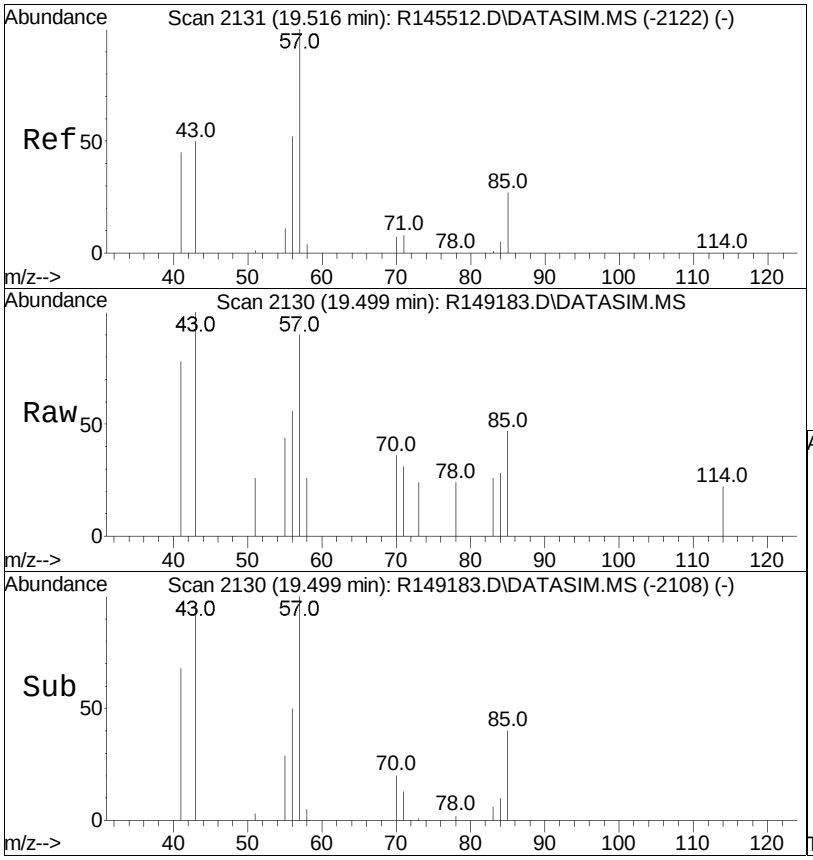


#38
2,5-Dimethylhexane
Concen: 0.02 ppbV m
RT: 19.319 min Scan# 2114
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 57 Resp: 444

Ion	Ratio	Lower	Upper
57	100		
43	126.7	86.5	126.5#
71	45.2	0.8	40.8#

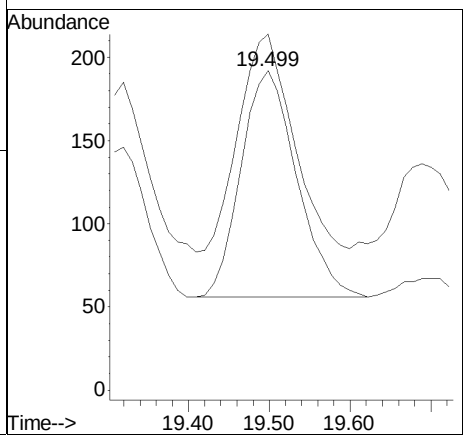


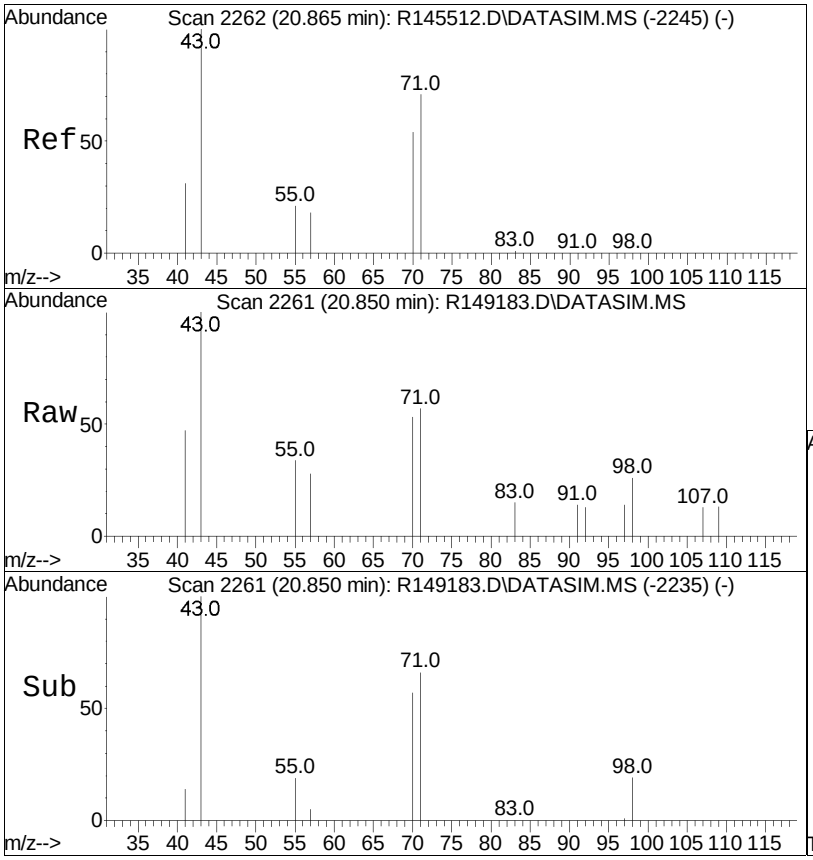


#39
2,4-Dimethyhexane / 2,2,3-TMP
Concen: 0.03 ppbV
RT: 19.499 min Scan# 2130
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 57 Resp: 652

Ion	Ratio	Lower	Upper
57	100		
43	111.5	36.1	76.1#

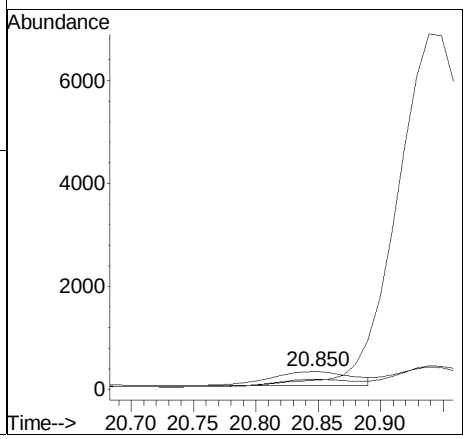


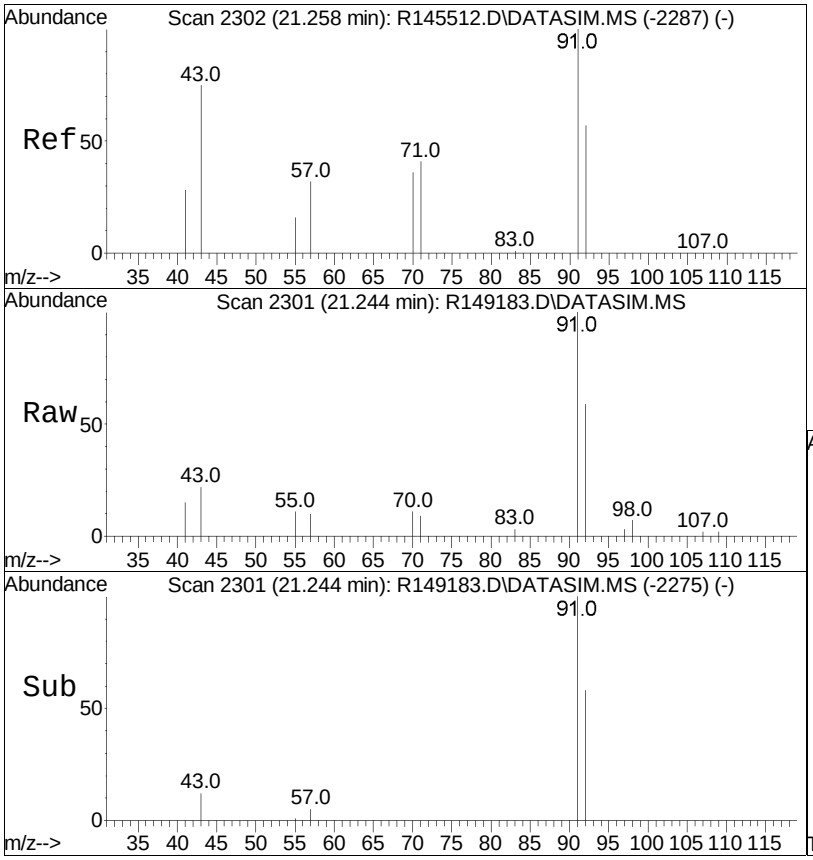


#40
2,3,4-Trimethylpentane
Concen: 0.04 ppbV
RT: 20.850 min Scan# 2261
Delta R.T. 0.010 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 43 Resp: 1206

Ion	Ratio	Lower	Upper
43	100		
71	57.0	34.6	74.6
70	52.7	23.3	63.3

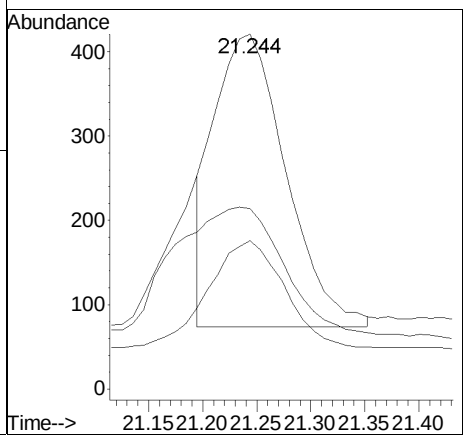


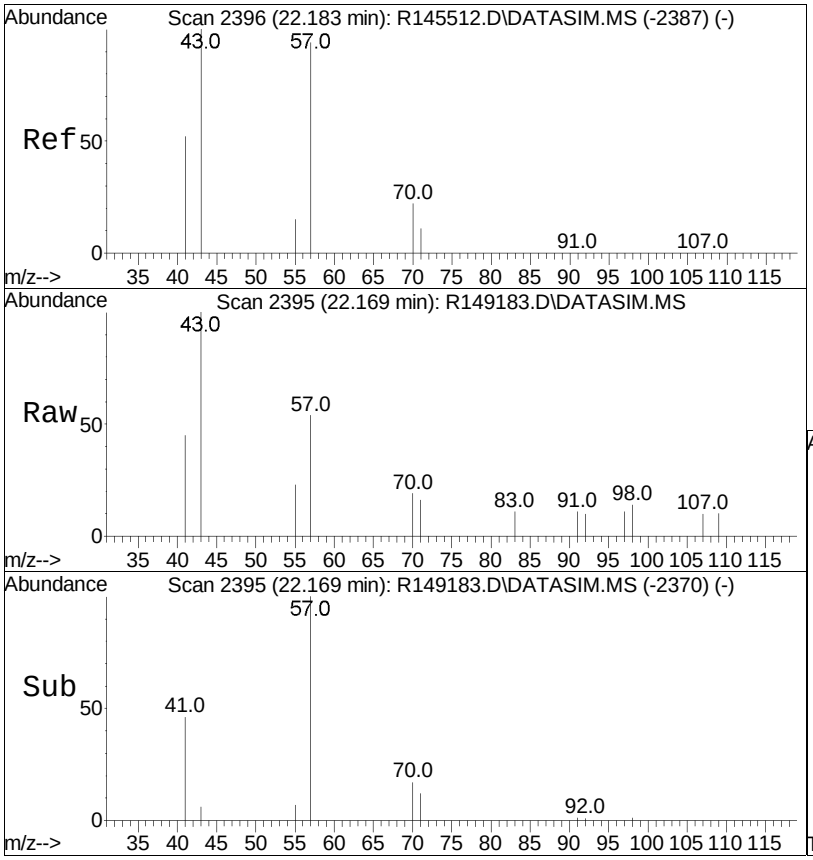


#41
2,3,3-Trimethylpentane
Concen: 0.06 ppbV m
RT: 21.244 min Scan# 2301
Delta R.T. 0.010 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 43 Resp: 1606

Ion	Ratio	Lower	Upper
43	100		
71	41.8	22.4	62.4
70	50.8	18.7	58.7

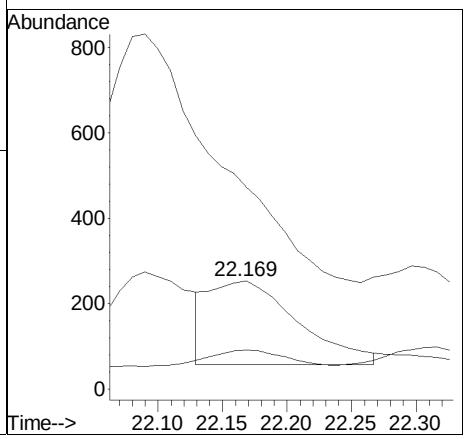


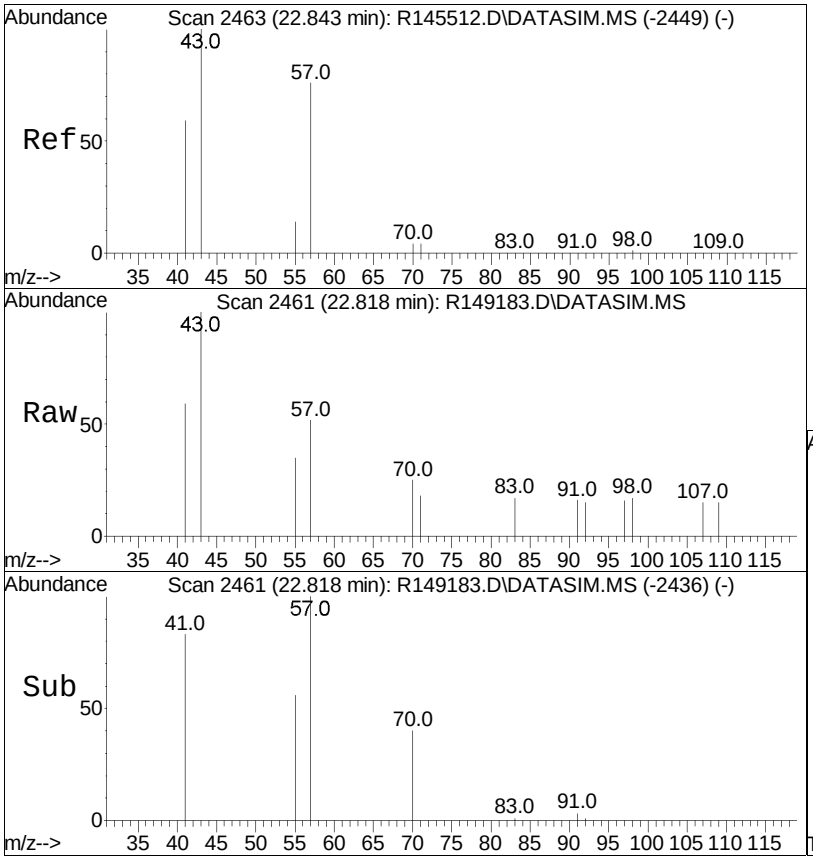


#44
2-Methylheptane
Concen: 0.05 ppbV m
RT: 22.169 min Scan# 2395
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 57 Resp: 939

Ion	Ratio	Lower	Upper
57	100		
43	186.2	98.3	138.3#
70	36.2	2.5	42.5

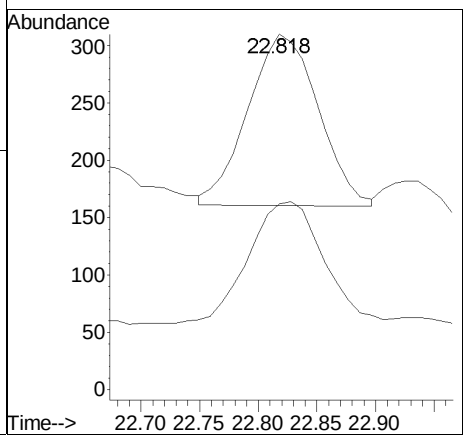


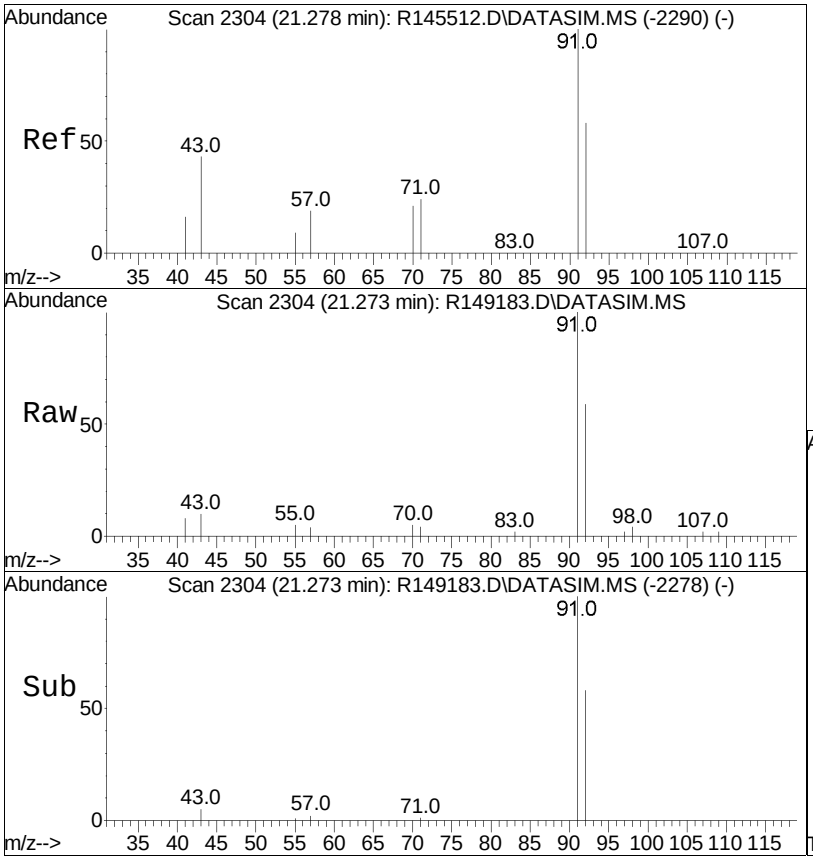


#45
3-Methylheptane
Concen: 0.03 ppbV m
RT: 22.818 min Scan# 2461
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 43 Resp: 623

Ion	Ratio	Lower	Upper
43	100		
57	52.3	47.6	87.6

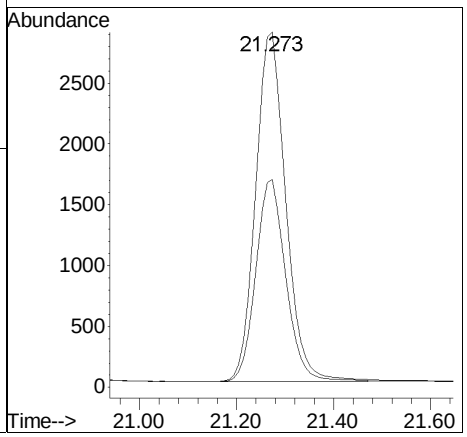


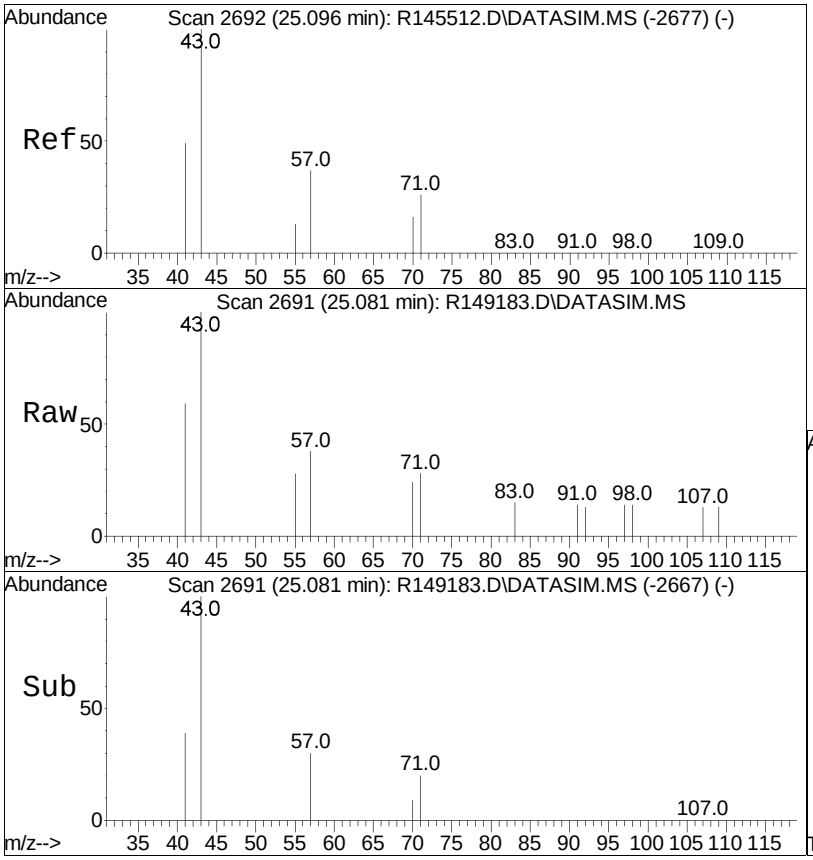


#47
Toluene
Concen: 0.40 ppbV
RT: 21.273 min Scan# 2304
Delta R.T. 0.010 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 91 Resp: 12403

Ion	Ratio	Lower	Upper
91	100		
92	58.6	37.6	77.6

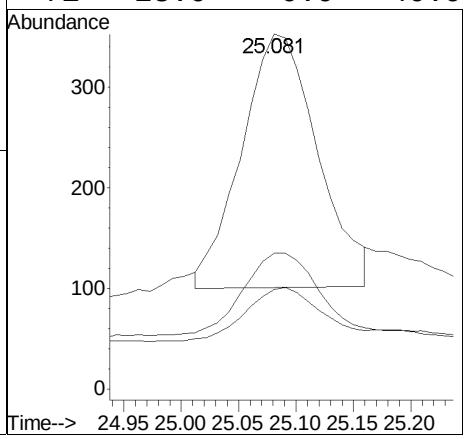


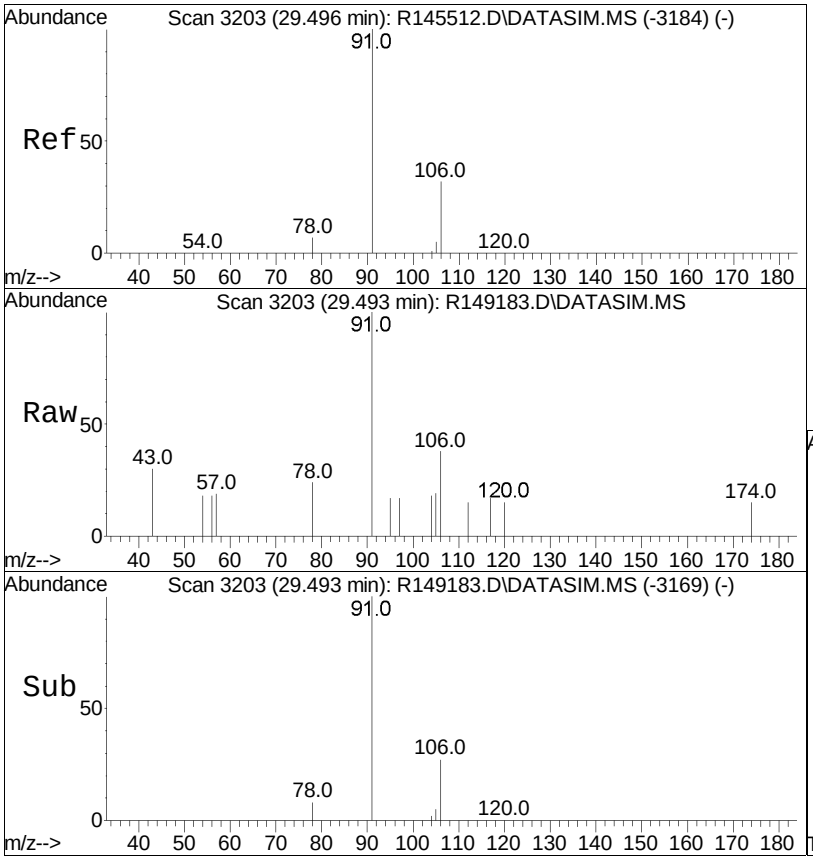


#52
Octane
Concen: 0.05 ppbV m
RT: 25.081 min Scan# 2691
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 43 Resp: 1164

Ion	Ratio	Lower	Upper
43	100		
57	38.2	13.6	53.6
71	28.0	0.9	40.9

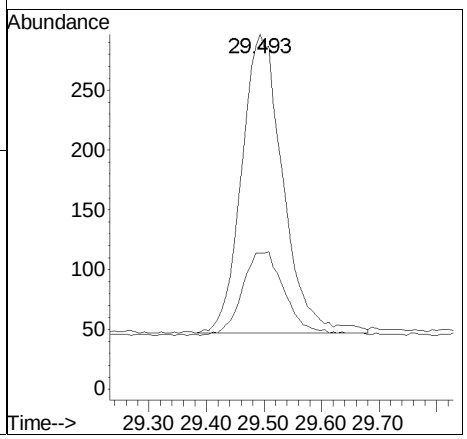


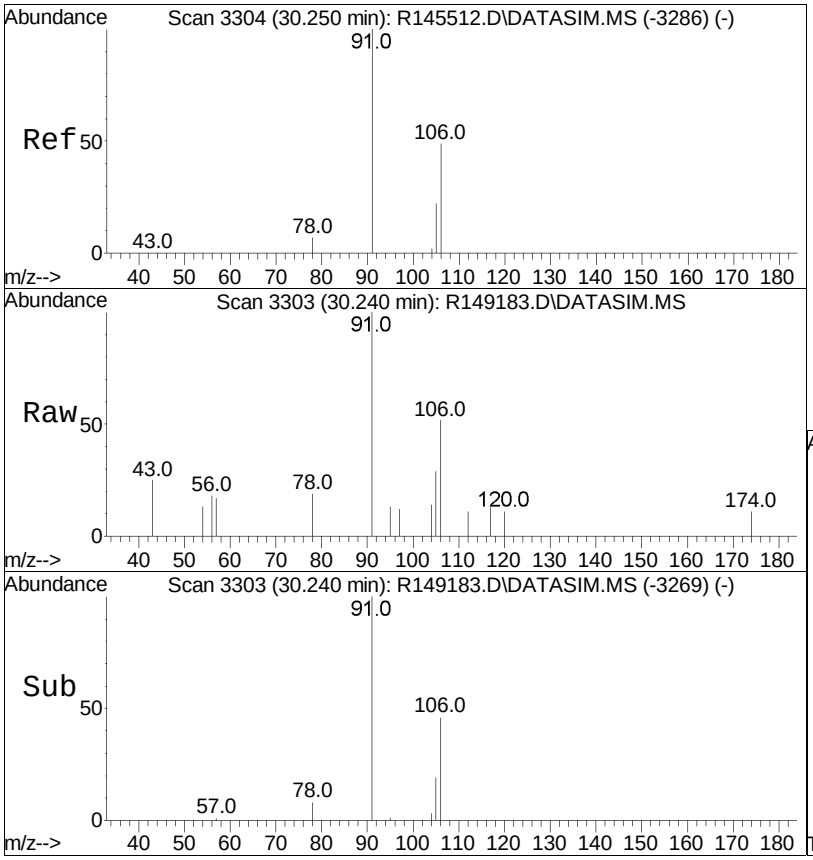


#55
Ethylbenzene
Concen: 0.04 ppbV
RT: 29.493 min Scan# 3203
Delta R.T. 0.007 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 91 Resp: 1245

Ion	Ratio	Lower	Upper
91	100		
106	38.4	9.1	49.1

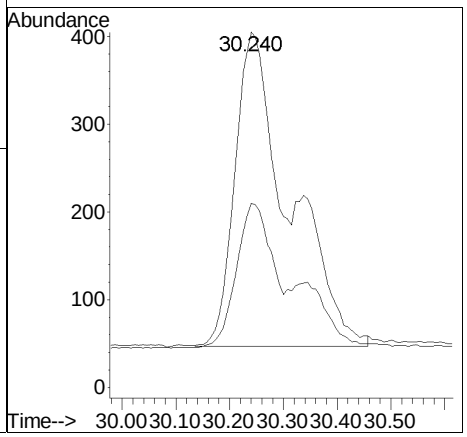


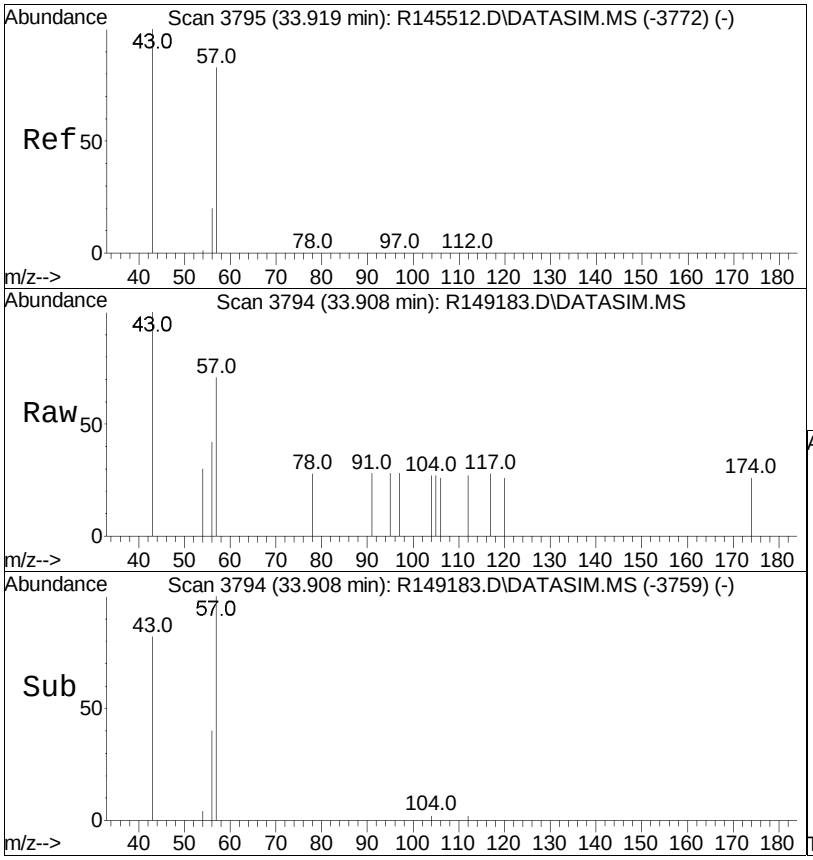


#57
p/m-Xylene
Concen: 0.11 ppbV m
RT: 30.240 min Scan# 3303
Delta R.T. 0.007 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 91 Resp: 2506

Ion	Ratio	Lower	Upper
91	100		
106	51.9	25.5	65.5

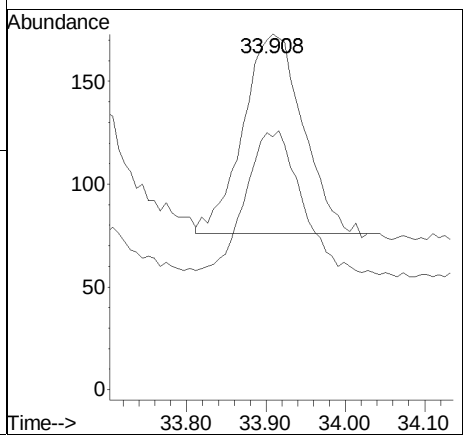


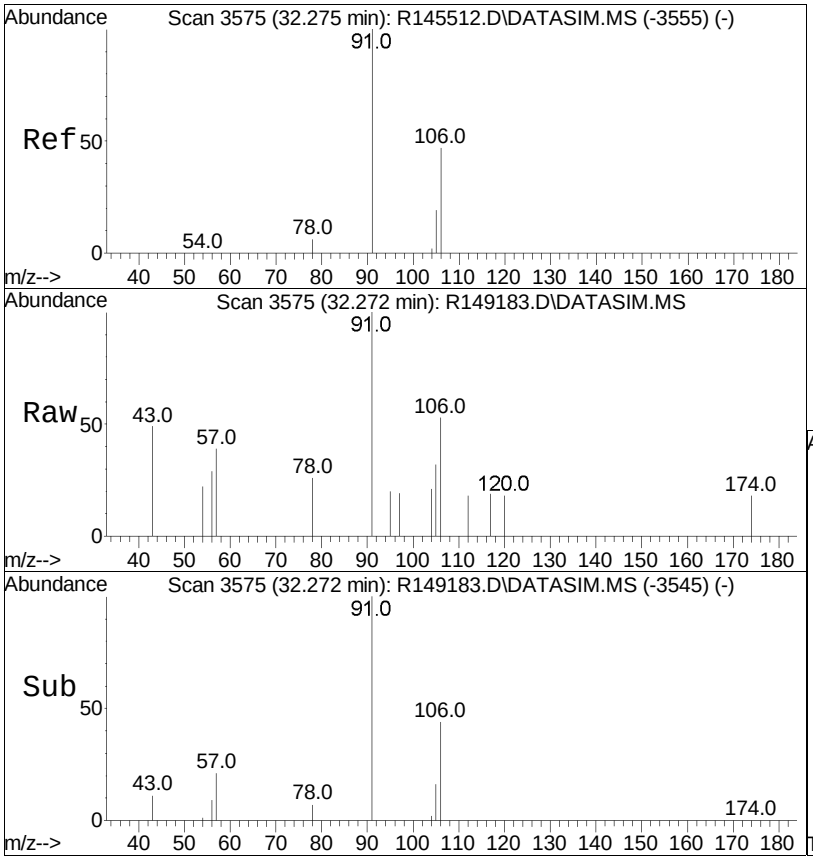


#59
Nonane
Concen: 0.02 ppbV
RT: 33.908 min Scan# 3794
Delta R.T. 0.015 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 43 Resp: 509

Ion	Ratio	Lower	Upper
43	100		
57	71.1	51.4	91.4

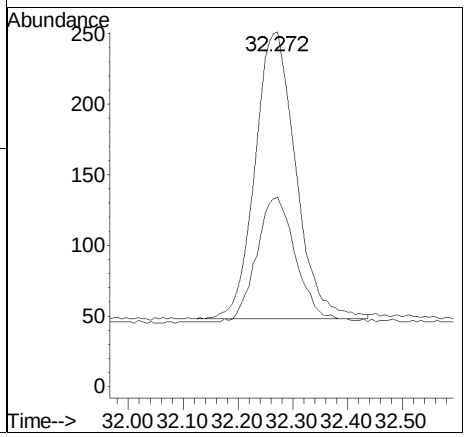


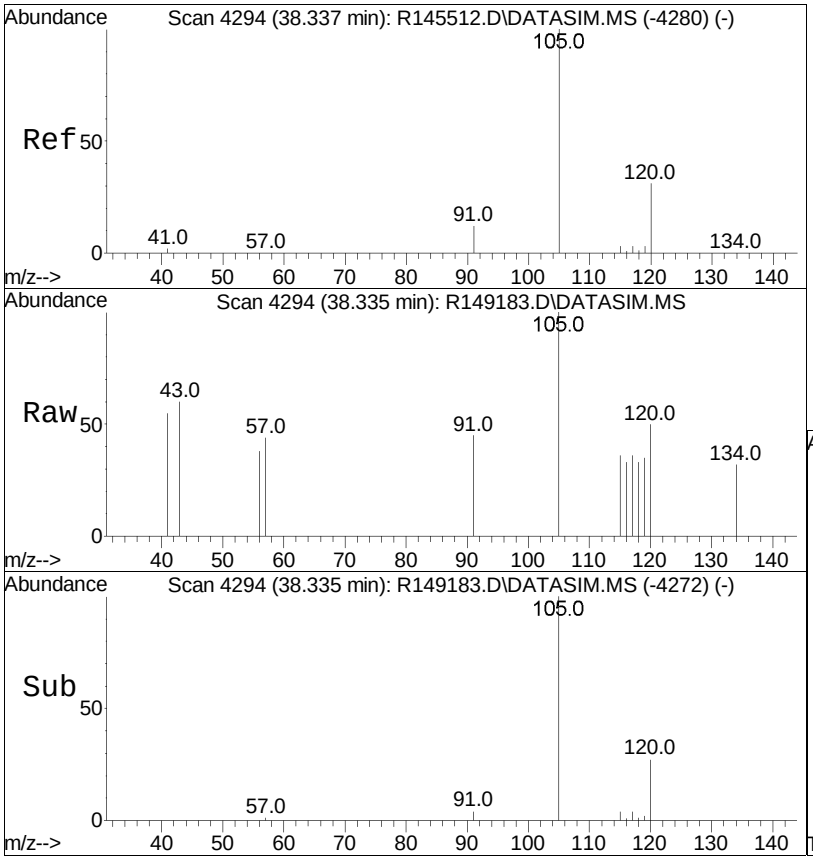


#61
o-Xylene
Concen: 0.05 ppbV
RT: 32.272 min Scan# 3575
Delta R.T. 0.015 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 91 Resp: 1051

Ion	Ratio	Lower	Upper
91	100		
106	53.4	23.5	63.5

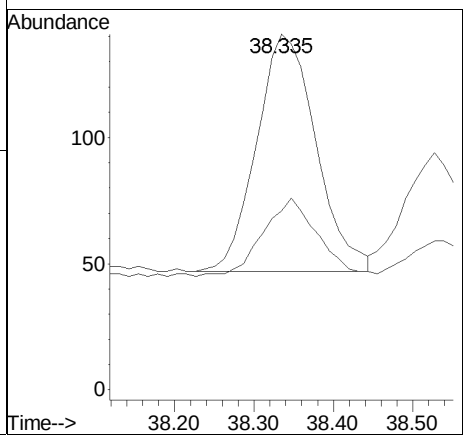


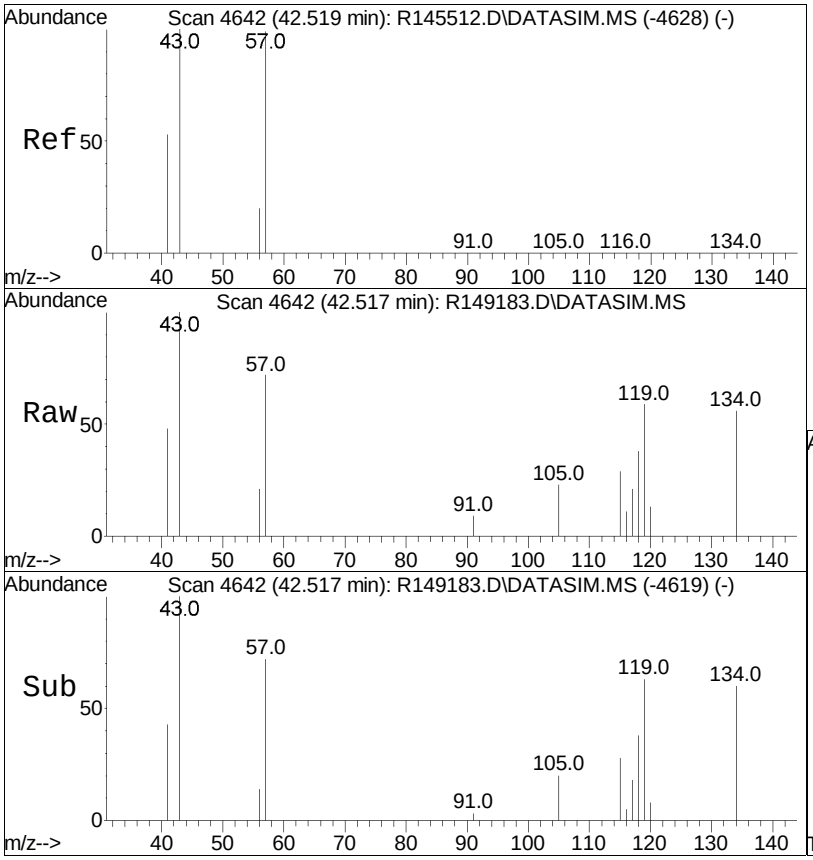


#65
1-Methyl-3-ethylbenzene
Concen: 0.02 ppbV
RT: 38.335 min Scan# 4294
Delta R.T. 0.012 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion:105 Resp: 488

Ion	Ratio	Lower	Upper
105	100		
120	50.4	10.4	50.4

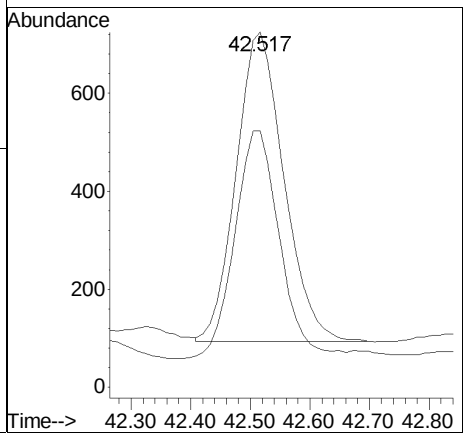


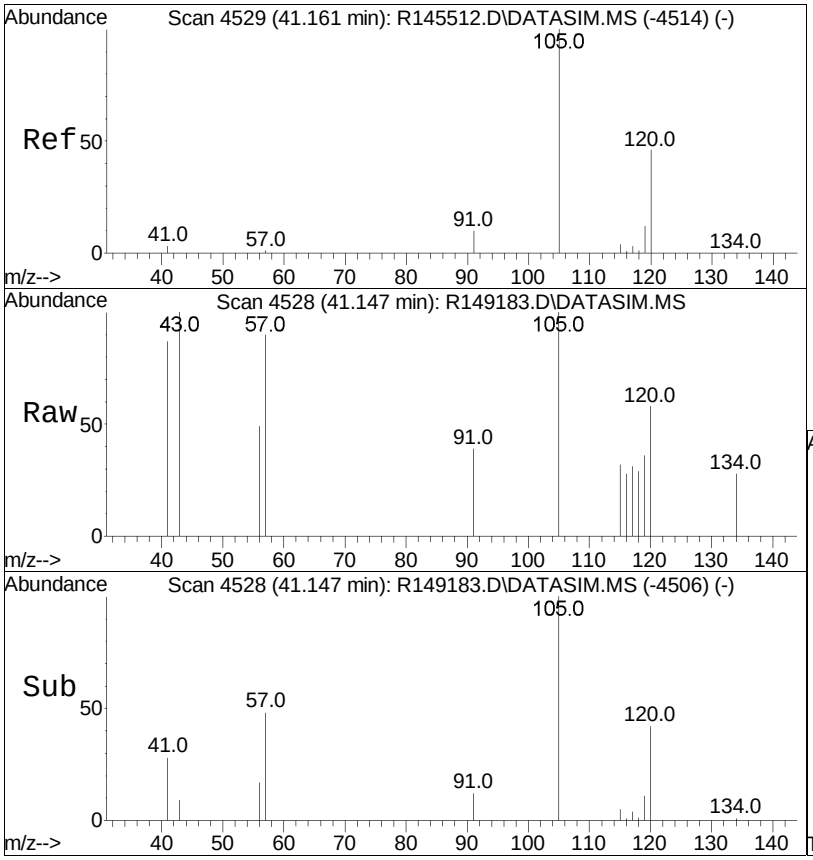


#70
Decane
Concen: 0.16 ppbV
RT: 42.517 min Scan# 4642
Delta R.T. 0.024 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 43 Resp: 3507

Ion	Ratio	Lower	Upper
43	100		
57	72.1	66.4	106.4

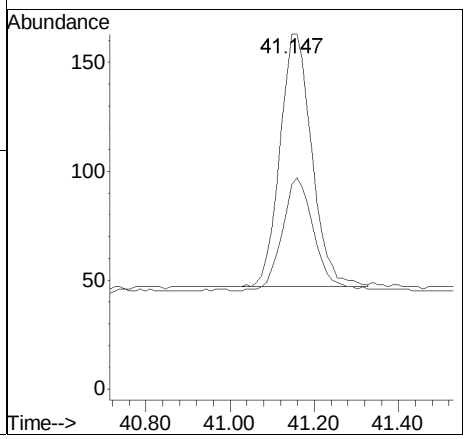


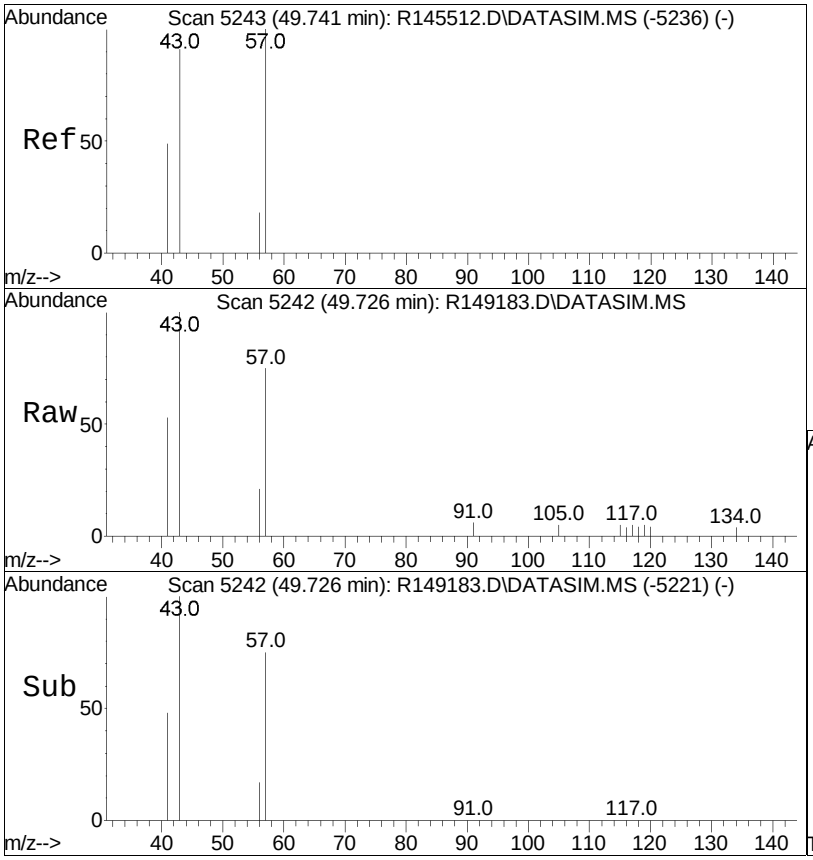


#71
1,2,4-Trimethylbenzene
Concen: 0.02 ppbV
RT: 41.147 min Scan# 4528
Delta R.T. 0.012 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion:105 Resp: 613

Ion	Ratio	Lower	Upper
105	100		
120	57.7	23.0	63.0

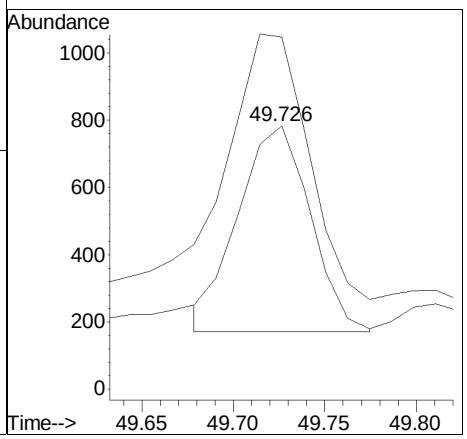


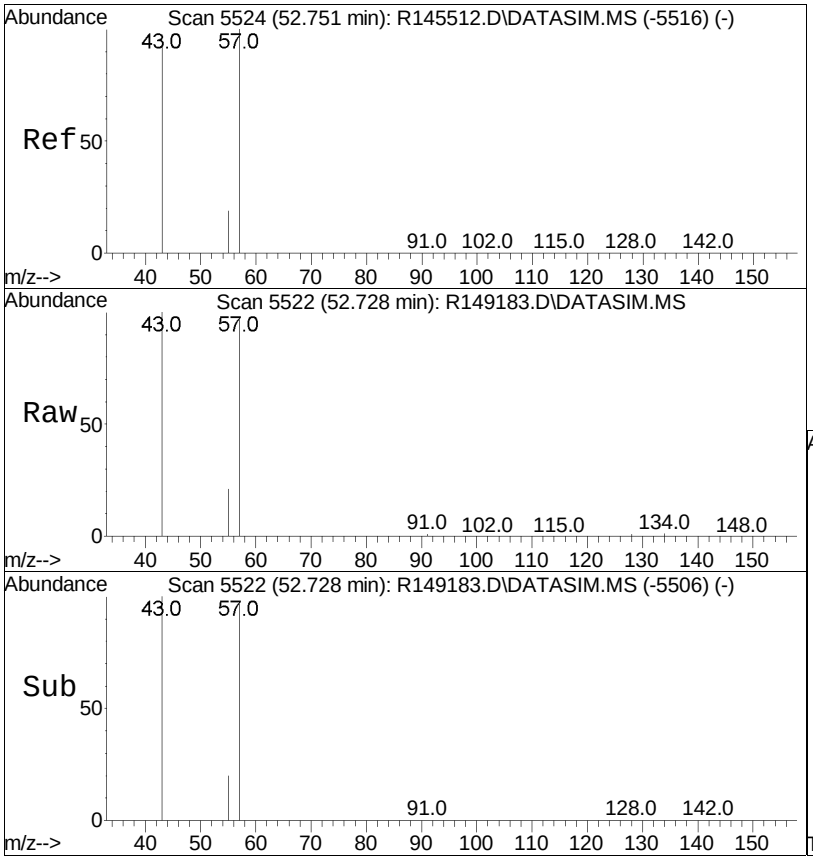


#85
Undecane
Concen: 0.07 ppbV m
RT: 49.726 min Scan# 5242
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 57 Resp: 1681

Ion	Ratio	Lower	Upper
57	100		
43	133.7	79.1	119.1#

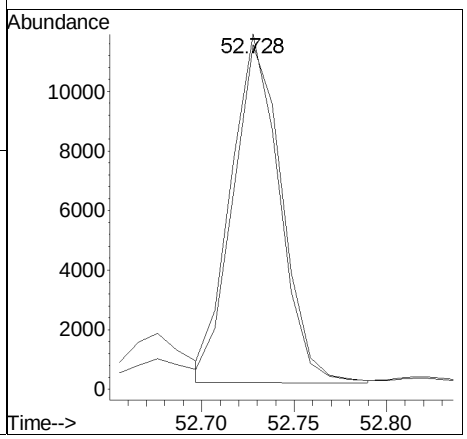


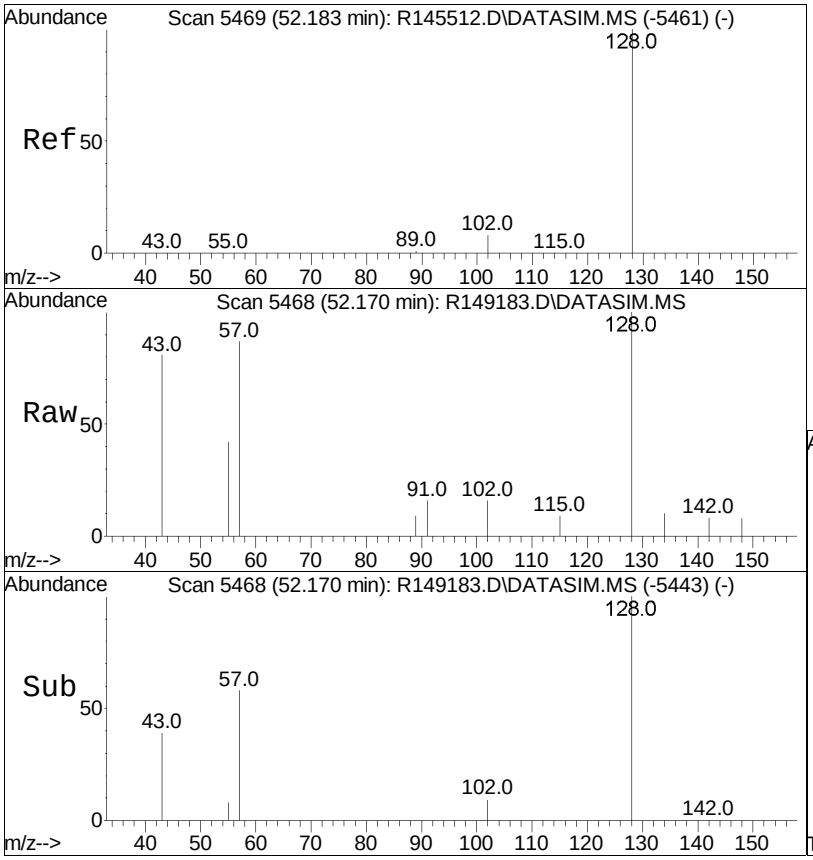


#92
Dodecane
Concen: 0.86 ppbV
RT: 52.728 min Scan# 5522
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 43 Resp: 21244

Ion	Ratio	Lower	Upper
43	100		
57	97.0	80.2	120.2

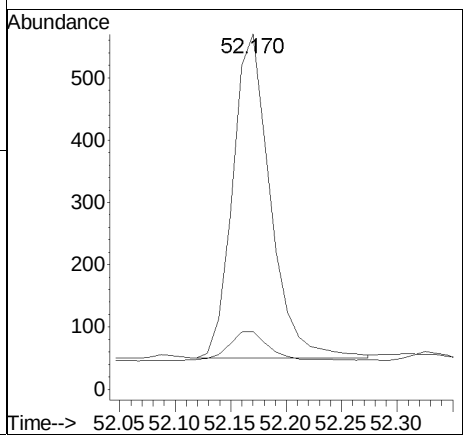


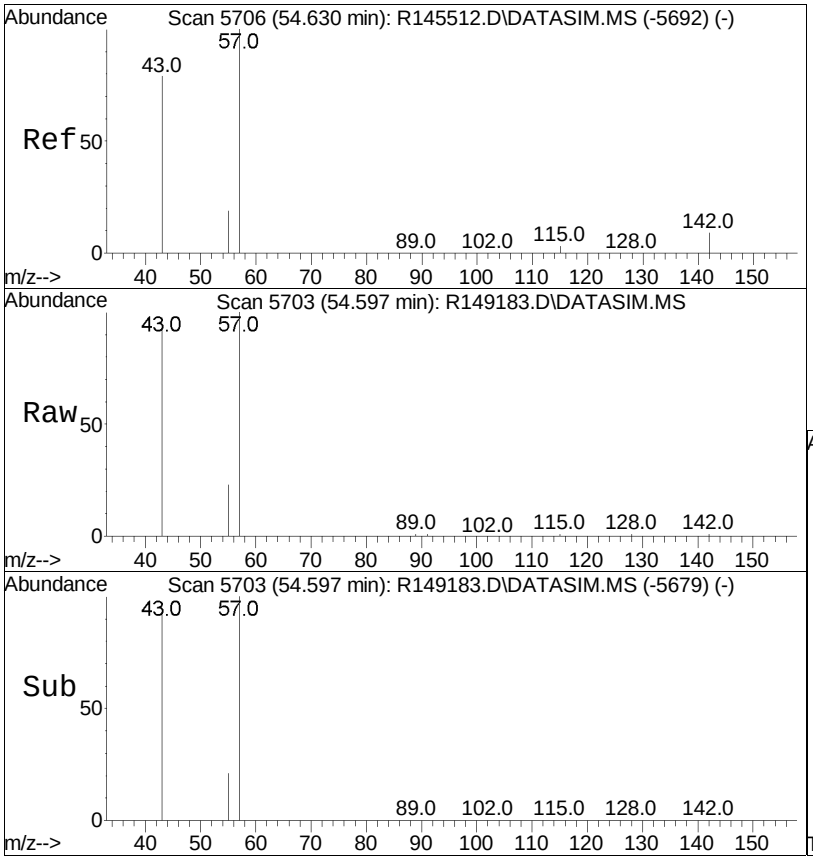


#93
Naphthalene
Concen: 0.04 ppbV
RT: 52.170 min Scan# 5468
Delta R.T. 0.010 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion:128 Resp: 1227

Ion	Ratio	Lower	Upper
128	100		
102	16.3	0.0	28.9

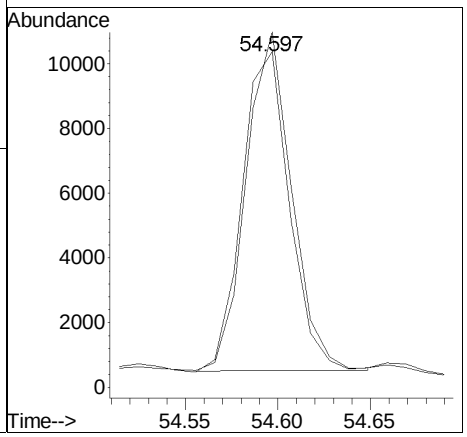


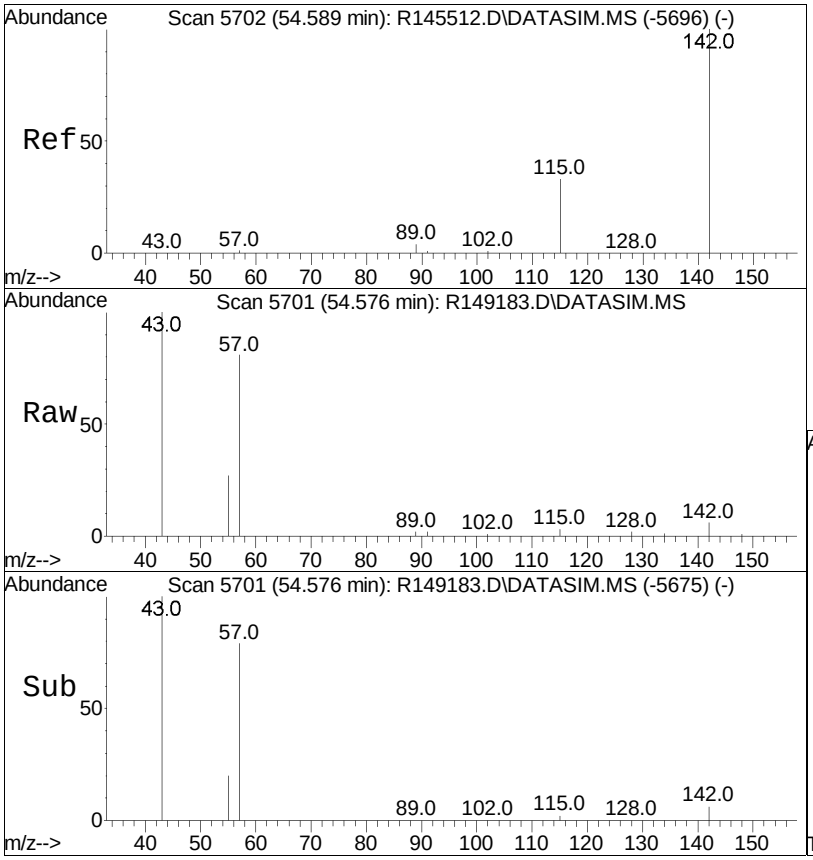


#96
Tridecane
Concen: 0.52 ppbV
RT: 54.597 min Scan# 5703
Delta R.T. -0.000 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion: 57 Resp: 17973

Ion	Ratio	Lower	Upper
57	100		
43	94.5	72.3	112.3

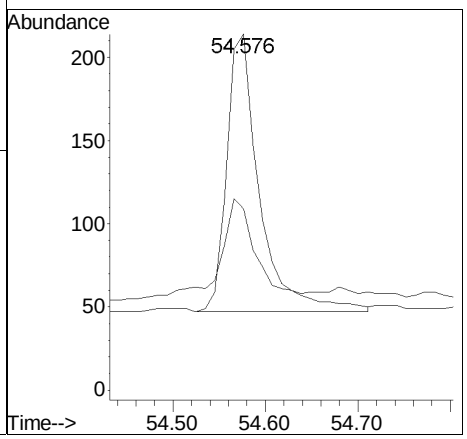


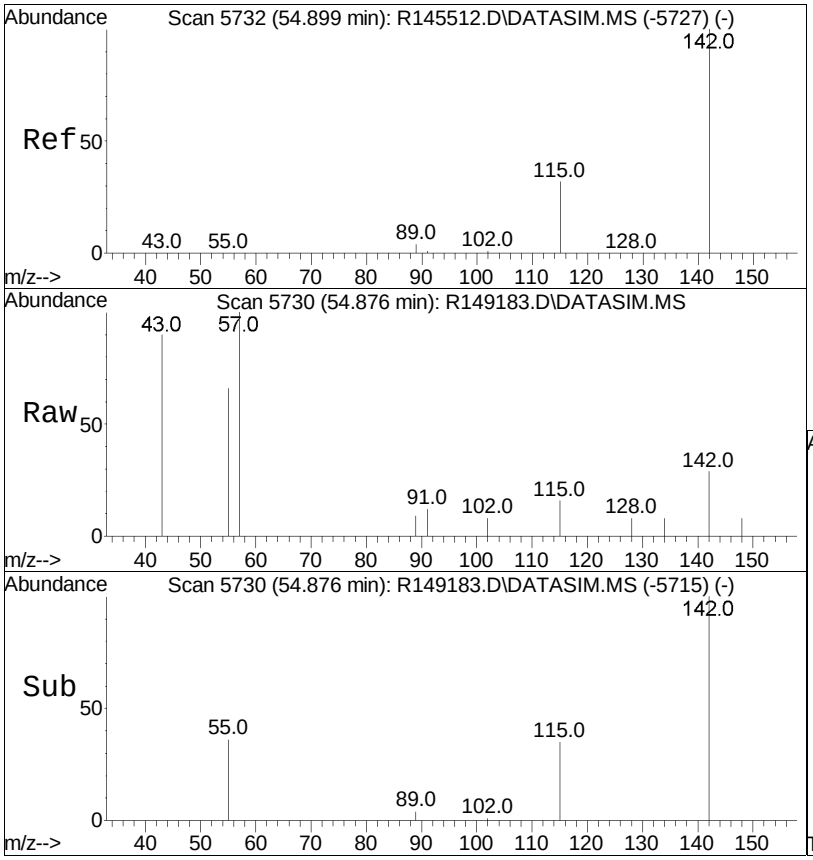


#97
2-Methylnaphthalene
Concen: 0.02 ppbV
RT: 54.576 min Scan# 5701
Delta R.T. 0.021 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion:142 Resp: 414

Ion	Ratio	Lower	Upper
142	100		
115	50.9	15.8	55.8

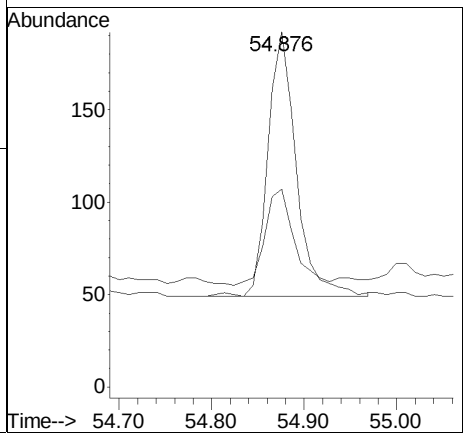




#98
1-Methylnaphthalene
Concen: 0.01 ppbV
RT: 54.876 min Scan# 5730
Delta R.T. 0.010 min
Lab File: R149183.D
Acq: 9 Nov 2016 2:17 am

Tgt Ion:142 Resp: 306

Ion	Ratio	Lower	Upper
142	100		
115	55.7	14.1	54.1#



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-09D	Date Collected	: 10/19/16 17:42
Client ID	: NFSV-01	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 03:24
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149184	Instrument ID	: AIRPIANO1
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
106-99-0	1,3-Butadiene	0.310	0.250	0.100	0.686	0.553	0.221	
78-78-4	Isopentane	47.6	0.250	0.100	140	0.738	0.295	
109-67-1	1-Pentene	3.92	0.250	0.100	11.2	0.717	0.287	
563-46-2	2-Methyl-1-Butene	6.06	0.250	0.100	17.4	0.717	0.287	
109-66-0	Pentane	22.5	0.250	0.100	66.4	0.738	0.295	
646-04-8	trans-2-Pentene	14.7	0.250	0.100	42.2	0.717	0.287	
627-20-3	cis-2-Pentene	5.05	0.250	0.100	14.5	0.717	0.287	
75-65-0	Tertiary Butanol	29.1	0.250	0.100	88.2	0.758	0.303	
287-92-3	Cyclopentane	6.07	0.250	0.100	17.4	0.717	0.287	
79-29-8	2,3-Dimethylbutane	21.5	0.250	0.100	75.8	0.881	0.353	
107-83-5	2-Methylpentane	15.2	0.250	0.100	53.6	0.881	0.352	
1634-04-4	Methyl tert butyl ether	259	0.250	0.100	934	0.901	0.361	
96-14-0	3-Methylpentane	15.0	0.250	0.100	52.9	0.881	0.352	
592-41-6	1-Hexene	0.700	0.250	0.100	2.41	0.861	0.344	
110-54-3	n-Hexane	6.99	0.250	0.100	24.6	0.881	0.352	
108-20-3	Isopropyl Ether	ND	0.250	0.100	ND	1.04	0.418	U
637-92-3	Ethyl-Tert-Butyl-Ether	4.15	0.250	0.100	17.3	1.04	0.418	
590-35-2	2,2-Dimethylpentane	1.68	0.250	0.100	6.88	1.02	0.410	
96-37-7	Methylcyclopentane	16.1	0.250	0.100	55.4	0.861	0.344	
108-08-7	2,4-Dimethylpentane	11.6	0.250	0.100	47.5	1.02	0.410	
107-06-2	1,2-Dichloroethane	ND	0.250	0.100	ND	1.01	0.405	U
110-82-7	Cyclohexane	11.4	0.250	0.100	39.2	0.861	0.344	
591-76-4	2-Methylhexane	4.89	0.250	0.100	20.0	1.02	0.410	
71-43-2	Benzene	124	0.250	0.100	396	0.799	0.319	
565-59-3	2,3-Dimethylpentane	45.6	0.250	0.100	187	1.02	0.410	
110-02-1	Thiophene	1.83	0.250	0.100	6.30	0.860	0.344	
589-34-4	3-Methylhexane	9.33	0.250	0.100	38.2	1.02	0.410	
994-05-8	Tertiary-Amyl Methyl Ether	15.2	0.250	0.100	63.5	1.04	0.418	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-09D	Date Collected	: 10/19/16 17:42
Client ID	: NFSV-01	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 03:24
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149184	Instrument ID	: AIRPIANO1
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
592-76-7	1-Heptene	ND	0.250	0.100	ND	1.00	0.402	U
540-84-1	Isooctane	89.6	0.250	0.100	418	1.17	0.467	
142-82-5	Heptane	3.58	0.250	0.100	14.7	1.02	0.410	
108-87-2	Methylcyclohexane	24.8	0.250	0.100	99.6	1.00	0.402	
592-13-2	2,5-Dimethylhexane	2.35	0.250	0.100	11.0	1.17	0.467	
589-43-5/564-02-3	2,4-Dimethylhexane/2,2,3-Trimethylpen	12.5	0.500	0.250	58.4	2.34	1.17	
565-75-3	2,3,4-Trimethylpentane	72.7	0.250	0.100	340	1.17	0.467	
560-21-4	2,3,3-Trimethylpentane	75.7	0.250	0.100	354	1.17	0.467	
584-94-1	2,3-Dimethylhexane	8.21	0.250	0.100	38.3	1.17	0.467	
619-99-8	3-Ethylhexane	4.19	0.250	0.100	19.6	1.17	0.467	
592-27-8	2-Methylheptane	3.73	0.250	0.100	17.4	1.17	0.467	
589-81-1	3-Methylheptane	4.77	0.250	0.100	22.3	1.17	0.467	
108-88-3	Toluene	77.5	0.250	0.100	292	0.942	0.377	
554-14-3	2-Methylthiophene	0.440	0.250	0.100	1.77	1.00	0.402	
616-44-4	3-Methylthiophene	0.450	0.250	0.100	1.81	1.00	0.402	
111-66-0	1-Octene	ND	0.250	0.100	ND	1.15	0.459	U
16747-50-5	1-Ethyl-1-Methylcyclopentane	0.810	0.250	0.100	3.72	1.15	0.459	
111-65-9	Octane	5.16	0.250	0.100	24.1	1.17	0.467	
106-93-4	1,2-Dibromoethane	ND	0.250	0.100	ND	1.92	0.769	U
100-41-4	Ethylbenzene	55.6	0.250	0.100	242	1.09	0.434	
872-55-9	2-Ethylthiophene	ND	0.250	0.100	ND	1.15	0.459	U
179601-23-1	p/m-Xylene	76.4	0.500	0.100	332	2.17	0.434	
124-11-8	1-Nonene	ND	0.250	0.100	ND	1.29	0.516	U
111-84-2	Nonane (C9)	14.0	0.250	0.100	73.5	1.31	0.525	
100-42-5	Styrene	7.02	0.250	0.100	29.9	1.06	0.426	
95-47-6	o-Xylene	43.6	0.500	0.100	189	2.17	0.434	
98-82-8	Isopropylbenzene	9.41	0.250	0.100	46.3	1.23	0.492	
103-65-1	n-Propylbenzene	3.52	0.250	0.100	17.3	1.23	0.492	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-09D	Date Collected	: 10/19/16 17:42
Client ID	: NFSV-01	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 03:24
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149184	Instrument ID	: AIRPIANO1
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
620-14-4	1-Methyl-3-Ethylbenzene	32.4	0.500	0.250	159	2.46	1.23	
622-96-8	1-Methyl-4-Ethylbenzene	23.2	0.250	0.100	114	1.23	0.492	
108-67-8	1,3,5-Trimethylbenzene	46.6	0.250	0.100	229	1.23	0.492	
872-05-9	1-Decene	ND	0.500	0.250	ND	2.87	1.43	U
611-14-3	1-Methyl-2-Ethylbenzene	54.4	0.500	0.250	267	2.46	1.23	
124-18-5	Decane (C10)	12.2	0.500	0.250	71.0	2.91	1.46	
95-63-6	1,2,4-Trimethylbenzene	55.0	0.500	0.250	270	2.46	1.23	
135-98-8	sec-Butylbenzene	0.800	0.500	0.250	4.39	2.74	1.37	
535-77-3	1-Methyl-3-Isopropylbenzene	8.79	0.500	0.250	48.2	2.74	1.37	
99-87-6	1-Methyl-4-Isopropylbenzene	9.75	0.500	0.250	53.5	2.74	1.37	
527-84-4	1-Methyl-2-Isopropylbenzene	0.760	0.500	0.250	4.17	2.74	1.37	
496-11-7	Indane	25.2	0.500	0.250	122	2.42	1.21	
95-13-6	Indene	25.2	0.500	0.250	120	2.38	1.19	
1074-43-7	1-Methyl-3-N-Propylbenzene	6.05	0.500	0.250	33.2	2.74	1.37	
1074-55-1	1-Methyl-4-N-Propylbenzene	2.75	0.500	0.250	15.1	2.74	1.37	
104-51-8	n-Butylbenzene	ND	0.500	0.250	ND	2.74	1.37	U
934-80-5	1,2-Dimethyl-4-Ethylbenzene	15.7	0.500	0.250	86.2	2.74	1.37	
135-01-3	1,2-Diethylbenzene	1.68	0.500	0.250	9.22	2.74	1.37	
1074-17-5	1-Methyl-2-N-Propylbenzene	4.44	0.500	0.250	24.4	2.74	1.37	
1758-88-9	1,4-Dimethyl-2-Ethylbenzene	7.12	0.500	0.250	39.1	2.74	1.37	
1120-21-4	Undecane	6.69	0.500	0.250	42.8	3.20	1.60	
874-41-9	1,3-Dimethyl-4-Ethylbenzene	5.03	0.500	0.250	27.6	2.74	1.37	
934-74-7	1,3-Dimethyl-5-Ethylbenzene	11.7	0.500	0.250	64.2	2.74	1.37	
2870-04-4	1,3-Dimethyl-2-Ethylbenzene	1.36	0.500	0.250	7.46	2.74	1.37	
933-98-2	1,2-Dimethyl-3-Ethylbenzene	3.26	0.500	0.250	17.9	2.74	1.37	
95-93-2	1,2,4,5-Tetramethylbenzene	1.82	0.500	0.250	9.99	2.74	1.37	
538-68-1	N-Pentylbenzene	ND	0.500	0.250	ND	3.03	1.52	U
112-40-3	Dodecane (C12)	10.4	1.00	0.500	72.4	6.97	3.48	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-09D	Date Collected	: 10/19/16 17:42
Client ID	: NFSV-01	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 03:24
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149184	Instrument ID	: AIRPIANO1
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
91-20-3	Naphthalene	109	0.500	0.250	572	2.62	1.31	
95-15-8	Benzothiophene	0.690	1.00	0.500	3.79	5.49	2.74	J
12108-13-3	MMT	ND	1.00	0.500	ND	8.92	4.46	U
629-50-5	Tridecane	0.520	10.0	0.500	3.92	75.4	3.77	J
91-57-6	2-Methylnaphthalene	38.8	5.00	0.500	226	29.1	2.91	
90-12-0	1-Methylnaphthalene	41.6	5.00	0.500	242	29.1	2.91	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149184.D
Acq On : 9 Nov 2016 3:24 am
Operator : AIRPIANO1:RY
Sample : L1634001-09D,3,25,250
Misc : WG948457,ICAL13049
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 10 12:40:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.202	49	121593	10.000	ppbV	0.00
Standard Area = 123393			Recovery = 98.54%			
27) 1,4-difluorbenzene	14.201	114	277195	10.000	ppbV	0.00
Standard Area = 263318			Recovery = 105.27%			
54) chlorobenzene-D5	27.633	117	201985	10.000	ppbV	0.00
Standard Area = 190793			Recovery = 105.87%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.619	65	85075	11.197	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 111.97%			
46) Toluene-D8	20.948	98	236366	11.177	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 111.77%			
62) 4-Bromofluorobenzene (...	34.334	95	122032	11.014	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 110.14%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.709	54	201M3	0.031	ppbV	
4) Isopentane	5.878	41	56110	4.765	ppbV	100
5) 1-Pentene	6.194	42	5217	0.392	ppbV	99
6) 2-Methyl-1-butene	6.352	55	9554	0.606	ppbV	89
7) Pentane	6.468	43	45348	2.250	ppbV	99
9) 2-Pentene (trans)	6.668	55	22443	1.470	ppbV	100
10) 2-Pentene (cis)	6.889	55	7079	0.505	ppbV	85
11) Tertiary butanol	6.878	59	66537	2.907	ppbV	84
12) Cyclopentane	8.643	70	2763M4	0.607	ppbV	
13) 2,3-Dimethylbutane	8.665	71	9030	2.151	ppbV #	80
14) 2-Methylpentane	8.820	43	34834	1.525	ppbV	99
15) MTBE	8.660	73	603717	25.922	ppbV #	62
16) 3-Methylpentane	9.465	57	22495	1.495	ppbV	98
17) 1-Hexene	9.709	56	604M6	0.070	ppbV	
18) Hexane	10.286	57	8998	0.699	ppbV #	55
19) Diisopropyl ether	0.000		0	N.D.	d	
20) Ethyl tertiary butyl e...	11.331	59	10436	0.415	ppbV	98
21) 2,2-Dimethylpentane	11.623	57	3464	0.168	ppbV	92
23) Methylcyclopentane	11.827	56	25790	1.614	ppbV	99
24) 2,4-Dimethylpentane	11.968	43	23954	1.158	ppbV	93
25) 1,2-Dichloroethane	0.000		0	N.D.	d	
26) Cyclohexane	13.909	56	14173	1.136	ppbV	100
28) 2-Methylhexane	14.391	43	11514	0.489	ppbV	98

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149184.D
Acq On : 9 Nov 2016 3:24 am
Operator : AIRPIANO1:RY
Sample : L1634001-09D,3,25,250
Misc : WG948457,ICAL13049
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 10 12:40:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
29) Benzene	13.316	78	328696	12.433	ppbV		99
30) 2,3-Dimethylpentane	14.548	56	75665	4.561	ppbV		99
31) Thiophene	13.596	84	2074	0.183	ppbV		98
32) 3-Methylhexane	15.007	43	17141	0.933	ppbV		99
33) TAME	14.805	73	34764	1.515	ppbV		92
34) 1-Heptene	0.000		0	N.D.	d		
35) Isooctane	15.993	57	371989	8.956	ppbV		99
36) Heptane	16.777	43	6411M4	0.358	ppbV		
37) Methylcyclohexane	18.479	83	33625	2.483	ppbV		98
38) 2,5-Dimethylhexane	19.319	57	4906	0.235	ppbV		98
39) 2,4-Dimethyhexane / 2,...	19.498	57	32157	1.254	ppbV		95
40) 2,3,4-Trimethylpentane	20.840	43	209427	7.268	ppbV		100
41) 2,3,3-Trimethylpentane	21.234	43	204239	7.572	ppbV		99
42) 2,3-Dimethylhexane	21.706	43	21258	0.821	ppbV		99
43) 3-Ethylhexane	22.926	43	13234	0.419	ppbV		94
44) 2-Methylheptane	22.168	57	7315	0.373	ppbV		97
45) 3-Methylheptane	22.818	43	10239	0.477	ppbV		100
47) Toluene	21.263	91	238893	7.748	ppbV		100
48) 2-Methylthiophene	21.460	97	891	0.044	ppbV		82
49) 3-Methylthiophene	22.070	97	898M4	0.045	ppbV		
50) 1-Octene	0.000		0	N.D.	d		
51) 1-ethyl-1-methylcyclop...	24.559	83	1401M4	0.081	ppbV		
52) Octane	25.081	43	12640	0.516	ppbV		99
53) 1,2-Dibromoethane	0.000		0	N.D.	d		
55) Ethylbenzene	29.486	91	158424	5.559	ppbV		100
56) 2-Ethylthiophene	0.000		0	N.D.	d		
57) p/m-Xylene	30.233	91	167588M4	7.638	ppbV		
58) 1-Nonene	0.000		0	N.D.	d		
59) Nonane	33.901	43	29641	1.396	ppbV		99
60) Styrene	31.824	104	10166	0.702	ppbV		98
61) o-Xylene	32.257	91	98100	4.362	ppbV		100
63) Isopropylbenzene	35.119	105	27848	0.941	ppbV		99
64) n-Propylbenzene	37.686	120	2717	0.352	ppbV	#	91
65) 1-Methyl-3-ethylbenzene	38.323	105	90389	3.239	ppbV		100
66) 1-Methyl-4-ethylbenzene	38.503	105	69546	2.315	ppbV		100
67) 1,3,5-Trimethylbenzene	38.984	105	113707	4.664	ppbV		100
68) 1-Decene	0.000		0	N.D.	d		
69) 1-Methyl-2-ethylbenzene	39.861	105	154963	5.445	ppbV		99
70) Decane	42.492	43	26726M4	1.217	ppbV		
71) 1,2,4-Trimethylbenzene	41.135	105	133443	5.499	ppbV		100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149184.D
Acq On : 9 Nov 2016 3:24 am
Operator : AIRPIANO1:RY
Sample : L1634001-09D,3,25,250
Misc : WG948457,ICAL13049
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 10 12:40:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

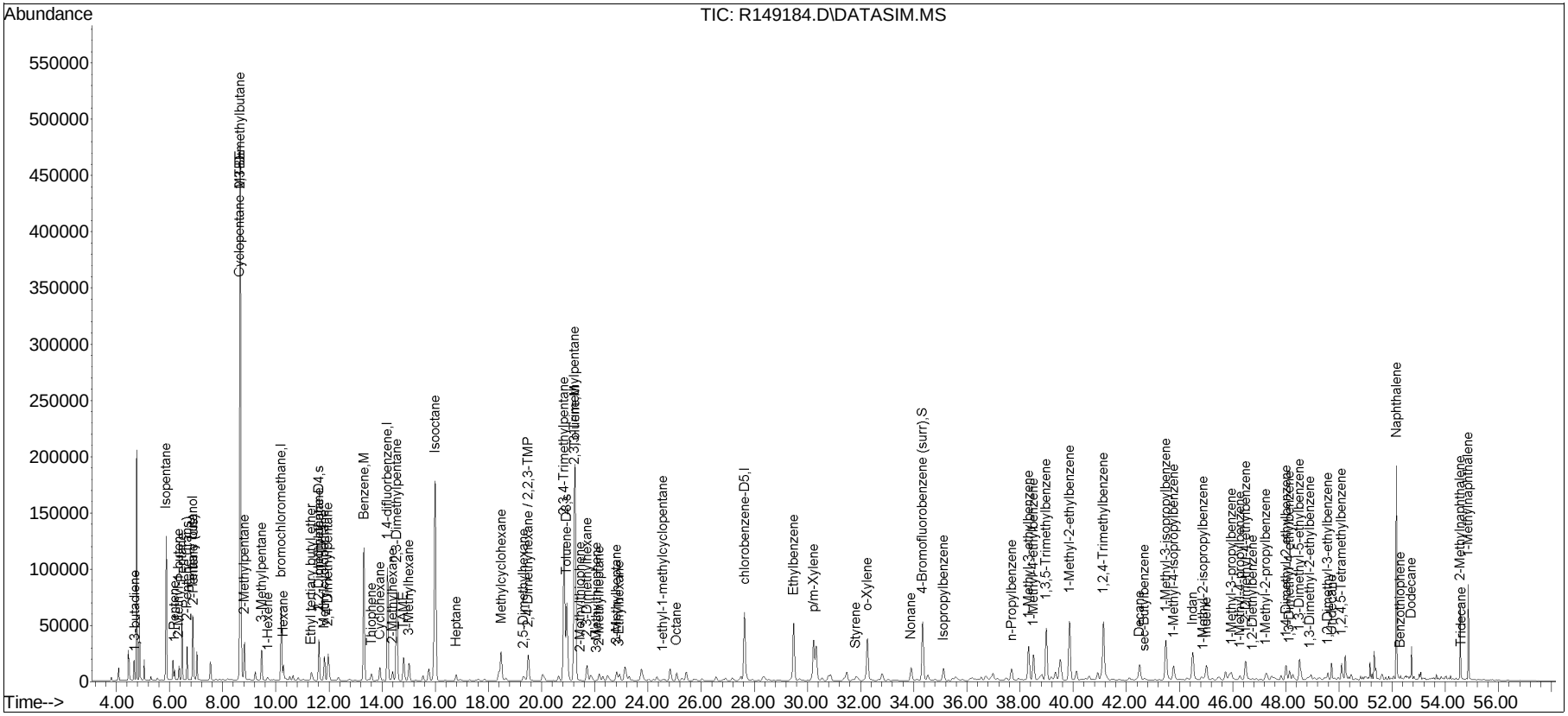
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
72) sec-Butylbenzene	42.673	105	3013	0.080	ppbV	87
73) 1-Methyl-3-isopropylbe...	43.490	119	27846	0.879	ppbV	77
74) 1-Methyl-4-isopropylbe...	43.778	119	25553	0.975	ppbV	97
75) 1-Methyl-2-isopropylbe...	44.884	119	2128	0.076	ppbV #	73
76) Indan	44.487	117	47848	2.521	ppbV	100
77) Indene	45.016	115	28849	2.520	ppbV	100
78) 1-Methyl-3-propylbenzene	45.953	105	21271	0.605	ppbV	97
79) 1-Methyl-4-propylbenzene	46.278	105	11847	0.275	ppbV	86
80) n-Butylbenzene	0.000		0	N.D.	d	
81) 1,2-Dimethyl-4-ethylbe...	46.482	119	41902	1.569	ppbV	99
82) 1,2-Diethylbenzene	46.746	119	2390	0.168	ppbV	98
83) 1-Methyl-2-propylbenzene	47.251	105	16654	0.444	ppbV	99
84) 1,4-Dimethyl-2-ethylbe...	48.008	119	19911	0.712	ppbV	82
85) Undecane	49.726	57	14870	0.669	ppbV	96
86) 1,3-Dimethyl-4-ethylbe...	48.140	119	16362	0.503	ppbV	95
87) 1,3-Dimethyl-5-ethylbe...	48.513	119	35507	1.169	ppbV	98
88) 1,3-Dimethyl-2-ethylbe...	48.897	119	4502	0.136	ppbV	88
89) 1,2-Dimethyl-3-ethylbe...	49.582	119	9820M6	0.326	ppbV	
90) 1,2,4,5-Tetramethylben...	50.099	119	18041	0.182	ppbV	97
91) Pentylbenzene	0.000		0	N.D.	d	
92) Dodecane	52.728	43	25121M4	1.035	ppbV	
93) Naphthalene	52.160	128	357122	10.885	ppbV	99
94) Benzothiophene	52.315	134	4835	0.069	ppbV	92
95) MMT	0.000		0	N.D.	d	
96) Tridecane	54.597	57	1796M4	0.052	ppbV	
97) 2-Methylnaphthalene	54.566	142	90049	3.881	ppbV	91
98) 1-Methylnaphthalene	54.865	142	107775	4.161	ppbV	97

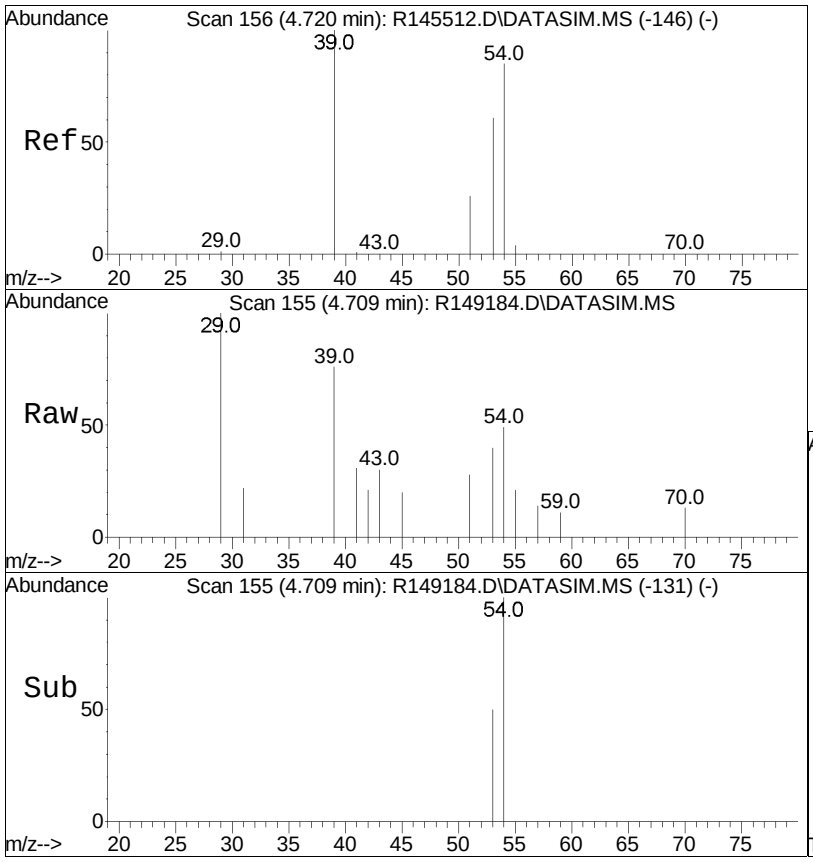
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Sub List : AIR-NF-PIANO - NF PIANO LIST161108PIANO\R149170.D

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149184.D
Acq On : 9 Nov 2016 3:24 am
Operator : AIRPIANO1:RY
Sample : L1634001-09D,3,25,250
Misc : WG948457,ICAL13049
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 10 12:40:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

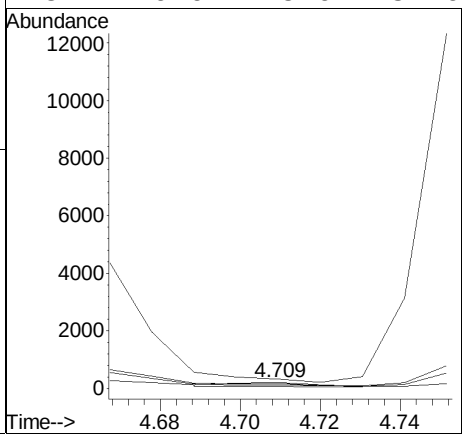


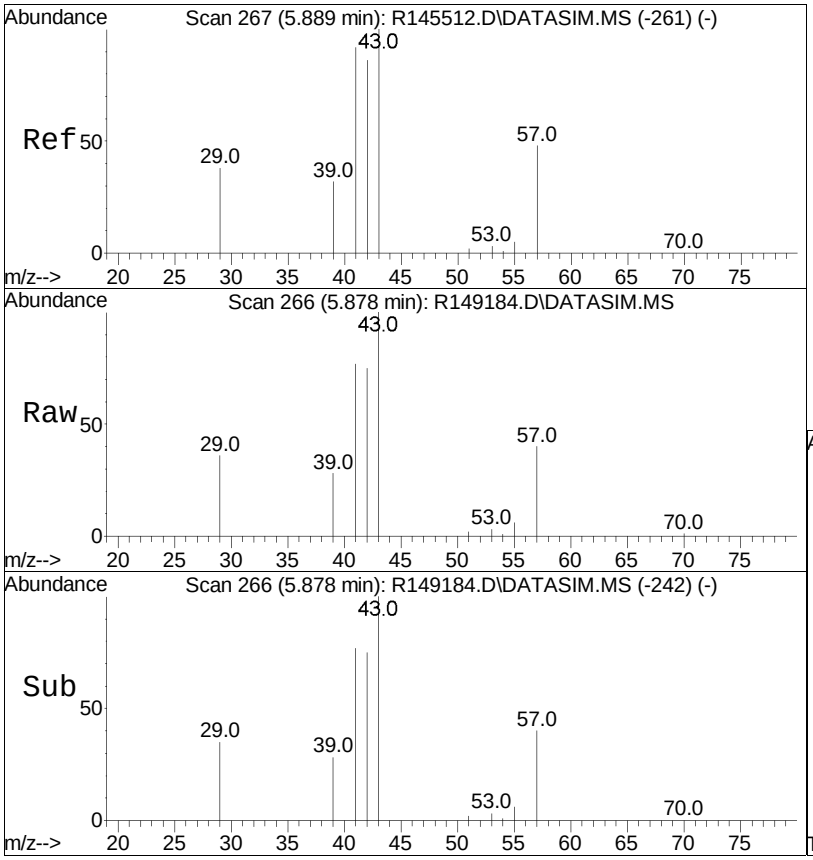


#2
1,3-butadiene
Concen: 0.03 ppbV m
RT: 4.709 min Scan# 155
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 54 Resp: 201

Ion	Ratio	Lower	Upper
54	100		
39	0.0	100.0	150.0#
53	0.0	57.0	85.6#
51	0.0	25.0	37.6#

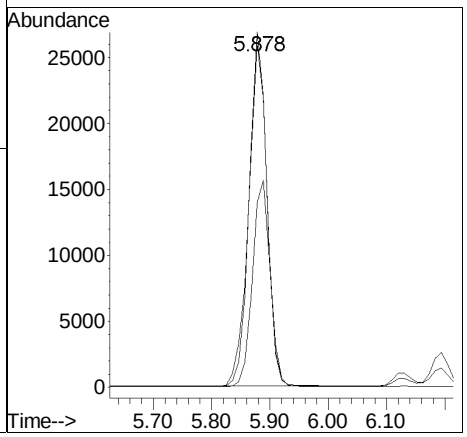


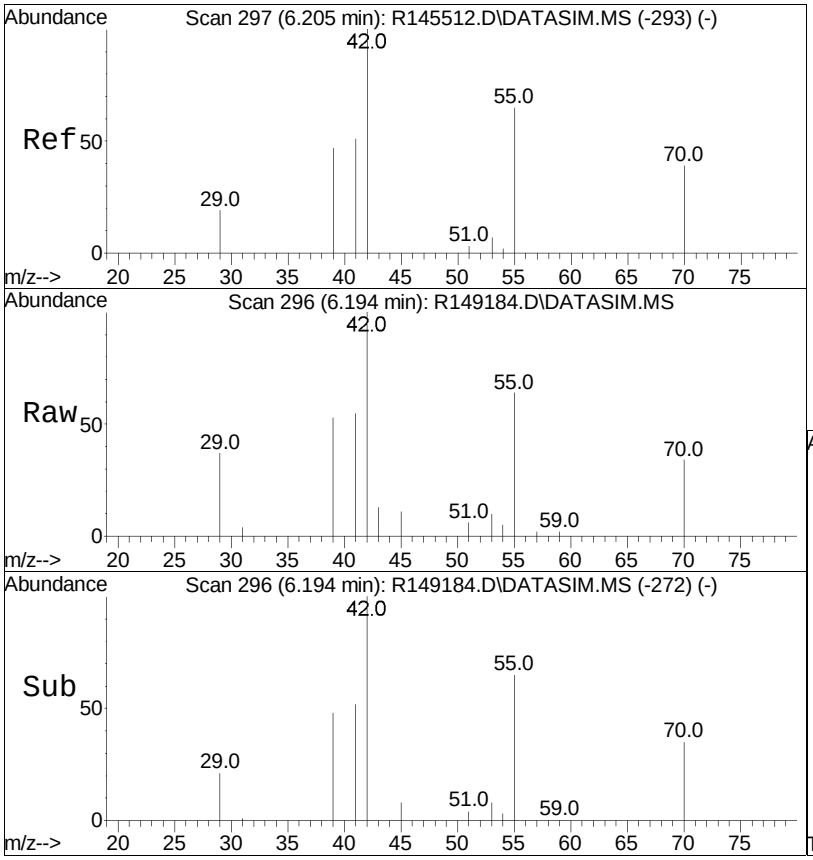


#4
Isopentane
Concen: 4.77 ppbV
RT: 5.878 min Scan# 266
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 41 Resp: 56110

Ion	Ratio	Lower	Upper
41	100		
57	51.9	31.8	71.8
42	96.7	76.7	116.7

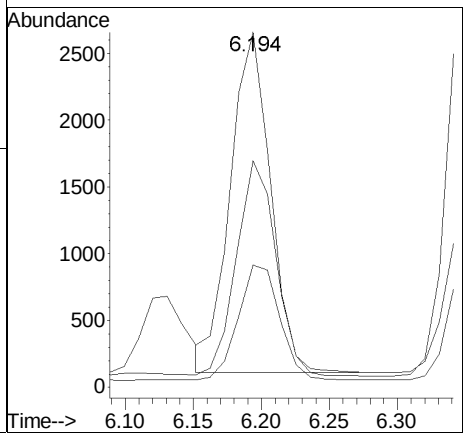


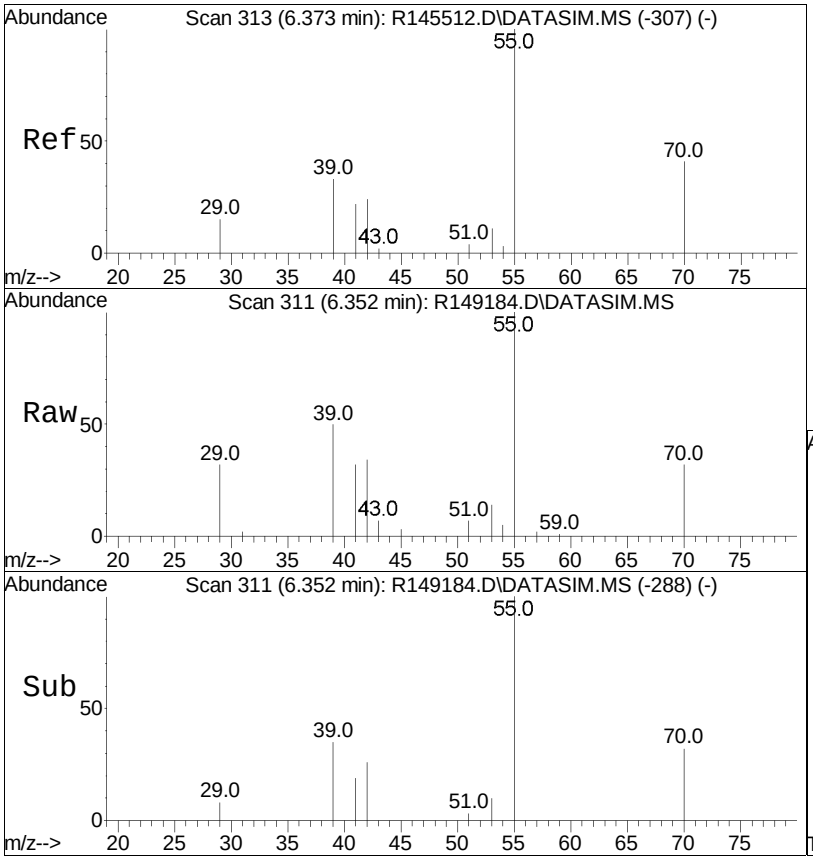


#5
1-Pentene
Concen: 0.39 ppbV
RT: 6.194 min Scan# 296
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 42 Resp: 5217

Ion	Ratio	Lower	Upper
42	100		
55	63.8	43.2	83.2
70	34.4	13.6	53.6

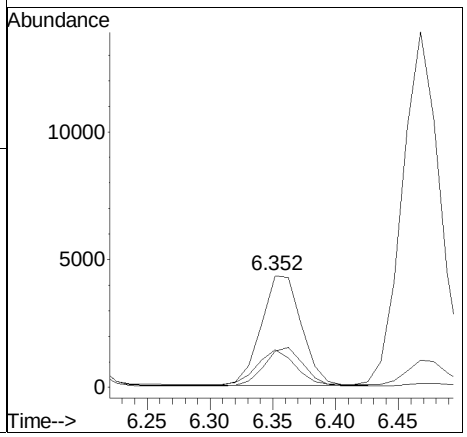


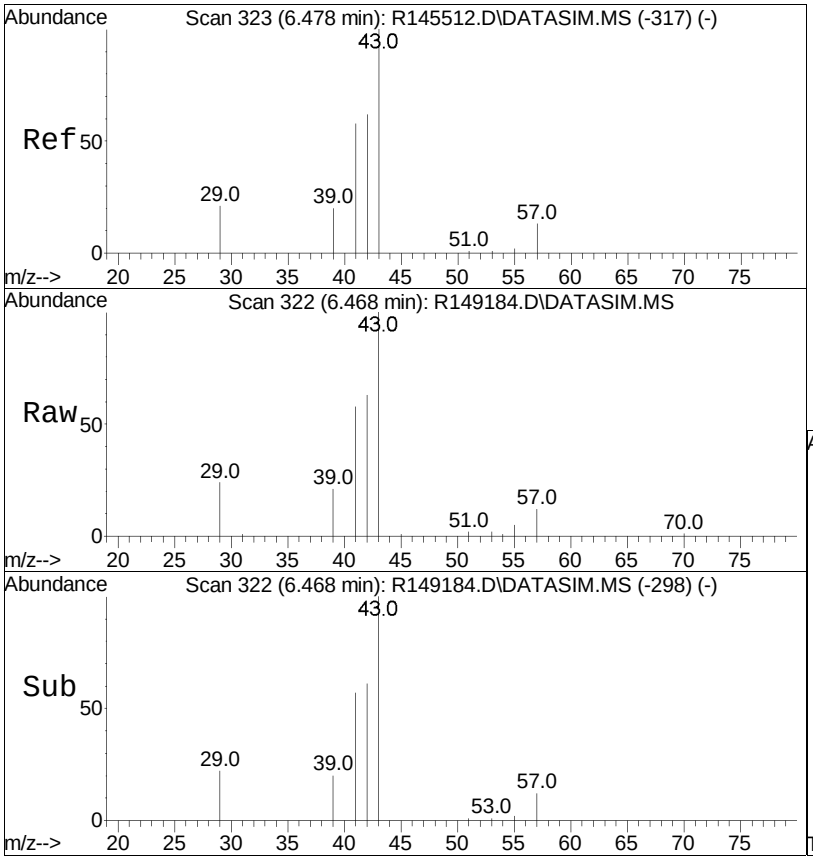


#6
2-Methyl-1-butene
Concen: 0.61 ppbV
RT: 6.352 min Scan# 311
Delta R.T. -0.011 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 55 Resp: 9554

Ion	Ratio	Lower	Upper
55	100		
70	32.4	16.1	56.1
42	33.8	5.4	45.4

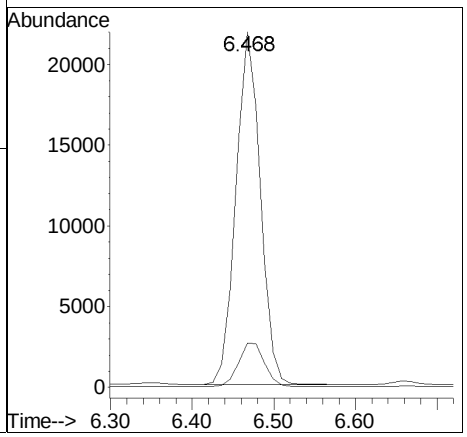


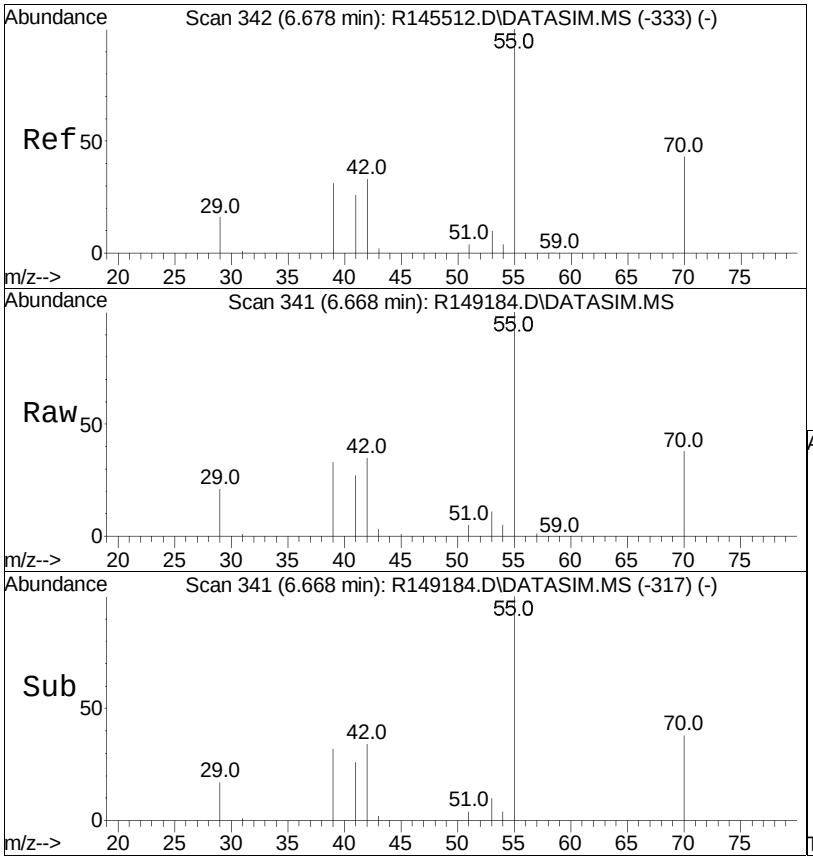


#7
Pentane
Concen: 2.25 ppbV
RT: 6.468 min Scan# 322
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 43 Resp: 45348

Ion	Ratio	Lower	Upper
43	100		
57	12.5	0.0	32.2

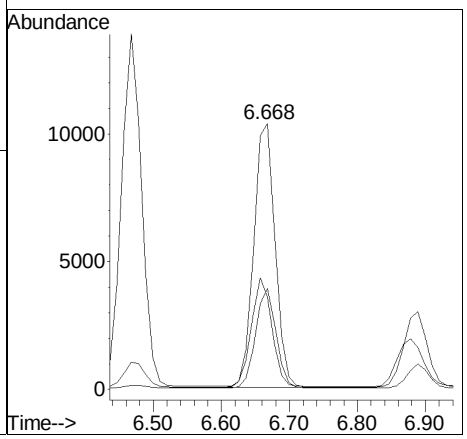


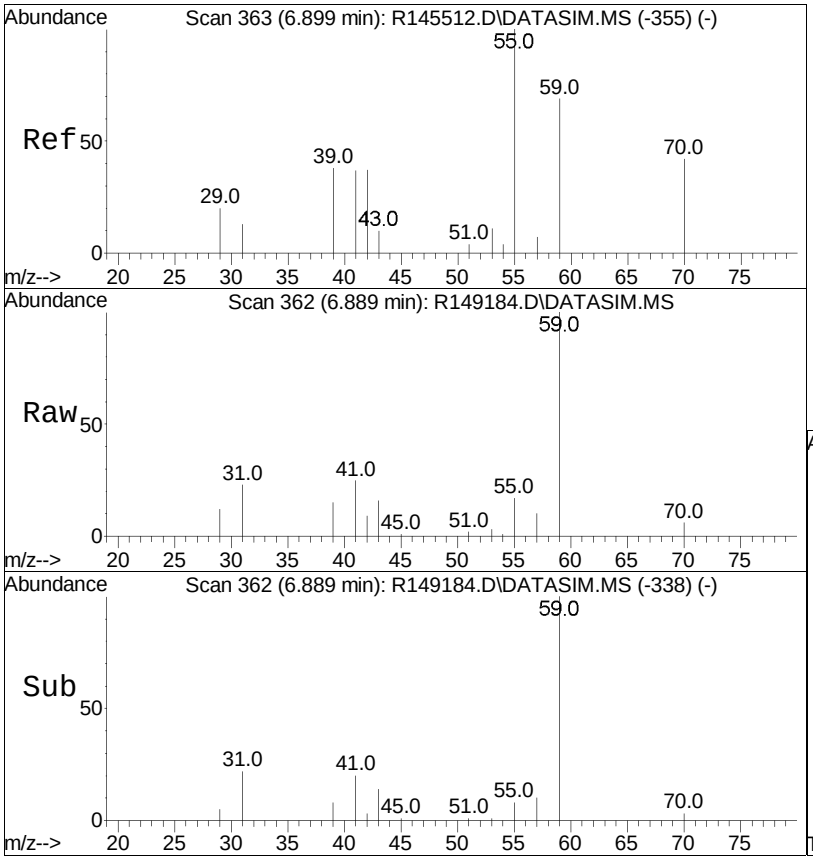


#9
2-Pentene (trans)
Concen: 1.47 ppbV
RT: 6.668 min Scan# 341
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 55 Resp: 22443

Ion	Ratio	Lower	Upper
55	100		
70	37.9	17.7	57.7
42	34.7	14.5	54.5

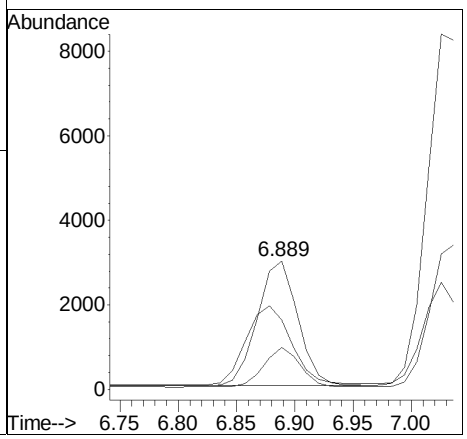


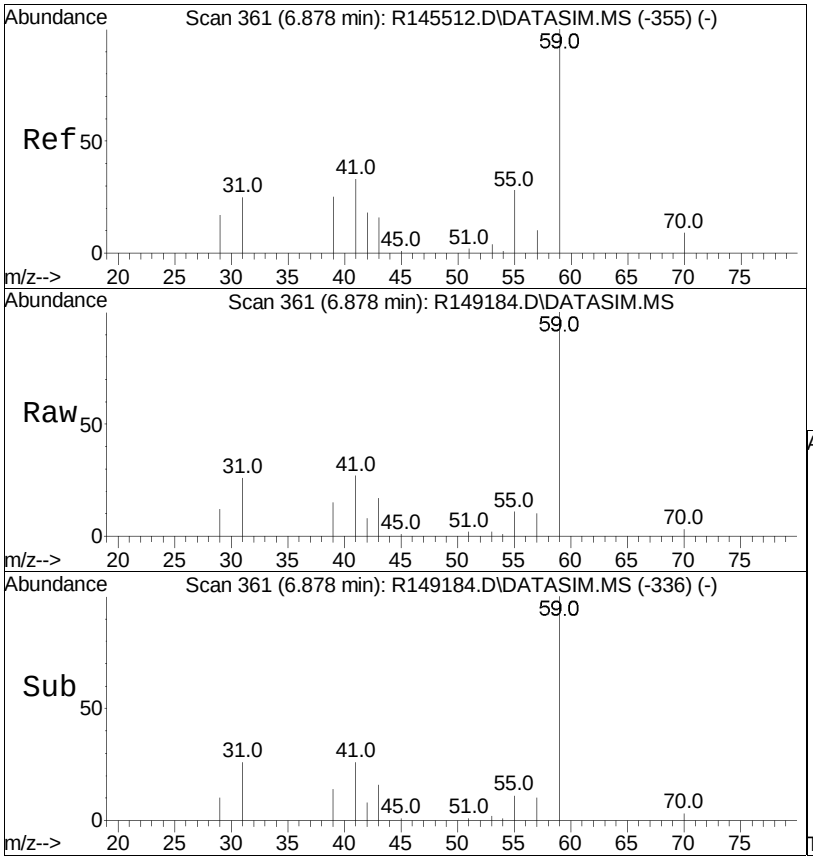


#10
2-Pentene (cis)
Concen: 0.50 ppbV
RT: 6.889 min Scan# 362
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 55 Resp: 7079

Ion	Ratio	Lower	Upper
55	100		
70	32.8	16.4	56.4
42	54.1	19.4	59.4

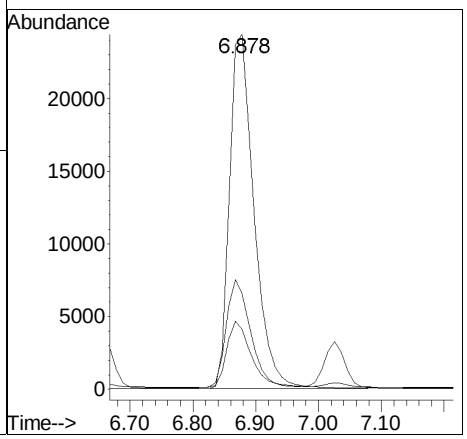


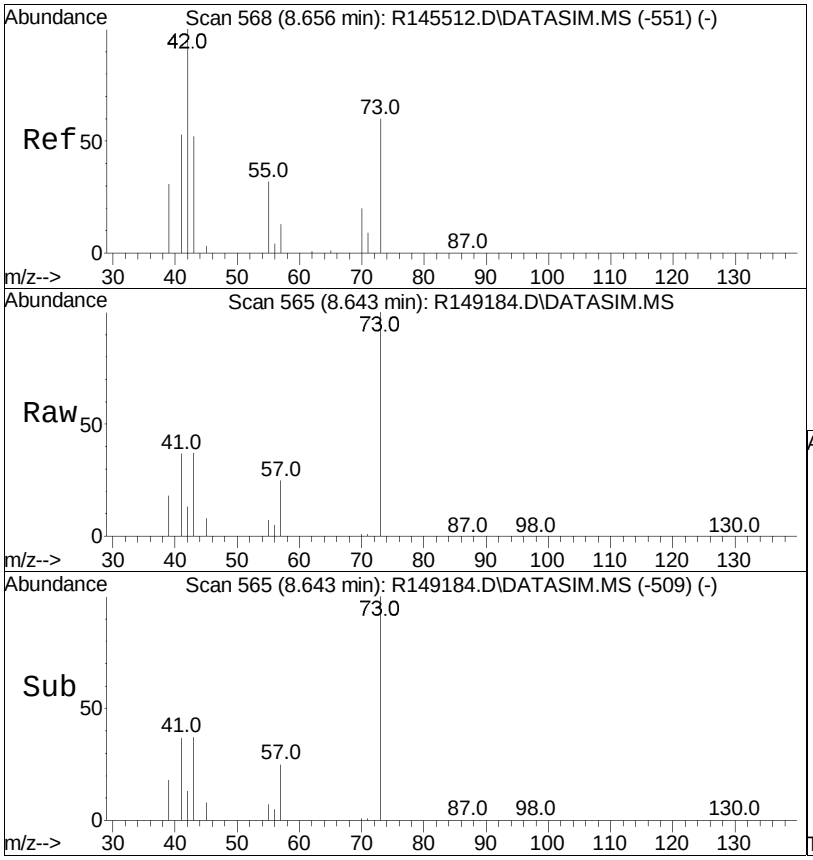


#11
Tertiary butanol
Concen: 2.91 ppbV
RT: 6.878 min Scan# 361
Delta R.T. 0.010 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 59 Resp: 66537

Ion	Ratio	Lower	Upper
59	100		
41	26.9	20.2	60.2
43	16.9	0.0	38.4

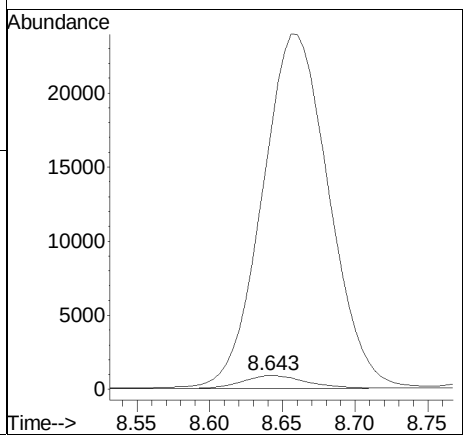


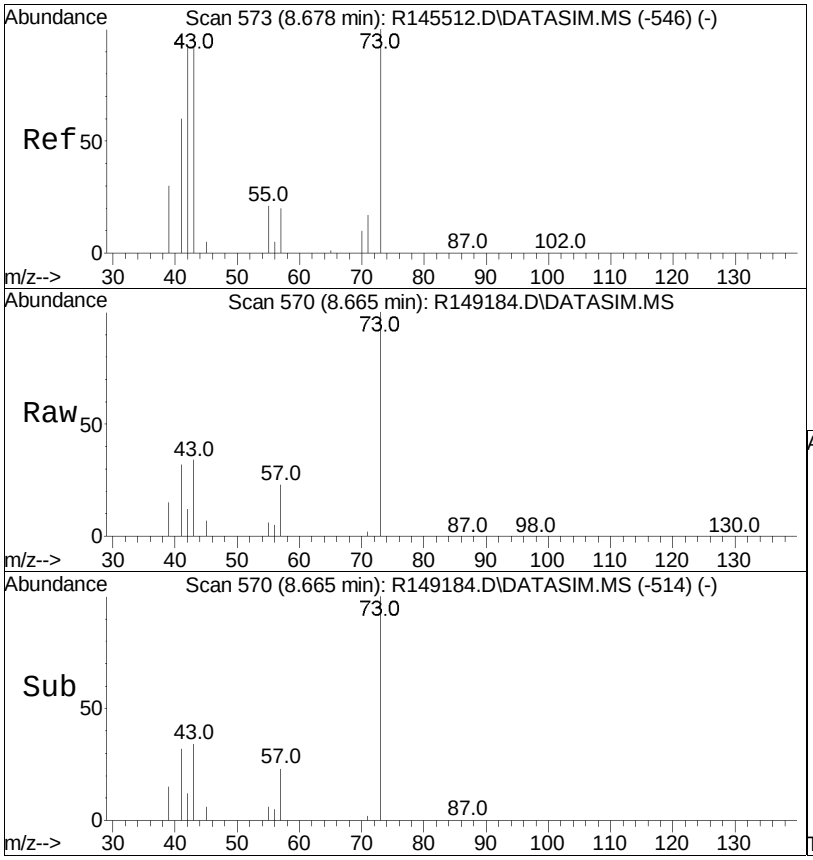


#12
Cyclopentane
Concen: 0.61 ppbV m
RT: 8.643 min Scan# 565
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 70 Resp: 2763

Ion	Ratio	Lower	Upper
70	100		
42	1880.3	617.9	657.9#

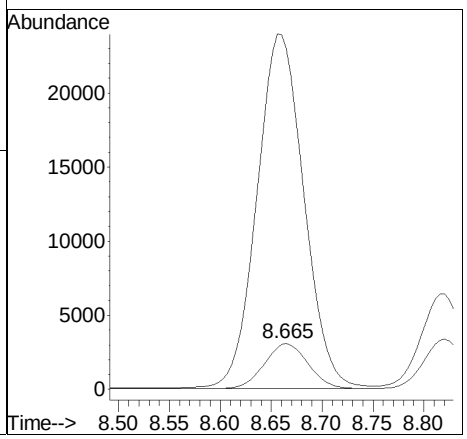


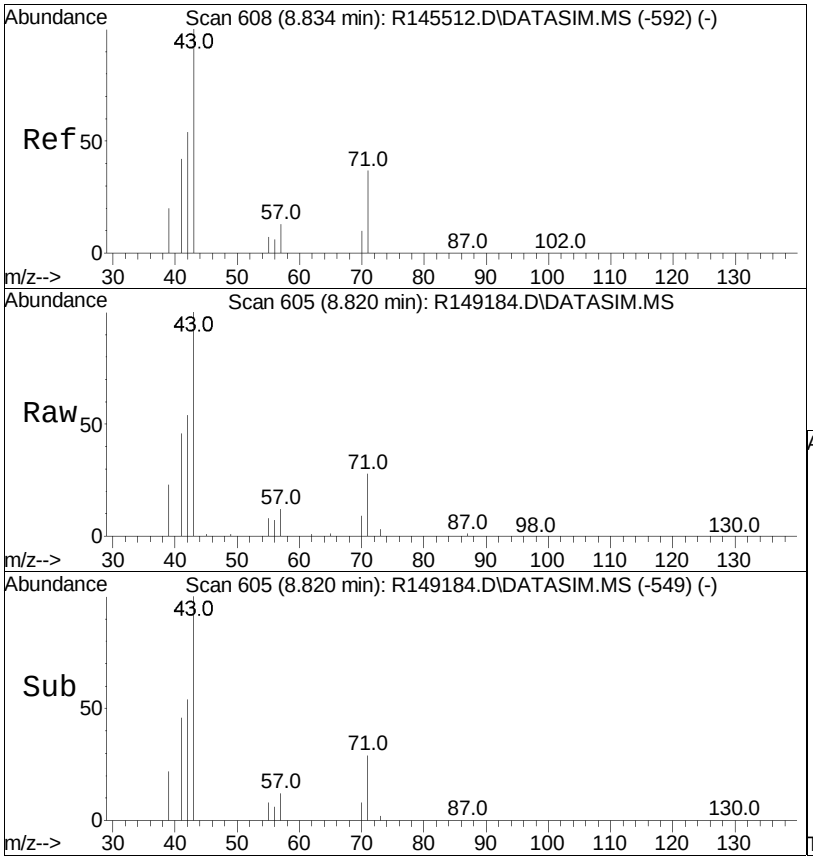


#13
2,3-Dimethylbutane
Concen: 2.15 ppbV
RT: 8.665 min Scan# 570
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 71 Resp: 9030

Ion	Ratio	Lower	Upper
71	100		
42	740.0	652.6	692.6#

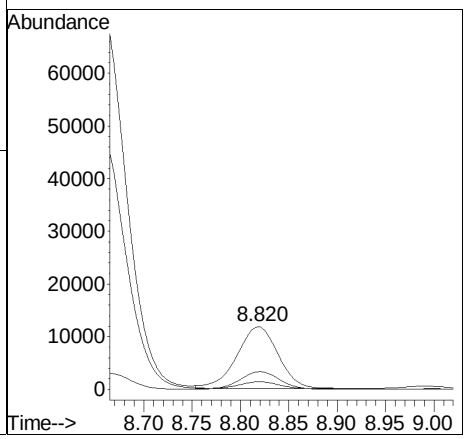


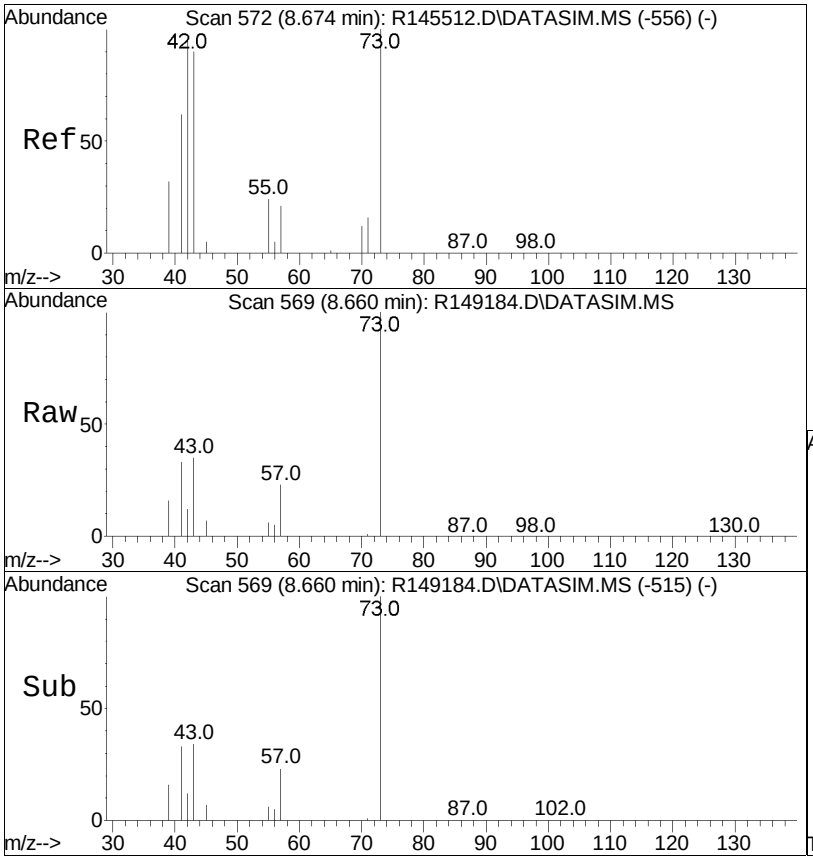


#14
2-Methylpentane
Concen: 1.53 ppbV
RT: 8.820 min Scan# 605
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 43 Resp: 34834

Ion	Ratio	Lower	Upper
43	100		
71	28.5	8.8	48.8
57	12.2	0.0	31.6

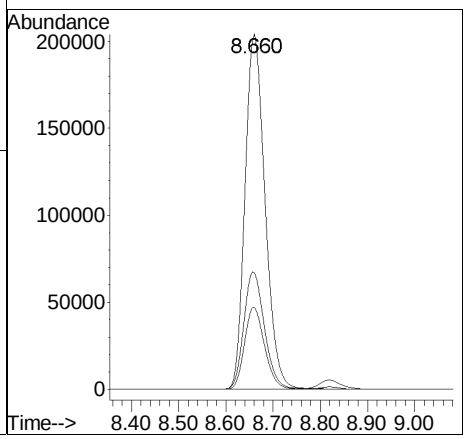


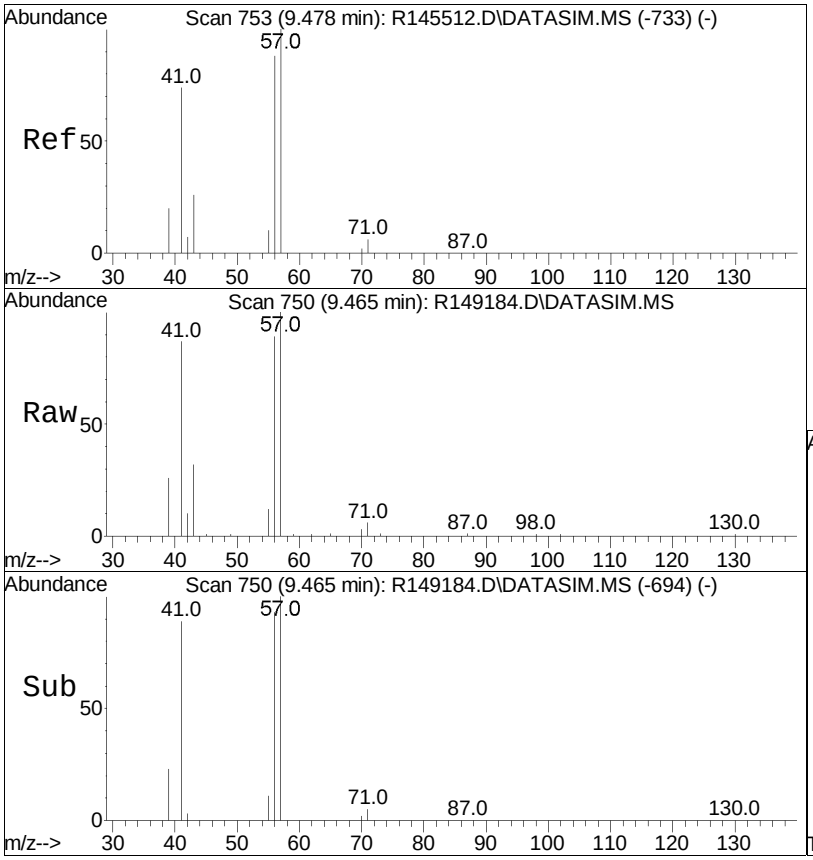


#15
MTBE
Concen: 25.92 ppbV
RT: 8.660 min Scan# 569
Delta R.T. -0.009 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 73 Resp: 603717

Ion	Ratio	Lower	Upper
73	100		
41	32.8	54.6	94.6#
57	23.0	3.7	43.7

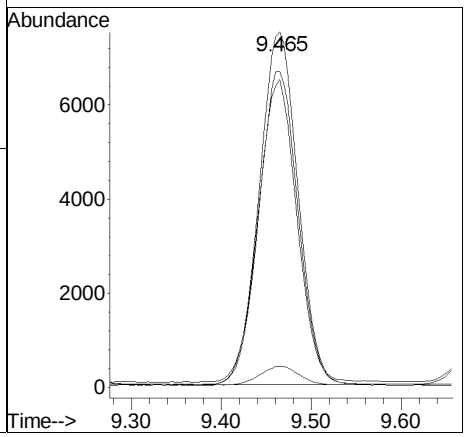


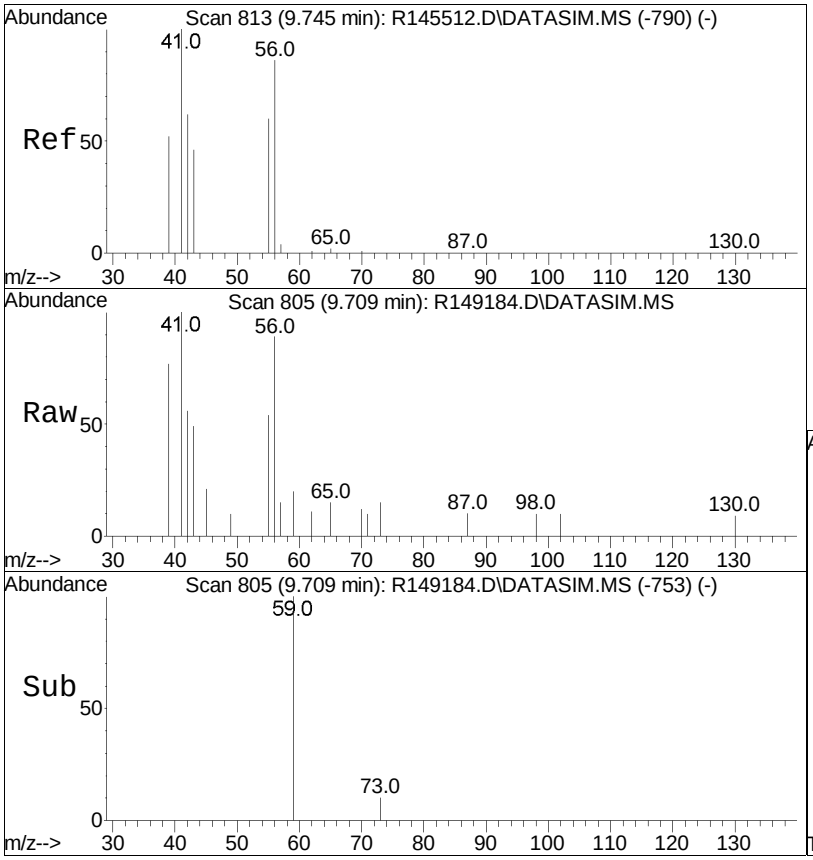


#16
3-Methylpentane
Concen: 1.50 ppbV
RT: 9.465 min Scan# 750
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 57 Resp: 22495

Ion	Ratio	Lower	Upper
57	100		
56	88.8	69.5	109.5
71	5.9	0.0	25.5
41	86.6	63.4	103.4

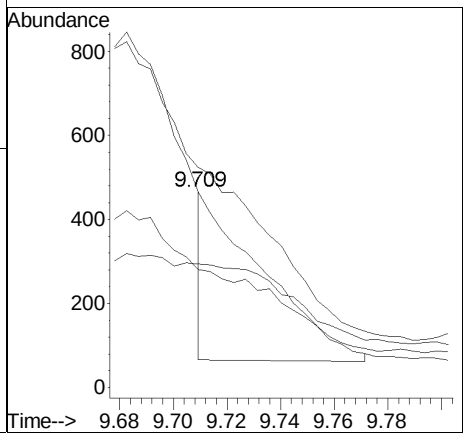


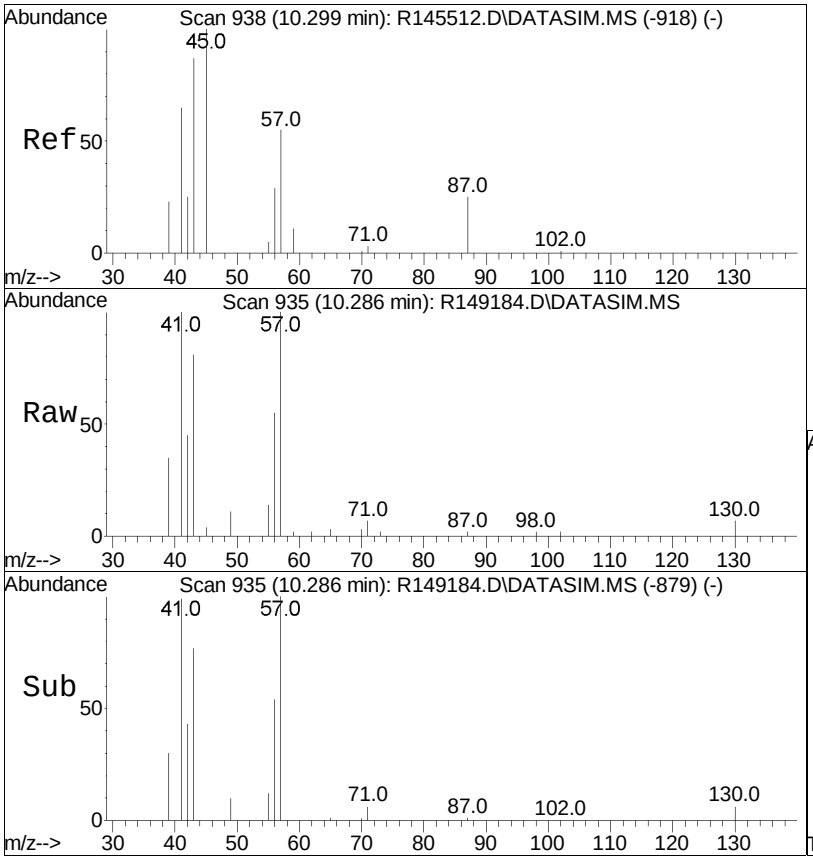


#17
1-Hexene
Concen: 0.07 ppbV m
RT: 9.709 min Scan# 805
Delta R.T. -0.018 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 56 Resp: 604

Ion	Ratio	Lower	Upper
56	100		
41	112.4	111.5	151.5
55	60.3	51.2	91.2
42	63.1	62.3	102.3

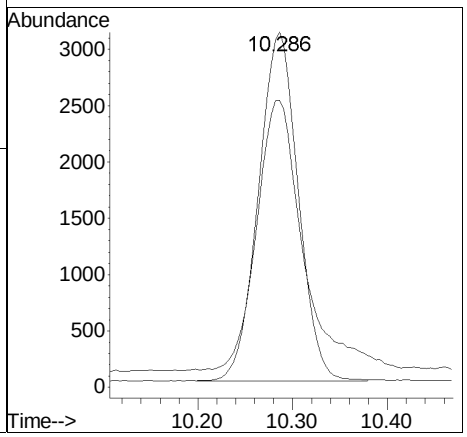


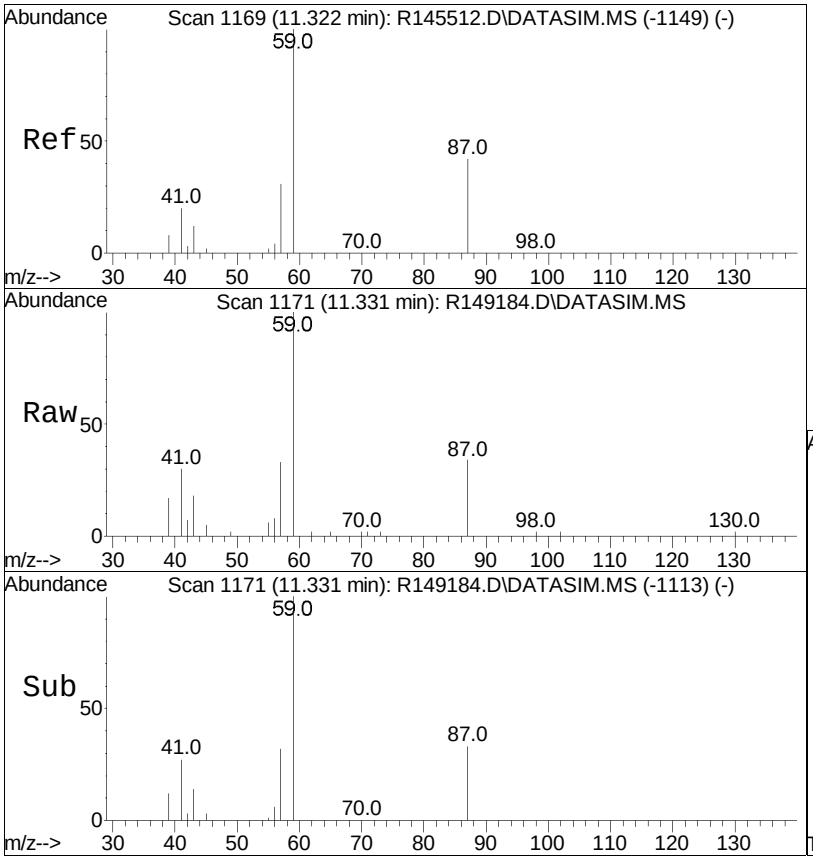


#18
Hexane
Concen: 0.70 ppbV
RT: 10.286 min Scan# 935
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 57 Resp: 8998

Ion	Ratio	Lower	Upper
57	100		
43	80.7	114.8	154.8#

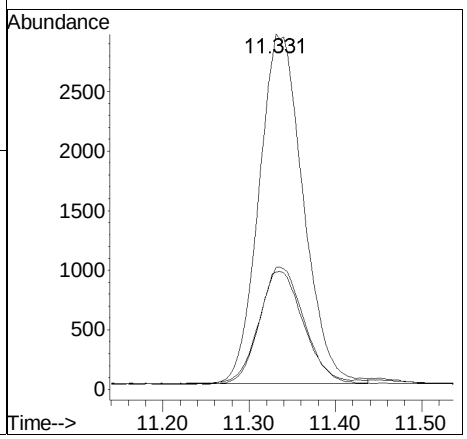


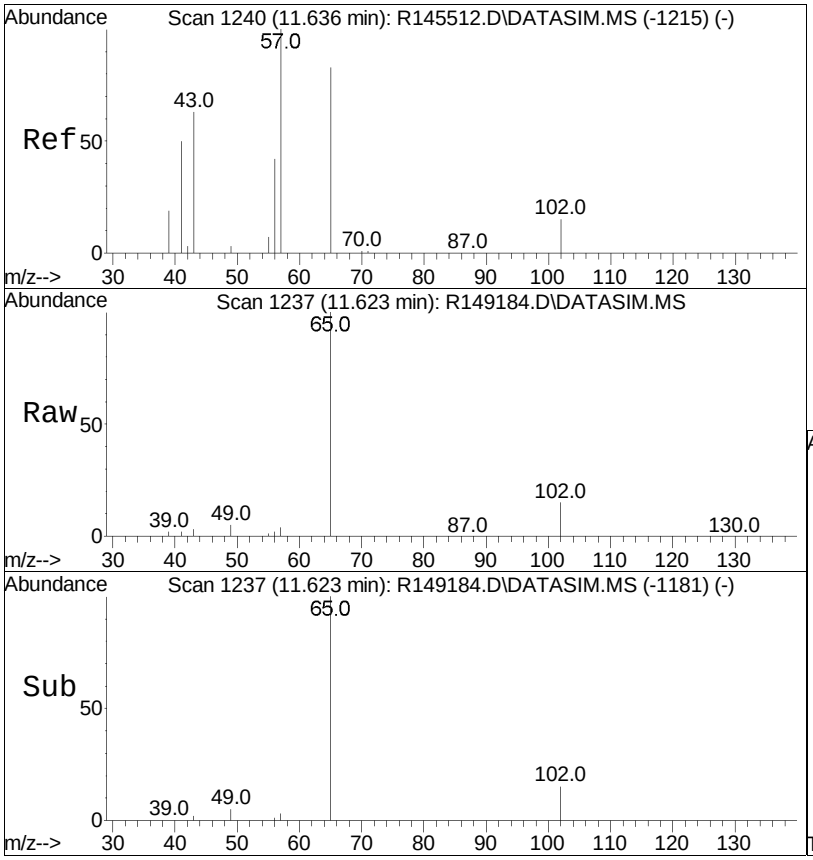


#20
Ethyl tertiary butyl ether
Concen: 0.41 ppbV
RT: 11.331 min Scan# 1171
Delta R.T. 0.009 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 59 Resp: 10436

Ion	Ratio	Lower	Upper
59	100		
87	34.3	13.6	53.6
57	33.0	11.7	51.7

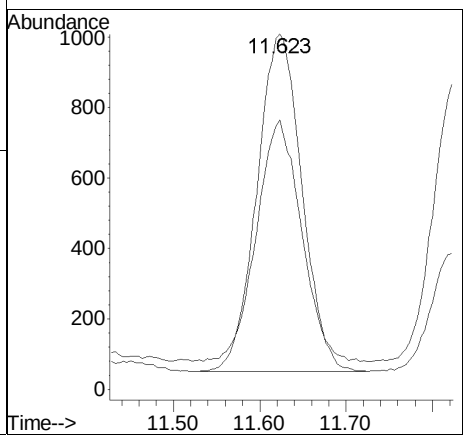


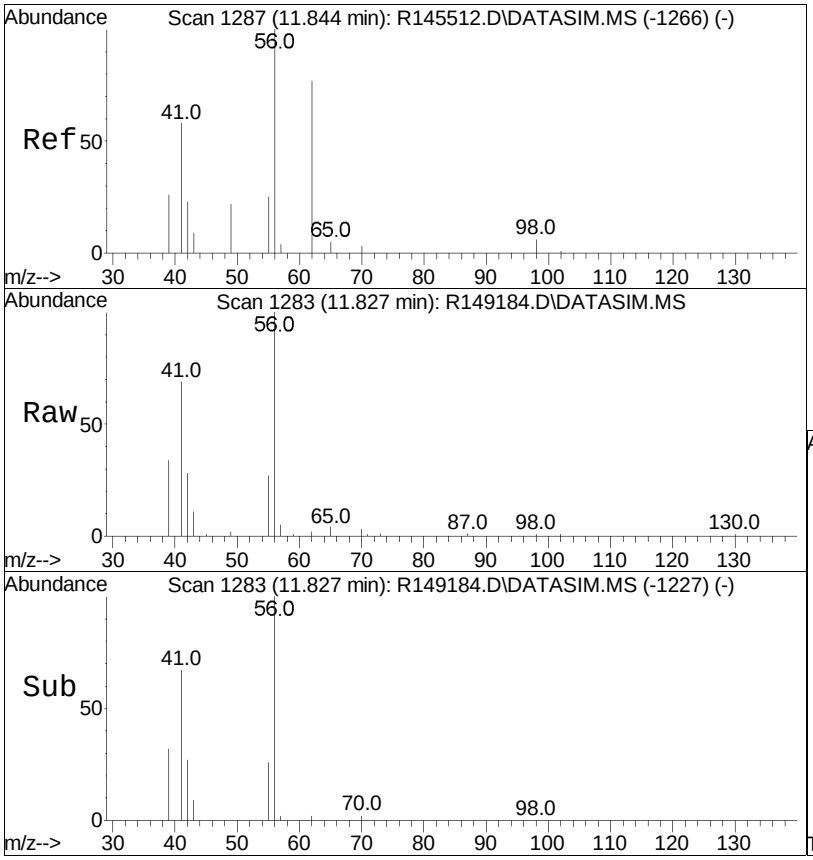


#21
2,2-Dimethylpentane
Concen: 0.17 ppbV
RT: 11.623 min Scan# 1237
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 57 Resp: 3464

Ion	Ratio	Lower	Upper
57	100		
43	75.8	49.6	89.6

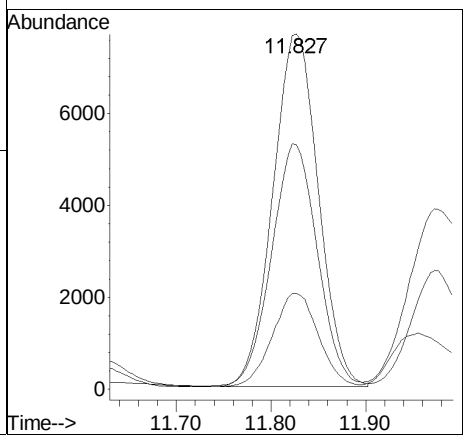


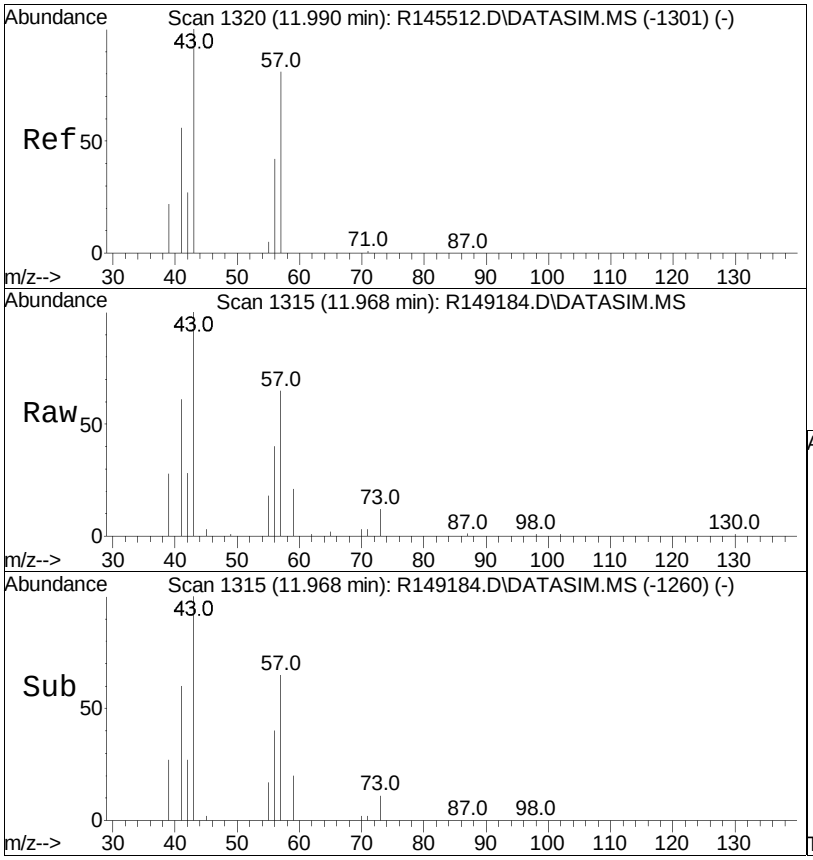


#23
Methylcyclopentane
Concen: 1.61 ppbV
RT: 11.827 min Scan# 1283
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 56 Resp: 25790

Ion	Ratio	Lower	Upper
56	100		
55	27.1	6.8	46.8
41	68.8	47.8	87.8

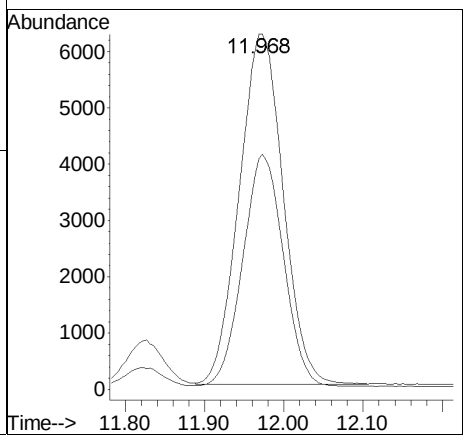


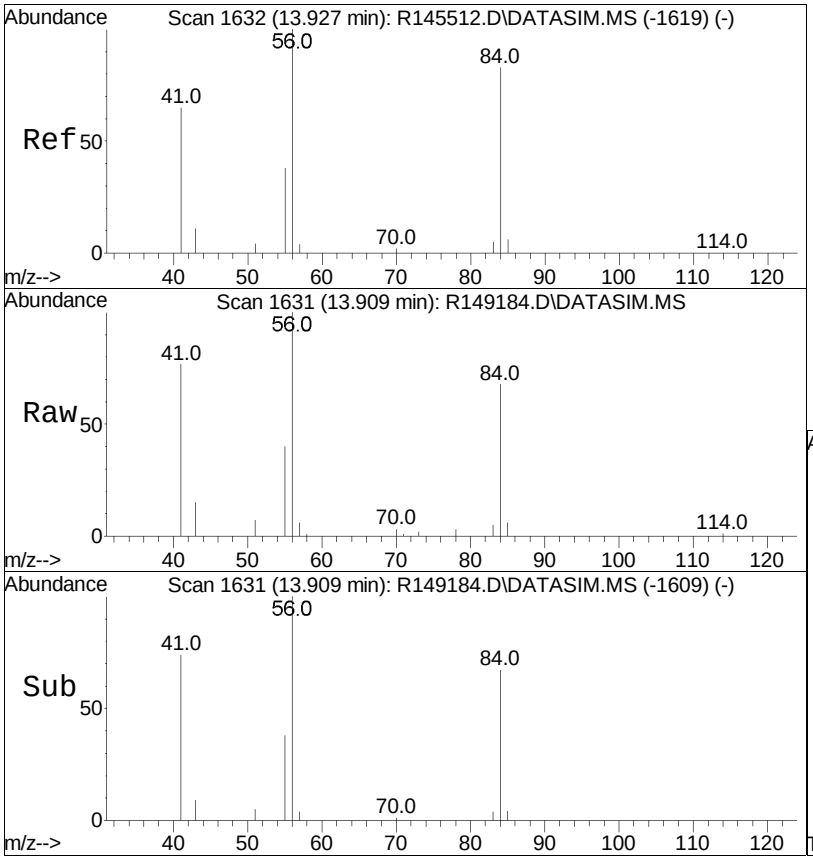


#24
2,4-Dimethylpentane
Concen: 1.16 ppbV
RT: 11.968 min Scan# 1315
Delta R.T. -0.005 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 43 Resp: 23954

Ion	Ratio	Lower	Upper
43	100		
57	65.0	50.5	90.5

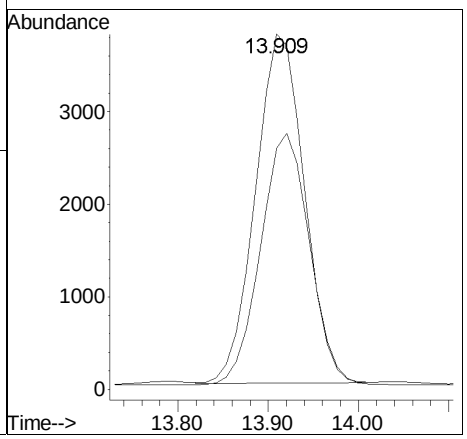


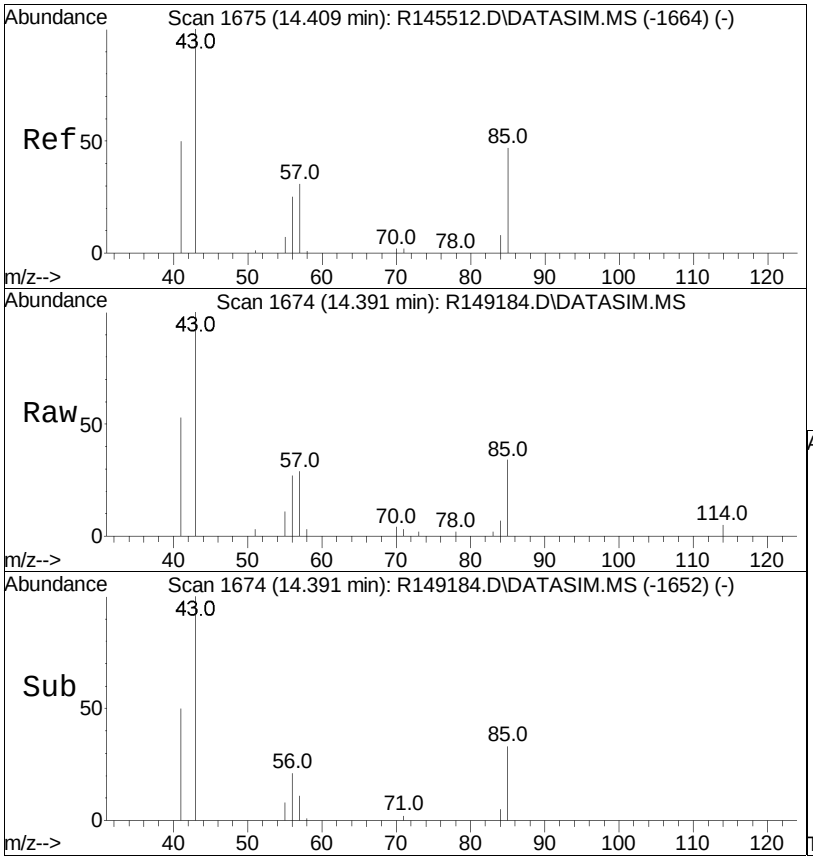


#26
Cyclohexane
Concen: 1.14 ppbV
RT: 13.909 min Scan# 1631
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 56 Resp: 14173

Ion	Ratio	Lower	Upper
56	100		
84	67.9	47.9	87.9

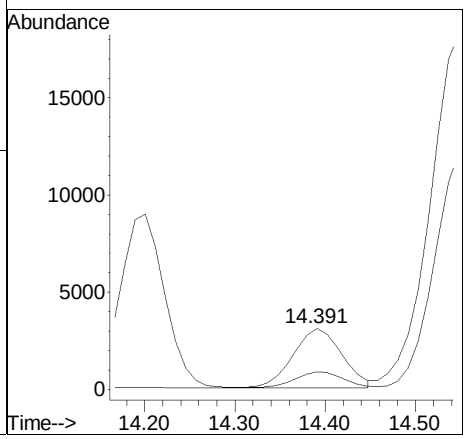


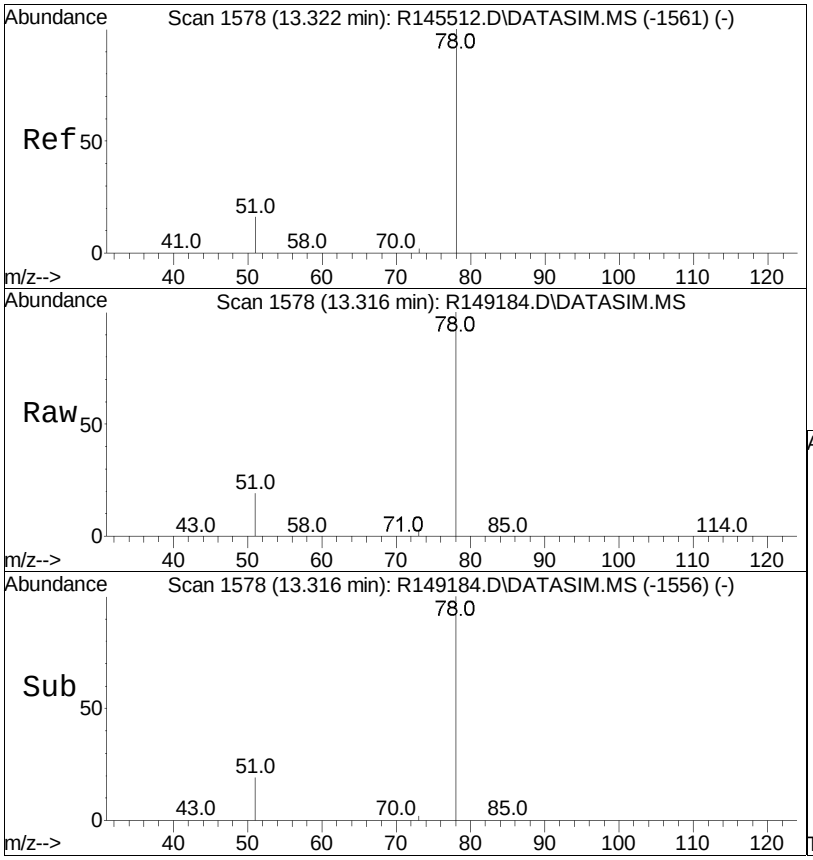


#28
2-Methylhexane
Concen: 0.49 ppbV
RT: 14.391 min Scan# 1674
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 43 Resp: 11514

Ion	Ratio	Lower	Upper
43	100		
57	29.0	7.8	47.8

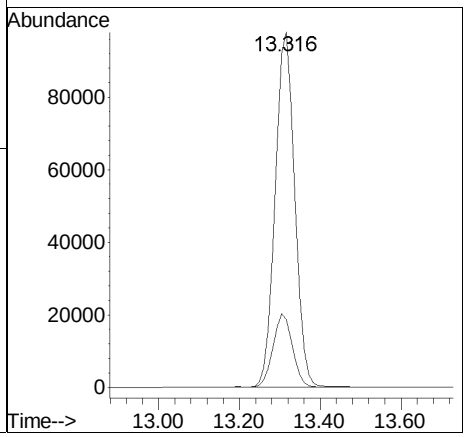


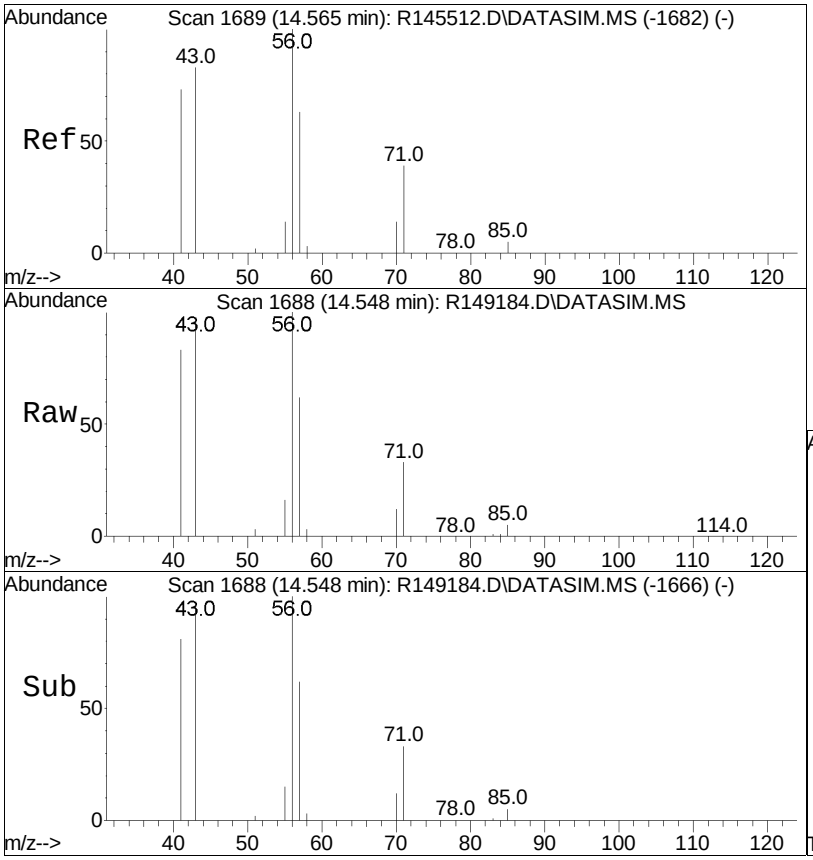


#29
Benzene
Concen: 12.43 ppbV
RT: 13.316 min Scan# 1578
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 78 Resp: 328696

Ion	Ratio	Lower	Upper
78	100		
51	19.1	0.0	39.4

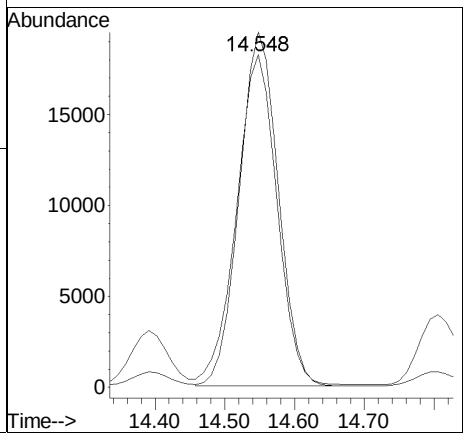


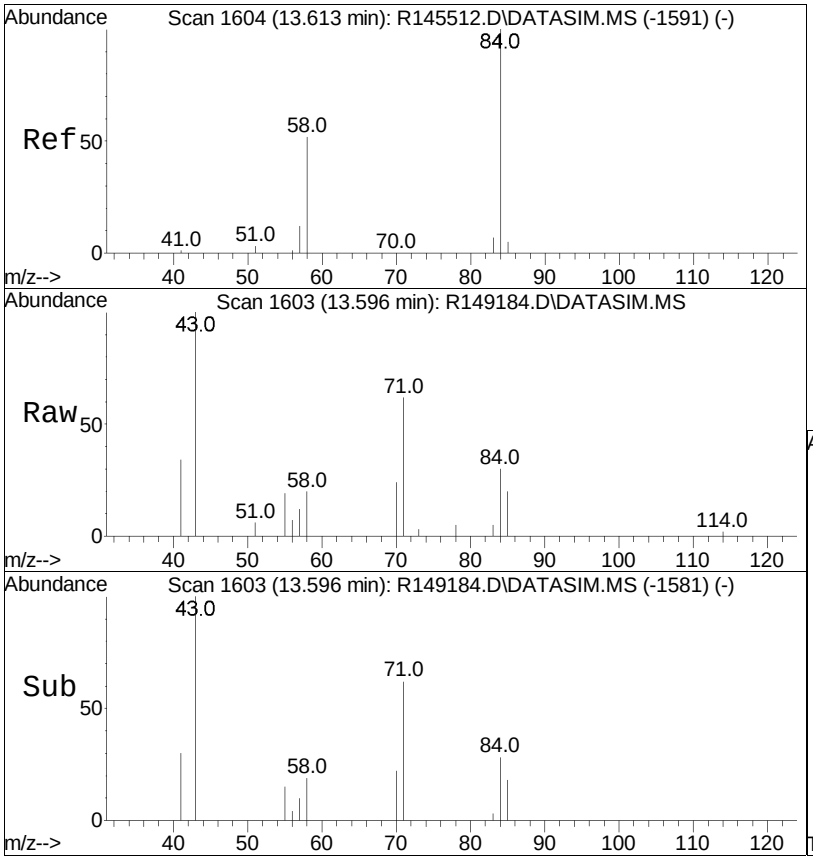


#30
2,3-Dimethylpentane
Concen: 4.56 ppbV
RT: 14.548 min Scan# 1688
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 56 Resp: 75665

Ion	Ratio	Lower	Upper
56	100		
43	93.6	72.3	112.3

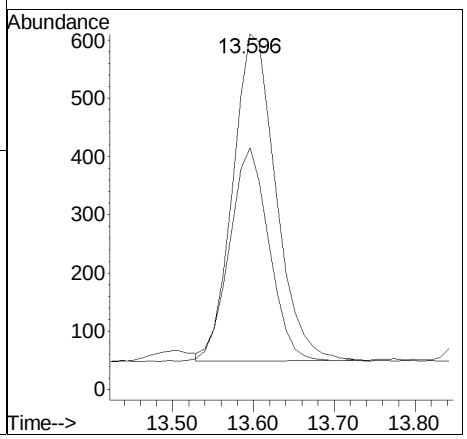


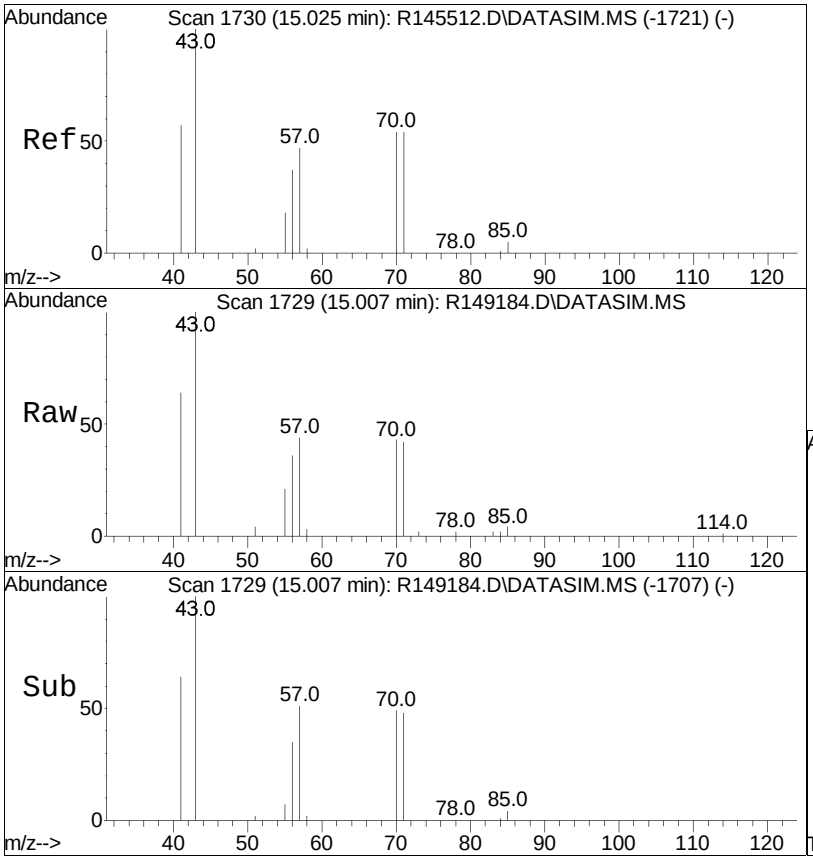


#31
Thiophene
Concen: 0.18 ppbV
RT: 13.596 min Scan# 1603
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 84 Resp: 2074

Ion	Ratio	Lower	Upper
84	100		
58	68.0	46.4	86.4

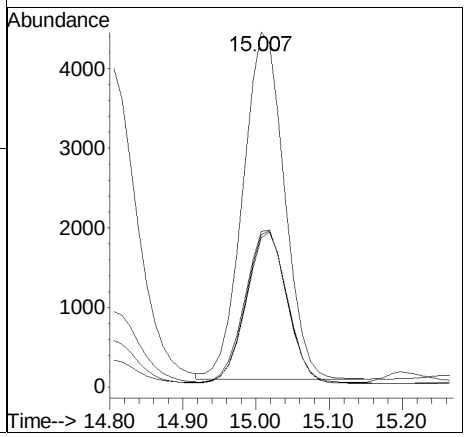


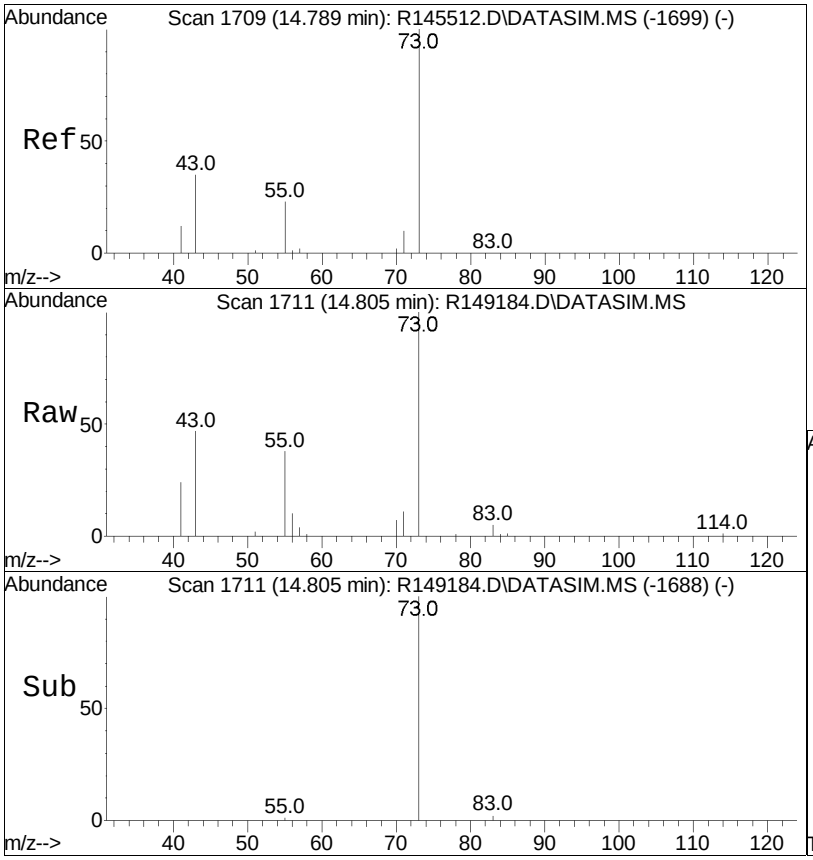


#32
3-Methylhexane
Concen: 0.93 ppbV
RT: 15.007 min Scan# 1729
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 43 Resp: 17141

Ion	Ratio	Lower	Upper
43	100		
57	43.8	23.4	63.4
70	43.0	22.5	62.5
71	42.1	22.4	62.4

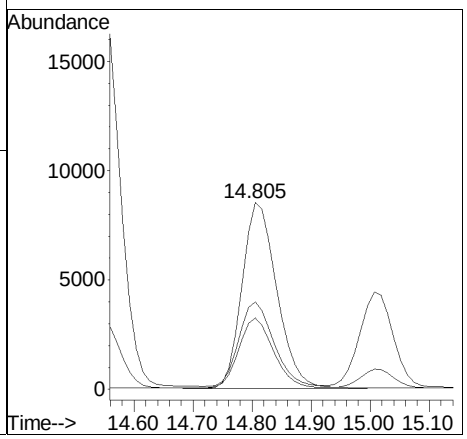


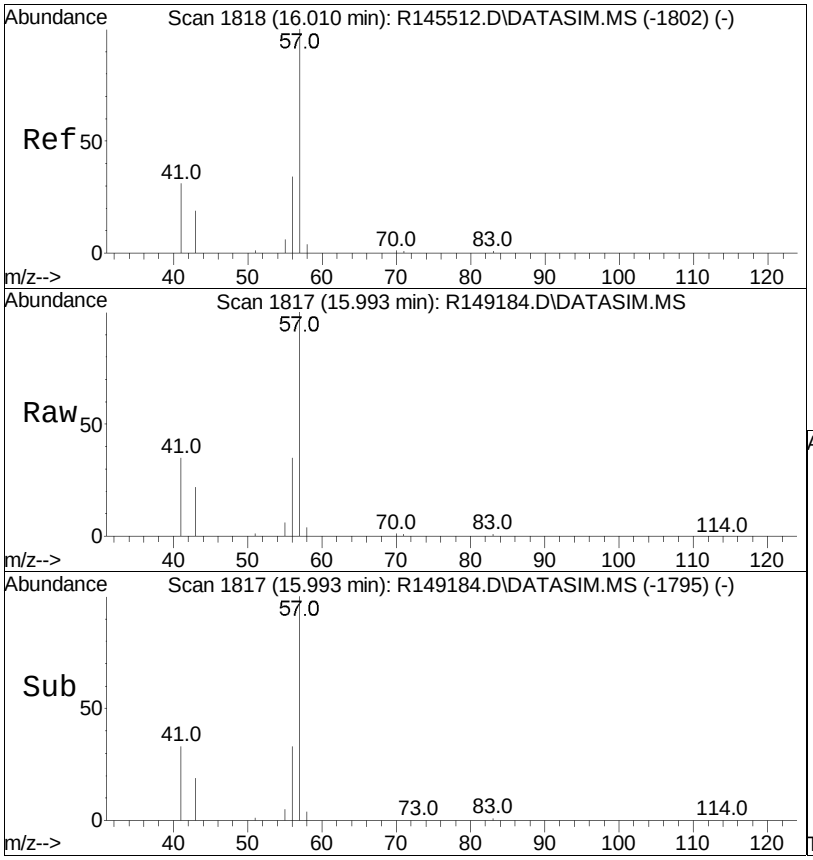


#33
TAME
Concen: 1.52 ppbV
RT: 14.805 min Scan# 1711
Delta R.T. 0.011 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 73 Resp: 34764

Ion	Ratio	Lower	Upper
73	100		
43	46.8	24.9	64.9
55	38.2	9.6	49.6

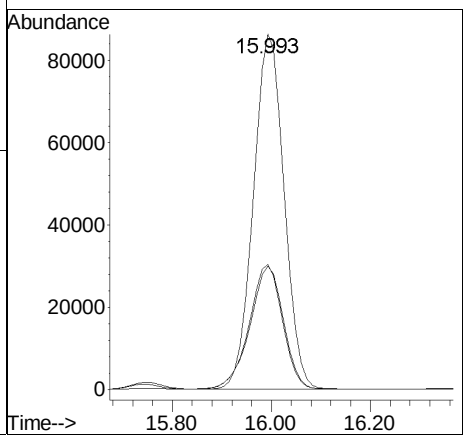


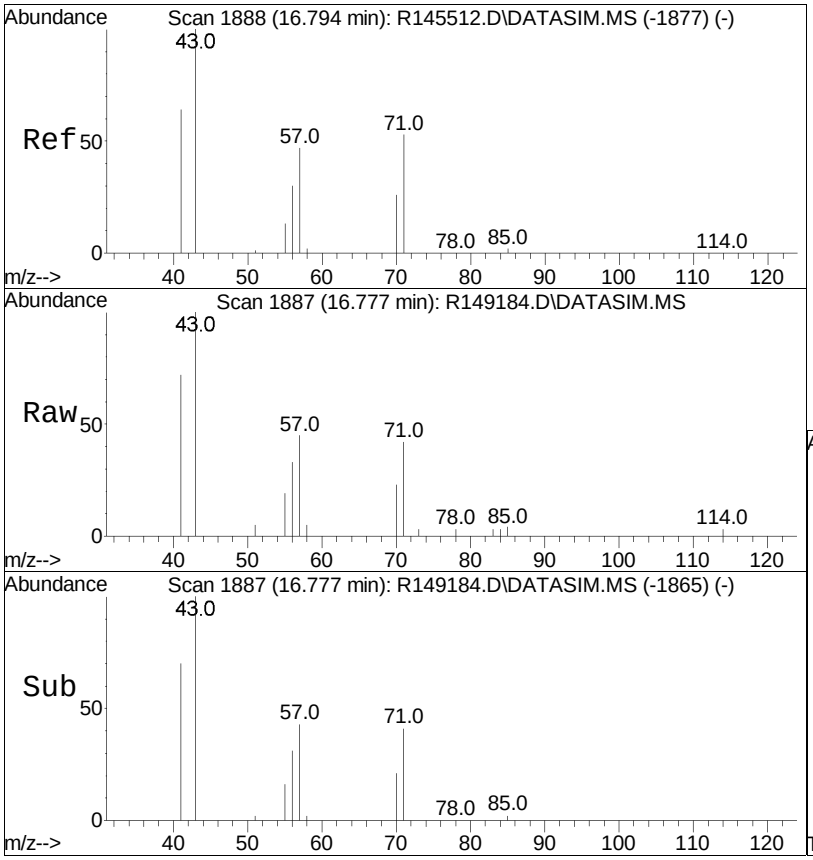


#35
Isooctane
Concen: 8.96 ppbV
RT: 15.993 min Scan# 1817
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 57 Resp: 371989

Ion	Ratio	Lower	Upper
57	100		
56	34.7	14.9	54.9
41	35.1	16.0	56.0

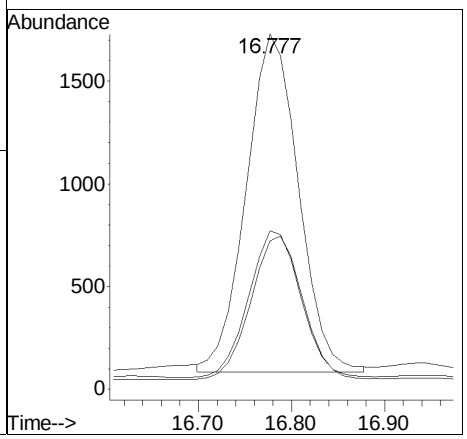


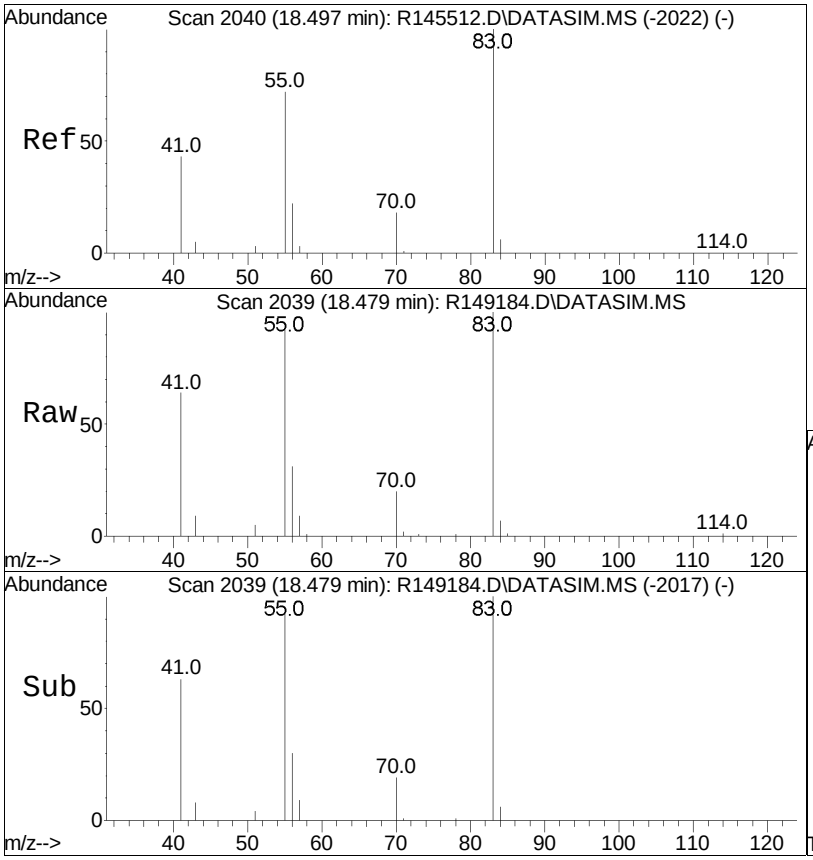


#36
Heptane
Concen: 0.36 ppbV m
RT: 16.777 min Scan# 1887
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 43 Resp: 6411

Ion	Ratio	Lower	Upper
43	100		
57	44.7	23.3	63.3
71	41.8	21.1	61.1

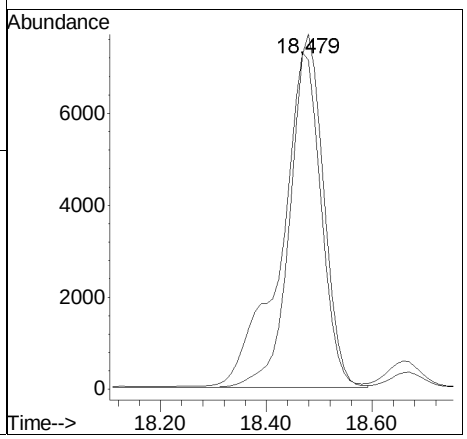


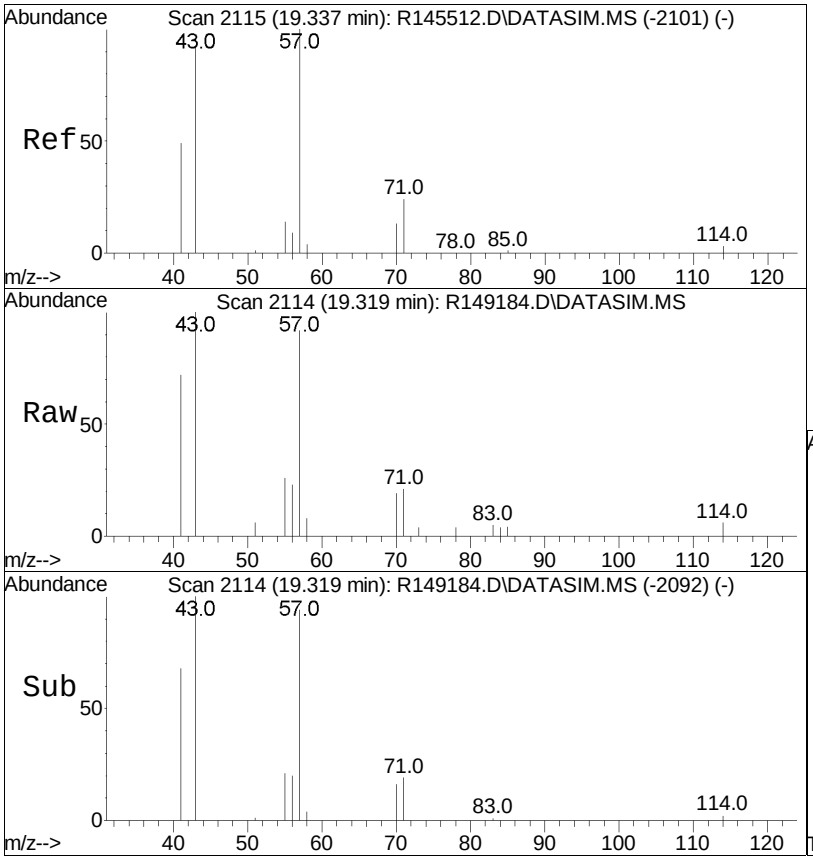


#37
Methylcyclohexane
Concen: 2.48 ppbV
RT: 18.479 min Scan# 2039
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 83 Resp: 33625

Ion	Ratio	Lower	Upper
83	100		
55	92.7	70.7	110.7

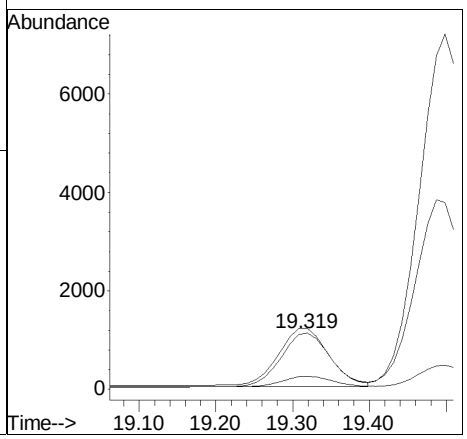


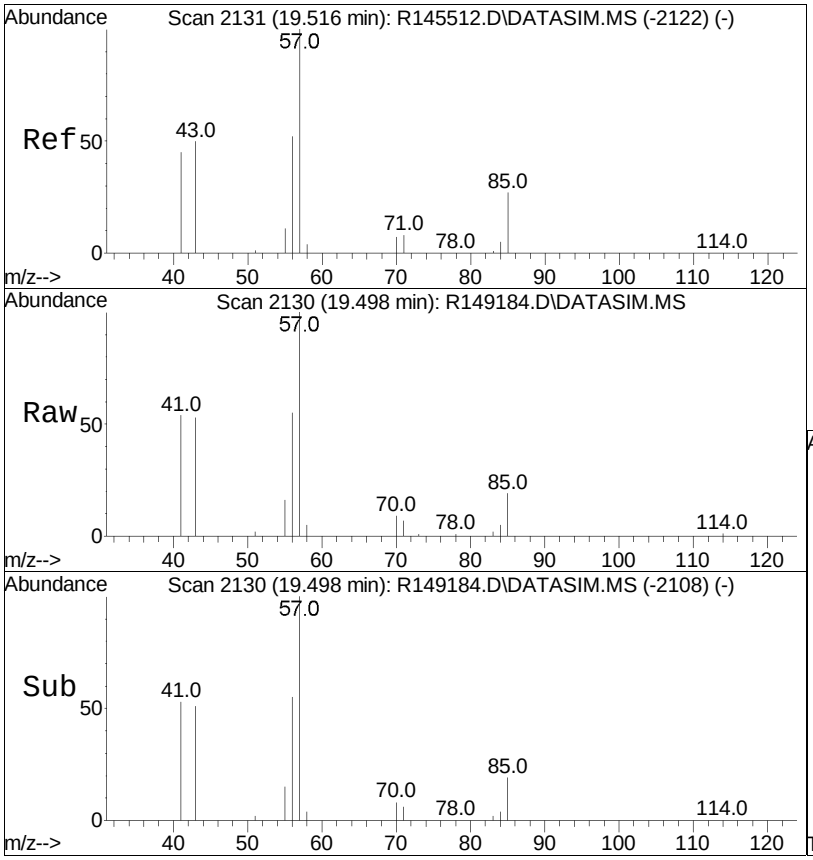


#38
2,5-Dimethylhexane
Concen: 0.24 ppbV
RT: 19.319 min Scan# 2114
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 57 Resp: 4906

Ion	Ratio	Lower	Upper
57	100		
43	108.2	86.5	126.5
71	23.3	0.8	40.8

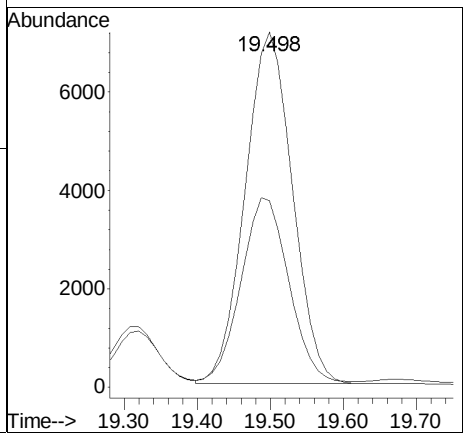


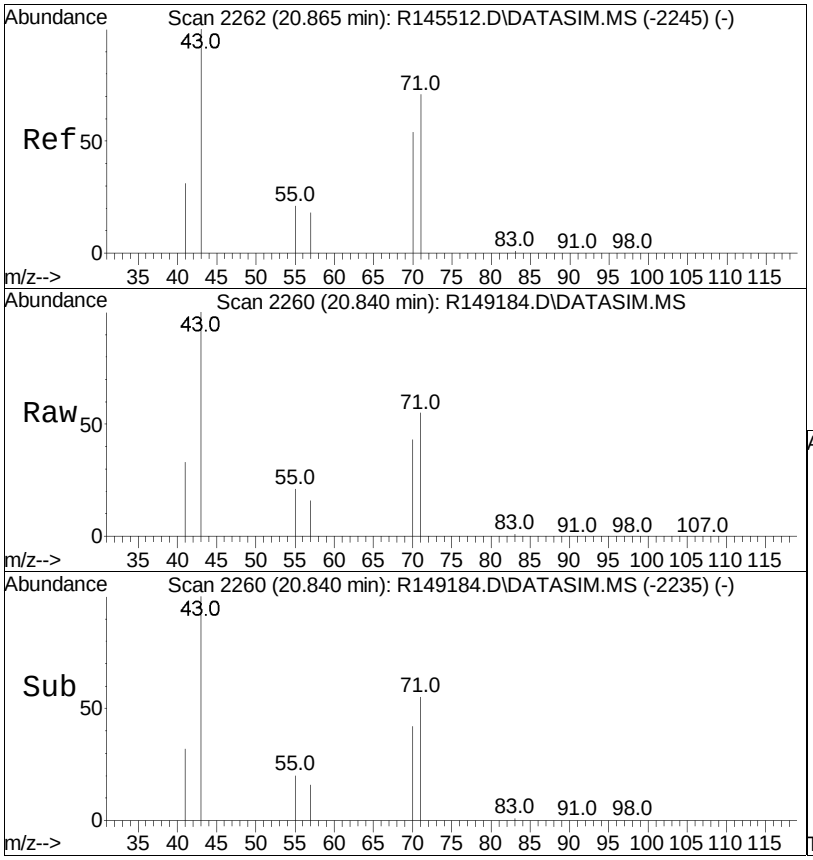


#39
2,4-Dimethyhexane / 2,2,3-TMP
Concen: 1.25 ppbV
RT: 19.498 min Scan# 2130
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 57 Resp: 32157

Ion	Ratio	Lower	Upper
57	100		
43	52.6	36.1	76.1

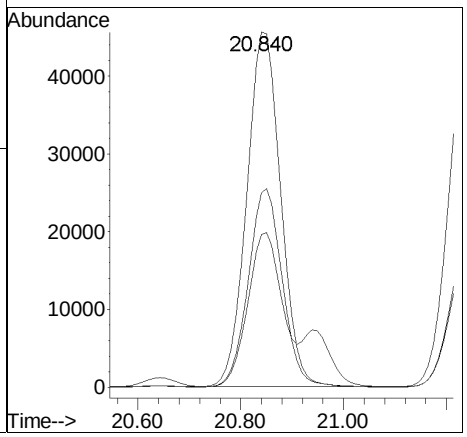


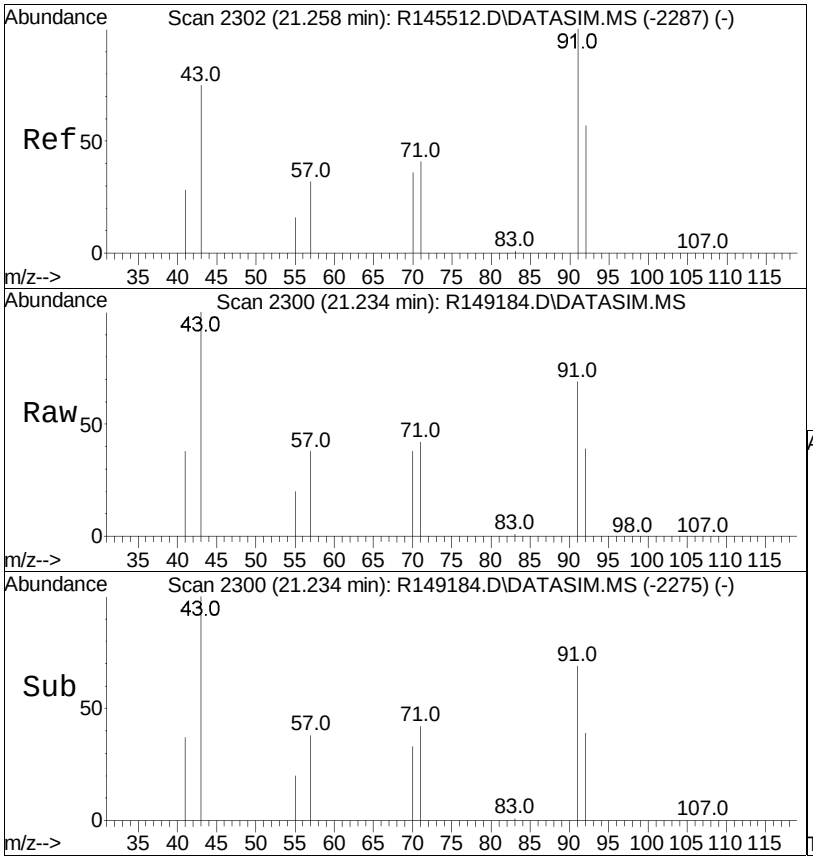


#40
2,3,4-Trimethylpentane
Concen: 7.27 ppbV
RT: 20.840 min Scan# 2260
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 43 Resp: 209427

Ion	Ratio	Lower	Upper
43	100		
71	54.8	34.6	74.6
70	43.0	23.3	63.3

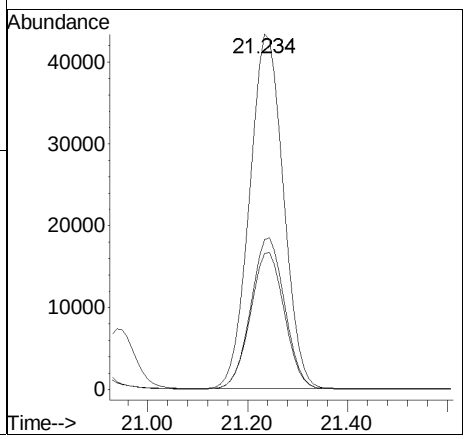


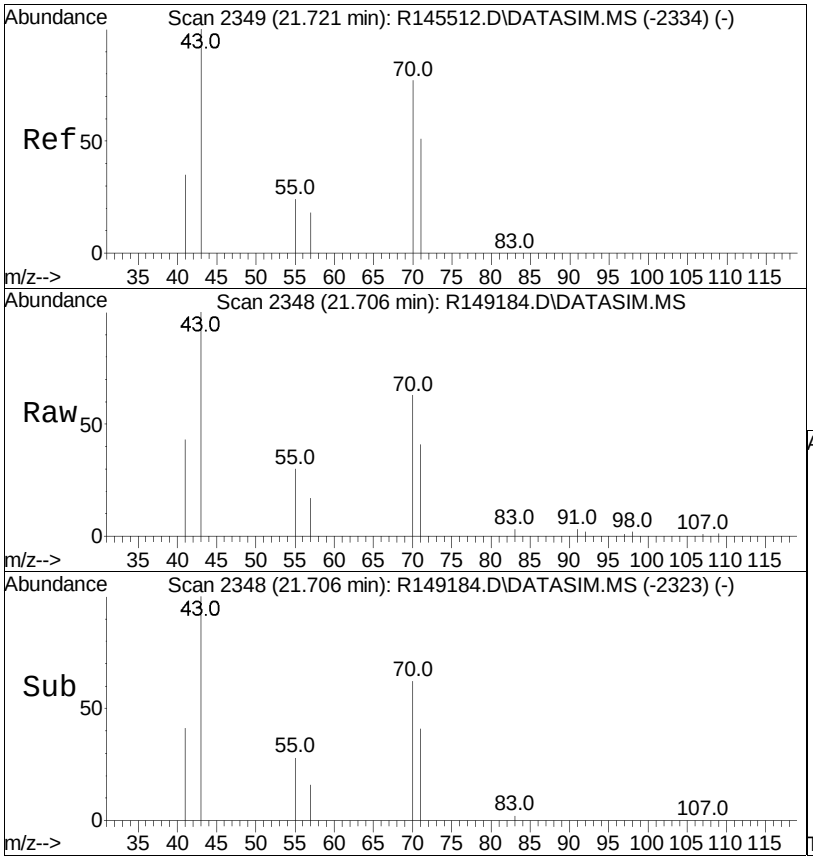


#41
2,3,3-Trimethylpentane
Concen: 7.57 ppbV
RT: 21.234 min Scan# 2300
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 43 Resp: 204239

Ion	Ratio	Lower	Upper
43	100		
71	42.1	22.4	62.4
70	38.2	18.7	58.7

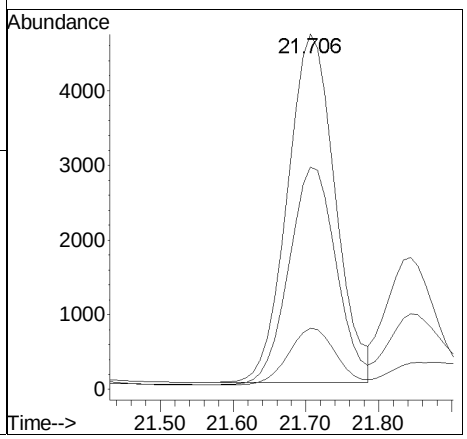


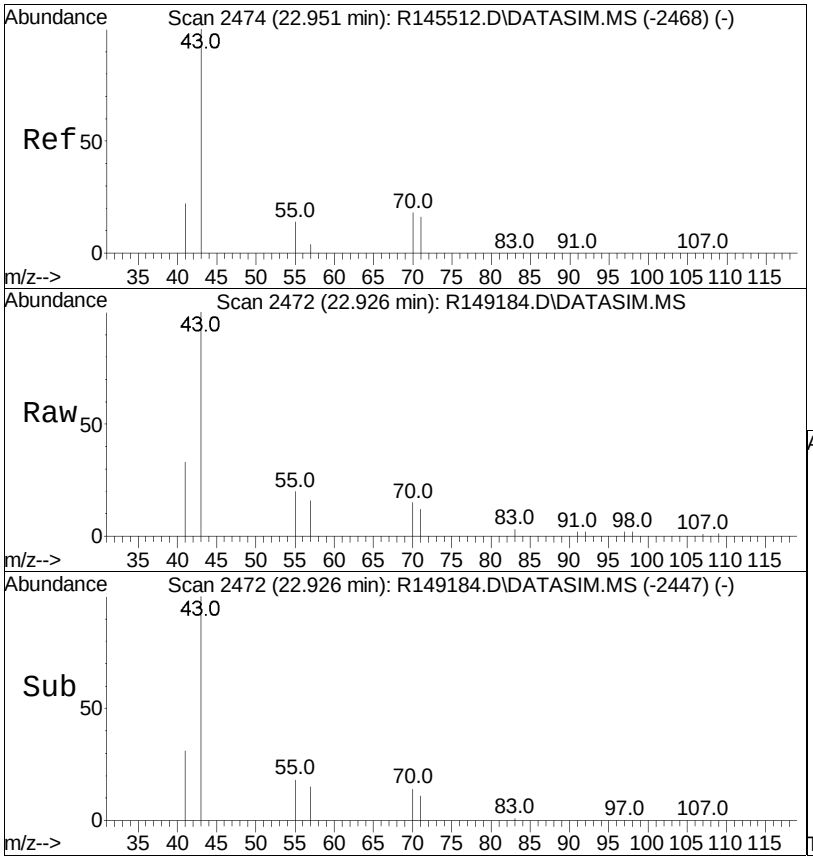


#42
2,3-Dimethylhexane
Concen: 0.82 ppbV
RT: 21.706 min Scan# 2348
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 43 Resp: 21258

Ion	Ratio	Lower	Upper
43	100		
70	62.6	41.8	81.8
57	17.2	0.0	36.6

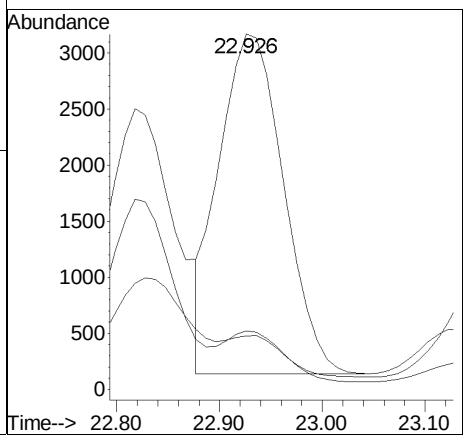


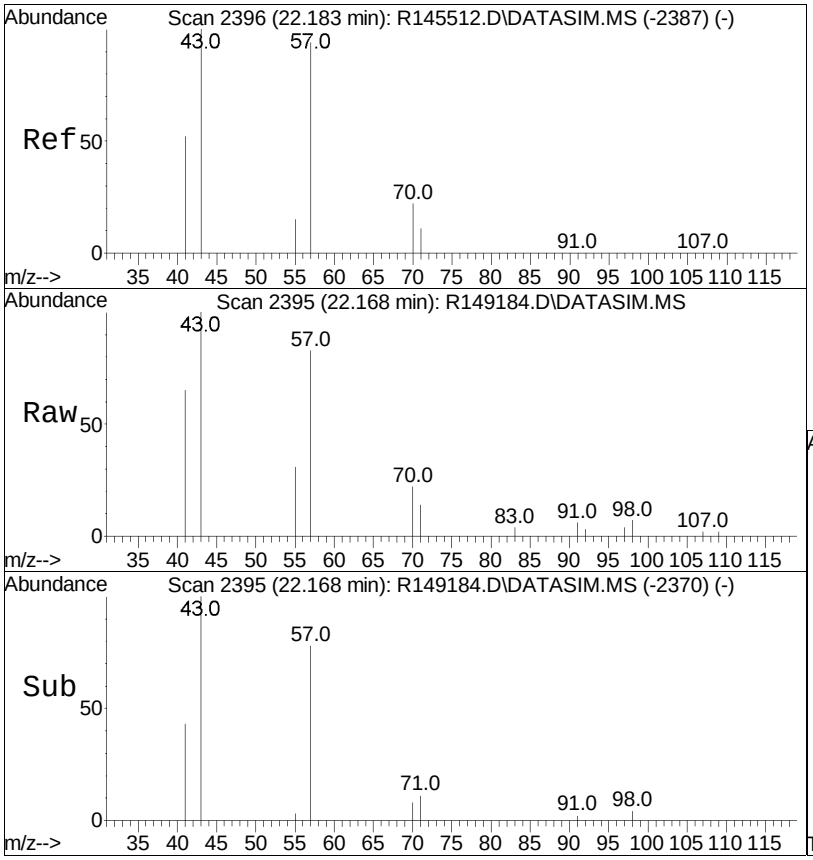


#43
3-Ethylhexane
Concen: 0.42 ppbV
RT: 22.926 min Scan# 2472
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 43 Resp: 13234

Ion	Ratio	Lower	Upper
43	100		
70	15.1	0.0	32.6
57	16.5	0.0	34.2

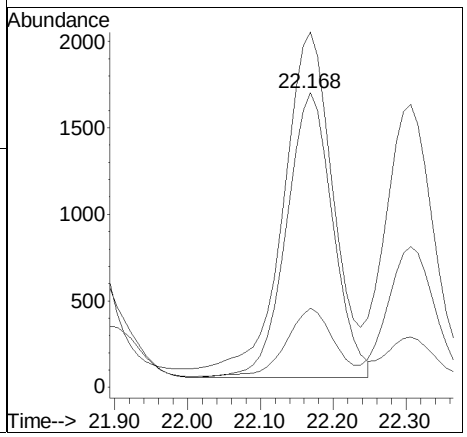


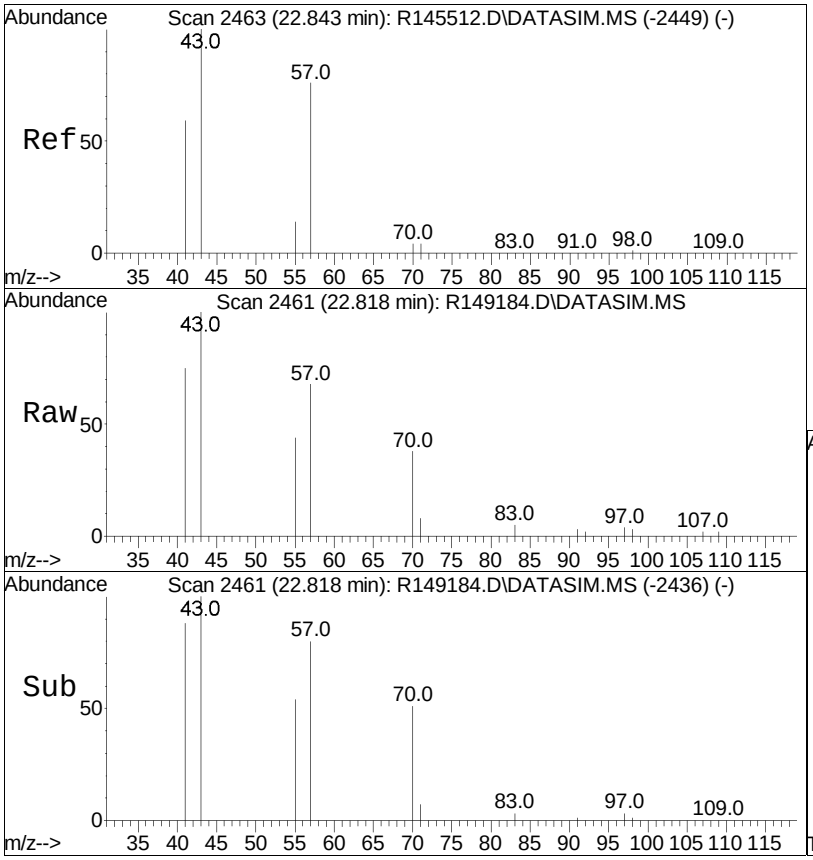


#44
2-Methylheptane
Concen: 0.37 ppbV
RT: 22.168 min Scan# 2395
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 57 Resp: 7315

Ion	Ratio	Lower	Upper
57	100		
43	120.5	98.3	138.3
70	26.9	2.5	42.5

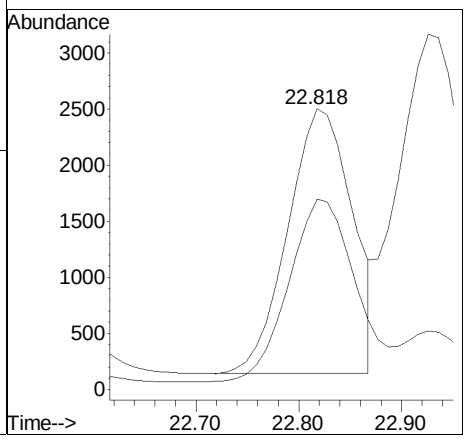


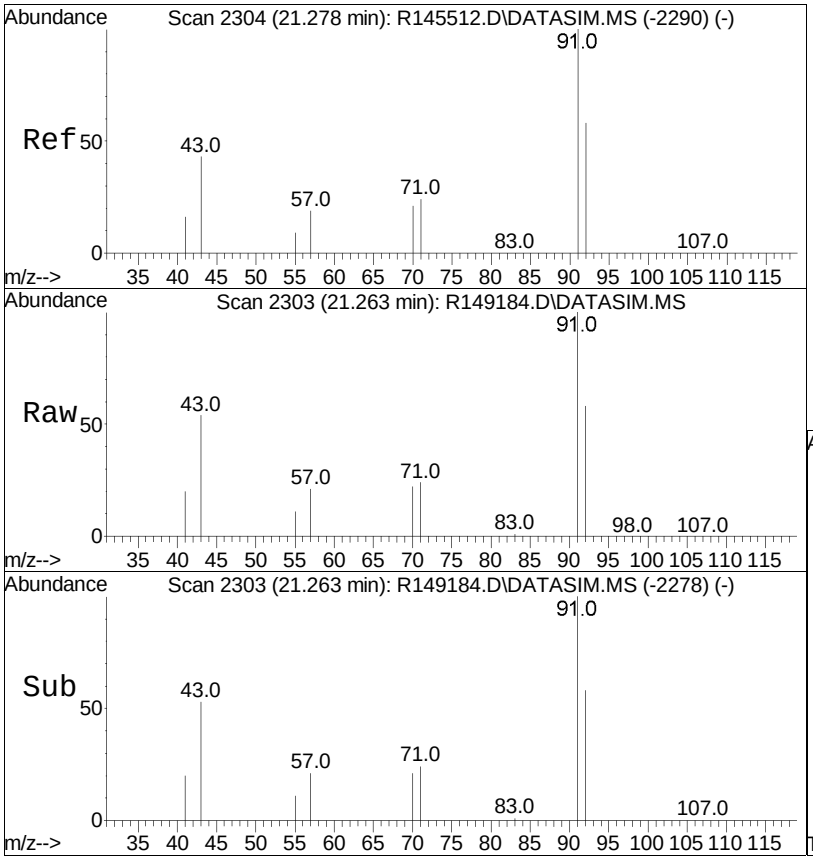


#45
3-Methylheptane
Concen: 0.48 ppbV
RT: 22.818 min Scan# 2461
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 43 Resp: 10239

Ion	Ratio	Lower	Upper
43	100		
57	67.8	47.6	87.6

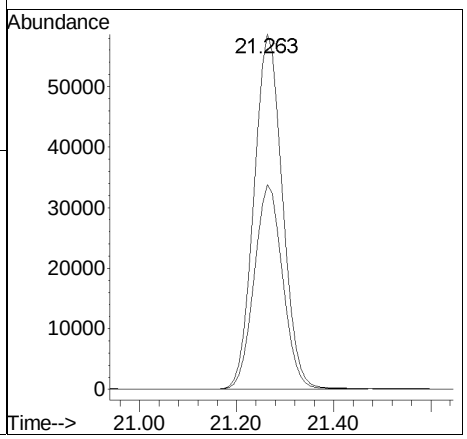


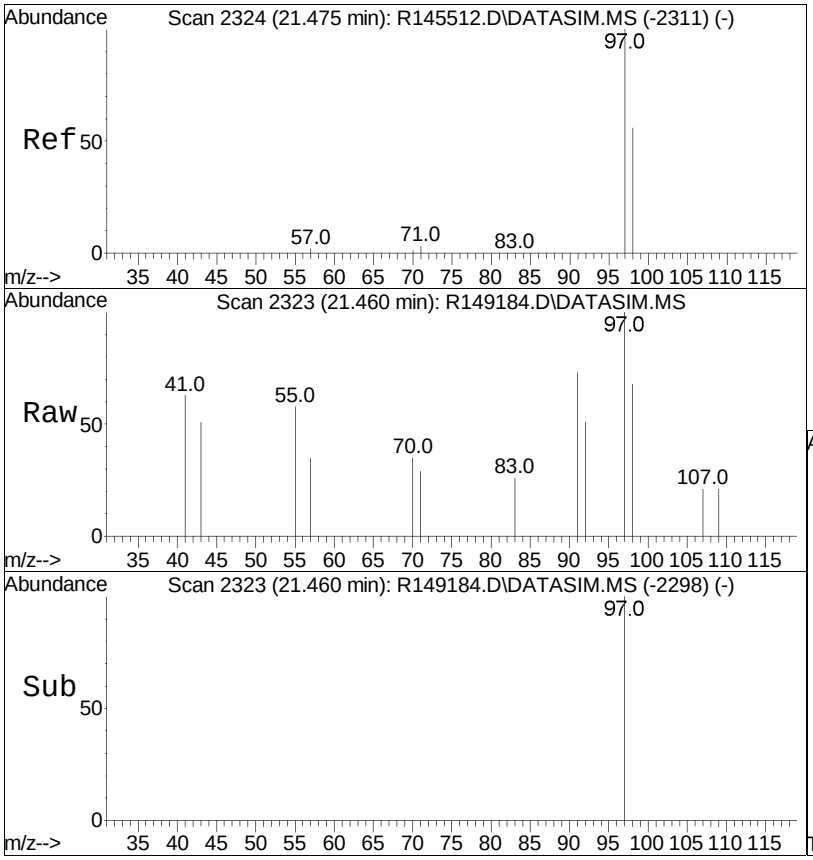


#47
Toluene
Concen: 7.75 ppbV
RT: 21.263 min Scan# 2303
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 91 Resp: 238893

Ion	Ratio	Lower	Upper
91	100		
92	57.7	37.6	77.6

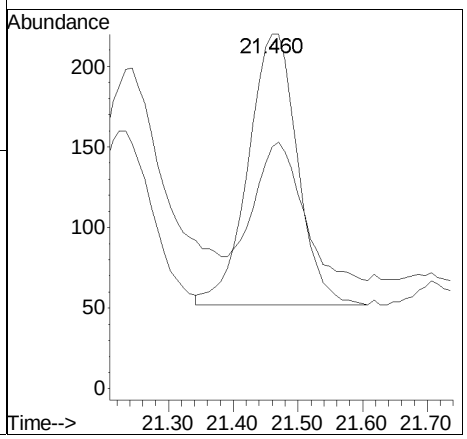


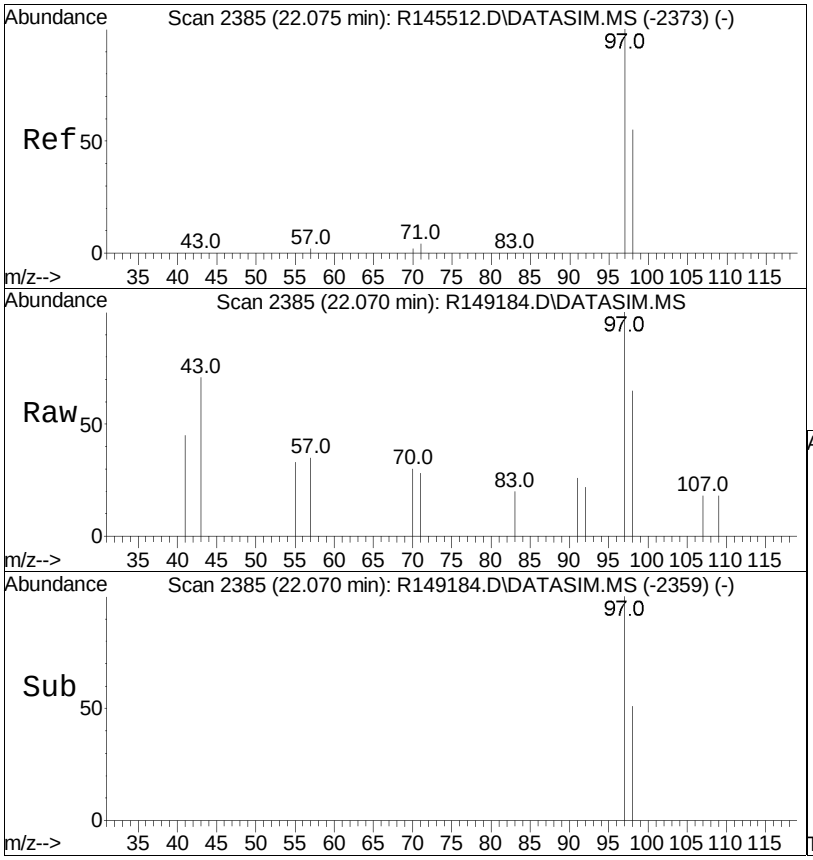


#48
2-Methylthiophene
Concen: 0.04 ppbV
RT: 21.460 min Scan# 2323
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 97 Resp: 891

Ion	Ratio	Lower	Upper
97	100		
98	68.2	35.4	75.4

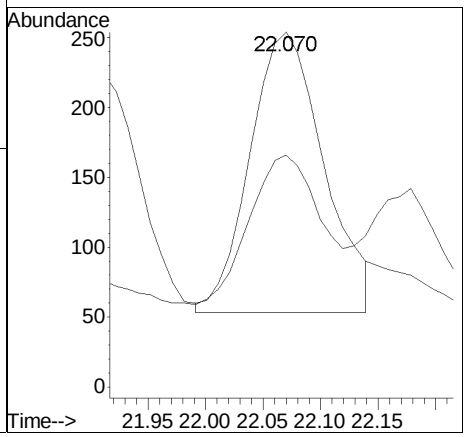


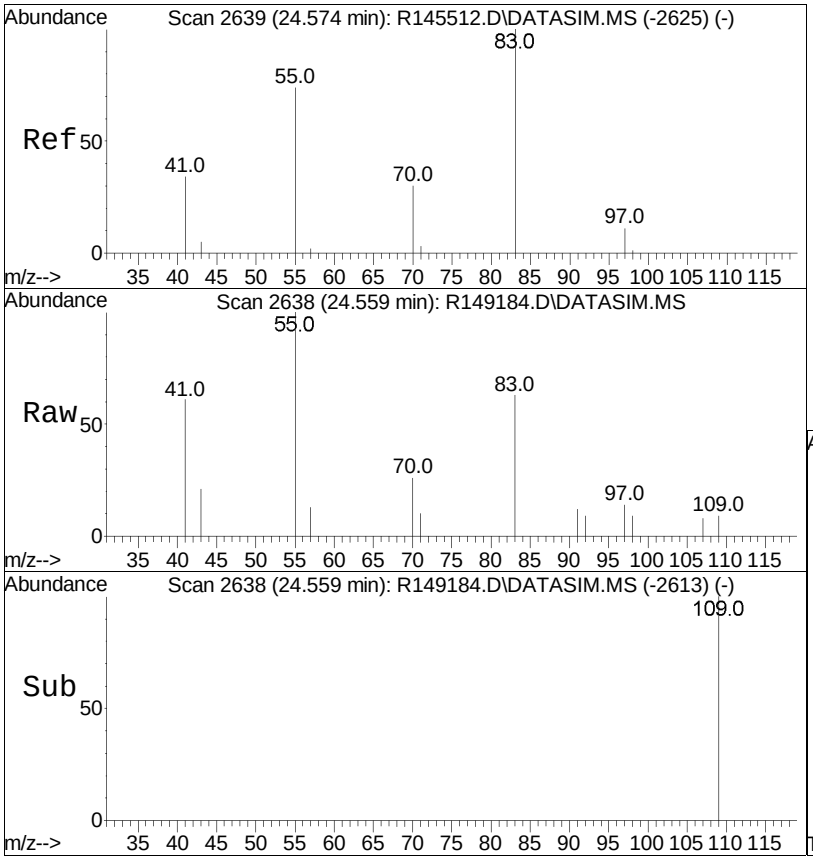


#49
3-Methylthiophene
Concen: 0.05 ppbV m
RT: 22.070 min Scan# 2385
Delta R.T. 0.010 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 97 Resp: 898

Ion	Ratio	Lower	Upper
97	100		
98	65.4	34.1	74.1

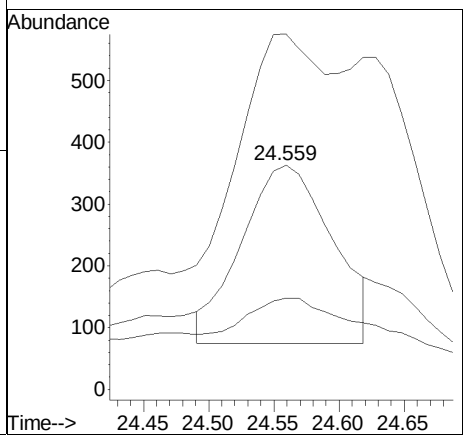


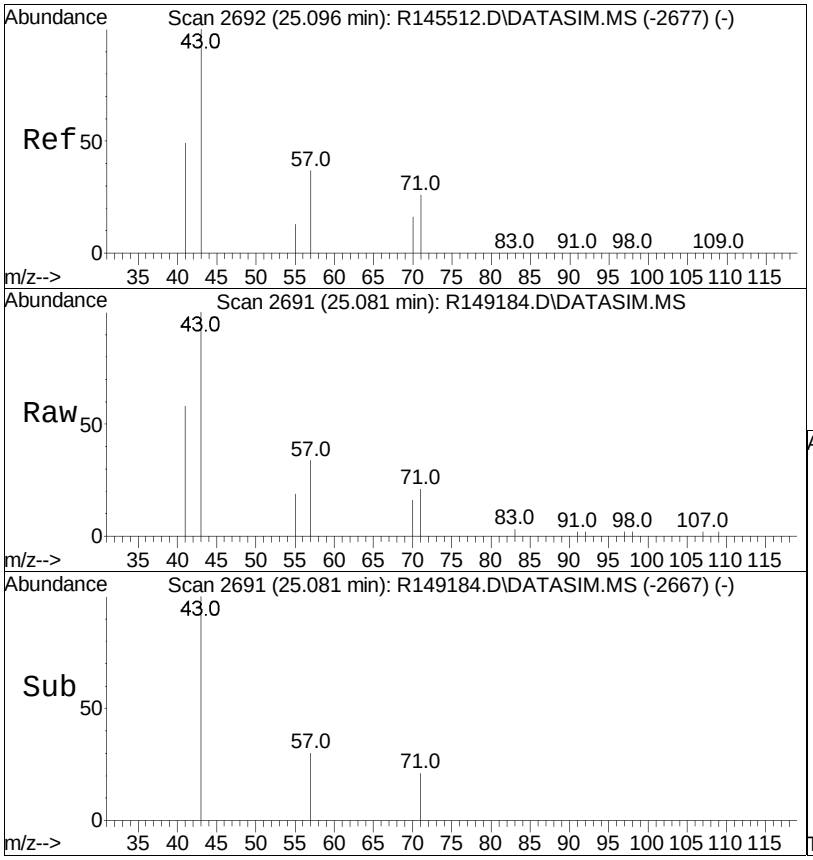


#51
1-ethyl-1-methylcyclopentane
Concen: 0.08 ppbV m
RT: 24.559 min Scan# 2638
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 83 Resp: 1401

Ion	Ratio	Lower	Upper
83	100		
55	122.8	73.0	109.4#
70	44.5	25.5	38.3#

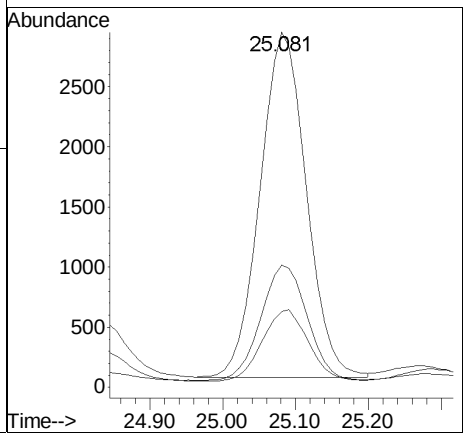


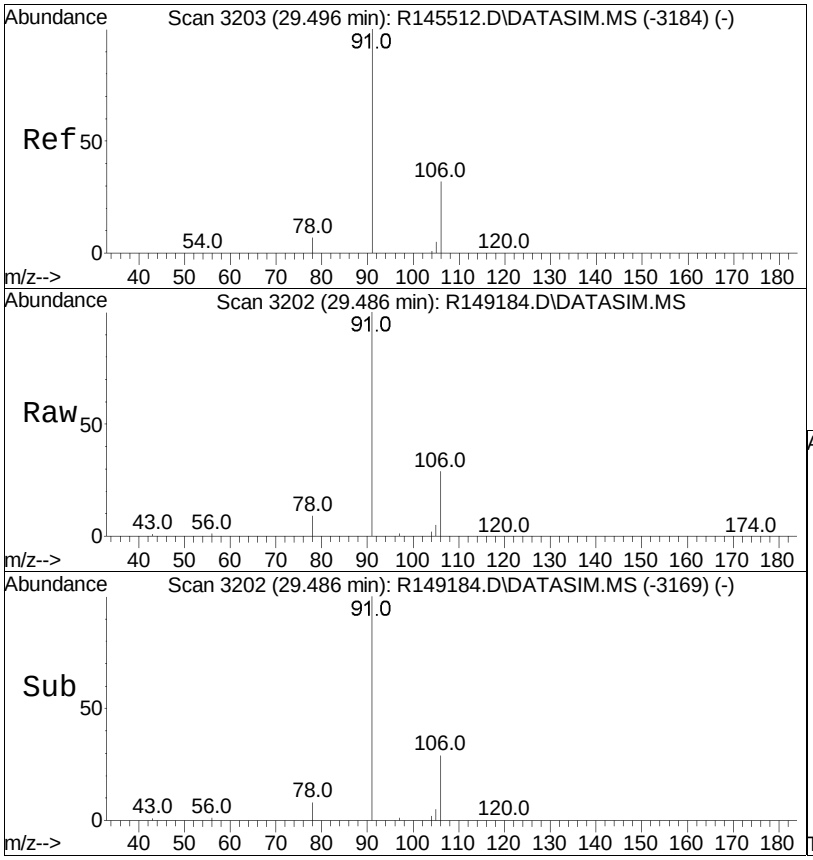


#52
Octane
Concen: 0.52 ppbV
RT: 25.081 min Scan# 2691
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 43 Resp: 12640

Ion	Ratio	Lower	Upper
43	100		
57	34.4	13.6	53.6
71	21.4	0.9	40.9

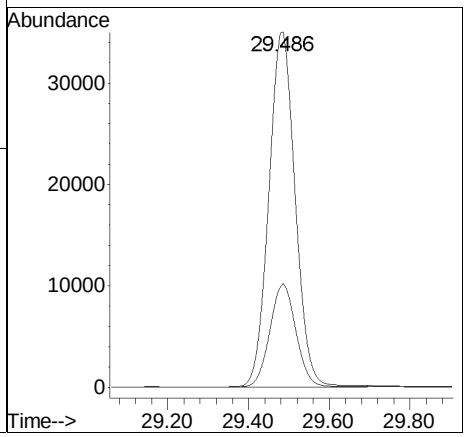


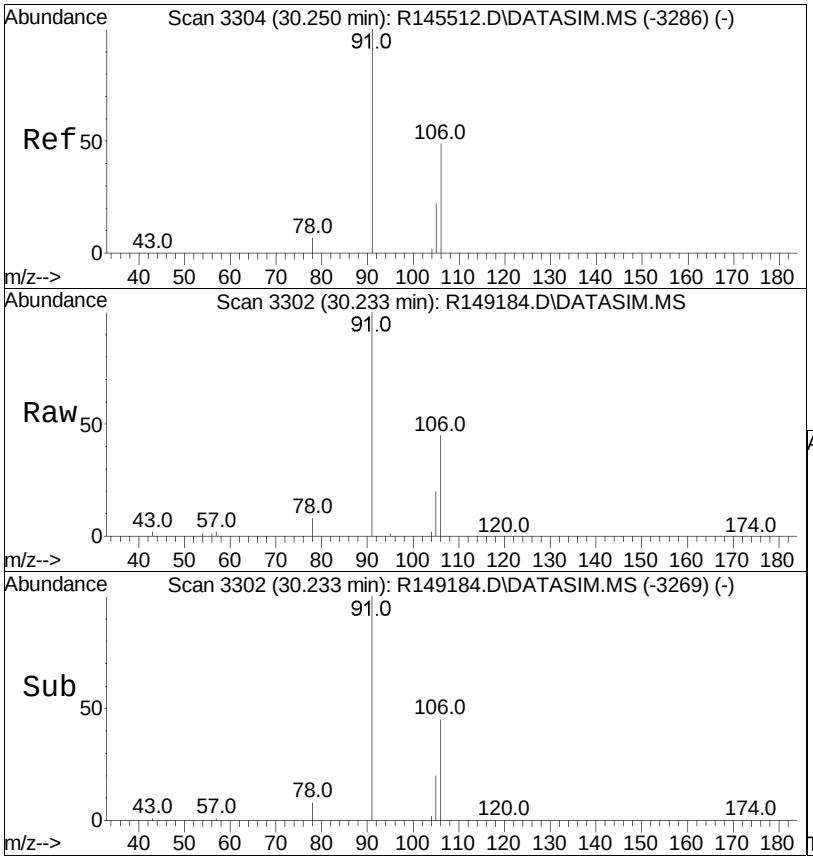


#55
Ethylbenzene
Concen: 5.56 ppbV
RT: 29.486 min Scan# 3202
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 91 Resp: 158424

Ion	Ratio	Lower	Upper
91	100		
106	29.2	9.1	49.1

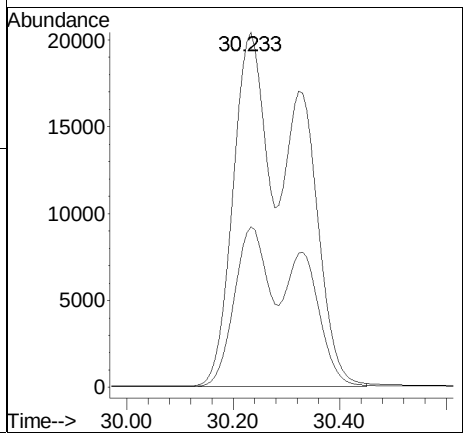


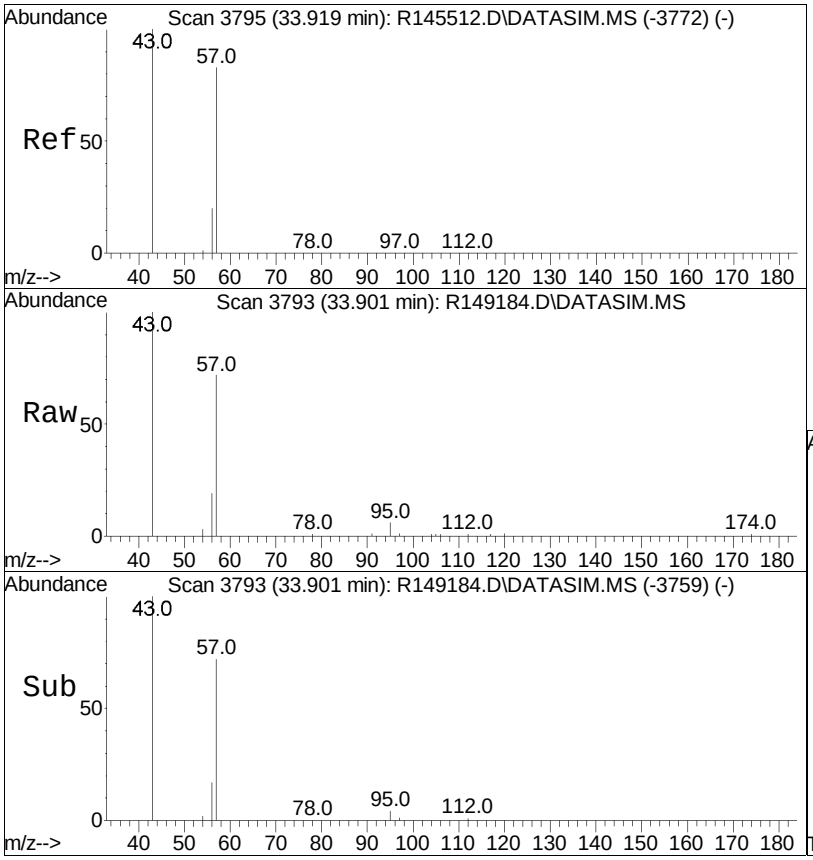


#57
p/m-Xylene
Concen: 7.64 ppbV m
RT: 30.233 min Scan# 3302
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 91 Resp: 167588

Ion	Ratio	Lower	Upper
91	100		
106	45.2	25.5	65.5

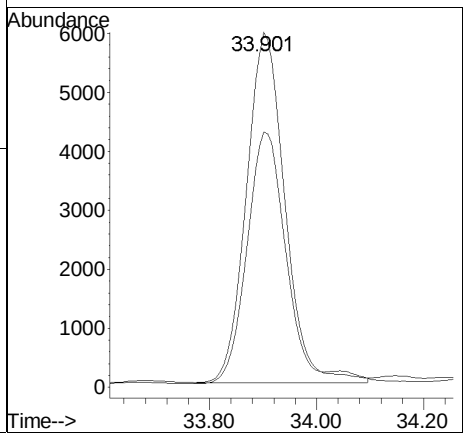


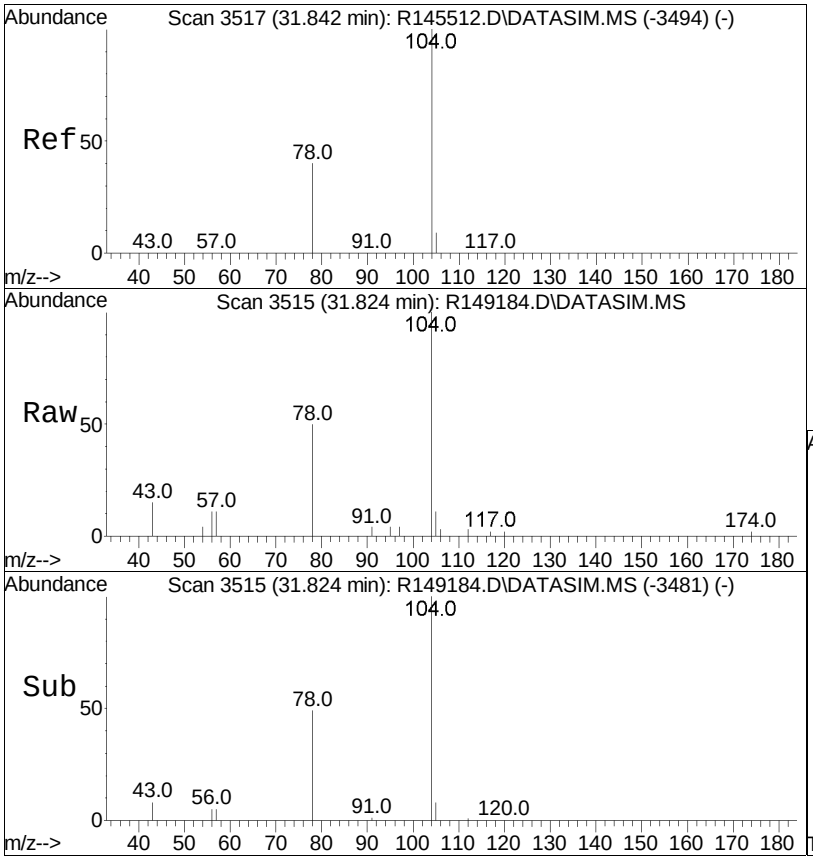


#59
Nonane
Concen: 1.40 ppbV
RT: 33.901 min Scan# 3793
Delta R.T. 0.007 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 43 Resp: 29641

Ion	Ratio	Lower	Upper
43	100		
57	71.8	51.4	91.4

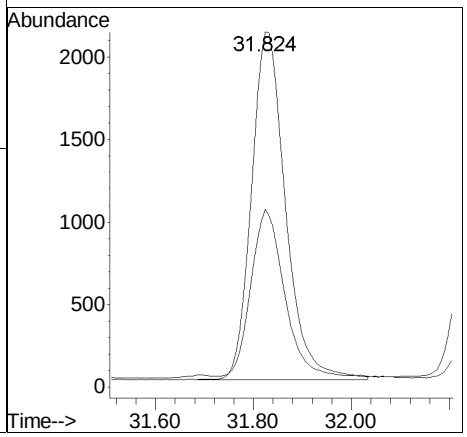


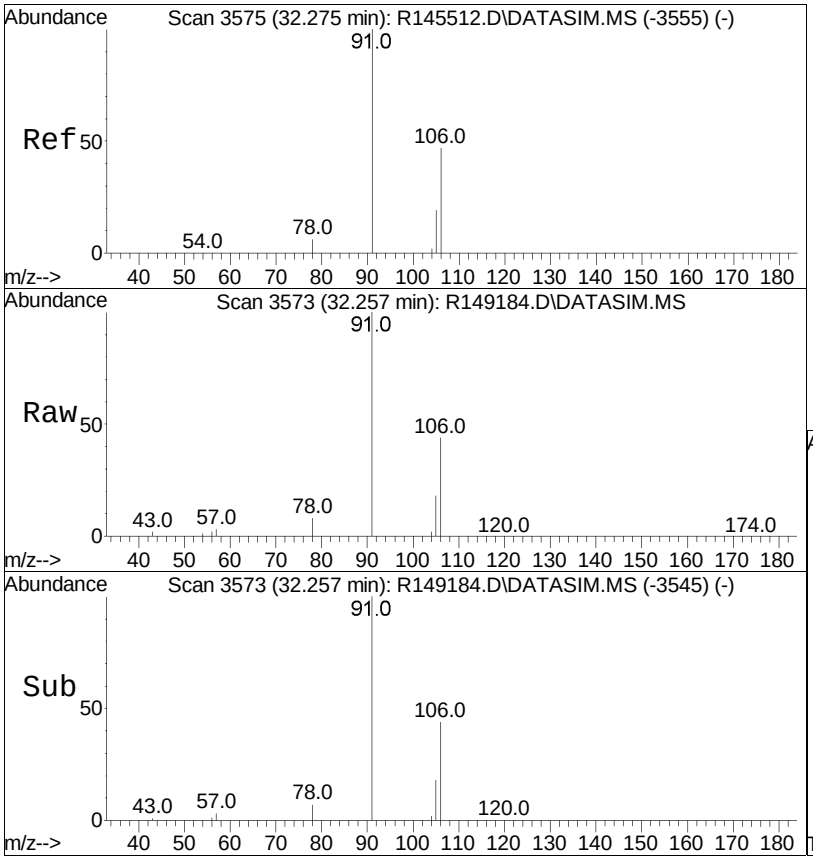


#60
Styrene
Concen: 0.70 ppbV
RT: 31.824 min Scan# 3515
Delta R.T. 0.007 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:104 Resp: 10166

Ion	Ratio	Lower	Upper
104	100		
78	50.1	28.5	68.5

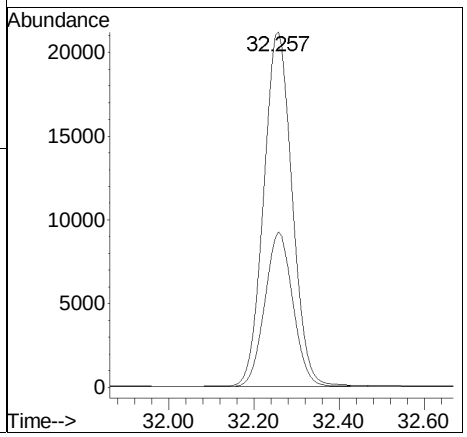


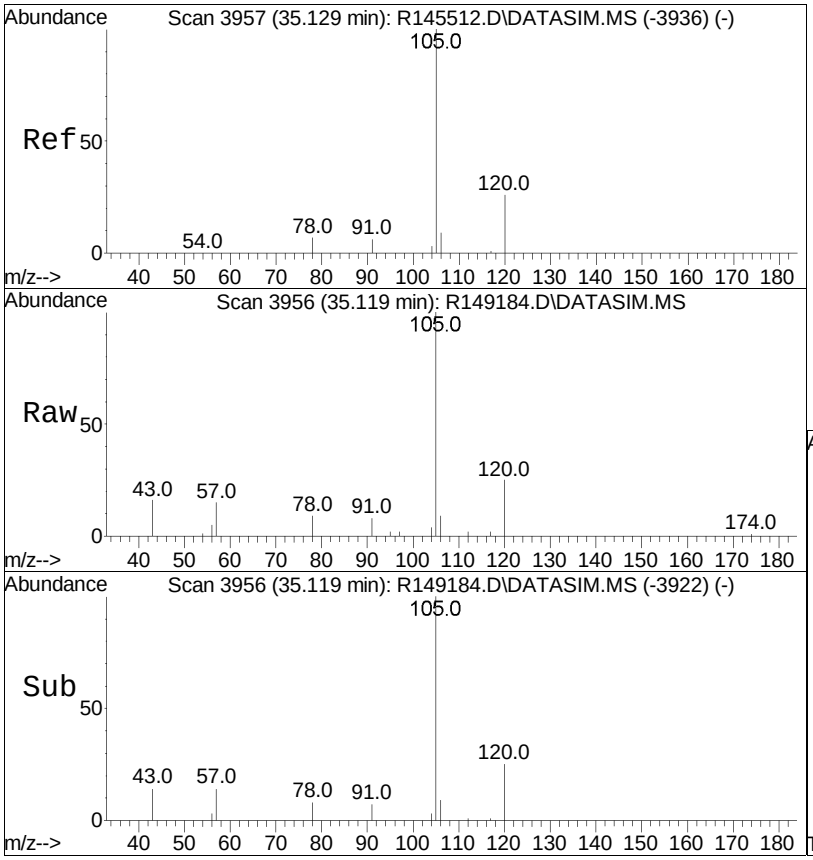


#61
o-Xylene
Concen: 4.36 ppbV
RT: 32.257 min Scan# 3573
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 91 Resp: 98100

Ion	Ratio	Lower	Upper
91	100		
106	43.8	23.5	63.5

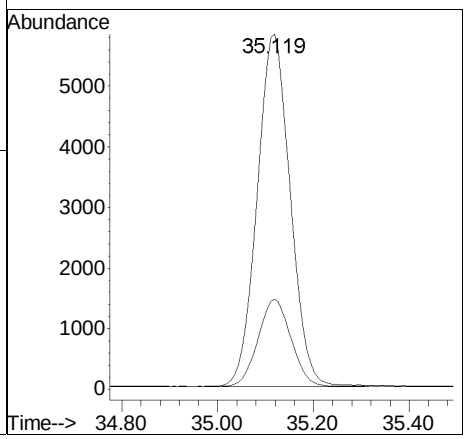


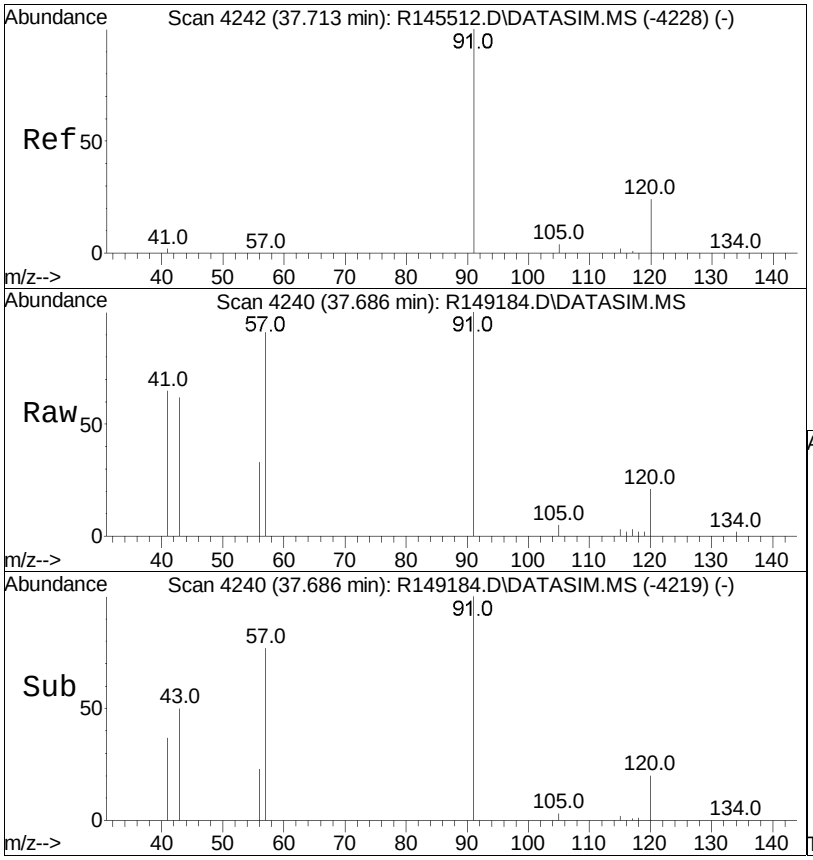


#63
Isopropylbenzene
Concen: 0.94 ppbV
RT: 35.119 min Scan# 3956
Delta R.T. 0.007 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:105 Resp: 27848

Ion	Ratio	Lower	Upper
105	100		
120	25.4	4.8	44.8

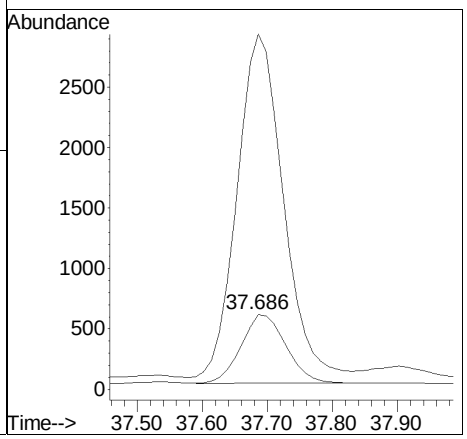


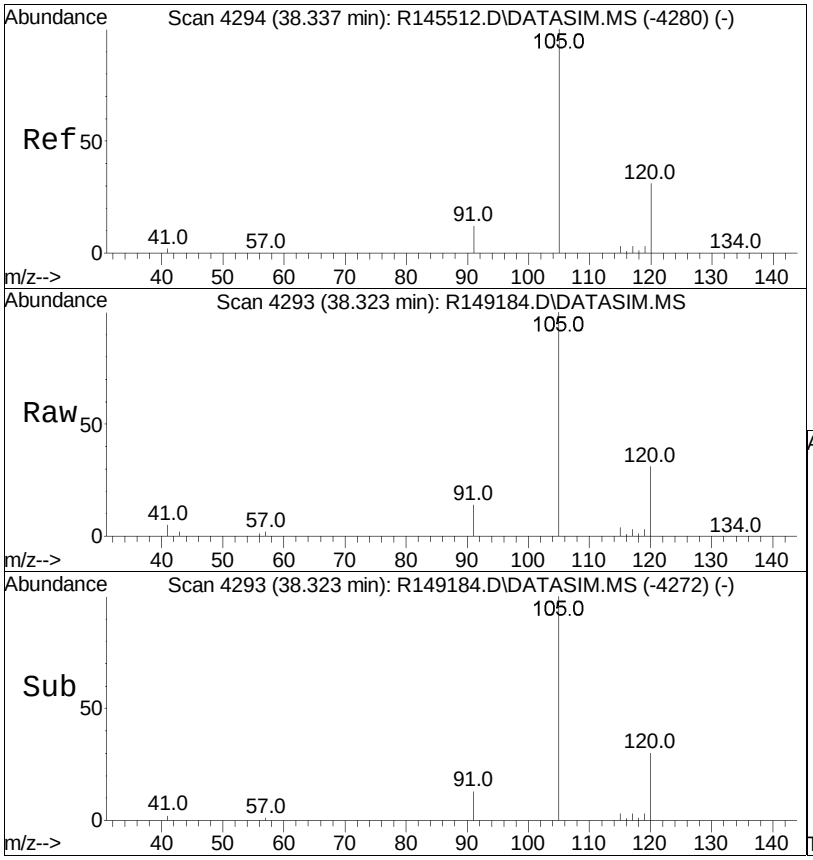


#64
n-Propylbenzene
Concen: 0.35 ppbV
RT: 37.686 min Scan# 4240
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:120 Resp: 2717

Ion	Ratio	Lower	Upper
120	100		
91	474.8	480.0	520.0#

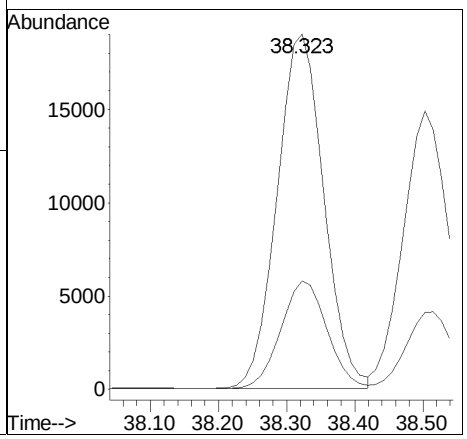


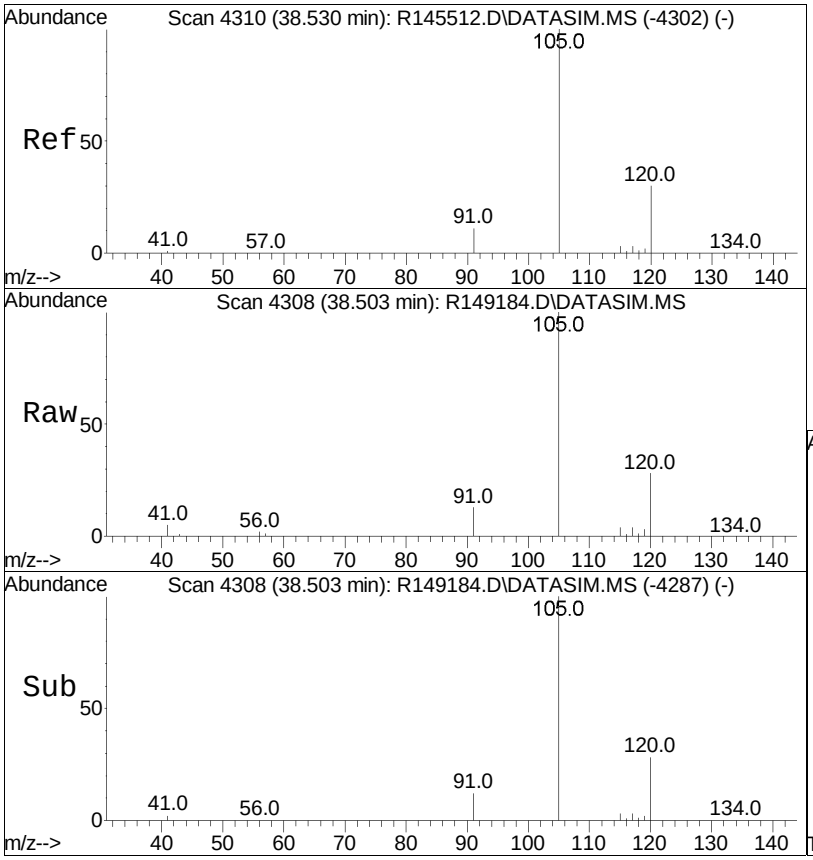


#65
1-Methyl-3-ethylbenzene
Concen: 3.24 ppbV
RT: 38.323 min Scan# 4293
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:105 Resp: 90389

Ion	Ratio	Lower	Upper
105	100		
120	30.5	10.4	50.4

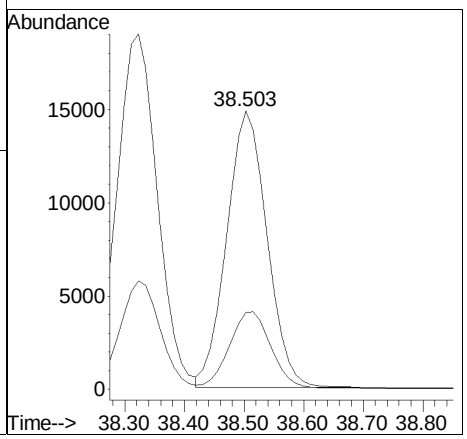


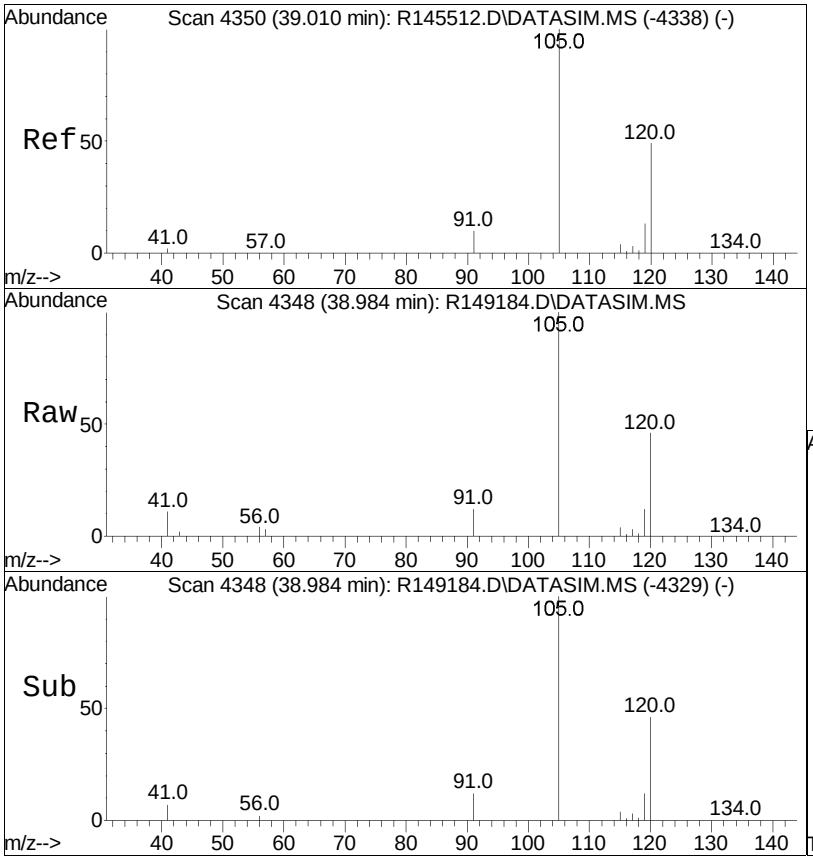


#66
1-Methyl-4-ethylbenzene
Concen: 2.31 ppbV
RT: 38.503 min Scan# 4308
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:105 Resp: 69546

Ion	Ratio	Lower	Upper
105	100		
120	27.7	7.8	47.8

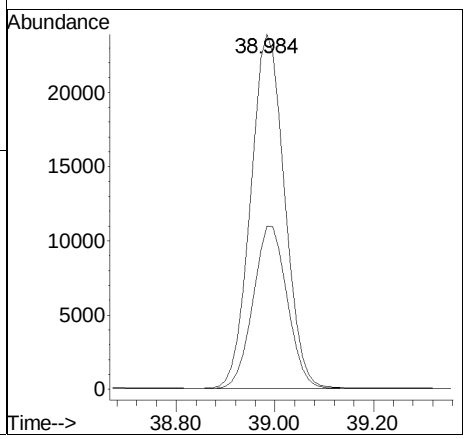


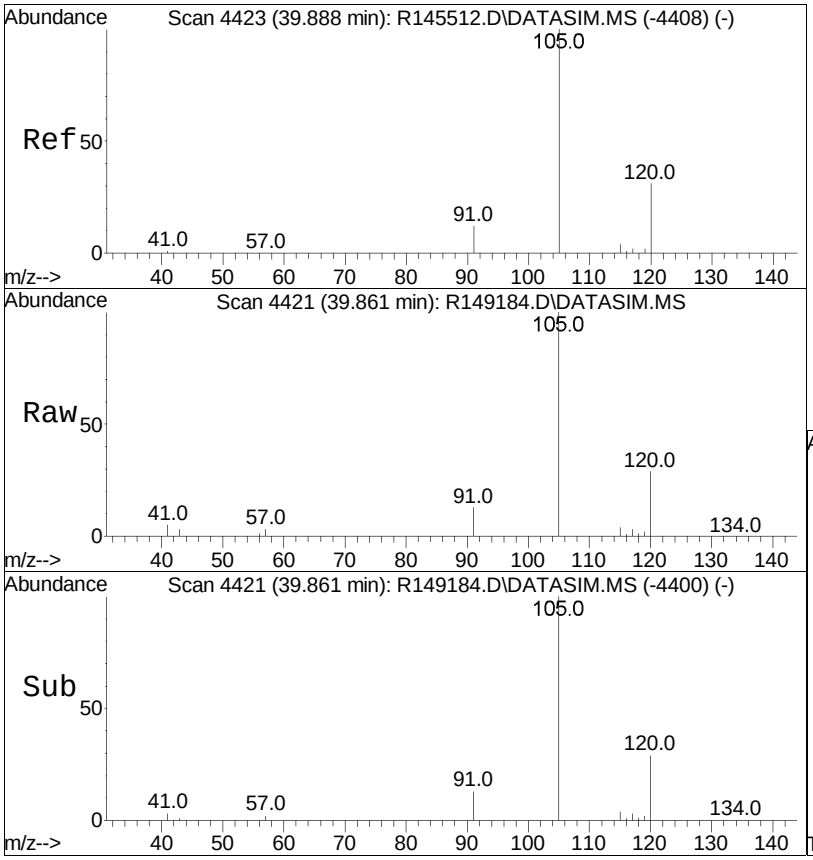


#67
1,3,5-Trimethylbenzene
Concen: 4.66 ppbV
RT: 38.984 min Scan# 4348
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:105 Resp: 113707

Ion	Ratio	Lower	Upper
105	100		
120	46.0	25.9	65.9

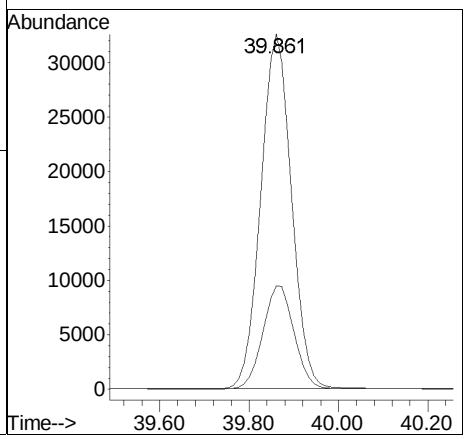


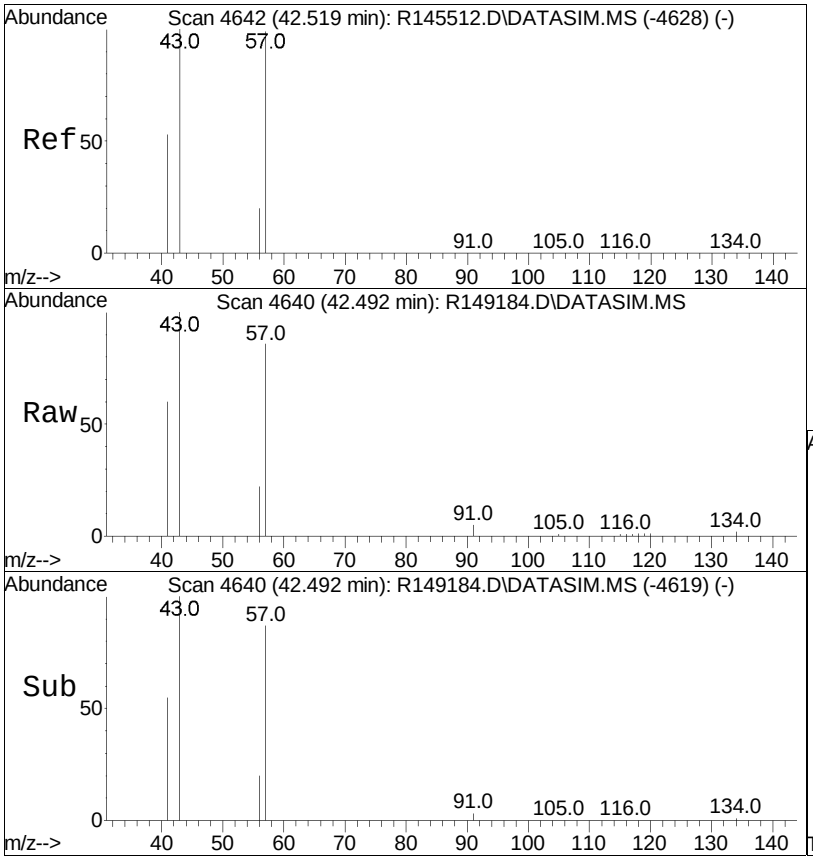


#69
1-Methyl-2-ethylbenzene
Concen: 5.44 ppbV
RT: 39.861 min Scan# 4421
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:105 Resp: 154963

Ion	Ratio	Lower	Upper
105	100		
120	29.2	9.6	49.6

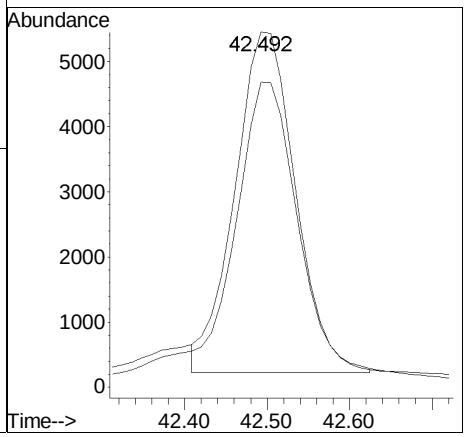


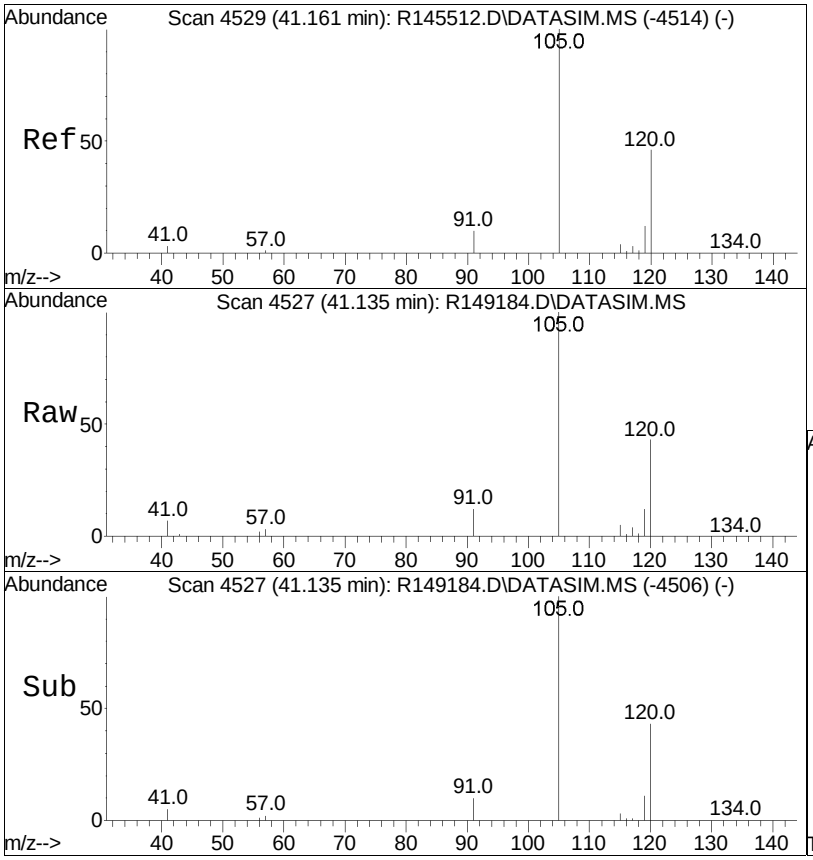


#70
Decane
Concen: 1.22 ppbV m
RT: 42.492 min Scan# 4640
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 43 Resp: 26726

Ion	Ratio	Lower	Upper
43	100		
57	85.9	66.4	106.4

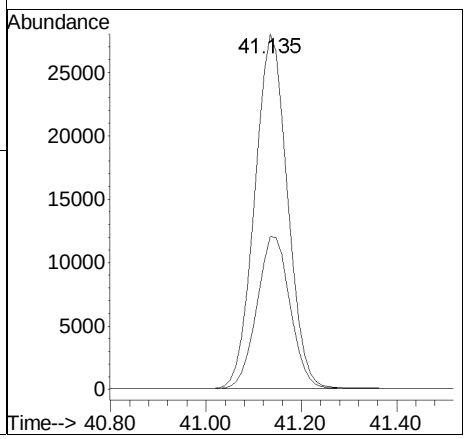


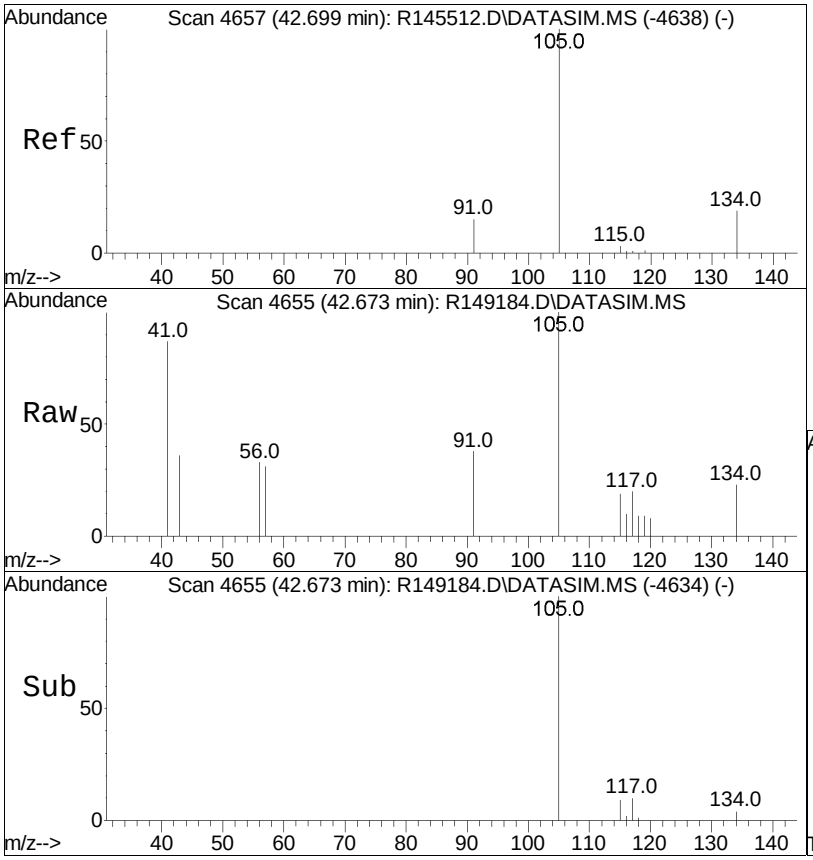


#71
1,2,4-Trimethylbenzene
Concen: 5.50 ppbV
RT: 41.135 min Scan# 4527
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:105 Resp: 133443

Ion	Ratio	Lower	Upper
105	100		
120	43.0	23.0	63.0

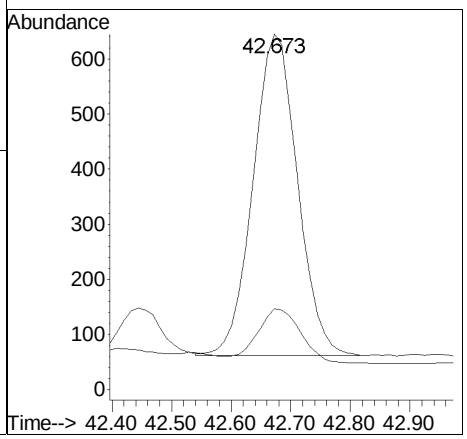


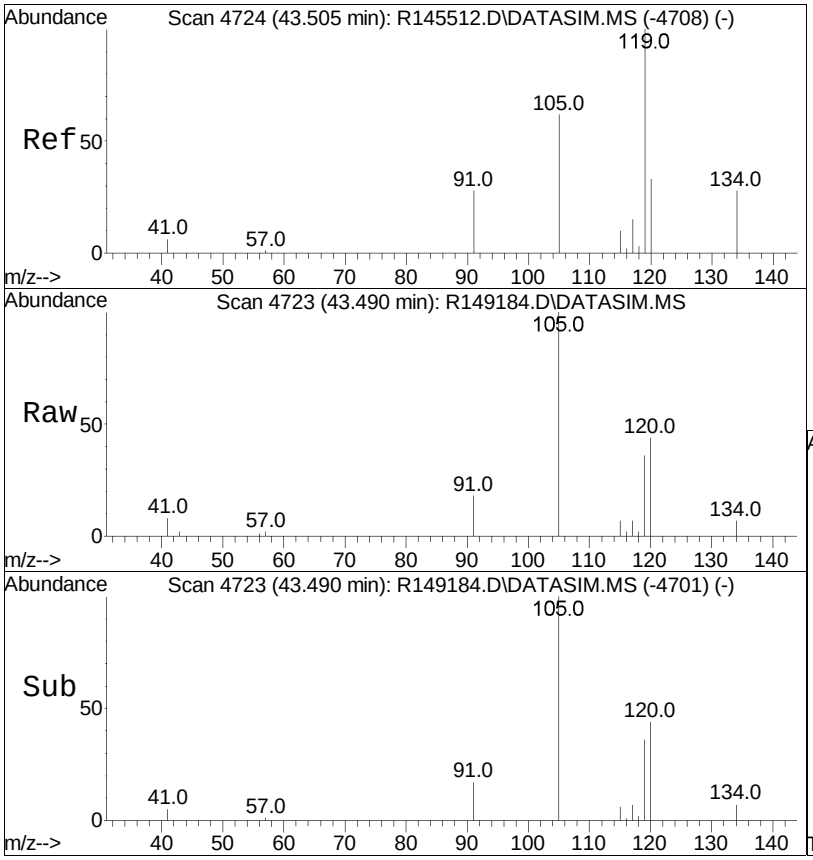


#72
sec-Butylbenzene
Concen: 0.08 ppbV
RT: 42.673 min Scan# 4655
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:105 Resp: 3013

Ion	Ratio	Lower	Upper
105	100		
134	22.8	0.0	37.0

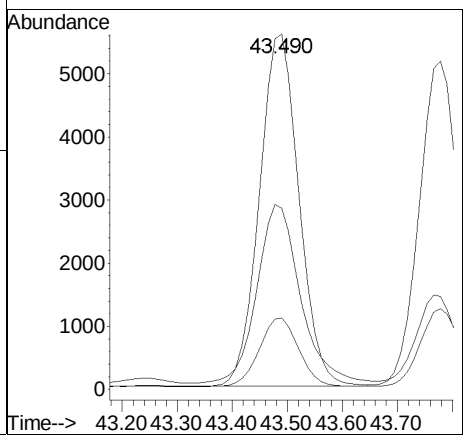


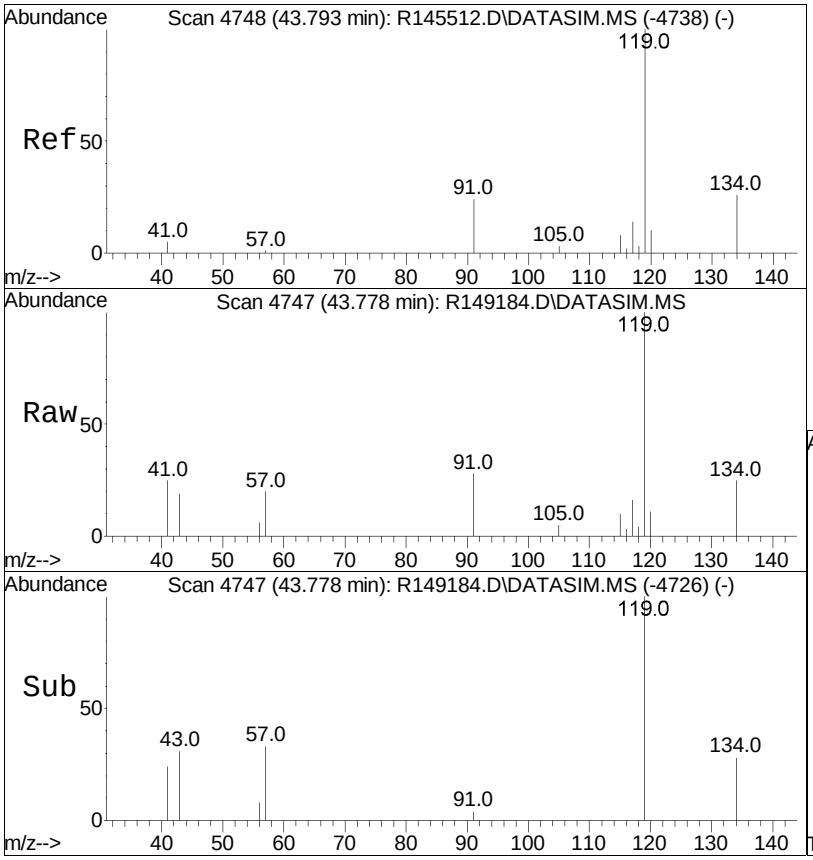


#73
1-Methyl-3-isopropylbenzene
Concen: 0.88 ppbV
RT: 43.490 min Scan# 4723
Delta R.T. 0.012 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:119 Resp: 27846

Ion	Ratio	Lower	Upper
119	100		
134	20.1	4.5	44.5
91	51.0	12.0	52.0

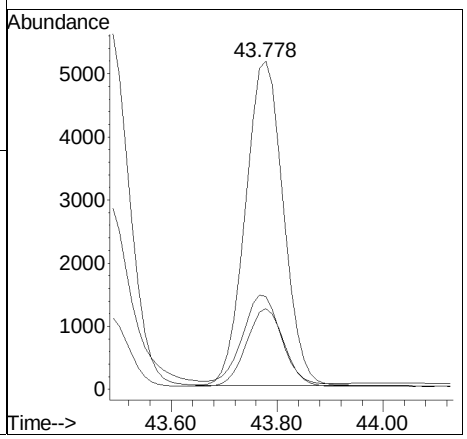


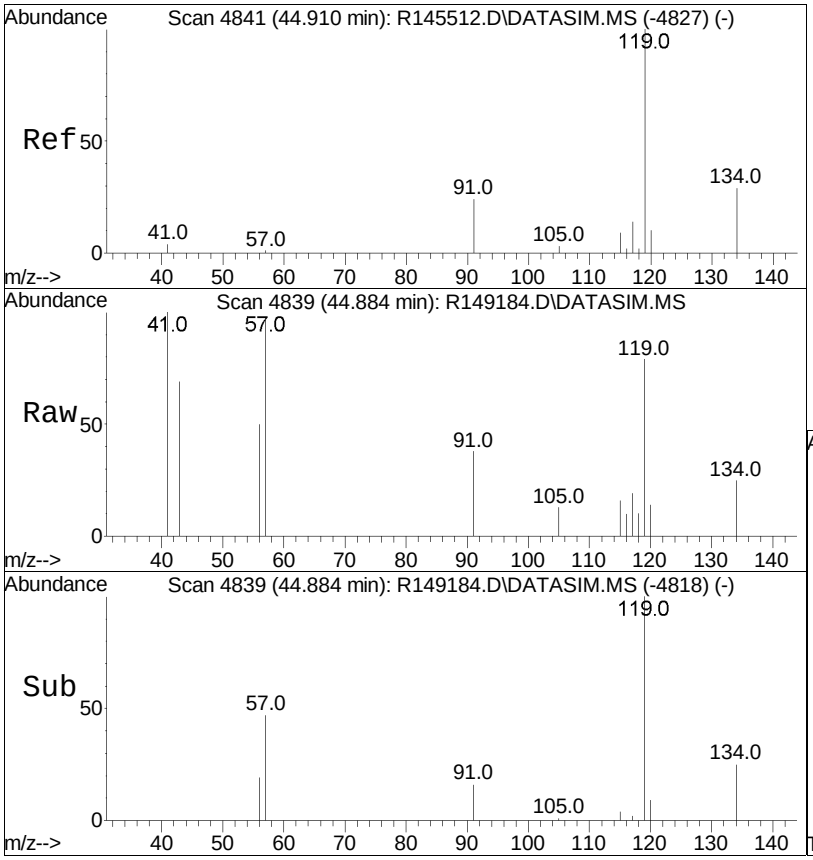


#74
1-Methyl-4-isopropylbenzene
Concen: 0.98 ppbV
RT: 43.778 min Scan# 4747
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:119 Resp: 25553

Ion	Ratio	Lower	Upper
119	100		
134	24.6	4.2	44.2
91	28.3	5.6	45.6

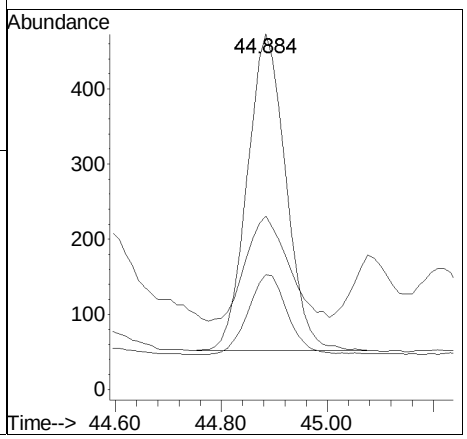


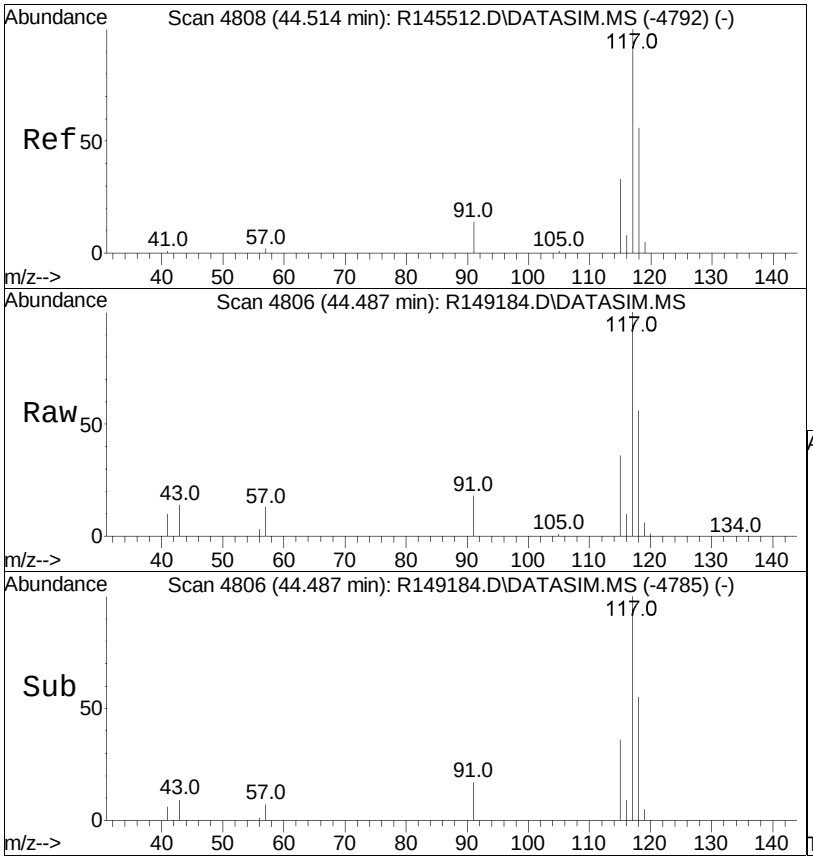


#75
1-Methyl-2-isopropylbenzene
Concen: 0.08 ppbV
RT: 44.884 min Scan# 4839
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:119 Resp: 2128

Ion	Ratio	Lower	Upper
119	100		
134	32.3	5.8	45.8
91	48.8	7.4	47.4#

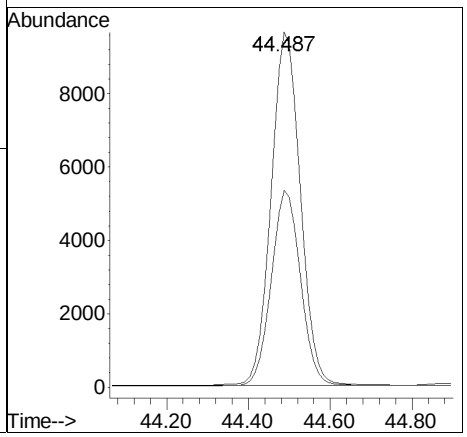


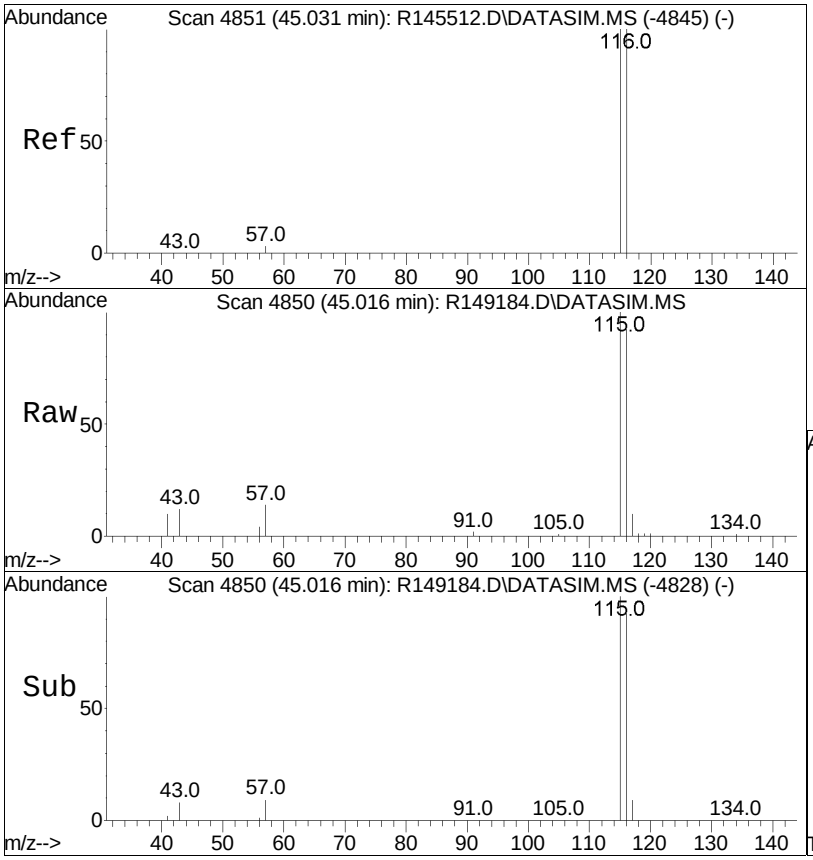


#76
Indan
Concen: 2.52 ppbV
RT: 44.487 min Scan# 4806
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:117 Resp: 47848

Ion	Ratio	Lower	Upper
117	100		
118	55.5	35.5	75.5

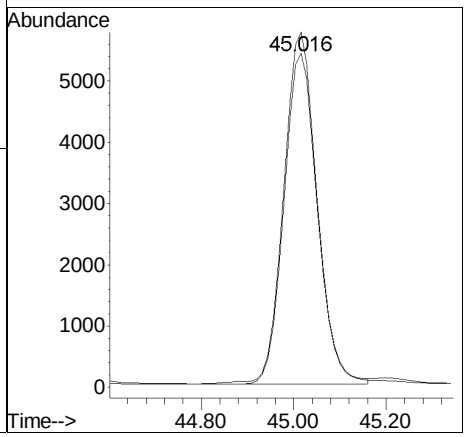


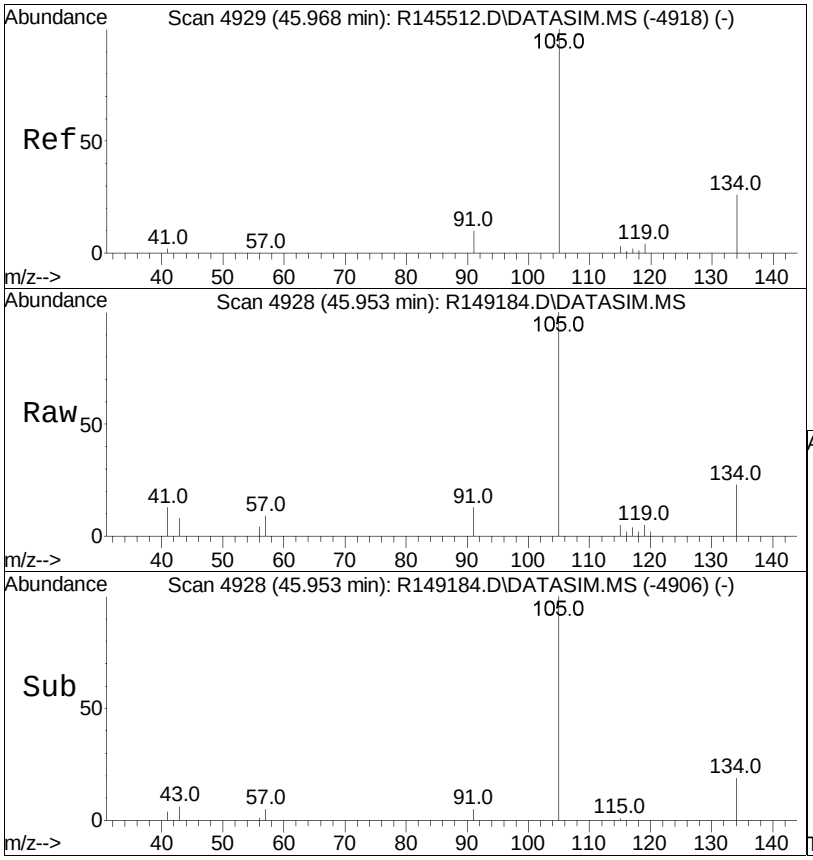


#77
Indene
Concen: 2.52 ppbV
RT: 45.016 min Scan# 4850
Delta R.T. 0.012 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:115 Resp: 28849

Ion	Ratio	Lower	Upper
115	100		
116	94.7	75.9	113.9

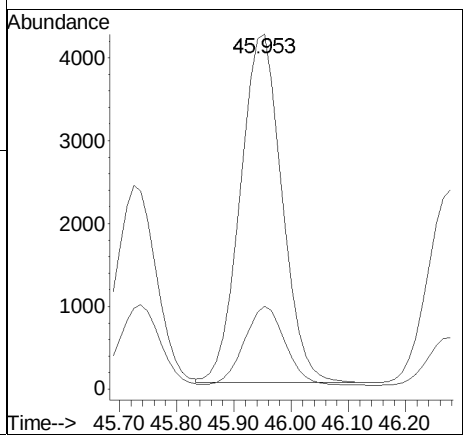


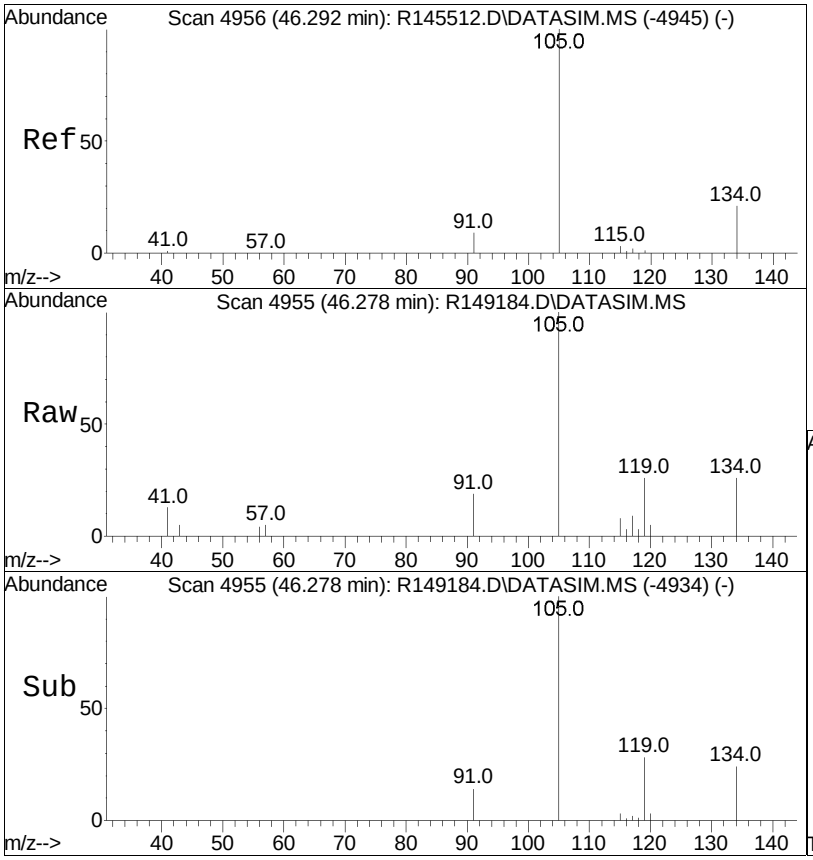


#78
1-Methyl-3-propylbenzene
Concen: 0.61 ppbV
RT: 45.953 min Scan# 4928
Delta R.T. 0.012 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:105 Resp: 21271

Ion	Ratio	Lower	Upper
105	100		
134	23.4	1.9	41.9

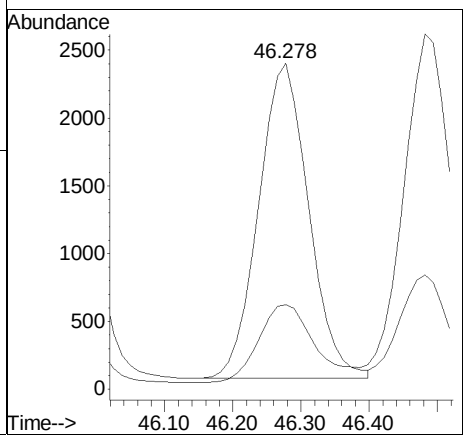


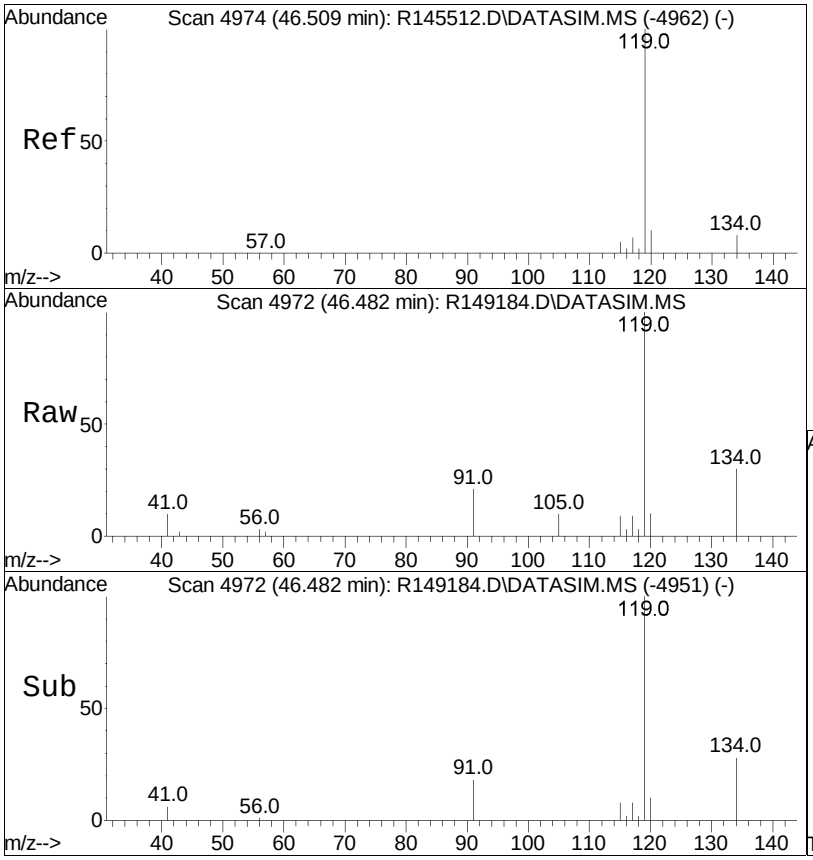


#79
1-Methyl-4-propylbenzene
Concen: 0.27 ppbV
RT: 46.278 min Scan# 4955
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:105 Resp: 11847

Ion	Ratio	Lower	Upper
105	100		
134	26.0	0.0	39.5

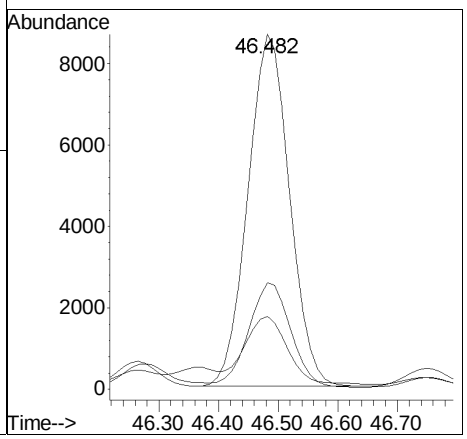


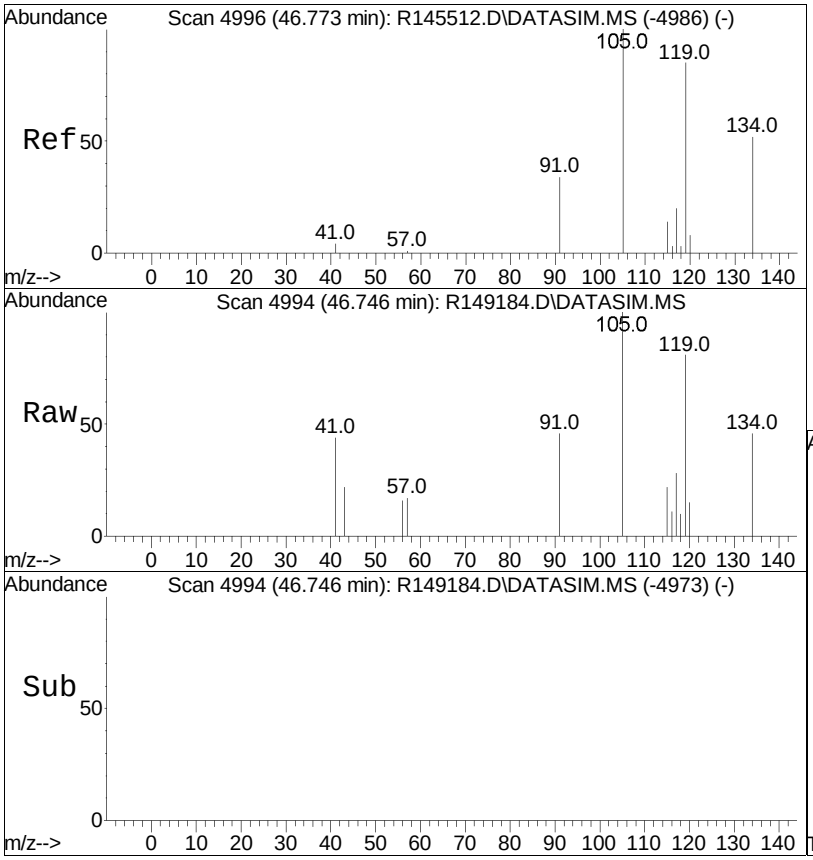


#81
1,2-Dimethyl-4-ethylbenzene
Concen: 1.57 ppbV
RT: 46.482 min Scan# 4972
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:119 Resp: 41902

Ion	Ratio	Lower	Upper
119	100		
134	30.0	9.8	49.8
91	20.6	0.0	39.8

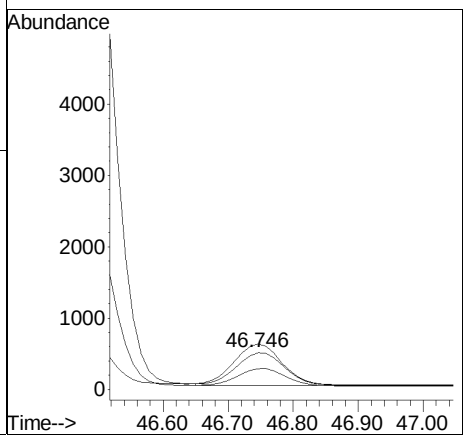


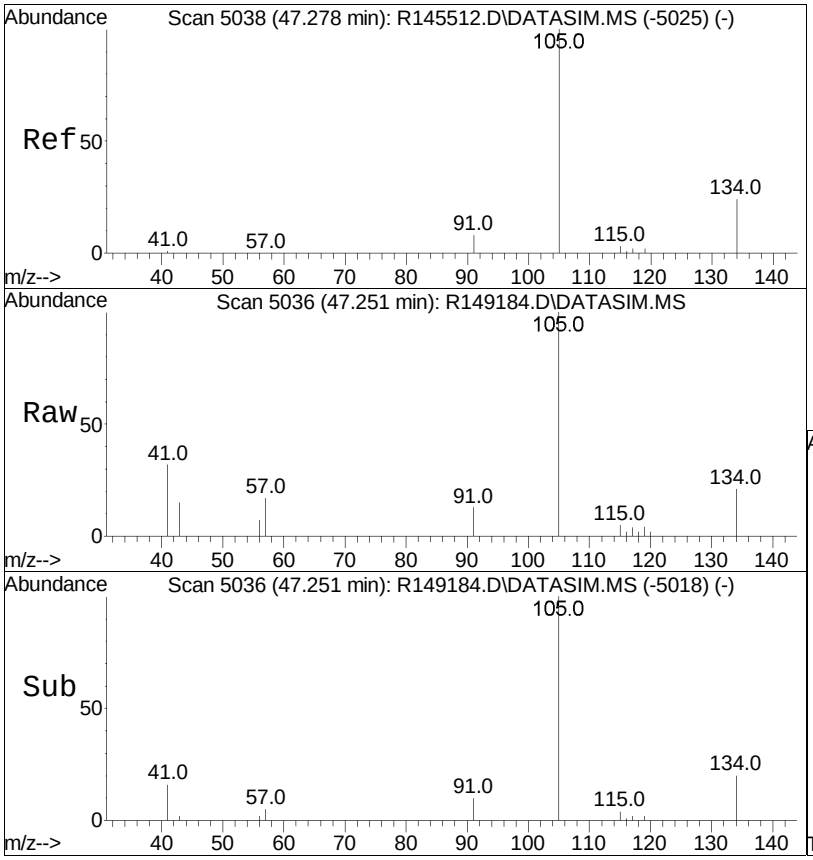


#82
1,2-Diethylbenzene
Concen: 0.17 ppbV
RT: 46.746 min Scan# 4994
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:119 Resp: 2390

Ion	Ratio	Lower	Upper
119	100		
105	123.6	103.0	143.0
134	56.4	33.7	73.7

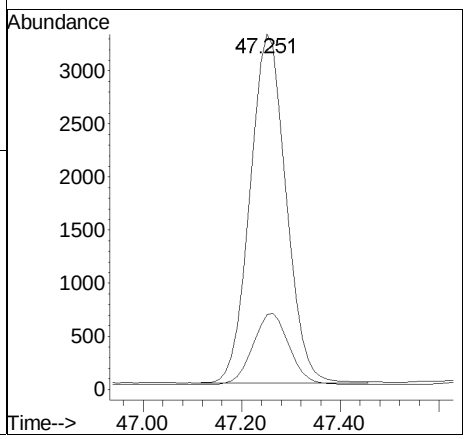


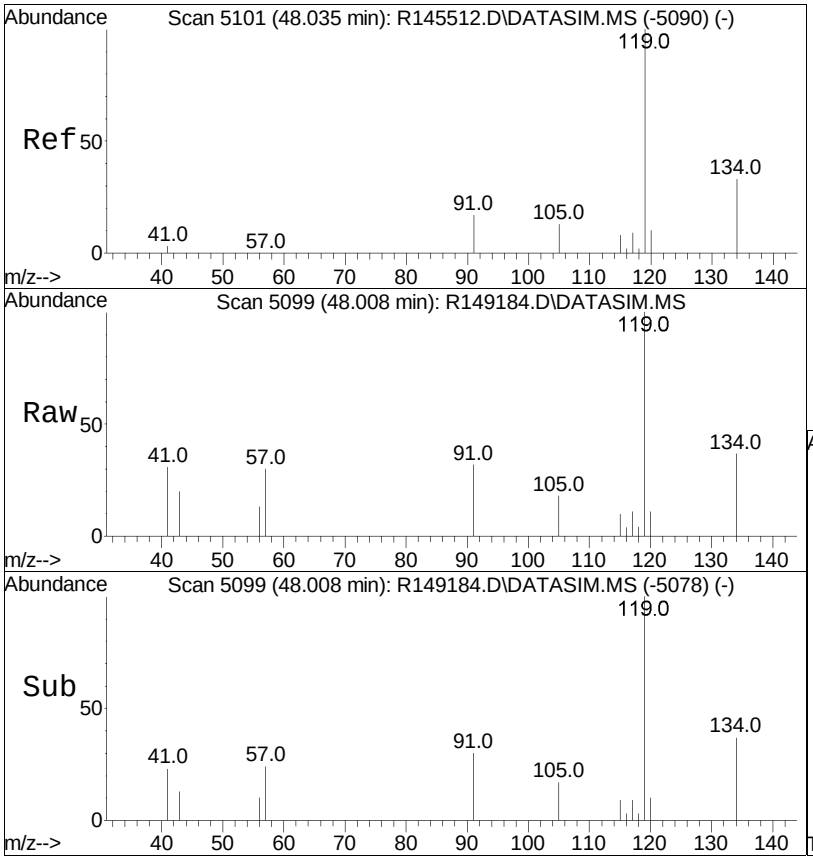


#83
1-Methyl-2-propylbenzene
Concen: 0.44 ppbV
RT: 47.251 min Scan# 5036
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:105 Resp: 16654

Ion	Ratio	Lower	Upper
105	100		
134	21.0	0.5	40.5

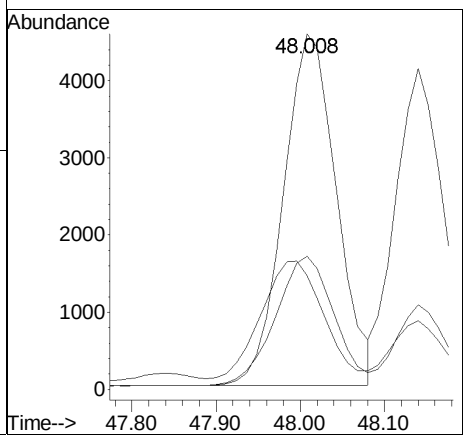


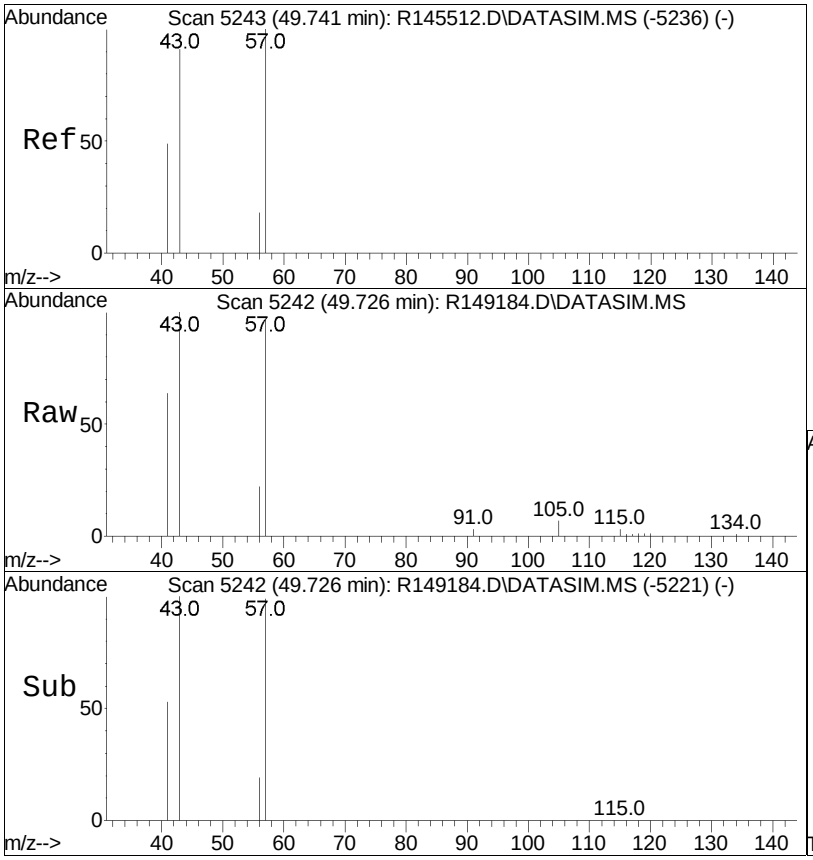


#84
1,4-Dimethyl-2-ethylbenzene
Concen: 0.71 ppbV
RT: 48.008 min Scan# 5099
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:119 Resp: 19911

Ion	Ratio	Lower	Upper
119	100		
134	37.5	10.4	50.4
91	32.0	0.1	40.1

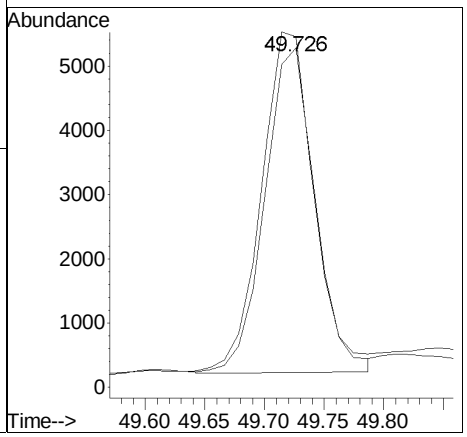


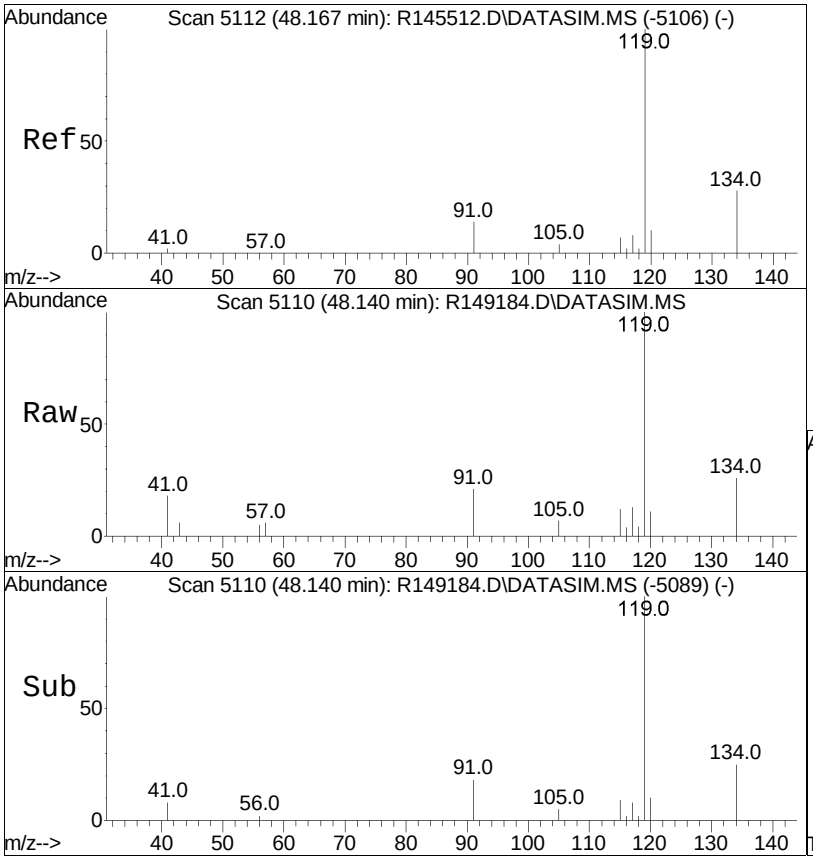


#85
Undecane
Concen: 0.67 ppbV
RT: 49.726 min Scan# 5242
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 57 Resp: 14870

Ion	Ratio	Lower	Upper
57	100		
43	103.3	79.1	119.1

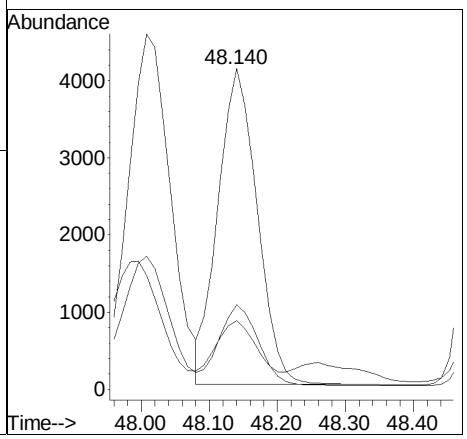


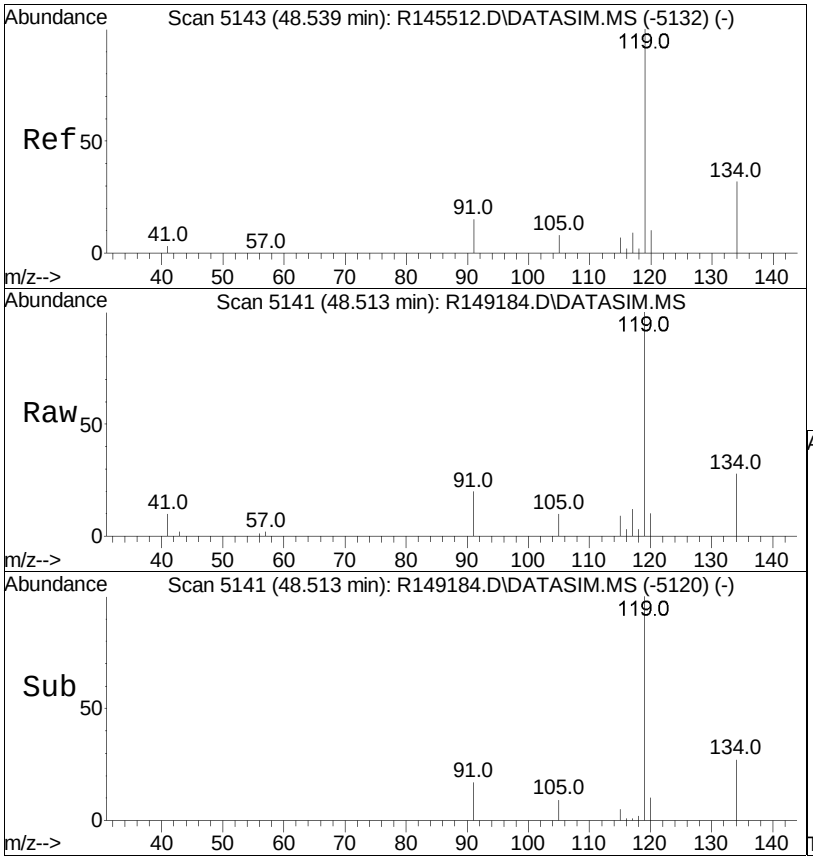


#86
1,3-Dimethyl-4-ethylbenzene
Concen: 0.50 ppbV
RT: 48.140 min Scan# 5110
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:119 Resp: 16362

Ion	Ratio	Lower	Upper
119	100		
134	26.4	6.2	46.2
91	21.4	0.0	36.4

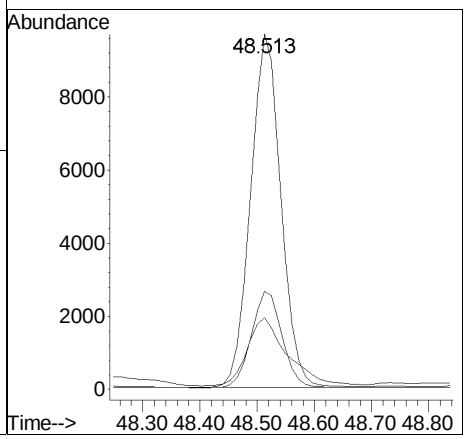


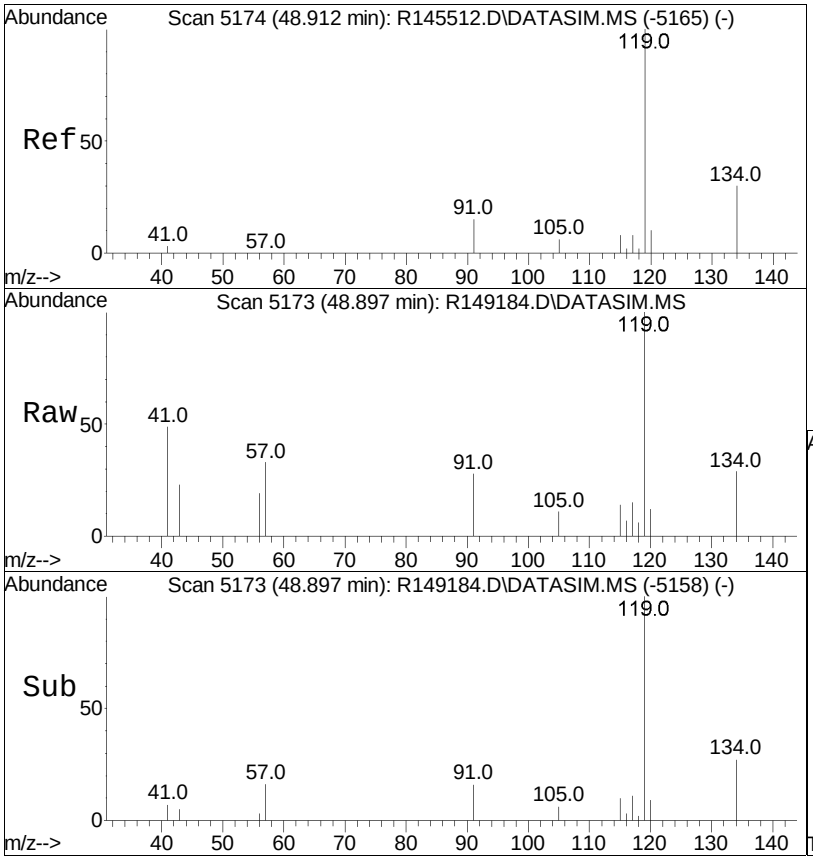


#87
1,3-Dimethyl-5-ethylbenzene
Concen: 1.17 ppbV
RT: 48.513 min Scan# 5141
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:119 Resp: 35507

Ion	Ratio	Lower	Upper
119	100		
134	27.6	7.8	47.8
91	20.2	0.0	38.0

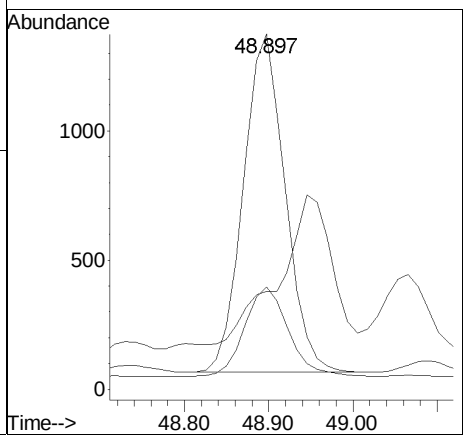


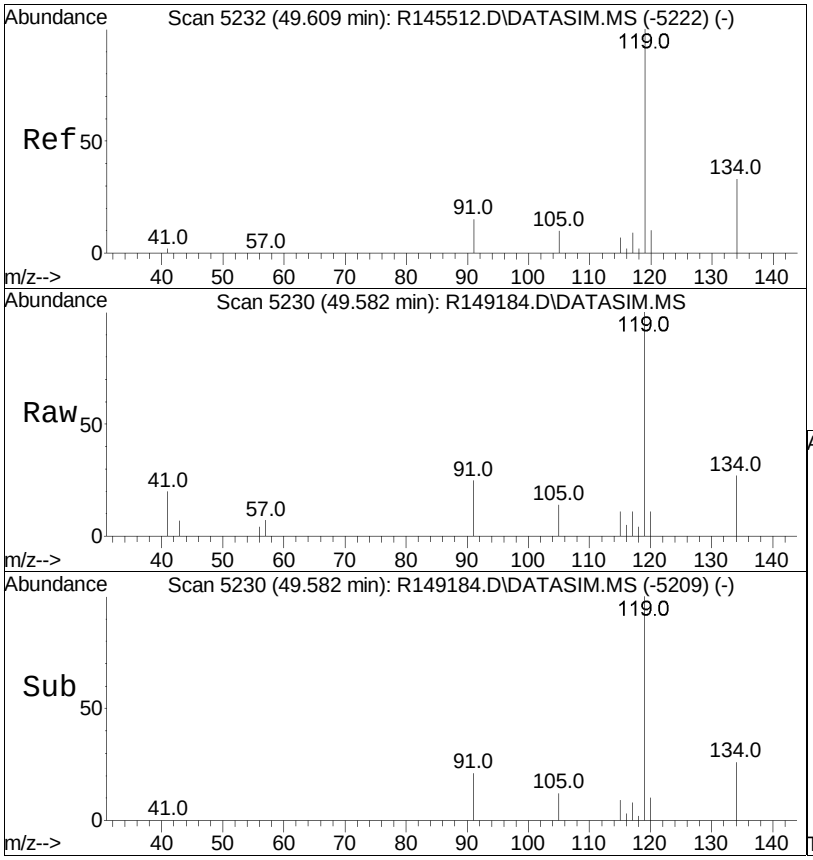


#88
1,3-Dimethyl-2-ethylbenzene
Concen: 0.14 ppbV
RT: 48.897 min Scan# 5173
Delta R.T. 0.012 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:119 Resp: 4502

Ion	Ratio	Lower	Upper
119	100		
134	28.9	5.9	45.9
91	27.6	0.0	38.2

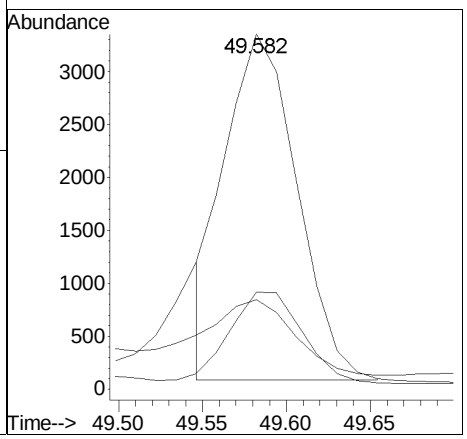


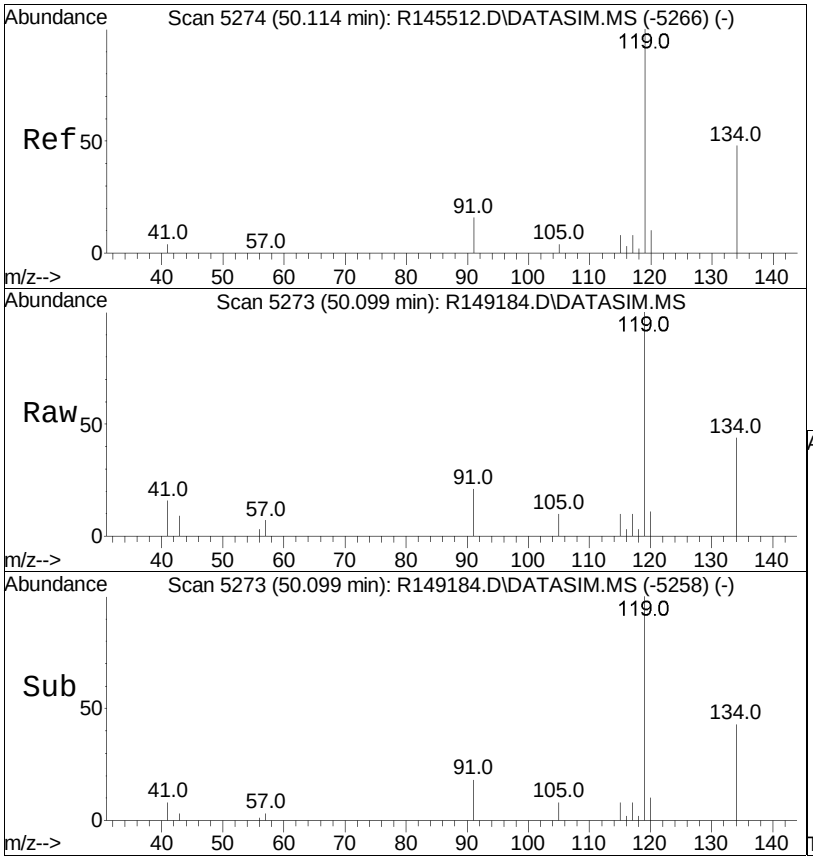


#89
1,2-Dimethyl-3-ethylbenzene
Concen: 0.33 ppbV m
RT: 49.582 min Scan# 5230
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:119 Resp: 9820

Ion	Ratio	Lower	Upper
119	100		
134	27.4	8.0	48.0
91	25.3	0.0	39.5

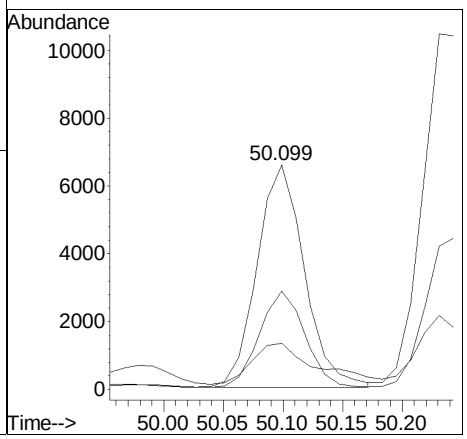


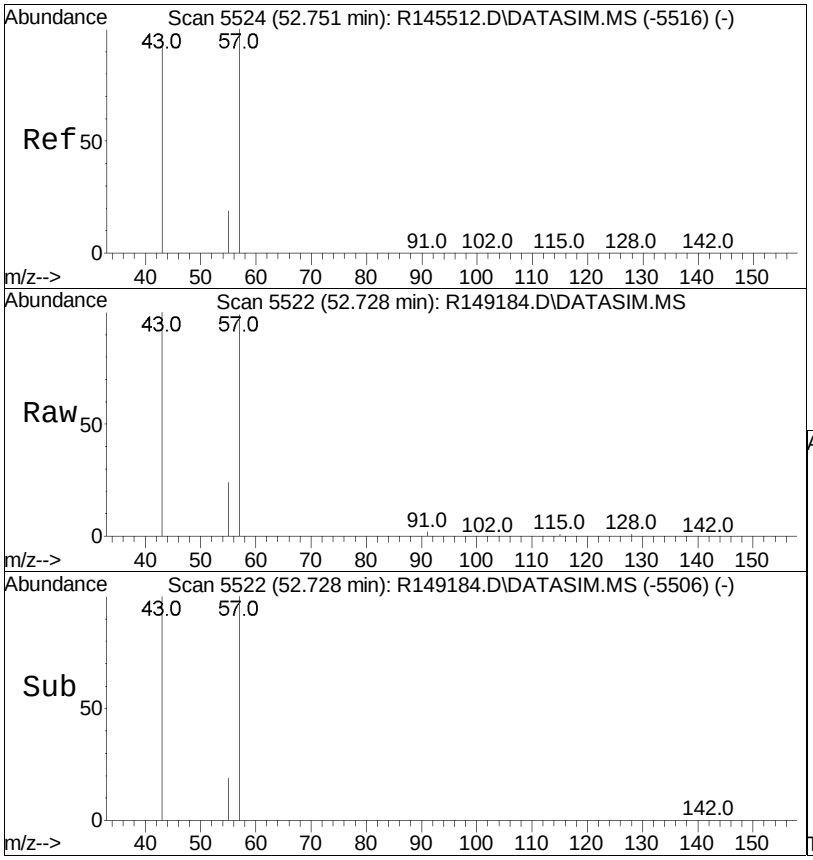


#90
1,2,4,5-Tetramethylbenzene
Concen: 0.18 ppbV
RT: 50.099 min Scan# 5273
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:119 Resp: 18041

Ion	Ratio	Lower	Upper
119	100		
134	43.8	24.1	64.1
91	20.6	0.0	36.7

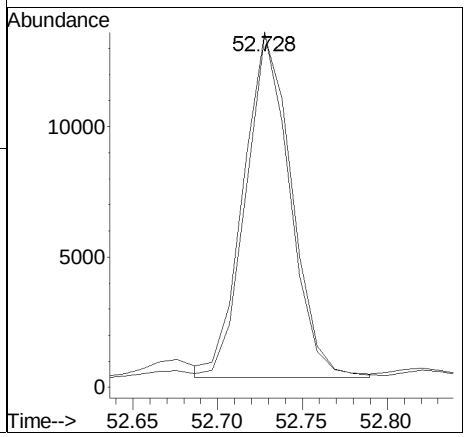


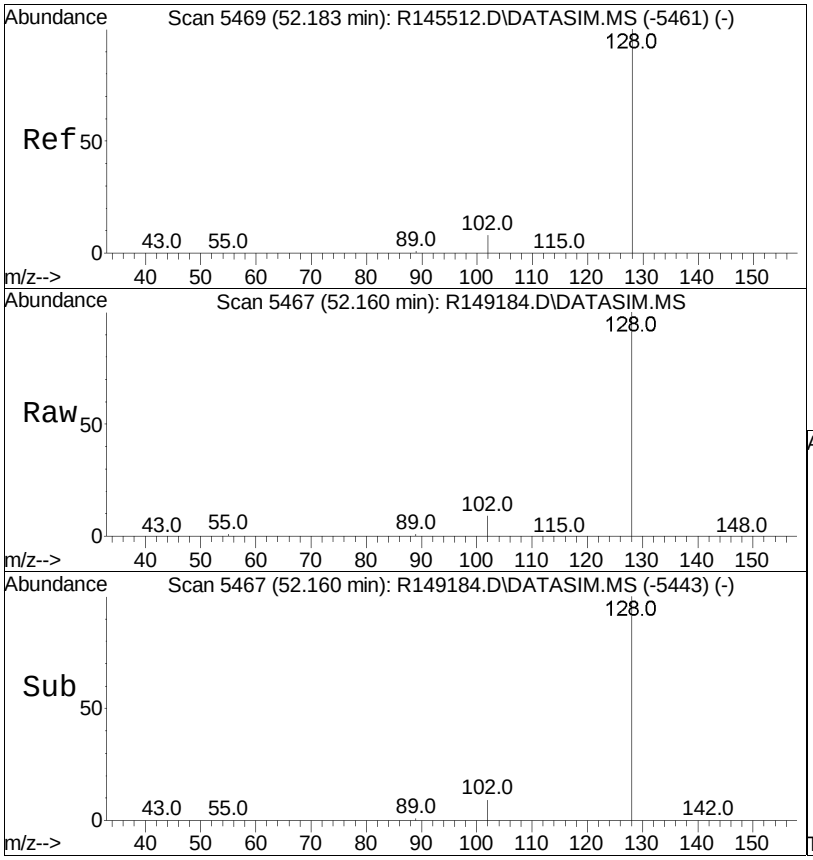


#92
Dodecane
Concen: 1.03 ppbV m
RT: 52.728 min Scan# 5522
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 43 Resp: 25121

Ion	Ratio	Lower	Upper
43	100		
57	99.1	80.2	120.2

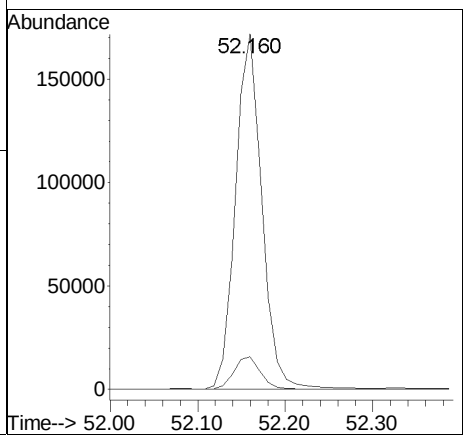


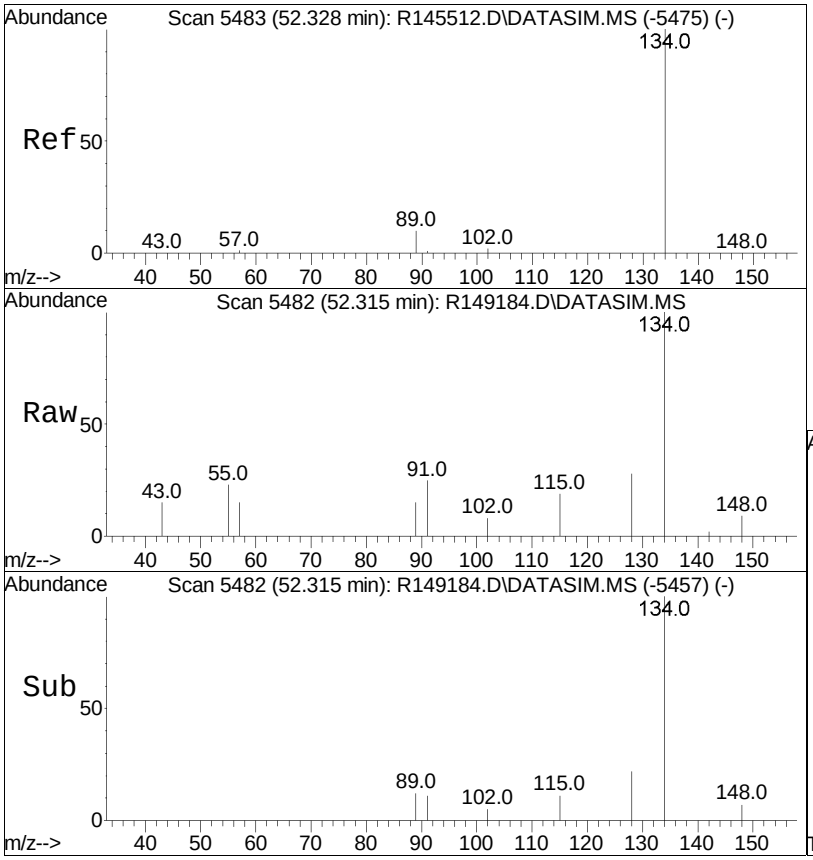


#93
Naphthalene
Concen: 10.89 ppbV
RT: 52.160 min Scan# 5467
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:128 Resp: 357122

Ion	Ratio	Lower	Upper
128	100		
102	9.2	0.0	28.9

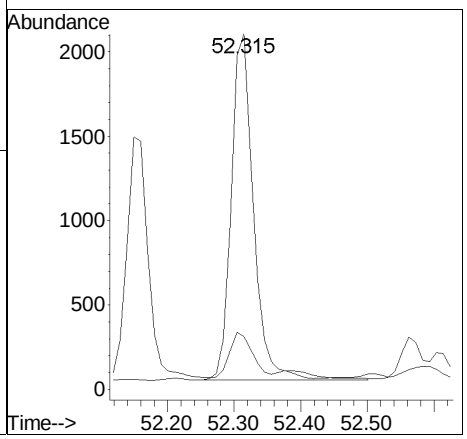


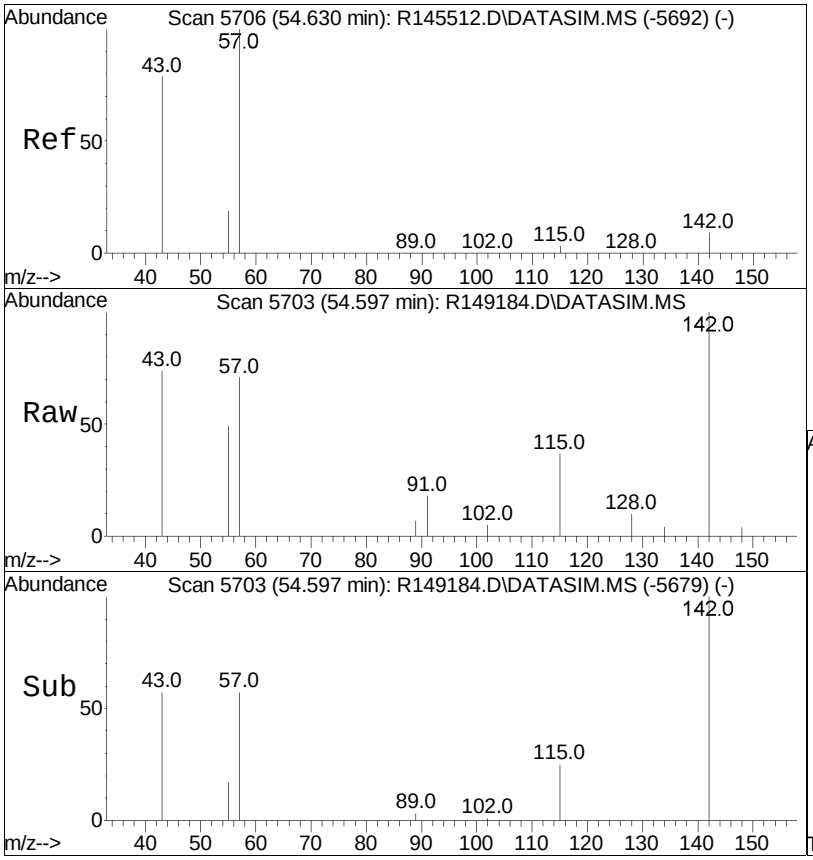


#94
Benzothiophene
Concen: 0.07 ppbV
RT: 52.315 min Scan# 5482
Delta R.T. 0.010 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:134 Resp: 4835

Ion	Ratio	Lower	Upper
134	100		
89	14.9	0.0	31.7

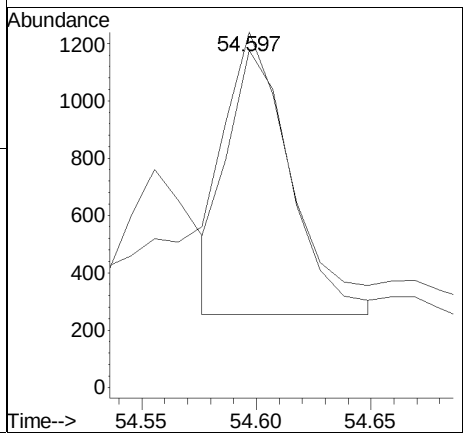


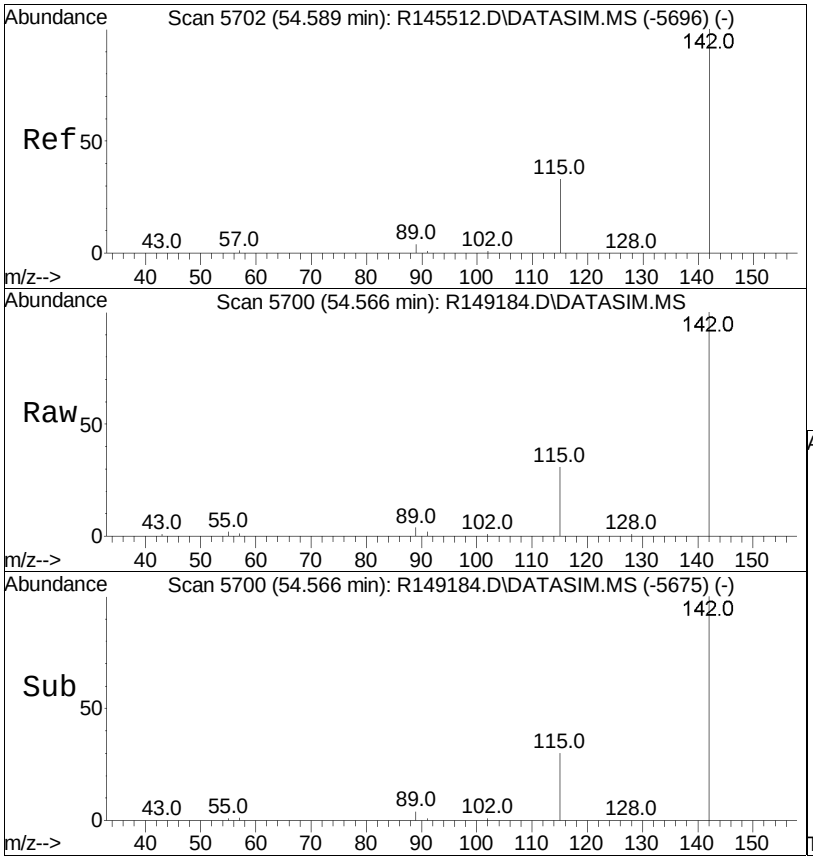


#96
Tridecane
Concen: 0.05 ppbV m
RT: 54.597 min Scan# 5703
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion: 57 Resp: 1796

Ion	Ratio	Lower	Upper
57	100		
43	105.4	72.3	112.3

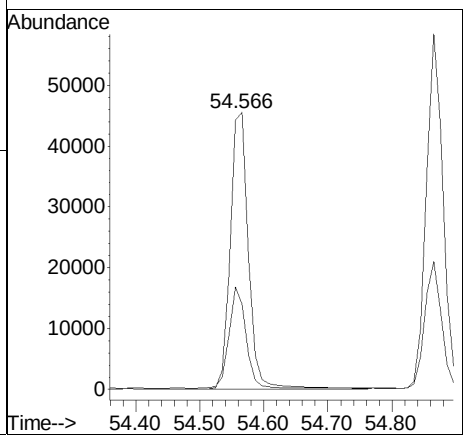


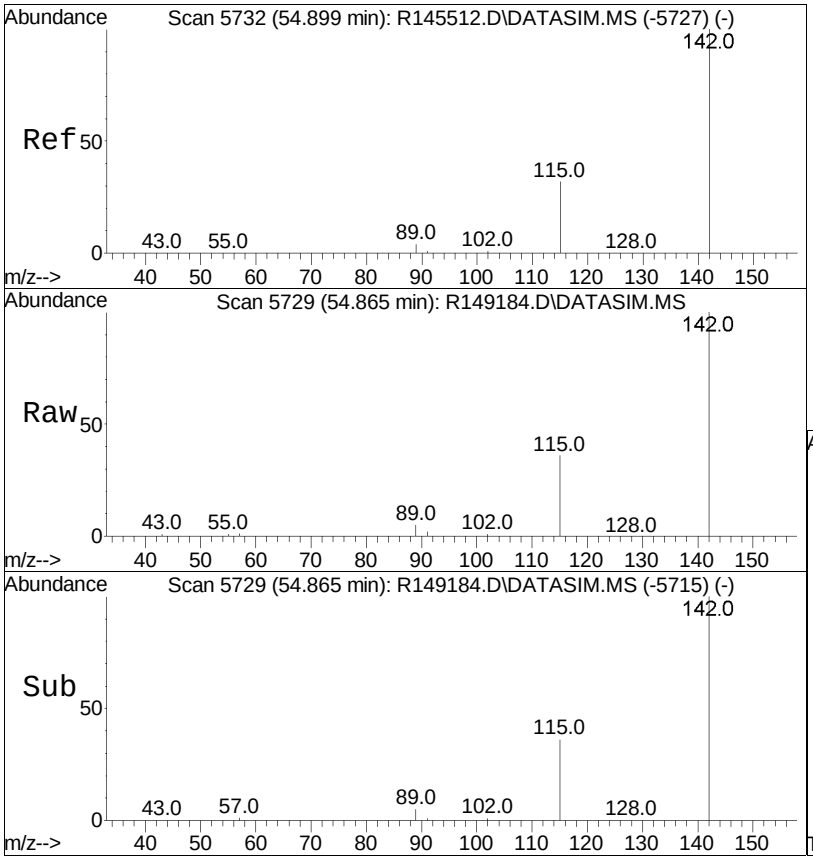


#97
2-Methylnaphthalene
Concen: 3.88 ppbV
RT: 54.566 min Scan# 5700
Delta R.T. 0.010 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:142 Resp: 90049

Ion	Ratio	Lower	Upper
142	100		
115	30.7	15.8	55.8

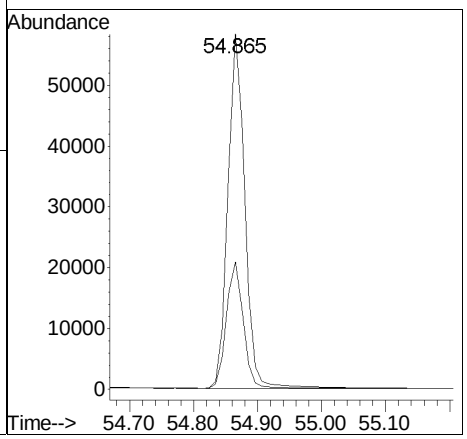




#98
1-Methylnaphthalene
Concen: 4.16 ppbV
RT: 54.865 min Scan# 5729
Delta R.T. -0.000 min
Lab File: R149184.D
Acq: 9 Nov 2016 3:24 am

Tgt Ion:142 Resp: 107775

Ion	Ratio	Lower	Upper
142	100		
115	36.0	14.1	54.1



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-10D	Date Collected	: 10/19/16 17:42
Client ID	: DUP101916	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 04:31
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149185	Instrument ID	: AIRPIANO1
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
106-99-0	1,3-Butadiene	0.300	0.250	0.100	0.664	0.553	0.221	
78-78-4	Isopentane	45.0	0.250	0.100	133	0.738	0.295	
109-67-1	1-Pentene	3.76	0.250	0.100	10.8	0.717	0.287	
563-46-2	2-Methyl-1-Butene	5.83	0.250	0.100	16.7	0.717	0.287	
109-66-0	Pentane	21.9	0.250	0.100	64.6	0.738	0.295	
646-04-8	trans-2-Pentene	14.1	0.250	0.100	40.4	0.717	0.287	
627-20-3	cis-2-Pentene	4.82	0.250	0.100	13.8	0.717	0.287	
75-65-0	Tertiary Butanol	28.0	0.250	0.100	84.9	0.758	0.303	
287-92-3	Cyclopentane	6.12	0.250	0.100	17.6	0.717	0.287	
79-29-8	2,3-Dimethylbutane	20.6	0.250	0.100	72.6	0.881	0.353	
107-83-5	2-Methylpentane	14.8	0.250	0.100	52.2	0.881	0.352	
1634-04-4	Methyl tert butyl ether	247	0.250	0.100	891	0.901	0.361	
96-14-0	3-Methylpentane	14.4	0.250	0.100	50.8	0.881	0.352	
592-41-6	1-Hexene	0.550	0.250	0.100	1.89	0.861	0.344	
110-54-3	n-Hexane	6.81	0.250	0.100	24.0	0.881	0.352	
108-20-3	Isopropyl Ether	ND	0.250	0.100	ND	1.04	0.418	U
637-92-3	Ethyl-Tert-Butyl-Ether	4.06	0.250	0.100	17.0	1.04	0.418	
590-35-2	2,2-Dimethylpentane	1.62	0.250	0.100	6.64	1.02	0.410	
96-37-7	Methylcyclopentane	15.6	0.250	0.100	53.7	0.861	0.344	
108-08-7	2,4-Dimethylpentane	11.1	0.250	0.100	45.5	1.02	0.410	
107-06-2	1,2-Dichloroethane	ND	0.250	0.100	ND	1.01	0.405	U
110-82-7	Cyclohexane	10.9	0.250	0.100	37.5	0.861	0.344	
591-76-4	2-Methylhexane	4.54	0.250	0.100	18.6	1.02	0.410	
71-43-2	Benzene	116	0.250	0.100	371	0.799	0.319	
565-59-3	2,3-Dimethylpentane	42.8	0.250	0.100	175	1.02	0.410	
110-02-1	Thiophene	1.73	0.250	0.100	5.95	0.860	0.344	
589-34-4	3-Methylhexane	8.81	0.250	0.100	36.1	1.02	0.410	
994-05-8	Tertiary-Amyl Methyl Ether	14.3	0.250	0.100	59.8	1.04	0.418	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-10D	Date Collected	: 10/19/16 17:42
Client ID	: DUP101916	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 04:31
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149185	Instrument ID	: AIRPIANO1
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
592-76-7	1-Heptene	ND	0.250	0.100	ND	1.00	0.402	U
540-84-1	Isooctane	84.2	0.250	0.100	393	1.17	0.467	
142-82-5	Heptane	3.46	0.250	0.100	14.2	1.02	0.410	
108-87-2	Methylcyclohexane	22.5	0.250	0.100	90.3	1.00	0.402	
592-13-2	2,5-Dimethylhexane	2.24	0.250	0.100	10.5	1.17	0.467	
589-43-5/564-02-3	2,4-Dimethylhexane/2,2,3-Trimethylpen	11.8	0.500	0.250	55.1	2.34	1.17	
565-75-3	2,3,4-Trimethylpentane	68.4	0.250	0.100	319	1.17	0.467	
560-21-4	2,3,3-Trimethylpentane	70.5	0.250	0.100	329	1.17	0.467	
584-94-1	2,3-Dimethylhexane	7.69	0.250	0.100	35.9	1.17	0.467	
619-99-8	3-Ethylhexane	3.95	0.250	0.100	18.4	1.17	0.467	
592-27-8	2-Methylheptane	3.57	0.250	0.100	16.7	1.17	0.467	
589-81-1	3-Methylheptane	4.52	0.250	0.100	21.1	1.17	0.467	
108-88-3	Toluene	72.2	0.250	0.100	272	0.942	0.377	
554-14-3	2-Methylthiophene	0.410	0.250	0.100	1.65	1.00	0.402	
616-44-4	3-Methylthiophene	0.440	0.250	0.100	1.77	1.00	0.402	
111-66-0	1-Octene	ND	0.250	0.100	ND	1.15	0.459	U
16747-50-5	1-Ethyl-1-Methylcyclopentane	0.730	0.250	0.100	3.35	1.15	0.459	
111-65-9	Octane	4.86	0.250	0.100	22.7	1.17	0.467	
106-93-4	1,2-Dibromoethane	ND	0.250	0.100	ND	1.92	0.769	U
100-41-4	Ethylbenzene	52.5	0.250	0.100	228	1.09	0.434	
872-55-9	2-Ethylthiophene	ND	0.250	0.100	ND	1.15	0.459	U
179601-23-1	p/m-Xylene	71.7	0.500	0.100	311	2.17	0.434	
124-11-8	1-Nonene	ND	0.250	0.100	ND	1.29	0.516	U
111-84-2	Nonane (C9)	13.1	0.250	0.100	68.7	1.31	0.525	
100-42-5	Styrene	6.62	0.250	0.100	28.2	1.06	0.426	
95-47-6	o-Xylene	41.2	0.500	0.100	179	2.17	0.434	
98-82-8	Isopropylbenzene	8.91	0.250	0.100	43.8	1.23	0.492	
103-65-1	n-Propylbenzene	3.34	0.250	0.100	16.4	1.23	0.492	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-10D	Date Collected	: 10/19/16 17:42
Client ID	: DUP101916	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 04:31
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149185	Instrument ID	: AIRPIANO1
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
620-14-4	1-Methyl-3-Ethylbenzene	30.7	0.500	0.250	151	2.46	1.23	
622-96-8	1-Methyl-4-Ethylbenzene	22.1	0.250	0.100	109	1.23	0.492	
108-67-8	1,3,5-Trimethylbenzene	44.2	0.250	0.100	217	1.23	0.492	
872-05-9	1-Decene	ND	0.500	0.250	ND	2.87	1.43	U
611-14-3	1-Methyl-2-Ethylbenzene	52.0	0.500	0.250	256	2.46	1.23	
124-18-5	Decane (C10)	11.5	0.500	0.250	66.9	2.91	1.46	
95-63-6	1,2,4-Trimethylbenzene	52.6	0.500	0.250	259	2.46	1.23	
135-98-8	sec-Butylbenzene	0.790	0.500	0.250	4.34	2.74	1.37	
535-77-3	1-Methyl-3-Isopropylbenzene	8.32	0.500	0.250	45.7	2.74	1.37	
99-87-6	1-Methyl-4-Isopropylbenzene	9.32	0.500	0.250	51.2	2.74	1.37	
527-84-4	1-Methyl-2-Isopropylbenzene	0.720	0.500	0.250	3.95	2.74	1.37	
496-11-7	Indane	24.1	0.500	0.250	117	2.42	1.21	
95-13-6	Indene	24.1	0.500	0.250	115	2.38	1.19	
1074-43-7	1-Methyl-3-N-Propylbenzene	5.83	0.500	0.250	32.0	2.74	1.37	
1074-55-1	1-Methyl-4-N-Propylbenzene	2.60	0.500	0.250	14.3	2.74	1.37	
104-51-8	n-Butylbenzene	ND	0.500	0.250	ND	2.74	1.37	U
934-80-5	1,2-Dimethyl-4-Ethylbenzene	15.2	0.500	0.250	83.4	2.74	1.37	
135-01-3	1,2-Diethylbenzene	1.63	0.500	0.250	8.95	2.74	1.37	
1074-17-5	1-Methyl-2-N-Propylbenzene	4.36	0.500	0.250	23.9	2.74	1.37	
1758-88-9	1,4-Dimethyl-2-Ethylbenzene	7.12	0.500	0.250	39.1	2.74	1.37	
1120-21-4	Undecane	6.60	0.500	0.250	42.2	3.20	1.60	
874-41-9	1,3-Dimethyl-4-Ethylbenzene	4.97	0.500	0.250	27.3	2.74	1.37	
934-74-7	1,3-Dimethyl-5-Ethylbenzene	11.6	0.500	0.250	63.7	2.74	1.37	
2870-04-4	1,3-Dimethyl-2-Ethylbenzene	1.34	0.500	0.250	7.35	2.74	1.37	
933-98-2	1,2-Dimethyl-3-Ethylbenzene	3.30	0.500	0.250	18.1	2.74	1.37	
95-93-2	1,2,4,5-Tetramethylbenzene	1.82	0.500	0.250	9.99	2.74	1.37	
538-68-1	N-Pentylbenzene	ND	0.500	0.250	ND	3.03	1.52	U
112-40-3	Dodecane (C12)	8.13	1.00	0.500	56.6	6.97	3.48	

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: L1634001-10D	Date Collected	: 10/19/16 17:42
Client ID	: DUP101916	Date Received	: 10/21/16
Sample Location	: HAVERHILL, MA	Date Analyzed	: 11/09/16 04:31
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 10
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149185	Instrument ID	: AIRPIANO1
Sample Amount	: 25.0 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
91-20-3	Naphthalene	116	0.500	0.250	608	2.62	1.31	
95-15-8	Benzothiophene	0.720	1.00	0.500	3.95	5.49	2.74	J
12108-13-3	MMT	ND	1.00	0.500	ND	8.92	4.46	U
629-50-5	Tridecane	1.51	10.0	0.500	11.4	75.4	3.77	J
91-57-6	2-Methylnaphthalene	52.2	5.00	0.500	304	29.1	2.91	
90-12-0	1-Methylnaphthalene	52.4	5.00	0.500	305	29.1	2.91	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149185.D
Acq On : 9 Nov 2016 4:31 am
Operator : AIRPIANO1:RY
Sample : L1634001-10D,3,25,250
Misc : WG948457,ICAL13049
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Nov 10 12:52:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.202	49	125373	10.000	ppbV	0.00
Standard Area = 123393			Recovery = 101.60%			
27) 1,4-difluorbenzene	14.201	114	288993	10.000	ppbV	0.00
Standard Area = 263318			Recovery = 109.75%			
54) chlorobenzene-D5	27.633	117	210775	10.000	ppbV	0.00
Standard Area = 190793			Recovery = 110.47%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.619	65	84636	10.803	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 108.03%			
46) Toluene-D8	20.949	98	234921	10.655	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 106.55%			
62) 4-Bromofluorobenzene (...	34.334	95	124552	10.773	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 107.73%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.710	54	202	0.030	ppbV #	5
4) Isopentane	5.878	41	54645	4.501	ppbV	99
5) 1-Pentene	6.194	42	5169	0.376	ppbV	99
6) 2-Methyl-1-butene	6.352	55	9473	0.583	ppbV	90
7) Pentane	6.468	43	45585	2.194	ppbV	100
9) 2-Pentene (trans)	6.668	55	22255	1.414	ppbV	100
10) 2-Pentene (cis)	6.889	55	6964	0.482	ppbV	84
11) Tertiary butanol	6.878	59	66115	2.802	ppbV	84
12) Cyclopentane	8.643	70	2870M4	0.612	ppbV	
13) 2,3-Dimethylbutane	8.665	71	8904	2.057	ppbV #	77
14) 2-Methylpentane	8.816	43	34730	1.475	ppbV	98
15) MTBE	8.660	73	593913	24.732	ppbV #	62
16) 3-Methylpentane	9.465	57	22311	1.438	ppbV	99
17) 1-Hexene	9.714	56	490M6	0.055	ppbV	
18) Hexane	10.286	57	9035	0.681	ppbV #	55
19) Diisopropyl ether	0.000		0	N.D.	d	
20) Ethyl tertiary butyl e...	11.336	59	10524	0.406	ppbV	99
21) 2,2-Dimethylpentane	11.623	57	3429	0.162	ppbV	94
23) Methylcyclopentane	11.827	56	25618	1.555	ppbV	99
24) 2,4-Dimethylpentane	11.969	43	23674	1.110	ppbV	92
25) 1,2-Dichloroethane	0.000		0	N.D.	d	
26) Cyclohexane	13.910	56	14004	1.089	ppbV	99
28) 2-Methylhexane	14.391	43	11148	0.454	ppbV	97

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149185.D
Acq On : 9 Nov 2016 4:31 am
Operator : AIRPIANO1:RY
Sample : L1634001-10D,3,25,250
Misc : WG948457,ICAL13049
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Nov 10 12:52:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
29) Benzene	13.316	78	320258	11.619	ppbV		99
30) 2,3-Dimethylpentane	14.548	56	73944	4.276	ppbV		99
31) Thiophene	13.596	84	2050	0.173	ppbV		97
32) 3-Methylhexane	15.007	43	16874	0.881	ppbV		99
33) TAME	14.806	73	34250	1.432	ppbV		92
34) 1-Heptene	0.000		0	N.D.	d		
35) Isooctane	15.993	57	364458	8.417	ppbV		99
36) Heptane	16.777	43	6464	0.346	ppbV		98
37) Methylcyclohexane	18.479	83	31760M4	2.249	ppbV		
38) 2,5-Dimethylhexane	19.319	57	4869	0.224	ppbV		98
39) 2,4-Dimethyhexane / 2,...	19.499	57	31498	1.178	ppbV		95
40) 2,3,4-Trimethylpentane	20.840	43	205352	6.835	ppbV		99
41) 2,3,3-Trimethylpentane	21.234	43	198299	7.051	ppbV		99
42) 2,3-Dimethylhexane	21.706	43	20758	0.769	ppbV		99
43) 3-Ethylhexane	22.926	43	13009	0.395	ppbV		94
44) 2-Methylheptane	22.169	57	7296	0.357	ppbV		97
45) 3-Methylheptane	22.818	43	10118	0.452	ppbV		99
47) Toluene	21.263	91	232240	7.225	ppbV		100
48) 2-Methylthiophene	21.460	97	865	0.041	ppbV		82
49) 3-Methylthiophene	22.070	97	913M4	0.044	ppbV		
50) 1-Octene	0.000		0	N.D.	d		
51) 1-ethyl-1-methylcyclop...	24.560	83	1320M6	0.073	ppbV		
52) Octane	25.081	43	12421	0.486	ppbV		98
53) 1,2-Dibromoethane	0.000		0	N.D.	d		
55) Ethylbenzene	29.478	91	156045	5.247	ppbV		99
56) 2-Ethylthiophene	0.000		0	N.D.	d		
57) p/m-Xylene	30.233	91	164174M4	7.170	ppbV		
58) 1-Nonene	0.000		0	N.D.	d		
59) Nonane	33.901	43	29084	1.313	ppbV		98
60) Styrene	31.832	104	10008	0.662	ppbV		99
61) o-Xylene	32.258	91	96744	4.122	ppbV		100
63) Isopropylbenzene	35.119	105	27520	0.891	ppbV		98
64) n-Propylbenzene	37.698	120	2689	0.334	ppbV	#	84
65) 1-Methyl-3-ethylbenzene	38.323	105	89467	3.073	ppbV		100
66) 1-Methyl-4-ethylbenzene	38.503	105	69421	2.214	ppbV		100
67) 1,3,5-Trimethylbenzene	38.984	105	112470	4.421	ppbV		98
68) 1-Decene	0.000		0	N.D.	d		
69) 1-Methyl-2-ethylbenzene	39.861	105	154378	5.198	ppbV		100
70) Decane	42.493	43	26244M4	1.146	ppbV		
71) 1,2,4-Trimethylbenzene	41.135	105	133244	5.262	ppbV		100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149185.D
Acq On : 9 Nov 2016 4:31 am
Operator : AIRPIANO1:RY
Sample : L1634001-10D,3,25,250
Misc : WG948457,ICAL13049
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Nov 10 12:52:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

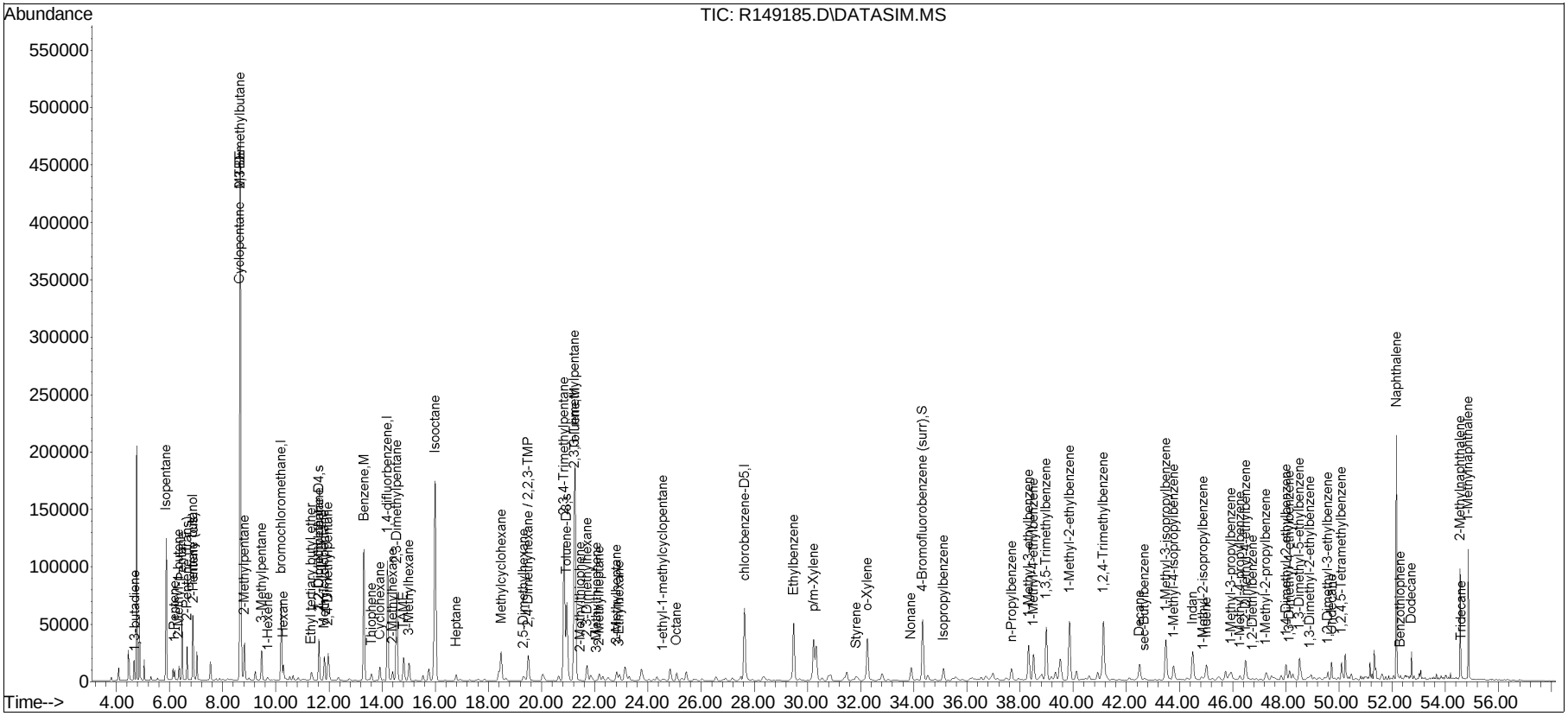
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
72) sec-Butylbenzene	42.673	105	3094	0.079	ppbV		89
73) 1-Methyl-3-isopropylbe...	43.490	119	27504	0.832	ppbV		76
74) 1-Methyl-4-isopropylbe...	43.778	119	25469	0.932	ppbV		97
75) 1-Methyl-2-isopropylbe...	44.884	119	2132	0.072	ppbV	#	72
76) Indan	44.487	117	47677	2.407	ppbV		100
77) Indene	45.016	115	28799	2.411	ppbV		100
78) 1-Methyl-3-propylbenzene	45.941	105	21369	0.583	ppbV		99
79) 1-Methyl-4-propylbenzene	46.278	105	11711	0.260	ppbV		84
80) n-Butylbenzene	0.000		0	N.D.	d		
81) 1,2-Dimethyl-4-ethylbe...	46.482	119	42322	1.519	ppbV		99
82) 1,2-Diethylbenzene	46.746	119	2425	0.163	ppbV		99
83) 1-Methyl-2-propylbenzene	47.251	105	17083	0.436	ppbV		99
84) 1,4-Dimethyl-2-ethylbe...	48.008	119	20764	0.712	ppbV		84
85) Undecane	49.727	57	15321	0.660	ppbV		96
86) 1,3-Dimethyl-4-ethylbe...	48.140	119	16856	0.497	ppbV		95
87) 1,3-Dimethyl-5-ethylbe...	48.513	119	36821	1.162	ppbV		98
88) 1,3-Dimethyl-2-ethylbe...	48.897	119	4613	0.134	ppbV		88
89) 1,2-Dimethyl-3-ethylbe...	49.582	119	10359M4	0.330	ppbV		
90) 1,2,4,5-Tetramethylben...	50.099	119	18897	0.182	ppbV		97
91) Pentylbenzene	0.000		0	N.D.	d		
92) Dodecane	52.728	43	20588M4	0.813	ppbV		
93) Naphthalene	52.160	128	395601	11.555	ppbV		100
94) Benzothiophene	52.315	134	5285	0.072	ppbV		92
95) MMT	0.000		0	N.D.	d		
96) Tridecane	54.597	57	5417M4	0.151	ppbV		
97) 2-Methylnaphthalene	54.556	142	126412	5.221	ppbV		98
98) 1-Methylnaphthalene	54.865	142	141777	5.245	ppbV		97

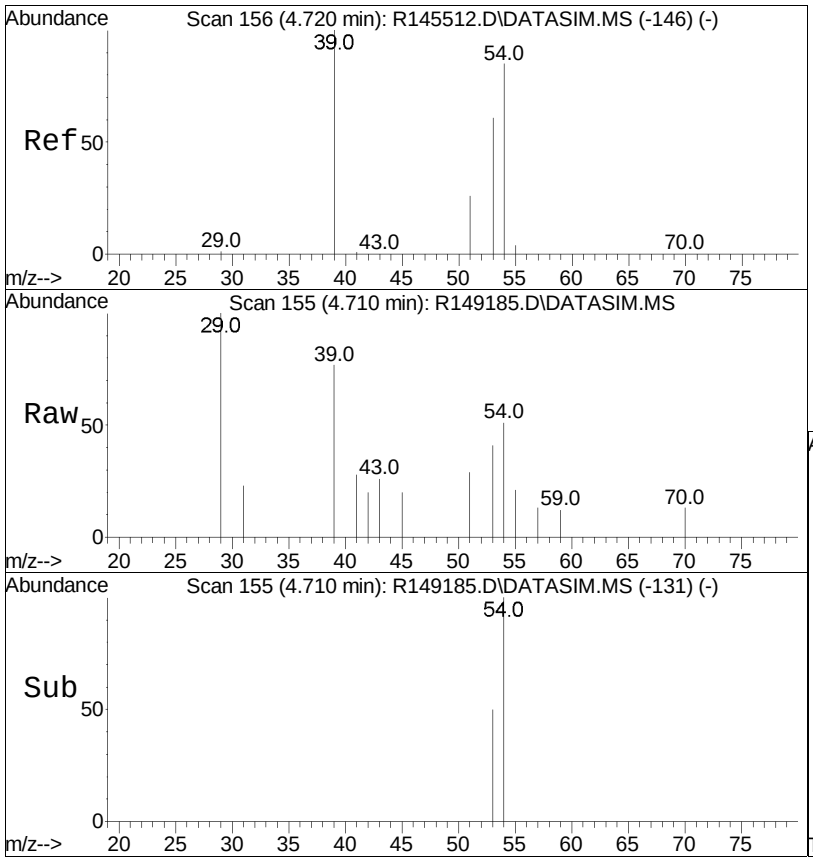
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Sub List : AIR-NF-PIANO - NF PIANO LIST161108PIANO\R149170.D

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149185.D
Acq On : 9 Nov 2016 4:31 am
Operator : AIRPIANO1:RY
Sample : L1634001-10D,3,25,250
Misc : WG948457,ICAL13049
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Nov 10 12:52:08 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

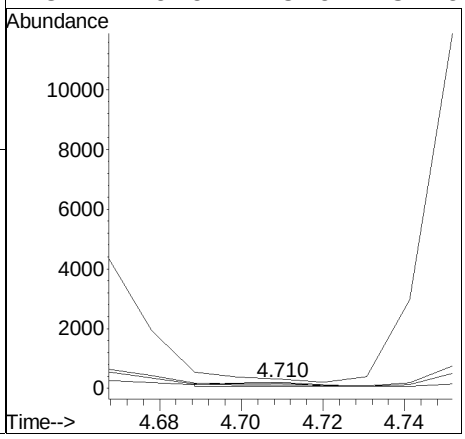


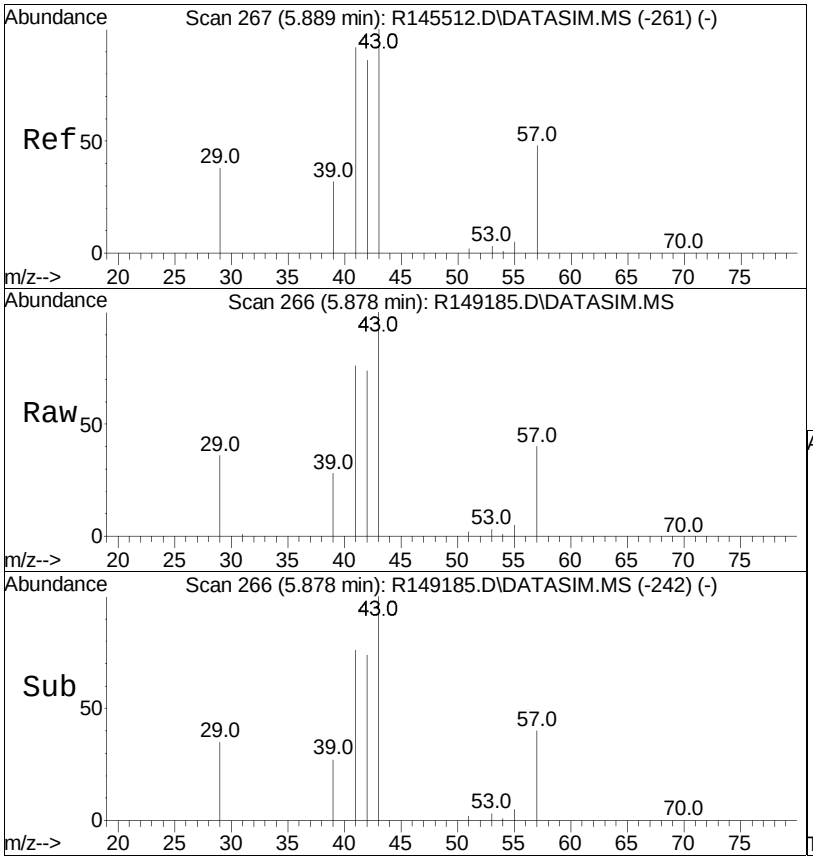


#2
1,3-butadiene
Concen: 0.03 ppbV
RT: 4.710 min Scan# 155
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 54 Resp: 202

Ion	Ratio	Lower	Upper
54	100		
39	0.0	100.0	150.0#
53	0.0	57.0	85.6#
51	0.0	25.0	37.6#

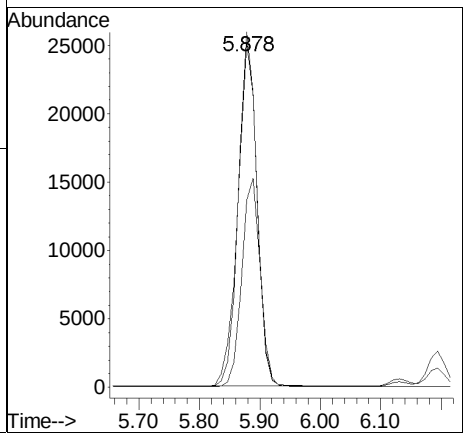


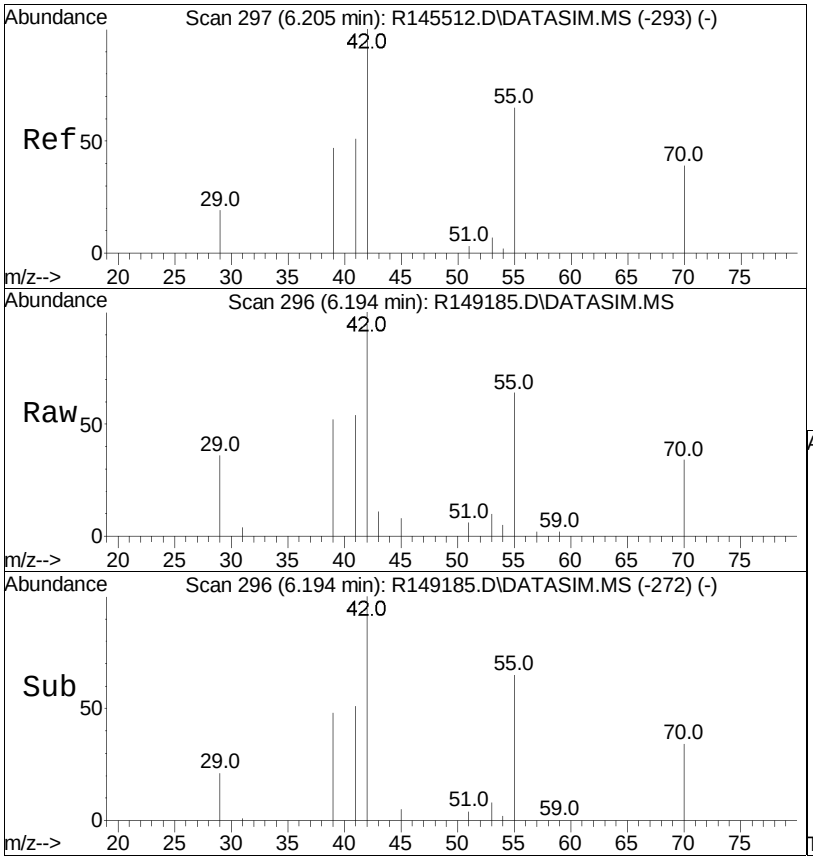


#4
Isopentane
Concen: 4.50 ppbV
RT: 5.878 min Scan# 266
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 41 Resp: 54645

Ion	Ratio	Lower	Upper
41	100		
57	52.7	31.8	71.8
42	97.0	76.7	116.7

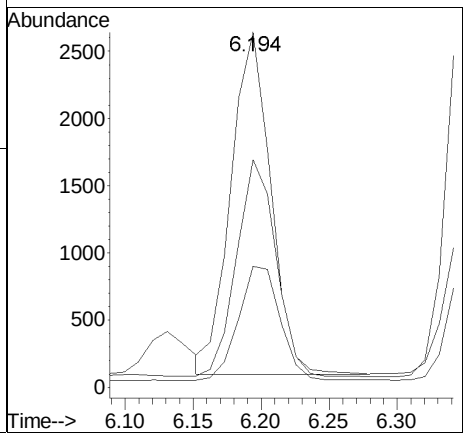


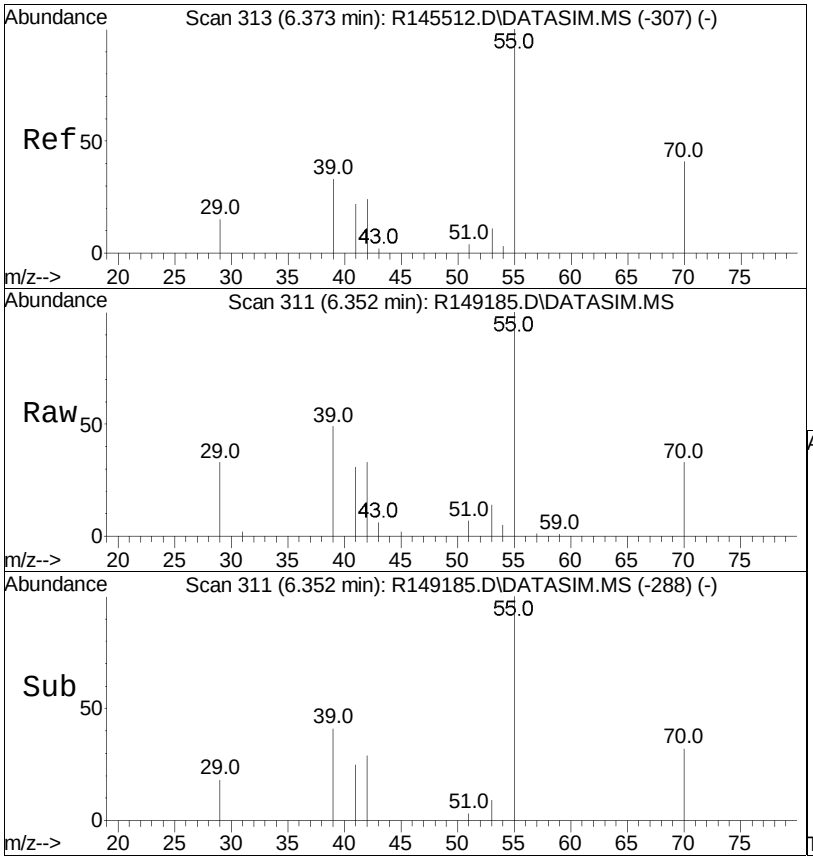


#5
1-Pentene
Concen: 0.38 ppbV
RT: 6.194 min Scan# 296
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 42 Resp: 5169

Ion	Ratio	Lower	Upper
42	100		
55	64.1	43.2	83.2
70	34.1	13.6	53.6

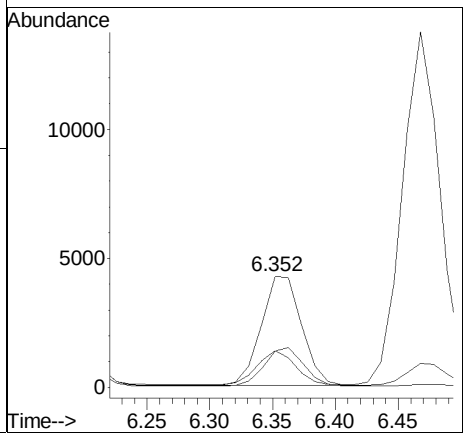


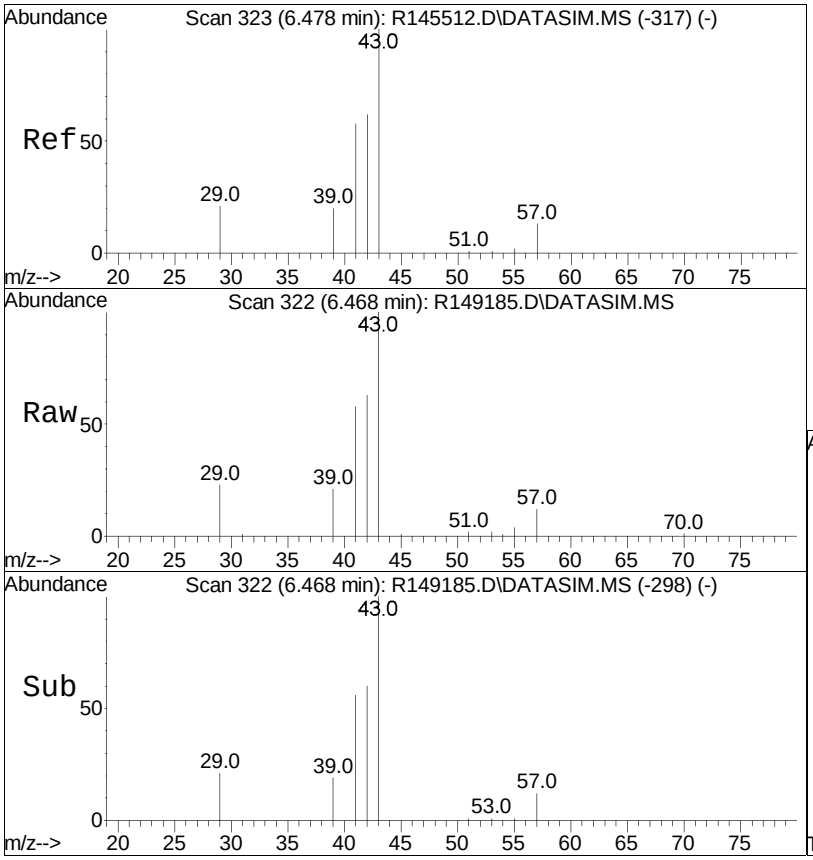


#6
2-Methyl-1-butene
Concen: 0.58 ppbV
RT: 6.352 min Scan# 311
Delta R.T. -0.011 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 55 Resp: 9473

Ion	Ratio	Lower	Upper
55	100		
70	32.8	16.1	56.1
42	33.1	5.4	45.4

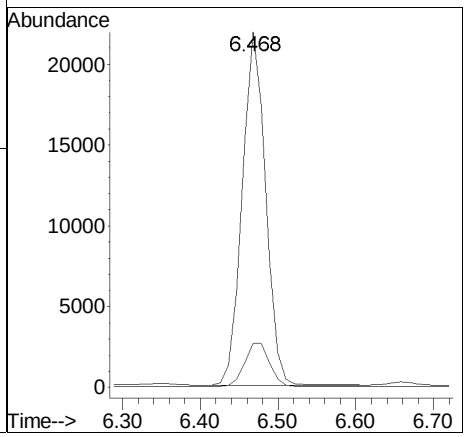


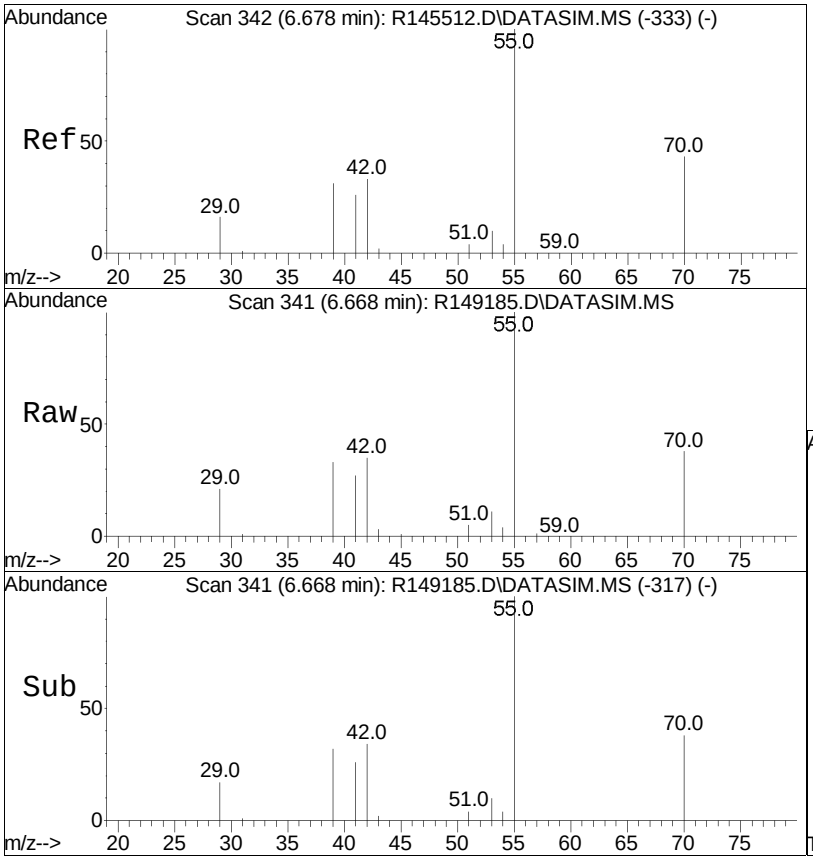


#7
Pentane
Concen: 2.19 ppbV
RT: 6.468 min Scan# 322
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 43 Resp: 45585

Ion	Ratio	Lower	Upper
43	100		
57	12.4	0.0	32.2

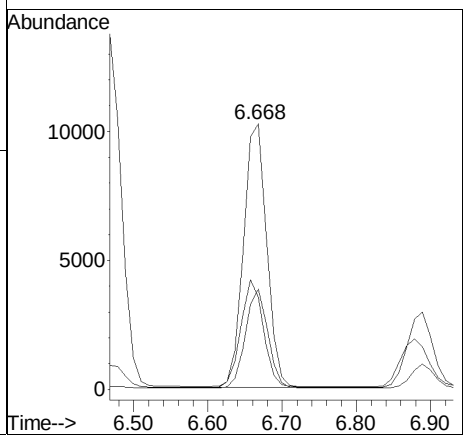


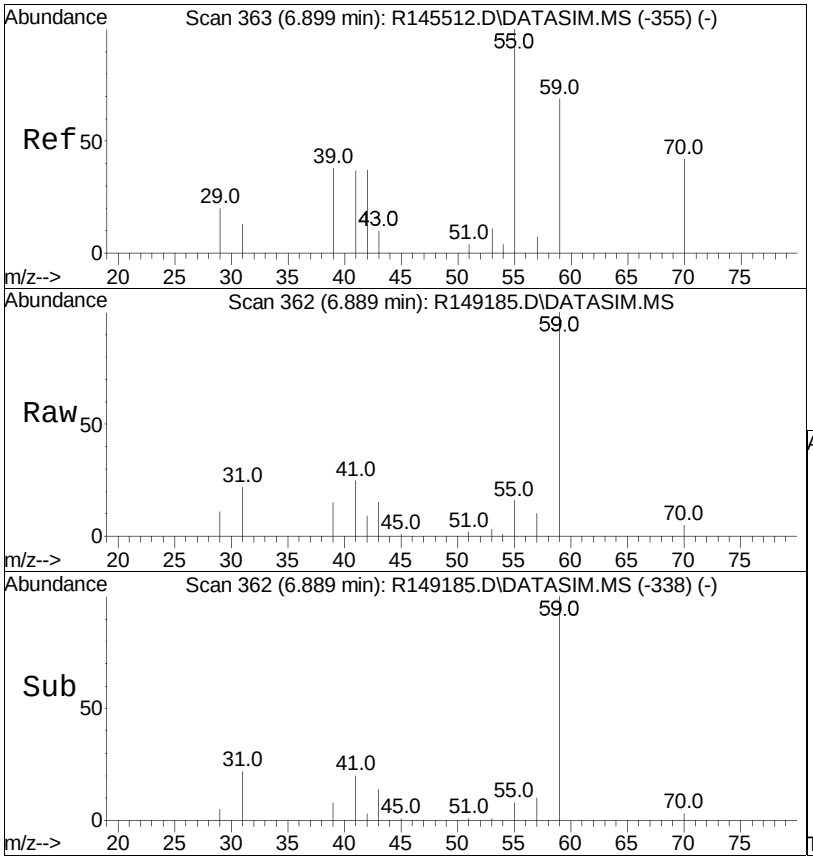


#9
2-Pentene (trans)
Concen: 1.41 ppbV
RT: 6.668 min Scan# 341
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 55 Resp: 22255

Ion	Ratio	Lower	Upper
55	100		
70	37.8	17.7	57.7
42	34.7	14.5	54.5

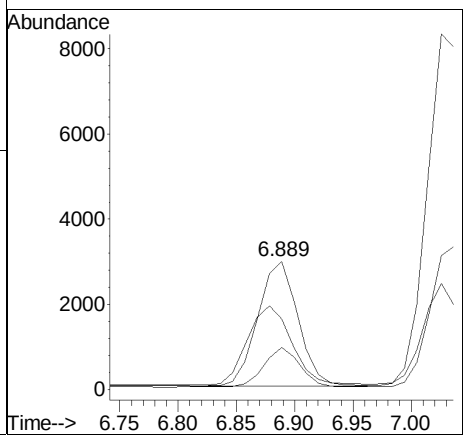


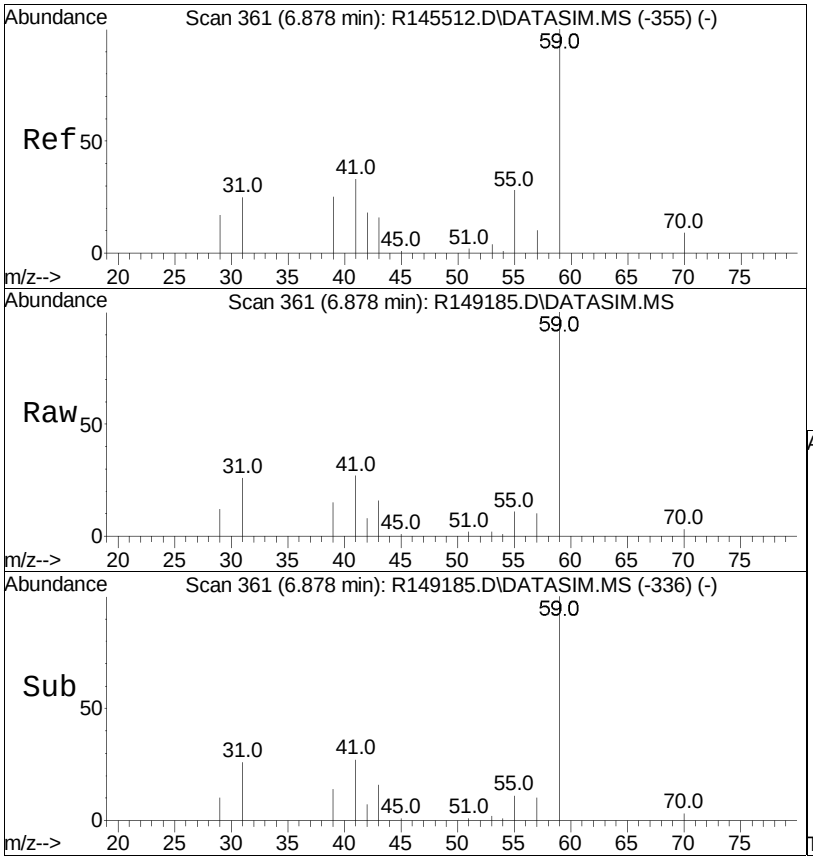


#10
2-Pentene (cis)
Concen: 0.48 ppbV
RT: 6.889 min Scan# 362
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 55 Resp: 6964

Ion	Ratio	Lower	Upper
55	100		
70	32.9	16.4	56.4
42	55.1	19.4	59.4

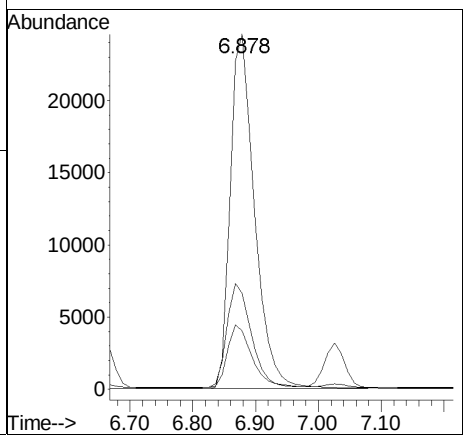


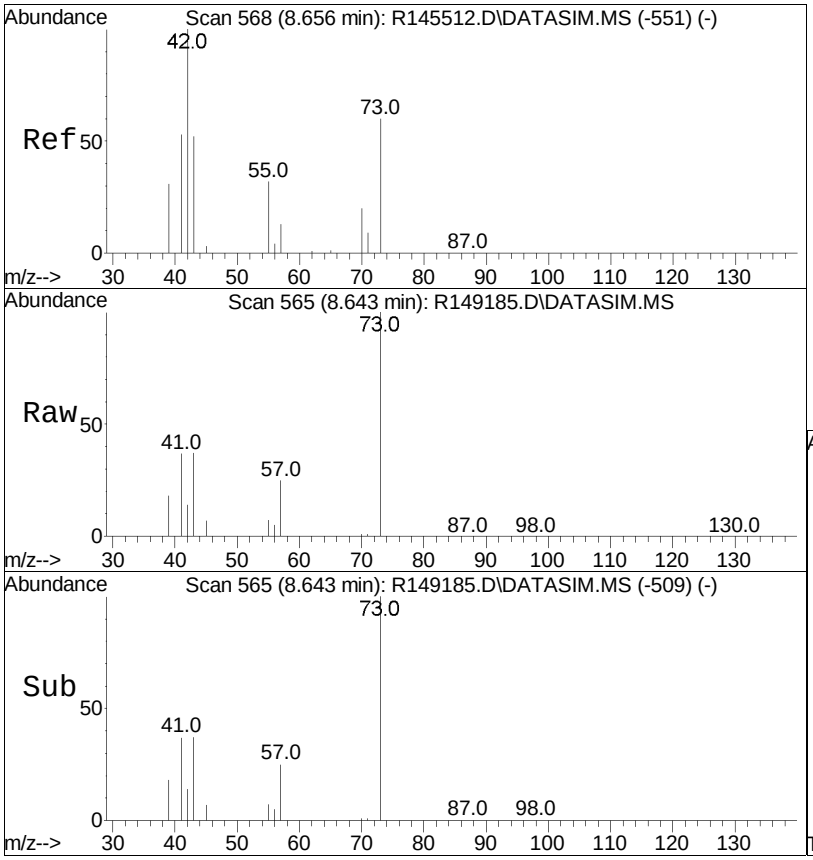


#11
Tertiary butanol
Concen: 2.80 ppbV
RT: 6.878 min Scan# 361
Delta R.T. 0.011 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 59 Resp: 66115

Ion	Ratio	Lower	Upper
59	100		
41	27.0	20.2	60.2
43	16.5	0.0	38.4

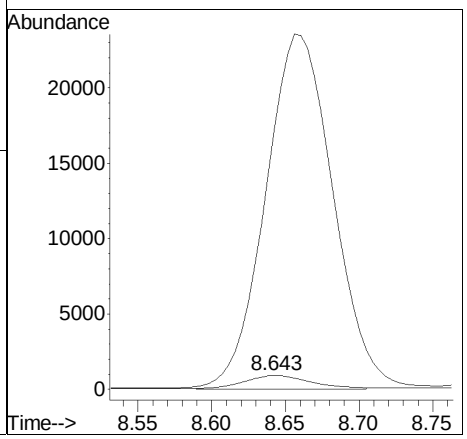


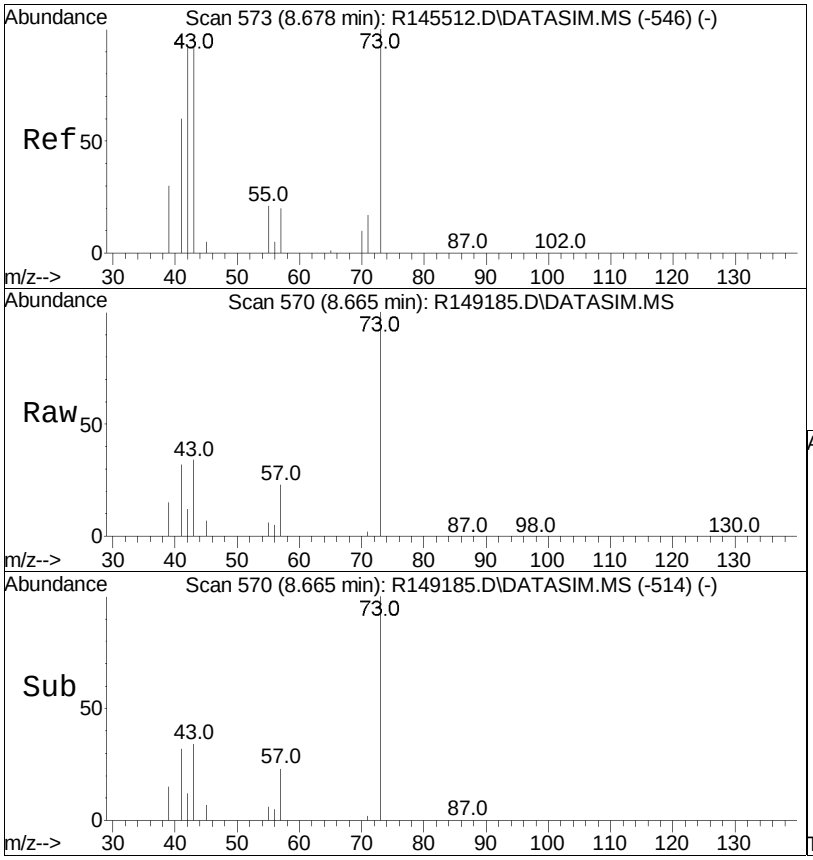


#12
Cyclopentane
Concen: 0.61 ppbV m
RT: 8.643 min Scan# 565
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 70 Resp: 2870

Ion	Ratio	Lower	Upper
70	100		
42	1881.6	617.9	657.9#

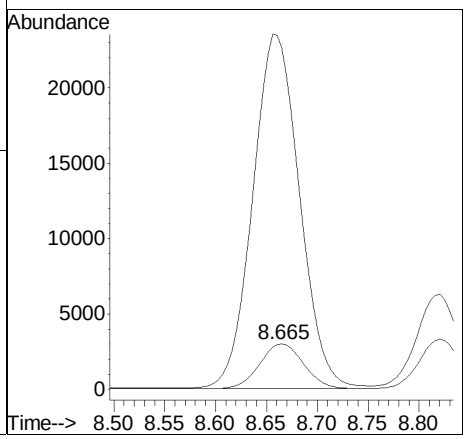


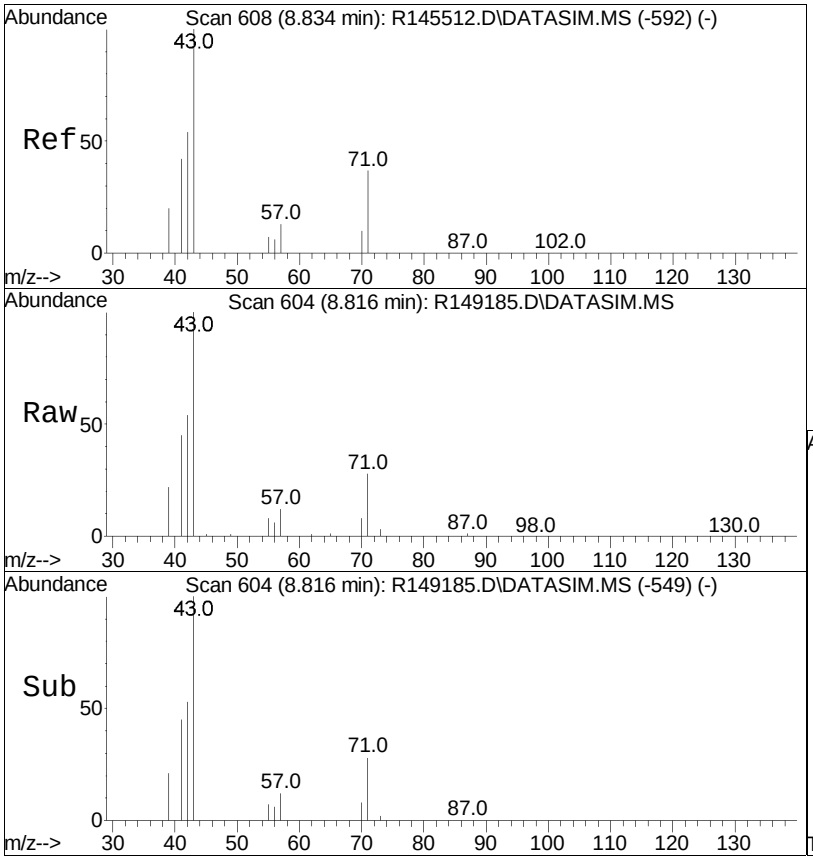


#13
2,3-Dimethylbutane
Concen: 2.06 ppbV
RT: 8.665 min Scan# 570
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 71 Resp: 8904

Ion	Ratio	Lower	Upper
71	100		
42	752.0	652.6	692.6#

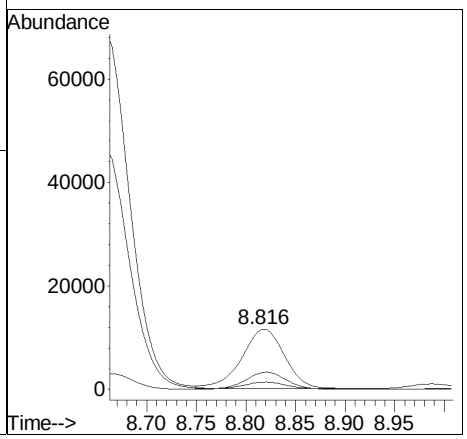


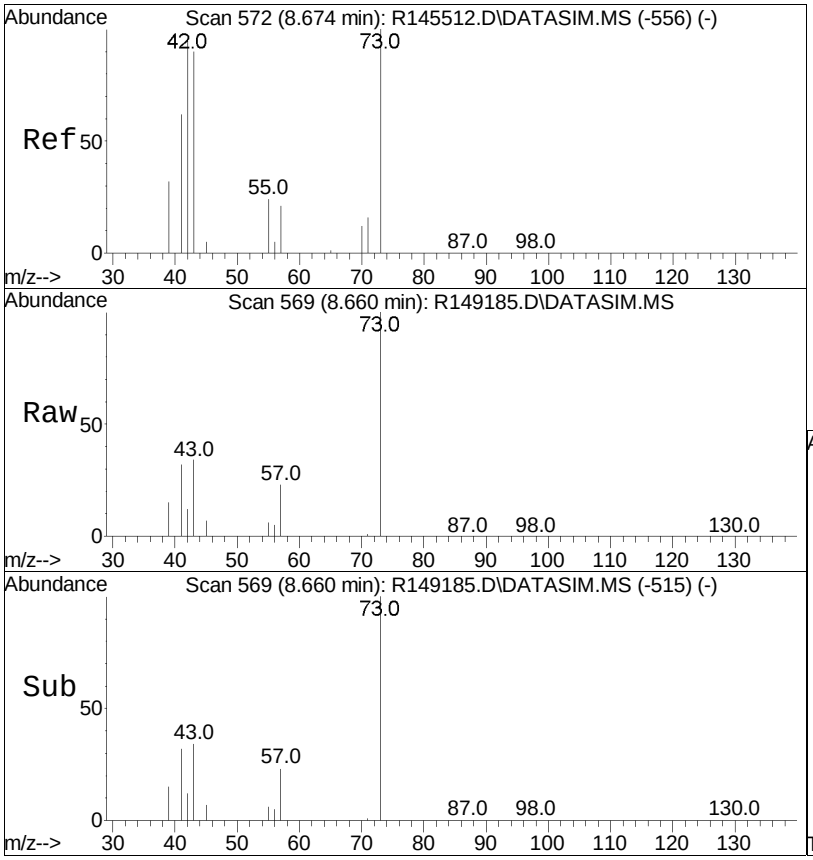


#14
2-Methylpentane
Concen: 1.47 ppbV
RT: 8.816 min Scan# 604
Delta R.T. -0.004 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 43 Resp: 34730

Ion	Ratio	Lower	Upper
43	100		
71	27.8	8.8	48.8
57	12.0	0.0	31.6

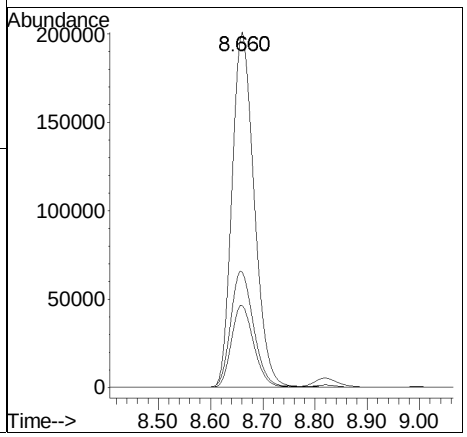


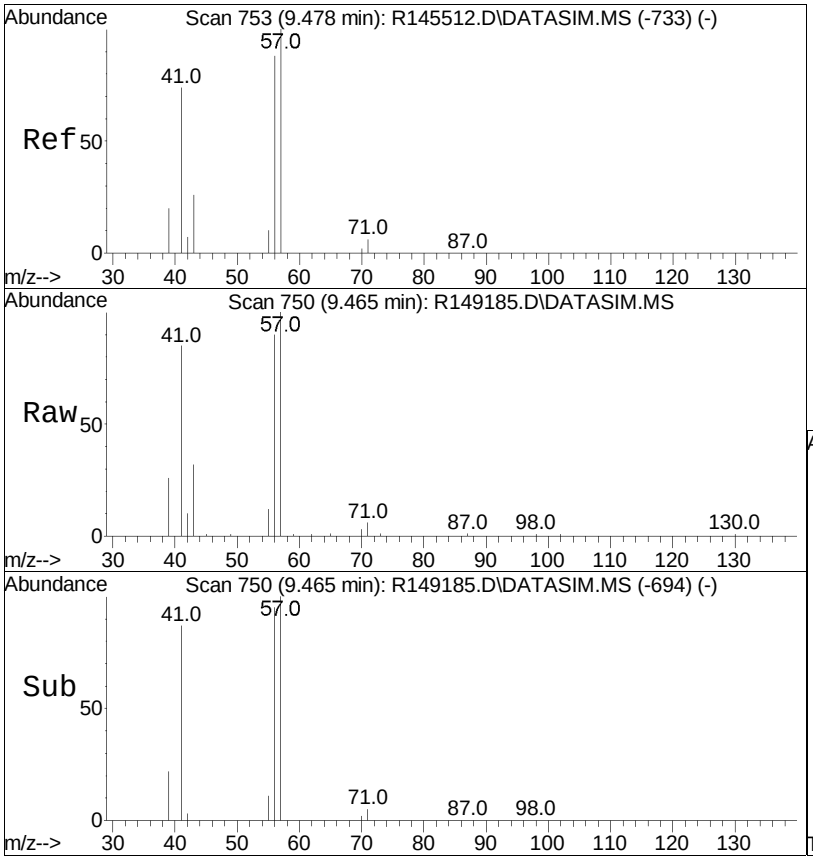


#15
MTBE
Concen: 24.73 ppbV
RT: 8.660 min Scan# 569
Delta R.T. -0.009 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 73 Resp: 593913

Ion	Ratio	Lower	Upper
73	100		
41	32.4	54.6	94.6#
57	23.1	3.7	43.7

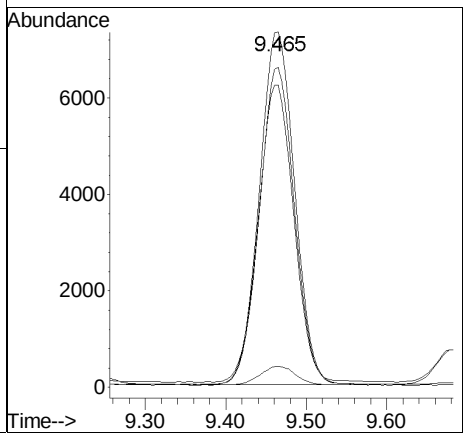


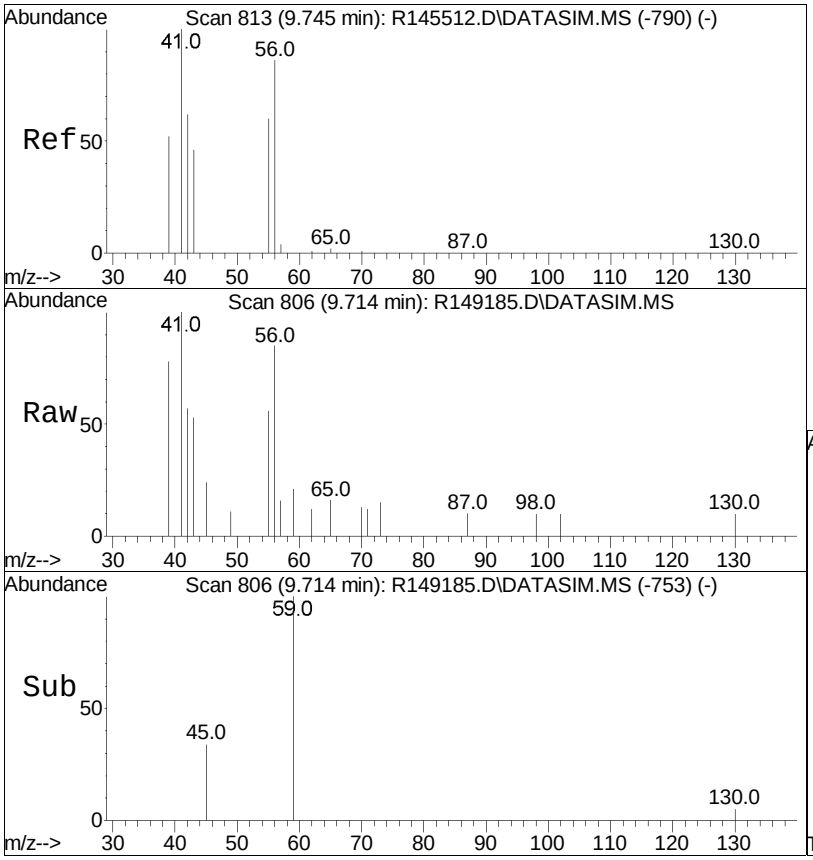


#16
3-Methylpentane
Concen: 1.44 ppbV
RT: 9.465 min Scan# 750
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 57 Resp: 22311

Ion	Ratio	Lower	Upper
57	100		
56	90.1	69.5	109.5
71	6.0	0.0	25.5
41	85.1	63.4	103.4

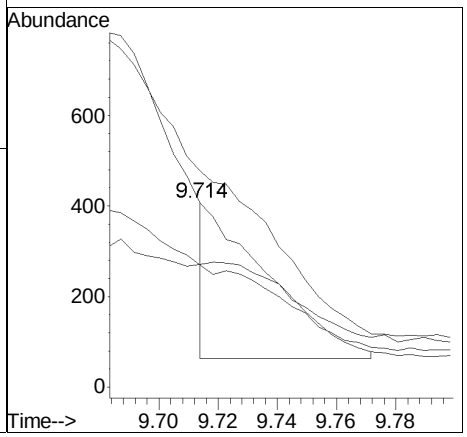


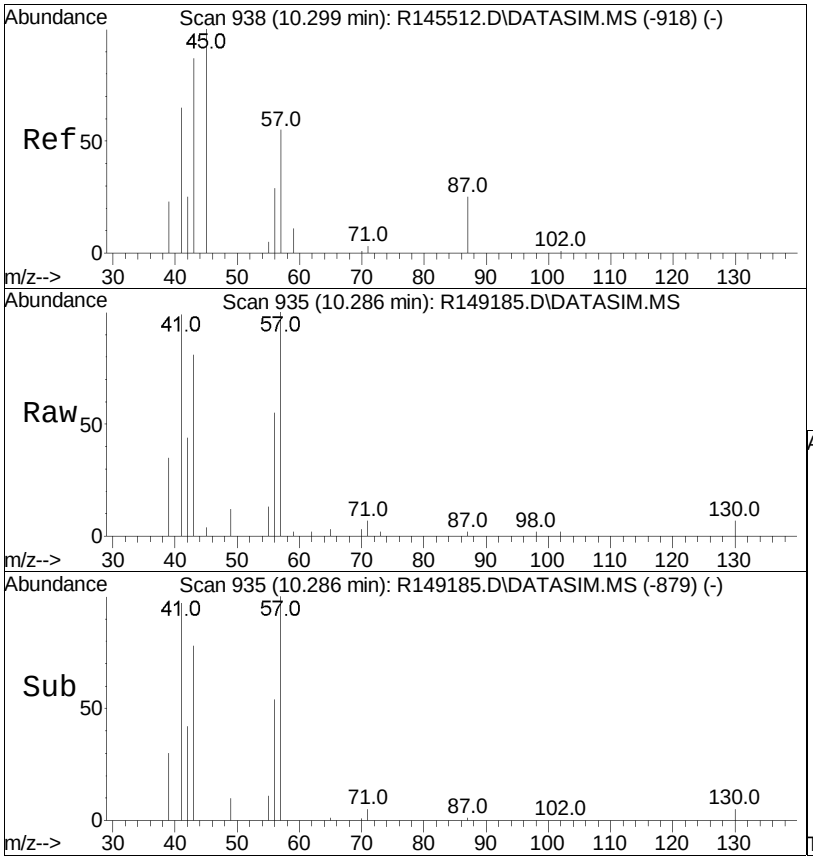


#17
1-Hexene
Concen: 0.05 ppbV m
RT: 9.714 min Scan# 806
Delta R.T. -0.013 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 56 Resp: 490

Ion	Ratio	Lower	Upper
56	100		
41	117.4	111.5	151.5
55	66.3	51.2	91.2
42	66.6	62.3	102.3

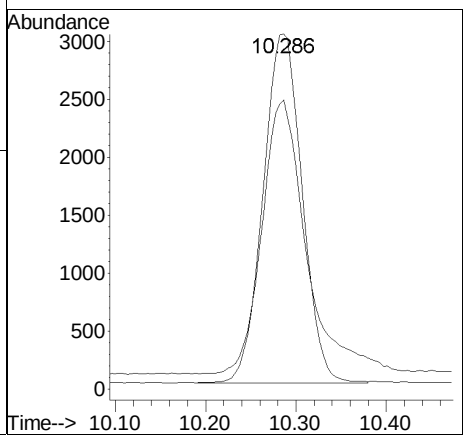


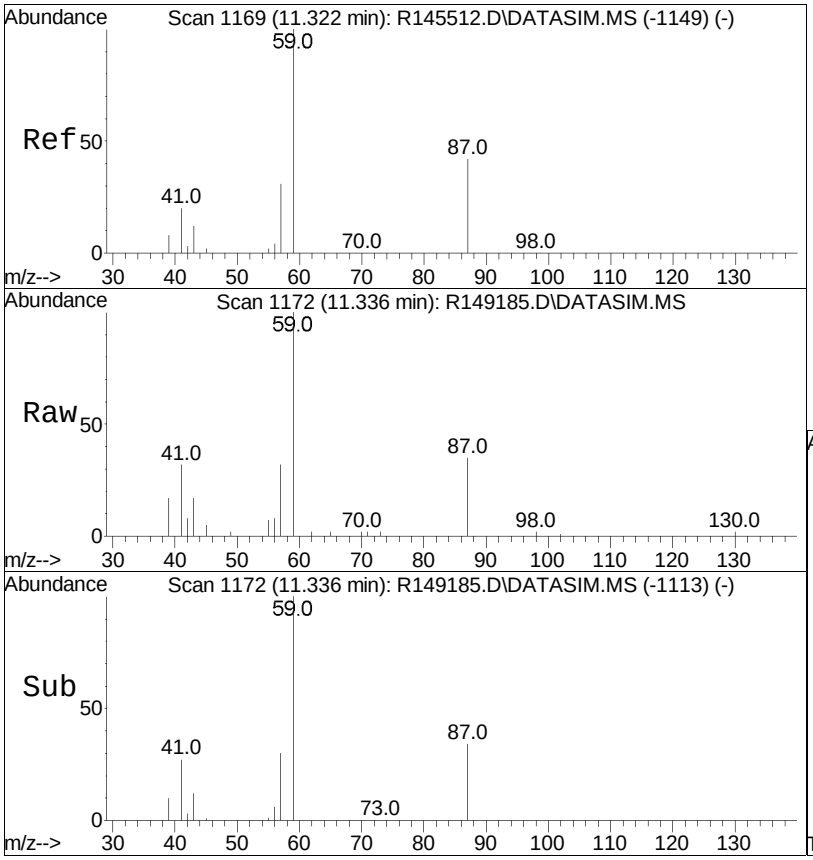


#18
Hexane
Concen: 0.68 ppbV
RT: 10.286 min Scan# 935
Delta R.T. -0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 57 Resp: 9035

Ion	Ratio	Lower	Upper
57	100		
43	81.5	114.8	154.8#

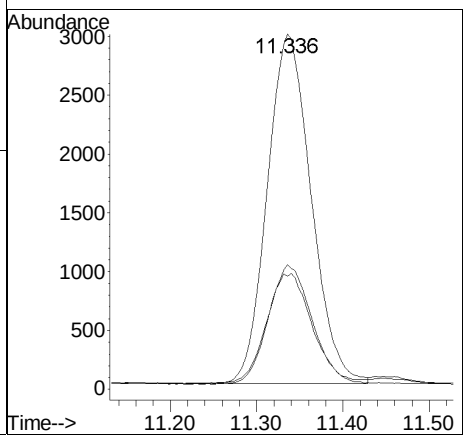


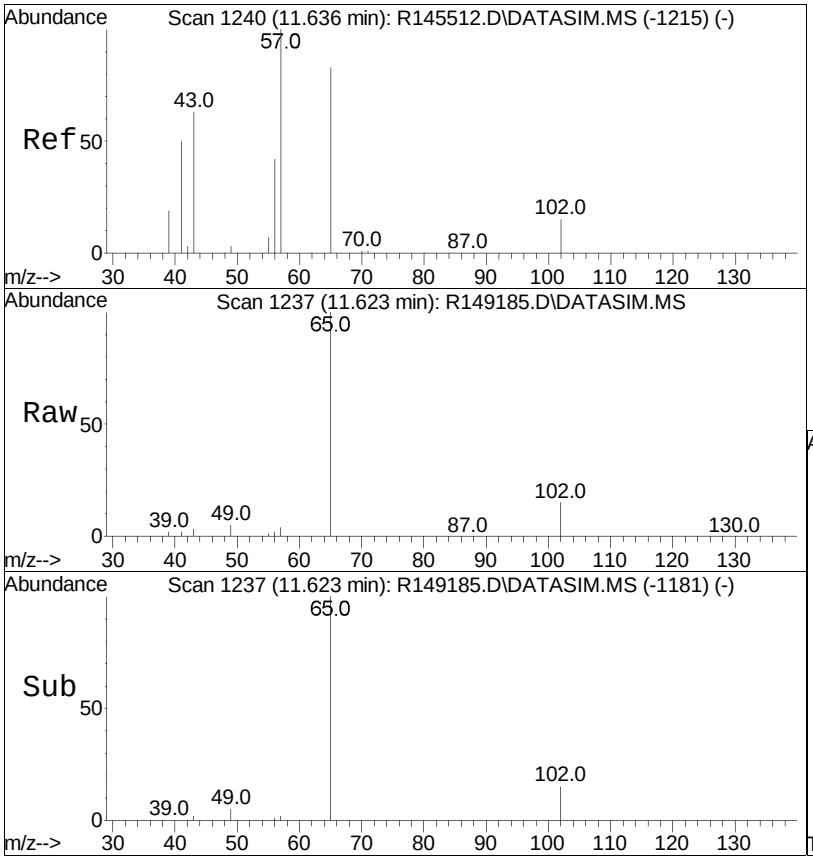


#20
Ethyl tertiary butyl ether
Concen: 0.41 ppbV
RT: 11.336 min Scan# 1172
Delta R.T. 0.013 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 59 Resp: 10524

Ion	Ratio	Lower	Upper
59	100		
87	35.1	13.6	53.6
57	31.8	11.7	51.7

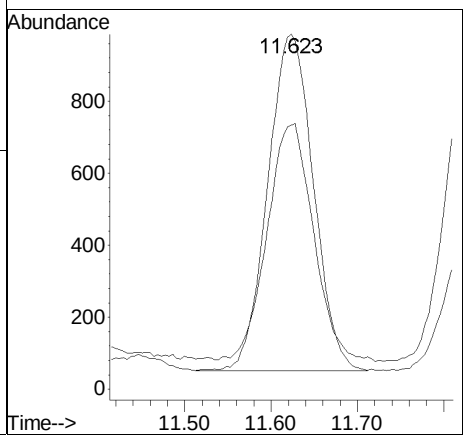


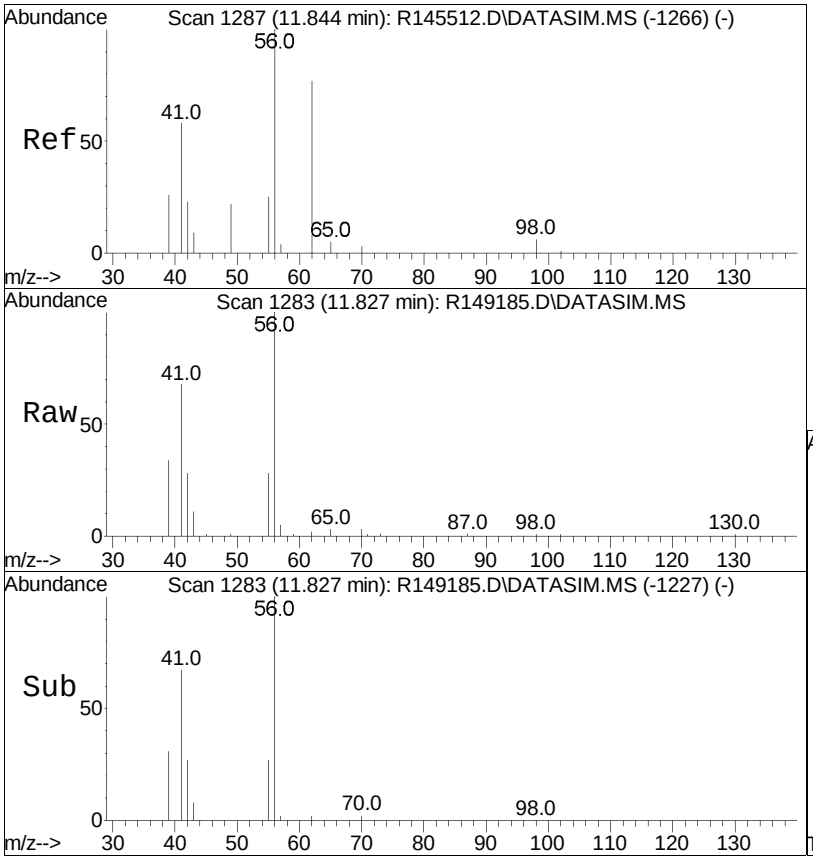


#21
2,2-Dimethylpentane
Concen: 0.16 ppbV
RT: 11.623 min Scan# 1237
Delta R.T. -0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 57 Resp: 3429

Ion	Ratio	Lower	Upper
57	100		
43	74.4	49.6	89.6

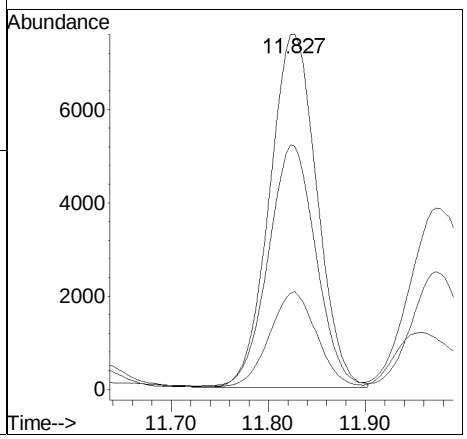


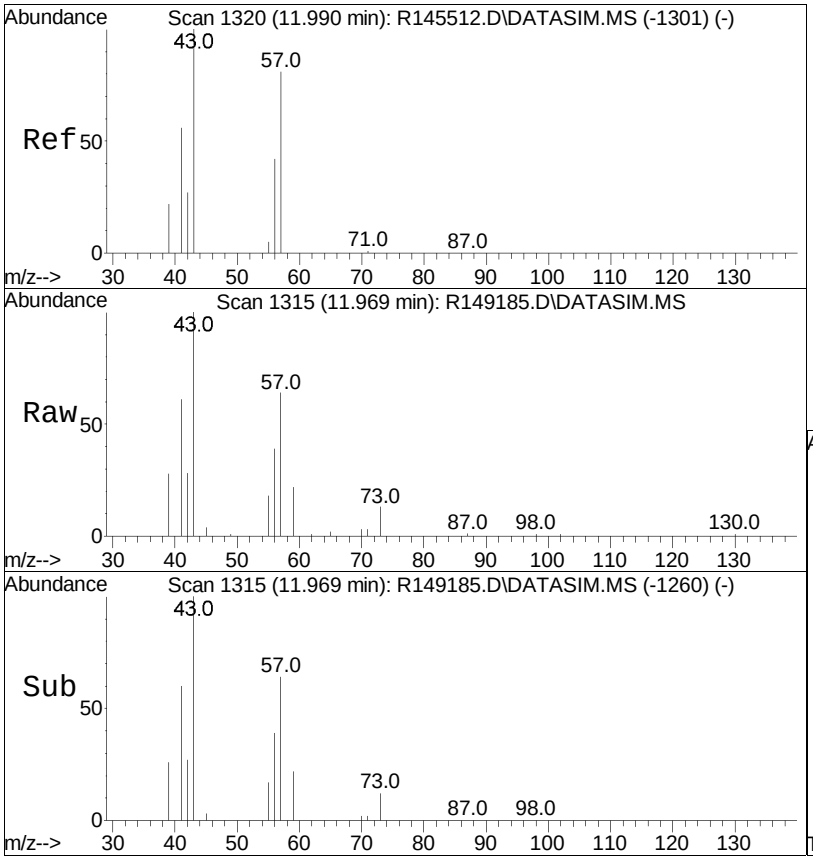


#23
Methylcyclopentane
Concen: 1.55 ppbV
RT: 11.827 min Scan# 1283
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 56 Resp: 25618

Ion	Ratio	Lower	Upper
56	100		
55	27.5	6.8	46.8
41	68.5	47.8	87.8

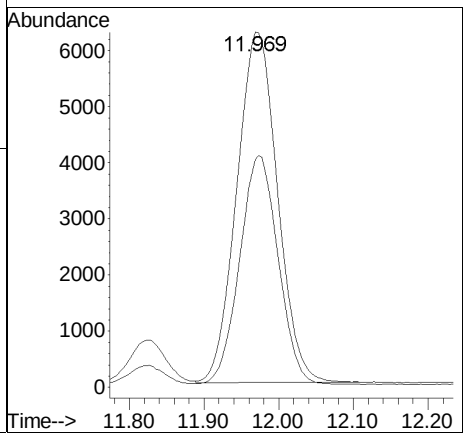


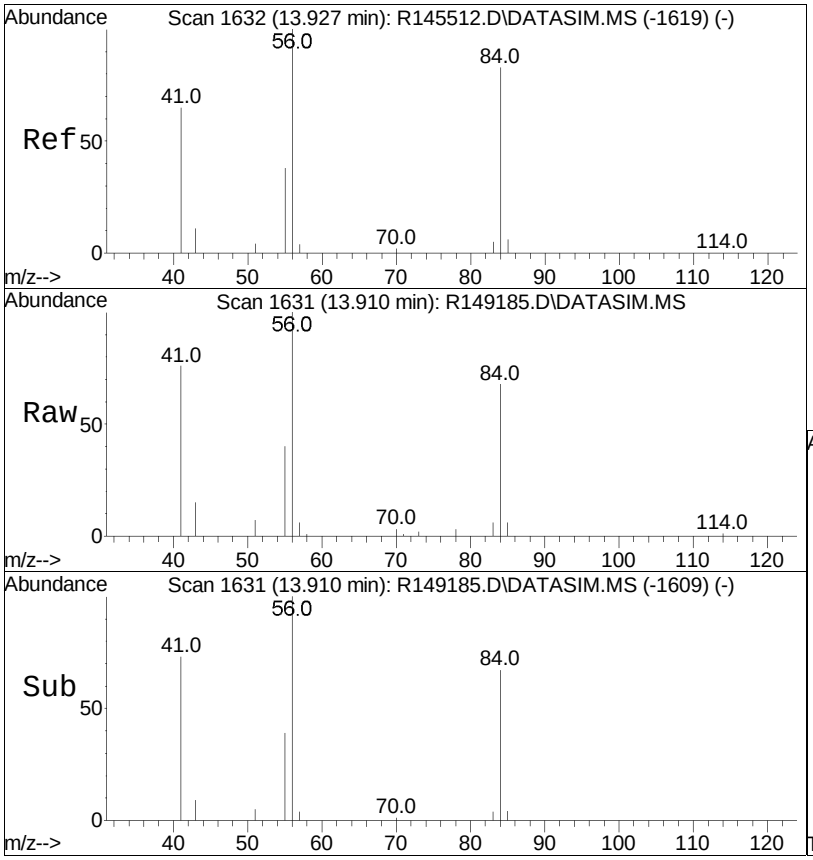


#24
2,4-Dimethylpentane
Concen: 1.11 ppbV
RT: 11.969 min Scan# 1315
Delta R.T. -0.004 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 43 Resp: 23674

Ion	Ratio	Lower	Upper
43	100		
57	64.2	50.5	90.5

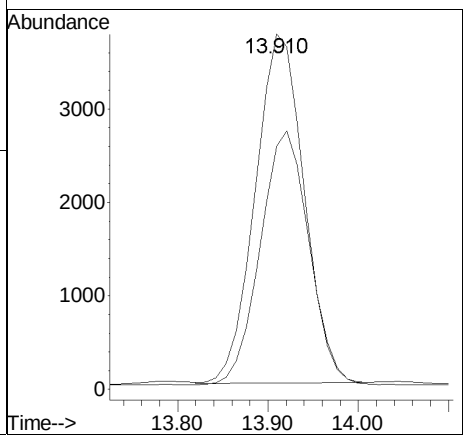


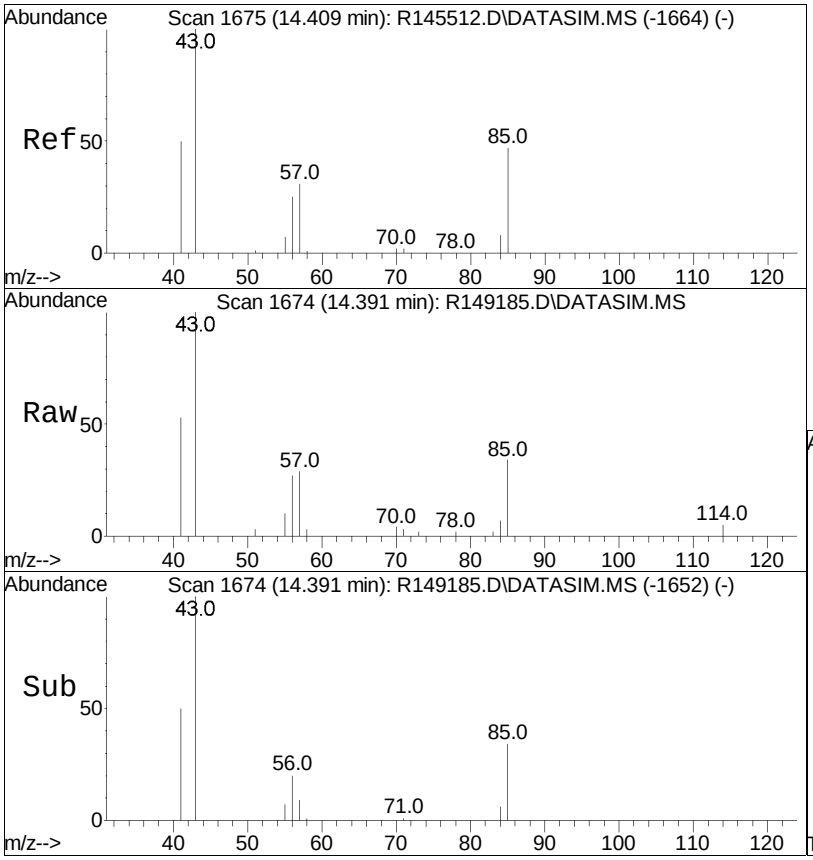


#26
Cyclohexane
Concen: 1.09 ppbV
RT: 13.910 min Scan# 1631
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 56 Resp: 14004

Ion	Ratio	Lower	Upper
56	100		
84	68.4	47.9	87.9

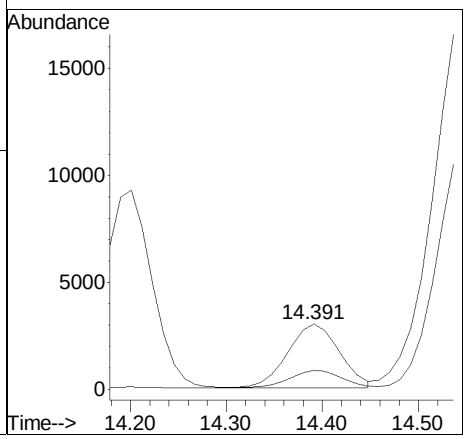


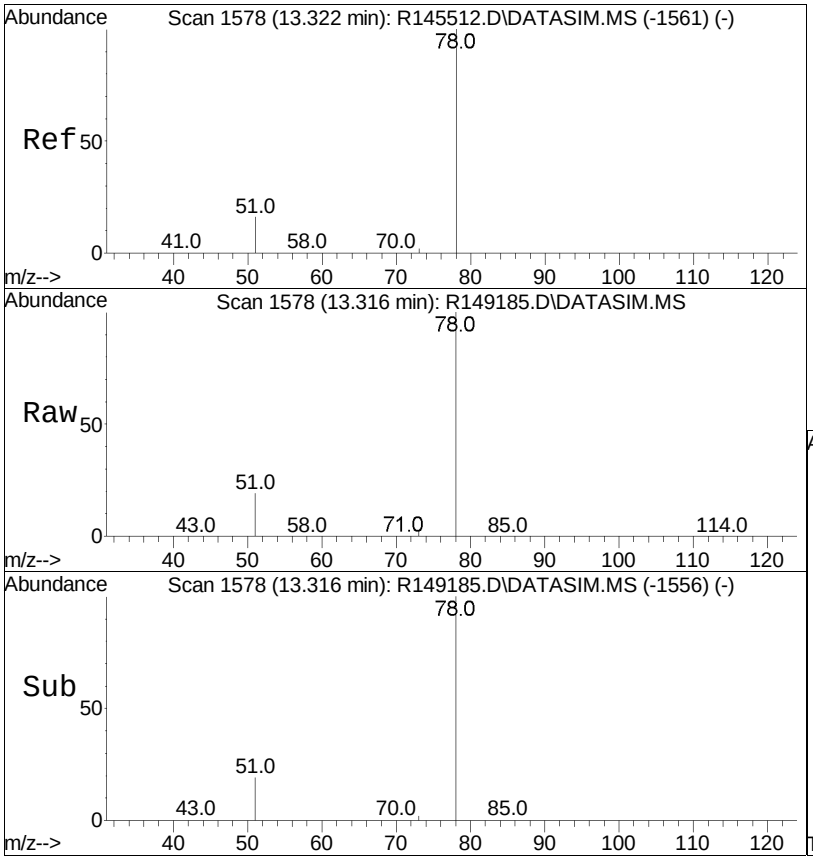


#28
2-Methylhexane
Concen: 0.45 ppbV
RT: 14.391 min Scan# 1674
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 43 Resp: 11148

Ion	Ratio	Lower	Upper
43	100		
57	29.1	7.8	47.8

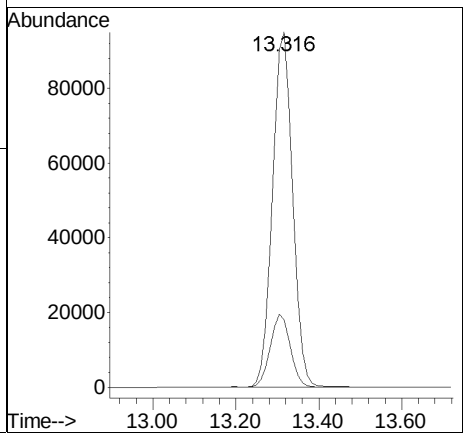


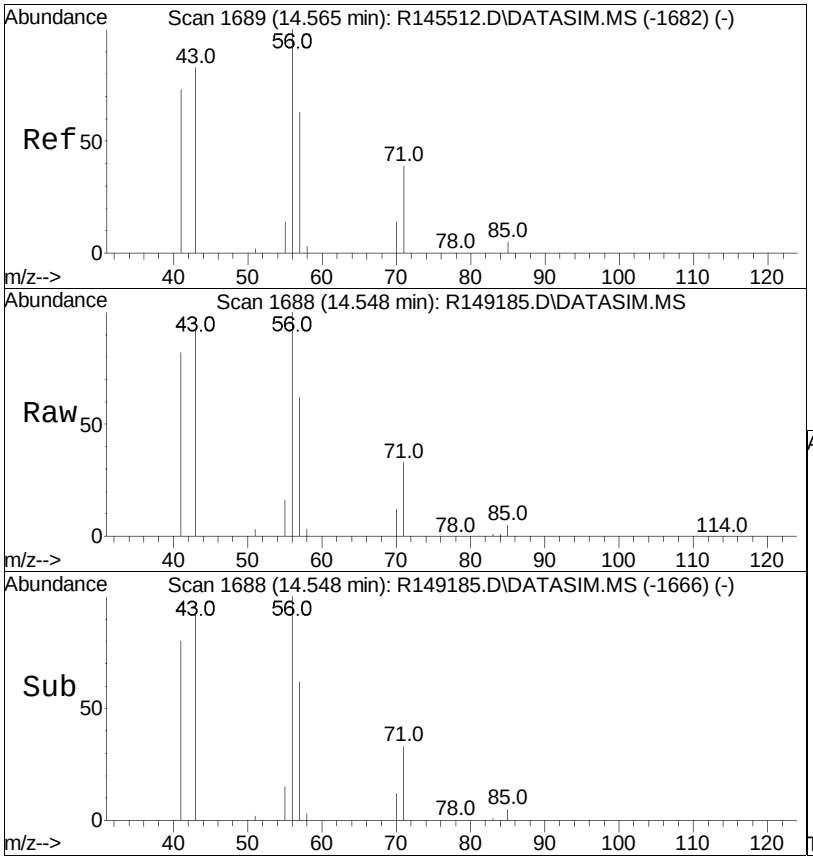


#29
Benzene
Concen: 11.62 ppbV
RT: 13.316 min Scan# 1578
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 78 Resp: 320258

Ion	Ratio	Lower	Upper
78	100		
51	19.0	0.0	39.4

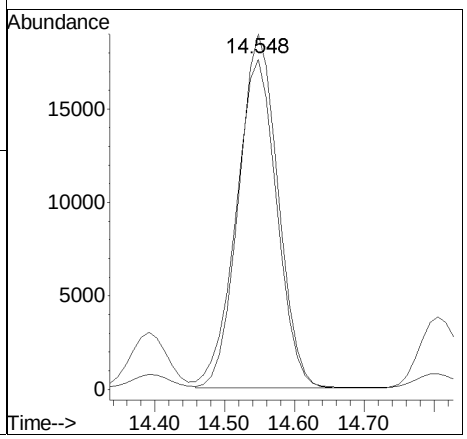


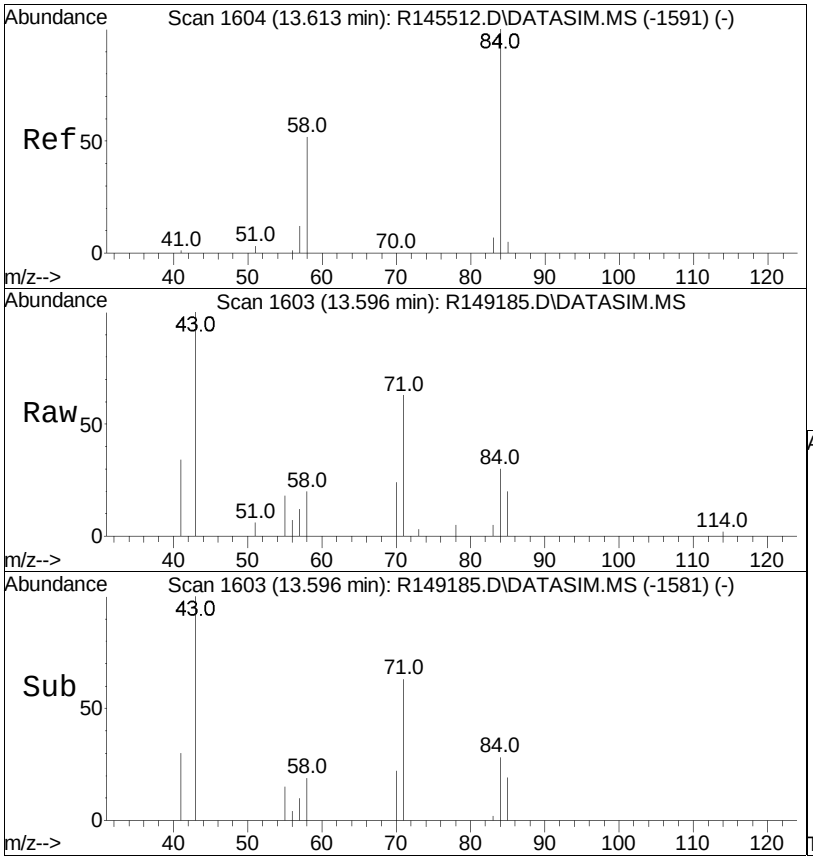


#30
2,3-Dimethylpentane
Concen: 4.28 ppbV
RT: 14.548 min Scan# 1688
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 56 Resp: 73944

Ion	Ratio	Lower	Upper
56	100		
43	92.8	72.3	112.3

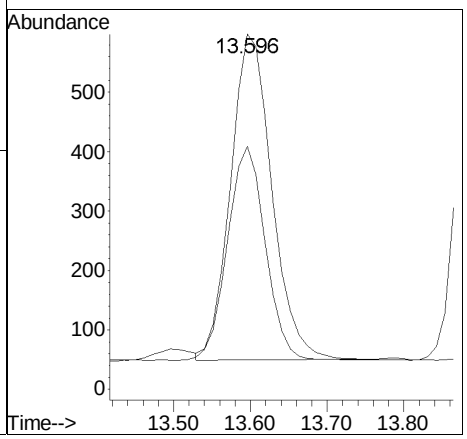


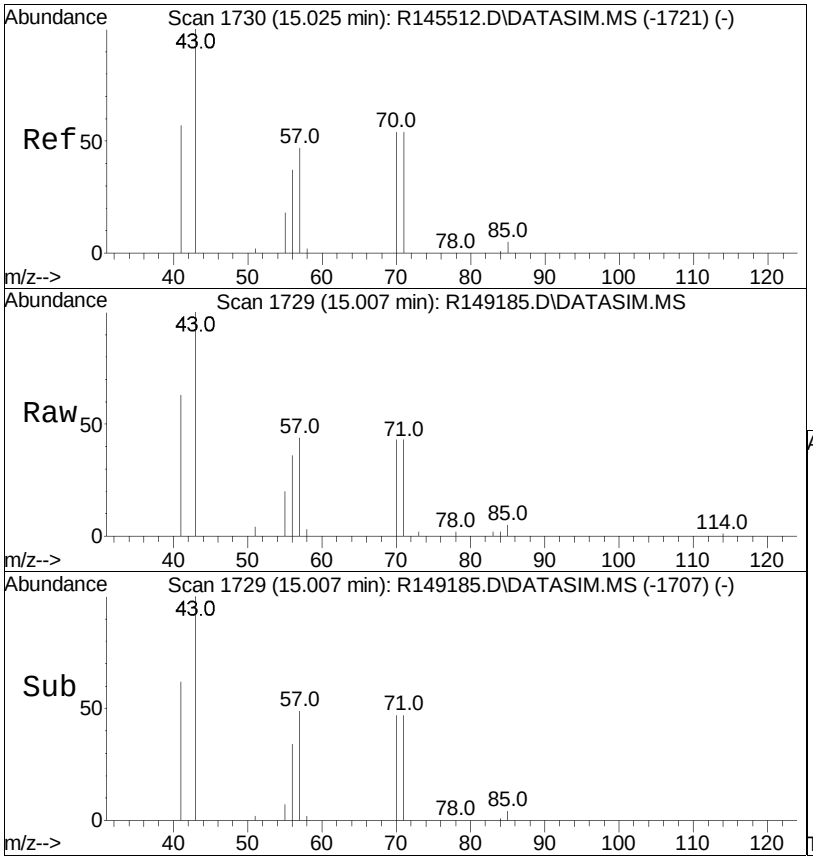


#31
Thiophene
Concen: 0.17 ppbV
RT: 13.596 min Scan# 1603
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 84 Resp: 2050

Ion	Ratio	Lower	Upper
84	100		
58	68.4	46.4	86.4

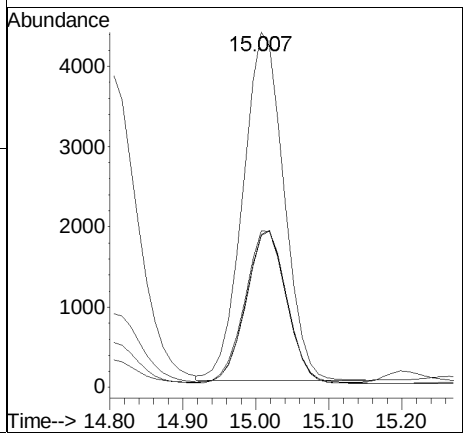


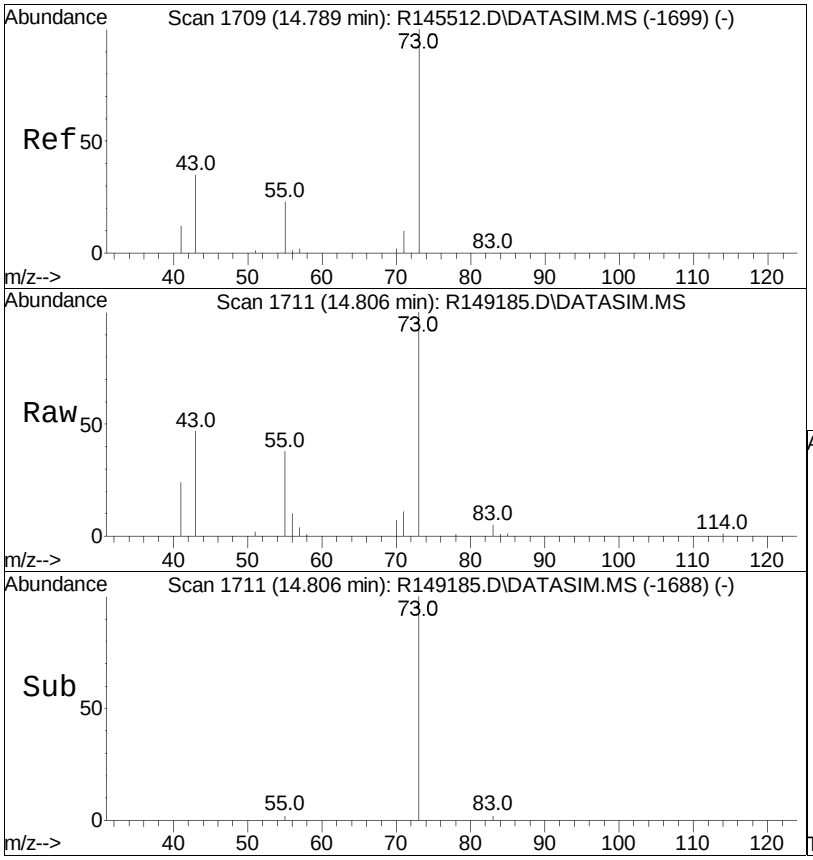


#32
3-Methylhexane
Concen: 0.88 ppbV
RT: 15.007 min Scan# 1729
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 43 Resp: 16874

Ion	Ratio	Lower	Upper
43	100		
57	44.0	23.4	63.4
70	43.0	22.5	62.5
71	42.7	22.4	62.4

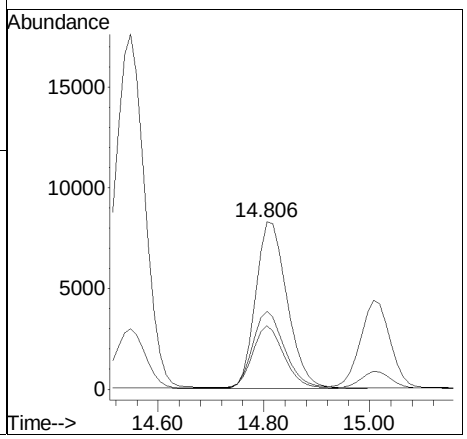


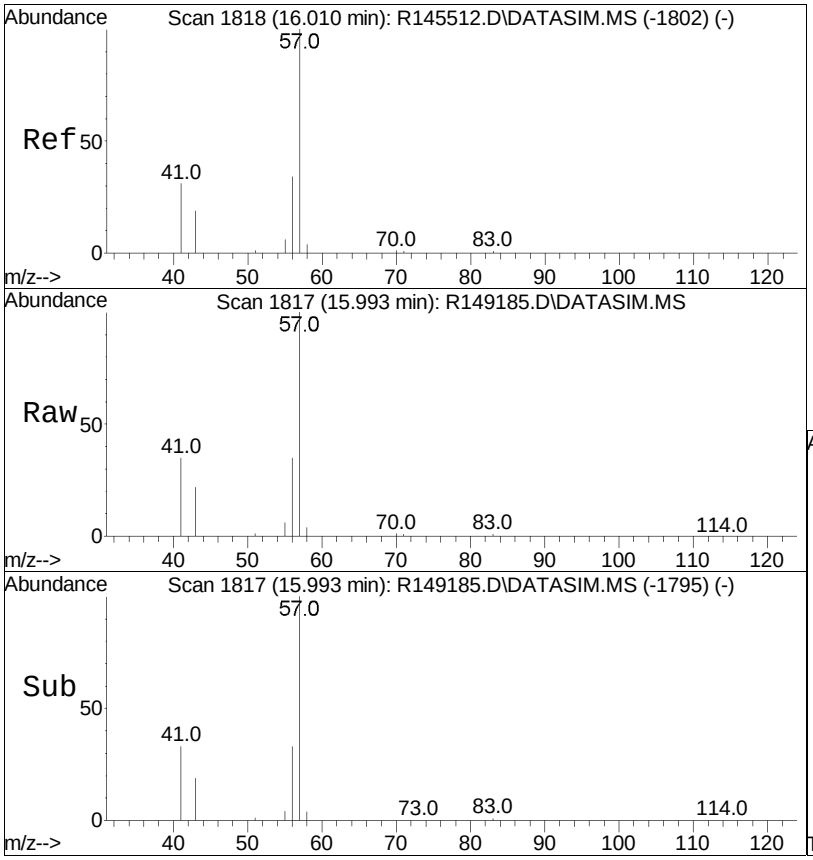


#33
TAME
Concen: 1.43 ppbV
RT: 14.806 min Scan# 1711
Delta R.T. 0.011 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 73 Resp: 34250

Ion	Ratio	Lower	Upper
73	100		
43	46.7	24.9	64.9
55	38.0	9.6	49.6

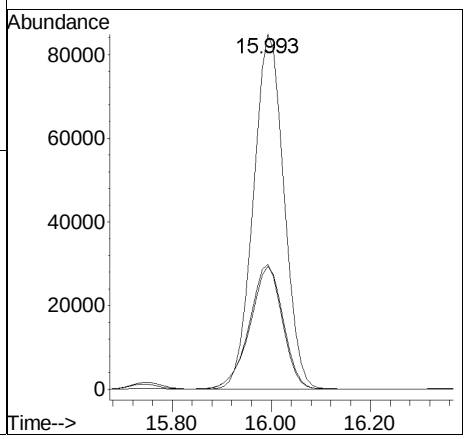


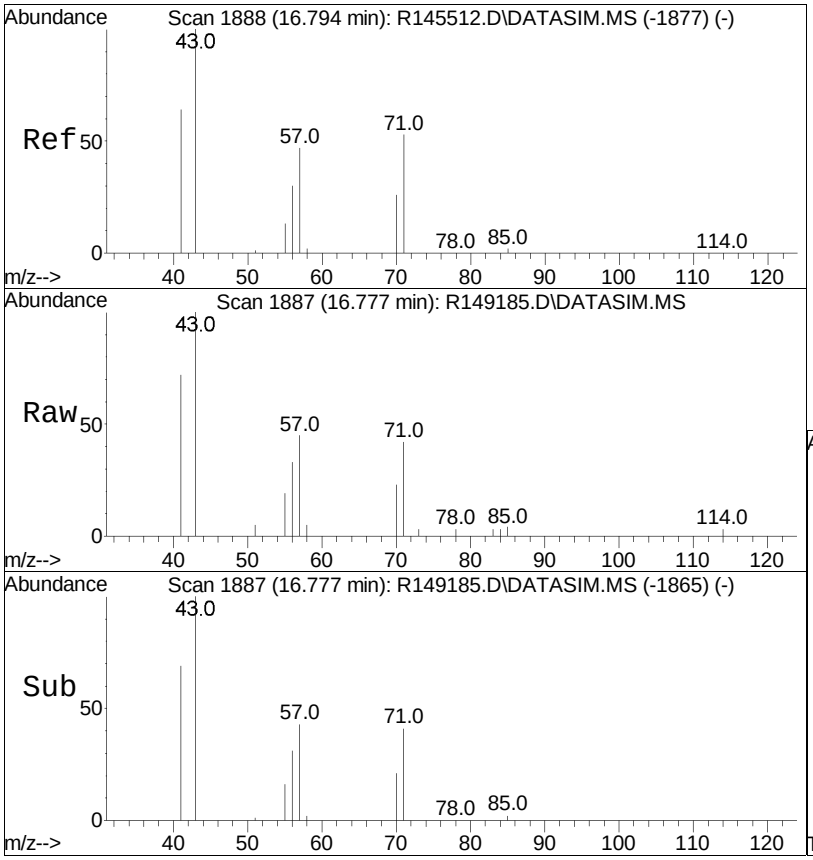


#35
Isooctane
Concen: 8.42 ppbV
RT: 15.993 min Scan# 1817
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 57 Resp: 364458

Ion	Ratio	Lower	Upper
57	100		
56	34.6	14.9	54.9
41	35.2	16.0	56.0

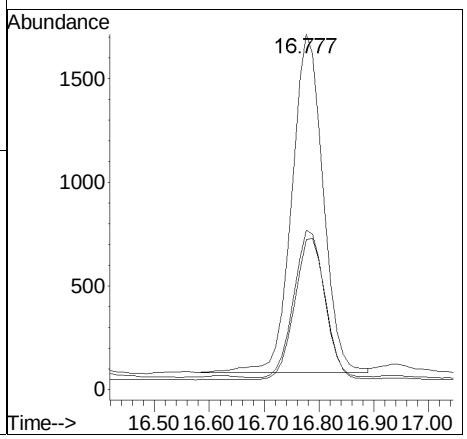


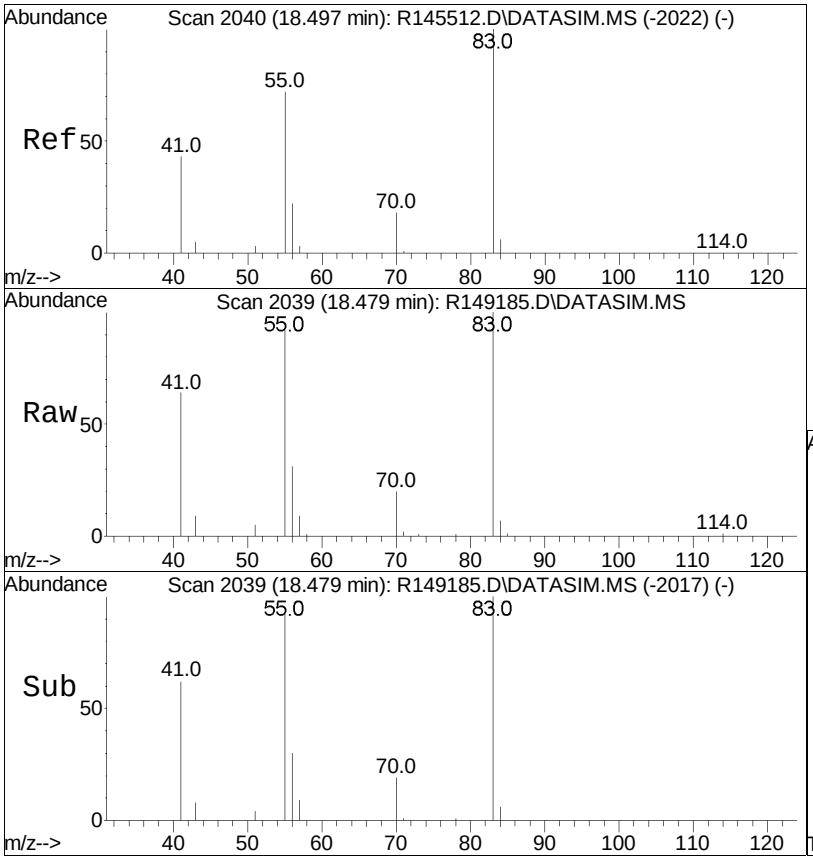


#36
Heptane
Concen: 0.35 ppbV
RT: 16.777 min Scan# 1887
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 43 Resp: 6464

Ion	Ratio	Lower	Upper
43	100		
57	44.8	23.3	63.3
71	42.1	21.1	61.1

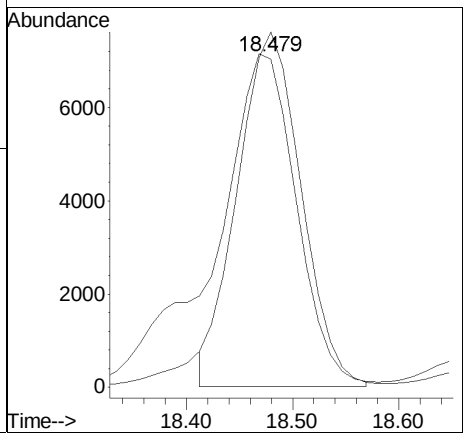


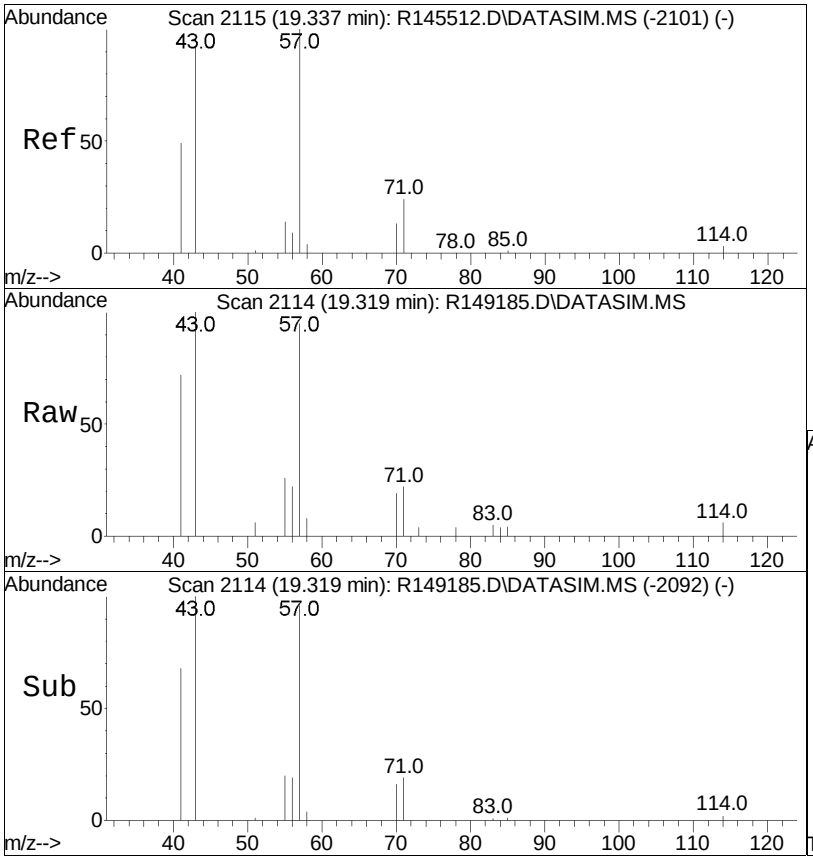


#37
Methylcyclohexane
Concen: 2.25 ppbV m
RT: 18.479 min Scan# 2039
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 83 Resp: 31760

Ion	Ratio	Lower	Upper
83	100		
55	92.4	70.7	110.7

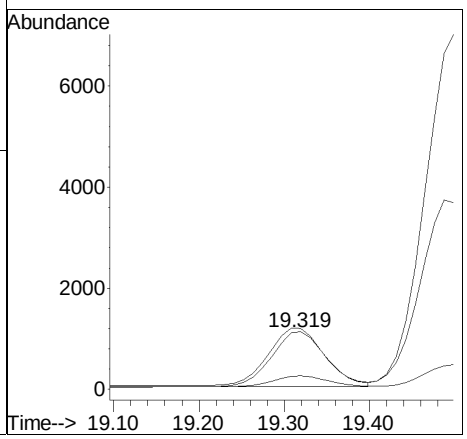


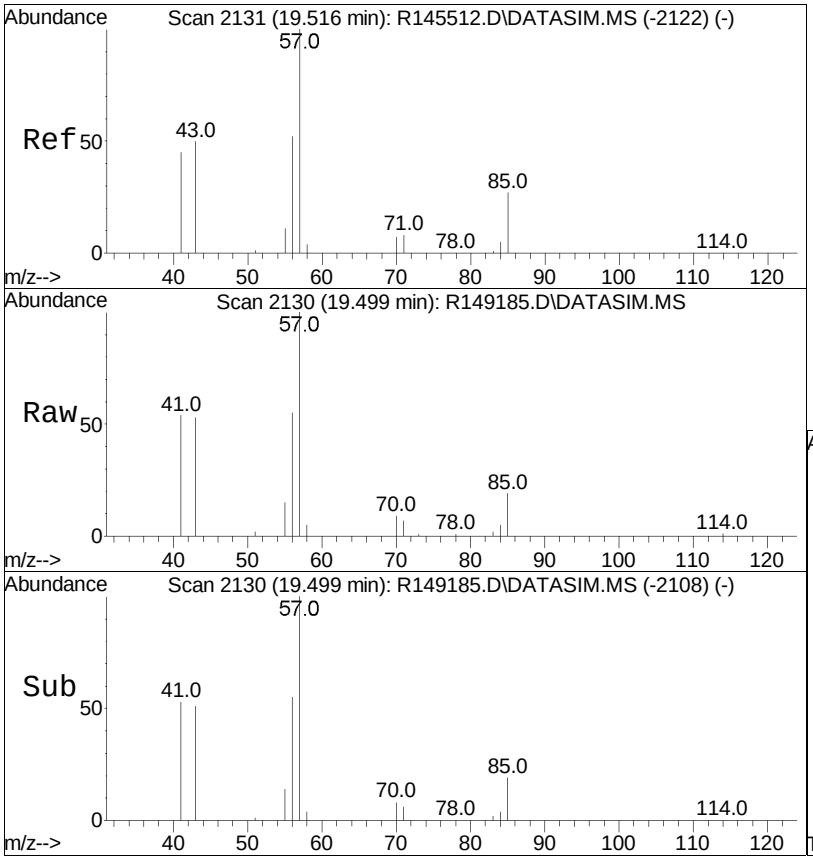


#38
2,5-Dimethylhexane
Concen: 0.22 ppbV
RT: 19.319 min Scan# 2114
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 57 Resp: 4869

Ion	Ratio	Lower	Upper
57	100		
43	105.8	86.5	126.5
71	23.5	0.8	40.8

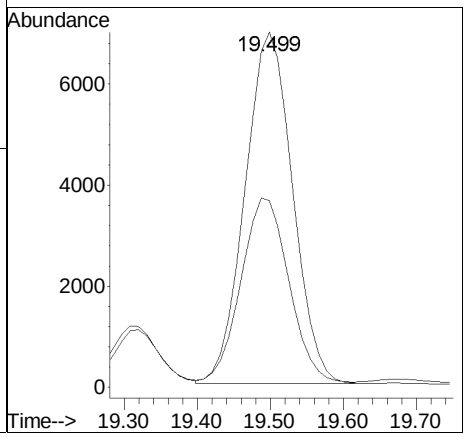


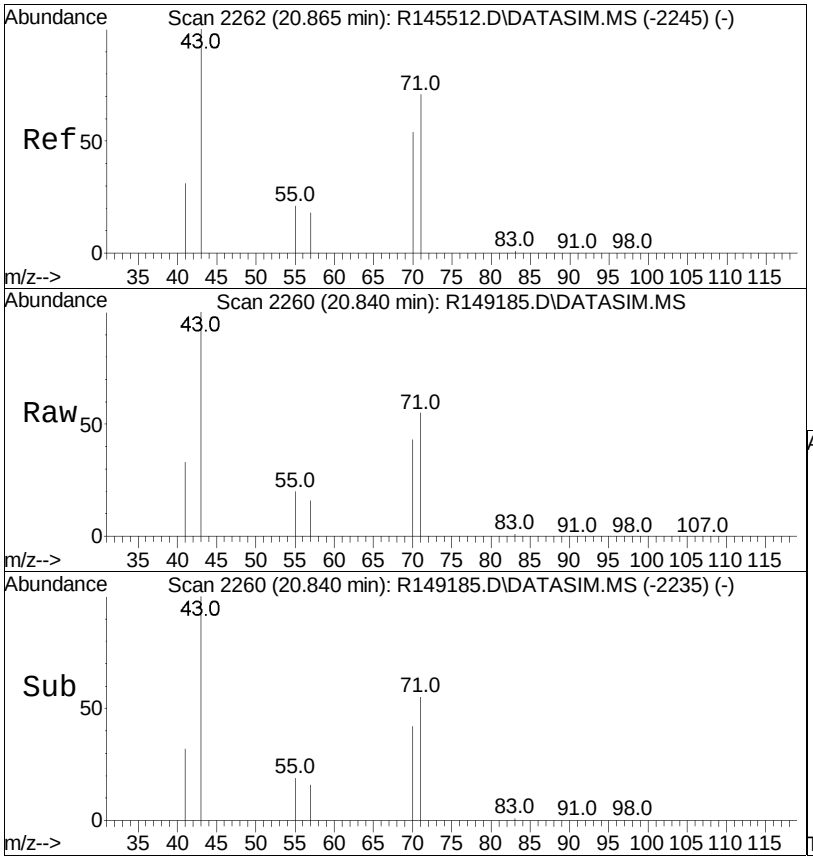


#39
2,4-Dimethyhexane / 2,2,3-TMP
Concen: 1.18 ppbV
RT: 19.499 min Scan# 2130
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 57 Resp: 31498

Ion	Ratio	Lower	Upper
57	100		
43	52.5	36.1	76.1

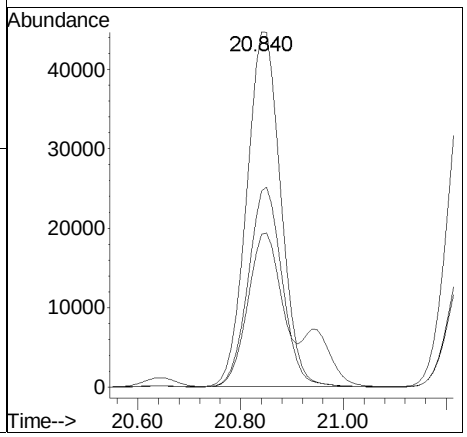


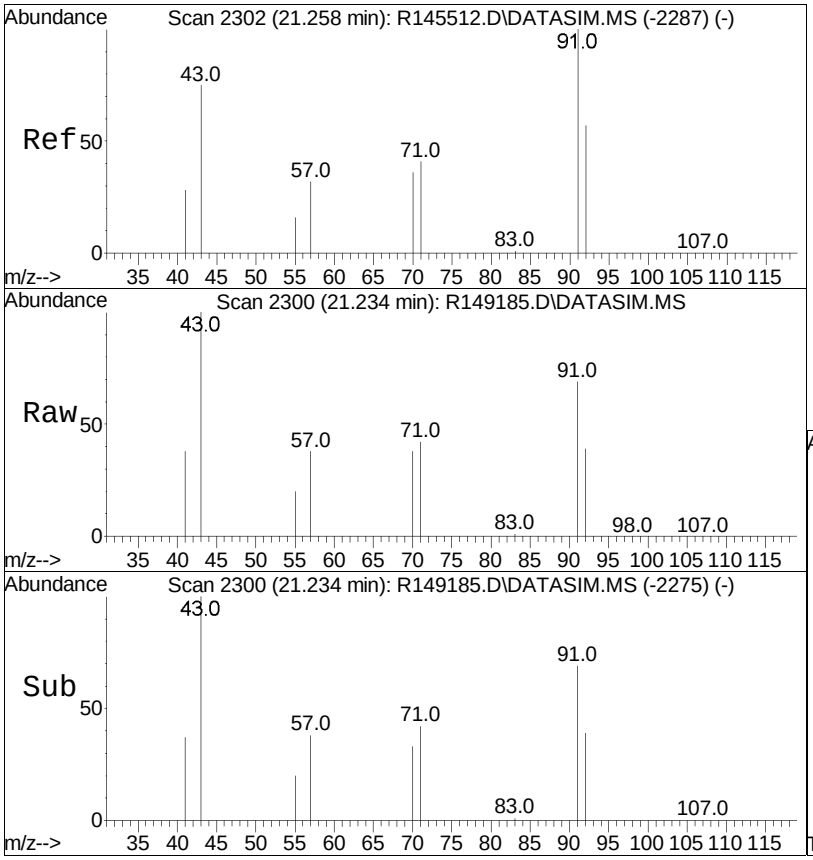


#40
2,3,4-Trimethylpentane
Concen: 6.84 ppbV
RT: 20.840 min Scan# 2260
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 43 Resp: 205352

Ion	Ratio	Lower	Upper
43	100		
71	55.3	34.6	74.6
70	43.1	23.3	63.3

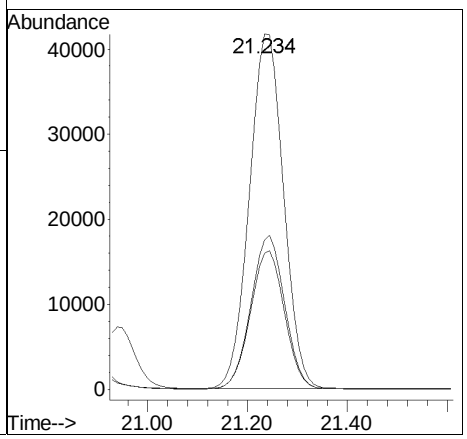


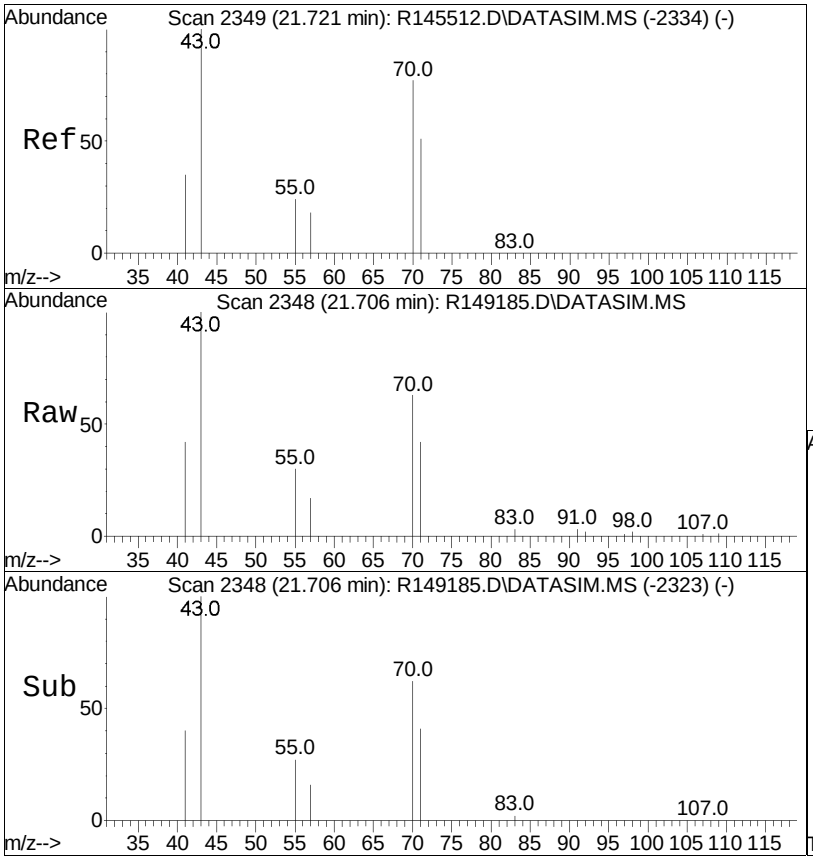


#41
2,3,3-Trimethylpentane
Concen: 7.05 ppbV
RT: 21.234 min Scan# 2300
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 43 Resp: 198299

Ion	Ratio	Lower	Upper
43	100		
71	42.1	22.4	62.4
70	38.3	18.7	58.7

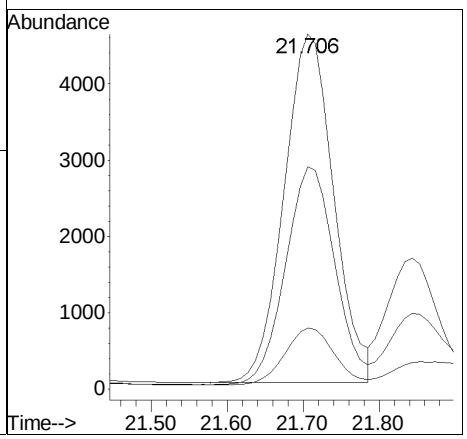


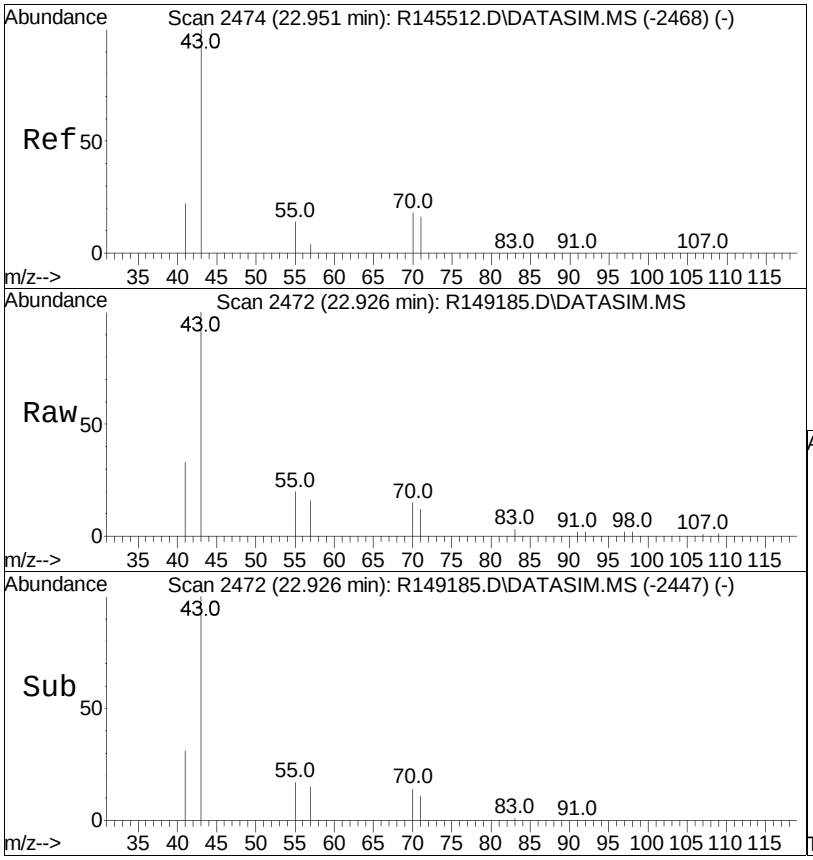


#42
2,3-Dimethylhexane
Concen: 0.77 ppbV
RT: 21.706 min Scan# 2348
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 43 Resp: 20758

Ion	Ratio	Lower	Upper
43	100		
70	62.7	41.8	81.8
57	17.2	0.0	36.6

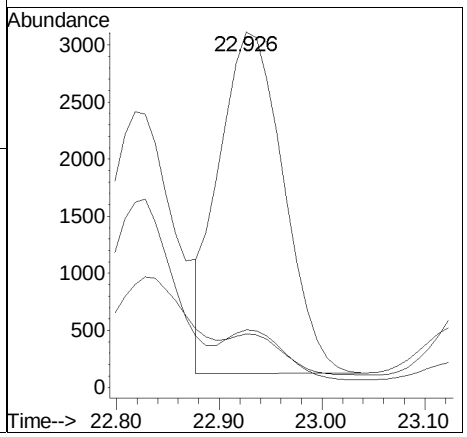


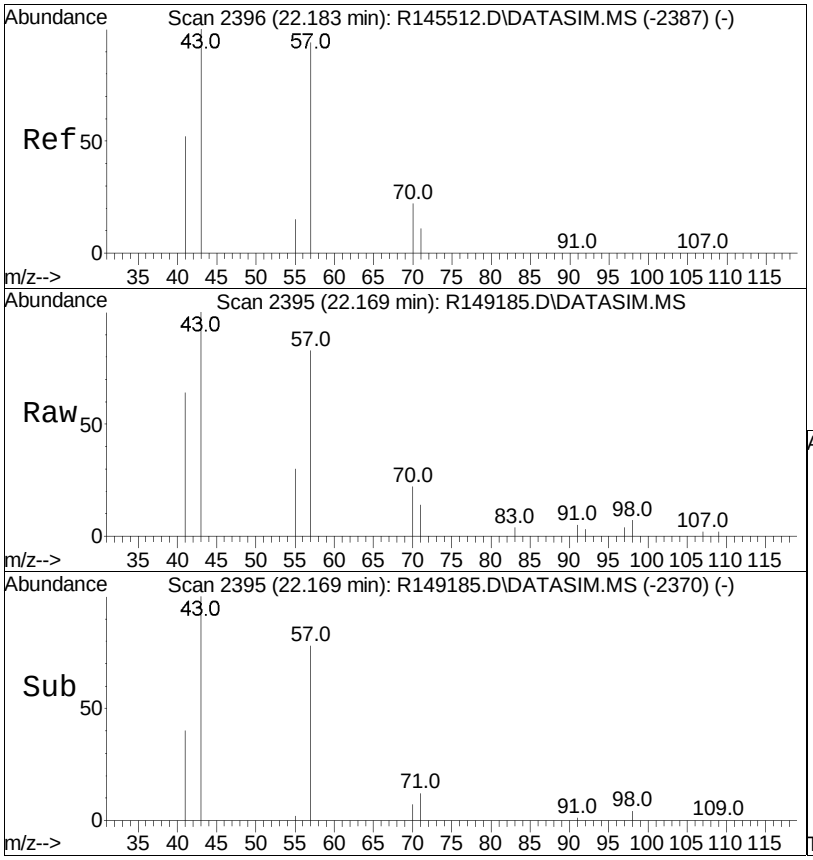


#43
3-Ethylhexane
Concen: 0.39 ppbV
RT: 22.926 min Scan# 2472
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 43 Resp: 13009

Ion	Ratio	Lower	Upper
43	100		
70	15.1	0.0	32.6
57	16.2	0.0	34.2

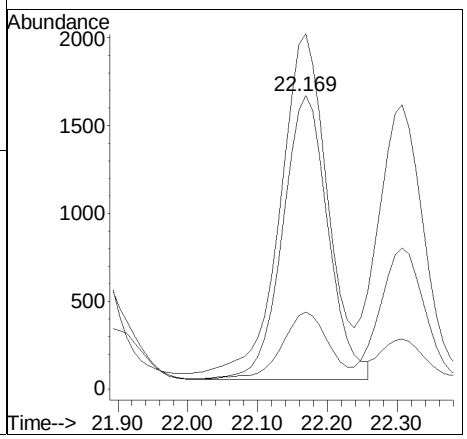


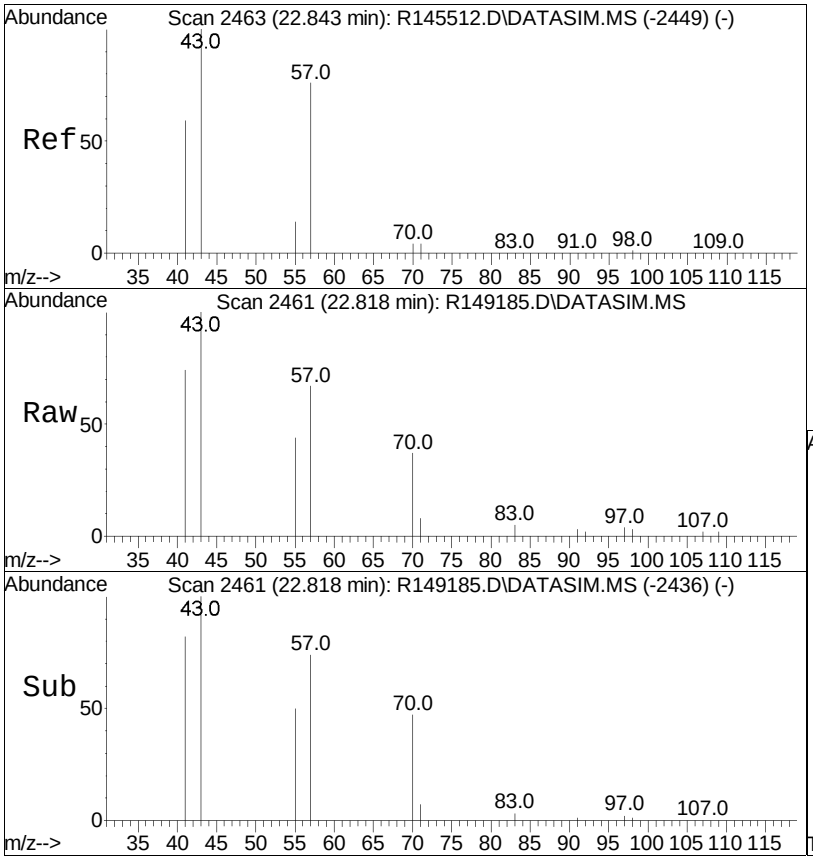


#44
2-Methylheptane
Concen: 0.36 ppbV
RT: 22.169 min Scan# 2395
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 57 Resp: 7296

Ion	Ratio	Lower	Upper
57	100		
43	120.9	98.3	138.3
70	26.3	2.5	42.5

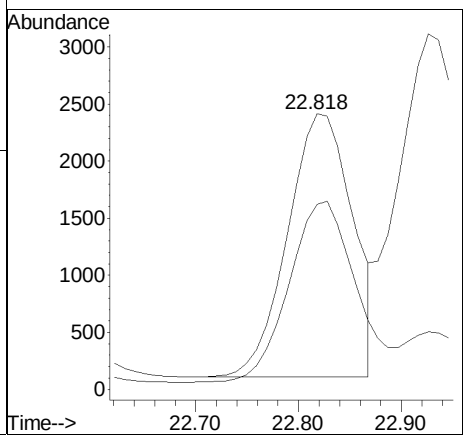


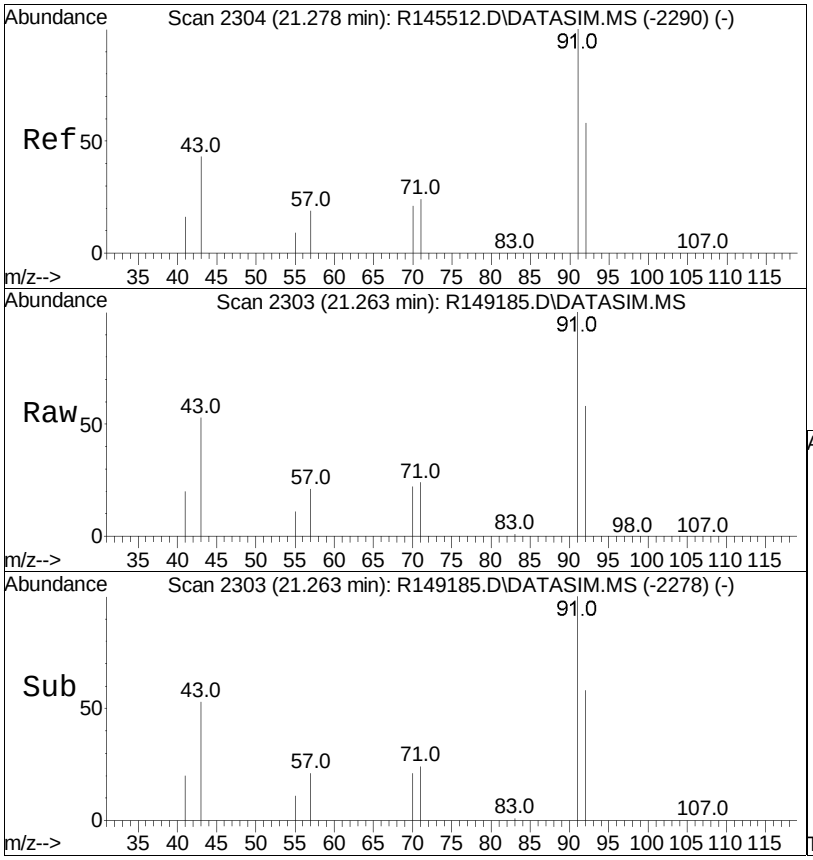


#45
3-Methylheptane
Concen: 0.45 ppbV
RT: 22.818 min Scan# 2461
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 43 Resp: 10118

Ion	Ratio	Lower	Upper
43	100		
57	67.1	47.6	87.6

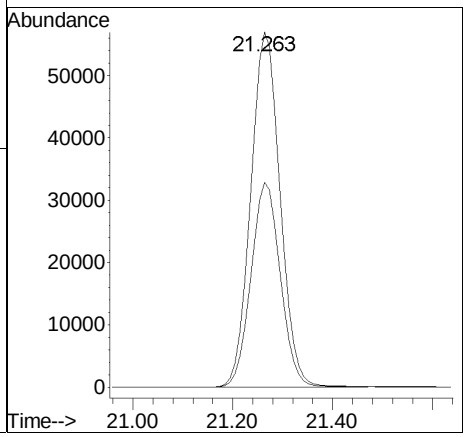


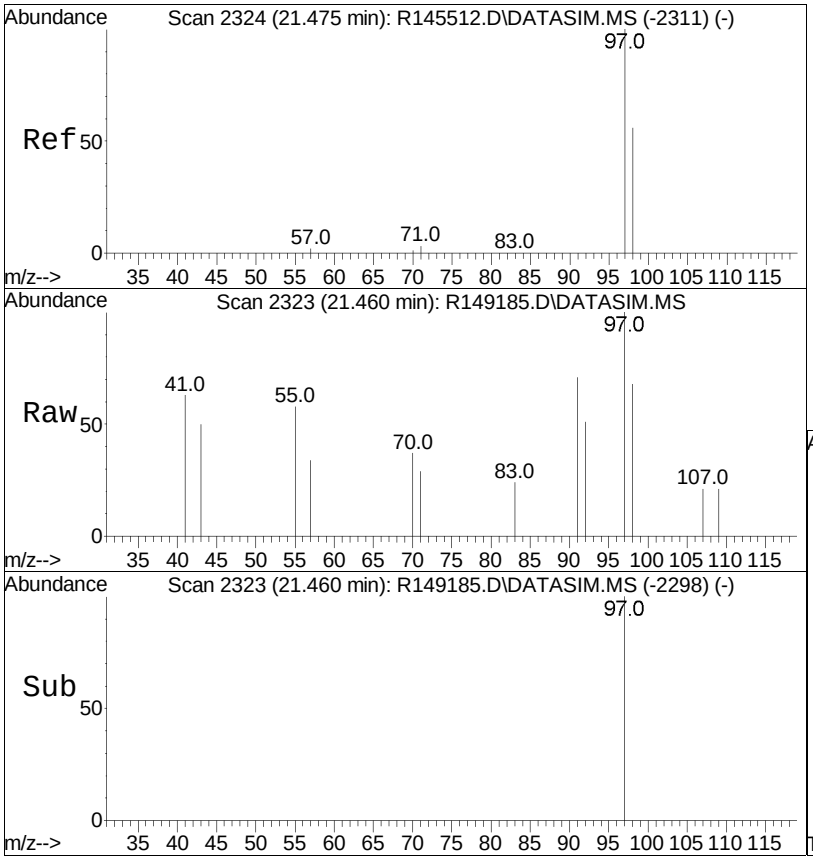


#47
Toluene
Concen: 7.22 ppbV
RT: 21.263 min Scan# 2303
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 91 Resp: 232240

Ion	Ratio	Lower	Upper
91	100		
92	57.7	37.6	77.6

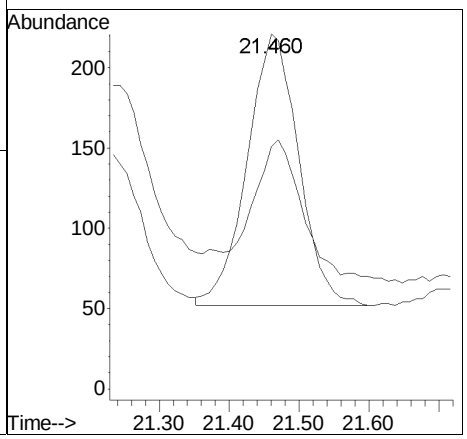


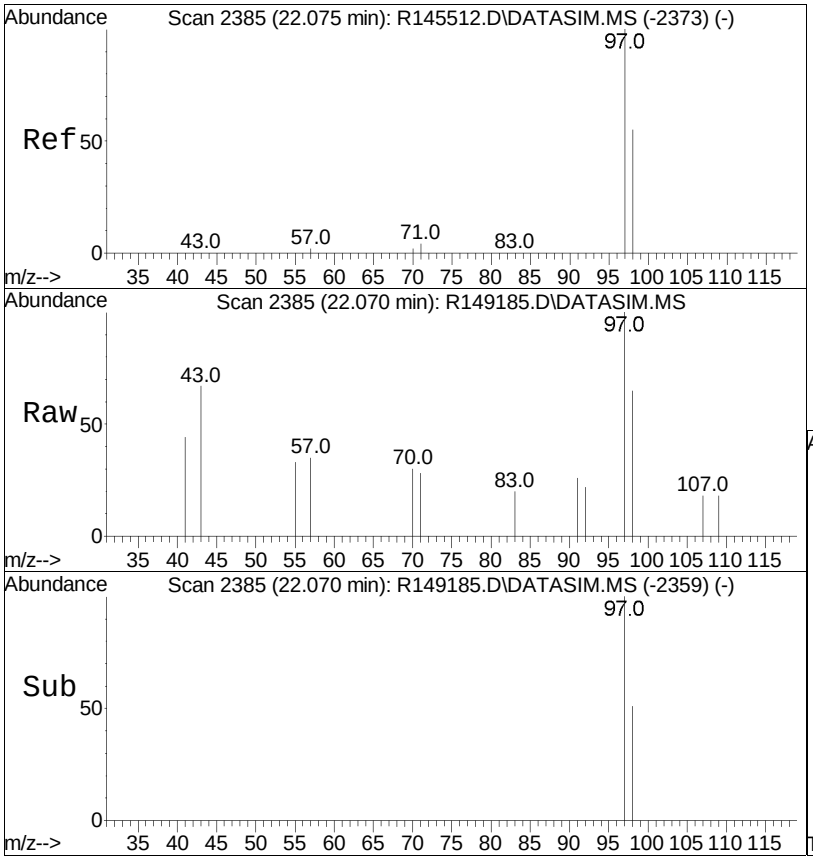


#48
2-Methylthiophene
Concen: 0.04 ppbV
RT: 21.460 min Scan# 2323
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 97 Resp: 865

Ion	Ratio	Lower	Upper
97	100		
98	68.3	35.4	75.4

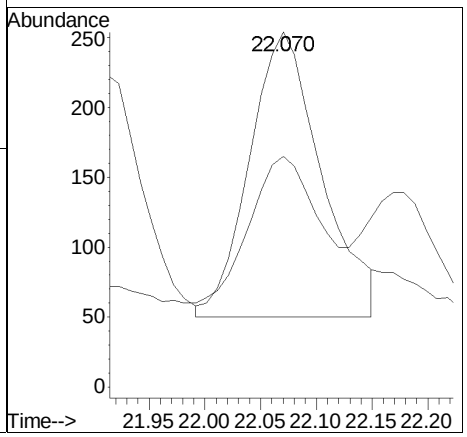


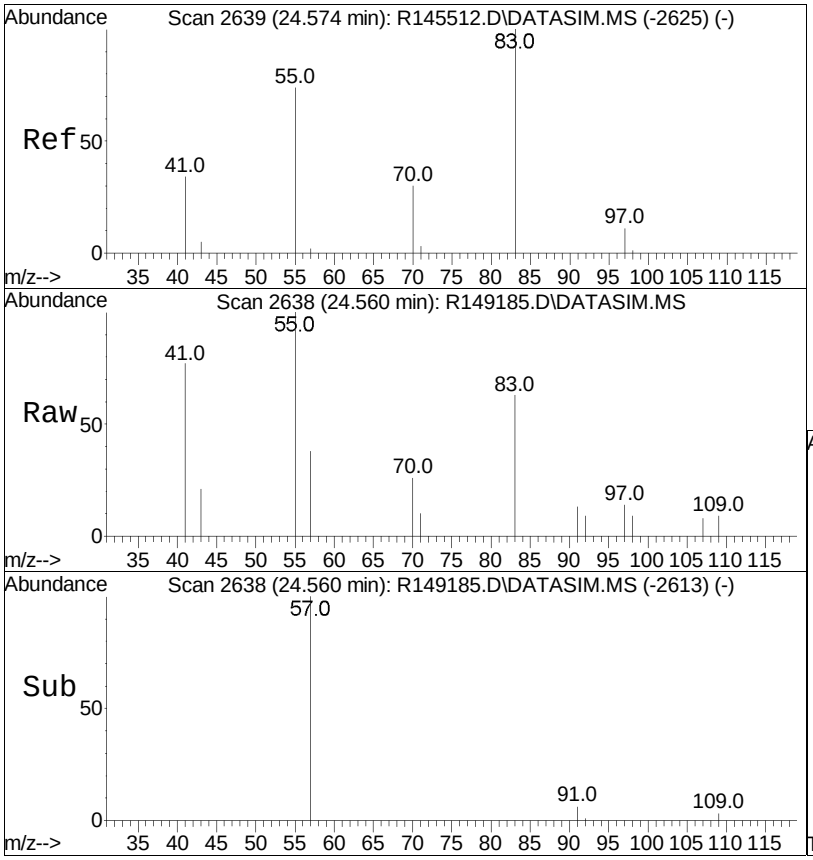


#49
3-Methylthiophene
Concen: 0.04 ppbV m
RT: 22.070 min Scan# 2385
Delta R.T. 0.010 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 97 Resp: 913

Ion	Ratio	Lower	Upper
97	100		
98	65.0	34.1	74.1

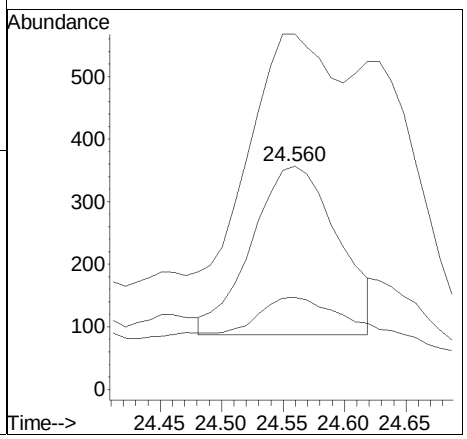


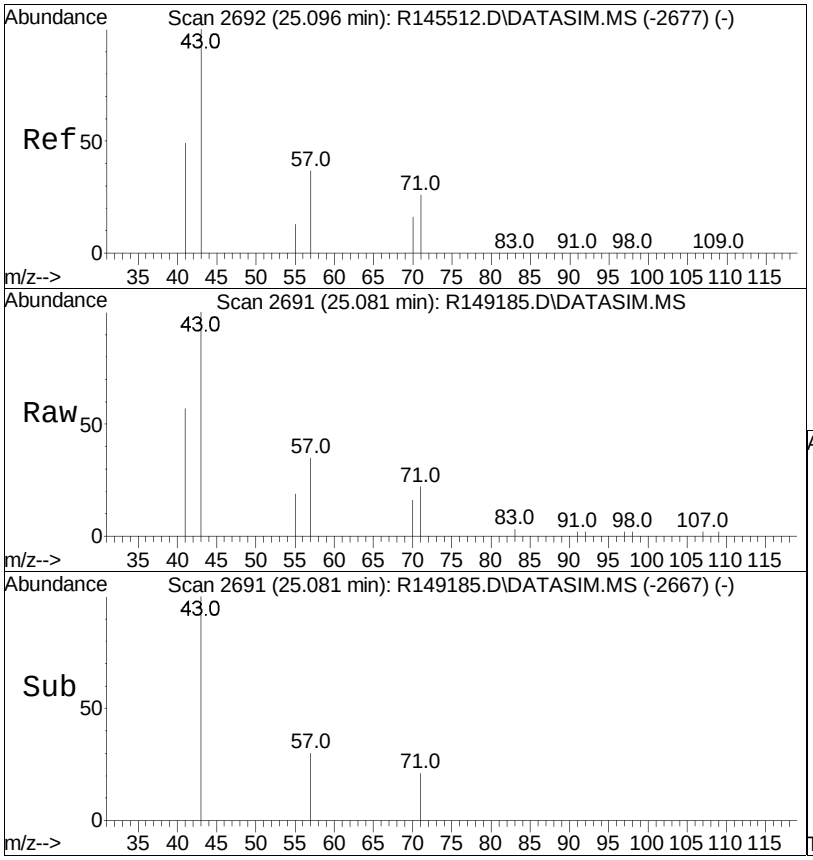


#51
1-ethyl-1-methylcyclopentane
Concen: 0.07 ppbV m
RT: 24.560 min Scan# 2638
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 83 Resp: 1320

Ion	Ratio	Lower	Upper
83	100		
55	133.9	73.0	109.4#
70	47.5	25.5	38.3#

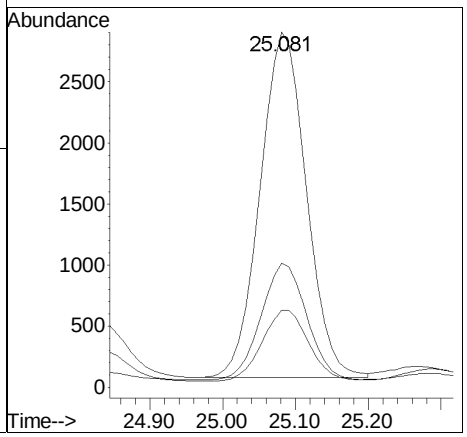


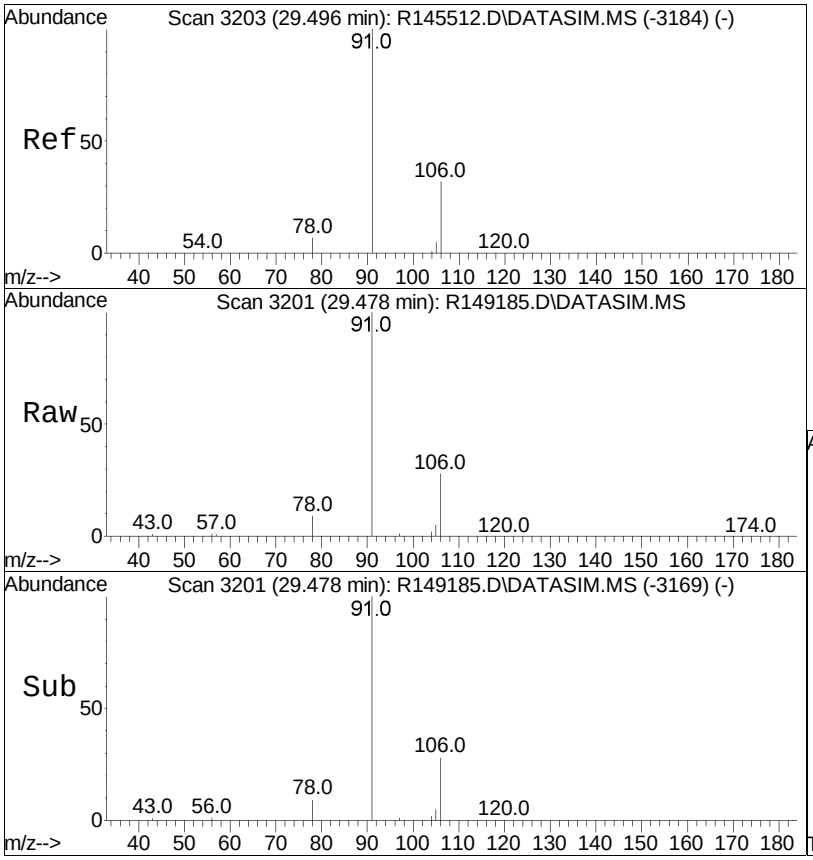


#52
Octane
Concen: 0.49 ppbV
RT: 25.081 min Scan# 2691
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 43 Resp: 12421

Ion	Ratio	Lower	Upper
43	100		
57	35.0	13.6	53.6
71	21.8	0.9	40.9

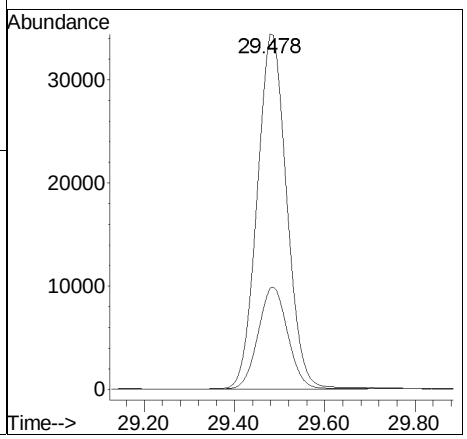


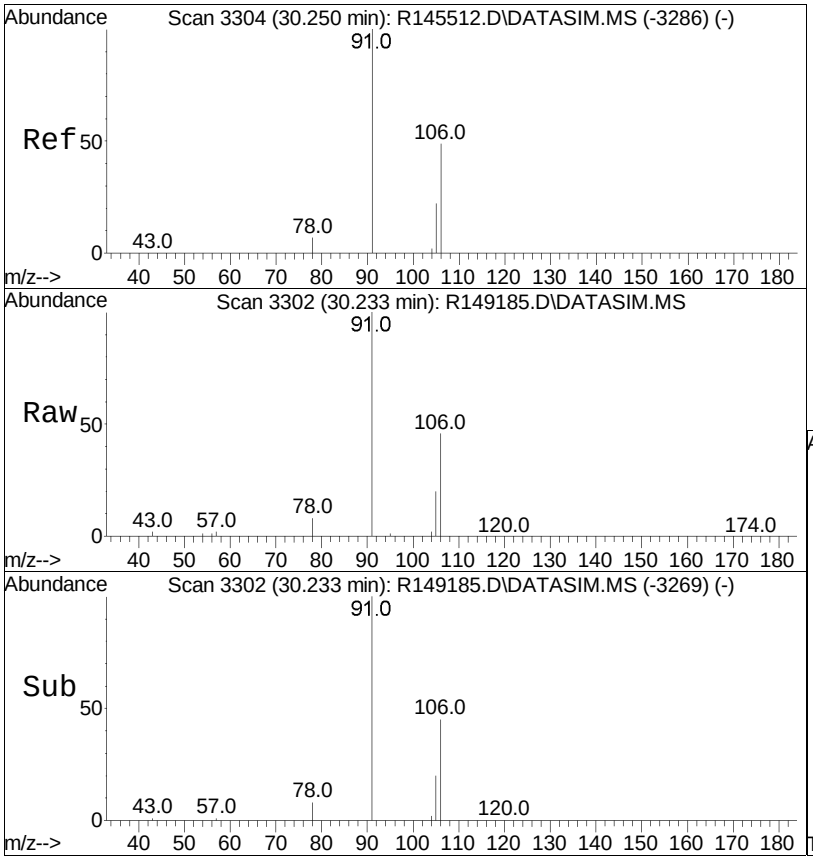


#55
Ethylbenzene
Concen: 5.25 ppbV
RT: 29.478 min Scan# 3201
Delta R.T. -0.007 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 91 Resp: 156045

Ion	Ratio	Lower	Upper
91	100		
106	28.5	9.1	49.1

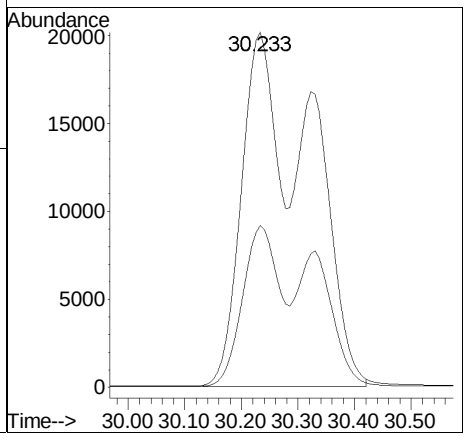


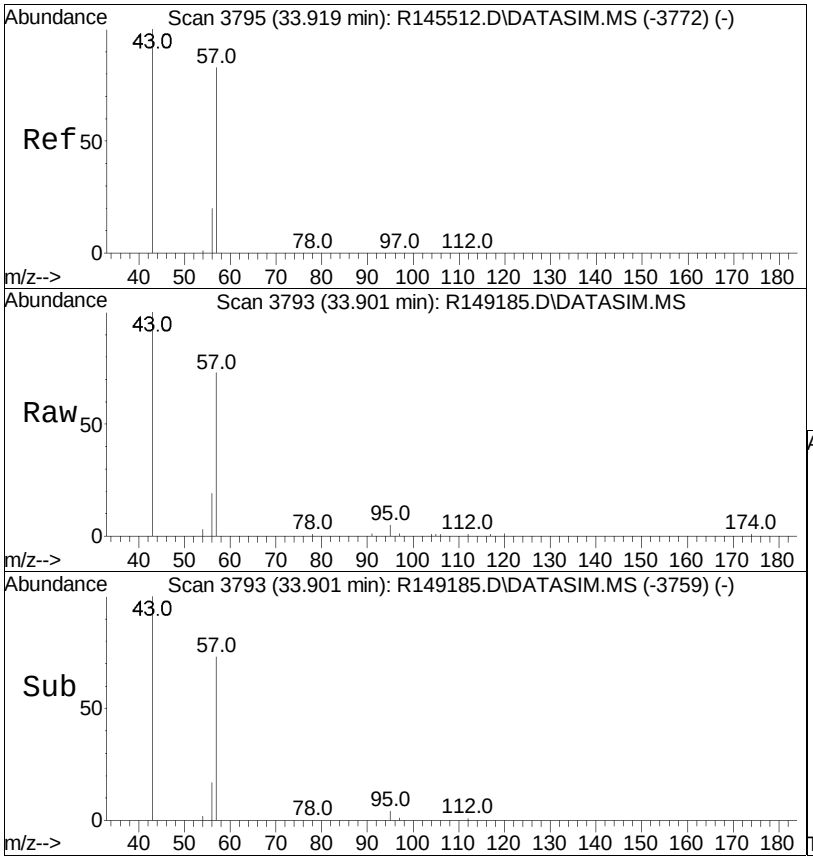


#57
p/m-Xylene
Concen: 7.17 ppbV m
RT: 30.233 min Scan# 3302
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 91 Resp: 164174

Ion	Ratio	Lower	Upper
91	100		
106	45.6	25.5	65.5

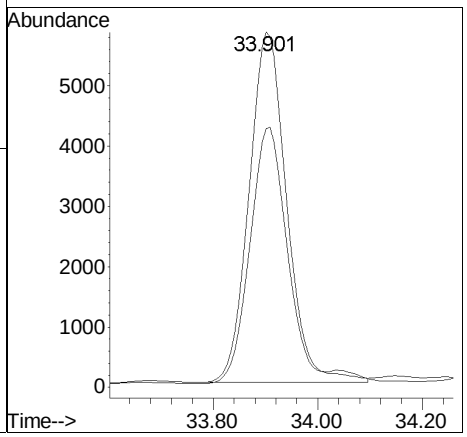


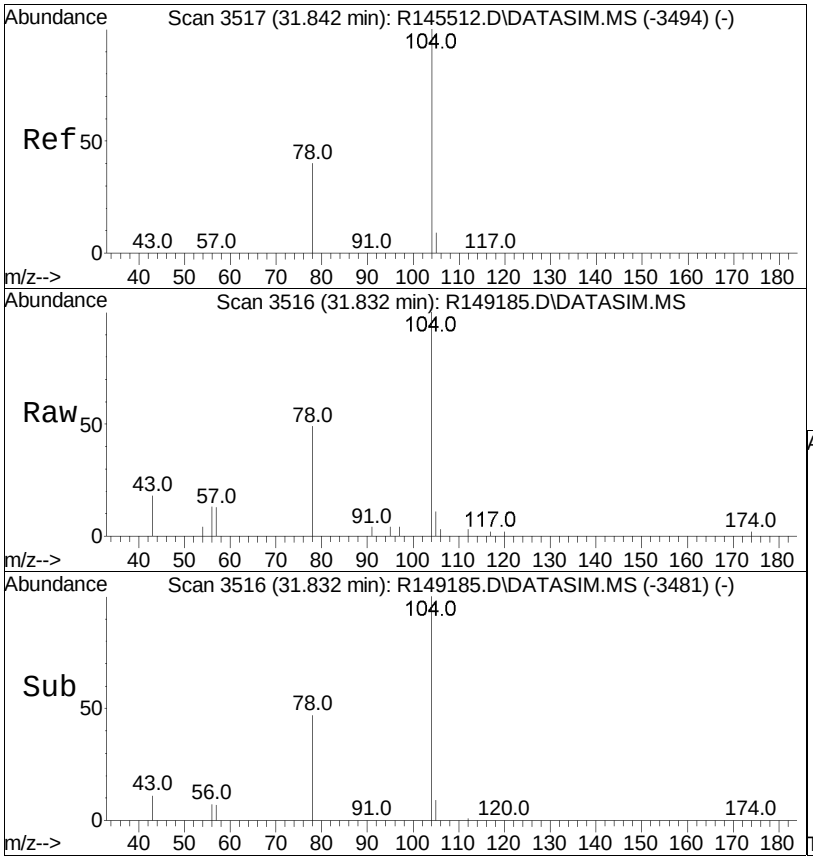


#59
Nonane
Concen: 1.31 ppbV
RT: 33.901 min Scan# 3793
Delta R.T. 0.007 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 43 Resp: 29084

Ion	Ratio	Lower	Upper
43	100		
57	72.8	51.4	91.4

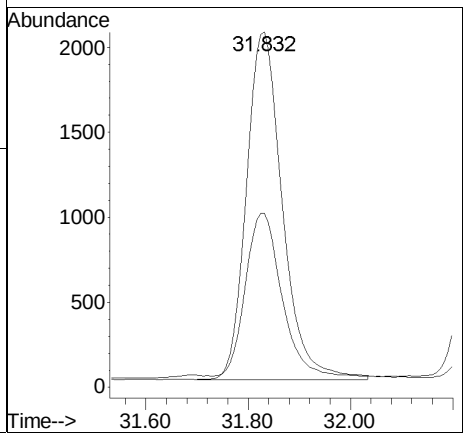


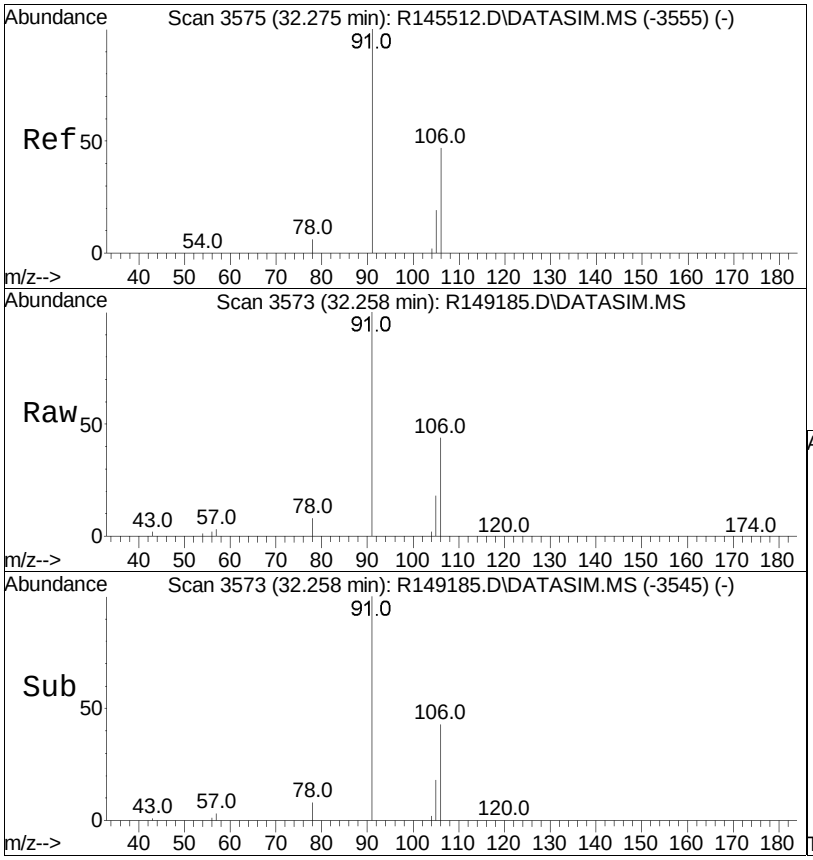


#60
Styrene
Concen: 0.66 ppbV
RT: 31.832 min Scan# 3516
Delta R.T. 0.015 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:104 Resp: 10008

Ion	Ratio	Lower	Upper
104	100		
78	48.9	28.5	68.5

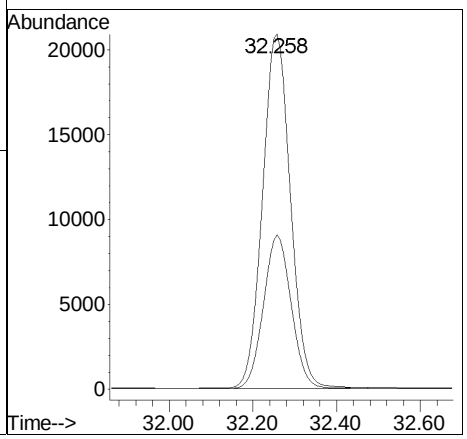


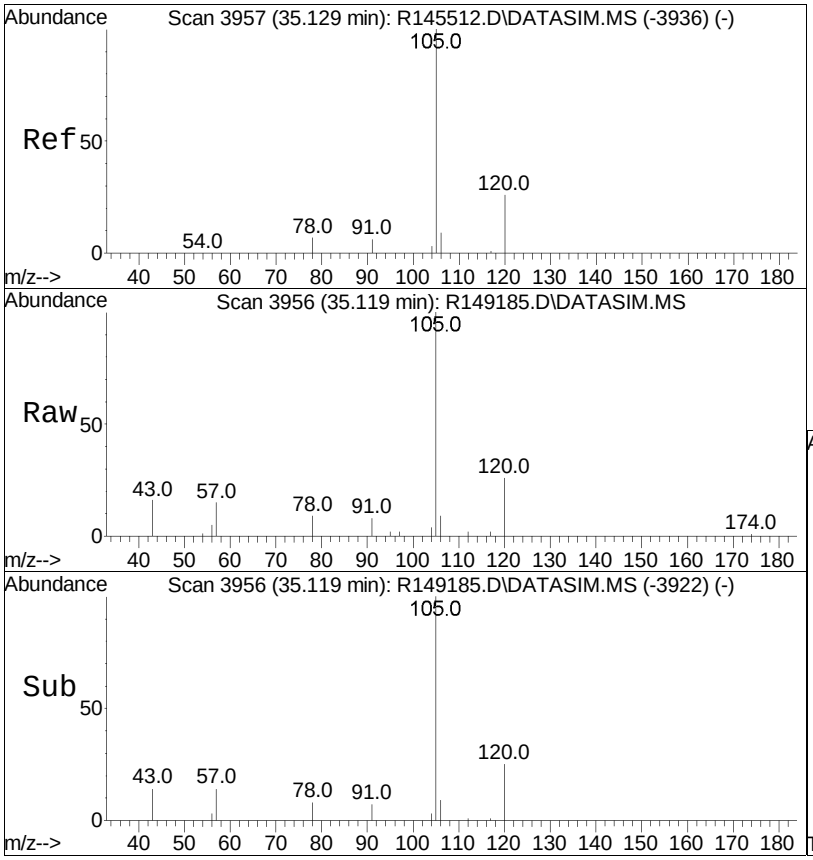


#61
o-Xylene
Concen: 4.12 ppbV
RT: 32.258 min Scan# 3573
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 91 Resp: 96744

Ion	Ratio	Lower	Upper
91	100		
106	43.5	23.5	63.5

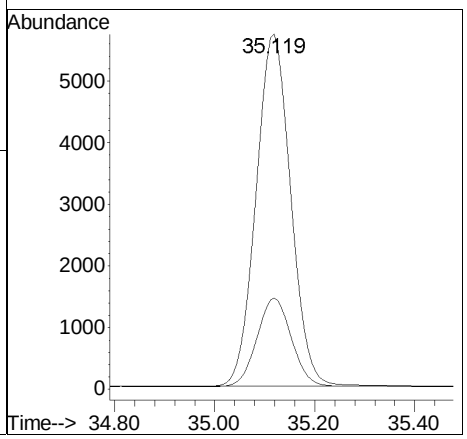


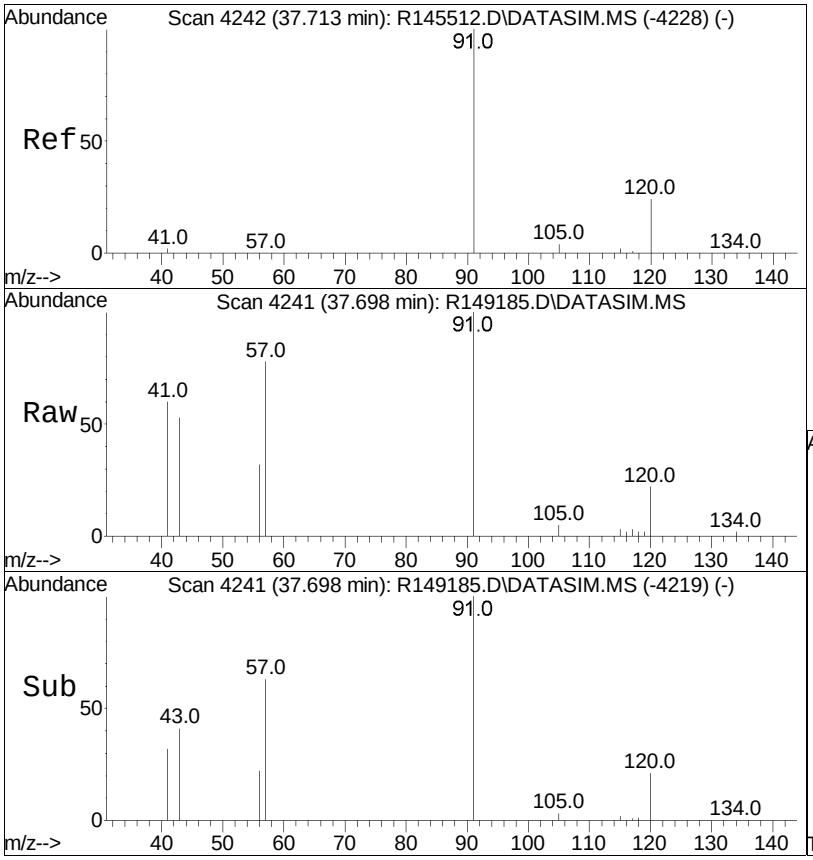


#63
Isopropylbenzene
Concen: 0.89 ppbV
RT: 35.119 min Scan# 3956
Delta R.T. 0.007 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:105 Resp: 27520

Ion	Ratio	Lower	Upper
105	100		
120	25.7	4.8	44.8

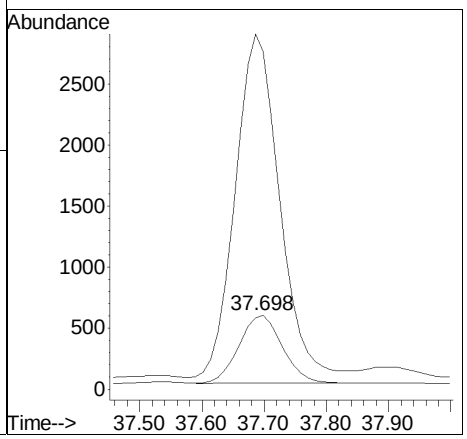


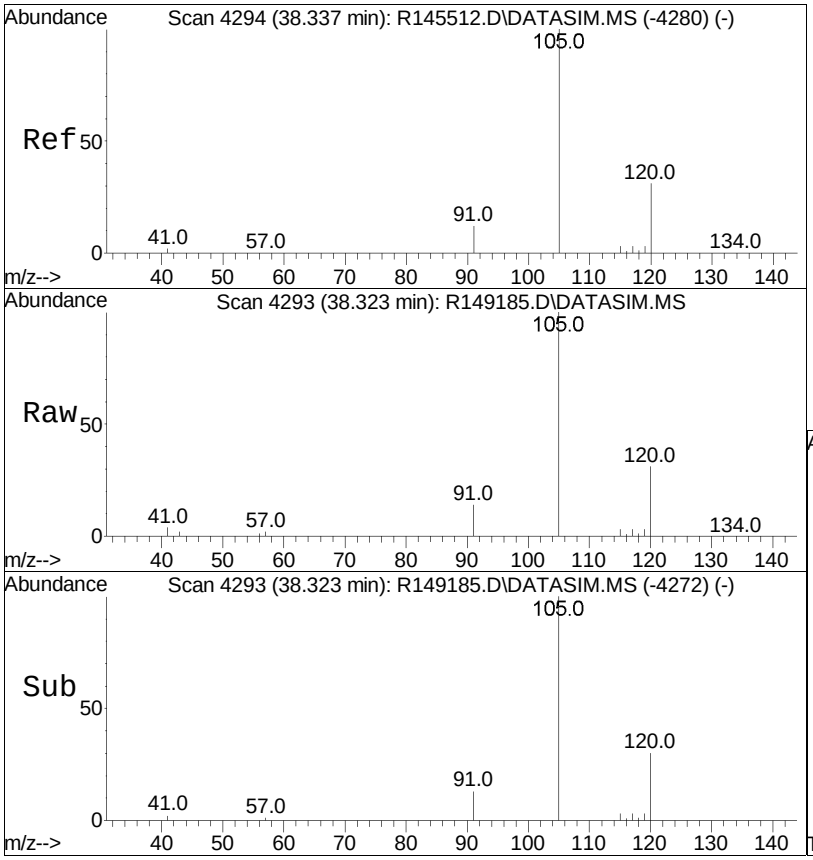


#64
n-Propylbenzene
Concen: 0.33 ppbV
RT: 37.698 min Scan# 4241
Delta R.T. 0.012 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:120 Resp: 2689

Ion	Ratio	Lower	Upper
120	100		
91	455.5	480.0	520.0#

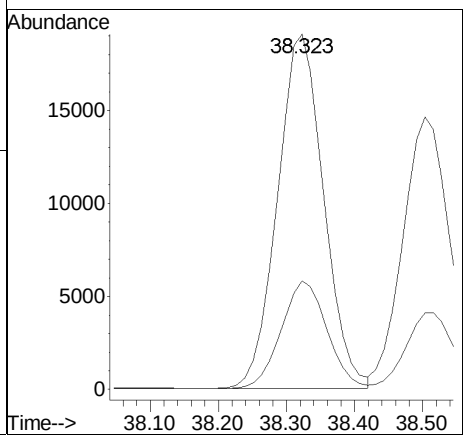


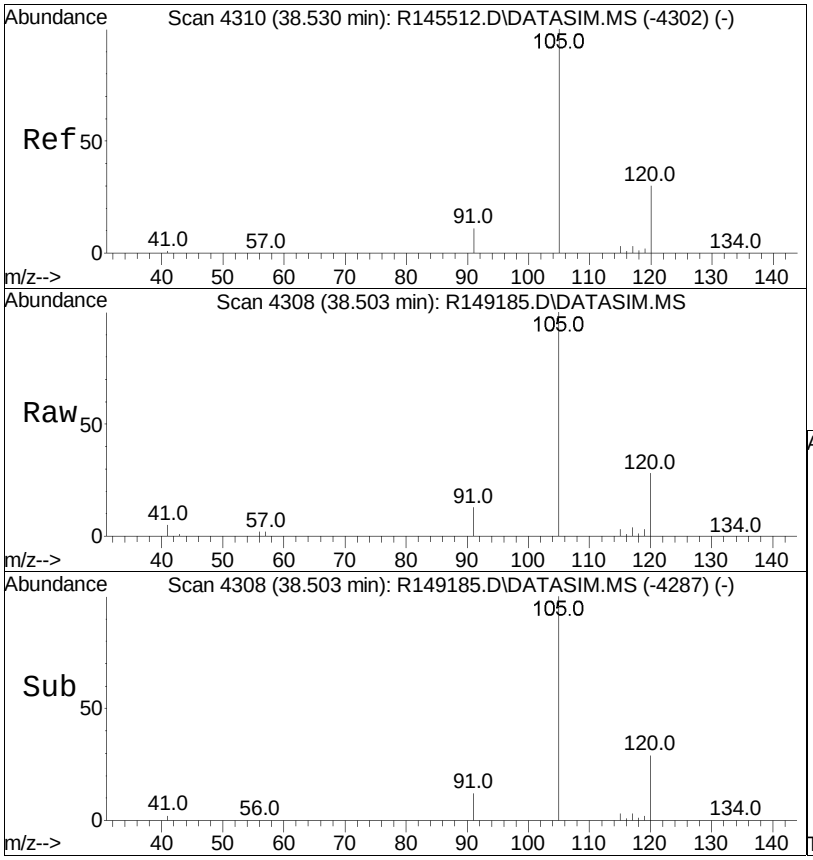


#65
1-Methyl-3-ethylbenzene
Concen: 3.07 ppbV
RT: 38.323 min Scan# 4293
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:105 Resp: 89467

Ion	Ratio	Lower	Upper
105	100		
120	30.6	10.4	50.4

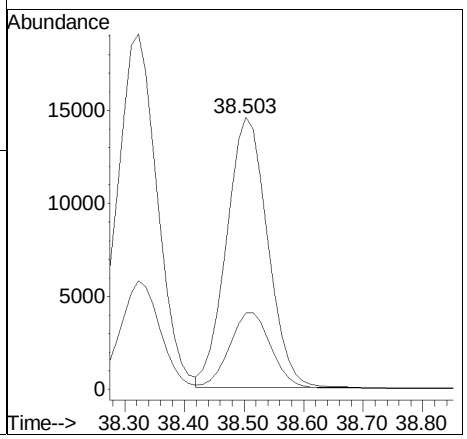


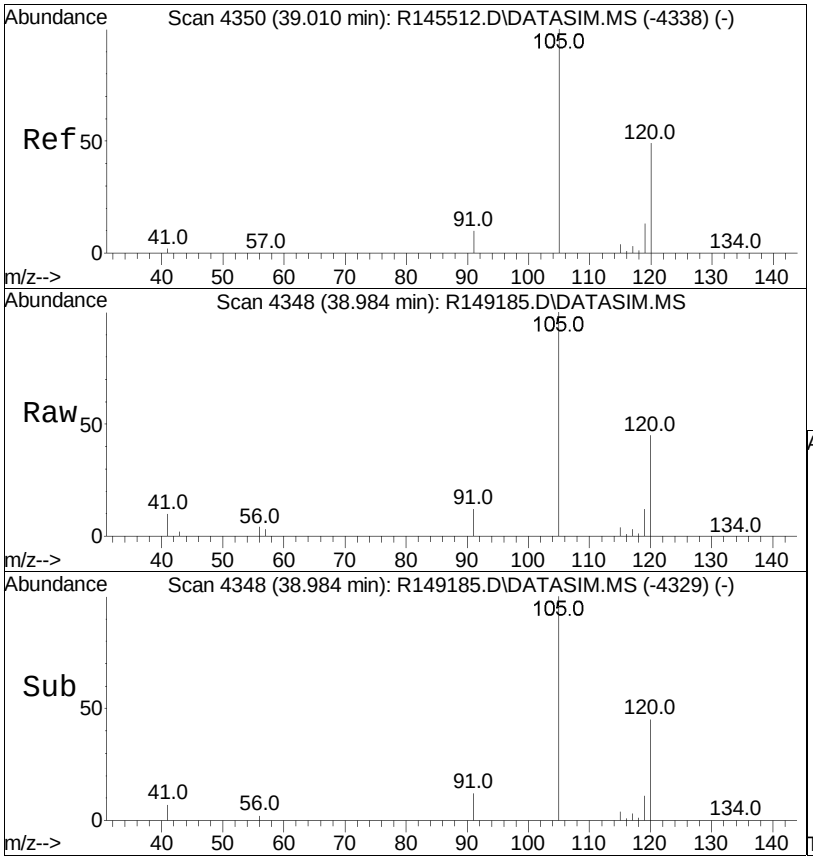


#66
1-Methyl-4-ethylbenzene
Concen: 2.21 ppbV
RT: 38.503 min Scan# 4308
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:105 Resp: 69421

Ion	Ratio	Lower	Upper
105	100		
120	28.1	7.8	47.8

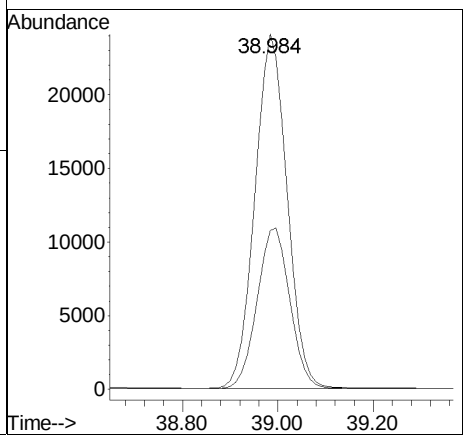


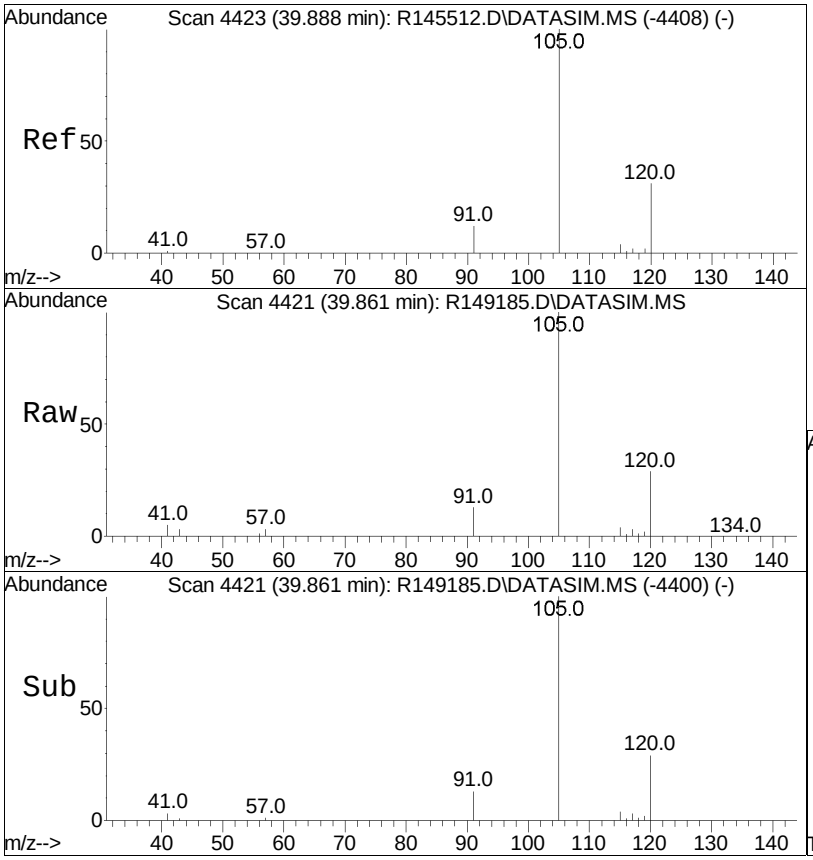


#67
1,3,5-Trimethylbenzene
Concen: 4.42 ppbV
RT: 38.984 min Scan# 4348
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:105 Resp: 112470

Ion	Ratio	Lower	Upper
105	100		
120	44.7	25.9	65.9

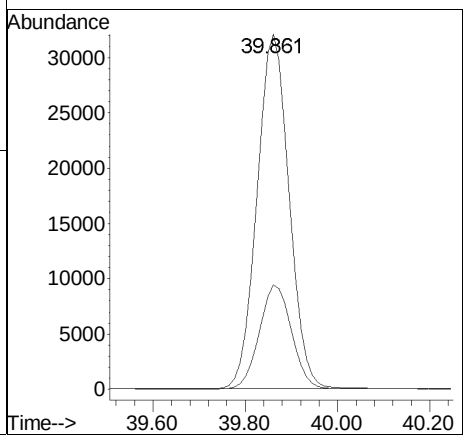


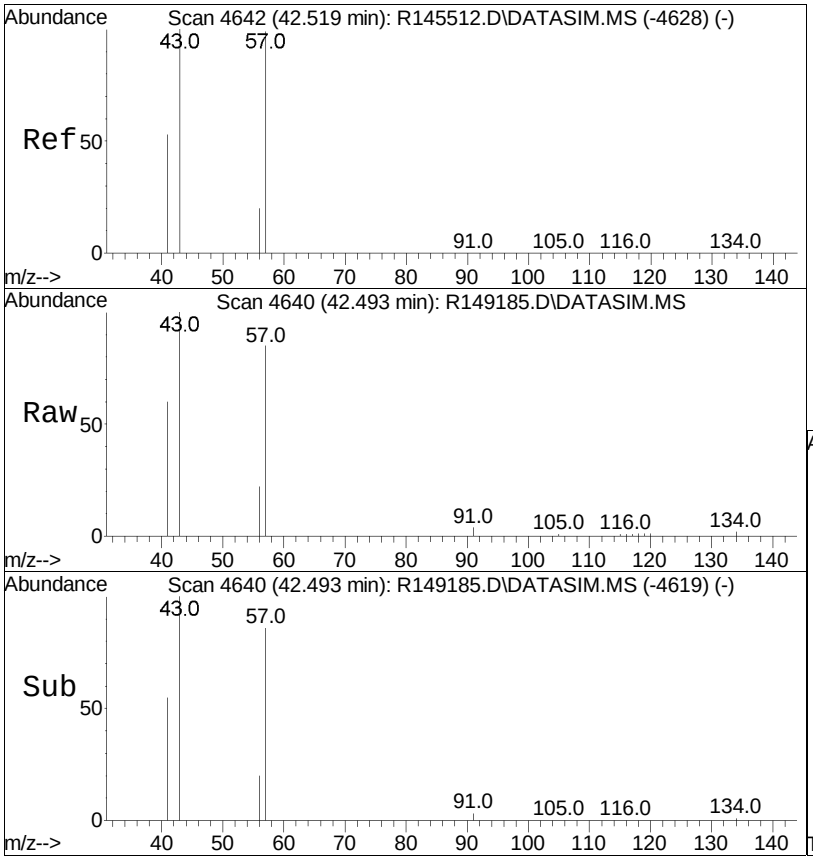


#69
1-Methyl-2-ethylbenzene
Concen: 5.20 ppbV
RT: 39.861 min Scan# 4421
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:105 Resp: 154378

Ion	Ratio	Lower	Upper
105	100		
120	29.4	9.6	49.6

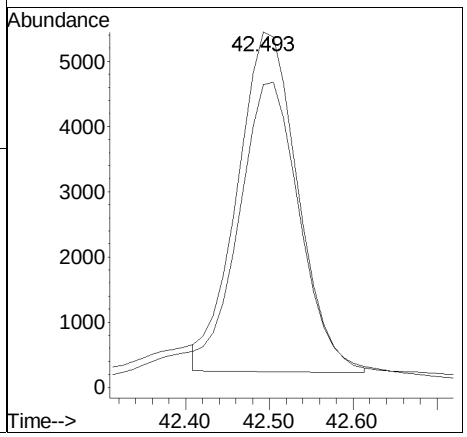


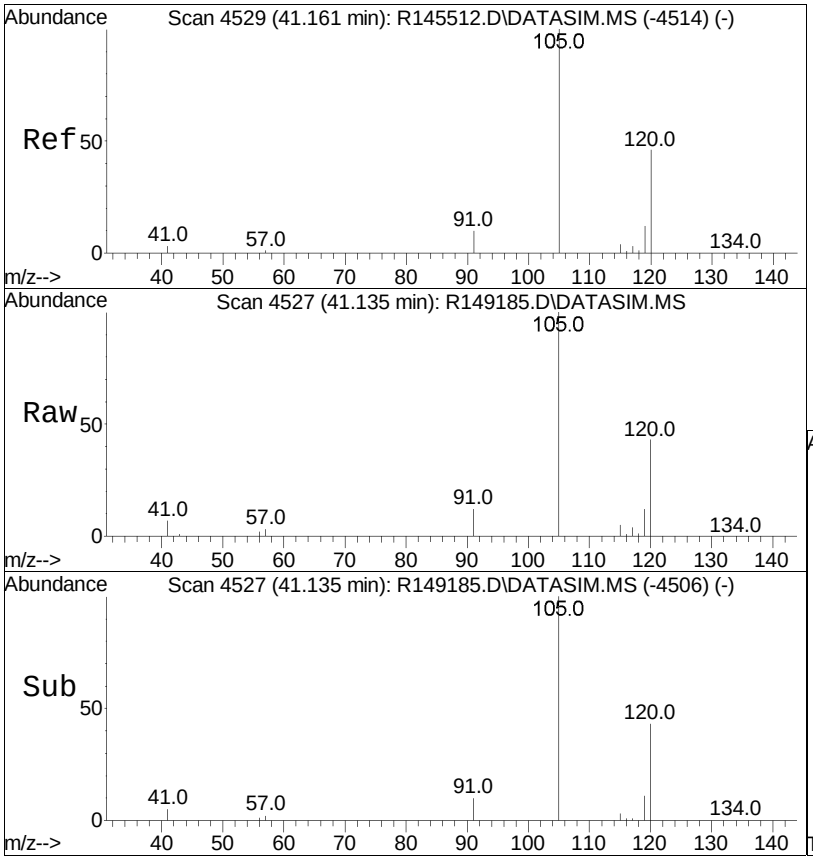


#70
Decane
Concen: 1.15 ppbV m
RT: 42.493 min Scan# 4640
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 43 Resp: 26244

Ion	Ratio	Lower	Upper
43	100		
57	85.2	66.4	106.4

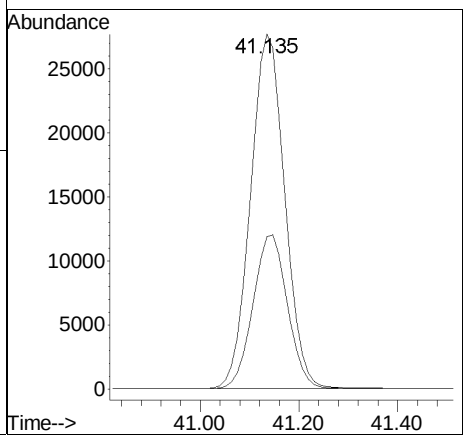


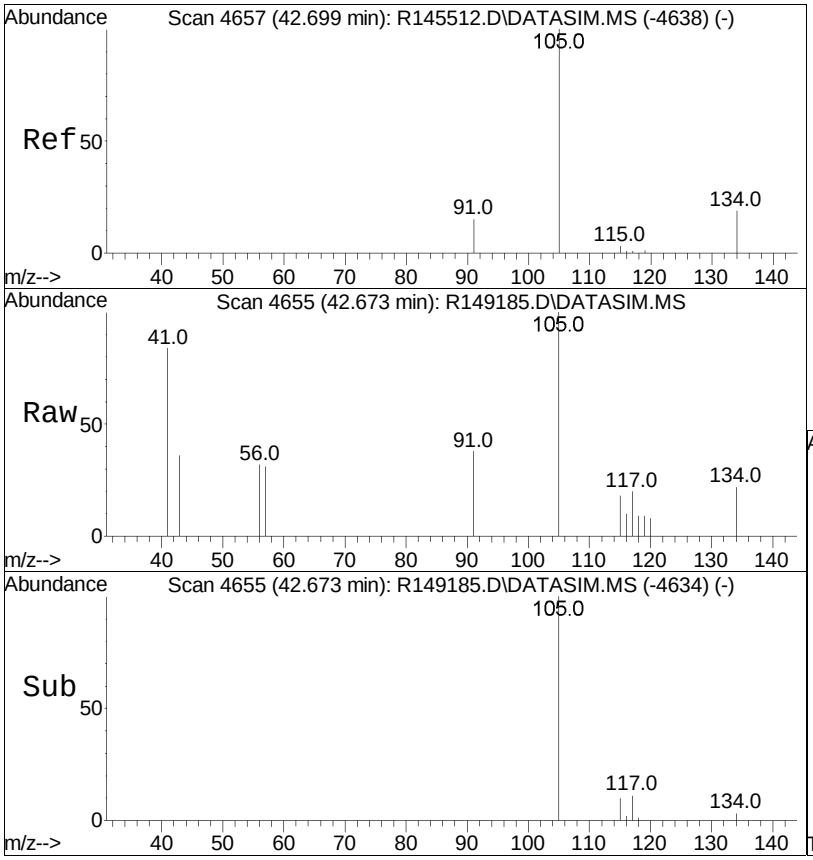


#71
1,2,4-Trimethylbenzene
Concen: 5.26 ppbV
RT: 41.135 min Scan# 4527
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:105 Resp: 133244

Ion	Ratio	Lower	Upper
105	100		
120	43.0	23.0	63.0

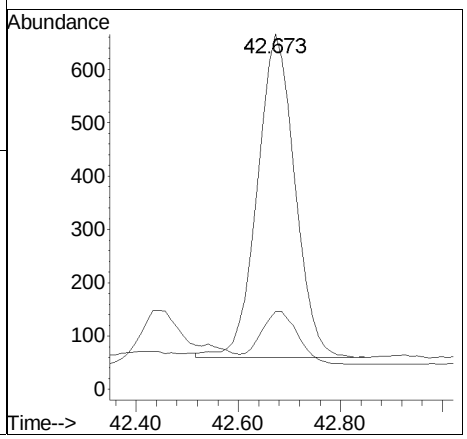


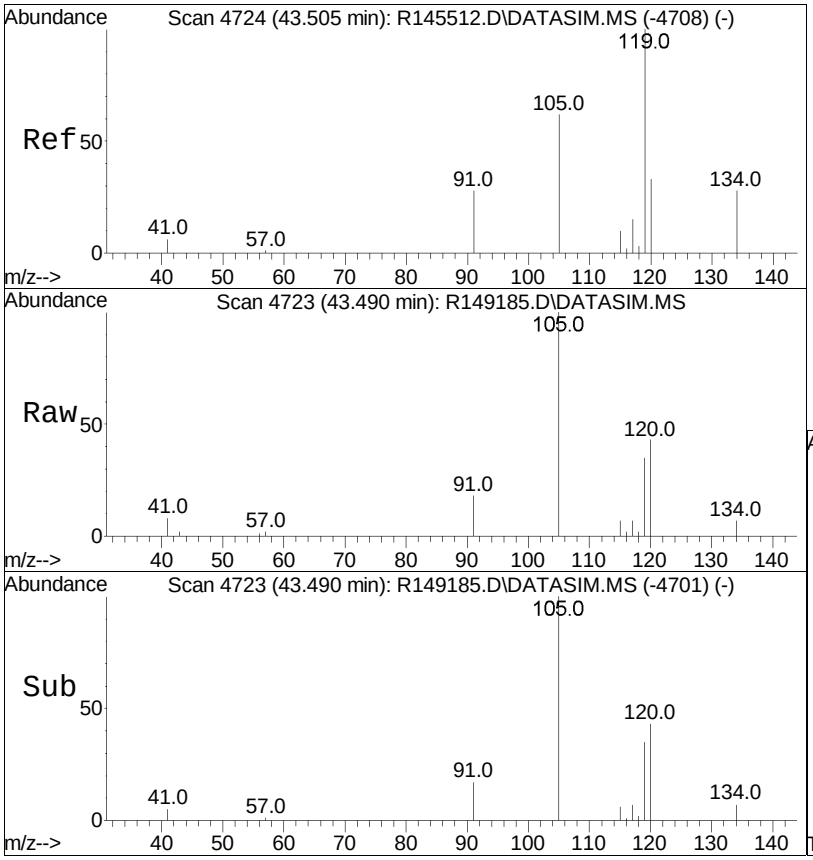


#72
sec-Butylbenzene
Concen: 0.08 ppbV
RT: 42.673 min Scan# 4655
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:105 Resp: 3094

Ion	Ratio	Lower	Upper
105	100		
134	21.9	0.0	37.0

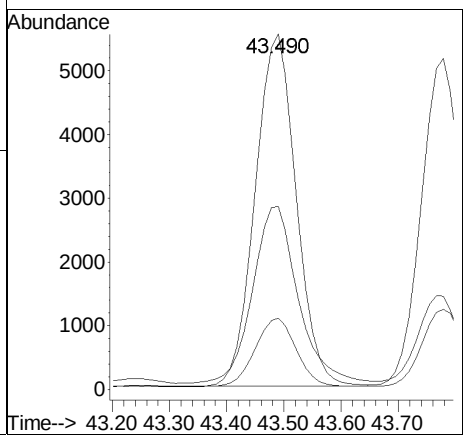


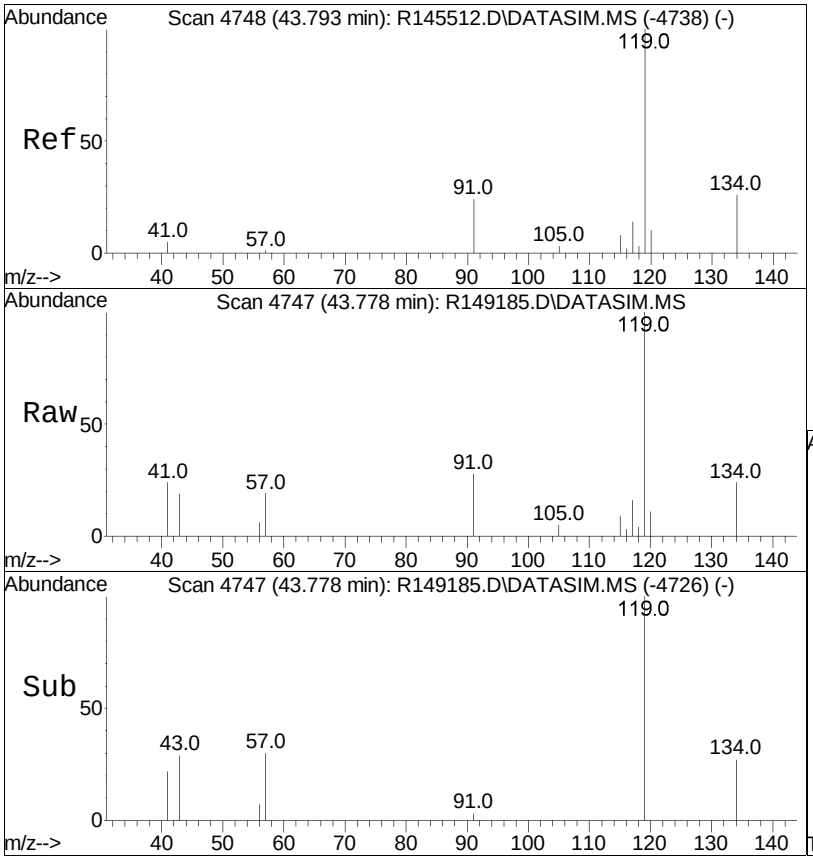


#73
1-Methyl-3-isopropylbenzene
Concen: 0.83 ppbV
RT: 43.490 min Scan# 4723
Delta R.T. 0.012 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:119 Resp: 27504

Ion	Ratio	Lower	Upper
119	100		
134	20.1	4.5	44.5
91	51.5	12.0	52.0

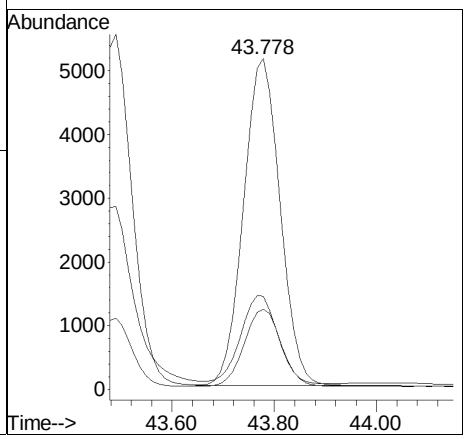


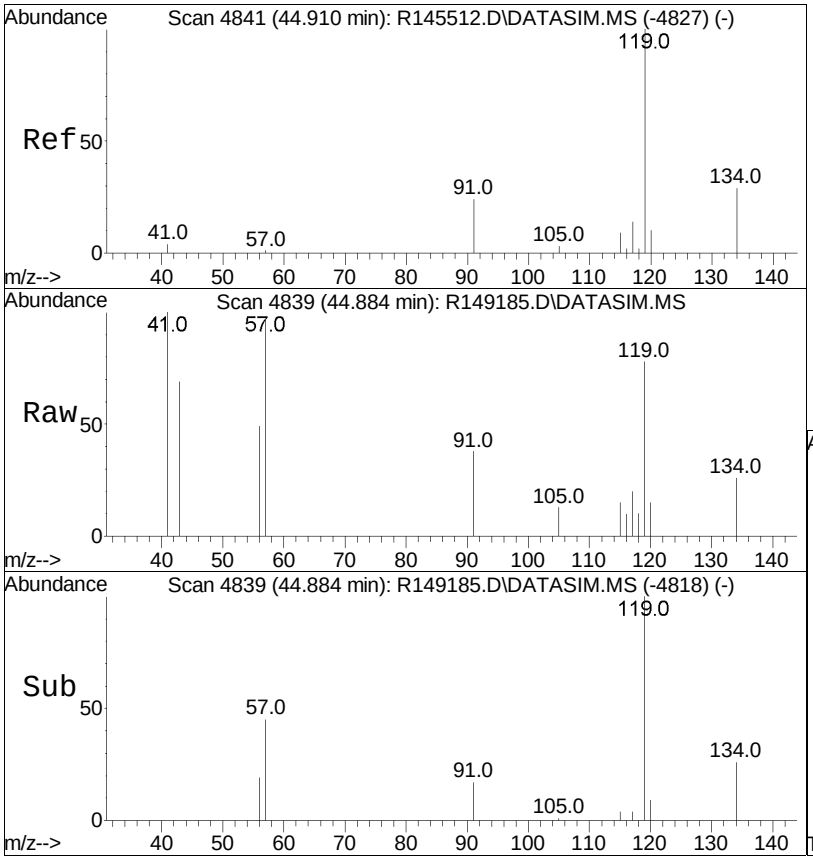


#74
1-Methyl-4-isopropylbenzene
Concen: 0.93 ppbV
RT: 43.778 min Scan# 4747
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:119 Resp: 25469

Ion	Ratio	Lower	Upper
119	100		
134	24.2	4.2	44.2
91	28.2	5.6	45.6

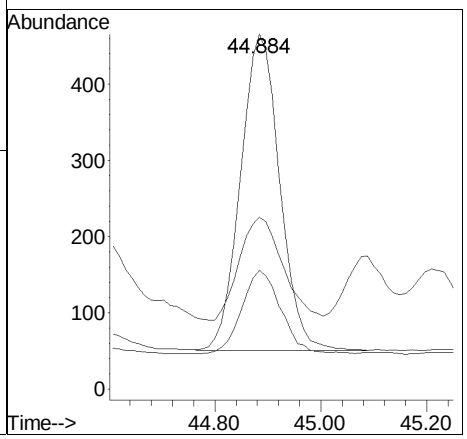


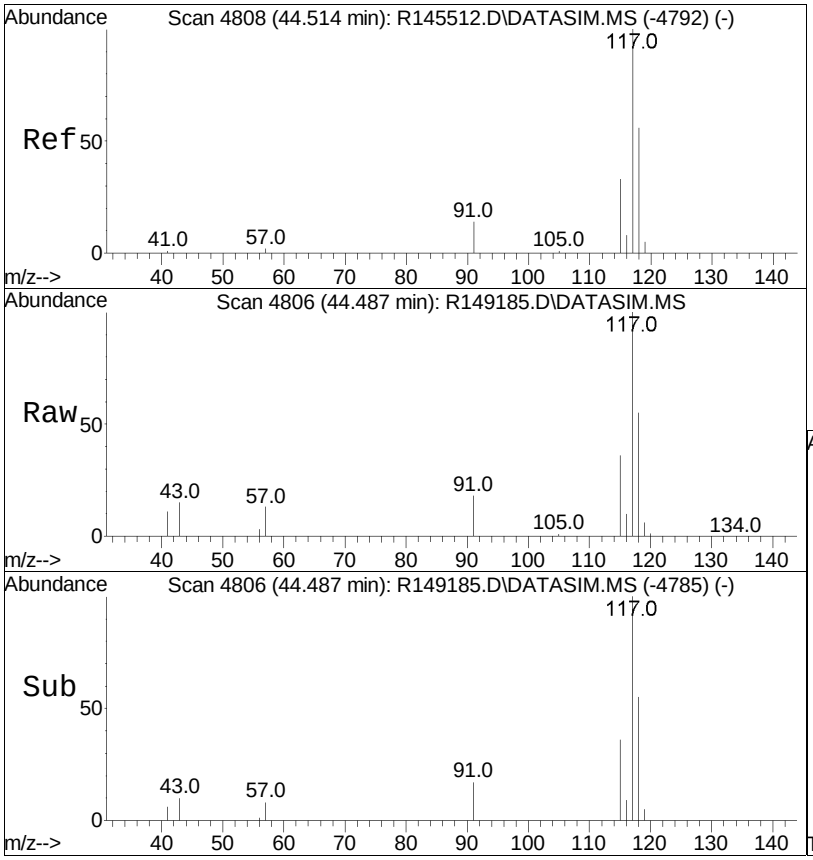


#75
1-Methyl-2-isopropylbenzene
Concen: 0.07 ppbV
RT: 44.884 min Scan# 4839
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:119 Resp: 2132

Ion	Ratio	Lower	Upper
119	100		
134	33.5	5.8	45.8
91	48.5	7.4	47.4#

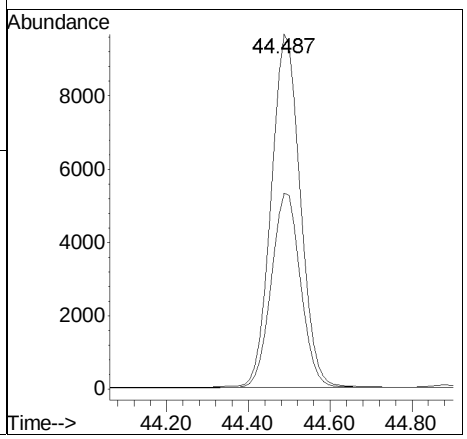


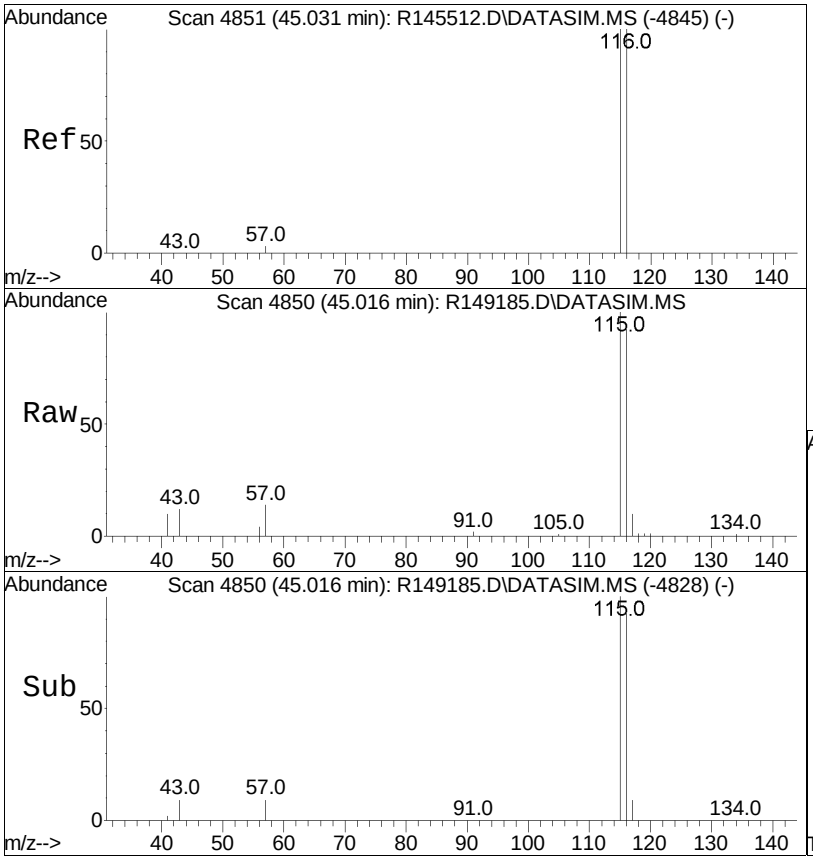


#76
Indan
Concen: 2.41 ppbV
RT: 44.487 min Scan# 4806
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:117 Resp: 47677

Ion	Ratio	Lower	Upper
117	100		
118	55.2	35.5	75.5

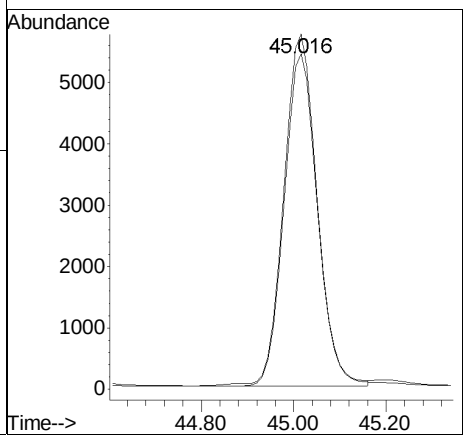


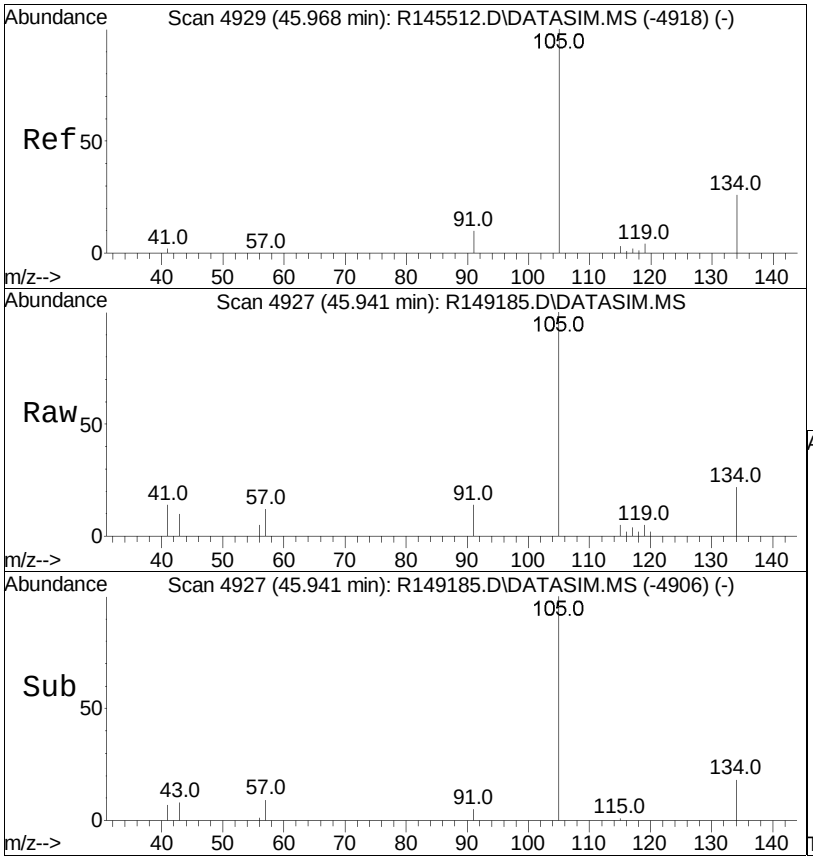


#77
Indene
Concen: 2.41 ppbV
RT: 45.016 min Scan# 4850
Delta R.T. 0.012 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:115 Resp: 28799

Ion	Ratio	Lower	Upper
115	100		
116	95.0	75.9	113.9

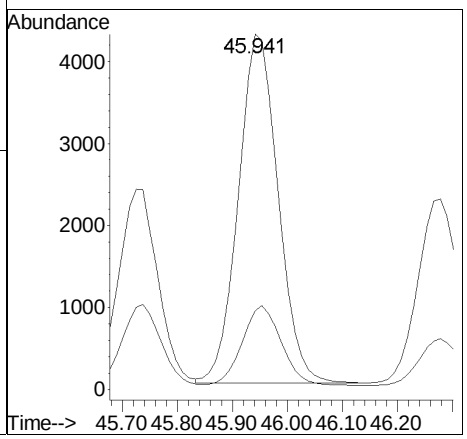


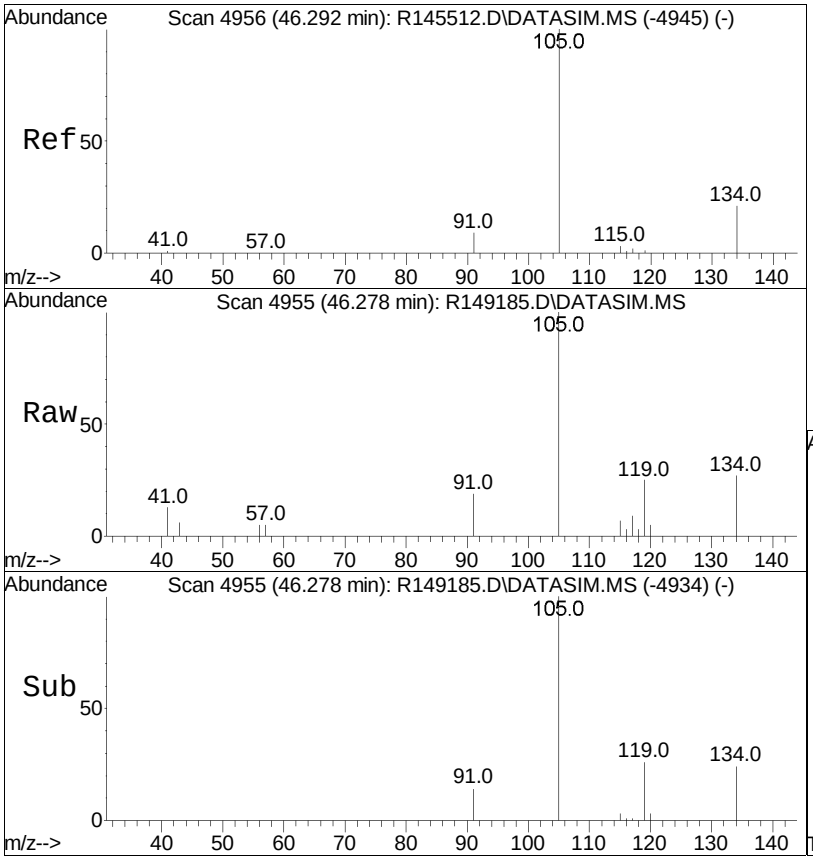


#78
1-Methyl-3-propylbenzene
Concen: 0.58 ppbV
RT: 45.941 min Scan# 4927
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:105 Resp: 21369

Ion	Ratio	Lower	Upper
105	100		
134	22.2	1.9	41.9

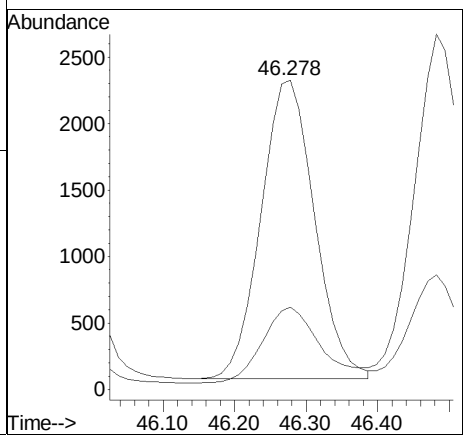


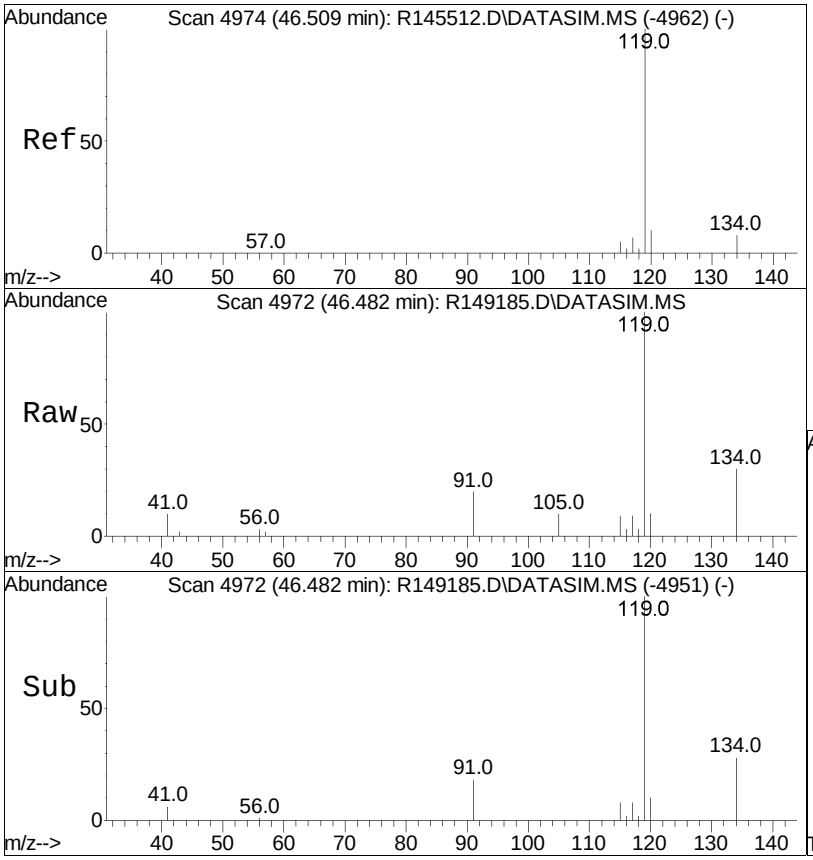


#79
1-Methyl-4-propylbenzene
Concen: 0.26 ppbV
RT: 46.278 min Scan# 4955
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:105 Resp: 11711

Ion	Ratio	Lower	Upper
105	100		
134	26.7	0.0	39.5

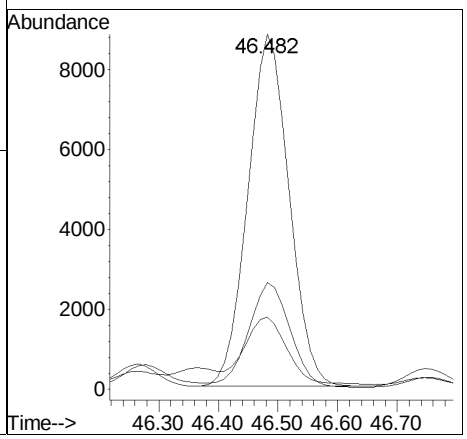


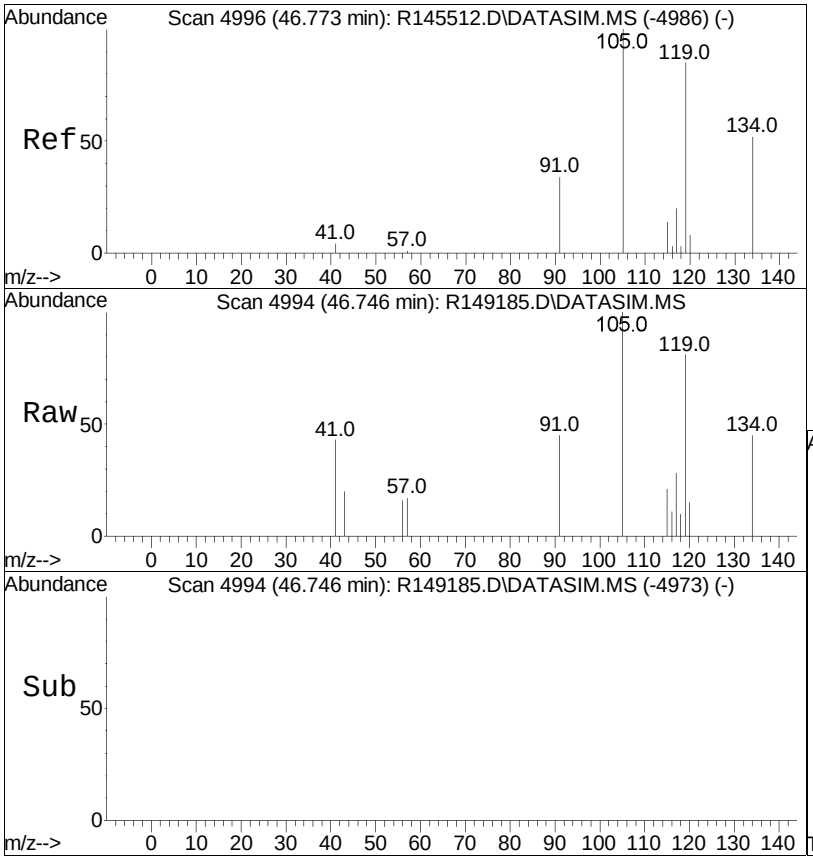


#81
1,2-Dimethyl-4-ethylbenzene
Concen: 1.52 ppbV
RT: 46.482 min Scan# 4972
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:119 Resp: 42322

Ion	Ratio	Lower	Upper
119	100		
134	30.1	9.8	49.8
91	20.3	0.0	39.8

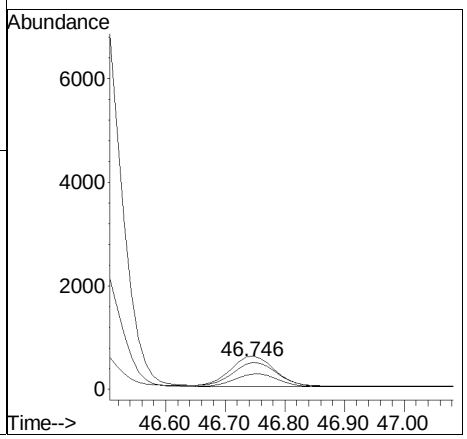


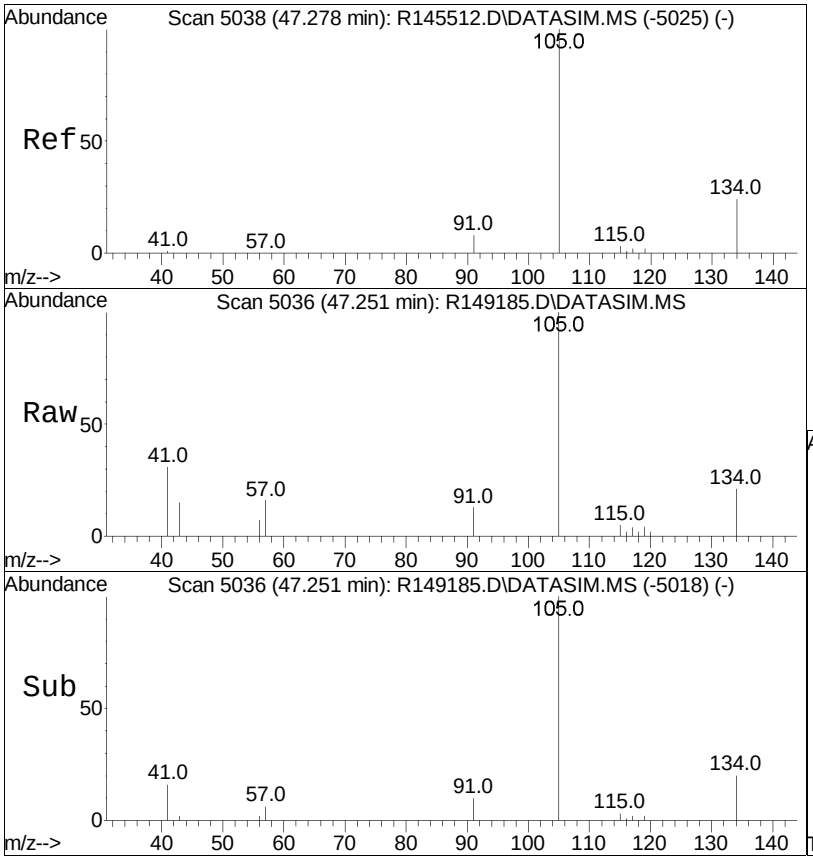


#82
1,2-Diethylbenzene
Concen: 0.16 ppbV
RT: 46.746 min Scan# 4994
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:119 Resp: 2425

Ion	Ratio	Lower	Upper
119	100		
105	123.5	103.0	143.0
134	56.1	33.7	73.7

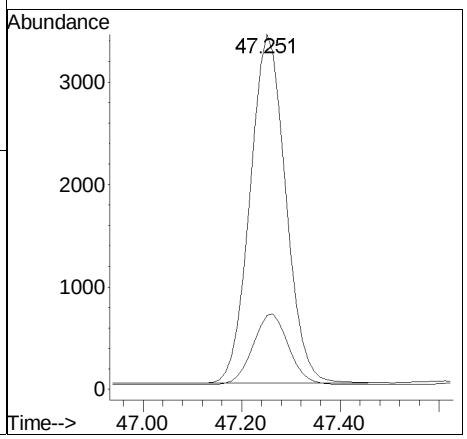


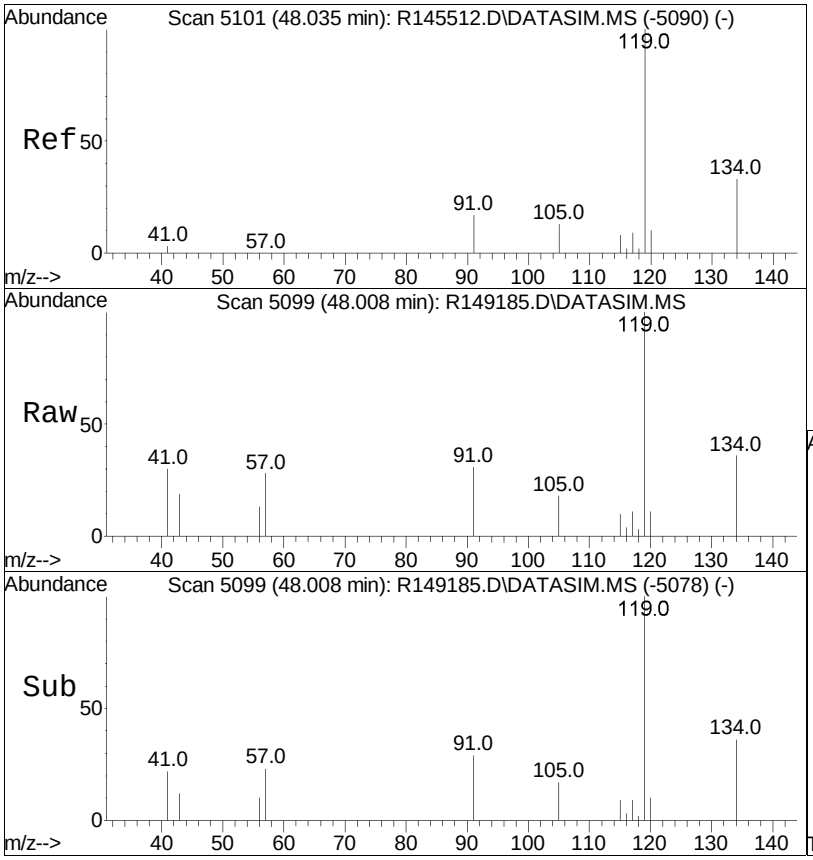


#83
1-Methyl-2-propylbenzene
Concen: 0.44 ppbV
RT: 47.251 min Scan# 5036
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:105 Resp: 17083

Ion	Ratio	Lower	Upper
105	100		
134	20.8	0.5	40.5

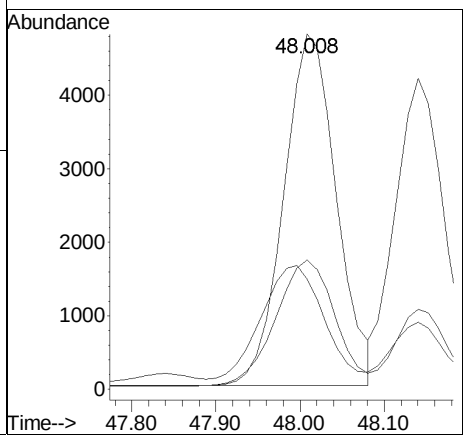


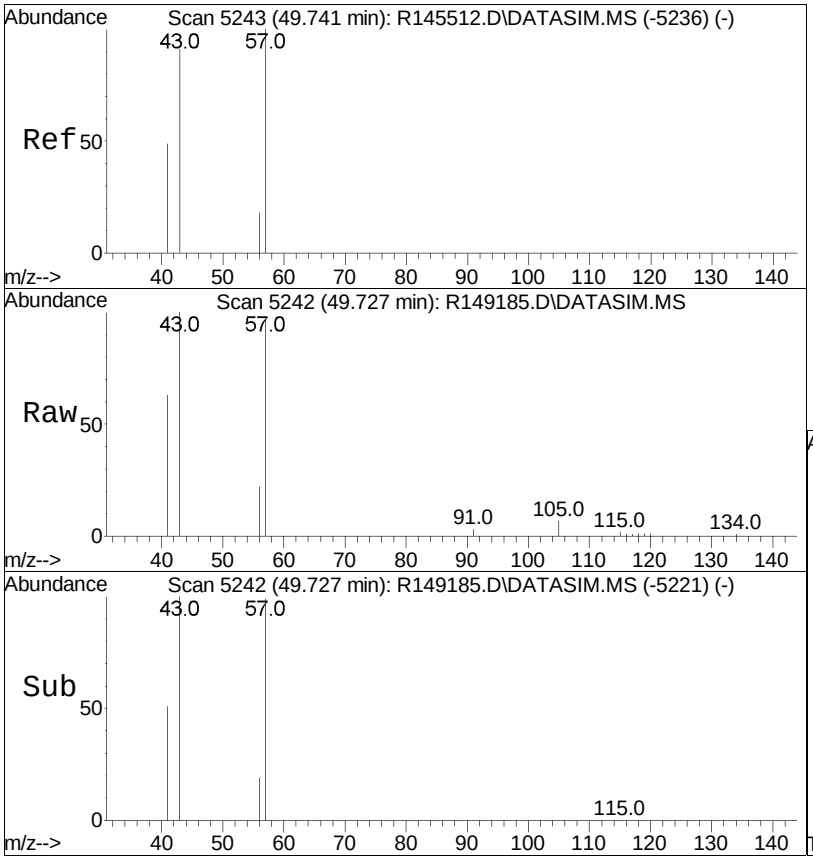


#84
1,4-Dimethyl-2-ethylbenzene
Concen: 0.71 ppbV
RT: 48.008 min Scan# 5099
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:119 Resp: 20764

Ion	Ratio	Lower	Upper
119	100		
134	36.4	10.4	50.4
91	31.1	0.1	40.1

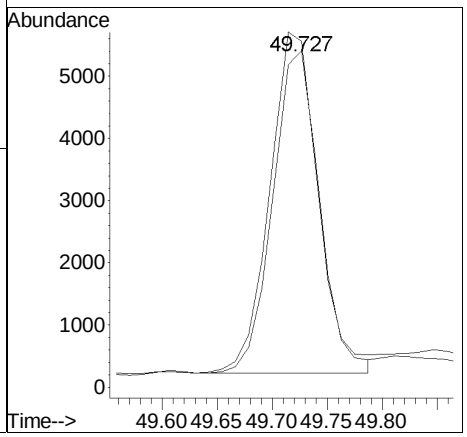


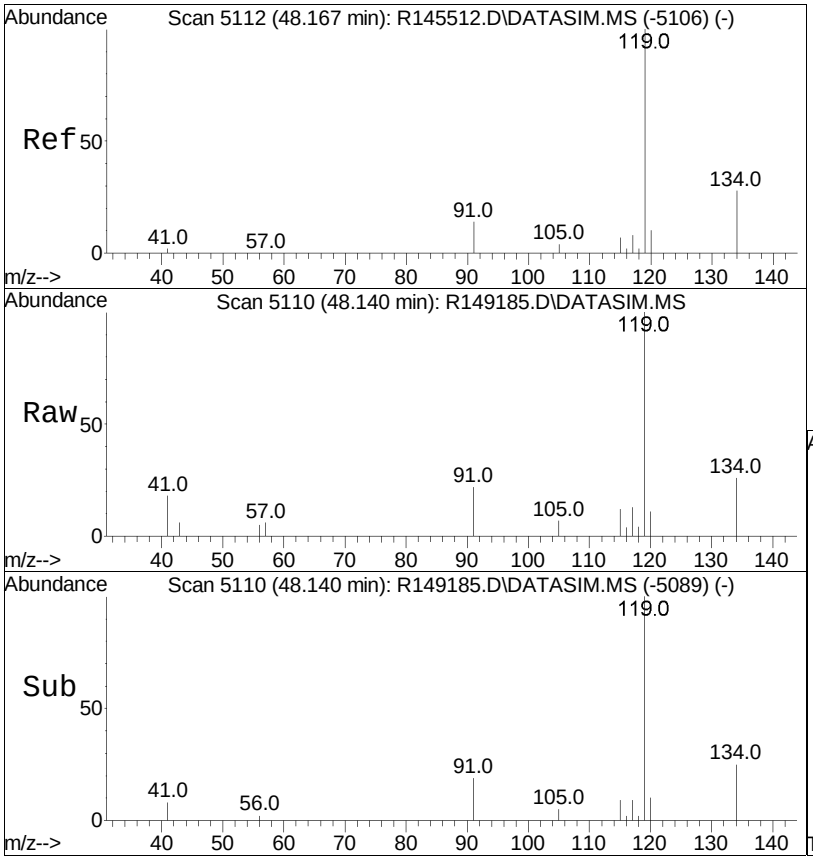


#85
Undecane
Concen: 0.66 ppbV
RT: 49.727 min Scan# 5242
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 57 Resp: 15321

Ion	Ratio	Lower	Upper
57	100		
43	102.8	79.1	119.1

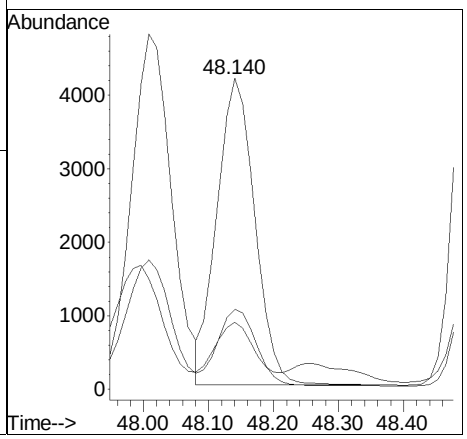


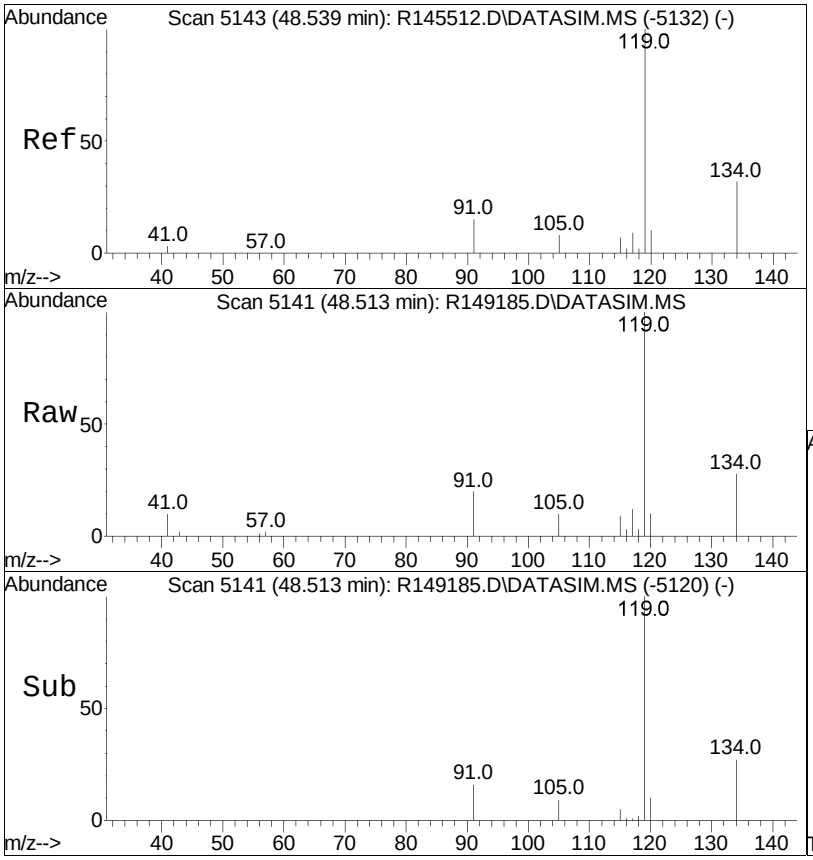


#86
1,3-Dimethyl-4-ethylbenzene
Concen: 0.50 ppbV
RT: 48.140 min Scan# 5110
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:119 Resp: 16856

Ion	Ratio	Lower	Upper
119	100		
134	25.8	6.2	46.2
91	21.6	0.0	36.4

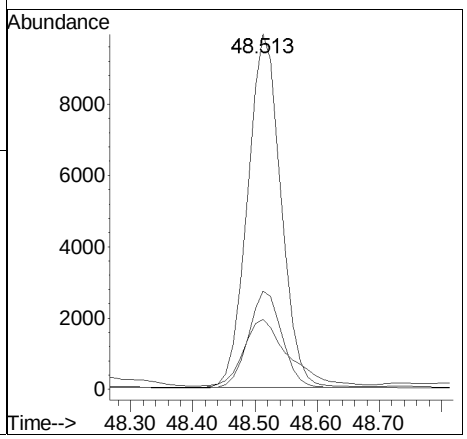


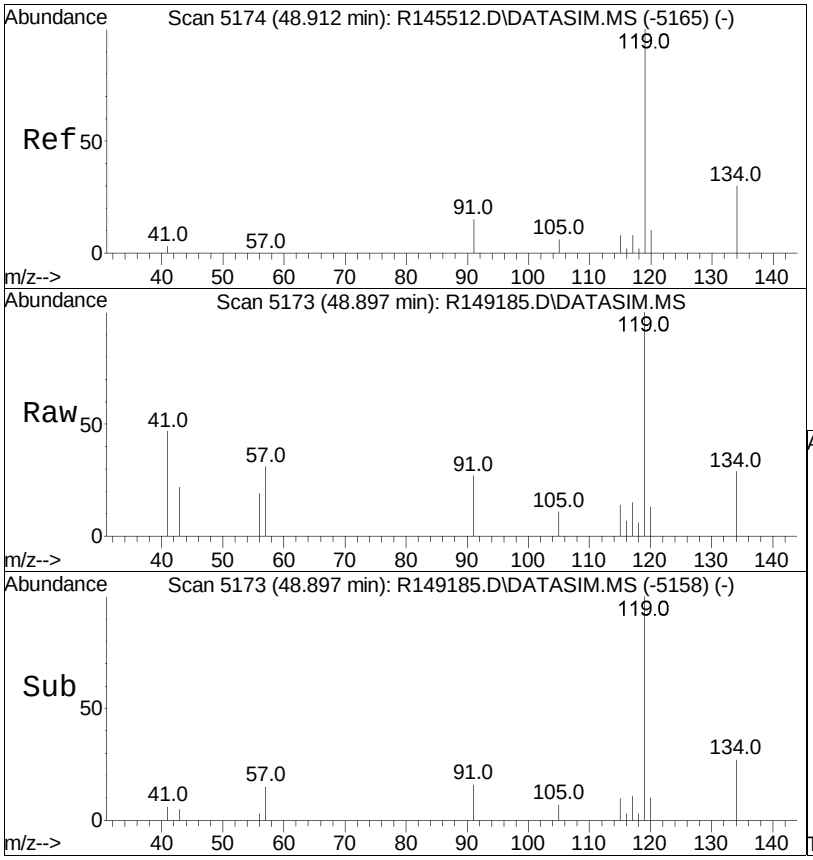


#87
1,3-Dimethyl-5-ethylbenzene
Concen: 1.16 ppbV
RT: 48.513 min Scan# 5141
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:119 Resp: 36821

Ion	Ratio	Lower	Upper
119	100		
134	27.7	7.8	47.8
91	19.7	0.0	38.0

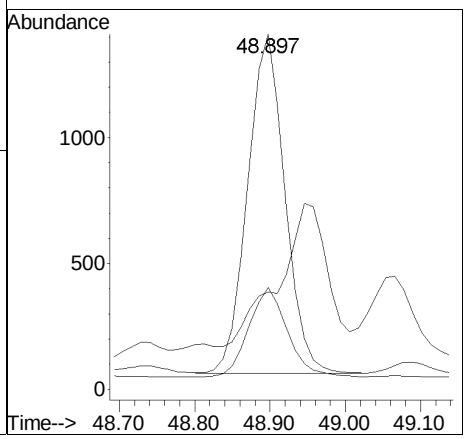


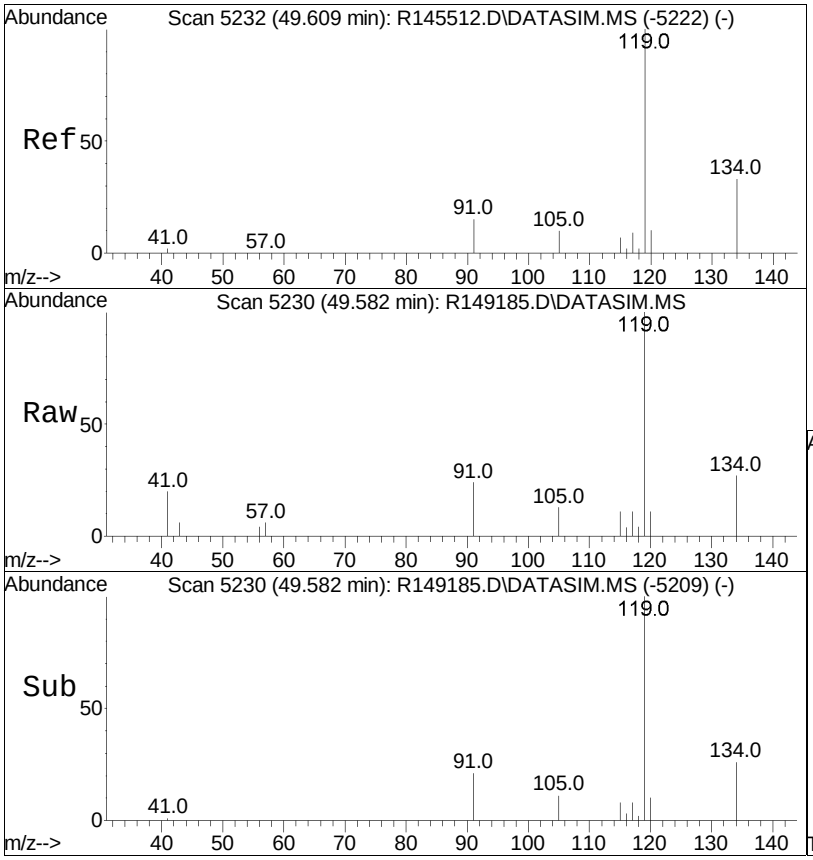


#88
1,3-Dimethyl-2-ethylbenzene
Concen: 0.13 ppbV
RT: 48.897 min Scan# 5173
Delta R.T. 0.012 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:119 Resp: 4613

Ion	Ratio	Lower	Upper
119	100		
134	28.7	5.9	45.9
91	27.4	0.0	38.2

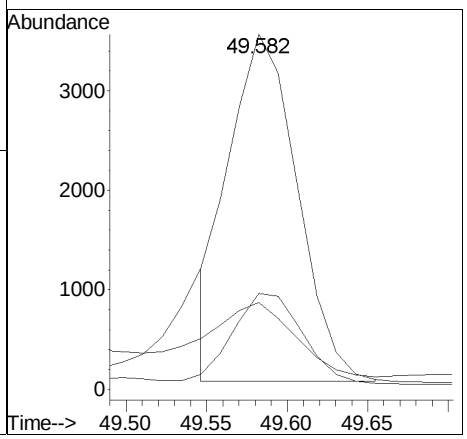


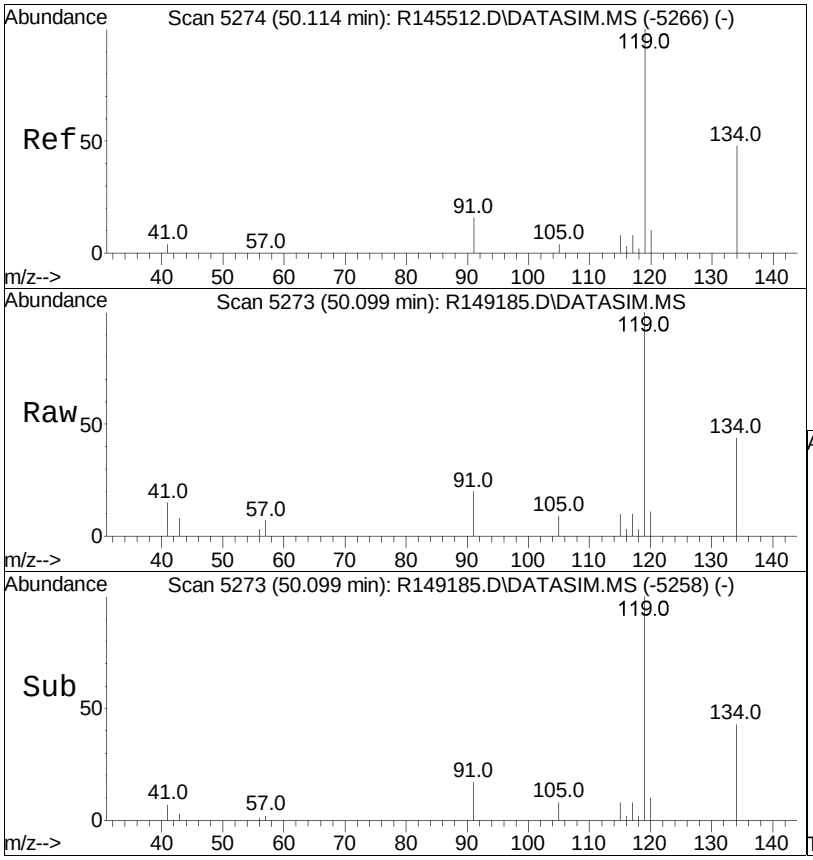


#89
1,2-Dimethyl-3-ethylbenzene
Concen: 0.33 ppbV m
RT: 49.582 min Scan# 5230
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:119 Resp: 10359

Ion	Ratio	Lower	Upper
119	100		
134	27.0	8.0	48.0
91	24.5	0.0	39.5

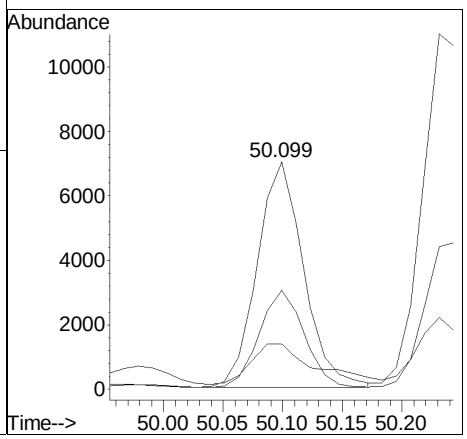


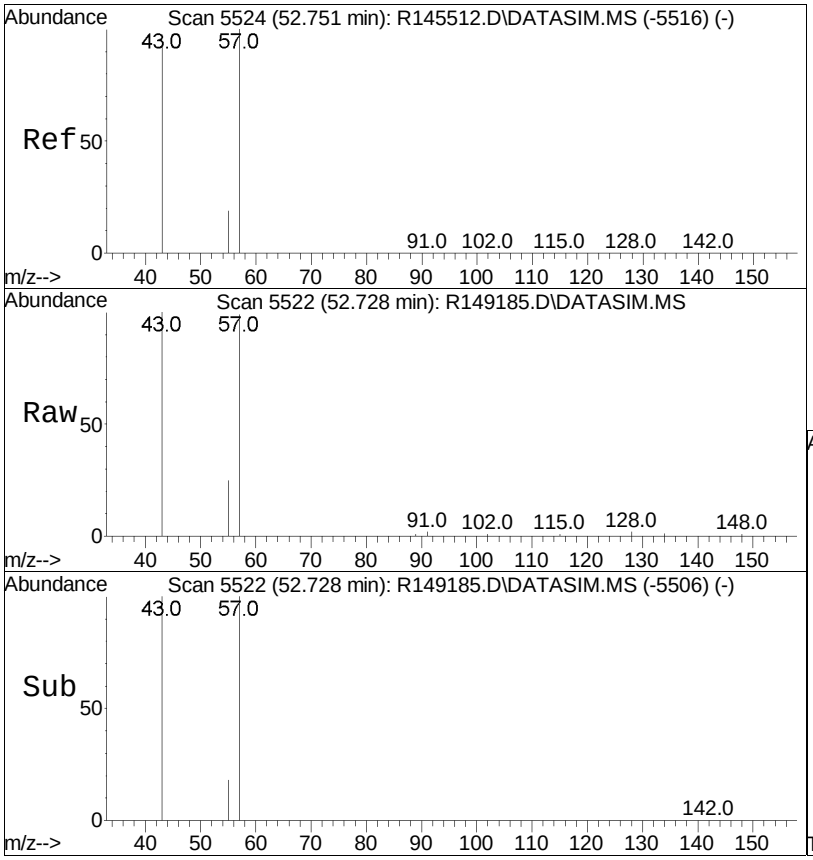


#90
1,2,4,5-Tetramethylbenzene
Concen: 0.18 ppbV
RT: 50.099 min Scan# 5273
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:119 Resp: 18897

Ion	Ratio	Lower	Upper
119	100		
134	43.6	24.1	64.1
91	20.0	0.0	36.7

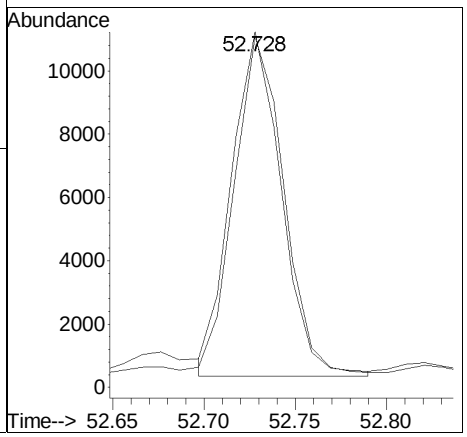


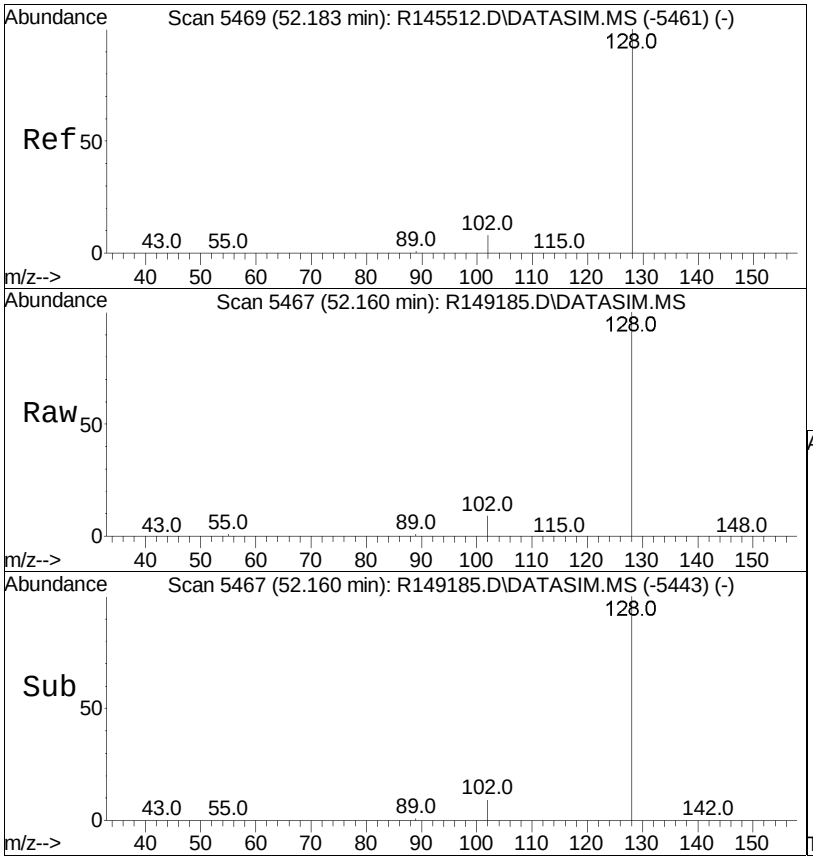


#92
Dodecane
Concen: 0.81 ppbV m
RT: 52.728 min Scan# 5522
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 43 Resp: 20588

Ion	Ratio	Lower	Upper
43	100		
57	98.9	80.2	120.2

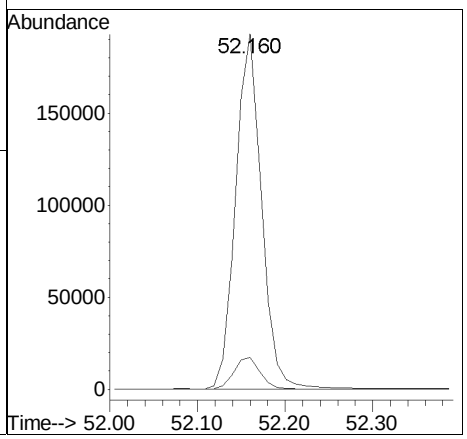


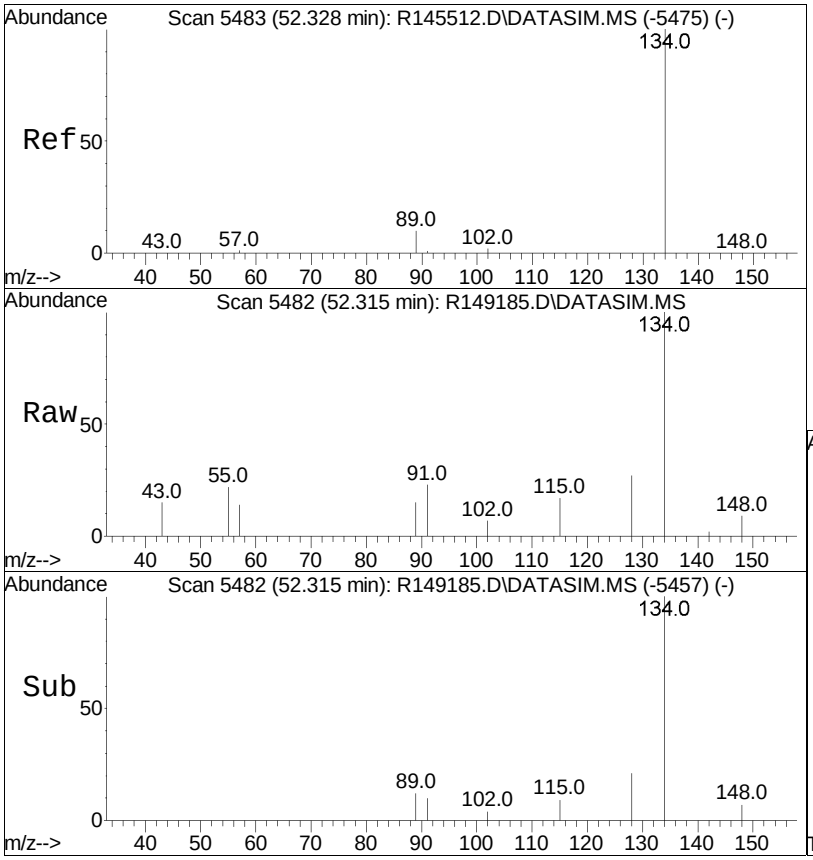


#93
Naphthalene
Concen: 11.56 ppbV
RT: 52.160 min Scan# 5467
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:128 Resp: 395601

Ion	Ratio	Lower	Upper
128	100		
102	9.0	0.0	28.9

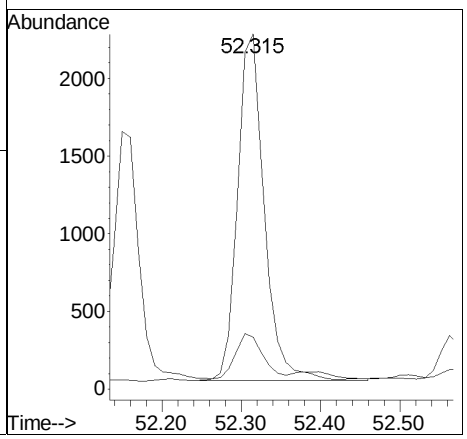


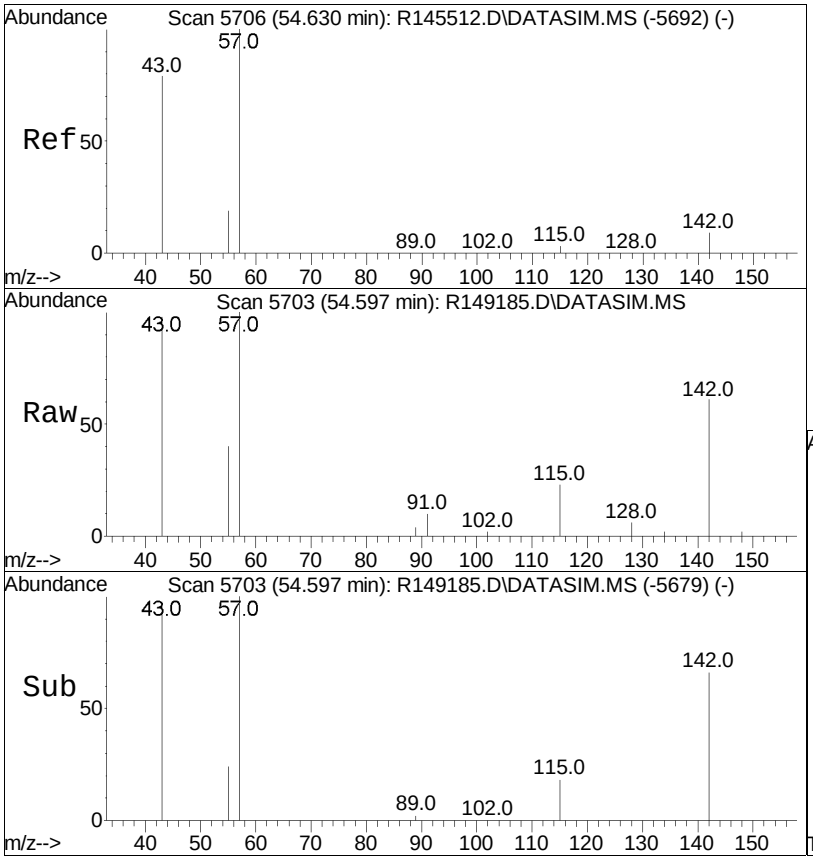


#94
Benzothiophene
Concen: 0.07 ppbV
RT: 52.315 min Scan# 5482
Delta R.T. 0.010 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:134 Resp: 5285

Ion	Ratio	Lower	Upper
134	100		
89	14.7	0.0	31.7

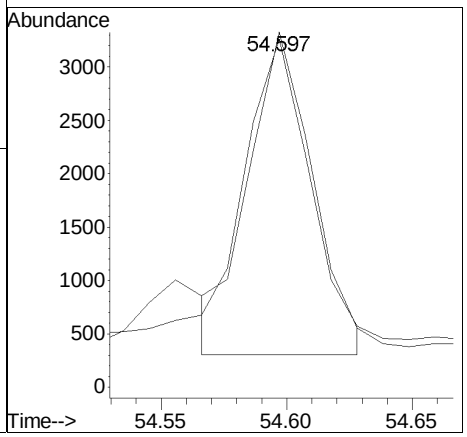


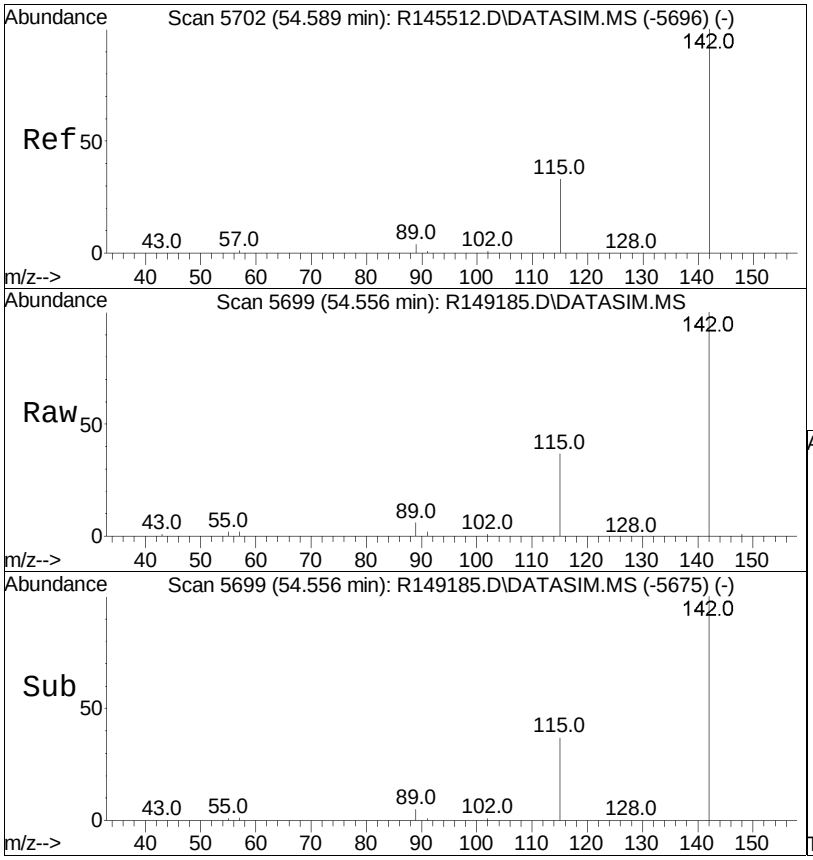


#96
Tridecane
Concen: 0.15 ppbV m
RT: 54.597 min Scan# 5703
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion: 57 Resp: 5417

Ion	Ratio	Lower	Upper
57	100		
43	98.1	72.3	112.3

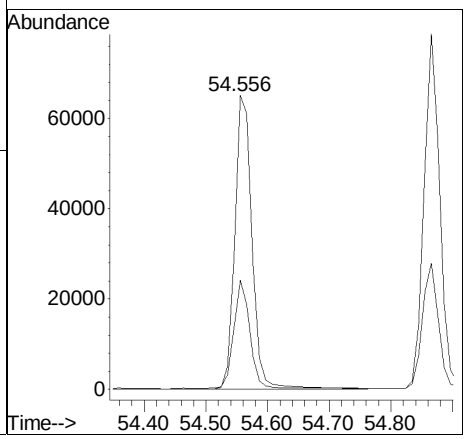


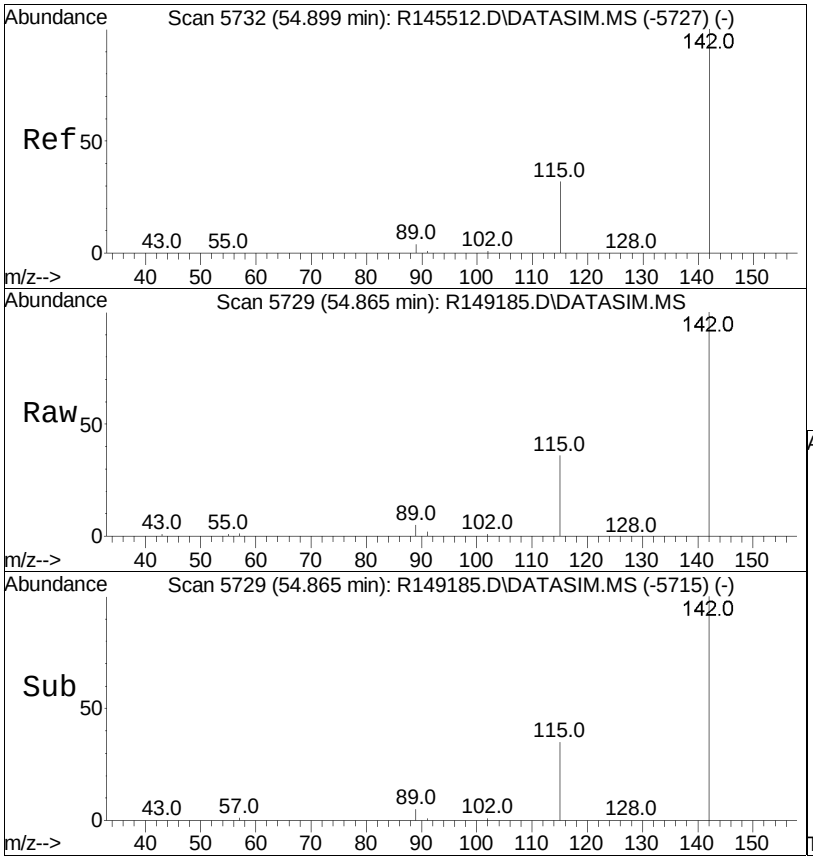


#97
2-Methylnaphthalene
Concen: 5.22 ppbV
RT: 54.556 min Scan# 5699
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:142 Resp: 126412

Ion	Ratio	Lower	Upper
142	100		
115	37.1	15.8	55.8

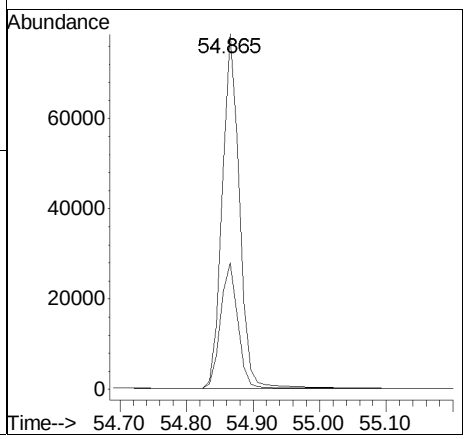




#98
1-Methylnaphthalene
Concen: 5.25 ppbV
RT: 54.865 min Scan# 5729
Delta R.T. 0.000 min
Lab File: R149185.D
Acq: 9 Nov 2016 4:31 am

Tgt Ion:142 Resp: 141777

Ion	Ratio	Lower	Upper
142	100		
115	35.6	14.1	54.1



Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: WG948457-5	Date Collected	: NA
Client ID	: WG948457-5BLANK	Date Received	: NA
Sample Location	:	Date Analyzed	: 11/08/16 15:31
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149174	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
106-99-0	1,3-Butadiene	ND	0.025	0.010	ND	0.055	0.022	U
78-78-4	Isopentane	ND	0.025	0.010	ND	0.074	0.030	U
109-67-1	1-Pentene	ND	0.025	0.010	ND	0.072	0.029	U
563-46-2	2-Methyl-1-Butene	ND	0.025	0.010	ND	0.072	0.029	U
109-66-0	Pentane	0.013	0.025	0.010	0.038	0.074	0.030	J
646-04-8	trans-2-Pentene	ND	0.025	0.010	ND	0.072	0.029	U
627-20-3	cis-2-Pentene	ND	0.025	0.010	ND	0.072	0.029	U
75-65-0	Tertiary Butanol	ND	0.025	0.010	ND	0.076	0.030	U
287-92-3	Cyclopentane	ND	0.025	0.010	ND	0.072	0.029	U
79-29-8	2,3-Dimethylbutane	ND	0.025	0.010	ND	0.088	0.035	U
107-83-5	2-Methylpentane	ND	0.025	0.010	ND	0.088	0.035	U
1634-04-4	Methyl tert butyl ether	ND	0.025	0.010	ND	0.090	0.036	U
96-14-0	3-Methylpentane	ND	0.025	0.010	ND	0.088	0.035	U
592-41-6	1-Hexene	ND	0.025	0.010	ND	0.086	0.034	U
110-54-3	n-Hexane	ND	0.025	0.010	ND	0.088	0.035	U
108-20-3	Isopropyl Ether	ND	0.025	0.010	ND	0.104	0.042	U
637-92-3	Ethyl-Tert-Butyl-Ether	ND	0.025	0.010	ND	0.104	0.042	U
590-35-2	2,2-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041	U
96-37-7	Methylcyclopentane	ND	0.025	0.010	ND	0.086	0.034	U
108-08-7	2,4-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041	U
107-06-2	1,2-Dichloroethane	ND	0.025	0.010	ND	0.101	0.041	U
110-82-7	Cyclohexane	ND	0.025	0.010	ND	0.086	0.034	U
591-76-4	2-Methylhexane	ND	0.025	0.010	ND	0.102	0.041	U
71-43-2	Benzene	ND	0.025	0.010	ND	0.080	0.032	U
565-59-3	2,3-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041	U
110-02-1	Thiophene	ND	0.025	0.010	ND	0.086	0.034	U
589-34-4	3-Methylhexane	ND	0.025	0.010	ND	0.102	0.041	U
994-05-8	Tertiary-Amyl Methyl Ether	ND	0.025	0.010	ND	0.104	0.042	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: WG948457-5	Date Collected	: NA
Client ID	: WG948457-5BLANK	Date Received	: NA
Sample Location	:	Date Analyzed	: 11/08/16 15:31
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149174	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
592-76-7	1-Heptene	ND	0.025	0.010	ND	0.100	0.040	U
540-84-1	Isooctane	ND	0.025	0.010	ND	0.117	0.047	U
142-82-5	Heptane	ND	0.025	0.010	ND	0.102	0.041	U
108-87-2	Methylcyclohexane	ND	0.025	0.010	ND	0.100	0.040	U
592-13-2	2,5-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
589-43-5/564-02-3	2,4-Dimethylhexane/2,2,3-Trimethylpen	ND	0.050	0.025	ND	0.234	0.117	U
565-75-3	2,3,4-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047	U
560-21-4	2,3,3-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047	U
584-94-1	2,3-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
619-99-8	3-Ethylhexane	ND	0.025	0.010	ND	0.117	0.047	U
592-27-8	2-Methylheptane	ND	0.025	0.010	ND	0.117	0.047	U
589-81-1	3-Methylheptane	ND	0.025	0.010	ND	0.117	0.047	U
108-88-3	Toluene	ND	0.025	0.010	ND	0.094	0.038	U
554-14-3	2-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040	U
616-44-4	3-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040	U
111-66-0	1-Octene	ND	0.025	0.010	ND	0.115	0.046	U
16747-50-5	1-Ethyl-1-Methylcyclopentane	ND	0.025	0.010	ND	0.115	0.046	U
111-65-9	Octane	ND	0.025	0.010	ND	0.117	0.047	U
106-93-4	1,2-Dibromoethane	ND	0.025	0.010	ND	0.192	0.077	U
100-41-4	Ethylbenzene	ND	0.025	0.010	ND	0.109	0.043	U
872-55-9	2-Ethylthiophene	ND	0.025	0.010	ND	0.115	0.046	U
179601-23-1	p/m-Xylene	ND	0.050	0.010	ND	0.217	0.043	U
124-11-8	1-Nonene	ND	0.025	0.010	ND	0.129	0.052	U
111-84-2	Nonane (C9)	ND	0.025	0.010	ND	0.131	0.053	U
100-42-5	Styrene	ND	0.025	0.010	ND	0.106	0.043	U
95-47-6	o-Xylene	ND	0.050	0.010	ND	0.217	0.043	U
98-82-8	Isopropylbenzene	ND	0.025	0.010	ND	0.123	0.049	U
103-65-1	n-Propylbenzene	ND	0.025	0.010	ND	0.123	0.049	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: WG948457-5	Date Collected	: NA
Client ID	: WG948457-5BLANK	Date Received	: NA
Sample Location	:	Date Analyzed	: 11/08/16 15:31
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149174	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
620-14-4	1-Methyl-3-Ethylbenzene	ND	0.050	0.025	ND	0.246	0.123	U
622-96-8	1-Methyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049	U
108-67-8	1,3,5-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049	U
872-05-9	1-Decene	ND	0.050	0.025	ND	0.287	0.143	U
611-14-3	1-Methyl-2-Ethylbenzene	ND	0.050	0.025	ND	0.246	0.123	U
124-18-5	Decane (C10)	ND	0.050	0.025	ND	0.291	0.146	U
95-63-6	1,2,4-Trimethylbenzene	ND	0.050	0.025	ND	0.246	0.123	U
135-98-8	sec-Butylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
535-77-3	1-Methyl-3-Isopropylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
99-87-6	1-Methyl-4-Isopropylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
527-84-4	1-Methyl-2-Isopropylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
496-11-7	Indane	ND	0.050	0.025	ND	0.242	0.121	U
95-13-6	Indene	ND	0.050	0.025	ND	0.238	0.119	U
1074-43-7	1-Methyl-3-N-Propylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1074-55-1	1-Methyl-4-N-Propylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
104-51-8	n-Butylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
934-80-5	1,2-Dimethyl-4-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
135-01-3	1,2-Diethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1074-17-5	1-Methyl-2-N-Propylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1758-88-9	1,4-Dimethyl-2-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
1120-21-4	Undecane	ND	0.050	0.025	ND	0.320	0.160	U
874-41-9	1,3-Dimethyl-4-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
934-74-7	1,3-Dimethyl-5-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
2870-04-4	1,3-Dimethyl-2-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
933-98-2	1,2-Dimethyl-3-Ethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
95-93-2	1,2,4,5-Tetramethylbenzene	ND	0.050	0.025	ND	0.274	0.137	U
538-68-1	N-Pentylbenzene	ND	0.050	0.025	ND	0.303	0.152	U
112-40-3	Dodecane (C12)	ND	0.100	0.050	ND	0.697	0.348	U

Form 1
Volatile Organics

Client	: NewFields	Lab Number	: L1634001
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00
Lab ID	: WG948457-5	Date Collected	: NA
Client ID	: WG948457-5BLANK	Date Received	: NA
Sample Location	:	Date Analyzed	: 11/08/16 15:31
Sample Matrix	: SOIL_VAPOR	Dilution Factor	: 1
Analytical Method	: 48,TO-15-SIM	Analyst	: RY
Lab File ID	: R149174	Instrument ID	: AIRPIANO1
Sample Amount	: 250 ml	GC Column	: RTX-1

		ppbV			ug/m3			
CAS NO.	Parameter	Results	RL	MDL	Results	RL	MDL	Qualifier
91-20-3	Naphthalene	ND	0.050	0.025	ND	0.262	0.131	U
95-15-8	Benzothiophene	ND	0.100	0.050	ND	0.549	0.274	U
12108-13-3	MMT	ND	0.100	0.050	ND	0.892	0.446	U
629-50-5	Tridecane	ND	1.00	0.050	ND	7.54	0.377	U
91-57-6	2-Methylnaphthalene	ND	0.500	0.050	ND	2.91	0.291	U
90-12-0	1-Methylnaphthalene	ND	0.500	0.050	ND	2.91	0.291	U

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149174.D
Acq On : 8 Nov 2016 3:31 pm
Operator : AIRPIANO1:RY
Sample : WG948457-5,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Nov 09 13:24:18 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.19	49	126953	10.000	ppbV	0.00
Standard Area = 123393			Recovery = 102.89%			
27) 1,4-difluorbenzene	14.20	114	272511	10.000	ppbV	0.00
Standard Area = 263318			Recovery = 103.49%			
54) chlorobenzene-D5	27.63	117	200300	10.000	ppbV	0.00
Standard Area = 190793			Recovery = 104.98%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.61	65	83490	10.524	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 105.24%			
46) Toluene-D8	20.95	98	232934	11.204	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 112.04%			
62) 4-Bromofluorobenzene (...	34.33	95	119376	10.865	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 108.65%			
Target Compounds						Qvalue
2) 1,3-butadiene	0.00		0	N.D. d		
4) Isopentane	0.00		0	N.D. d		
5) 1-Pentene	0.00		0	N.D. d		
6) 2-Methyl-1-butene	6.34		0	N.D.		
7) Pentane	6.47	43	278	0.013	ppbV	50
9) 2-Pentene (trans)	6.68		0	N.D.		
10) 2-Pentene (cis)	6.87		0	N.D.		
11) Tertiary butanol	6.84		0	N.D.		
12) Cyclopentane	8.65		0	N.D.		
13) 2,3-Dimethylbutane	8.66		0	N.D.		
14) 2-Methylpentane	8.83		0	N.D.		
15) MTBE	8.67		0	N.D.		
16) 3-Methylpentane	9.47		0	N.D.		
17) 1-Hexene	0.00		0	N.D. d		
18) Hexane	0.00		0	N.D. d		
19) Diisopropyl ether	0.00		0	N.D. d		
20) Ethyl tertiary butyl e...	0.00		0	N.D. d		
21) 2,2-Dimethylpentane	0.00		0	N.D. d		
23) Methylcyclopentane	0.00		0	N.D. d		
24) 2,4-Dimethylpentane	0.00		0	N.D. d		
25) 1,2-Dichloroethane	0.00		0	N.D. d		
26) Cyclohexane	0.00		0	N.D. d		
28) 2-Methylhexane	0.00		0	N.D. d		

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149174.D
Acq On : 8 Nov 2016 3:31 pm
Operator : AIRPIANO1:RY
Sample : WG948457-5,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Nov 09 13:24:18 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
29) Benzene	13.32		0	N.D.		
30) 2,3-Dimethylpentane	0.00		0	N.D.	d	
31) Thiophene	0.00		0	N.D.	d	
32) 3-Methylhexane	0.00		0	N.D.	d	
33) TAME	0.00		0	N.D.	d	
34) 1-Heptene	0.00		0	N.D.	d	
35) Isooctane	0.00		0	N.D.	d	
36) Heptane	0.00		0	N.D.	d	
37) Methylcyclohexane	0.00		0	N.D.	d	
38) 2,5-Dimethylhexane	0.00		0	N.D.	d	
39) 2,4-Dimethyhexane / 2,...	0.00		0	N.D.	d	
40) 2,3,4-Trimethylpentane	0.00		0	N.D.	d	
41) 2,3,3-Trimethylpentane	0.00		0	N.D.	d	
42) 2,3-Dimethylhexane	0.00		0	N.D.	d	
43) 3-Ethylhexane	0.00		0	N.D.	d	
44) 2-Methylheptane	0.00		0	N.D.	d	
45) 3-Methylheptane	0.00		0	N.D.	d	
47) Toluene	21.28		0	N.D.		
48) 2-Methylthiophene	0.00		0	N.D.	d	
49) 3-Methylthiophene	0.00		0	N.D.	d	
50) 1-Octene	0.00		0	N.D.	d	
51) 1-ethyl-1-methylcyclop...	0.00		0	N.D.	d	
52) Octane	25.08		0	N.D.		
53) 1,2-Dibromoethane	0.00		0	N.D.	d	
55) Ethylbenzene	0.00		0	N.D.	d	
56) 2-Ethylthiophene	0.00		0	N.D.	d	
57) p/m-Xylene	0.00		0	N.D.	d	
58) 1-Nonene	0.00		0	N.D.	d	
59) Nonane	33.90		0	N.D.		
60) Styrene	0.00		0	N.D.	d	
61) o-Xylene	32.27		0	N.D.		
63) Isopropylbenzene	35.12		0	N.D.		
64) n-Propylbenzene	0.00		0	N.D.	d	
65) 1-Methyl-3-ethylbenzene	0.00		0	N.D.	d	
66) 1-Methyl-4-ethylbenzene	0.00		0	N.D.	d	
67) 1,3,5-Trimethylbenzene	0.00		0	N.D.	d	
68) 1-Decene	0.00		0	N.D.	d	
69) 1-Methyl-2-ethylbenzene	0.00		0	N.D.	d	
70) Decane	0.00		0	N.D.	d	
71) 1,2,4-Trimethylbenzene	0.00		0	N.D.	d	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149174.D
Acq On : 8 Nov 2016 3:31 pm
Operator : AIRPIANO1:RY
Sample : WG948457-5,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Nov 09 13:24:18 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
72) sec-Butylbenzene	0.00		0	N.D.	d	
73) 1-Methyl-3-isopropylbe...	0.00		0	N.D.	d	
74) 1-Methyl-4-isopropylbe...	0.00		0	N.D.	d	
75) 1-Methyl-2-isopropylbe...	0.00		0	N.D.	d	
76) Indan	0.00		0	N.D.	d	
77) Indene	0.00		0	N.D.	d	
78) 1-Methyl-3-propylbenzene	0.00		0	N.D.	d	
79) 1-Methyl-4-propylbenzene	0.00		0	N.D.	d	
80) n-Butylbenzene	0.00		0	N.D.	d	
81) 1,2-Dimethyl-4-ethylbe...	0.00		0	N.D.	d	
82) 1,2-Diethylbenzene	0.00		0	N.D.	d	
83) 1-Methyl-2-propylbenzene	0.00		0	N.D.	d	
84) 1,4-Dimethyl-2-ethylbe...	0.00		0	N.D.	d	
85) Undecane	0.00		0	N.D.	d	
86) 1,3-Dimethyl-4-ethylbe...	0.00		0	N.D.	d	
87) 1,3-Dimethyl-5-ethylbe...	0.00		0	N.D.	d	
88) 1,3-Dimethyl-2-ethylbe...	0.00		0	N.D.	d	
89) 1,2-Dimethyl-3-ethylbe...	0.00		0	N.D.	d	
90) 1,2,4,5-Tetramethylben...	0.00		0	N.D.	d	
91) Pentylbenzene	0.00		0	N.D.	d	
92) Dodecane	0.00		0	N.D.	d	
93) Naphthalene	52.20		0	N.D.		
94) Benzothiophene	52.36		0	N.D.		
95) MMT	0.00		0	N.D.	d	
96) Tridecane	0.00		0	N.D.	d	
97) 2-Methylnaphthalene	0.00		0	N.D.	d	
98) 1-Methylnaphthalene	54.92		0	N.D.		

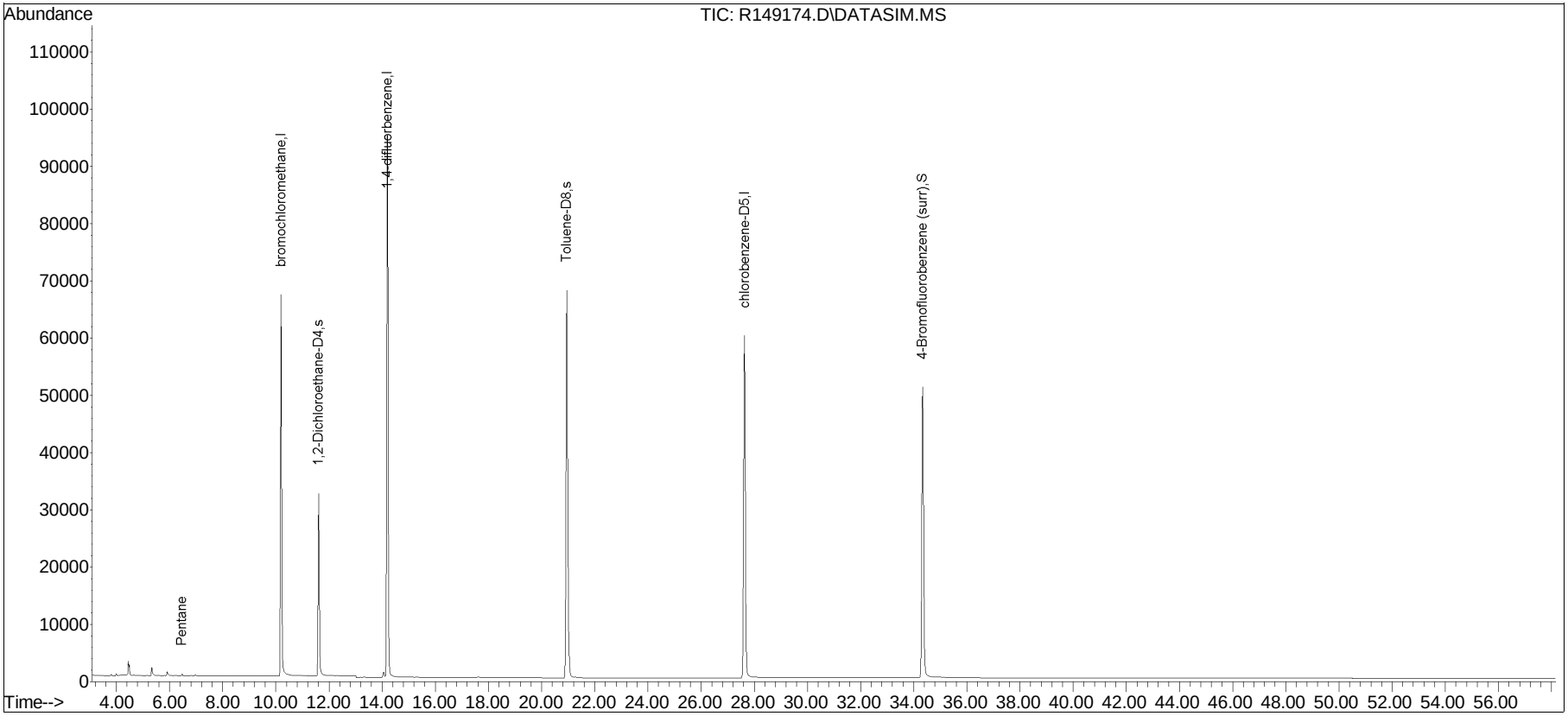
(#) = qualifier out of range (m) = manual integration (+) = signals summed

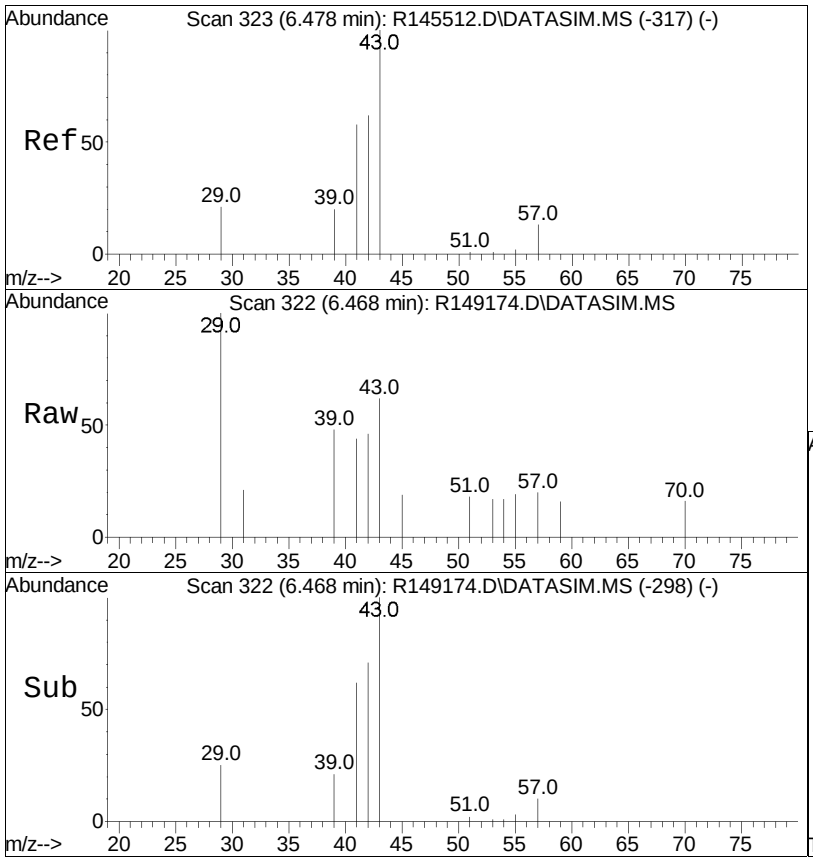
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149174.D
Acq On : 8 Nov 2016 3:31 pm
Operator : AIRPIANO1:RY
Sample : WG948457-5,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Nov 09 13:24:18 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

Sub List : AIR-NF-PIANO - NF PIANO LIST161108PIANO\R149170.D

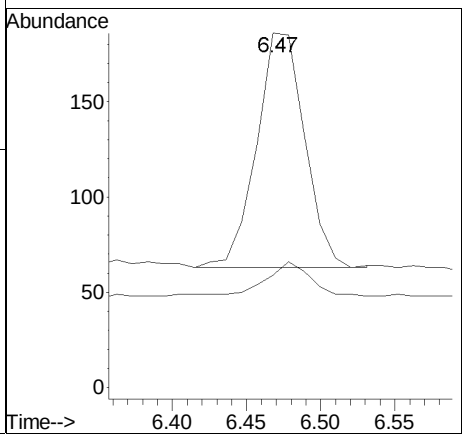




#7
Pentane
Concen: 0.01 ppbV
RT: 6.47 min Scan# 322
Delta R.T. 0.000 min
Lab File: R149174.D
Acq: 8 Nov 2016 3:31 pm

Tgt Ion: 43 Resp: 278

Ion	Ratio	Lower	Upper
43	100		
57	31.7	0.0	32.2



Laboratory Control Sample
Form 3

Client	: NewFields	**Lab Number**	: L1634001
Project Name	: WINTER STREET HAVERHILL	**Project Number**	: 01.0172397.00
Matrix	: AIR		
LCS Sample ID	: WG948457-3	**Analysis Date :** 11/08/16 11:55	**File ID** : R149171
LCSD Sample ID	: WG948457-4	**Analysis Date :** 11/08/16 13:02	**File ID** : R149172

	Laboratory Control Sample			Laboratory Control Duplicate					
Parameter	True (ppbV)	Found (ppbV)	%R	True (ppbV)	Found (ppbV)	%R	RPD	Recovery Limits	RPD Limit
Methyl tert butyl ether	5	5.17	103	5	4.74	95	8	70-130	30
n-Hexane	5	5.12	102	5	5.09	102	0	70-130	30
1,2-Dichloroethane	5	5.33	107	5	4.97	99	8	70-130	30
Cyclohexane	5	5.72	114	5	5.34	107	6	70-130	30
Benzene	5	4.74	95	5	4.84	97	2	70-130	30
Isooctane	5	5.71	114	5	5.88	118	3	70-130	30
Heptane	5	5.53	111	5	5.67	113	2	70-130	30
Toluene	5	4.85	97	5	4.98	100	3	70-130	30
1,2-Dibromoethane	5	5.48	110	5	5.62	112	2	70-130	30
Ethylbenzene	5	5.27	105	5	5.39	108	3	70-130	30
p/m-Xylene	10	11.9	119	10	12.2	122	2	70-130	30
Styrene	5	5.81	116	5	6.01	120	3	70-130	30
o-Xylene	5	5.52	110	5	5.72	114	4	70-130	30
n-Propylbenzene	5	5.22	104	5	5.40	108	4	70-130	30
1-Methyl-4-Ethylbenzene	5	5.40	108	5	5.58	112	4	70-130	30
1,3,5-Trimethylbenzene	5	5.60	112	5	5.78	116	4	70-130	30
1,2,4-Trimethylbenzene	5	5.95	119	5	6.14	123	3	70-130	30
Naphthalene	5	5.52	110	5	5.86	117	6	50-130	30

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149171.D
Acq On : 8 Nov 2016 11:55 am
Operator : AIRPIANO1:RY
Sample : WG948457-3,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 08 14:56:07 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR_PIANO_LCS - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	122881	10.000	ppbV	0.00
Standard Area = 123393			Recovery = 99.59%			
27) 1,4-difluorbenzene	14.20	114	281857	10.000	ppbV	0.00
Standard Area = 263318			Recovery = 107.04%			
54) chlorobenzene-D5	27.63	117	207529	10.000	ppbV	0.00
Standard Area = 190793			Recovery = 108.77%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.62	65	83367	10.857	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 108.57%			
46) Toluene-D8	20.95	98	220778	10.267	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 102.67%			
62) 4-Bromofluorobenzene (...	34.33	95	117157	10.292	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 102.92%			
Target Compounds						Qvalue
15) MTBE	8.66	73	121704	5.171	ppbV #	60
18) Hexane	10.28	57	66613	5.123	ppbV	89
25) 1,2-Dichloroethane	11.84	62	68866	5.333	ppbV	99
26) Cyclohexane	13.91	56	72077	5.718	ppbV	100
29) Benzene	13.32	78	127363	4.738	ppbV	100
35) Isooctane	15.99	57	241073	5.708	ppbV	97
36) Heptane	16.78	43	100678	5.531	ppbV	99
47) Toluene	21.26	91	152162	4.854	ppbV	100
53) 1,2-Dibromoethane	23.43	107	86695	5.481	ppbV	100
55) Ethylbenzene	29.48	91	154320	5.270	ppbV	100
57) p/m-Xylene	30.23	91	268962M1	11.930	ppbV	
60) Styrene	31.82	104	86425	5.809	ppbV	99
61) o-Xylene	32.25	91	127431	5.515	ppbV	99
64) n-Propylbenzene	37.69	120	41348	5.216	ppbV #	37
66) 1-Methyl-4-ethylbenzene	38.50	105	166771	5.403	ppbV	98
67) 1,3,5-Trimethylbenzene	38.98	105	140298	5.601	ppbV	100
71) 1,2,4-Trimethylbenzene	41.13	105	148299	5.948	ppbV	98
93) Naphthalene	52.16	128	186251	5.525	ppbV	100

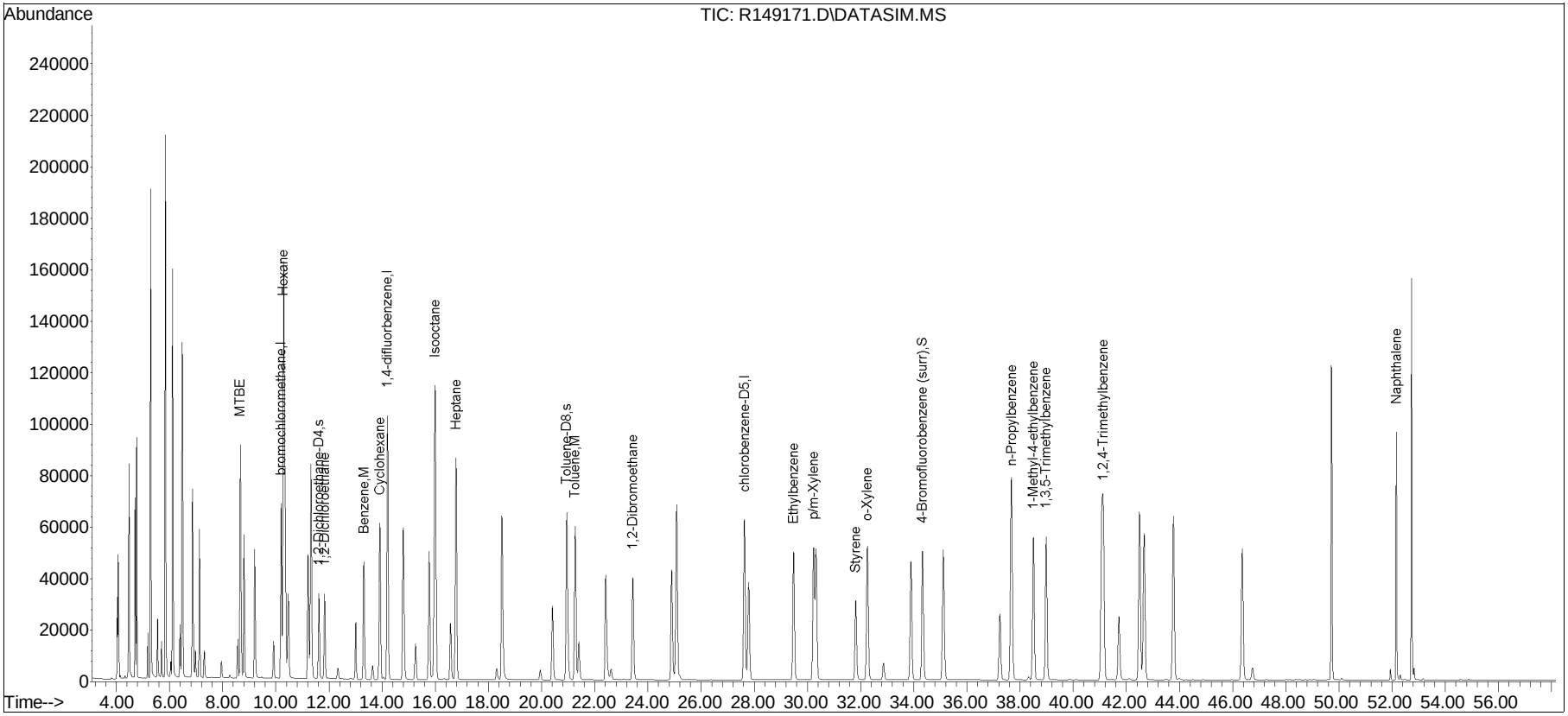
(#) = qualifier out of range (m) = manual integration (+) = signals summed

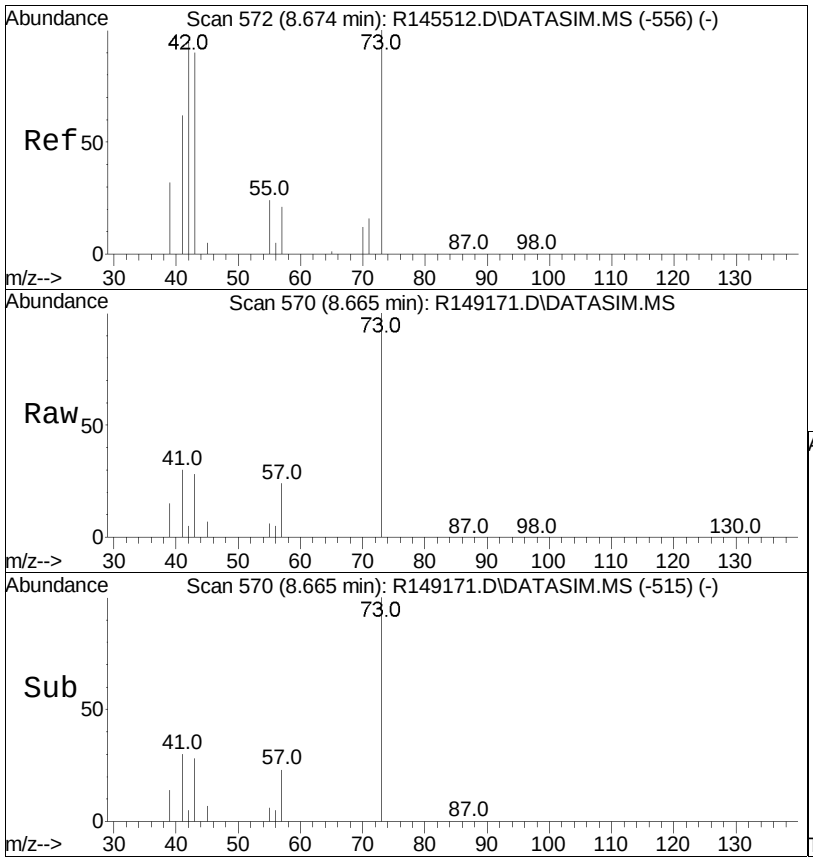
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149171.D
Acq On : 8 Nov 2016 11:55 am
Operator : AIRPIANO1:RY
Sample : WG948457-3,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 08 14:56:07 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

Sub List : AIR_PIANO_LCS - .\AIR1\2016\161108PIANO\R149170.D

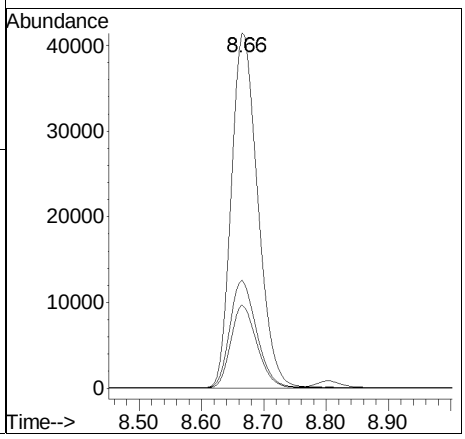


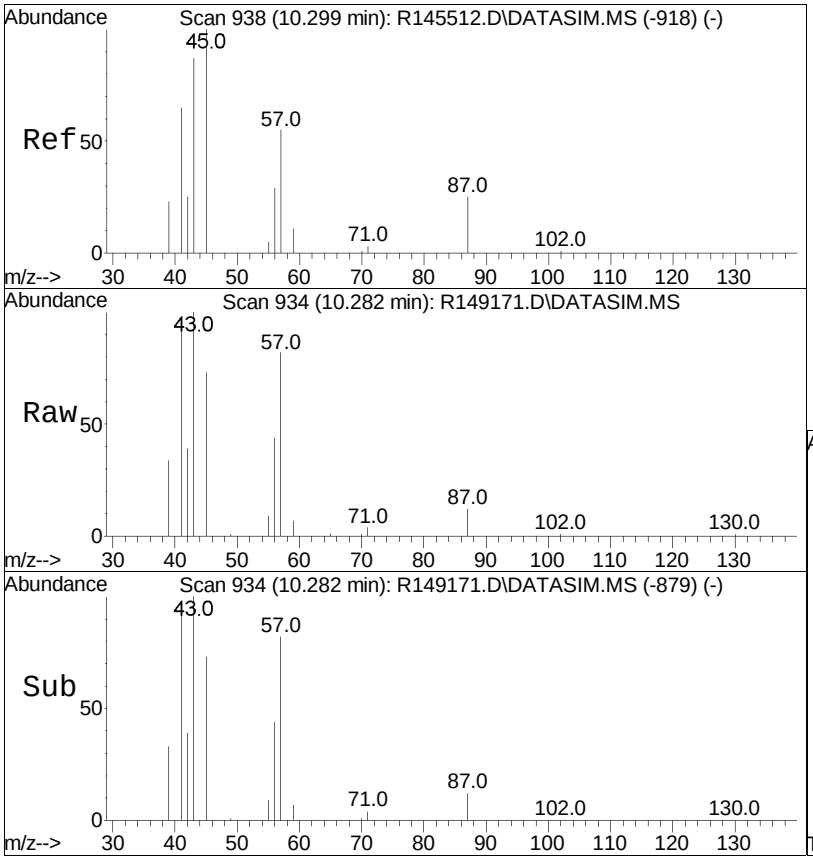


#15
MTBE
Concen: 5.17 ppbV
RT: 8.66 min Scan# 570
Delta R.T. -0.004 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion: 73 Resp: 121704

Ion	Ratio	Lower	Upper
73	100		
41	30.5	54.6	94.6#
57	23.5	3.7	43.7

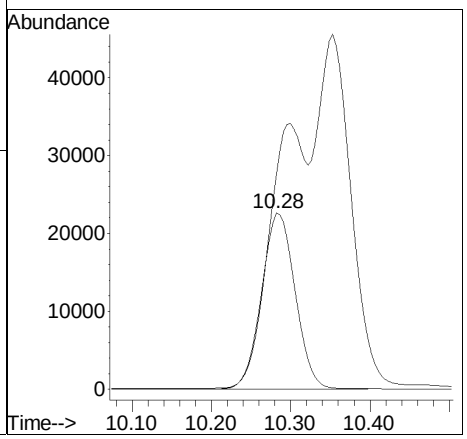


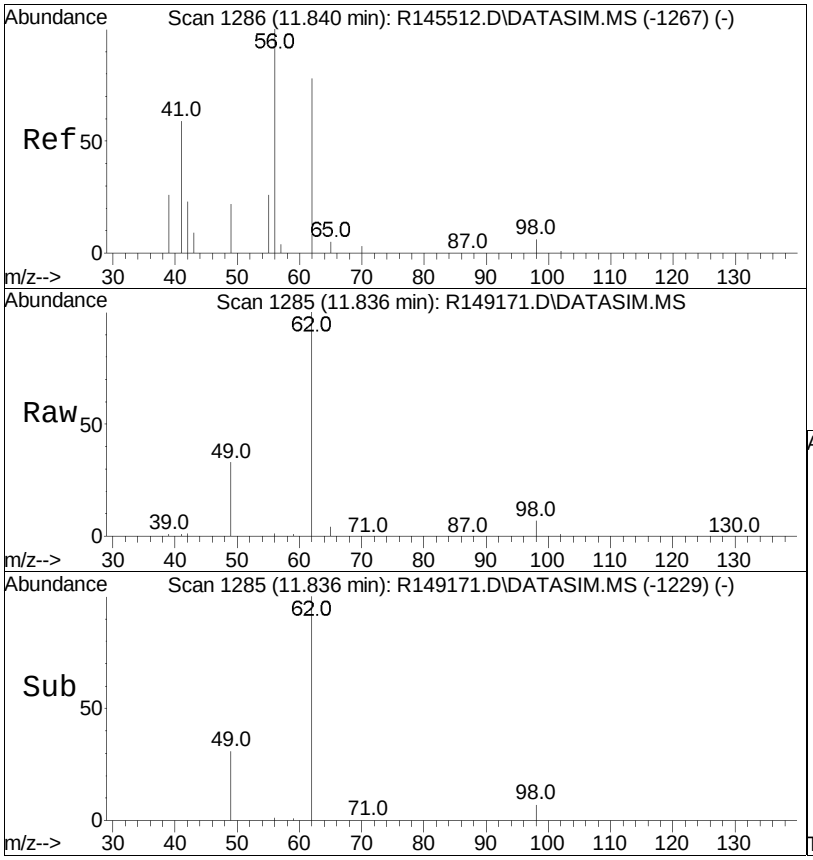


#18
Hexane
Concen: 5.12 ppbV
RT: 10.28 min Scan# 934
Delta R.T. -0.004 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion: 57 Resp: 66613

Ion	Ratio	Lower	Upper
57	100		
43	122.0	114.8	154.8

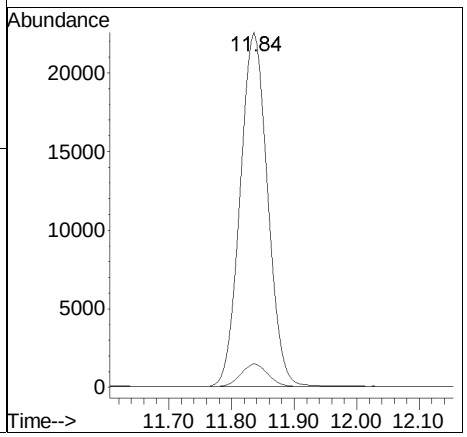


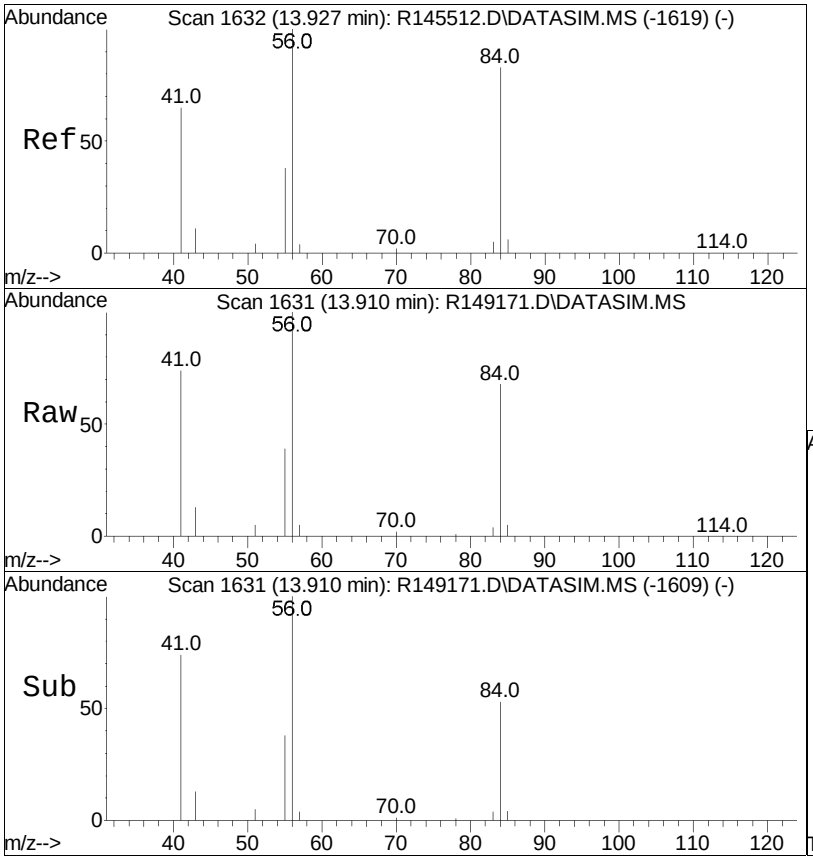


#25
1,2-Dichloroethane
Concen: 5.33 ppbV
RT: 11.84 min Scan# 1285
Delta R.T. -0.000 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion: 62 Resp: 68866

Ion	Ratio	Lower	Upper
62	100		
98	6.7	0.0	26.5

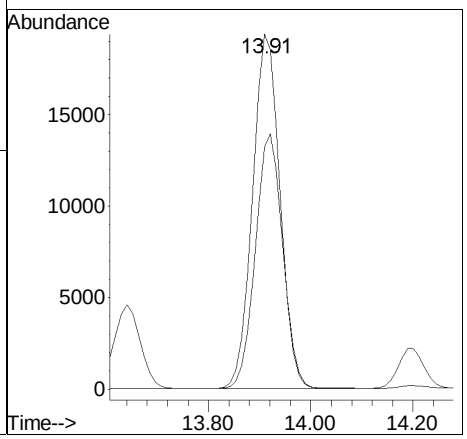


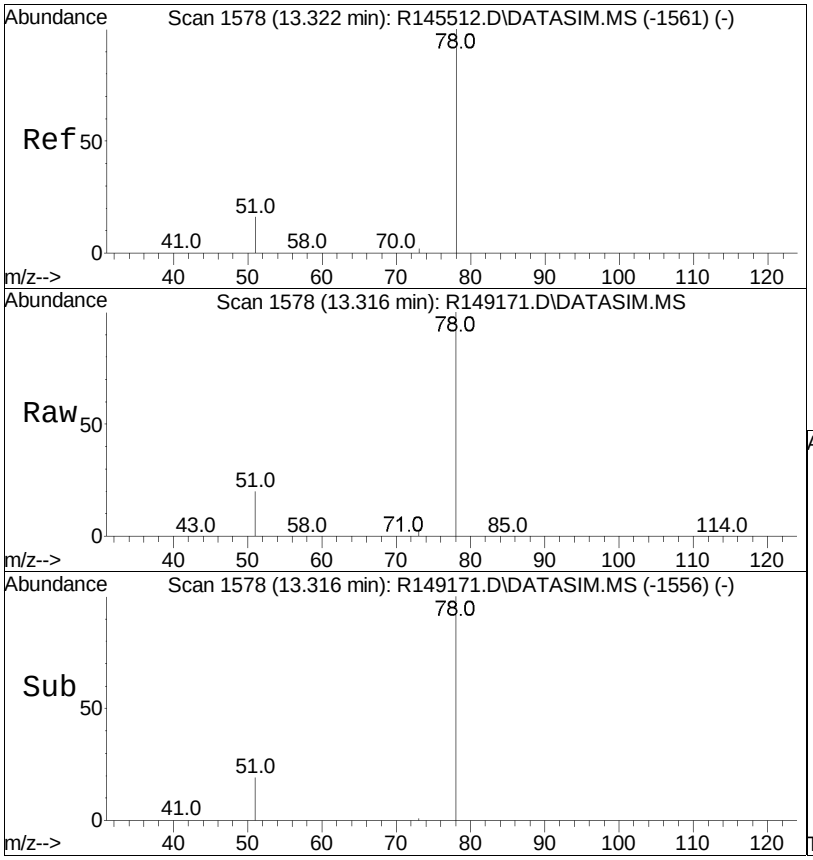


#26
Cyclohexane
Concen: 5.72 ppbV
RT: 13.91 min Scan# 1631
Delta R.T. -0.000 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion: 56 Resp: 72077

Ion	Ratio	Lower	Upper
56	100		
84	68.2	47.9	87.9

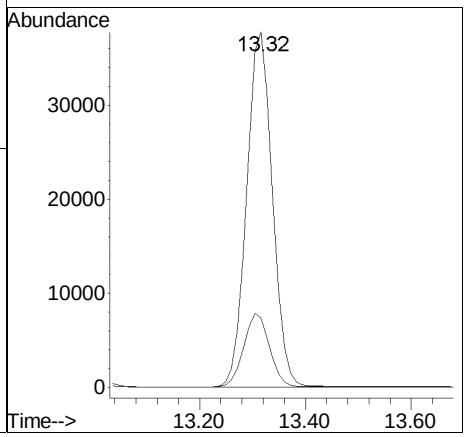


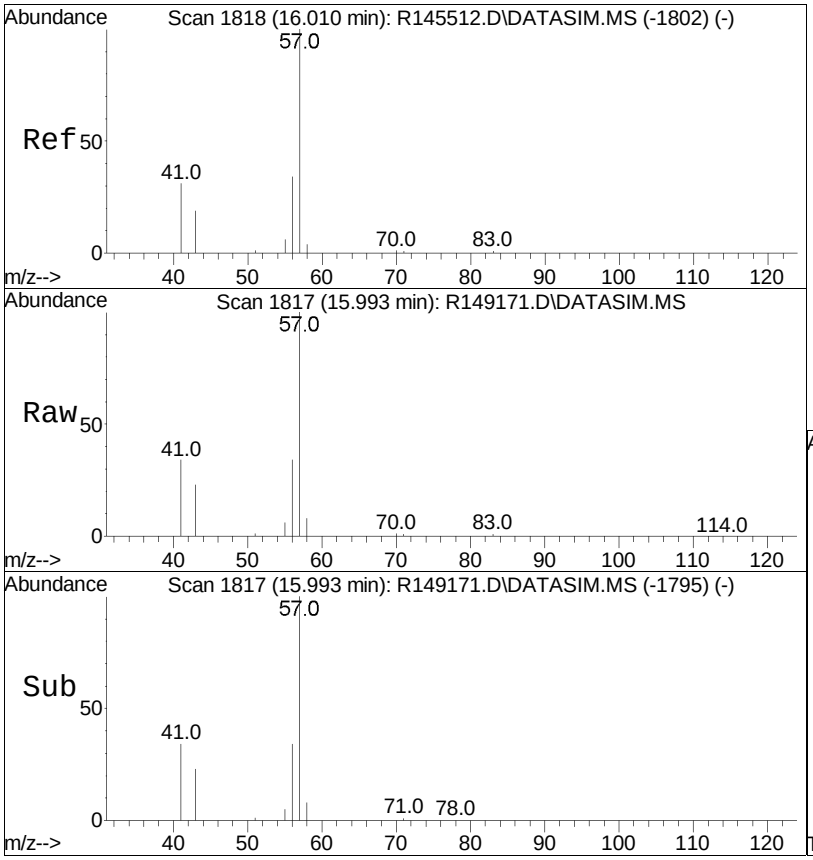


#29
Benzene
Concen: 4.74 ppbV
RT: 13.32 min Scan# 1578
Delta R.T. -0.000 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion: 78 Resp: 127363

Ion	Ratio	Lower	Upper
78	100		
51	19.5	0.0	39.4

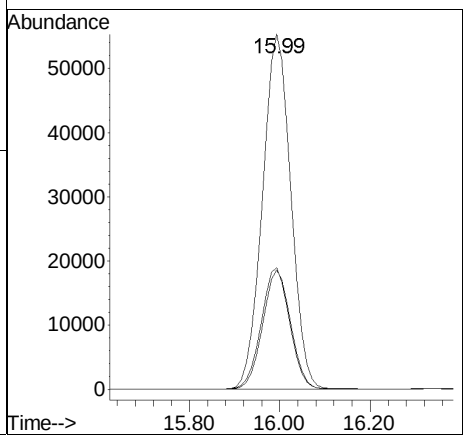


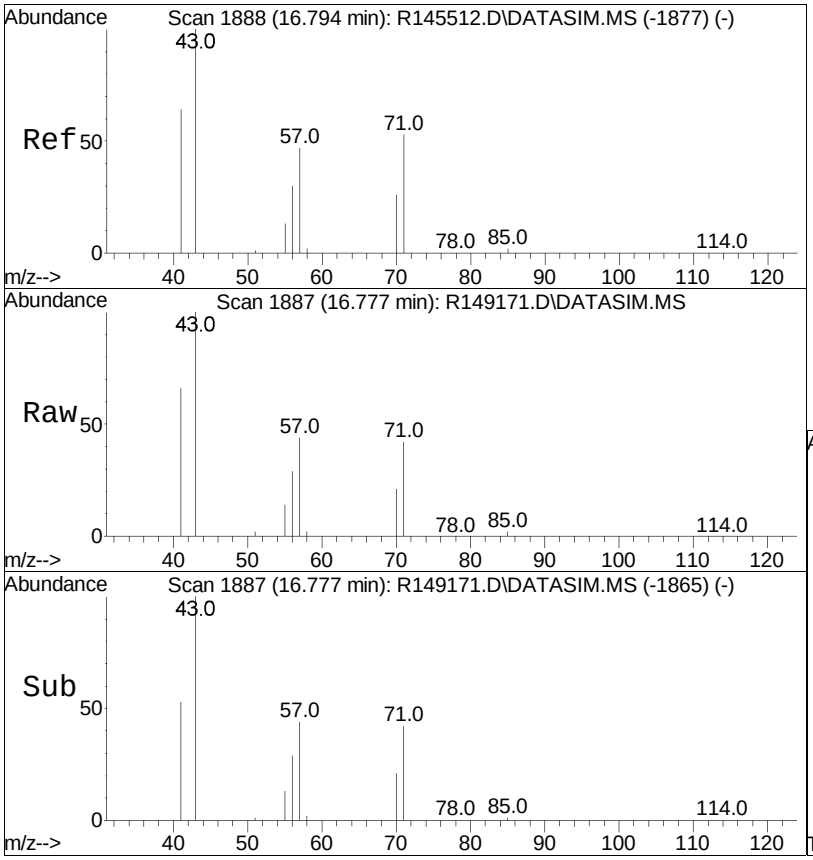


#35
Isooctane
Concen: 5.71 ppbV
RT: 15.99 min Scan# 1817
Delta R.T. -0.000 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion: 57 Resp: 241073

Ion	Ratio	Lower	Upper
57	100		
56	33.6	14.9	54.9
41	34.3	16.0	56.0

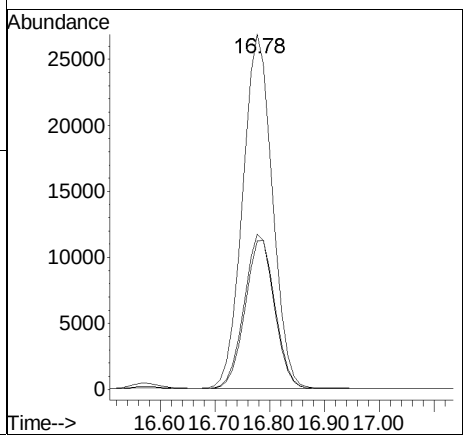


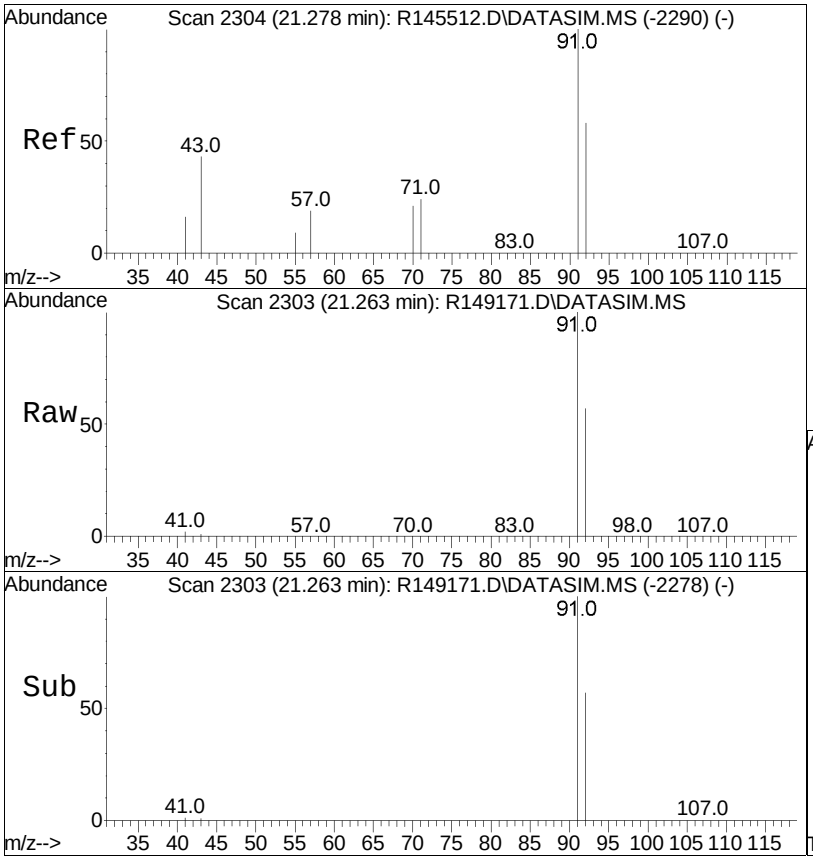


#36
Heptane
Concen: 5.53 ppbV
RT: 16.78 min Scan# 1887
Delta R.T. -0.000 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion: 43 Resp: 100678

Ion	Ratio	Lower	Upper
43	100		
57	43.7	23.3	63.3
71	41.7	21.1	61.1

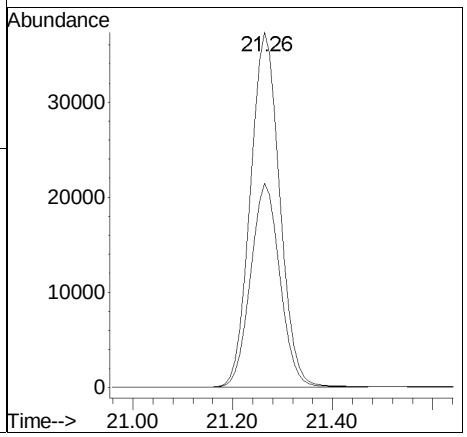


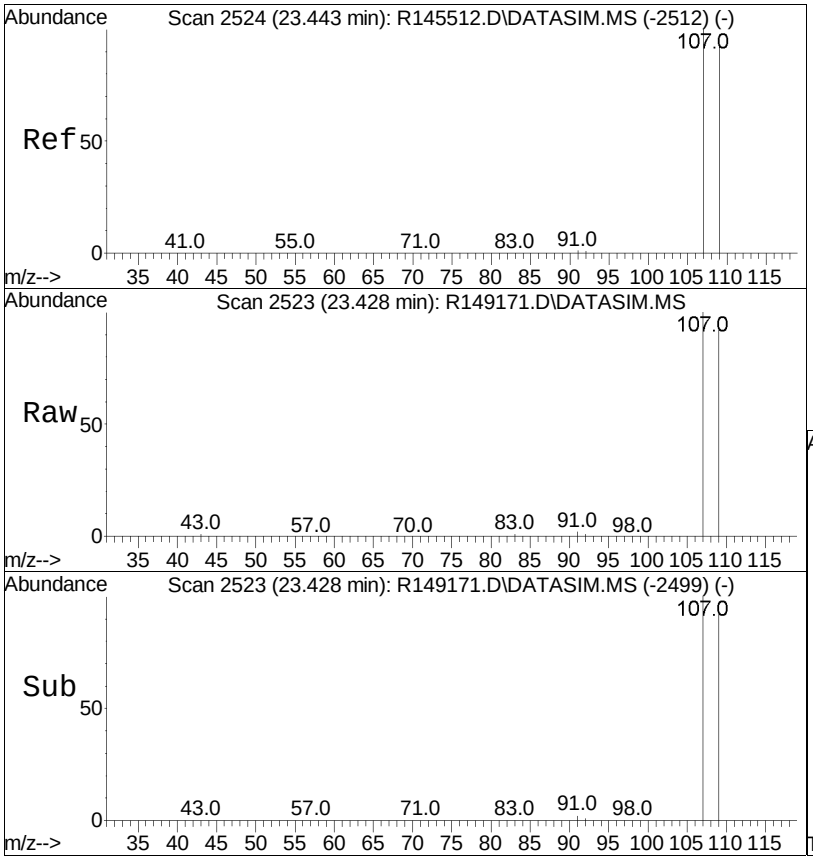


#47
Toluene
Concen: 4.85 ppbV
RT: 21.26 min Scan# 2303
Delta R.T. -0.000 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion: 91 Resp: 152162

Ion	Ratio	Lower	Upper
91	100		
92	57.5	37.6	77.6

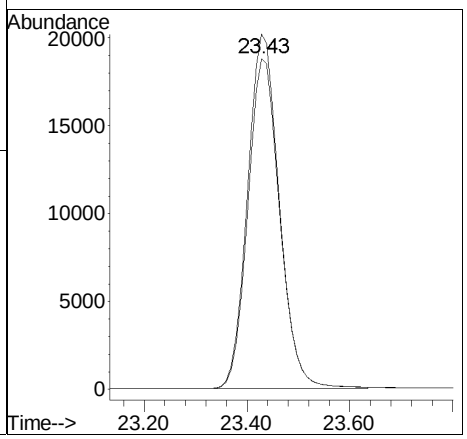


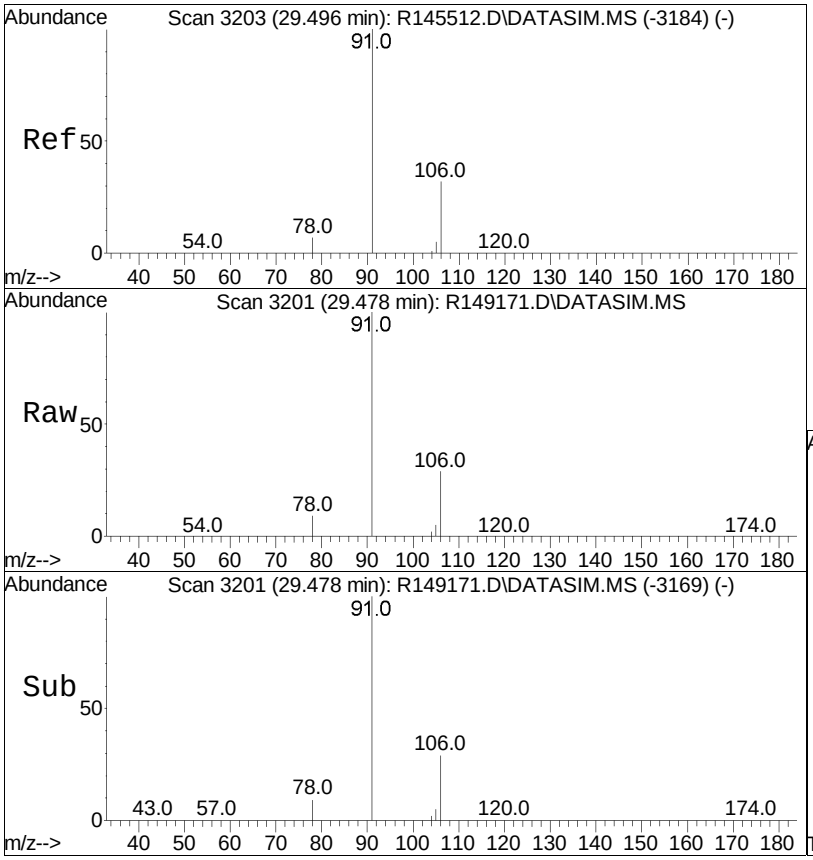


#53
1,2-Dibromoethane
Concen: 5.48 ppbV
RT: 23.43 min Scan# 2523
Delta R.T. -0.000 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion:107 Resp: 86695

Ion	Ratio	Lower	Upper
107	100		
109	93.0	73.2	113.2

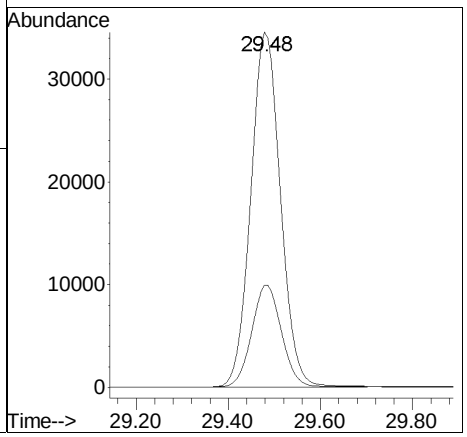


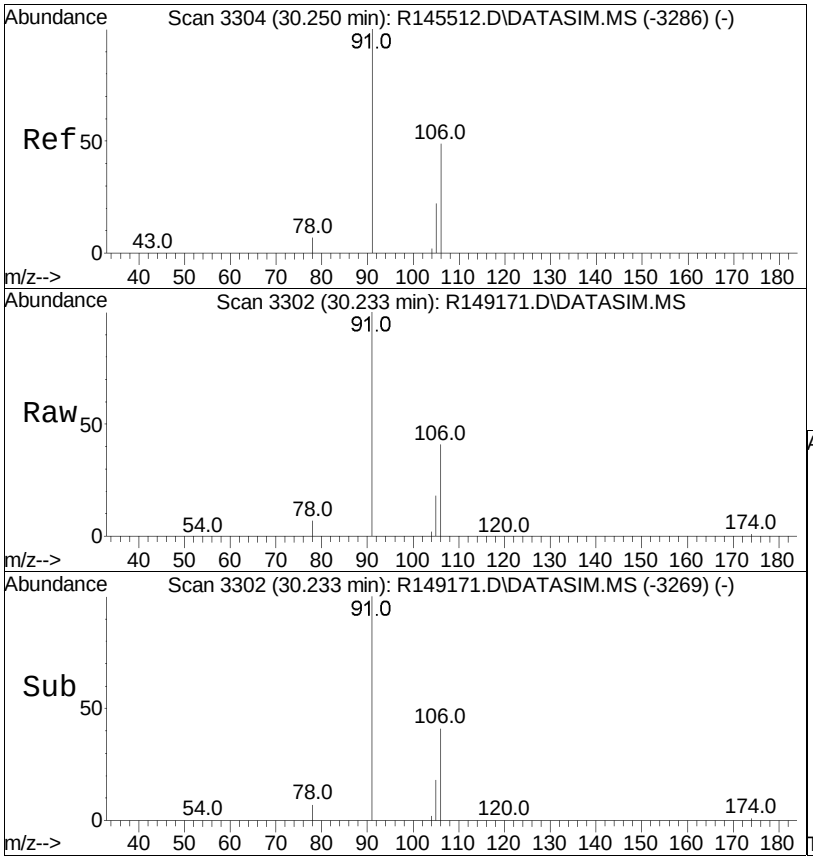


#55
Ethylbenzene
Concen: 5.27 ppbV
RT: 29.48 min Scan# 3201
Delta R.T. -0.008 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion: 91 Resp: 154320

Ion	Ratio	Lower	Upper
91	100		
106	28.8	9.1	49.1

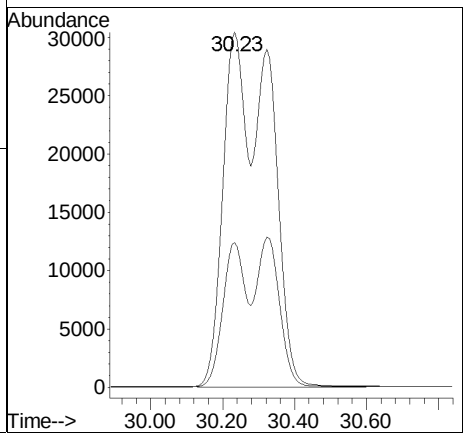


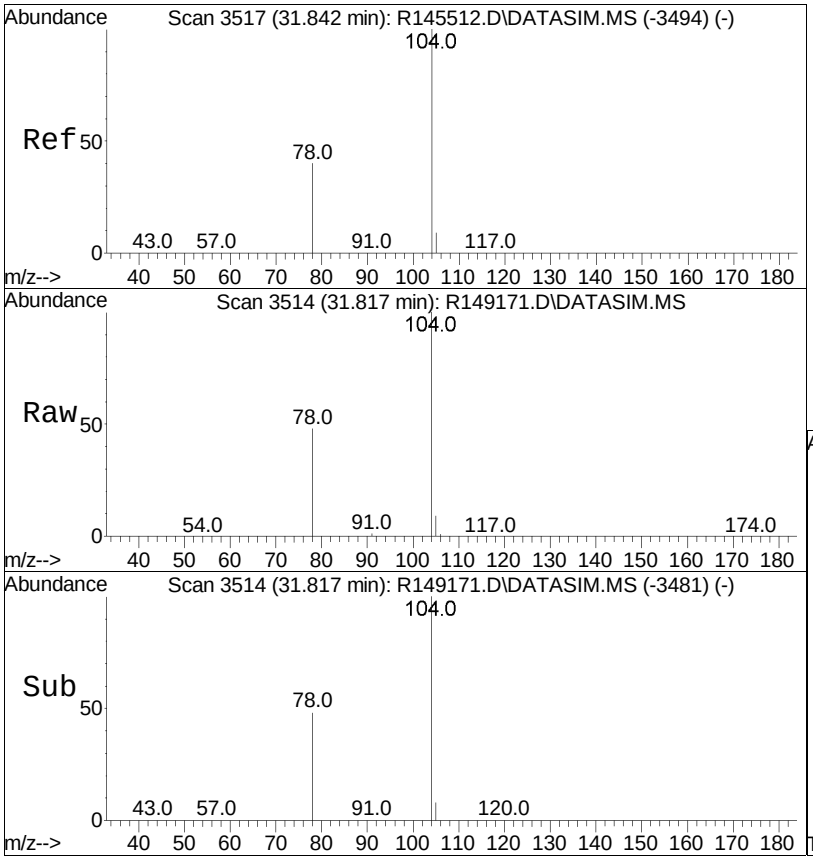


#57
p/m-Xylene
Concen: 11.93 ppbV m
RT: 30.23 min Scan# 3302
Delta R.T. -0.000 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion: 91 Resp: 268962

Ion	Ratio	Lower	Upper
91	100		
106	40.8	25.5	65.5

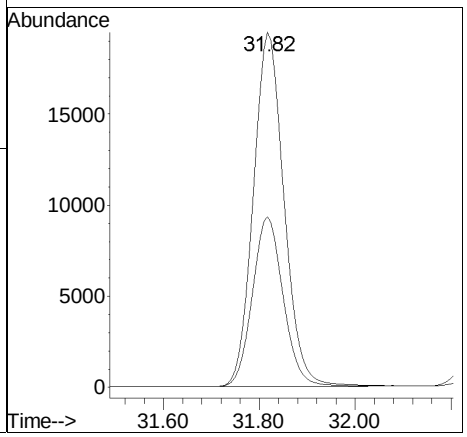


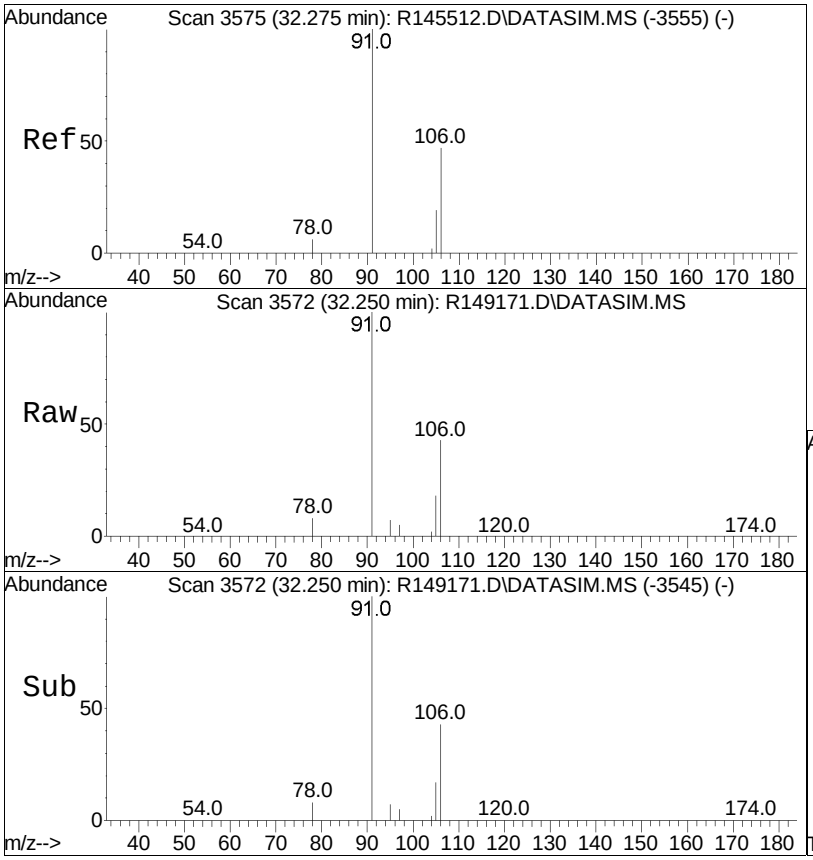


#60
Styrene
Concen: 5.81 ppbV
RT: 31.82 min Scan# 3514
Delta R.T. -0.000 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion:104 Resp: 86425

Ion	Ratio	Lower	Upper
104	100		
78	48.1	28.5	68.5

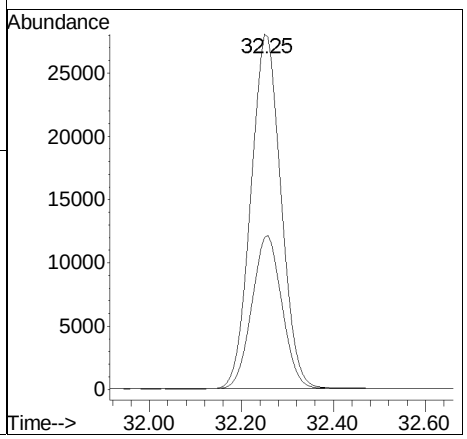


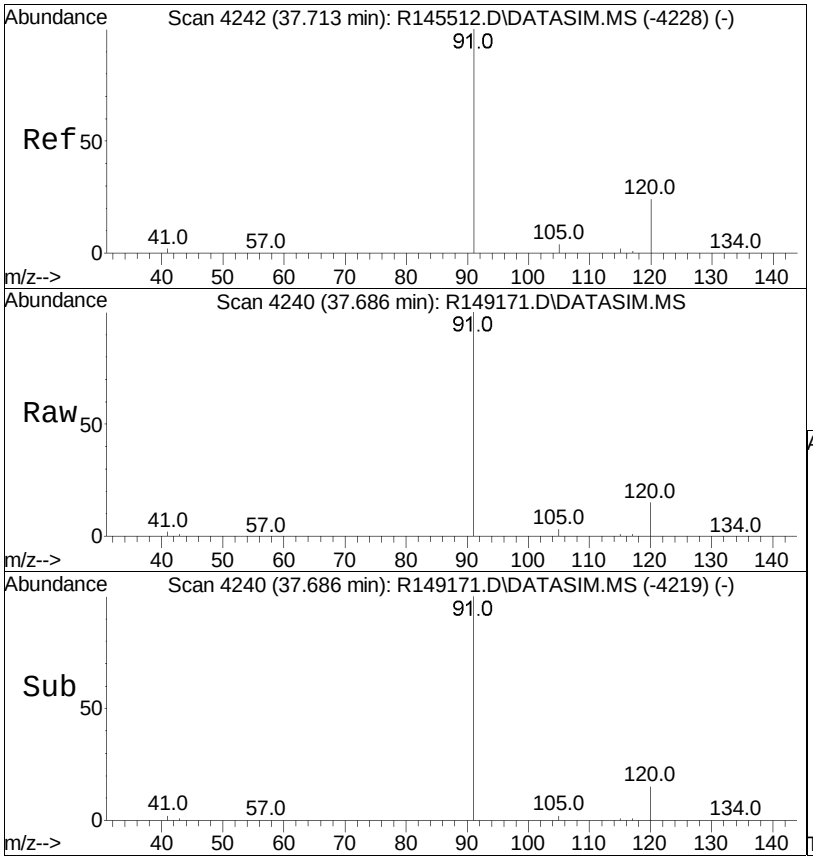


#61
o-Xylene
Concen: 5.52 ppbV
RT: 32.25 min Scan# 3572
Delta R.T. -0.007 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion: 91 Resp: 127431

Ion	Ratio	Lower	Upper
91	100		
106	42.7	23.5	63.5

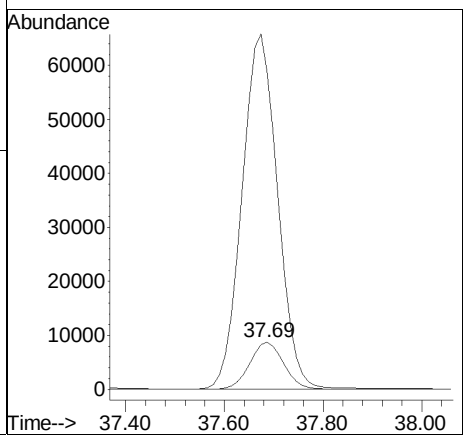


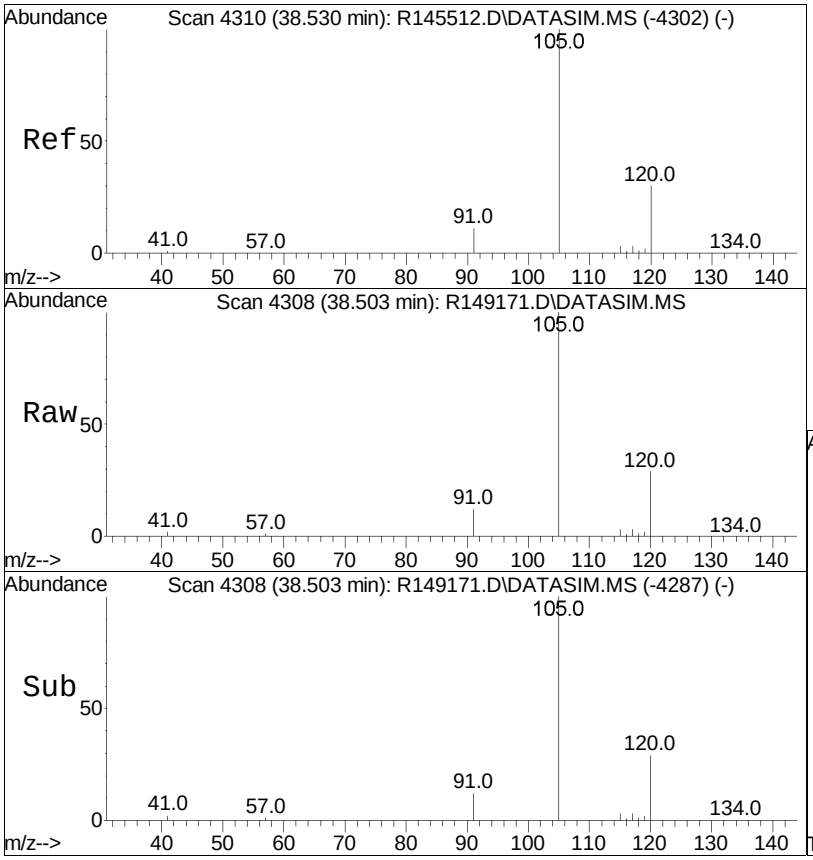


#64
n-Propylbenzene
Concen: 5.22 ppbV
RT: 37.69 min Scan# 4240
Delta R.T. -0.000 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion:120 Resp: 41348

Ion	Ratio	Lower	Upper
120	100		
91	674.3	480.0	520.0#

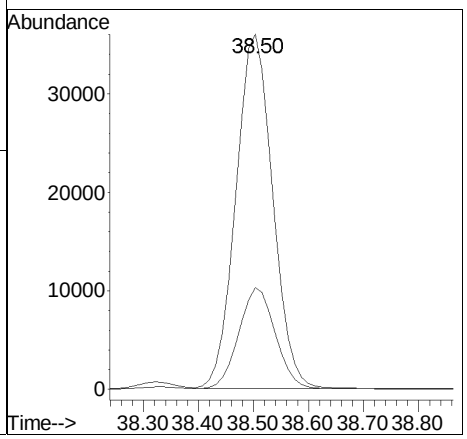


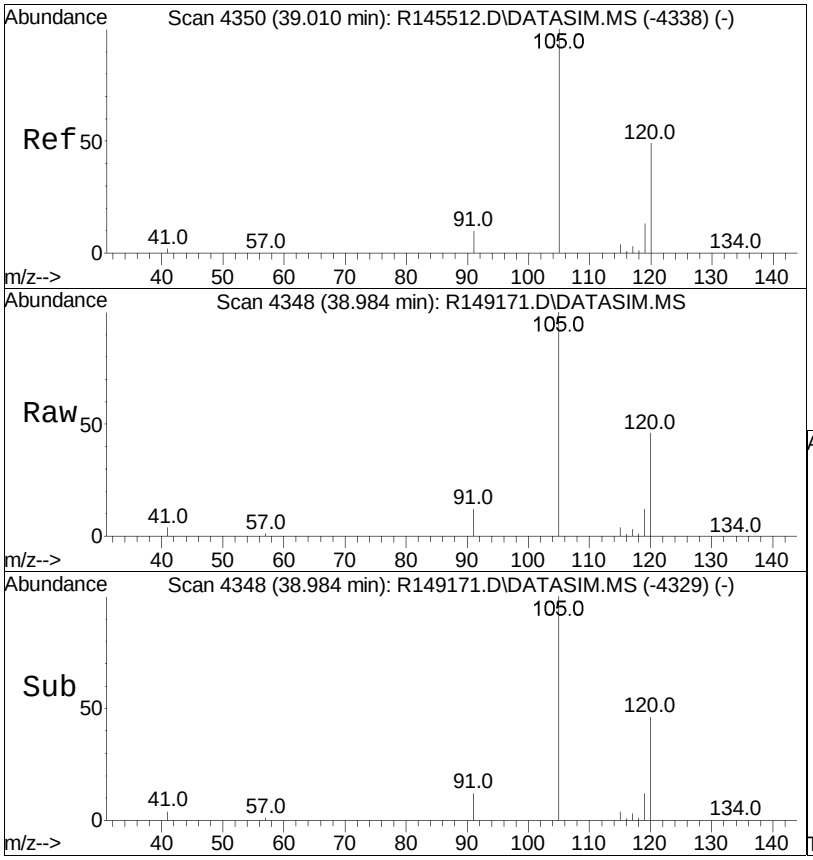


#66
1-Methyl-4-ethylbenzene
Concen: 5.40 ppbV
RT: 38.50 min Scan# 4308
Delta R.T. -0.000 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion:105 Resp: 166771

Ion	Ratio	Lower	Upper
105	100		
120	28.7	7.8	47.8

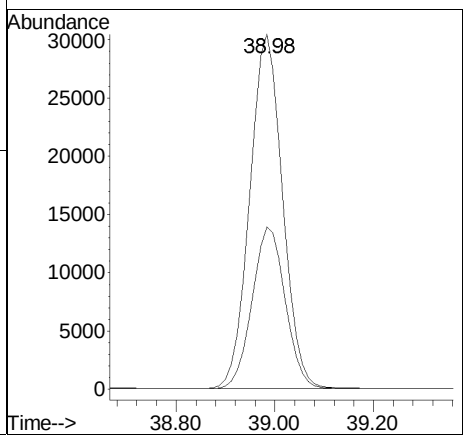


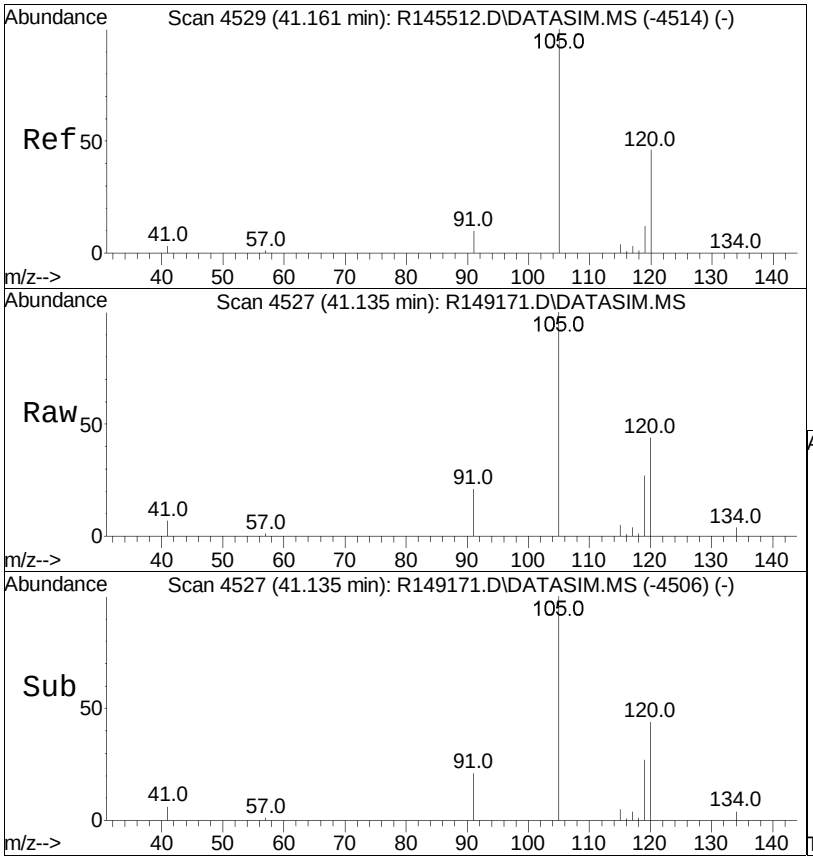


#67
1,3,5-Trimethylbenzene
Concen: 5.60 ppbV
RT: 38.98 min Scan# 4348
Delta R.T. -0.000 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion:105 Resp: 140298

Ion	Ratio	Lower	Upper
105	100		
120	45.7	25.9	65.9

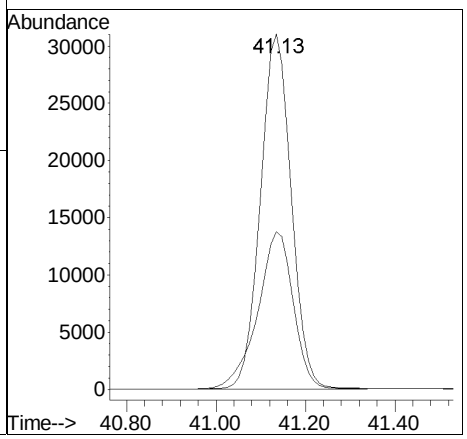


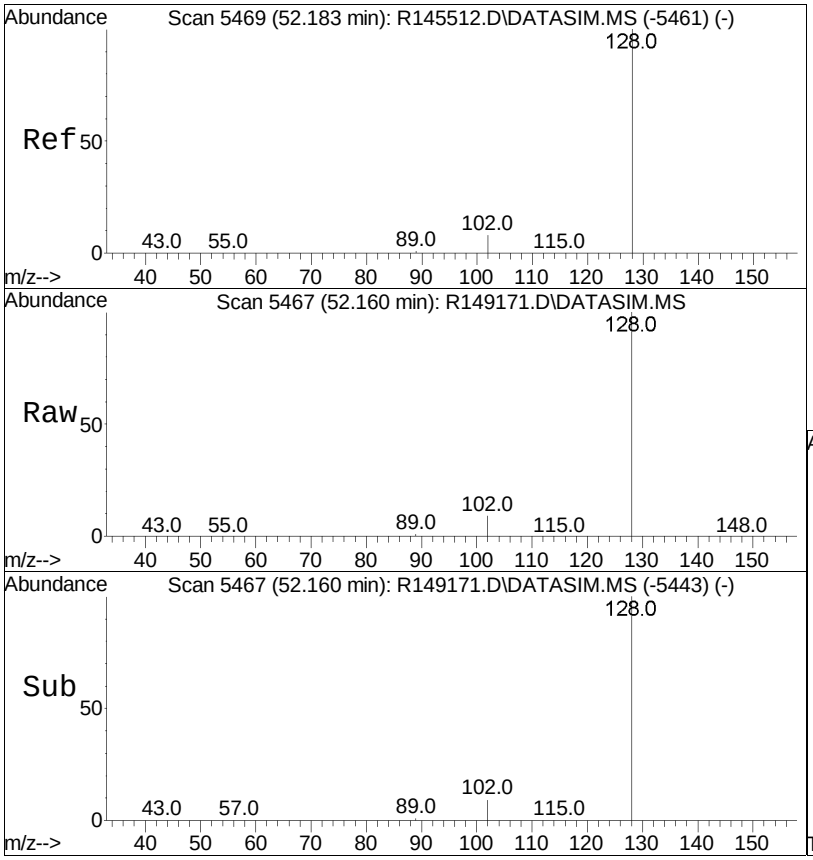


#71
1,2,4-Trimethylbenzene
Concen: 5.95 ppbV
RT: 41.13 min Scan# 4527
Delta R.T. -0.000 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion:105 Resp: 148299

Ion	Ratio	Lower	Upper
105	100		
120	44.5	23.0	63.0

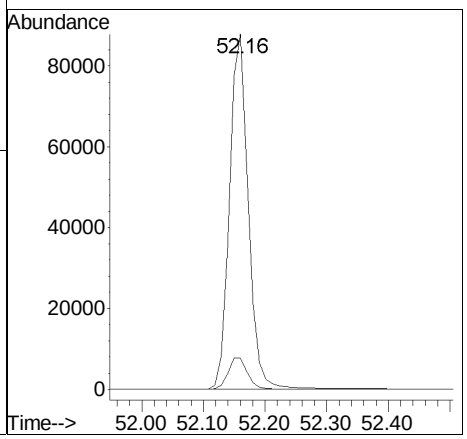




#93
Naphthalene
Concen: 5.53 ppbV
RT: 52.16 min Scan# 5467
Delta R.T. -0.000 min
Lab File: R149171.D
Acq: 8 Nov 2016 11:55 am

Tgt Ion:128 Resp: 186251

Ion	Ratio	Lower	Upper
128	100		
102	8.8	0.0	28.9



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149172.D
Acq On : 8 Nov 2016 1:02 pm
Operator : AIRPIANO1:RY
Sample : WG948457-4,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 08 14:56:37 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR_PIANO_LCS - .

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	130175	10.000	ppbV	0.00
Standard Area = 123393			Recovery = 105.50%			
27) 1,4-difluorbenzene	14.20	114	273259	10.000	ppbV	0.00
Standard Area = 263318			Recovery = 103.78%			
54) chlorobenzene-D5	27.63	117	202015	10.000	ppbV	0.00
Standard Area = 190793			Recovery = 105.88%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.62	65	85326	10.489	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 104.89%			
46) Toluene-D8	20.95	98	226496	10.865	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 108.65%			
62) 4-Bromofluorobenzene (...	34.33	95	120003	10.829	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 108.29%			
Target Compounds						Qvalue
15) MTBE	8.66	73	118081	4.736	ppbV #	60
18) Hexane	10.29	57	70106	5.089	ppbV	94
25) 1,2-Dichloroethane	11.83	62	67980	4.970	ppbV	100
26) Cyclohexane	13.91	56	71290	5.339	ppbV	99
29) Benzene	13.32	78	126158	4.841	ppbV	100
35) Isooctane	15.99	57	240784	5.881	ppbV	98
36) Heptane	16.78	43	99992	5.666	ppbV	99
47) Toluene	21.26	91	151372	4.980	ppbV	100
53) 1,2-Dibromoethane	23.43	107	86227	5.623	ppbV	100
55) Ethylbenzene	29.48	91	153696	5.392	ppbV	99
57) p/m-Xylene	30.23	91	268705M1	12.244	ppbV	
60) Styrene	31.82	104	87030	6.009	ppbV	100
61) o-Xylene	32.26	91	128571	5.716	ppbV	100
64) n-Propylbenzene	37.69	120	41648	5.397	ppbV #	32
66) 1-Methyl-4-ethylbenzene	38.50	105	167573	5.577	ppbV	100
67) 1,3,5-Trimethylbenzene	38.98	105	140966	5.781	ppbV	100
71) 1,2,4-Trimethylbenzene	41.13	105	149003	6.140	ppbV	98
93) Naphthalene	52.16	128	192347	5.862	ppbV	100

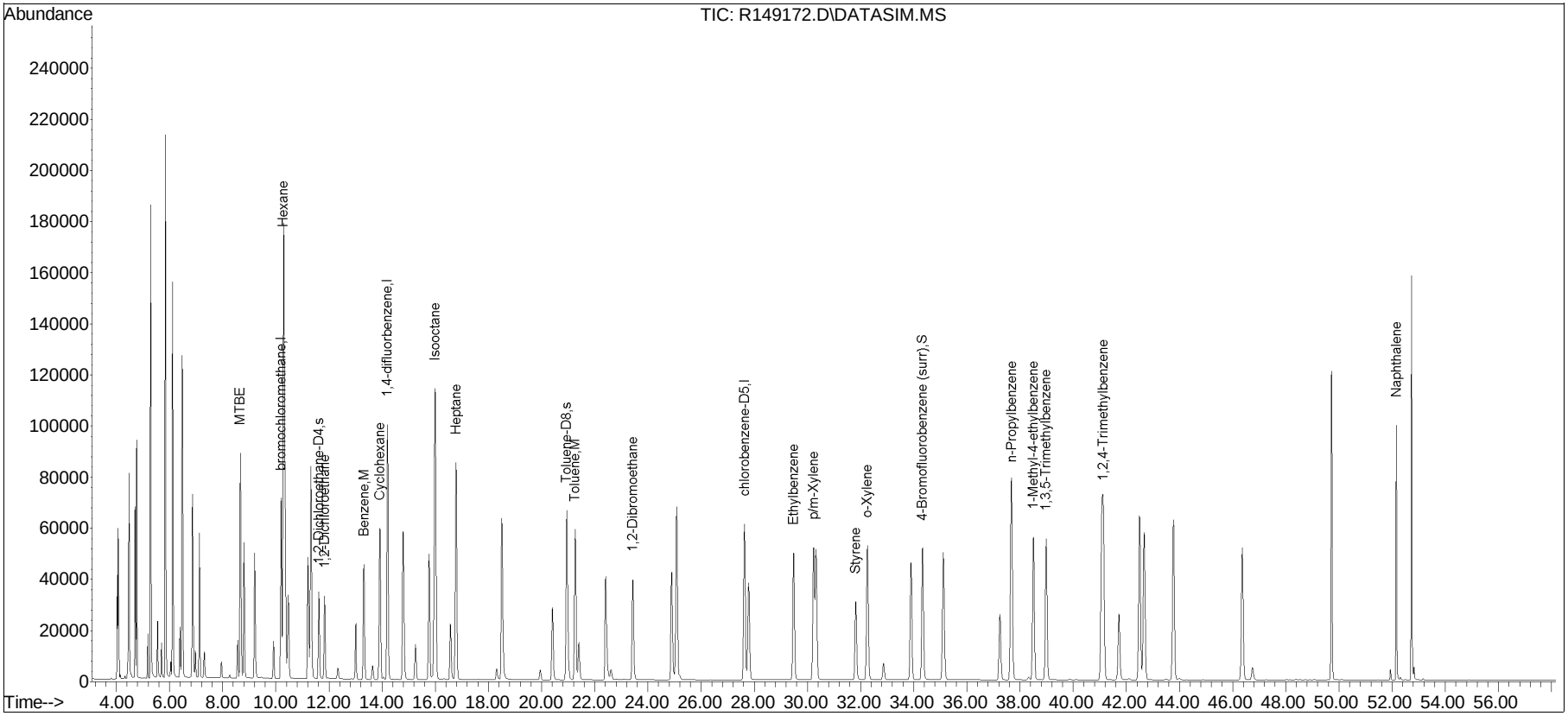
(#) = qualifier out of range (m) = manual integration (+) = signals summed

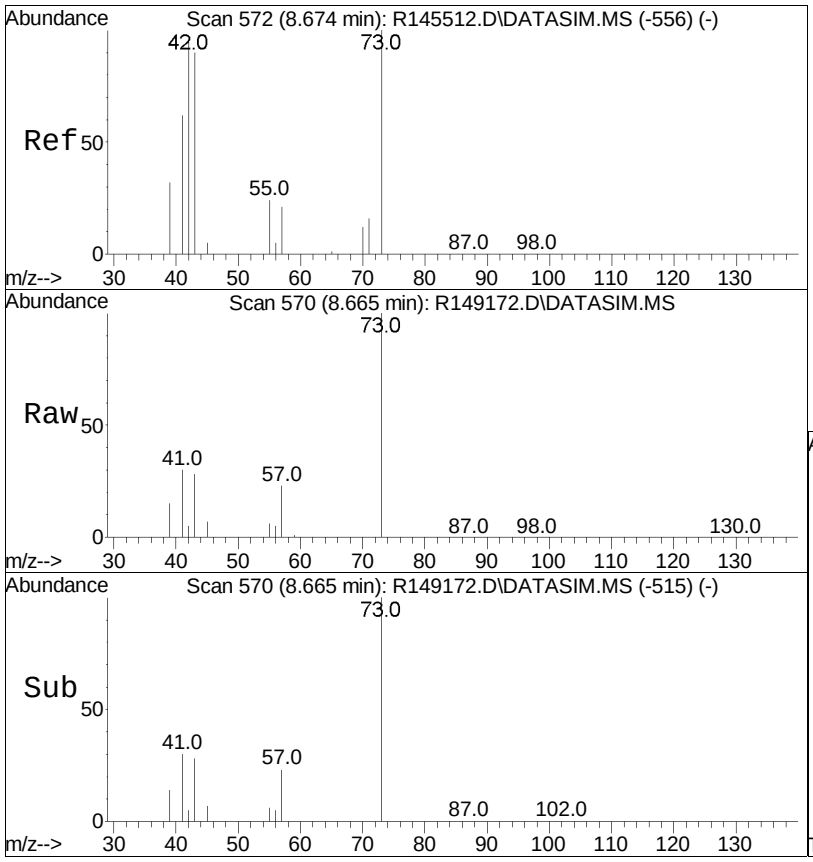
Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149172.D
Acq On : 8 Nov 2016 1:02 pm
Operator : AIRPIANO1:RY
Sample : WG948457-4,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 08 14:56:37 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

Sub List : AIR_PIANO_LCS - .\AIR1\2016\161108PIANO\R149170.D

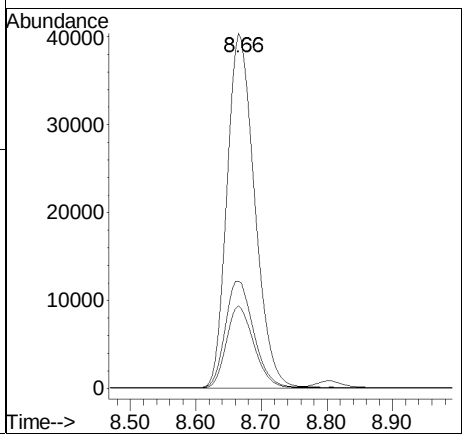


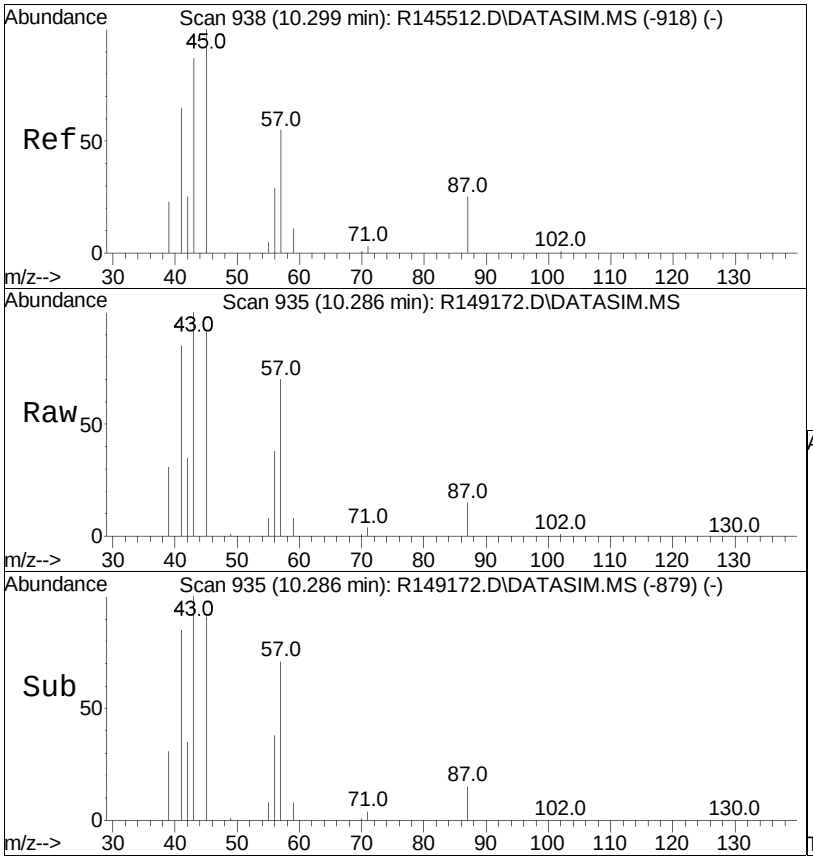


#15
MTBE
Concen: 4.74 ppbV
RT: 8.66 min Scan# 570
Delta R.T. -0.004 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion: 73 Resp: 118081

Ion	Ratio	Lower	Upper
73	100		
41	30.1	54.6	94.6#
57	23.2	3.7	43.7

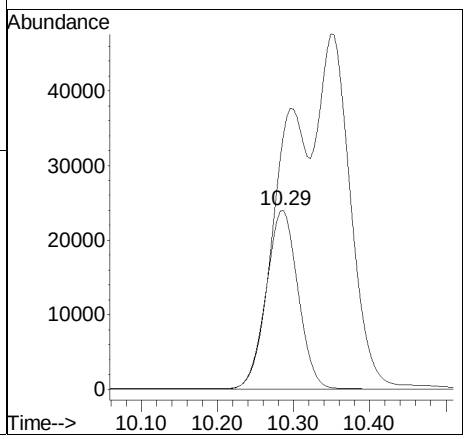


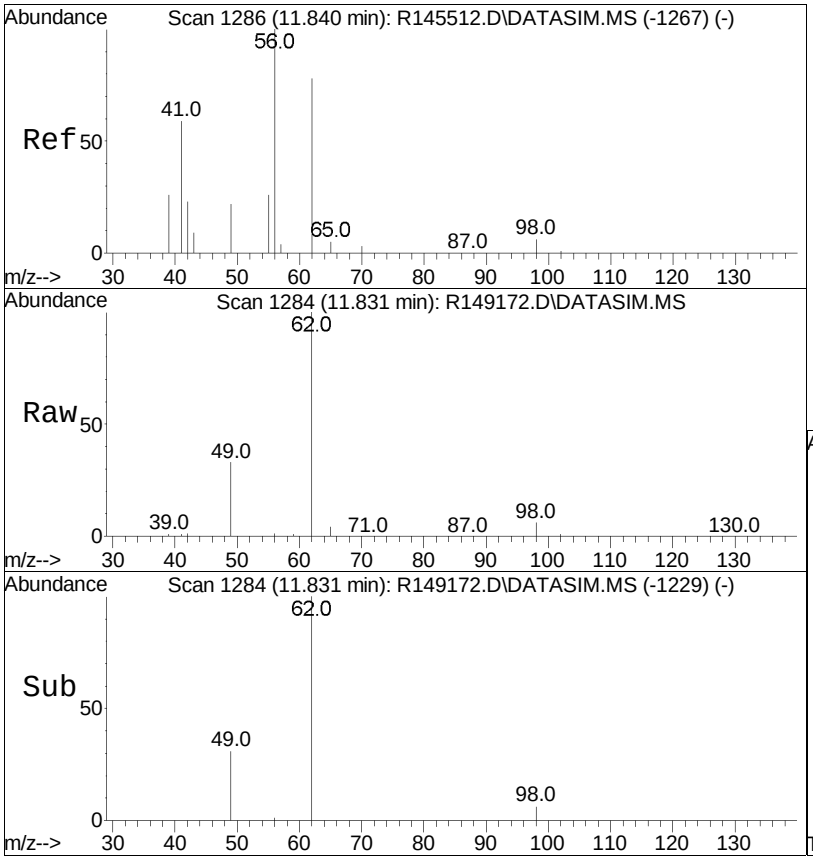


#18
Hexane
Concen: 5.09 ppbV
RT: 10.29 min Scan# 935
Delta R.T. -0.000 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion: 57 Resp: 70106

Ion	Ratio	Lower	Upper
57	100		
43	141.9	114.8	154.8

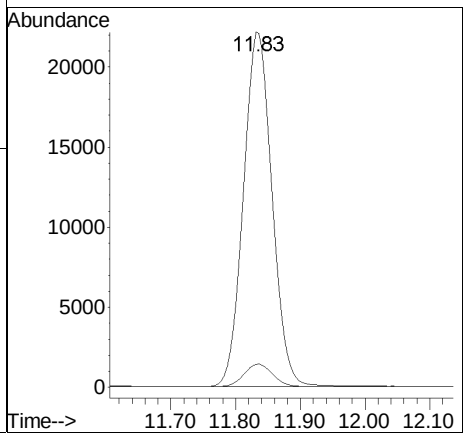


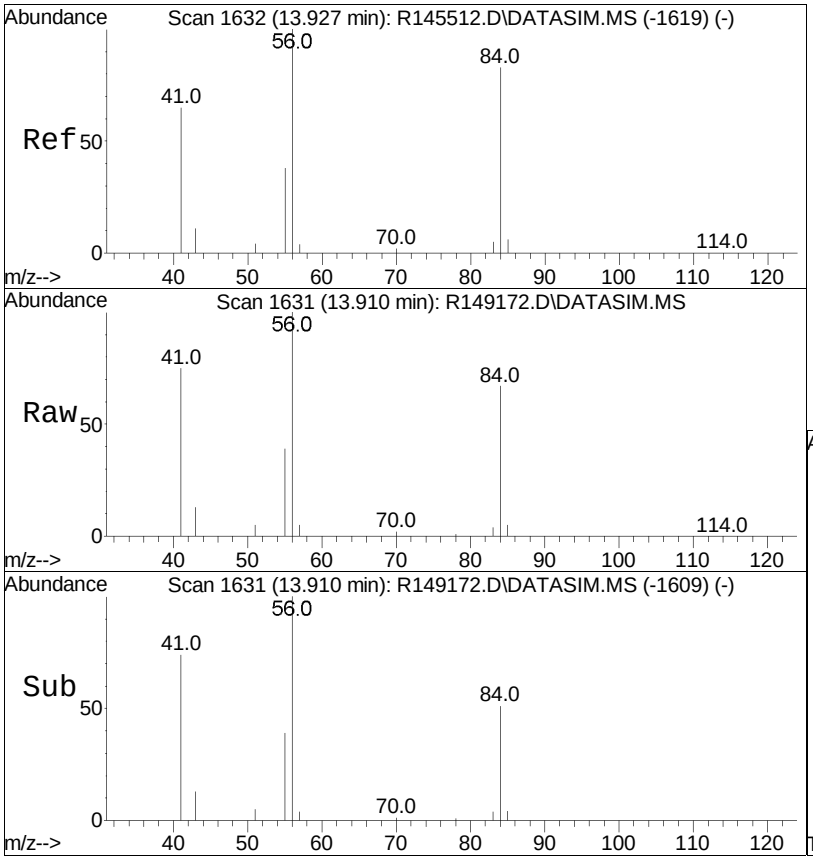


#25
1,2-Dichloroethane
Concen: 4.97 ppbV
RT: 11.83 min Scan# 1284
Delta R.T. -0.004 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion: 62 Resp: 67980

Ion	Ratio	Lower	Upper
62	100		
98	6.4	0.0	26.5

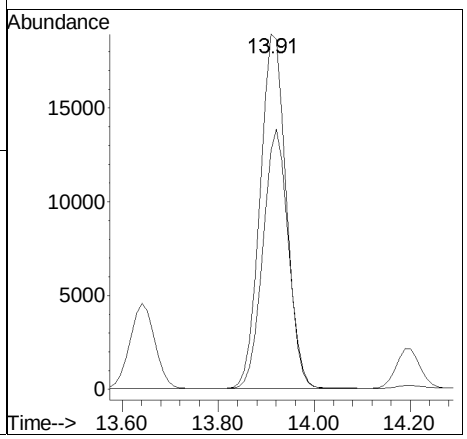


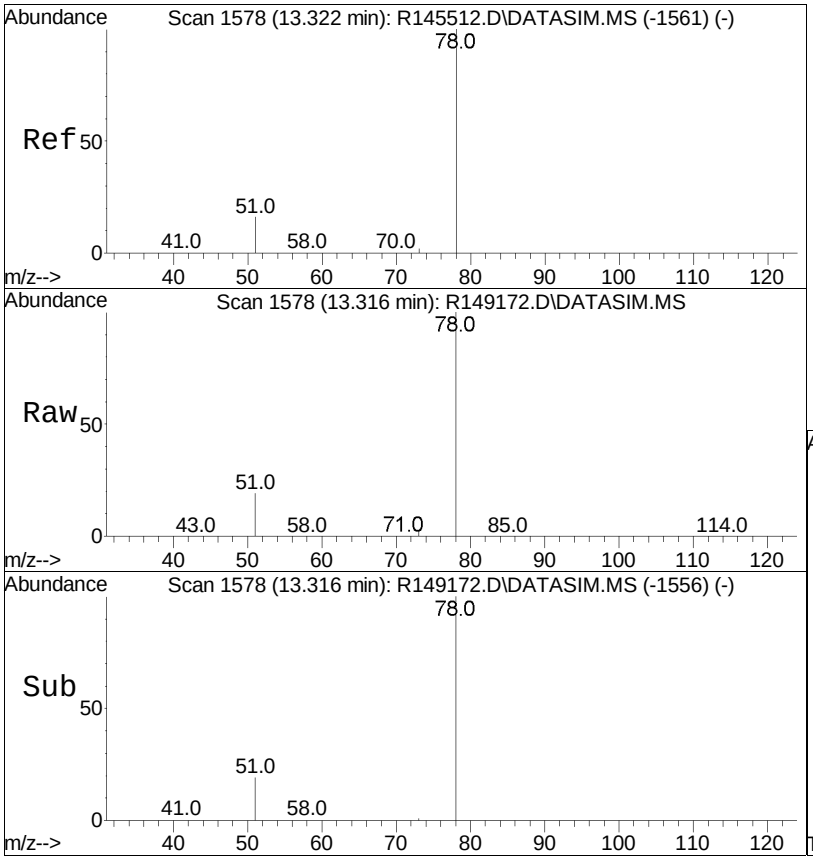


#26
Cyclohexane
Concen: 5.34 ppbV
RT: 13.91 min Scan# 1631
Delta R.T. -0.000 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion: 56 Resp: 71290

Ion	Ratio	Lower	Upper
56	100		
84	67.2	47.9	87.9

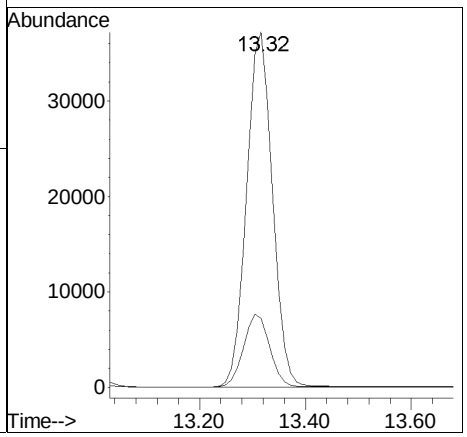


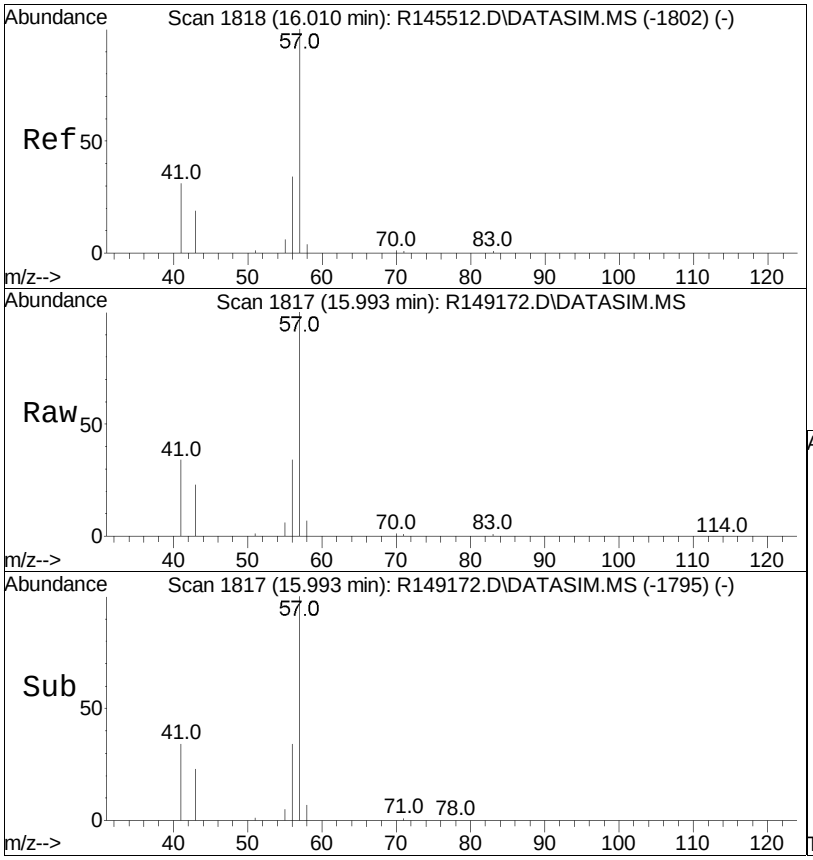


#29
Benzene
Concen: 4.84 ppbV
RT: 13.32 min Scan# 1578
Delta R.T. -0.000 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion: 78 Resp: 126158

Ion	Ratio	Lower	Upper
78	100		
51	19.4	0.0	39.4

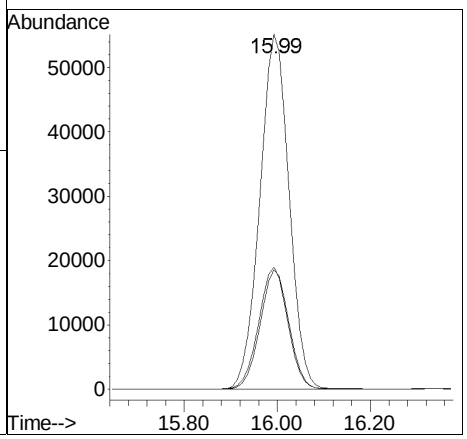


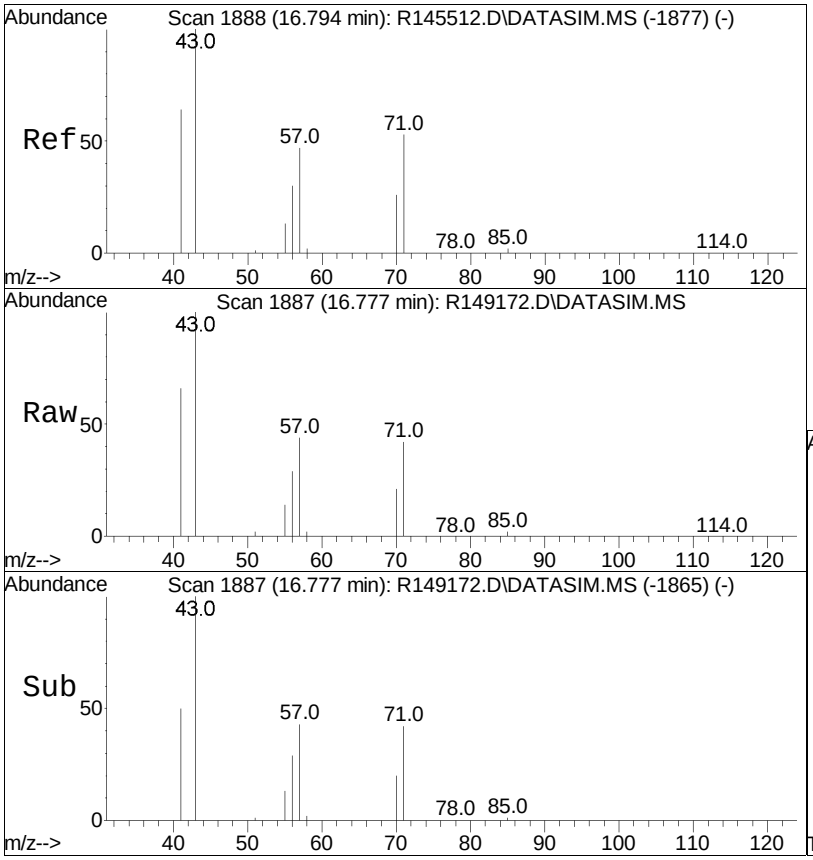


#35
Isooctane
Concen: 5.88 ppbV
RT: 15.99 min Scan# 1817
Delta R.T. -0.000 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion: 57 Resp: 240784

Ion	Ratio	Lower	Upper
57	100		
56	33.7	14.9	54.9
41	34.4	16.0	56.0

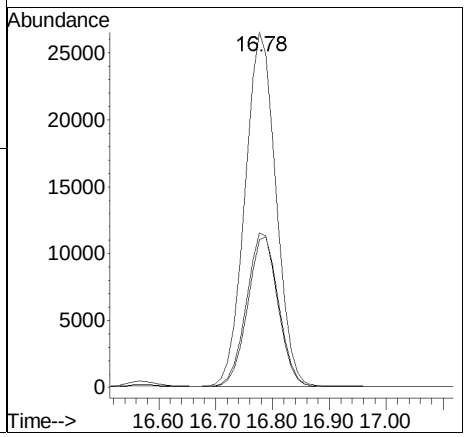


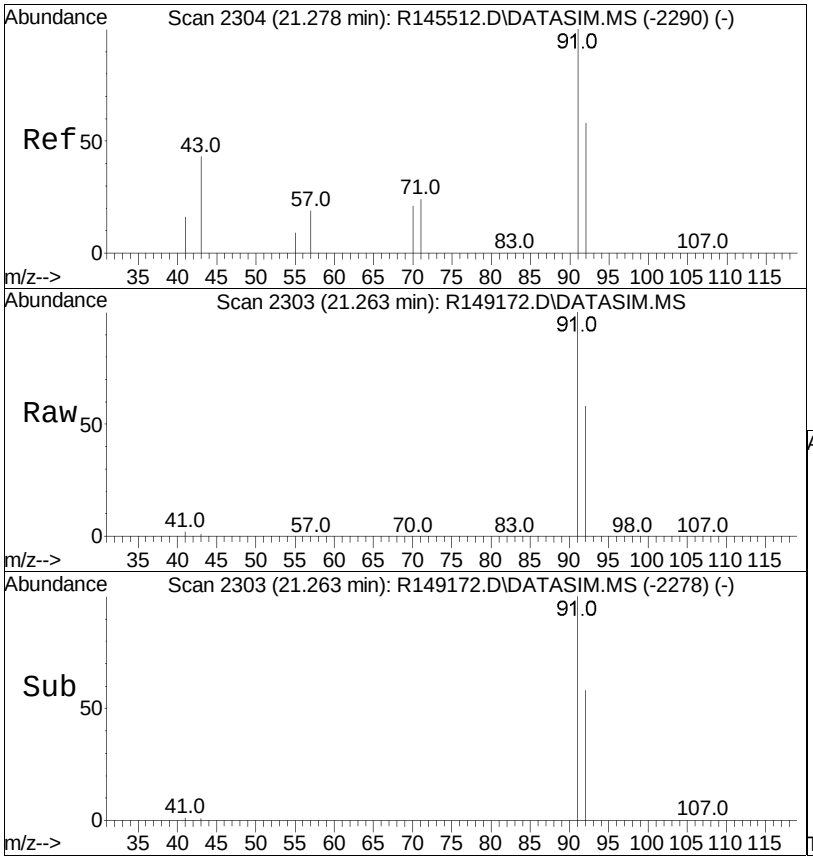


#36
Heptane
Concen: 5.67 ppbV
RT: 16.78 min Scan# 1887
Delta R.T. -0.000 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion: 43 Resp: 99992

Ion	Ratio	Lower	Upper
43	100		
57	43.5	23.3	63.3
71	41.6	21.1	61.1

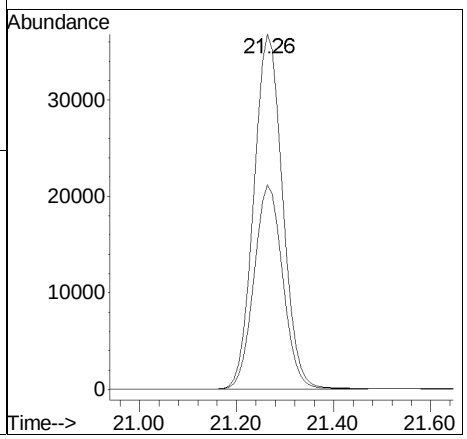


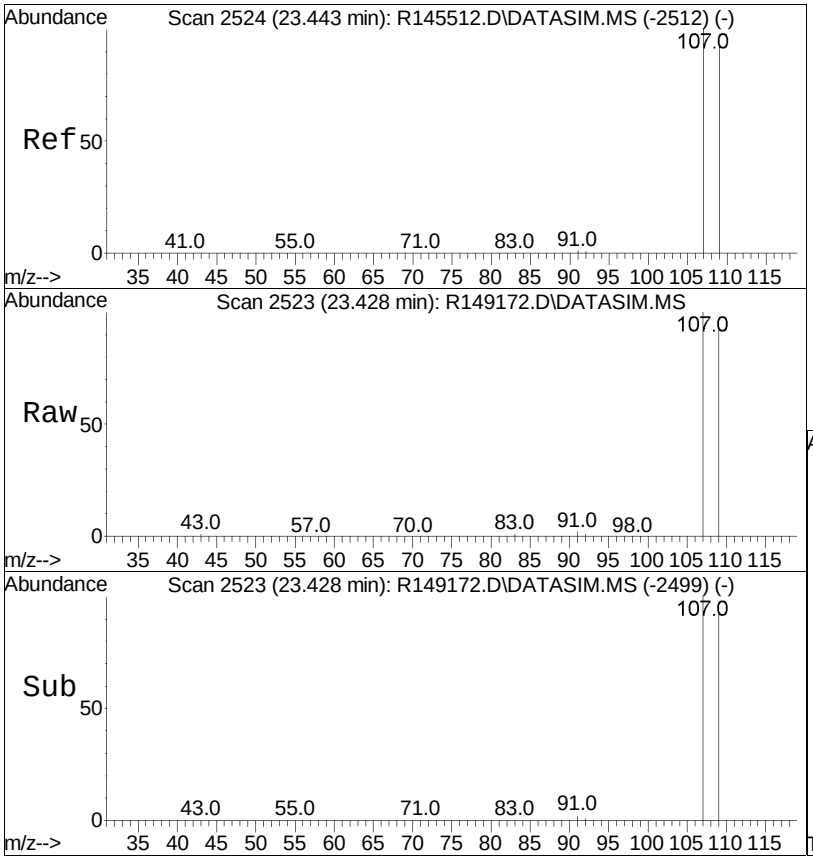


#47
Toluene
Concen: 4.98 ppbV
RT: 21.26 min Scan# 2303
Delta R.T. -0.000 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion: 91 Resp: 151372

Ion	Ratio	Lower	Upper
91	100		
92	57.6	37.6	77.6

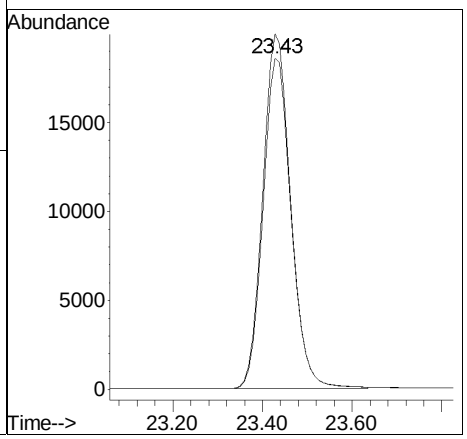


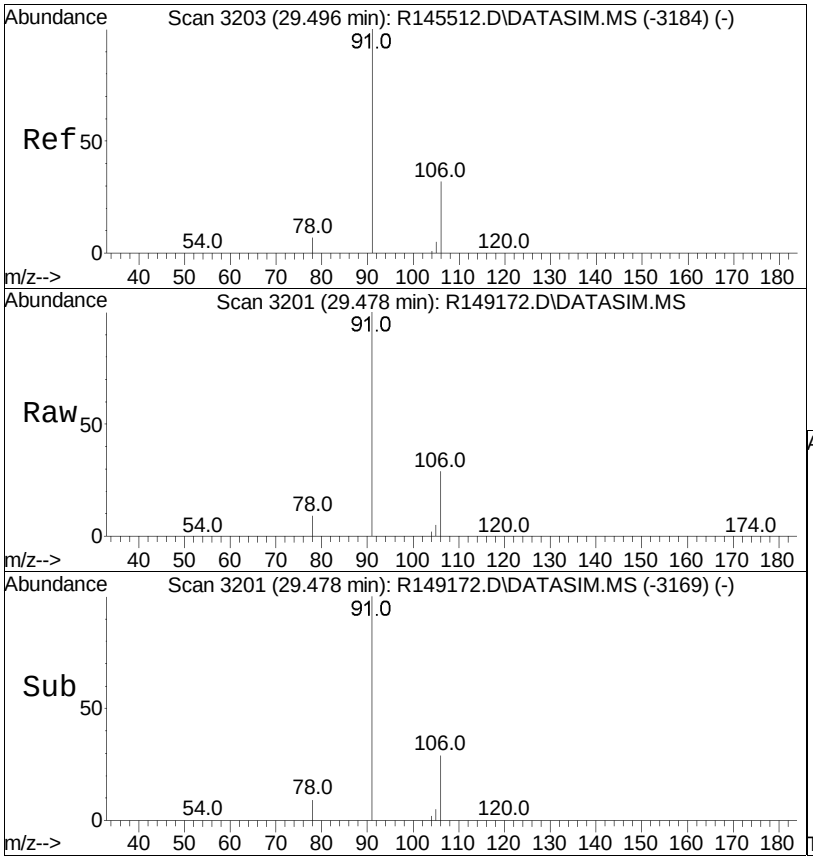


#53
1,2-Dibromoethane
Concen: 5.62 ppbV
RT: 23.43 min Scan# 2523
Delta R.T. -0.000 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion:107 Resp: 86227

Ion	Ratio	Lower	Upper
107	100		
109	93.3	73.2	113.2

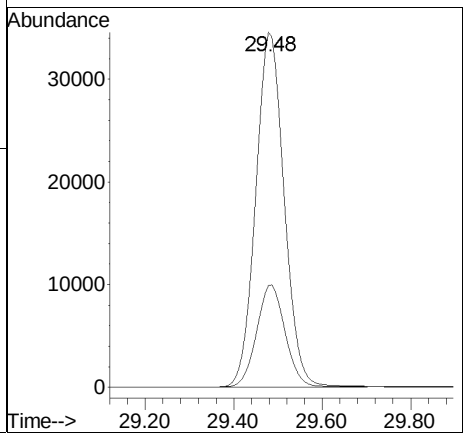


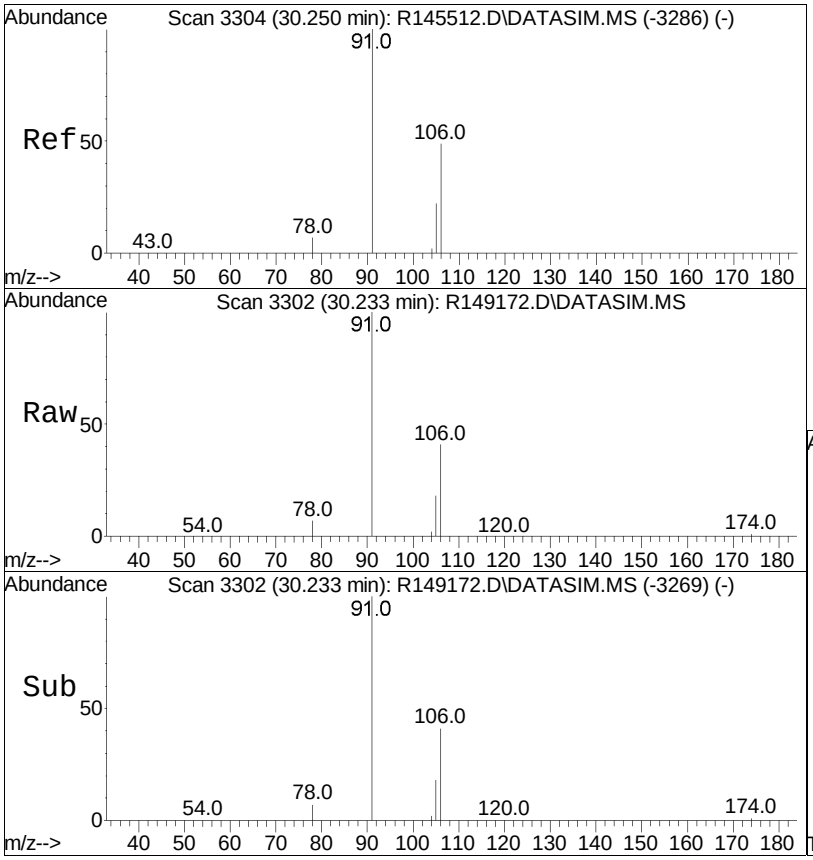


#55
Ethylbenzene
Concen: 5.39 ppbV
RT: 29.48 min Scan# 3201
Delta R.T. -0.008 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion: 91 Resp: 153696

Ion	Ratio	Lower	Upper
91	100		
106	28.7	9.1	49.1

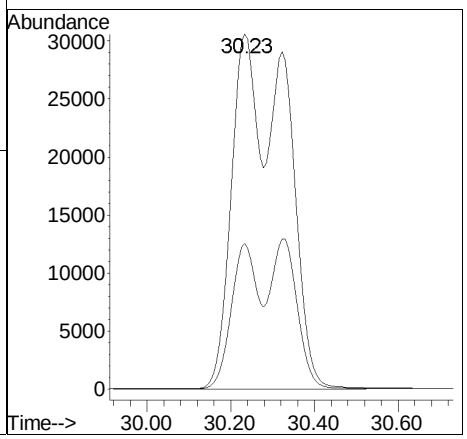


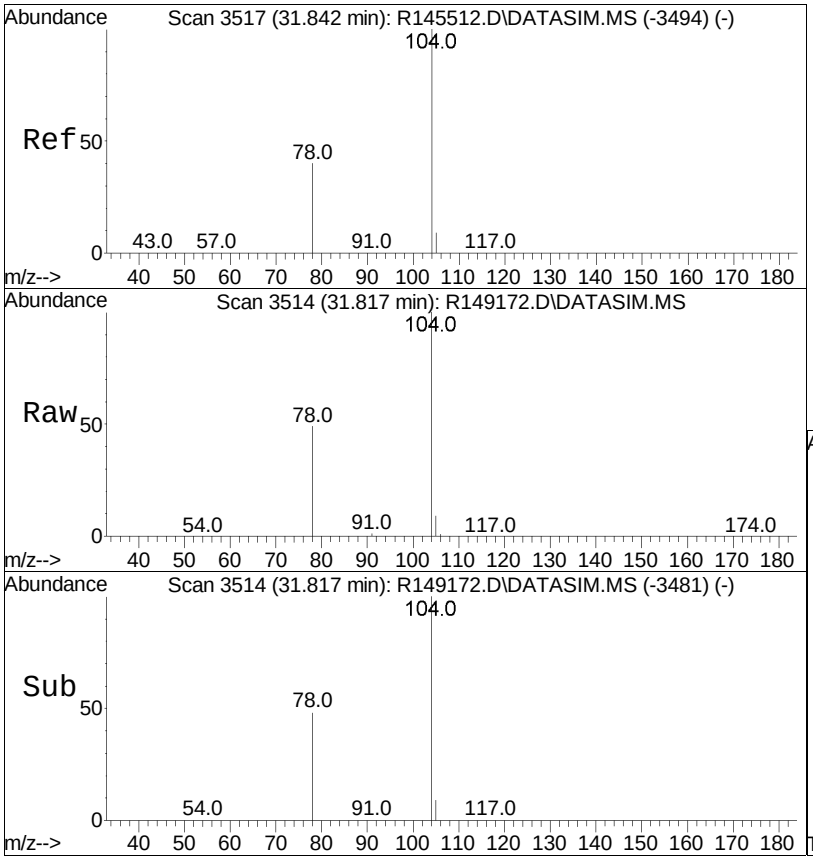


#57
p/m-Xylene
Concen: 12.24 ppbV m
RT: 30.23 min Scan# 3302
Delta R.T. -0.000 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion: 91 Resp: 268705

Ion	Ratio	Lower	Upper
91	100		
106	41.1	25.5	65.5

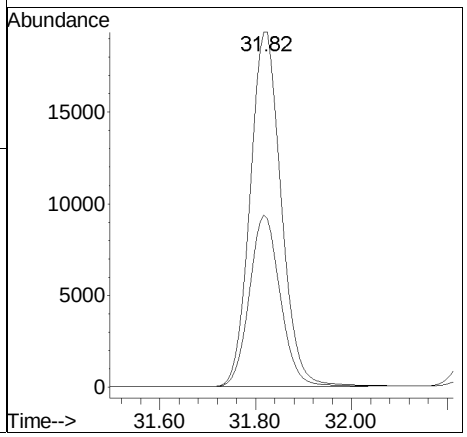


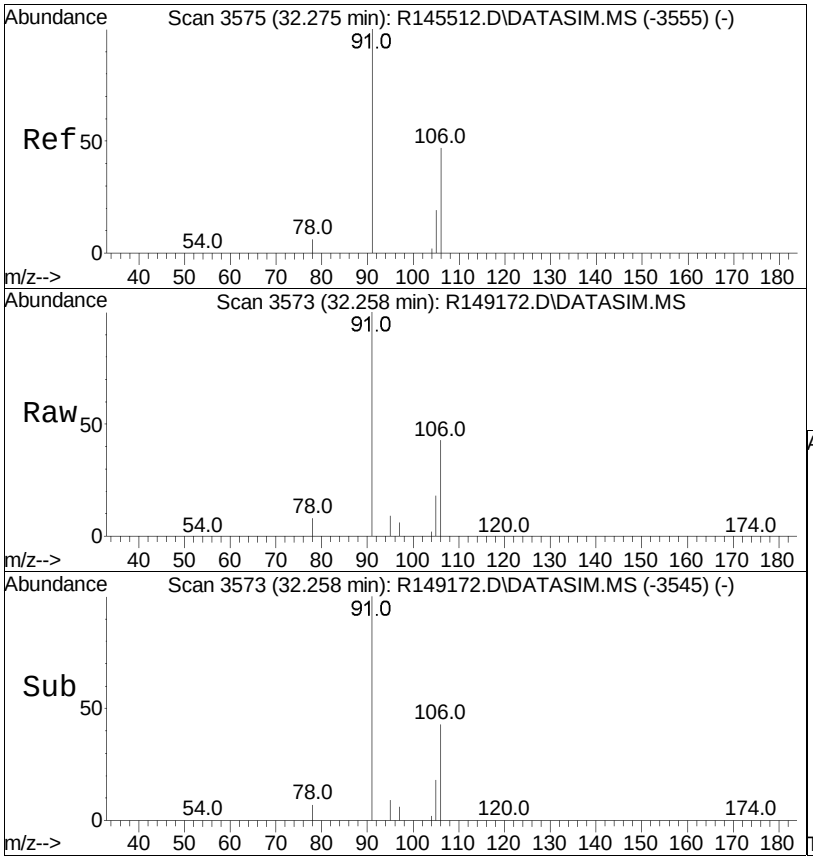


#60
Styrene
Concen: 6.01 ppbV
RT: 31.82 min Scan# 3514
Delta R.T. -0.000 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion:104 Resp: 87030

Ion	Ratio	Lower	Upper
104	100		
78	48.6	28.5	68.5

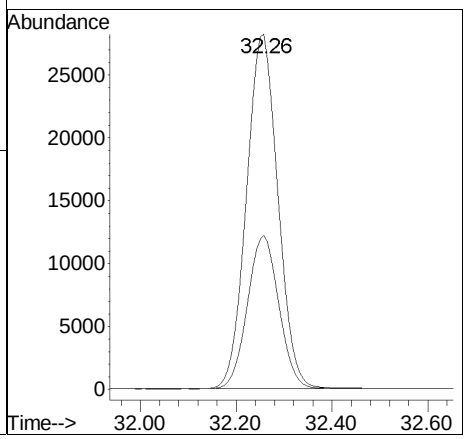


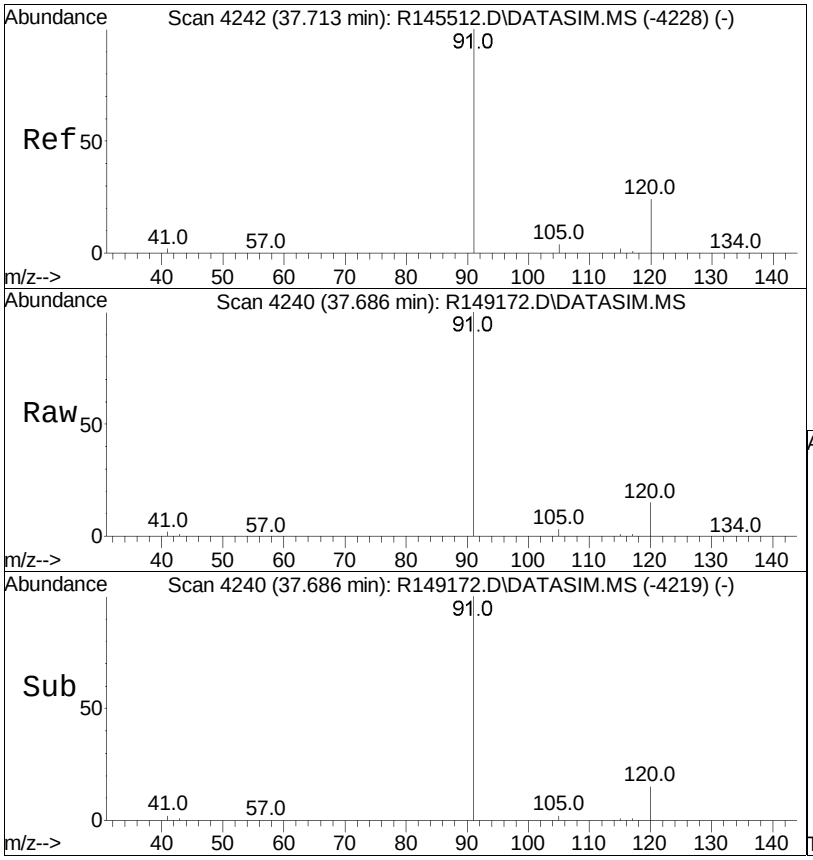


#61
o-Xylene
Concen: 5.72 ppbV
RT: 32.26 min Scan# 3573
Delta R.T. -0.000 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion: 91 Resp: 128571

Ion	Ratio	Lower	Upper
91	100		
106	43.4	23.5	63.5

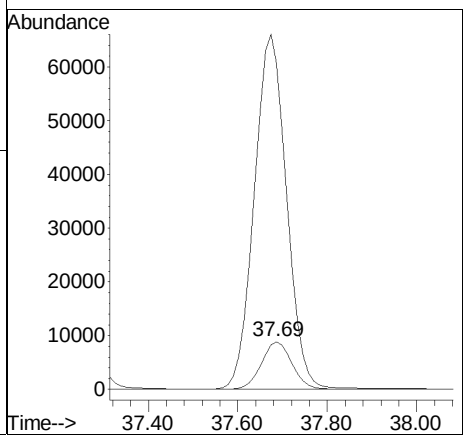


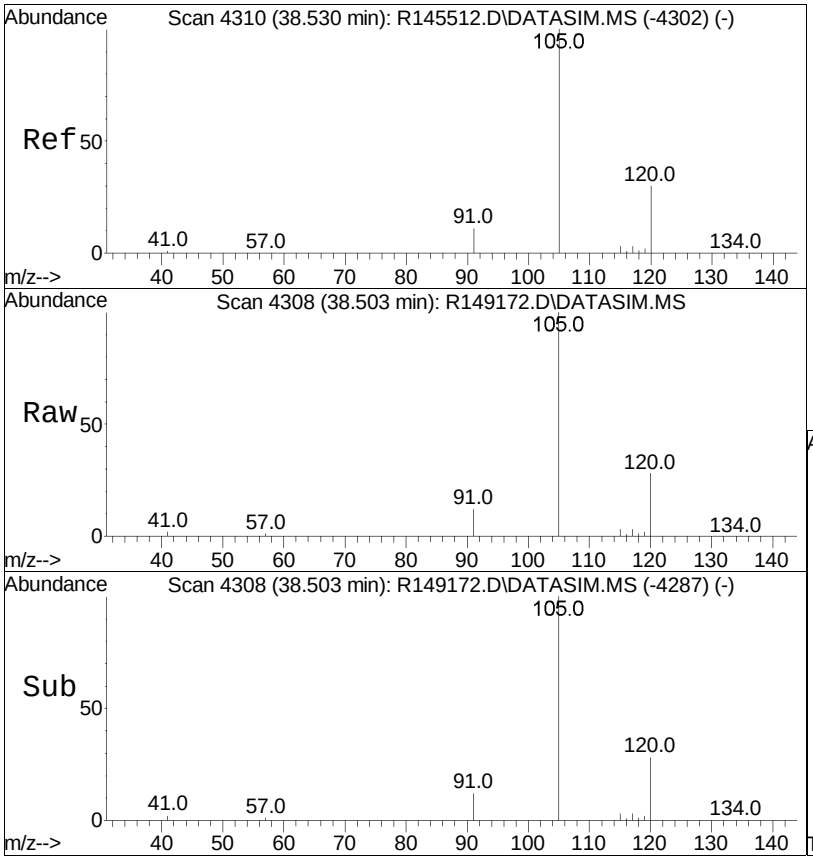


#64
n-Propylbenzene
Concen: 5.40 ppbV
RT: 37.69 min Scan# 4240
Delta R.T. -0.000 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion:120 Resp: 41648

Ion	Ratio	Lower	Upper
120	100		
91	686.2	480.0	520.0#

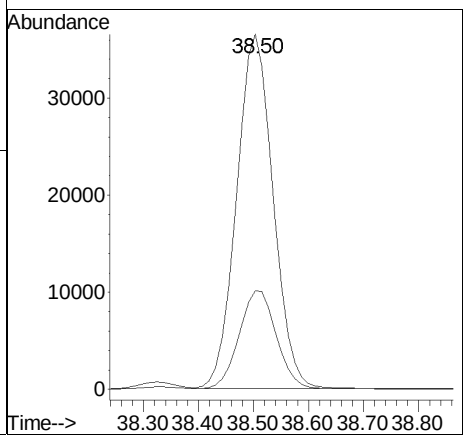


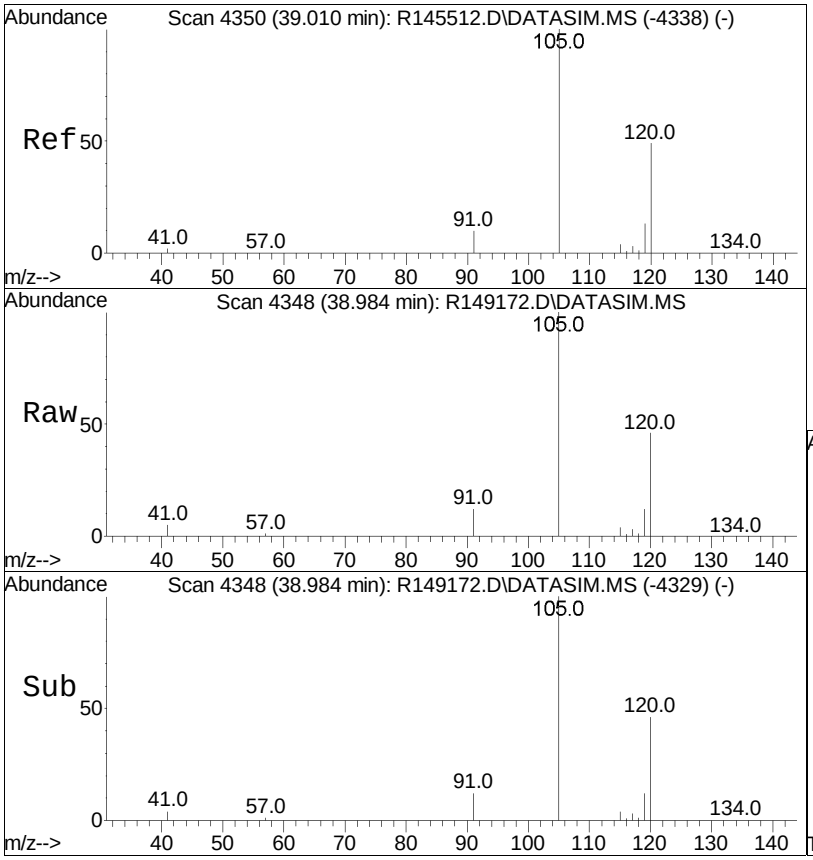


#66
1-Methyl-4-ethylbenzene
Concen: 5.58 ppbV
RT: 38.50 min Scan# 4308
Delta R.T. -0.000 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion:105 Resp: 167573

Ion	Ratio	Lower	Upper
105	100		
120	27.8	7.8	47.8

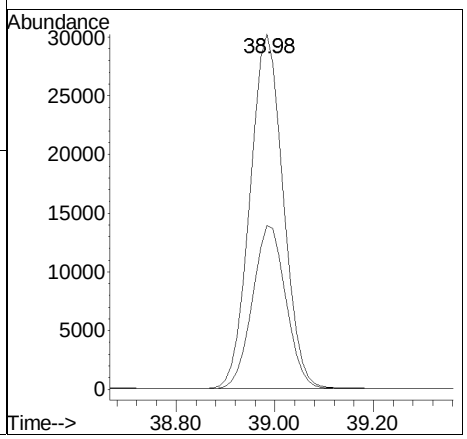


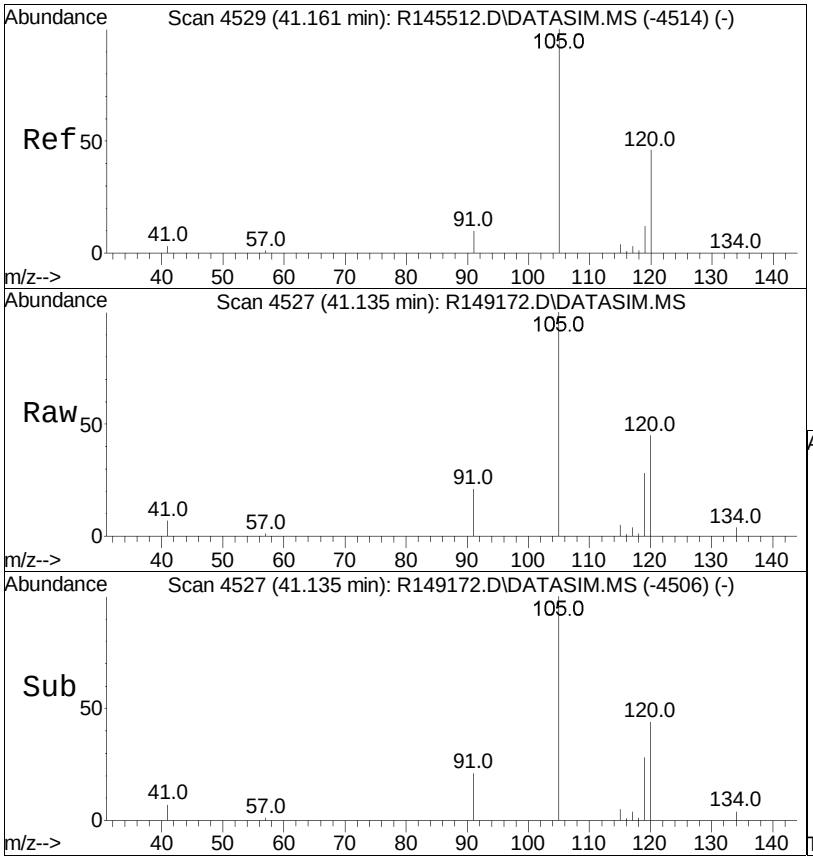


#67
1,3,5-Trimethylbenzene
Concen: 5.78 ppbV
RT: 38.98 min Scan# 4348
Delta R.T. -0.000 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion:105 Resp: 140966

Ion	Ratio	Lower	Upper
105	100		
120	46.2	25.9	65.9

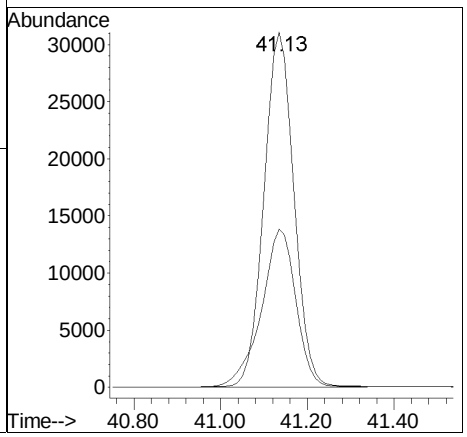


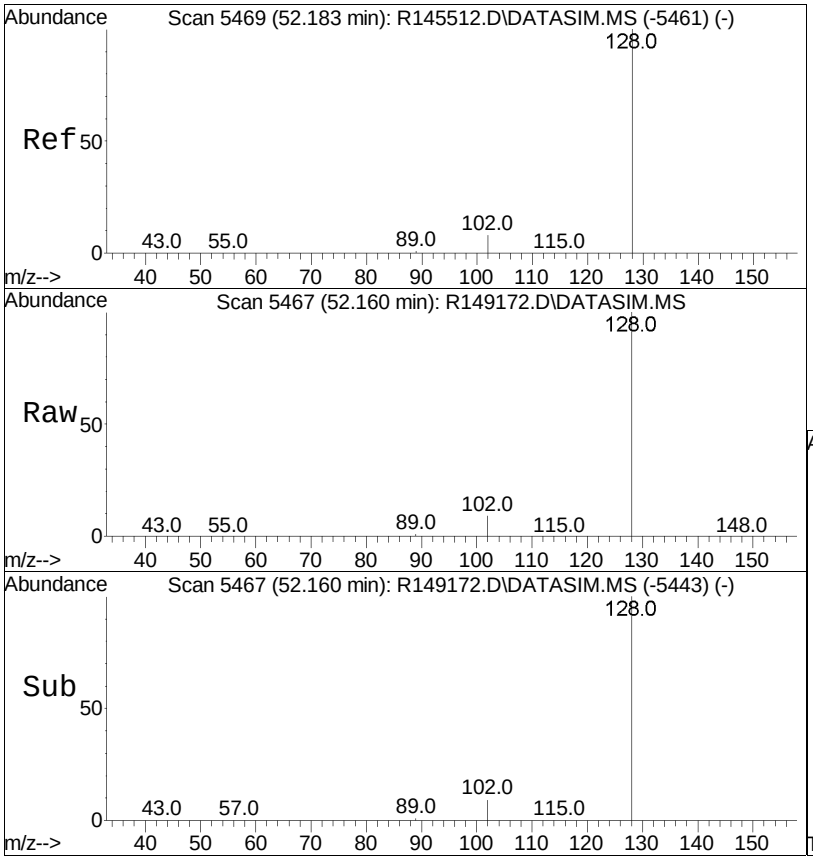


#71
1,2,4-Trimethylbenzene
Concen: 6.14 ppbV
RT: 41.13 min Scan# 4527
Delta R.T. -0.000 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion:105 Resp: 149003

Ion	Ratio	Lower	Upper
105	100		
120	44.6	23.0	63.0

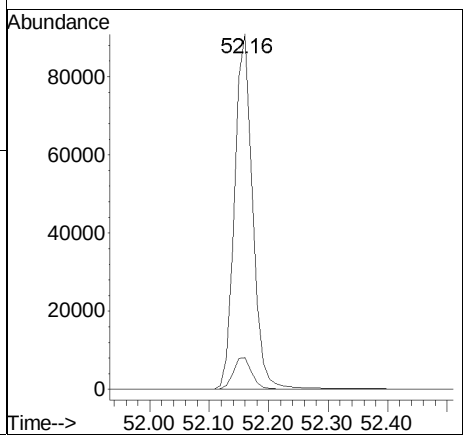




#93
Naphthalene
Concen: 5.86 ppbV
RT: 52.16 min Scan# 5467
Delta R.T. -0.000 min
Lab File: R149172.D
Acq: 8 Nov 2016 1:02 pm

Tgt Ion:128 Resp: 192347

Ion	Ratio	Lower	Upper
128	100		
102	8.9	0.0	28.9



Quality Control Results

Form 2
Surrogate Recovery
AIRVOA

Client: NewFields
Project Name: WINTER STREET HAVERHILL

Lab Number: L1634001
Project Number: 01.0172397.00
Matrix:

CLIENT ID (LAB SAMPLE NO.)	SMC1 TOL	SMC2 BFB	SMC3 DCA	SMC4	TOT OUT
DUP101916 (L1634001-10D)	107	108	108	--	0
NFSV-05DUP	107	104	111	--	0
WG948457-4LCSD	109	108	105	--	0
WG948457-3LCS	103	103	109	--	0
WG948457-5BLANK	112	109	105	--	0
NFAA-01 (L1634001-01D)	99	93	98	--	0
NFSV-01 (L1634001-09D)	112	110	112	--	0
NFSV-02 (L1634001-08)	105	102	100	--	0
NFSV-03 (L1634001-07)	104	102	101	--	0
NFSV-04 (L1634001-02)	100	93	100	--	0
NFSV-05 (L1634001-04D)	105	102	110	--	0
NFSV-06 (L1634001-05)	102	98	101	--	0
NFSV-07 (L1634001-03)	103	99	102	--	0
NFSV-08 (L1634001-06)	105	103	101	--	0

	QC LIMITS
TOL = TOLUENE-D8	(70-130)
BFB = 4-BROMOFLUOROBENZENE	(70-130)
DCA = 1,2-DICHLOROETHANE-D4	(70-130)

*** Values outside of QC limits**

Method Blank Summary
Form 4

Client	: NewFields	**Lab Number**	: L1634001
Project Name	: WINTER STREET HAVERHILL	**Project Number**	: 01.0172397.00
Lab Sample ID	: WG948457-5	**Lab File ID**	: R149174
Instrument ID	: AIRPIANO1		
Matrix	: SOIL_VAPOR	**Analysis Date**	: 11/08/16 15:31

Client Sample No.	Lab Sample ID	Analysis Date
WG948457-3LCS	WG948457-3	11/08/16 11:55
WG948457-4LCSD	WG948457-4	11/08/16 13:02
NFAA-01	L1634001-01D	11/08/16 17:24
NFSV-04	L1634001-02	11/08/16 18:31
NFSV-07	L1634001-03	11/08/16 19:38
NFSV-05	L1634001-04D	11/08/16 20:44
NFSV-05DUP	WG948457-6D	11/08/16 21:51
NFSV-06	L1634001-05	11/08/16 22:57
NFSV-08	L1634001-06	11/09/16 00:04
NFSV-03	L1634001-07	11/09/16 01:11
NFSV-02	L1634001-08	11/09/16 02:17
NFSV-01	L1634001-09D	11/09/16 03:24
DUP101916	L1634001-10D	11/09/16 04:31

Tune Summary

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: NewFields	**Lab Number**	: L1634001
Project Name	: WINTER STREET HAVERHILL	**Project Number**	: 01.0172397.00
Instrument ID	: AIRPIANO1	**Analysis Date**	: 10/28/16 12:11
Tune Standard	: WG947234-1	**Tune File ID**	: R149057_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	15.0 - 40.0% of mass 95	24.2
75	30.0 - 60.0% of mass 95	52.3
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	0.4 (.5)1
174	Greater than 50.0 of mass 95	85.8
175	5.0 - 9.0% of mass 174	6.6 (7.7)1
176	95.0 - 101% of mass 174	81.4 (94.9)1
177	5.0 - 9.0% of mass 176	5.3 (6.5)2

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

This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

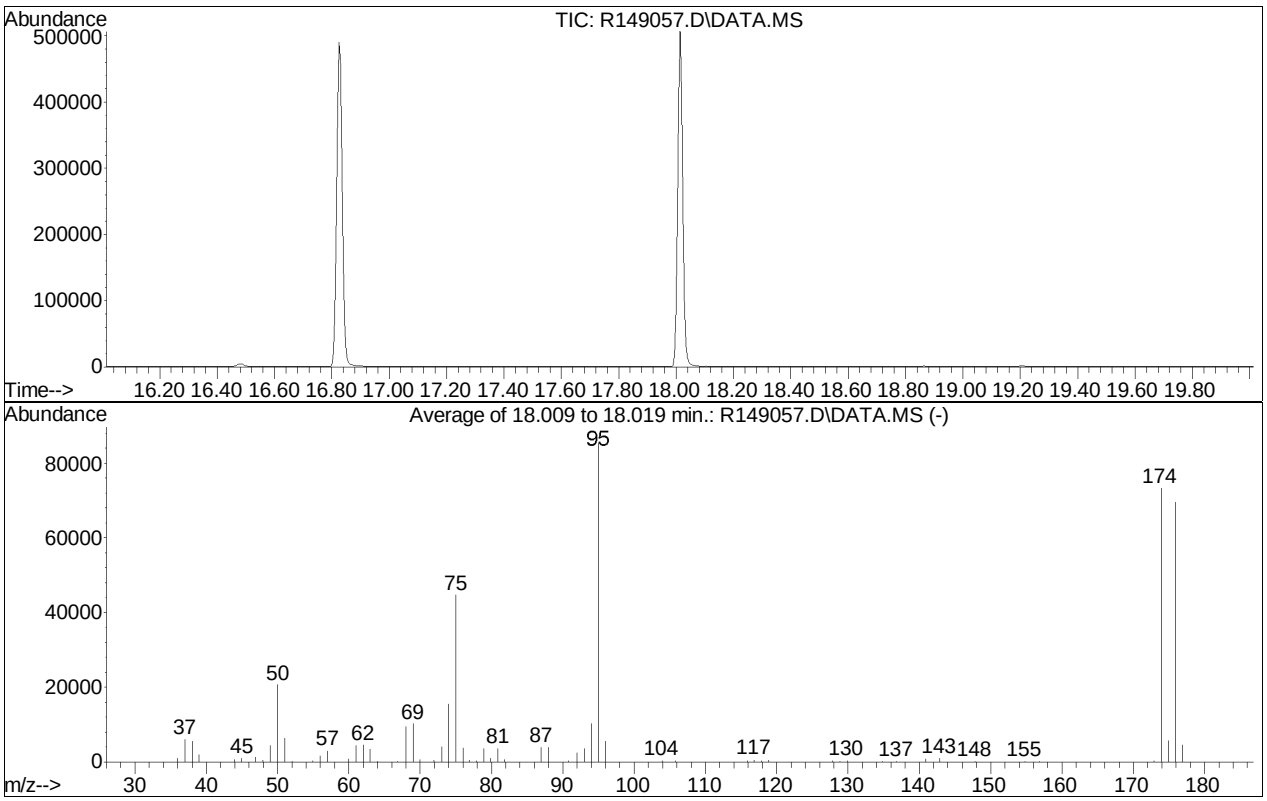
Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
0.025 ppbv	R914421-1	R149058	10/28/16 12:45
0.050 ppbv	R914421-2	R149059	10/28/16 13:51
0.1 ppbv	R914421-3	R149060	10/28/16 14:58
1.0 ppbv	R914421-4	R149063	10/28/16 18:40
2.5 ppbv	R914421-5	R149064	10/28/16 19:46
5.0 ppbv	R914421-6	R149065	10/28/16 20:53
10.0 ppbv	R914421-7	R149066	10/28/16 21:59
25.0 ppbv	R914421-8	R149067	10/28/16 23:06
50.0 ppbv	R914421-9	R149068	10/29/16 00:12
ICV Quant Report	R914421-10	R149071	10/29/16 10:01

BFB

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149057.D
Acq On : 28 Oct 2016 12:11 pm
Operator : AIRPIANO1:RY
Sample : WG947234-1
Misc : WG947234
ALS Vial : 1 Sample Multiplier: 1

Integration File: rteint.p

Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Title : TO15_PIANO
Last Update : Sat Oct 29 13:33:15 2016



AutoFind: Scans 1575, 1576, 1577; Background Corrected with Scan 1568

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	24.2	20715	PASS
75	95	30	66	52.3	44715	PASS
95	95	100	100	100.0	85453	PASS
96	95	5	9	6.5	5585	PASS
173	174	0.00	2	0.5	343	PASS
174	95	50	120	85.8	73301	PASS
175	174	4	9	7.7	5626	PASS
176	174	93	101	94.9	69565	PASS
177	176	5	9	6.5	4522	PASS

Instrument Performance Check
Bromofluorobenzene (BFB)
Form 5

Client	: NewFields	**Lab Number**	: L1634001
Project Name	: WINTER STREET HAVERHILL	**Project Number**	: 01.0172397.00
Instrument ID	: AIRPIANO1	**Analysis Date**	: 11/08/16 08:07
Tune Standard	: WG948457-1	**Tune File ID**	: R149169_tune

m/e	Ion Abundance Criteria	%Relative Abundance
50	15.0 - 40.0% of mass 95	24.4
75	30.0 - 60.0% of mass 95	53.3
95	Base Peak, 100% relative abundance	100
96	5.0 - 9.0% of mass 95	6.6
173	Less than 2.0% of mass 174	0 (0)1
174	Greater than 50.0 of mass 95	82.6
175	5.0 - 9.0% of mass 174	6.4 (7.8)1
176	95.0 - 101% of mass 174	79.8 (96.7)1
177	5.0 - 9.0% of mass 176	5.2 (6.5)2

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

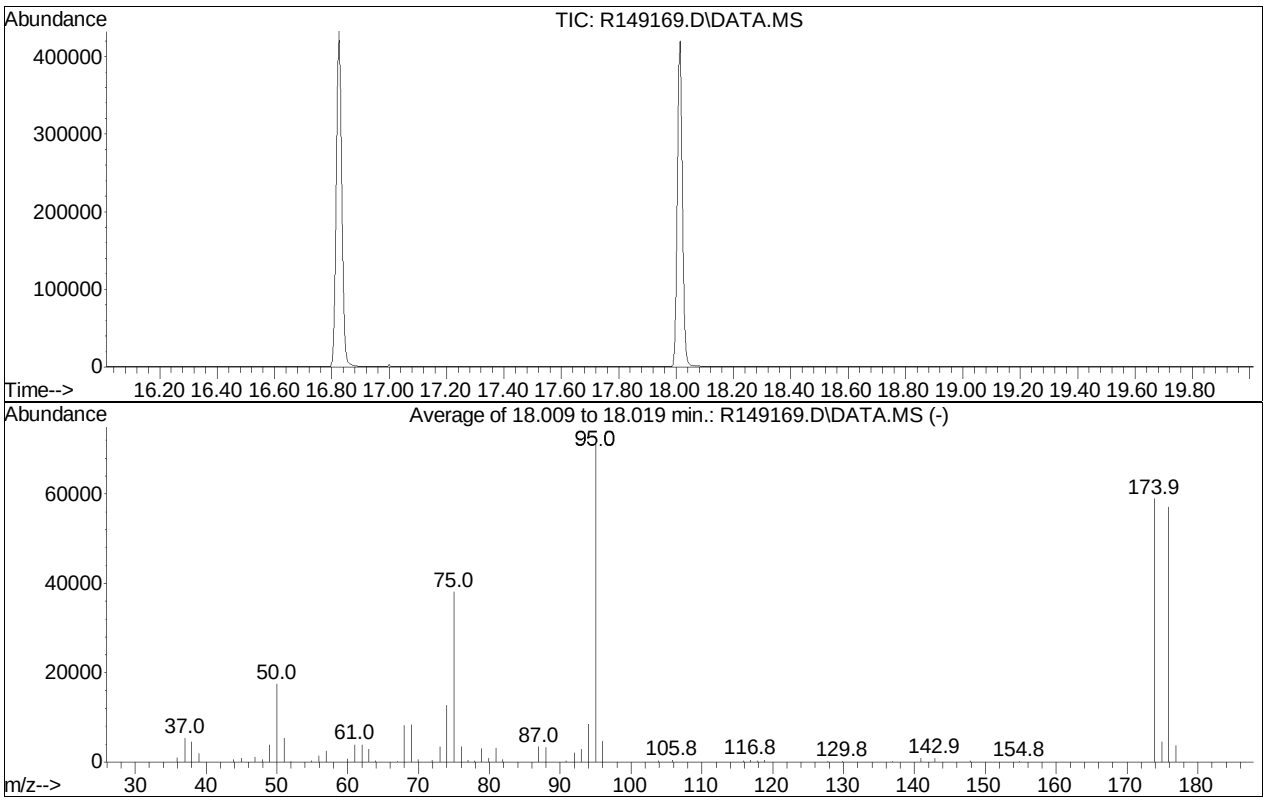
This Check Applies to the following Samples, MS, MSD, Blanks, and Standards:

Client Sample ID	Lab Sample ID	File ID	Analysis Date/Time
WG948457-2CCAL	WG948457-2	R149170	11/08/16 10:09
WG948457-3LCS	WG948457-3	R149171	11/08/16 11:55
WG948457-4LCSD	WG948457-4	R149172	11/08/16 13:02
WG948457-5BLANK	WG948457-5	R149174	11/08/16 15:31
NFAA-01	L1634001-01D	R149175	11/08/16 17:24
NFSV-04	L1634001-02	R149176	11/08/16 18:31
NFSV-07	L1634001-03	R149177	11/08/16 19:38
NFSV-05	L1634001-04D	R149178	11/08/16 20:44
WG948457-6DUP	WG948457-6D	R149179	11/08/16 21:51
NFSV-06	L1634001-05	R149180	11/08/16 22:57
NFSV-08	L1634001-06	R149181	11/09/16 00:04
NFSV-03	L1634001-07	R149182	11/09/16 01:11
NFSV-02	L1634001-08	R149183	11/09/16 02:17
NFSV-01	L1634001-09D	R149184	11/09/16 03:24
DUP101916	L1634001-10D	R149185	11/09/16 04:31

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149169.D
Acq On : 8 Nov 2016 8:07 am
Operator : AIRPIANO1:RY
Sample : WG948457-1,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 1 Sample Multiplier: 1

Integration File: rteint.p

Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Title : TO15_PIANO
Last Update : Sat Oct 29 13:33:15 2016



AutoFind: Scans 1575, 1576, 1577; Background Corrected with Scan 1568

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	24.4	17440	PASS
75	95	30	66	53.3	38099	PASS
95	95	100	100	100.0	71496	PASS
96	95	5	9	6.6	4685	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	82.6	59032	PASS
175	174	4	9	7.8	4579	PASS
176	174	93	101	96.7	57083	PASS
177	176	5	9	6.5	3731	PASS

Initial Calibration

Initial Calibration Summary
Form 6

Client	**: NewFields**	**Lab Number**	**: L1634001**
Project Name	**: WINTER STREET HAVERHILL**	**Project Number**	**: 01.0172397.00**
Instrument ID	**: AIRPIANO1**	**Ical Ref**	**: ICAL13049**
Calibration dates	**: 10/28/16 12:45 10/29/16 00:12**		

Calibration Files
0.02=R149058.D 0.05=R149059.D 0.1 =R149060.D 1.0 =R149063.D 2.5 =R149064.D 5.0 =R149065.D
10 =R149066.D 25 =R149067.D 50 =R149068.D

		Compound	0.02	0.05	0.1	1.0	2.5	5.0	10	25	50	Avg	%RSD
1)	I	bromochloromethane	----------ISTD----------										
2)		1,3-butadiene	0.518	0.528	0.464	0.544	0.559	0.582	0.546	0.526	0.500	0.5297	6.47
3)		ethanol				0.823	0.872	0.882	0.755	0.678	0.627	0.7729	13.58
4)		Isopentane	1.257	1.205	0.881	0.921	0.930	0.960	0.891	0.857	0.814	0.9683	16.04
5)		1-Pentene	1.274	1.089	0.955	1.115	1.119	1.168	1.097	1.044	1.002	1.0959	8.50
6)		2-Methyl-1-butene	1.319	1.314	1.153	1.317	1.350	1.407	1.327	1.268	1.214	1.2965	5.82
7)		Pentane	2.873	1.881	1.478	1.478	1.502	1.547	1.457	1.375	1.325	1.6574	29.09
8)		isopropyl alcohol				1.297	1.144	1.192	1.153	1.235	1.179	1.2002	4.78
9)		2-Pentene (trans)	1.183	1.232	1.133	1.298	1.319	1.373	1.306	1.259	1.196	1.2555	6.06
10)		2-Pentene (cis)	1.163	1.084	1.056	1.199	1.205	1.254	1.193	1.142	1.085	1.1535	5.77
11)		Tertiary butanol	2.611	2.573	1.851	1.689	1.711	1.768	1.642	1.584	1.511	1.8821	22.01
12)		Cyclopentane	0.353	0.355	0.344	0.412	0.385	0.401	0.378	0.364	0.377	0.3743	6.06
13)		2,3-Dimethylbutane	0.312	0.333	0.314	0.355	0.362	0.378	0.356	0.343	0.354	0.3452	6.41
14)		2-Methylpentane	1.690	2.297	1.867	1.874	1.877	1.950	1.829	1.774	1.748	1.8785	9.35
15)		MTBE	1.678	1.887	1.720	1.979	2.021	2.108	1.988	1.919	1.939	1.9154	7.23
16)		3-Methylpentane	1.160	1.216	1.133	1.267	1.309	1.338	1.270	1.225	1.218	1.2374	5.35
17)		1-Hexene	0.650	0.748	0.639	0.719	0.746	0.768	0.729	0.702	0.716	0.7130	6.09
18)		Hexane	0.992	1.066	0.908	1.084	1.100	1.138	1.118	1.032	1.086	1.0582	6.74
19)		Diisopropyl ether	2.428	2.491	2.170	2.716	2.674	2.753	2.735	2.488	2.614	2.5633	7.39
20)		Ethyl tertiary butyl ether	1.969	1.978	1.679	2.049	2.159	2.282	2.181	2.161	2.160	2.0689	8.60
21)		2,2-Dimethylpentane	1.581	1.568	1.457	1.707	1.776	1.852	1.783	1.762	1.745	1.6923	7.58
22)	s	1,2-Dichloroethane-D4	0.655	0.692	0.628	0.610	0.587	0.621	0.584	0.614	0.633	0.6249	5.34
23)		Methylcyclopentane	1.230	1.207	1.100	1.311	1.375	1.448	1.400	1.381	1.378	1.3144	8.59
24)		2,4-Dimethylpentane	1.589	1.526	1.453	1.723	1.803	1.894	1.812	1.774	1.735	1.7009	8.61
25)		1,2-Dichloroethane	1.015	1.036	0.961	1.085	1.104	1.136	1.071	1.037	1.012	1.0508	5.08
26)		Cyclohexane	0.936	0.931	0.852	1.025	1.083	1.139	1.100	1.091	1.076	1.0258	9.48
27)	I	1,4-difluorbenzene	----------ISTD----------										
28)		2-Methylhexane	0.797	0.769	0.772	0.860	0.893	0.950	0.917	0.859	0.828	0.8494	7.51
29)	M	Benzene	1.195	0.982	0.912	0.906	0.926	0.974	0.946	0.881	0.861	0.9538	10.38
30)		2,3-Dimethylpentane	0.606	0.539	0.554	0.601	0.623	0.654	0.636	0.596	0.578	0.5984	6.21
31)		Thiophene	0.414	0.373	0.381	0.431	0.381	0.407	0.418	0.444	0.437	0.4096	6.36
32)		3-Methylhexane	0.625	0.608	0.587	0.659	0.693	0.742	0.719	0.677	0.654	0.6626	7.70
33)		TAME	0.792	0.777	0.703	0.812	0.858	0.919	0.894	0.849	0.844	0.8277	7.87
34)		1-Heptene	0.143	0.115	0.125	0.147	0.158	0.180	0.172	0.163	0.166	0.1522	14.18
35)		Isooctane	1.349	1.269	1.334	1.526	1.595	1.692	1.656	1.512	1.553	1.4984	9.95
36)		Heptane	0.625	0.545	0.549	0.636	0.680	0.733	0.715	0.678	0.652	0.6458	10.19
37)		Methylcyclohexane	0.457	0.429	0.417	0.474	0.507	0.548	0.543	0.517	0.506	0.4886	9.67
38)		2,5-Dimethylhexane	0.668	0.623	0.630	0.743	0.797	0.863	0.847	0.810	0.785	0.7517	12.14
39)		2,4-Dimethylhexane/2,2,3-Trimethylpenta	0.799	0.764	0.784	0.943	0.999	1.065	1.035	0.982	0.955	0.9252	12.28
40)		2,3,4-Trimethylpentane	0.868	0.848	0.903	1.087	1.126	1.205	1.165	1.100	1.055	1.0396	12.79

Initial Calibration Summary
Form 6

Client	**: NewFields**	**Lab Number**	**: L1634001**
Project Name	**: WINTER STREET HAVERHILL**	**Project Number**	**: 01.0172397.00**
Instrument ID	**: AIRPIANO1**	**Ical Ref**	**: ICAL13049**
Calibration dates	**: 10/28/16 12:45 10/29/16 00:12**		

Calibration Files
0.02=R149058.D 0.05=R149059.D 0.1 =R149060.D 1.0 =R149063.D 2.5 =R149064.D 5.0 =R149065.D
10 =R149066.D 25 =R149067.D 50 =R149068.D

		Compound	0.02	0.05	0.1	1.0	2.5	5.0	10	25	50	Avg	%RSD
41)		2,3,3-Trimethylpentane	0.895	0.843	0.870	0.979	1.033	1.103	1.065	1.005	0.965	0.9731	9.15
42)		2,3-Dimethylhexane	0.840	0.792	0.801	0.935	1.003	1.068	1.042	0.983	0.941	0.9340	10.94
43)		3-Ethylhexane	1.012	0.909	0.945	1.177	1.241	1.340	1.261	1.222	1.160	1.1406	13.19
44)		2-Methylheptane	0.613	0.586	0.586	0.721	0.773	0.810	0.793	0.756	0.730	0.7074	12.60
45)		3-Methylheptane	0.740	0.635	0.652	0.752	0.814	0.870	0.894	0.823	0.790	0.7746	11.52
46)	s	Toluene-D8	0.831	0.826	0.816	0.738	0.715	0.769	0.730	0.719	0.721	0.7629	6.41
47)	M	Toluene	1.245	1.061	1.008	1.065	1.117	1.187	1.152	1.097	1.079	1.1123	6.51
48)		2-Methylthiophene	0.632	0.640	0.636	0.754	0.703	0.763	0.784	0.833	0.821	0.7296	10.93
49)		3-Methylthiophene	0.636	0.597	0.614	0.733	0.688	0.749	0.775	0.820	0.809	0.7134	11.73
50)		1-Octene	0.288	0.258	0.270	0.325	0.359	0.391	0.390	0.374	0.363	0.3353	15.50
51)		1-Ethyl-1-Methylcyclopentane	0.580	0.523	0.547	0.645	0.608	0.660	0.672	0.711	0.700	0.6273	10.67
52)		Octane	0.765	0.720	0.724	0.873	0.951	1.028	1.010	0.964	0.923	0.8842	13.60
53)		1,2-Dibromoethane	0.477	0.479	0.491	0.570	0.593	0.634	0.623	0.594	0.591	0.5612	11.06
54)	I	chlorobenzene-D5	----------ISTD----------										
55)		Ethylbenzene	1.261	1.137	1.162	1.402	1.465	1.558	1.635	1.544	1.535	1.4110	12.95
56)		2-Ethylthiophene	0.806	0.761	0.763	0.983	0.951	1.015	1.092	1.105	1.104	0.9534	15.05
57)		p/m-Xylene	1.005	0.884	0.861	1.076	1.113	1.189	1.256	1.197	1.195	1.0863	13.14
58)		1-Nonene	0.325	0.312	0.330	0.429	0.463	0.498	0.525	0.500	0.486	0.4298	19.77
59)		Nonane	0.988	0.833	0.833	1.047	1.112	1.183	1.225	1.139	1.099	1.0510	13.49
60)		Styrene	0.447	0.431	0.546	0.719	0.774	0.849	0.915	0.882	0.890	0.7169	27.05
61)		o-Xylene	0.969	0.866	0.907	1.116	1.166	1.236	1.307	1.234	1.221	1.1134	14.42
62)	S	4-Bromofluorobenzene (surr)	0.608	0.580	0.586	0.532	0.501	0.534	0.536	0.524	0.536	0.5485	6.32
63)		Isopropylbenzene	1.251	1.164	1.230	1.470	1.502	1.607	1.725	1.618	1.622	1.4654	13.84
64)		n-Propylbenzene	0.311	0.290	0.304	0.375	0.389	0.421	0.460	0.440	0.447	0.3820	17.24
65)		1-Methyl-3-ethylbenzene	1.094	1.038	1.037	1.367	1.422	1.546	1.696	1.618	1.615	1.3815	19.10
66)		1-Methyl-4-ethylbenzene	1.162	1.069	1.094	1.499	1.562	1.675	1.841	1.744	1.741	1.4875	20.32
67)		1,3,5-Trimethylbenzene	1.011	0.902	0.916	1.183	1.225	1.341	1.469	1.413	1.404	1.2071	18.18
68)		1-Decene	0.472	0.430	0.467	0.633	0.643	0.699	0.752	0.693	0.662	0.6057	19.45
69)		1-Methyl-2-ethylbenzene	1.174	1.046	1.091	1.398	1.435	1.562	1.708	1.642	1.625	1.4091	17.80
70)		Decane	0.833	0.752	0.840	1.125	1.144	1.256	1.368	1.270	1.194	1.0869	20.45
71)		1,2,4-Trimethylbenzene	1.054	0.932	0.885	1.156	1.194	1.324	1.468	1.394	1.405	1.2013	17.69
72)		sec-Butylbenzene	1.491	1.378	1.441	1.891	1.901	2.081	2.304	2.164	2.147	1.8663	18.63
73)		1-Methyl-3-isopropylbenzene	1.232	1.146	1.150	1.559	1.551	1.759	1.956	1.875	1.884	1.5681	20.77
74)		1-Methyl-4-isopropylbenzene	0.992	0.927	0.954	1.287	1.303	1.457	1.641	1.554	1.560	1.2970	21.57
75)		1-Methyl-2-isopropylbenzene	1.102	1.027	1.045	1.373	1.380	1.562	1.751	1.658	1.659	1.3953	20.24
76)		Indan	0.795	0.722	0.710	0.931	0.931	1.043	1.152	1.087	1.086	0.9397	17.65
77)		Indene	0.255	0.273	0.419	0.597	0.598	0.683	0.785	0.746	0.746	0.5668	35.97#
78)		1-Methyl-3-propylbenzene	1.359	1.263	1.243	1.722	1.723	1.972	2.212	2.094	2.070	1.7397	21.62
79)		1-Methyl-4-propylbenzene	1.570	1.479	1.484	2.161	2.137	2.462	2.742	2.603	2.563	2.1336	23.74
80)		n-Butylbenzene	1.228	1.168	1.232	1.687	1.631	1.896	2.099	1.917	1.904	1.6402	21.38

Initial Calibration Summary
Form 6

Client	**: NewFields**	**Lab Number**	**: L1634001**
Project Name	**: WINTER STREET HAVERHILL**	**Project Number**	**: 01.0172397.00**
Instrument ID	**: AIRPIANO1**	**Ical Ref**	**: ICAL13049**
Calibration dates	**: 10/28/16 12:45 10/29/16 00:12**		

Calibration Files
0.02=R149058.D 0.05=R149059.D 0.1 =R149060.D 1.0 =R149063.D 2.5 =R149064.D 5.0 =R149065.D
10 =R149066.D 25 =R149067.D 50 =R149068.D

	Compound	0.02	0.05	0.1	1.0	2.5	5.0	10	25	50	Avg	%RSD
81)	1,2-Dimethyl-4-ethylbenzene	0.953	0.910	0.923	1.344	1.293	1.514	1.724	1.626	1.611	1.3219	24.51
82)	1,2-Diethylbenzene	0.547	0.513	0.508	0.701	0.696	0.795	0.891	0.844	0.845	0.7044	21.44
83)	1-Methyl-2-propylbenzene	1.437	1.354	1.340	1.871	1.816	2.128	2.359	2.233	2.184	1.8580	21.46
84)	1,4-Dimethyl-2-ethylbenzene	1.017	0.942	0.972	1.386	1.320	1.566	1.830	1.700	1.722	1.3840	24.90
85)	Undecane	0.667	0.643	0.758	1.211	1.087	1.305	1.508	1.381	1.349	1.1010	30.04#
86)	1,3-Dimethyl-4-ethylbenzene	1.191	1.140	1.129	1.627	1.560	1.838	2.061	1.973	1.970	1.6101	23.52
87)	1,3-Dimethyl-5-ethylbenzene	1.102	1.030	1.035	1.518	1.438	1.717	1.948	1.877	1.866	1.5034	24.94
88)	1,3-Dimethyl-2-ethylbenzene	1.206	1.151	1.158	1.644	1.559	1.838	2.119	2.009	2.023	1.6341	23.88
89)	1,2-Dimethyl-3-ethylbenzene	1.118	1.067	1.038	1.466	1.393	1.667	1.955	1.858	1.848	1.4900	24.23
90)	1,2,4,5-Tetramethylbenzene	3.097	3.006	3.390	5.281	4.709	5.789	6.369	6.505	6.127	4.9194	29.04
91)	Pentylbenzene	1.025	1.067	1.105	1.697	1.484	1.849	2.231	2.085	2.038	1.6199	29.02
92)	Dodecane		0.549	0.736	1.300	1.058	1.311	1.749	1.496	1.418	1.2022	33.25#
93)	Naphthalene		0.884	1.053	1.577	1.374	1.770	2.230	2.040	2.066	1.6243	30.30
94)	Benzothiophene		1.319	2.051	3.396	3.450	4.437	4.231	4.462	4.419	3.4707	34.51
95)	MMT			0.242	0.362	0.299	0.390	0.438	0.510	0.528	0.3955	26.67
96)	Tridecane				1.463	1.213	1.499	2.006	1.959	2.041	1.6969	20.61
97)	2-Methylnaphthalene			0.480	1.006	0.820	1.090	1.343	1.587	1.715	1.1488	37.77
98)	1-Methylnaphthalene			0.569	1.173	0.920	1.177	1.660	1.683	1.795	1.2824	35.30

Response Factor Report Air Piano 1

Method Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Method File : PA161028.M
Title : TO15_PIANO
Last Update : Sat Oct 29 13:33:15 2016
Response Via : Initial Calibration

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		Compound	0.02	0.05	0.1	1.0	2.5	5.0	10	25	50	Avg	%RSD
1)	I	bromochloromethane	----------ISTD----------										
2)		1,3-butadiene	0.518	0.528	0.464	0.544	0.559	0.582	0.546	0.526	0.500	0.5297	6.47
3)		ethanol				0.823	0.872	0.882	0.755	0.678	0.627	0.7729	13.58
4)		Isopentane	1.257	1.205	0.881	0.921	0.930	0.960	0.891	0.857	0.814	0.9683	16.04
5)		1-Pentene	1.274	1.089	0.955	1.115	1.119	1.168	1.097	1.044	1.002	1.0959	8.50
6)		2-Methyl-1-butene	1.319	1.314	1.153	1.317	1.350	1.407	1.327	1.268	1.214	1.2965	5.82
7)		Pentane	2.873	1.881	1.478	1.478	1.502	1.547	1.457	1.375	1.325	1.6574	29.09
8)		isopropyl alcohol				1.297	1.144	1.192	1.153	1.235	1.179	1.2002	4.78
9)		2-Pentene (trans)	1.183	1.232	1.133	1.298	1.319	1.373	1.306	1.259	1.196	1.2555	6.06
10)		2-Pentene (cis)	1.163	1.084	1.056	1.199	1.205	1.254	1.193	1.142	1.085	1.1535	5.77
11)		Tertiary butanol	2.611	2.573	1.851	1.689	1.711	1.768	1.642	1.584	1.511	1.8821	22.01
12)		Cyclopentane	0.353	0.355	0.344	0.412	0.385	0.401	0.378	0.364	0.377	0.3743	6.06
13)		2,3-Dimethylbutane	0.312	0.333	0.314	0.355	0.362	0.378	0.356	0.343	0.354	0.3452	6.41
14)		2-Methylpentane	1.690	2.297	1.867	1.874	1.877	1.950	1.829	1.774	1.748	1.8785	9.35
15)		MTBE	1.678	1.887	1.720	1.979	2.021	2.108	1.988	1.919	1.939	1.9154	7.23
16)		3-Methylpentane	1.160	1.216	1.133	1.267	1.309	1.338	1.270	1.225	1.218	1.2374	5.35
17)		1-Hexene	0.650	0.748	0.639	0.719	0.746	0.768	0.729	0.702	0.716	0.7130	6.09
18)		Hexane	0.992	1.066	0.908	1.084	1.100	1.138	1.118	1.032	1.086	1.0582	6.74
19)		Diisopropyl ether	2.428	2.491	2.170	2.716	2.674	2.753	2.735	2.488	2.614	2.5633	7.39
20)		Ethyl tertiary butyl ether	1.969	1.978	1.679	2.049	2.159	2.282	2.181	2.161	2.160	2.0689	8.60
21)		2,2-Dimethylpentane	1.581	1.568	1.457	1.707	1.776	1.852	1.783	1.762	1.745	1.6923	7.58
22)	s	1,2-Dichloroethane-D4	0.655	0.692	0.628	0.610	0.587	0.621	0.584	0.614	0.633	0.6249	5.34
23)		Methylcyclopentane	1.230	1.207	1.100	1.311	1.375	1.448	1.400	1.381	1.378	1.3144	8.59
24)		2,4-Dimethylpentane	1.589	1.526	1.453	1.723	1.803	1.894	1.812	1.774	1.735	1.7009	8.61
25)		1,2-Dichloroethane	1.015	1.036	0.961	1.085	1.104	1.136	1.071	1.037	1.012	1.0508	5.08
26)		Cyclohexane	0.936	0.931	0.852	1.025	1.083	1.139	1.100	1.091	1.076	1.0258	9.48
27)	I	1,4-difluorbenzene	----------ISTD----------										
28)		2-Methylhexane	0.797	0.769	0.772	0.860	0.893	0.950	0.917	0.859	0.828	0.8494	7.51
29)	M	Benzene	1.195	0.982	0.912	0.906	0.926	0.974	0.946	0.881	0.861	0.9538	10.38
30)		2,3-Dimethylpentane	0.606	0.539	0.554	0.601	0.623	0.654	0.636	0.596	0.578	0.5984	6.21

Response Factor Report Air Piano 1

Method Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Method File : PA161028.M
Title : TO15_PIANO
Last Update : Sat Oct 29 13:33:15 2016
Response Via : Initial Calibration

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10 =R149066.D 25 =R149067.D 50 =R149068.D

		Compound	0.02	0.05	0.1	1.0	2.5	5.0	10	25	50	Avg	%RSD
31)		Thiophene	0.414	0.373	0.381	0.431	0.381	0.407	0.418	0.444	0.437	0.4096	6.36
32)		3-Methylhexane	0.625	0.608	0.587	0.659	0.693	0.742	0.719	0.677	0.654	0.6626	7.70
33)		TAME	0.792	0.777	0.703	0.812	0.858	0.919	0.894	0.849	0.844	0.8277	7.87
34)		1-Heptene	0.143	0.115	0.125	0.147	0.158	0.180	0.172	0.163	0.166	0.1522	14.18
35)		Isooctane	1.349	1.269	1.334	1.526	1.595	1.692	1.656	1.512	1.553	1.4984	9.95
36)		Heptane	0.625	0.545	0.549	0.636	0.680	0.733	0.715	0.678	0.652	0.6458	10.19
37)		Methylcyclohexane	0.457	0.429	0.417	0.474	0.507	0.548	0.543	0.517	0.506	0.4886	9.67
38)		2,5-Dimethylhexane	0.668	0.623	0.630	0.743	0.797	0.863	0.847	0.810	0.785	0.7517	12.14
39)		2,4-Dimethyhexane / 2,2,...	0.799	0.764	0.784	0.943	0.999	1.065	1.035	0.982	0.955	0.9252	12.28
40)		2,3,4-Trimethylpentane	0.868	0.848	0.903	1.087	1.126	1.205	1.165	1.100	1.055	1.0396	12.79
41)		2,3,3-Trimethylpentane	0.895	0.843	0.870	0.979	1.033	1.103	1.065	1.005	0.965	0.9731	9.15
42)		2,3-Dimethylhexane	0.840	0.792	0.801	0.935	1.003	1.068	1.042	0.983	0.941	0.9340	10.94
43)		3-Ethylhexane	1.012	0.909	0.945	1.177	1.241	1.340	1.261	1.222	1.160	1.1406	13.19
44)		2-Methylheptane	0.613	0.586	0.586	0.721	0.773	0.810	0.793	0.756	0.730	0.7074	12.60
45)		3-Methylheptane	0.740	0.635	0.652	0.752	0.814	0.870	0.894	0.823	0.790	0.7746	11.52
46)	s	Toluene-D8	0.831	0.826	0.816	0.738	0.715	0.769	0.730	0.719	0.721	0.7629	6.41
47)	M	Toluene	1.245	1.061	1.008	1.065	1.117	1.187	1.152	1.097	1.079	1.1123	6.51
48)		2-Methylthiophene	0.632	0.640	0.636	0.754	0.703	0.763	0.784	0.833	0.821	0.7296	10.93
49)		3-Methylthiophene	0.636	0.597	0.614	0.733	0.688	0.749	0.775	0.820	0.809	0.7134	11.73
50)		1-Octene	0.288	0.258	0.270	0.325	0.359	0.391	0.390	0.374	0.363	0.3353	15.50
51)		1-ethyl-1-methylcyclopen...	0.580	0.523	0.547	0.645	0.608	0.660	0.672	0.711	0.700	0.6273	10.67
52)		Octane	0.765	0.720	0.724	0.873	0.951	1.028	1.010	0.964	0.923	0.8842	13.60
53)		1,2-Dibromoethane	0.477	0.479	0.491	0.570	0.593	0.634	0.623	0.594	0.591	0.5612	11.06
54)	I	chlorobenzene-D5	----------ISTD----------										
55)		Ethylbenzene	1.261	1.137	1.162	1.402	1.465	1.558	1.635	1.544	1.535	1.4110	12.95
56)		2-Ethylthiophene	0.806	0.761	0.763	0.983	0.951	1.015	1.092	1.105	1.104	0.9534	15.05
57)		p/m-Xylene	1.005	0.884	0.861	1.076	1.113	1.189	1.256	1.197	1.195	1.0863	13.14
58)		1-Nonene	0.325	0.312	0.330	0.429	0.463	0.498	0.525	0.500	0.486	0.4298	19.77
59)		Nonane	0.988	0.833	0.833	1.047	1.112	1.183	1.225	1.139	1.099	1.0510	13.49
60)		Styrene	0.447	0.431	0.546	0.719	0.774	0.849	0.915	0.882	0.890	0.7169	27.05
61)		o-Xylene	0.969	0.866	0.907	1.116	1.166	1.236	1.307	1.234	1.221	1.1134	14.42

Response Factor Report Air Piano 1

Method Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Method File : PA161028.M
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Calibration Files
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10 =R149066.D 25 =R149067.D 50 =R149068.D

	Compound	0.02	0.05	0.1	1.0	2.5	5.0	10	25	50	Avg	%RSD
62) S	4-Bromofluorobenzene (surr)	0.608	0.580	0.586	0.532	0.501	0.534	0.536	0.524	0.536	0.5485	6.32
63)	Isopropylbenzene	1.251	1.164	1.230	1.470	1.502	1.607	1.725	1.618	1.622	1.4654	13.84
64)	n-Propylbenzene	0.311	0.290	0.304	0.375	0.389	0.421	0.460	0.440	0.447	0.3820	17.24
65)	1-Methyl-3-ethylbenzene	1.094	1.038	1.037	1.367	1.422	1.546	1.696	1.618	1.615	1.3815	19.10
66)	1-Methyl-4-ethylbenzene	1.162	1.069	1.094	1.499	1.562	1.675	1.841	1.744	1.741	1.4875	20.32
67)	1,3,5-Trimethylbenzene	1.011	0.902	0.916	1.183	1.225	1.341	1.469	1.413	1.404	1.2071	18.18
68)	1-Decene	0.472	0.430	0.467	0.633	0.643	0.699	0.752	0.693	0.662	0.6057	19.45
69)	1-Methyl-2-ethylbenzene	1.174	1.046	1.091	1.398	1.435	1.562	1.708	1.642	1.625	1.4091	17.80
70)	Decane	0.833	0.752	0.840	1.125	1.144	1.256	1.368	1.270	1.194	1.0869	20.45
71)	1,2,4-Trimethylbenzene	1.054	0.932	0.885	1.156	1.194	1.324	1.468	1.394	1.405	1.2013	17.69
72)	sec-Butylbenzene	1.491	1.378	1.441	1.891	1.901	2.081	2.304	2.164	2.147	1.8663	18.63
73)	1-Methyl-3-isopropylbenzene	1.232	1.146	1.150	1.559	1.551	1.759	1.956	1.875	1.884	1.5681	20.77
74)	1-Methyl-4-isopropylbenzene	0.992	0.927	0.954	1.287	1.303	1.457	1.641	1.554	1.560	1.2970	21.57
75)	1-Methyl-2-isopropylbenzene	1.102	1.027	1.045	1.373	1.380	1.562	1.751	1.658	1.659	1.3953	20.24
76)	Indan	0.795	0.722	0.710	0.931	0.931	1.043	1.152	1.087	1.086	0.9397	17.65
77)	Indene	0.255	0.273	0.419	0.597	0.598	0.683	0.785	0.746	0.746	0.5668	35.97#
78)	1-Methyl-3-propylbenzene	1.359	1.263	1.243	1.722	1.723	1.972	2.212	2.094	2.070	1.7397	21.62
79)	1-Methyl-4-propylbenzene	1.570	1.479	1.484	2.161	2.137	2.462	2.742	2.603	2.563	2.1336	23.74
80)	n-Butylbenzene	1.228	1.168	1.232	1.687	1.631	1.896	2.099	1.917	1.904	1.6402	21.38
81)	1,2-Dimethyl-4-ethylbenzene	0.953	0.910	0.923	1.344	1.293	1.514	1.724	1.626	1.611	1.3219	24.51
82)	1,2-Diethylbenzene	0.547	0.513	0.508	0.701	0.696	0.795	0.891	0.844	0.845	0.7044	21.44
83)	1-Methyl-2-propylbenzene	1.437	1.354	1.340	1.871	1.816	2.128	2.359	2.233	2.184	1.8580	21.46
84)	1,4-Dimethyl-2-ethylbenzene	1.017	0.942	0.972	1.386	1.320	1.566	1.830	1.700	1.722	1.3840	24.90
85)	Undecane	0.667	0.643	0.758	1.211	1.087	1.305	1.508	1.381	1.349	1.1010	30.04#
86)	1,3-Dimethyl-4-ethylbenzene	1.191	1.140	1.129	1.627	1.560	1.838	2.061	1.973	1.970	1.6101	23.52
87)	1,3-Dimethyl-5-ethylbenzene	1.102	1.030	1.035	1.518	1.438	1.717	1.948	1.877	1.866	1.5034	24.94
88)	1,3-Dimethyl-2-ethylbenzene	1.206	1.151	1.158	1.644	1.559	1.838	2.119	2.009	2.023	1.6341	23.88
89)	1,2-Dimethyl-3-ethylbenzene	1.118	1.067	1.038	1.466	1.393	1.667	1.955	1.858	1.848	1.4900	24.23
90)	1,2,4,5-Tetramethylbenzene	3.097	3.006	3.390	5.281	4.709	5.789	6.369	6.505	6.127	4.9194	29.04
91)	Pentylbenzene	1.025	1.067	1.105	1.697	1.484	1.849	2.231	2.085	2.038	1.6199	29.02
92)	Dodecane		0.549	0.736	1.300	1.058	1.311	1.749	1.496	1.418	1.2022	33.25#
93)	Naphthalene		0.884	1.053	1.577	1.374	1.770	2.230	2.040	2.066	1.6243	30.30

Response Factor Report Air Piano 1

Method Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Method File : PA161028.M
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Calibration Files
0.02=R149058.D 0.05=R149059.D 0.1 =R149060.D 1.0 =R149063.D 2.5 =R149064.D 5.0 =R149065.D
10 =R149066.D 25 =R149067.D 50 =R149068.D

	Compound	0.02	0.05	0.1	1.0	2.5	5.0	10	25	50	Avg	%RSD
94)	Benzothiophene		1.319	2.051	3.396	3.450	4.437	4.231	4.462	4.419	3.4707	34.51
95)	MMT			0.242	0.362	0.299	0.390	0.438	0.510	0.528	0.3955	26.67
96)	Tridecane				1.463	1.213	1.499	2.006	1.959	2.041	1.6969	20.61
97)	2-Methylnaphthalene			0.480	1.006	0.820	1.090	1.343	1.587	1.715	1.1488	37.77
98)	1-Methylnaphthalene			0.569	1.173	0.920	1.177	1.660	1.683	1.795	1.2824	35.30

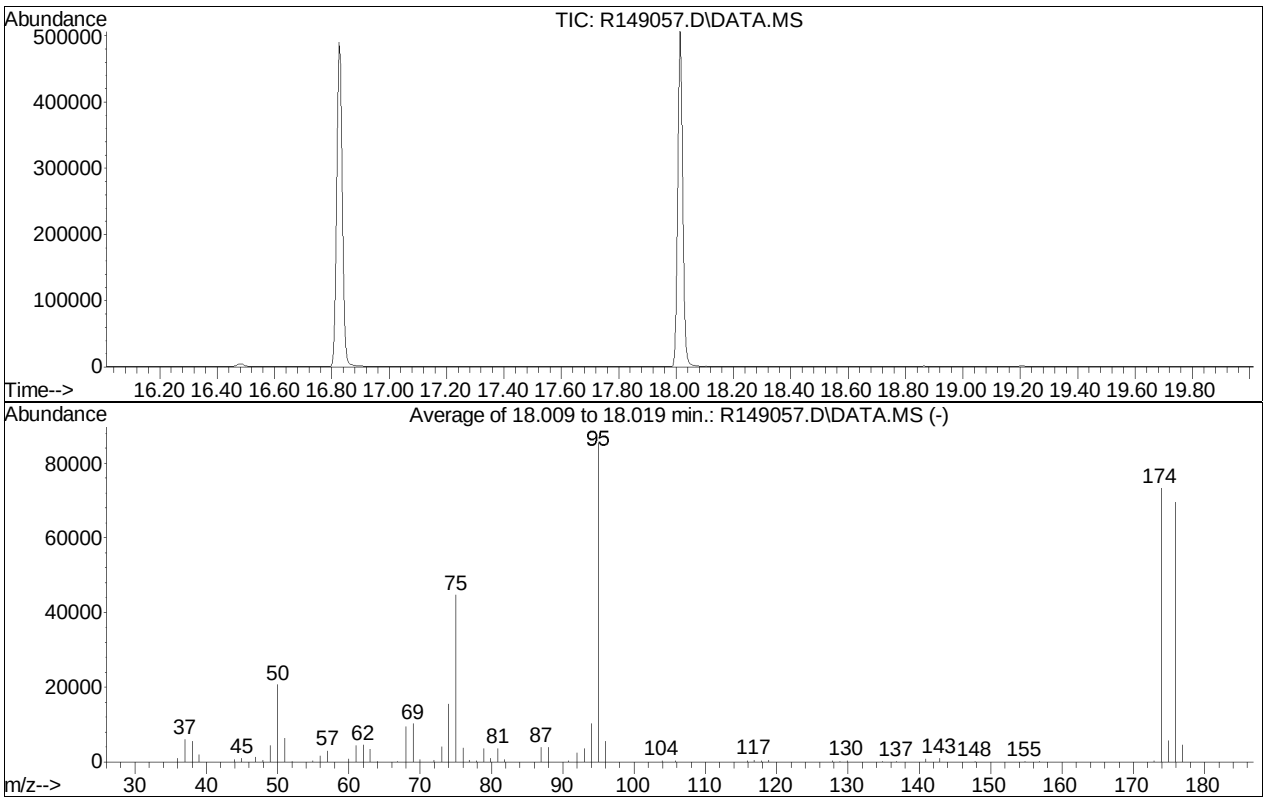
(#) = Out of Range

BFB

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149057.D
Acq On : 28 Oct 2016 12:11 pm
Operator : AIRPIANO1:RY
Sample : WG947234-1
Misc : WG947234
ALS Vial : 1 Sample Multiplier: 1

Integration File: rteint.p

Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Title : TO15_PIANO
Last Update : Sat Oct 29 13:33:15 2016



AutoFind: Scans 1575, 1576, 1577; Background Corrected with Scan 1568

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	8	40	24.2	20715	PASS
75	95	30	66	52.3	44715	PASS
95	95	100	100	100.0	85453	PASS
96	95	5	9	6.5	5585	PASS
173	174	0.00	2	0.5	343	PASS
174	95	50	120	85.8	73301	PASS
175	174	4	9	7.7	5626	PASS
176	174	93	101	94.9	69565	PASS
177	176	5	9	6.5	4522	PASS

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149058.D
Acq On : 28 Oct 2016 12:45 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO0.025
Misc : WG947234
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 29 12:32:51 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	135897	10.000	ppbV	0.00
Standard Area = 153923			Recovery = 88.29%			
27) 1,4-difluorbenzene	14.20	114	291771	10.000	ppbV	0.00
Standard Area = 333192			Recovery = 87.57%			
54) chlorobenzene-D5	27.63	117	206881	10.000	ppbV	0.00
Standard Area = 250343			Recovery = 82.64%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.62	65	89076	10.554	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 105.54%			
46) Toluene-D8	20.95	98	242339	10.797	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 107.97%			
62) 4-Bromofluorobenzene (...	34.33	95	125720	11.381	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 113.81%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.71	54	176M4	0.022	ppbV	
3) ethanol	5.31	31	4613	0.385	ppbV	99
4) Isopentane	5.88	41	427	0.033	ppbV #	73
5) 1-Pentene	6.19	42	433M4	0.027	ppbV	
6) 2-Methyl-1-butene	6.36	55	448	0.023	ppbV #	67
7) Pentane	6.47	43	781	0.037	ppbV	79
8) isopropyl alcohol	6.15	45	1025	0.063	ppbV #	97
9) 2-Pentene (trans)	6.67	55	402	0.022	ppbV #	73
10) 2-Pentene (cis)	6.89	55	395	0.023	ppbV #	68
11) Tertiary butanol	6.94	59	887	0.037	ppbV #	51
12) Cyclopentane	8.64	70	120	0.022	ppbV #	10
13) 2,3-Dimethylbutane	8.67	71	106M4	0.021	ppbV	
14) 2-Methylpentane	8.81	43	574M6	0.022	ppbV	
15) MTBE	8.72	73	570	0.020	ppbV	78
16) 3-Methylpentane	9.46	57	394	0.022	ppbV #	87
17) 1-Hexene	9.73	56	221	0.021	ppbV	90
18) Hexane	10.29	57	337M4	0.022	ppbV	
19) Diisopropyl ether	10.35	45	825	0.022	ppbV	95
20) Ethyl tertiary butyl e...	11.37	59	669	0.022	ppbV	73
21) 2,2-Dimethylpentane	11.62	57	537	0.021	ppbV	78
23) Methylcyclopentane	11.83	56	418	0.021	ppbV #	68
24) 2,4-Dimethylpentane	11.98	43	540	0.021	ppbV	99
25) 1,2-Dichloroethane	11.84	62	345	0.022	ppbV #	12

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149058.D
Acq On : 28 Oct 2016 12:45 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO0.025
Misc : WG947234
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 29 12:32:51 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
26) Cyclohexane	13.92	56	318	0.021	ppbV		90
28) 2-Methylhexane	14.39	43	581	0.021	ppbV	#	48
29) Benzene	13.32	78	872	0.031	ppbV		59
30) 2,3-Dimethylpentane	14.56	56	442	0.023	ppbV		91
31) Thiophene	13.61	84	302	0.025	ppbV		84
32) 3-Methylhexane	15.02	43	456M4	0.021	ppbV		
33) TAME	14.88	73	578	0.022	ppbV	#	58
34) 1-Heptene	15.93	70	104M4	0.020	ppbV		
35) Isooctane	16.00	57	984M4	0.020	ppbV		
36) Heptane	16.79	43	456	0.021	ppbV		80
37) Methylcyclohexane	18.48	83	333	0.021	ppbV		84
38) 2,5-Dimethylhexane	19.32	57	487	0.019	ppbV	#	87
39) 2,4-Dimethyhexane / 2,...	19.50	57	1166	0.038	ppbV		83
40) 2,3,4-Trimethylpentane	20.85	43	633M4	0.018	ppbV		
41) 2,3,3-Trimethylpentane	21.24	43	653	0.020	ppbV		78
42) 2,3-Dimethylhexane	21.71	43	613	0.020	ppbV		85
43) 3-Ethylhexane	22.94	43	738	0.019	ppbV		53
44) 2-Methylheptane	22.18	57	447	0.019	ppbV	#	85
45) 3-Methylheptane	22.83	43	540	0.021	ppbV		100
47) Toluene	21.28	91	908	0.026	ppbV		90
48) 2-Methylthiophene	21.48	97	461M4	0.021	ppbV		
49) 3-Methylthiophene	22.09	97	464	0.021	ppbV	#	62
50) 1-Octene	24.09	55	210	0.018	ppbV		93
51) 1-ethyl-1-methylcyclop...	24.57	83	423	0.022	ppbV		97
52) Octane	25.09	43	558	0.019	ppbV		69
53) 1,2-Dibromoethane	23.47	107	348	0.019	ppbV		99
55) Ethylbenzene	29.49	91	652	0.020	ppbV		67
56) 2-Ethylthiophene	29.65	97	417	0.020	ppbV	#	60
57) p/m-Xylene	30.27	91	520M4	0.021	ppbV		
58) 1-Nonene	32.91	56	168M4	0.016	ppbV		
59) Nonane	33.91	43	511	0.021	ppbV		95
60) Styrene	31.86	104	231	0.013	ppbV	#	58
61) o-Xylene	32.28	91	501	0.020	ppbV		73
63) Isopropylbenzene	35.13	105	647	0.019	ppbV		62
64) n-Propylbenzene	37.71	120	161	0.018	ppbV	#	13
65) 1-Methyl-3-ethylbenzene	38.35	105	566	0.018	ppbV		63
66) 1-Methyl-4-ethylbenzene	38.53	105	601	0.017	ppbV		64
67) 1,3,5-Trimethylbenzene	39.01	105	523	0.019	ppbV		77
68) 1-Decene	41.57	41	244	0.017	ppbV	#	85
69) 1-Methyl-2-ethylbenzene	39.89	105	607	0.019	ppbV	#	63

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149058.D
Acq On : 28 Oct 2016 12:45 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO0.025
Misc : WG947234
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 29 12:32:51 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

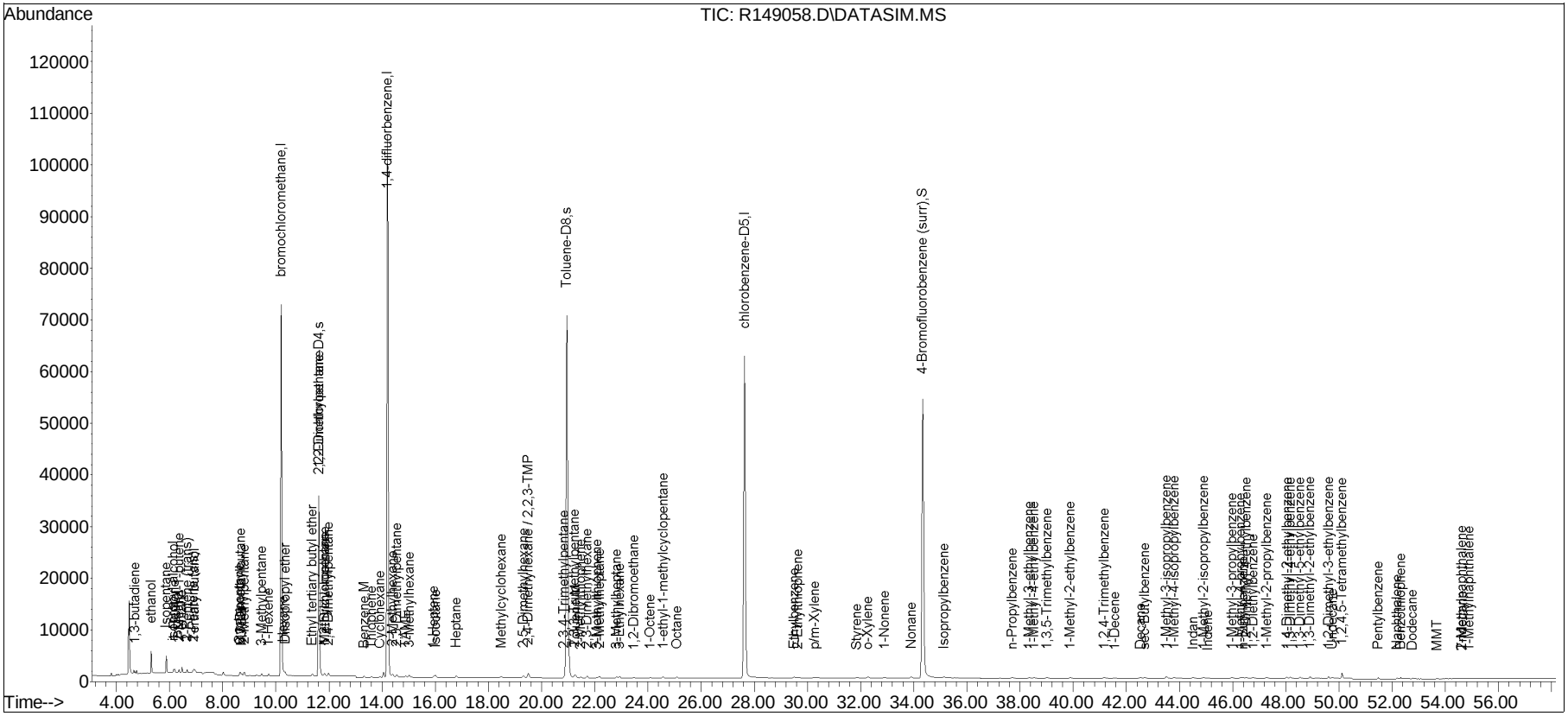
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
70) Decane	42.53	43	431	0.017	ppbV		97
71) 1,2,4-Trimethylbenzene	41.17	105	545	0.020	ppbV		70
72) sec-Butylbenzene	42.70	105	771	0.018	ppbV		54
73) 1-Methyl-3-isopropylbe...	43.50	119	637	0.018	ppbV	#	62
74) 1-Methyl-4-isopropylbe...	43.80	119	513	0.017	ppbV	#	55
75) 1-Methyl-2-isopropylbe...	44.91	119	570	0.018	ppbV	#	56
76) Indan	44.51	117	411	0.019	ppbV		75
77) Indene	45.06	115	132	0.009	ppbV		96
78) 1-Methyl-3-propylbenzene	45.98	105	703	0.017	ppbV	#	56
79) 1-Methyl-4-propylbenzene	46.30	105	812	0.016	ppbV		58
80) n-Butylbenzene	46.39	91	635M4	0.016	ppbV		
81) 1,2-Dimethyl-4-ethylbe...	46.51	119	493	0.016	ppbV	#	44
82) 1,2-Diethylbenzene	46.77	119	283	0.017	ppbV	#	83
83) 1-Methyl-2-propylbenzene	47.29	105	743	0.017	ppbV	#	57
84) 1,4-Dimethyl-2-ethylbe...	48.04	119	526M3	0.016	ppbV		
85) Undecane	49.75	57	345	0.013	ppbV		86
86) 1,3-Dimethyl-4-ethylbe...	48.16	119	616	0.016	ppbV	#	57
87) 1,3-Dimethyl-5-ethylbe...	48.54	119	570	0.016	ppbV	#	62
88) 1,3-Dimethyl-2-ethylbe...	48.91	119	624	0.016	ppbV		66
89) 1,2-Dimethyl-3-ethylbe...	49.61	119	578	0.017	ppbV		68
90) 1,2,4,5-Tetramethylben...	50.11	119	1602	0.013	ppbV		89
91) Pentylbenzene	51.48	91	530M4	0.014	ppbV		
92) Dodecane	52.76	43	278	0.010	ppbV		84
93) Naphthalene	52.18	128	482	0.013	ppbV	#	38
94) Benzothiophene	52.33	134	689	0.008	ppbV		57
95) MMT	53.69	134	45	0.006	ppbV		90
96) Tridecane	54.64	57	121	0.004	ppbV	#	72
97) 2-Methylnaphthalene	54.62	142	70	0.003	ppbV	#	8
98) 1-Methylnaphthalene	54.91	142	94	0.004	ppbV	#	13

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

Sub List : Default - All compounds listed1028PIANO_ICAL\R149065.D

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149058.D
Acq On : 28 Oct 2016 12:45 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO0.025
Misc : WG947234
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 29 12:32:51 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149059.D
Acq On : 28 Oct 2016 1:51 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO0.05
Misc : WG947234
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 29 12:33:24 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	129107	10.000	ppbV	0.00
Standard Area = 153923			Recovery = 83.88%			
27) 1,4-difluorbenzene	14.20	114	289297	10.000	ppbV	0.00
Standard Area = 333192			Recovery = 86.83%			
54) chlorobenzene-D5	27.63	117	212072	10.000	ppbV	0.00
Standard Area = 250343			Recovery = 84.71%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.62	65	89278	11.134	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 111.34%			
46) Toluene-D8	20.95	98	239101	10.744	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 107.44%			
62) 4-Bromofluorobenzene (...	34.34	95	123086	10.870	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 108.70%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.71	54	341M4	0.045	ppbV	
3) ethanol	5.30	31	7893	0.693	ppbV	100
4) Isopentane	5.88	41	778	0.063	ppbV #	74
5) 1-Pentene	6.19	42	703M4	0.047	ppbV	
6) 2-Methyl-1-butene	6.36	55	848	0.047	ppbV	80
7) Pentane	6.47	43	1214	0.061	ppbV	86
8) isopropyl alcohol	6.15	45	1602	0.104	ppbV	96
9) 2-Pentene (trans)	6.67	55	795M4	0.045	ppbV	
10) 2-Pentene (cis)	6.89	55	700	0.043	ppbV	79
11) Tertiary butanol	6.93	59	1661	0.073	ppbV #	84
12) Cyclopentane	8.64	70	229	0.044	ppbV #	42
13) 2,3-Dimethylbutane	8.66	71	215	0.044	ppbV #	46
14) 2-Methylpentane	8.81	43	1483M6	0.059	ppbV	
15) MTBE	8.72	73	1218	0.045	ppbV #	76
16) 3-Methylpentane	9.46	57	785	0.045	ppbV	87
17) 1-Hexene	9.73	56	483	0.049	ppbV #	86
18) Hexane	10.29	57	688	0.047	ppbV	87
19) Diisopropyl ether	10.35	45	1608	0.045	ppbV	94
20) Ethyl tertiary butyl e...	11.37	59	1277	0.043	ppbV	84
21) 2,2-Dimethylpentane	11.62	57	1012	0.042	ppbV	91
23) Methylcyclopentane	11.82	56	779	0.042	ppbV #	64
24) 2,4-Dimethylpentane	11.97	43	985	0.040	ppbV	98
25) 1,2-Dichloroethane	11.84	62	669	0.046	ppbV	56

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149059.D
Acq On : 28 Oct 2016 1:51 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO0.05
Misc : WG947234
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 29 12:33:24 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
26) Cyclohexane	13.92	56	601	0.041	ppbV		88
28) 2-Methylhexane	14.39	43	1112	0.040	ppbV		71
29) Benzene	13.32	78	1420	0.050	ppbV		79
30) 2,3-Dimethylpentane	14.55	56	779	0.041	ppbV	#	60
31) Thiophene	13.60	84	540	0.046	ppbV		88
32) 3-Methylhexane	15.02	43	880	0.041	ppbV		88
33) TAME	14.87	73	1124	0.042	ppbV		71
34) 1-Heptene	15.94	70	167M4	0.032	ppbV		
35) Isooctane	15.99	57	1835M4	0.037	ppbV		
36) Heptane	16.78	43	788	0.037	ppbV		89
37) Methylcyclohexane	18.48	83	620	0.039	ppbV		90
38) 2,5-Dimethylhexane	19.32	57	901	0.036	ppbV		91
39) 2,4-Dimethyhexane / 2,...	19.50	57	2210	0.072	ppbV		89
40) 2,3,4-Trimethylpentane	20.85	43	1226	0.035	ppbV		90
41) 2,3,3-Trimethylpentane	21.23	43	1220	0.038	ppbV		87
42) 2,3-Dimethylhexane	21.72	43	1145	0.037	ppbV		89
43) 3-Ethylhexane	22.94	43	1315	0.034	ppbV		71
44) 2-Methylheptane	22.17	57	847	0.036	ppbV		89
45) 3-Methylheptane	22.83	43	919	0.037	ppbV		99
47) Toluene	21.27	91	1534	0.045	ppbV		95
48) 2-Methylthiophene	21.47	97	926	0.042	ppbV	#	71
49) 3-Methylthiophene	22.08	97	864	0.040	ppbV		80
50) 1-Octene	24.09	55	373	0.033	ppbV		94
51) 1-ethyl-1-methylcyclop...	24.56	83	756	0.040	ppbV		96
52) Octane	25.09	43	1041	0.035	ppbV		81
53) 1,2-Dibromoethane	23.46	107	693	0.038	ppbV		98
55) Ethylbenzene	29.51	91	1206	0.037	ppbV		81
56) 2-Ethylthiophene	29.65	97	807	0.037	ppbV		74
57) p/m-Xylene	30.26	91	937M1	0.037	ppbV		
58) 1-Nonene	32.91	56	331	0.031	ppbV		96
59) Nonane	33.92	43	883	0.035	ppbV		99
60) Styrene	31.85	104	457	0.025	ppbV	#	69
61) o-Xylene	32.27	91	918	0.035	ppbV		84
63) Isopropylbenzene	35.12	105	1234	0.036	ppbV		78
64) n-Propylbenzene	37.71	120	308	0.034	ppbV	#	35
65) 1-Methyl-3-ethylbenzene	38.35	105	1101	0.034	ppbV		76
66) 1-Methyl-4-ethylbenzene	38.53	105	1134	0.032	ppbV		77
67) 1,3,5-Trimethylbenzene	39.01	105	956	0.034	ppbV		85
68) 1-Decene	41.56	41	456	0.031	ppbV		91
69) 1-Methyl-2-ethylbenzene	39.88	105	1109	0.033	ppbV		75

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149059.D
Acq On : 28 Oct 2016 1:51 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO0.05
Misc : WG947234
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 29 12:33:24 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

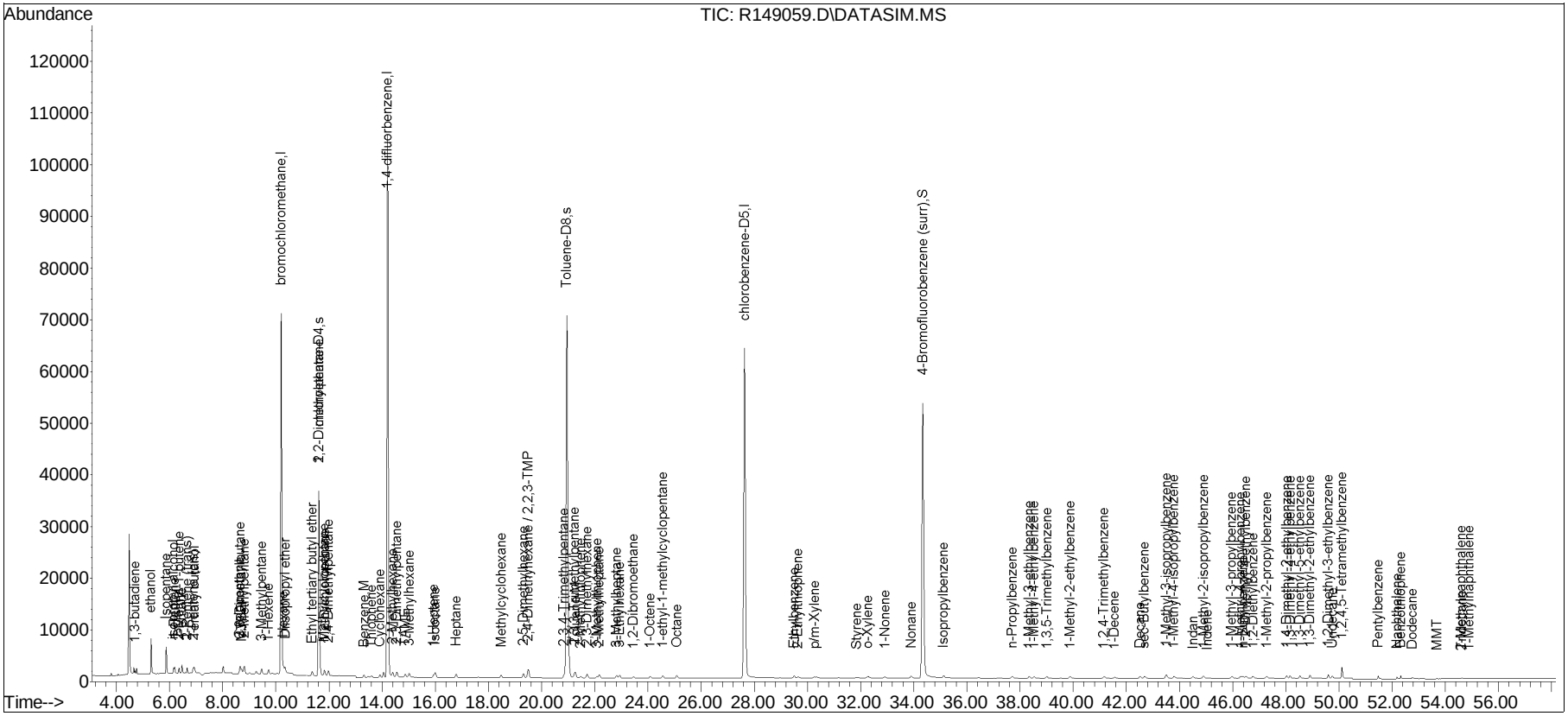
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
70) Decane	42.52	43	797	0.030	ppbV		96
71) 1,2,4-Trimethylbenzene	41.16	105	988	0.035	ppbV		82
72) sec-Butylbenzene	42.68	105	1461	0.033	ppbV		75
73) 1-Methyl-3-isopropylbe...	43.50	119	1215	0.033	ppbV		76
74) 1-Methyl-4-isopropylbe...	43.79	119	983	0.032	ppbV		69
75) 1-Methyl-2-isopropylbe...	44.91	119	1089	0.033	ppbV		74
76) Indan	44.51	117	766	0.035	ppbV		84
77) Indene	45.05	115	289M4	0.020	ppbV		
78) 1-Methyl-3-propylbenzene	45.97	105	1339	0.032	ppbV		76
79) 1-Methyl-4-propylbenzene	46.30	105	1568	0.030	ppbV		77
80) n-Butylbenzene	46.39	91	1238M4	0.031	ppbV		
81) 1,2-Dimethyl-4-ethylbe...	46.49	119	965	0.030	ppbV	#	64
82) 1,2-Diethylbenzene	46.76	119	544	0.032	ppbV		90
83) 1-Methyl-2-propylbenzene	47.27	105	1436	0.032	ppbV		77
84) 1,4-Dimethyl-2-ethylbe...	48.03	119	999	0.030	ppbV		75
85) Undecane	49.75	57	682	0.025	ppbV		90
86) 1,3-Dimethyl-4-ethylbe...	48.16	119	1209	0.031	ppbV		76
87) 1,3-Dimethyl-5-ethylbe...	48.54	119	1092	0.030	ppbV		77
88) 1,3-Dimethyl-2-ethylbe...	48.91	119	1220	0.031	ppbV		80
89) 1,2-Dimethyl-3-ethylbe...	49.59	119	1131	0.032	ppbV		82
90) 1,2,4,5-Tetramethylben...	50.11	119	3187	0.026	ppbV		95
91) Pentylbenzene	51.48	91	1131	0.029	ppbV		80
92) Dodecane	52.76	43	582	0.021	ppbV		90
93) Naphthalene	52.18	128	937	0.025	ppbV		69
94) Benzothiophene	52.32	134	1399	0.015	ppbV		81
95) MMT	53.69	134	76	0.009	ppbV		93
96) Tridecane	54.63	57	271M4	0.009	ppbV		
97) 2-Methylnaphthalene	54.60	142	131	0.006	ppbV	#	27
98) 1-Methylnaphthalene	54.90	142	189	0.008	ppbV	#	39

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

Sub List : Default - All compounds listed1028PIANO_ICAL\R149065.D

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149059.D
Acq On : 28 Oct 2016 1:51 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO0.05
Misc : WG947234
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 29 12:33:24 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149060.D
Acq On : 28 Oct 2016 2:58 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO0.1
Misc : WG947234
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 29 12:14:52 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	137729	10.000	ppbV	0.00
Standard Area = 153923			Recovery = 89.48%			
27) 1,4-difluorbenzene	14.20	114	284169	10.000	ppbV	0.00
Standard Area = 333192			Recovery = 85.29%			
54) chlorobenzene-D5	27.63	117	205784	10.000	ppbV	0.00
Standard Area = 250343			Recovery = 82.20%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.62	65	86492	10.111	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.11%			
46) Toluene-D8	20.95	98	231933	10.610	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 106.10%			
62) 4-Bromofluorobenzene (...	34.33	95	120637	10.979	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 109.79%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.71	54	639M4	0.080	ppbV	
3) ethanol	5.31	31	2245	0.185	ppbV	98
4) Isopentane	5.88	41	1213	0.092	ppbV	93
5) 1-Pentene	6.19	42	1315M4	0.082	ppbV	
6) 2-Methyl-1-butene	6.35	55	1588	0.082	ppbV	87
7) Pentane	6.47	43	2035	0.095	ppbV	91
8) isopropyl alcohol	6.15	45	1920	0.117	ppbV #	87
9) 2-Pentene (trans)	6.67	55	1561	0.083	ppbV	89
10) 2-Pentene (cis)	6.89	55	1455	0.084	ppbV	89
11) Tertiary butanol	6.92	59	2549	0.105	ppbV	88
12) Cyclopentane	8.64	70	474	0.086	ppbV #	56
13) 2,3-Dimethylbutane	8.66	71	432	0.083	ppbV #	71
14) 2-Methylpentane	8.82	43	2572	0.096	ppbV	97
15) MTBE	8.71	73	2369	0.082	ppbV #	72
16) 3-Methylpentane	9.46	57	1561	0.085	ppbV	94
17) 1-Hexene	9.73	56	880	0.083	ppbV	91
18) Hexane	10.28	57	1251	0.080	ppbV #	62
19) Diisopropyl ether	10.34	45	2989	0.079	ppbV	91
20) Ethyl tertiary butyl e...	11.36	59	2313	0.074	ppbV	93
21) 2,2-Dimethylpentane	11.62	57	2007	0.079	ppbV	94
23) Methylcyclopentane	11.83	56	1515	0.076	ppbV	90
24) 2,4-Dimethylpentane	11.98	43	2001	0.077	ppbV	97
25) 1,2-Dichloroethane	11.84	62	1324	0.085	ppbV	73

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149060.D
Acq On : 28 Oct 2016 2:58 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO0.1
Misc : WG947234
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 29 12:14:52 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
26) Cyclohexane	13.91	56	1173	0.075	ppbV		96
28) 2-Methylhexane	14.39	43	2193	0.081	ppbV		84
29) Benzene	13.32	78	2593	0.094	ppbV		85
30) 2,3-Dimethylpentane	14.55	56	1575	0.085	ppbV		96
31) Thiophene	13.60	84	1084	0.094	ppbV		95
32) 3-Methylhexane	15.02	43	1667	0.079	ppbV		90
33) TAME	14.86	73	1999	0.077	ppbV		85
34) 1-Heptene	15.94	70	355M4	0.069	ppbV		
35) Isooctane	15.99	57	3791M4	0.079	ppbV		
36) Heptane	16.78	43	1560	0.075	ppbV		93
37) Methylcyclohexane	18.48	83	1186	0.076	ppbV		90
38) 2,5-Dimethylhexane	19.32	57	1790	0.073	ppbV		95
39) 2,4-Dimethyhexane / 2,...	19.50	57	4456	0.147	ppbV		95
40) 2,3,4-Trimethylpentane	20.84	43	2567	0.075	ppbV		95
41) 2,3,3-Trimethylpentane	21.24	43	2471	0.079	ppbV		91
42) 2,3-Dimethylhexane	21.71	43	2276	0.075	ppbV		94
43) 3-Ethylhexane	22.94	43	2685	0.071	ppbV		83
44) 2-Methylheptane	22.17	57	1666	0.072	ppbV		95
45) 3-Methylheptane	22.83	43	1853	0.075	ppbV		97
47) Toluene	21.27	91	2865	0.085	ppbV		96
48) 2-Methylthiophene	21.47	97	1806	0.083	ppbV		85
49) 3-Methylthiophene	22.07	97	1744	0.082	ppbV		90
50) 1-Octene	24.09	55	767	0.069	ppbV		96
51) 1-ethyl-1-methylcyclop...	24.57	83	1553	0.083	ppbV		99
52) Octane	25.08	43	2058	0.070	ppbV		89
53) 1,2-Dibromoethane	23.46	107	1395	0.077	ppbV		99
55) Ethylbenzene	29.49	91	2391	0.075	ppbV		89
56) 2-Ethylthiophene	29.64	97	1570	0.075	ppbV		85
57) p/m-Xylene	30.25	91	1771M4	0.072	ppbV		
58) 1-Nonene	32.90	56	679	0.066	ppbV		97
59) Nonane	33.91	43	1714	0.070	ppbV		98
60) Styrene	31.85	104	1124	0.064	ppbV		87
61) o-Xylene	32.27	91	1866	0.073	ppbV		91
63) Isopropylbenzene	35.13	105	2532	0.077	ppbV		87
64) n-Propylbenzene	37.71	120	626	0.072	ppbV	#	55
65) 1-Methyl-3-ethylbenzene	38.33	105	2135	0.067	ppbV		88
66) 1-Methyl-4-ethylbenzene	38.53	105	2252	0.065	ppbV		87
67) 1,3,5-Trimethylbenzene	39.00	105	1885	0.068	ppbV		94
68) 1-Decene	41.54	41	962	0.067	ppbV		95
69) 1-Methyl-2-ethylbenzene	39.87	105	2246	0.070	ppbV		90

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149060.D
Acq On : 28 Oct 2016 2:58 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO0.1
Misc : WG947234
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 29 12:14:52 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

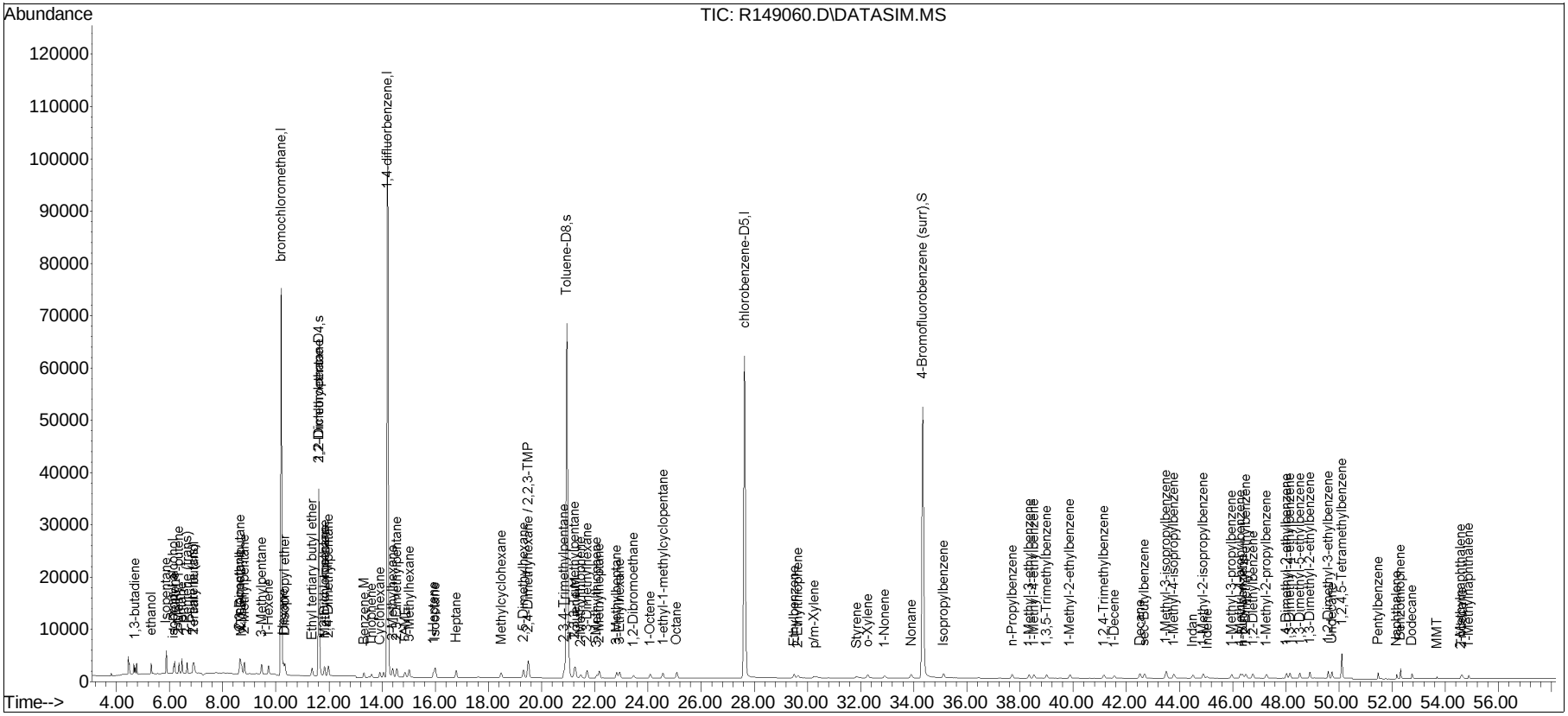
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) Decane	42.52	43	1728	0.067	ppbV	98
71) 1,2,4-Trimethylbenzene	41.16	105	1822	0.067	ppbV	88
72) sec-Butylbenzene	42.68	105	2965	0.069	ppbV	86
73) 1-Methyl-3-isopropylbe...	43.49	119	2367	0.065	ppbV	87
74) 1-Methyl-4-isopropylbe...	43.79	119	1963	0.065	ppbV	84
75) 1-Methyl-2-isopropylbe...	44.90	119	2151	0.067	ppbV	87
76) Indan	44.50	117	1461	0.068	ppbV	92
77) Indene	45.04	115	862M4	0.061	ppbV	
78) 1-Methyl-3-propylbenzene	45.97	105	2557	0.063	ppbV	83
79) 1-Methyl-4-propylbenzene	46.30	105	3054	0.060	ppbV	87
80) n-Butylbenzene	46.37	91	2536M4	0.065	ppbV	
81) 1,2-Dimethyl-4-ethylbe...	46.49	119	1899	0.061	ppbV	77
82) 1,2-Diethylbenzene	46.76	119	1045	0.064	ppbV	92
83) 1-Methyl-2-propylbenzene	47.26	105	2758	0.063	ppbV	90
84) 1,4-Dimethyl-2-ethylbe...	48.02	119	2001	0.062	ppbV	87
85) Undecane	49.74	57	1559	0.058	ppbV	91
86) 1,3-Dimethyl-4-ethylbe...	48.15	119	2324	0.061	ppbV	89
87) 1,3-Dimethyl-5-ethylbe...	48.52	119	2129	0.060	ppbV	88
88) 1,3-Dimethyl-2-ethylbe...	48.91	119	2383	0.063	ppbV	90
89) 1,2-Dimethyl-3-ethylbe...	49.59	119	2137	0.062	ppbV	89
90) 1,2,4,5-Tetramethylben...	50.11	119	6977	0.059	ppbV	97
91) Pentylbenzene	51.47	91	2273	0.060	ppbV	93
92) Dodecane	52.75	43	1515	0.056	ppbV	96
93) Naphthalene	52.17	128	2167	0.060	ppbV	86
94) Benzothiophene	52.31	134	4221	0.046	ppbV	92
95) MMT	53.69	134	497	0.062	ppbV	98
96) Tridecane	54.63	57	1235M4	0.040	ppbV	
97) 2-Methylnaphthalene	54.58	142	987	0.044	ppbV	84
98) 1-Methylnaphthalene	54.89	142	1170	0.048	ppbV	88

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

Sub List : Default - All compounds listed1028PIANO_ICAL\R149065.D

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149060.D
Acq On : 28 Oct 2016 2:58 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO0.1
Misc : WG947234
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Oct 29 12:14:52 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149063.D
Acq On : 28 Oct 2016 6:40 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO1.0
Misc : WG947234
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 29 13:31:27 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	159263	10.000	ppbV	0.00
Standard Area = 153923			Recovery = 103.47%			
27) 1,4-difluorbenzene	14.20	114	349592	10.000	ppbV	0.00
Standard Area = 333192			Recovery = 104.92%			
54) chlorobenzene-D5	27.63	117	250268	10.000	ppbV	0.00
Standard Area = 250343			Recovery = 99.97%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.62	65	97148	9.822	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.22%			
46) Toluene-D8	20.95	98	258146	9.599	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 95.99%			
62) 4-Bromofluorobenzene (...	34.33	95	133157	9.965	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 99.65%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.71	54	8666M4	0.935	ppbV	
3) ethanol	5.30	31	13112	0.933	ppbV	99
4) Isopentane	5.88	41	14661	0.959	ppbV	99
5) 1-Pentene	6.19	42	17752M4	0.954	ppbV	
6) 2-Methyl-1-butene	6.35	55	20978	0.936	ppbV	90
7) Pentane	6.47	43	23544	0.955	ppbV	99
8) isopropyl alcohol	6.13	45	20657	1.088	ppbV #	91
9) 2-Pentene (trans)	6.67	55	20680	0.946	ppbV	99
10) 2-Pentene (cis)	6.89	55	19092	0.956	ppbV	97
11) Tertiary butanol	6.89	59	26898	0.955	ppbV	84
12) Cyclopentane	8.64	70	6557M3	1.026	ppbV	
13) 2,3-Dimethylbutane	8.66	71	5653	0.938	ppbV #	89
14) 2-Methylpentane	8.82	43	29848	0.961	ppbV	99
15) MTBE	8.69	73	31513	0.939	ppbV #	81
16) 3-Methylpentane	9.46	57	20181	0.947	ppbV	98
17) 1-Hexene	9.73	56	11456	0.937	ppbV	99
18) Hexane	10.28	57	17262	0.953	ppbV #	66
19) Diisopropyl ether	10.32	45	43257	0.986	ppbV	91
20) Ethyl tertiary butyl e...	11.34	59	32637	0.898	ppbV	99
21) 2,2-Dimethylpentane	11.62	57	27194	0.922	ppbV	99
23) Methylcyclopentane	11.83	56	20876	0.905	ppbV	98
24) 2,4-Dimethylpentane	11.97	43	27443	0.910	ppbV	100
25) 1,2-Dichloroethane	11.84	62	17276	0.955	ppbV	98

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149063.D
Acq On : 28 Oct 2016 6:40 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO1.0
Misc : WG947234
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 29 13:31:27 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
26) Cyclohexane	13.91	56	16323	0.900	ppbV		100
28) 2-Methylhexane	14.39	43	30071	0.906	ppbV		99
29) Benzene	13.32	78	31684	0.930	ppbV		98
30) 2,3-Dimethylpentane	14.55	56	21000	0.919	ppbV		100
31) Thiophene	13.60	84	15058	1.059	ppbV		98
32) 3-Methylhexane	15.01	43	23025	0.887	ppbV		99
33) TAME	14.82	73	28389	0.883	ppbV		97
34) 1-Heptene	15.93	70	5150M4	0.817	ppbV		
35) Isooctane	15.99	57	53333M4	0.901	ppbV		
36) Heptane	16.78	43	22238	0.868	ppbV		100
37) Methylcyclohexane	18.48	83	16580	0.865	ppbV		96
38) 2,5-Dimethylhexane	19.32	57	25978	0.861	ppbV		100
39) 2,4-Dimethyhexane / 2,...	19.50	57	65928	1.770	ppbV		100
40) 2,3,4-Trimethylpentane	20.85	43	38005	0.902	ppbV		97
41) 2,3,3-Trimethylpentane	21.23	43	34230	0.888	ppbV		99
42) 2,3-Dimethylhexane	21.71	43	32702	0.876	ppbV		99
43) 3-Ethylhexane	22.93	43	41137	0.878	ppbV		98
44) 2-Methylheptane	22.17	57	25204	0.890	ppbV		99
45) 3-Methylheptane	22.82	43	26291	0.864	ppbV		99
47) Toluene	21.26	91	37223	0.897	ppbV		100
48) 2-Methylthiophene	21.46	97	26353	0.988	ppbV		99
49) 3-Methylthiophene	22.06	97	25620	0.979	ppbV		100
50) 1-Octene	24.09	55	11349	0.830	ppbV		99
51) 1-ethyl-1-methylcyclop...	24.56	83	22542	0.976	ppbV		99
52) Octane	25.08	43	30527	0.850	ppbV		100
53) 1,2-Dibromoethane	23.44	107	19922	0.900	ppbV		100
55) Ethylbenzene	29.49	91	35094	0.900	ppbV		100
56) 2-Ethylthiophene	29.64	97	24591	0.968	ppbV		99
57) p/m-Xylene	30.24	91	26935M1	0.905	ppbV		
58) 1-Nonene	32.90	56	10744	0.861	ppbV		100
59) Nonane	33.90	43	26195	0.884	ppbV		99
60) Styrene	31.83	104	17995	0.847	ppbV		99
61) o-Xylene	32.26	91	27929	0.903	ppbV		100
63) Isopropylbenzene	35.12	105	36779	0.914	ppbV		99
64) n-Propylbenzene	37.70	120	9391	0.890	ppbV	#	91
65) 1-Methyl-3-ethylbenzene	38.32	105	34202	0.884	ppbV		98
66) 1-Methyl-4-ethylbenzene	38.50	105	37522	0.895	ppbV		100
67) 1,3,5-Trimethylbenzene	38.98	105	29598	0.882	ppbV		98
68) 1-Decene	41.53	41	15835	0.905	ppbV		97
69) 1-Methyl-2-ethylbenzene	39.86	105	34994	0.895	ppbV		100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149063.D
Acq On : 28 Oct 2016 6:40 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO1.0
Misc : WG947234
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 29 13:31:27 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

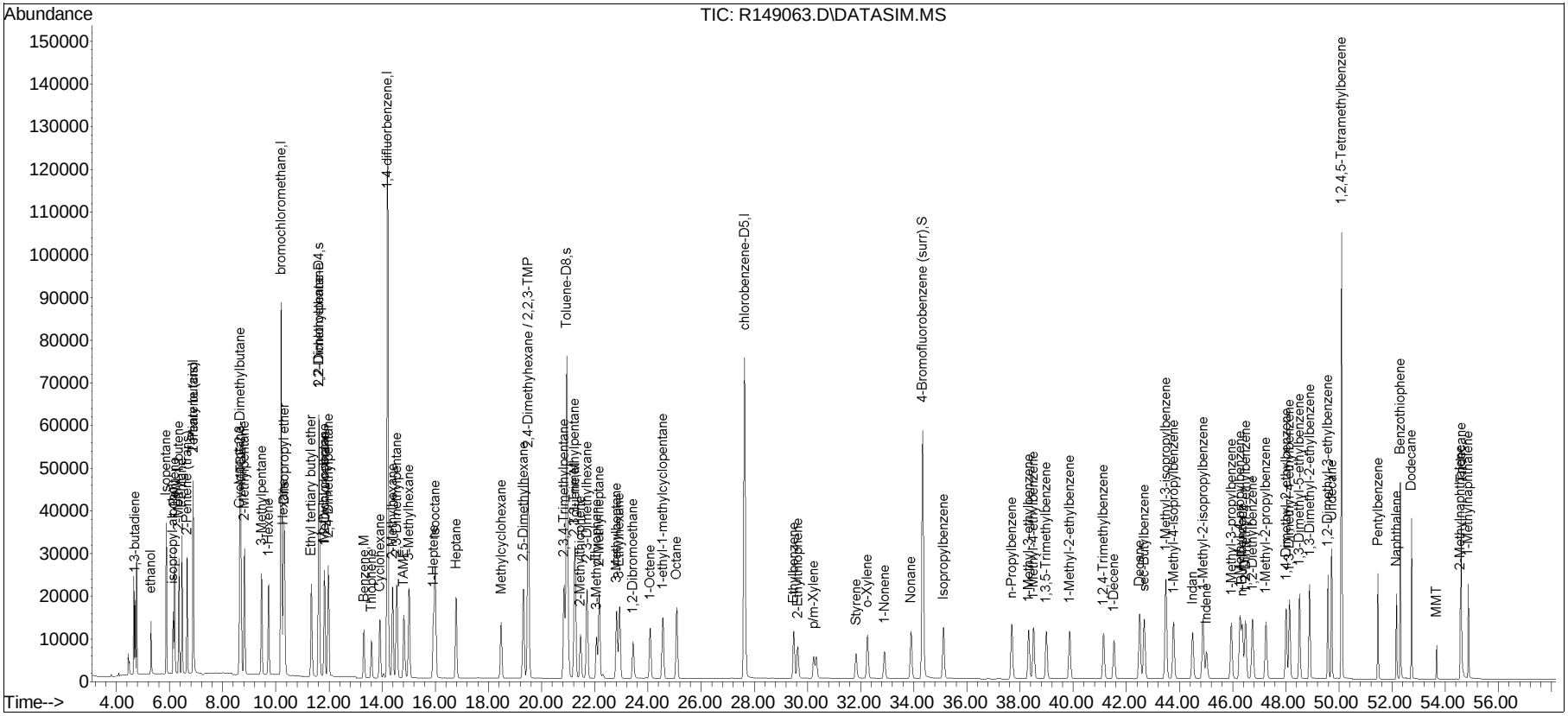
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) Decane	42.50	43	28162	0.896	ppbV	100
71) 1,2,4-Trimethylbenzene	41.13	105	28942	0.874	ppbV	99
72) sec-Butylbenzene	42.67	105	47330	0.909	ppbV	100
73) 1-Methyl-3-isopropylbe...	43.49	119	39013	0.886	ppbV	99
74) 1-Methyl-4-isopropylbe...	43.78	119	32203	0.883	ppbV	98
75) 1-Methyl-2-isopropylbe...	44.88	119	34367	0.879	ppbV	99
76) Indan	44.49	117	23289	0.892	ppbV	100
77) Indene	45.02	115	14936M4	0.874	ppbV	
78) 1-Methyl-3-propylbenzene	45.95	105	43091	0.873	ppbV	98
79) 1-Methyl-4-propylbenzene	46.28	105	54095	0.878	ppbV	100
80) n-Butylbenzene	46.36	91	42222M4	0.890	ppbV	
81) 1,2-Dimethyl-4-ethylbe...	46.48	119	33628	0.888	ppbV	98
82) 1,2-Diethylbenzene	46.75	119	17547	0.882	ppbV	99
83) 1-Methyl-2-propylbenzene	47.25	105	46814	0.879	ppbV	98
84) 1,4-Dimethyl-2-ethylbe...	48.01	119	34688	0.885	ppbV	99
85) Undecane	49.73	57	30312	0.928	ppbV	97
86) 1,3-Dimethyl-4-ethylbe...	48.14	119	40723	0.885	ppbV	98
87) 1,3-Dimethyl-5-ethylbe...	48.51	119	37987	0.884	ppbV	99
88) 1,3-Dimethyl-2-ethylbe...	48.90	119	41148	0.895	ppbV	98
89) 1,2-Dimethyl-3-ethylbe...	49.58	119	36698	0.880	ppbV	98
90) 1,2,4,5-Tetramethylben...	50.10	119	132179	0.912	ppbV	100
91) Pentylbenzene	51.47	91	42458	0.917	ppbV	93
92) Dodecane	52.73	43	32546	0.992	ppbV	95
93) Naphthalene	52.16	128	39468	0.891	ppbV	99
94) Benzothiophene	52.30	134	84993	0.765	ppbV	96
95) MMT	53.68	134	9049	0.928	ppbV	99
96) Tridecane	54.60	57	36608	0.976	ppbV	93
97) 2-Methylnaphthalene	54.57	142	25187	0.923	ppbV	95
98) 1-Methylnaphthalene	54.87	142	29355	0.997	ppbV	93

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

Sub List : Default - All compounds listed1028PIANO_ICAL\R149065.D

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149063.D
Acq On : 28 Oct 2016 6:40 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO1.0
Misc : WG947234
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Oct 29 13:31:27 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149064.D
Acq On : 28 Oct 2016 7:46 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO2.5
Misc : WG947234
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 29 12:23:50 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	160563	10.000	ppbV	0.00
Standard Area = 153923			Recovery = 104.31%			
27) 1,4-difluorbenzene	14.20	114	354337	10.000	ppbV	0.00
Standard Area = 333192			Recovery = 106.35%			
54) chlorobenzene-D5	27.63	117	260708	10.000	ppbV	0.00
Standard Area = 250343			Recovery = 104.14%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.62	65	94197	9.446	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 94.46%			
46) Toluene-D8	20.95	98	253490	9.300	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 93.00%			
62) 4-Bromofluorobenzene (...	34.33	95	130586	9.381	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 93.81%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.71	54	22428M4	2.399	ppbV	
3) ethanol	5.30	31	35011	2.471	ppbV	100
4) Isopentane	5.88	41	37337	2.423	ppbV	99
5) 1-Pentene	6.19	42	44932M4	2.396	ppbV	
6) 2-Methyl-1-butene	6.35	55	54175	2.398	ppbV	91
7) Pentane	6.47	43	60275	2.426	ppbV	99
8) isopropyl alcohol	6.13	45	45941	2.400	ppbV	98
9) 2-Pentene (trans)	6.67	55	52945	2.402	ppbV	99
10) 2-Pentene (cis)	6.89	55	48387	2.403	ppbV	99
11) Tertiary butanol	6.88	59	68698	2.421	ppbV	89
12) Cyclopentane	8.64	70	15447	2.397	ppbV	99
13) 2,3-Dimethylbutane	8.66	71	14539	2.393	ppbV	97
14) 2-Methylpentane	8.82	43	75358	2.406	ppbV	100
15) MTBE	8.67	73	81140	2.398	ppbV	96
16) 3-Methylpentane	9.47	57	52531	2.445	ppbV	99
17) 1-Hexene	9.73	56	29931	2.429	ppbV	100
18) Hexane	10.28	57	44174	2.418	ppbV #	79
19) Diisopropyl ether	10.31	45	107341	2.428	ppbV	95
20) Ethyl tertiary butyl e...	11.33	59	86681	2.365	ppbV	100
21) 2,2-Dimethylpentane	11.62	57	71310	2.399	ppbV	100
23) Methylcyclopentane	11.83	56	55211	2.375	ppbV	98
24) 2,4-Dimethylpentane	11.97	43	72374	2.380	ppbV	100
25) 1,2-Dichloroethane	11.84	62	44330	2.431	ppbV	99

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149064.D
Acq On : 28 Oct 2016 7:46 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO2.5
Misc : WG947234
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 29 12:23:50 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
26) Cyclohexane	13.91	56	43456	2.376	ppbV	100
28) 2-Methylhexane	14.39	43	79121	2.351	ppbV	100
29) Benzene	13.32	78	82029	2.377	ppbV	100
30) 2,3-Dimethylpentane	14.55	56	55159	2.381	ppbV	100
31) Thiophene	13.60	84	33734	2.340	ppbV	100
32) 3-Methylhexane	15.01	43	61364	2.333	ppbV	99
33) TAME	14.81	73	76022	2.334	ppbV	99
34) 1-Heptene	15.93	70	14011M4	2.192	ppbV	
35) Isooctane	15.99	57	141265M4	2.356	ppbV	
36) Heptane	16.78	43	60253	2.321	ppbV	99
37) Methylcyclohexane	18.48	83	44880	2.309	ppbV	98
38) 2,5-Dimethylhexane	19.32	57	70571	2.307	ppbV	100
39) 2,4-Dimethyhexane / 2,...	19.50	57	177010	4.690	ppbV	99
40) 2,3,4-Trimethylpentane	20.84	43	99717	2.336	ppbV	99
41) 2,3,3-Trimethylpentane	21.23	43	91481	2.341	ppbV	100
42) 2,3-Dimethylhexane	21.71	43	88847	2.348	ppbV	100
43) 3-Ethylhexane	22.93	43	109898	2.315	ppbV	100
44) 2-Methylheptane	22.17	57	68466	2.385	ppbV	100
45) 3-Methylheptane	22.82	43	72138	2.340	ppbV	99
47) Toluene	21.26	91	98948	2.352	ppbV	100
48) 2-Methylthiophene	21.46	97	62284	2.303	ppbV	100
49) 3-Methylthiophene	22.06	97	60917	2.296	ppbV	100
50) 1-Octene	24.08	55	31766	2.291	ppbV	99
51) 1-ethyl-1-methylcyclop...	24.56	83	53878	2.302	ppbV	100
52) Octane	25.08	43	84282	2.315	ppbV	100
53) 1,2-Dibromoethane	23.44	107	52515	2.339	ppbV	100
55) Ethylbenzene	29.49	91	95468	2.351	ppbV	100
56) 2-Ethylthiophene	29.63	97	61980	2.342	ppbV	100
57) p/m-Xylene	30.23	91	72546M1	2.340	ppbV	
58) 1-Nonene	32.89	56	30158	2.321	ppbV	100
59) Nonane	33.90	43	72445	2.348	ppbV	100
60) Styrene	31.82	104	50436	2.279	ppbV	99
61) o-Xylene	32.26	91	76007	2.359	ppbV	100
63) Isopropylbenzene	35.12	105	97876	2.336	ppbV	100
64) n-Propylbenzene	37.69	120	25332	2.305	ppbV	99
65) 1-Methyl-3-ethylbenzene	38.32	105	92660	2.299	ppbV	100
66) 1-Methyl-4-ethylbenzene	38.50	105	101781	2.331	ppbV	99
67) 1,3,5-Trimethylbenzene	38.98	105	79842	2.284	ppbV	100
68) 1-Decene	41.53	41	41904	2.299	ppbV	99
69) 1-Methyl-2-ethylbenzene	39.86	105	93497	2.296	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149064.D
Acq On : 28 Oct 2016 7:46 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO2.5
Misc : WG947234
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 29 12:23:50 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

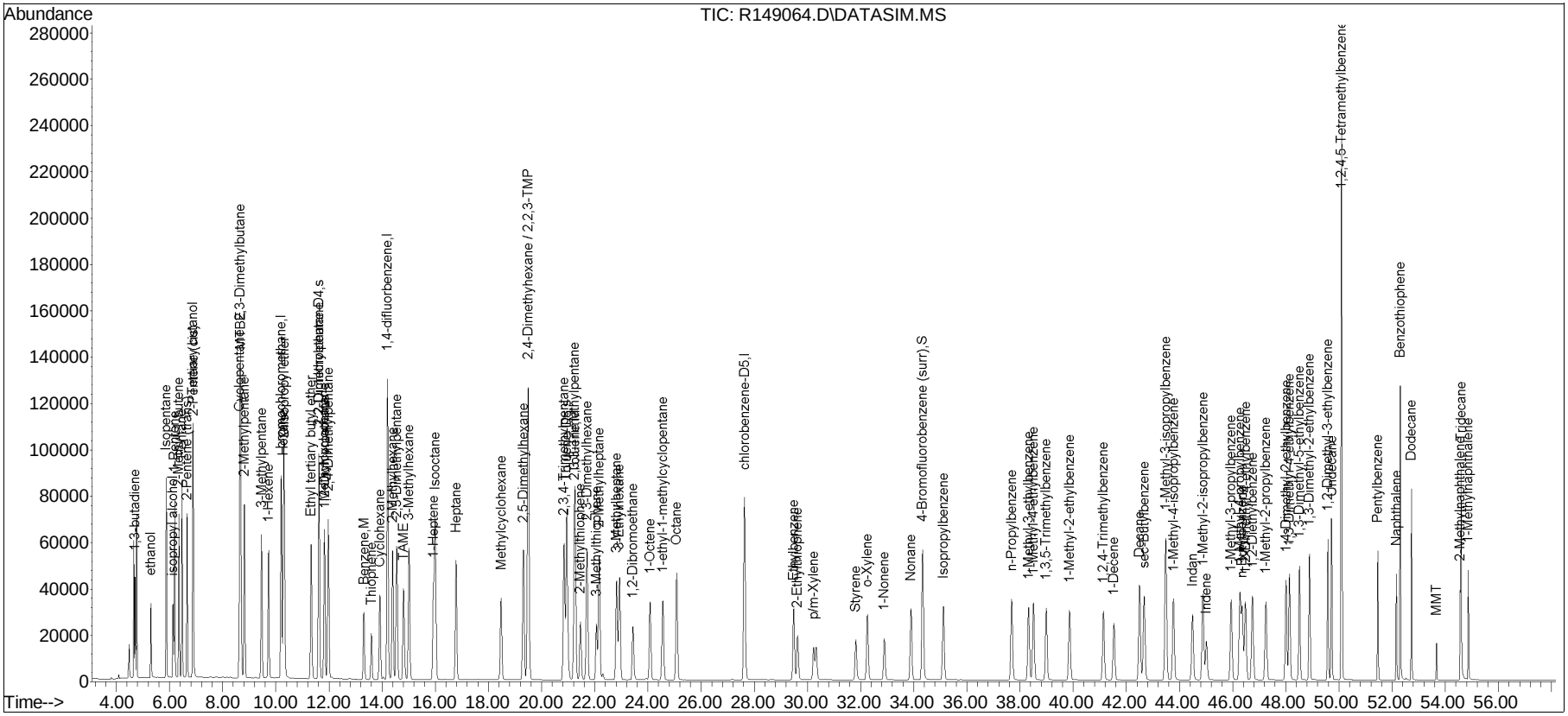
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) Decane	42.49	43	74582	2.277	ppbV	100
71) 1,2,4-Trimethylbenzene	41.13	105	77790	2.254	ppbV	99
72) sec-Butylbenzene	42.67	105	123872	2.283	ppbV	100
73) 1-Methyl-3-isopropylbe...	43.48	119	101071	2.204	ppbV	100
74) 1-Methyl-4-isopropylbe...	43.78	119	84907	2.235	ppbV	100
75) 1-Methyl-2-isopropylbe...	44.88	119	89955	2.209	ppbV	100
76) Indan	44.49	117	60706	2.233	ppbV	100
77) Indene	45.02	115	38986	2.190	ppbV	100
78) 1-Methyl-3-propylbenzene	45.94	105	112322	2.185	ppbV	100
79) 1-Methyl-4-propylbenzene	46.28	105	139305	2.170	ppbV	99
80) n-Butylbenzene	46.36	91	106298M4	2.150	ppbV	
81) 1,2-Dimethyl-4-ethylbe...	46.48	119	84283	2.135	ppbV	99
82) 1,2-Diethylbenzene	46.75	119	45335	2.187	ppbV	99
83) 1-Methyl-2-propylbenzene	47.25	105	118394	2.134	ppbV	99
84) 1,4-Dimethyl-2-ethylbe...	48.01	119	86027	2.107	ppbV	99
85) Undecane	49.73	57	70878	2.084	ppbV	97
86) 1,3-Dimethyl-4-ethylbe...	48.14	119	101697	2.122	ppbV	99
87) 1,3-Dimethyl-5-ethylbe...	48.51	119	93695	2.093	ppbV	99
88) 1,3-Dimethyl-2-ethylbe...	48.89	119	101608	2.121	ppbV	100
89) 1,2-Dimethyl-3-ethylbe...	49.58	119	90809	2.089	ppbV	99
90) 1,2,4,5-Tetramethylben...	50.10	119	306890	2.033	ppbV	99
91) Pentylbenzene	51.46	91	96715	2.006	ppbV	100
92) Dodecane	52.73	43	68944	2.018	ppbV	98
93) Naphthalene	52.16	128	89565	1.941	ppbV	99
94) Benzothiophene	52.30	134	224855	1.944	ppbV	100
95) MMT	53.68	134	19505	1.920	ppbV	99
96) Tridecane	54.60	57	79040	2.023	ppbV	97
97) 2-Methylnaphthalene	54.57	142	53473	1.882	ppbV	91
98) 1-Methylnaphthalene	54.87	142	59990	1.955	ppbV	98

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

Sub List : Default - All compounds listed1028PIANO_ICAL\R149065.D

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149064.D
Acq On : 28 Oct 2016 7:46 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO2.5
Misc : WG947234
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 29 12:23:50 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149065.D
Acq On : 28 Oct 2016 8:53 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO5.0
Misc : WG947234
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 29 12:00:53 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Fri Jun 24 09:17:47 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	153923	10.000	ppbV	0.00
Standard Area = 153923			Recovery = 100.00%			
27) 1,4-difluorbenzene	14.20	114	333192	10.000	ppbV	-0.01
Standard Area = 333192			Recovery = 100.00%			
54) chlorobenzene-D5	27.63	117	250343	10.000	ppbV	-0.01
Standard Area = 250343			Recovery = 100.00%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.62	65	95597	9.129	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 91.29%			
46) Toluene-D8	20.95	98	256305	10.502	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 105.02%			
62) 4-Bromofluorobenzene (...	34.33	95	133670	9.685	ppbV	-0.01
Spiked Amount 10.000	Range 70 - 130		Recovery = 96.85%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.71	54	44812M4	5.256	ppbV	
3) ethanol	5.29	31	67907	7.695	ppbV #	86
4) Isopentane	5.88	41	73851	5.517	ppbV	97
5) 1-Pentene	6.19	42	89881	5.911	ppbV	93
6) 2-Methyl-1-butene	6.36	55	108302	5.541	ppbV	87
7) Pentane	6.47	43	119095	5.603	ppbV	98
8) isopropyl alcohol	6.12	45	91763	4.216	ppbV	95
9) 2-Pentene (trans)	6.67	55	105650	5.507	ppbV	91
10) 2-Pentene (cis)	6.89	55	96515	5.480	ppbV	92
11) Tertiary butanol	6.87	59	136037	4.947	ppbV	98
12) Cyclopentane	8.64	70	30894	6.796	ppbV #	76
13) 2,3-Dimethylbutane	8.66	71	29122	6.638	ppbV #	91
14) 2-Methylpentane	8.82	43	150112	4.752	ppbV	94
15) MTBE	8.67	73	162209	6.669	ppbV	94
16) 3-Methylpentane	9.46	57	102987	5.488	ppbV	96
17) 1-Hexene	9.73	56	59068	5.202	ppbV	91
18) Hexane	10.29	57	87566	5.310	ppbV	85
19) Diisopropyl ether	10.31	45	211904	5.685	ppbV	91
20) Ethyl tertiary butyl e...	11.32	59	175650	4.312	ppbV	96
21) 2,2-Dimethylpentane	11.62	57	142503	4.193	ppbV	99
23) Methylcyclopentane	11.83	56	111413	4.051	ppbV	90
24) 2,4-Dimethylpentane	11.97	43	145740	4.348	ppbV	97
25) 1,2-Dichloroethane	11.84	62	87393	5.279	ppbV	99

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149065.D
Acq On : 28 Oct 2016 8:53 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO5.0
Misc : WG947234
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 29 12:00:53 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Fri Jun 24 09:17:47 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
26) Cyclohexane	13.91	56	87660	4.047	ppbV		84
28) 2-Methylhexane	14.39	43	158214	5.195	ppbV		98
29) Benzene	13.32	78	162278	5.902	ppbV		90
30) 2,3-Dimethylpentane	14.55	56	108931	5.095	ppbV		96
31) Thiophene	13.60	84	67788	4.463	ppbV		89
32) 3-Methylhexane	15.01	43	123644	5.035	ppbV		92
33) TAME	14.79	73	153155	6.188	ppbV		96
34) 1-Heptene	15.93	70	30051	6.161	ppbV	#	79
35) Isooctane	15.99	57	281949M6	4.822	ppbV		
36) Heptane	16.78	43	122075	4.998	ppbV		95
37) Methylcyclohexane	18.48	83	91368	6.151	ppbV		81
38) 2,5-Dimethylhexane	19.32	57	143842	4.955	ppbV		96
39) 2,4-Dimethyhexane / 2,...	19.50	57	354910	10.605	ppbV		98
40) 2,3,4-Trimethylpentane	20.84	43	200711	5.172	ppbV		85
41) 2,3,3-Trimethylpentane	21.23	43	183696	5.297	ppbV		87
42) 2,3-Dimethylhexane	21.71	43	177895	5.250	ppbV		87
43) 3-Ethylhexane	22.93	43	223170	5.349	ppbV		96
44) 2-Methylheptane	22.17	57	134952M4	5.019	ppbV		
45) 3-Methylheptane	22.82	43	144929	5.120	ppbV		98
47) Toluene	21.26	91	197813	5.941	ppbV		99
48) 2-Methylthiophene	21.46	97	127127	4.520	ppbV		100
49) 3-Methylthiophene	22.06	97	124735	4.516	ppbV		100
50) 1-Octene	24.08	55	65187	5.071	ppbV		84
51) 1-ethyl-1-methylcyclop...	24.56	83	110018	4.813	ppbV		84
52) Octane	25.08	43	171189	5.087	ppbV		97
53) 1,2-Dibromoethane	23.43	107	105540	6.376	ppbV		100
55) Ethylbenzene	29.49	91	194996	5.958	ppbV		99
56) 2-Ethylthiophene	29.63	97	127068	4.718	ppbV		97
57) p/m-Xylene	30.23	91	148868M1	5.631	ppbV		
58) 1-Nonene	32.89	56	62393	4.951	ppbV		92
59) Nonane	33.89	43	148127	5.300	ppbV		96
60) Styrene	31.82	104	106276	6.069	ppbV		95
61) o-Xylene	32.26	91	154680	6.007	ppbV		99
63) Isopropylbenzene	35.11	105	201202	5.911	ppbV		100
64) n-Propylbenzene	37.69	120	52757	5.849	ppbV	#	89
65) 1-Methyl-3-ethylbenzene	38.32	105	193524	5.845	ppbV		98
66) 1-Methyl-4-ethylbenzene	38.50	105	209649	5.997	ppbV		99
67) 1,3,5-Trimethylbenzene	38.98	105	167825	5.926	ppbV		99
68) 1-Decene	41.53	41	87511	6.016	ppbV		87
69) 1-Methyl-2-ethylbenzene	39.86	105	195519	5.949	ppbV		100

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149065.D
Acq On : 28 Oct 2016 8:53 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO5.0
Misc : WG947234
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 29 12:00:53 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Fri Jun 24 09:17:47 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

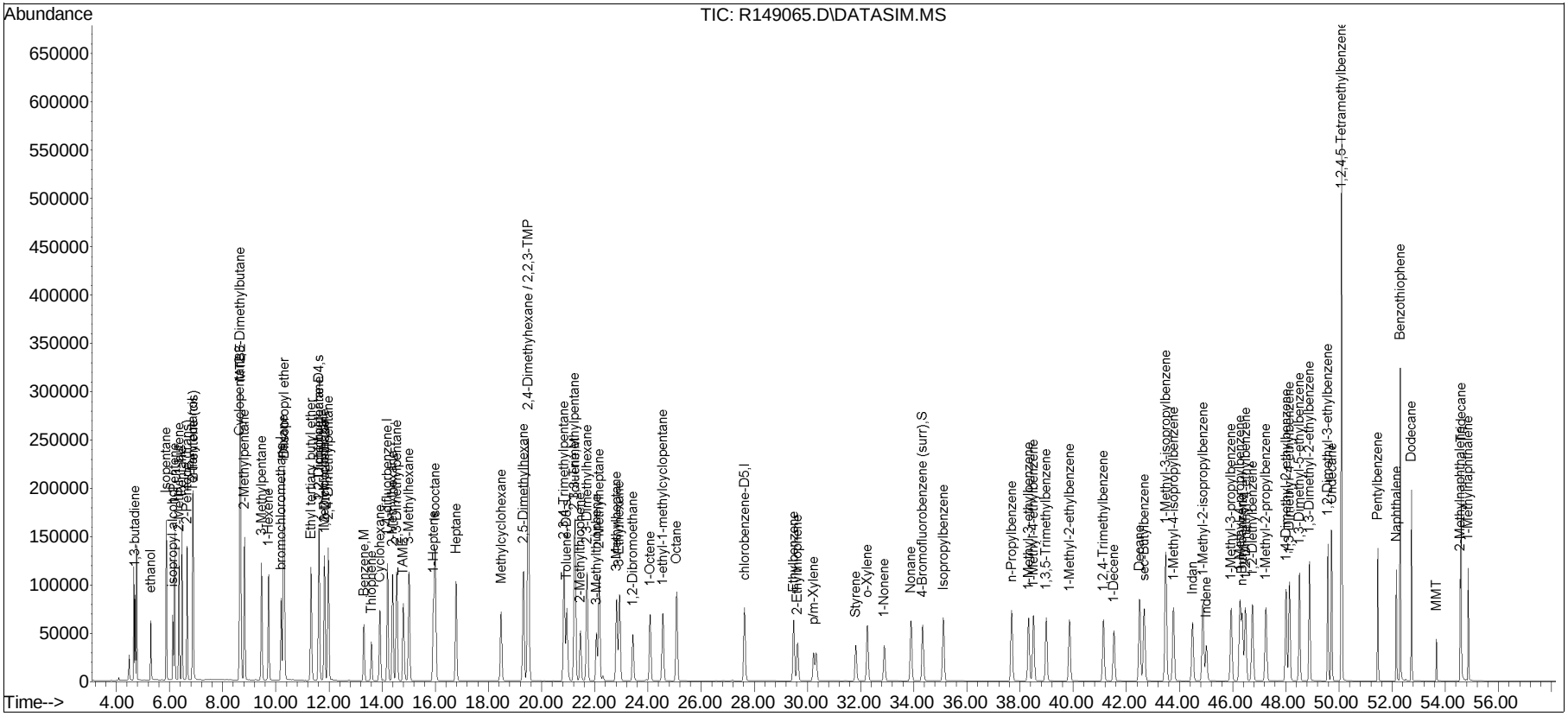
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) Decane	42.49	43	157254	5.371	ppbV	94
71) 1,2,4-Trimethylbenzene	41.13	105	165674	5.843	ppbV	100
72) sec-Butylbenzene	42.67	105	260466	6.136	ppbV	100
73) 1-Methyl-3-isopropylbe...	43.48	119	220197	6.082	ppbV	99
74) 1-Methyl-4-isopropylbe...	43.78	119	182375	6.073	ppbV	99
75) 1-Methyl-2-isopropylbe...	44.88	119	195473	6.231	ppbV	98
76) Indan	44.49	117	130525	4.528	ppbV	100
77) Indene	45.00	115	85469	4.108	ppbV	95
78) 1-Methyl-3-propylbenzene	45.94	105	246787	6.209	ppbV	100
79) 1-Methyl-4-propylbenzene	46.28	105	308233	6.424	ppbV	100
80) n-Butylbenzene	46.36	91	237380M4	6.706	ppbV	
81) 1,2-Dimethyl-4-ethylbe...	46.48	119	189499	6.443	ppbV	99
82) 1,2-Diethylbenzene	46.75	119	99540	6.443	ppbV	100
83) 1-Methyl-2-propylbenzene	47.25	105	266398	6.467	ppbV	99
84) 1,4-Dimethyl-2-ethylbe...	48.01	119	196054	6.354	ppbV	98
85) Undecane	49.73	57	163297	5.468	ppbV	99
86) 1,3-Dimethyl-4-ethylbe...	48.14	119	230118	6.517	ppbV	99
87) 1,3-Dimethyl-5-ethylbe...	48.51	119	214960	6.502	ppbV	98
88) 1,3-Dimethyl-2-ethylbe...	48.89	119	230051	6.440	ppbV	97
89) 1,2-Dimethyl-3-ethylbe...	49.58	119	208688	6.410	ppbV	97
90) 1,2,4,5-Tetramethylben...	50.10	119	724645	9.527	ppbV	99
91) Pentylbenzene	51.46	91	231481	6.946	ppbV	98
92) Dodecane	52.73	43	164038	5.771	ppbV	97
93) Naphthalene	52.16	128	221508	6.825	ppbV	99
94) Benzothiophene	52.30	134	555382	8.555	ppbV	100
95) MMT	53.67	134	48782	4.476	ppbV	98
96) Tridecane	54.60	57	187599	8.755	ppbV	92
97) 2-Methylnaphthalene	54.56	142	136429	6.898	ppbV	96
98) 1-Methylnaphthalene	54.87	142	147301	6.239	ppbV	99

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

Sub List : Default - All compounds listed1028PIANO_ICAL\R149065.D

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149065.D
Acq On : 28 Oct 2016 8:53 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO5.0
Misc : WG947234
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Oct 29 12:00:53 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Fri Jun 24 09:17:47 2016
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149066.D
Acq On : 28 Oct 2016 9:59 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO10
Misc : WG947234
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 29 12:26:29 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	162890	10.000	ppbV	0.00
Standard Area = 153923			Recovery = 105.83%			
27) 1,4-difluorbenzene	14.20	114	349771	10.000	ppbV	0.00
Standard Area = 333192			Recovery = 104.98%			
54) chlorobenzene-D5	27.63	117	252043	10.000	ppbV	0.00
Standard Area = 250343			Recovery = 100.68%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.62	65	95194	9.410	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 94.10%			
46) Toluene-D8	20.95	98	255502	9.496	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 94.96%			
62) 4-Bromofluorobenzene (...	34.33	95	135114	10.040	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.40%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.71	54	88891M4	9.372	ppbV	
3) ethanol	5.29	31	122913	8.552	ppbV	100
4) Isopentane	5.88	41	145116	9.284	ppbV	100
5) 1-Pentene	6.19	42	178750	9.396	ppbV	99
6) 2-Methyl-1-butene	6.36	55	216144	9.429	ppbV	100
7) Pentane	6.47	43	237373	9.417	ppbV	100
8) isopropyl alcohol	6.12	45	187823	9.671	ppbV	99
9) 2-Pentene (trans)	6.67	55	212702	9.512	ppbV	100
10) 2-Pentene (cis)	6.89	55	194270	9.510	ppbV	100
11) Tertiary butanol	6.86	59	267406	9.287	ppbV	91
12) Cyclopentane	8.64	70	61545	9.412	ppbV	99
13) 2,3-Dimethylbutane	8.66	71	57978	9.406	ppbV	98
14) 2-Methylpentane	8.82	43	297922	9.377	ppbV	99
15) MTBE	8.66	73	323808	9.432	ppbV	97
16) 3-Methylpentane	9.46	57	206948	9.494	ppbV	99
17) 1-Hexene	9.73	56	118794	9.502	ppbV	99
18) Hexane	10.29	57	182077	9.824	ppbV	87
19) Diisopropyl ether	10.30	45	445467	9.932	ppbV	96
20) Ethyl tertiary butyl e...	11.32	59	355336	9.558	ppbV	99
21) 2,2-Dimethylpentane	11.63	57	290396	9.628	ppbV	100
23) Methylcyclopentane	11.83	56	227995	9.669	ppbV	99
24) 2,4-Dimethylpentane	11.98	43	295085	9.566	ppbV	99
25) 1,2-Dichloroethane	11.83	62	174414	9.429	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149066.D
Acq On : 28 Oct 2016 9:59 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO10
Misc : WG947234
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 29 12:26:29 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
26) Cyclohexane	13.91	56	179146	9.656	ppbV	99
28) 2-Methylhexane	14.39	43	320888	9.660	ppbV	99
29) Benzene	13.32	78	330893	9.712	ppbV	100
30) 2,3-Dimethylpentane	14.55	56	222289	9.720	ppbV	99
31) Thiophene	13.60	84	146269	10.277	ppbV	100
32) 3-Methylhexane	15.02	43	251449	9.686	ppbV	96
33) TAME	14.78	73	312708	9.725	ppbV	99
34) 1-Heptene	15.93	70	60081M4	9.523	ppbV	
35) Isooctane	15.99	57	579236M6	9.785	ppbV	
36) Heptane	16.78	43	250042	9.756	ppbV	100
37) Methylcyclohexane	18.48	83	189953	9.902	ppbV	99
38) 2,5-Dimethylhexane	19.32	57	296254	9.810	ppbV	100
39) 2,4-Dimethyhexane / 2,...	19.50	57	723910	19.430	ppbV	99
40) 2,3,4-Trimethylpentane	20.85	43	407435	9.669	ppbV	99
41) 2,3,3-Trimethylpentane	21.24	43	372455	9.657	ppbV	99
42) 2,3-Dimethylhexane	21.71	43	364488	9.759	ppbV	100
43) 3-Ethylhexane	22.94	43	441192	9.416	ppbV	100
44) 2-Methylheptane	22.17	57	277228M4	9.784	ppbV	
45) 3-Methylheptane	22.83	43	312861	10.282	ppbV	99
47) Toluene	21.26	91	403046	9.705	ppbV	100
48) 2-Methylthiophene	21.46	97	274233	10.275	ppbV	99
49) 3-Methylthiophene	22.06	97	271030	10.349	ppbV	100
50) 1-Octene	24.09	55	136504	9.974	ppbV	97
51) 1-ethyl-1-methylcyclop...	24.56	83	235115	10.179	ppbV	99
52) Octane	25.08	43	353226	9.828	ppbV	100
53) 1,2-Dibromoethane	23.43	107	217861	9.832	ppbV	100
55) Ethylbenzene	29.48	91	411990	10.493	ppbV	99
56) 2-Ethylthiophene	29.63	97	275268	10.758	ppbV	100
57) p/m-Xylene	30.32	91	316540M1	10.560	ppbV	
58) 1-Nonene	32.89	56	132218	10.524	ppbV	98
59) Nonane	33.90	43	308863	10.355	ppbV	98
60) Styrene	31.82	104	230548	10.774	ppbV	100
61) o-Xylene	32.26	91	329368	10.575	ppbV	100
63) Isopropylbenzene	35.11	105	434764	10.731	ppbV	99
64) n-Propylbenzene	37.69	120	115820	10.903	ppbV	98
65) 1-Methyl-3-ethylbenzene	38.32	105	427424	10.969	ppbV	99
66) 1-Methyl-4-ethylbenzene	38.50	105	463936	10.990	ppbV	99
67) 1,3,5-Trimethylbenzene	38.98	105	370141	10.953	ppbV	100
68) 1-Decene	41.53	41	189596	10.760	ppbV	99
69) 1-Methyl-2-ethylbenzene	39.86	105	430546	10.936	ppbV	100

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149066.D
Acq On : 28 Oct 2016 9:59 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO10
Misc : WG947234
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 29 12:26:29 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

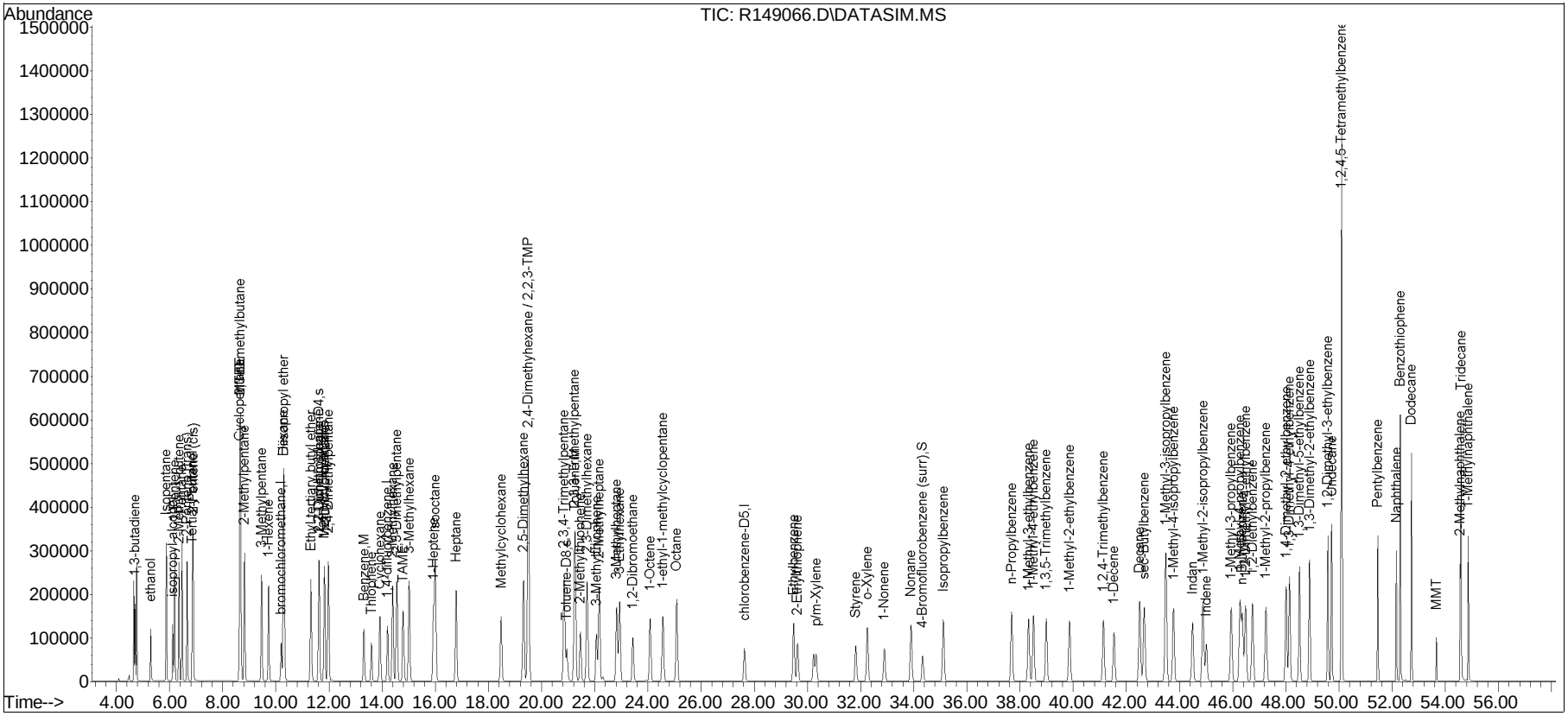
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) Decane	42.50	43	344786	10.889	ppbV	97
71) 1,2,4-Trimethylbenzene	41.13	105	370105	11.094	ppbV	100
72) sec-Butylbenzene	42.67	105	580597	11.070	ppbV	99
73) 1-Methyl-3-isopropylbe...	43.49	119	493092	11.121	ppbV	98
74) 1-Methyl-4-isopropylbe...	43.78	119	413555	11.262	ppbV	100
75) 1-Methyl-2-isopropylbe...	44.88	119	441343	11.213	ppbV	100
76) Indan	44.49	117	290378	11.048	ppbV	100
77) Indene	45.00	115	197836	11.495	ppbV	99
78) 1-Methyl-3-propylbenzene	45.94	105	557499	11.219	ppbV	100
79) 1-Methyl-4-propylbenzene	46.28	105	691225	11.137	ppbV	99
80) n-Butylbenzene	46.36	91	528959M4	11.066	ppbV	
81) 1,2-Dimethyl-4-ethylbe...	46.48	119	434430	11.385	ppbV	100
82) 1,2-Diethylbenzene	46.75	119	224649	11.208	ppbV	99
83) 1-Methyl-2-propylbenzene	47.25	105	594511	11.083	ppbV	99
84) 1,4-Dimethyl-2-ethylbe...	48.01	119	461327	11.686	ppbV	99
85) Undecane	49.73	57	380138	11.561	ppbV	100
86) 1,3-Dimethyl-4-ethylbe...	48.14	119	519455	11.211	ppbV	99
87) 1,3-Dimethyl-5-ethylbe...	48.51	119	490954	11.343	ppbV	99
88) 1,3-Dimethyl-2-ethylbe...	48.90	119	534145	11.531	ppbV	97
89) 1,2-Dimethyl-3-ethylbe...	49.58	119	492749	11.726	ppbV	100
90) 1,2,4,5-Tetramethylben...	50.10	119	1605224	11.001	ppbV	99
91) Pentylbenzene	51.46	91	562420	12.066	ppbV	100
92) Dodecane	52.73	43	440937	13.349	ppbV	100
93) Naphthalene	52.16	128	561979	12.600	ppbV	100
94) Benzothiophene	52.30	134	1066336	9.535	ppbV	99
95) MMT	53.67	134	110407	11.240	ppbV	98
96) Tridecane	54.60	57	505684	13.387	ppbV	97
97) 2-Methylnaphthalene	54.56	142	338598	12.326	ppbV	99
98) 1-Methylnaphthalene	54.87	142	418492	14.110	ppbV	100

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

Sub List : Default - All compounds listed1028PIANO_ICAL\R149065.D

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149066.D
Acq On : 28 Oct 2016 9:59 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO10
Misc : WG947234
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 29 12:26:29 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149067.D
Acq On : 28 Oct 2016 11:06 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO25
Misc : WG947234
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 29 12:28:43 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	161212	10.000	ppbV	0.00
Standard Area = 153923			Recovery = 104.74%			
27) 1,4-difluorbenzene	14.20	114	361842	10.000	ppbV	0.00
Standard Area = 333192			Recovery = 108.60%			
54) chlorobenzene-D5	27.63	117	265215	10.000	ppbV	0.00
Standard Area = 250343			Recovery = 105.94%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.62	65	98957	9.883	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.83%			
46) Toluene-D8	20.95	98	260053	9.343	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 93.43%			
62) 4-Bromofluorobenzene (...	34.33	95	138926	9.810	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 98.10%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.71	54	211871M4	22.571	ppbV	
3) ethanol	5.29	31	273169	19.204	ppbV	99
4) Isopentane	5.88	41	345291	22.321	ppbV	99
5) 1-Pentene	6.19	42	420689	22.344	ppbV	99
6) 2-Methyl-1-butene	6.36	55	511208	22.534	ppbV	99
7) Pentane	6.47	43	554087	22.211	ppbV	99
8) isopropyl alcohol	6.11	45	497875	25.902	ppbV	99
9) 2-Pentene (trans)	6.67	55	507539	22.934	ppbV	99
10) 2-Pentene (cis)	6.89	55	460078	22.757	ppbV	100
11) Tertiary butanol	6.86	59	638533	22.408	ppbV	86
12) Cyclopentane	8.64	70	146586	22.651	ppbV	94
13) 2,3-Dimethylbutane	8.66	71	138224	22.659	ppbV	95
14) 2-Methylpentane	8.82	43	714927	22.736	ppbV	99
15) MTBE	8.66	73	773567	22.767	ppbV	96
16) 3-Methylpentane	9.46	57	493817	22.891	ppbV	99
17) 1-Hexene	9.73	56	282865	22.861	ppbV	99
18) Hexane	10.29	57	415848	22.671	ppbV	87
19) Diisopropyl ether	10.30	45	1002784	22.591	ppbV	94
20) Ethyl tertiary butyl e...	11.32	59	871103	23.675	ppbV	99
21) 2,2-Dimethylpentane	11.63	57	710068	23.788	ppbV	100
23) Methylcyclopentane	11.83	56	556697	23.854	ppbV	98
24) 2,4-Dimethylpentane	11.98	43	714934	23.419	ppbV	98
25) 1,2-Dichloroethane	11.84	62	418031	22.835	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149067.D
Acq On : 28 Oct 2016 11:06 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO25
Misc : WG947234
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 29 12:28:43 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
26) Cyclohexane	13.92	56	439726	23.947	ppbV	93
28) 2-Methylhexane	14.40	43	776862	22.607	ppbV	98
29) Benzene	13.32	78	796968	22.611	ppbV	99
30) 2,3-Dimethylpentane	14.56	56	539158	22.788	ppbV	97
31) Thiophene	13.60	84	402017	27.305	ppbV	98
32) 3-Methylhexane	15.02	43	612695	22.815	ppbV	97
33) TAME	14.78	73	767887	23.084	ppbV	97
34) 1-Heptene	15.94	70	147768M4	22.640	ppbV	
35) Isooctane	16.00	57	1367703M6	22.334	ppbV	
36) Heptane	16.79	43	613137	23.125	ppbV	97
37) Methylcyclohexane	18.48	83	467347	23.550	ppbV	98
38) 2,5-Dimethylhexane	19.32	57	732478	23.445	ppbV	99
39) 2,4-Dimethyhexane / 2,...	19.51	57	1776790	46.099	ppbV	98
40) 2,3,4-Trimethylpentane	20.85	43	994990	22.824	ppbV	98
41) 2,3,3-Trimethylpentane	21.24	43	909462	22.795	ppbV	99
42) 2,3-Dimethylhexane	21.72	43	889520	23.022	ppbV	99
43) 3-Ethylhexane	22.94	43	1105401	22.805	ppbV	100
44) 2-Methylheptane	22.17	57	683795M4	23.329	ppbV	
45) 3-Methylheptane	22.83	43	744630	23.655	ppbV	99
47) Toluene	21.27	91	992244	23.095	ppbV	100
48) 2-Methylthiophene	21.46	97	753666	27.295	ppbV	100
49) 3-Methylthiophene	22.06	97	742051	27.390	ppbV	100
50) 1-Octene	24.09	55	338396	23.901	ppbV	97
51) 1-ethyl-1-methylcyclop...	24.57	83	643286	26.921	ppbV	99
52) Octane	25.09	43	871807	23.447	ppbV	99
53) 1,2-Dibromoethane	23.44	107	537081	23.430	ppbV	99
55) Ethylbenzene	29.49	91	1023815	24.780	ppbV	100
56) 2-Ethylthiophene	29.64	97	732788	27.218	ppbV	100
57) p/m-Xylene	30.33	91	793973M1	25.172	ppbV	
58) 1-Nonene	32.90	56	331840	25.102	ppbV	97
59) Nonane	33.90	43	755147	24.060	ppbV	98
60) Styrene	31.82	104	584851	25.973	ppbV	98
61) o-Xylene	32.26	91	818096	24.962	ppbV	100
63) Isopropylbenzene	35.12	105	1072484	25.157	ppbV	100
64) n-Propylbenzene	37.69	120	291852	26.109	ppbV	97
65) 1-Methyl-3-ethylbenzene	38.32	105	1073029	26.169	ppbV	98
66) 1-Methyl-4-ethylbenzene	38.52	105	1156486	26.035	ppbV	98
67) 1,3,5-Trimethylbenzene	39.00	105	937126	26.354	ppbV	98
68) 1-Decene	41.54	41	459671	24.791	ppbV	96
69) 1-Methyl-2-ethylbenzene	39.86	105	1088789	26.282	ppbV	99

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149067.D
Acq On : 28 Oct 2016 11:06 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO25
Misc : WG947234
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 29 12:28:43 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

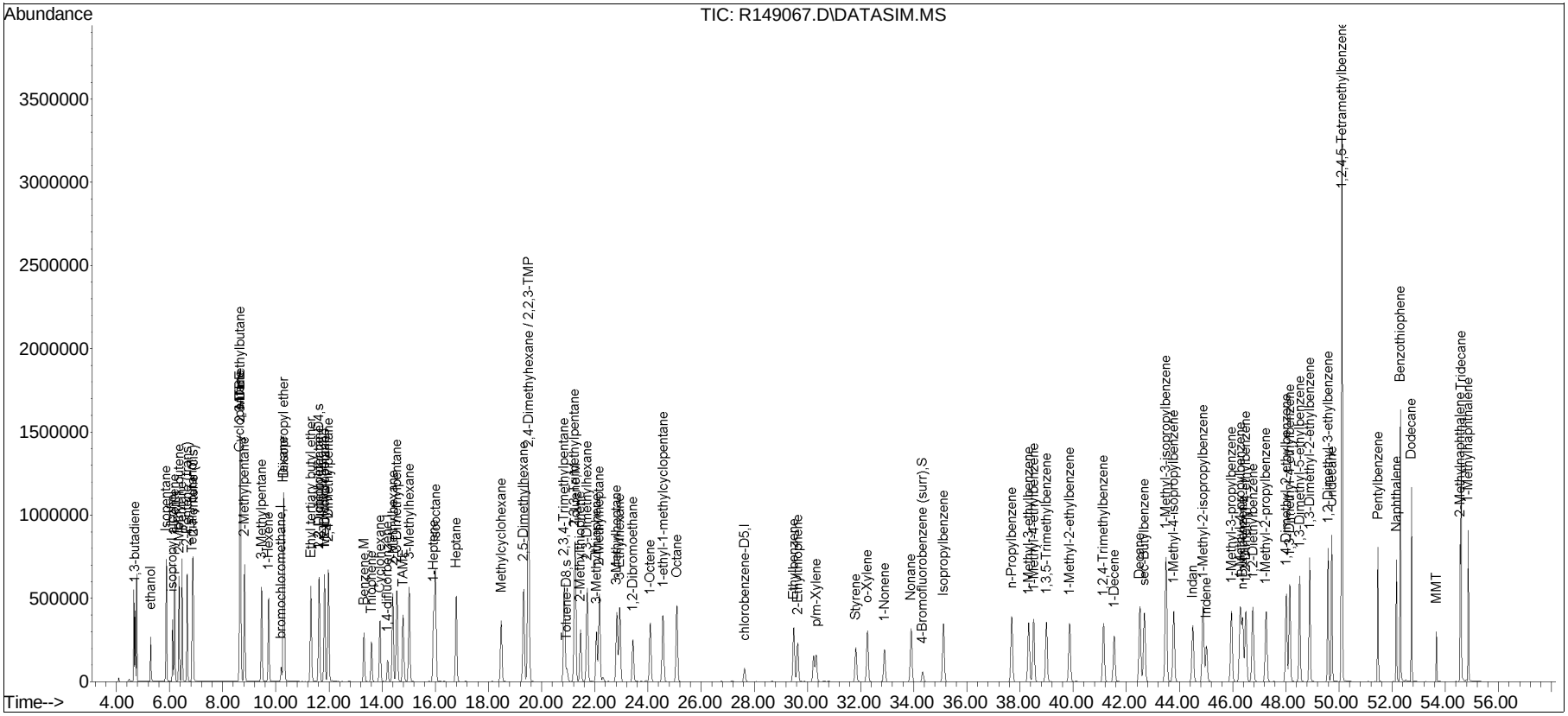
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) Decane	42.50	43	842210	25.277	ppbV	97
71) 1,2,4-Trimethylbenzene	41.13	105	924191	26.328	ppbV	99
72) sec-Butylbenzene	42.67	105	1434759	25.998	ppbV	98
73) 1-Methyl-3-isopropylbe...	43.49	119	1243524	26.653	ppbV	99
74) 1-Methyl-4-isopropylbe...	43.79	119	1030124	26.658	ppbV	99
75) 1-Methyl-2-isopropylbe...	44.88	119	1099498	26.547	ppbV	99
76) Indan	44.50	117	720838	26.065	ppbV	100
77) Indene	45.02	115	494304	27.296	ppbV	99
78) 1-Methyl-3-propylbenzene	45.95	105	1388337	26.551	ppbV	99
79) 1-Methyl-4-propylbenzene	46.29	105	1726042	26.429	ppbV	99
80) n-Butylbenzene	46.37	91	1270946M4	25.269	ppbV	
81) 1,2-Dimethyl-4-ethylbe...	46.49	119	1077969	26.848	ppbV	100
82) 1,2-Diethylbenzene	46.76	119	559416	26.524	ppbV	100
83) 1-Methyl-2-propylbenzene	47.25	105	1480434	26.228	ppbV	98
84) 1,4-Dimethyl-2-ethylbe...	48.02	119	1127136	27.134	ppbV	99
85) Undecane	49.73	57	915852	26.470	ppbV	99
86) 1,3-Dimethyl-4-ethylbe...	48.15	119	1308160	26.830	ppbV	99
87) 1,3-Dimethyl-5-ethylbe...	48.52	119	1244550	27.325	ppbV	98
88) 1,3-Dimethyl-2-ethylbe...	48.90	119	1332149	27.330	ppbV	98
89) 1,2-Dimethyl-3-ethylbe...	49.59	119	1231803	27.858	ppbV	96
90) 1,2,4,5-Tetramethylben...	50.11	119	4313313	28.093	ppbV	98
91) Pentylbenzene	51.47	91	1382183	28.181	ppbV	89
92) Dodecane	52.73	43	991922	28.539	ppbV	98
93) Naphthalene	52.16	128	1352886	28.826	ppbV	99
94) Benzothiophene	52.31	134	2958337	25.140	ppbV	97
95) MMT	53.67	134	338454	32.745	ppbV	93
96) Tridecane	54.60	57	1299156	32.684	ppbV	94
97) 2-Methylnaphthalene	54.56	142	1052356	36.405	ppbV	99
98) 1-Methylnaphthalene	54.87	142	1115949	35.756	ppbV	99

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

Sub List : Default - All compounds listed1028PIANO_ICAL\R149065.D

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149067.D
Acq On : 28 Oct 2016 11:06 pm
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO25
Misc : WG947234
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 29 12:28:43 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149068.D
Acq On : 29 Oct 2016 12:12 am
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO50
Misc : WG947234
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 29 12:30:54 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	172236	10.000	ppbV	0.00
Standard Area = 153923			Recovery = 111.90%			
27) 1,4-difluorbenzene	14.20	114	393090	10.000	ppbV	0.00
Standard Area = 333192			Recovery = 117.98%			
54) chlorobenzene-D5	27.63	117	288352	10.000	ppbV	0.00
Standard Area = 250343			Recovery = 115.18%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.62	65	109033	10.193	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 101.93%			
46) Toluene-D8	20.96	98	283309	9.369	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 93.69%			
62) 4-Bromofluorobenzene (...	34.34	95	154487	10.034	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 100.34%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.71	54	430879M4	42.965	ppbV	
3) ethanol	5.29	31	539932	35.528	ppbV	98
4) Isopentane	5.88	41	701313	42.433	ppbV	99
5) 1-Pentene	6.19	42	862779	42.892	ppbV	100
6) 2-Methyl-1-butene	6.36	55	1045058	43.117	ppbV	100
7) Pentane	6.47	43	1141286	42.820	ppbV	100
8) isopropyl alcohol	6.11	45	1015331	49.441	ppbV	98
9) 2-Pentene (trans)	6.67	55	1030286	43.575	ppbV	100
10) 2-Pentene (cis)	6.89	55	934576	43.268	ppbV	99
11) Tertiary butanol	6.86	59	1300993	42.733	ppbV	84
12) Cyclopentane	8.64	70	324920	46.995	ppbV #	92
13) 2,3-Dimethylbutane	8.67	71	304586	46.735	ppbV #	83
14) 2-Methylpentane	8.82	43	1505219	44.806	ppbV	99
15) MTBE	8.66	73	1669722	45.996	ppbV	96
16) 3-Methylpentane	9.46	57	1049039	45.515	ppbV	98
17) 1-Hexene	9.73	56	616764	46.657	ppbV	98
18) Hexane	10.29	57	935449	47.735	ppbV #	65
19) Diisopropyl ether	10.30	45	2251245	47.472	ppbV	86
20) Ethyl tertiary butyl e...	11.31	59	1859911	47.314	ppbV	99
21) 2,2-Dimethylpentane	11.63	57	1502915	47.126	ppbV	99
23) Methylcyclopentane	11.84	56	1186774	47.597	ppbV	96
24) 2,4-Dimethylpentane	11.99	43	1494074	45.808	ppbV	96
25) 1,2-Dichloroethane	11.84	62	871202	44.544	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149068.D
Acq On : 29 Oct 2016 12:12 am
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO50
Misc : WG947234
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 29 12:30:54 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
26) Cyclohexane	13.92	56	926611	47.233	ppbV		96
28) 2-Methylhexane	14.40	43	1627837	43.605	ppbV		99
29) Benzene	13.32	78	1691805	44.184	ppbV		99
30) 2,3-Dimethylpentane	14.56	56	1136669	44.224	ppbV		99
31) Thiophene	13.60	84	858221	53.656	ppbV		99
32) 3-Methylhexane	15.02	43	1285189	44.052	ppbV		99
33) TAME	14.77	73	1659449	45.920	ppbV		96
34) 1-Heptene	15.94	70	325285	45.875	ppbV		94
35) Isooctane	16.02	57	3052224M4	45.879	ppbV		
36) Heptane	16.79	43	1280571	44.458	ppbV		98
37) Methylcyclohexane	18.49	83	994375	46.124	ppbV		96
38) 2,5-Dimethylhexane	19.33	57	1542666	45.453	ppbV		99
39) 2,4-Dimethyhexane / 2,...	19.51	57	3754389	89.665	ppbV		96
40) 2,3,4-Trimethylpentane	20.86	43	2073809	43.790	ppbV		97
41) 2,3,3-Trimethylpentane	21.25	43	1897154	43.770	ppbV		97
42) 2,3-Dimethylhexane	21.73	43	1850456	44.085	ppbV		97
43) 3-Ethylhexane	22.95	43	2279313	43.285	ppbV		99
44) 2-Methylheptane	22.18	57	1434761M4	45.058	ppbV		
45) 3-Methylheptane	22.84	43	1552022	45.385	ppbV		98
47) Toluene	21.27	91	2120225	45.425	ppbV		100
48) 2-Methylthiophene	21.47	97	1613915	53.804	ppbV		99
49) 3-Methylthiophene	22.07	97	1589598	54.010	ppbV		100
50) 1-Octene	24.10	55	714123	46.428	ppbV		94
51) 1-ethyl-1-methylcyclop...	24.58	83	1376298	53.018	ppbV		97
52) Octane	25.09	43	1814072	44.911	ppbV		99
53) 1,2-Dibromoethane	23.44	107	1161806	46.654	ppbV		100
55) Ethylbenzene	29.49	91	2213432	49.275	ppbV		99
56) 2-Ethylthiophene	29.64	97	1592365	54.399	ppbV		99
57) p/m-Xylene	30.33	91	1723576M1	50.259	ppbV		
58) 1-Nonene	32.91	56	700474	48.735	ppbV		95
59) Nonane	33.92	43	1584944	46.447	ppbV		96
60) Styrene	31.83	104	1282847	52.399	ppbV		98
61) o-Xylene	32.26	91	1760117	49.396	ppbV		99
63) Isopropylbenzene	35.13	105	2339031	50.465	ppbV		99
64) n-Propylbenzene	37.70	120	644295	53.014	ppbV	#	90
65) 1-Methyl-3-ethylbenzene	38.33	105	2327810	52.215	ppbV		99
66) 1-Methyl-4-ethylbenzene	38.52	105	2509528	51.962	ppbV		99
67) 1,3,5-Trimethylbenzene	39.00	105	2024891	52.375	ppbV		99
68) 1-Decene	41.56	41	954238	47.334	ppbV		93
69) 1-Methyl-2-ethylbenzene	39.87	105	2343529	52.031	ppbV		99

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149068.D
Acq On : 29 Oct 2016 12:12 am
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO50
Misc : WG947234
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 29 12:30:54 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : Default - All compounds listed

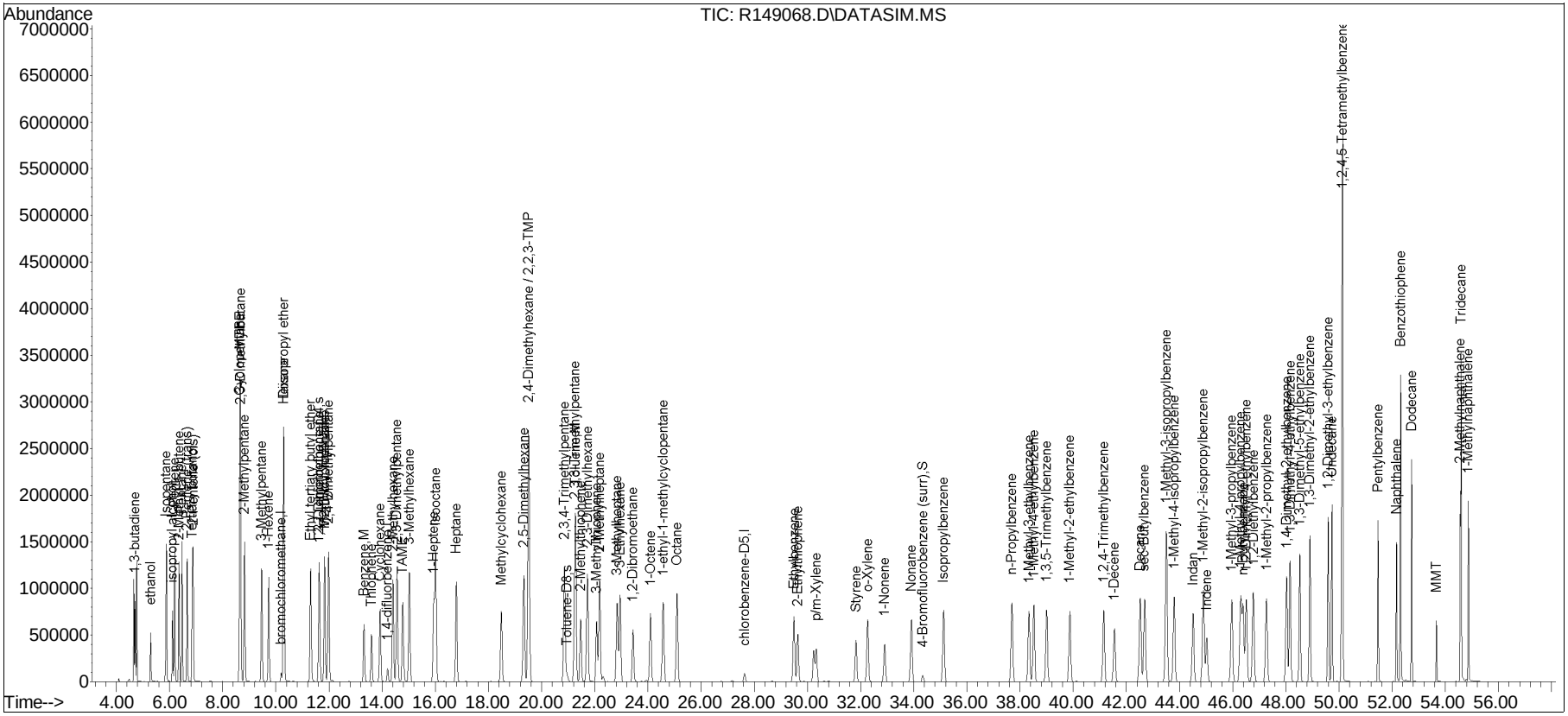
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
70) Decane	42.52	43	1721042	47.509	ppbV	95
71) 1,2,4-Trimethylbenzene	41.15	105	2025874	53.081	ppbV	100
72) sec-Butylbenzene	42.68	105	3095895	51.596	ppbV	99
73) 1-Methyl-3-isopropylbe...	43.50	119	2716844	53.559	ppbV	98
74) 1-Methyl-4-isopropylbe...	43.80	119	2248561	53.521	ppbV	99
75) 1-Methyl-2-isopropylbe...	44.90	119	2391987	53.120	ppbV	100
76) Indan	44.51	117	1565957	52.080	ppbV	99
77) Indene	45.03	115	1075608	54.630	ppbV	98
78) 1-Methyl-3-propylbenzene	45.97	105	2984272	52.493	ppbV	98
79) 1-Methyl-4-propylbenzene	46.30	105	3694580	52.032	ppbV	99
80) n-Butylbenzene	46.39	91	2745092M4	50.199	ppbV	
81) 1,2-Dimethyl-4-ethylbe...	46.52	119	2322151	53.194	ppbV	99
82) 1,2-Diethylbenzene	46.78	119	1218155	53.124	ppbV	96
83) 1-Methyl-2-propylbenzene	47.28	105	3149276	51.317	ppbV	98
84) 1,4-Dimethyl-2-ethylbe...	48.03	119	2482894	54.975	ppbV	98
85) Undecane	49.74	57	1944428	51.689	ppbV	97
86) 1,3-Dimethyl-4-ethylbe...	48.16	119	2840787	53.588	ppbV	99
87) 1,3-Dimethyl-5-ethylbe...	48.52	119	2690809	54.339	ppbV	100
88) 1,3-Dimethyl-2-ethylbe...	48.91	119	2916495	55.033	ppbV	96
89) 1,2-Dimethyl-3-ethylbe...	49.59	119	2664006	55.414	ppbV	99
90) 1,2,4,5-Tetramethylben...	50.13	119	8834039	52.920	ppbV	98
91) Pentylbenzene	51.47	91	2937968	55.095	ppbV	93
92) Dodecane	52.74	43	2044334	54.099	ppbV	84
93) Naphthalene	52.16	128	2979357	58.387	ppbV	98
94) Benzothiophene	52.32	134	6371432	49.800	ppbV	96
95) MMT	53.67	134	761450	67.759	ppbV	89
96) Tridecane	54.60	57	2943003	68.099	ppbV	94
97) 2-Methylnaphthalene	54.57	142	2472149	78.659	ppbV	94
98) 1-Methylnaphthalene	54.87	142	2587797	76.262	ppbV	93

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

Sub List : Default - All compounds listed1028PIANO_ICAL\R149065.D

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149068.D
Acq On : 29 Oct 2016 12:12 am
Operator : AIRPIANO1:MR
Sample : INF-TO15SIM-PIANO50
Misc : WG947234
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Oct 29 12:30:54 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 12:01:35 2016
Response via : Initial Calibration



Initial Calibration Verification

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149071.D
Acq On : 29 Oct 2016 10:01 am
Operator : AIRPIANO1:MR
Sample : CNF-TO15SIM-PIANO5.0
Misc : WG947234
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 29 13:37:10 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 150%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	I	bromochloromethane	10.000	10.000	0.0	117	0.00
2		1,3-butadiene	5.000	5.076	-1.5	108	0.00
3		ethanol	25.000	21.545	13.8	443	0.00
7		Pentane	5.000	4.267	14.7	107	0.00
8		isopropyl alcohol	12.500	14.446	-15.6	341	-0.01
11		Tertiary butanol	5.000	4.219	15.6	105	0.00
15		MTBE	5.000	5.115	-2.3	109	0.00
18		Hexane	5.000	5.390	-7.8	118	0.00
19		Diisopropyl ether	5.000	5.968	-19.4	130	0.00
20		Ethyl tertiary butyl ether	5.000	5.513	-10.3	117	0.00
22	s	1,2-Dichloroethane-D4	10.000	8.776	12.2	104	0.00
25		1,2-Dichloroethane	5.000	5.125	-2.5	111	0.00
26		Cyclohexane	5.000	5.689	-13.8	120	0.01
27	I	1,4-difluorbenzene	10.000	10.000	0.0	120	0.00
29	M	Benzene	5.000	4.833	3.3	114	0.00
33		TAME	5.000	5.478	-9.6	119	-0.01
35		Isooctane	5.000	5.735	-14.7	122	0.00
36		Heptane	5.000	5.552	-11.0	118	0.00
46	s	Toluene-D8	10.000	8.967	10.3	107	0.00
47	M	Toluene	5.000	5.005	-0.1	113	0.00
52		Octane	5.000	5.597	-11.9	116	0.00
53		1,2-Dibromoethane	5.000	5.570	-11.4	119	0.00
54	I	chlorobenzene-D5	10.000	10.000	0.0	115	0.00
55		Ethylbenzene	5.000	5.661	-13.2	118	0.00
57		p/m-Xylene	10.000	12.712	-27.1	267	0.00
59		Nonane	5.000	5.463	-9.3	112	0.00
60		Styrene	5.000	6.275	-25.5	122	0.00
61		o-Xylene	5.000	5.832	-16.6	121	0.00
62	S	4-Bromofluorobenzene (surr)	10.000	9.376	6.2	111	0.00
63		Isopropylbenzene	5.000	5.683	-13.7	119	0.00
64		n-Propylbenzene	5.000	6.171	-23.4	129	0.00
66		1-Methyl-4-ethylbenzene	5.000	6.041	-20.8	124	0.00
67		1,3,5-Trimethylbenzene	5.000	5.956	-19.1	123	0.00
70		Decane	5.000	5.628	-12.6	112	0.00
71		1,2,4-Trimethylbenzene	5.000	6.077	-21.5	127	0.00
72		sec-Butylbenzene	5.000	5.778	-15.6	119	0.00
74		1-Methyl-4-isopropylbenzene	5.000	6.800	-36.0#	139	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149071.D
Acq On : 29 Oct 2016 10:01 am
Operator : AIRPIANO1:MR
Sample : CNF-TO15SIM-PIANO5.0
Misc : WG947234
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 29 13:37:10 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
80	n-Butylbenzene	5.000	5.708	-14.2	114	0.00
85	Undecane	5.000	5.688	-13.8	111	0.00
92	Dodecane	5.000	5.643	-12.9	119	0.00
93	Naphthalene	5.000	6.224	-24.5	132	0.00

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149071.D
Acq On : 29 Oct 2016 10:01 am
Operator : AIRPIANO1:MR
Sample : CNF-TO15SIM-PIANO5.0
Misc : WG947234
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 29 13:37:10 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : AIR-PIANO-ICV - Sub List Unknown

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	180543	10.000	ppbV	0.00
Standard Area = 153923			Recovery = 117.29%			
27) 1,4-difluorbenzene	14.20	114	400890	10.000	ppbV	0.00
Standard Area = 333192			Recovery = 120.32%			
54) chlorobenzene-D5	27.63	117	288202	10.000	ppbV	0.00
Standard Area = 250343			Recovery = 115.12%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.62	65	99014	8.776	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 87.76%			
46) Toluene-D8	20.95	98	274252	8.967	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 89.67%			
62) 4-Bromofluorobenzene (...	34.33	95	148220	9.376	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 93.76%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.71	54	48537M4	5.076	ppbV	
3) ethanol	5.29	31	300622	21.545	ppbV	99
7) Pentane	6.47	43	127667	4.267	ppbV	100
8) isopropyl alcohol	6.11	45	313028	14.446	ppbV	99
11) Tertiary butanol	6.87	59	143354	4.219	ppbV	80
15) MTBE	8.66	73	176881	5.115	ppbV #	59
18) Hexane	10.29	57	102973	5.390	ppbV	86
19) Diisopropyl ether	10.30	45	276198	5.968	ppbV	94
20) Ethyl tertiary butyl e...	11.31	59	205928	5.513	ppbV	98
25) 1,2-Dichloroethane	11.83	62	97224	5.125	ppbV	99
26) Cyclohexane	13.92	56	105364	5.689	ppbV	90
29) Benzene	13.32	78	184808	4.833	ppbV	100
33) TAME	14.78	73	181786	5.478	ppbV	97
35) Isooctane	15.99	57	344462	5.735	ppbV	97
36) Heptane	16.78	43	143731	5.552	ppbV	99
47) Toluene	21.26	91	223167	5.005	ppbV	100
52) Octane	25.08	43	198383	5.597	ppbV	99
53) 1,2-Dibromoethane	23.43	107	125308	5.570	ppbV	99
55) Ethylbenzene	29.48	91	230198	5.661	ppbV	100
57) p/m-Xylene	30.23	91	397987M1	12.712	ppbV	
59) Nonane	33.90	43	165486	5.463	ppbV	97
60) Styrene	31.82	104	129660	6.275	ppbV	98
61) o-Xylene	32.26	91	187138	5.832	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149071.D
Acq On : 29 Oct 2016 10:01 am
Operator : AIRPIANO1:MR
Sample : CNF-TO15SIM-PIANO5.0
Misc : WG947234
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 29 13:37:10 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\R149065.D
Sub List : AIR-PIANO-ICV - Sub List Unknown

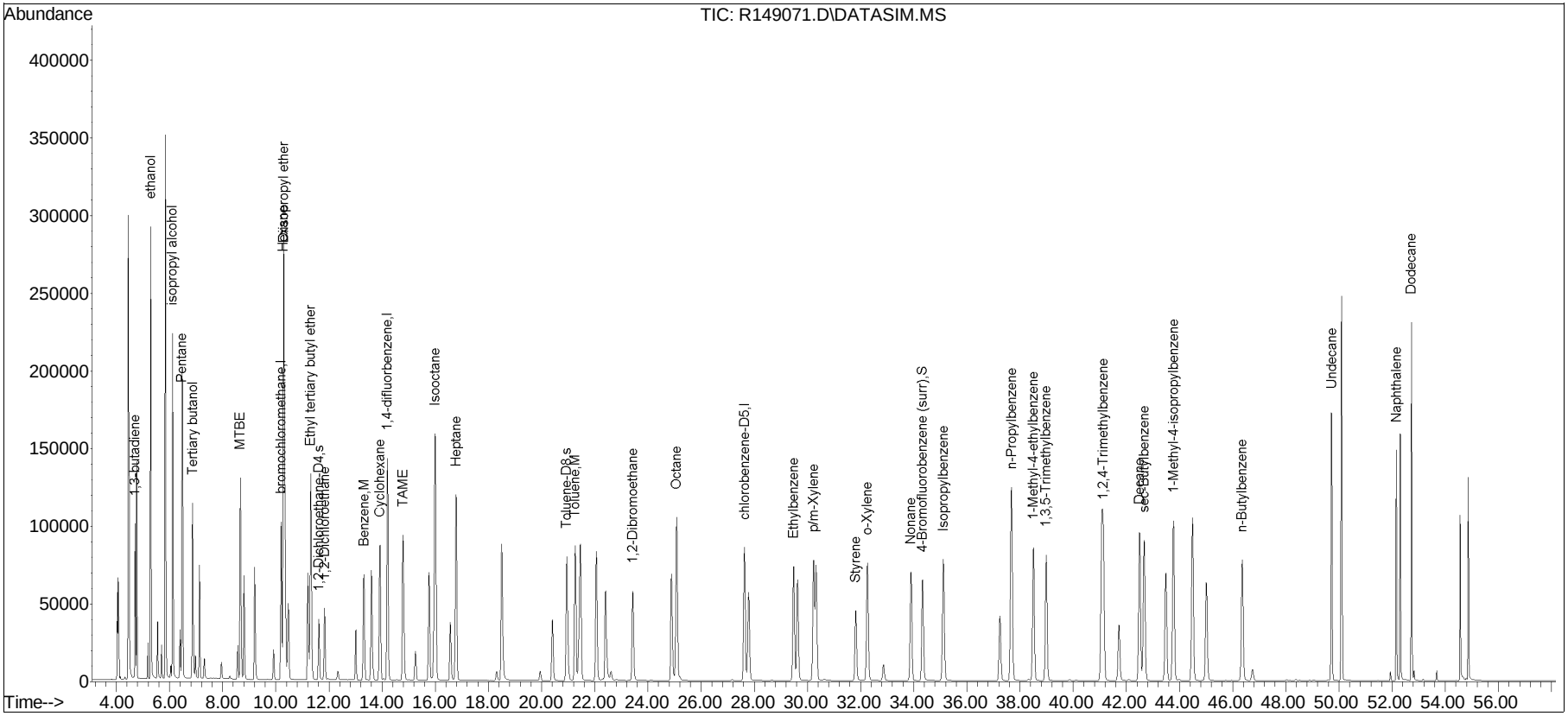
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
63) Isopropylbenzene	35.11	105	240030	5.683	ppbV		100
64) n-Propylbenzene	37.69	120	67933	6.171	ppbV	#	40
66) 1-Methyl-4-ethylbenzene	38.50	105	258957	6.041	ppbV		99
67) 1,3,5-Trimethylbenzene	38.98	105	207194	5.956	ppbV		100
70) Decane	42.49	43	176306	5.628	ppbV		97
71) 1,2,4-Trimethylbenzene	41.13	105	210387	6.077	ppbV		98
72) sec-Butylbenzene	42.67	105	310792	5.778	ppbV		100
74) 1-Methyl-4-isopropylbe...	43.78	119	254192	6.800	ppbV		99
80) n-Butylbenzene	46.36	91	269801	5.708	ppbV		100
85) Undecane	49.73	57	180502	5.688	ppbV		99
92) Dodecane	52.73	43	195517	5.643	ppbV		99
93) Naphthalene	52.16	128	291335	6.224	ppbV		100

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

Sub List : AIR-PIANO-ICV - Sub List Unknown28PIANO_ICAL\R149065.D

Data Path : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\
Data File : R149071.D
Acq On : 29 Oct 2016 10:01 am
Operator : AIRPIANO1:MR
Sample : CNF-TO15SIM-PIANO5.0
Misc : WG947234
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Oct 29 13:37:10 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161028PIANO_ICAL\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration



Continuing Calibration

Continuing Calibration
Form 7

Client	: NewFields	Lab Number	: L1634001	
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00	
Instrument ID	: AIRPIANO1	Calibration Date	: 11/08/16 10:09	
Lab File ID	: R149170	Init. Calib. Date(s)	: 10/28/16	10/29/16
Sample No	: WG948457-2	Init. Calib. Times	: 12:45	00:12
Channel	:			

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
bromochloromethane	1	1	.01	0	30	80	0
1,3-butadiene	0.53	0.564	.01	-6.4	30	78	0
Isopentane	0.968	0.91	.01	6	30	76	0
1-Pentene	1.096	1.07	.01	2.4	30	73	0
2-Methyl-1-butene	1.296	1.289	.01	0.5	30	73	-.01
Pentane	1.657	1.437	.01	13.3	30	74	0
2-Pentene (trans)	1.256	1.261	.01	-0.4	30	74	0
2-Pentene (cis)	1.153	1.163	.01	-0.9	30	74	0
Tertiary butanol	1.882	1.635	.01	13.1	30	74	0
Cyclopentane	0.374	0.388	.01	-3.7	30	77	0
2,3-Dimethylbutane	0.345	0.37	.01	-7.2	30	78	0
2-Methylpentane	1.879	1.913	.01	-1.8	30	79	0
MTBE	1.915	1.974	.01	-3.1	30	75	0
3-Methylpentane	1.237	1.278	.01	-3.3	30	77	0
1-Hexene	0.713	0.732	.01	-2.7	30	76	0
Hexane	1.058	1.143	.01	-8	30	81	0
Diisopropyl ether	2.563	2.814	.01	-9.8	30	82	-.01
Ethyl tertiary butyl ether	2.069	2.18	.01	-5.4	30	77	-.02
2,2-Dimethylpentane	1.692	1.857	.01	-9.8	30	80	0
1,2-Dichloroethane-D4	0.625	0.665	.01	-6.4	30	86	0
Methylcyclopentane	1.314	1.449	.01	-10.3	30	80	0
2,4-Dimethylpentane	1.701	1.887	.01	-10.9	30	80	0
1,2-Dichloroethane	1.051	1.121	.01	-6.7	30	79	0
Cyclohexane	1.026	1.137	.01	-10.8	30	80	.01
1,4-difluorbenzene	1	1	.01	0	30	79	0
2-Methylhexane	0.849	0.977	.01	-15.1	30	81	0
Benzene	0.954	0.981	.01	-2.8	30	80	0
2,3-Dimethylpentane	0.598	0.677	.01	-13.2	30	82	0
Thiophene	0.41	0.408	.01	0.5	30	79	0
3-Methylhexane	0.663	0.758	.01	-14.3	30	81	0
TAME	0.828	0.909	.01	-9.8	30	78	-.01
1-Heptene	0.152	0.181	.01	-19.1	30	79	0
Isooctane	1.498	1.883	.01	-25.7	30	88	0
Heptane	0.646	0.739	.01	-14.4	30	80	0
Methylcyclohexane	0.489	0.552	.01	-12.9	30	80	0
2,5-Dimethylhexane	0.752	0.874	.01	-16.2	30	80	0
2,4-Dimethyhexane / 2,2,3-	0.925	1.093	.01	-18.2	30	81	0
2,3,4-Trimethylpentane	1.04	1.214	.01	-16.7	30	80	0
2,3,3-Trimethylpentane	0.973	1.129	.01	-16	30	81	0
2,3-Dimethylhexane	0.934	1.099	.01	-17.7	30	81	0
3-Ethylhexane	1.141	1.371	.01	-20.2	30	81	0
2-Methylheptane	0.707	0.855	.01	-20.9	30	83	0
3-Methylheptane	0.775	0.906	.01	-16.9	30	82	0
Toluene-D8	0.763	0.854	.01	-11.9	30	88	0
Toluene	1.112	1.214	.01	-9.2	30	81	0

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: NewFields	Lab Number	: L1634001	
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00	
Instrument ID	: AIRPIANO1	Calibration Date	: 11/08/16 10:09	
Lab File ID	: R149170	Init. Calib. Date(s)	: 10/28/16	10/29/16
Sample No	: WG948457-2	Init. Calib. Times	: 12:45	00:12
Channel	:			

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
2-Methylthiophene	0.73	0.766	.01	-4.9	30	79	0
3-Methylthiophene	0.713	0.747	.01	-4.8	30	79	0
1-Octene	0.335	0.398	.01	-18.8	30	80	0
1-ethyl-1-methylcyclopenta	0.627	0.674	.01	-7.5	30	81	0
Octane	0.884	1.055	.01	-19.3	30	81	0
1,2-Dibromoethane	0.561	0.629	.01	-12.1	30	78	0
chlorobenzene-D5	1	1	.01	0	30	76	0
Ethylbenzene	1.411	1.619	.01	-14.7	30	79	0
2-Ethylthiophene	0.953	1.05	.01	-10.2	30	79	0
p/m-Xylene	1.086	1.244	.01	-14.5	30	80	0
1-Nonene	0.43	0.524	.01	-21.9	30	80	0
Nonane	1.051	1.267	.01	-20.6	30	82	0
Styrene	0.717	0.876	.01	-22.2	30	79	0
o-Xylene	1.113	1.291	.01	-16	30	80	0
4-Bromofluorobenzene (surr	0.549	0.616	.01	-12.2	30	88	0
Isopropylbenzene	1.465	1.671	.01	-14.1	30	79	0
n-Propylbenzene	0.382	0.435	.01	-13.9	30	79	0
1-Methyl-3-ethylbenzene	1.381	1.612	.01	-16.7	30	79	-.01
1-Methyl-4-ethylbenzene	1.487	1.755	.01	-18	30	80	0
1,3,5-Trimethylbenzene	1.207	1.422	.01	-17.8	30	81	0
1-Decene	0.606	0.745	.01	-22.9	30	81	0
1-Methyl-2-ethylbenzene	1.409	1.637	.01	-16.2	30	80	-.01
Decane	1.087	1.367	.01	-25.8	30	83	0
1,2,4-Trimethylbenzene	1.201	1.383	.01	-15.2	30	80	0
sec-Butylbenzene	1.866	2.209	.01	-18.4	30	81	-.01
1-Methyl-3-isopropylbenzen	1.568	1.85	.01	-18	30	80	0
1-Methyl-4-isopropylbenzen	1.297	1.538	.01	-18.6	30	80	-.01
1-Methyl-2-isopropylbenzen	1.395	1.621	.01	-16.2	30	79	0
Indan	0.94	1.09	.01	-16	30	80	0
Indene	0.567	0.717	.01	-26.5	30	80	0
1-Methyl-3-propylbenzene	1.74	2.097	.01	-20.5	30	81	0
1-Methyl-4-propylbenzene	2.134	2.631	.01	-23.3	30	81	-.01
n-Butylbenzene	1.64	2.075	.01	-26.5	30	83	-.01
1,2-Dimethyl-4-ethylbenzen	1.322	1.611	.01	-21.9	30	81	0
1,2-Diethylbenzene	0.704	0.853	.01	-21.2	30	82	0
1-Methyl-2-propylbenzene	1.858	2.264	.01	-21.9	30	81	0
1,4-Dimethyl-2-ethylbenzen	1.384	1.692	.01	-22.3	30	82	0
Undecane	1.101	1.479	.01	-34.3*	30	86	-.01
1,3-Dimethyl-4-ethylbenzen	1.61	2.005	.01	-24.5	30	83	0
1,3-Dimethyl-5-ethylbenzen	1.503	1.855	.01	-23.4	30	82	0
1,3-Dimethyl-2-ethylbenzen	1.634	2.016	.01	-23.4	30	84	0
1,2-Dimethyl-3-ethylbenzen	1.49	1.835	.01	-23.2	30	84	0
1,2,4,5-Tetramethylbenzene	4.919	6.384	.01	-29.8	30	84	0
Pentylbenzene	1.62	2.122	.01	-31*	30	87	0
Dodecane	1.202	1.695	.01	-41*	30	99	0

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: NewFields	**Lab Number**	: L1634001	
Project Name	: WINTER STREET HAVERHILL	**Project Number**	: 01.0172397.00	
Instrument ID	: AIRPIANO1	**Calibration Date**	: 11/08/16 10:09	
Lab File ID	: R149170	**Init. Calib. Date(s)**	: 10/28/16	10/29/16
Sample No	: WG948457-2	**Init. Calib. Times**	: 12:45	00:12
Channel	:			

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Naphthalene	1.624	2.115	.01	-30.2*	30	91	0
Benzothiophene	3.471	5.234	.01	-50.8*	30	90	0
MMT	0.396	0.498	.01	-25.8	30	97	0
Tridecane	1.697	2.249	.01	-32.5*	30	114	0
2-Methylnaphthalene	1.149	1.557	.01	-35.5*	30	109	0
1-Methylnaphthalene	1.282	1.756	.01	-37*	30	114	0

* Value outside of QC limits.

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149170.D
Acq On : 8 Nov 2016 10:09 am
Operator : AIRPIANO1:RY
Sample : WG948457-2,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 09 05:53:19 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

Min. RRF : 0.010 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	80	0.00
2		1,3-butadiene	0.530	0.564	-6.4	78	0.00
4		Isopentane	0.968	0.910	6.0	76	0.00
5		1-Pentene	1.096	1.070	2.4	73	0.00
6		2-Methyl-1-butene	1.296	1.289	0.5	73	-0.01
7		Pentane	1.657	1.437	13.3	74	0.00
9		2-Pentene (trans)	1.256	1.261	-0.4	74	0.00
10		2-Pentene (cis)	1.153	1.163	-0.9	74	0.00
11		Tertiary butanol	1.882	1.635	13.1	74	0.00
12		Cyclopentane	0.374	0.388	-3.7	77	0.00
13		2,3-Dimethylbutane	0.345	0.370	-7.2	78	0.00
14		2-Methylpentane	1.879	1.913	-1.8	79	0.00
15		MTBE	1.915	1.974	-3.1	75	0.00
16		3-Methylpentane	1.237	1.278	-3.3	77	0.00
17		1-Hexene	0.713	0.732	-2.7	76	0.00
18		Hexane	1.058	1.143	-8.0	81	0.00
19		Diisopropyl ether	2.563	2.814	-9.8	82	-0.01
20		Ethyl tertiary butyl ether	2.069	2.180	-5.4	77	-0.02
21		2,2-Dimethylpentane	1.692	1.857	-9.8	80	0.00
22	s	1,2-Dichloroethane-D4	0.625	0.665	-6.4	86	0.00
23		Methylcyclopentane	1.314	1.449	-10.3	80	0.00
24		2,4-Dimethylpentane	1.701	1.887	-10.9	80	0.00
25		1,2-Dichloroethane	1.051	1.121	-6.7	79	0.00
26		Cyclohexane	1.026	1.137	-10.8	80	0.01
27	I	1,4-difluorbenzene	1.000	1.000	0.0	79	0.00
28		2-Methylhexane	0.849	0.977	-15.1	81	0.00
29	M	Benzene	0.954	0.981	-2.8	80	0.00
30		2,3-Dimethylpentane	0.598	0.677	-13.2	82	0.00
31		Thiophene	0.410	0.408	0.5	79	0.00
32		3-Methylhexane	0.663	0.758	-14.3	81	0.00
33		TAME	0.828	0.909	-9.8	78	-0.01
34		1-Heptene	0.152	0.181	-19.1	79	0.00
35		Isooctane	1.498	1.883	-25.7	88	0.00
36		Heptane	0.646	0.739	-14.4	80	0.00
37		Methylcyclohexane	0.489	0.552	-12.9	80	0.00
38		2,5-Dimethylhexane	0.752	0.874	-16.2	80	0.00
39		2,4-Dimethyhexane / 2,2,3-T	0.925	1.093	-18.2	81	0.00
40		2,3,4-Trimethylpentane	1.040	1.214	-16.7	80	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149170.D
Acq On : 8 Nov 2016 10:09 am
Operator : AIRPIANO1:RY
Sample : WG948457-2,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 09 05:53:19 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

Min. RRF : 0.010 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)
41		2,3,3-Trimethylpentane	0.973	1.129	-16.0	81	0.00
42		2,3-Dimethylhexane	0.934	1.099	-17.7	81	0.00
43		3-Ethylhexane	1.141	1.371	-20.2	81	0.00
44		2-Methylheptane	0.707	0.855	-20.9	83	0.00
45		3-Methylheptane	0.775	0.906	-16.9	82	0.00
46	s	Toluene-D8	0.763	0.854	-11.9	88	0.00
47	M	Toluene	1.112	1.214	-9.2	81	0.00
48		2-Methylthiophene	0.730	0.766	-4.9	79	0.00
49		3-Methylthiophene	0.713	0.747	-4.8	79	0.00
50		1-Octene	0.335	0.398	-18.8	80	0.00
51		1-ethyl-1-methylcyclopentan	0.627	0.674	-7.5	81	0.00
52		Octane	0.884	1.055	-19.3	81	0.00
53		1,2-Dibromoethane	0.561	0.629	-12.1	78	0.00
54	I	chlorobenzene-D5	1.000	1.000	0.0	76	0.00
55		Ethylbenzene	1.411	1.619	-14.7	79	0.00
56		2-Ethylthiophene	0.953	1.050	-10.2	79	0.00
57		p/m-Xylene	1.086	1.244	-14.5	80	0.00
58		1-Nonene	0.430	0.524	-21.9	80	0.00
59		Nonane	1.051	1.267	-20.6	82	0.00
60		Styrene	0.717	0.876	-22.2	79	0.00
61		o-Xylene	1.113	1.291	-16.0	80	0.00
62	S	4-Bromofluorobenzene (surr)	0.549	0.616	-12.2	88	0.00
63		Isopropylbenzene	1.465	1.671	-14.1	79	0.00
64		n-Propylbenzene	0.382	0.435	-13.9	79	0.00
65		1-Methyl-3-ethylbenzene	1.381	1.612	-16.7	79	-0.01
66		1-Methyl-4-ethylbenzene	1.487	1.755	-18.0	80	0.00
67		1,3,5-Trimethylbenzene	1.207	1.422	-17.8	81	0.00
68		1-Decene	0.606	0.745	-22.9	81	0.00
69		1-Methyl-2-ethylbenzene	1.409	1.637	-16.2	80	-0.01
70		Decane	1.087	1.367	-25.8	83	0.00
71		1,2,4-Trimethylbenzene	1.201	1.383	-15.2	80	0.00
72		sec-Butylbenzene	1.866	2.209	-18.4	81	-0.01
73		1-Methyl-3-isopropylbenzene	1.568	1.850	-18.0	80	0.00
74		1-Methyl-4-isopropylbenzene	1.297	1.538	-18.6	80	-0.01
75		1-Methyl-2-isopropylbenzene	1.395	1.621	-16.2	79	0.00
76		Indan	0.940	1.090	-16.0	80	0.00
77		Indene	0.567	0.717	-26.5	80	0.00
78		1-Methyl-3-propylbenzene	1.740	2.097	-20.5	81	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149170.D
Acq On : 8 Nov 2016 10:09 am
Operator : AIRPIANO1:RY
Sample : WG948457-2,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 09 05:53:19 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

Min. RRF : 0.010 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)
79	1-Methyl-4-propylbenzene	2.134	2.631	-23.3	81	-0.01
80	n-Butylbenzene	1.640	2.075	-26.5	83	-0.01
81	1,2-Dimethyl-4-ethylbenzene	1.322	1.611	-21.9	81	0.00
82	1,2-Diethylbenzene	0.704	0.853	-21.2	82	0.00
83	1-Methyl-2-propylbenzene	1.858	2.264	-21.9	81	0.00
84	1,4-Dimethyl-2-ethylbenzene	1.384	1.692	-22.3	82	0.00
85	Undecane	1.101	1.479	-34.3#	86	-0.01
86	1,3-Dimethyl-4-ethylbenzene	1.610	2.005	-24.5	83	0.00
87	1,3-Dimethyl-5-ethylbenzene	1.503	1.855	-23.4	82	0.00
88	1,3-Dimethyl-2-ethylbenzene	1.634	2.016	-23.4	84	0.00
89	1,2-Dimethyl-3-ethylbenzene	1.490	1.835	-23.2	84	0.00
90	1,2,4,5-Tetramethylbenzene	4.919	6.384	-29.8	84	0.00
91	Pentylbenzene	1.620	2.122	-31.0#	87	0.00
92	Dodecane	1.202	1.695	-41.0#	99	0.00
93	Naphthalene	1.624	2.115	-30.2#	91	0.00
94	Benzothiophene	3.471	5.234	-50.8#	90	0.00
95	MMT	0.396	0.498	-25.8	97	0.00
96	Tridecane	1.697	2.249	-32.5#	114	0.00
97	2-Methylnaphthalene	1.149	1.557	-35.5#	109	0.00
98	1-Methylnaphthalene	1.282	1.756	-37.0#	114	0.00

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149170.D
Acq On : 8 Nov 2016 10:09 am
Operator : AIRPIANO1:RY
Sample : WG948457-2,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 09 05:53:19 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) bromochloromethane	10.20	49	123393	10.000	ppbV		0.00
27) 1,4-difluorbenzene	14.20	114	263318	10.000	ppbV		0.00
54) chlorobenzene-D5	27.63	117	190793	10.000	ppbV		0.00
System Monitoring Compounds							
22) 1,2-Dichloroethane-D4	11.61	65	82038	10.640	ppbV		0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 106.40%				
46) Toluene-D8	20.95	98	224874	11.194	ppbV		0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 111.94%				
62) 4-Bromofluorobenzene (...	34.33	95	117508	11.228	ppbV		0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 112.28%				
Target Compounds							Qvalue
2) 1,3-butadiene	4.71	54	34824	5.328	ppbV		96
4) Isopentane	5.88	41	56151	4.699	ppbV		98
5) 1-Pentene	6.19	42	66025	4.883	ppbV		99
6) 2-Methyl-1-butene	6.35	55	79535	4.972	ppbV		91
7) Pentane	6.47	43	88635	4.334	ppbV		100
9) 2-Pentene (trans)	6.67	55	77823	5.023	ppbV		100
10) 2-Pentene (cis)	6.89	55	71740	5.040	ppbV		100
11) Tertiary butanol	6.87	59	100898	4.345	ppbV		99
12) Cyclopentane	8.64	70	23941	5.183	ppbV		97
13) 2,3-Dimethylbutane	8.66	71	22837	5.361	ppbV	#	91
14) 2-Methylpentane	8.82	43	118037	5.092	ppbV		99
15) MTBE	8.66	73	121778	5.153	ppbV		86
16) 3-Methylpentane	9.47	57	78842	5.163	ppbV		99
17) 1-Hexene	9.73	56	45157	5.132	ppbV		99
18) Hexane	10.29	57	70502	5.399	ppbV	#	56
19) Diisopropyl ether	10.30	45	173642	5.490	ppbV		84
20) Ethyl tertiary butyl e...	11.30	59	134487	5.268	ppbV		100
21) 2,2-Dimethylpentane	11.63	57	114568	5.486	ppbV		99
23) Methylcyclopentane	11.83	56	89368	5.510	ppbV		99
24) 2,4-Dimethylpentane	11.98	43	116446	5.548	ppbV		99
25) 1,2-Dichloroethane	11.83	62	69170	5.335	ppbV		100
26) Cyclohexane	13.92	56	70166	5.543	ppbV		93
28) 2-Methylhexane	14.39	43	128587	5.749	ppbV		99
29) Benzene	13.32	78	129221	5.145	ppbV		99
30) 2,3-Dimethylpentane	14.55	56	89102	5.655	ppbV		100
31) Thiophene	13.60	84	53698	4.979	ppbV		98
32) 3-Methylhexane	15.01	43	99802	5.720	ppbV		99

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149170.D
Acq On : 8 Nov 2016 10:09 am
Operator : AIRPIANO1:RY
Sample : WG948457-2,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 09 05:53:19 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
33) TAME	14.78	73	119679	5.491	ppbV	97
34) 1-Heptene	15.93	70	23788	5.937	ppbV	100
35) Isooctane	15.99	57	247881	6.283	ppbV	100
36) Heptane	16.78	43	97346	5.725	ppbV	99
37) Methylcyclohexane	18.48	83	72645	5.646	ppbV	98
38) 2,5-Dimethylhexane	19.32	57	115026	5.811	ppbV	100
39) 2,4-Dimethyhexane / 2,...	19.50	57	287905	11.818	ppbV	100
40) 2,3,4-Trimethylpentane	20.84	43	159858	5.840	ppbV	100
41) 2,3,3-Trimethylpentane	21.23	43	148625	5.800	ppbV	100
42) 2,3-Dimethylhexane	21.71	43	144729	5.885	ppbV	100
43) 3-Ethylhexane	22.93	43	180519	6.010	ppbV	100
44) 2-Methylheptane	22.17	57	112594	6.044	ppbV	100
45) 3-Methylheptane	22.82	43	119224	5.845	ppbV	100
47) Toluene	21.26	91	159855	5.458	ppbV	100
48) 2-Methylthiophene	21.46	97	100835	5.249	ppbV	99
49) 3-Methylthiophene	22.06	97	98391	5.238	ppbV	99
50) 1-Octene	24.08	55	52361	5.930	ppbV	99
51) 1-ethyl-1-methylcyclop...	24.56	83	88700	5.370	ppbV	100
52) Octane	25.08	43	138942	5.968	ppbV	100
53) 1,2-Dibromoethane	23.43	107	82824	5.605	ppbV	99
55) Ethylbenzene	29.48	91	154452	5.737	ppbV	100
56) 2-Ethylthiophene	29.63	97	100179	5.507	ppbV	100
57) p/m-Xylene	30.23	91	118663M1	5.725	ppbV	
58) 1-Nonene	32.89	56	50013	6.099	ppbV	100
59) Nonane	33.89	43	120838	6.026	ppbV	100
60) Styrene	31.82	104	83566	6.109	ppbV	99
61) o-Xylene	32.25	91	123130	5.796	ppbV	100
63) Isopropylbenzene	35.11	105	159387	5.701	ppbV	100
64) n-Propylbenzene	37.69	120	41516	5.696	ppbV	95
65) 1-Methyl-3-ethylbenzene	38.31	105	153744	5.833	ppbV	98
66) 1-Methyl-4-ethylbenzene	38.50	105	167421	5.899	ppbV	98
67) 1,3,5-Trimethylbenzene	38.98	105	135680	5.891	ppbV	99
68) 1-Decene	41.53	41	71039	6.147	ppbV	99
69) 1-Methyl-2-ethylbenzene	39.85	105	156139	5.808	ppbV	97
70) Decane	42.49	43	130420	6.289	ppbV	100
71) 1,2,4-Trimethylbenzene	41.13	105	131924	5.756	ppbV	99
72) sec-Butylbenzene	42.66	105	210698	5.917	ppbV	97
73) 1-Methyl-3-isopropylbe...	43.48	119	176445	5.898	ppbV	100
74) 1-Methyl-4-isopropylbe...	43.77	119	146757	5.930	ppbV	98
75) 1-Methyl-2-isopropylbe...	44.88	119	154665	5.810	ppbV	99
76) Indan	44.49	117	103963	5.799	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149170.D
Acq On : 8 Nov 2016 10:09 am
Operator : AIRPIANO1:RY
Sample : WG948457-2,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 09 05:53:19 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
77) Indene	45.00	115	68361	6.322	ppbV	99
78) 1-Methyl-3-propylbenzene	45.94	105	200042	6.027	ppbV	99
79) 1-Methyl-4-propylbenzene	46.27	105	251010	6.166	ppbV	97
80) n-Butylbenzene	46.35	91	197979M6	6.327	ppbV	
81) 1,2-Dimethyl-4-ethylbe...	46.48	119	153685	6.094	ppbV	99
82) 1,2-Diethylbenzene	46.75	119	81372	6.054	ppbV	99
83) 1-Methyl-2-propylbenzene	47.25	105	215950	6.092	ppbV	100
84) 1,4-Dimethyl-2-ethylbe...	48.01	119	161405	6.112	ppbV	100
85) Undecane	49.71	57	141052	6.715	ppbV	94
86) 1,3-Dimethyl-4-ethylbe...	48.14	119	191308	6.228	ppbV	99
87) 1,3-Dimethyl-5-ethylbe...	48.51	119	176924	6.168	ppbV	99
88) 1,3-Dimethyl-2-ethylbe...	48.89	119	192327	6.169	ppbV	99
89) 1,2-Dimethyl-3-ethylbe...	49.58	119	175012	6.156	ppbV	99
90) 1,2,4,5-Tetramethylben...	50.10	119	609054	6.489	ppbV	99
91) Pentylbenzene	51.46	91	202437	6.550	ppbV	98
92) Dodecane	52.73	43	161662	7.048	ppbV	99
93) Naphthalene	52.16	128	201763	6.511	ppbV	99
94) Benzothiophene	52.30	134	499317M4	7.541	ppbV	
95) MMT	53.67	134	47520	6.297	ppbV	100
96) Tridecane	54.60	57	214516	6.626	ppbV	98
97) 2-Methylnaphthalene	54.56	142	148566	6.778	ppbV	100
98) 1-Methylnaphthalene	54.87	142	167496	6.845	ppbV	100

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

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149170.D
Acq On : 8 Nov 2016 10:09 am
Operator : AIRPIANO1:RY
Sample : WG948457-2,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 09 05:53:19 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

Sub List : AIR-NF-PIANO - NF PIANO LIST



Continuing Calibration
Form 7

Client	: NewFields	Lab Number	: L1634001	
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00	
Instrument ID	: AIRPIANO1	Calibration Date	: 11/09/16 11:02	
Lab File ID	: R149186	Init. Calib. Date(s)	: 10/28/16	10/29/16
Sample No	: WG948457-7	Init. Calib. Times	: 12:45	00:12
Channel	:			

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
bromochloromethane	1	1	.01	0	30	86	0
1,3-butadiene	0.53	0.539	.01	-1.7	30	80	0
Isopentane	0.968	0.897	.01	7.3	30	81	0
1-Pentene	1.096	1.088	.01	0.7	30	80	0
2-Methyl-1-butene	1.296	1.313	.01	-1.3	30	80	0
Pentane	1.657	1.448	.01	12.6	30	81	0
2-Pentene (trans)	1.256	1.289	.01	-2.6	30	81	0
2-Pentene (cis)	1.153	1.182	.01	-2.5	30	81	0
Tertiary butanol	1.882	1.676	.01	10.9	30	82	0
Cyclopentane	0.374	0.373	.01	0.3	30	80	0
2,3-Dimethylbutane	0.345	0.351	.01	-1.7	30	80	0
2-Methylpentane	1.879	1.84	.01	2.1	30	81	0
MTBE	1.915	2.001	.01	-4.5	30	82	0
3-Methylpentane	1.237	1.266	.01	-2.3	30	82	0
1-Hexene	0.713	0.731	.01	-2.5	30	82	0
Hexane	1.058	1.166	.01	-10.2	30	88	0
Diisopropyl ether	2.563	2.869	.01	-11.9	30	90	0
Ethyl tertiary butyl ether	2.069	2.313	.01	-11.8	30	87	0
2,2-Dimethylpentane	1.692	1.9	.01	-12.3	30	88	0
1,2-Dichloroethane-D4	0.625	0.688	.01	-10.1	30	96	0
Methylcyclopentane	1.314	1.481	.01	-12.7	30	88	0
2,4-Dimethylpentane	1.701	1.918	.01	-12.8	30	87	0
1,2-Dichloroethane	1.051	1.115	.01	-6.1	30	85	0
Cyclohexane	1.026	1.152	.01	-12.3	30	87	0
1,4-difluorbenzene	1	1	.01	0	30	87	0
2-Methylhexane	0.849	0.947	.01	-11.5	30	87	0
Benzene	0.954	0.968	.01	-1.5	30	87	0
2,3-Dimethylpentane	0.598	0.656	.01	-9.7	30	88	0
Thiophene	0.41	0.409	.01	0.2	30	88	0
3-Methylhexane	0.663	0.737	.01	-11.2	30	87	0
TAME	0.828	0.918	.01	-10.9	30	87	0
1-Heptene	0.152	0.179	.01	-17.8	30	87	0
Isooctane	1.498	1.815	.01	-21.2	30	94	0
Heptane	0.646	0.737	.01	-14.1	30	88	0
Methylcyclohexane	0.489	0.555	.01	-13.5	30	88	0
2,5-Dimethylhexane	0.752	0.868	.01	-15.4	30	88	0
2,4-Dimethyhexane / 2,2,3-	0.925	1.055	.01	-14.1	30	86	0
2,3,4-Trimethylpentane	1.04	1.203	.01	-15.7	30	87	0
2,3,3-Trimethylpentane	0.973	1.095	.01	-12.5	30	87	0
2,3-Dimethylhexane	0.934	1.066	.01	-14.1	30	87	0
3-Ethylhexane	1.141	1.33	.01	-16.6	30	87	0
2-Methylheptane	0.707	0.825	.01	-16.7	30	89	0
3-Methylheptane	0.775	0.867	.01	-11.9	30	87	0
Toluene-D8	0.763	0.868	.01	-13.8	30	99	0
Toluene	1.112	1.173	.01	-5.5	30	86	0

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: NewFields	Lab Number	: L1634001	
Project Name	: WINTER STREET HAVERHILL	Project Number	: 01.0172397.00	
Instrument ID	: AIRPIANO1	Calibration Date	: 11/09/16 11:02	
Lab File ID	: R149186	Init. Calib. Date(s)	: 10/28/16	10/29/16
Sample No	: WG948457-7	Init. Calib. Times	: 12:45	00:12
Channel	:			

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
2-Methylthiophene	0.73	0.76	.01	-4.1	30	87	0
3-Methylthiophene	0.713	0.747	.01	-4.8	30	87	0
1-Octene	0.335	0.391	.01	-16.7	30	87	0
1-ethyl-1-methylcyclopenta	0.627	0.67	.01	-6.9	30	89	0
Octane	0.884	1.035	.01	-17.1	30	88	0
1,2-Dibromoethane	0.561	0.62	.01	-10.5	30	85	0
chlorobenzene-D5	1	1	.01	0	30	85	0
Ethylbenzene	1.411	1.616	.01	-14.5	30	88	0
2-Ethylthiophene	0.953	1.044	.01	-9.5	30	87	0
p/m-Xylene	1.086	1.24	.01	-14.2	30	88	0
1-Nonene	0.43	0.515	.01	-19.8	30	87	0
Nonane	1.051	1.209	.01	-15	30	86	0
Styrene	0.717	0.868	.01	-21.1	30	86	0
o-Xylene	1.113	1.277	.01	-14.7	30	87	0
4-Bromofluorobenzene (surr	0.549	0.643	.01	-17.1	30	102	0
Isopropylbenzene	1.465	1.655	.01	-13	30	87	0
n-Propylbenzene	0.382	0.436	.01	-14.1	30	88	0
1-Methyl-3-ethylbenzene	1.381	1.588	.01	-15	30	87	0
1-Methyl-4-ethylbenzene	1.487	1.717	.01	-15.5	30	87	0
1,3,5-Trimethylbenzene	1.207	1.38	.01	-14.3	30	87	0
1-Decene	0.606	0.703	.01	-16	30	85	0
1-Methyl-2-ethylbenzene	1.409	1.607	.01	-14.1	30	87	0
Decane	1.087	1.288	.01	-18.5	30	87	0
1,2,4-Trimethylbenzene	1.201	1.36	.01	-13.2	30	87	0
sec-Butylbenzene	1.866	2.119	.01	-13.6	30	86	0
1-Methyl-3-isopropylbenzen	1.568	1.797	.01	-14.6	30	86	0
1-Methyl-4-isopropylbenzen	1.297	1.483	.01	-14.3	30	86	0
1-Methyl-2-isopropylbenzen	1.395	1.576	.01	-13	30	85	0
Indan	0.94	1.055	.01	-12.2	30	86	0
Indene	0.567	0.687	.01	-21.2	30	85	0
1-Methyl-3-propylbenzene	1.74	2.008	.01	-15.4	30	86	0
1-Methyl-4-propylbenzene	2.134	2.499	.01	-17.1	30	86	0
n-Butylbenzene	1.64	1.964	.01	-19.8	30	88	0
1,2-Dimethyl-4-ethylbenzen	1.322	1.548	.01	-17.1	30	86	0
1,2-Diethylbenzene	0.704	0.809	.01	-14.9	30	86	0
1-Methyl-2-propylbenzene	1.858	2.168	.01	-16.7	30	86	0
1,4-Dimethyl-2-ethylbenzen	1.384	1.604	.01	-15.9	30	87	0
Undecane	1.101	1.37	.01	-24.4	30	89	0
1,3-Dimethyl-4-ethylbenzen	1.61	1.878	.01	-16.6	30	86	0
1,3-Dimethyl-5-ethylbenzen	1.503	1.745	.01	-16.1	30	86	0
1,3-Dimethyl-2-ethylbenzen	1.634	1.885	.01	-15.4	30	87	0
1,2-Dimethyl-3-ethylbenzen	1.49	1.748	.01	-17.3	30	89	0
1,2,4,5-Tetramethylbenzene	4.919	6.007	.01	-22.1	30	88	0
Pentylbenzene	1.62	1.968	.01	-21.5	30	90	0
Dodecane	1.202	1.523	.01	-26.7	30	98	0

* Value outside of QC limits.

Continuing Calibration
Form 7

Client	: NewFields	**Lab Number**	: L1634001	
Project Name	: WINTER STREET HAVERHILL	**Project Number**	: 01.0172397.00	
Instrument ID	: AIRPIANO1	**Calibration Date**	: 11/09/16 11:02	
Lab File ID	: R149186	**Init. Calib. Date(s)**	: 10/28/16	10/29/16
Sample No	: WG948457-7	**Init. Calib. Times**	: 12:45	00:12
Channel	:			

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Naphthalene	1.624	2.027	.01	-24.8	30	97	0
Benzothiophene	3.471	4.854	.01	-39.8*	30	92	0
MMT	0.396	0.459	.01	-15.9	30	100	.01
Tridecane	1.697	2	.01	-17.9	30	113	0
2-Methylnaphthalene	1.149	1.46	.01	-27.1	30	113	0
1-Methylnaphthalene	1.282	1.62	.01	-26.4	30	116	0

* Value outside of QC limits.

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149186.D
Acq On : 9 Nov 2016 11:02 am
Operator : AIRPIANO1:RY
Sample : WG948457-7,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 09 12:20:55 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

Min. RRF : 0.010 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	86	0.00
2		1,3-butadiene	0.530	0.539	-1.7	80	0.00
4		Isopentane	0.968	0.897	7.3	81	0.00
5		1-Pentene	1.096	1.088	0.7	80	0.00
6		2-Methyl-1-butene	1.296	1.313	-1.3	80	0.00
7		Pentane	1.657	1.448	12.6	81	0.00
9		2-Pentene (trans)	1.256	1.289	-2.6	81	0.00
10		2-Pentene (cis)	1.153	1.182	-2.5	81	0.00
11		Tertiary butanol	1.882	1.676	10.9	82	0.00
12		Cyclopentane	0.374	0.373	0.3	80	0.00
13		2,3-Dimethylbutane	0.345	0.351	-1.7	80	0.00
14		2-Methylpentane	1.879	1.840	2.1	81	0.00
15		MTBE	1.915	2.001	-4.5	82	0.00
16		3-Methylpentane	1.237	1.266	-2.3	82	0.00
17		1-Hexene	0.713	0.731	-2.5	82	0.00
18		Hexane	1.058	1.166	-10.2	88	0.00
19		Diisopropyl ether	2.563	2.869	-11.9	90	0.00
20		Ethyl tertiary butyl ether	2.069	2.313	-11.8	87	0.00
21		2,2-Dimethylpentane	1.692	1.900	-12.3	88	0.00
22	s	1,2-Dichloroethane-D4	0.625	0.688	-10.1	96	0.00
23		Methylcyclopentane	1.314	1.481	-12.7	88	0.00
24		2,4-Dimethylpentane	1.701	1.918	-12.8	87	0.00
25		1,2-Dichloroethane	1.051	1.115	-6.1	85	0.00
26		Cyclohexane	1.026	1.152	-12.3	87	0.00
27	I	1,4-difluorbenzene	1.000	1.000	0.0	87	0.00
28		2-Methylhexane	0.849	0.947	-11.5	87	0.00
29	M	Benzene	0.954	0.968	-1.5	87	0.00
30		2,3-Dimethylpentane	0.598	0.656	-9.7	88	0.00
31		Thiophene	0.410	0.409	0.2	88	0.00
32		3-Methylhexane	0.663	0.737	-11.2	87	0.00
33		TAME	0.828	0.918	-10.9	87	0.00
34		1-Heptene	0.152	0.179	-17.8	87	0.00
35		Isooctane	1.498	1.815	-21.2	94	0.00
36		Heptane	0.646	0.737	-14.1	88	0.00
37		Methylcyclohexane	0.489	0.555	-13.5	88	0.00
38		2,5-Dimethylhexane	0.752	0.868	-15.4	88	0.00
39		2,4-Dimethyhexane / 2,2,3-T	0.925	1.055	-14.1	86	0.00
40		2,3,4-Trimethylpentane	1.040	1.203	-15.7	87	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149186.D
Acq On : 9 Nov 2016 11:02 am
Operator : AIRPIANO1:RY
Sample : WG948457-7,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 09 12:20:55 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

Min. RRF : 0.010 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)
41		2,3,3-Trimethylpentane	0.973	1.095	-12.5	87	0.00
42		2,3-Dimethylhexane	0.934	1.066	-14.1	87	0.00
43		3-Ethylhexane	1.141	1.330	-16.6	87	0.00
44		2-Methylheptane	0.707	0.825	-16.7	89	0.00
45		3-Methylheptane	0.775	0.867	-11.9	87	0.00
46	s	Toluene-D8	0.763	0.868	-13.8	99	0.00
47	M	Toluene	1.112	1.173	-5.5	86	0.00
48		2-Methylthiophene	0.730	0.760	-4.1	87	0.00
49		3-Methylthiophene	0.713	0.747	-4.8	87	0.00
50		1-Octene	0.335	0.391	-16.7	87	0.00
51		1-ethyl-1-methylcyclopentan	0.627	0.670	-6.9	89	0.00
52		Octane	0.884	1.035	-17.1	88	0.00
53		1,2-Dibromoethane	0.561	0.620	-10.5	85	0.00
54	I	chlorobenzene-D5	1.000	1.000	0.0	85	0.00
55		Ethylbenzene	1.411	1.616	-14.5	88	0.00
56		2-Ethylthiophene	0.953	1.044	-9.5	87	0.00
57		p/m-Xylene	1.086	1.240	-14.2	88	0.00
58		1-Nonene	0.430	0.515	-19.8	87	0.00
59		Nonane	1.051	1.209	-15.0	86	0.00
60		Styrene	0.717	0.868	-21.1	86	0.00
61		o-Xylene	1.113	1.277	-14.7	87	0.00
62	S	4-Bromofluorobenzene (surr)	0.549	0.643	-17.1	102	0.00
63		Isopropylbenzene	1.465	1.655	-13.0	87	0.00
64		n-Propylbenzene	0.382	0.436	-14.1	88	0.00
65		1-Methyl-3-ethylbenzene	1.381	1.588	-15.0	87	0.00
66		1-Methyl-4-ethylbenzene	1.487	1.717	-15.5	87	0.00
67		1,3,5-Trimethylbenzene	1.207	1.380	-14.3	87	0.00
68		1-Decene	0.606	0.703	-16.0	85	0.00
69		1-Methyl-2-ethylbenzene	1.409	1.607	-14.1	87	0.00
70		Decane	1.087	1.288	-18.5	87	0.00
71		1,2,4-Trimethylbenzene	1.201	1.360	-13.2	87	0.00
72		sec-Butylbenzene	1.866	2.119	-13.6	86	0.00
73		1-Methyl-3-isopropylbenzene	1.568	1.797	-14.6	86	0.00
74		1-Methyl-4-isopropylbenzene	1.297	1.483	-14.3	86	0.00
75		1-Methyl-2-isopropylbenzene	1.395	1.576	-13.0	85	0.00
76		Indan	0.940	1.055	-12.2	86	0.00
77		Indene	0.567	0.687	-21.2	85	0.00
78		1-Methyl-3-propylbenzene	1.740	2.008	-15.4	86	0.00

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149186.D
Acq On : 9 Nov 2016 11:02 am
Operator : AIRPIANO1:RY
Sample : WG948457-7,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 09 12:20:55 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

Min. RRF : 0.010 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)
79	1-Methyl-4-propylbenzene	2.134	2.499	-17.1	86	0.00
80	n-Butylbenzene	1.640	1.964	-19.8	88	0.00
81	1,2-Dimethyl-4-ethylbenzene	1.322	1.548	-17.1	86	0.00
82	1,2-Diethylbenzene	0.704	0.809	-14.9	86	0.00
83	1-Methyl-2-propylbenzene	1.858	2.168	-16.7	86	0.00
84	1,4-Dimethyl-2-ethylbenzene	1.384	1.604	-15.9	87	0.00
85	Undecane	1.101	1.370	-24.4	89	0.00
86	1,3-Dimethyl-4-ethylbenzene	1.610	1.878	-16.6	86	0.00
87	1,3-Dimethyl-5-ethylbenzene	1.503	1.745	-16.1	86	0.00
88	1,3-Dimethyl-2-ethylbenzene	1.634	1.885	-15.4	87	0.00
89	1,2-Dimethyl-3-ethylbenzene	1.490	1.748	-17.3	89	0.00
90	1,2,4,5-Tetramethylbenzene	4.919	6.007	-22.1	88	0.00
91	Pentylbenzene	1.620	1.968	-21.5	90	0.00
92	Dodecane	1.202	1.523	-26.7	98	0.00
93	Naphthalene	1.624	2.027	-24.8	97	0.00
94	Benzothiophene	3.471	4.854	-39.8#	92	0.00
95	MMT	0.396	0.459	-15.9	100	0.01
96	Tridecane	1.697	2.000	-17.9	113	0.00
97	2-Methylnaphthalene	1.149	1.460	-27.1	113	0.00
98	1-Methylnaphthalene	1.282	1.620	-26.4	116	0.00

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149186.D
Acq On : 9 Nov 2016 11:02 am
Operator : AIRPIANO1:RY
Sample : WG948457-7,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 09 12:20:55 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) bromochloromethane	10.20	49	132729	10.000	ppbV	0.00
Standard Area = 123393			Recovery = 107.57%			
27) 1,4-difluorbenzene	14.20	114	290894	10.000	ppbV	0.00
Standard Area = 263318			Recovery = 110.47%			
54) chlorobenzene-D5	27.63	117	211573	10.000	ppbV	0.00
Standard Area = 190793			Recovery = 110.89%			
System Monitoring Compounds						
22) 1,2-Dichloroethane-D4	11.62	65	91328	11.011	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 110.11%			
46) Toluene-D8	20.95	98	252502	11.378	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 113.78%			
62) 4-Bromofluorobenzene (...	34.33	95	135963	11.715	ppbV	0.00
Spiked Amount 10.000	Range 70 - 130		Recovery = 117.15%			
Target Compounds						Qvalue
2) 1,3-butadiene	4.71	54	35740M4	5.084	ppbV	
4) Isopentane	5.88	41	59502	4.630	ppbV	99
5) 1-Pentene	6.19	42	72223	4.965	ppbV	95
6) 2-Methyl-1-butene	6.36	55	87106	5.062	ppbV	98
7) Pentane	6.47	43	96080	4.368	ppbV	99
9) 2-Pentene (trans)	6.67	55	85559	5.134	ppbV	98
10) 2-Pentene (cis)	6.89	55	78447	5.124	ppbV	98
11) Tertiary butanol	6.87	59	111237	4.453	ppbV	98
12) Cyclopentane	8.64	70	24750	4.982	ppbV	95
13) 2,3-Dimethylbutane	8.66	71	23306	5.087	ppbV #	91
14) 2-Methylpentane	8.82	43	122120	4.898	ppbV	99
15) MTBE	8.67	73	132802	5.224	ppbV	99
16) 3-Methylpentane	9.46	57	84007	5.115	ppbV	100
17) 1-Hexene	9.73	56	48492	5.124	ppbV	99
18) Hexane	10.29	57	77405	5.511	ppbV	99
19) Diisopropyl ether	10.31	45	190386	5.596	ppbV	99
20) Ethyl tertiary butyl e...	11.32	59	153471	5.589	ppbV	99
21) 2,2-Dimethylpentane	11.62	57	126103	5.614	ppbV	100
23) Methylcyclopentane	11.83	56	98266	5.632	ppbV	99
24) 2,4-Dimethylpentane	11.98	43	127313	5.639	ppbV	99
25) 1,2-Dichloroethane	11.84	62	74029	5.308	ppbV	99
26) Cyclohexane	13.91	56	76432	5.614	ppbV	97
28) 2-Methylhexane	14.39	43	137716	5.574	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149186.D
Acq On : 9 Nov 2016 11:02 am
Operator : AIRPIANO1:RY
Sample : WG948457-7,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 09 12:20:55 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
29) Benzene	13.32	78	140742	5.073	ppbV	100
30) 2,3-Dimethylpentane	14.55	56	95477	5.485	ppbV	99
31) Thiophene	13.60	84	59486	4.992	ppbV	99
32) 3-Methylhexane	15.01	43	107194	5.561	ppbV	99
33) TAME	14.79	73	133579	5.548	ppbV	98
34) 1-Heptene	15.93	70	26063	5.888	ppbV	98
35) Isooctane	15.99	57	263968	6.056	ppbV	100
36) Heptane	16.78	43	107255	5.709	ppbV	100
37) Methylcyclohexane	18.48	83	80652	5.674	ppbV	100
38) 2,5-Dimethylhexane	19.32	57	126177	5.770	ppbV	100
39) 2,4-Dimethyhexane / 2,...	19.50	57	306849	11.402	ppbV	99
40) 2,3,4-Trimethylpentane	20.84	43	174906	5.784	ppbV	99
41) 2,3,3-Trimethylpentane	21.23	43	159221	5.625	ppbV	100
42) 2,3-Dimethylhexane	21.71	43	155035	5.706	ppbV	100
43) 3-Ethylhexane	22.94	43	193466	5.831	ppbV	100
44) 2-Methylheptane	22.17	57	119953	5.829	ppbV	100
45) 3-Methylheptane	22.82	43	126135	5.598	ppbV	100
47) Toluene	21.26	91	170637	5.274	ppbV	100
48) 2-Methylthiophene	21.46	97	110520	5.208	ppbV	100
49) 3-Methylthiophene	22.06	97	108661	5.236	ppbV	100
50) 1-Octene	24.08	55	56930	5.836	ppbV	99
51) 1-ethyl-1-methylcyclop...	24.56	83	97401	5.337	ppbV	99
52) Octane	25.08	43	150546	5.853	ppbV	100
53) 1,2-Dibromoethane	23.43	107	90162	5.523	ppbV	100
55) Ethylbenzene	29.48	91	170900	5.725	ppbV	99
56) 2-Ethylthiophene	29.63	97	110432	5.475	ppbV	100
57) p/m-Xylene	30.23	91	131138M4	5.706	ppbV	
58) 1-Nonene	32.89	56	54432	5.986	ppbV	99
59) Nonane	33.89	43	127937	5.754	ppbV	99
60) Styrene	31.82	104	91825	6.054	ppbV	100
61) o-Xylene	32.26	91	135049	5.733	ppbV	100
63) Isopropylbenzene	35.11	105	175041	5.646	ppbV	100
64) n-Propylbenzene	37.69	120	46167	5.712	ppbV	96
65) 1-Methyl-3-ethylbenzene	38.32	105	167992	5.748	ppbV	99
66) 1-Methyl-4-ethylbenzene	38.50	105	181585	5.770	ppbV	100
67) 1,3,5-Trimethylbenzene	38.98	105	146018	5.718	ppbV	100
68) 1-Decene	41.53	41	74377	5.804	ppbV	98
69) 1-Methyl-2-ethylbenzene	39.86	105	170008	5.703	ppbV	99
70) Decane	42.49	43	136204	5.923	ppbV	99
71) 1,2,4-Trimethylbenzene	41.13	105	143842	5.659	ppbV	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149186.D
Acq On : 9 Nov 2016 11:02 am
Operator : AIRPIANO1:RY
Sample : WG948457-7,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 09 12:20:55 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

CCAL FILE : O:\Forensics\Data\AIR1\2016\161108PIANO\R149170.D
Sub List : AIR-NF-PIANO - NF PIANO LIST

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
72) sec-Butylbenzene	42.67	105	224115	5.676	ppbV	100
73) 1-Methyl-3-isopropylbe...	43.48	119	190099	5.730	ppbV	100
74) 1-Methyl-4-isopropylbe...	43.78	119	156915	5.718	ppbV	100
75) 1-Methyl-2-isopropylbe...	44.88	119	166697	5.647	ppbV	100
76) Indan	44.49	117	111643	5.616	ppbV	100
77) Indene	45.00	115	72704	6.063	ppbV	100
78) 1-Methyl-3-propylbenzene	45.94	105	212372	5.770	ppbV	99
79) 1-Methyl-4-propylbenzene	46.28	105	264402	5.857	ppbV	100
80) n-Butylbenzene	46.36	91	207726M4	5.986	ppbV	
81) 1,2-Dimethyl-4-ethylbe...	46.48	119	163737	5.855	ppbV	100
82) 1,2-Diethylbenzene	46.75	119	85545	5.740	ppbV	99
83) 1-Methyl-2-propylbenzene	47.25	105	229365	5.835	ppbV	100
84) 1,4-Dimethyl-2-ethylbe...	48.01	119	169655	5.794	ppbV	100
85) Undecane	49.73	57	144947	6.222	ppbV	98
86) 1,3-Dimethyl-4-ethylbe...	48.14	119	198668	5.832	ppbV	99
87) 1,3-Dimethyl-5-ethylbe...	48.51	119	184604	5.804	ppbV	99
88) 1,3-Dimethyl-2-ethylbe...	48.89	119	199430	5.768	ppbV	100
89) 1,2-Dimethyl-3-ethylbe...	49.58	119	184883	5.865	ppbV	100
90) 1,2,4,5-Tetramethylben...	50.10	119	635470	6.106	ppbV	99
91) Pentylbenzene	51.46	91	208206	6.075	ppbV	99
92) Dodecane	52.73	43	161148	6.336	ppbV	99
93) Naphthalene	52.16	128	214450	6.240	ppbV	100
94) Benzothiophene	52.30	134	513533	6.994	ppbV	99
95) MMT	53.68	134	48596	5.807	ppbV	98
96) Tridecane	54.60	57	211561	5.893	ppbV	99
97) 2-Methylnaphthalene	54.56	142	154482	6.356	ppbV	98
98) 1-Methylnaphthalene	54.87	142	171360	6.316	ppbV	98

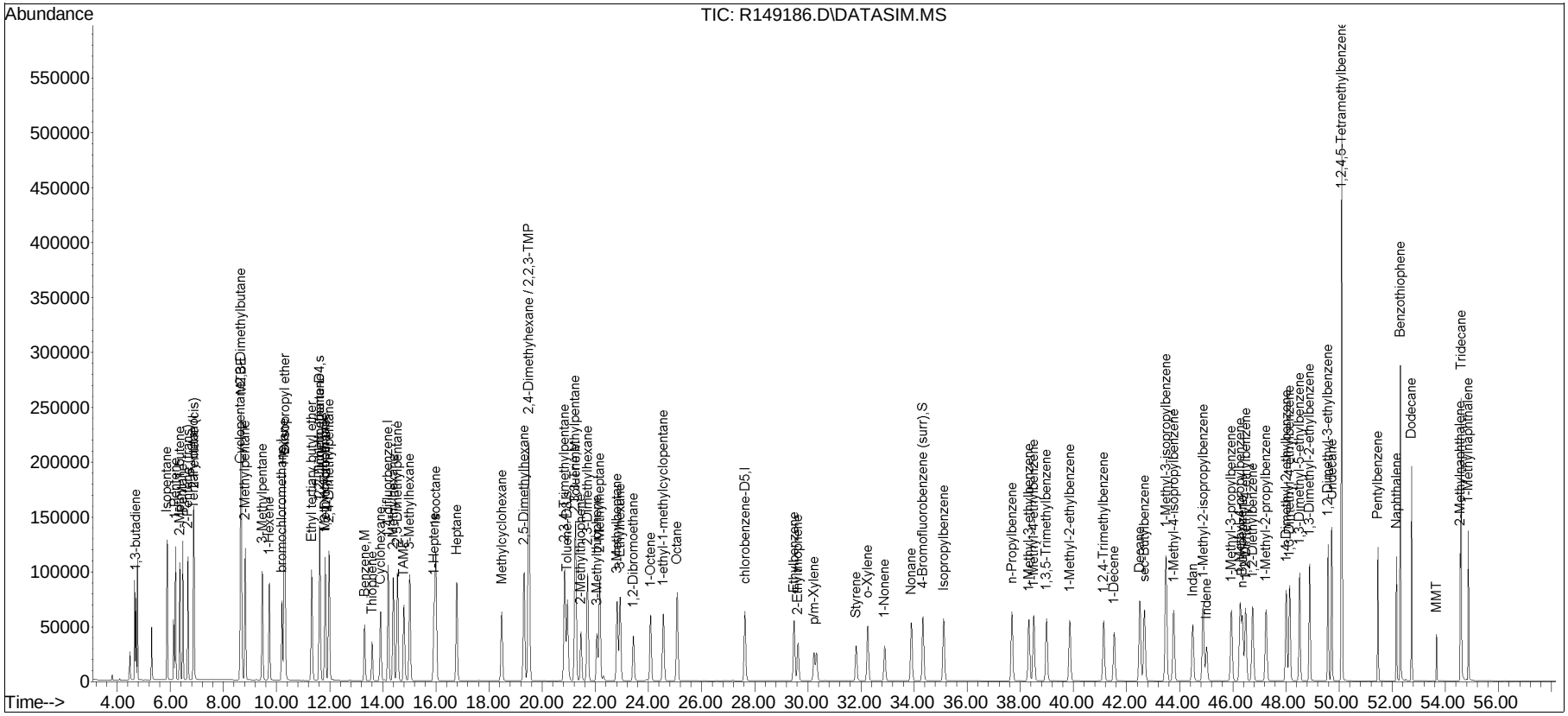
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\AIR1\2016\161108PIANO\
Data File : R149186.D
Acq On : 9 Nov 2016 11:02 am
Operator : AIRPIANO1:RY
Sample : WG948457-7,3,250,250
Misc : WG948457,ICAL13049
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 09 12:20:55 2016
Quant Method : O:\Forensics\Data\AIR1\2016\161108PIANO\PA161028.M
Quant Title : TO15_PIANO
QLast Update : Sat Oct 29 13:34:17 2016
Response via : Initial Calibration

Sub List : AIR-NF-PIANO - NF PIANO LIST161108PIANO\R149170.D



Internal Standard Area and RT Summary
Form 8

Client	: NewFields	**Lab Number**	: L1634001
Project Name	: WINTER STREET HAVERHILL	**Project Number**	: 01.0172397.00
Instrument ID	: AIRPIANO1	**Analysis Date**	: 11/08/16 10:09
Sample No	: WG948457-2	**Lab File ID**	: R149170

	Bromochloromethane		1,4-Difluorobenzene		Chlorobenzene-d5	
	Area	RT	Area	RT	Area	RT
WG948457-2	123393	10.20	263318	14.20	190793	27.63
Upper Limit	172750	10.53	368645	14.53	267110	27.96
Lower Limit	74036	9.87	157991	13.87	114476	27.30
Sample ID						
WG948457-3 LCS	122881	10.20	281857	14.20	207529	27.63
WG948457-4 LCSD	130175	10.20	273259	14.20	202015	27.63
WG948457-5 BLANK	126953	10.19	272511	14.20	200300	27.63
NFAA-01	131433	10.20	276659	14.20	206153	27.63
NFSV-04	128578	10.19	273607	14.20	202526	27.63
NFSV-07	130237	10.20	273245	14.20	203361	27.63
NFSV-05	123383	10.20	279932	14.20	204307	27.63
NFSV-05 DUP	120631	10.20	272540	14.20	198724	27.63
NFSV-06	128450	10.19	276341	14.20	201809	27.63
NFSV-08	129289	10.20	269727	14.20	194706	27.63
NFSV-03	131672	10.20	277076	14.20	200099	27.63
NFSV-02	133905	10.20	281312	14.20	204540	27.63
NFSV-01	121593	10.20	277195	14.20	201985	27.63
DUP101916	125373	10.20	288993	14.20	210775	27.63
WG948457-7 CCAL	132729	10.20	290894	14.20	211573	27.63

Area Upper Limit = +40% of internal standard area
Area Lower Limit = - 40% of internal standard area

RT Upper Limit = +0.33 minutes of internal standard RT
RT Lower Limit = -0.33 minutes of internal standard RT

* Values outside of QC limits

Air Canister
Certification Results

Project Name:	BATCH CANISTER CERTIFICATION	**Lab Number:**	L1631571
Project Number:	CANISTER QC BAT	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1631571-02	Date Collected:	10/04/16 16:00
Client ID:	CAN 1841 SHELF 57	Date Received:	10/05/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15		
Analytical Date:	10/05/16 09:40		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
Chlorodifluoromethane	ND	0.200	0.063	ND	0.707	0.221		1
Propylene	ND	0.500	0.093	ND	0.861	0.160		1
Propane	ND	0.500	0.114	ND	0.902	0.206		1
Dichlorodifluoromethane	ND	0.200	0.047	ND	0.989	0.230		1
Chloromethane	ND	0.200	0.096	ND	0.413	0.198		1
Freon-114	ND	0.200	0.042	ND	1.40	0.293		1
Methanol	ND	5.00	0.736	ND	6.55	0.964		1
Vinyl chloride	ND	0.200	0.053	ND	0.511	0.136		1
1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177		1
Butane	ND	0.200	0.044	ND	0.475	0.105		1
Bromomethane	ND	0.200	0.070	ND	0.777	0.270		1
Chloroethane	ND	0.200	0.077	ND	0.528	0.202		1
Ethanol	ND	5.00	0.542	ND	9.42	1.02		1
Dichlorofluoromethane	ND	0.200	0.057	ND	0.842	0.241		1
Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306		1
Acrolein	ND	0.500	0.114	ND	1.15	0.261		1
Acetone	ND	1.00	0.269	ND	2.38	0.639		1
Acetonitrile	ND	0.200	0.076	ND	0.336	0.128		1
Trichlorofluoromethane	ND	0.200	0.042	ND	1.12	0.234		1
Isopropanol	ND	0.500	0.114	ND	1.23	0.280		1
Acrylonitrile	ND	0.500	0.079	ND	1.09	0.171		1
Pentane	ND	0.200	0.048	ND	0.590	0.140		1
Ethyl ether	ND	0.200	0.059	ND	0.606	0.179		1
1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224		1
Tertiary butyl Alcohol	ND	0.500	0.060	ND	1.52	0.182		1

Project Name:	BATCH CANISTER CERTIFICATION	**Lab Number:**	L1631571
Project Number:	CANISTER QC BAT	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1631571-02	Date Collected:	10/04/16 16:00
Client ID:	CAN 1841 SHELF 57	Date Received:	10/05/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
Methylene chloride	ND	0.500	0.188	ND	1.74	0.653		1
3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254		1
Carbon disulfide	ND	0.200	0.035	ND	0.623	0.107		1
Freon-113	ND	0.200	0.051	ND	1.53	0.392		1
trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293		1
1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312		1
Methyl tert butyl ether	ND	0.200	0.045	ND	0.721	0.163		1
Vinyl acetate	ND	1.00	0.057	ND	3.52	0.200		1
2-Butanone	ND	0.500	0.052	ND	1.47	0.154		1
cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233		1
Ethyl Acetate	ND	0.500	0.131	ND	1.80	0.472		1
Chloroform	ND	0.200	0.045	ND	0.977	0.221		1
Tetrahydrofuran	ND	0.500	0.062	ND	1.47	0.183		1
2,2-Dichloropropane	ND	0.200	0.058	ND	0.924	0.269		1
1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223		1
n-Hexane	ND	0.200	0.052	ND	0.705	0.183		1
Diisopropyl ether	ND	0.200	0.066	ND	0.836	0.274		1
tert-Butyl Ethyl Ether	ND	0.200	0.052	ND	0.836	0.215		1
1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311		1
1,1-Dichloropropene	ND	0.200	0.072	ND	0.908	0.325		1
Benzene	ND	0.200	0.054	ND	0.639	0.172		1
Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296		1
Cyclohexane	ND	0.200	0.066	ND	0.688	0.226		1
tert-Amyl Methyl Ether	ND	0.200	0.080	ND	0.836	0.332		1
Dibromomethane	ND	0.200	0.048	ND	1.42	0.338		1
1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322		1
Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439		1
1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281		1

Air Canister Certification Results

Lab ID: L1631571-02 Date Collected: 10/04/16 16:00
Client ID: CAN 1841 SHELF 57 Date Received: 10/05/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air								
Trichloroethene	ND	0.200	0.071	ND	1.07	0.382		1
2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308		1
Methyl Methacrylate	ND	0.500	0.148	ND	2.05	0.606		1
Heptane	ND	0.200	0.055	ND	0.820	0.227		1
cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338		1
4-Methyl-2-pentanone	ND	0.500	0.061	ND	2.05	0.249		1
trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315		1
1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364		1
Toluene	ND	0.200	0.063	ND	0.754	0.237		1
1,3-Dichloropropane	ND	0.200	0.078	ND	0.924	0.359		1
2-Hexanone	ND	0.200	0.060	ND	0.820	0.248		1
Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636		1
1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599		1
Butyl acetate	ND	0.500	0.114	ND	2.38	0.542		1
Octane	ND	0.200	0.042	ND	0.934	0.197		1
Tetrachloroethene	ND	0.200	0.076	ND	1.36	0.514		1
1,1,1,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363		1
Ethylbenzene	ND	0.200	0.056	ND	0.869	0.241		1
p/m-Xylene	ND	0.400	0.139	ND	1.74	0.604		1
Bromoform	ND	0.200	0.052	ND	2.07	0.541		1
Styrene	ND	0.200	0.080	ND	0.852	0.340		1
1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
o-Xylene	ND	0.200	0.063	ND	0.869	0.274		1
1,2,3-Trichloropropane	ND	0.200	0.077	ND	1.21	0.462		1
Nonane	ND	0.200	0.064	ND	1.05	0.338		1
Isopropylbenzene	ND	0.200	0.043	ND	0.983	0.211		1
Bromobenzene	ND	0.200	0.079	ND	0.793	0.313		1

Project Name:	BATCH CANISTER CERTIFICATION	**Lab Number:**	L1631571
Project Number:	CANISTER QC BAT	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1631571-02	Date Collected:	10/04/16 16:00
Client ID:	CAN 1841 SHELF 57	Date Received:	10/05/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252		1
n-Propylbenzene	ND	0.200	0.056	ND	0.983	0.275		1
4-Chlorotoluene	ND	0.200	0.076	ND	1.04	0.396		1
4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381		1
1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287		1
tert-Butylbenzene	ND	0.200	0.040	ND	1.10	0.221		1
1,2,4-Trimethylbenzene	ND	0.200	0.069	ND	0.983	0.341		1
Decane	ND	0.200	0.048	ND	1.16	0.282		1
Benzyl chloride	ND	0.200	0.065	ND	1.04	0.334		1
1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383		1
1,4-Dichlorobenzene	ND	0.200	0.042	ND	1.20	0.251		1
sec-Butylbenzene	ND	0.200	0.073	ND	1.10	0.401		1
p-Isopropyltoluene	ND	0.200	0.061	ND	1.10	0.334		1
1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369		1
n-Butylbenzene	ND	0.200	0.064	ND	1.10	0.351		1
1,2-Dibromo-3-chloropropane	ND	0.200	0.074	ND	1.93	0.719		1
Undecane	ND	0.200	0.053	ND	1.28	0.338		1
Dodecane	ND	0.200	0.056	ND	1.39	0.393		1
1,2,4-Trichlorobenzene	ND	0.200	0.061	ND	1.48	0.454		1
Naphthalene	ND	0.200	0.043	ND	1.05	0.227		1
1,2,3-Trichlorobenzene	ND	0.200	0.044	ND	1.48	0.324		1
Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781		1

	Results	**Qualifier**	**Units**	**RDL**	**Dilution Factor**
Tentatively Identified Compounds					

No Tentatively Identified Compounds

Project Name:	BATCH CANISTER CERTIFICATION	**Lab Number:**	L1631571
Project Number:	CANISTER QC BAT	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1631571-02	Date Collected:	10/04/16 16:00
Client ID:	CAN 1841 SHELF 57	Date Received:	10/05/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	90		60-140
Bromochloromethane	88		60-140
chlorobenzene-d5	90		60-140

Project Name:	BATCH CANISTER CERTIFICATION	**Lab Number:**	L1631571
Project Number:	CANISTER QC BAT	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1631571-02	Date Collected:	10/04/16 16:00
Client ID:	CAN 1841 SHELF 57	Date Received:	10/05/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	10/05/16 09:40		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM								
Dichlorodifluoromethane	ND	0.200	0.006	ND	0.989	0.030		1
Chloromethane	ND	0.200	0.048	ND	0.413	0.099		1
Freon-114	ND	0.050	0.005	ND	0.349	0.035		1
Vinyl chloride	ND	0.020	0.007	ND	0.051	0.018		1
1,3-Butadiene	ND	0.020	0.006	ND	0.044	0.013		1
Bromomethane	ND	0.020	0.008	ND	0.078	0.031		1
Chloroethane	ND	0.020	0.007	ND	0.053	0.019		1
Acetone	ND	1.00	0.133	ND	2.38	0.316		1
Trichlorofluoromethane	ND	0.050	0.008	ND	0.281	0.045		1
Acrylonitrile	ND	0.500	0.015	ND	1.09	0.033		1
1,1-Dichloroethene	ND	0.020	0.007	ND	0.079	0.028		1
Methylene chloride	ND	0.500	0.250	ND	1.74	0.869		1
Freon-113	ND	0.050	0.006	ND	0.383	0.046		1
Halothane	ND	0.050	0.008	ND	0.404	0.065		1
trans-1,2-Dichloroethene	ND	0.020	0.006	ND	0.079	0.024		1
1,1-Dichloroethane	ND	0.020	0.007	ND	0.081	0.028		1
Methyl tert butyl ether	ND	0.200	0.004	ND	0.721	0.014		1
2-Butanone	ND	0.500	0.025	ND	1.47	0.073		1
cis-1,2-Dichloroethene	ND	0.020	0.007	ND	0.079	0.026		1
Chloroform	ND	0.020	0.006	ND	0.098	0.029		1
1,2-Dichloroethane	ND	0.020	0.008	ND	0.081	0.032		1
1,1,1-Trichloroethane	ND	0.020	0.007	ND	0.109	0.038		1
Benzene	ND	0.100	0.021	ND	0.319	0.067		1
Carbon tetrachloride	ND	0.020	0.008	ND	0.126	0.050		1
1,2-Dichloropropane	ND	0.020	0.006	ND	0.092	0.028		1

Project Name:	BATCH CANISTER CERTIFICATION	**Lab Number:**	L1631571
Project Number:	CANISTER QC BAT	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1631571-02	Date Collected:	10/04/16 16:00
Client ID:	CAN 1841 SHELF 57	Date Received:	10/05/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM								
Bromodichloromethane	ND	0.020	0.008	ND	0.134	0.054		1
1,4-Dioxane	ND	0.100	0.050	ND	0.360	0.180		1
Trichloroethene	ND	0.020	0.007	ND	0.107	0.038		1
cis-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036		1
4-Methyl-2-pentanone	ND	0.500	0.042	ND	2.05	0.172		1
trans-1,3-Dichloropropene	ND	0.020	0.008	ND	0.091	0.036		1
1,1,2-Trichloroethane	ND	0.020	0.009	ND	0.109	0.049		1
Toluene	ND	0.050	0.025	ND	0.188	0.094		1
Dibromochloromethane	ND	0.020	0.008	ND	0.170	0.068		1
1,2-Dibromoethane	ND	0.020	0.008	ND	0.154	0.062		1
Tetrachloroethene	ND	0.020	0.008	ND	0.136	0.054		1
1,1,1,2-Tetrachloroethane	ND	0.020	0.004	ND	0.137	0.028		1
Chlorobenzene	ND	0.100	0.008	ND	0.461	0.037		1
Ethylbenzene	ND	0.020	0.007	ND	0.087	0.030		1
p/m-Xylene	ND	0.040	0.009	ND	0.174	0.039		1
Bromoform	ND	0.020	0.015	ND	0.207	0.155		1
Styrene	ND	0.020	0.008	ND	0.085	0.034		1
1,1,2,2-Tetrachloroethane	ND	0.020	0.007	ND	0.137	0.048		1
o-Xylene	ND	0.020	0.008	ND	0.087	0.035		1
Isopropylbenzene	ND	0.200	0.046	ND	0.983	0.226		1
4-Ethyltoluene	ND	0.020	0.010	ND	0.098	0.048		1
1,3,5-Trimethybenzene	ND	0.020	0.005	ND	0.098	0.025		1
1,2,4-Trimethylbenzene	ND	0.020	0.007	ND	0.098	0.034		1
1,3-Dichlorobenzene	ND	0.020	0.007	ND	0.120	0.042		1
1,4-Dichlorobenzene	ND	0.020	0.008	ND	0.120	0.048		1
sec-Butylbenzene	ND	0.200	0.047	ND	1.10	0.258		1
p-Isopropyltoluene	ND	0.200	0.048	ND	1.10	0.263		1
1,2-Dichlorobenzene	ND	0.020	0.007	ND	0.120	0.042		1

Project Name:	BATCH CANISTER CERTIFICATION	**Lab Number:**	L1631571
Project Number:	CANISTER QC BAT	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1631571-02	Date Collected:	10/04/16 16:00
Client ID:	CAN 1841 SHELF 57	Date Received:	10/05/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air by SIM								
n-Butylbenzene	ND	0.200	0.045	ND	1.10	0.247		1
1,2,4-Trichlorobenzene	ND	0.050	0.010	ND	0.371	0.074		1
Naphthalene	ND	0.050	0.012	ND	0.262	0.063		1
1,2,3-Trichlorobenzene	ND	0.050	0.019	ND	0.371	0.141		1
Hexachlorobutadiene	ND	0.050	0.011	ND	0.533	0.117		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-difluorobenzene	88		60-140
bromochloromethane	89		60-140
chlorobenzene-d5	88		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-01	Date Collected:	10/10/16 11:53
Client ID:	CAN 2300	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15		
Analytical Date:	10/10/16 18:47		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
Dichlorodifluoromethane	ND	0.200	0.047	ND	0.989	0.230		1
Chloromethane	ND	0.200	0.096	ND	0.413	0.198		1
Freon-114	ND	0.200	0.042	ND	1.40	0.293		1
Vinyl chloride	ND	0.200	0.038	ND	0.511	0.097		1
1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177		1
Butane	ND	0.200	0.044	ND	0.475	0.105		1
Acetaldehyde	ND	2.50	0.547	ND	4.50	0.985		1
Bromomethane	ND	0.200	0.070	ND	0.777	0.270		1
Chloroethane	ND	0.200	0.077	ND	0.528	0.202		1
Ethanol	ND	2.50	0.542	ND	4.71	1.02		1
Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306		1
Acrolein	ND	0.500	0.114	ND	1.15	0.261		1
Acetone	ND	1.00	0.165	ND	2.38	0.392		1
Trichlorofluoromethane	ND	0.200	0.042	ND	1.12	0.234		1
Isopropanol	ND	0.500	0.053	ND	1.23	0.129		1
Pentane	ND	0.200	0.048	ND	0.590	0.140		1
1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224		1
tert-Butyl Alcohol	ND	0.500	0.060	ND	1.52	0.182		1
Methylene chloride	ND	1.00	0.299	ND	1.74	1.04		1
3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254		1
Carbon disulfide	ND	0.200	0.035	ND	0.623	0.107		1
Freon-113	ND	0.200	0.051	ND	1.53	0.392		1
trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293		1
1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312		1
Methyl tert butyl ether	ND	0.200	0.053	ND	0.721	0.190		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-01	Date Collected:	10/10/16 11:53
Client ID:	CAN 2300	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
2-Butanone	ND	0.500	0.047	ND	1.47	0.139		1
cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233		1
Chloroform	ND	0.200	0.053	ND	0.977	0.259		1
1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223		1
n-Hexane	ND	0.200	0.052	ND	0.705	0.183		1
1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311		1
Benzene	ND	0.200	0.054	ND	0.639	0.172		1
Thiophene	ND	0.200	0.053	ND	0.688	0.182		1
Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296		1
Cyclohexane	ND	0.200	0.066	ND	0.688	0.226		1
1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322		1
Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439		1
1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281		1
Trichloroethene	ND	0.200	0.071	ND	1.07	0.382		1
2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308		1
Heptane	ND	0.200	0.055	ND	0.820	0.227		1
cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338		1
4-Methyl-2-pentanone	ND	0.500	0.061	ND	2.05	0.249		1
trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315		1
1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364		1
Toluene	ND	0.200	0.063	ND	0.754	0.237		1
2-Methylthiophene	ND	0.200	0.079	ND	0.803	0.317		1
2-Hexanone	ND	0.200	0.060	ND	0.820	0.248		1
3-Methylthiophene	ND	0.200	0.067	ND	0.803	0.269		1
Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636		1
1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599		1
Octane	ND	0.200	0.042	ND	0.934	0.197		1
Tetrachloroethene	ND	0.200	0.076	ND	1.36	0.514		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-01	Date Collected:	10/10/16 11:53
Client ID:	CAN 2300	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363		1
Ethylbenzene	ND	0.200	0.056	ND	0.869	0.241		1
2-Ethylthiophene	ND	0.200	0.057	ND	0.918	0.262		1
p/m-Xylene	ND	0.400	0.139	ND	1.74	0.604		1
Bromoform	ND	0.200	0.052	ND	2.07	0.541		1
Styrene	ND	0.200	0.080	ND	0.852	0.340		1
1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
o-Xylene	ND	0.200	0.063	ND	0.869	0.274		1
Nonane	ND	0.200	0.063	ND	1.05	0.328		1
2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252		1
4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381		1
1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287		1
1,2,4-Trimethylbenzene	ND	0.200	0.069	ND	0.983	0.341		1
Decane	ND	0.200	0.048	ND	1.16	0.282		1
1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383		1
1,4-Dichlorobenzene	ND	0.200	0.036	ND	1.20	0.217		1
1,2,3-Trimethylbenzene	ND	0.200	0.075	ND	0.983	0.369		1
1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369		1
Indane	ND	0.200	0.080	ND	0.967	0.384		1
Indene	ND	0.200	0.061	ND	0.951	0.289		1
Undecane	ND	0.200	0.053	ND	1.28	0.338		1
1,2,4,5-Tetramethylbenzene	ND	0.500	0.080	ND	2.74	0.436		1
Dodecane	ND	0.500	0.048	ND	3.48	0.333		1
1,2,4-Trichlorobenzene	ND	0.200	0.061	ND	1.48	0.454		1
Naphthalene	ND	0.200	0.043	ND	1.05	0.223		1
Benzothiophene	ND	0.500	0.047	ND	2.74	0.257		1
Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781		1
2-Methylnaphthalene	ND	1.00	0.272	ND	5.82	1.58		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-01	Date Collected:	10/10/16 11:53
Client ID:	CAN 2300	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
1-Methylnaphthalene	ND	1.00	0.250	ND	5.82	1.45		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	93		60-140
Bromochloromethane	100		60-140
chlorobenzene-d5	91		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-01	Date Collected:	10/10/16 11:53
Client ID:	CAN 2300	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	10/10/16 18:47		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
PIANO Volatile Organics in Air by SIM								
1,3-Butadiene	ND	0.025	0.010	ND	0.055	0.022		1
Ethyl Alcohol	ND	0.500	0.100	ND	0.942	0.188		1
Isopentane	ND	0.025	0.010	ND	0.074	0.030		1
1-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
2-Methyl-1-Butene	ND	0.025	0.010	ND	0.072	0.029		1
Pentane	ND	0.025	0.010	ND	0.074	0.030		1
iso-Propyl Alcohol	ND	0.500	0.100	ND	1.23	0.246		1
trans-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
cis-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
Tertiary Butanol	ND	0.025	0.010	ND	0.076	0.030		1
Cyclopentane	ND	0.025	0.010	ND	0.072	0.029		1
2,3-Dimethylbutane	ND	0.025	0.010	ND	0.088	0.035		1
2-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
Methyl tert butyl ether	ND	0.025	0.010	ND	0.090	0.036		1
3-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
1-Hexene	ND	0.025	0.010	ND	0.086	0.034		1
n-Hexane	ND	0.025	0.010	ND	0.088	0.035		1
Isopropyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
Ethyl-Tert-Butyl-Ether	ND	0.025	0.010	ND	0.104	0.042		1
2,2-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclopentane	ND	0.025	0.010	ND	0.086	0.034		1
2,4-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
1,2-Dichloroethane	ND	0.025	0.010	ND	0.101	0.041		1
Cyclohexane	ND	0.025	0.010	ND	0.086	0.034		1
2-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1

Air Canister Certification Results

Lab ID: L1632229-01 Date Collected: 10/10/16 11:53
Client ID: CAN 2300 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Benzene	ND	0.025	0.010	ND	0.080	0.032		1
2,3-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Thiophene	ND	0.025	0.010	ND	0.086	0.034		1
3-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1
Tertiary-Amyl Methyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
1-Heptene	ND	0.025	0.010	ND	0.100	0.040		1
Isooctane	ND	0.025	0.010	ND	0.117	0.047		1
Heptane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclohexane	ND	0.025	0.010	ND	0.100	0.040		1
2,5-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2,4-Dimethylhexane/2,2,3-Trimethylpentan	ND	0.025	0.010	ND	0.117	0.047		1
2,3,4-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3,3-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
3-Ethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
3-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
Toluene	ND	0.025	0.010	ND	0.094	0.038		1
2-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
3-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
1-Octene	ND	0.025	0.010	ND	0.115	0.046		1
1-Ethyl-1-Methylcyclopentane	ND	0.025	0.010	ND	0.115	0.046		1
Octane	ND	0.025	0.010	ND	0.117	0.047		1
1,2-Dibromoethane	ND	0.025	0.010	ND	0.192	0.077		1
Ethylbenzene	ND	0.025	0.010	ND	0.109	0.043		1
2-Ethylthiophene	ND	0.025	0.010	ND	0.115	0.046		1
p/m-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
1-Nonene	ND	0.025	0.010	ND	0.129	0.052		1

Air Canister Certification Results

Lab ID: L1632229-01 Date Collected: 10/10/16 11:53
Client ID: CAN 2300 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Nonane (C9)	ND	0.025	0.010	ND	0.131	0.053		1
Styrene	ND	0.025	0.010	ND	0.106	0.043		1
o-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
Isopropylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
n-Propylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1,3,5-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Decene	ND	0.025	0.010	ND	0.143	0.057		1
1-Methyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
Decane (C10)	ND	0.025	0.010	ND	0.146	0.058		1
1,2,4-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
sec-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-3-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Indane	ND	0.025	0.010	ND	0.121	0.048		1
Indene	ND	0.025	0.010	ND	0.119	0.048		1
1-Methyl-3-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
n-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Diethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,4-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Undecane	ND	0.025	0.010	ND	0.160	0.064		1
1,3-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,3-Dimethyl-5-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-01	Date Collected:	10/10/16 11:53
Client ID:	CAN 2300	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
PIANO Volatile Organics in Air by SIM								
1,3-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2,4,5-Tetramethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
N-Pentylbenzene	ND	0.025	0.010	ND	0.152	0.061		1
Dodecane (C12)	ND	0.050	0.020	ND	0.348	0.139		1
Naphthalene	ND	0.050	0.020	ND	0.262	0.105		1
Benzothiophene	ND	0.025	0.010	ND	0.137	0.055		1
MMT	ND	0.050	0.020	ND	0.446	0.178		1
Tridecane	ND	0.100	0.050	ND	0.754	0.377		1
2-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1
1-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	97		60-140
Bromochloromethane	105		60-140
chlorobenzene-d5	97		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-03	Date Collected:	10/10/16 11:53
Client ID:	CAN 2311	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15		
Analytical Date:	10/10/16 19:58		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
Dichlorodifluoromethane	ND	0.200	0.047	ND	0.989	0.230		1
Chloromethane	ND	0.200	0.096	ND	0.413	0.198		1
Freon-114	ND	0.200	0.042	ND	1.40	0.293		1
Vinyl chloride	ND	0.200	0.038	ND	0.511	0.097		1
1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177		1
Butane	ND	0.200	0.044	ND	0.475	0.105		1
Acetaldehyde	ND	2.50	0.547	ND	4.50	0.985		1
Bromomethane	ND	0.200	0.070	ND	0.777	0.270		1
Chloroethane	ND	0.200	0.077	ND	0.528	0.202		1
Ethanol	ND	2.50	0.542	ND	4.71	1.02		1
Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306		1
Acrolein	ND	0.500	0.114	ND	1.15	0.261		1
Acetone	ND	1.00	0.165	ND	2.38	0.392		1
Trichlorofluoromethane	ND	0.200	0.042	ND	1.12	0.234		1
Isopropanol	ND	0.500	0.053	ND	1.23	0.129		1
Pentane	ND	0.200	0.048	ND	0.590	0.140		1
1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224		1
tert-Butyl Alcohol	ND	0.500	0.060	ND	1.52	0.182		1
Methylene chloride	ND	1.00	0.299	ND	1.74	1.04		1
3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254		1
Carbon disulfide	ND	0.200	0.035	ND	0.623	0.107		1
Freon-113	ND	0.200	0.051	ND	1.53	0.392		1
trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293		1
1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312		1
Methyl tert butyl ether	ND	0.200	0.053	ND	0.721	0.190		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-03	Date Collected:	10/10/16 11:53
Client ID:	CAN 2311	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
2-Butanone	ND	0.500	0.047	ND	1.47	0.139		1
cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233		1
Chloroform	ND	0.200	0.053	ND	0.977	0.259		1
1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223		1
n-Hexane	ND	0.200	0.052	ND	0.705	0.183		1
1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311		1
Benzene	ND	0.200	0.054	ND	0.639	0.172		1
Thiophene	ND	0.200	0.053	ND	0.688	0.182		1
Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296		1
Cyclohexane	ND	0.200	0.066	ND	0.688	0.226		1
1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322		1
Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439		1
1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281		1
Trichloroethene	ND	0.200	0.071	ND	1.07	0.382		1
2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308		1
Heptane	ND	0.200	0.055	ND	0.820	0.227		1
cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338		1
4-Methyl-2-pentanone	ND	0.500	0.061	ND	2.05	0.249		1
trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315		1
1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364		1
Toluene	ND	0.200	0.063	ND	0.754	0.237		1
2-Methylthiophene	ND	0.200	0.079	ND	0.803	0.317		1
2-Hexanone	ND	0.200	0.060	ND	0.820	0.248		1
3-Methylthiophene	ND	0.200	0.067	ND	0.803	0.269		1
Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636		1
1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599		1
Octane	ND	0.200	0.042	ND	0.934	0.197		1
Tetrachloroethene	ND	0.200	0.076	ND	1.36	0.514		1

Air Canister Certification Results

Lab ID: L1632229-03 Date Collected: 10/10/16 11:53
Client ID: CAN 2311 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air								
Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363		1
Ethylbenzene	ND	0.200	0.056	ND	0.869	0.241		1
2-Ethylthiophene	ND	0.200	0.057	ND	0.918	0.262		1
p/m-Xylene	ND	0.400	0.139	ND	1.74	0.604		1
Bromoform	ND	0.200	0.052	ND	2.07	0.541		1
Styrene	ND	0.200	0.080	ND	0.852	0.340		1
1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
o-Xylene	ND	0.200	0.063	ND	0.869	0.274		1
Nonane	ND	0.200	0.063	ND	1.05	0.328		1
2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252		1
4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381		1
1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287		1
1,2,4-Trimethylbenzene	ND	0.200	0.069	ND	0.983	0.341		1
Decane	ND	0.200	0.048	ND	1.16	0.282		1
1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383		1
1,4-Dichlorobenzene	ND	0.200	0.036	ND	1.20	0.217		1
1,2,3-Trimethylbenzene	ND	0.200	0.075	ND	0.983	0.369		1
1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369		1
Indane	ND	0.200	0.080	ND	0.967	0.384		1
Indene	ND	0.200	0.061	ND	0.951	0.289		1
Undecane	ND	0.200	0.053	ND	1.28	0.338		1
1,2,4,5-Tetramethylbenzene	ND	0.500	0.080	ND	2.74	0.436		1
Dodecane	ND	0.500	0.048	ND	3.48	0.333		1
1,2,4-Trichlorobenzene	ND	0.200	0.061	ND	1.48	0.454		1
Naphthalene	ND	0.200	0.043	ND	1.05	0.223		1
Benzothiophene	ND	0.500	0.047	ND	2.74	0.257		1
Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781		1
2-Methylnaphthalene	ND	1.00	0.272	ND	5.82	1.58		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-03	Date Collected:	10/10/16 11:53
Client ID:	CAN 2311	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
1-Methylnaphthalene	ND	1.00	0.250	ND	5.82	1.45		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	94		60-140
Bromochloromethane	97		60-140
chlorobenzene-d5	91		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-03	Date Collected:	10/10/16 11:53
Client ID:	CAN 2311	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	10/10/16 19:58		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
PIANO Volatile Organics in Air by SIM								
1,3-Butadiene	ND	0.025	0.010	ND	0.055	0.022		1
Ethyl Alcohol	ND	0.500	0.100	ND	0.942	0.188		1
Isopentane	ND	0.025	0.010	ND	0.074	0.030		1
1-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
2-Methyl-1-Butene	ND	0.025	0.010	ND	0.072	0.029		1
Pentane	ND	0.025	0.010	ND	0.074	0.030		1
iso-Propyl Alcohol	ND	0.500	0.100	ND	1.23	0.246		1
trans-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
cis-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
Tertiary Butanol	ND	0.025	0.010	ND	0.076	0.030		1
Cyclopentane	ND	0.025	0.010	ND	0.072	0.029		1
2,3-Dimethylbutane	ND	0.025	0.010	ND	0.088	0.035		1
2-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
Methyl tert butyl ether	ND	0.025	0.010	ND	0.090	0.036		1
3-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
1-Hexene	ND	0.025	0.010	ND	0.086	0.034		1
n-Hexane	ND	0.025	0.010	ND	0.088	0.035		1
Isopropyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
Ethyl-Tert-Butyl-Ether	ND	0.025	0.010	ND	0.104	0.042		1
2,2-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclopentane	ND	0.025	0.010	ND	0.086	0.034		1
2,4-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
1,2-Dichloroethane	ND	0.025	0.010	ND	0.101	0.041		1
Cyclohexane	ND	0.025	0.010	ND	0.086	0.034		1
2-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1

Air Canister Certification Results

Lab ID: L1632229-03 Date Collected: 10/10/16 11:53
Client ID: CAN 2311 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Benzene	ND	0.025	0.010	ND	0.080	0.032		1
2,3-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Thiophene	ND	0.025	0.010	ND	0.086	0.034		1
3-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1
Tertiary-Amyl Methyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
1-Heptene	ND	0.025	0.010	ND	0.100	0.040		1
Isooctane	ND	0.025	0.010	ND	0.117	0.047		1
Heptane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclohexane	ND	0.025	0.010	ND	0.100	0.040		1
2,5-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2,4-Dimethylhexane/2,2,3-Trimethylpentan	ND	0.025	0.010	ND	0.117	0.047		1
2,3,4-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3,3-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
3-Ethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
3-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
Toluene	ND	0.025	0.010	ND	0.094	0.038		1
2-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
3-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
1-Octene	ND	0.025	0.010	ND	0.115	0.046		1
1-Ethyl-1-Methylcyclopentane	ND	0.025	0.010	ND	0.115	0.046		1
Octane	ND	0.025	0.010	ND	0.117	0.047		1
1,2-Dibromoethane	ND	0.025	0.010	ND	0.192	0.077		1
Ethylbenzene	ND	0.025	0.010	ND	0.109	0.043		1
2-Ethylthiophene	ND	0.025	0.010	ND	0.115	0.046		1
p/m-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
1-Nonene	ND	0.025	0.010	ND	0.129	0.052		1

Air Canister Certification Results

Lab ID: L1632229-03 Date Collected: 10/10/16 11:53
Client ID: CAN 2311 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Nonane (C9)	ND	0.025	0.010	ND	0.131	0.053		1
Styrene	ND	0.025	0.010	ND	0.106	0.043		1
o-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
Isopropylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
n-Propylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1,3,5-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Decene	ND	0.025	0.010	ND	0.143	0.057		1
1-Methyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
Decane (C10)	ND	0.025	0.010	ND	0.146	0.058		1
1,2,4-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
sec-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-3-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Indane	ND	0.025	0.010	ND	0.121	0.048		1
Indene	ND	0.025	0.010	ND	0.119	0.048		1
1-Methyl-3-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
n-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Diethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,4-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Undecane	ND	0.025	0.010	ND	0.160	0.064		1
1,3-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,3-Dimethyl-5-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1

Air Canister Certification Results

Lab ID: L1632229-03 Date Collected: 10/10/16 11:53
Client ID: CAN 2311 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
1,3-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2,4,5-Tetramethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
N-Pentylbenzene	ND	0.025	0.010	ND	0.152	0.061		1
Dodecane (C12)	ND	0.050	0.020	ND	0.348	0.139		1
Naphthalene	ND	0.050	0.020	ND	0.262	0.105		1
Benzothiophene	ND	0.025	0.010	ND	0.137	0.055		1
MMT	ND	0.050	0.020	ND	0.446	0.178		1
Tridecane	ND	0.100	0.050	ND	0.754	0.377		1
2-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1
1-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	97		60-140
Bromochloromethane	102		60-140
chlorobenzene-d5	98		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-04	Date Collected:	10/10/16 11:53
Client ID:	CAN 2313	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15		
Analytical Date:	10/10/16 20:33		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
Dichlorodifluoromethane	ND	0.200	0.047	ND	0.989	0.230		1
Chloromethane	ND	0.200	0.096	ND	0.413	0.198		1
Freon-114	ND	0.200	0.042	ND	1.40	0.293		1
Vinyl chloride	ND	0.200	0.038	ND	0.511	0.097		1
1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177		1
Butane	ND	0.200	0.044	ND	0.475	0.105		1
Acetaldehyde	ND	2.50	0.547	ND	4.50	0.985		1
Bromomethane	ND	0.200	0.070	ND	0.777	0.270		1
Chloroethane	ND	0.200	0.077	ND	0.528	0.202		1
Ethanol	ND	2.50	0.542	ND	4.71	1.02		1
Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306		1
Acrolein	ND	0.500	0.114	ND	1.15	0.261		1
Acetone	ND	1.00	0.165	ND	2.38	0.392		1
Trichlorofluoromethane	ND	0.200	0.042	ND	1.12	0.234		1
Isopropanol	ND	0.500	0.053	ND	1.23	0.129		1
Pentane	ND	0.200	0.048	ND	0.590	0.140		1
1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224		1
tert-Butyl Alcohol	ND	0.500	0.060	ND	1.52	0.182		1
Methylene chloride	ND	1.00	0.299	ND	1.74	1.04		1
3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254		1
Carbon disulfide	ND	0.200	0.035	ND	0.623	0.107		1
Freon-113	ND	0.200	0.051	ND	1.53	0.392		1
trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293		1
1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312		1
Methyl tert butyl ether	ND	0.200	0.053	ND	0.721	0.190		1

Air Canister Certification Results

Lab ID: L1632229-04 Date Collected: 10/10/16 11:53
Client ID: CAN 2313 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air								
2-Butanone	ND	0.500	0.047	ND	1.47	0.139		1
cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233		1
Chloroform	ND	0.200	0.053	ND	0.977	0.259		1
1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223		1
n-Hexane	ND	0.200	0.052	ND	0.705	0.183		1
1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311		1
Benzene	ND	0.200	0.054	ND	0.639	0.172		1
Thiophene	ND	0.200	0.053	ND	0.688	0.182		1
Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296		1
Cyclohexane	ND	0.200	0.066	ND	0.688	0.226		1
1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322		1
Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439		1
1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281		1
Trichloroethene	ND	0.200	0.071	ND	1.07	0.382		1
2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308		1
Heptane	ND	0.200	0.055	ND	0.820	0.227		1
cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338		1
4-Methyl-2-pentanone	ND	0.500	0.061	ND	2.05	0.249		1
trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315		1
1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364		1
Toluene	ND	0.200	0.063	ND	0.754	0.237		1
2-Methylthiophene	ND	0.200	0.079	ND	0.803	0.317		1
2-Hexanone	ND	0.200	0.060	ND	0.820	0.248		1
3-Methylthiophene	ND	0.200	0.067	ND	0.803	0.269		1
Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636		1
1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599		1
Octane	ND	0.200	0.042	ND	0.934	0.197		1
Tetrachloroethene	ND	0.200	0.076	ND	1.36	0.514		1

Air Canister Certification Results

Lab ID: L1632229-04 Date Collected: 10/10/16 11:53
Client ID: CAN 2313 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363		1
Ethylbenzene	ND	0.200	0.056	ND	0.869	0.241		1
2-Ethylthiophene	ND	0.200	0.057	ND	0.918	0.262		1
p/m-Xylene	ND	0.400	0.139	ND	1.74	0.604		1
Bromoform	ND	0.200	0.052	ND	2.07	0.541		1
Styrene	ND	0.200	0.080	ND	0.852	0.340		1
1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
o-Xylene	ND	0.200	0.063	ND	0.869	0.274		1
Nonane	ND	0.200	0.063	ND	1.05	0.328		1
2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252		1
4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381		1
1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287		1
1,2,4-Trimethylbenzene	ND	0.200	0.069	ND	0.983	0.341		1
Decane	ND	0.200	0.048	ND	1.16	0.282		1
1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383		1
1,4-Dichlorobenzene	ND	0.200	0.036	ND	1.20	0.217		1
1,2,3-Trimethylbenzene	ND	0.200	0.075	ND	0.983	0.369		1
1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369		1
Indane	ND	0.200	0.080	ND	0.967	0.384		1
Indene	ND	0.200	0.061	ND	0.951	0.289		1
Undecane	ND	0.200	0.053	ND	1.28	0.338		1
1,2,4,5-Tetramethylbenzene	ND	0.500	0.080	ND	2.74	0.436		1
Dodecane	ND	0.500	0.048	ND	3.48	0.333		1
1,2,4-Trichlorobenzene	ND	0.200	0.061	ND	1.48	0.454		1
Naphthalene	ND	0.200	0.043	ND	1.05	0.223		1
Benzothiophene	ND	0.500	0.047	ND	2.74	0.257		1
Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781		1
2-Methylnaphthalene	ND	1.00	0.272	ND	5.82	1.58		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-04	Date Collected:	10/10/16 11:53
Client ID:	CAN 2313	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
1-Methylnaphthalene	ND	1.00	0.250	ND	5.82	1.45		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	92		60-140
Bromochloromethane	96		60-140
chlorobenzene-d5	88		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-04	Date Collected:	10/10/16 11:53
Client ID:	CAN 2313	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	10/10/16 20:33		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
PIANO Volatile Organics in Air by SIM								
1,3-Butadiene	ND	0.025	0.010	ND	0.055	0.022		1
Ethyl Alcohol	ND	0.500	0.100	ND	0.942	0.188		1
Isopentane	ND	0.025	0.010	ND	0.074	0.030		1
1-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
2-Methyl-1-Butene	ND	0.025	0.010	ND	0.072	0.029		1
Pentane	ND	0.025	0.010	ND	0.074	0.030		1
iso-Propyl Alcohol	ND	0.500	0.100	ND	1.23	0.246		1
trans-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
cis-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
Tertiary Butanol	ND	0.025	0.010	ND	0.076	0.030		1
Cyclopentane	ND	0.025	0.010	ND	0.072	0.029		1
2,3-Dimethylbutane	ND	0.025	0.010	ND	0.088	0.035		1
2-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
Methyl tert butyl ether	ND	0.025	0.010	ND	0.090	0.036		1
3-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
1-Hexene	ND	0.025	0.010	ND	0.086	0.034		1
n-Hexane	ND	0.025	0.010	ND	0.088	0.035		1
Isopropyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
Ethyl-Tert-Butyl-Ether	ND	0.025	0.010	ND	0.104	0.042		1
2,2-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclopentane	ND	0.025	0.010	ND	0.086	0.034		1
2,4-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
1,2-Dichloroethane	ND	0.025	0.010	ND	0.101	0.041		1
Cyclohexane	ND	0.025	0.010	ND	0.086	0.034		1
2-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1

Air Canister Certification Results

Lab ID: L1632229-04 Date Collected: 10/10/16 11:53
Client ID: CAN 2313 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Benzene	ND	0.025	0.010	ND	0.080	0.032		1
2,3-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Thiophene	ND	0.025	0.010	ND	0.086	0.034		1
3-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1
Tertiary-Amyl Methyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
1-Heptene	ND	0.025	0.010	ND	0.100	0.040		1
Isooctane	ND	0.025	0.010	ND	0.117	0.047		1
Heptane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclohexane	ND	0.025	0.010	ND	0.100	0.040		1
2,5-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2,4-Dimethylhexane/2,2,3-Trimethylpentan	ND	0.025	0.010	ND	0.117	0.047		1
2,3,4-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3,3-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
3-Ethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
3-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
Toluene	ND	0.025	0.010	ND	0.094	0.038		1
2-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
3-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
1-Octene	ND	0.025	0.010	ND	0.115	0.046		1
1-Ethyl-1-Methylcyclopentane	ND	0.025	0.010	ND	0.115	0.046		1
Octane	ND	0.025	0.010	ND	0.117	0.047		1
1,2-Dibromoethane	ND	0.025	0.010	ND	0.192	0.077		1
Ethylbenzene	ND	0.025	0.010	ND	0.109	0.043		1
2-Ethylthiophene	ND	0.025	0.010	ND	0.115	0.046		1
p/m-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
1-Nonene	ND	0.025	0.010	ND	0.129	0.052		1

Air Canister Certification Results

Lab ID: L1632229-04 Date Collected: 10/10/16 11:53
Client ID: CAN 2313 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Nonane (C9)	ND	0.025	0.010	ND	0.131	0.053		1
Styrene	ND	0.025	0.010	ND	0.106	0.043		1
o-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
Isopropylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
n-Propylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1,3,5-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Decene	ND	0.025	0.010	ND	0.143	0.057		1
1-Methyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
Decane (C10)	ND	0.025	0.010	ND	0.146	0.058		1
1,2,4-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
sec-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-3-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Indane	ND	0.025	0.010	ND	0.121	0.048		1
Indene	ND	0.025	0.010	ND	0.119	0.048		1
1-Methyl-3-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
n-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Diethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,4-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Undecane	ND	0.025	0.010	ND	0.160	0.064		1
1,3-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,3-Dimethyl-5-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-04	Date Collected:	10/10/16 11:53
Client ID:	CAN 2313	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
PIANO Volatile Organics in Air by SIM								
1,3-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2,4,5-Tetramethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
N-Pentylbenzene	ND	0.025	0.010	ND	0.152	0.061		1
Dodecane (C12)	ND	0.050	0.020	ND	0.348	0.139		1
Naphthalene	ND	0.050	0.020	ND	0.262	0.105		1
Benzothiophene	ND	0.025	0.010	ND	0.137	0.055		1
MMT	ND	0.050	0.020	ND	0.446	0.178		1
Tridecane	ND	0.100	0.050	ND	0.754	0.377		1
2-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1
1-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	96		60-140
Bromochloromethane	102		60-140
chlorobenzene-d5	96		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-05	Date Collected:	10/10/16 11:53
Client ID:	CAN 2302	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15		
Analytical Date:	10/10/16 21:09		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
Dichlorodifluoromethane	ND	0.200	0.047	ND	0.989	0.230		1
Chloromethane	ND	0.200	0.096	ND	0.413	0.198		1
Freon-114	ND	0.200	0.042	ND	1.40	0.293		1
Vinyl chloride	ND	0.200	0.038	ND	0.511	0.097		1
1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177		1
Butane	ND	0.200	0.044	ND	0.475	0.105		1
Acetaldehyde	ND	2.50	0.547	ND	4.50	0.985		1
Bromomethane	ND	0.200	0.070	ND	0.777	0.270		1
Chloroethane	ND	0.200	0.077	ND	0.528	0.202		1
Ethanol	ND	2.50	0.542	ND	4.71	1.02		1
Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306		1
Acrolein	ND	0.500	0.114	ND	1.15	0.261		1
Acetone	ND	1.00	0.165	ND	2.38	0.392		1
Trichlorofluoromethane	ND	0.200	0.042	ND	1.12	0.234		1
Isopropanol	ND	0.500	0.053	ND	1.23	0.129		1
Pentane	ND	0.200	0.048	ND	0.590	0.140		1
1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224		1
tert-Butyl Alcohol	ND	0.500	0.060	ND	1.52	0.182		1
Methylene chloride	ND	1.00	0.299	ND	1.74	1.04		1
3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254		1
Carbon disulfide	ND	0.200	0.035	ND	0.623	0.107		1
Freon-113	ND	0.200	0.051	ND	1.53	0.392		1
trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293		1
1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312		1
Methyl tert butyl ether	ND	0.200	0.053	ND	0.721	0.190		1

Air Canister Certification Results

Lab ID: L1632229-05 Date Collected: 10/10/16 11:53
Client ID: CAN 2302 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air								
2-Butanone	ND	0.500	0.047	ND	1.47	0.139		1
cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233		1
Chloroform	ND	0.200	0.053	ND	0.977	0.259		1
1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223		1
n-Hexane	ND	0.200	0.052	ND	0.705	0.183		1
1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311		1
Benzene	ND	0.200	0.054	ND	0.639	0.172		1
Thiophene	ND	0.200	0.053	ND	0.688	0.182		1
Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296		1
Cyclohexane	ND	0.200	0.066	ND	0.688	0.226		1
1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322		1
Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439		1
1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281		1
Trichloroethene	ND	0.200	0.071	ND	1.07	0.382		1
2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308		1
Heptane	ND	0.200	0.055	ND	0.820	0.227		1
cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338		1
4-Methyl-2-pentanone	ND	0.500	0.061	ND	2.05	0.249		1
trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315		1
1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364		1
Toluene	ND	0.200	0.063	ND	0.754	0.237		1
2-Methylthiophene	ND	0.200	0.079	ND	0.803	0.317		1
2-Hexanone	ND	0.200	0.060	ND	0.820	0.248		1
3-Methylthiophene	ND	0.200	0.067	ND	0.803	0.269		1
Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636		1
1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599		1
Octane	ND	0.200	0.042	ND	0.934	0.197		1
Tetrachloroethene	ND	0.200	0.076	ND	1.36	0.514		1

Air Canister Certification Results

Lab ID: L1632229-05 Date Collected: 10/10/16 11:53
Client ID: CAN 2302 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air								
Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363		1
Ethylbenzene	ND	0.200	0.056	ND	0.869	0.241		1
2-Ethylthiophene	ND	0.200	0.057	ND	0.918	0.262		1
p/m-Xylene	ND	0.400	0.139	ND	1.74	0.604		1
Bromoform	ND	0.200	0.052	ND	2.07	0.541		1
Styrene	ND	0.200	0.080	ND	0.852	0.340		1
1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
o-Xylene	ND	0.200	0.063	ND	0.869	0.274		1
Nonane	ND	0.200	0.063	ND	1.05	0.328		1
2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252		1
4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381		1
1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287		1
1,2,4-Trimethylbenzene	ND	0.200	0.069	ND	0.983	0.341		1
Decane	ND	0.200	0.048	ND	1.16	0.282		1
1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383		1
1,4-Dichlorobenzene	ND	0.200	0.036	ND	1.20	0.217		1
1,2,3-Trimethylbenzene	ND	0.200	0.075	ND	0.983	0.369		1
1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369		1
Indane	ND	0.200	0.080	ND	0.967	0.384		1
Indene	ND	0.200	0.061	ND	0.951	0.289		1
Undecane	ND	0.200	0.053	ND	1.28	0.338		1
1,2,4,5-Tetramethylbenzene	ND	0.500	0.080	ND	2.74	0.436		1
Dodecane	ND	0.500	0.048	ND	3.48	0.333		1
1,2,4-Trichlorobenzene	ND	0.200	0.061	ND	1.48	0.454		1
Naphthalene	ND	0.200	0.043	ND	1.05	0.223		1
Benzothiophene	ND	0.500	0.047	ND	2.74	0.257		1
Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781		1
2-Methylnaphthalene	ND	1.00	0.272	ND	5.82	1.58		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-05	Date Collected:	10/10/16 11:53
Client ID:	CAN 2302	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
1-Methylnaphthalene	ND	1.00	0.250	ND	5.82	1.45		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	93		60-140
Bromochloromethane	96		60-140
chlorobenzene-d5	94		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-05	Date Collected:	10/10/16 11:53
Client ID:	CAN 2302	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	10/10/16 21:09		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
PIANO Volatile Organics in Air by SIM								
1,3-Butadiene	ND	0.025	0.010	ND	0.055	0.022		1
Ethyl Alcohol	ND	0.500	0.100	ND	0.942	0.188		1
Isopentane	ND	0.025	0.010	ND	0.074	0.030		1
1-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
2-Methyl-1-Butene	ND	0.025	0.010	ND	0.072	0.029		1
Pentane	ND	0.025	0.010	ND	0.074	0.030		1
iso-Propyl Alcohol	ND	0.500	0.100	ND	1.23	0.246		1
trans-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
cis-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
Tertiary Butanol	ND	0.025	0.010	ND	0.076	0.030		1
Cyclopentane	ND	0.025	0.010	ND	0.072	0.029		1
2,3-Dimethylbutane	ND	0.025	0.010	ND	0.088	0.035		1
2-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
Methyl tert butyl ether	ND	0.025	0.010	ND	0.090	0.036		1
3-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
1-Hexene	ND	0.025	0.010	ND	0.086	0.034		1
n-Hexane	ND	0.025	0.010	ND	0.088	0.035		1
Isopropyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
Ethyl-Tert-Butyl-Ether	ND	0.025	0.010	ND	0.104	0.042		1
2,2-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclopentane	ND	0.025	0.010	ND	0.086	0.034		1
2,4-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
1,2-Dichloroethane	ND	0.025	0.010	ND	0.101	0.041		1
Cyclohexane	ND	0.025	0.010	ND	0.086	0.034		1
2-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1

Air Canister Certification Results

Lab ID: L1632229-05 Date Collected: 10/10/16 11:53
Client ID: CAN 2302 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Benzene	ND	0.025	0.010	ND	0.080	0.032		1
2,3-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Thiophene	ND	0.025	0.010	ND	0.086	0.034		1
3-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1
Tertiary-Amyl Methyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
1-Heptene	ND	0.025	0.010	ND	0.100	0.040		1
Isooctane	ND	0.025	0.010	ND	0.117	0.047		1
Heptane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclohexane	ND	0.025	0.010	ND	0.100	0.040		1
2,5-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2,4-Dimethylhexane/2,2,3-Trimethylpentan	ND	0.025	0.010	ND	0.117	0.047		1
2,3,4-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3,3-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
3-Ethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
3-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
Toluene	ND	0.025	0.010	ND	0.094	0.038		1
2-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
3-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
1-Octene	ND	0.025	0.010	ND	0.115	0.046		1
1-Ethyl-1-Methylcyclopentane	ND	0.025	0.010	ND	0.115	0.046		1
Octane	ND	0.025	0.010	ND	0.117	0.047		1
1,2-Dibromoethane	ND	0.025	0.010	ND	0.192	0.077		1
Ethylbenzene	ND	0.025	0.010	ND	0.109	0.043		1
2-Ethylthiophene	ND	0.025	0.010	ND	0.115	0.046		1
p/m-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
1-Nonene	ND	0.025	0.010	ND	0.129	0.052		1

Air Canister Certification Results

Lab ID: L1632229-05 Date Collected: 10/10/16 11:53
Client ID: CAN 2302 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
PIANO Volatile Organics in Air by SIM								
Nonane (C9)	ND	0.025	0.010	ND	0.131	0.053		1
Styrene	ND	0.025	0.010	ND	0.106	0.043		1
o-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
Isopropylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
n-Propylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1,3,5-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Decene	ND	0.025	0.010	ND	0.143	0.057		1
1-Methyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
Decane (C10)	ND	0.025	0.010	ND	0.146	0.058		1
1,2,4-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
sec-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-3-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Indane	ND	0.025	0.010	ND	0.121	0.048		1
Indene	ND	0.025	0.010	ND	0.119	0.048		1
1-Methyl-3-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
n-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Diethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,4-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Undecane	ND	0.025	0.010	ND	0.160	0.064		1
1,3-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,3-Dimethyl-5-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1

Air Canister Certification Results

Lab ID: L1632229-05 Date Collected: 10/10/16 11:53
Client ID: CAN 2302 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
1,3-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2,4,5-Tetramethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
N-Pentylbenzene	ND	0.025	0.010	ND	0.152	0.061		1
Dodecane (C12)	ND	0.050	0.020	ND	0.348	0.139		1
Naphthalene	ND	0.050	0.020	ND	0.262	0.105		1
Benzothiophene	ND	0.025	0.010	ND	0.137	0.055		1
MMT	ND	0.050	0.020	ND	0.446	0.178		1
Tridecane	ND	0.100	0.050	ND	0.754	0.377		1
2-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1
1-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	98		60-140
Bromochloromethane	102		60-140
chlorobenzene-d5	99		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-06	Date Collected:	10/10/16 11:53
Client ID:	CAN 2308	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15		
Analytical Date:	10/10/16 21:44		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
Dichlorodifluoromethane	ND	0.200	0.047	ND	0.989	0.230		1
Chloromethane	ND	0.200	0.096	ND	0.413	0.198		1
Freon-114	ND	0.200	0.042	ND	1.40	0.293		1
Vinyl chloride	ND	0.200	0.038	ND	0.511	0.097		1
1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177		1
Butane	ND	0.200	0.044	ND	0.475	0.105		1
Acetaldehyde	ND	2.50	0.547	ND	4.50	0.985		1
Bromomethane	ND	0.200	0.070	ND	0.777	0.270		1
Chloroethane	ND	0.200	0.077	ND	0.528	0.202		1
Ethanol	ND	2.50	0.542	ND	4.71	1.02		1
Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306		1
Acrolein	ND	0.500	0.114	ND	1.15	0.261		1
Acetone	ND	1.00	0.165	ND	2.38	0.392		1
Trichlorofluoromethane	ND	0.200	0.042	ND	1.12	0.234		1
Isopropanol	ND	0.500	0.053	ND	1.23	0.129		1
Pentane	ND	0.200	0.048	ND	0.590	0.140		1
1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224		1
tert-Butyl Alcohol	ND	0.500	0.060	ND	1.52	0.182		1
Methylene chloride	ND	1.00	0.299	ND	1.74	1.04		1
3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254		1
Carbon disulfide	ND	0.200	0.035	ND	0.623	0.107		1
Freon-113	ND	0.200	0.051	ND	1.53	0.392		1
trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293		1
1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312		1
Methyl tert butyl ether	ND	0.200	0.053	ND	0.721	0.190		1

Air Canister Certification Results

Lab ID: L1632229-06 Date Collected: 10/10/16 11:53
Client ID: CAN 2308 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air								
2-Butanone	ND	0.500	0.047	ND	1.47	0.139		1
cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233		1
Chloroform	ND	0.200	0.053	ND	0.977	0.259		1
1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223		1
n-Hexane	ND	0.200	0.052	ND	0.705	0.183		1
1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311		1
Benzene	ND	0.200	0.054	ND	0.639	0.172		1
Thiophene	ND	0.200	0.053	ND	0.688	0.182		1
Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296		1
Cyclohexane	ND	0.200	0.066	ND	0.688	0.226		1
1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322		1
Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439		1
1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281		1
Trichloroethene	ND	0.200	0.071	ND	1.07	0.382		1
2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308		1
Heptane	ND	0.200	0.055	ND	0.820	0.227		1
cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338		1
4-Methyl-2-pentanone	ND	0.500	0.061	ND	2.05	0.249		1
trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315		1
1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364		1
Toluene	ND	0.200	0.063	ND	0.754	0.237		1
2-Methylthiophene	ND	0.200	0.079	ND	0.803	0.317		1
2-Hexanone	ND	0.200	0.060	ND	0.820	0.248		1
3-Methylthiophene	ND	0.200	0.067	ND	0.803	0.269		1
Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636		1
1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599		1
Octane	ND	0.200	0.042	ND	0.934	0.197		1
Tetrachloroethene	ND	0.200	0.076	ND	1.36	0.514		1

Air Canister Certification Results

Lab ID: L1632229-06 Date Collected: 10/10/16 11:53
Client ID: CAN 2308 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air								
Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363		1
Ethylbenzene	ND	0.200	0.056	ND	0.869	0.241		1
2-Ethylthiophene	ND	0.200	0.057	ND	0.918	0.262		1
p/m-Xylene	ND	0.400	0.139	ND	1.74	0.604		1
Bromoform	ND	0.200	0.052	ND	2.07	0.541		1
Styrene	ND	0.200	0.080	ND	0.852	0.340		1
1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
o-Xylene	ND	0.200	0.063	ND	0.869	0.274		1
Nonane	ND	0.200	0.063	ND	1.05	0.328		1
2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252		1
4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381		1
1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287		1
1,2,4-Trimethylbenzene	ND	0.200	0.069	ND	0.983	0.341		1
Decane	ND	0.200	0.048	ND	1.16	0.282		1
1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383		1
1,4-Dichlorobenzene	ND	0.200	0.036	ND	1.20	0.217		1
1,2,3-Trimethylbenzene	ND	0.200	0.075	ND	0.983	0.369		1
1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369		1
Indane	ND	0.200	0.080	ND	0.967	0.384		1
Indene	ND	0.200	0.061	ND	0.951	0.289		1
Undecane	ND	0.200	0.053	ND	1.28	0.338		1
1,2,4,5-Tetramethylbenzene	ND	0.500	0.080	ND	2.74	0.436		1
Dodecane	ND	0.500	0.048	ND	3.48	0.333		1
1,2,4-Trichlorobenzene	ND	0.200	0.061	ND	1.48	0.454		1
Naphthalene	ND	0.200	0.043	ND	1.05	0.223		1
Benzothiophene	ND	0.500	0.047	ND	2.74	0.257		1
Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781		1
2-Methylnaphthalene	ND	1.00	0.272	ND	5.82	1.58		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-06	Date Collected:	10/10/16 11:53
Client ID:	CAN 2308	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
1-Methylnaphthalene	ND	1.00	0.250	ND	5.82	1.45		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	94		60-140
Bromochloromethane	96		60-140
chlorobenzene-d5	92		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-06	Date Collected:	10/10/16 11:53
Client ID:	CAN 2308	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	10/10/16 21:44		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
PIANO Volatile Organics in Air by SIM								
1,3-Butadiene	ND	0.025	0.010	ND	0.055	0.022		1
Ethyl Alcohol	ND	0.500	0.100	ND	0.942	0.188		1
Isopentane	ND	0.025	0.010	ND	0.074	0.030		1
1-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
2-Methyl-1-Butene	ND	0.025	0.010	ND	0.072	0.029		1
Pentane	ND	0.025	0.010	ND	0.074	0.030		1
iso-Propyl Alcohol	ND	0.500	0.100	ND	1.23	0.246		1
trans-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
cis-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
Tertiary Butanol	ND	0.025	0.010	ND	0.076	0.030		1
Cyclopentane	ND	0.025	0.010	ND	0.072	0.029		1
2,3-Dimethylbutane	ND	0.025	0.010	ND	0.088	0.035		1
2-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
Methyl tert butyl ether	ND	0.025	0.010	ND	0.090	0.036		1
3-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
1-Hexene	ND	0.025	0.010	ND	0.086	0.034		1
n-Hexane	ND	0.025	0.010	ND	0.088	0.035		1
Isopropyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
Ethyl-Tert-Butyl-Ether	ND	0.025	0.010	ND	0.104	0.042		1
2,2-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclopentane	ND	0.025	0.010	ND	0.086	0.034		1
2,4-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
1,2-Dichloroethane	ND	0.025	0.010	ND	0.101	0.041		1
Cyclohexane	ND	0.025	0.010	ND	0.086	0.034		1
2-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1

Air Canister Certification Results

Lab ID: L1632229-06 Date Collected: 10/10/16 11:53
Client ID: CAN 2308 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Benzene	ND	0.025	0.010	ND	0.080	0.032		1
2,3-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Thiophene	ND	0.025	0.010	ND	0.086	0.034		1
3-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1
Tertiary-Amyl Methyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
1-Heptene	ND	0.025	0.010	ND	0.100	0.040		1
Isooctane	ND	0.025	0.010	ND	0.117	0.047		1
Heptane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclohexane	ND	0.025	0.010	ND	0.100	0.040		1
2,5-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2,4-Dimethylhexane/2,2,3-Trimethylpentan	ND	0.025	0.010	ND	0.117	0.047		1
2,3,4-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3,3-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
3-Ethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
3-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
Toluene	ND	0.025	0.010	ND	0.094	0.038		1
2-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
3-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
1-Octene	ND	0.025	0.010	ND	0.115	0.046		1
1-Ethyl-1-Methylcyclopentane	ND	0.025	0.010	ND	0.115	0.046		1
Octane	ND	0.025	0.010	ND	0.117	0.047		1
1,2-Dibromoethane	ND	0.025	0.010	ND	0.192	0.077		1
Ethylbenzene	ND	0.025	0.010	ND	0.109	0.043		1
2-Ethylthiophene	ND	0.025	0.010	ND	0.115	0.046		1
p/m-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
1-Nonene	ND	0.025	0.010	ND	0.129	0.052		1

Air Canister Certification Results

Lab ID: L1632229-06 Date Collected: 10/10/16 11:53
Client ID: CAN 2308 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Nonane (C9)	ND	0.025	0.010	ND	0.131	0.053		1
Styrene	ND	0.025	0.010	ND	0.106	0.043		1
o-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
Isopropylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
n-Propylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1,3,5-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Decene	ND	0.025	0.010	ND	0.143	0.057		1
1-Methyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
Decane (C10)	ND	0.025	0.010	ND	0.146	0.058		1
1,2,4-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
sec-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-3-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Indane	ND	0.025	0.010	ND	0.121	0.048		1
Indene	ND	0.025	0.010	ND	0.119	0.048		1
1-Methyl-3-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
n-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Diethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,4-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Undecane	ND	0.025	0.010	ND	0.160	0.064		1
1,3-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,3-Dimethyl-5-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-06	Date Collected:	10/10/16 11:53
Client ID:	CAN 2308	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
PIANO Volatile Organics in Air by SIM								
1,3-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2,4,5-Tetramethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
N-Pentylbenzene	ND	0.025	0.010	ND	0.152	0.061		1
Dodecane (C12)	ND	0.050	0.020	ND	0.348	0.139		1
Naphthalene	ND	0.050	0.020	ND	0.262	0.105		1
Benzothiophene	ND	0.025	0.010	ND	0.137	0.055		1
MMT	ND	0.050	0.020	ND	0.446	0.178		1
Tridecane	ND	0.100	0.050	ND	0.754	0.377		1
2-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1
1-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	99		60-140
Bromochloromethane	100		60-140
chlorobenzene-d5	98		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-07	Date Collected:	10/10/16 11:53
Client ID:	CAN 2299	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15		
Analytical Date:	10/10/16 22:19		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
Dichlorodifluoromethane	ND	0.200	0.047	ND	0.989	0.230		1
Chloromethane	ND	0.200	0.096	ND	0.413	0.198		1
Freon-114	ND	0.200	0.042	ND	1.40	0.293		1
Vinyl chloride	ND	0.200	0.038	ND	0.511	0.097		1
1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177		1
Butane	ND	0.200	0.044	ND	0.475	0.105		1
Acetaldehyde	ND	2.50	0.547	ND	4.50	0.985		1
Bromomethane	ND	0.200	0.070	ND	0.777	0.270		1
Chloroethane	ND	0.200	0.077	ND	0.528	0.202		1
Ethanol	ND	2.50	0.542	ND	4.71	1.02		1
Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306		1
Acrolein	ND	0.500	0.114	ND	1.15	0.261		1
Acetone	ND	1.00	0.165	ND	2.38	0.392		1
Trichlorofluoromethane	ND	0.200	0.042	ND	1.12	0.234		1
Isopropanol	ND	0.500	0.053	ND	1.23	0.129		1
Pentane	ND	0.200	0.048	ND	0.590	0.140		1
1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224		1
tert-Butyl Alcohol	ND	0.500	0.060	ND	1.52	0.182		1
Methylene chloride	ND	1.00	0.299	ND	1.74	1.04		1
3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254		1
Carbon disulfide	ND	0.200	0.035	ND	0.623	0.107		1
Freon-113	ND	0.200	0.051	ND	1.53	0.392		1
trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293		1
1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312		1
Methyl tert butyl ether	ND	0.200	0.053	ND	0.721	0.190		1

Air Canister Certification Results

Lab ID: L1632229-07 Date Collected: 10/10/16 11:53
Client ID: CAN 2299 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air								
2-Butanone	ND	0.500	0.047	ND	1.47	0.139		1
cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233		1
Chloroform	ND	0.200	0.053	ND	0.977	0.259		1
1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223		1
n-Hexane	ND	0.200	0.052	ND	0.705	0.183		1
1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311		1
Benzene	ND	0.200	0.054	ND	0.639	0.172		1
Thiophene	ND	0.200	0.053	ND	0.688	0.182		1
Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296		1
Cyclohexane	ND	0.200	0.066	ND	0.688	0.226		1
1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322		1
Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439		1
1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281		1
Trichloroethene	ND	0.200	0.071	ND	1.07	0.382		1
2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308		1
Heptane	ND	0.200	0.055	ND	0.820	0.227		1
cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338		1
4-Methyl-2-pentanone	ND	0.500	0.061	ND	2.05	0.249		1
trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315		1
1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364		1
Toluene	ND	0.200	0.063	ND	0.754	0.237		1
2-Methylthiophene	ND	0.200	0.079	ND	0.803	0.317		1
2-Hexanone	ND	0.200	0.060	ND	0.820	0.248		1
3-Methylthiophene	ND	0.200	0.067	ND	0.803	0.269		1
Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636		1
1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599		1
Octane	ND	0.200	0.042	ND	0.934	0.197		1
Tetrachloroethene	ND	0.200	0.076	ND	1.36	0.514		1

Air Canister Certification Results

Lab ID: L1632229-07 Date Collected: 10/10/16 11:53
Client ID: CAN 2299 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363		1
Ethylbenzene	ND	0.200	0.056	ND	0.869	0.241		1
2-Ethylthiophene	ND	0.200	0.057	ND	0.918	0.262		1
p/m-Xylene	ND	0.400	0.139	ND	1.74	0.604		1
Bromoform	ND	0.200	0.052	ND	2.07	0.541		1
Styrene	ND	0.200	0.080	ND	0.852	0.340		1
1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
o-Xylene	ND	0.200	0.063	ND	0.869	0.274		1
Nonane	ND	0.200	0.063	ND	1.05	0.328		1
2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252		1
4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381		1
1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287		1
1,2,4-Trimethylbenzene	ND	0.200	0.069	ND	0.983	0.341		1
Decane	ND	0.200	0.048	ND	1.16	0.282		1
1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383		1
1,4-Dichlorobenzene	ND	0.200	0.036	ND	1.20	0.217		1
1,2,3-Trimethylbenzene	ND	0.200	0.075	ND	0.983	0.369		1
1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369		1
Indane	ND	0.200	0.080	ND	0.967	0.384		1
Indene	ND	0.200	0.061	ND	0.951	0.289		1
Undecane	ND	0.200	0.053	ND	1.28	0.338		1
1,2,4,5-Tetramethylbenzene	ND	0.500	0.080	ND	2.74	0.436		1
Dodecane	ND	0.500	0.048	ND	3.48	0.333		1
1,2,4-Trichlorobenzene	ND	0.200	0.061	ND	1.48	0.454		1
Naphthalene	ND	0.200	0.043	ND	1.05	0.223		1
Benzothiophene	ND	0.500	0.047	ND	2.74	0.257		1
Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781		1
2-Methylnaphthalene	ND	1.00	0.272	ND	5.82	1.58		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-07	Date Collected:	10/10/16 11:53
Client ID:	CAN 2299	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
1-Methylnaphthalene	ND	1.00	0.250	ND	5.82	1.45		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	93		60-140
Bromochloromethane	95		60-140
chlorobenzene-d5	90		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-07	Date Collected:	10/10/16 11:53
Client ID:	CAN 2299	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	10/10/16 22:19		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
PIANO Volatile Organics in Air by SIM								
1,3-Butadiene	ND	0.025	0.010	ND	0.055	0.022		1
Ethyl Alcohol	ND	0.500	0.100	ND	0.942	0.188		1
Isopentane	ND	0.025	0.010	ND	0.074	0.030		1
1-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
2-Methyl-1-Butene	ND	0.025	0.010	ND	0.072	0.029		1
Pentane	ND	0.025	0.010	ND	0.074	0.030		1
iso-Propyl Alcohol	ND	0.500	0.100	ND	1.23	0.246		1
trans-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
cis-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
Tertiary Butanol	ND	0.025	0.010	ND	0.076	0.030		1
Cyclopentane	ND	0.025	0.010	ND	0.072	0.029		1
2,3-Dimethylbutane	ND	0.025	0.010	ND	0.088	0.035		1
2-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
Methyl tert butyl ether	ND	0.025	0.010	ND	0.090	0.036		1
3-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
1-Hexene	ND	0.025	0.010	ND	0.086	0.034		1
n-Hexane	ND	0.025	0.010	ND	0.088	0.035		1
Isopropyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
Ethyl-Tert-Butyl-Ether	ND	0.025	0.010	ND	0.104	0.042		1
2,2-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclopentane	ND	0.025	0.010	ND	0.086	0.034		1
2,4-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
1,2-Dichloroethane	ND	0.025	0.010	ND	0.101	0.041		1
Cyclohexane	ND	0.025	0.010	ND	0.086	0.034		1
2-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1

Air Canister Certification Results

Lab ID: L1632229-07 Date Collected: 10/10/16 11:53
Client ID: CAN 2299 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Benzene	ND	0.025	0.010	ND	0.080	0.032		1
2,3-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Thiophene	ND	0.025	0.010	ND	0.086	0.034		1
3-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1
Tertiary-Amyl Methyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
1-Heptene	ND	0.025	0.010	ND	0.100	0.040		1
Isooctane	ND	0.025	0.010	ND	0.117	0.047		1
Heptane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclohexane	ND	0.025	0.010	ND	0.100	0.040		1
2,5-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2,4-Dimethylhexane/2,2,3-Trimethylpentan	ND	0.025	0.010	ND	0.117	0.047		1
2,3,4-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3,3-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
3-Ethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
3-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
Toluene	ND	0.025	0.010	ND	0.094	0.038		1
2-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
3-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
1-Octene	ND	0.025	0.010	ND	0.115	0.046		1
1-Ethyl-1-Methylcyclopentane	ND	0.025	0.010	ND	0.115	0.046		1
Octane	ND	0.025	0.010	ND	0.117	0.047		1
1,2-Dibromoethane	ND	0.025	0.010	ND	0.192	0.077		1
Ethylbenzene	ND	0.025	0.010	ND	0.109	0.043		1
2-Ethylthiophene	ND	0.025	0.010	ND	0.115	0.046		1
p/m-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
1-Nonene	ND	0.025	0.010	ND	0.129	0.052		1

Air Canister Certification Results

Lab ID: L1632229-07 Date Collected: 10/10/16 11:53
Client ID: CAN 2299 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Nonane (C9)	ND	0.025	0.010	ND	0.131	0.053		1
Styrene	ND	0.025	0.010	ND	0.106	0.043		1
o-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
Isopropylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
n-Propylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1,3,5-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Decene	ND	0.025	0.010	ND	0.143	0.057		1
1-Methyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
Decane (C10)	ND	0.025	0.010	ND	0.146	0.058		1
1,2,4-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
sec-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-3-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Indane	ND	0.025	0.010	ND	0.121	0.048		1
Indene	ND	0.025	0.010	ND	0.119	0.048		1
1-Methyl-3-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
n-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Diethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,4-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Undecane	ND	0.025	0.010	ND	0.160	0.064		1
1,3-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,3-Dimethyl-5-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-07	Date Collected:	10/10/16 11:53
Client ID:	CAN 2299	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
PIANO Volatile Organics in Air by SIM								
1,3-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2,4,5-Tetramethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
N-Pentylbenzene	ND	0.025	0.010	ND	0.152	0.061		1
Dodecane (C12)	ND	0.050	0.020	ND	0.348	0.139		1
Naphthalene	ND	0.050	0.020	ND	0.262	0.105		1
Benzothiophene	ND	0.025	0.010	ND	0.137	0.055		1
MMT	ND	0.050	0.020	ND	0.446	0.178		1
Tridecane	ND	0.100	0.050	ND	0.754	0.377		1
2-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1
1-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	98		60-140
Bromochloromethane	101		60-140
chlorobenzene-d5	97		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-08	Date Collected:	10/10/16 11:53
Client ID:	CAN 2309	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15		
Analytical Date:	10/10/16 22:55		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
Dichlorodifluoromethane	ND	0.200	0.047	ND	0.989	0.230		1
Chloromethane	ND	0.200	0.096	ND	0.413	0.198		1
Freon-114	ND	0.200	0.042	ND	1.40	0.293		1
Vinyl chloride	ND	0.200	0.038	ND	0.511	0.097		1
1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177		1
Butane	ND	0.200	0.044	ND	0.475	0.105		1
Acetaldehyde	ND	2.50	0.547	ND	4.50	0.985		1
Bromomethane	ND	0.200	0.070	ND	0.777	0.270		1
Chloroethane	ND	0.200	0.077	ND	0.528	0.202		1
Ethanol	ND	2.50	0.542	ND	4.71	1.02		1
Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306		1
Acrolein	ND	0.500	0.114	ND	1.15	0.261		1
Acetone	ND	1.00	0.165	ND	2.38	0.392		1
Trichlorofluoromethane	ND	0.200	0.042	ND	1.12	0.234		1
Isopropanol	ND	0.500	0.053	ND	1.23	0.129		1
Pentane	ND	0.200	0.048	ND	0.590	0.140		1
1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224		1
tert-Butyl Alcohol	ND	0.500	0.060	ND	1.52	0.182		1
Methylene chloride	ND	1.00	0.299	ND	1.74	1.04		1
3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254		1
Carbon disulfide	ND	0.200	0.035	ND	0.623	0.107		1
Freon-113	ND	0.200	0.051	ND	1.53	0.392		1
trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293		1
1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312		1
Methyl tert butyl ether	ND	0.200	0.053	ND	0.721	0.190		1

Air Canister Certification Results

Lab ID: L1632229-08 Date Collected: 10/10/16 11:53
Client ID: CAN 2309 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air								
2-Butanone	ND	0.500	0.047	ND	1.47	0.139		1
cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233		1
Chloroform	ND	0.200	0.053	ND	0.977	0.259		1
1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223		1
n-Hexane	ND	0.200	0.052	ND	0.705	0.183		1
1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311		1
Benzene	ND	0.200	0.054	ND	0.639	0.172		1
Thiophene	ND	0.200	0.053	ND	0.688	0.182		1
Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296		1
Cyclohexane	ND	0.200	0.066	ND	0.688	0.226		1
1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322		1
Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439		1
1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281		1
Trichloroethene	ND	0.200	0.071	ND	1.07	0.382		1
2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308		1
Heptane	ND	0.200	0.055	ND	0.820	0.227		1
cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338		1
4-Methyl-2-pentanone	ND	0.500	0.061	ND	2.05	0.249		1
trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315		1
1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364		1
Toluene	ND	0.200	0.063	ND	0.754	0.237		1
2-Methylthiophene	ND	0.200	0.079	ND	0.803	0.317		1
2-Hexanone	ND	0.200	0.060	ND	0.820	0.248		1
3-Methylthiophene	ND	0.200	0.067	ND	0.803	0.269		1
Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636		1
1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599		1
Octane	ND	0.200	0.042	ND	0.934	0.197		1
Tetrachloroethene	ND	0.200	0.076	ND	1.36	0.514		1

Air Canister Certification Results

Lab ID: L1632229-08 Date Collected: 10/10/16 11:53
Client ID: CAN 2309 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air								
Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363		1
Ethylbenzene	ND	0.200	0.056	ND	0.869	0.241		1
2-Ethylthiophene	ND	0.200	0.057	ND	0.918	0.262		1
p/m-Xylene	ND	0.400	0.139	ND	1.74	0.604		1
Bromoform	ND	0.200	0.052	ND	2.07	0.541		1
Styrene	ND	0.200	0.080	ND	0.852	0.340		1
1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
o-Xylene	ND	0.200	0.063	ND	0.869	0.274		1
Nonane	ND	0.200	0.063	ND	1.05	0.328		1
2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252		1
4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381		1
1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287		1
1,2,4-Trimethylbenzene	ND	0.200	0.069	ND	0.983	0.341		1
Decane	ND	0.200	0.048	ND	1.16	0.282		1
1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383		1
1,4-Dichlorobenzene	ND	0.200	0.036	ND	1.20	0.217		1
1,2,3-Trimethylbenzene	ND	0.200	0.075	ND	0.983	0.369		1
1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369		1
Indane	ND	0.200	0.080	ND	0.967	0.384		1
Indene	ND	0.200	0.061	ND	0.951	0.289		1
Undecane	ND	0.200	0.053	ND	1.28	0.338		1
1,2,4,5-Tetramethylbenzene	ND	0.500	0.080	ND	2.74	0.436		1
Dodecane	ND	0.500	0.048	ND	3.48	0.333		1
1,2,4-Trichlorobenzene	ND	0.200	0.061	ND	1.48	0.454		1
Naphthalene	ND	0.200	0.043	ND	1.05	0.223		1
Benzothiophene	ND	0.500	0.047	ND	2.74	0.257		1
Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781		1
2-Methylnaphthalene	ND	1.00	0.272	ND	5.82	1.58		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-08	Date Collected:	10/10/16 11:53
Client ID:	CAN 2309	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
1-Methylnaphthalene	ND	1.00	0.250	ND	5.82	1.45		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	92		60-140
Bromochloromethane	96		60-140
chlorobenzene-d5	87		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-08	Date Collected:	10/10/16 11:53
Client ID:	CAN 2309	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	10/10/16 22:55		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
PIANO Volatile Organics in Air by SIM								
1,3-Butadiene	ND	0.025	0.010	ND	0.055	0.022		1
Ethyl Alcohol	ND	0.500	0.100	ND	0.942	0.188		1
Isopentane	ND	0.025	0.010	ND	0.074	0.030		1
1-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
2-Methyl-1-Butene	ND	0.025	0.010	ND	0.072	0.029		1
Pentane	ND	0.025	0.010	ND	0.074	0.030		1
iso-Propyl Alcohol	ND	0.500	0.100	ND	1.23	0.246		1
trans-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
cis-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
Tertiary Butanol	ND	0.025	0.010	ND	0.076	0.030		1
Cyclopentane	ND	0.025	0.010	ND	0.072	0.029		1
2,3-Dimethylbutane	ND	0.025	0.010	ND	0.088	0.035		1
2-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
Methyl tert butyl ether	ND	0.025	0.010	ND	0.090	0.036		1
3-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
1-Hexene	ND	0.025	0.010	ND	0.086	0.034		1
n-Hexane	ND	0.025	0.010	ND	0.088	0.035		1
Isopropyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
Ethyl-Tert-Butyl-Ether	ND	0.025	0.010	ND	0.104	0.042		1
2,2-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclopentane	ND	0.025	0.010	ND	0.086	0.034		1
2,4-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
1,2-Dichloroethane	ND	0.025	0.010	ND	0.101	0.041		1
Cyclohexane	ND	0.025	0.010	ND	0.086	0.034		1
2-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1

Air Canister Certification Results

Lab ID: L1632229-08 Date Collected: 10/10/16 11:53
Client ID: CAN 2309 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Benzene	ND	0.025	0.010	ND	0.080	0.032		1
2,3-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Thiophene	ND	0.025	0.010	ND	0.086	0.034		1
3-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1
Tertiary-Amyl Methyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
1-Heptene	ND	0.025	0.010	ND	0.100	0.040		1
Isooctane	ND	0.025	0.010	ND	0.117	0.047		1
Heptane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclohexane	ND	0.025	0.010	ND	0.100	0.040		1
2,5-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2,4-Dimethylhexane/2,2,3-Trimethylpentan	ND	0.025	0.010	ND	0.117	0.047		1
2,3,4-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3,3-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
3-Ethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
3-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
Toluene	ND	0.025	0.010	ND	0.094	0.038		1
2-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
3-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
1-Octene	ND	0.025	0.010	ND	0.115	0.046		1
1-Ethyl-1-Methylcyclopentane	ND	0.025	0.010	ND	0.115	0.046		1
Octane	ND	0.025	0.010	ND	0.117	0.047		1
1,2-Dibromoethane	ND	0.025	0.010	ND	0.192	0.077		1
Ethylbenzene	ND	0.025	0.010	ND	0.109	0.043		1
2-Ethylthiophene	ND	0.025	0.010	ND	0.115	0.046		1
p/m-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
1-Nonene	ND	0.025	0.010	ND	0.129	0.052		1

Air Canister Certification Results

Lab ID: L1632229-08 Date Collected: 10/10/16 11:53
Client ID: CAN 2309 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Nonane (C9)	ND	0.025	0.010	ND	0.131	0.053		1
Styrene	ND	0.025	0.010	ND	0.106	0.043		1
o-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
Isopropylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
n-Propylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1,3,5-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Decene	ND	0.025	0.010	ND	0.143	0.057		1
1-Methyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
Decane (C10)	ND	0.025	0.010	ND	0.146	0.058		1
1,2,4-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
sec-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-3-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Indane	ND	0.025	0.010	ND	0.121	0.048		1
Indene	ND	0.025	0.010	ND	0.119	0.048		1
1-Methyl-3-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
n-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Diethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,4-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Undecane	ND	0.025	0.010	ND	0.160	0.064		1
1,3-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,3-Dimethyl-5-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-08	Date Collected:	10/10/16 11:53
Client ID:	CAN 2309	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
PIANO Volatile Organics in Air by SIM								
1,3-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2,4,5-Tetramethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
N-Pentylbenzene	ND	0.025	0.010	ND	0.152	0.061		1
Dodecane (C12)	ND	0.050	0.020	ND	0.348	0.139		1
Naphthalene	ND	0.050	0.020	ND	0.262	0.105		1
Benzothiophene	ND	0.025	0.010	ND	0.137	0.055		1
MMT	ND	0.050	0.020	ND	0.446	0.178		1
Tridecane	ND	0.100	0.050	ND	0.754	0.377		1
2-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1
1-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	95		60-140
Bromochloromethane	101		60-140
chlorobenzene-d5	93		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-09	Date Collected:	10/10/16 11:53
Client ID:	CAN 2296	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15		
Analytical Date:	10/10/16 23:30		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
Dichlorodifluoromethane	ND	0.200	0.047	ND	0.989	0.230		1
Chloromethane	ND	0.200	0.096	ND	0.413	0.198		1
Freon-114	ND	0.200	0.042	ND	1.40	0.293		1
Vinyl chloride	ND	0.200	0.038	ND	0.511	0.097		1
1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177		1
Butane	ND	0.200	0.044	ND	0.475	0.105		1
Acetaldehyde	ND	2.50	0.547	ND	4.50	0.985		1
Bromomethane	ND	0.200	0.070	ND	0.777	0.270		1
Chloroethane	ND	0.200	0.077	ND	0.528	0.202		1
Ethanol	ND	2.50	0.542	ND	4.71	1.02		1
Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306		1
Acrolein	ND	0.500	0.114	ND	1.15	0.261		1
Acetone	ND	1.00	0.165	ND	2.38	0.392		1
Trichlorofluoromethane	ND	0.200	0.042	ND	1.12	0.234		1
Isopropanol	ND	0.500	0.053	ND	1.23	0.129		1
Pentane	ND	0.200	0.048	ND	0.590	0.140		1
1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224		1
tert-Butyl Alcohol	ND	0.500	0.060	ND	1.52	0.182		1
Methylene chloride	ND	1.00	0.299	ND	1.74	1.04		1
3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254		1
Carbon disulfide	ND	0.200	0.035	ND	0.623	0.107		1
Freon-113	ND	0.200	0.051	ND	1.53	0.392		1
trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293		1
1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312		1
Methyl tert butyl ether	ND	0.200	0.053	ND	0.721	0.190		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-09	Date Collected:	10/10/16 11:53
Client ID:	CAN 2296	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
2-Butanone	ND	0.500	0.047	ND	1.47	0.139		1
cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233		1
Chloroform	ND	0.200	0.053	ND	0.977	0.259		1
1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223		1
n-Hexane	ND	0.200	0.052	ND	0.705	0.183		1
1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311		1
Benzene	ND	0.200	0.054	ND	0.639	0.172		1
Thiophene	ND	0.200	0.053	ND	0.688	0.182		1
Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296		1
Cyclohexane	ND	0.200	0.066	ND	0.688	0.226		1
1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322		1
Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439		1
1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281		1
Trichloroethene	ND	0.200	0.071	ND	1.07	0.382		1
2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308		1
Heptane	ND	0.200	0.055	ND	0.820	0.227		1
cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338		1
4-Methyl-2-pentanone	ND	0.500	0.061	ND	2.05	0.249		1
trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315		1
1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364		1
Toluene	ND	0.200	0.063	ND	0.754	0.237		1
2-Methylthiophene	ND	0.200	0.079	ND	0.803	0.317		1
2-Hexanone	ND	0.200	0.060	ND	0.820	0.248		1
3-Methylthiophene	ND	0.200	0.067	ND	0.803	0.269		1
Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636		1
1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599		1
Octane	ND	0.200	0.042	ND	0.934	0.197		1
Tetrachloroethene	ND	0.200	0.076	ND	1.36	0.514		1

Air Canister Certification Results

Lab ID: L1632229-09 Date Collected: 10/10/16 11:53
Client ID: CAN 2296 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air								
Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363		1
Ethylbenzene	ND	0.200	0.056	ND	0.869	0.241		1
2-Ethylthiophene	ND	0.200	0.057	ND	0.918	0.262		1
p/m-Xylene	ND	0.400	0.139	ND	1.74	0.604		1
Bromoform	ND	0.200	0.052	ND	2.07	0.541		1
Styrene	ND	0.200	0.080	ND	0.852	0.340		1
1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
o-Xylene	ND	0.200	0.063	ND	0.869	0.274		1
Nonane	ND	0.200	0.063	ND	1.05	0.328		1
2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252		1
4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381		1
1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287		1
1,2,4-Trimethylbenzene	ND	0.200	0.069	ND	0.983	0.341		1
Decane	ND	0.200	0.048	ND	1.16	0.282		1
1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383		1
1,4-Dichlorobenzene	ND	0.200	0.036	ND	1.20	0.217		1
1,2,3-Trimethylbenzene	ND	0.200	0.075	ND	0.983	0.369		1
1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369		1
Indane	ND	0.200	0.080	ND	0.967	0.384		1
Indene	ND	0.200	0.061	ND	0.951	0.289		1
Undecane	ND	0.200	0.053	ND	1.28	0.338		1
1,2,4,5-Tetramethylbenzene	ND	0.500	0.080	ND	2.74	0.436		1
Dodecane	ND	0.500	0.048	ND	3.48	0.333		1
1,2,4-Trichlorobenzene	ND	0.200	0.061	ND	1.48	0.454		1
Naphthalene	ND	0.200	0.043	ND	1.05	0.223		1
Benzothiophene	ND	0.500	0.047	ND	2.74	0.257		1
Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781		1
2-Methylnaphthalene	ND	1.00	0.272	ND	5.82	1.58		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-09	Date Collected:	10/10/16 11:53
Client ID:	CAN 2296	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
1-Methylnaphthalene	ND	1.00	0.250	ND	5.82	1.45		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	94		60-140
Bromochloromethane	98		60-140
chlorobenzene-d5	90		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-09	Date Collected:	10/10/16 11:53
Client ID:	CAN 2296	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	10/10/16 23:30		
Analyst:	MB		

	ppbV			ug/m3				Dilution
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Factor**
PIANO Volatile Organics in Air by SIM								
1,3-Butadiene	ND	0.025	0.010	ND	0.055	0.022		1
Ethyl Alcohol	ND	0.500	0.100	ND	0.942	0.188		1
Isopentane	ND	0.025	0.010	ND	0.074	0.030		1
1-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
2-Methyl-1-Butene	ND	0.025	0.010	ND	0.072	0.029		1
Pentane	ND	0.025	0.010	ND	0.074	0.030		1
iso-Propyl Alcohol	ND	0.500	0.100	ND	1.23	0.246		1
trans-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
cis-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
Tertiary Butanol	ND	0.025	0.010	ND	0.076	0.030		1
Cyclopentane	ND	0.025	0.010	ND	0.072	0.029		1
2,3-Dimethylbutane	ND	0.025	0.010	ND	0.088	0.035		1
2-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
Methyl tert butyl ether	ND	0.025	0.010	ND	0.090	0.036		1
3-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
1-Hexene	ND	0.025	0.010	ND	0.086	0.034		1
n-Hexane	ND	0.025	0.010	ND	0.088	0.035		1
Isopropyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
Ethyl-Tert-Butyl-Ether	ND	0.025	0.010	ND	0.104	0.042		1
2,2-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclopentane	ND	0.025	0.010	ND	0.086	0.034		1
2,4-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
1,2-Dichloroethane	ND	0.025	0.010	ND	0.101	0.041		1
Cyclohexane	ND	0.025	0.010	ND	0.086	0.034		1
2-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1

Air Canister Certification Results

Lab ID: L1632229-09 Date Collected: 10/10/16 11:53
Client ID: CAN 2296 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Benzene	ND	0.025	0.010	ND	0.080	0.032		1
2,3-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Thiophene	ND	0.025	0.010	ND	0.086	0.034		1
3-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1
Tertiary-Amyl Methyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
1-Heptene	ND	0.025	0.010	ND	0.100	0.040		1
Isooctane	ND	0.025	0.010	ND	0.117	0.047		1
Heptane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclohexane	ND	0.025	0.010	ND	0.100	0.040		1
2,5-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2,4-Dimethylhexane/2,2,3-Trimethylpentan	ND	0.025	0.010	ND	0.117	0.047		1
2,3,4-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3,3-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
3-Ethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
3-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
Toluene	ND	0.025	0.010	ND	0.094	0.038		1
2-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
3-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
1-Octene	ND	0.025	0.010	ND	0.115	0.046		1
1-Ethyl-1-Methylcyclopentane	ND	0.025	0.010	ND	0.115	0.046		1
Octane	ND	0.025	0.010	ND	0.117	0.047		1
1,2-Dibromoethane	ND	0.025	0.010	ND	0.192	0.077		1
Ethylbenzene	ND	0.025	0.010	ND	0.109	0.043		1
2-Ethylthiophene	ND	0.025	0.010	ND	0.115	0.046		1
p/m-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
1-Nonene	ND	0.025	0.010	ND	0.129	0.052		1

Air Canister Certification Results

Lab ID: L1632229-09 Date Collected: 10/10/16 11:53
Client ID: CAN 2296 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Nonane (C9)	ND	0.025	0.010	ND	0.131	0.053		1
Styrene	ND	0.025	0.010	ND	0.106	0.043		1
o-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
Isopropylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
n-Propylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1,3,5-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Decene	ND	0.025	0.010	ND	0.143	0.057		1
1-Methyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
Decane (C10)	ND	0.025	0.010	ND	0.146	0.058		1
1,2,4-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
sec-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-3-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Indane	ND	0.025	0.010	ND	0.121	0.048		1
Indene	ND	0.025	0.010	ND	0.119	0.048		1
1-Methyl-3-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
n-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Diethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,4-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Undecane	ND	0.025	0.010	ND	0.160	0.064		1
1,3-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,3-Dimethyl-5-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1

Air Canister Certification Results

Lab ID: L1632229-09 Date Collected: 10/10/16 11:53
Client ID: CAN 2296 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
1,3-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2,4,5-Tetramethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
N-Pentylbenzene	ND	0.025	0.010	ND	0.152	0.061		1
Dodecane (C12)	ND	0.050	0.020	ND	0.348	0.139		1
Naphthalene	ND	0.050	0.020	ND	0.262	0.105		1
Benzothiophene	ND	0.025	0.010	ND	0.137	0.055		1
MMT	ND	0.050	0.020	ND	0.446	0.178		1
Tridecane	ND	0.100	0.050	ND	0.754	0.377		1
2-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1
1-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	99		60-140
Bromochloromethane	104		60-140
chlorobenzene-d5	97		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-10	Date Collected:	10/10/16 11:53
Client ID:	CAN 2312	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15		
Analytical Date:	10/11/16 00:05		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
Dichlorodifluoromethane	ND	0.200	0.047	ND	0.989	0.230		1
Chloromethane	ND	0.200	0.096	ND	0.413	0.198		1
Freon-114	ND	0.200	0.042	ND	1.40	0.293		1
Vinyl chloride	ND	0.200	0.038	ND	0.511	0.097		1
1,3-Butadiene	ND	0.200	0.080	ND	0.442	0.177		1
Butane	ND	0.200	0.044	ND	0.475	0.105		1
Acetaldehyde	ND	2.50	0.547	ND	4.50	0.985		1
Bromomethane	ND	0.200	0.070	ND	0.777	0.270		1
Chloroethane	ND	0.200	0.077	ND	0.528	0.202		1
Ethanol	ND	2.50	0.542	ND	4.71	1.02		1
Vinyl bromide	ND	0.200	0.070	ND	0.874	0.306		1
Acrolein	ND	0.500	0.114	ND	1.15	0.261		1
Acetone	ND	1.00	0.165	ND	2.38	0.392		1
Trichlorofluoromethane	ND	0.200	0.042	ND	1.12	0.234		1
Isopropanol	ND	0.500	0.053	ND	1.23	0.129		1
Pentane	ND	0.200	0.048	ND	0.590	0.140		1
1,1-Dichloroethene	ND	0.200	0.057	ND	0.793	0.224		1
tert-Butyl Alcohol	ND	0.500	0.060	ND	1.52	0.182		1
Methylene chloride	ND	1.00	0.299	ND	1.74	1.04		1
3-Chloropropene	ND	0.200	0.081	ND	0.626	0.254		1
Carbon disulfide	ND	0.200	0.035	ND	0.623	0.107		1
Freon-113	ND	0.200	0.051	ND	1.53	0.392		1
trans-1,2-Dichloroethene	ND	0.200	0.074	ND	0.793	0.293		1
1,1-Dichloroethane	ND	0.200	0.077	ND	0.809	0.312		1
Methyl tert butyl ether	ND	0.200	0.053	ND	0.721	0.190		1

Air Canister Certification Results

Lab ID: L1632229-10 Date Collected: 10/10/16 11:53
Client ID: CAN 2312 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air								
2-Butanone	ND	0.500	0.047	ND	1.47	0.139		1
cis-1,2-Dichloroethene	ND	0.200	0.059	ND	0.793	0.233		1
Chloroform	ND	0.200	0.053	ND	0.977	0.259		1
1,2-Dichloroethane	ND	0.200	0.055	ND	0.809	0.223		1
n-Hexane	ND	0.200	0.052	ND	0.705	0.183		1
1,1,1-Trichloroethane	ND	0.200	0.057	ND	1.09	0.311		1
Benzene	ND	0.200	0.054	ND	0.639	0.172		1
Thiophene	ND	0.200	0.053	ND	0.688	0.182		1
Carbon tetrachloride	ND	0.200	0.047	ND	1.26	0.296		1
Cyclohexane	ND	0.200	0.066	ND	0.688	0.226		1
1,2-Dichloropropane	ND	0.200	0.070	ND	0.924	0.322		1
Bromodichloromethane	ND	0.200	0.066	ND	1.34	0.439		1
1,4-Dioxane	ND	0.200	0.078	ND	0.721	0.281		1
Trichloroethene	ND	0.200	0.071	ND	1.07	0.382		1
2,2,4-Trimethylpentane	ND	0.200	0.066	ND	0.934	0.308		1
Heptane	ND	0.200	0.055	ND	0.820	0.227		1
cis-1,3-Dichloropropene	ND	0.200	0.075	ND	0.908	0.338		1
4-Methyl-2-pentanone	ND	0.500	0.061	ND	2.05	0.249		1
trans-1,3-Dichloropropene	ND	0.200	0.069	ND	0.908	0.315		1
1,1,2-Trichloroethane	ND	0.200	0.067	ND	1.09	0.364		1
Toluene	ND	0.200	0.063	ND	0.754	0.237		1
2-Methylthiophene	ND	0.200	0.079	ND	0.803	0.317		1
2-Hexanone	ND	0.200	0.060	ND	0.820	0.248		1
3-Methylthiophene	ND	0.200	0.067	ND	0.803	0.269		1
Dibromochloromethane	ND	0.200	0.075	ND	1.70	0.636		1
1,2-Dibromoethane	ND	0.200	0.078	ND	1.54	0.599		1
Octane	ND	0.200	0.042	ND	0.934	0.197		1
Tetrachloroethene	ND	0.200	0.076	ND	1.36	0.514		1

Air Canister Certification Results

Lab ID: L1632229-10 Date Collected: 10/10/16 11:53
Client ID: CAN 2312 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
Volatile Organics in Air								
Chlorobenzene	ND	0.200	0.079	ND	0.921	0.363		1
Ethylbenzene	ND	0.200	0.056	ND	0.869	0.241		1
2-Ethylthiophene	ND	0.200	0.057	ND	0.918	0.262		1
p/m-Xylene	ND	0.400	0.139	ND	1.74	0.604		1
Bromoform	ND	0.200	0.052	ND	2.07	0.541		1
Styrene	ND	0.200	0.080	ND	0.852	0.340		1
1,1,2,2-Tetrachloroethane	ND	0.200	0.055	ND	1.37	0.376		1
o-Xylene	ND	0.200	0.063	ND	0.869	0.274		1
Nonane	ND	0.200	0.063	ND	1.05	0.328		1
2-Chlorotoluene	ND	0.200	0.049	ND	1.04	0.252		1
4-Ethyltoluene	ND	0.200	0.078	ND	0.983	0.381		1
1,3,5-Trimethylbenzene	ND	0.200	0.058	ND	0.983	0.287		1
1,2,4-Trimethylbenzene	ND	0.200	0.069	ND	0.983	0.341		1
Decane	ND	0.200	0.048	ND	1.16	0.282		1
1,3-Dichlorobenzene	ND	0.200	0.064	ND	1.20	0.383		1
1,4-Dichlorobenzene	ND	0.200	0.036	ND	1.20	0.217		1
1,2,3-Trimethylbenzene	ND	0.200	0.075	ND	0.983	0.369		1
1,2-Dichlorobenzene	ND	0.200	0.061	ND	1.20	0.369		1
Indane	ND	0.200	0.080	ND	0.967	0.384		1
Indene	ND	0.200	0.061	ND	0.951	0.289		1
Undecane	ND	0.200	0.053	ND	1.28	0.338		1
1,2,4,5-Tetramethylbenzene	ND	0.500	0.080	ND	2.74	0.436		1
Dodecane	ND	0.500	0.048	ND	3.48	0.333		1
1,2,4-Trichlorobenzene	ND	0.200	0.061	ND	1.48	0.454		1
Naphthalene	ND	0.200	0.043	ND	1.05	0.223		1
Benzothiophene	ND	0.500	0.047	ND	2.74	0.257		1
Hexachlorobutadiene	ND	0.200	0.073	ND	2.13	0.781		1
2-Methylnaphthalene	ND	1.00	0.272	ND	5.82	1.58		1

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-10	Date Collected:	10/10/16 11:53
Client ID:	CAN 2312	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
Volatile Organics in Air								
1-Methylnaphthalene	ND	1.00	0.250	ND	5.82	1.45		1

Internal Standard	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,4-Difluorobenzene	94		60-140
Bromochloromethane	97		60-140
chlorobenzene-d5	91		60-140

Project Name:	INDIV. CANISTER CERTIFICATION	**Lab Number:**	L1632229
Project Number:	CANISTER QC INDIV	**Report Date:**	11/23/16

Air Canister Certification Results

Lab ID:	L1632229-10	Date Collected:	10/10/16 11:53
Client ID:	CAN 2312	Date Received:	10/10/16
Sample Location:		Field Prep:	Not Specified
Matrix:	Air		
Anaytical Method:	48,TO-15-SIM		
Analytical Date:	10/11/16 00:05		
Analyst:	MB		

	ppbV			ug/m3				
Parameter	**Results**	**RL**	**MDL**	**Results**	**RL**	**MDL**	**Qualifier**	**Dilution Factor**
PIANO Volatile Organics in Air by SIM								
1,3-Butadiene	ND	0.025	0.010	ND	0.055	0.022		1
Ethyl Alcohol	ND	0.500	0.100	ND	0.942	0.188		1
Isopentane	ND	0.025	0.010	ND	0.074	0.030		1
1-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
2-Methyl-1-Butene	ND	0.025	0.010	ND	0.072	0.029		1
Pentane	ND	0.025	0.010	ND	0.074	0.030		1
iso-Propyl Alcohol	ND	0.500	0.100	ND	1.23	0.246		1
trans-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
cis-2-Pentene	ND	0.025	0.010	ND	0.072	0.029		1
Tertiary Butanol	ND	0.025	0.010	ND	0.076	0.030		1
Cyclopentane	ND	0.025	0.010	ND	0.072	0.029		1
2,3-Dimethylbutane	ND	0.025	0.010	ND	0.088	0.035		1
2-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
Methyl tert butyl ether	ND	0.025	0.010	ND	0.090	0.036		1
3-Methylpentane	ND	0.025	0.010	ND	0.088	0.035		1
1-Hexene	ND	0.025	0.010	ND	0.086	0.034		1
n-Hexane	ND	0.025	0.010	ND	0.088	0.035		1
Isopropyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
Ethyl-Tert-Butyl-Ether	ND	0.025	0.010	ND	0.104	0.042		1
2,2-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclopentane	ND	0.025	0.010	ND	0.086	0.034		1
2,4-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
1,2-Dichloroethane	ND	0.025	0.010	ND	0.101	0.041		1
Cyclohexane	ND	0.025	0.010	ND	0.086	0.034		1
2-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1

Air Canister Certification Results

Lab ID: L1632229-10 Date Collected: 10/10/16 11:53
Client ID: CAN 2312 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Benzene	ND	0.025	0.010	ND	0.080	0.032		1
2,3-Dimethylpentane	ND	0.025	0.010	ND	0.102	0.041		1
Thiophene	ND	0.025	0.010	ND	0.086	0.034		1
3-Methylhexane	ND	0.025	0.010	ND	0.102	0.041		1
Tertiary-Amyl Methyl Ether	ND	0.025	0.010	ND	0.104	0.042		1
1-Heptene	ND	0.025	0.010	ND	0.100	0.040		1
Isooctane	ND	0.025	0.010	ND	0.117	0.047		1
Heptane	ND	0.025	0.010	ND	0.102	0.041		1
Methylcyclohexane	ND	0.025	0.010	ND	0.100	0.040		1
2,5-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2,4-Dimethylhexane/2,2,3-Trimethylpentan	ND	0.025	0.010	ND	0.117	0.047		1
2,3,4-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3,3-Trimethylpentane	ND	0.025	0.010	ND	0.117	0.047		1
2,3-Dimethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
3-Ethylhexane	ND	0.025	0.010	ND	0.117	0.047		1
2-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
3-Methylheptane	ND	0.025	0.010	ND	0.117	0.047		1
Toluene	ND	0.025	0.010	ND	0.094	0.038		1
2-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
3-Methylthiophene	ND	0.025	0.010	ND	0.100	0.040		1
1-Octene	ND	0.025	0.010	ND	0.115	0.046		1
1-Ethyl-1-Methylcyclopentane	ND	0.025	0.010	ND	0.115	0.046		1
Octane	ND	0.025	0.010	ND	0.117	0.047		1
1,2-Dibromoethane	ND	0.025	0.010	ND	0.192	0.077		1
Ethylbenzene	ND	0.025	0.010	ND	0.109	0.043		1
2-Ethylthiophene	ND	0.025	0.010	ND	0.115	0.046		1
p/m-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
1-Nonene	ND	0.025	0.010	ND	0.129	0.052		1

Air Canister Certification Results

Lab ID: L1632229-10 Date Collected: 10/10/16 11:53
Client ID: CAN 2312 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
Nonane (C9)	ND	0.025	0.010	ND	0.131	0.053		1
Styrene	ND	0.025	0.010	ND	0.106	0.043		1
o-Xylene	ND	0.025	0.010	ND	0.109	0.043		1
Isopropylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
n-Propylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Methyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1,3,5-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
1-Decene	ND	0.025	0.010	ND	0.143	0.057		1
1-Methyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
Decane (C10)	ND	0.025	0.010	ND	0.146	0.058		1
1,2,4-Trimethylbenzene	ND	0.025	0.010	ND	0.123	0.049		1
sec-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-3-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-Isopropylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Indane	ND	0.025	0.010	ND	0.121	0.048		1
Indene	ND	0.025	0.010	ND	0.119	0.048		1
1-Methyl-3-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-4-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
n-Butylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Diethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1-Methyl-2-N-Propylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,4-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
Undecane	ND	0.025	0.010	ND	0.160	0.064		1
1,3-Dimethyl-4-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,3-Dimethyl-5-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1

Air Canister Certification Results

Lab ID: L1632229-10 Date Collected: 10/10/16 11:53
Client ID: CAN 2312 Date Received: 10/10/16
Sample Location: Field Prep: Not Specified

Parameter	ppbV Results	ppbV RL	ppbV MDL	ug/m3 Results	ug/m3 RL	ug/m3 MDL	Qualifier	Dilution Factor
PIANO Volatile Organics in Air by SIM								
1,3-Dimethyl-2-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2-Dimethyl-3-Ethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
1,2,4,5-Tetramethylbenzene	ND	0.025	0.010	ND	0.137	0.055		1
N-Pentylbenzene	ND	0.025	0.010	ND	0.152	0.061		1
Dodecane (C12)	ND	0.050	0.020	ND	0.348	0.139		1
Naphthalene	ND	0.050	0.020	ND	0.262	0.105		1
Benzothiophene	ND	0.025	0.010	ND	0.137	0.055		1
MMT	ND	0.050	0.020	ND	0.446	0.178		1
Tridecane	ND	0.100	0.050	ND	0.754	0.377		1
2-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1
1-Methylnaphthalene	ND	0.050	0.020	ND	0.291	0.116		1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	98		60-140
Bromochloromethane	102		60-140
chlorobenzene-d5	98		60-140

Chain of Custody Records

REFERENCES

48 Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Second Edition. EPA/625/R-96/010b, January 1999.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

AIR ANALYSIS

PAGE 1 OF 1

CHAIN OF CUSTODY

ALPHA ANALYTICAL
320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 10/21/16

ALPHA Job #: L1634001

Client Information

Client: Newfields
Address: 300 Ledgewood Place
Rockland, Ma 02370
Phone: 781 681 5040
Fax: 781 681 5048
Email: www.newfields.com

☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Winter Street Haverhill
Project Location: Haverhill, Ma
Project #: 01.0172397.00
Project Manager: ~~Stephen Hastings-Mattingly~~ ~~Jason Chrzanowski~~ JRC 10-20-16
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx
Criteria Checker:
(Default based on Regulatory Criteria Indicated)
Other Formats:
☑ EMAIL (standard pdf report)
☐ Additional Deliverables:

Report to: (if different than Project Manager)
~~jason.chrzanowski@gza.com~~ JRC 10/20/16
elitman@newfields.com

Billing Information

☑ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm
Ma	MCP	

Other Project Specific Requirements/Comments: smathingly@Newfields.com
elitman@newfields.com

Project-Specific Target Compound List: ☐

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I D Can	I D - Flow Controller	TO-15	TO-15 SIM	APH Subtract Non-petroleum HCs ☐	Fixed Gases	Sulfides & Mercaptans by TO-15	PIANO	Sample Comments (i.e. PID)
34001-01	NFAA-01	10-19-16	0706	1842	-29.92	-19.77	AA	ADS	6L	1841	0484	X	X				X	38 ppm
-02	NFSV-04	10-19-16	0824	0856	-29.48	-4.97	SV	ADS	2.7	2299	0173	X	X				X	72 ppm
-03	NFSV-07	10-19-16	0914	0945	-29.60	-5.25	SV	ADS	2.7	2300	0363	X	X				X	77 ppm
-04	NFSV-05	10-19-16	1012	1046	-29.67	-3.45	SV	ADS	2.7	2308	0297	X	X				X	72 ppm
-05	NFSV-06	10-19-16	1114	1148	-29.69	-5.39	SV	ADS	2.7	2313	0489	X	X				X	70 ppm
-06	NFSV-08	10-19-16	1222	1254	-29.80	-5.62	SV	ADS	2.7	2311	0019	X	X				X	71 ppm
-07	NFSV-03	10-19-16	1524	1558	-30.57	-3.74	SV	ADS	2.7	2312	0618	X	X				X	72 ppm
-08	NFSV-02	10-19-16	1544	1618	-29.87	-1.63	SV	ADS	2.7	2296	0353	X	X				X	71 ppm
-09	NFSV-01	10-19-16	1710	1742	-29.64	-2.93	SV	ADS	2.7	2302	0146	X	X				X	67 ppm
-10	DUP101916	10-19-16	1710	1742	-29.98	-6.08	SV	ADS	2.7	2309	0217	X	X				X	72 ppm
											Container Type	AA1L	AA6L				AA1L	

*SAMPLE MATRIX CODES

AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
[signature] GZA	10-19-16 2010	[signature] AAL	10-21-16 9:55
[signature] AAL	10-21-16 1215	[signature]	10/21/16 1215

Form No: 101-02 Rev: (25-Sep-15)

Sample Delivery Group Form

Laboratory Job number: L1634001
Project Manager: Chris Anderson **Review Date:** 10/27/2016
Project Number: 01.0172397.00
Project Name: WINTER STREET HAVERHILL **Received:** 10/21/2016 08:55
Client Account: NewFields **Received by:** BB

Samples Delivered by: COURIER **Call Tracker #**
Bill Of Laden N/A **Trackingnum**
Coc Present Present

Container Status Intact **Sample IDs**

All Containers Accounted For? Yes

Were Extra Samples Received? No

Do Sample Labels and COC agree? Yes

Are Samples in Appropriate Containers? Yes

Are Samples Received within Holding time? Yes

pH of Samples upon Receipt N/A **Are samples Properly Preserved?** Yes
Initial pH **preserved in house with** **Final pH**
Other Issues
Chlorine Check N/A

Are VOA/VPH Vials Present? No
Aqueous: Do Vials Contain Head Space? N/A
Soils: Is MeOHCovering the Soil? N/A
Reagent H2O Preserved vials Frozen on N/A
Frozen by Client N/A

Cooler	Seal	Ice Present	Blue Ice Present	Temp. (Celsius)	Frozen upon Receipt	Delivered Direct from Site
N/A	Present/Intact	No	No	-	No	No

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: NPW and SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
EPA 9012B: NPW: Total Cyanide
EPA 9050A: NPW: Specific Conductance
SM3500: NPW: Ferrous Iron
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.
SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility
SM 2540D: TSS
EPA 3005A NPW
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: ***EPA 3050B***

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9222D-MF**.

Mansfield Facility:

Drinking Water
EPA 200.7: Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. **EPA 200.8:** Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. **EPA 245.1** Hg.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

ANALYTICAL REPORT

Lab Number:	L2006496
Client:	GZA GeoEnvironmental, Inc. 249 Vanderbilt Ave. Norwood, MA 02062
ATTN:	Kyle Maxfield
Phone:	(781) 278-5845
Project Name:	284 WINTER ST
Project Number:	01.0172397.10
Report Date:	02/20/20

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA030), NH NELAP (2062), CT (PH-0141), DoD (L2474), FL (E87814), IL (200081), LA (85084), ME (MA00030), MD (350), NJ (MA015), NY (11627), NC (685), OH (CL106), PA (68-02089), RI (LAO00299), TX (T104704419), VT (VT-0015), VA (460194), WA (C954), US Army Corps of Engineers, USDA (Permit #P330-17-00150), USFWS (Permit #206964).

320 Forbes Boulevard, Mansfield, MA 02048-1806
508-822-9300 (Fax) 508-822-3288 800-624-9220 - www.alphalab.com

Project Name: 284 WINTER ST
Project Number: 01.0172397.10

Lab Number: L2006496
Report Date: 02/20/20

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2006496-01	SG-1	SOIL_VAPOR	HAVERHILL, MA	02/12/20 15:26	02/13/20
L2006496-02	SG-2	SOIL_VAPOR	HAVERHILL, MA	02/12/20 15:41	02/13/20
L2006496-03	SG-3	SOIL_VAPOR	HAVERHILL, MA	02/12/20 10:01	02/13/20

Project Name:	284 WINTER ST	**Lab Number:**	L2006496
Project Number:	01.0172397.10	**Report Date:**	02/20/20

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	YES
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	YES
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	YES
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	YES
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	YES

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name:	284 WINTER ST	**Lab Number:**	L2006496
Project Number:	01.0172397.10	**Report Date:**	02/20/20

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	284 WINTER ST	**Lab Number:**	L2006496
Project Number:	01.0172397.10	**Report Date:**	02/20/20

Case Narrative (continued)

MCP Related Narratives

Canisters were released from the laboratory on February 11, 2020. The canister certification data is provided as an addendum.

Petroleum Hydrocarbons in Air:

Sample Receipt

The canister ID number for the sample designated SG-3 (L2006496-03) is listed on the CoC as 2236 but should be 2336.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Christopher J. Anderson

Title: Technical Director/Representative Date: 02/20/20

QC OUTLIER SUMMARY REPORT

Project Name: 284 WINTER ST
Project Number: 01.0172397.10

Lab Number: L2006496
Report Date: 02/20/20

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment

There are no QC Outliers associated with this report.

AIR

Project Name: 284 WINTER ST
Project Number: 01.0172397.10
Lab Number: L2006496
Report Date: 02/20/20

SAMPLE RESULTS

Lab ID:	L2006496-01	Date Collected:	02/12/20 15:26
Client ID:	SG-1	Date Received:	02/13/20
Sample Location:	HAVERHILL, MA	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil_Vapor		
Analytical Method:	96,APH		
Analytical Date:	02/20/20 05:33		
Analyst:	EW		

Quality Control Information

Sample Type:	Composite
Sample Container Type:	Canister - 2.7 Liter
Sampling Flow Controller:	Mechanical
Sampling Zone:	Unknown
Sampling Flow Meter RPD of pre & post-sampling calibration check:	<=20%
Were all QA/QC procedures REQUIRED by the method followed?	Yes
Were all performance/acceptance standards for the required procedures achieved?	Yes
Were significant modifications made to the method as specified in Sect 11.1.2?	No

Petroleum Hydrocarbons in Air - Mansfield Lab

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,3-Butadiene	ND		ug/m3	0.50	--	1
Methyl tert butyl ether	ND		ug/m3	0.70	--	1
Benzene	ND		ug/m3	0.60	--	1
C5-C8 Aliphatics, Adjusted	100		ug/m3	10	--	1
Toluene	1.2		ug/m3	0.90	--	1
Ethylbenzene	ND		ug/m3	0.90	--	1
p/m-Xylene	1.3		ug/m3	0.90	--	1
o-Xylene	ND		ug/m3	0.90	--	1
Naphthalene	ND		ug/m3	1.1	--	1
C9-C12 Aliphatics, Adjusted	3500		ug/m3	10	--	1
C9-C10 Aromatics Total	ND		ug/m3	10	--	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	110		50-200
Bromochloromethane	114		50-200
Chlorobenzene-d5	110		50-200

Project Name: 284 WINTER ST
Project Number: 01.0172397.10
Lab Number: L2006496
Report Date: 02/20/20

SAMPLE RESULTS

Lab ID:	L2006496-02	Date Collected:	02/12/20 15:41
Client ID:	SG-2	Date Received:	02/13/20
Sample Location:	HAVERHILL, MA	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil_Vapor		
Analytical Method:	96,APH		
Analytical Date:	02/20/20 06:11		
Analyst:	EW		

Quality Control Information

Sample Type:	Composite
Sample Container Type:	Canister - 2.7 Liter
Sampling Flow Controller:	Mechanical
Sampling Zone:	Unknown
Sampling Flow Meter RPD of pre & post-sampling calibration check:	<=20%
Were all QA/QC procedures REQUIRED by the method followed?	Yes
Were all performance/acceptance standards for the required procedures achieved?	Yes
Were significant modifications made to the method as specified in Sect 11.1.2?	No

Petroleum Hydrocarbons in Air - Mansfield Lab

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,3-Butadiene	ND		ug/m3	0.50	--	1
Methyl tert butyl ether	ND		ug/m3	0.70	--	1
Benzene	ND		ug/m3	0.60	--	1
C5-C8 Aliphatics, Adjusted	190		ug/m3	10	--	1
Toluene	1.5		ug/m3	0.90	--	1
Ethylbenzene	ND		ug/m3	0.90	--	1
p/m-Xylene	1.3		ug/m3	0.90	--	1
o-Xylene	ND		ug/m3	0.90	--	1
Naphthalene	ND		ug/m3	1.1	--	1
C9-C12 Aliphatics, Adjusted	3400		ug/m3	10	--	1
C9-C10 Aromatics Total	ND		ug/m3	10	--	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	111		50-200
Bromochloromethane	117		50-200
Chlorobenzene-d5	112		50-200

Project Name: 284 WINTER ST
Project Number: 01.0172397.10
Lab Number: L2006496
Report Date: 02/20/20

SAMPLE RESULTS

Lab ID:	L2006496-03	Date Collected:	02/12/20 10:01
Client ID:	SG-3	Date Received:	02/13/20
Sample Location:	HAVERHILL, MA	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil_Vapor		
Analytical Method:	96,APH		
Analytical Date:	02/20/20 06:49		
Analyst:	EW		

Quality Control Information

Sample Type:	Composite
Sample Container Type:	Canister - 2.7 Liter
Sampling Flow Controller:	Mechanical
Sampling Zone:	Unknown
Sampling Flow Meter RPD of pre & post-sampling calibration check:	<=20%
Were all QA/QC procedures REQUIRED by the method followed?	Yes
Were all performance/acceptance standards for the required procedures achieved?	Yes
Were significant modifications made to the method as specified in Sect 11.1.2?	No

Petroleum Hydrocarbons in Air - Mansfield Lab

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
1,3-Butadiene	ND		ug/m3	0.50	--	1
Methyl tert butyl ether	ND		ug/m3	0.70	--	1
Benzene	ND		ug/m3	0.60	--	1
C5-C8 Aliphatics, Adjusted	38		ug/m3	10	--	1
Toluene	1.5		ug/m3	0.90	--	1
Ethylbenzene	ND		ug/m3	0.90	--	1
p/m-Xylene	0.97		ug/m3	0.90	--	1
o-Xylene	ND		ug/m3	0.90	--	1
Naphthalene	ND		ug/m3	1.1	--	1
C9-C12 Aliphatics, Adjusted	160		ug/m3	10	--	1
C9-C10 Aromatics Total	ND		ug/m3	10	--	1

Internal Standard	% Recovery	Qualifier	Acceptance Criteria
1,4-Difluorobenzene	112		50-200
Bromochloromethane	120		50-200
Chlorobenzene-d5	115		50-200

Project Name: 284 WINTER ST
Project Number: 01.0172397.10
Lab Number: L2006496
Report Date: 02/20/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 96,APH
Analytical Date: 02/19/20 15:04
Analyst: EW

Parameter	Result	Qualifier	Units	RL	MDL
Petroleum Hydrocarbons in Air - Mansfield Lab for sample(s): 01-03 Batch: WG1342334-4					
1,3-Butadiene	ND		ug/m3	0.50	--
Methyl tert butyl ether	ND		ug/m3	0.70	--
Benzene	ND		ug/m3	0.60	--
C5-C8 Aliphatics, Adjusted	ND		ug/m3	10	--
Toluene	ND		ug/m3	0.90	--
Ethylbenzene	ND		ug/m3	0.90	--
p/m-Xylene	ND		ug/m3	0.90	--
o-Xylene	ND		ug/m3	0.90	--
Naphthalene	ND		ug/m3	1.1	--
C9-C12 Aliphatics, Adjusted	ND		ug/m3	10	--
C9-C10 Aromatics Total	ND		ug/m3	10	--

Lab Control Sample Analysis

Batch Quality Control

Project Name: 284 WINTER ST

Project Number: 01.0172397.10

Lab Number: L2006496

Report Date: 02/20/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Petroleum Hydrocarbons in Air - Mansfield Lab Associated sample(s): 01-03 Batch: WG1342334-3								
1,3-Butadiene	99		-		70-130	-		
Methyl tert butyl ether	95		-		70-130	-		
Benzene	113		-		70-130	-		
C5-C8 Aliphatics, Adjusted	109		-		70-130	-		
Toluene	120		-		70-130	-		
Ethylbenzene	121		-		70-130	-		
p/m-Xylene	117		-		70-130	-		
o-Xylene	122		-		70-130	-		
Naphthalene	135		-		50-150	-		
C9-C12 Aliphatics, Adjusted	112		-		70-130	-		
C9-C10 Aromatics Total	105		-		70-130	-		

Project Name: 284 WINTER ST

Lab Number: L2006496

Project Number: 01.0172397.10

Report Date: 02/20/20

Canister and Flow Controller Information

Samplenum	Client ID	Media ID	Media Type	Date Prepared	Bottle Order	Cleaning Batch ID	Can Leak Check	Initial Pressure (in. Hg)	Pressure on Receipt (in. Hg)	Flow Controler Leak Chk	Flow Out mL/min	Flow In mL/min	% RPD
L2006496-01	SG-1	0954	Flow 2	02/11/20	314008		-	-	-	Pass	72	75	4
L2006496-01	SG-1	2856	2.7L Can	02/11/20	314008	L2005618-01	Pass	-29.4	-5.2	-	-	-	-
L2006496-02	SG-2	0617	Flow 2	02/11/20	314008		-	-	-	Pass	72	74	3
L2006496-02	SG-2	2788	2.7L Can	02/11/20	314008	L2005618-01	Pass	-28.2	-5.0	-	-	-	-
L2006496-03	SG-3	01499	Flow 2	02/11/20	314008		-	-	-	Pass	72	72	0
L2006496-03	SG-3	2336	2.7L Can	02/11/20	314008	L2005618-01	Pass	-28.4	-4.2	-	-	-	-

AIR Petro Can Certification

Project Name: BATCH CANISTER CERTIFICATION **Lab Number:** L2005618

Project Number: CANISTER QC BAT **Report Date:** 02/20/20

AIR CAN CERTIFICATION RESULTS

Lab ID:	L2005618-01	Date Collected:	02/06/20 16:00
Client ID:	CAN 1734 SHELF 9	Date Received:	02/07/20
Sample Location:	Not Specified	Field Prep:	Not Specified
Matrix:	Air		
Analytical Method:	96,APH		
Analytical Date:	02/08/20 18:20		
Analyst:	RY		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbons in Air						
1,3-Butadiene	ND		ug/m3	0.50	--	1
Methyl tert butyl ether	ND		ug/m3	0.70	--	1
Benzene	ND		ug/m3	0.60	--	1
C5-C8 Aliphatics, Adjusted	ND		ug/m3	10	--	1
Toluene	ND		ug/m3	0.90	--	1
Ethylbenzene	ND		ug/m3	0.90	--	1
p/m-Xylene	ND		ug/m3	0.90	--	1
o-Xylene	ND		ug/m3	0.90	--	1
Naphthalene	ND		ug/m3	1.1	--	1
C9-C12 Aliphatics, Adjusted	ND		ug/m3	10	--	1
C9-C10 Aromatics Total	ND		ug/m3	10	--	1

Project Name: 284 WINTER ST
Project Number: 01.0172397.10

Lab Number: L2006496
Report Date: 02/20/20

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
NA	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2006496-01A	Canister - 2.7 Liter	NA	NA			Y	Absent		APH-10(30)
L2006496-02A	Canister - 2.7 Liter	NA	NA			Y	Absent		APH-10(30)
L2006496-03A	Canister - 2.7 Liter	NA	NA			Y	Absent		APH-10(30)

*Values in parentheses indicate holding time in days

Project Name:	284 WINTER ST	**Lab Number:**	L2006496
Project Number:	01.0172397.10	**Report Date:**	02/20/20

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report

Project Name:	284 WINTER ST	**Lab Number:**	L2006496
Project Number:	01.0172397.10	**Report Date:**	02/20/20

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less

Report Format: Data Usability Report

Project Name:	284 WINTER ST	**Lab Number:**	L2006496
Project Number:	01.0172397.10	**Report Date:**	02/20/20

Data Qualifiers

than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: Data Usability Report

Project Name:	284 WINTER ST	**Lab Number:**	L2006496
Project Number:	01.0172397.10	**Report Date:**	02/20/20

REFERENCES

96 Method for the Determination of Air-Phase Petroleum Hydrocarbons (APH), MassDEP, December 2009, Revision 1 with QC Requirements & Performance Standards for the Analysis of APH by GC/MS under the Massachusetts Contingency Plan, WSC-CAM-IXA, July 2010.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
EPA TO-12 Non-methane organics
EPA 3C Fixed gases
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb**,** As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

AIR ANALYSIS

PAGE 1 OF 1

CHAIN OF CUSTODY

ALPHA ANALYTICAL
320 Forbes Blvd, Mansfield, MA 02048
TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 2/15/20

ALPHA Job #: L2006496

Client Information

Client: GZA GeoEnvironmental
Address: 249 Vanderbilt Ave
Norwood, MA
Phone: (781) 278-3700
Fax:
Email: kyle.maxfield@gza.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: 284 WINTER ST
Project Location: HAVERHILL, MA
Project #: 01.0172397.10
Project Manager: KYLE MAXFIELD
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX
☐ ADEx COMMERCIAL
Criteria Checker: STANDARDS
(Default based on Regulatory Criteria Indicated)
Other Formats:
☑ EMAIL (standard pdf report)
☐ Additional Deliverables:
Report to: (if different than Project Manager)

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed	Program	Res / Comm
MA	MCP	Comm.

Other Project Specific Requirements/Comments:

Project-Specific Target Compound List: ☐

All Columns Below Must Be Filled Out

ALPHA Lab ID (Lab Use Only)	Sample ID	COLLECTION End Date	Start Time	End Time	Initial Vacuum	Final Vacuum	Sample Matrix*	Sampler's Initials	Can Size	I.D. Can	I.D. - Flow Controller	TO-15	TO-15 SIM	APH (Method Non-detection HCs)	Fixed Gases	Sulfides & Mercaptans by TO-15	☐	Sample Comments (i.e. PID)
L2006496-01	SG-1	2-12-20	1456	1526	-29.84	-5.45	SV	MDD	2.7	2236	0954		X					
-02	SG-2	2-12-20	1911	1941	-30.01	-5.49	SV	MDD	2.7	2786	0617		X					
-03	SG-3	2-12-20	0931	1001	-29.57	-5.65	SV	MDD	2.7	2236	01499		X					
	REL TB ML 2-13-20 2030																	

*SAMPLE MATRIX CODES
AA = Ambient Air (Indoor/Outdoor)
SV = Soil Vapor/Landfill Gas/SVE
Other = Please Specify

Container Type

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By:	Date/Time	Received By:	Date/Time:
[signature]	2-12-20 1850	GZA FRIDGE	2-12-20 1850
[signature]	2/13/20 1101	[signature]	2/13/20 1101
[signature]	2/13/20 1545	[signature]	2/15/20 1545
[signature]	2/13/20 1930	TB ML	2/13/20 1930

Form No: 101-02 Rev: (25-Sep-15)

Appendix I – Soil Analytical Reports

ANALYTICAL REPORT

Prepared for:
NewFields
300 Ledgewood Place, Suite 305
Rockland, MA 02370

Project:	National Grid Winter St. Haverhill
ETR:	1610011
Report Date:	December 02, 2016

Certifications and Accreditations
Massachusetts M-MA030
Connecticut PH-0141
New Hampshire 2206
Rhode Island LAO00289
New Jersey MA015
Maine MA0030
New York 11627
Louisiana 03090
Florida E87814
Pennsylvania 68-02089
Army Corps of Engineers
Department of the Navy

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320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Sample ID Cross Reference

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**

Lab Code: **MA00030**
ETR: **1610011**

Lab Sample ID	Client Sample ID	Matrix
1610011-01	NFSB-04 0-1'	Soil
1610011-02	NFSB-04 12.5-15'	Soil
1610011-03	NFSB-05 1-2'	Soil
1610011-04	NFSB-05 5-6'	Soil
1610011-05	NFSB-06 1-2'	Soil
1610011-06	NFSB-06 12.5-15'	Soil
1610011-07	NFSB-07 1-2'	Soil
1610011-08	NFSB-07 6-7'	Soil
1610011-09	NFSB-07 13-15'	Soil
1610011-10	NFSB-08 1-2'	Soil
1610011-11	NFSB-08 7-8'	Soil
1610011-12	NFSB-08 11-15'	Soil
1610011-13	NFSB-09 1-2'	Soil
1610011-14	NFSB-09 3-4'	Soil
1610011-15	DUP-2	Soil

Gaps in Lab Sample IDs are indicative of samples not analyzed per client request.

Certificate/Approval Program Summary

Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2, 365.2; Metals: 200.8, 245.1; Organics: 608, 624, 625, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastwater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, 365.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608, 624, 625, 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/ SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: 608, 624).

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: EPA 608, 624).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608, 624, 625).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608, 624, 625, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 365.2, 376.2; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 245.1; 6020, 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Poratable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy

CASE NARRATIVE
Alpha Analytical

ETR: 1610011
Project: National Grid Winter St. Haverhill

All analyses were performed according to the Alpha Analytical quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Alpha Analytical certifies that the test results within meet all of the requirements of NELAC, for all NELAC accredited parameters.

Sample Receipt

Samples 1610011-01 through -15 were received on October 28, 2016, in good condition, between 2° and 6° C, without discrepancies. Samples -01 through -15 were released for TPH analysis and samples -01, -04, -05, -09, -10, -11, -12, -14 and -15 for PAH/BIO analysis.

Alkylated Polynuclear Aromatic Hydrocarbons and Triaromatic Steroids by GC/MS-SIM - Soil

Polynuclear aromatic hydrocarbons and geochemical biomarkers were analyzed following Alpha Analytical SOP *Analysis of Parent and Alkylated Polynuclear Aromatic Hydrocarbons, Selected Heterocyclic Compounds, Steranes, Triterpanes, and Triaromatic Steroids by Gas Chromatography/Mass Spectrometry with Selected Ion Monitoring (SOP 2247, Rev. 9, 03/21/2016).* Soil samples are spiked with surrogate compounds and extracted by *Shaker Table Extraction (SOP 2261, Rev. 7, 01/21/2016).* Solvent extracts are dried over sodium sulfate and concentrated to an appropriate volume by *Gravimetric Determination (SOP 2263, Rev. 5, 08/03/2015).* A pre-determined volume of the extract is alumina cleaned by *Alumina Column Cleanup of Organic Extract (SOP 2260, Rev. 6, 03/21/2016)* and concentrated to 1mL. Qualitative identifications are confirmed by analyzing standards under the same conditions used for samples, comparing mass spectra, GC retention times, and patterns generated from reference oils. Quantification is based on response factors derived from a multi-level initial calibration using internal standard techniques. Alkyl homologues are quantified using the response factor of the parent PAH compound. Target steroids are quantified using the response factor of 5β(H)-Cholane. All enclosed data was evaluated below the reporting limits to three times signal to noise. The sample specific reporting limit is the value reported for all compounds which are not detected ("U" qualified).

1. The method blank SS110116B03 contained low-level target compounds detected below the reporting limit. Associated field sample results are flagged with "B" qualifiers if the concentration of the analyte in the sample is less than 10X the concentration in the blank.

2. Concentrations for compounds flagged with "G" qualifiers may be biased high due to matrix interference included in the quantitation.

3. Several samples required dilutions due to over-calibration concentrations of target compounds. The diluted analyses are only quantified for the compounds that were over the calibration range of the analytical instrument in the un-diluted analyses. Additionally, the final diluted analysis on samples 1610011-14E and 1610011-15E had all the surrogates diluted out.

4. The relative percent difference (RPD) between the sample 1610011-04 and its duplicate (1610011-04D) had two compounds above the 30% QC limit. The integrations and calculations in the native sample and the duplicate were reviewed and found to be appropriate. See Duplicate Summary Report for individual compounds affected.

5. The continuing calibration verification (CCV), C311251605, had the percent deviation for trans-Decalin (28.9%D) and Benzo [j]+[k] fluoranthene (29.6%D) above the 25%D QC limit. These values were below 35%D and represent less than 10% of all compounds, therefore the calibration was accepted.

Steranes and Triterpanes by GC/MS-SIM - (F1) Soil

Geochemical biomarkers were analyzed following Alpha Analytical SOP *Analysis of Parent and Alkylated Polynuclear Aromatic Hydrocarbons, Selected Heterocyclic Compounds, Steranes, Triterpanes, and Triaromatic Steroids by Gas Chromatography/Mass Spectrometry with Selected Ion Monitoring (SOP 2247, Rev. 9, 03/21/2016)*. Soil samples are extracted as stated above for the PAH analysis. A pre-determined volume of the pre alumina extract is silica fractionated (*Silica Gel Cleanup Preparation (Manual), SOP 2267, Rev. 2, 03/21/2012*) and concentrated to 900uL, split in half and spiked with internal standard for biomarker analysis. The average weight of all samples included in the extraction batch is used as the weight for the blank, laboratory control sample, and laboratory control sample duplicate. The final value is rounded accordingly. Qualitative identifications are confirmed by analyzing standards under the same conditions used for samples, comparing mass spectra, GC retention times, and patterns generated from reference oils. Quantification is based on response factors derived from a multi-level initial calibration using internal standard techniques. Target triterpane biomarker concentrations are quantified using the response factor of Hopane and the steranes are quantified using the response factor of 5β(H)Cholane. All enclosed data was evaluated below the reporting limits to three times signal to noise. The sample specific reporting limit is the value reported for all compounds which are not detected ("U" qualified). Any sample preparation method deviations can be found in the "Sample Preparation and Extraction" section of this document or noted on the *Forensic Preparation Checklist* located in the sample preparation document.

In the "Steranes and Triterpanes" report section, the Lab IDs are reported with a suffix "F1" on all forms to indicate that the data reported is for fractionated biomarker analysis. The sample name in the analytical data (Quantitation Report and Injection Log) may be entered with a suffix "RF1" as a keyword requirement for LIMS data transfer.

1. Concentrations for compounds flagged with "G" qualifiers may be biased high due to matrix interference included in the quantitation.

2. The relative percent difference (RPD) between the sample 1610011-04-RF1 and its duplicate (1610011-04D-RF1) had some compounds above the 30% QC limit. The integrations and calculations in the native sample and the duplicate were reviewed and found to be appropriate. See Duplicate Summary Report for individual compounds affected.

Total Petroleum Hydrocarbons by GC/FID – Soil

Samples for total saturated hydrocarbons were analyzed following the procedures in Alpha Analytical SOP *Total Petroleum and Saturated Hydrocarbons by Gas Chromatography/Flame Ionization Detector (SOP 2246, Rev. 7, 9/5/2015)* Method 8100/8015mod. Samples were prepared as stated above for the PAH analysis. A portion of the final extract was analyzed for GC/FID (gas chromatography with flame ionization detection). A multi-level initial calibration over the n-alkane range from C9-C40 was evaluated and quantified using internal standard techniques prior to sample analysis. All enclosed data was evaluated below the reporting limits to three times signal to noise. The sample specific reporting limit is the value reported for all compounds which are not detected ("U" qualified).

1. The analysis for sample 1610011-14 has the surrogate d50-Tetracosane recovered above the upper recovery limit of 130%, at 133%, potentially due to the sample matrix. The surrogate ortho-Terphenyl was recovered within acceptance criteria.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Analytical makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Analytical. To the best of my knowledge, the information contained in this report is accurate and complete. For any questions regarding this report, please contact the signatory below at 508-822-9300.

Approved by: Susan O'Neil Title: **Project Manager** Date: **12/8/16**

Susan O'Neil

Sample Preparation

Alpha Woods Hole Lab
Batch Prep Report
11/01/2016 1610011 - OP NEWFIE

Lab ID	Prep Method	Analyst	Prep Start Date	Prep Completed	TCLP Date	Initial Amount (g or ml)	Split	PIV (ml)	Final Volume (ml)	Solvent Ex	Conc. Analyst	Conc. Date	Conc. Method	Transfer Volume (ml)	Vialed By	Vialed Date
1610011-01 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		30.48	2	1	2	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
1610011-02 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		5.23	4	1	4	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
1610011-03 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		15.17	10	1	10	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
1610011-04D (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		5.35	20	1	20	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
1610011-04 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		5.22	20	1	20	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
1610011-05 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		15.46	4	1	4	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
1610011-06 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		5.55	20	1	20	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
1610011-07 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		15.22	2	1	2	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
1610011-08 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		5.12	20	1	20	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
1610011-09 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		5.3	2	1	2	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
1610011-10 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		5.24	2	1	2	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
1610011-11 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		15.88	2	1	2	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
1610011-12 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		15.83	2	1	2	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
1610011-13 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		15.84	4	1	4	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
1610011-14 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		5.69	6.66667	1	6.67	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
1610011-15 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		5.49	4	1	4	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
SS110116B03 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		11	2	1	2	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
SS110116LCS02 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		11	2	1	2	False	TJ	11/5/2016	KD Flask		BA	11/9/2016
SS110116LCSD02 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/9/2016		11	2	1	2	False	TJ	11/5/2016	KD Flask		BA	11/9/2016

Alpha Woods Hole Lab
Batch Prep Report
11/01/2016 1610011 - OP NEWFIE

Lab ID	Notes
1610011-01 (Soil - 1610011)	1st Prep
1610011-02 (Soil - 1610011)	1st Prep
1610011-03 (Soil - 1610011)	1st Prep
1610011-04D (Soil - 1610011)	1st Prep
1610011-04 (Soil - 1610011)	1st Prep
1610011-05 (Soil - 1610011)	1st Prep
1610011-06 (Soil - 1610011)	1st Prep
1610011-07 (Soil - 1610011)	1st Prep
1610011-08 (Soil - 1610011)	1st Prep
1610011-09 (Soil - 1610011)	1st Prep
1610011-10 (Soil - 1610011)	1st Prep
1610011-11 (Soil - 1610011)	1st Prep
1610011-12 (Soil - 1610011)	1st Prep
1610011-13 (Soil - 1610011)	1st Prep
1610011-14 (Soil - 1610011)	1st Prep
1610011-15 (Soil - 1610011)	1st Prep
SS110116B03 (Soil - 1610011)	1st Prep
SS110116LCS02 (Soil - 1610011)	1st Prep
SS110116LCSD02 (Soil - 1610011)	1st Prep

Alpha Woods Hole Lab
Batch Prep Spike Report

11/01/2016 1610011 - OP NEWFIE Analyst: BA Witness: BA

Lab ID	QC Type	OP NEWFIE - surr	Vol OP NEWFIE - surr	Units OP NEWFIE - surr	OP NEWFIE - spk 1	Vol OP NEWFIE - spk 1	Units OP NEWFIE - spk 1	OP NEWFIE - spk 2	Vol OP NEWFIE - spk 2	Units OP NEWFIE - spk 2
1610011-01	SAM	FRAX85	100	µl	MSAX17	100	µl			
1610011-02	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610011-03	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610011-04	D	FRAX85	500	µl	MSAX17	500	µl			
1610011-04	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610011-05	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610011-06	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610011-07	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610011-08	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610011-09	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610011-10	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610011-11	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610011-12	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610011-13	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610011-14	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610011-15	SAM	FRAX85	500	µl	MSAX17	500	µl			
SS110116B03	B	FRAX85	100	µl	MSAX17	100	µl			
SS110116LCS02	LCS	FRAX85	100	µl	MSAX17	100	µl	FRAX73	100	µl
SS110116LCSD02	LCSD	FRAX85	100	µl	MSAX17	100	µl	FRAX73	100	µl
SS112516B01	B	-99	-99	-99	-99	-99	-99	-99	-99	-99
SS112516PRM01	PRM	-99	-99	-99	-99	-99	-99	-99	-99	-99

STD ID	TITLE	CONTENTS	SOLVENT	LOT
MSAX17	Biomarker Surrogate	5b(H)Cholane = 10 ug/mL	DCM	DO105
FRAX73	LCS Solution PAH /SHC	Aromatic Hydrocarbon STD = 10 ug/mL MA EPH Aliphatic Std = 200 ug/mL	DCM	DP875
FRAX85	PAH/SHC SURROGATE	Deuterated PAH Surrogate = 10 ug/mL OTP = 500 ug/mL D50 Tetracosane = 500 ug/mL	DCM	DQ092

Alpha Woods Hole Lab
Batch Prep Spike Report

11/01/2016 1610011 - OP SHC Analyst: BA Witness: BA

Lab ID	QC Type	OP SHC - surr	Vol OP SHC - surr	Units OP SHC - surr	OP SHC - spk 1	Vol OP SHC - spk 1	Units OP SHC - spk 1	OP SHC - spk 2	Vol OP SHC - spk 2	Units OP SHC - spk 2
1610011-01	SAM	FRAX85	100	µl				FRAX53	100	µl
1610011-02	SAM	FRAX85	500	µl				FRAX53	100	µl
1610011-03	SAM	FRAX85	500	µl				FRAX53	100	µl
1610011-04	D	FRAX85	500	µl				FRAX53	100	µl
1610011-04	SAM	FRAX85	500	µl				FRAX53	100	µl
1610011-05	SAM	FRAX85	500	µl				FRAX53	100	µl
1610011-06	SAM	FRAX85	500	µl				FRAX53	100	µl
1610011-07	SAM	FRAX85	500	µl				FRAX53	100	µl
1610011-08	SAM	FRAX85	500	µl				FRAX53	100	µl
1610011-09	SAM	FRAX85	500	µl				FRAX53	100	µl
1610011-10	SAM	FRAX85	500	µl				FRAX53	100	µl
1610011-11	SAM	FRAX85	500	µl				FRAX53	100	µl
1610011-12	SAM	FRAX85	500	µl				FRAX53	100	µl
1610011-13	SAM	FRAX85	500	µl				FRAX53	100	µl
1610011-14	SAM	FRAX85	500	µl				FRAX53	100	µl
1610011-15	SAM	FRAX85	500	µl				FRAX53	100	µl
SS110116B03	B	FRAX85	100	µl				FRAX53	100	µl
SS110116LCS02	LCS	FRAX85	100	µl	FRAX73	100	µl	FRAX53	100	µl
SS110116LCSD02	LCSD	FRAX85	100	µl	FRAX73	100	µl	FRAX53	100	µl
SS112516B01	B	-99	-99	-99	-99	-99	-99	-99	-99	-99
SS112516PRM01	PRM	-99	-99	-99	-99	-99	-99	-99	-99	-99

STD ID	TITLE	CONTENTS	SOLVENT	LOT
FRAX53	PAH/SHC RIS Spiking Solution	5 Alpha Androstane = 500 ug/mL Acenaphthene D10, Chrysene D12 = 5 ug/mL	DCM	dp875
FRAX73	LCS Solution PAH /SHC	Aromatic Hydrocarbon STD = 10 ug/mL MA EPH Aliphatic Std = 200 ug/mL	DCM	DP875
FRAX85	PAH/SHC SURROGATE	Deuterated PAH Surrogate = 10 ug/mL OTP = 500 ug/mL D50 Tetracosane = 500 ug/mL	DCM	DQ092

Alpha Woods Hole Lab
Batch Clean Up Report
11/01/2016 1610011 - OP NEWFIE

Lab ID	QC Type	Clean Up Method	Analyst	Clean Up Date	Flow Rate	Coll. Start	Coll. End	Concentration Analyst	Conc. Date	Solvent Ex.	Pre Vol (ml)	Frac Amt (ml)	Frac Split	Frac Fact	Tran Vol (ml)	Active
1610011-01	SAM	3660B	TJ	11/5/2016												True
1610011-02	SAM	3660B	TJ	11/5/2016												True
1610011-03	SAM	3660B	TJ	11/5/2016												True
1610011-04	D	3660B	TJ	11/5/2016												True
1610011-04	SAM	3660B	TJ	11/5/2016												True
1610011-05	SAM	3660B	TJ	11/5/2016												True
1610011-06	SAM	3660B	TJ	11/5/2016												True
1610011-07	SAM	3660B	TJ	11/5/2016												True
1610011-08	SAM	3660B	TJ	11/5/2016												True
1610011-09	SAM	3660B	TJ	11/5/2016												True
1610011-10	SAM	3660B	TJ	11/5/2016												True
1610011-11	SAM	3660B	TJ	11/5/2016												True
1610011-12	SAM	3660B	TJ	11/5/2016												True
1610011-13	SAM	3660B	TJ	11/5/2016												True
1610011-14	SAM	3660B	TJ	11/5/2016												True
1610011-15	SAM	3660B	TJ	11/5/2016												True
SS110116B03	B	3660B	TJ	11/5/2016												True
SS110116LCS02	LCS	3660B	TJ	11/5/2016												True
SS110116LCSD02	LCSD	3660B	TJ	11/5/2016												True

Alpha Woods Hole Lab
Batch Clean Up Report
11/01/2016 1610011 - OP NEWFIE

Lab ID	Notes
1610011-01	
1610011-02	
1610011-03	
1610011-04	
1610011-04	
1610011-05	
1610011-06	
1610011-07	
1610011-08	
1610011-09	
1610011-10	
1610011-11	
1610011-12	
1610011-13	
1610011-14	
1610011-15	
SS110116B03	
SS110116LCS02	
SS110116LCSD02	

ETR 1610011

Analyst TJ

Date 11/08/2016

Alpha Analytical

- [x] Pre-Alumina
- [ ] Post-Alumina
- [ ] Pre-Silica
- [ ] Oily Material Prep.
- [ ] Other

ETR	Lab ID	QC	Extract Volume (µL)	Aliquot Removed (µL)	Aliquot Weight (mg)	Total Extract Weight (mg)	Volume Removed for Column (µl)	Extract Weight to Column (mg)	Split Factor	QC (%R)
	FRAX35	Gravimetric Standard	10000	50	0.268	53.60	N/A	N/A	N/A	104%
1610011	1		4000	50	0.008	0.64	2000	0.32	2.00	
	2		4000	50	0.405	32.40	1000	8.10	4.00	
	3		10000	50	0.603	120.60	1000	12.06	10.00	
	4	D	10000	50	0.765	153.00	500	7.65	20.00	12%RPD
	4		10000	50	0.859	171.80	500	8.59	20.00	
	5		4000	50	0.523	41.84	1000	10.46	4.00	
	6		4000	50	1.755	140.40	200	7.02	20.00	
	7		4000	50	0.272	21.76	2000	10.88	2.00	
	8		10000	50	0.872	174.40	500	8.72	20.00	
	9		4000	50	0.305	24.40	2000	12.20	2.00	
	10		4000	50	0.137	10.96	2000	5.48	2.00	
	11		4000	50	0.072	5.76	2000	2.88	2.00	
	12		4000	50	0.009	0.72	2000	0.36	2.00	
	13		4000	50	0.557	44.56	1000	11.14	4.00	
	14		10000	50	0.335	67.00	1500	10.04	6.67	
	15		4000	50	0.404	32.32	1000	8.08	4.00	

Note:

Total Extract Weight (mg) = (Extract Volume ÷ Aliquot Removed) (Aliquot Weight)

Gravimetric Standard = 5 mg/mL

LCS Acceptance Criteria: 95% - 105%

Verified by: ED

Date: 11/16/16

ETR 1610011

Analyst TJ

Date 11/08/2016

Alpha Analytical

- [x] Pre-Alumina
- [ ] Post-Alumina
- [ ] Pre-Silica
- [ ] Oily Material Prep.
- [ ] Other

ETR	Lab ID	QC	Extract Volume (µL)	Aliquot Removed (µL)	Aliquot Weight (mg)	Total Extract Weight (mg)	Volume Removed for Column (µl)	Extract Weight to Column (mg)	Split Factor	QC (%R)
	FRAX35	Gravimetric Standard	10000	50	0.268		N/A	N/A	N/A	0%
1610011	1		4000	50	0.008					
	2		4000	50	0.405					
	3		10000	50	0.603					
	4		10000	50	0.859					
	4	D	10000	50	0.765					#VALUE!
	5		4000	50	0.523					
	6		4000	50	1.755					
	7		4000	50	0.272					
	8		10000	50	0.872					
	9		4000	50	0.305					
	10		4000	50	0.137					
	11		4000	50	0.072					
	12		4000	50	0.009					
	13		4000	50	0.551					
	14		10000	50	0.335					
	15		4000	50	0.404					

Note:

Total Extract Weight (mg) = (Extract Volume ÷ Aliquot Removed) (Aliquot Weight)

Gravimetric Standard = 5 mg/mL

LCS Acceptance Criteria: 95% - 105%

Verified by: _____

Date: _____

Alpha Woods Hole Lab
Batch Clean Up Report

11/01/2016 1610011 - OP NEWFIE

Lab ID	QC Type	Clean Up Method	Analyst	Clean Up Date	Flow Rate	Coll. Start	Coll. End	Concentration Analyst	Conc. Date	Solvent Ex.	Pre Vol (ml)	Frac Amt (ml)	Frac Split	Frac Fact	Tran Vol (ml)	Active
1610011-01	SAM	3610	BA	11/9/2016				BA	11/9/2016	False	4	2	2	0		True
1610011-02	SAM	3610	BA	11/9/2016				BA	11/9/2016	False	4	1	4	0		True
1610011-03	SAM	3610	BA	11/9/2016				BA	11/9/2016	False	10	1	10	0		True
1610011-04	D	3610	BA	11/9/2016				BA	11/9/2016	False	10	0.5	20	0		True
1610011-04	SAM	3610	BA	11/9/2016				BA	11/9/2016	False	10	0.5	20	0		True
1610011-05	SAM	3610	BA	11/9/2016				BA	11/9/2016	False	4	1	4	0		True
1610011-06	SAM	3610	BA	11/9/2016				BA	11/9/2016	False	4	0.2	20	0		True
1610011-07	SAM	3610	BA	11/9/2016				BA	11/9/2016	False	4	2	2	0		True
1610011-08	SAM	3610	BA	11/9/2016				BA	11/9/2016	False	10	0.5	20	0		True
1610011-09	SAM	3610	BA	11/9/2016				BA	11/9/2016	False	4	2	2	0		True
1610011-10	SAM	3610	BA	11/9/2016				BA	11/9/2016	False	4	2	2	0		True
1610011-11	SAM	3610	BA	11/9/2016				BA	11/9/2016	False	4	2	2	0		True
1610011-12	SAM	3610	BA	11/9/2016				BA	11/9/2016	False	4	2	2	0		True
1610011-13	SAM	3610	BA	11/9/2016				BA	11/9/2016	False	4	1	4	0		True
1610011-14	SAM	3610	BA	11/9/2016				BA	11/9/2016	False	10	1.5	6.66667	0		True
1610011-15	SAM	3610	BA	11/9/2016				BA	11/9/2016	False	4	1	4	0		True
SS110116B03	B	3610	BA	11/9/2016				BA	11/9/2016	False	4	2	2	0		True
SS110116LCS02	LCS	3610	BA	11/9/2016				BA	11/9/2016	False	4	2	2	0		True
SS110116LCSD02	LCSD	3610	BA	11/9/2016				BA	11/9/2016	False	4	2	2	0		True

Alpha Woods Hole Lab
Batch Clean Up Report
11/01/2016 1610011 - OP NEWFIE

Lab ID	Notes
1610011-01	
1610011-02	
1610011-03	
1610011-04	
1610011-04	
1610011-05	
1610011-06	
1610011-07	
1610011-08	
1610011-09	
1610011-10	
1610011-11	
1610011-12	
1610011-13	
1610011-14	
1610011-15	
SS110116B03	
SS110116LCS02	
SS110116LCSD02	

Batch ID: 16 10011 Client: Newfields Project: National (Grid) Winter St. Haverill

Anomalies are noted in the Prep Process Notes section below.

Test(s) Spiked for:
Choose from the following:
F1B, POIB, POIH, POIHX, POITAS, TPH+A

Identify Matrix:
Filter • Filter (L) • NAPL • Net • Oil Product • PUF • Sediment • Sheen • Soil • Solid • SPMD • Tissue • Pom Pom • 1L Water • 4L Water • Floc Water

	Date:	Initials:
COC/ETR Check:	11/1/16	BA
1st Extraction:	11/1/16	BA
2nd Extraction:	11/3/16	DR
3rd Extraction:	11/4/16	JP

Extraction HT:
11/3/2016

Cleanup Methods:		Date/ Initials:
No Cleanup Required		
Alumina Column (3610)	X	11/9/16 BA
Silica Column (3630)		
Fractionation Column (3630F1)		
GPC (3640)		
Copper (3660B)	X	11/5/16 TJ
Water pH<2 verified		

	Date/Initials:	ID & Amount:
RIS Spike Analyst:	11/9/16 BA	TCMX 53 100uL
RIS Spike Witness:	11/9/16 TJ	

Prep Process Notes

REAGENT	LOT #
DCM	0000125081
SODIUM SULFATE	0000131774
SILICA GEL	N/A 214
ALUMINA	

REAGENT	LOT #
COPPER	0VR110516A
GLASS WOOL	14140001

BATCH COMPLETE Analyst:	BA	Date:	11/10/16

BATCH REVIEWED Analyst:	EP	Date:	11/16/16

Batch ID: 161001 **Client:** Newfields **Project:** National Guard Winter St Haverhill

Prep Process Notes

Sample ID	Low Volume	High H2O	Plant Material	Other	Difficult to homogenize	Potential High Level		Spiked High
						Visual	Odor	
1								
2						X	X	X
3						X	X	X
4						X	X	X
5						X	X	X
6						X		X
7						X		X
8						X	X	X
9						X		X
10						X	X	X
11						X	X	X
12						X		X
13						X	X	X
14						X	X	X
15								

Present

Alpha Woods Hole Lab
Batch Weight Report
11/01/2016

Lab ID	QC Type	PS1610011 - Pan Weight	PS1610011 - Wet Weight	PS1610011 - Dry Weight	PS1610011 - Dry Weight #2	PS1610011 - Dry Weight #3	Percent Solid	RPD
1610011-01	D	1.17	5.81	5.64	5.64		96.34	0.24%
1610011-01	SAM	1.15	5.52	5.35	5.35		96.11	
1610011-02	SAM	1.17	8.09	6.24	6.24		73.27	
1610011-03	SAM	1.16	7.31	6.78	6.78		91.38	
1610011-04	SAM	1.14	5.1	4.79	4.78		91.92	
1610011-05	SAM	1.18	7.64	6.97	6.97		89.63	
1610011-06	SAM	1.16	8.12	7.14	7.14		85.92	
1610011-07	SAM	1.15	6.26	5.81	5.81		91.19	
1610011-08	SAM	1.14	6.13	5.37	5.37		84.77	
1610011-09	SAM	1.14	5.95	5.42	5.41		88.77	
1610011-10	SAM	1.16	6.81	6.33	6.33		91.50	
1610011-11	SAM	1.14	5.88	5.28	5.28		87.34	
1610011-12	SAM	1.15	7.94	6.33	6.32		76.14	
1610011-13	SAM	1.16	5.96	5.38	5.38		87.92	
1610011-14	SAM	1.16	7.09	5.96	5.96		80.94	
1610011-15	SAM	1.16	6.39	5.51	5.51		83.17	
PSS110116B04	B	1.15	1.15	1.15	1.15		100.00	

Initial: 11/1/2016 9:09:49 AM TS
Weight #1: 11/4/2016 4:50:36 AM BA
Weight #2: 11/4/2016 7:00:05 AM BA

Alkylated Polynuclear Aromatic Hydrocarbons and Triaromatic Steroids by GC/MS-SIM

Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-04 0-1'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-01**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/25/16	96.1	30.48	2	1	AC

Parameter	Result		Parameter	Result	
cis/trans-Decalin	**0.165**	J	C1-Dibenzothiophenes	**0.965**	
C1-Decalins	**0.645**	J	C2-Dibenzothiophenes	**1.62**	
C2-Decalins	**1.07**		C3-Dibenzothiophenes	**1.42**	
C3-Decalins	0.683	U	C4-Dibenzothiophenes	**0.977**	
C4-Decalins	0.683	U	Benzo(b)fluorene	**3.45**	
Benzothiophene	**0.255**	J	Fluoranthene	**34.1**	
C1-Benzo(b)thiophenes	**0.418**	J	Pyrene	**52.5**	
C2-Benzo(b)thiophenes	**0.215**	JB	C1-Fluoranthenes/Pyrenes	**25.0**	
C3-Benzo(b)thiophenes	**0.707**		C2-Fluoranthenes/Pyrenes	**13.4**	
C4-Benzo(b)thiophenes	0.683	U	C3-Fluoranthenes/Pyrenes	**7.05**	
Naphthalene	**4.18**		C4-Fluoranthenes/Pyrenes	**4.09**	
C1-Naphthalenes	**2.48**	B	Naphthobenzothiophenes	**3.27**	
C2-Naphthalenes	**2.60**	B	C1-Naphthobenzothiophenes	**3.22**	
C3-Naphthalenes	**1.98**	B	C2-Naphthobenzothiophenes	**3.02**	
C4-Naphthalenes	**1.92**	G	C3-Naphthobenzothiophenes	**2.13**	
Biphenyl	**0.651**	JB	C4-Naphthobenzothiophenes	0.683	U
Dibenzofuran	**1.06**	B	Benz[a]anthracene	**21.3**	
Acenaphthylene	**13.7**		Chrysene/Triphenylene	**22.2**	
Acenaphthene	**1.54**	B	C1-Chrysenes	**15.5**	
Fluorene	**2.21**	B	C2-Chrysenes	**10.1**	
C1-Fluorenes	**1.87**	B	C3-Chrysenes	**6.35**	
C2-Fluorenes	**2.56**		C4-Chrysenes	**2.86**	
C3-Fluorenes	**3.05**	G	Benzo[b]fluoranthene	**20.4**	
Anthracene	**9.73**		Benzo[j]fluoranthene/Benzo[k]fluoranthene	**24.0**	
Phenanthrene	**29.5**		Benzo[a]fluoranthene	**7.48**	
C1-Phenanthrenes/Anthracenes	**14.2**		Benzo[e]pyrene	**22.0**	
C2-Phenanthrenes/Anthracenes	**7.92**		Benzo[a]pyrene	**27.5**	
C3-Phenanthrenes/Anthracenes	**3.97**		Perylene	**6.16**	
C4-Phenanthrenes/Anthracenes	**1.52**		Indeno[1,2,3-cd]pyrene	**18.1**	
Retene	0.683	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	**5.83**	
Dibenzothiophene	**1.36**		Benzo[g,h,i]perylene	**20.7**	

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	73	50-130
Phenanthrene-d10	97	50-130
Benzo[a]pyrene-d12	91	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
B - Found in associated blank as well as sample.
J - Estimated value, below quantitation limit.
N/A - Not Applicable
G - Matrix Interference

Form I
Carbazole

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-04 0-1'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-01**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/25/16	96.1	30.48	2	1	AC

Parameter	Result
Carbazole	**1.29**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	73	50-130
Phenanthrene-d10	97	50-130
Benzo[a]pyrene-d12	91	50-130

N/A - Not Applicable

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-04 0-1'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-01**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/25/16	96.1	30.48	2	1	AC

Parameter	Result	
4-Methyldibenzothiophene	**0.574**	J
2/3-Methyldibenzothiophene	0.683	U
1-Methyldibenzothiophene	**0.116**	J
3-Methylphenanthrene	**3.03**	
2-Methylphenanthrene	**3.38**	
2-Methylanthracene	**1.57**	
9/4-Methylphenanthrene	**3.36**	
1-Methylphenanthrene	**2.08**	

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	73	50-130
Phenanthrene-d10	97	50-130
Benzo[a]pyrene-d12	91	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
J - Estimated value, below quantitation limit.
N/A - Not Applicable

Form I
Triaromatic Steroids

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-04 0-1'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-01**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/25/16	96.1	30.48	2	1	AC

Parameter	Result	
C26,20R- +C27,20S- triaromatic steroid	**0.608**	J
C28,20S-triaromatic steroid	**0.518**	J
C27,20R-triaromatic steroid	**0.488**	J
C28,20R-triaromatic steroid	**0.379**	J

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	90	50-130

J - Estimated value, below quantitation limit.
N/A - Not Applicable

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251605.D
Acq On : 25 Nov 2016 6:20 pm
Operator : AC
Sample : 1610011-01
Misc : 1x
ALS Vial : 5 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:44:48 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.205	164	103105	500.000	ng/ml	-0.02
71) Chrysene-d12	43.690	240	163845	500.000	ng/ml	-0.02
System Monitoring Compounds						
8) Naphthalene-d8	20.234	136	160371	362.622	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 36.26%#			
40) Phenanthrene-d10	33.091	188	164731	486.065	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 48.61%#			
80) Benzo[b]fluoranthene-d12	47.605	264	168419	493.492	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 49.35%#			
85) Benzo[a]pyrene-d12	48.855	264	125109	455.405	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 45.54%#			
126) 5B(H)Cholane - Surr	44.262	217	23998	451.012	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 45.10%#			
Target Compounds						Qvalue
2) trans-Decalin	16.847	138	216	2.418	ng/ml	100
4) C1-Decalins	18.774	152	844M5	9.448	ng/ml	
5) C2-Decalins	20.114	166	1396M5	15.628	ng/ml	
9) Naphthalene	20.310	128	29808	61.284	ng/ml	100
10) C1-Naphthalenes	23.441	142	17641M5	36.269	ng/ml	
11) C2-Naphthalenes	25.850	156	18522M5	38.081	ng/ml	
12) C3-Naphthalenes	28.183	170	14108M5	29.006	ng/ml	
13) C4-Naphthalenes	29.327	184G	13700M5	28.167	ng/ml	
14) 2-Methylnaphthalene	23.020	142	8753	28.306	ng/ml	100
15) 1-Methylnaphthalene	23.441	142	9462	32.301	ng/ml	100
16) Benzothiophene	20.551	134	1608M4	3.733	ng/ml	
17) C1-Benzo(b)thiophenes	23.065	148	2639M5	6.126	ng/ml	
18) C2-Benzo(b)thiophenes	25.579	162	1356M5	3.148	ng/ml	
19) C3-Benzo(b)thiophenes	26.572	176	4463M5	10.361	ng	
21) Biphenyl	24.901	154	3746	9.542	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.519	156	3723	13.873	ng/ml	100
23) Dibenzofuran	27.988	168	6383M4	15.491	ng/ml	
24) Acenaphthylene	26.603	152	94387M4	200.363	ng/ml	
25) Acenaphthene	27.340	153	6513	22.610	ng/ml	100
26) 2,3,5-Trimethylnaphthalen	28.876	170	767M3	3.326	ng/ml	
27) Fluorene	29.358	166	10186M4	32.390	ng/ml	
28) C1-Fluorenes	31.585	180	8630M5	27.442	ng/ml	
29) C2-Fluorenes	33.904	194	11814M5	37.567	ng/ml	
30) C3-Fluorenes	36.448	208G	14066M5	44.728	ng/ml	
31) Dibenzothiophene	32.684	184	9223	19.875	ng/ml#	90
32) 4-Methyldibenzothiophene(	34.461	198	3903	8.411	ng/ml	100
34) 1-Methyldibenzothiophene(	35.214	198	790	1.702	ng/ml	100
35) OTP	34.822	198	24871M4	53.596	ng/ml	
36) C1-Dibenzothiophenes	34.822	198	31427M5	67.725	ng/ml	
36) C1-Dibenzothiophenes BS	34.822	198	6556M5	14.128	ng/ml	
37) C2-Dibenzothiophenes	36.132	212	10986M5	23.675	ng/ml	
38) C3-Dibenzothiophenes	37.939	226	9624M5	20.740	ng/ml	
39) C4-Dibenzothiophenes	40.032	240	6637M5	14.303	ng/ml	
41) Phenanthrene	33.181	178	190757	432.734	ng/ml	100
42) 3-Methylphenanthrene(3MP)	35.138	192	19592	44.445	ng/ml	93
43) 2-Methylphenanthrene(2MP)	35.244	192	21848M4	49.562	ng/ml	
44) 2-Methylanthracene(2MA)	35.409	192	10158M4	23.043	ng/ml	
45) 9/4-Methylphenanthrene(9M	35.590	192	21670	49.159	ng/ml	80
46) 1-Methylphenanthrene(1MP)	35.680	192	13434	30.475	ng/ml	95

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251605.D
Acq On : 25 Nov 2016 6:20 pm
Operator : AC
Sample : 1610011-01
Misc : 1x
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 29 13:44:48 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
47) C1-Phenanthrenes/Anthrace	35.244	192	91646M5	207.900	ng/ml	
48) C2-Phenanthrenes/Anthrace	37.141	206	57357M5	130.115	ng/ml	
48) C2-Phenanthrenes/Anthr BS	37.141	206	51108M5	115.939	ng/ml	
49) 5AA IS BKGD	37.141	206	6249M3	14.176	ng/ml	
50) C3-Phenanthrenes/Anthrace	39.249	220	25641M5	58.167	ng/ml	
51) C4-Phenanthrenes/Anthrace	41.447	234	9804M5	22.240	ng/ml	
53) Anthracene	33.377	178	59624M4	142.517	ng/ml	
54) Carbazole	34.024	167	7726	18.903	ng/ml	95
55) 1-Methylphenanthrene	35.680	192	13434	41.322	ng/ml	96
56) Fluoranthene	37.954	202	244291	499.304	ng/ml	95
57) Benzo(b)fluorene	40.483	216	14658M3	50.562	ng/ml	
58) Pyrene	38.842	202	407630	768.571	ng/ml	95
59) C1-Fluoranthenes/Pyrenes	41.010	216	193976M5	365.735	ng/ml	
60) C2-Fluoranthenes/Pyrenes	42.305	230	104261M5	196.580	ng/ml	
61) C3-Fluoranthenes/Pyrenes	44.157	244	54786M5	103.297	ng/ml	
62) C4-Fluoranthenes/Pyrenes	45.482	258	31804M5	59.965	ng/ml	
63) Naphthobenzothiophene	42.697	234	13913	30.267	ng/ml	98
64) Naphthobenzothiophene-2,1	42.697	234	13913	30.267	ng/ml	98
65) Naphthobenzothiophene-1,2	43.028	234	3813	8.295	ng/ml#	100
66) Naphthobenzothiophene-2,3	43.329	234	4273M3	9.296	ng/ml	
67) C1-Naphthobenzothiophenes	44.097	248	21710M5	47.229	ng/ml	
68) C2-Naphthobenzothiophenes	46.370	262	20356M5	44.283	ng/ml	
69) C3-Naphthobenzothiophenes	47.470	276	14378M5	31.278	ng/ml	
72) Benz[a]anthracene	43.615	228	141770M3	312.273	ng/ml	
74) Chrysene/Triphenylene	43.781	228	138712	325.791	ng/ml	95
75) C1-Chrysenes	45.256	242	96528M5	226.714	ng/ml	
76) C2-Chrysenes	46.958	256	68445M5	160.756	ng/ml	
76) C2-Chrysenes BS	46.958	256	63086M5	148.169	ng/ml	
77) BBF-D12 Surr BKGD	47.605	256	5359	12.587	ng/ml	100
78) C3-Chrysenes	48.599	270	39602M5	93.013	ng/ml	
79) C4-Chrysenes	48.524	284	17870M5	41.971	ng/ml	
81) Benzo[b]fluoranthene	47.696	252	137911	298.561	ng/ml	97
82) Benzo[j]+[k]fluoranthene	47.771	252	149590	351.308	ng/ml	99
83) Benzo[a]fluoranthene	48.102	252	46682M4	109.632	ng/ml	
84) Benzo[e]pyrene	48.735	252	138296	321.969	ng/ml	99
86) Benzo[a]pyrene	48.946	252	164901	402.379	ng/ml	98
87) Perylene	49.262	252	37456	90.266	ng/ml	97
88) Indeno[1,2,3-cd]pyrene	54.006	276	140604M4	265.681	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.036	278	38553M4	85.351	ng/ml	
90) Benzo[g,h,i]perylene	55.391	276	154999	302.796	ng/ml	100
144) C26,20R- +C27,20S- triaro	50.120	231	474M4	8.908	ng/mL	
145) C28,20S-triaromatic stero	51.024	231	404M4	7.593	ng/mL	
146) C27,20R-triaromatic stero	51.491	231	380M4	7.142	ng/mL	
147) C28,20R-triaromatic stero	52.756	231	295M4	5.544	ng/mL	

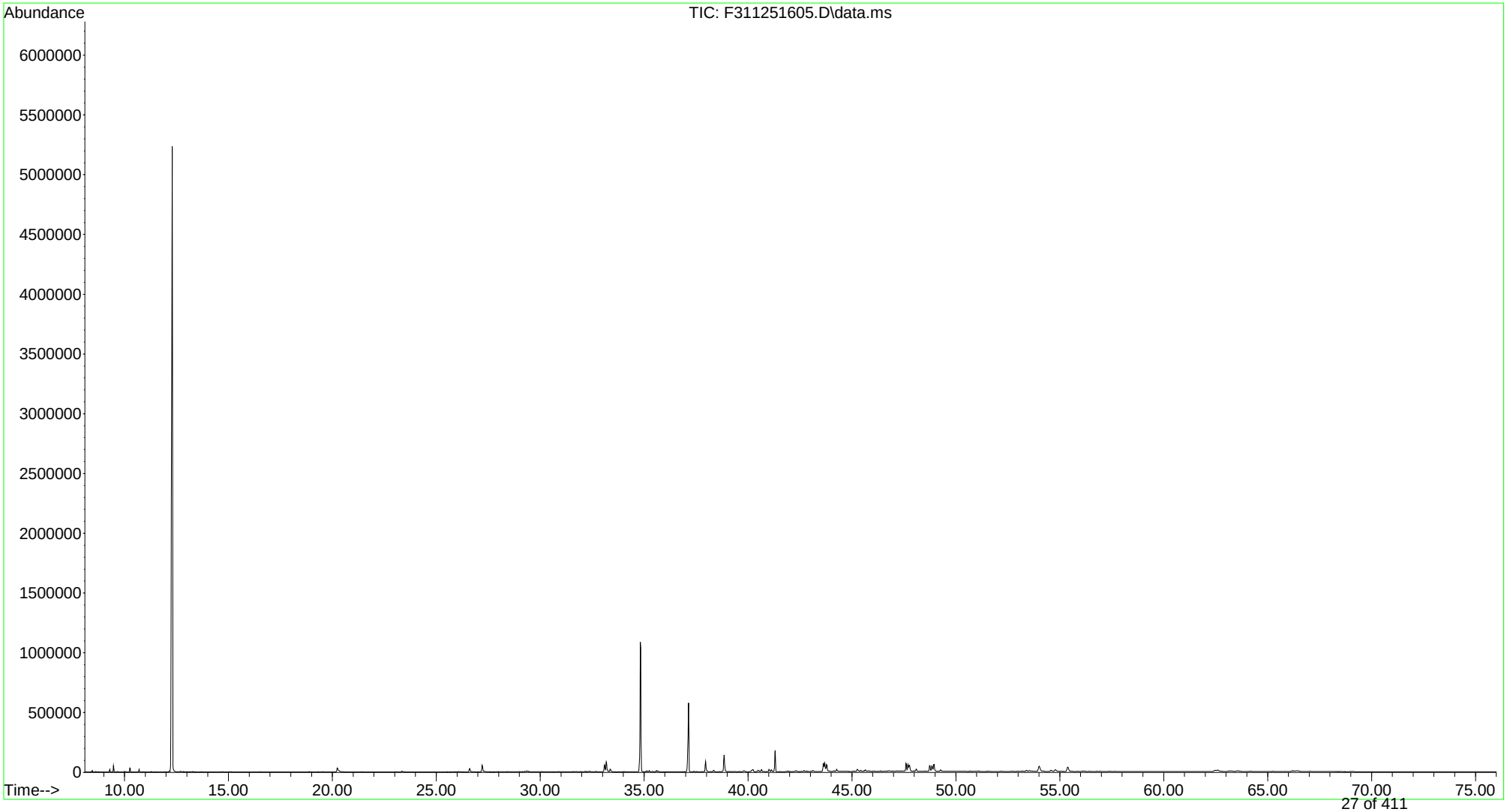
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251605.D
Acq On : 25 Nov 2016 6:20 pm
Operator : AC
Sample : 1610011-01
Misc : 1x
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 29 13:44:48 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/25/16	91.9	5.22	20	1	AC

Parameter	Result		Parameter	Result
cis/trans-Decalin	**4830**		C1-Dibenzothiophenes	**1490**
C1-Decalins	**15800**		C2-Dibenzothiophenes	**2030**
C2-Decalins	**18900**		C3-Dibenzothiophenes	**2210**
C3-Decalins	**13200**		C4-Dibenzothiophenes	**1280**
C4-Decalins	**20100**		Benzo(b)fluorene	**3230**
Benzothiophene	**566**		Fluoranthene	**11600**
C1-Benzo(b)thiophenes	**573**		Pyrene	**19800**
C2-Benzo(b)thiophenes	**610**		C1-Fluoranthenes/Pyrenes	**21800**
C3-Benzo(b)thiophenes	**876**		C2-Fluoranthenes/Pyrenes	**18400**
C4-Benzo(b)thiophenes	**708**		C3-Fluoranthenes/Pyrenes	**9840**
Naphthalene	**18200**		C4-Fluoranthenes/Pyrenes	**5590**
C1-Naphthalenes	**4360**		Naphthobenzothiophenes	**1580**
C2-Naphthalenes	**5180**		C1-Naphthobenzothiophenes	**2680**
C3-Naphthalenes	**4330**		C2-Naphthobenzothiophenes	**3140**
C4-Naphthalenes	**5620**		C3-Naphthobenzothiophenes	**2240**
Biphenyl	**842**		C4-Naphthobenzothiophenes	**1100**
Dibenzofuran	**733**		Benz[a]anthracene	**6660**
Acenaphthylene	**11300**		Chrysene/Triphenylene	**8100**
Acenaphthene	**1950**		C1-Chrysenes	**12500**
Fluorene	**3040**		C2-Chrysenes	**12000**
C1-Fluorenes	**2340**		C3-Chrysenes	**7790**
C2-Fluorenes	**4630**		C4-Chrysenes	**3080**
C3-Fluorenes	**4310**		Benzo[b]fluoranthene	**11600**
Anthracene	**6510**		Benzo[j]fluoranthene/Benzo[k]fluoranthene	**10400**
Phenanthrene	**13400**		Benzo[a]fluoranthene	**5770**
C1-Phenanthrenes/Anthracenes	**9900**		Benzo[e]pyrene	**13000**
C2-Phenanthrenes/Anthracenes	**9230**		Benzo[a]pyrene	**16000**
C3-Phenanthrenes/Anthracenes	**7100**		Perylene	**3840**
C4-Phenanthrenes/Anthracenes	**3200**		Indeno[1,2,3-cd]pyrene	**11200**
Retene	41.7 U		Dibenz[ah]anthracene/Dibenz[ac]anthracene	**4290**
Dibenzothiophene	**1210**		Benzo[g,h,i]perylene	**13300**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	107	50-130
Phenanthrene-d10	93	50-130
Benzo[a]pyrene-d12	103	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

11/29/16 18:00

Form I
Carbazole

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/25/16	91.9	5.22	20	1	AC

Parameter	Result
Carbazole	**207**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	107	50-130
Phenanthrene-d10	93	50-130
Benzo[a]pyrene-d12	103	50-130

N/A - Not Applicable

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/25/16	91.9	5.22	20	1	AC

Parameter	Result
4-Methyldibenzothiophene	**508**
2/3-Methyldibenzothiophene	**688**
1-Methyldibenzothiophene	**159**
3-Methylphenanthrene	**1660**
2-Methylphenanthrene	**1950**
2-Methylanthracene	**1850**
9/4-Methylphenanthrene	**3120**
1-Methylphenanthrene	**1170**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	107	50-130
Phenanthrene-d10	93	50-130
Benzo[a]pyrene-d12	103	50-130

N/A - Not Applicable

Form I
Triaromatic Steroids

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/25/16	91.9	5.22	20	1	AC

Parameter	Result
C26,20R- +C27,20S- triaromatic steroid	**69.8**
C28,20S-triaromatic steroid	**105**
C27,20R-triaromatic steroid	**80.8**
C28,20R-triaromatic steroid	**50.4**

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	99	50-130

N/A - Not Applicable

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251606.D
Acq On : 25 Nov 2016 7:46 pm
Operator : AC
Sample : 1610011-04
Misc : 1x
ALS Vial : 6 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 17:44:22 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.205	164	59244	500.000	ng/ml	-0.02
71) Chrysene-d12	43.675	240	125682	500.000	ng/ml	-0.03
System Monitoring Compounds						
8) Naphthalene-d8	20.219	136	68197M4	268.367	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 26.84%#			
40) Phenanthrene-d10	33.091	188	45342	232.839	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 23.28%#			
80) Benzo[b]fluoranthene-d12	47.605	264	70940	270.982	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 27.10%#			
85) Benzo[a]pyrene-d12	48.840	264	54511	258.675	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 25.87%#			
126) 5B(H)Cholane - Surr	44.262	217	10084	247.062	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 24.71%#			
Target Compounds						Qvalue
2) trans-Decalin	16.847	138	54122	1054.447	ng/ml	100
3) cis-Decalin	18.066	138	3989M3	103.461	ng/ml	
4) C1-Decalins	18.789	152	194235M5	3784.238	ng/ml	
5) C2-Decalins	20.114	166	232289M5	4525.636	ng/ml	
6) C3-Decalins	22.583	180	162335M5	3162.737	ng/ml	
7) C4-Decalins	25.985	194	247382M5	4819.689	ng/ml	
9) Naphthalene	20.294	128	1216973	4354.455	ng/ml	100
10) C1-Naphthalenes	23.411	142	292299M5	1045.876	ng/ml	
11) C2-Naphthalenes	25.835	156	347370M5	1242.926	ng/ml	
12) C3-Naphthalenes	28.514	170	290358M5	1038.931	ng/ml	
13) C4-Naphthalenes	30.486	184	376900M5	1348.587	ng/ml	
14) 2-Methylnaphthalene	22.989	142	62999	354.564	ng/ml	100
15) 1-Methylnaphthalene	23.411	142	228708	1358.794	ng/ml	100
16) Benzothiophene	20.505	134	33597	135.738	ng/ml	100
17) C1-Benzo(b)thiophenes	22.854	148	34002M5	137.374	ng/ml	
18) C2-Benzo(b)thiophenes	25.564	162	36254M5	146.472	ng/ml	
19) C3-Benzo(b)thiophenes	28.018	176	52000M5	210.089	ng	
20) C4-Benzo(b)thiophenes	30.110	190	42024M5	169.784	ng/ml	
21) Biphenyl	24.871	154	45581M4	202.074	ng/ml	
22) 2,6-Dimethylnaphthalene	25.488	156	81752	530.146	ng/ml	100
23) Dibenzofuran	27.972	168	41656M3	175.937	ng/ml	
24) Acenaphthylene	26.602	152	734936M4	2715.121	ng/ml	
25) Acenaphthene	27.325	153	77408	467.680	ng/ml	94
26) 2,3,5-Trimethylnaphthalen	28.876	170	11321M3	85.439	ng/ml	
27) Fluorene	29.342	166	131758M4	729.158	ng/ml	
28) C1-Fluorenes	31.570	180	101262M5	560.391	ng/ml	
29) C2-Fluorenes	34.190	194	200588M5	1110.068	ng/ml	
30) C3-Fluorenes	36.433	208	186838M5	1033.974	ng/ml	
31) Dibenzothiophene	32.684	184	77206	289.554	ng/ml#	93
32) 4-Methyldibenzothiophene(	34.446	198	32508	121.918	ng/ml	100
33) 2/3-Methyldibenzothiophen	34.792	198	44045	165.187	ng/ml	100
34) 1-Methyldibenzothiophene(	35.213	198	10154	38.082	ng/ml	100
36) C1-Dibenzothiophenes	34.446	198	95328M5	357.519	ng/ml	
36) C1-Dibenzothiophenes BS	34.446	198	95328M5	357.519	ng/ml	
37) C2-Dibenzothiophenes	36.493	212	129908M5	487.208	ng/ml	
38) C3-Dibenzothiophenes	37.939	226	141085M5	529.126	ng/ml	
39) C4-Dibenzothiophenes	39.610	240	81649M5	306.217	ng/ml	
41) Phenanthrene	33.181	178	812342	3207.113	ng/ml	98
42) 3-Methylphenanthrene(3MP)	35.123	192	100968	398.620	ng/ml	95

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251606.D
Acq On : 25 Nov 2016 7:46 pm
Operator : AC
Sample : 1610011-04
Misc : 1x
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 29 17:44:22 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
43) 2-Methylphenanthrene(2MP)	35.244	192	118604M4	468.247	ng/ml	
44) 2-Methylanthracene(2MA)	35.394	192	112253M3	443.173	ng/ml	
45) 9/4-Methylphenanthrene(9M	35.590	192	189797	749.316	ng/ml	78
46) 1-Methylphenanthrene(1MP)	35.680	192	71099	280.698	ng/ml	96
47) C1-Phenanthrenes/Anthrace	35.590	192	601337M5	2374.069	ng/ml	
48) C2-Phenanthrenes/Anthrace	37.397	206	560728M5	2213.745	ng/ml	
48) C2-Phenanthrenes/Anthr BS	37.397	206	560728M5	2213.745	ng/ml	
50) C3-Phenanthrenes/Anthrace	39.233	220	431167M5	1702.240	ng/ml	
51) C4-Phenanthrenes/Anthrace	41.432	234	194156M5	766.525	ng/ml	
53) Anthracene	33.362	178	375405M4	1561.637	ng/ml	
54) Carbazole	34.024	167	11657M4	49.636	ng/ml	
55) 1-Methylphenanthrene	35.680	192	71099	380.602	ng/ml	95
56) Fluoranthene	37.954	202	780347	2775.752	ng/ml	93
57) Benzo(b)fluorene	40.468	216	128930M3	774.000	ng/ml	
58) Pyrene	38.842	202	1445608	4743.556	ng/ml#	91
59) C1-Fluoranthenes/Pyrenes	40.995	216	1591506M5	5222.299	ng/ml	
60) C2-Fluoranthenes/Pyrenes	42.305	230	1343048M5	4407.020	ng/ml	
61) C3-Fluoranthenes/Pyrenes	44.142	244	719442M5	2360.746	ng/ml	
62) C4-Fluoranthenes/Pyrenes	45.949	258	408896M5	1341.734	ng/ml	
63) Naphthobenzothiophene	42.696	234	58985	223.318	ng/ml#	83
64) Naphthobenzothiophene-2,1	42.696	234	58985	223.318	ng/ml#	83
65) Naphthobenzothiophene-1,2	43.028	234	15283	57.862	ng/ml#	100
66) Naphthobenzothiophene-2,3	43.329	234	25544M3	96.710	ng/ml	
67) C1-Naphthobenzothiophenes	44.082	248	170096M5	643.985	ng/ml	
68) C2-Naphthobenzothiophenes	45.572	262	198830M5	752.772	ng/ml	
69) C3-Naphthobenzothiophenes	47.304	276	141946M5	537.409	ng/ml	
70) C4-Naphthobenzothiophenes	48.840	290	69649M5	263.692	ng/ml	
72) Benz[a]anthracene	43.615	228	556395M3	1597.692	ng/ml	
74) Chrysene/Triphenylene	43.780	228	634827	1943.754	ng/ml	96
75) C1-Chrysenes	45.241	242	976576M5	2990.142	ng/ml	
76) C2-Chrysenes	46.943	256	935992M5	2865.880	ng/ml	
76) C2-Chrysenes BS	46.943	256	935992M5	2865.880	ng/ml	
78) C3-Chrysenes	48.599	270	610548M5	1869.415	ng/ml	
79) C4-Chrysenes	48.509	284	241693M5	740.031	ng/ml	
81) Benzo[b]fluoranthene	47.696	252	990588	2795.683	ng/ml	99
82) Benzo[j]+[k]fluoranthene	47.771	252	814643M6	2494.098	ng/ml	
83) Benzo[a]fluoranthene	48.087	252	452234M4	1384.552	ng/ml	
84) Benzo[e]pyrene	48.750	252	1028633	3121.947	ng/ml	99
86) Benzo[a]pyrene	48.946	252	1205101	3833.502	ng/ml	99
87) Perylene	49.262	252	292970	920.422	ng/ml	96
88) Indeno[1,2,3-cd]pyrene	54.006	276	1089998M4	2685.024	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.036	278	356556M3	1029.058	ng/ml	
90) Benzo[g,h,i]perylene	55.406	276	1256976	3201.166	ng/ml	99
144) C26,20R- +C27,20S- triaro	50.120	231	684M4	16.758	ng/mL	
145) C28,20S-triaromatic stero	51.009	231	1025	25.113	ng/mL	100
146) C27,20R-triaromatic stero	51.491	231	791M4	19.380	ng/mL	
147) C28,20R-triaromatic stero	52.756	231	493M4	12.079	ng/mL	

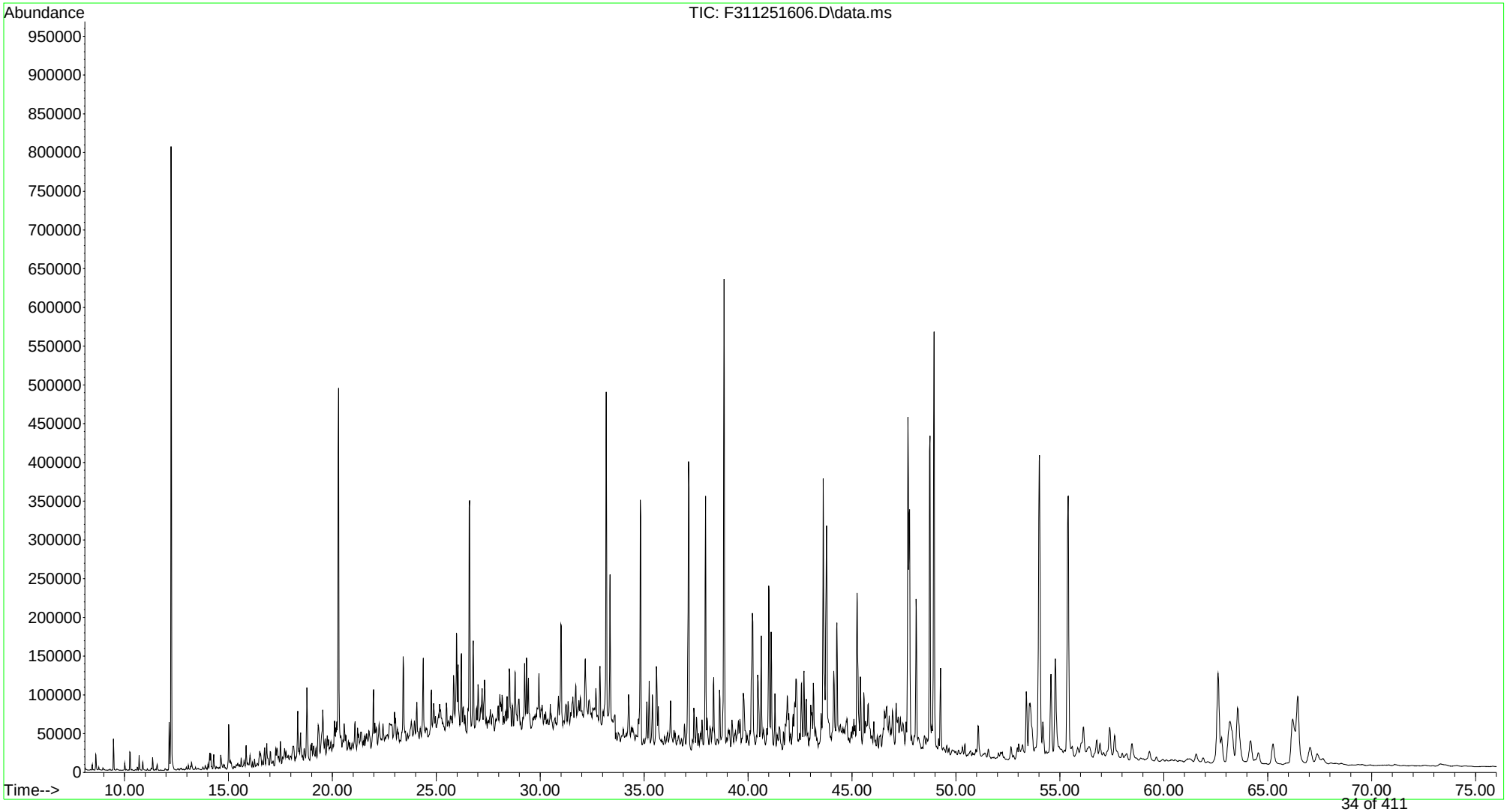
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251606.D
Acq On : 25 Nov 2016 7:46 pm
Operator : AC
Sample : 1610011-04
Misc : 1x
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 29 17:44:22 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS



Form I
Duplicate
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04 D**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/25/16	91.9	5.35	20	1	AC

Parameter	Result		Parameter	Result
cis/trans-Decalin	**5130**		C1-Dibenzothiophenes	**1620**
C1-Decalins	**16500**		C2-Dibenzothiophenes	**2420**
C2-Decalins	**18900**		C3-Dibenzothiophenes	**2670**
C3-Decalins	**13100**		C4-Dibenzothiophenes	**1380**
C4-Decalins	**19800**		Benzo(b)fluorene	**3430**
Benzothiophene	**563**		Fluoranthene	**12400**
C1-Benzo(b)thiophenes	**572**		Pyrene	**20900**
C2-Benzo(b)thiophenes	**588**		C1-Fluoranthenes/Pyrenes	**25200**
C3-Benzo(b)thiophenes	**823**		C2-Fluoranthenes/Pyrenes	**20600**
C4-Benzo(b)thiophenes	**776**		C3-Fluoranthenes/Pyrenes	**11200**
Naphthalene	**18500**		C4-Fluoranthenes/Pyrenes	**6120**
C1-Naphthalenes	**4270**		Naphthobenzothiophenes	**2120**
C2-Naphthalenes	**4960**		C1-Naphthobenzothiophenes	**3760**
C3-Naphthalenes	**4600**		C2-Naphthobenzothiophenes	**3940**
C4-Naphthalenes	**6060**		C3-Naphthobenzothiophenes	**2390**
Biphenyl	**840**		C4-Naphthobenzothiophenes	**1110**
Dibenzofuran	**655**		Benz[a]anthracene	**8960**
Acenaphthylene	**11800**		Chrysene/Triphenylene	**10800**
Acenaphthene	**1870**		C1-Chrysenes	**17000**
Fluorene	**2710**		C2-Chrysenes	**14900**
C1-Fluorenes	**2340**		C3-Chrysenes	**8180**
C2-Fluorenes	**4980**		C4-Chrysenes	**3180**
C3-Fluorenes	**4680**		Benzo[b]fluoranthene	**15200**
Anthracene	**7140**		Benzo[j]fluoranthene/Benzo[k]fluoranthene	**11500**
Phenanthrene	**11400**		Benzo[a]fluoranthene	**6240**
C1-Phenanthrenes/Anthracenes	**10600**		Benzo[e]pyrene	**15000**
C2-Phenanthrenes/Anthracenes	**11100**		Benzo[a]pyrene	**18300**
C3-Phenanthrenes/Anthracenes	**8900**		Perylene	**4390**
C4-Phenanthrenes/Anthracenes	**3950**		Indeno[1,2,3-cd]pyrene	**12700**
Retene	40.7 U		Dibenz[ah]anthracene/Dibenz[ac]anthracene	**4830**
Dibenzothiophene	**1220**		Benzo[g,h,i]perylene	**14800**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	110	50-130
Phenanthrene-d10	93	50-130
Benzo[a]pyrene-d12	106	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

11/29/16 18:01

Form I
Duplicate
Carbazole

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04 D**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/25/16	91.9	5.35	20	1	AC

Parameter	Result
Carbazole	**211**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	110	50-130
Phenanthrene-d10	93	50-130
Benzo[a]pyrene-d12	106	50-130

N/A - Not Applicable

Form I
Duplicate
Polynuclear Aromatic Hydrocarbons Isomers

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04 D**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/25/16	91.9	5.35	20	1	AC

Parameter	Result
4-Methyldibenzothiophene	**556**
2/3-Methyldibenzothiophene	**728**
1-Methyldibenzothiophene	**179**
3-Methylphenanthrene	**1740**
2-Methylphenanthrene	**2060**
2-Methylanthracene	**1990**
9/4-Methylphenanthrene	**3520**
1-Methylphenanthrene	**1340**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	110	50-130
Phenanthrene-d10	93	50-130
Benzo[a]pyrene-d12	106	50-130

N/A - Not Applicable

Form I
Duplicate
Triaromatic Steroids

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04 D**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/25/16	91.9	5.35	20	1	AC

Parameter	Result
C26,20R- +C27,20S- triaromatic steroid	**90.5**
C28,20S-triaromatic steroid	**80.9**
C27,20R-triaromatic steroid	**66.2**
C28,20R-triaromatic steroid	**44.8**

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	96	50-130

N/A - Not Applicable

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251607.D
Acq On : 25 Nov 2016 9:12 pm
Operator : AC
Sample : 1610011-04d
Misc : 1x
ALS Vial : 7 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 17:45:07 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.205	164	57900	500.000	ng/ml	-0.02
71) Chrysene-d12	43.690	240	119446	500.000	ng/ml	-0.02
System Monitoring Compounds						
8) Naphthalene-d8	20.219	136	68247M4	274.797	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 27.48%#			
40) Phenanthrene-d10	33.091	188	44467	233.646	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 23.36%#			
80) Benzo[b]fluoranthene-d12	47.605	264	68084	273.650	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 27.37%#			
85) Benzo[a]pyrene-d12	48.840	264	53229	265.778	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 26.58%#			
126) 5B(H)Cholane - Surr	44.262	217	9332	240.574	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 24.06%#			
Target Compounds						Qvalue
2) trans-Decalin	16.847	138	57642	1149.095	ng/ml	100
3) cis-Decalin	18.067	138	4218M4	111.940	ng/ml	
4) C1-Decalins	18.789	152	203115M5	4049.102	ng/ml	
5) C2-Decalins	20.114	166	232968M5	4644.222	ng/ml	
6) C3-Decalins	22.598	180	161182M5	3213.167	ng/ml	
7) C4-Decalins	25.985	194	244389M5	4871.900	ng/ml	
9) Naphthalene	20.295	128	1243860	4553.971	ng/ml	100
10) C1-Naphthalenes	23.411	142	287061M5	1050.976	ng/ml	
11) C2-Naphthalenes	25.835	156	333328M5	1220.367	ng/ml	
12) C3-Naphthalenes	28.514	170	308857M5	1130.775	ng/ml	
13) C4-Naphthalenes	30.486	184	407232M5	1490.942	ng/ml	
14) 2-Methylnaphthalene	22.989	142	64718	372.694	ng/ml	100
15) 1-Methylnaphthalene	23.411	142	223004	1355.659	ng/ml	100
16) Benzothiophene	20.520	134	33506	138.512	ng/ml	100
17) C1-Benzo(b)thiophenes	22.854	148	34031M5	140.683	ng/ml	
18) C2-Benzo(b)thiophenes	25.564	162	34997M5	144.676	ng/ml	
19) C3-Benzo(b)thiophenes	28.018	176	48957M5	202.386	ng	
20) C4-Benzo(b)thiophenes	30.110	190	46124M5	190.675	ng/ml	
21) Biphenyl	24.871	154	45561	206.674	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.488	156	77927	517.072	ng/ml	100
23) Dibenzofuran	27.972	168	37281M3	161.113	ng/ml	
24) Acenaphthylene	26.602	152	766861	2898.826	ng/ml	100
25) Acenaphthene	27.325	153	74227	458.871	ng/ml	92
26) 2,3,5-Trimethylnaphthalen	28.876	170	11954M3	92.311	ng/ml	
27) Fluorene	29.342	166	117632M4	666.094	ng/ml	
28) C1-Fluorenes	31.570	180	101726M5	576.026	ng/ml	
29) C2-Fluorenes	34.190	194	216312M5	1224.872	ng/ml	
30) C3-Fluorenes	36.433	208	203177M5	1150.495	ng/ml	
31) Dibenzothiophene	32.684	184	77869	298.819	ng/ml#	92
32) 4-Methyldibenzothiophene(	34.446	198	35591	136.579	ng/ml	100
33) 2/3-Methyldibenzothiophen	34.792	198	46629	178.937	ng/ml	100
34) 1-Methyldibenzothiophene(	35.229	198	11458	43.970	ng/ml	100
36) C1-Dibenzothiophenes	34.446	198	104018M5	399.165	ng/ml	
36) C1-Dibenzothiophenes BS	34.446	198	104018M5	399.165	ng/ml	
37) C2-Dibenzothiophenes	36.508	212	154976M5	594.715	ng/ml	
38) C3-Dibenzothiophenes	37.939	226	171049M5	656.394	ng/ml	
39) C4-Dibenzothiophenes	39.610	240	88748M5	340.567	ng/ml	
41) Phenanthrene	33.181	178	694658	2806.159	ng/ml	98
42) 3-Methylphenanthrene(3MP)	35.138	192	105856	427.619	ng/ml	96

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251607.D
Acq On : 25 Nov 2016 9:12 pm
Operator : AC
Sample : 1610011-04d
Misc : 1x
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 29 17:45:07 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
43) 2-Methylphenanthrene(2MP)	35.244	192	125126M4	505.462	ng/ml	
44) 2-Methylanthracene(2MA)	35.409	192	120909M3	488.427	ng/ml	
45) 9/4-Methylphenanthrene(9M	35.605	192	214474	866.395	ng/ml	80
46) 1-Methylphenanthrene(1MP)	35.680	192	81473	329.120	ng/ml	95
47) C1-Phenanthrenes/Anthrace	35.605	192	648531M5	2619.823	ng/ml	
48) C2-Phenanthrenes/Anthrace	37.397	206	674929M5	2726.461	ng/ml	
48) C2-Phenanthrenes/Anthr BS	37.397	206	674929M5	2726.461	ng/ml	
50) C3-Phenanthrenes/Anthrace	39.234	220	541991M5	2189.441	ng/ml	
51) C4-Phenanthrenes/Anthrace	41.432	234	240343M5	970.896	ng/ml	
53) Anthracene	33.362	178	412729M4	1756.754	ng/ml	
54) Carbazole	34.024	167	11925M4	51.956	ng/ml	
55) 1-Methylphenanthrene	35.680	192	81473	446.259	ng/ml	96
56) Fluoranthene	37.954	202	836021	3042.817	ng/ml#	92
57) Benzo(b)fluorene	40.468	216	137196M3	842.741	ng/ml	
58) Pyrene	38.842	202	1527540	5128.754	ng/ml#	91
59) C1-Fluoranthenes/Pyrenes	41.010	216	1843817M5	6190.662	ng/ml	
60) C2-Fluoranthenes/Pyrenes	42.576	230	1512216M5	5077.303	ng/ml	
61) C3-Fluoranthenes/Pyrenes	44.142	244	816871M5	2742.665	ng/ml	
62) C4-Fluoranthenes/Pyrenes	45.949	258	448425M5	1505.598	ng/ml	
63) Naphthobenzothiophene	42.697	234	80685	312.565	ng/ml#	86
64) Naphthobenzothiophene-2,1	42.697	234	80685	312.565	ng/ml#	86
65) Naphthobenzothiophene-1,2	43.028	234	20099	77.861	ng/ml#	100
66) Naphthobenzothiophene-2,3	43.329	234	33481M3	129.702	ng/ml	
67) C1-Naphthobenzothiophenes	44.082	248	238506M5	923.946	ng/ml	
68) C2-Naphthobenzothiophenes	45.587	262	250202M5	969.255	ng/ml	
69) C3-Naphthobenzothiophenes	47.304	276	151681M5	587.595	ng/ml	
70) C4-Naphthobenzothiophenes	48.825	290	70405M5	272.741	ng/ml	
72) Benz[a]anthracene	43.615	228	729044M3	2202.749	ng/ml	
74) Chrysene/Triphenylene	43.781	228	825251	2658.724	ng/ml	96
75) C1-Chrysenes	45.256	242	1300415M5	4189.568	ng/ml	
76) C2-Chrysenes	46.958	256	1138000M5	3666.313	ng/ml	
76) C2-Chrysenes BS	46.958	256	1138000M5	3666.313	ng/ml	
78) C3-Chrysenes	48.599	270	624049M5	2010.509	ng/ml	
79) C4-Chrysenes	48.509	284	242663M5	781.791	ng/ml	
81) Benzo[b]fluoranthene	47.696	252	1254845	3726.374	ng/ml	99
82) Benzo[j]+[k]fluoranthene	47.771	252	875816	2821.373	ng/ml	100
83) Benzo[a]fluoranthene	48.102	252	476457M4	1534.869	ng/ml	
84) Benzo[e]pyrene	48.750	252	1154090	3685.584	ng/ml	100
86) Benzo[a]pyrene	48.946	252	1343764	4497.764	ng/ml	99
87) Perylene	49.262	252	326553	1079.491	ng/ml	96
88) Indeno[1,2,3-cd]pyrene	54.021	276	1206518M4	3127.216	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.051	278	390935M3	1187.184	ng/ml	
90) Benzo[g,h,i]perylene	55.406	276	1361845	3649.307	ng/ml	98
144) C26,20R- +C27,20S- triaro	50.120	231	863	22.248	ng/mL	100
145) C28,20S-triaromatic stero	51.024	231	772M4	19.902	ng/mL	
146) C27,20R-triaromatic stero	51.491	231	631M4	16.267	ng/mL	
147) C28,20R-triaromatic stero	52.771	231	427M4	11.008	ng/mL	

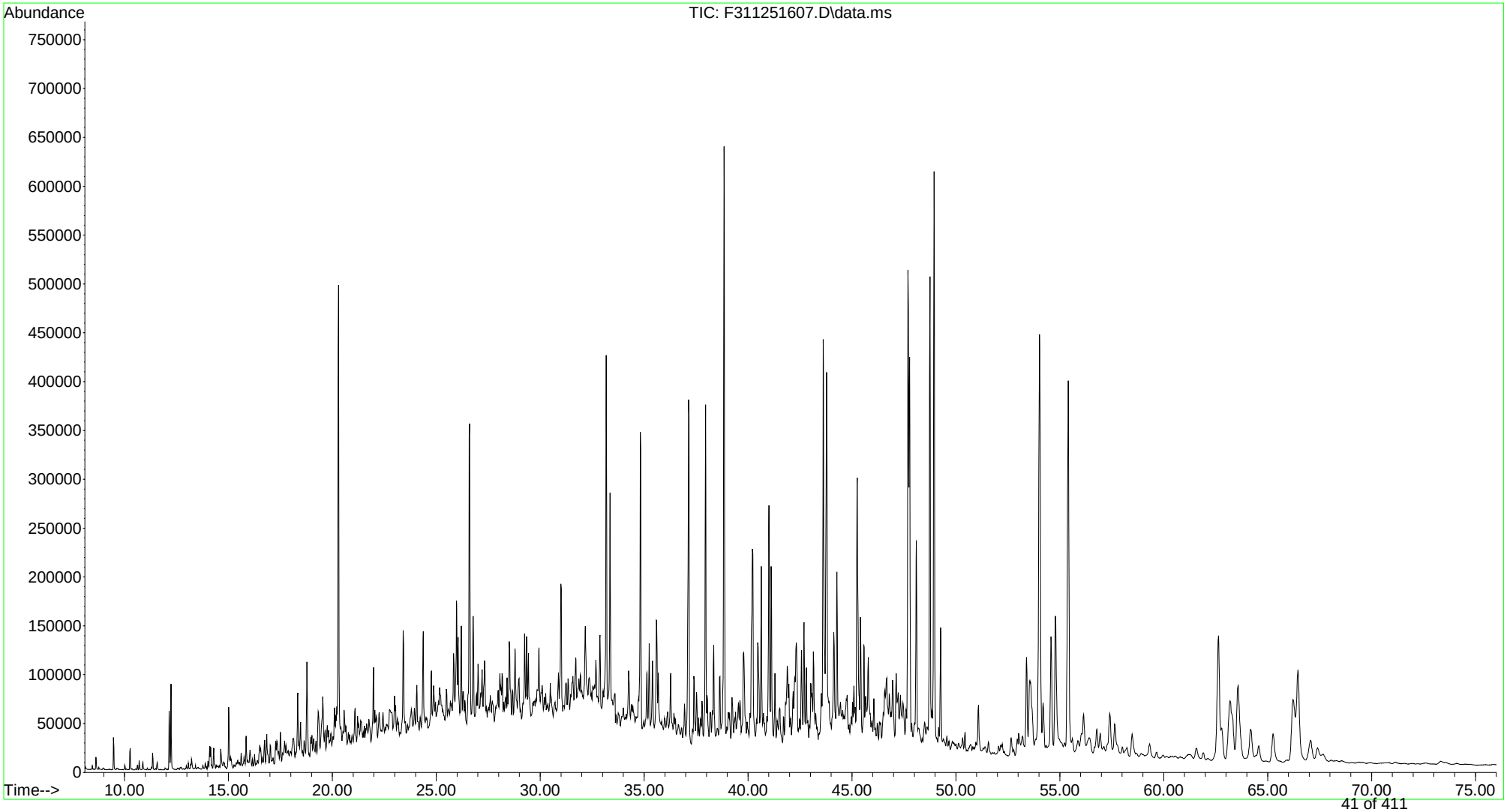
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251607.D
Acq On : 25 Nov 2016 9:12 pm
Operator : AC
Sample : 1610011-04d
Misc : 1x
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 29 17:45:07 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS



Duplicate
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
10/20/16	10/28/16	11/01/16	91.9	AC

Parameter	Sample Result	Duplicate Result	RPD	RPD Limit
cis/trans-Decalin	**4830**	**5130**	6	30
C1-Decalins	**15800**	**16500**	4	30
C2-Decalins	**18900**	**18900**	0	30
C3-Decalins	**13200**	**13100**	1	30
C4-Decalins	**20100**	**19800**	1	30
Benzothiophene	**566**	**563**	0	30
C1-Benzo(b)thiophenes	**573**	**572**	0	30
C2-Benzo(b)thiophenes	**610**	**588**	4	30
C3-Benzo(b)thiophenes	**876**	**823**	6	30
C4-Benzo(b)thiophenes	**708**	**776**	9	30
Naphthalene	**18200**	**18500**	2	30
C1-Naphthalenes	**4360**	**4270**	2	30
C2-Naphthalenes	**5180**	**4960**	4	30
C3-Naphthalenes	**4330**	**4600**	6	30
C4-Naphthalenes	**5620**	**6060**	8	30
Biphenyl	**842**	**840**	0	30
Dibenzofuran	**733**	**655**	11	30
Acenaphthylene	**11300**	**11800**	4	30
Acenaphthene	**1950**	**1870**	4	30
Fluorene	**3040**	**2710**	11	30
C1-Fluorenes	**2340**	**2340**	0	30
C2-Fluorenes	**4630**	**4980**	7	30
C3-Fluorenes	**4310**	**4680**	8	30
Anthracene	**6510**	**7140**	9	30
Phenanthrene	**13400**	**11400**	16	30
C1-Phenanthrenes/Anthracenes	**9900**	**10600**	7	30
C2-Phenanthrenes/Anthracenes	**9230**	**11100**	18	30
C3-Phenanthrenes/Anthracenes	**7100**	**8900**	23	30
C4-Phenanthrenes/Anthracenes	**3200**	**3950**	21	30
Retene	41.7 U	40.7 U	N/A	30
Dibenzothiophene	**1210**	**1220**	1	30
C1-Dibenzothiophenes	**1490**	**1620**	9	30
C2-Dibenzothiophenes	**2030**	**2420**	17	30
C3-Dibenzothiophenes	**2210**	**2670**	19	30
C4-Dibenzothiophenes	**1280**	**1380**	8	30

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

Duplicate
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
10/20/16	10/28/16	11/01/16	91.9	AC

Parameter	Sample Result	Duplicate Result	RPD	RPD Limit
Benzo(b)fluorene	**3230**	**3430**	6	30
Fluoranthene	**11600**	**12400**	7	30
Pyrene	**19800**	**20900**	5	30
C1-Fluoranthenes/Pyrenes	**21800**	**25200**	15	30
C2-Fluoranthenes/Pyrenes	**18400**	**20600**	12	30
C3-Fluoranthenes/Pyrenes	**9840**	**11200**	13	30
C4-Fluoranthenes/Pyrenes	**5590**	**6120**	9	30
Naphthobenzothiophenes	**1580**	**2120**	29	30
C1-Naphthobenzothiophenes	**2680**	**3760**	33[a]	30
C2-Naphthobenzothiophenes	**3140**	**3940**	23	30
C3-Naphthobenzothiophenes	**2240**	**2390**	6	30
C4-Naphthobenzothiophenes	**1100**	**1110**	1	30
Benz[a]anthracene	**6660**	**8960**	29	30
Chrysene/Triphenylene	**8100**	**10800**	29	30
C1-Chrysenes	**12500**	**17000**	31[a]	30
C2-Chrysenes	**12000**	**14900**	22	30
C3-Chrysenes	**7790**	**8180**	5	30
C4-Chrysenes	**3080**	**3180**	3	30
Benzo[b]fluoranthene	**11600**	**15200**	26	30
Benzo[j]fluoranthene/Benzo[k]fluoranthene	**10400**	**11500**	10	30
Benzo[a]fluoranthene	**5770**	**6240**	8	30
Benzo[e]pyrene	**13000**	**15000**	14	30
Benzo[a]pyrene	**16000**	**18300**	13	30
Perylene	**3840**	**4390**	13	30
Indeno[1,2,3-cd]pyrene	**11200**	**12700**	13	30
Dibenz[ah]anthracene/Dibenz[ac]anthracene	**4290**	**4830**	12	30
Benzo[g,h,i]perylene	**13300**	**14800**	11	30

Surrogate	% Recovery		Acceptance Range (%)
Naphthalene-d8	107	110	50-130
Phenanthrene-d10	93	93	50-130
Benzo[a]pyrene-d12	103	106	50-130

[a] - Value outside of QC Limits.
N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

11/29/16 18:02

Duplicate
Carbazole

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
10/20/16	10/28/16	11/01/16	91.9	AC

Parameter	Sample Result	Duplicate Result	RPD	RPD Limit
Carbazole	**207**	**211**	2	30

N/A - Not Applicable

Surrogate	% Recovery		Acceptance Range (%)
Naphthalene-d8	107	110	50-130
Phenanthrene-d10	93	93	50-130
Benzo[a]pyrene-d12	103	106	50-130

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

11/29/16 18:02

Duplicate
Polynuclear Aromatic Hydrocarbons Isomers

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
10/20/16	10/28/16	11/01/16	91.9	AC

Parameter	Sample Result	Duplicate Result	RPD	RPD Limit
4-Methyldibenzothiophene	**508**	**556**	9	30
2/3-Methyldibenzothiophene	**688**	**728**	6	30
1-Methyldibenzothiophene	**159**	**179**	12	30
3-Methylphenanthrene	**1660**	**1740**	5	30
2-Methylphenanthrene	**1950**	**2060**	5	30
2-Methylanthracene	**1850**	**1990**	7	30
9/4-Methylphenanthrene	**3120**	**3520**	12	30
1-Methylphenanthrene	**1170**	**1340**	13	30

N/A - Not Applicable

Surrogate	% Recovery		Acceptance Range (%)
Naphthalene-d8	107	110	50-130
Phenanthrene-d10	93	93	50-130
Benzo[a]pyrene-d12	103	106	50-130

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

11/29/16 18:02

Duplicate
Triaromatic Steroids

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
10/20/16	10/28/16	11/01/16	91.9	AC

Parameter	Sample Result	Duplicate Result	RPD	RPD Limit
C26,20R- +C27,20S- triaromatic steroid	**69.8**	**90.5**	26	30
C28,20S-triaromatic steroid	**105**	**80.9**	26	30
C27,20R-triaromatic steroid	**80.8**	**66.2**	20	30
C28,20R-triaromatic steroid	**50.4**	**44.8**	12	30

N/A - Not Applicable

Surrogate	% Recovery		Acceptance Range (%)
5B(H)Cholane	99	96	50-130

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

11/29/16 18:02

Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-06 1-2'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-05**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/26/16	89.6	15.46	4	5	AC

Parameter	Result		Parameter	Result
cis/trans-Decalin	**40.0**	G	C1-Dibenzothiophenes	**849**
C1-Decalins	**49.0**		C2-Dibenzothiophenes	**962**
C2-Decalins	**100**		C3-Dibenzothiophenes	**582**
C3-Decalins	**84.7**		C4-Dibenzothiophenes	**212**
C4-Decalins	**198**		Benzo(b)fluorene	**836**
Benzothiophene	**116**		Fluoranthene	**8220**
C1-Benzo(b)thiophenes	**89.3**		Pyrene	**9640**
C2-Benzo(b)thiophenes	**126**		C1-Fluoranthenes/Pyrenes	**7230**
C3-Benzo(b)thiophenes	**154**		C2-Fluoranthenes/Pyrenes	**4650**
C4-Benzo(b)thiophenes	**88.4**		C3-Fluoranthenes/Pyrenes	**2290**
Naphthalene	**2130**		C4-Fluoranthenes/Pyrenes	**1140**
C1-Naphthalenes	**1220**		Naphthobenzothiophenes	**1270**
C2-Naphthalenes	**2060**		C1-Naphthobenzothiophenes	**1230**
C3-Naphthalenes	**1710**		C2-Naphthobenzothiophenes	**830**
C4-Naphthalenes	**911**		C3-Naphthobenzothiophenes	**446**
Biphenyl	**258**		C4-Naphthobenzothiophenes	**188**
Dibenzofuran	**400**		Benz[a]anthracene	**6790**
Acenaphthylene	**3710**		Chrysene/Triphenylene	**6820**
Acenaphthene	**319**		C1-Chrysenes	**5820**
Fluorene	**876**		C2-Chrysenes	**3420**
C1-Fluorenes	**959**		C3-Chrysenes	**1870**
C2-Fluorenes	**1240**		C4-Chrysenes	**863**
C3-Fluorenes	**999**	G	Benzo[b]fluoranthene	**6840**
Anthracene	**2690**		Benzo[j]fluoranthene/Benzo[k]fluoranthene	**5930**
Phenanthrene	**6420**		Benzo[a]fluoranthene	**2200**
C1-Phenanthrenes/Anthracenes	**6510**		Benzo[e]pyrene	**5500**
C2-Phenanthrenes/Anthracenes	**4110**		Benzo[a]pyrene	**7980**
C3-Phenanthrenes/Anthracenes	**1850**		Perylene	**2000**
C4-Phenanthrenes/Anthracenes	**522**		Indeno[1,2,3-cd]pyrene	**5260**
Retene	14.4	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	**1730**
Dibenzothiophene	**462**		Benzo[g,h,i]perylene	**5520**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	71	50-130
Phenanthrene-d10	81	50-130
Benzo[a]pyrene-d12	86	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable
G - Matrix Interference

11/29/16 16:38

Form I
Carbazole

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-06 1-2'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-05**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/26/16	89.6	15.46	4	5	AC

Parameter	Result
Carbazole	**237**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	71	50-130
Phenanthrene-d10	81	50-130
Benzo[a]pyrene-d12	86	50-130

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-06 1-2'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-05**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/26/16	89.6	15.46	4	5	AC

Parameter	Result
4-Methyldibenzothiophene	**318**
2/3-Methyldibenzothiophene	**313**
1-Methyldibenzothiophene	**98.8**
3-Methylphenanthrene	**1350**
2-Methylphenanthrene	**1540**
2-Methylanthracene	**788**
9/4-Methylphenanthrene	**1620**
1-Methylphenanthrene	**1080**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	71	50-130
Phenanthrene-d10	81	50-130
Benzo[a]pyrene-d12	86	50-130

N/A - Not Applicable

Form I
Triaromatic Steroids

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-06 1-2'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-05**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/26/16	89.6	15.46	4	5	AC

Parameter	Result
C26,20R- +C27,20S- triaromatic steroid	**33.5**
C28,20S-triaromatic steroid	**30.1**
C27,20R-triaromatic steroid	**26.4**
C28,20R-triaromatic steroid	**15.4**

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	76	50-130

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251609.D
Acq On : 26 Nov 2016 12:04 am
Operator : AC
Sample : 1610011-05
Misc : 5x
ALS Vial : 9 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:40:36 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.205	164	72150	500.000	ng/ml	-0.02
71) Chrysene-d12	43.690	240	102141	500.000	ng/ml	-0.02
System Monitoring Compounds						
8) Naphthalene-d8	20.219	136	54941	177.528	ng/ml	-0.01
Spiked Amount 1000.000	Range 50 - 130		Recovery = 17.75%#			
40) Phenanthrene-d10	33.076	188	48035	202.544	ng/ml	-0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery = 20.25%#			
80) Benzo[b]fluoranthene-d12	47.605	264	46388	218.036	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 21.80%#			
85) Benzo[a]pyrene-d12	48.840	264	36623	213.844	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 21.38%#			
126) 5B(H)Cholane - Surr	44.262	217	6317	190.440	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 19.04%#			
Target Compounds						Qvalue
2) trans-Decalin	16.847	138	686	10.974	ng/ml	100
3) cis-Decalin	18.097	138G	787M3	16.761	ng/ml	
4) C1-Decalins	18.774	152	2124M5	33.979	ng/ml	
5) C2-Decalins	20.114	166	4343M5	69.478	ng/ml	
6) C3-Decalins	22.583	180	3670M5	58.712	ng/ml	
7) C4-Decalins	25.970	194	8562M5	136.973	ng/ml	
9) Naphthalene	20.295	128	502036	1475.013	ng/ml	100
10) C1-Naphthalenes	23.426	142	288425M5	847.411	ng/ml	
11) C2-Naphthalenes	25.835	156	486958M5	1430.713	ng/ml	
12) C3-Naphthalenes	28.168	170	403954M5	1186.842	ng/ml	
13) C4-Naphthalenes	30.938	184	214809M5	631.122	ng/ml	
14) 2-Methylnaphthalene	22.989	142	126190	583.169	ng/ml	100
15) 1-Methylnaphthalene	23.426	142	167841	818.801	ng/ml	100
16) Benzothiophene	20.521	134	24296	80.601	ng/ml	100
17) C1-Benzo(b)thiophenes	23.396	148	18653M5	61.881	ng/ml	
18) C2-Benzo(b)thiophenes	25.549	162	26422M5	87.654	ng/ml	
19) C3-Benzo(b)thiophenes	27.656	176	32272M5	107.062	ng	
20) C4-Benzo(b)thiophenes	30.110	190	18458M5	61.234	ng/ml	
21) Biphenyl	24.871	154	49025	178.464	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.504	156	115591	615.502	ng/ml	100
23) Dibenzofuran	27.973	168	79872M4	277.001	ng/ml	
24) Acenaphthylene	26.588	152	847967M4	2572.330	ng/ml	
25) Acenaphthene	27.325	153	44542M4	220.974	ng/ml	
26) 2,3,5-Trimethylnaphthalen	28.876	170	20770M3	128.711	ng/ml	
27) Fluorene	29.343	166	133597M4	607.085	ng/ml	
28) C1-Fluorenes	31.570	180	146261M5	664.632	ng/ml	
29) C2-Fluorenes	33.904	194	189328M5	860.335	ng/ml	
30) C3-Fluorenes	36.433	208G	152262M5	691.901	ng/ml	
31) Dibenzothiophene	32.684	184	103999	320.269	ng/ml#	92
32) 4-Methyldibenzothiophene(	34.446	198	71610	220.526	ng/ml	100
33) 2/3-Methyldibenzothiophen	34.792	198	70359	216.674	ng/ml	100
34) 1-Methyldibenzothiophene(	35.214	198	22238	68.483	ng/ml	100
36) C1-Dibenzothiophenes	34.446	198	191086M5	588.458	ng/ml	
36) C1-Dibenzothiophenes BS	34.446	198	191086M5	588.458	ng/ml	
37) C2-Dibenzothiophenes	36.132	212	216352M5	666.265	ng/ml	
38) C3-Dibenzothiophenes	37.924	226	131009M5	403.448	ng/ml	
39) C4-Dibenzothiophenes	39.610	240	47615M5	146.632	ng/ml	
41) Phenanthrene	33.166	178	1372622	4449.738	ng/ml	99
42) 3-Methylphenanthrene(3MP)	35.123	192	287925	933.389	ng/ml	91

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251609.D
Acq On : 26 Nov 2016 12:04 am
Operator : AC
Sample : 1610011-05
Misc : 5x
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 29 13:40:36 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
43) 2-Methylphenanthrene(2MP)	35.244	192	328350M4	1064.438	ng/ml	
44) 2-Methylanthracene(2MA)	35.394	192	168391M3	545.886	ng/ml	
45) 9/4-Methylphenanthrene(9M	35.590	192	345827	1121.095	ng/ml	93
46) 1-Methylphenanthrene(1MP)	35.680	192	231732	751.224	ng/ml	91
47) C1-Phenanthrenes/Anthrace	35.244	192	1391229M5	4510.057	ng/ml	
48) C2-Phenanthrenes/Anthrace	37.397	206	878677M5	2848.477	ng/ml	
48) C2-Phenanthrenes/Anthr BS	37.397	206	878677M5	2848.477	ng/ml	
50) C3-Phenanthrenes/Anthrace	39.234	220	395352M5	1281.644	ng/ml	
51) C4-Phenanthrenes/Anthrace	41.432	234	111503M5	361.468	ng/ml	
53) Anthracene	33.362	178	545302M4	1862.624	ng/ml	
54) Carbazole	34.024	167	46988	164.287	ng/ml	98
55) 1-Methylphenanthrene	35.680	192	231732	1018.595	ng/ml	99
56) Fluoranthene	37.954	202	1950465	5696.906	ng/ml	93
57) Benzo(b)fluorene	40.468	216	117493M3	579.171	ng/ml	
58) Pyrene	38.842	202	2478669	6678.517	ng/ml#	91
59) C1-Fluoranthenes/Pyrenes	40.227	216	1858164M5	5006.631	ng/ml	
60) C2-Fluoranthenes/Pyrenes	42.290	230	1194992M5	3219.782	ng/ml	
61) C3-Fluoranthenes/Pyrenes	44.157	244	589694M5	1588.870	ng/ml	
62) C4-Fluoranthenes/Pyrenes	45.467	258	293777M5	791.552	ng/ml	
63) Naphthobenzothiophene	42.697	234	167951	522.122	ng/ml	96
64) Naphthobenzothiophene-2,1	42.697	234	167951	522.122	ng/ml	96
65) Naphthobenzothiophene-1,2	43.028	234	43918	136.531	ng/ml#	100
66) Naphthobenzothiophene-2,3	43.329	234	70867M3	220.310	ng/ml	
67) C1-Naphthobenzothiophenes	44.082	248	274067M5	852.013	ng/ml	
68) C2-Naphthobenzothiophenes	45.934	262	185042M5	575.254	ng/ml	
69) C3-Naphthobenzothiophenes	47.304	276	99357M5	308.879	ng/ml	
70) C4-Naphthobenzothiophenes	48.840	290	41893M5	130.236	ng/ml	
72) Benz[a]anthracene	43.615	228	1332063M3	4706.603	ng/ml	
74) Chrysene/Triphenylene	43.781	228	1253970	4724.392	ng/ml	98
75) C1-Chrysenes	45.256	242	1069903M5	4030.911	ng/ml	
76) C2-Chrysenes	46.958	256	629692M5	2372.395	ng/ml	
76) C2-Chrysenes BS	46.958	256	629692M5	2372.395	ng/ml	
78) C3-Chrysenes	47.786	270	343331M5	1293.516	ng/ml	
79) C4-Chrysenes	48.509	284	158732M5	598.030	ng/ml	
81) Benzo[b]fluoranthene	47.696	252	1363835	4736.196	ng/ml	93
82) Benzo[j]+[k]fluoranthene	47.771	252	1089951	4106.068	ng/ml	99
83) Benzo[a]fluoranthene	48.102	252	404391M4	1523.423	ng/ml	
84) Benzo[e]pyrene	48.750	252	1020249	3810.169	ng/ml	98
86) Benzo[a]pyrene	48.946	252	1413451	5532.558	ng/ml	99
87) Perylene	49.262	252	358206	1384.745	ng/ml	100
88) Indeno[1,2,3-cd]pyrene	54.006	276	1202398M4	3644.549	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.036	278	338293M3	1201.374	ng/ml	
90) Benzo[g,h,i]perylene	55.391	276	1221148	3826.683	ng/ml	99
144) C26,20R- +C27,20S- triaro	50.105	231	770M4	23.213	ng/mL	
145) C28,20S-triaromatic stero	51.024	231	691M4	20.832	ng/mL	
146) C27,20R-triaromatic stero	51.491	231	606M4	18.269	ng/mL	
147) C28,20R-triaromatic stero	52.771	231	353M4	10.642	ng/mL	

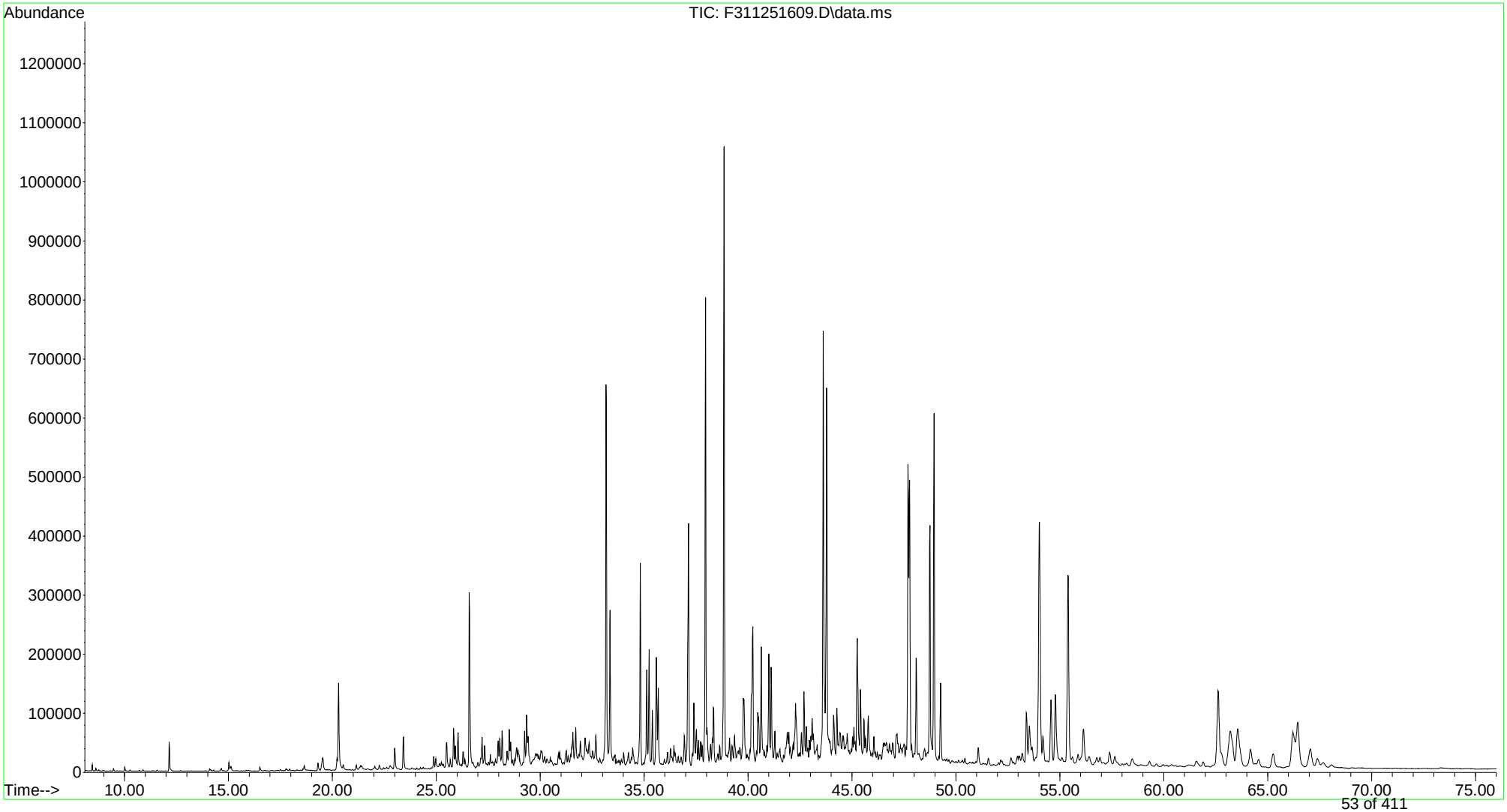
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251609.D
Acq On : 26 Nov 2016 12:04 am
Operator : AC
Sample : 1610011-05
Misc : 5x
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 29 13:40:36 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-07 13-15'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-09**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/24/16	10/28/16	11/01/16	11/27/16	88.8	5.30	2	5	AC

Parameter	Result	
cis/trans-Decalin	**9560**	
C1-Decalins	**19100**	
C2-Decalins	**18100**	
C3-Decalins	**11000**	
C4-Decalins	**19600**	
Benzothiophene	**1630**	
C1-Benzo(b)thiophenes	**7660**	
C2-Benzo(b)thiophenes	**9020**	
C3-Benzo(b)thiophenes	**7540**	
C4-Benzo(b)thiophenes	**4010**	
Naphthalene	**79600**	E
C1-Naphthalenes	**125000**	E
C2-Naphthalenes	**146000**	E
C3-Naphthalenes	**104000**	
C4-Naphthalenes	**51100**	
Biphenyl	**9660**	
Dibenzofuran	**4170**	
Acenaphthylene	**5090**	
Acenaphthene	**24000**	
Fluorene	**14700**	
C1-Fluorenes	**20800**	
C2-Fluorenes	**26800**	
C3-Fluorenes	**13900**	
Anthracene	**17400**	
Phenanthrene	**57000**	E
C1-Phenanthrenes/Anthracenes	**78500**	
C2-Phenanthrenes/Anthracenes	**51300**	
C3-Phenanthrenes/Anthracenes	**23100**	
C4-Phenanthrenes/Anthracenes	**7210**	
Retene	21.2	U
Dibenzothiophene	**6380**	

Parameter	Result
C1-Dibenzothiophenes	**11600**
C2-Dibenzothiophenes	**10700**
C3-Dibenzothiophenes	**5880**
C4-Dibenzothiophenes	**1950**
Benzo(b)fluorene	**4760**
Fluoranthene	**13700**
Pyrene	**24600**
C1-Fluoranthenes/Pyrenes	**40600**
C2-Fluoranthenes/Pyrenes	**21200**
C3-Fluoranthenes/Pyrenes	**9030**
C4-Fluoranthenes/Pyrenes	**3400**
Naphthobenzothiophenes	**2980**
C1-Naphthobenzothiophenes	**3830**
C2-Naphthobenzothiophenes	**2470**
C3-Naphthobenzothiophenes	**1120**
C4-Naphthobenzothiophenes	**482**
Benz[a]anthracene	**8370**
Chrysene/Triphenylene	**8820**
C1-Chrysenes	**12600**
C2-Chrysenes	**7810**
C3-Chrysenes	**4020**
C4-Chrysenes	**1330**
Benzo[b]fluoranthene	**2710**
Benzo[j]fluoranthene/Benzo[k]fluoranthene	**3840**
Benzo[a]fluoranthene	**2470**
Benzo[e]pyrene	**4020**
Benzo[a]pyrene	**7350**
Perylene	**1250**
Indeno[1,2,3-cd]pyrene	**2210**
Dibenz[ah]anthracene/Dibenz[ac]anthracene	**1050**
Benzo[g,h,i]perylene	**2880**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	118	50-130
Phenanthrene-d10	102	50-130
Benzo[a]pyrene-d12	102	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
E - Estimated value, exceeds the upper limit of calibration.
N/A - Not Applicable

11/29/16 18:07

Form I
Carbazole

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-07 13-15'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-09**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/24/16	10/28/16	11/01/16	11/27/16	88.8	5.30	2	5	AC

Parameter	Result
Carbazole	**165**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	118	50-130
Phenanthrene-d10	102	50-130
Benzo[a]pyrene-d12	102	50-130

N/A - Not Applicable

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-07 13-15'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-09**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/24/16	10/28/16	11/01/16	11/27/16	88.8	5.30	2	5	AC

Parameter	Result
4-Methyldibenzothiophene	**4930**
2/3-Methyldibenzothiophene	**4570**
1-Methyldibenzothiophene	**995**
3-Methylphenanthrene	**18000**
2-Methylphenanthrene	**17800**
2-Methylanthracene	**8380**
9/4-Methylphenanthrene	**20600**
1-Methylphenanthrene	**11800**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	118	50-130
Phenanthrene-d10	102	50-130
Benzo[a]pyrene-d12	102	50-130

N/A - Not Applicable

Form I
Triaromatic Steroids

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-07 13-15'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-09**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/24/16	10/28/16	11/01/16	11/27/16	88.8	5.30	2	5	AC

Parameter	Result	
C26,20R- +C27,20S- triaromatic steroid	**16.4**	J
C28,20S-triaromatic steroid	**17.3**	J
C27,20R-triaromatic steroid	21.2	U
C28,20R-triaromatic steroid	21.2	U

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	87	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
J - Estimated value, below quantitation limit.
N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251625.D
Acq On : 27 Nov 2016 11:40 am
Operator : AC
Sample : 1610011-09
Misc : 5x
ALS Vial : 25 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:41:17 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.205	164	31156M4	500.000	ng/ml	-0.02
71) Chrysene-d12	43.690	240	83973	500.000	ng/ml	-0.02
System Monitoring Compounds						
8) Naphthalene-d8	20.219	136	78945M4	590.732	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 59.07%			
40) Phenanthrene-d10	33.091	188	52073	508.475	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 50.85%			
80) Benzo[b]fluoranthene-d12	47.620	264	87653	501.129	ng/ml	0.01
Spiked Amount 1000.000	Range 50 - 130		Recovery = 50.11%			
85) Benzo[a]pyrene-d12	48.855	264	72010	511.441	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.14%			
126) 5B(H)Cholane - Surr	44.262	217	11823	433.545	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 43.35%#			
Target Compounds						Qvalue
2) trans-Decalin	16.847	138	112833	4180.130	ng/ml	100
3) cis-Decalin	18.066	138	6397M4	315.495	ng/ml	
4) C1-Decalins	18.789	152	242257M5	8974.907	ng/ml	
5) C2-Decalins	20.114	166	230210M5	8528.601	ng/ml	
6) C3-Decalins	22.598	180	140304M5	5197.849	ng/ml	
7) C4-Decalins	26.000	194	249386M5	9239.015	ng/ml	
9) Naphthalene	20.310	128	5503256	37443.402	ng/ml	100
10) C1-Naphthalenes	23.019	142	8646792M5	58831.591	ng/ml	
11) C2-Naphthalenes	25.865	156	10127614M5	68906.902	ng/ml	
12) C3-Naphthalenes	28.198	170	7207349M5	49037.818	ng/ml	
13) C4-Naphthalenes	30.953	184	3532925M5	24037.539	ng/ml	
14) 2-Methylnaphthalene	23.019	142	4761149	50953.721	ng/ml	100
15) 1-Methylnaphthalene	23.441	142	3886428	43906.159	ng/ml	100
16) Benzothiophene	20.520	134	99662	765.653	ng/ml	100
17) C1-Benzo(b)thiophenes	22.869	148	469352M5	3605.797	ng/ml	
18) C2-Benzo(b)thiophenes	25.579	162	552698M5	4246.103	ng/ml	
19) C3-Benzo(b)thiophenes	28.033	176	461555M5	3545.897	ng	
20) C4-Benzo(b)thiophenes	30.125	190	245597M5	1886.799	ng/ml	
21) Biphenyl	24.886	154	539190	4545.383	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.518	156	2839425	35013.084	ng/ml	100
23) Dibenzofuran	27.972	168	244097M4	1960.395	ng/ml	
24) Acenaphthylene	26.602	152	340818M3	2394.224	ng/ml	
25) Acenaphthene	27.340	153	982127	11283.223	ng/ml	99
26) 2,3,5-Trimethylnaphthalen	28.891	170	358884M3	5150.265	ng/ml	
27) Fluorene	29.357	166	658873M4	6933.441	ng/ml	
28) C1-Fluorenes	31.736	180	927661M5	9761.947	ng/ml	
29) C2-Fluorenes	33.768	194	1197362M5	12600.060	ng/ml	
30) C3-Fluorenes	35.740	208	619498M5	6519.091	ng/ml	
31) Dibenzothiophene	32.699	184	421001	3002.370	ng/ml#	64
32) 4-Methyldibenzothiophene(	34.461	198	325308	2319.935	ng/ml	100
33) 2/3-Methyldibenzothiophen	34.807	198	301376	2149.264	ng/ml	100
34) 1-Methyldibenzothiophene(	35.229	198	65635	468.076	ng/ml	100
36) C1-Dibenzothiophenes	34.461	198	762705M5	5439.232	ng/ml	
36) C1-Dibenzothiophenes BS	34.461	198	762705M5	5439.232	ng/ml	
37) C2-Dibenzothiophenes	36.147	212	703858M5	5019.565	ng/ml	
38) C3-Dibenzothiophenes	37.939	226	387774M5	2765.411	ng/ml	
39) C4-Dibenzothiophenes	39.625	240	128380M5	915.542	ng/ml	
41) Phenanthrene	33.196	178	3570632	26805.454	ng/ml	98
42) 3-Methylphenanthrene(3MP)	35.138	192	1128420	8471.276	ng/ml	94

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251625.D
Acq On : 27 Nov 2016 11:40 am
Operator : AC
Sample : 1610011-09
Misc : 5x
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Nov 29 13:41:17 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
43) 2-Methylphenanthrene(2MP)	35.259	192	1115705	8375.822	ng/ml	96
44) 2-Methylanthracene(2MA)	35.409	192	525171M3	3942.565	ng/ml	
45) 9/4-Methylphenanthrene(9M	35.605	192	1294374	9717.127	ng/ml	98
46) 1-Methylphenanthrene(1MP)	35.695	192	738263	5542.289	ng/ml	96
47) C1-Phenanthrenes/Anthrace	35.259	192	4917190M5	36914.336	ng/ml	
48) C2-Phenanthrenes/Anthrace	37.412	206	3212805M5	24119.175	ng/ml	
48) C2-Phenanthrenes/Anthr BS	37.412	206	3212805M5	24119.175	ng/ml	
50) C3-Phenanthrenes/Anthrace	39.233	220	1449694M5	10883.145	ng/ml	
51) C4-Phenanthrenes/Anthrace	41.432	234	451745M5	3391.341	ng/ml	
53) Anthracene	33.377	178	1037180M4	8204.212	ng/ml	
54) Carbazole	34.024	167	9585M4	77.607	ng/ml	
55) 1-Methylphenanthrene	35.695	192	738263	7514.867	ng/ml	96
56) Fluoranthene	37.969	202	952241M4	6440.838	ng/ml	
57) Benzo(b)fluorene	40.483	216	196381M3	2241.760	ng/ml	
58) Pyrene	38.857	202	1857209	11588.226	ng/ml#	90
59) C1-Fluoranthenes/Pyrenes	40.242	216	3061782M5	19104.269	ng/ml	
60) C2-Fluoranthenes/Pyrenes	42.696	230	1600941M5	9989.218	ng/ml	
61) C3-Fluoranthenes/Pyrenes	43.765	244	680567M5	4246.460	ng/ml	
62) C4-Fluoranthenes/Pyrenes	45.391	258	256239M5	1598.827	ng/ml	
63) Naphthobenzothiophene	42.696	234	123637	890.087	ng/ml#	93
64) Naphthobenzothiophene-2,1	42.696	234	123637	890.087	ng/ml#	93
65) Naphthobenzothiophene-1,2	43.028	234	30139	216.977	ng/ml#	100
66) Naphthobenzothiophene-2,3	43.329	234	41047M3	295.505	ng/ml	
67) C1-Naphthobenzothiophenes	44.097	248	250468M5	1803.169	ng/ml	
68) C2-Naphthobenzothiophenes	45.587	262	161340M5	1161.519	ng/ml	
69) C3-Naphthobenzothiophenes	47.108	276	73158M5	526.679	ng/ml	
70) C4-Naphthobenzothiophenes	48.840	290	31512M5	226.861	ng/ml	
72) Benz[a]anthracene	43.630	228	916702M3	3939.775	ng/ml	
74) Chrysene/Triphenylene	43.780	228	905887	4151.387	ng/ml	98
75) C1-Chrysenes	45.256	242	1296871M5	5943.141	ng/ml	
76) C2-Chrysenes	46.958	256	801807M5	3674.422	ng/ml	
76) C2-Chrysenes BS	46.958	256	801807M5	3674.422	ng/ml	
78) C3-Chrysenes	48.599	270	413042M5	1892.838	ng/ml	
79) C4-Chrysenes	50.150	284	136539M5	625.714	ng/ml	
81) Benzo[b]fluoranthene	47.696	252	301506	1273.574	ng/ml	99
82) Benzo[j]+[k]fluoranthene	47.771	252	393856M6	1804.750	ng/ml	
83) Benzo[a]fluoranthene	48.102	252	253901M4	1163.440	ng/ml	
84) Benzo[e]pyrene	48.750	252	416747	1893.089	ng/ml	98
86) Benzo[a]pyrene	48.946	252	726502	3458.935	ng/ml	99
87) Perylene	49.262	252	124764	586.660	ng/ml	97
88) Indeno[1,2,3-cd]pyrene	54.021	276	281562M4	1038.078	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.051	278	114051	492.657	ng/ml	95
90) Benzo[g,h,i]perylene	55.391	276	355348	1354.467	ng/ml	99
144) C26,20R- +C27,20S- triaro	50.120	231	211M4	7.737	ng/mL	
145) C28,20S-triaromatic stero	51.039	231	222	8.141	ng/mL	100

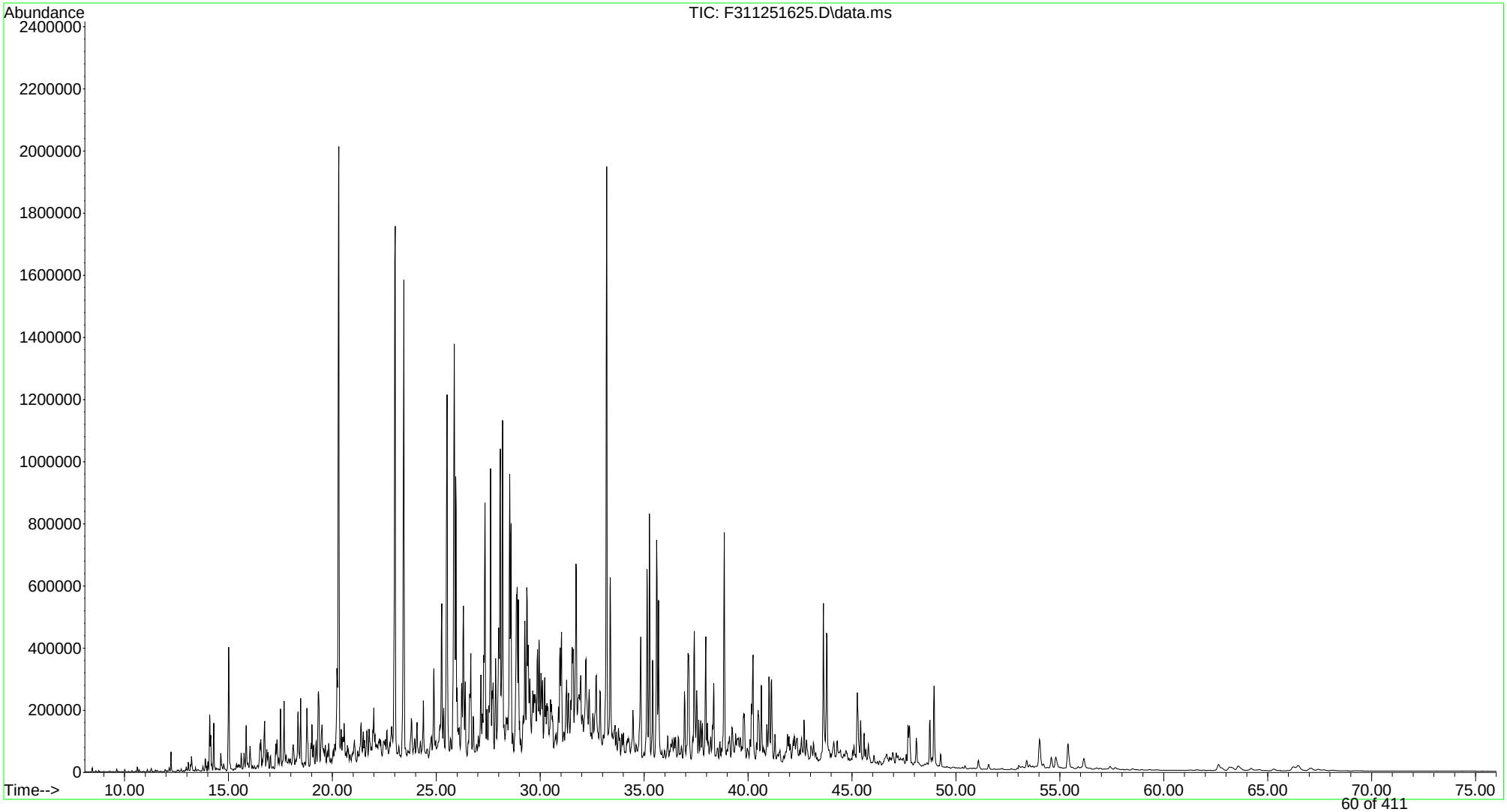
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251625.D
Acq On : 27 Nov 2016 11:40 am
Operator : AC
Sample : 1610011-09
Misc : 5x
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Nov 29 13:41:17 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-07 13-15'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-09E**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/24/16	10/28/16	11/01/16	11/26/16	88.8	5.30	2	20	AC

Parameter	Result		Parameter	Result	
cis/trans-Decalin	85.0	U	C1-Dibenzothiophenes	85.0	U
C1-Decalins	85.0	U	C2-Dibenzothiophenes	85.0	U
C2-Decalins	85.0	U	C3-Dibenzothiophenes	85.0	U
C3-Decalins	85.0	U	C4-Dibenzothiophenes	85.0	U
C4-Decalins	85.0	U	Benzo(b)fluorene	85.0	U
Benzothiophene	85.0	U	Fluoranthene	85.0	U
C1-Benzo(b)thiophenes	85.0	U	Pyrene	85.0	U
C2-Benzo(b)thiophenes	85.0	U	C1-Fluoranthenes/Pyrenes	85.0	U
C3-Benzo(b)thiophenes	85.0	U	C2-Fluoranthenes/Pyrenes	85.0	U
C4-Benzo(b)thiophenes	85.0	U	C3-Fluoranthenes/Pyrenes	85.0	U
Naphthalene	**67400**		C4-Fluoranthenes/Pyrenes	85.0	U
C1-Naphthalenes	**114000**		Naphthobenzothiophenes	85.0	U
C2-Naphthalenes	**148000**		C1-Naphthobenzothiophenes	85.0	U
C3-Naphthalenes	85.0	U	C2-Naphthobenzothiophenes	85.0	U
C4-Naphthalenes	85.0	U	C3-Naphthobenzothiophenes	85.0	U
Biphenyl	85.0	U	C4-Naphthobenzothiophenes	85.0	U
Dibenzofuran	85.0	U	Benz[a]anthracene	85.0	U
Acenaphthylene	85.0	U	Chrysene/Triphenylene	85.0	U
Acenaphthene	85.0	U	C1-Chrysenes	85.0	U
Fluorene	85.0	U	C2-Chrysenes	85.0	U
C1-Fluorenes	85.0	U	C3-Chrysenes	85.0	U
C2-Fluorenes	85.0	U	C4-Chrysenes	85.0	U
C3-Fluorenes	85.0	U	Benzo[b]fluoranthene	85.0	U
Anthracene	85.0	U	Benzo[j]fluoranthene/Benzo[k]fluoranthene	85.0	U
Phenanthrene	**50700**		Benzo[a]fluoranthene	85.0	U
C1-Phenanthrenes/Anthracenes	85.0	U	Benzo[e]pyrene	85.0	U
C2-Phenanthrenes/Anthracenes	85.0	U	Benzo[a]pyrene	85.0	U
C3-Phenanthrenes/Anthracenes	85.0	U	Perylene	85.0	U
C4-Phenanthrenes/Anthracenes	85.0	U	Indeno[1,2,3-cd]pyrene	85.0	U
Retene	85.0	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	85.0	U
Dibenzothiophene	85.0	U	Benzo[g,h,i]perylene	85.0	U

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	94	50-130
Phenanthrene-d10	91	50-130
Benzo[a]pyrene-d12	92	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

11/29/16 16:38

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251613.D
Acq On : 26 Nov 2016 5:48 am
Operator : AC
Sample : 1610011-09-RE
Misc : 20x
ALS Vial : 13 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:40:53 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.205	164	43441M3	500.000	ng/ml	-0.02
71) Chrysene-d12	43.690	240	98201	500.000	ng/ml	-0.02
System Monitoring Compounds						
8) Naphthalene-d8	20.219	136	21947M4	117.783	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 11.78%#			
40) Phenanthrene-d10	33.091	188	16247	113.782	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 11.38%#			
80) Benzo[b]fluoranthene-d12	47.620	264	24004	117.352	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 11.74%#			
85) Benzo[a]pyrene-d12	48.855	264	19033	115.594	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 11.56%#			
126) 5B(H)Cholane - Surr	44.262	217	3330	104.418	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 10.44%#			
Target Compounds						Qvalue
9) Naphthalene	20.295	128	1624398	7926.654	ng/ml	100
10) C1-Naphthalenes	22.989	142	2760163M5	13468.902	ng/ml	
11) C2-Naphthalenes	25.835	156	3558377M5	17363.986	ng/ml	
14) 2-Methylnaphthalene	22.989	142	1487098	11414.203	ng/ml	100
15) 1-Methylnaphthalene	23.426	142	1263646	10238.637	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.504	156	954715	8443.366	ng/ml	100
41) Phenanthrene	33.181	178	1106702	5958.688	ng/ml	98

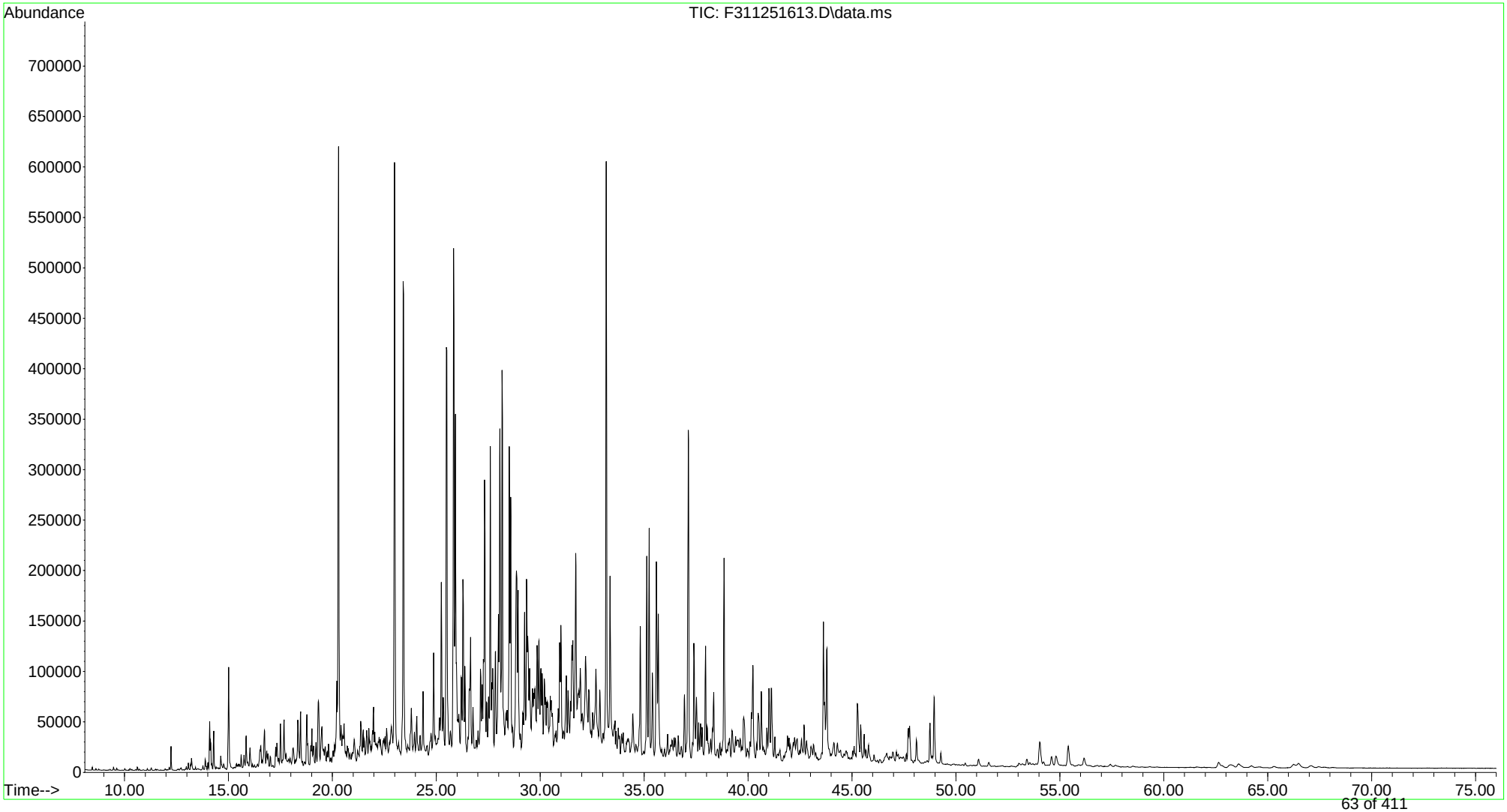
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251613.D
Acq On : 26 Nov 2016 5:48 am
Operator : AC
Sample : 1610011-09-RE
Misc : 20x
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 29 13:40:53 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 1-2'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-10**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/26/16	91.5	5.24	2	5	AC

Parameter	Result		Parameter	Result
cis/trans-Decalin	**49.6**		C1-Dibenzothiophenes	**688**
C1-Decalins	**56.4**		C2-Dibenzothiophenes	**445**
C2-Decalins	**47.9**		C3-Dibenzothiophenes	**239**
C3-Decalins	20.9	U	C4-Dibenzothiophenes	**81.2**
C4-Decalins	20.9	U	Benzo(b)fluorene	**2010**
Benzothiophene	**421**		Fluoranthene	**16400**
C1-Benzo(b)thiophenes	**174**		Pyrene	**14600**
C2-Benzo(b)thiophenes	**111**		C1-Fluoranthenes/Pyrenes	**7720**
C3-Benzo(b)thiophenes	**70.5**		C2-Fluoranthenes/Pyrenes	**3460**
C4-Benzo(b)thiophenes	**34.2**		C3-Fluoranthenes/Pyrenes	**1500**
Naphthalene	**8390**		C4-Fluoranthenes/Pyrenes	**891**
C1-Naphthalenes	**3060**		Naphthobenzothiophenes	**2780**
C2-Naphthalenes	**2130**		C1-Naphthobenzothiophenes	**1170**
C3-Naphthalenes	**1230**		C2-Naphthobenzothiophenes	**583**
C4-Naphthalenes	**549**		C3-Naphthobenzothiophenes	**302**
Biphenyl	**791**		C4-Naphthobenzothiophenes	**116**
Dibenzofuran	**2660**		Benz[a]anthracene	**11200**
Acenaphthylene	**1600**		Chrysene/Triphenylene	**10300**
Acenaphthene	**1470**		C1-Chrysenes	**4860**
Fluorene	**2100**		C2-Chrysenes	**2370**
C1-Fluorenes	**756**		C3-Chrysenes	**1560**
C2-Fluorenes	**792**		C4-Chrysenes	**680**
C3-Fluorenes	**666**	G	Benzo[b]fluoranthene	**9370**
Anthracene	**7900**		Benzo[j]fluoranthene/Benzo[k]fluoranthene	**11300**
Phenanthrene	**11400**		Benzo[a]fluoranthene	**3210**
C1-Phenanthrenes/Anthracenes	**5580**		Benzo[e]pyrene	**7640**
C2-Phenanthrenes/Anthracenes	**2820**		Benzo[a]pyrene	**11900**
C3-Phenanthrenes/Anthracenes	**1110**		Perylene	**3020**
C4-Phenanthrenes/Anthracenes	**338**		Indeno[1,2,3-cd]pyrene	**7260**
Retene	20.9	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	**2770**
Dibenzothiophene	**857**		Benzo[g,h,i]perylene	**6350**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	62	50-130
Phenanthrene-d10	80	50-130
Benzo[a]pyrene-d12	79	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable
G - Matrix Interference

11/29/16 16:38

Form I
Carbazole

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 1-2'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-10**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/26/16	91.5	5.24	2	5	AC

Parameter	Result
Carbazole	**1390**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	62	50-130
Phenanthrene-d10	80	50-130
Benzo[a]pyrene-d12	79	50-130

N/A - Not Applicable

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 1-2'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-10**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/26/16	91.5	5.24	2	5	AC

Parameter	Result
4-Methyldibenzothiophene	**188**
2/3-Methyldibenzothiophene	**314**
1-Methyldibenzothiophene	**65.8**
3-Methylphenanthrene	**1200**
2-Methylphenanthrene	**1470**
2-Methylanthracene	**918**
9/4-Methylphenanthrene	**1030**
1-Methylphenanthrene	**786**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	62	50-130
Phenanthrene-d10	80	50-130
Benzo[a]pyrene-d12	79	50-130

N/A - Not Applicable

Form I
Triaromatic Steroids

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 1-2'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-10**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/26/16	91.5	5.24	2	5	AC

Parameter	Result
C26,20R- +C27,20S- triaromatic steroid	**59.8**
C28,20S-triaromatic steroid	**51.5**
C27,20R-triaromatic steroid	**57.6**
C28,20R-triaromatic steroid	**35.6**

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	75	50-130

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251610.D
Acq On : 26 Nov 2016 1:30 am
Operator : AC
Sample : 1610011-10
Misc : 5x
ALS Vial : 10 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:40:43 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.205	164	76356	500.000	ng/ml	-0.02
71) Chrysene-d12	43.690	240	107317	500.000	ng/ml	-0.02
System Monitoring Compounds						
8) Naphthalene-d8	20.219	136	102107	311.760	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 31.18%#			
40) Phenanthrene-d10	33.091	188	100803	401.633	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 40.16%#			
80) Benzo[b]fluoranthene-d12	47.605	264	96433	431.399	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 43.14%#			
85) Benzo[a]pyrene-d12	48.840	264	70966	394.389	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 39.44%#			
126) 5B(H)Cholane - Surr	44.262	217	13110	376.167	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 37.62%#			
Target Compounds						Qvalue
2) trans-Decalin	16.847	138	1574	23.793	ng/ml	100
4) C1-Decalins	18.337	152	1789M5	27.043	ng/ml	
5) C2-Decalins	20.114	166	1519M5	22.962	ng/ml	
9) Naphthalene	20.295	128	1448462	4021.251	ng/ml	100
10) C1-Naphthalenes	23.004	142	528204M5	1466.411	ng/ml	
11) C2-Naphthalenes	25.503	156	367132M5	1019.240	ng/ml	
12) C3-Naphthalenes	28.183	170	212233M5	589.206	ng/ml	
13) C4-Naphthalenes	30.938	184	94741M5	263.022	ng/ml	
14) 2-Methylnaphthalene	23.004	142	368046	1607.181	ng/ml	100
15) 1-Methylnaphthalene	23.426	142	159515	735.317	ng/ml	100
16) Benzothiophene	20.520	134	64344	201.702	ng/ml	100
17) C1-Benzo(b)thiophenes	23.230	148	26685M5	83.650	ng/ml	
18) C2-Benzo(b)thiophenes	25.564	162	17004M5	53.303	ng/ml	
19) C3-Benzo(b)thiophenes	27.476	176	10779M5	33.789	ng	
20) C4-Benzo(b)thiophenes	30.110	190	5237M5	16.417	ng/ml	
21) Biphenyl	24.886	154	110257	379.257	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.503	156	111940	563.227	ng/ml	100
23) Dibenzofuran	27.972	168	388614	1273.498	ng/ml	99
24) Acenaphthylene	26.602	152	267964M4	768.099	ng/ml	
25) Acenaphthene	27.325	153	149949	702.923	ng/ml	97
26) 2,3,5-Trimethylnaphthalen	28.876	170	16583M3	97.104	ng/ml	
27) Fluorene	29.357	166	234431M4	1006.609	ng/ml	
28) C1-Fluorenes	31.585	180	84389M5	362.353	ng/ml	
29) C2-Fluorenes	33.904	194	88476M5	379.902	ng/ml	
30) C3-Fluorenes	36.433	208G	74338M5	319.195	ng/ml	
31) Dibenzothiophene	32.684	184	141171	410.795	ng/ml#	94
32) 4-Methyldibenzothiophene(	34.446	198	30904	89.928	ng/ml	100
33) 2/3-Methyldibenzothiophen	34.807	198	51804	150.745	ng/ml	100
34) 1-Methyldibenzothiophene(	35.229	198	10849	31.570	ng/ml	100
36) C1-Dibenzothiophenes	34.807	198	113370M5	329.896	ng/ml	
36) C1-Dibenzothiophenes BS	34.807	198	113370M5	329.896	ng/ml	
37) C2-Dibenzothiophenes	36.493	212	73292M5	213.273	ng/ml	
38) C3-Dibenzothiophenes	37.939	226	39342M5	114.482	ng/ml	
39) C4-Dibenzothiophenes	40.182	240	13384M5	38.946	ng/ml	
41) Phenanthrene	33.181	178	1790600	5484.982	ng/ml	100
42) 3-Methylphenanthrene(3MP)	35.123	192	187710	574.995	ng/ml	88
43) 2-Methylphenanthrene(2MP)	35.244	192	229526M4	703.086	ng/ml	
44) 2-Methylanthracene(2MA)	35.394	192	143756M4	440.355	ng/ml	
45) 9/4-Methylphenanthrene(9M	35.590	192	161584M3	494.966	ng/ml	

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251610.D
Acq On : 26 Nov 2016 1:30 am
Operator : AC
Sample : 1610011-10
Misc : 5x
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 29 13:40:43 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
46) 1-Methylphenanthrene(1MP)	35.680	192	123069	376.986	ng/ml	85
47) C1-Phenanthrenes/Anthrace	35.244	192	874053M5	2677.407	ng/ml	
48) C2-Phenanthrenes/Anthrace	37.095	206	441657M5	1352.888	ng/ml	
48) C2-Phenanthrenes/Anthr BS	37.095	206	441657M5	1352.888	ng/ml	
50) C3-Phenanthrenes/Anthrace	39.233	220	173946M5	532.833	ng/ml	
51) C4-Phenanthrenes/Anthrace	41.432	234	52894M5	162.025	ng/ml	
53) Anthracene	33.362	178	1173625M4	3788.006	ng/ml	
54) Carbazole	34.024	167	202135	667.806	ng/ml	99
55) 1-Methylphenanthrene	35.680	192	123069	511.161	ng/ml	93
56) Fluoranthene	37.954	202	2840332	7839.045	ng/ml	93
57) Benzo(b)fluorene	40.483	216	206494M3	961.824	ng/ml	
58) Pyrene	38.842	202	2752561	7007.960	ng/ml	92
59) C1-Fluoranthenes/Pyrenes	40.227	216	1454087M5	3702.074	ng/ml	
60) C2-Fluoranthenes/Pyrenes	42.290	230	652336M5	1660.833	ng/ml	
61) C3-Fluoranthenes/Pyrenes	44.157	244	283122M5	720.822	ng/ml	
62) C4-Fluoranthenes/Pyrenes	44.443	258	167769M5	427.136	ng/ml	
63) Naphthobenzothiophene	42.696	234	289474	850.339	ng/ml	98
64) Naphthobenzothiophene-2,1	42.696	234	289474	850.339	ng/ml	98
65) Naphthobenzothiophene-1,2	43.028	234	59124	173.679	ng/ml#	100
66) Naphthobenzothiophene-2,3	43.329	234	105494M3	309.892	ng/ml	
67) C1-Naphthobenzothiophenes	44.353	248	190543M5	559.726	ng/ml	
68) C2-Naphthobenzothiophenes	45.934	262	95166M5	279.553	ng/ml	
69) C3-Naphthobenzothiophenes	47.470	276	49348M5	144.961	ng/ml	
70) C4-Naphthobenzothiophenes	50.406	290	18863M5	55.411	ng/ml	
72) Benz[a]anthracene	43.615	228	1602287M3	5388.336	ng/ml	
74) Chrysene/Triphenylene	43.780	228	1383805	4962.097	ng/ml	98
75) C1-Chrysenes	45.256	242	649535M5	2329.126	ng/ml	
76) C2-Chrysenes	46.958	256	316948M5	1136.523	ng/ml	
76) C2-Chrysenes BS	46.958	256	316948M5	1136.523	ng/ml	
78) C3-Chrysenes	47.289	270	208927M5	749.178	ng/ml	
79) C4-Chrysenes	49.653	284	90926M5	326.046	ng/ml	
81) Benzo[b]fluoranthene	47.696	252	1359219	4492.508	ng/ml	100
82) Benzo[j]+[k]fluoranthene	47.771	252	1514982M6	5431.980	ng/ml	
83) Benzo[a]fluoranthene	48.087	252	428784M4	1537.408	ng/ml	
84) Benzo[e]pyrene	48.750	252	1030030	3661.167	ng/ml	93
86) Benzo[a]pyrene	48.946	252	1528503	5694.336	ng/ml	99
87) Perylene	49.262	252	393616	1448.242	ng/ml	91
88) Indeno[1,2,3-cd]pyrene	54.006	276	1206866M4	3481.658	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.036	278	393259M4	1329.215	ng/ml	
90) Benzo[g,h,i]perylene	55.391	276	1020415	3043.425	ng/ml	98
144) C26,20R- +C27,20S- triaro	50.105	231	999M4	28.664	ng/mL	
145) C28,20S-triaromatic stero	51.024	231	861	24.705	ng/mL	100
146) C27,20R-triaromatic stero	51.491	231	963	27.631	ng/mL	100
147) C28,20R-triaromatic stero	52.771	231	595M4	17.072	ng/mL	

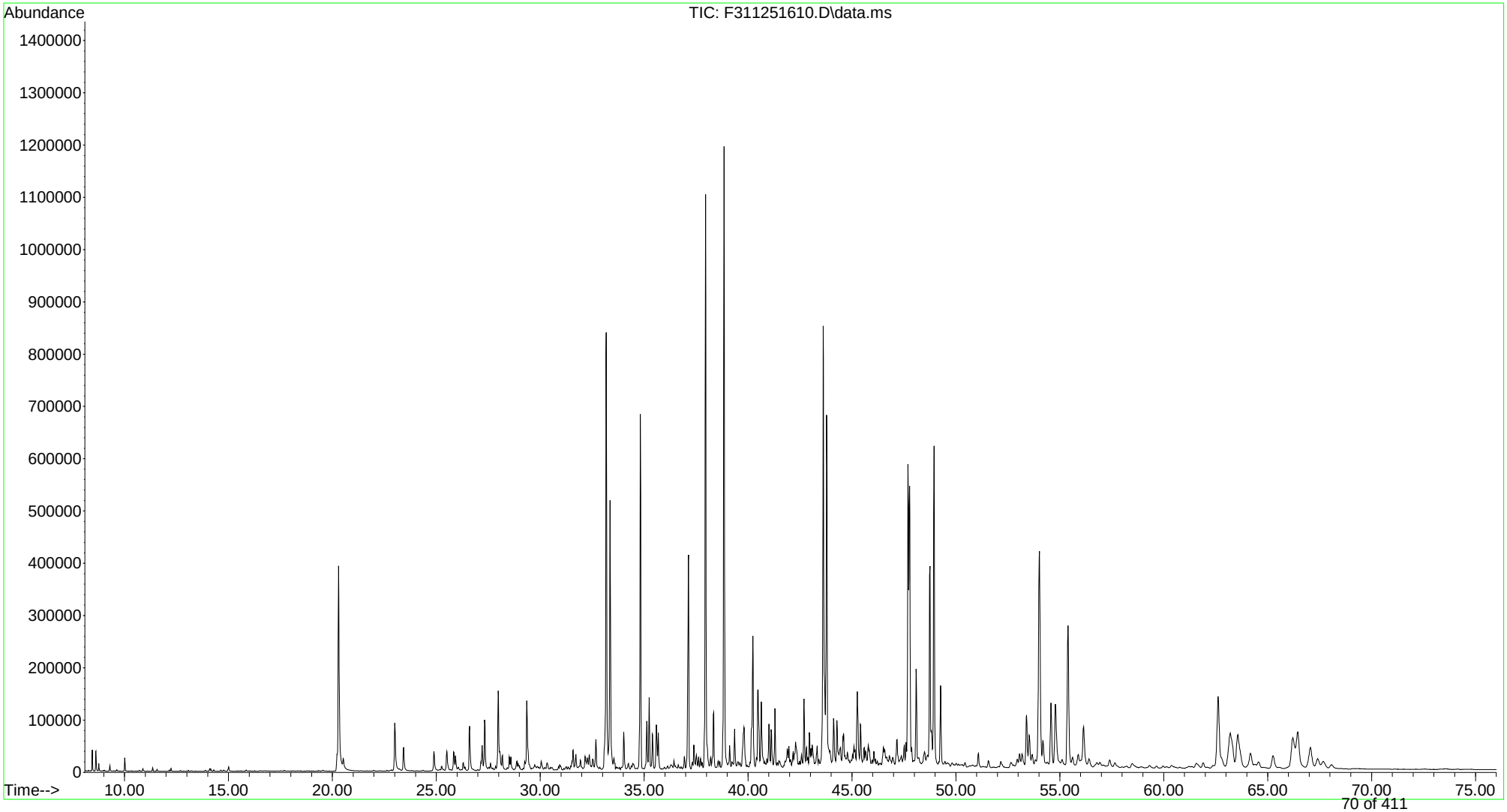
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251610.D
Acq On : 26 Nov 2016 1:30 am
Operator : AC
Sample : 1610011-10
Misc : 5x
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 29 13:40:43 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 7-8'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-11**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/27/16	87.3	15.88	2	2	AC

Parameter	Result		Parameter	Result	
cis/trans-Decalin	**432**		C1-Dibenzothiophenes	**250**	
C1-Decalins	**1110**		C2-Dibenzothiophenes	**163**	
C2-Decalins	**1190**		C3-Dibenzothiophenes	**73.4**	
C3-Decalins	**812**		C4-Dibenzothiophenes	**23.7**	
C4-Decalins	**1990**		Benzo(b)fluorene	**7.67**	
Benzothiophene	**3.94**		Fluoranthene	**46.2**	
C1-Benzo(b)thiophenes	**68.3**		Pyrene	**51.6**	
C2-Benzo(b)thiophenes	**62.8**		C1-Fluoranthenes/Pyrenes	**51.2**	
C3-Benzo(b)thiophenes	**108**		C2-Fluoranthenes/Pyrenes	**30.8**	
C4-Benzo(b)thiophenes	**71.2**		C3-Fluoranthenes/Pyrenes	**23.3**	
Naphthalene	**98.4**		C4-Fluoranthenes/Pyrenes	**12.8**	
C1-Naphthalenes	**289**		Naphthobenzothiophenes	**8.84**	
C2-Naphthalenes	**3220**		C1-Naphthobenzothiophenes	**9.39**	
C3-Naphthalenes	**3610**		C2-Naphthobenzothiophenes	**10.4**	
C4-Naphthalenes	**2110**		C3-Naphthobenzothiophenes	**9.43**	
Biphenyl	**133**		C4-Naphthobenzothiophenes	2.88	U
Dibenzofuran	**78.2**		Benz[a]anthracene	**23.5**	
Acenaphthylene	**37.3**		Chrysene/Triphenylene	**26.5**	
Acenaphthene	**66.6**		C1-Chrysenes	**20.2**	
Fluorene	**100**		C2-Chrysenes	**15.2**	
C1-Fluorenes	**347**		C3-Chrysenes	**12.3**	
C2-Fluorenes	**569**		C4-Chrysenes	2.88	U
C3-Fluorenes	**309**		Benzo[b]fluoranthene	**28.0**	
Anthracene	**33.8**		Benzo[j]fluoranthene/Benzo[k]fluoranthene	**43.8**	
Phenanthrene	**345**		Benzo[a]fluoranthene	**9.41**	
C1-Phenanthrenes/Anthracenes	**561**		Benzo[e]pyrene	**28.8**	
C2-Phenanthrenes/Anthracenes	**454**		Benzo[a]pyrene	**42.4**	
C3-Phenanthrenes/Anthracenes	**180**		Perylene	**11.6**	
C4-Phenanthrenes/Anthracenes	**49.7**		Indeno[1,2,3-cd]pyrene	**30.2**	
Retene	2.88	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	**10.6**	
Dibenzothiophene	**84.5**		Benzo[g,h,i]perylene	**30.6**	

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	122	50-130
Phenanthrene-d10	102	50-130
Benzo[a]pyrene-d12	111	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

11/29/16 16:38

Form I
Carbazole

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 7-8'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-11**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/27/16	87.3	15.88	2	2	AC

Parameter	Result
Carbazole	**4.06**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	122	50-130
Phenanthrene-d10	102	50-130
Benzo[a]pyrene-d12	111	50-130

N/A - Not Applicable

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 7-8'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-11**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/27/16	87.3	15.88	2	2	AC

Parameter	Result
4-Methyldibenzothiophene	**103**
2/3-Methyldibenzothiophene	**128**
1-Methyldibenzothiophene	**9.72**
3-Methylphenanthrene	**161**
2-Methylphenanthrene	**178**
2-Methylanthracene	**16.5**
9/4-Methylphenanthrene	**116**
1-Methylphenanthrene	**73.9**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	122	50-130
Phenanthrene-d10	102	50-130
Benzo[a]pyrene-d12	111	50-130

N/A - Not Applicable

Form I
Triaromatic Steroids

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 7-8'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-11**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/27/16	87.3	15.88	2	2	AC

Parameter	Result	
C26,20R- +C27,20S- triaromatic steroid	**1.77**	J
C28,20S-triaromatic steroid	2.88	U
C27,20R-triaromatic steroid	**1.38**	J
C28,20R-triaromatic steroid	**1.85**	J

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	89	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
J - Estimated value, below quantitation limit.
N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251626.D
Acq On : 27 Nov 2016 1:06 pm
Operator : AC
Sample : 1610011-11
Misc : 2x
ALS Vial : 26 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:50:43 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Acenaphthene-d10	27.205	164	36519M4	500.000 ng/ml	-0.02
71) Chrysene-d12	43.735	240	92490	500.000 ng/ml	0.03
System Monitoring Compounds					
8) Naphthalene-d8	20.219	136	239478	1528.813 ng/ml	-0.01
Spiked Amount 1000.000	Range 50 - 130		Recovery = 152.88%#		
40) Phenanthrene-d10	33.091	188	152713	1272.201 ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 127.22%		
80) Benzo[b]fluoranthene-d12	47.636	264	271459	1409.068 ng/ml	0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery = 140.91%#		
85) Benzo[a]pyrene-d12	48.901	264	214250	1381.557 ng/ml	0.05
Spiked Amount 1000.000	Range 50 - 130		Recovery = 138.16%#		
126) 5B(H)Cholane - Surr	44.262	217	33443	1113.414 ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 111.34%		
Target Compounds					Qvalue
2) trans-Decalin	16.847	138	43738	1382.405 ng/ml	100
3) cis-Decalin	18.067	138	2753M4	115.836 ng/ml	
4) C1-Decalins	18.774	152	121463M5	3839.021 ng/ml	
5) C2-Decalins	20.114	166	130402M5	4121.551 ng/ml	
6) C3-Decalins	22.583	180	89059M5	2814.843 ng/ml	
7) C4-Decalins	25.985	194	218158M5	6895.211 ng/ml	
9) Naphthalene	20.295	128	58755M4	341.054 ng/ml	
10) C1-Naphthalenes	23.426	142	172436M5	1000.936 ng/ml	
11) C2-Naphthalenes	25.835	156	1922064M5	11156.969 ng/ml	
12) C3-Naphthalenes	28.183	170	2157016M5	12520.791 ng/ml	
13) C4-Naphthalenes	30.938	184	1262651M5	7329.287 ng/ml	
14) 2-Methylnaphthalene	22.989	142	16464M4	150.322 ng/ml	
15) 1-Methylnaphthalene	23.426	142	153167	1476.260 ng/ml	100
16) Benzothiophene	20.505	134	2085M3	13.666 ng/ml	
17) C1-Benzo(b)thiophenes	22.538	148	36142M5	236.885 ng/ml	
18) C2-Benzo(b)thiophenes	25.564	162	33235M5	217.832 ng/ml	
19) C3-Benzo(b)thiophenes	28.018	176	57038M5	373.843 ng	
20) C4-Benzo(b)thiophenes	30.125	190	37679M5	246.959 ng/ml	
21) Biphenyl	24.871	154	63966	460.045 ng/ml	100
22) 2,6-Dimethylnaphthalene	25.504	156	566376	5958.372 ng/ml	100
23) Dibenzofuran	27.973	168	39578	271.180 ng/ml#	72
24) Acenaphthylene	26.588	152	21556M3	129.191 ng/ml	
25) Acenaphthene	27.340	153	23553M4	230.853 ng/ml	
26) 2,3,5-Trimethylnaphthalen	28.876	170	109574M3	1341.547 ng/ml	
27) Fluorene	29.358	166	38612M4	346.651 ng/ml	
28) C1-Fluorenes	31.721	180	133996M5	1202.989 ng/ml	
29) C2-Fluorenes	33.753	194	219875M5	1973.994 ng/ml	
30) C3-Fluorenes	35.741	208	119209M5	1070.235 ng/ml	
31) Dibenzothiophene	32.684	184	48134M3	292.857 ng/ml	
32) 4-Methyldibenzothiophene(	34.461	198	58499	355.920 ng/ml	100
33) 2/3-Methyldibenzothiophen	34.792	198	72935M4	443.751 ng/ml	
34) 1-Methyldibenzothiophene(	35.229	198	5537	33.688 ng/ml	100
36) C1-Dibenzothiophenes	34.461	198	142345M5	866.056 ng/ml	
36) C1-Dibenzothiophenes BS	34.461	198	142345M5	866.056 ng/ml	
37) C2-Dibenzothiophenes	36.508	212	92709M5	564.061 ng/ml	
38) C3-Dibenzothiophenes	37.954	226	41857M5	254.667 ng/ml	
39) C4-Dibenzothiophenes	39.640	240	13503M5	82.155 ng/ml	
41) Phenanthrene	33.181	178	186680	1195.635 ng/ml	96
42) 3-Methylphenanthrene(3MP)	35.138	192	87076	557.698 ng/ml	95

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251626.D
Acq On : 27 Nov 2016 1:06 pm
Operator : AC
Sample : 1610011-11
Misc : 2x
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Nov 29 13:50:43 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
43) 2-Methylphenanthrene(2MP)	35.259	192	96446M4	617.711	ng/ml	
44) 2-Methylanthracene(2MA)	35.409	192	8951M4	57.329	ng/ml	
45) 9/4-Methylphenanthrene(9M	35.590	192	62585	400.840	ng/ml	97
46) 1-Methylphenanthrene(1MP)	35.680	192	39997	256.170	ng/ml	98
47) C1-Phenanthrenes/Anthrace	35.259	192	303544M5	1944.118	ng/ml	
48) C2-Phenanthrenes/Anthrace	37.111	206	245573M5	1572.829	ng/ml	
48) C2-Phenanthrenes/Anthr BS	37.111	206	245573M5	1572.829	ng/ml	
50) C3-Phenanthrenes/Anthrace	39.264	220	97677M5	625.595	ng/ml	
51) C4-Phenanthrenes/Anthrace	41.462	234	26907M5	172.332	ng/ml	
53) Anthracene	33.377	178	17378M4	117.275	ng/ml	
54) Carbazole	34.024	167	2038M3	14.078	ng/ml	
55) 1-Methylphenanthrene	35.680	192	40131	348.508	ng/ml	93
56) Fluoranthene	37.984	202	27761	160.197	ng/ml	95
57) Benzo(b)fluorene	40.513	216	2731M3	26.597	ng/ml	
58) Pyrene	38.872	202	33646	179.107	ng/ml	100
59) C1-Fluoranthenes/Pyrenes	40.273	216	33322M5	177.382	ng/ml	
60) C2-Fluoranthenes/Pyrenes	42.365	230	20070M5	106.838	ng/ml	
61) C3-Fluoranthenes/Pyrenes	44.202	244	15199M5	80.908	ng/ml	
62) C4-Fluoranthenes/Pyrenes	45.934	258	8368M5	44.545	ng/ml	
63) Naphthobenzothiophene	42.742	234	3101M4	19.046	ng/ml	
64) Naphthobenzothiophene-2,1	42.742	234	3090M4	18.979	ng/ml	
65) Naphthobenzothiophene-1,2	43.058	234	661	4.060	ng/ml#	100
66) Naphthobenzothiophene-2,3	43.374	234	1240M3	7.616	ng/ml	
67) C1-Naphthobenzothiophenes	44.428	248	5303M5	32.571	ng/ml	
68) C2-Naphthobenzothiophenes	46.386	262	5881M5	36.121	ng/ml	
69) C3-Naphthobenzothiophenes	47.741	276	5321M5	32.681	ng/ml	
72) Benz[a]anthracene	43.675	228	20907M3	81.579	ng/ml	
74) Chrysene/Triphenylene	43.841	228	22052	91.751	ng/ml	96
75) C1-Chrysenes	45.316	242	16852M5	70.116	ng/ml	
76) C2-Chrysenes	47.636	256	21477M5	89.359	ng/ml	
76) C2-Chrysenes BS	47.636	256	12627M5	52.537	ng/ml	
77) BBF-D12 Surr BKGD	47.636	256	8850M4	36.822	ng/ml	
78) C3-Chrysenes	48.629	270	10274M5	42.747	ng/ml	
81) Benzo[b]fluoranthene	47.726	252	25364	97.273	ng/ml	97
82) Benzo[j]+[k]fluoranthene	47.801	252	36523M3	151.947	ng/ml	
83) Benzo[a]fluoranthene	48.132	252	7843M4	32.629	ng/ml	
84) Benzo[e]pyrene	48.780	252	24186	99.749	ng/ml	99
86) Benzo[a]pyrene	49.006	252	34001	146.975	ng/ml	95
87) Perylene	49.337	252	9449	40.339	ng/ml	94
88) Indeno[1,2,3-cd]pyrene	54.111	276	31268M4	104.665	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.141	278	9393M4	36.838	ng/ml	
90) Benzo[g,h,i]perylene	55.497	276	30694	106.222	ng/ml	94
144) C26,20R- +C27,20S- triaro	50.151	231	184M4	6.126	ng/mL	
146) C27,20R-triaromatic stero	51.566	231	144M4	4.794	ng/mL	
147) C28,20R-triaromatic stero	52.771	231	193M4	6.426	ng/mL	

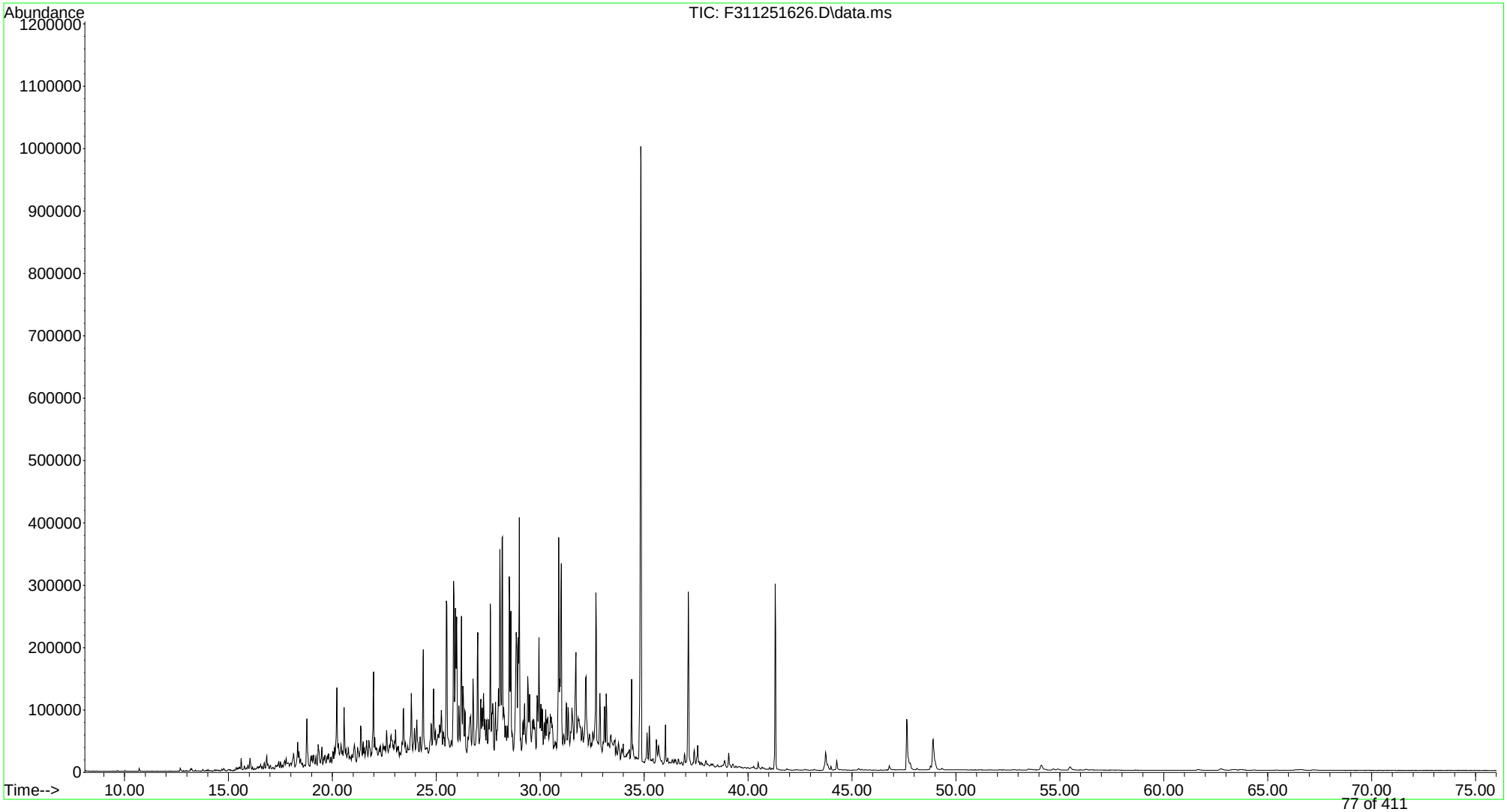
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251626.D
Acq On : 27 Nov 2016 1:06 pm
Operator : AC
Sample : 1610011-11
Misc : 2x
ALS Vial : 26 Sample Multiplier: 1

Quant Time: Nov 29 13:50:43 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 11-15'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-12**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/24/16	10/28/16	11/01/16	11/25/16	76.1	15.83	2	1	AC

Parameter	Result	
cis/trans-Decalin	**6.44**	
C1-Decalins	**7.68**	
C2-Decalins	**6.44**	
C3-Decalins	**3.91**	
C4-Decalins	**6.09**	
Benzothiophene	1.66	U
C1-Benzo(b)thiophenes	**0.921**	J
C2-Benzo(b)thiophenes	**0.779**	JB
C3-Benzo(b)thiophenes	1.66	U
C4-Benzo(b)thiophenes	1.66	U
Naphthalene	**1.59**	JB
C1-Naphthalenes	**56.7**	
C2-Naphthalenes	**44.0**	
C3-Naphthalenes	**12.4**	
C4-Naphthalenes	**8.53**	
Biphenyl	**16.7**	
Dibenzofuran	**1.01**	JB
Acenaphthylene	**8.44**	
Acenaphthene	**3.81**	
Fluorene	**6.42**	
C1-Fluorenes	**4.41**	
C2-Fluorenes	**4.32**	
C3-Fluorenes	**2.65**	
Anthracene	**5.82**	
Phenanthrene	**17.7**	
C1-Phenanthrenes/Anthracenes	**4.63**	
C2-Phenanthrenes/Anthracenes	**3.21**	
C3-Phenanthrenes/Anthracenes	**1.98**	
C4-Phenanthrenes/Anthracenes	1.66	U
Retene	1.66	U
Dibenzothiophene	**0.741**	JB

Parameter	Result	
C1-Dibenzothiophenes	**0.879**	J
C2-Dibenzothiophenes	**1.35**	J
C3-Dibenzothiophenes	1.66	U
C4-Dibenzothiophenes	1.66	U
Benzo(b)fluorene	**1.44**	J
Fluoranthene	**6.52**	
Pyrene	**7.03**	
C1-Fluoranthenes/Pyrenes	**6.96**	
C2-Fluoranthenes/Pyrenes	**3.01**	
C3-Fluoranthenes/Pyrenes	**2.00**	
C4-Fluoranthenes/Pyrenes	1.66	U
Naphthobenzothiophenes	**0.771**	J
C1-Naphthobenzothiophenes	**0.985**	J
C2-Naphthobenzothiophenes	1.66	U
C3-Naphthobenzothiophenes	1.66	U
C4-Naphthobenzothiophenes	1.66	U
Benz[a]anthracene	**4.34**	
Chrysene/Triphenylene	**4.21**	
C1-Chrysenes	**2.57**	
C2-Chrysenes	**1.82**	
C3-Chrysenes	1.66	U
C4-Chrysenes	1.66	U
Benzo[b]fluoranthene	**2.86**	
Benzo[j]fluoranthene/Benzo[k]fluoranthene	**4.31**	
Benzo[a]fluoranthene	**1.97**	
Benzo[e]pyrene	**2.96**	
Benzo[a]pyrene	**5.38**	
Perylene	**1.12**	J
Indeno[1,2,3-cd]pyrene	**3.18**	
Dibenz[ah]anthracene/Dibenz[ac]anthracene	**1.15**	JB
Benzo[g,h,i]perylene	**3.10**	

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	80	50-130
Phenanthrene-d10	104	50-130
Benzo[a]pyrene-d12	104	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
B - Found in associated blank as well as sample.
J - Estimated value, below quantitation limit.
N/A - Not Applicable

11/29/16 16:38

Form I
Carbazole

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 11-15'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-12**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/24/16	10/28/16	11/01/16	11/25/16	76.1	15.83	2	1	AC

Parameter	Result
Carbazole	**0.300** J

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	80	50-130
Phenanthrene-d10	104	50-130
Benzo[a]pyrene-d12	104	50-130

J - Estimated value, below quantitation limit.
N/A - Not Applicable

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 11-15'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-12**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/24/16	10/28/16	11/01/16	11/25/16	76.1	15.83	2	1	AC

Parameter	Result	
4-Methyldibenzothiophene	**0.515**	J
2/3-Methyldibenzothiophene	1.66	U
1-Methyldibenzothiophene	**0.0866**	J
3-Methylphenanthrene	**1.01**	J
2-Methylphenanthrene	**1.07**	J
2-Methylanthracene	**0.565**	J
9/4-Methylphenanthrene	**1.03**	J
1-Methylphenanthrene	**0.762**	J

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	80	50-130
Phenanthrene-d10	104	50-130
Benzo[a]pyrene-d12	104	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
J - Estimated value, below quantitation limit.
N/A - Not Applicable

Form I
Triaromatic Steroids

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 11-15'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-12**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/24/16	10/28/16	11/01/16	11/25/16	76.1	15.83	2	1	AC

Parameter	Result	
C26,20R- +C27,20S- triaromatic steroid	1.66	U
C28,20S-triaromatic steroid	1.66	U
C27,20R-triaromatic steroid	1.66	U
C28,20R-triaromatic steroid	1.66	U

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	91	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251608.D
Acq On : 25 Nov 2016 10:38 pm
Operator : AC
Sample : 1610011-12
Misc : 1x
ALS Vial : 8 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:40:30 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.205	164	86805M4	500.000	ng/ml	-0.02
71) Chrysene-d12	43.690	240	138107	500.000	ng/ml	-0.02
System Monitoring Compounds						
8) Naphthalene-d8	20.219	136	746378	2004.572	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 200.46%#			
40) Phenanthrene-d10	33.091	188	740098	2593.840	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 259.38%#			
80) Benzo[b]fluoranthene-d12	47.620	264	767118	2666.668	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 266.67%#			
85) Benzo[a]pyrene-d12	48.855	264	604950	2612.441	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 261.24%#			
126) 5B(H)Cholane - Surr	44.262	217	101707	2267.679	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 226.77%#			
Target Compounds						Qvalue
2) trans-Decalin	16.847	138	2799	37.218	ng/ml	100
3) cis-Decalin	18.067	138	89M4	1.575	ng/ml	
4) C1-Decalins	18.774	152	3480M5	46.273	ng/ml	
5) C2-Decalins	20.114	166	2918M5	38.800	ng/ml	
6) C3-Decalins	23.005	180	1772M5	23.562	ng/ml	
7) C4-Decalins	25.970	194	2759M5	36.686	ng/ml	
9) Naphthalene	20.295	128	3915M4	9.561	ng/ml	
10) C1-Naphthalenes	23.005	142	139911M5	341.668	ng/ml	
11) C2-Naphthalenes	25.850	156	108568M5	265.127	ng/ml	
12) C3-Naphthalenes	28.183	170	30645M5	74.836	ng/ml	
13) C4-Naphthalenes	30.938	184	21058M5	51.424	ng/ml	
14) 2-Methylnaphthalene	23.005	142	98926	379.989	ng/ml	100
15) 1-Methylnaphthalene	23.426	142	40790M4	165.396	ng/ml	
17) C1-Benzo(b)thiophenes	23.065	148	2014M5	5.553	ng/ml	
18) C2-Benzo(b)thiophenes	25.172	162	1703M5	4.696	ng/ml	
21) Biphenyl	24.886	154	33345	100.892	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.504	156	26291M4	116.360	ng/ml	
23) Dibenzofuran	27.988	168	2108M4	6.076	ng/ml	
24) Acenaphthylene	26.603	152	20163	50.839	ng/ml	100
25) Acenaphthene	27.325	153	5565M4	22.947	ng/ml	
26) 2,3,5-Trimethylnaphthalen	28.876	170	1589M3	8.185	ng/ml	
27) Fluorene	29.358	166	10243M4	38.688	ng/ml	
28) C1-Fluorenes	31.586	180	7042M5	26.597	ng/ml	
29) C2-Fluorenes	33.753	194	6896M5	26.046	ng/ml	
30) C3-Fluorenes	36.508	208	4235M5	15.995	ng/ml	
31) Dibenzothiophene	32.684	184	1744	4.464	ng/ml#	41
32) 4-Methyldibenzothiophene(	34.461	198	1213M4	3.105	ng/ml	
34) 1-Methyldibenzothiophene(	35.244	198	204	0.522	ng/ml	100
35) OTP	34.867	198	84964	217.477	ng/ml	100
36) C1-Dibenzothiophenes	34.867	198	87034M5	222.775	ng/ml	
36) C1-Dibenzothiophenes BS	34.867	198	2070M5	5.298	ng/ml	
37) C2-Dibenzothiophenes	36.524	212	3169M5	8.111	ng/ml	
41) Phenanthrene	33.181	178	39502	106.437	ng/ml	100
42) 3-Methylphenanthrene(3MP)	35.153	192	2258M4	6.084	ng/ml	
43) 2-Methylphenanthrene(2MP)	35.259	192	2391M4	6.443	ng/ml	
44) 2-Methylanthracene(2MA)	35.409	192	1263M4	3.403	ng/ml	
45) 9/4-Methylphenanthrene(9M	35.590	192	2307	6.216	ng/ml	81
46) 1-Methylphenanthrene(1MP)	35.680	192	1705	4.594	ng/ml	99
47) C1-Phenanthrenes/Anthrace	35.259	192	10359M5	27.912	ng/ml	

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251608.D
Acq On : 25 Nov 2016 10:38 pm
Operator : AC
Sample : 1610011-12
Misc : 1x
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 29 13:40:30 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
48) C2-Phenanthrenes/Anthrace	37.141	206	17795M5	47.948	ng/ml	
48) C2-Phenanthrenes/Anthr BS	37.141	206	7171M5	19.322	ng/ml	
49) 5AA IS BKGD	37.141	206	10624M4	28.626	ng/ml	
50) C3-Phenanthrenes/Anthrace	39.264	220	4419M5	11.907	ng/ml	
53) Anthracene	33.377	178	12354M4	35.074	ng/ml	
54) Carbazole	34.039	167	623	1.810	ng/ml#	69
55) 1-Methylphenanthrene	35.680	192	1705	6.229	ng/ml	91
56) Fluoranthene	37.984	202	16197M4	39.321	ng/ml	
57) Benzo(b)fluorene	40.498	216	2118M3	8.678	ng/ml	
58) Pyrene	38.872	202	18920	42.372	ng/ml	98
59) C1-Fluoranthenes/Pyrenes	40.258	216	18723M5	41.930	ng/ml	
60) C2-Fluoranthenes/Pyrenes	42.350	230	8091M5	18.120	ng/ml	
61) C3-Fluoranthenes/Pyrenes	44.262	244	5369M5	12.024	ng/ml	
63) Naphthobenzothiophene	42.712	234	1068	2.760	ng/ml#	80
64) Naphthobenzothiophene-2,1	42.712	234	1068	2.760	ng/ml#	80
65) Naphthobenzothiophene-1,2	43.043	234	273	0.705	ng/ml#	100
66) Naphthobenzothiophene-2,3	43.344	234	458M3	1.183	ng/ml	
67) C1-Naphthobenzothiophenes	44.413	248	2297M5	5.935	ng/ml	
72) Benz[a]anthracene	43.630	228	10006	26.147	ng/ml#	43
74) Chrysene/Triphenylene	43.796	228	9105	25.370	ng/ml	90
75) C1-Chrysenes	45.286	242	5555M5	15.478	ng/ml	
76) C2-Chrysenes	47.620	256	29964M5	83.492	ng/ml	
76) C2-Chrysenes BS	47.620	256	3945M5	10.992	ng/ml	
77) BBF-D12 Surr BKGD	47.620	256	26019	72.499	ng/ml	100
81) Benzo[b]fluoranthene	47.696	252	6716M4	17.249	ng/ml	
82) Benzo[j]+[k]fluoranthene	47.771	252	9326M6	25.984	ng/ml	
83) Benzo[a]fluoranthene	48.102	252	4270M4	11.897	ng/ml	
84) Benzo[e]pyrene	48.750	252	6464	17.854	ng/ml	95
86) Benzo[a]pyrene	48.961	252	11211	32.454	ng/ml	100
87) Perylene	49.307	252	2368	6.770	ng/ml	96
88) Indeno[1,2,3-cd]pyrene	54.066	276	8561M4	19.191	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.096	278	2630M3	6.908	ng/ml	
90) Benzo[g,h,i]perylene	55.452	276	8059	18.678	ng/ml	95

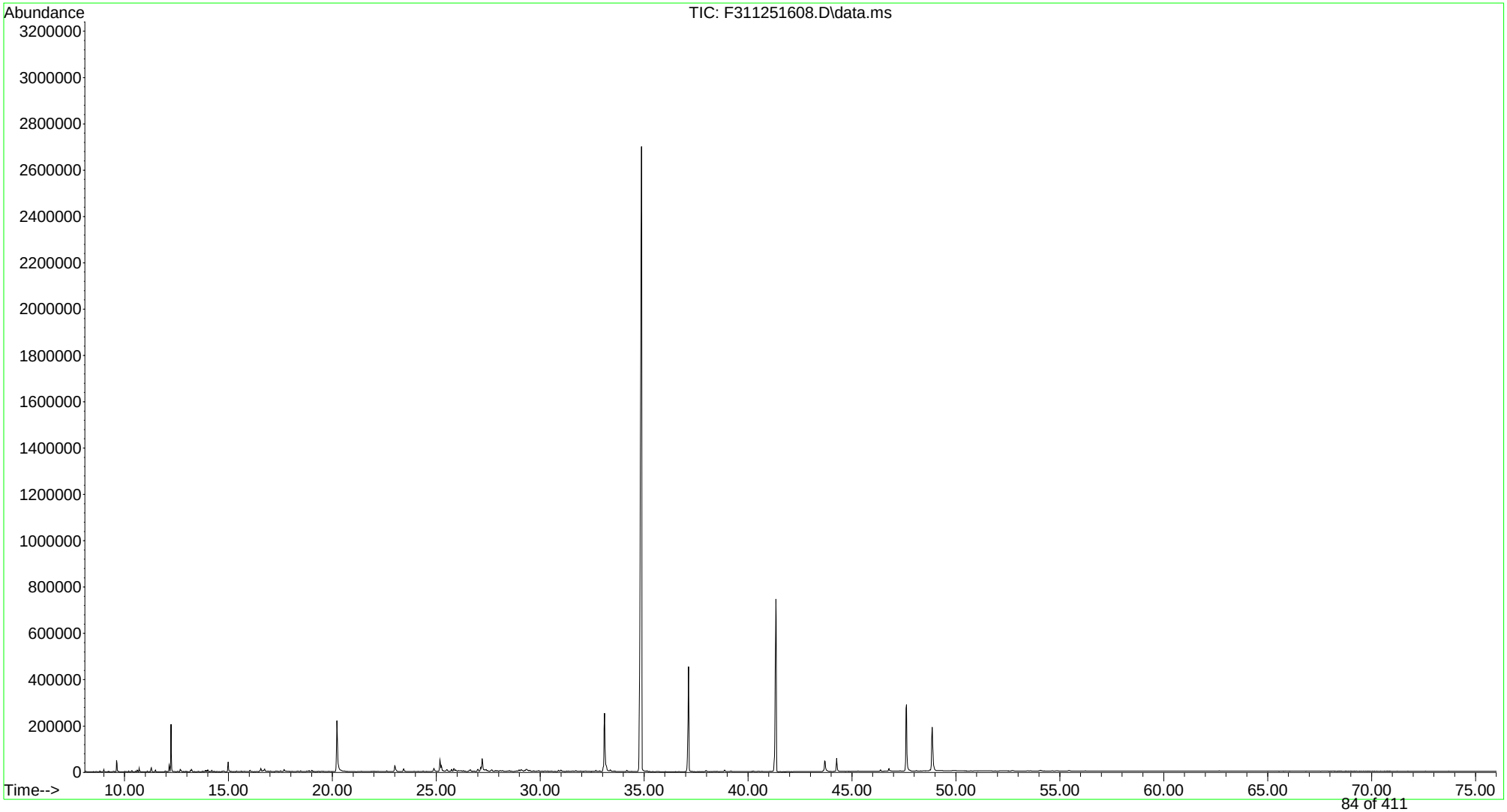
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251608.D
Acq On : 25 Nov 2016 10:38 pm
Operator : AC
Sample : 1610011-12
Misc : 1x
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 29 13:40:30 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-09 3-4'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-14**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/21/16	10/28/16	11/01/16	11/27/16	80.9	5.69	6.67	10	AC

Parameter	Result		Parameter	Result
cis/trans-Decalin	**27.6**	J	C1-Dibenzothiophenes	**8730**
C1-Decalins	145	U	C2-Dibenzothiophenes	**5770**
C2-Decalins	145	U	C3-Dibenzothiophenes	**2960**
C3-Decalins	145	U	C4-Dibenzothiophenes	**961**
C4-Decalins	145	U	Benzo(b)fluorene	**23400**
Benzothiophene	**2370**		Fluoranthene	**212000**
C1-Benzo(b)thiophenes	**2380**		Pyrene	**169000**
C2-Benzo(b)thiophenes	**2440**		C1-Fluoranthenes/Pyrenes	**92200**
C3-Benzo(b)thiophenes	**1230**		C2-Fluoranthenes/Pyrenes	**32400**
C4-Benzo(b)thiophenes	**430**		C3-Fluoranthenes/Pyrenes	**15900**
Naphthalene	**24000**		C4-Fluoranthenes/Pyrenes	**9310**
C1-Naphthalenes	**29300**		Naphthobenzothiophenes	**16200**
C2-Naphthalenes	**45800**		C1-Naphthobenzothiophenes	**9220**
C3-Naphthalenes	**23200**		C2-Naphthobenzothiophenes	**4800**
C4-Naphthalenes	**7400**		C3-Naphthobenzothiophenes	**2460**
Biphenyl	**10800**		C4-Naphthobenzothiophenes	**860**
Dibenzofuran	**67200**		Benz[a]anthracene	**112000**
Acenaphthylene	**40000**		Chrysene/Triphenylene	**99900**
Acenaphthene	**16600**		C1-Chrysenes	**54400**
Fluorene	**82200**		C2-Chrysenes	**26300**
C1-Fluorenes	**21400**		C3-Chrysenes	**17200**
C2-Fluorenes	**11000**		C4-Chrysenes	**7150**
C3-Fluorenes	**8680**	G	Benzo[b]fluoranthene	**87100**
Anthracene	**76800**		Benzo[j]fluoranthene/Benzo[k]fluoranthene	**87800**
Phenanthrene	**295000**	E	Benzo[a]fluoranthene	**24400**
C1-Phenanthrenes/Anthracenes	**105000**		Benzo[e]pyrene	**65200**
C2-Phenanthrenes/Anthracenes	**43200**		Benzo[a]pyrene	**105000**
C3-Phenanthrenes/Anthracenes	**16000**		Perylene	**26900**
C4-Phenanthrenes/Anthracenes	**4480**		Indeno[1,2,3-cd]pyrene	**58200**
Retene	145	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	**18800**
Dibenzothiophene	**19400**		Benzo[g,h,i]perylene	**56700**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	69	50-130
Phenanthrene-d10	93	50-130
Benzo[a]pyrene-d12	104	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
J - Estimated value, below quantitation limit.
E - Estimated value, exceeds the upper limit of calibration.
N/A - Not Applicable
G - Matrix Interference

Form I
Carbazole

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-09 3-4'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-14**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/21/16	10/28/16	11/01/16	11/27/16	80.9	5.69	6.67	10	AC

Parameter	Result
Carbazole	**27700**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	69	50-130
Phenanthrene-d10	93	50-130
Benzo[a]pyrene-d12	104	50-130

N/A - Not Applicable

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-09 3-4'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-14**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/21/16	10/28/16	11/01/16	11/27/16	80.9	5.69	6.67	10	AC

Parameter	Result
4-Methyldibenzothiophene	**2060**
2/3-Methyldibenzothiophene	**3040**
1-Methyldibenzothiophene	**1290**
3-Methylphenanthrene	**24200**
2-Methylphenanthrene	**29500**
2-Methylanthracene	**13000**
9/4-Methylphenanthrene	**19100**
1-Methylphenanthrene	**14700**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	69	50-130
Phenanthrene-d10	93	50-130
Benzo[a]pyrene-d12	104	50-130

N/A - Not Applicable

Form I
Triaromatic Steroids

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-09 3-4'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-14**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/21/16	10/28/16	11/01/16	11/27/16	80.9	5.69	6.67	10	AC

Parameter	Result	
C26,20R- +C27,20S- triaromatic steroid	145	U
C28,20S-triaromatic steroid	145	U
C27,20R-triaromatic steroid	145	U
C28,20R-triaromatic steroid	145	U

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	81	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251627.D
Acq On : 27 Nov 2016 2:33 pm
Operator : AC
Sample : 1610011-14
Misc : 10x
ALS Vial : 27 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:41:47 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.205	164	69150	500.000	ng/ml	-0.02
71) Chrysene-d12	43.690	240	99446	500.000	ng/ml	-0.02
System Monitoring Compounds						
8) Naphthalene-d8	20.234	136	15367	51.809	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	5.18%#		
40) Phenanthrene-d10	33.076	188	15906	69.979	ng/ml	-0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery =	7.00%#		
80) Benzo[b]fluoranthene-d12	47.605	264	15689	75.741	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	7.57%#		
85) Benzo[a]pyrene-d12	48.855	264	12959	77.719	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	7.77%#		
126) 5B(H)Cholane - Surr	44.262	217	1949	60.349	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	6.03%#		
Target Compounds						Qvalue
2) trans-Decalin	16.847	138	114	1.903	ng/ml	100
9) Naphthalene	20.310	128	540272	1656.218	ng/ml	100
10) C1-Naphthalenes	23.426	142	660165M5	2023.753	ng/ml	
11) C2-Naphthalenes	25.835	156	1030637M5	3159.445	ng/ml	
12) C3-Naphthalenes	28.183	170	521998M5	1600.199	ng/ml	
13) C4-Naphthalenes	30.938	184	166774M5	511.250	ng/ml	
14) 2-Methylnaphthalene	23.004	142	132892	640.785	ng/ml	100
15) 1-Methylnaphthalene	23.426	142	525538	2675.029	ng/ml	100
16) Benzothiophene	20.550	134	47335	163.846	ng/ml	100
17) C1-Benzo(b)thiophenes	22.869	148	47505M5	164.434	ng/ml	
18) C2-Benzo(b)thiophenes	25.564	162	48746M5	168.730	ng/ml	
19) C3-Benzo(b)thiophenes	27.460	176	24595M5	85.133	ng	
20) C4-Benzo(b)thiophenes	30.125	190	8579M5	29.695	ng/ml	
21) Biphenyl	24.886	154	196601	746.731	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.503	156	285667	1587.119	ng/ml	100
23) Dibenzofuran	27.972	168	1283180	4643.209	ng/ml	99
24) Acenaphthylene	26.602	152	872338M4	2761.065	ng/ml	
25) Acenaphthene	27.325	153	221550	1146.798	ng/ml	98
26) 2,3,5-Trimethylnaphthalen	28.876	170	48540M3	313.852	ng/ml	
27) Fluorene	29.357	166	1196559M4	5673.235	ng/ml	
28) C1-Fluorenes	31.585	180	311843M5	1478.539	ng/ml	
29) C2-Fluorenes	33.648	194	160790M5	762.352	ng/ml	
30) C3-Fluorenes	36.433	208G	126442M5	599.498	ng/ml	
31) Dibenzothiophene	32.684	184	417704	1342.144	ng/ml	98
32) 4-Methyldibenzothiophene(	34.461	198	44181	141.960	ng/ml	100
33) 2/3-Methyldibenzothiophen	34.777	198	65413	210.182	ng/ml	100
34) 1-Methyldibenzothiophene(	35.229	198	27683	88.950	ng/ml	100
36) C1-Dibenzothiophenes	34.461	198	187684M5	603.056	ng/ml	
36) C1-Dibenzothiophenes BS	34.461	198	187684M5	603.056	ng/ml	
37) C2-Dibenzothiophenes	36.930	212	123905M5	398.125	ng/ml	
38) C3-Dibenzothiophenes	37.939	226	63618M5	204.414	ng/ml	
39) C4-Dibenzothiophenes	39.610	240	20660M5	66.384	ng/ml	
41) Phenanthrene	33.181	178	6030836	20398.823	ng/ml	97
42) 3-Methylphenanthrene(3MP)	35.123	192	494742	1673.425	ng/ml	91
43) 2-Methylphenanthrene(2MP)	35.244	192	602435M4	2037.688	ng/ml	
44) 2-Methylanthracene(2MA)	35.409	192	264491M4	894.620	ng/ml	
45) 9/4-Methylphenanthrene(9M	35.590	192	389519	1317.517	ng/ml	78
46) 1-Methylphenanthrene(1MP)	35.680	192	299481	1012.971	ng/ml	93
47) C1-Phenanthrenes/Anthrace	35.244	192	2139019M5	7235.062	ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251627.D
Acq On : 27 Nov 2016 2:33 pm
Operator : AC
Sample : 1610011-14
Misc : 10x
ALS Vial : 27 Sample Multiplier: 1

Quant Time: Nov 29 13:41:47 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
48) C2-Phenanthrenes/Anthrace	37.397	206	881624M5	2982.023	ng/ml	
48) C2-Phenanthrenes/Anthr BS	37.397	206	881624M5	2982.023	ng/ml	
50) C3-Phenanthrenes/Anthrace	39.233	220	325966M5	1102.554	ng/ml	
51) C4-Phenanthrenes/Anthrace	41.432	234	91435M5	309.272	ng/ml	
53) Anthracene	33.362	178	1487756M4	5302.296	ng/ml	
54) Carbazole	34.024	167	524575	1913.671	ng/ml	99
55) 1-Methylphenanthrene	35.680	192	299481	1373.501	ng/ml	99
56) Fluoranthene	37.969	202	4808205	14653.049	ng/ml	94
57) Benzo(b)fluorene	40.483	216	313538M3	1612.610	ng/ml	
58) Pyrene	38.857	202	4152477	11673.818	ng/ml	93
59) C1-Fluoranthenes/Pyrenes	40.227	216	2263304M5	6362.804	ng/ml	
60) C2-Fluoranthenes/Pyrenes	41.974	230	796920M5	2240.373	ng/ml	
61) C3-Fluoranthenes/Pyrenes	44.157	244	390740M5	1098.484	ng/ml	
62) C4-Fluoranthenes/Pyrenes	44.443	258	228643M5	642.782	ng/ml	
63) Naphthobenzothiophene	42.696	234	187034	606.672	ng/ml#	93
64) Naphthobenzothiophene-2,1	42.696	234	187034	606.672	ng/ml#	93
65) Naphthobenzothiophene-1,2	43.028	234	68834	223.273	ng/ml#	100
66) Naphthobenzothiophene-2,3	43.329	234	89597M3	290.621	ng/ml	
67) C1-Naphthobenzothiophenes	44.353	248	196227M5	636.491	ng/ml	
68) C2-Naphthobenzothiophenes	46.521	262	102284M5	331.773	ng/ml	
69) C3-Naphthobenzothiophenes	47.304	276	52468M5	170.188	ng/ml	
70) C4-Naphthobenzothiophenes	50.391	290	18312M5	59.398	ng/ml	
72) Benz[a]anthracene	43.630	228	2123129	7704.988	ng/ml	91
74) Chrysene/Triphenylene	43.795	228	1782088	6896.055	ng/ml	99
75) C1-Chrysenes	45.256	242	970874M5	3756.942	ng/ml	
76) C2-Chrysenes	46.807	256	469585M5	1817.129	ng/ml	
76) C2-Chrysenes BS	46.807	256	469585M5	1817.129	ng/ml	
78) C3-Chrysenes	47.801	270	306442M5	1185.823	ng/ml	
79) C4-Chrysenes	49.668	284	127586M5	493.713	ng/ml	
81) Benzo[b]fluoranthene	47.696	252	1686949	6017.035	ng/ml	99
82) Benzo[j]+[k]fluoranthene	47.771	252	1566959	6063.028	ng/ml	99
83) Benzo[a]fluoranthene	48.102	252	435064M4	1683.391	ng/ml	
84) Benzo[e]pyrene	48.750	252	1172805	4498.593	ng/ml	92
86) Benzo[a]pyrene	48.946	252	1799043	7232.685	ng/ml	99
87) Perylene	49.277	252	468070	1858.491	ng/ml	98
88) Indeno[1,2,3-cd]pyrene	54.021	276	1290480M4	4017.534	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.051	278	356460M4	1300.196	ng/ml	
90) Benzo[g,h,i]perylene	55.406	276	1215814	3913.219	ng/ml	99

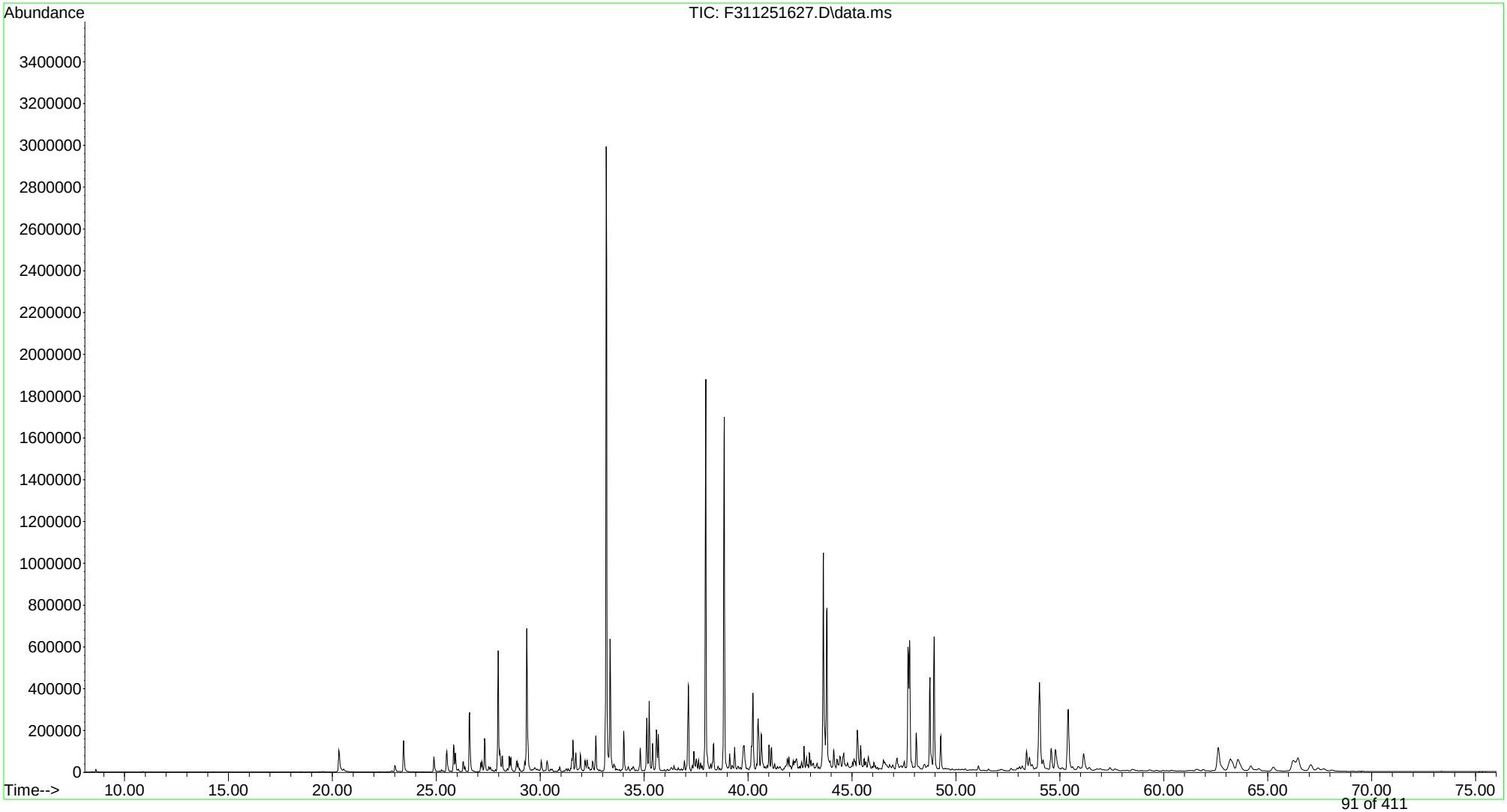
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251627.D
Acq On : 27 Nov 2016 2:33 pm
Operator : AC
Sample : 1610011-14
Misc : 10x
ALS Vial : 27 Sample Multiplier: 1

Quant Time: Nov 29 13:41:47 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-09 3-4'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-14E**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/21/16	10/28/16	11/01/16	11/27/16	80.9	5.69	6.67	100	AC

Parameter	Result		Parameter	Result	
cis/trans-Decalin	1450	U	C1-Dibenzothiophenes	1450	U
C1-Decalins	1450	U	C2-Dibenzothiophenes	1450	U
C2-Decalins	1450	U	C3-Dibenzothiophenes	1450	U
C3-Decalins	1450	U	C4-Dibenzothiophenes	1450	U
C4-Decalins	1450	U	Benzo(b)fluorene	1450	U
Benzothiophene	1450	U	Fluoranthene	1450	U
C1-Benzo(b)thiophenes	1450	U	Pyrene	1450	U
C2-Benzo(b)thiophenes	1450	U	C1-Fluoranthenes/Pyrenes	1450	U
C3-Benzo(b)thiophenes	1450	U	C2-Fluoranthenes/Pyrenes	1450	U
C4-Benzo(b)thiophenes	1450	U	C3-Fluoranthenes/Pyrenes	1450	U
Naphthalene	1450	U	C4-Fluoranthenes/Pyrenes	1450	U
C1-Naphthalenes	1450	U	Naphthobenzothiophenes	1450	U
C2-Naphthalenes	1450	U	C1-Naphthobenzothiophenes	1450	U
C3-Naphthalenes	1450	U	C2-Naphthobenzothiophenes	1450	U
C4-Naphthalenes	1450	U	C3-Naphthobenzothiophenes	1450	U
Biphenyl	1450	U	C4-Naphthobenzothiophenes	1450	U
Dibenzofuran	1450	U	Benz[a]anthracene	1450	U
Acenaphthylene	1450	U	Chrysene/Triphenylene	1450	U
Acenaphthene	1450	U	C1-Chrysenes	1450	U
Fluorene	1450	U	C2-Chrysenes	1450	U
C1-Fluorenes	1450	U	C3-Chrysenes	1450	U
C2-Fluorenes	1450	U	C4-Chrysenes	1450	U
C3-Fluorenes	1450	U	Benzo[b]fluoranthene	1450	U
Anthracene	1450	U	Benzo[j]fluoranthene/Benzo[k]fluoranthene	1450	U
Phenanthrene	**404000**		Benzo[a]fluoranthene	1450	U
C1-Phenanthrenes/Anthracenes	1450	U	Benzo[e]pyrene	1450	U
C2-Phenanthrenes/Anthracenes	1450	U	Benzo[a]pyrene	1450	U
C3-Phenanthrenes/Anthracenes	1450	U	Perylene	1450	U
C4-Phenanthrenes/Anthracenes	1450	U	Indeno[1,2,3-cd]pyrene	1450	U
Retene	1450	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	1450	U
Dibenzothiophene	1450	U	Benzo[g,h,i]perylene	1450	U

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	DL	50-130
Phenanthrene-d10	DL	50-130
Benzo[a]pyrene-d12	DL	50-130

DL - Surrogate diluted out of sample.
U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

11/29/16 18:16

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251628.D
Acq On : 27 Nov 2016 4:00 pm
Operator : AC
Sample : 1610011-14-RE
Misc : 100x
ALS Vial : 28 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:41:58 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.235	164	62833	500.000	ng/ml	0.02
71) Chrysene-d12	43.720	240	101305	500.000	ng/ml	0.02
System Monitoring Compounds						
8) Naphthalene-d8	20.370	136	1462	5.425	ng/ml	0.14
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.54%#		
40) Phenanthrene-d10	33.121	188	1679	8.129	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.81%#		
80) Benzo[b]fluoranthene-d12	47.635	264	1818M4	8.616	ng/ml	0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.86%#		
85) Benzo[a]pyrene-d12	48.885	264	1596M4	9.396	ng/ml	0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.94%#		
126) 5B(H)Cholane - Surr	44.277	217	281	8.541	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.85%#		
Target Compounds						Qvalue
41) Phenanthrene	33.211	178	749095	2788.489	ng/ml	100

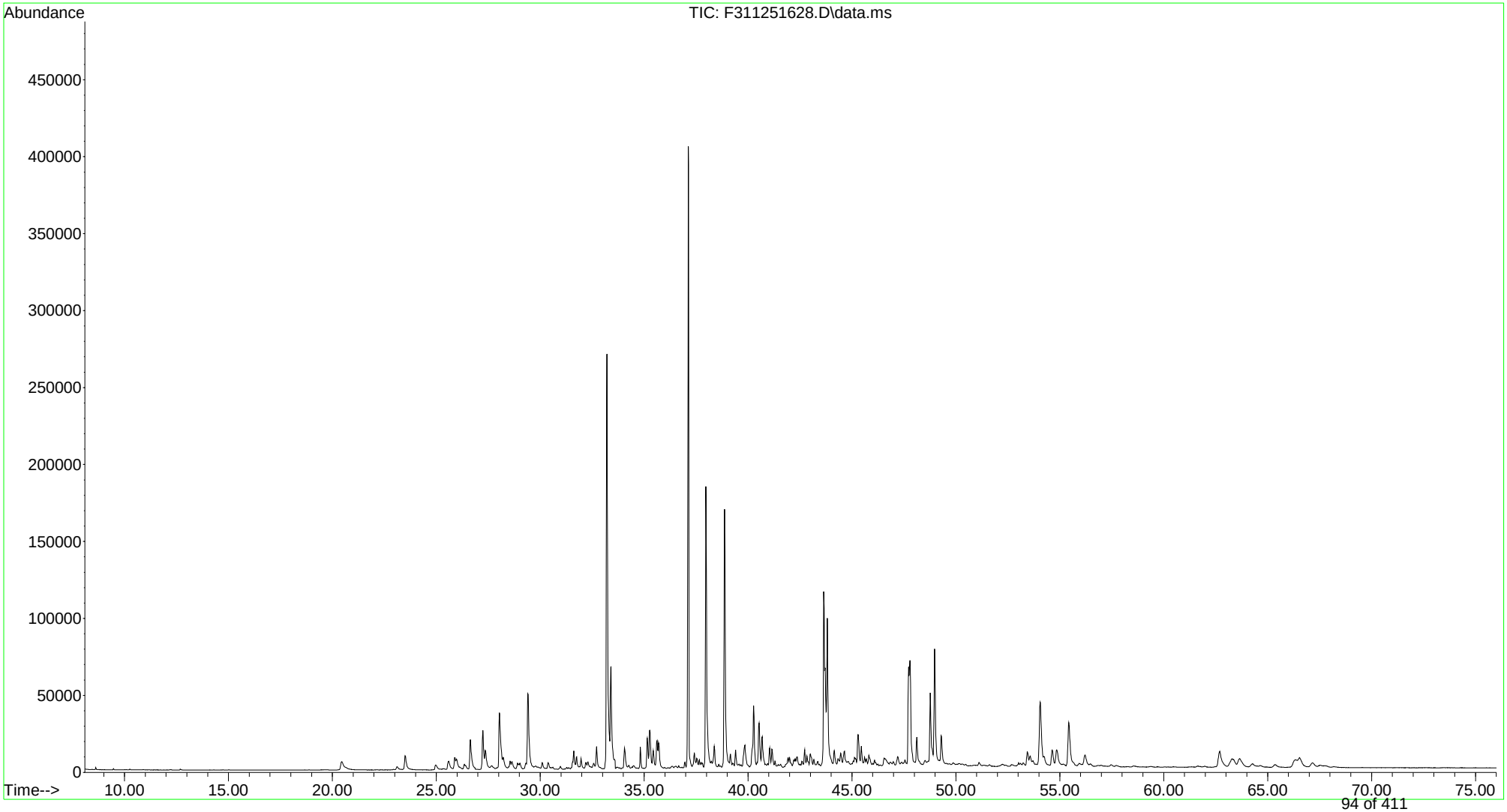
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251628.D
Acq On : 27 Nov 2016 4:00 pm
Operator : AC
Sample : 1610011-14-RE
Misc : 100x
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Nov 29 13:41:58 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **DUP-2**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-15**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/25/16	10/28/16	11/01/16	11/27/16	83.2	5.49	4	10	AC

Parameter	Result		Parameter	Result
cis/trans-Decalin	**355**		C1-Dibenzothiophenes	**6130**
C1-Decalins	**1060**		C2-Dibenzothiophenes	**4390**
C2-Decalins	**1920**		C3-Dibenzothiophenes	**1930**
C3-Decalins	**1850**		C4-Dibenzothiophenes	**591**
C4-Decalins	**2940**		Benzo(b)fluorene	**4230**
Benzothiophene	**8610**		Fluoranthene	**17800**
C1-Benzo(b)thiophenes	**10100**		Pyrene	**22600**
C2-Benzo(b)thiophenes	**5810**		C1-Fluoranthenes/Pyrenes	**23500**
C3-Benzo(b)thiophenes	**1860**		C2-Fluoranthenes/Pyrenes	**9300**
C4-Benzo(b)thiophenes	**466**		C3-Fluoranthenes/Pyrenes	**3260**
Naphthalene	**408000**	E	C4-Fluoranthenes/Pyrenes	**1310**
C1-Naphthalenes	**268000**	E	Naphthobenzothiophenes	**2660**
C2-Naphthalenes	**92300**		C1-Naphthobenzothiophenes	**2680**
C3-Naphthalenes	**22600**		C2-Naphthobenzothiophenes	**1540**
C4-Naphthalenes	**6220**		C3-Naphthobenzothiophenes	**718**
Biphenyl	**14200**		C4-Naphthobenzothiophenes	**280**
Dibenzofuran	**3450**		Benz[a]anthracene	**10400**
Acenaphthylene	**7700**		Chrysene/Triphenylene	**11700**
Acenaphthene	**38100**		C1-Chrysenes	**10800**
Fluorene	**17300**		C2-Chrysenes	**5450**
C1-Fluorenes	**11600**		C3-Chrysenes	**2460**
C2-Fluorenes	**7700**		C4-Chrysenes	**1020**
C3-Fluorenes	**3140**		Benzo[b]fluoranthene	**5370**
Anthracene	**13800**		Benzo[j]fluoranthene/Benzo[k]fluoranthene	**7330**
Phenanthrene	**53400**		Benzo[a]fluoranthene	**2400**
C1-Phenanthrenes/Anthracenes	**41600**		Benzo[e]pyrene	**5480**
C2-Phenanthrenes/Anthracenes	**17100**		Benzo[a]pyrene	**9780**
C3-Phenanthrenes/Anthracenes	**5520**		Perylene	**2050**
C4-Phenanthrenes/Anthracenes	**1340**		Indeno[1,2,3-cd]pyrene	**4180**
Retene	87.6	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	**1540**
Dibenzothiophene	**4720**		Benzo[g,h,i]perylene	**4440**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	82	50-130
Phenanthrene-d10	94	50-130
Benzo[a]pyrene-d12	99	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
E - Estimated value, exceeds the upper limit of calibration.
N/A - Not Applicable

11/29/16 18:05

Form I
Carbazole

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **DUP-2**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-15**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/25/16	10/28/16	11/01/16	11/27/16	83.2	5.49	4	10	AC

Parameter	Result
Carbazole	**1000**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	82	50-130
Phenanthrene-d10	94	50-130
Benzo[a]pyrene-d12	99	50-130

N/A - Not Applicable

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **DUP-2**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-15**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/25/16	10/28/16	11/01/16	11/27/16	83.2	5.49	4	10	AC

Parameter	Result
4-Methyldibenzothiophene	**2360**
2/3-Methyldibenzothiophene	**2150**
1-Methyldibenzothiophene	**618**
3-Methylphenanthrene	**9890**
2-Methylphenanthrene	**9910**
2-Methylanthracene	**3770**
9/4-Methylphenanthrene	**8740**
1-Methylphenanthrene	**6480**

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	82	50-130
Phenanthrene-d10	94	50-130
Benzo[a]pyrene-d12	99	50-130

N/A - Not Applicable

Form I
Triaromatic Steroids

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **DUP-2**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-15**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/25/16	10/28/16	11/01/16	11/27/16	83.2	5.49	4	10	AC

Parameter	Result	
C26,20R- +C27,20S- triaromatic steroid	**104**	
C28,20S-triaromatic steroid	**128**	
C27,20R-triaromatic steroid	**64.1**	J
C28,20R-triaromatic steroid	**60.9**	J

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	87	50-130

J - Estimated value, below quantitation limit.
N/A - Not Applicable

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251629.D
Acq On : 27 Nov 2016 5:26 pm
Operator : AC
Sample : 1610011-15
Misc : 10x
ALS Vial : 29 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:42:05 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.205	164	54768	500.000	ng/ml	-0.02
71) Chrysene-d12	43.690	240	91685	500.000	ng/ml	-0.02
System Monitoring Compounds						
8) Naphthalene-d8	20.219	136	24223	103.112	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 10.31%#			
40) Phenanthrene-d10	33.091	188	21238	117.974	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 11.80%#			
80) Benzo[b]fluoranthene-d12	47.620	264	23830	124.781	ng/ml	0.01
Spiked Amount 1000.000	Range 50 - 130		Recovery = 12.48%#			
85) Benzo[a]pyrene-d12	48.870	264	19049	123.913	ng/ml	0.01
Spiked Amount 1000.000	Range 50 - 130		Recovery = 12.39%#			
126) 5B(H)Cholane - Surr	44.262	217	3248	109.085	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 10.91%#			
Target Compounds						Qvalue
2) trans-Decalin	16.847	138	1514	31.908	ng/ml	100
3) cis-Decalin	18.081	138	308M3	8.641	ng/ml	
4) C1-Decalins	18.774	152	5732M5	120.802	ng/ml	
5) C2-Decalins	20.114	166	10391M5	218.991	ng/ml	
6) C3-Decalins	22.583	180	10034M5	211.467	ng/ml	
7) C4-Decalins	25.985	194	15904M5	335.177	ng/ml	
9) Naphthalene	20.310	128	12041493	46606.955	ng/ml	100
10) C1-Naphthalenes	23.004	142	7904349M5	30594.017	ng/ml	
11) C2-Naphthalenes	25.835	156	2721715M5	10534.479	ng/ml	
12) C3-Naphthalenes	28.183	170	666972M5	2581.535	ng/ml	
13) C4-Naphthalenes	30.938	184	183492M5	710.211	ng/ml	
14) 2-Methylnaphthalene	23.004	142	5040436	30686.478	ng/ml	100
15) 1-Methylnaphthalene	23.426	142	2887319	18556.002	ng/ml	100
16) Benzothiophene	20.520	134	224836	982.615	ng/ml	100
17) C1-Benzo(b)thiophenes	22.854	148	265018M5	1158.225	ng/ml	
18) C2-Benzo(b)thiophenes	25.549	162	151737M5	663.146	ng/ml	
19) C3-Benzo(b)thiophenes	27.656	176	48558M5	212.216	ng	
20) C4-Benzo(b)thiophenes	30.125	190	12165M5	53.165	ng/ml	
21) Biphenyl	24.871	154	338850	1624.991	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.503	156	689066	4833.654	ng/ml	100
23) Dibenzofuran	27.987	168	86203M4	393.839	ng/ml	
24) Acenaphthylene	26.602	152	219978M4	879.096	ng/ml	
25) Acenaphthene	27.325	153	666018	4352.776	ng/ml	97
26) 2,3,5-Trimethylnaphthalen	28.876	170	48207M3	393.550	ng/ml	
27) Fluorene	29.357	166	330081M4	1975.980	ng/ml	
28) C1-Fluorenes	31.585	180	220179M5	1318.068	ng/ml	
29) C2-Fluorenes	33.919	194	146784M5	878.700	ng/ml	
30) C3-Fluorenes	35.740	208	59777M5	357.846	ng/ml	
31) Dibenzothiophene	32.684	184	132768	538.628	ng/ml#	89
32) 4-Methyldibenzothiophene(	34.461	198	66385	269.318	ng/ml	100
33) 2/3-Methyldibenzothiophen	34.807	198	60463	245.293	ng/ml	100
34) 1-Methyldibenzothiophene(	35.229	198	17379	70.505	ng/ml	100
36) C1-Dibenzothiophenes	34.461	198	172429M5	699.530	ng/ml	
36) C1-Dibenzothiophenes BS	34.461	198	172429M5	699.530	ng/ml	
37) C2-Dibenzothiophenes	36.508	212	123402M5	500.631	ng/ml	
38) C3-Dibenzothiophenes	37.939	226	54405M5	220.716	ng/ml	
39) C4-Dibenzothiophenes	39.625	240	16628M5	67.458	ng/ml	
41) Phenanthrene	33.181	178	1428763	6101.731	ng/ml	100
42) 3-Methylphenanthrene(3MP)	35.123	192	264434	1129.302	ng/ml	91

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251629.D
Acq On : 27 Nov 2016 5:26 pm
Operator : AC
Sample : 1610011-15
Misc : 10x
ALS Vial : 29 Sample Multiplier: 1

Quant Time: Nov 29 13:42:05 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
43) 2-Methylphenanthrene(2MP)	35.244	192	265012M4	1131.771	ng/ml	
44) 2-Methylanthracene(2MA)	35.409	192	100845M3	430.673	ng/ml	
45) 9/4-Methylphenanthrene(9M	35.590	192	233573	997.506	ng/ml	92
46) 1-Methylphenanthrene(1MP)	35.680	192	173264	739.948	ng/ml	92
47) C1-Phenanthrenes/Anthrace	35.244	192	1113232M5	4754.212	ng/ml	
48) C2-Phenanthrenes/Anthrace	37.397	206	457247M5	1952.737	ng/ml	
48) C2-Phenanthrenes/Anthr BS	37.397	206	457247M5	1952.737	ng/ml	
50) C3-Phenanthrenes/Anthrace	39.249	220	147514M5	629.979	ng/ml	
51) C4-Phenanthrenes/Anthrace	41.447	234	35941M5	153.491	ng/ml	
53) Anthracene	33.377	178	351353M4	1581.034	ng/ml	
54) Carbazole	34.024	167	24900	114.690	ng/ml	97
55) 1-Methylphenanthrene	35.680	192	173264	1003.306	ng/ml	100
56) Fluoranthene	37.954	202	526906	2027.419	ng/ml#	91
57) Benzo(b)fluorene	40.498	216	74297M3	482.476	ng/ml	
58) Pyrene	38.857	202	725443	2574.982	ng/ml#	89
59) C1-Fluoranthenes/Pyrenes	40.242	216	754894M5	2679.520	ng/ml	
60) C2-Fluoranthenes/Pyrenes	41.898	230	299070M5	1061.558	ng/ml	
61) C3-Fluoranthenes/Pyrenes	44.172	244	104917M5	372.406	ng/ml	
62) C4-Fluoranthenes/Pyrenes	45.406	258	42079M5	149.361	ng/ml	
63) Naphthobenzothiophene	42.711	234	44069	180.481	ng/ml	99
64) Naphthobenzothiophene-2,1	42.711	234	44069	180.481	ng/ml	99
65) Naphthobenzothiophene-1,2	43.043	234	13440	55.043	ng/ml#	100
66) Naphthobenzothiophene-2,3	43.344	234	16553M3	67.792	ng/ml	
67) C1-Naphthobenzothiophenes	44.097	248	74714M5	305.986	ng/ml	
68) C2-Naphthobenzothiophenes	45.587	262	43068M5	176.382	ng/ml	
69) C3-Naphthobenzothiophenes	47.726	276	19998M5	81.900	ng/ml	
70) C4-Naphthobenzothiophenes	48.840	290	7816M5	32.010	ng/ml	
72) Benz[a]anthracene	43.630	228	303041M3	1192.850	ng/ml	
74) Chrysene/Triphenylene	43.795	228	318410	1336.433	ng/ml	98
75) C1-Chrysenes	45.271	242	293791M5	1233.102	ng/ml	
76) C2-Chrysenes	46.973	256	148172M5	621.909	ng/ml	
76) C2-Chrysenes BS	46.973	256	148172M5	621.909	ng/ml	
78) C3-Chrysenes	48.599	270	66987M5	281.158	ng/ml	
79) C4-Chrysenes	49.668	284	27720M5	116.347	ng/ml	
81) Benzo[b]fluoranthene	47.711	252	158463	613.052	ng/ml	97
82) Benzo[j]+[k]fluoranthene	47.771	252	199280	836.343	ng/ml	99
83) Benzo[a]fluoranthene	48.117	252	65193M4	273.604	ng/ml	
84) Benzo[e]pyrene	48.750	252	150401	625.735	ng/ml	98
86) Benzo[a]pyrene	48.961	252	255978	1116.220	ng/ml	97
87) Perylene	49.277	252	54398M4	234.273	ng/ml	
88) Indeno[1,2,3-cd]pyrene	54.036	276	141321M4	477.204	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.066	278	44450M4	175.857	ng/ml	
90) Benzo[g,h,i]perylene	55.421	276	145307	507.274	ng/ml	100
144) C26,20R- +C27,20S- triaro	50.120	231	352M4	11.822	ng/mL	
145) C28,20S-triaromatic stero	51.009	231	435	14.610	ng/mL	100
146) C27,20R-triaromatic stero	51.506	231	218M4	7.322	ng/mL	
147) C28,20R-triaromatic stero	52.756	231	207M4	6.952	ng/mL	

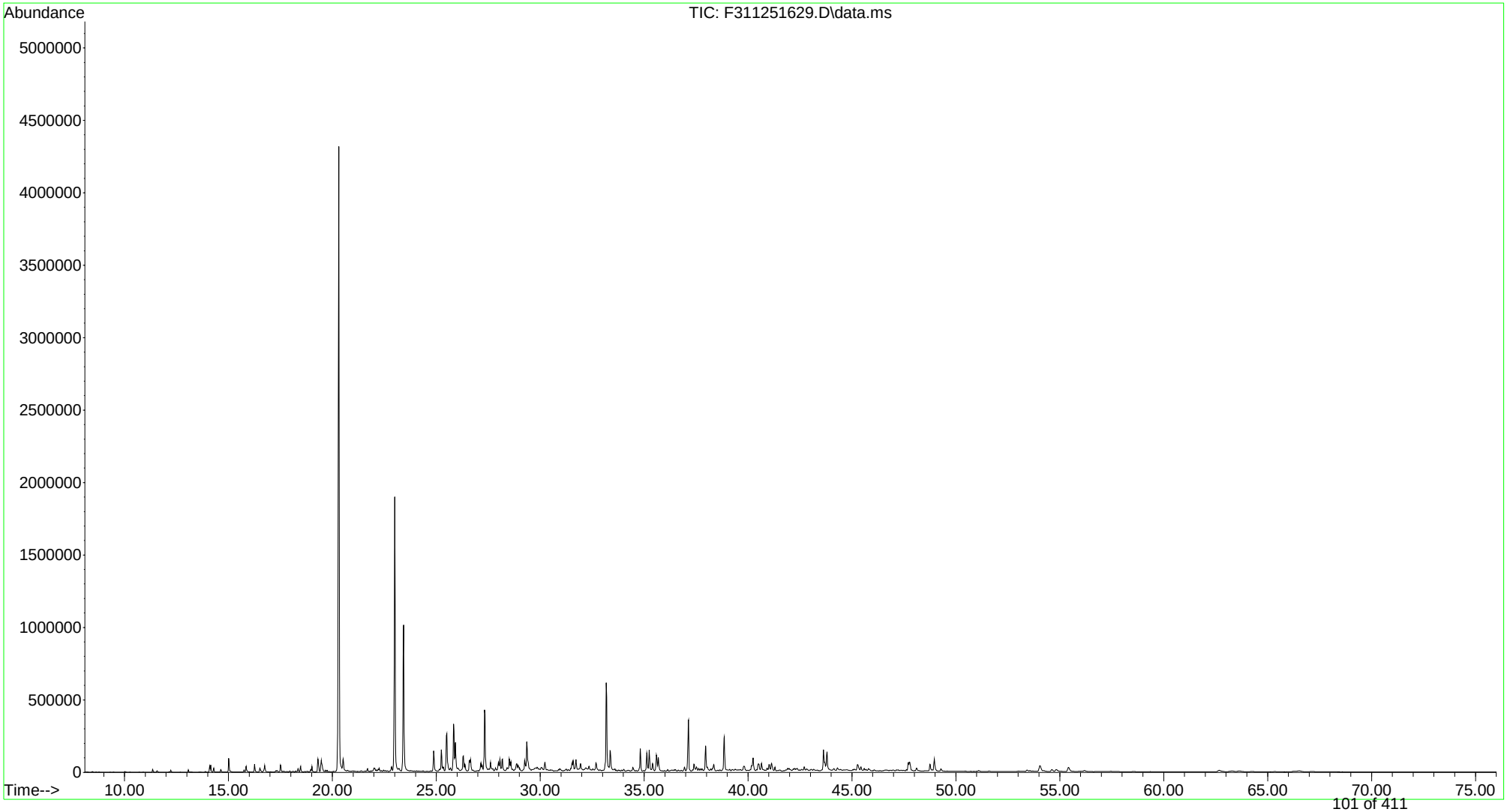
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251629.D
Acq On : 27 Nov 2016 5:26 pm
Operator : AC
Sample : 1610011-15
Misc : 10x
ALS Vial : 29 Sample Multiplier: 1

Quant Time: Nov 29 13:42:05 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **DUP-2**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-15E**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/25/16	10/28/16	11/01/16	11/27/16	83.2	5.49	4	100	AC

Parameter	Result		Parameter	Result	
cis/trans-Decalin	876	U	C1-Dibenzothiophenes	876	U
C1-Decalins	876	U	C2-Dibenzothiophenes	876	U
C2-Decalins	876	U	C3-Dibenzothiophenes	876	U
C3-Decalins	876	U	C4-Dibenzothiophenes	876	U
C4-Decalins	876	U	Benzo(b)fluorene	876	U
Benzothiophene	876	U	Fluoranthene	876	U
C1-Benzo(b)thiophenes	876	U	Pyrene	876	U
C2-Benzo(b)thiophenes	876	U	C1-Fluoranthenes/Pyrenes	876	U
C3-Benzo(b)thiophenes	876	U	C2-Fluoranthenes/Pyrenes	876	U
C4-Benzo(b)thiophenes	876	U	C3-Fluoranthenes/Pyrenes	876	U
Naphthalene	**348000**		C4-Fluoranthenes/Pyrenes	876	U
C1-Naphthalenes	**227000**		Naphthobenzothiophenes	876	U
C2-Naphthalenes	876	U	C1-Naphthobenzothiophenes	876	U
C3-Naphthalenes	876	U	C2-Naphthobenzothiophenes	876	U
C4-Naphthalenes	876	U	C3-Naphthobenzothiophenes	876	U
Biphenyl	876	U	C4-Naphthobenzothiophenes	876	U
Dibenzofuran	876	U	Benz[a]anthracene	876	U
Acenaphthylene	876	U	Chrysene/Triphenylene	876	U
Acenaphthene	876	U	C1-Chrysenes	876	U
Fluorene	876	U	C2-Chrysenes	876	U
C1-Fluorenes	876	U	C3-Chrysenes	876	U
C2-Fluorenes	876	U	C4-Chrysenes	876	U
C3-Fluorenes	876	U	Benzo[b]fluoranthene	876	U
Anthracene	876	U	Benzo[j]fluoranthene/Benzo[k]fluoranthene	876	U
Phenanthrene	876	U	Benzo[a]fluoranthene	876	U
C1-Phenanthrenes/Anthracenes	876	U	Benzo[e]pyrene	876	U
C2-Phenanthrenes/Anthracenes	876	U	Benzo[a]pyrene	876	U
C3-Phenanthrenes/Anthracenes	876	U	Perylene	876	U
C4-Phenanthrenes/Anthracenes	876	U	Indeno[1,2,3-cd]pyrene	876	U
Retene	876	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	876	U
Dibenzothiophene	876	U	Benzo[g,h,i]perylene	876	U

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	DL	50-130
Phenanthrene-d10	DL	50-130
Benzo[a]pyrene-d12	DL	50-130

DL - Surrogate diluted out of sample.
U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251630.D
Acq On : 27 Nov 2016 6:52 pm
Operator : AC
Sample : 1610011-15-RE
Misc : 100x
ALS Vial : 30 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:42:12 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.235	164	60904	500.000	ng/ml	0.02
71) Chrysene-d12	43.750	240	100869	500.000	ng/ml	0.05
System Monitoring Compounds						
8) Naphthalene-d8	20.249	136	1966	7.526	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.75%#		
40) Phenanthrene-d10	33.136	188	1791	8.946	ng/ml	0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.89%#		
80) Benzo[b]fluoranthene-d12	47.696	264	1893	9.010	ng/ml	0.09
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.90%#		
85) Benzo[a]pyrene-d12	48.946	264	1584	9.366	ng/ml	0.09
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.94%#		
126) 5B(H)Cholane - Surr	44.277	217	288	8.792	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.88%#		
Target Compounds						Qvalue
9) Naphthalene	20.325	128	1141844	3974.278	ng/ml	100
10) C1-Naphthalenes	23.050	142	745563M5	2594.991	ng/ml	
14) 2-Methylnaphthalene	23.050	142	442577	2422.975	ng/ml	100

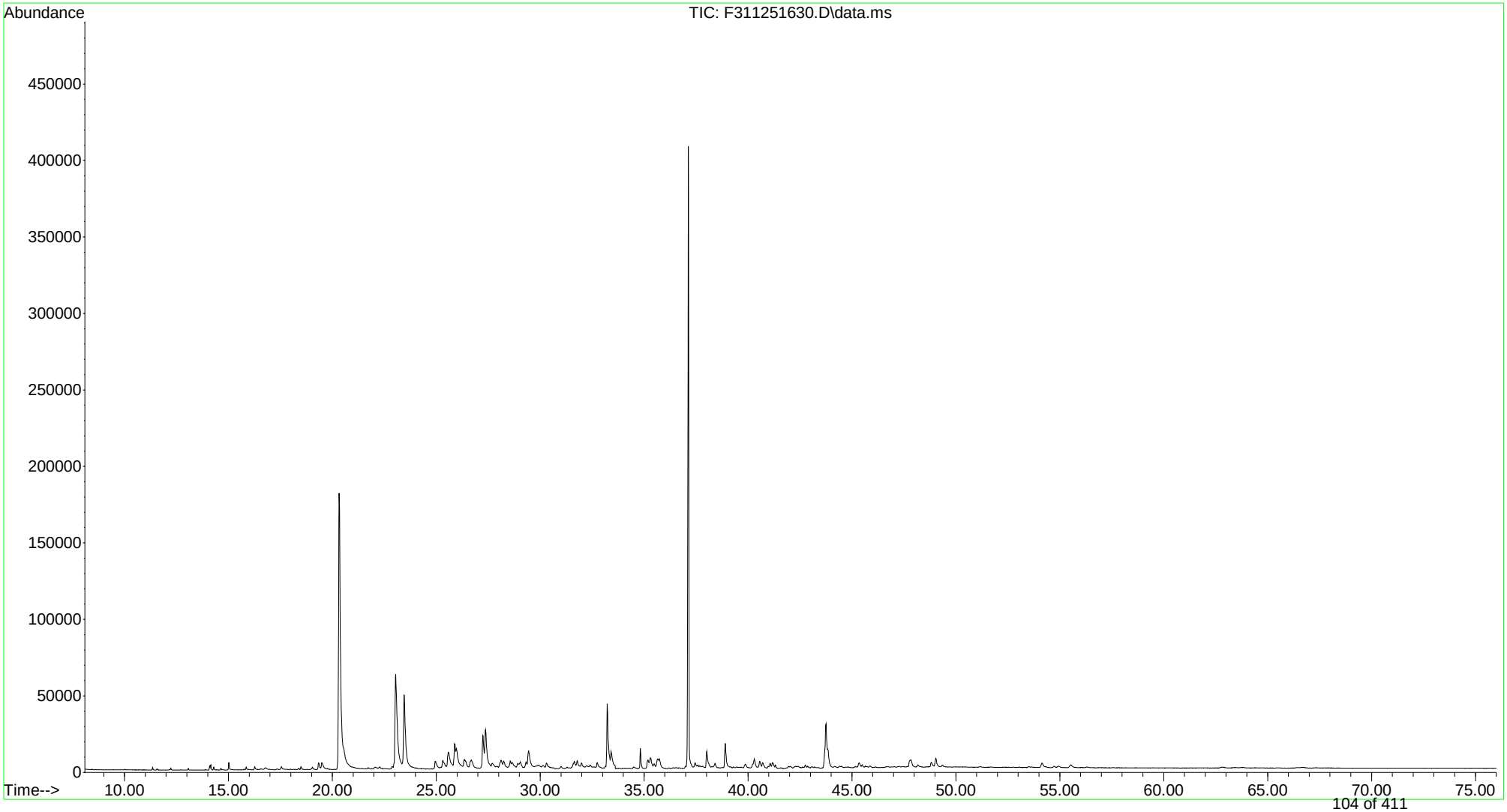
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251630.D
Acq On : 27 Nov 2016 6:52 pm
Operator : AC
Sample : 1610011-15-RE
Misc : 100x
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Nov 29 13:42:12 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116B03**
Associated Blank: **N/A**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/23/16	100	11.00	2	1	AC

Parameter	Result		Parameter	Result	
cis/trans-Decalin	1.82	U	C1-Dibenzothiophenes	1.82	U
C1-Decalins	1.82	U	C2-Dibenzothiophenes	1.82	U
C2-Decalins	1.82	U	C3-Dibenzothiophenes	1.82	U
C3-Decalins	1.82	U	C4-Dibenzothiophenes	1.82	U
C4-Decalins	1.82	U	Benzo(b)fluorene	1.82	U
Benzothiophene	1.82	U	Fluoranthene	**0.167**	J
C1-Benzo(b)thiophenes	1.82	U	Pyrene	**0.143**	J
C2-Benzo(b)thiophenes	**0.245**	J	C1-Fluoranthenes/Pyrenes	1.82	U
C3-Benzo(b)thiophenes	1.82	U	C2-Fluoranthenes/Pyrenes	1.82	U
C4-Benzo(b)thiophenes	1.82	U	C3-Fluoranthenes/Pyrenes	1.82	U
Naphthalene	**0.334**	J	C4-Fluoranthenes/Pyrenes	1.82	U
C1-Naphthalenes	**0.557**	J	Naphthobenzothiophenes	1.82	U
C2-Naphthalenes	**1.25**	J	C1-Naphthobenzothiophenes	1.82	U
C3-Naphthalenes	**1.08**	J	C2-Naphthobenzothiophenes	1.82	U
C4-Naphthalenes	1.82	U	C3-Naphthobenzothiophenes	1.82	U
Biphenyl	**0.544**	J	C4-Naphthobenzothiophenes	1.82	U
Dibenzofuran	**0.137**	J	Benz[a]anthracene	**0.0502**	J
Acenaphthylene	**0.0615**	J	Chrysene/Triphenylene	**0.101**	J
Acenaphthene	**0.263**	J	C1-Chrysenes	1.82	U
Fluorene	**0.375**	J	C2-Chrysenes	1.82	U
C1-Fluorenes	**0.264**	J	C3-Chrysenes	1.82	U
C2-Fluorenes	1.82	U	C4-Chrysenes	1.82	U
C3-Fluorenes	1.82	U	Benzo[b]fluoranthene	1.82	U
Anthracene	**0.124**	J	Benzo[j]fluoranthene/Benzo[k]fluoranthene	1.82	U
Phenanthrene	**0.745**	J	Benzo[a]fluoranthene	1.82	U
C1-Phenanthrenes/Anthracenes	**0.346**	J	Benzo[e]pyrene	1.82	U
C2-Phenanthrenes/Anthracenes	1.82	U	Benzo[a]pyrene	1.82	U
C3-Phenanthrenes/Anthracenes	1.82	U	Perylene	1.82	U
C4-Phenanthrenes/Anthracenes	1.82	U	Indeno[1,2,3-cd]pyrene	**0.101**	J
Retene	1.82	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	**0.129**	J
Dibenzothiophene	**0.124**	J	Benzo[g,h,i]perylene	**0.128**	J

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	83	50-130
Phenanthrene-d10	92	50-130
Benzo[a]pyrene-d12	85	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
J - Estimated value, below quantitation limit.
N/A - Not Applicable

Form I
Carbazole

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116B03**
Associated Blank: **N/A**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/23/16	100	11.00	2	1	AC

Parameter	Result
Carbazole	1.82 U

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	83	50-130
Phenanthrene-d10	92	50-130
Benzo[a]pyrene-d12	85	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116B03**
Associated Blank: **N/A**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/23/16	100	11.00	2	1	AC

Parameter	Result	
4-Methyldibenzothiophene	1.82	U
2/3-Methyldibenzothiophene	1.82	U
1-Methyldibenzothiophene	1.82	U
3-Methylphenanthrene	**0.0649**	J
2-Methylphenanthrene	**0.100**	J
2-Methylanthracene	1.82	U
9/4-Methylphenanthrene	**0.0716**	J
1-Methylphenanthrene	**0.0749**	J

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	83	50-130
Phenanthrene-d10	92	50-130
Benzo[a]pyrene-d12	85	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
J - Estimated value, below quantitation limit.
N/A - Not Applicable

Form I
Triaromatic Steroids

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116B03**
Associated Blank: **N/A**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/23/16	100	11.00	2	1	AC

Parameter	Result	
C26,20R- +C27,20S- triaromatic steroid	1.82	U
C28,20S-triaromatic steroid	1.82	U
C27,20R-triaromatic steroid	1.82	U
C28,20R-triaromatic steroid	1.82	U

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	90	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV22\
Data File : F311221609.D
Acq On : 23 Nov 2016 12:07 am
Operator : AC
Sample : SS110116B03
Misc : 1X ETR1610011
ALS Vial : 9 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:35:46 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.235	164	105539	500.000	ng/ml	0.00
71) Chrysene-d12	43.750	240	164936	500.000	ng/ml	0.00
System Monitoring Compounds						
8) Naphthalene-d8	20.249	136	186964	413.002	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 41.30%#			
40) Phenanthrene-d10	33.121	188	159287	459.162	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 45.92%#			
80) Benzo[b]fluoranthene-d12	47.726	264	160445	467.018	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 46.70%#			
85) Benzo[a]pyrene-d12	48.976	264	117851	426.148	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 42.61%#			
126) 5B(H)Cholane - Surr	44.338	217	24146	450.792	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 45.08%#			
Target Compounds						Qvalue
9) Naphthalene	20.325	128	914	1.836	ng/ml	100
10) C1-Naphthalenes	23.471	142	1526M5	3.065	ng/ml	
11) C2-Naphthalenes	25.549	156	3432M5	6.893	ng/ml	
12) C3-Naphthalenes	28.213	170	2965M5	5.955	ng/ml	
14) 2-Methylnaphthalene	23.049	142	224	0.708	ng/ml	100
15) 1-Methylnaphthalene	23.471	142	1155M4	3.852	ng/ml	
18) C2-Benzo(b)thiophenes	25.895	162	593M5	1.345	ng/ml	
21) Biphenyl	24.916	154	1203	2.994	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.549	156	982	3.575	ng/ml	100
23) Dibenzofuran	28.018	168	319	0.756	ng/ml#	75
24) Acenaphthylene	26.633	152	163M4	0.338	ng/ml	
25) Acenaphthene	27.355	153	427	1.448	ng/ml	93
26) 2,3,5-Trimethylnaphthalen	28.906	170	122M3	0.517	ng/ml	
27) Fluorene	29.387	166	664	2.063	ng/ml	92
28) C1-Fluorenes	31.615	180	468M5	1.454	ng/ml	
31) Dibenzothiophene	32.714	184	324	0.682	ng/ml#	80
41) Phenanthrene	33.211	178	1848	4.096	ng/ml	98
42) 3-Methylphenanthrene(3MP)	35.168	192	161M3	0.357	ng/ml	
43) 2-Methylphenanthrene(2MP)	35.274	192	248	0.550	ng/ml	89
45) 9/4-Methylphenanthrene(9M	35.620	192	178	0.394	ng/ml	81
46) 1-Methylphenanthrene(1MP)	35.725	192	186M3	0.412	ng/ml	
47) C1-Phenanthrenes/Anthrace	35.274	192	858M5	1.901	ng/ml	
53) Anthracene	33.407	178	292M3	0.682	ng/ml	
55) 1-Methylphenanthrene	35.725	192	186M3	0.559	ng/ml	
56) Fluoranthene	38.029	202	460	0.919	ng/ml#	78
58) Pyrene	38.917	202	428	0.788	ng/ml#	8
72) Benz[a]anthracene	43.705	228	126M3	0.276	ng/ml	
74) Chrysene/Triphenylene	43.841	228	238M3	0.555	ng/ml	
88) Indeno[1,2,3-cd]pyrene	54.322	276	295M4	0.554	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.322	278	323	0.710	ng/ml#	57
90) Benzo[g,h,i]perylene	55.722	276	363M4	0.704	ng/ml	

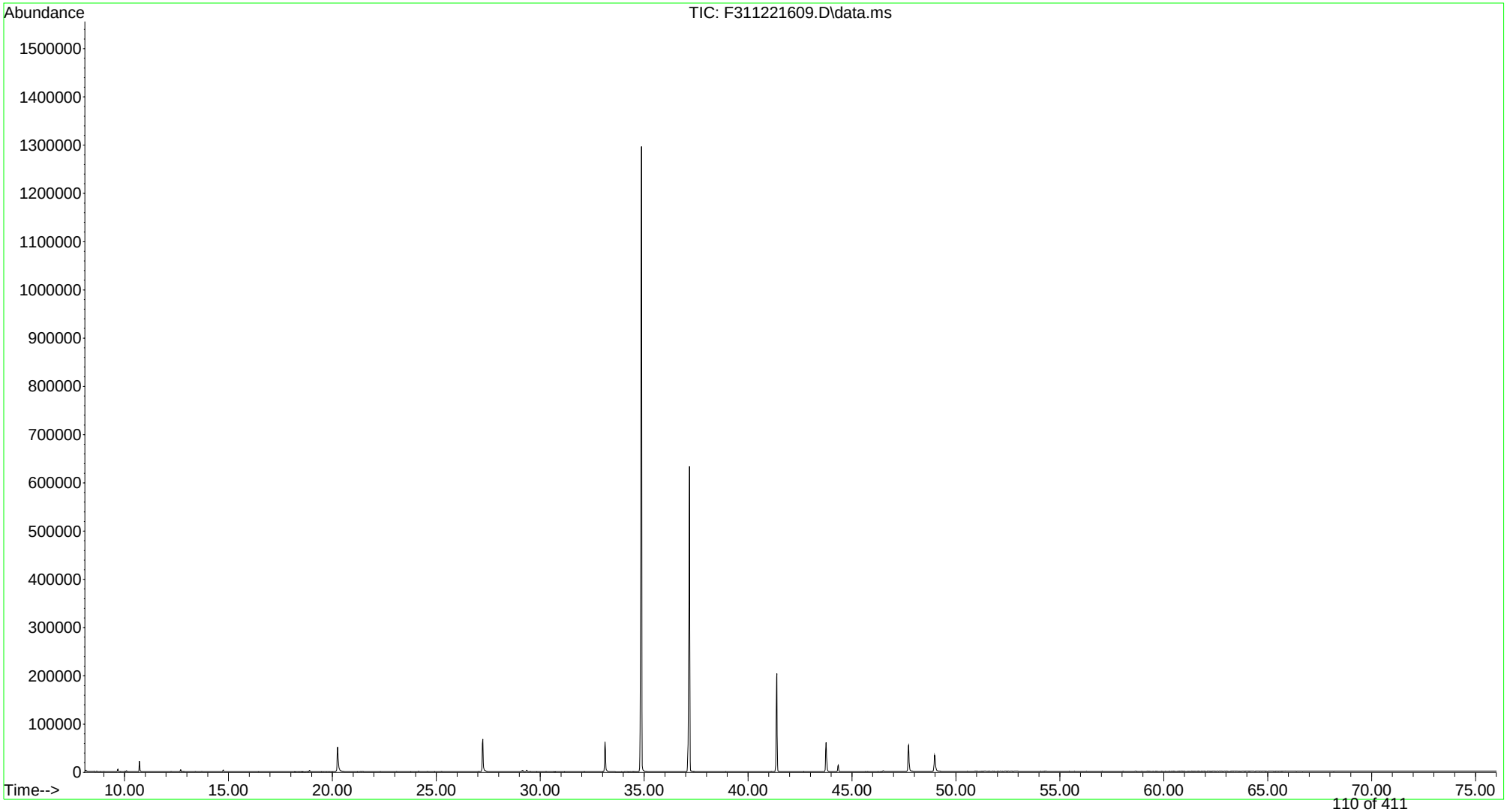
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV22\
Data File : F311221609.D
Acq On : 23 Nov 2016 12:07 am
Operator : AC
Sample : SS110116B03
Misc : 1X ETR1610011
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 29 13:35:46 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS



Form III
Spike Recovery Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **See Below**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	11/01/16	100	AC

Lab ID: SS110116B03 SS110116LCS02 SS110116LCSD02

Parameter	Blank Conc.		LCS Conc.	LCS % Recovery	LCSD Conc.	LCSD % Recovery	% RPD	RPD Limit	% Recovery Limits
Naphthalene	0.334		86.9	96	83.6	92	4	30	50-130
Acenaphthylene	0.0615		86.7	95	82.9	91	4	30	50-130
Acenaphthene	0.263		92.2	101	88.9	98	4	30	50-130
Fluorene	0.375		94.6	104	91.5	101	3	30	50-130
Anthracene	0.124		102	112	99.7	110	2	30	50-130
Phenanthrene	0.745		99.4	109	97.5	107	2	30	50-130
Fluoranthene	0.167		91.5	101	88.8	98	3	30	50-130
Pyrene	0.143		89.5	98	87.8	97	2	30	50-130
Benz[a]anthracene	0.0502		92.2	101	91.8	101	0	30	50-130
Chrysene/Triphenylene	0.101		93.7	103	94.1	103	0	30	50-130
Benzo[b]fluoranthene	1.82	U	98.4	108	95.7	105	3	30	50-130
Benzo[j]fluoranthene/ Benzo[k]fluoranthene	1.82	U	107	117	107	117	0	30	50-130
Benzo[a]pyrene	1.82	U	104	114	99.1	109	5	30	50-130
Indeno[1,2,3-cd]pyrene	0.101		95.1	105	95.1	105	0	30	50-130
Dibenz[ah]anthracene/ Dibenz[ac]anthracene	0.129		96.1	106	97.8	108	2	30	50-130
Benzo[g,h,i]perylene	0.128		92.7	102	92.7	102	0	30	50-130

Surrogate	% Recovery		Acceptance Range (%)
Naphthalene-d8	88	85	50-130
Phenanthrene-d10	97	95	50-130
Benzo[a]pyrene-d12	90	85	50-130
5B(H)Cholane	91	92	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

11/29/16 16:40

Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116LCS02**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/23/16	100	11.00	2	1	AC

Parameter	Result		Parameter	Result	
cis/trans-Decalin	1.82	U	C1-Dibenzothiophenes	1.82	U
C1-Decalins	1.82	U	C2-Dibenzothiophenes	1.82	U
C2-Decalins	1.82	U	C3-Dibenzothiophenes	1.82	U
C3-Decalins	1.82	U	C4-Dibenzothiophenes	1.82	U
C4-Decalins	1.82	U	Benzo(b)fluorene	1.82	U
Benzothiophene	1.82	U	Fluoranthene	**91.5**	S
C1-Benzo(b)thiophenes	1.82	U	Pyrene	**89.5**	S
C2-Benzo(b)thiophenes	1.82	U	C1-Fluoranthenes/Pyrenes	1.82	U
C3-Benzo(b)thiophenes	1.82	U	C2-Fluoranthenes/Pyrenes	1.82	U
C4-Benzo(b)thiophenes	1.82	U	C3-Fluoranthenes/Pyrenes	1.82	U
Naphthalene	**86.9**	S	C4-Fluoranthenes/Pyrenes	1.82	U
C1-Naphthalenes	1.82	U	Naphthobenzothiophenes	1.82	U
C2-Naphthalenes	1.82	U	C1-Naphthobenzothiophenes	1.82	U
C3-Naphthalenes	1.82	U	C2-Naphthobenzothiophenes	1.82	U
C4-Naphthalenes	1.82	U	C3-Naphthobenzothiophenes	1.82	U
Biphenyl	1.82	U	C4-Naphthobenzothiophenes	1.82	U
Dibenzofuran	1.82	U	Benz[a]anthracene	**92.2**	S
Acenaphthylene	**86.7**	S	Chrysene/Triphenylene	**93.7**	S
Acenaphthene	**92.2**	S	C1-Chrysenes	1.82	U
Fluorene	**94.6**	S	C2-Chrysenes	1.82	U
C1-Fluorenes	1.82	U	C3-Chrysenes	1.82	U
C2-Fluorenes	1.82	U	C4-Chrysenes	1.82	U
C3-Fluorenes	1.82	U	Benzo[b]fluoranthene	**98.4**	S
Anthracene	**102**	S	Benzo[j]fluoranthene/Benzo[k]fluoranthene	**107**	S
Phenanthrene	**99.4**	S	Benzo[a]fluoranthene	1.82	U
C1-Phenanthrenes/Anthracenes	1.82	U	Benzo[e]pyrene	1.82	U
C2-Phenanthrenes/Anthracenes	1.82	U	Benzo[a]pyrene	**104**	S
C3-Phenanthrenes/Anthracenes	1.82	U	Perylene	1.82	U
C4-Phenanthrenes/Anthracenes	1.82	U	Indeno[1,2,3-cd]pyrene	**95.1**	S
Retene	1.82	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	**96.1**	S
Dibenzothiophene	1.82	U	Benzo[g,h,i]perylene	**92.7**	S

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	88	50-130
Phenanthrene-d10	97	50-130
Benzo[a]pyrene-d12	90	50-130

S - Spike compound.
U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

Form I
Carbazole

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116LCS02**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/23/16	100	11.00	2	1	AC

Parameter	Result
Carbazole	1.82 U

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	88	50-130
Phenanthrene-d10	97	50-130
Benzo[a]pyrene-d12	90	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116LCS02**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/23/16	100	11.00	2	1	AC

Parameter	Result	
4-Methyldibenzothiophene	1.82	U
2/3-Methyldibenzothiophene	1.82	U
1-Methyldibenzothiophene	1.82	U
3-Methylphenanthrene	1.82	U
2-Methylphenanthrene	1.82	U
2-Methylanthracene	1.82	U
9/4-Methylphenanthrene	1.82	U
1-Methylphenanthrene	1.82	U

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	88	50-130
Phenanthrene-d10	97	50-130
Benzo[a]pyrene-d12	90	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

Form I
Triaromatic Steroids

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116LCS02**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/23/16	100	11.00	2	1	AC

Parameter	Result	
C26,20R- +C27,20S- triaromatic steroid	1.82	U
C28,20S-triaromatic steroid	1.82	U
C27,20R-triaromatic steroid	1.82	U
C28,20R-triaromatic steroid	1.82	U

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	91	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV22\
Data File : F311221610.D
Acq On : 23 Nov 2016 1:33 am
Operator : AC
Sample : SS110116LCS02
Misc : 1X ETR1610011
ALS Vial : 10 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:35:51 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.220	164	70977	500.000	ng/ml	-0.02
71) Chrysene-d12	43.750	240	116633	500.000	ng/ml	0.00
System Monitoring Compounds						
8) Naphthalene-d8	20.234	136	133899	439.812	ng/ml	-0.01
Spiked Amount 1000.000	Range 50 - 130		Recovery = 43.98%#			
40) Phenanthrene-d10	33.106	188	113633	487.063	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 48.71%#			
80) Benzo[b]fluoranthene-d12	47.711	264	115901	477.077	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 47.71%#			
85) Benzo[a]pyrene-d12	48.976	264	88188	450.952	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 45.10%#			
126) 5B(H)Cholane - Surr	44.338	217	17207	454.287	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 45.43%#			
Target Compounds						Qvalue
9) Naphthalene	20.310	128	159951	477.712	ng/ml	100
14) 2-Methylnaphthalene	23.019	142	108732	510.794	ng/ml	100
24) Acenaphthylene	26.617	152	154596M4	476.721	ng/ml	
25) Acenaphthene	27.355	153	100576	507.206	ng/ml	99
27) Fluorene	29.372	166	112579	520.030	ng/ml	100
41) Phenanthrene	33.196	178	165874	546.614	ng/ml	100
53) Anthracene	33.392	178	161201M4	559.725	ng/ml	
56) Fluoranthene	37.984	202	169469	503.164	ng/ml	97
58) Pyrene	38.887	202	179728	492.262	ng/ml	97
72) Benz[a]anthracene	43.690	228	163899	507.152	ng/ml	99
74) Chrysene/Triphenylene	43.856	228	156247	515.524	ng/ml	99
81) Benzo[b]fluoranthene	47.801	252	177935	541.138	ng/ml	98
82) Benzo[j]+[k]fluoranthene	47.891	252	177901	586.916	ng/ml	98
86) Benzo[a]pyrene	49.066	252	166372	570.301	ng/ml	99
88) Indeno[1,2,3-cd]pyrene	54.232	276	197130M3	523.271	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.277	278	169994	528.685	ng/ml	98
90) Benzo[g,h,i]perylene	55.647	276	185872	510.090	ng/ml	99

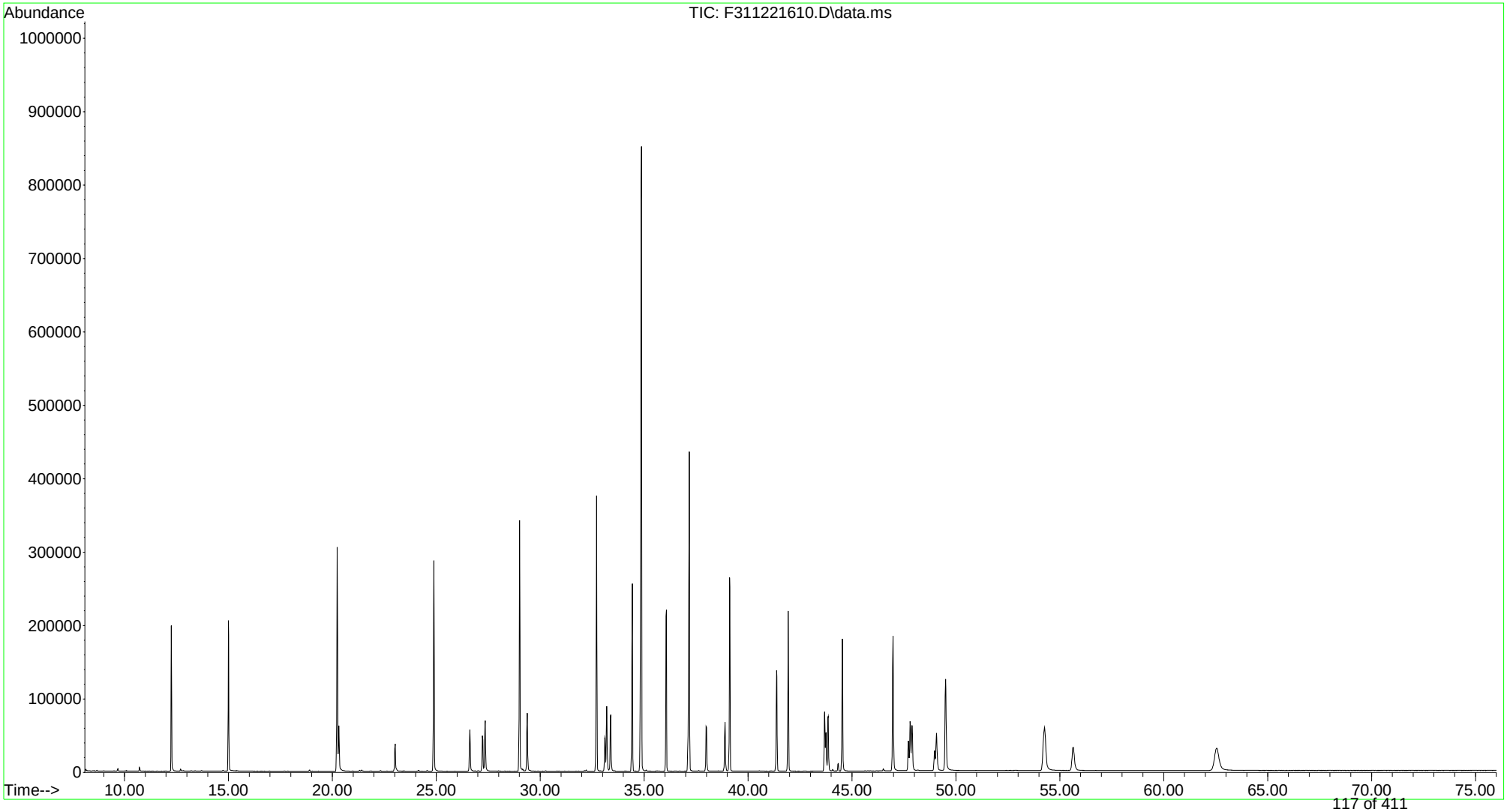
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV22\
Data File : F311221610.D
Acq On : 23 Nov 2016 1:33 am
Operator : AC
Sample : SS110116LCS02
Misc : 1X ETR1610011
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 29 13:35:51 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS



Form I
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Laboratory Control Sample Dup**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116LCSD02**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/23/16	100	11.00	2	1	AC

Parameter	Result		Parameter	Result	
cis/trans-Decalin	1.82	U	C1-Dibenzothiophenes	1.82	U
C1-Decalins	1.82	U	C2-Dibenzothiophenes	1.82	U
C2-Decalins	1.82	U	C3-Dibenzothiophenes	1.82	U
C3-Decalins	1.82	U	C4-Dibenzothiophenes	1.82	U
C4-Decalins	1.82	U	Benzo(b)fluorene	1.82	U
Benzothiophene	1.82	U	Fluoranthene	**88.8**	S
C1-Benzo(b)thiophenes	1.82	U	Pyrene	**87.8**	S
C2-Benzo(b)thiophenes	1.82	U	C1-Fluoranthenes/Pyrenes	1.82	U
C3-Benzo(b)thiophenes	1.82	U	C2-Fluoranthenes/Pyrenes	1.82	U
C4-Benzo(b)thiophenes	1.82	U	C3-Fluoranthenes/Pyrenes	1.82	U
Naphthalene	**83.6**	S	C4-Fluoranthenes/Pyrenes	1.82	U
C1-Naphthalenes	1.82	U	Naphthobenzothiophenes	1.82	U
C2-Naphthalenes	1.82	U	C1-Naphthobenzothiophenes	1.82	U
C3-Naphthalenes	1.82	U	C2-Naphthobenzothiophenes	1.82	U
C4-Naphthalenes	1.82	U	C3-Naphthobenzothiophenes	1.82	U
Biphenyl	1.82	U	C4-Naphthobenzothiophenes	1.82	U
Dibenzofuran	1.82	U	Benz[a]anthracene	**91.8**	S
Acenaphthylene	**82.9**	S	Chrysene/Triphenylene	**94.1**	S
Acenaphthene	**88.9**	S	C1-Chrysenes	1.82	U
Fluorene	**91.5**	S	C2-Chrysenes	1.82	U
C1-Fluorenes	1.82	U	C3-Chrysenes	1.82	U
C2-Fluorenes	1.82	U	C4-Chrysenes	1.82	U
C3-Fluorenes	1.82	U	Benzo[b]fluoranthene	**95.7**	S
Anthracene	**99.7**	S	Benzo[j]fluoranthene/Benzo[k]fluoranthene	**107**	S
Phenanthrene	**97.5**	S	Benzo[a]fluoranthene	1.82	U
C1-Phenanthrenes/Anthracenes	1.82	U	Benzo[e]pyrene	1.82	U
C2-Phenanthrenes/Anthracenes	1.82	U	Benzo[a]pyrene	**99.1**	S
C3-Phenanthrenes/Anthracenes	1.82	U	Perylene	1.82	U
C4-Phenanthrenes/Anthracenes	1.82	U	Indeno[1,2,3-cd]pyrene	**95.1**	S
Retene	1.82	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	**97.8**	S
Dibenzothiophene	1.82	U	Benzo[g,h,i]perylene	**92.7**	S

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	85	50-130
Phenanthrene-d10	95	50-130
Benzo[a]pyrene-d12	85	50-130

S - Spike compound.
U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

Form I
Carbazole

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Laboratory Control Sample Dup**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116LCSD02**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/23/16	100	11.00	2	1	AC

Parameter	Result
Carbazole	1.82 U

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	85	50-130
Phenanthrene-d10	95	50-130
Benzo[a]pyrene-d12	85	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

Form I
Polynuclear Aromatic Hydrocarbons Isomers

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Laboratory Control Sample Dup**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116LCSD02**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/23/16	100	11.00	2	1	AC

Parameter	Result	
4-Methyldibenzothiophene	1.82	U
2/3-Methyldibenzothiophene	1.82	U
1-Methyldibenzothiophene	1.82	U
3-Methylphenanthrene	1.82	U
2-Methylphenanthrene	1.82	U
2-Methylanthracene	1.82	U
9/4-Methylphenanthrene	1.82	U
1-Methylphenanthrene	1.82	U

Surrogate	% Recovery	Acceptance Range (%)
Naphthalene-d8	85	50-130
Phenanthrene-d10	95	50-130
Benzo[a]pyrene-d12	85	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

Form I
Triaromatic Steroids

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Laboratory Control Sample Dup**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116LCSD02**
Associated Blank: **SS110116B03**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/23/16	100	11.00	2	1	AC

Parameter	Result	
C26,20R- +C27,20S- triaromatic steroid	1.82	U
C28,20S-triaromatic steroid	1.82	U
C27,20R-triaromatic steroid	1.82	U
C28,20R-triaromatic steroid	1.82	U

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	92	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV22\
Data File : F311221611.D
Acq On : 23 Nov 2016 2:58 am
Operator : AC
Sample : SS110116LCSD02
Misc : 1X ETR1610011
ALS Vial : 11 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:36:00 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.220	164	74711	500.000	ng/ml	-0.02
71) Chrysene-d12	43.750	240	121186	500.000	ng/ml	0.00
System Monitoring Compounds						
8) Naphthalene-d8	20.234	136	135761	423.641	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 42.36%#			
40) Phenanthrene-d10	33.106	188	116666	475.071	ng/ml	-0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 47.51%#			
80) Benzo[b]fluoranthene-d12	47.711	264	118839	470.792	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 47.08%#			
85) Benzo[a]pyrene-d12	48.976	264	86778	427.071	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 42.71%#			
126) 5B(H)Cholane - Surr	44.337	217	18014	457.724	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 45.77%#			
Target Compounds						Qvalue
9) Naphthalene	20.310	128	162011	459.682	ng/ml	100
14) 2-Methylnaphthalene	23.019	142	110187	491.758	ng/ml	100
24) Acenaphthylene	26.617	152	155675M4	456.056	ng/ml	
25) Acenaphthene	27.355	153	102074	489.033	ng/ml	99
27) Fluorene	29.372	166	114679	503.255	ng/ml	99
41) Phenanthrene	33.196	178	171319	536.341	ng/ml	100
53) Anthracene	33.392	178	166223M4	548.316	ng/ml	
56) Fluoranthene	37.999	202	173122	488.320	ng/ml	97
58) Pyrene	38.887	202	185508	482.699	ng/ml	97
72) Benz[a]anthracene	43.690	228	169524	504.849	ng/ml	99
74) Chrysene/Triphenylene	43.856	228	162947	517.431	ng/ml	99
81) Benzo[b]fluoranthene	47.801	252	179752	526.125	ng/ml	98
82) Benzo[j]+[k]fluoranthene	47.891	252	184874	587.006	ng/ml	99
86) Benzo[a]pyrene	49.066	252	165195	544.992	ng/ml	99
88) Indeno[1,2,3-cd]pyrene	54.232	276	204793M3	523.189	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.292	278	179616	537.623	ng/ml	98
90) Benzo[g,h,i]perylene	55.647	276	193094	510.001	ng/ml	99

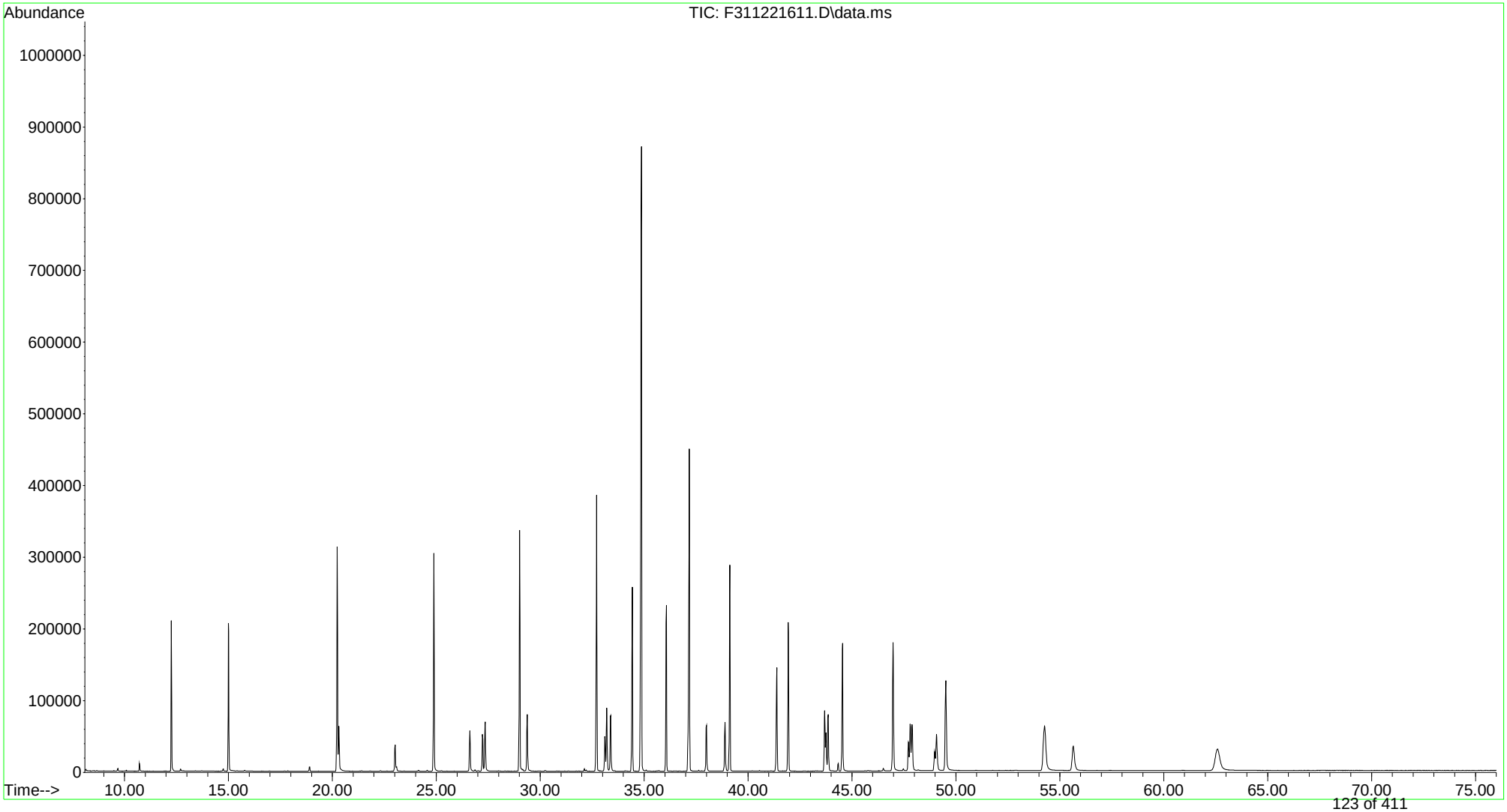
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV22\
Data File : F311221611.D
Acq On : 23 Nov 2016 2:58 am
Operator : AC
Sample : SS110116LCSD02
Misc : 1X ETR1610011
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 29 13:36:00 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Sub List : POITAS_ALTNEW_REV2 - PAHs,optionals,isomers.TAS



Form III
Spike Recovery Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS112816ANC01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	AC

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
cis/trans-Decalin	479.2	574	120	65-135
C1-Decalins	728.9	905	124	65-135
C2-Decalins	635.5	760	120	65-135
C3-Decalins	329.8	412	125	65-135
C4-Decalins	326.5	397	122	65-135
Benzothiophene	5.4	5.29	98	65-135
C1-Benzo(b)thiophenes	28.9	28.6	99	65-135
C2-Benzo(b)thiophenes	49.6	45.8	92	65-135
C3-Benzo(b)thiophenes	99.0	86.8	88	65-135
C4-Benzo(b)thiophenes	87.1	74.4	85	65-135
Naphthalene	555.8	589	106	65-135
C1-Naphthalenes	1167.3	1200	103	65-135
C2-Naphthalenes	1409.7	1370	97	65-135
C3-Naphthalenes	1035.9	961	93	65-135
C4-Naphthalenes	561.1	542	97	65-135
Biphenyl	145.7	152	105	65-135
Dibenzofuran	51.2	47.6	93	65-135
Acenaphthylene	6.5	7.61	117	65-135
Acenaphthene	18.7	14.3	76	65-135
Fluorene	74.6	62.0	83	65-135
C1-Fluorenes	170.2	143	84	65-135
C2-Fluorenes	255.4	224	88	65-135
C3-Fluorenes	238.5	211	88	65-135
Phenanthrene	212.2	164	77	65-135
C1-Phenanthrenes/Anthracenes	432.7	315	73	65-135
C2-Phenanthrenes/Anthracenes	465.9	406	87	65-135
C3-Phenanthrenes/Anthracenes	317.4	292	92	65-135
C4-Phenanthrenes/Anthracenes	129	125	97	65-135
Dibenzothiophene	138.9	121	87	65-135
C1-Dibenzothiophenes	278.6	238	85	65-135
C2-Dibenzothiophenes	377.5	301	80	65-135
C3-Dibenzothiophenes	341.4	289	85	65-135
C4-Dibenzothiophenes	183.4	166	91	65-135

Form III
Spike Recovery Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS112816ANC01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	AC

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
Fluoranthene	4.00	3.23	81	65-135
Pyrene	13.0	9.38	72	65-135
C1-Fluoranthenes/Pyrenes	63.1	45.0	71	65-135
C2-Fluoranthenes/Pyrenes	102.2	75.1	73	65-135
C3-Fluoranthenes/Pyrenes	119.6	97.9	82	65-135
C4-Fluoranthenes/Pyrenes	104	82.8	80	65-135
Naphthobenzothiophenes	43.8	35.0	80	65-135
C1-Naphthobenzothiophenes	117.2	91.4	78	65-135
C2-Naphthobenzothiophenes	163.3	126	77	65-135
C3-Naphthobenzothiophenes	128.7	108	84	65-135
C4-Naphthobenzothiophenes	89.0	76.5	86	65-135
Benz[a]anthracene	2.1	1.58	75	65-135
Chrysene/Triphenylene	35.2	29.8	85	65-135
C1-Chrysenes	62.8	56.8	90	65-135
C2-Chrysenes	86.0	69.6	81	65-135
C3-Chrysenes	97.6	91.1	93	65-135
C4-Chrysenes	59.4	58.0	98	65-135
Benzo[b]fluoranthene	5.2	4.53	87	65-135
Benzo[e]pyrene	9.8	9.22	94	65-135
Benzo[a]pyrene	1.9	1.57	82	65-135
Perylene	2.8	3.30	118	65-135
Benzo[g,h,i]perylene	3.1	3.72	120	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

11/29/16 16:39

Form III
Spike Recovery Summary
Carbazole

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS112816ANC01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	AC

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
Carbazole	6.00	4.54	76	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

11/29/16 16:39

Form III
Spike Recovery Summary
Polynuclear Aromatic Hydrocarbons Isomers

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS112816ANC01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	AC

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
4-Methyldibenzothiophene	131.8	113	86	65-135
2/3-Methyldibenzothiophene	97.5	92.0	94	65-135
1-Methyldibenzothiophene	44.2	29.0	66	65-135
3-Methylphenanthrene	89.4	62.8	70	65-135
2-Methylphenanthrene	97.7	65.5	67	65-135
2-Methylanthracene	3.2	2.08	65	65-135
9/4-Methylphenanthrene	141.2	111	78	65-135
1-Methylphenanthrene	97.4	67.8	70	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

11/29/16 16:39

Form III
Spike Recovery Summary
Triaromatic Steroids

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS112816ANC01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	AC

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
C26,20R- +C27,20S- triaromatic steroid	293.9	296	101	65-135
C28,20S-triaromatic steroid	187.6	183	97	65-135
C27,20R-triaromatic steroid	180.2	170	95	65-135
C28,20R-triaromatic steroid	150.5	148	98	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

11/29/16 16:40

Form I
Alaska North Slope Crude
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS112816ANC01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	11/10/16	100	0.0502	10	1	AC

Parameter	Result		Parameter	Result	
cis/trans-Decalin	**574**		C1-Dibenzothiophenes	**238**	
C1-Decalins	**905**		C2-Dibenzothiophenes	**301**	
C2-Decalins	**760**		C3-Dibenzothiophenes	**289**	
C3-Decalins	**412**		C4-Dibenzothiophenes	**166**	
C4-Decalins	**397**		Benzo(b)fluorene	**5.43**	
Benzothiophene	**5.29**		Fluoranthene	**3.23**	
C1-Benzo(b)thiophenes	**28.6**		Pyrene	**9.38**	
C2-Benzo(b)thiophenes	**45.8**		C1-Fluoranthenes/Pyrenes	**45.0**	
C3-Benzo(b)thiophenes	**86.8**		C2-Fluoranthenes/Pyrenes	**75.1**	
C4-Benzo(b)thiophenes	**74.4**		C3-Fluoranthenes/Pyrenes	**97.9**	
Naphthalene	**589**		C4-Fluoranthenes/Pyrenes	**82.8**	
C1-Naphthalenes	**1200**		Naphthobenzothiophenes	**35.0**	
C2-Naphthalenes	**1370**		C1-Naphthobenzothiophenes	**91.4**	
C3-Naphthalenes	**961**		C2-Naphthobenzothiophenes	**126**	
C4-Naphthalenes	**542**		C3-Naphthobenzothiophenes	**108**	
Biphenyl	**152**		C4-Naphthobenzothiophenes	**76.5**	
Dibenzofuran	**47.6**		Benz[a]anthracene	**1.58**	J
Acenaphthylene	**7.61**		Chrysene/Triphenylene	**29.8**	
Acenaphthene	**14.3**		C1-Chrysenes	**56.8**	
Fluorene	**62.0**		C2-Chrysenes	**69.6**	
C1-Fluorenes	**143**		C3-Chrysenes	**91.1**	
C2-Fluorenes	**224**		C4-Chrysenes	**58.0**	
C3-Fluorenes	**211**		Benzo[b]fluoranthene	**4.53**	
Anthracene	1.99	U	Benzo[j]fluoranthene/Benzo[k]fluoranthene	**0.563**	J
Phenanthrene	**164**		Benzo[a]fluoranthene	1.99	U
C1-Phenanthrenes/Anthracenes	**315**		Benzo[e]pyrene	**9.22**	
C2-Phenanthrenes/Anthracenes	**406**		Benzo[a]pyrene	**1.57**	J
C3-Phenanthrenes/Anthracenes	**292**		Perylene	**3.30**	
C4-Phenanthrenes/Anthracenes	**125**		Indeno[1,2,3-cd]pyrene	**0.807**	J
Retene	1.99	U	Dibenz[ah]anthracene/Dibenz[ac]anthracene	**1.50**	J
Dibenzothiophene	**121**		Benzo[g,h,i]perylene	**3.72**	

U - The analyte was analyzed for but not detected at the sample specific level reported.
J - Estimated value, below quantitation limit.
N/A - Not Applicable

Form I
Alaska North Slope Crude
Carbazole

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS112816ANC01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	11/10/16	100	0.0502	10	1	AC

Parameter	Result
Carbazole	**4.54**

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Form I
Alaska North Slope Crude
Polynuclear Aromatic Hydrocarbons Isomers

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS112816ANC01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	11/10/16	100	0.0502	10	1	AC

Parameter	Result
4-Methyldibenzothiophene	**113**
2/3-Methyldibenzothiophene	**92.0**
1-Methyldibenzothiophene	**29.0**
3-Methylphenanthrene	**62.8**
2-Methylphenanthrene	**65.5**
2-Methylanthracene	**2.08**
9/4-Methylphenanthrene	**111**
1-Methylphenanthrene	**67.8**

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Form I
Alaska North Slope Crude
Triaromatic Steroids

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS112816ANC01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	11/10/16	100	0.0502	10	1	AC

Parameter	Result
C26,20R- +C27,20S- triaromatic steroid	**296**
C28,20S-triaromatic steroid	**183**
C27,20R-triaromatic steroid	**170**
C28,20R-triaromatic steroid	**148**

N/A - Not Applicable

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091613.D
Acq On : 10 Nov 2016 9:46 am
Operator : AC
Sample : SS112816ANC01
Misc : FRAX36 5.02
ALS Vial : 13 Sample Multiplier: 1

MAL 11/28/16

Quant Time: Nov 20 19:47:34 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:15:38 2016
Response via : Initial Calibration

Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.235	164	59009M4	500.000	ng/ml	0.00
71) Chrysene-d12	43.750	240	92645	500.000	ng/ml	0.00
System Monitoring Compounds						
8) Naphthalene-d8	20.234	136	274354	1083.928	ng/ml	-0.01
Spiked Amount 1000.000	Range 50 - 130		Recovery = 108.39%			
40) Phenanthrene-d10	33.121	188	169294	872.814	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 87.28%			
80) Benzo[b]fluoranthene-d12	47.726	264	211601	1096.524	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 109.65%			
85) Benzo[a]pyrene-d12	48.976	264	178030	1146.077	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 114.61%			
126) 5B(H)Cholane - Surr	44.353	217	31055	1032.181	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 103.22%			
Target Compounds						Qvalue
2) trans-Decalin	16.877	138	138960	2718.109	ng/ml	100
3) cis-Decalin	18.097	138	6317	164.494	ng/ml	100
4) C1-Decalins	18.804	152	232279M5	4543.463	ng/ml	
5) C2-Decalins	20.144	166	195091M5	3816.052	ng/ml	
6) C3-Decalins	22.613	180	105619M5	2065.947	ng/ml	
7) C4-Decalins	26.015	194	101940M5	1993.984	ng/ml	
9) Naphthalene	20.310	128	822601	2955.073	ng/ml	100
10) C1-Naphthalenes	23.019	142	1677812M5	6027.293	ng/ml	
11) C2-Naphthalenes	25.865	156	1918458M5	6891.779	ng/ml	
12) C3-Naphthalenes	28.198	170	1343419M5	4826.035	ng/ml	
13) C4-Naphthalenes	30.968	184	757566M5	2721.445	ng/ml	
14) 2-Methylnaphthalene	23.019	142	993410	5613.272	ng/ml	100
15) 1-Methylnaphthalene	23.441	142	684147	4080.822	ng/ml	100
16) Benzothiophene	20.505	134	6542M4	26.536	ng/ml	
17) C1-Benzo(b)thiophenes	22.568	148	35412M5	143.640	ng/ml	
18) C2-Benzo(b)thiophenes	26.061	162	56641M5	229.751	ng/ml	
19) C3-Benzo(b)thiophenes	28.033	176	107359M5	435.476	ng	
20) C4-Benzo(b)thiophenes	30.140	190	92062M5	373.428	ng/ml	
21) Biphenyl	24.901	154	171948	765.331	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.519	156	484538	3154.650	ng/ml	100
23) Dibenzofuran	27.987	168	56409	239.195	ng/ml#	72
24) Acenaphthylene	26.602	152	10295M4	38.185	ng/ml	
25) Acenaphthene	27.355	153	11804M4	71.601	ng/ml	
26) 2,3,5-Trimethylnaphthalen	28.906	170	95247M3	721.689	ng/ml	
27) Fluorene	29.372	166	56025M4	311.281	ng/ml	
28) C1-Fluorenes	31.751	180	129165M5	717.655	ng/ml	
29) C2-Fluorenes	33.783	194	202432M5	1124.734	ng/ml	
30) C3-Fluorenes	35.771	208	190606M5	1059.027	ng/ml	
31) Dibenzothiophene	32.714	184	161260	607.199	ng/ml#	79
32) 4-Methyldibenzothiophene(	34.476	198	151217	569.384	ng/ml	100
33) 2/3-Methyldibenzothiophen	34.837	198	122674M3	461.910	ng/ml	
34) 1-Methyldibenzothiophene(	35.259	198	38601	145.346	ng/ml	100
35) OTP	34.867	198	11448M3	43.106	ng/ml	
36) C1-Dibenzothiophenes	34.476	198	328619M5	1237.363	ng/ml	
36) C1-Dibenzothiophenes BS	34.476	198	317171M5	1194.257	ng/ml	
37) C2-Dibenzothiophenes	36.538	212	400948M5	1509.706	ng/ml	
38) C3-Dibenzothiophenes	37.984	226	385426M5	1451.261	ng/ml	
39) C4-Dibenzothiophenes	39.670	240	221630M5	834.513	ng/ml	
41) Phenanthrene	33.196	178	207274	821.573	ng/ml	93
42) 3-Methylphenanthrene(3MP)	35.168	192	79469	314.992	ng/ml	97
43) 2-Methylphenanthrene(2MP)	35.289	192	82942	328.758	ng/ml	98
44) 2-Methylanthracene(2MA)	35.424	192	2641	10.468	ng/ml	88
45) 9/4-Methylphenanthrene(9M	35.620	192	140321	556.191	ng/ml	99
46) 1-Methylphenanthrene(1MP)	35.710	192	85886	340.427	ng/ml	99

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091613.D
Acq On : 10 Nov 2016 9:46 am
Operator : AC
Sample : SS112816ANC01
Misc : FRAX36 5.02
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 20 19:47:34 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:15:38 2016
Response via : Initial Calibration

Sub List : Default - All compounds listed

	Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
47)	C1-Phenanthrenes/Anthrace	35.620	192	398424M5	1579.236	ng/ml	
48)	C2-Phenanthrenes/Anthrace	37.442	206	514679M5	2040.037	ng/ml	
48)	C2-Phenanthrenes/Anthr BS	37.442	206	514679M5	2040.037	ng/ml	
50)	C3-Phenanthrenes/Anthrace	39.279	220	369262M5	1463.646	ng/ml	
51)	C4-Phenanthrenes/Anthrace	41.477	234	158893M5	629.805	ng/ml	
54)	Carbazole	34.024	167	5331M4	22.790	ng/ml	
55)	1-Methylphenanthrene	35.710	192	86419	464.454	ng/ml	92
56)	Fluoranthene	37.999	202	4546M3	16.235	ng/ml	
57)	Benzo(b)fluorene	40.528	216	4526M3	27.279	ng/ml	
58)	Pyrene	38.887	202	14301M4	47.114	ng/ml	
59)	C1-Fluoranthenes/Pyrenes	40.272	216	68517M5	225.724	ng/ml	
60)	C2-Fluoranthenes/Pyrenes	42.410	230	114379M5	376.813	ng/ml	
61)	C3-Fluoranthenes/Pyrenes	44.127	244	149234M5	491.640	ng/ml	
62)	C4-Fluoranthenes/Pyrenes	45.482	258	126093M5	415.404	ng/ml	
63)	Naphthobenzothiophene	42.757	234	34092	129.587	ng/ml#	94
64)	Naphthobenzothiophene-2,1	42.757	234	34092	129.587	ng/ml#	94
65)	Naphthobenzothiophene-1,2	43.103	234	7637	29.029	ng/ml#	100
66)	Naphthobenzothiophene-2,3	43.404	234	4459	16.949	ng/ml#	100
67)	C1-Naphthobenzothiophenes	44.157	248	120682M5	458.722	ng/ml	
68)	C2-Naphthobenzothiophenes	46.190	262	166451M5	632.694	ng/ml	
69)	C3-Naphthobenzothiophenes	47.831	276	143039M5	543.703	ng/ml	
70)	C4-Naphthobenzothiophenes	48.961	290	101058M5	384.130	ng/ml	
72)	Benz[a]anthracene	43.690	228	2039M3	7.943	ng/ml	
73)	Chrysene	43.826	228	35823M4	148.799	ng/mL	
74)	Chrysene/Triphenylene	43.826	228	36063M4	149.795	ng/ml	
75)	C1-Chrysenes	45.331	242	68593M5	284.916	ng/ml	
76)	C2-Chrysenes	46.777	256	90286M5	375.022	ng/ml	
76)	C2-Chrysenes BS	46.777	256	84168M5	349.610	ng/ml	
77)	BBF-D12 Surr BKGD	47.711	256	6118	25.412	ng/ml	100
78)	C3-Chrysenes	48.885	270	110087M5	457.270	ng/ml	
79)	C4-Chrysenes	50.406	284	70110M5	291.217	ng/ml	
81)	Benzo[b]fluoranthene	47.801	252	5941M4	22.746	ng/ml	
82)	Benzo[j]+[k]fluoranthene	47.861	252	681M3	2.828	ng/ml	
84)	Benzo[e]pyrene	48.870	252	11247M4	46.308	ng/ml	
86)	Benzo[a]pyrene	49.066	252	1822M3	7.863	ng/ml	
87)	Perylene	49.382	252	3886	16.562	ng/ml#	25
88)	Indeno[1,2,3-cd]pyrene	54.202	276	1212M3	4.050	ng/ml	
89)	Dibenz[ah]+[ac]anthracene	54.262	278	1919M4	7.513	ng/ml	
90)	Benzo[g,h,i]perylene	55.617	276	5407	18.681	ng/ml#	67
91)	Hopane (T19)	53.178	191	41211	778.272	ng/mL	93
92)	17a(H),21B(H)-hopane - C3	53.178	191	41211	778.272	ng/mL	93
93)	C23 Tricyclic Terpane (T4	41.357	191	20802M4	392.847	ng/ml	
94)	C24 Tricyclic Terpane (T5	42.079	191	9541	180.182	ng/ml	100
95)	C25 Tricyclic Terpane (T6	43.570	191	10222	193.043	ng/ml	100
96)	C24 Tetracyclic Terpane (	44.910	191	3620M4	68.364	ng/ml	
97)	C26 Tricyclic Terpane-22S	44.639	191	4173M4	78.807	ng/ml	
98)	C26 Tricyclic Terpane-22R	44.729	191	3806	71.877	ng/ml	100
99)	C28 Tricyclic Terpane-22S	47.048	191	3692M4	69.724	ng/ml	
100)	C28 Tricyclic Terpane-22R	47.214	191	3905M4	73.746	ng/ml	
101)	C29 Tricyclic Terpane-22S	47.756	191	4747	89.647	ng/ml	100
102)	C29 Tricyclic Terpane-22R	47.967	191	4989M4	94.218	ng/ml	
103)	18a-22,29,30-Trisnorneoho	49.156	191	6882	129.967	ng/ml	100
104)	C30 Tricyclic Terpane-22S	49.262	191	3076M4	58.090	ng/mL	
105)	C30 Tricyclic Terpane-22R	49.518	191	3776M4	71.310	ng/mL	
106)	17a(H)-22,29,30-Trisnorho	49.729	191	8113	153.214	ng/ml	100
107)	17a/b,21b/a 28,30-Bisnorh	50.994	191	1807M4	34.125	ng/ml	
108)	17a(H),21b(H)-25-Norhopan	50.798	191	2104	39.734	ng/ml	100
109)	30-Norhopane (T15)	51.717	191	23003	434.413	ng/ml	100
110)	18a(H)-30-Norneohopane-C2	51.822	191	5479M4	103.471	ng/ml	
111)	17a(H)-Diahopane (X)	51.958	191	2990M4	56.466	ng/ml	
112)	30-Normoretane (T17)	52.560	191	2340M4	44.191	ng/ml	

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091613.D
Acq On : 10 Nov 2016 9:46 am
Operator : AC
Sample : SS112816ANC01
Misc : FRAX36 5.02
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 20 19:47:34 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:15:38 2016
Response via : Initial Calibration

Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
114) Moretane (T20)	53.915	191	3906M4	73.765	ng/ml	
115) 30-Homohopane-22S (T21)	55.105	191	17947	338.930	ng/ml	100
116) 30-Homohopane-22R (T22)	55.361	191	15191	286.883	ng/ml	100
117) Gammacerane/C32-diahopane	55.933	191	3206	60.545	ng/mL	100
118) 30,31-Bishomohopane-22S (	56.792	191	13560	256.081	ng/ml	100
119) 30,31-Bishomohopane-22R (	57.213	191	9690	182.996	ng/ml	100
120) 30,31-Trishomohopane-22S	59.111	191	11031	208.321	ng/ml	100
121) 30,31-Trishomohopane-22R	59.788	191	8096	152.893	ng/ml	100
122) Tetrakishomohopane-22S (T	61.987	191	8166	154.215	ng/ml	100
123) Tetrakishomohopane-22R (T	62.981	191	5823	109.968	ng/ml	100
124) Pentakishomohopane-22S (T	65.435	191	9938	187.680	ng/ml	100
125) Pentakishomohopane-22R (T	66.851	191	6981M4	131.837	ng/ml	
127) 13b(H),17a(H)-20S-Diachol	45.858	217	6660M4	221.360	ng/ml	
128) 13b(H),17a(H)-20R-Diachol	46.295	217	3349	111.311	ng/ml	100
129) 13b,17a-20S-Methyldiachol	47.003	217	3130M3	104.032	ng/ml	
130) 14a,17a-20S-Chol/13b,17a-	47.906	217	7586	252.137	ng/ml	100
131) 14a,17a-20R-Chol/13b,17a-	48.449	217	9028M4	300.065	ng/ml	
132) Unknown Sterane (S18)	48.735	217	2219	73.753	ng/ml	100
133) 13a,17b-20S-Ethyldiachole	49.021	217	444	14.757	ng/ml	100
134) 14a,17a-20S-Methylcholest	49.187	217	4270M4	141.923	ng/ml	
135) 14a,17a-20R-Methylcholest	49.955	217	4746	157.744	ng/ml	100
136) 14a(H),17a(H)-20S-Ethylch	50.331	217	9031	300.165	ng/ml	100
137) 14a(H),17a(H)-20R-Ethylch	51.295	217	5978M4	198.692	ng/ml	
138) 14b(H),17b(H)-20R-Cholest	47.997	218	6103	202.847	ng/ml	100
139) 14b(H),17b(H)-20S-Cholest	48.087	218	5437	180.711	ng/ml	100
140) 14b,17b-20R-Methylcholest	49.367	218	6347	210.956	ng/ml	100
141) 14b,17b-20S-Methylcholest	49.458	218	7107M4	236.217	ng/ml	
142) 14b(H),17b(H)-20R-Ethylch	50.587	218	9268M3	308.042	ng/ml	
143) 14b(H),17b(H)-20S-Ethylch	50.632	218	4847M3	161.101	ng/ml	
144) C26,20R- +C27,20S- triaro	50.286	231	44713	1486.135	ng/mL	100
145) C28,20S-triaromatic stero	51.220	231	27606	917.546	ng/mL	100
146) C27,20R-triaromatic stero	51.702	231	25747	855.758	ng/mL	100
147) C28,20R-triaromatic stero	52.997	231	22293M4	740.957	ng/mL	

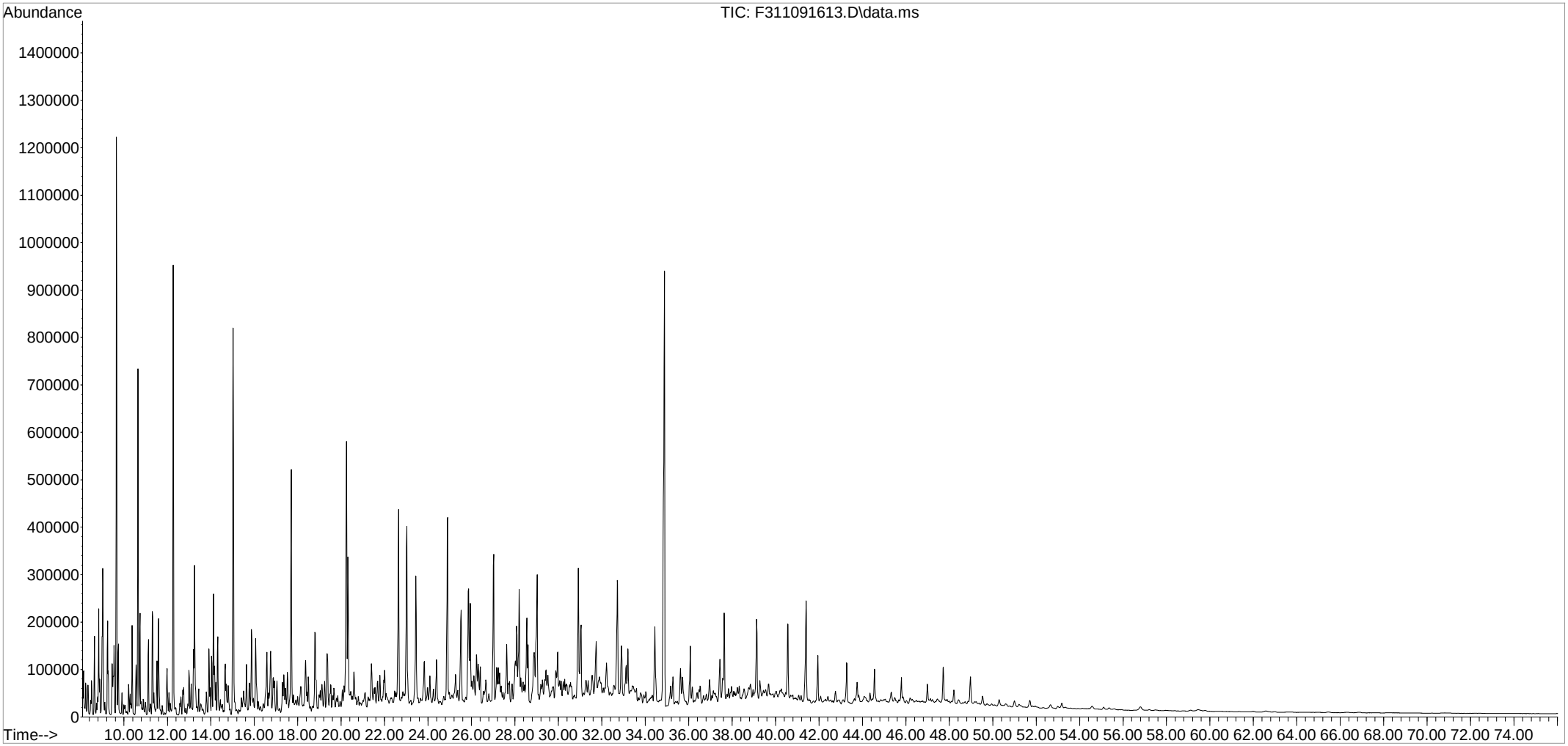
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091613.D
Acq On : 10 Nov 2016 9:46 am
Operator : AC
Sample : SS112816ANC01
Misc : FRAX36 5.02
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Nov 20 19:47:34 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:15:38 2016
Response via : Initial Calibration

Sub List : Default - All compounds listed



Analysis log File

Total Files Reported in Log : 44
Log Generated From Directory: O:\Forensics\Data\PAH3\2016\NOV16\NOV22\

No.	DATA FILE	INJ METH	SAMPLE NAME	MISC	DATE INJ'D
1	F311221601.D	FRNC3A.M	PRIME	DCM	11/22/2016 9:04 am
2	F311221602.D	FRNC3A.M	C311221601	CCV	11/22/2016 10:30 am
3	F311221603.D	FRNC3A.M	DCM	DCM	11/22/2016 2:02 pm
4	F311221604.D	FRNC3A.M	112116A DCM TANK	DCM	11/22/2016 4:58 pm
5	F311221605.D	FRNC3A.M	SS110116B01	1X ETR1610010	11/22/2016 6:24 pm
6	F311221606.D	FRNC3A.M	SS110116LCS01	1X ETR1610010	11/22/2016 7:50 pm
7	F311221607.D	FRNC3A.M	SS110116LCSD01	1X ETR1610010	11/22/2016 9:16 pm
8	F311221608.D	FRNC3A.M	DCM	DCM	11/22/2016 10:41 pm
9	F311221609.D	FRNC3A.M	SS110116B03	1X ETR1610011	11/23/2016 12:07 am
10	F311221610.D	FRNC3A.M	SS110116LCS02	1X ETR1610011	11/23/2016 1:33 am
11	F311221611.D	FRNC3A.M	SS110116LCSD02	1X ETR1610011	11/23/2016 2:58 am
12	F311221612.D	FRNC3A.M	C311221602	CC FRAX92 500NG/ML	11/23/2016 4:24 am
13	F311221613.D	FRNC3A.M	PP311221601	PP	11/23/2016 5:49 am
14	F311221614.D	FRNC3A.M	DCM	DCM	11/23/2016 7:15 am
15	F311221615.D	FRNC3A.M	DCM	DCM	11/23/2016 8:41 am
16	F311221616.D	FRNC3A.M	c311221603	cc	11/23/2016 10:07 am
17	F311221617.D	FRNC3A.M	ans311221601	frax36 5.02	11/23/2016 11:33 am
18	F311221618.D	FRNC3A.M	DCM	DCM	11/23/2016 12:59 pm
19	F311221619.D	FRNC3A.M	DCM	DCM	11/23/2016 2:26 pm
20	F311221620.D	FRNC3A.M	SS110116B01	1X ETR 1610010	11/23/2016 3:52 pm
21	F311221621.D	FRNC3A.M	SS110116B03	1X ETR 1610011	11/23/2016 5:18 pm
22	F311221622.D	FRNC3A.M	1610010-01	1X	11/23/2016 6:44 pm
23	F311221623.D	FRNC3A.M	1610010-02	1X	11/23/2016 8:10 pm
24	F311221624.D	FRNC3A.M	1610010-12	1X	11/23/2016 9:36 pm
25	F311221625.D	FRNC3A.M	C311221604	CC	11/23/2016 11:03 pm
26	F311221626.D	FRNC3A.M	1610010-04	10X	11/24/2016 12:28 am
27	F311221627.D	FRNC3A.M	1610010-05	10X	11/24/2016 1:54 am
28	F311221628.D	FRNC3A.M	1610010-06	10X	11/24/2016 3:20 am
29	F311221629.D	FRNC3A.M	1610010-10	10X	11/24/2016 4:46 am
30	F311221630.D	FRNC3A.M	1610010-08	10X	11/24/2016 6:11 am
31	F311221631.D	FRNC3A.M	1610010-11	10X	11/24/2016 7:37 am
32	F311221632.D	FRNC3A.M	1610010-14	10X	11/24/2016 9:03 am
33	F311221633.D	FRNC3A.M	1610010-14D	10X	11/24/2016 10:28 am
34	F311221634.D	FRNC3A.M	C311221605	CC	11/24/2016 11:54 am
35	F311221635.D	FRNC3A.M	1610010-08-RE	100X	11/24/2016 1:20 pm
36	F311221636.D	FRNC3A.M	1610010-11-RE	100X	11/24/2016 2:46 pm
37	F311221637.D	FRNC3A.M	1610010-14-RE	100X	11/24/2016 4:12 pm
38	F311221638.D	FRNC3A.M	1610010-14D-RE	100X	11/24/2016 5:38 pm
39	F311221639.D	FRNC3A.M	1610010-09	2X	11/24/2016 7:03 pm
40	F311221640.D	FRNC3A.M	1610010-15	5X	11/24/2016 8:29 pm
41	F311221641.D	FRNC3A.M	1610010-15-RE	50X	11/24/2016 9:55 pm
42	F311221642.D	FRNC3A.M	C311221606	CC	11/24/2016 11:21 pm
43	F311221643.D	FRNC3A.M	PRIME	1X	11/25/2016 10:13 am
44	F311221644.D	FRNC3A.M	C311221607	CC FRAX92 500NG/ML	11/25/2016 11:40 am

method: pah3110916

MWS
11-29-2016

SeqLog 1.0 - (c) 2009 Abacus Database Applications

Total Files Reported in Log : 31
Log Generated From Directory: O:\Forensics\Data\PAH3\2016\NOV16\NOV25\

No.	DATA FILE	INJ METH	SAMPLE NAME	MISC	DATE INJ'D
1	F311251601.D	FRNC3A.M	PRIME	1X	11/25/2016 12:35 pm
2	F311251602.D	FRNC3A.M	C311251601	CC FRAX92 500NG/ML	11/25/2016 2:01 pm
3	F311251603.D	FRNC3A.M	ANS311251601		11/25/2016 3:27 pm
4	F311251604.D	FRNC3A.M	1610010-15	5x	11/25/2016 4:54 pm
5	F311251605.D	FRNC3A.M	1610011-01	1x	11/25/2016 6:20 pm
6	F311251606.D	FRNC3A.M	1610011-04	1x	11/25/2016 7:46 pm
7	F311251607.D	FRNC3A.M	1610011-04d	1x	11/25/2016 9:12 pm
8	F311251608.D	FRNC3A.M	1610011-12	1x	11/25/2016 10:38 pm
9	F311251609.D	FRNC3A.M	1610011-05	5x	11/26/2016 12:04 am
10	F311251610.D	FRNC3A.M	1610011-10	5x	11/26/2016 1:30 am
11	F311251611.D	FRNC3A.M	C311251602	cc frax92 500ng/ml	11/26/2016 2:56 am
12	F311251612.D	FRNC3A.M	1610011-09 — re-make dil	5x	11/26/2016 4:22 am
13	F311251613.D	FRNC3A.M	1610011-09-RE	20x	11/26/2016 5:48 am
14	F311251614.D	FRNC3A.M	1610011-11	2x	11/26/2016 7:14 am
15	F311251615.D	FRNC3A.M	1610011-14	10x	11/26/2016 8:40 am
16	F311251616.D	FRNC3A.M	1610011-15 re-make dil	10x	11/26/2016 10:06 am
17	F311251617.D	FRNC3A.M	1610011-14	100x	11/26/2016 11:32 am
18	F311251618.D	FRNC3A.M	1610011-15	100x	11/26/2016 12:59 pm
19	F311251619.D	FRNC3A.M	C311251603	cc frax92 500ng/ml	11/26/2016 2:25 pm
20	F311251620.D	FRNC3A.M	pp311251601		11/26/2016 3:51 pm
21	F311251621.D	FRNC3A.M	dcm	dcm	11/26/2016 5:17 pm
22	F311251622.D	FRNC3A.M	dcm	dcm	11/26/2016 6:44 pm
23	F311251623.D	FRNC3A.M	Prime	1x	11/27/2016 8:47 am
24	F311251624.D	FRNC3A.M	c311251604	cc frax92 500ng/ml	11/27/2016 10:13 am
25	F311251625.D	FRNC3A.M	1610011-09	5x	11/27/2016 11:40 am
26	F311251626.D	FRNC3A.M	1610011-11	2x	11/27/2016 1:06 pm
27	F311251627.D	FRNC3A.M	1610011-14	10x	11/27/2016 2:33 pm
28	F311251628.D	FRNC3A.M	1610011-14-RE	100x	11/27/2016 4:00 pm
29	F311251629.D	FRNC3A.M	1610011-15	10x	11/27/2016 5:26 pm
30	F311251630.D	FRNC3A.M	1610011-15-RE	100c	11/27/2016 6:52 pm
31	F311251631.D	FRNC3A.M	c3112516105	cc frax92 500ng/ml	11/27/2016 8:19 pm

method: pah3110916

12/2/16

11-29-2016

Supporting Quality Control Results

Form IV
Method Blank Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**

Case: **N/A** SDG: **N/A**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116B03**
Date Analyzed: **11/23/16 00:07**

Client ID	Lab ID	Date/Time Analyzed
LCS	SS110116LCS02	11/23/16 01:33
LCSD	SS110116LCSD02	11/23/16 02:58
NFSB-04 0-1'	1610011-01	11/25/16 18:20
NFSB-05 5-6'	1610011-04	11/25/16 19:46
NFSB-05 5-6'	1610011-04 D	11/25/16 21:12
NFSB-08 11-15'	1610011-12	11/25/16 22:38
NFSB-06 1-2'	1610011-05	11/26/16 00:04
NFSB-08 1-2'	1610011-10	11/26/16 01:30
NFSB-07 13-15'	1610011-09E	11/26/16 05:48
NFSB-07 13-15'	1610011-09	11/27/16 11:40
NFSB-08 7-8'	1610011-11	11/27/16 13:06
NFSB-09 3-4'	1610011-14	11/27/16 14:33
NFSB-09 3-4'	1610011-14E	11/27/16 16:00
DUP-2	1610011-15	11/27/16 17:26
DUP-2	1610011-15E	11/27/16 18:52

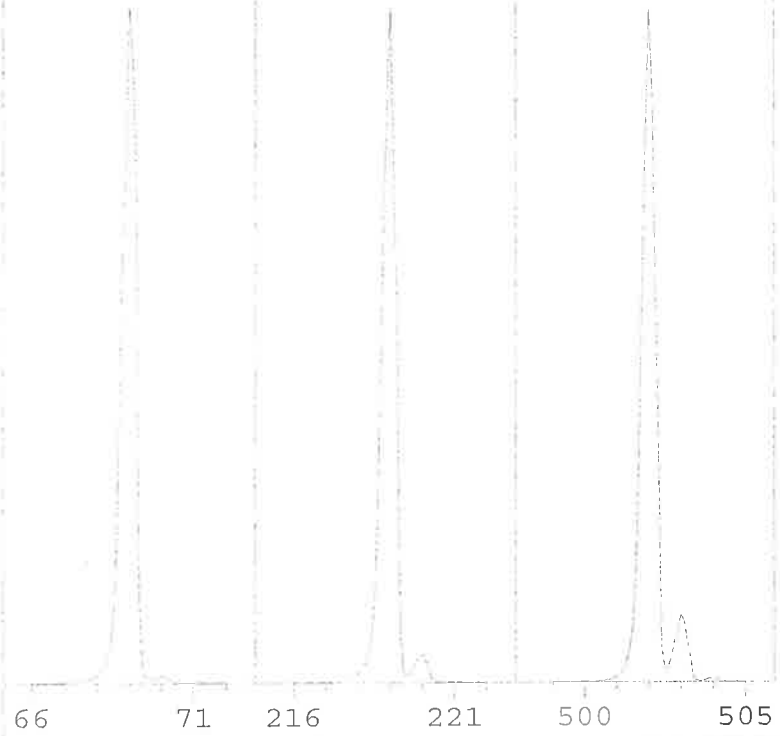
N/A - Not Applicable

5973 Tune

Wed Nov 09 16:01:41 2016 Instrument: PAH 3

C:\MSDCHEM\1\5973N\PFTBA.U

Mass	69.00	Mass	219.00	Mass	502.00
Ab	617907	Ab	380391	Ab	66607
Pw50	0.52	Pw50	0.50	Pw50	0.49



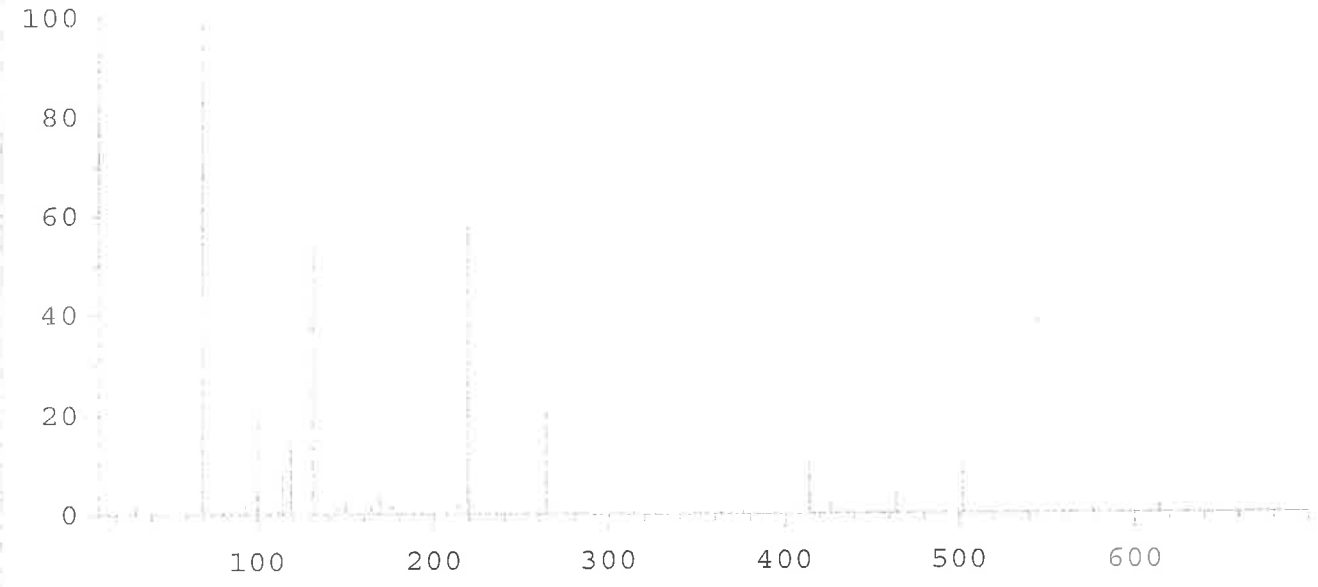
Ion Pol	POS	MassGain	61
		MassOffs	-13
Emission	34.6	AmuGain	2469
ElEnrgy	69.9	AmuOffs	144
Filament	1	Wid219	-0.032
		DC Pol	POS
Repeller	34.81		
IonFcus	86.4	HEDEnab	ON
EntLens	0.0	EMVolts	1941
EntOffs	VAR		
		Samples	8
PFTBA	OPEN	Averages	3
		Stepsize	0.10

Zones:

MS Source	230	Foreline	53
MS Quad	150		

Scan: 10.00 - 700.00 Samples: 8 Thresh: 100 Step: 0.10

155 peaks Base: 69.00 Abundance: 523584



Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.00	523584	100.00	70.00	6334	1.21
219.00	305216	58.29	219.90	13501	4.42
502.00	53576	10.23	503.00	5425	10.13

TARGET MASS:	50	69	131	219	414	502
DYNAMIC ENT OFFSET:	12.0	16.3	18.6	19.8	24.3	25.1
TARGET ABUND(%):	1.0	100.0	50.0	52.0	9.0	9.0
ACTUAL TUNE ABUND(%):	1.0	100.0	54.2	58.3	10.5	10.2

Analysis log File

Total Files Reported in Log : 31
Log Generated From Directory: O:\Forensics\Data\PAH3\2016\NOV16\NOV09\

NAL 11/28/16

No.	DATA FILE	INJ METH	SAMPLE NAME	MISC	DATE INJ'D
1	F311091601.D	FRNC3A.M	DCM	DCM	11/9/2016 4:06 pm
2	F311091602.D	FRNC3A.M	DCM	DCM	11/9/2016 5:35 pm
3	F311091603.D	FRNC3A.M	I311081601	FRAX34	11/9/2016 7:03 pm
4	F311091604.D	FRNC3A.M	I311081602	FRAX33	11/9/2016 8:32 pm
5	F311091605.D	FRNC3A.M	I311081603	FRAX32	11/9/2016 10:01 pm
6	F311091606.D	FRNC3A.M	I311081604	FRAX31	11/9/2016 11:30 pm
7	F311091607.D	FRNC3A.M	I311081605	FRAX30	11/10/2016 12:58 am
8	F311091608.D	FRNC3A.M	I311081606	FRAX29	11/10/2016 2:26 am
9	F311091609.D	FRNC3A.M	I311081607	FRAX28	11/10/2016 3:55 am
10	F311091610.D	FRNC3A.M	DCM	DCM	11/10/2016 5:22 am
11	F311091611.D	FRNC3A.M	QC311081601	FRAX54	11/10/2016 6:49 am
12	F311091612.D	FRNC3A.M	DCM	DCM	11/10/2016 8:18 am
13	F311091613.D	FRNC3A.M	SS112816ANC01	FRAX36 5.02	11/10/2016 9:46 am
14	F311091614.D	FRNC3A.M	ANS311081602	FRAX36 5.02	11/10/2016 11:26 am
15	F311091615.D	FRNC3A.M	DCM	DCM	11/11/2016 8:53 am
16	F311091616.D	FRNC3A.M	DCM CHECK DC341	DCM SN75023	11/11/2016 10:21 am
17	F311091617.D	FRNC3A.M	DCM CHECK DC341	DCM SN75036	11/11/2016 11:47 am
18	F311091618.D	FRNC3A.M	DCM CHECK RECHECK	DCM SN75036	11/11/2016 1:13 pm
19	F311091619.D	FRNC3A.M	DCM	DCM	11/14/2016 8:28 am
20	F311091620.D	FRNC3A.M	DCM	DCM	11/14/2016 9:56 am
21	F311091621.D	FRNC3A.M	NASO 144042	DCM	11/14/2016 2:54 pm
22	F311091622.D	FRNC3A.M	GPC 3 BLK	1X	11/14/2016 4:23 pm
23	F311091623.D	FRNC3A.M	GPC 3 LCS	1X	11/14/2016 5:49 pm
24	F311091624.D	FRNC3A.M	DCM	1X	11/15/2016 11:07 am
25	F311091625.D	FRNC3A.M	GPC 3 BLK	11/24/16	11/15/2016 12:37 pm
26	F311091626.D	FRNC3A.M	DCM	DCM	11/17/2016 12:11 pm
27	F311091627.D	FRNC3A.M	DCM	DCM	11/17/2016 1:40 pm
28	F311091628.D	FRNC3A.M	SILICA LOT	BCBR9427V	11/17/2016 3:08 pm
29	F311091629.D	FRNC3A.M	PRIME	BCBR9427V	11/21/2016 9:20 am
30	F311091630.D	FRNC3A.M	CC	BCBR9427V	11/21/2016 10:45 am
31	F311091631.D	FRNC3A.M	ANS311081603	FRAX36 5.02	11/21/2016 12:11 pm

SeqLog 1.0 - (c) 2009 Abacus Database Applications

Response Factor Report PAH 3

Method Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Method File : PAH3110916.M
Title : Decalins & Alkylated PAH's
Last Update : Sun Nov 20 16:15:38 2016
Response Via : Initial Calibration

Calibration Files
10 =F311091603.D 25 =F311091604.D 100 =F311091605.D 500 =F311091606.D 5000=F311091607.D 1E3 =F311091608.D 2E3 =F311091609.D

		Compound	10	25	100	500	5000	1E3	2E3	Avg	%RSD
1)	i	Acenaphthene-d10	----------ISTD----------								
2)	A1	trans-Decalin	0.437	0.417	0.415	0.412	0.432	0.448	0.472	0.433	4.95
3)	t	cis-Decalin	0.316	0.320	0.301	0.306	0.328	0.343	0.362	0.325	6.56
4)	A2	C1-Decalins	0.437	0.417	0.415	0.412	0.432	0.448	0.472	0.433	4.95
5)	A2	C2-Decalins	0.437	0.417	0.415	0.412	0.432	0.448	0.472	0.433	4.95
6)	A2	C3-Decalins	0.437	0.417	0.415	0.412	0.432	0.448	0.472	0.433	4.95
7)	A2	C4-Decalins	0.437	0.417	0.415	0.412	0.432	0.448	0.472	0.433	4.95
8)	s	Naphthalene-d8	2.211	2.150	2.104	2.087	2.136	2.135	2.189	2.145	2.03
9)	A1	Naphthalene	2.447	2.418	2.377	2.375	2.330	2.279	2.284	2.359	2.71
10)	A2	C1-Naphthalenes	2.447	2.418	2.377	2.375	2.330	2.279	2.284	2.359	2.71
11)	A2	C2-Naphthalenes	2.447	2.418	2.377	2.375	2.330	2.279	2.284	2.359	2.71
12)	A2	C3-Naphthalenes	2.447	2.418	2.377	2.375	2.330	2.279	2.284	2.359	2.71
13)	A2	C4-Naphthalenes	2.447	2.418	2.377	2.375	2.330	2.279	2.284	2.359	2.71
14)	t	2-Methylnaphth...	1.468	1.502	1.451	1.478	1.530	1.526	1.541	1.500	2.31
15)	t	1-Methylnaphth...	1.414	1.449	1.394	1.419	1.440	1.420	1.408	1.421	1.32
16)	A1	Benzothiophene	2.049	2.098	2.118	2.128	2.102	2.068	2.060	2.089	1.45
17)	A2	C1-Benzo(b)thi...	2.049	2.098	2.118	2.128	2.102	2.068	2.060	2.089	1.45
18)	A2	C2-Benzo(b)thi...	2.049	2.098	2.118	2.128	2.102	2.068	2.060	2.089	1.45
19)	A2	C3-Benzo(b)thi...	2.049	2.098	2.118	2.128	2.102	2.068	2.060	2.089	1.45
20)	A2	C4-Benzo(b)thi...	2.049	2.098	2.118	2.128	2.102	2.068	2.060	2.089	1.45
21)	t	Biphenyl	1.907	1.951	1.923	1.879	1.946	1.887	1.834	1.904	2.16
22)	t	2,6-Dimethylna...	1.276	1.317	1.284	1.279	1.354	1.325	1.275	1.301	2.38
23)	t	Dibenzofuran	1.957	2.051	2.109	2.052	2.090	1.960	1.767	1.998	5.89
24)	t	Acenaphthylene	2.260	2.334	2.308	2.303	2.394	2.279	2.112	2.284	3.82
25)	t	Acenaphthene	1.406	1.449	1.441	1.402	1.447	1.367	1.266	1.397	4.64
26)	t	2,3,5-Trimethy...	1.128	1.099	1.097	1.109	1.182	1.142	1.071	1.118	3.21
27)	A1	Fluorene	1.592	1.574	1.550	1.550	1.599	1.482	1.328	1.525	6.24
28)	A2	C1-Fluorenes	1.592	1.574	1.550	1.550	1.599	1.482	1.328	1.525	6.24
29)	A2	C2-Fluorenes	1.592	1.574	1.550	1.550	1.599	1.482	1.328	1.525	6.24
30)	A2	C3-Fluorenes	1.592	1.574	1.550	1.550	1.599	1.482	1.328	1.525	6.24
31)	A1	Dibenzothiophene	2.247	2.305	2.271	2.298	2.343	2.204	2.085	2.250	3.80
32)	A2	4-Methyldibenz...	2.247	2.305	2.271	2.298	2.343	2.204	2.085	2.250	3.80
33)	A2	2/3-Methyldibe...	2.247	2.305	2.271	2.298	2.343	2.204	2.085	2.250	3.80
34)	A2	1-Methyldibenz...	2.247	2.305	2.271	2.298	2.343	2.204	2.085	2.250	3.80
35)	A2	OTP	2.247	2.305	2.271	2.298	2.343	2.204	2.085	2.250	3.80
36)	A2	C1-Dibenzothio...	2.247	2.305	2.271	2.298	2.343	2.204	2.085	2.250	3.80
37)	A2	C2-Dibenzothio...	2.247	2.305	2.271	2.298	2.343	2.204	2.085	2.250	3.80
38)	A2	C3-Dibenzothio...	2.247	2.305	2.271	2.298	2.343	2.204	2.085	2.250	3.80
39)	A2	C4-Dibenzothio...	2.247	2.305	2.271	2.298	2.343	2.204	2.085	2.250	3.80
40)	s	Phenanthrene-d10	1.614	1.591	1.603	1.579	1.728	1.722	1.667	1.644	3.80
41)	A1	Phenanthrene	2.207	2.265	2.266	2.245	2.215	2.013	1.752	2.138	8.94
42)	A2	3-Methylphenan...	2.207	2.265	2.266	2.245	2.215	2.013	1.752	2.138	8.94

Method Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Method File : PAH3110916.M
Title : Decalins & Alkylated PAH's
Last Update : Sun Nov 20 16:15:38 2016
Response Via : Initial Calibration

Calibration Files
10 =F311091603.D 25 =F311091604.D 100 =F311091605.D 500 =F311091606.D 5000=F311091607.D 1E3 =F311091608.D 2E3 =F311091609.D

		Compound	10	25	100	500	5000	1E3	2E3	Avg	%RSD
43)	A2	2-Methylphenan...	2.207	2.265	2.266	2.245	2.215	2.013	1.752	2.138	8.94
44)	A2	2-Methylanthra...	2.207	2.265	2.266	2.245	2.215	2.013	1.752	2.138	8.94
45)	A2	9/4-Methylphen...	2.207	2.265	2.266	2.245	2.215	2.013	1.752	2.138	8.94
46)	A2	1-Methylphenan...	2.207	2.265	2.266	2.245	2.215	2.013	1.752	2.138	8.94
47)	A2	C1-Phenanthren...	2.207	2.265	2.266	2.245	2.215	2.013	1.752	2.138	8.94
48)	A2	C2-Phenanthren...	2.207	2.265	2.266	2.245	2.215	2.013	1.752	2.138	8.94
49)	A2	5AA IS BKGD	2.207	2.265	2.266	2.245	2.215	2.013	1.752	2.138	8.94
50)	A2	C3-Phenanthren...	2.207	2.265	2.266	2.245	2.215	2.013	1.752	2.138	8.94
51)	A2	C4-Phenanthren...	2.207	2.265	2.266	2.245	2.215	2.013	1.752	2.138	8.94
52)	t	Retene	0.545	0.549	0.535	0.549	0.640	0.666	0.679	0.595	10.72
53)	t	Anthracene	2.169	2.209	2.148	2.084	2.149	1.898	1.545	2.029	11.65
54)	t	Carbazole	2.112	2.070	2.028	2.032	2.091	1.891	1.649	1.982	8.24
55)	t	1-Methylphenan...	1.655	1.633	1.530	1.561	1.653	1.547	1.458	1.577	4.67
56)	A1	Fluoranthene	2.302	2.341	2.361	2.431	2.527	2.387	2.259	2.373	3.70
57)	t	Benzo(b)fluorene	1.482	1.383	1.380	1.375	1.503	1.425	1.292	1.406	5.09
58)	A1	Pyrene	2.582	2.594	2.580	2.637	2.709	2.538	2.364	2.572	4.14
59)	A2	C1-Fluoranthen...	2.582	2.594	2.580	2.637	2.709	2.538	2.364	2.572	4.14
60)	A2	C2-Fluoranthen...	2.582	2.594	2.580	2.637	2.709	2.538	2.364	2.572	4.14
61)	A2	C3-Fluoranthen...	2.582	2.594	2.580	2.637	2.709	2.538	2.364	2.572	4.14
62)	A2	C4-Fluoranthen...	2.582	2.594	2.580	2.637	2.709	2.538	2.364	2.572	4.14
63)	A1	Naphthobenzoth...	2.216	2.254	2.222	2.230	2.383	2.233	2.067	2.229	4.12
64)	A2	Naphthobenzoth...	2.216	2.254	2.222	2.230	2.383	2.233	2.067	2.229	4.12
65)	A2	Naphthobenzoth...	2.216	2.254	2.222	2.230	2.383	2.233	2.067	2.229	4.12
66)	A2	Naphthobenzoth...	2.216	2.254	2.222	2.230	2.383	2.233	2.067	2.229	4.12
67)	A2	C1-Naphthobenz...	2.216	2.254	2.222	2.230	2.383	2.233	2.067	2.229	4.12
68)	A2	C2-Naphthobenz...	2.216	2.254	2.222	2.230	2.383	2.233	2.067	2.229	4.12
69)	A2	C3-Naphthobenz...	2.216	2.254	2.222	2.230	2.383	2.233	2.067	2.229	4.12
70)	A2	C4-Naphthobenz...	2.216	2.254	2.222	2.230	2.383	2.233	2.067	2.229	4.12
71)	i	Chrysene-d12	----------ISTD----------								
72)	t	Benz[a]anthracene	1.426	1.471	1.401	1.366	1.452	1.346	1.235	1.385	5.77
73)	A1	Chrysene	1.374	1.369	1.382	1.323	1.338	1.218	1.091	1.299	8.26
74)	A2	Chrysene/Triph...	1.374	1.369	1.382	1.323	1.338	1.218	1.091	1.299	8.26
75)	A2	C1-Chrysenes	1.374	1.369	1.382	1.323	1.338	1.218	1.091	1.299	8.26
76)	A2	C2-Chrysenes	1.374	1.369	1.382	1.323	1.338	1.218	1.091	1.299	8.26
77)	A2	BBF-D12 Surr BKGD	1.374	1.369	1.382	1.323	1.338	1.218	1.091	1.299	8.26
78)	A2	C3-Chrysenes	1.374	1.369	1.382	1.323	1.338	1.218	1.091	1.299	8.26
79)	A2	C4-Chrysenes	1.374	1.369	1.382	1.323	1.338	1.218	1.091	1.299	8.26
80)	s	Benzo[b]fluora...	0.951	0.965	0.963	1.006	1.098	1.135	1.172	1.041	8.79
81)	t	Benzo[b]fluora...	1.339	1.403	1.429	1.468	1.491	1.431	1.306	1.410	4.72
82)	A1	Benzo[j]+[k]fl...	1.422	1.419	1.360	1.271	1.360	1.211	1.054	1.299	10.20
83)	A2	Benzo[a]fluora...	1.422	1.419	1.360	1.271	1.360	1.211	1.054	1.299	10.20
84)	t	Benzo[e]pyrene	1.409	1.356	1.319	1.311	1.368	1.266	1.147	1.311	6.53

Method Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Method File : PAH3110916.M
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Last Update : Sun Nov 20 16:15:38 2016
Response Via : Initial Calibration

Calibration Files
10 =F311091603.D 25 =F311091604.D 100 =F311091605.D 500 =F311091606.D 5000=F311091607.D 1E3 =F311091608.D 2E3 =F311091609.D

		Compound	10	25	100	500	5000	1E3	2E3	Avg	%RSD
85)	s	Benzo[a]pyrene...	0.822	0.803	0.794	0.853	0.885	0.880	0.833	0.838	4.26
86)	t	Benzo[a]pyrene	1.294	1.376	1.337	1.312	1.320	1.164	0.951	1.251	11.81
87)	t	Perylene	1.397	1.335	1.344	1.308	1.331	1.165	0.983	1.266	11.37
88)	t	Indeno[1,2,3-c...	1.587	1.575	1.486	1.574	1.714	1.672	1.698	1.615	5.09
89)	t	Dibenz[ah]+[ac...	1.370	1.342	1.360	1.355	1.446	1.395	1.380	1.378	2.50
90)	t	Benzo[g,h,i]pe...	1.654	1.584	1.565	1.517	1.627	1.533	1.456	1.562	4.31
91)	A1	Hopane (T19)	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
92)	A2	17a(H),21B(H)-...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
93)	A2	C23 Tricyclic ...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
94)	A2	C24 Tricyclic ...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
95)	A2	C25 Tricyclic ...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
96)	A2	C24 Tetracycli...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
97)	A2	C26 Tricyclic ...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
98)	A2	C26 Tricyclic ...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
99)	A2	C28 Tricyclic ...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
100)	A2	C28 Tricyclic ...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
101)	A2	C29 Tricyclic ...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
102)	A2	C29 Tricyclic ...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
103)	A2	18a-22,29,30-T...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
104)	A2	C30 Tricyclic ...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
105)	A2	C30 Tricyclic ...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
106)	A2	17a(H)-22,29,3...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
107)	A2	17a/b,21b/a 28...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
108)	A2	17a(H),21b(H)-...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
109)	A2	30-Norhopane (...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
110)	A2	18a(H)-30-Norn...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
111)	A2	17a(H)-Diahopa...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
112)	A2	30-Normoretane...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
113)	A2	18a(H)&18b(H)-...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
114)	A2	Moretane (T20)	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
115)	A2	30-Homohopane-...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
116)	A2	30-Homohopane-...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
117)	A2	Gammacerane/C3...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
118)	A2	30,31-Bishomoh...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
119)	A2	30,31-Bishomoh...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
120)	A2	30,31-Trishomo...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
121)	A2	30,31-Trishomo...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
122)	A2	Tetrakishomoho...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
123)	A2	Tetrakishomoho...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
124)	A2	Pentakishomoho...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
125)	A2	Pentakishomoho...	0.345	0.276	0.301	0.290	0.258	0.244		0.286	12.50
126)	SA1	5B(H)Cholane -...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
127)	A2	13b(H),17a(H)-...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60

Method Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
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	Compound	10	25	100	500	5000	1E3	2E3	Avg	%RSD
128) A2	13b(H),17a(H)-...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
129) A2	13b,17a-20S-Me...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
130) A2	14a,17a-20S-Ch...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
131) A2	14a,17a-20R-Ch...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
132) A2	Unknown Steran...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
133) A2	13a,17b-20S-Et...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
134) A2	14a,17a-20S-Me...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
135) A2	14a,17a-20R-Me...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
136) A2	14a(H),17a(H)-...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
137) A2	14a(H),17a(H)-...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
138) A2	14b(H),17b(H)-...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
139) A2	14b(H),17b(H)-...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
140) A2	14b,17b-20R-Me...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
141) A2	14b,17b-20S-Me...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
142) A2	14b(H),17b(H)-...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
143) A2	14b(H),17b(H)-...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
144) A2	C26,20R- +C27,...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
145) A2	C28,20S-triaro...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
146) A2	C27,20R-triaro...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60
147) A2	C28,20R-triaro...	0.164	0.163	0.156	0.152	0.168	0.167	0.167	0.162	3.60

(#) = Out of Range

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091603.D
Acq On : 9 Nov 2016 7:03 pm
Operator : AC
Sample : I311081601
Misc : FRAX34
ALS Vial : 3 Sample Multiplier: 1

NAL
11/28/16

Quant Time: Nov 20 19:46:40 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:00:51 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.250	164	68941	500.000	ng/ml	0.02
71) Chrysene-d12	43.750	240	102897	500.000	ng/ml	0.00
System Monitoring Compounds						
8) Naphthalene-d8	20.295	136	3048	11.455	ng/ml	0.05
Spiked Amount 1000.000	Range 50 - 130		Recovery =	1.15%#		
40) Phenanthrene-d10	33.151	188	2225	9.395	ng/ml	0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.94%#		
80) Benzo[b]fluoranthene-d12	47.726	264	1958	7.986	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.80%#		
85) Benzo[a]pyrene-d12	48.976	264	1691	8.532	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.85%#		
126) 5B(H)Cholane - Surr	44.338	217	337	10.608	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	1.06%#		
Target Compounds						Qvalue
2) trans-Decalin	16.862	138	301	4.885	ng/ml	100
3) cis-Decalin	18.097	138	218	4.618	ng/ml	100
9) Naphthalene	20.385	128	3374	13.233	ng/ml	100
14) 2-Methylnaphthalene	23.080	142	2024	11.921	ng/ml	100
15) 1-Methylnaphthalene	23.501	142	1949	12.029	ng/ml	100
16) Benzothiophene	20.596	134	2825	13.138	ng/ml	100
21) Biphenyl	24.947	154	2629	11.984	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.549	156	1759	11.316	ng/ml	100
23) Dibenzofuran	28.048	168	2699	11.694	ng/ml#	86
24) Acenaphthylene	26.633	152	3116M4	12.792	ng/ml	
25) Acenaphthene	27.370	153	1938	12.014	ng/ml	96
26) 2,3,5-Trimethylnaphthalen	28.951	170	1555	10.878	ng/ml	93
27) Fluorene	29.418	166	2195	11.998	ng/ml	86
31) Dibenzothiophene	32.745	184	3098	12.019	ng/ml	96
41) Phenanthrene	33.241	178	3043M4	11.330	ng/ml	
52) Retene	40.212	234	752	8.043	ng/ml	99
53) Anthracene	33.422	178	2991M4	12.189	ng/ml	
54) Carbazole	34.084	167	2912	12.357	ng/ml	97
55) 1-Methylphenanthrene	35.741	192	2282	10.975	ng/ml	95
56) Fluoranthene	38.014	202	3174	10.393	ng/ml	100
57) Benzo(b)fluorene	40.528	216	2044	10.529	ng/ml	95
58) Pyrene	38.902	202	3560	10.669	ng/ml	99
63) Naphthobenzothiophene	42.757	234	3055	10.109	ng/ml#	91
64) Naphthobenzothiophene-2,1	42.757	234	3055	10.109	ng/ml#	91
72) Benz[a]anthracene	43.690	228	2935M3	12.440	ng/ml	
73) Chrysene	43.856	228	2827	11.938	ng/mL	98
74) Chrysene/Triphenylene	43.856	228	2827	11.938	ng/ml	98
81) Benzo[b]fluoranthene	47.801	252	2756M3	10.337	ng/ml	
82) Benzo[j]+[k]fluoranthene	47.891	252	2926	11.758	ng/ml	100
84) Benzo[e]pyrene	48.870	252	2900	11.575	ng/ml	90
86) Benzo[a]pyrene	49.066	252	2663	11.290	ng/ml	97
87) Perylene	49.397	252	2875	12.121	ng/ml	93
88) Indeno[1,2,3-cd]pyrene	54.217	276	3266M4	10.462	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.277	278	2820	10.157	ng/ml	95
90) Benzo[g,h,i]perylene	55.617	276	3403	11.010	ng/ml	95
91) Hopane (T19)	53.178	191	711	13.023	ng/mL#	73
92) 17a(H),21B(H)-hopane - C3	53.178	191	711	13.023	ng/mL#	73

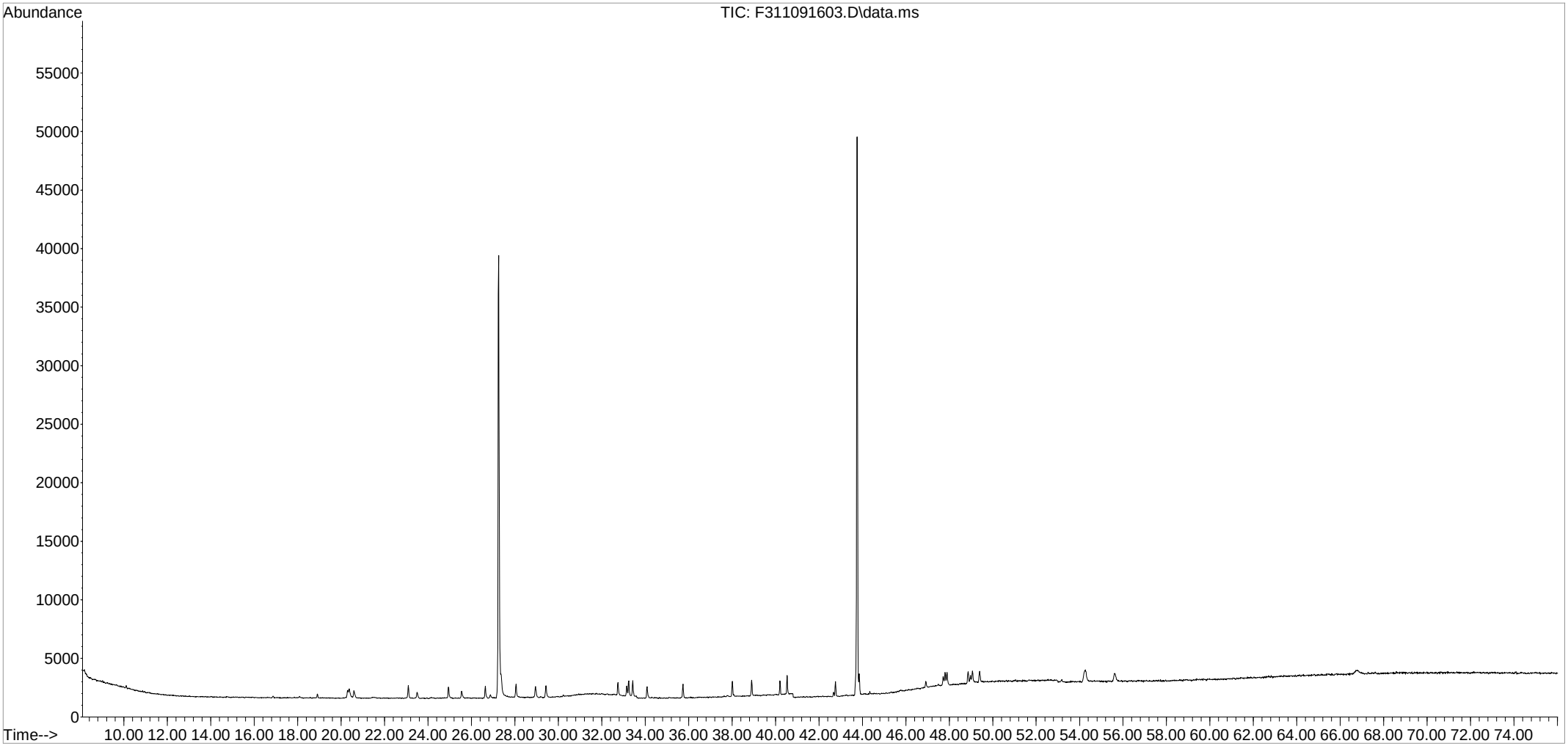
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091603.D
Acq On : 9 Nov 2016 7:03 pm
Operator : AC
Sample : I311081601
Misc : FRAX34
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 20 19:46:40 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:00:51 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091604.D
Acq On : 9 Nov 2016 8:32 pm
Operator : AC
Sample : I311081602
Misc : FRAX33
ALS Vial : 4 Sample Multiplier: 1

MAL 11/28/16

Quant Time: Nov 20 19:46:46 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:00:51 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.250	164	70245	500.000	ng/ml	0.02
71) Chrysene-d12	43.750	240	101493	500.000	ng/ml	0.00
System Monitoring Compounds						
8) Naphthalene-d8	20.280	136	7552	27.855	ng/ml	0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery =	2.79%#		
40) Phenanthrene-d10	33.151	188	5587	23.152	ng/ml	0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery =	2.32%#		
80) Benzo[b]fluoranthene-d12	47.711	264	4897	20.249	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	2.02%#		
85) Benzo[a]pyrene-d12	48.976	264	4074	20.840	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery =	2.08%#		
126) 5B(H)Cholane - Surr	44.338	217	827	26.392	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	2.64%#		
Target Compounds						Qvalue
2) trans-Decalin	16.862	138	732	11.659	ng/ml	100
3) cis-Decalin	18.097	138	562	11.684	ng/ml	100
9) Naphthalene	20.370	128	8494	32.696	ng/ml	100
14) 2-Methylnaphthalene	23.080	142	5277	30.503	ng/ml	100
15) 1-Methylnaphthalene	23.486	142	5091	30.837	ng/ml	100
16) Benzothiophene	20.581	134	7370	33.639	ng/ml	100
21) Biphenyl	24.931	154	6851	30.650	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.549	156	4626	29.208	ng/ml	100
23) Dibenzofuran	28.048	168	7205	30.638	ng/ml	92
24) Acenaphthylene	26.633	152	8199M4	33.035	ng/ml	
25) Acenaphthene	27.370	153	5091	30.974	ng/ml	99
26) 2,3,5-Trimethylnaphthalen	28.951	170	3861	26.508	ng/ml	97
27) Fluorene	29.418	166	5527	29.651	ng/ml	99
31) Dibenzothiophene	32.745	184	8095	30.824	ng/ml	98
41) Phenanthrene	33.226	178	7956	29.074	ng/ml	97
52) Retene	40.212	234	1929	20.249	ng/ml	98
53) Anthracene	33.422	178	7757M4	31.025	ng/ml	
54) Carbazole	34.084	167	7271	30.281	ng/ml	99
55) 1-Methylphenanthrene	35.741	192	5734	27.064	ng/ml	97
56) Fluoranthene	38.014	202	8223	26.425	ng/ml	97
57) Benzo(b)fluorene	40.528	216	4857	24.555	ng/ml	98
58) Pyrene	38.902	202	9110	26.794	ng/ml	99
63) Naphthobenzothiophene	42.757	234	7916	25.708	ng/ml	97
64) Naphthobenzothiophene-2,1	42.757	234	7916	25.708	ng/ml	97
72) Benz[a]anthracene	43.690	228	7467	32.086	ng/ml	99
73) Chrysene	43.856	228	6947	29.742	ng/mL	99
74) Chrysene/Triphenylene	43.856	228	6947	29.742	ng/ml	99
81) Benzo[b]fluoranthene	47.801	252	7119	27.072	ng/ml	98
82) Benzo[j]+[k]fluoranthene	47.891	252	7200	29.334	ng/ml	92
84) Benzo[e]pyrene	48.855	252	6880	27.842	ng/ml	91
86) Benzo[a]pyrene	49.066	252	6983	30.014	ng/ml	98
87) Perylene	49.397	252	6775	28.958	ng/ml	91
88) Indeno[1,2,3-cd]pyrene	54.232	276	7992M4	25.956	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.277	278	6811	24.871	ng/ml	99
90) Benzo[g,h,i]perylene	55.602	276	8037	26.361	ng/ml	96
91) Hopane (T19)	53.163	191	1402	26.035	ng/mL#	84
92) 17a(H),21B(H)-hopane - C3	53.163	191	1402	26.035	ng/mL#	84

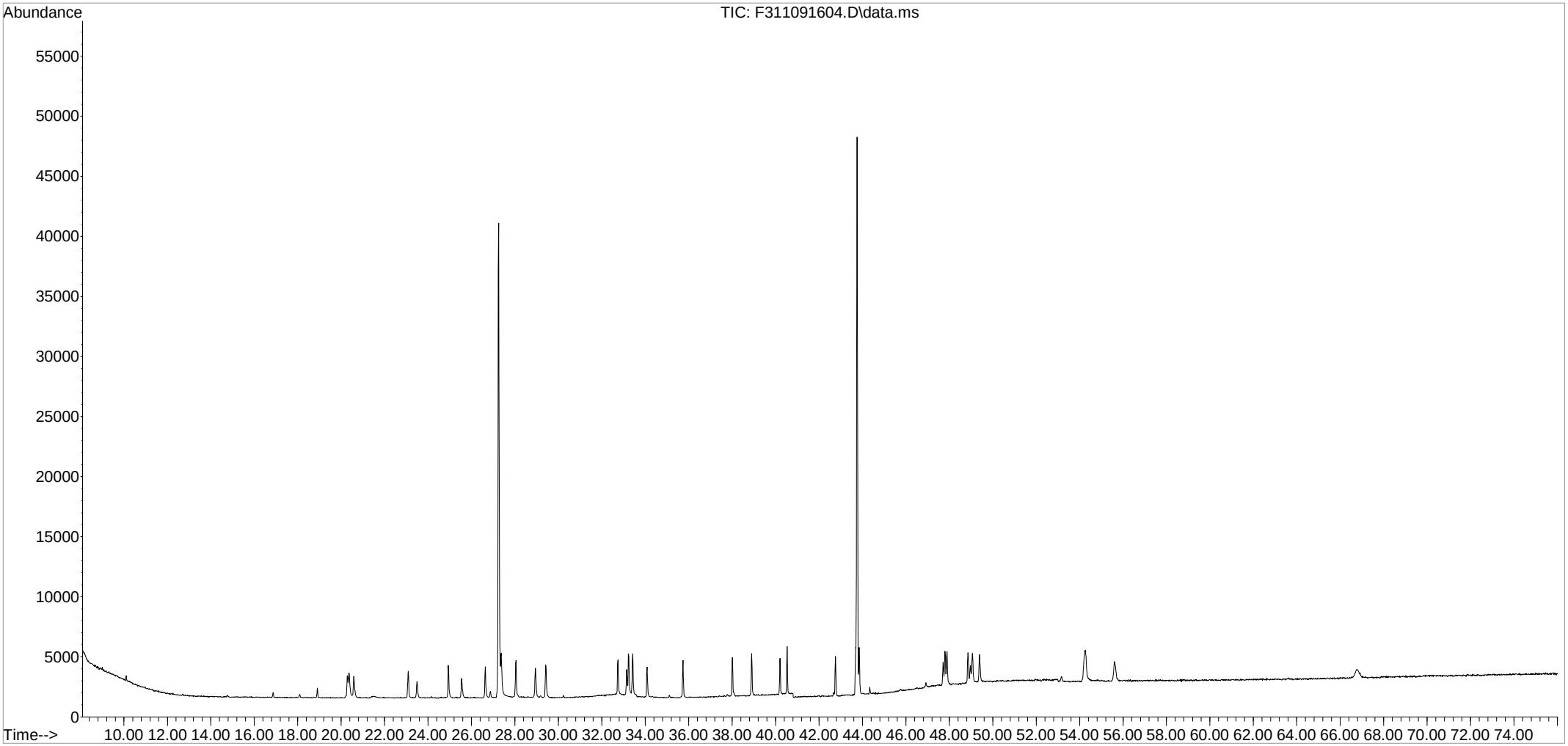
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091604.D
Acq On : 9 Nov 2016 8:32 pm
Operator : AC
Sample : I311081602
Misc : FRAX33
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 20 19:46:46 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:00:51 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091605.D
Acq On : 9 Nov 2016 10:01 pm
Operator : AC
Sample : I311081603
Misc : FRAX32
ALS Vial : 5 Sample Multiplier: 1

MAL 11/28/16

Quant Time: Nov 20 19:46:54 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:00:51 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.250	164	67596	500.000	ng/ml	0.02
71) Chrysene-d12	43.750	240	98833	500.000	ng/ml	0.00
System Monitoring Compounds						
8) Naphthalene-d8	20.265	136	28451	109.054	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 10.91%#			
40) Phenanthrene-d10	33.136	188	21669	93.313	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 9.33%#			
80) Benzo[b]fluoranthene-d12	47.711	264	19032	80.816	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 8.08%#			
85) Benzo[a]pyrene-d12	48.961	264	15694	82.440	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 8.24%#			
126) 5B(H)Cholane - Surr	44.338	217	3090	101.265	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 10.13%#			
Target Compounds						Qvalue
2) trans-Decalin	16.862	138	2807	46.461	ng/ml	100
3) cis-Decalin	18.097	138	2038	44.029	ng/ml	100
9) Naphthalene	20.340	128	32129	128.522	ng/ml	100
14) 2-Methylnaphthalene	23.065	142	19617	117.838	ng/ml	100
15) 1-Methylnaphthalene	23.486	142	18846	118.627	ng/ml	100
16) Benzothiophene	20.566	134	28627	135.783	ng/ml	100
21) Biphenyl	24.931	154	25992	120.840	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.534	156	17352	113.853	ng/ml	100
23) Dibenzofuran	28.033	168	28518	126.022	ng/ml	93
24) Acenaphthylene	26.633	152	31200M4	130.636	ng/ml	
25) Acenaphthene	27.370	153	19484	123.188	ng/ml	99
26) 2,3,5-Trimethylnaphthalen	28.936	170	14836	105.851	ng/ml	94
27) Fluorene	29.403	166	20960	116.852	ng/ml	99
31) Dibenzothiophene	32.730	184	30702	121.486	ng/ml	98
41) Phenanthrene	33.226	178	30640	116.356	ng/ml	100
52) Retene	40.212	234	7229	78.858	ng/ml	96
53) Anthracene	33.407	178	29040M4	120.699	ng/ml	
54) Carbazole	34.069	167	27421	118.674	ng/ml	100
55) 1-Methylphenanthrene	35.725	192	20682	101.444	ng/ml	98
56) Fluoranthene	37.999	202	31919	106.591	ng/ml	98
57) Benzo(b)fluorene	40.528	216	18655	98.007	ng/ml	100
58) Pyrene	38.887	202	34885	106.623	ng/ml	99
63) Naphthobenzothiophene	42.757	234	30044	101.395	ng/ml	97
64) Naphthobenzothiophene-2,1	42.757	234	30044	101.395	ng/ml	97
72) Benz[a]anthracene	43.690	228	27702	122.242	ng/ml	99
73) Chrysene	43.856	228	27310	120.067	ng/mL	98
74) Chrysene/Triphenylene	43.856	228	27310	120.067	ng/ml	98
81) Benzo[b]fluoranthene	47.801	252	28241	110.285	ng/ml	98
82) Benzo[j]+[k]fluoranthene	47.891	252	26886	112.487	ng/ml	100
84) Benzo[e]pyrene	48.855	252	26073	108.351	ng/ml	99
86) Benzo[a]pyrene	49.066	252	26423	116.626	ng/ml	100
87) Perylene	49.382	252	26572	116.633	ng/ml	99
88) Indeno[1,2,3-cd]pyrene	54.217	276	29373M3	97.964	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.262	278	26890	100.834	ng/ml	98
90) Benzo[g,h,i]perylene	55.602	276	30927	104.171	ng/ml	99
91) Hopane (T19)	53.163	191	5943	113.330	ng/mL	93
92) 17a(H),21B(H)-hopane - C3	53.163	191	5943	113.330	ng/mL	93

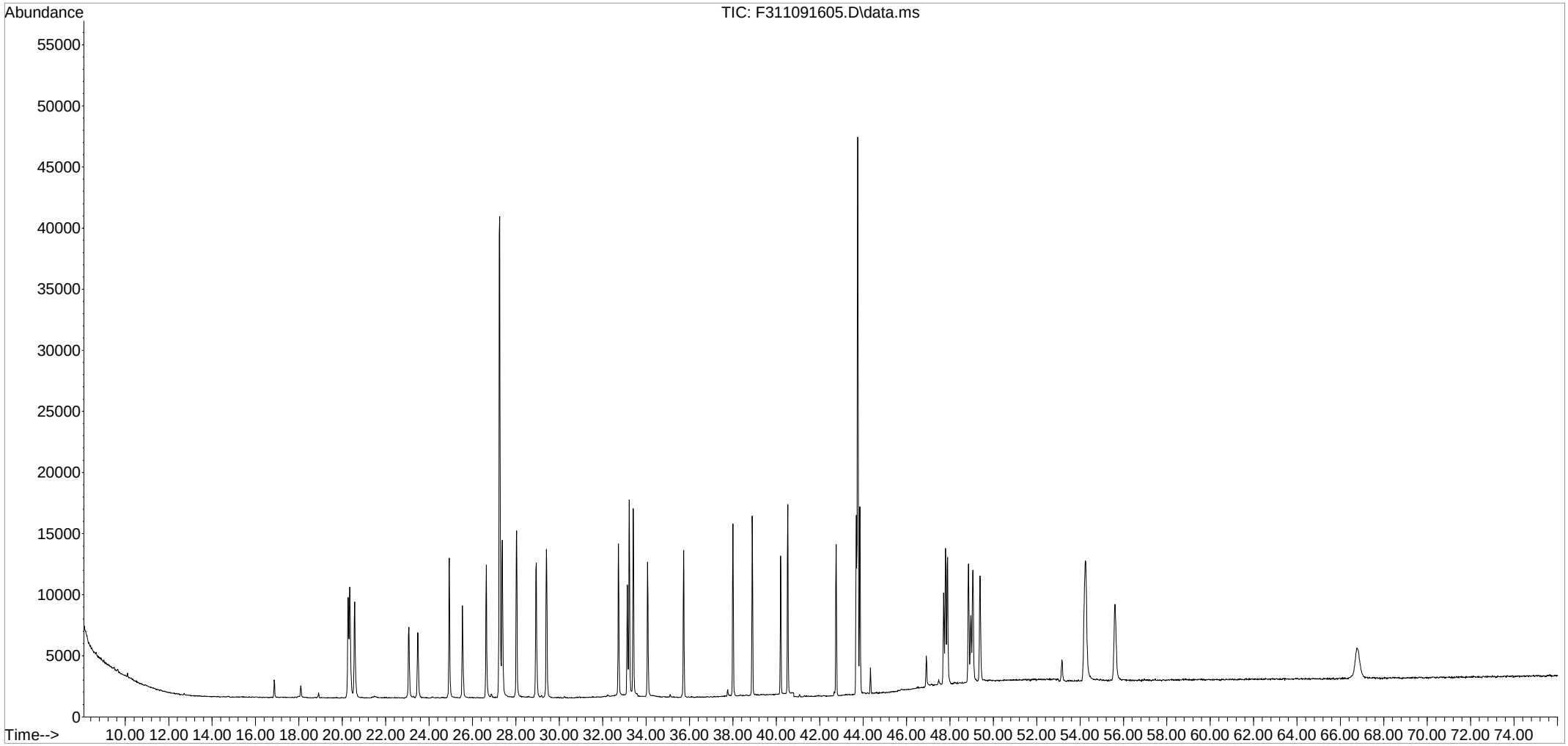
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091605.D
Acq On : 9 Nov 2016 10:01 pm
Operator : AC
Sample : I311081603
Misc : FRAX32
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 20 19:46:54 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:00:51 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091606.D
Acq On : 9 Nov 2016 11:30 pm
Operator : AC
Sample : I311081604
Misc : FRAX31
ALS Vial : 6 Sample Multiplier: 1

MAL 11/28/16

Quant Time: Nov 20 19:47:02 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:00:51 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.235	164	71009	500.000	ng/ml	0.00
71) Chrysene-d12	43.750	240	105735	500.000	ng/ml	0.00
System Monitoring Compounds						
8) Naphthalene-d8	20.249	136	148229	540.858	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 54.09%			
40) Phenanthrene-d10	33.121	188	112149	459.734	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 45.97%#			
80) Benzo[b]fluoranthene-d12	47.711	264	106393	422.287	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 42.23%#			
85) Benzo[a]pyrene-d12	48.961	264	90159	442.686	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 44.27%#			
126) 5B(H)Cholane - Surr	44.337	217	16117	493.705	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 49.37%#			
Target Compounds						Qvalue
2) trans-Decalin	16.862	138	14628	230.483	ng/ml	100
3) cis-Decalin	18.096	138	10882	223.797	ng/ml	100
9) Naphthalene	20.325	128	168634	642.143	ng/ml	100
14) 2-Methylnaphthalene	23.034	142	104961	600.189	ng/ml	100
15) 1-Methylnaphthalene	23.456	142	100760	603.753	ng/ml	100
16) Benzothiophene	20.550	134	151122	682.346	ng/ml	100
21) Biphenyl	24.916	154	133408	590.421	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.518	156	90831	567.331	ng/ml	100
23) Dibenzofuran	28.017	168	145721	612.995	ng/ml	93
24) Acenaphthylene	26.632	152	163560M4	651.916	ng/ml	
25) Acenaphthene	27.355	153	99564	599.240	ng/ml	99
26) 2,3,5-Trimethylnaphthalen	28.921	170	78722	534.664	ng/ml	93
27) Fluorene	29.387	166	110059	584.087	ng/ml	100
31) Dibenzothiophene	32.714	184	163199	614.732	ng/ml	98
41) Phenanthrene	33.211	178	159397	576.221	ng/ml	100
52) Retene	40.197	234	39002	405.008	ng/ml	96
53) Anthracene	33.392	178	147996M4	585.553	ng/ml	
54) Carbazole	34.054	167	144318	594.568	ng/ml	100
55) 1-Methylphenanthrene	35.725	192	110817	517.427	ng/ml	99
56) Fluoranthene	37.999	202	172646	548.828	ng/ml	99
57) Benzo(b)fluorene	40.528	216	97659	488.405	ng/ml	100
58) Pyrene	38.887	202	187226	544.734	ng/ml	99
63) Naphthobenzothiophene	42.757	234	158339	508.689	ng/ml	97
64) Naphthobenzothiophene-2,1	42.757	234	158339	508.689	ng/ml	97
72) Benz[a]anthracene	43.690	228	144387	595.554	ng/ml	100
73) Chrysene	43.856	228	139900	574.916	ng/mL	100
74) Chrysene/Triphenylene	43.856	228	139900	574.916	ng/ml	100
81) Benzo[b]fluoranthene	47.801	252	155262	566.741	ng/ml	98
82) Benzo[j]+[k]fluoranthene	47.876	252	134342	525.377	ng/ml	99
84) Benzo[e]pyrene	48.855	252	138666	538.636	ng/ml	98
86) Benzo[a]pyrene	49.051	252	138739	572.395	ng/ml	98
87) Perylene	49.382	252	138347	567.609	ng/ml	97
88) Indeno[1,2,3-cd]pyrene	54.201	276	166396M3	518.734	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.262	278	143314	502.331	ng/ml	99
90) Benzo[g,h,i]perylene	55.602	276	160424	505.081	ng/ml	100
91) Hopane (T19)	53.162	191	30657	546.451	ng/mL	97
92) 17a(H),21B(H)-hopane - C3	53.162	191	30657	546.451	ng/mL	97

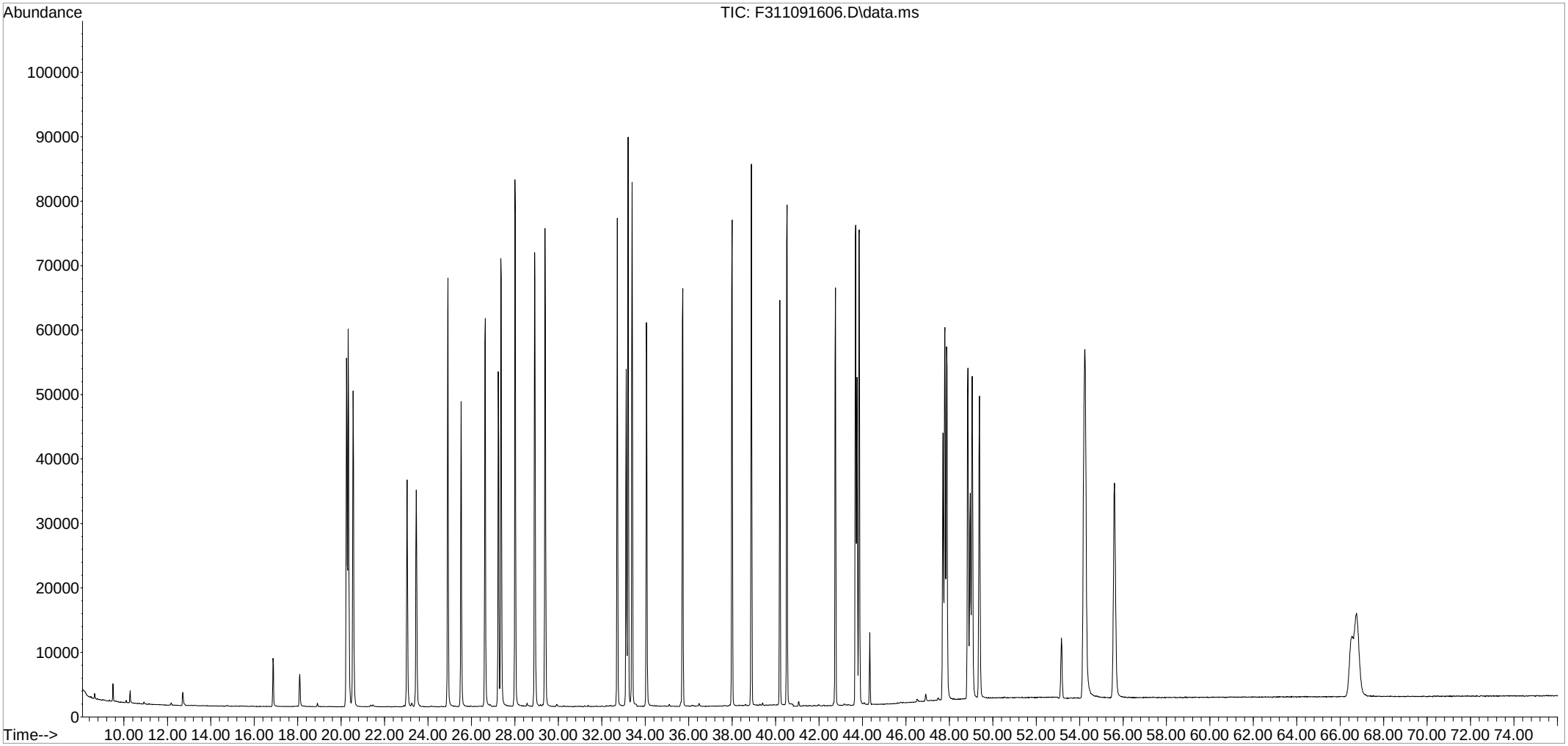
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091606.D
Acq On : 9 Nov 2016 11:30 pm
Operator : AC
Sample : I311081604
Misc : FRAX31
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 20 19:47:02 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:00:51 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091607.D
Acq On : 10 Nov 2016 12:58 am
Operator : AC
Sample : I311081605
Misc : FRAX30
ALS Vial : 7 Sample Multiplier: 1

NAL 11/28/16

Quant Time: Nov 20 19:47:08 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:00:51 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.220	164	66002	500.000	ng/ml	-0.01
71) Chrysene-d12	43.750	240	101520	500.000	ng/ml	0.00
System Monitoring Compounds						
8) Naphthalene-d8	20.234	136	1409653	5533.741	ng/ml	-0.01
Spiked Amount 1000.000	Range 50 - 130		Recovery = 553.37%#			
40) Phenanthrene-d10	33.121	188	1140748	5031.036	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 503.10%#			
80) Benzo[b]fluoranthene-d12	47.711	264	1114903	4608.916	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 460.89%#			
85) Benzo[a]pyrene-d12	48.976	264	898093	4592.779	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 459.28%#			
126) 5B(H)Cholane - Surr	44.338	217	170406	5436.701	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 543.67%#			
Target Compounds						Qvalue
2) trans-Decalin	16.862	138	142586	2417.060	ng/ml	100
3) cis-Decalin	18.097	138	108211	2394.266	ng/ml	100
9) Naphthalene	20.310	128	1538171	6301.554	ng/ml	100
14) 2-Methylnaphthalene	23.019	142	1009949	6213.207	ng/ml	100
15) 1-Methylnaphthalene	23.441	142	950295	6126.124	ng/ml	100
16) Benzothiophene	20.535	134	1387424	6739.729	ng/ml	100
21) Biphenyl	24.901	154	1284708	6117.032	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.503	156	893845	6006.492	ng/ml	100
23) Dibenzofuran	27.987	168	1379531	6243.423	ng/ml	93
24) Acenaphthylene	26.618	152	1580323M4	6776.673	ng/ml	
25) Acenaphthene	27.355	153	954796	6182.522	ng/ml	98
26) 2,3,5-Trimethylnaphthalen	28.906	170	779822	5698.188	ng/ml	95
27) Fluorene	29.372	166	1055490	6026.458	ng/ml	99
31) Dibenzothiophene	32.714	184	1546306	6266.429	ng/ml	98
41) Phenanthrene	33.196	178	1462131	5686.585	ng/ml	100
52) Retene	40.197	234	422501	4720.209	ng/ml	92
53) Anthracene	33.392	178	1418586M4	6038.488	ng/ml	
54) Carbazole	34.054	167	1380151	6117.361	ng/ml	99
55) 1-Methylphenanthrene	35.710	192	1090970	5480.389	ng/ml	99
56) Fluoranthene	37.999	202	1667743M4	5703.809	ng/ml	
57) Benzo(b)fluorene	40.528	216	991982	5337.380	ng/ml	99
58) Pyrene	38.887	202	1788172	5597.367	ng/ml	99
63) Naphthobenzothiophene	42.757	234	1572635	5435.614	ng/ml	97
64) Naphthobenzothiophene-2,1	42.757	234	1572635	5435.614	ng/ml	97
72) Benz[a]anthracene	43.690	228	1474462	6334.228	ng/ml	100
73) Chrysene	43.856	228	1358783	5815.729	ng/mL	99
74) Chrysene/Triphenylene	43.856	228	1358783	5815.729	ng/ml	99
81) Benzo[b]fluoranthene	47.801	252	1513453	5753.809	ng/ml	99
82) Benzo[j]+[k]fluoranthene	47.891	252	1380376	5622.427	ng/ml	99
84) Benzo[e]pyrene	48.855	252	1388413	5617.088	ng/ml	99
86) Benzo[a]pyrene	49.066	252	1340412	5759.742	ng/ml	99
87) Perylene	49.397	252	1351119	5773.515	ng/ml	99
88) Indeno[1,2,3-cd]pyrene	54.202	276	1740170M3	5650.161	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.262	278	1468438	5360.728	ng/ml	96
90) Benzo[g,h,i]perylene	55.617	276	1651361	5415.033	ng/ml	98
91) Hopane (T19)	53.163	191	261837	4860.935	ng/mL	93
92) 17a(H),21B(H)-hopane - C3	53.163	191	261837	4860.935	ng/mL	93

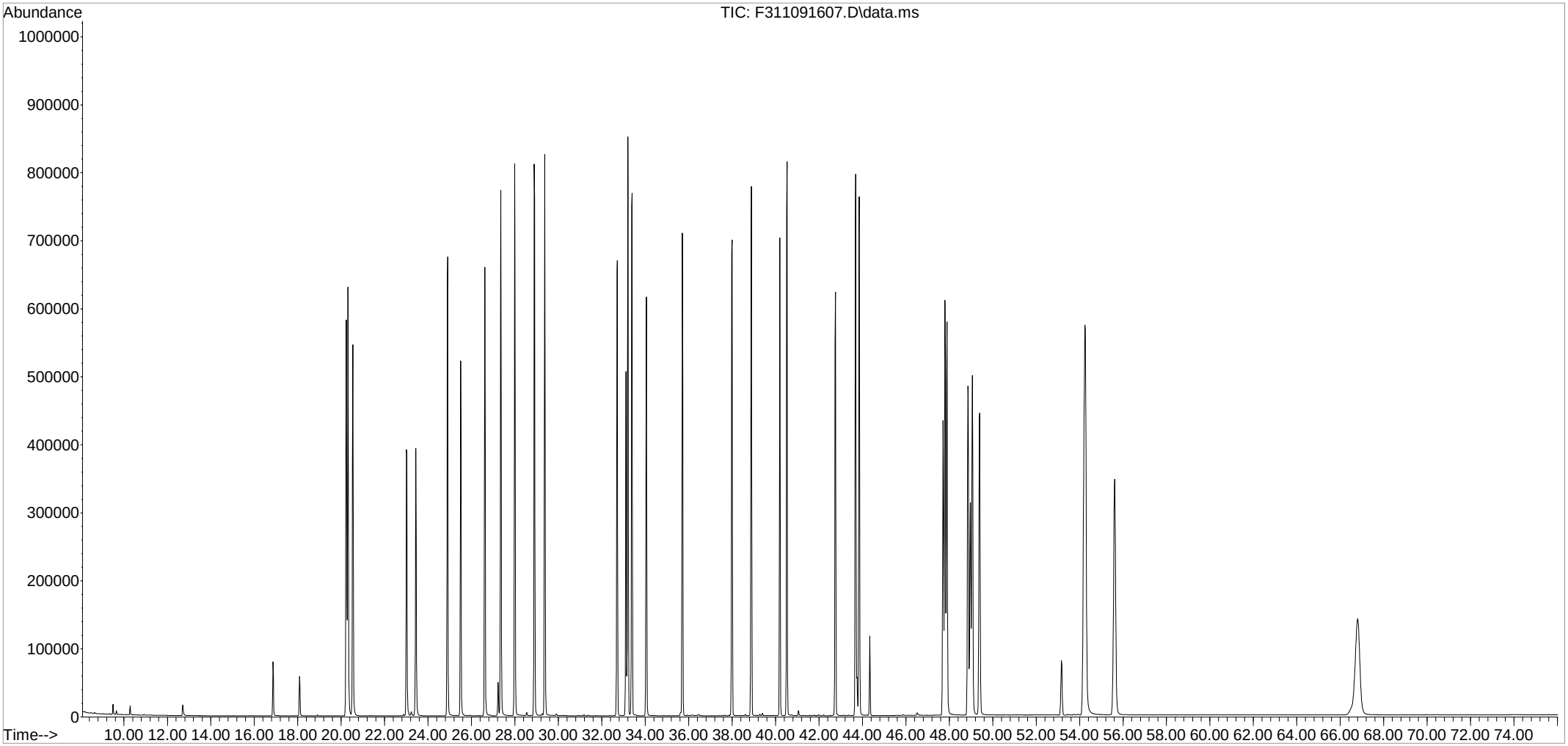
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091607.D
Acq On : 10 Nov 2016 12:58 am
Operator : AC
Sample : I311081605
Misc : FRAX30
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 20 19:47:08 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:00:51 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091608.D
Acq On : 10 Nov 2016 2:26 am
Operator : AC
Sample : I311081606
Misc : FRAX29
ALS Vial : 8 Sample Multiplier: 1

NAL
11/28/16

Quant Time: Nov 20 19:47:15 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:00:51 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc Units	Dev(Min)
Internal Standards					
1) Acenaphthene-d10	27.220	164	65535	500.000 ng/ml	-0.01
71) Chrysene-d12	43.751	240	102938	500.000 ng/ml	0.00
System Monitoring Compounds					
8) Naphthalene-d8	20.235	136	2798723	11064.972 ng/ml	-0.01
Spiked Amount 1000.000	Range 50 - 130		Recovery = 1106.50%#		
40) Phenanthrene-d10	33.121	188	2257327	10026.422 ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 1002.64%#		
80) Benzo[b]fluoranthene-d12	47.726	264	2336514	9525.900 ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 952.59%#		
85) Benzo[a]pyrene-d12	48.991	264	1812022	9138.893 ng/ml	0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery = 913.89%#		
126) 5B(H)Cholane - Surr	44.338	217	343391	10804.766 ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 1080.48%#		
Target Compounds					Qvalue
2) trans-Decalin	16.862	138	293329	5007.827 ng/ml	100
3) cis-Decalin	18.082	138	224960	5012.913 ng/ml	100
9) Naphthalene	20.310	128	2987707	12327.212 ng/ml	100
14) 2-Methylnaphthalene	23.005	142	2000666	12395.805 ng/ml	100
15) 1-Methylnaphthalene	23.441	142	1861156	12083.532 ng/ml	100
16) Benzothiophene	20.536	134	2710488	13260.642 ng/ml	100
21) Biphenyl	24.901	154	2472802	11857.946 ng/ml	100
22) 2,6-Dimethylnaphthalene	25.504	156	1736811	11754.253 ng/ml	100
23) Dibenzofuran	27.988	168	2569107	11710.010 ng/ml	93
24) Acenaphthylene	26.618	152	2987044M4	12900.189 ng/ml	
25) Acenaphthene	27.355	153	1791460	11682.775 ng/ml	97
26) 2,3,5-Trimethylnaphthalen	28.906	170	1496886	11015.743 ng/ml	98
27) Fluorene	29.373	166	1942741	11171.378 ng/ml	99
31) Dibenzothiophene	32.715	184	2888889	11790.693 ng/ml	98
41) Phenanthrene	33.211	178	2639006	10336.879 ng/ml	99
52) Retene	40.212	234	872295	9814.781 ng/ml	86
53) Anthracene	33.392	178	2487472M4	10663.862 ng/ml	
54) Carbazole	34.054	167	2478628	11064.522 ng/ml	99
55) 1-Methylphenanthrene	35.711	192	2027791	10259.013 ng/ml	99
56) Fluoranthene	37.999	202	3128227	10775.015 ng/ml	99
57) Benzo(b)fluorene	40.529	216	1868386	10124.526 ng/ml	98
58) Pyrene	38.887	202	3326505	10486.883 ng/ml	97
63) Naphthobenzothiophene	42.757	234	2926419	10186.875 ng/ml	98
64) Naphthobenzothiophene-2,1	42.757	234	2926419	10186.875 ng/ml	98
72) Benz[a]anthracene	43.690	228	2771522	11742.331 ng/ml	100
73) Chrysene	43.856	228	2507421	10584.180 ng/mL	99
74) Chrysene/Triphenylene	43.856	228	2507421	10584.180 ng/ml	99
81) Benzo[b]fluoranthene	47.816	252	2945887	11045.325 ng/ml	100
82) Benzo[j]+[k]fluoranthene	47.907	252	2493170	10015.075 ng/ml	99
84) Benzo[e]pyrene	48.870	252	2605789	10396.992 ng/ml	100
86) Benzo[a]pyrene	49.081	252	2396101	10154.201 ng/ml	99
87) Perylene	49.398	252	2399158	10110.705 ng/ml	100
88) Indeno[1,2,3-cd]pyrene	54.232	276	3441638M3	11020.727 ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.292	278	2871202	10337.317 ng/ml#	95
90) Benzo[g,h,i]perylene	55.647	276	3156827	10209.059 ng/ml	98
91) Hopane (T19)	53.178	191	503137	9211.936 ng/mL	93
92) 17a(H),21B(H)-hopane - C3	53.178	191	503137	9211.936 ng/mL	93

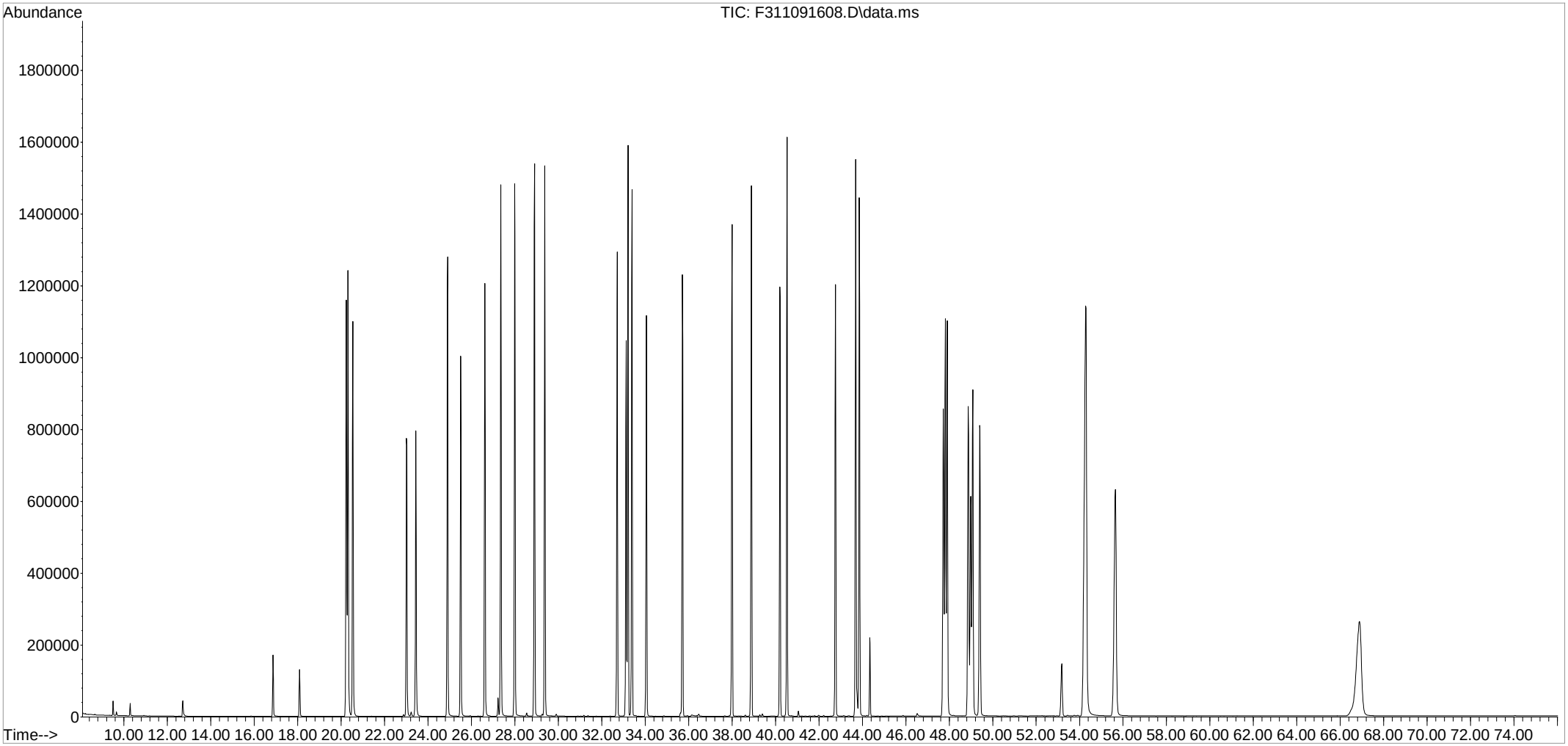
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091608.D
Acq On : 10 Nov 2016 2:26 am
Operator : AC
Sample : I311081606
Misc : FRAX29
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 20 19:47:15 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:00:51 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091609.D
Acq On : 10 Nov 2016 3:55 am
Operator : AC
Sample : I311081607
Misc : FRAX28
ALS Vial : 9 Sample Multiplier: 1

MAL 11/28/16

Quant Time: Nov 20 19:47:23 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:00:51 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.220	164	60876	500.000	ng/ml	-0.02
71) Chrysene-d12	43.765	240	97005	500.000	ng/ml	0.02
System Monitoring Compounds						
8) Naphthalene-d8	20.249	136	5330222	22686.260	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 2268.63%#			
40) Phenanthrene-d10	33.121	188	4060061	19413.832	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 1941.38%#			
80) Benzo[b]fluoranthene-d12	47.741	264	4546396	19669.190	ng/ml	0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery = 1966.92%#			
85) Benzo[a]pyrene-d12	49.006	264	3230321	17288.504	ng/ml	0.05
Spiked Amount 1000.000	Range 50 - 130		Recovery = 1728.85%#			
126) 5B(H)Cholane - Surr	44.353	217	646098	21572.798	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 2157.28%#			
Target Compounds						Qvalue
2) trans-Decalin	16.862	138	574608	10560.712	ng/ml	100
3) cis-Decalin	18.097	138	441201	10583.968	ng/ml	100
9) Naphthalene	20.325	128	5561998	24705.001	ng/ml	100
14) 2-Methylnaphthalene	23.019	142	3751853	25024.947	ng/ml	100
15) 1-Methylnaphthalene	23.441	142	3428522	23963.225	ng/ml	100
16) Benzothiophene	20.535	134	5015127	26413.514	ng/ml	100
21) Biphenyl	24.901	154	4466320	23056.700	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.518	156	3105426	22625.119	ng/ml	100
23) Dibenzofuran	28.002	168	4302644	21112.404	ng/ml	92
24) Acenaphthylene	26.617	152	5143979M4	23915.575	ng/ml	
25) Acenaphthene	27.355	153	3083832	21649.945	ng/ml	97
26) 2,3,5-Trimethylnaphthalen	28.906	170	2608767	20667.482	ng/ml	99
27) Fluorene	29.387	166	3233707	20017.954	ng/ml	99
31) Dibenzothiophene	32.714	184	5075922	22302.349	ng/ml	98
41) Phenanthrene	33.211	178	4266142	17989.189	ng/ml	99
52) Retene	40.212	234	1654007	20034.651	ng/ml	81
53) Anthracene	33.392	178	3761247M4	17358.627	ng/ml	
54) Carbazole	34.069	167	4016572	19302.077	ng/ml	99
55) 1-Methylphenanthrene	35.725	192	3550370	19336.737	ng/ml	98
56) Fluoranthene	38.014	202	5501934	20401.504	ng/ml	98
57) Benzo(b)fluorene	40.543	216	3146081	18352.921	ng/ml	97
58) Pyrene	38.902	202	5756596	19536.700	ng/ml	97
63) Naphthobenzothiophene	42.772	234	5033595	18862.964	ng/ml	98
64) Naphthobenzothiophene-2,1	42.772	234	5033595	18862.964	ng/ml	98
72) Benz[a]anthracene	43.705	228	4791450	21541.928	ng/ml	100
73) Chrysene	43.871	228	4234698	18968.545	ng/mL	99
74) Chrysene/Triphenylene	43.871	228	4234698	18968.545	ng/ml	99
81) Benzo[b]fluoranthene	47.846	252	5069309	20169.391	ng/ml	99
82) Benzo[j]+[k]fluoranthene	47.921	252	4089333	17431.567	ng/ml	98
84) Benzo[e]pyrene	48.900	252	4449592	18839.538	ng/ml	100
86) Benzo[a]pyrene	49.111	252	3690732	16597.197	ng/ml	100
87) Perylene	49.427	252	3814161	17057.022	ng/ml	100
88) Indeno[1,2,3-cd]pyrene	54.277	276	6587099M3	22383.131	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.352	278	5353461	20453.156	ng/ml#	94
90) Benzo[g,h,i]perylene	55.692	276	5648360	19383.800	ng/ml	97

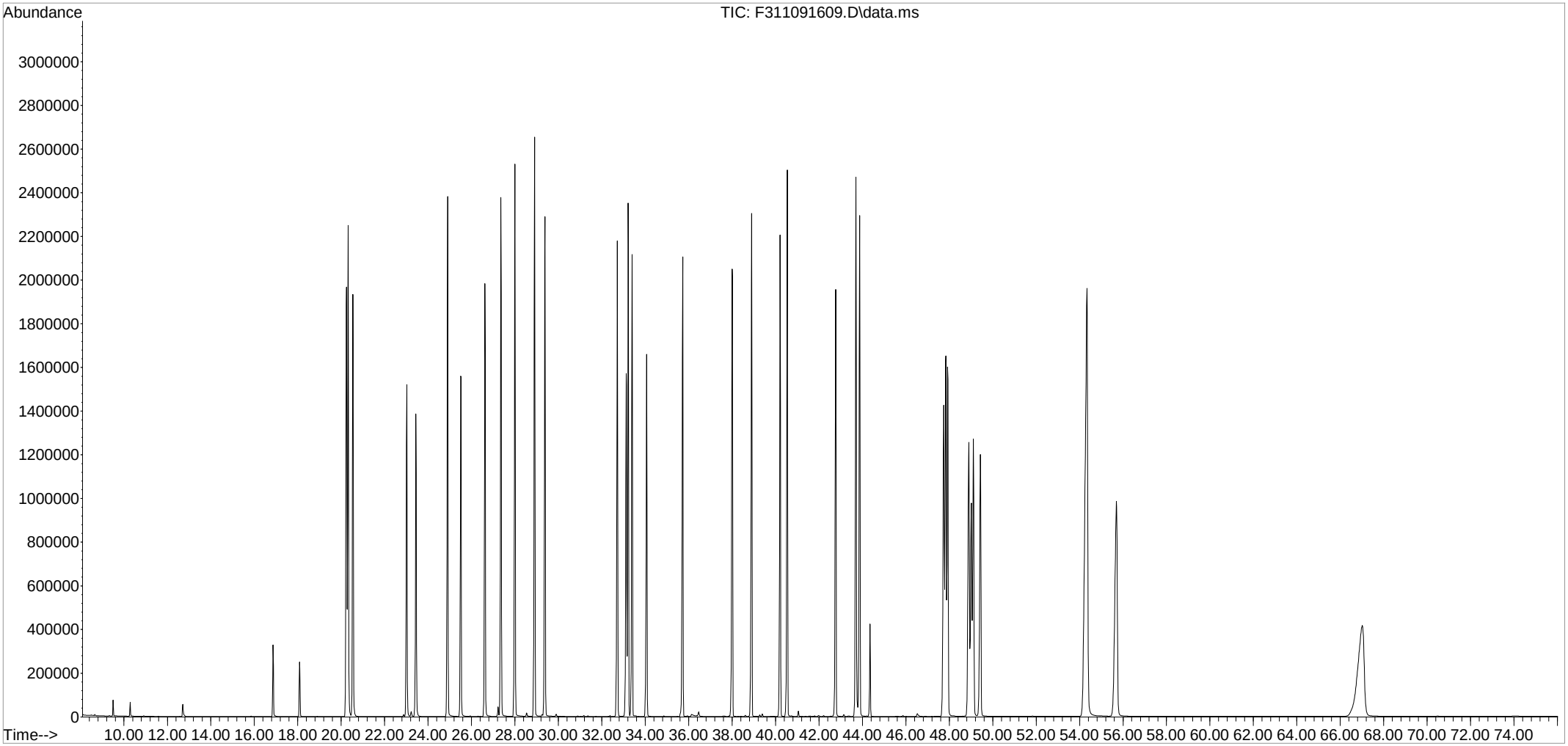
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091609.D
Acq On : 10 Nov 2016 3:55 am
Operator : AC
Sample : I311081607
Misc : FRAX28
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Nov 20 19:47:23 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:00:51 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091611.D
Acq On : 10 Nov 2016 6:49 am
Operator : AC
Sample : QC311081601
Misc : FRAX54
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 20 19:47:28 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:15:38 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Acenaphthene-d10	1.000	1.000	0.0	122	0.00
2	A1	trans-Decalin	0.433	0.410	5.3	122	0.00
3	t	cis-Decalin	0.325	0.318	2.2	127	0.00
8	s	Naphthalene-d8	2.145	0.000#	100.0#	0#	-20.25#
9	A1	Naphthalene	2.359	2.392	-1.4	123	0.00
14	t	2-Methylnaphthalene	1.500	1.555	-3.7	129	-0.01
15	t	1-Methylnaphthalene	1.421	1.461	-2.8	126	0.00
16	A1	Benzothiophene	2.089	2.148	-2.8	124	0.00
21	t	Biphenyl	1.904	1.993	-4.7	130	-0.01
22	t	2,6-Dimethylnaphthalene	1.301	1.357	-4.3	130	0.00
23	t	Dibenzofuran	1.998	2.188	-9.5	131	-0.01
24	t	Acenaphthylene	2.284	2.431	-6.4	129	-0.01
25	t	Acenaphthene	1.397	1.479	-5.9	129	0.00
26	t	2,3,5-Trimethylnaphthalene	1.118	1.163	-4.0	128	-0.01
27	A1	Fluorene	1.525	1.657	-8.7	131	0.00
31	A1	Dibenzothiophene	2.250	2.491	-10.7	133	0.00
40	s	Phenanthrene-d10	1.644	0.000#	100.0#	0#	-33.12#
41	A1	Phenanthrene	2.138	2.373	-11.0	129	0.00
52	t	Retene	0.595	0.580	2.5	129	0.00
53	t	Anthracene	2.029	2.212	-9.0	130	0.00
54	t	Carbazole	1.982	2.136	-7.8	129	0.00
55	t	1-Methylphenanthrene	1.577	1.663	-5.5	130	0.00
56	A1	Fluoranthene	2.373	2.557	-7.8	129	0.00
57	t	Benzo(b)fluorene	1.406	1.456	-3.6	130	0.00
58	A1	Pyrene	2.572	2.765	-7.5	128	0.00
63	A1	Naphthobenzothiophene	2.229	2.372	-6.4	130	0.00
64	A2	Naphthobenzothiophene-2,1-D	2.229	2.372	-6.4	130	0.00
71	i	Chrysene-d12	1.000	1.000	0.0	121	0.00
72	t	Benz[a]anthracene	1.385	1.462	-5.6	129	-0.01
73	A1	Chrysene	1.299	1.406	-8.2	128	0.00
74	A2	Chrysene/Triphenylene	1.299	1.406	-8.2	128	0.00
80	s	Benzo[b]fluoranthene-d12	1.041	0.000#	100.0#	0#	-47.71#
81	t	Benzo[b]fluoranthene	1.410	1.572	-11.5	129	0.00
82	A1	Benzo[j]+[k]fluoranthene	1.299	1.404	-8.1	133	0.00
84	t	Benzo[e]pyrene	1.311	1.417	-8.1	130	0.00
85	s	Benzo[a]pyrene-d12	0.838	0.000#	100.0#	0#	-48.96#
86	t	Benzo[a]pyrene	1.251	1.444	-15.4	133	0.00
87	t	Perylene	1.266	1.424	-12.5	131	0.00
88	t	Indeno[1,2,3-cd]pyrene	1.615	1.695	-5.0	130	0.00
89	t	Dibenz[ah]+[ac]anthracene	1.378	1.471	-6.7	131	0.00
90	t	Benzo[g,h,i]perylene	1.562	1.593	-2.0	127	0.00
91	A1	Hopane (T19)	0.286	0.000#	100.0#	0#	-53.16#
92	A2	17a(H),21B(H)-hopane - C30H	0.286	0.000#	100.0#	0#	-53.16#
126	SA1	5B(H)Cholane - Surr	0.162	0.000#	100.0#	0#	-44.34#

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Concentration)	Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene	0.92	0.70 - 1.30

Mass Discrimination (Response)	Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene	0.99	0.70 - 2.00

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091611.D
Acq On : 10 Nov 2016 6:49 am
Operator : AC
Sample : QC311081601
Misc : FRAX54
ALS Vial : 11 Sample Multiplier: 1

NAL 11/28/16

Quant Time: Nov 20 19:47:28 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:15:38 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.235	164	86949	500.000	ng/ml	0.00
71) Chrysene-d12	43.750	240	127633	500.000	ng/ml	0.00
System Monitoring Compounds						
8) Naphthalene-d8	0.000	136	0d	0.000	ng/ml	
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.00%#		
40) Phenanthrene-d10	0.000	188	0d	0.000	ng/ml	
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.00%#		
80) Benzo[b]fluoranthene-d12	0.000	264	0d	0.000	ng/ml	
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.00%#		
85) Benzo[a]pyrene-d12	0.000	264	0d	0.000	ng/ml	
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.00%#		
126) 5B(H)Cholane - Surr	0.000	217	0	0.000	ng/ml	
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.00%#		
Target Compounds						Qvalue
2) trans-Decalin	16.862	138	17841	236.837	ng/ml	100
3) cis-Decalin	18.097	138	13826	244.337	ng/ml	100
9) Naphthalene	20.325	128	207983	507.061	ng/ml	100
14) 2-Methylnaphthalene	23.020	142	135224	518.555	ng/ml	100
15) 1-Methylnaphthalene	23.456	142	127002	514.118	ng/ml	100
16) Benzothiophene	20.551	134	186724	514.020	ng/ml	100
21) Biphenyl	24.901	154	173317	523.536	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.519	156	118006	521.412	ng/ml	100
23) Dibenzofuran	28.003	168	190227	547.432	ng/ml	93
24) Acenaphthylene	26.618	152	211367M4	532.055	ng/ml	
25) Acenaphthene	27.355	153	128634	529.540	ng/ml	100
26) 2,3,5-Trimethylnaphthalen	28.906	170	101151	520.143	ng/ml	93
27) Fluorene	29.388	166	144052	543.180	ng/ml	100
31) Dibenzothiophene	32.714	184	216560	553.396	ng/ml	98
41) Phenanthrene	33.211	178	206308	554.972	ng/ml	99
52) Retene	40.197	234	50417	487.441	ng/ml	96
53) Anthracene	33.392	178	192345M4	545.181	ng/ml	
54) Carbazole	34.054	167	185687	538.727	ng/ml	100
55) 1-Methylphenanthrene	35.725	192	144610	527.455	ng/ml	99
56) Fluoranthene	37.999	202	222328M4	538.849	ng/ml	
57) Benzo(b)fluorene	40.528	216	126563	517.694	ng/ml	100
58) Pyrene	38.887	202	240375	537.431	ng/ml	99
63) Naphthobenzothiophene	42.757	234	206232	532.007	ng/ml	97
64) Naphthobenzothiophene-2,1	42.757	234	206232	532.007	ng/ml	97
72) Benz[a]anthracene	43.675	228	186658	527.797	ng/ml	100
73) Chrysene	43.856	228	179483	541.152	ng/mL	99
74) Chrysene/Triphenylene	43.856	228	179483	541.152	ng/ml	99
81) Benzo[b]fluoranthene	47.801	252	200579	557.430	ng/ml	98
82) Benzo[j]+[k]fluoranthene	47.876	252	179182	540.195	ng/ml	99
84) Benzo[e]pyrene	48.855	252	180823	540.417	ng/ml	98
86) Benzo[a]pyrene	49.051	252	184340	577.433	ng/ml	97
87) Perylene	49.382	252	181707	562.142	ng/ml	97
88) Indeno[1,2,3-cd]pyrene	54.202	276	216355M3	524.807	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.262	278	187788	533.691	ng/ml	99
90) Benzo[g,h,i]perylene	55.602	276	203312	509.864	ng/ml	100

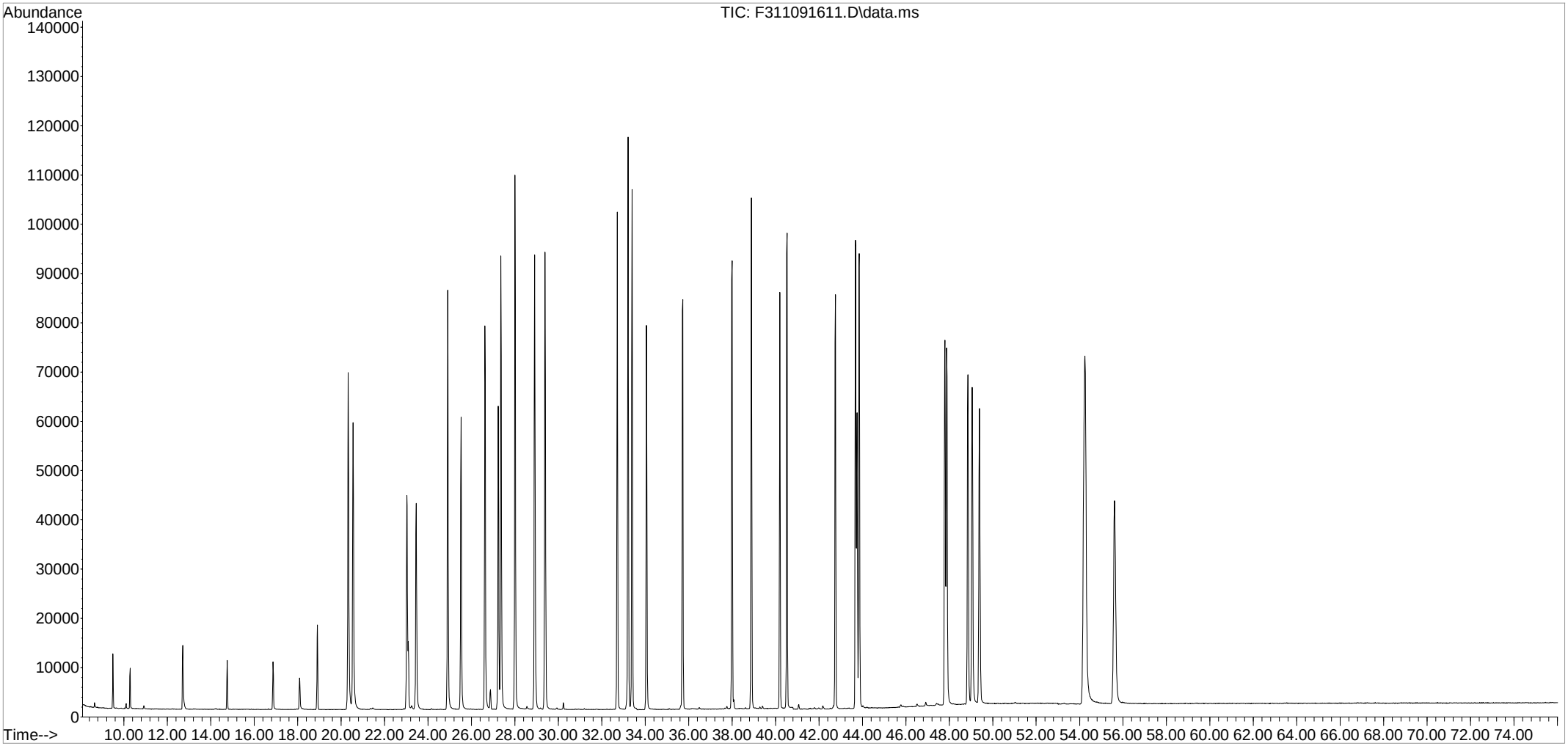
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV09\
Data File : F311091611.D
Acq On : 10 Nov 2016 6:49 am
Operator : AC
Sample : QC311081601
Misc : FRAX54
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 20 19:47:28 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sun Nov 20 16:15:38 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV22\
Data File : F311221602.D
Acq On : 22 Nov 2016 10:30 am
Operator : AC
Sample : C311221601
Misc : DCM
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 29 13:35:21 2016
Quant Method : O:\FORENSICS\DATA\PAH3\2016\NOV16\NOV09\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Acenaphthene-d10	1.000	1.000	0.0	124	0.01
2	A1	trans-Decalin	0.433	0.417	3.7	125	0.00
3	t	cis-Decalin	0.325	0.301	7.4	122	0.00
8	s	Naphthalene-d8	2.145	2.217	-3.4	131	0.00
9	A1	Naphthalene	2.359	2.557	-8.4	133	0.00
14	t	2-Methylnaphthalene	1.500	1.576	-5.1	132	0.02
15	t	1-Methylnaphthalene	1.421	1.514	-6.5	132	0.02
16	A1	Benzothiophene	2.089	2.343	-12.2	136	0.00
21	t	Biphenyl	1.904	2.035	-6.9	134	0.00
22	t	2,6-Dimethylnaphthalene	1.301	1.384	-6.4	134	0.02
23	t	Dibenzofuran	1.998	2.244	-12.3	135	0.00
24	t	Acenaphthylene	2.284	2.472	-8.2	133	0.00
25	t	Acenaphthene	1.397	1.518	-8.7	134	0.02
26	t	2,3,5-Trimethylnaphthalene	1.118	1.189	-6.4	133	0.00
27	A1	Fluorene	1.525	1.683	-10.4	134	0.02
31	A1	Dibenzothiophene	2.250	2.546	-13.2	137	0.02
40	s	Phenanthrene-d10	1.644	1.782	-8.4	140	0.02
41	A1	Phenanthrene	2.138	2.444	-14.3	135	0.02
52	t	Retene	0.595	0.603	-1.3	136	0.02
53	t	Anthracene	2.029	2.282	-12.5	135	0.02
54	t	Carbazole	1.982	2.215	-11.8	135	0.02
55	t	1-Methylphenanthrene	1.577	1.700	-7.8	135	0.02
56	A1	Fluoranthene	2.373	2.614	-10.2	133	0.02
57	t	Benzo(b)fluorene	1.406	1.515	-7.8	136	0.02
58	A1	Pyrene	2.572	2.850	-10.8	134	0.02
63	A1	Naphthobenzothiophene	2.229	2.454	-10.1	136	0.00
64	A2	Naphthobenzothiophene-2,1-D	2.229	2.454	-10.1	136	0.00
71	i	Chrysene-d12	1.000	1.000	0.0	131	0.02
72	t	Benz[a]anthracene	1.385	1.426	-3.0	137	0.00
73	A1	Chrysene	1.299	1.403	-8.0	139	0.00
74	A2	Chrysene/Triphenylene	1.299	1.403	-8.0	139	0.00
80	s	Benzo[b]fluoranthene-d12	1.041	0.981	5.8	128	0.02
81	t	Benzo[b]fluoranthene	1.410	1.488	-5.5	133	0.02
82	A1	Benzo[j]+[k]fluoranthene	1.299	1.309	-0.8	135	0.02
84	t	Benzo[e]pyrene	1.311	1.319	-0.6	132	0.02
85	s	Benzo[a]pyrene-d12	0.838	0.802	4.3	123	0.02
86	t	Benzo[a]pyrene	1.251	1.303	-4.2	130	0.03
87	t	Perylene	1.266	1.339	-5.8	134	0.03
88	t	Indeno[1,2,3-cd]pyrene	1.615	1.515	6.2	126	0.05
89	t	Dibenz[ah]+[ac]anthracene	1.378	1.332	3.3	129	0.03
90	t	Benzo[g,h,i]perylene	1.562	1.527	2.2	132	0.05
91	A1	Hopane (T19)	0.286	0.271	5.2	123	0.02
92	A2	17a(H),21B(H)-hopane - C30H	0.286	0.271	5.2	123	0.02
126	SA1	5B(H)Cholane - Surr	0.162	0.167	-3.1	144	0.00

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Concentration)	Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene	0.86	0.70 - 1.30

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV22\
Data File : F311221602.D
Acq On : 22 Nov 2016 10:30 am
Operator : AC
Sample : C311221601
Misc : DCM
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 29 13:35:21 2016
Quant Method : O:\FORENSICS\DATA\PAH3\2016\NOV16\NOV09\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area% Dev(min)
Mass Discrimination (Response)			Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene			0.99	0.70 - 2.00

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV22\
Data File : F311221602.D
Acq On : 22 Nov 2016 10:30 am
Operator : AC
Sample : C311221601
Misc : DCM
ALS Vial : 2 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:35:21 2016
Quant Method : O:\FORENSICS\DATA\PAH3\2016\NOV16\NOV09\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.250	164	87846	500.000	ng/ml	0.01
71) Chrysene-d12	43.766	240	138717	500.000	ng/ml	0.02
System Monitoring Compounds						
8) Naphthalene-d8	20.249	136	194725	516.782	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.68%			
40) Phenanthrene-d10	33.136	188	156568	542.225	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 54.22%			
80) Benzo[b]fluoranthene-d12	47.726	264	136075	470.946	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 47.09%#			
85) Benzo[a]pyrene-d12	48.976	264	111198	478.090	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 47.81%#			
126) 5B(H)Cholane - Surr	44.338	217	23222	515.485	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.55%			
Target Compounds						Qvalue
2) trans-Decalin	16.862	138	18309	240.568	ng/ml	100
3) cis-Decalin	18.097	138	13227	231.364	ng/ml	100
9) Naphthalene	20.325	128	224662	542.132	ng/ml	100
14) 2-Methylnaphthalene	23.050	142	138418	525.383	ng/ml	100
15) 1-Methylnaphthalene	23.471	142	132962	532.748	ng/ml	100
16) Benzothiophene	20.551	134	205856	560.901	ng/ml	100
21) Biphenyl	24.916	154	178780	534.524	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.534	156	121604	531.824	ng/ml	100
23) Dibenzofuran	28.018	168	197113	561.457	ng/ml	96
24) Acenaphthylene	26.633	152	217142M4	541.011	ng/ml	
25) Acenaphthene	27.370	153	133378	543.462	ng/ml	98
26) 2,3,5-Trimethylnaphthalen	28.921	170	104436	531.552	ng/ml	95
27) Fluorene	29.403	166	147872	551.890	ng/ml	100
31) Dibenzothiophene	32.730	184	223653	565.686	ng/ml	99
41) Phenanthrene	33.226	178	214657	571.535	ng/ml	100
52) Retene	40.212	234	53001	507.192	ng/ml	95
53) Anthracene	33.407	178	200466M4	562.397	ng/ml	
54) Carbazole	34.069	167	194609	558.847	ng/ml	98
55) 1-Methylphenanthrene	35.741	192	149354	539.196	ng/ml	99
56) Fluoranthene	38.014	202	229589	550.765	ng/ml#	93
57) Benzo(b)fluorene	40.544	216	133120	538.955	ng/ml	100
58) Pyrene	38.902	202	250345	554.006	ng/ml	93
63) Naphthobenzothiophene	42.757	234	215585	550.456	ng/ml	99
64) Naphthobenzothiophene-2,1	42.757	234	215585	550.456	ng/ml	99
72) Benz[a]anthracene	43.690	228	197754	514.492	ng/ml	99
73) Chrysene	43.856	228	194581	539.796	ng/mL	99
74) Chrysene/Triphenylene	43.856	228	194581	539.796	ng/ml	99
81) Benzo[b]fluoranthene	47.816	252	206349	527.644	ng/ml	99
82) Benzo[j]+[k]fluoranthene	47.891	252	181552	503.606	ng/ml	99
84) Benzo[e]pyrene	48.870	252	182951	503.087	ng/ml	98
86) Benzo[a]pyrene	49.081	252	180746	520.936	ng/ml	98
87) Perylene	49.413	252	185761	528.764	ng/ml	98
88) Indeno[1,2,3-cd]pyrene	54.247	276	210220M3	469.181	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.292	278	184804	483.244	ng/ml	97
90) Benzo[g,h,i]perylene	55.647	276	211801	488.712	ng/ml	99
91) Hopane (T19)	53.178	191	37641	474.757	ng/mL	95
92) 17a(H),21B(H)-hopane - C3	53.178	191	37641	474.757	ng/mL	95

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV22\
Data File : F311221602.D
Acq On : 22 Nov 2016 10:30 am
Operator : AC
Sample : C311221601
Misc : DCM
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 29 13:35:21 2016
Quant Method : O:\FORENSICS\DATA\PAH3\2016\NOV16\NOV09\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

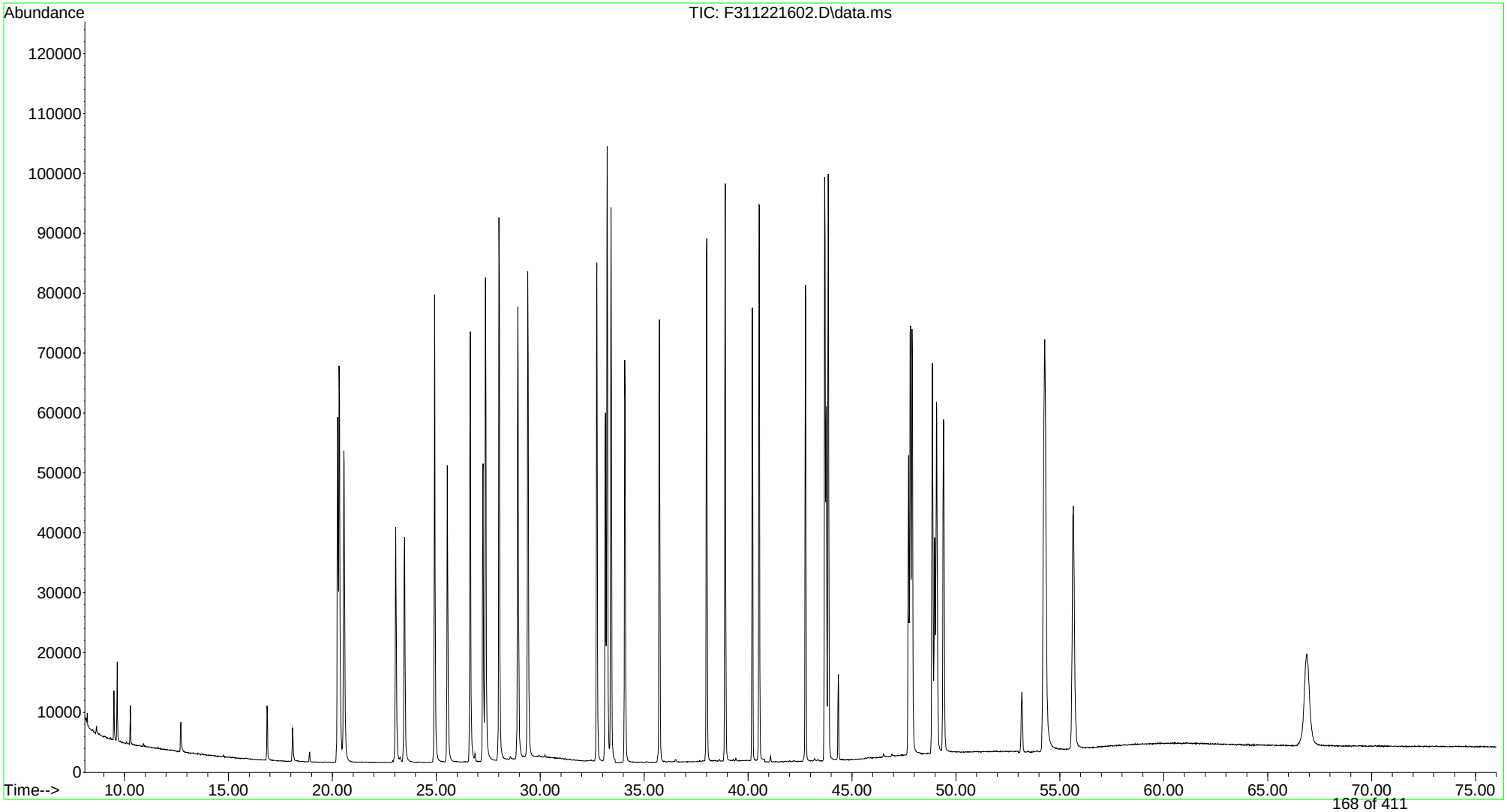
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV22\
Data File : F311221602.D
Acq On : 22 Nov 2016 10:30 am
Operator : AC
Sample : C311221601
Misc : DCM
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 29 13:35:21 2016
Quant Method : O:\FORENSICS\DATA\PAH3\2016\NOV16\NOV09\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV22\
Data File : F311221612.D
Acq On : 23 Nov 2016 4:24 am
Operator : AC
Sample : C311221602
Misc : CC FRAX92 500NG/ML
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 29 13:36:04 2016
Quant Method : O:\FORENSICS\DATA\PAH3\2016\NOV16\NOV22\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Acenaphthene-d10	1.000	1.000	0.0	171	0.00
2	A1	trans-Decalin	0.433	0.426	1.6	177	0.00
3	t	cis-Decalin	0.325	0.328	-0.9	183	-0.01
8	s	Naphthalene-d8	2.145	2.222	-3.6	182	0.00
9	A1	Naphthalene	2.359	2.532	-7.3	182	0.00
14	t	2-Methylnaphthalene	1.500	1.596	-6.4	185	0.00
15	t	1-Methylnaphthalene	1.421	1.509	-6.2	182	0.00
16	A1	Benzothiophene	2.089	2.296	-9.9	185	0.00
21	t	Biphenyl	1.904	2.042	-7.2	186	0.00
22	t	2,6-Dimethylnaphthalene	1.301	1.392	-7.0	186	0.00
23	t	Dibenzofuran	1.998	2.274	-13.8	190	0.00
24	t	Acenaphthylene	2.284	2.508	-9.8	186	0.00
25	t	Acenaphthene	1.397	1.521	-8.9	186	0.00
26	t	2,3,5-Trimethylnaphthalene	1.118	1.199	-7.2	185	0.00
27	A1	Fluorene	1.525	1.690	-10.8	187	0.02
31	A1	Dibenzothiophene	2.250	2.515	-11.8	187	0.00
40	s	Phenanthrene-d10	1.644	1.744	-6.1	189	0.00
41	A1	Phenanthrene	2.138	2.436	-13.9	186	0.00
52	t	Retene	0.595	0.592	0.5	184	0.02
53	t	Anthracene	2.029	2.262	-11.5	186	0.02
54	t	Carbazole	1.982	2.198	-10.9	185	0.02
55	t	1-Methylphenanthrene	1.577	1.686	-6.9	185	0.02
56	A1	Fluoranthene	2.373	2.602	-9.7	183	0.00
57	t	Benzo(b)fluorene	1.406	1.468	-4.4	183	0.02
58	A1	Pyrene	2.572	2.815	-9.4	183	0.02
63	A1	Naphthobenzothiophene	2.229	2.442	-9.6	187	0.00
64	A2	Naphthobenzothiophene-2,1-D	2.229	2.442	-9.6	187	0.00
71	i	Chrysene-d12	1.000	1.000	0.0	174	0.02
72	t	Benz[a]anthracene	1.385	1.451	-4.8	185	0.00
73	A1	Chrysene	1.299	1.410	-8.5	185	0.00
74	A2	Chrysene/Triphenylene	1.299	1.410	-8.5	185	0.00
80	s	Benzo[b]fluoranthene-d12	1.041	1.000	3.9	173	0.02
81	t	Benzo[b]fluoranthene	1.410	1.410	0.0	167	0.00
82	A1	Benzo[j]+[k]fluoranthene	1.299	1.479	-13.9	202#	0.02
84	t	Benzo[e]pyrene	1.311	1.364	-4.0	181	0.02
85	s	Benzo[a]pyrene-d12	0.838	0.811	3.2	165	0.02
86	t	Benzo[a]pyrene	1.251	1.337	-6.9	177	0.02
87	t	Perylene	1.266	1.360	-7.4	181	0.03
88	t	Indeno[1,2,3-cd]pyrene	1.615	1.554	3.8	172	0.05
89	t	Dibenz[ah]+[ac]anthracene	1.378	1.364	1.0	175	0.03
90	t	Benzo[g,h,i]perylene	1.562	1.571	-0.6	180	0.05
91	A1	Hopane (T19)	0.286	0.263	8.0	157	0.00
92	A2	17a(H),21B(H)-hopane - C30H	0.286	0.263	8.0	157	0.00
126	SA1	5B(H)Cholane - Surr	0.162	0.164	-1.2	187	0.00

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Concentration)	Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene	0.88	0.70 - 1.30

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV22\
Data File : F311221612.D
Acq On : 23 Nov 2016 4:24 am
Operator : AC
Sample : C311221602
Misc : CC FRAX92 500NG/ML
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 29 13:36:04 2016
Quant Method : O:\FORENSICS\DATA\PAH3\2016\NOV16\NOV22\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area% Dev(min)
Mass Discrimination (Response)			Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene			0.98	0.70 - 2.00

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV22\
Data File : F311221612.D
Acq On : 23 Nov 2016 4:24 am
Operator : AC
Sample : C311221602
Misc : CC FRAX92 500NG/ML
ALS Vial : 12 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:36:04 2016
Quant Method : O:\FORENSICS\DATA\PAH3\2016\NOV16\NOV22\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.235	164	121485	500.000	ng/ml	0.00
71) Chrysene-d12	43.766	240	183724	500.000	ng/ml	0.02
System Monitoring Compounds						
8) Naphthalene-d8	20.250	136	269900	517.950	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.80%			
40) Phenanthrene-d10	33.121	188	211879	530.596	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 53.06%			
80) Benzo[b]fluoranthene-d12	47.726	264	183666	479.938	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 47.99%#			
85) Benzo[a]pyrene-d12	48.976	264	149073	483.923	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 48.39%#			
126) 5B(H)Cholane - Surr	44.338	217	30110	504.651	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 50.47%			
Target Compounds						Qvalue
2) trans-Decalin	16.862	138	25870	245.793	ng/ml	100
3) cis-Decalin	18.082	138	19939	252.196	ng/ml	100
9) Naphthalene	20.325	128	307578	536.698	ng/ml	100
14) 2-Methylnaphthalene	23.035	142	193950	532.320	ng/ml	100
15) 1-Methylnaphthalene	23.456	142	183367	531.270	ng/ml	100
16) Benzothiophene	20.551	134	278911	549.525	ng/ml	100
21) Biphenyl	24.916	154	248087	536.354	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.519	156	169069	534.667	ng/ml	100
23) Dibenzofuran	28.018	168	276262	569.012	ng/ml	93
24) Acenaphthylene	26.633	152	304663M4	548.885	ng/ml	
25) Acenaphthene	27.355	153	184833	544.583	ng/ml	99
26) 2,3,5-Trimethylnaphthalen	28.921	170	145603	535.877	ng/ml	92
27) Fluorene	29.403	166	205295	554.044	ng/ml	100
31) Dibenzothiophene	32.715	184	305575	558.879	ng/ml	98
41) Phenanthrene	33.211	178	295977	569.843	ng/ml	100
52) Retene	40.212	234	71935	497.769	ng/ml	96
53) Anthracene	33.407	178	274788M4	557.442	ng/ml	
54) Carbazole	34.069	167	266982	554.385	ng/ml	100
55) 1-Methylphenanthrene	35.741	192	204830	534.716	ng/ml	100
56) Fluoranthene	37.999	202	316127M4	548.373	ng/ml	
57) Benzo(b)fluorene	40.544	216	178305	522.002	ng/ml	100
58) Pyrene	38.902	202	342036	547.327	ng/ml	99
63) Naphthobenzothiophene	42.757	234	296630	547.669	ng/ml	96
64) Naphthobenzothiophene-2,1	42.757	234	296630	547.669	ng/ml	96
72) Benz[a]anthracene	43.690	228	266572	523.638	ng/ml	100
73) Chrysene	43.856	228	259004	542.500	ng/mL	99
74) Chrysene/Triphenylene	43.856	228	259004	542.500	ng/ml	99
81) Benzo[b]fluoranthene	47.801	252	259022	500.079	ng/ml	98
82) Benzo[j]+[k]fluoranthene	47.891	252	271770	569.187	ng/ml	98
84) Benzo[e]pyrene	48.870	252	250625	520.351	ng/ml	98
86) Benzo[a]pyrene	49.066	252	245612	534.477	ng/ml	98
87) Perylene	49.413	252	249804	536.872	ng/ml	98
88) Indeno[1,2,3-cd]pyrene	54.247	276	285512M4	481.121	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.292	278	250604	494.774	ng/ml	99
90) Benzo[g,h,i]perylene	55.647	276	288585	502.762	ng/ml	99
91) Hopane (T19)	53.163	191	48275	459.723	ng/mL	95
92) 17a(H),21B(H)-hopane - C3	53.163	191	48275	459.723	ng/mL	95

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV22\
Data File : F311221612.D
Acq On : 23 Nov 2016 4:24 am
Operator : AC
Sample : C311221602
Misc : CC FRAX92 500NG/ML
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 29 13:36:04 2016
Quant Method : O:\FORENSICS\DATA\PAH3\2016\NOV16\NOV22\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

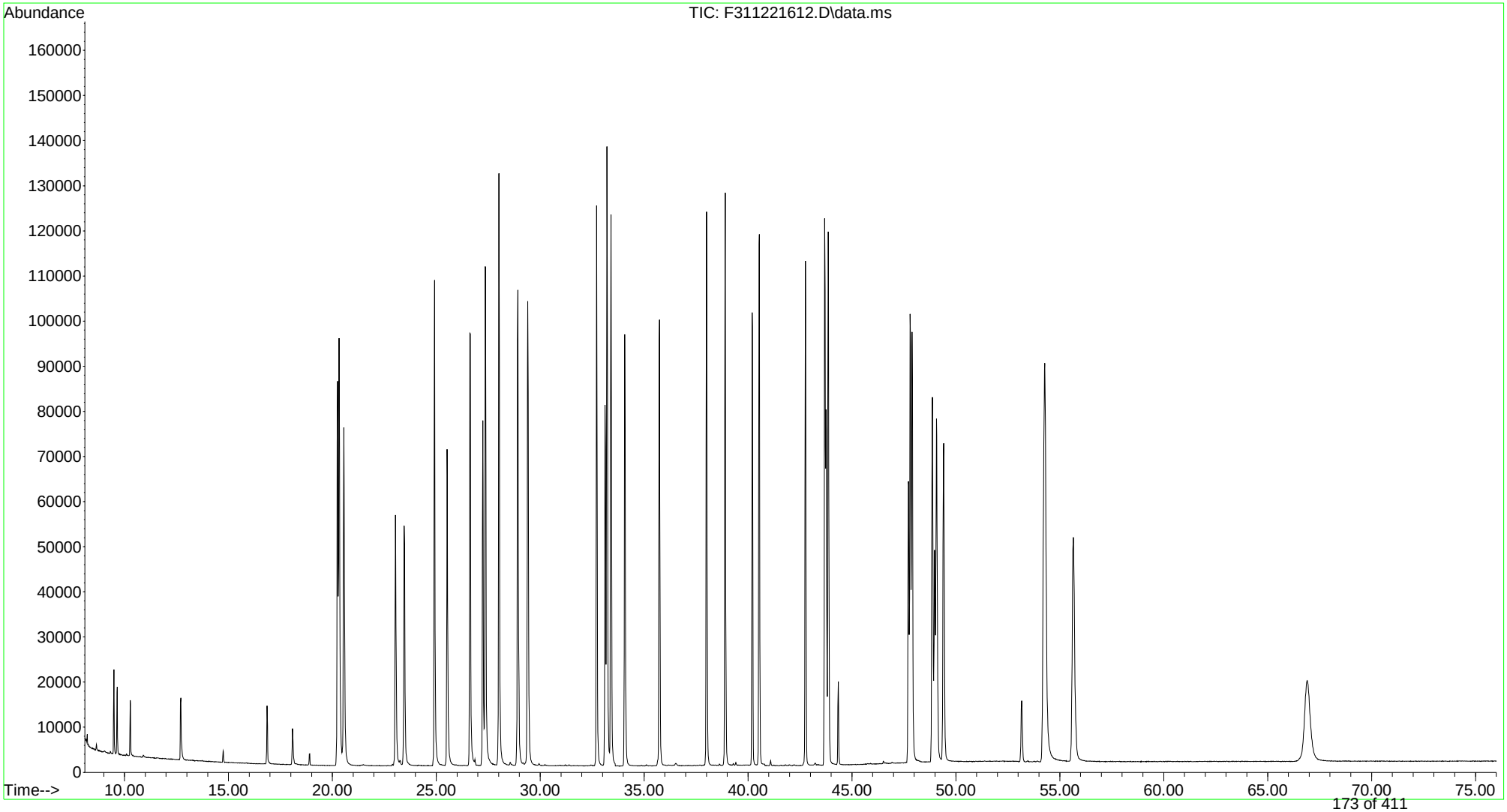
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV22\
Data File : F311221612.D
Acq On : 23 Nov 2016 4:24 am
Operator : AC
Sample : C311221602
Misc : CC FRAX92 500NG/ML
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Nov 29 13:36:04 2016
Quant Method : O:\FORENSICS\DATA\PAH3\2016\NOV16\NOV22\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251602.D
Acq On : 25 Nov 2016 2:01 pm
Operator : AC
Sample : C311251601
Misc : CC FRAX92 500NG/ML
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 29 13:39:50 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Acenaphthene-d10	1.000	1.000	0.0	111	-0.02
2	A1	trans-Decalin	0.433	0.379	12.5	102	-0.01
3	t	cis-Decalin	0.325	0.303	6.8	110	-0.03
8	s	Naphthalene-d8	2.145	2.043	4.8	109	-0.01
9	A1	Naphthalene	2.359	2.328	1.3	109	0.00
14	t	2-Methylnaphthalene	1.500	1.364	9.1	103	0.00
15	t	1-Methylnaphthalene	1.421	1.382	2.7	108	0.00
16	A1	Benzothiophene	2.089	2.145	-2.7	112	0.00
21	t	Biphenyl	1.904	1.936	-1.7	115	-0.01
22	t	2,6-Dimethylnaphthalene	1.301	1.315	-1.1	114	0.00
23	t	Dibenzofuran	1.998	2.153	-7.8	117	-0.01
24	t	Acenaphthylene	2.284	2.293	-0.4	111	-0.01
25	t	Acenaphthene	1.397	1.413	-1.1	112	-0.01
26	t	2,3,5-Trimethylnaphthalene	1.118	1.167	-4.4	117	-0.01
27	A1	Fluorene	1.525	1.623	-6.4	116	0.00
31	A1	Dibenzothiophene	2.250	2.411	-7.2	117	-0.01
40	s	Phenanthrene-d10	1.644	1.788	-8.8	126	-0.01
41	A1	Phenanthrene	2.138	2.293	-7.2	114	-0.01
52	t	Retene	0.595	0.659	-10.8	133	-0.03
53	t	Anthracene	2.029	2.215	-9.2	118	0.00
54	t	Carbazole	1.982	2.114	-6.7	116	0.00
55	t	1-Methylphenanthrene	1.577	1.684	-6.8	120	-0.01
56	A1	Fluoranthene	2.373	2.603	-9.7	119	-0.03
57	t	Benzo(b)fluorene	1.406	1.579	-12.3	128	-0.03
58	A1	Pyrene	2.572	2.838	-10.3	120	-0.03
63	A1	Naphthobenzothiophene	2.229	2.521	-13.1	126	-0.05
64	A2	Naphthobenzothiophene-2,1-D	2.229	2.521	-13.1	126	-0.05
71	i	Chrysene-d12	1.000	1.000	0.0	131	-0.05
72	t	Benz[a]anthracene	1.385	1.362	1.7	130	-0.06
73	A1	Chrysene	1.299	1.305	-0.5	129	-0.06
74	A2	Chrysene/Triphenylene	1.299	1.305	-0.5	129	-0.06
80	s	Benzo[b]fluoranthene-d12	1.041	1.042	-0.1	135	-0.11
81	t	Benzo[b]fluoranthene	1.410	1.354	4.0	121	-0.11
82	A1	Benzo[j]+[k]fluoranthene	1.299	1.420	-9.3	146	-0.09
84	t	Benzo[e]pyrene	1.311	1.322	-0.8	132	-0.11
85	s	Benzo[a]pyrene-d12	0.838	0.866	-3.3	133	-0.11
86	t	Benzo[a]pyrene	1.251	1.307	-4.5	130	-0.09
87	t	Perylene	1.266	1.323	-4.5	132	-0.09
88	t	Indeno[1,2,3-cd]pyrene	1.615	1.618	-0.2	134	-0.18
89	t	Dibenz[ah]+[ac]anthracene	1.378	1.441	-4.6	139	-0.20
90	t	Benzo[g,h,i]perylene	1.562	1.540	1.4	133	-0.20
91	A1	Hopane (T19)	0.286	0.256	10.5	115	-0.20
92	A2	17a(H),21B(H)-hopane - C30H	0.286	0.256	10.5	115	-0.20
126	SA1	5B(H)Cholane - Surr	0.162	0.164	-1.2	141	-0.08

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Concentration)	Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene	0.92	0.70 - 1.30

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251602.D
Acq On : 25 Nov 2016 2:01 pm
Operator : AC
Sample : C311251601
Misc : CC FRAX92 500NG/ML
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 29 13:39:50 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area% Dev(min)
Mass Discrimination (Response)			Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene			1.18	0.70 - 2.00

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251602.D
Acq On : 25 Nov 2016 2:01 pm
Operator : AC
Sample : C311251601
Misc : CC FRAX92 500NG/ML
ALS Vial : 2 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:39:50 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.220	164	78981	500.000	ng/ml	-0.02
71) Chrysene-d12	43.705	240	138241	500.000	ng/ml	-0.05
System Monitoring Compounds						
8) Naphthalene-d8	20.234	136	161329	476.209	ng/ml	-0.01
Spiked Amount 1000.000	Range 50 - 130		Recovery = 47.62%#			
40) Phenanthrene-d10	33.106	188	141244	544.059	ng/ml	-0.01
Spiked Amount 1000.000	Range 50 - 130		Recovery = 54.41%			
80) Benzo[b]fluoranthene-d12	47.605	264	143985	500.038	ng/ml	-0.11
Spiked Amount 1000.000	Range 50 - 130		Recovery = 50.00%			
85) Benzo[a]pyrene-d12	48.855	264	119670	516.287	ng/ml	-0.11
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.63%			
126) 5B(H)Cholane - Surr	44.262	217	22654	504.608	ng/ml	-0.08
Spiked Amount 1000.000	Range 50 - 130		Recovery = 50.46%			
Target Compounds						Qvalue
2) trans-Decalin	16.847	138	14968	218.744	ng/ml	100
3) cis-Decalin	18.067	138	11971	232.898	ng/ml	100
9) Naphthalene	20.325	128	183854	493.455	ng/ml	100
14) 2-Methylnaphthalene	23.035	142	107723	454.770	ng/ml	100
15) 1-Methylnaphthalene	23.456	142	109176	486.543	ng/ml	100
16) Benzothiophene	20.551	134	169443	513.506	ng/ml	100
21) Biphenyl	24.901	154	152910	508.491	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.519	156	103850	505.156	ng/ml	100
23) Dibenzofuran	28.003	168	170042	538.712	ng/ml	97
24) Acenaphthylene	26.618	152	181073M4	501.782	ng/ml	
25) Acenaphthene	27.340	153	111580	505.674	ng/ml	98
26) 2,3,5-Trimethylnaphthalen	28.906	170	92194	521.912	ng/ml	98
27) Fluorene	29.388	166	128198	532.166	ng/ml	99
31) Dibenzothiophene	32.699	184	190461	535.804	ng/ml	100
41) Phenanthrene	33.196	178	181080	536.250	ng/ml	100
52) Retene	40.167	234	52058	554.083	ng/ml	91
53) Anthracene	33.392	178	174975M4	545.981	ng/ml	
54) Carbazole	34.054	167	167002	533.398	ng/ml	98
55) 1-Methylphenanthrene	35.710	192	133008	534.081	ng/ml	100
56) Fluoranthene	37.969	202	205572	548.502	ng/ml	96
57) Benzo(b)fluorene	40.498	216	124722	561.632	ng/ml	99
58) Pyrene	38.857	202	224178	551.783	ng/ml	96
63) Naphthobenzothiophene	42.712	234	199095	565.410	ng/ml	96
64) Naphthobenzothiophene-2,1	42.712	234	199095	565.410	ng/ml	96
72) Benz[a]anthracene	43.630	228	188336	491.676	ng/ml	99
73) Chrysene	43.796	228	180458	502.340	ng/mL	98
74) Chrysene/Triphenylene	43.796	228	180458	502.340	ng/ml	98
81) Benzo[b]fluoranthene	47.696	252	187137M3	480.165	ng/ml	
82) Benzo[j]+[k]fluoranthene	47.786	252	196360	546.557	ng/ml	98
84) Benzo[e]pyrene	48.750	252	182745	504.251	ng/ml	99
86) Benzo[a]pyrene	48.961	252	180706	522.614	ng/ml	98
87) Perylene	49.292	252	182855	522.284	ng/ml	98
88) Indeno[1,2,3-cd]pyrene	54.021	276	223685M3	500.951	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.066	278	199181	522.632	ng/ml	98
90) Benzo[g,h,i]perylene	55.406	276	212881	492.895	ng/ml	99
91) Hopane (T19)	52.967	191	35386	447.852	ng/mL	96
92) 17a(H),21B(H)-hopane - C3	52.967	191	35386	447.852	ng/mL	96

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251602.D
Acq On : 25 Nov 2016 2:01 pm
Operator : AC
Sample : C311251601
Misc : CC FRAX92 500NG/ML
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 29 13:39:50 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

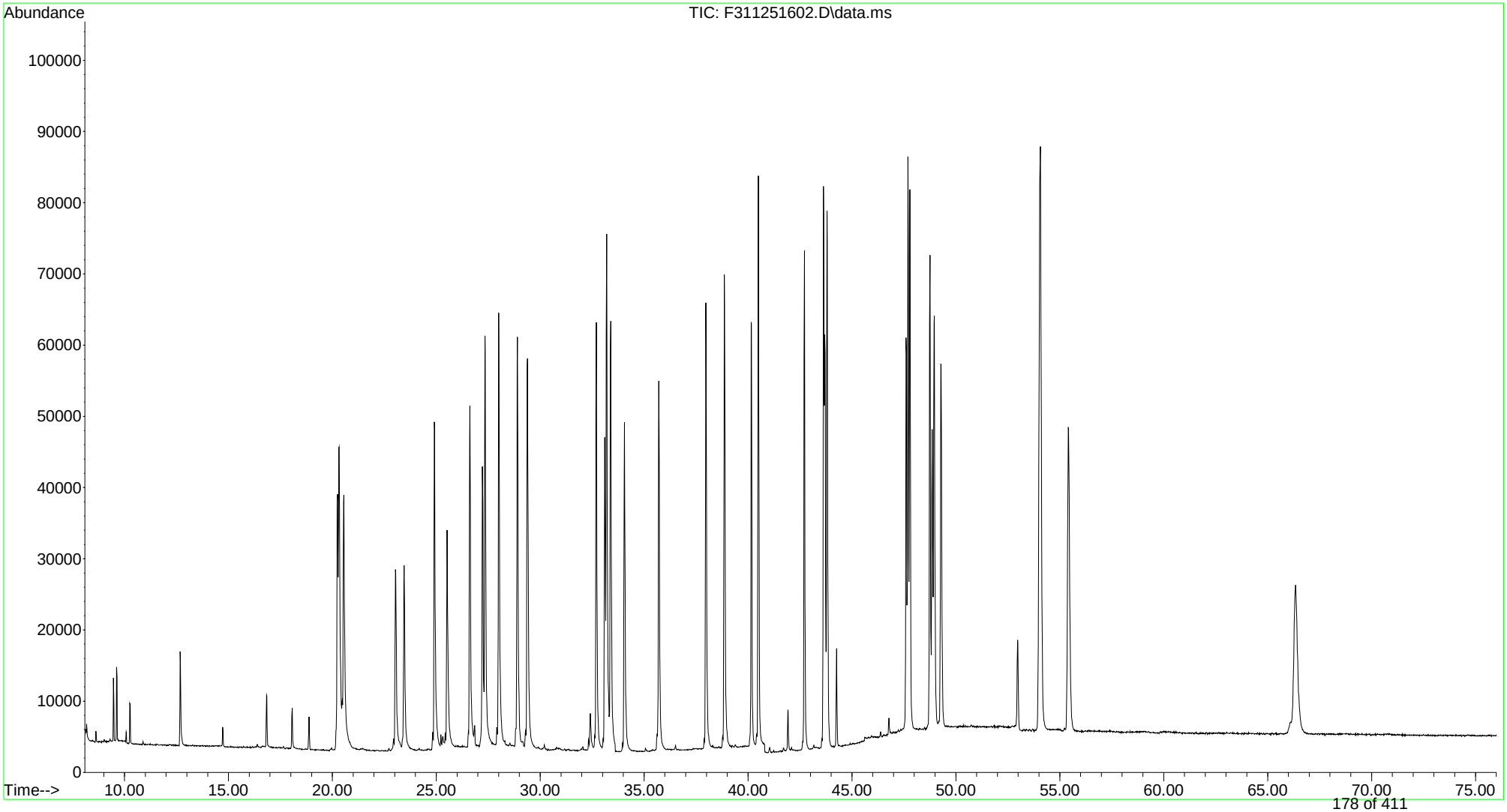
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251602.D
Acq On : 25 Nov 2016 2:01 pm
Operator : AC
Sample : C311251601
Misc : CC FRAX92 500NG/ML
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Nov 29 13:39:50 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Mon Nov 21 15:26:23 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251611.D
Acq On : 26 Nov 2016 2:56 am
Operator : AC
Sample : C311251602
Misc : cc frax92 500ng/ml
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 29 13:40:47 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Acenaphthene-d10	1.000	1.000	0.0	106	0.01
2	A1	trans-Decalin	0.433	0.369	14.8	95	-0.01
3	t	cis-Decalin	0.325	0.293	9.8	101	-0.03
8	s	Naphthalene-d8	2.145	2.004	6.6	102	0.02
9	A1	Naphthalene	2.359	2.242	5.0	100	0.03
14	t	2-Methylnaphthalene	1.500	1.385	7.7	99	0.05
15	t	1-Methylnaphthalene	1.421	1.417	0.3	106	0.03
16	A1	Benzothiophene	2.089	2.061	1.3	102	0.03
21	t	Biphenyl	1.904	1.853	2.7	104	0.03
22	t	2,6-Dimethylnaphthalene	1.301	1.283	1.4	106	0.06
23	t	Dibenzofuran	1.998	1.974	1.2	102	0.03
24	t	Acenaphthylene	2.284	2.179	4.6	100	0.00
25	t	Acenaphthene	1.397	1.385	0.9	104	0.02
26	t	2,3,5-Trimethylnaphthalene	1.118	1.065	4.7	102	0.02
27	A1	Fluorene	1.525	1.498	1.8	102	0.05
31	A1	Dibenzothiophene	2.250	2.149	4.5	99	0.02
40	s	Phenanthrene-d10	1.644	1.720	-4.6	115	0.02
41	A1	Phenanthrene	2.138	2.200	-2.9	104	0.02
52	t	Retene	0.595	0.643	-8.1	124	-0.01
53	t	Anthracene	2.029	2.086	-2.8	106	0.05
54	t	Carbazole	1.982	2.004	-1.1	104	0.03
55	t	1-Methylphenanthrene	1.577	1.568	0.6	106	0.02
56	A1	Fluoranthene	2.373	2.409	-1.5	105	0.00
57	t	Benzo(b)fluorene	1.406	1.494	-6.3	115	-0.01
58	A1	Pyrene	2.572	2.697	-4.9	108	0.00
63	A1	Naphthobenzothiophene	2.229	2.395	-7.4	114	-0.03
64	A2	Naphthobenzothiophene-2,1-D	2.229	2.395	-7.4	114	-0.03
71	i	Chrysene-d12	1.000	1.000	0.0	120	-0.03
72	t	Benz[a]anthracene	1.385	1.341	3.2	118	-0.03
73	A1	Chrysene	1.299	1.300	-0.1	118	-0.03
74	A2	Chrysene/Triphenylene	1.299	1.300	-0.1	118	-0.03
80	s	Benzo[b]fluoranthene-d12	1.041	1.041	0.0	124	-0.08
81	t	Benzo[b]fluoranthene	1.410	1.261	10.6	103	-0.09
82	A1	Benzo[j]+[k]fluoranthene	1.299	1.442	-11.0	136	-0.08
84	t	Benzo[e]pyrene	1.311	1.273	2.9	116	-0.09
85	s	Benzo[a]pyrene-d12	0.838	0.871	-3.9	122	-0.08
86	t	Benzo[a]pyrene	1.251	1.281	-2.4	117	-0.08
87	t	Perylene	1.266	1.308	-3.3	120	-0.08
88	t	Indeno[1,2,3-cd]pyrene	1.615	1.573	2.6	120	-0.14
89	t	Dibenz[ah]+[ac]anthracene	1.378	1.418	-2.9	125	-0.15
90	t	Benzo[g,h,i]perylene	1.562	1.490	4.6	118	-0.15
91	A1	Hopane (T19)	0.286	0.237	17.1	98	-0.18
92	A2	17a(H),21B(H)-hopane - C30H	0.286	0.237	17.1	98	-0.18
126	SA1	5B(H)Cholane - Surr	0.162	0.158	2.5	124	-0.08

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Concentration)	Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene	0.93	0.70 - 1.30

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251611.D
Acq On : 26 Nov 2016 2:56 am
Operator : AC
Sample : C311251602
Misc : cc frax92 500ng/ml
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 29 13:40:47 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
Mass Discrimination (Response)			Ratio	Range	Limits
Benzo[g,h,i]perylene to Phenanthrene			1.14	0.70 - 2.00	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251611.D
Acq On : 26 Nov 2016 2:56 am
Operator : AC
Sample : C311251602
Misc : cc frax92 500ng/ml
ALS Vial : 11 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:40:47 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.250	164	75068	500.000	ng/ml	0.03
71) Chrysene-d12	43.720	240	126555	500.000	ng/ml	0.02
System Monitoring Compounds						
8) Naphthalene-d8	20.265	136	150461M4	467.279	ng/ml	0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery = 46.73%#			
40) Phenanthrene-d10	33.136	188	129102	523.211	ng/ml	0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery = 52.32%			
80) Benzo[b]fluoranthene-d12	47.635	264	131783	499.922	ng/ml	0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery = 49.99%#			
85) Benzo[a]pyrene-d12	48.885	264	110286	519.737	ng/ml	0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.97%			
126) 5B(H)Cholane - Surr	44.262	217	20044	487.699	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 48.77%#			
Target Compounds						Qvalue
2) trans-Decalin	16.847	138	13841	212.818	ng/ml	100
3) cis-Decalin	18.067	138	11003	225.223	ng/ml	100
9) Naphthalene	20.355	128	168271M1	475.173	ng/ml	
14) 2-Methylnaphthalene	23.080	142	103978M1	461.841	ng/ml	
15) 1-Methylnaphthalene	23.486	142	106400M1	498.888	ng/ml	
16) Benzothiophene	20.581	134	154694M1	493.245	ng/ml	
21) Biphenyl	24.947	154	139129M1	486.781	ng/ml	
22) 2,6-Dimethylnaphthalene	25.579	156	96309M1	492.894	ng/ml	
23) Dibenzofuran	28.048	168	148168	493.881	ng/ml	100
24) Acenaphthylene	26.633	152	163581M4	476.938	ng/ml	
25) Acenaphthene	27.370	153	103992	495.852	ng/ml	98
26) 2,3,5-Trimethylnaphthalen	28.936	170	79967	476.292	ng/ml	98
27) Fluorene	29.433	166	112463	491.183	ng/ml	99
31) Dibenzothiophene	32.730	184	161320	477.481	ng/ml	99
41) Phenanthrene	33.226	178	165185M4	514.678	ng/ml	
52) Retene	40.182	234	48261	540.445	ng/ml	96
53) Anthracene	33.437	178	156557M4	513.975	ng/ml	
54) Carbazole	34.084	167	150466	505.633	ng/ml	99
55) 1-Methylphenanthrene	35.741	192	117710	497.291	ng/ml	100
56) Fluoranthene	37.999	202	180851	507.695	ng/ml	97
57) Benzo(b)fluorene	40.513	216	112188	531.524	ng/ml	100
58) Pyrene	38.887	202	202481	524.357	ng/ml	97
63) Naphthobenzothiophene	42.727	234	179816	537.278	ng/ml	95
64) Naphthobenzothiophene-2,1	42.727	234	179816	537.278	ng/ml	95
72) Benz[a]anthracene	43.660	228	169733	484.027	ng/ml	100
73) Chrysene	43.826	228	164573	500.424	ng/mL	99
74) Chrysene/Triphenylene	43.826	228	164573	500.424	ng/ml	99
81) Benzo[b]fluoranthene	47.711	252	159598	447.318	ng/ml	97
82) Benzo[j]+[k]fluoranthene	47.801	252	182531	554.979	ng/ml	97
84) Benzo[e]pyrene	48.765	252	161064	485.464	ng/ml	96
86) Benzo[a]pyrene	48.976	252	162119	512.153	ng/ml	95
87) Perylene	49.307	252	165561	516.554	ng/ml	94
88) Indeno[1,2,3-cd]pyrene	54.066	276	199109M3	487.088	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.111	278	179420	514.253	ng/ml	96
90) Benzo[g,h,i]perylene	55.451	276	188609	477.021	ng/ml	100
91) Hopane (T19)	52.982	191	29989	414.594	ng/mL#	91
92) 17a(H),21B(H)-hopane - C3	52.982	191	29989	414.594	ng/mL#	91

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251611.D
Acq On : 26 Nov 2016 2:56 am
Operator : AC
Sample : C311251602
Misc : cc frax92 500ng/ml
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 29 13:40:47 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

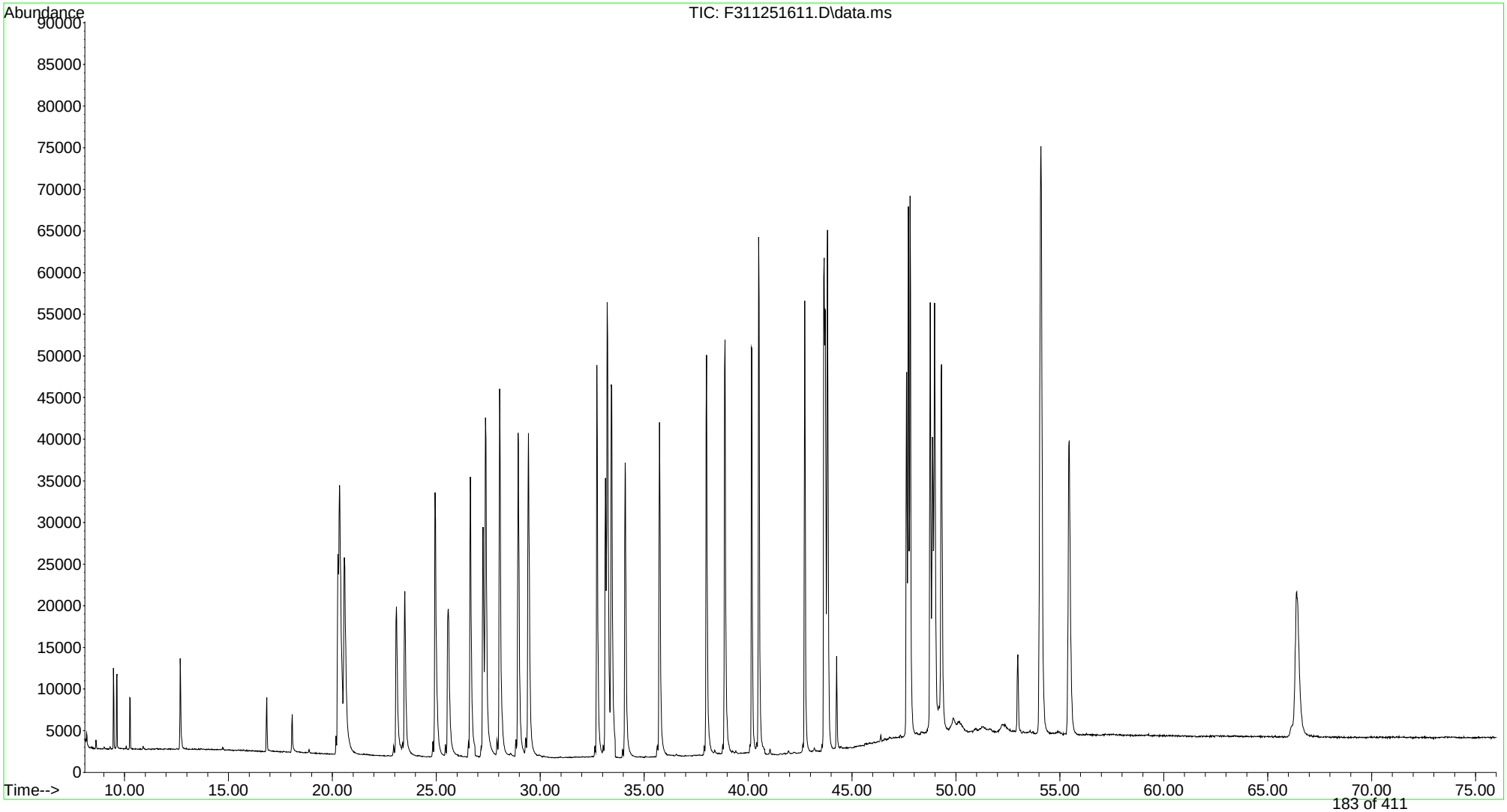
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251611.D
Acq On : 26 Nov 2016 2:56 am
Operator : AC
Sample : C311251602
Misc : cc frax92 500ng/ml
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Nov 29 13:40:47 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251619.D
Acq On : 26 Nov 2016 2:25 pm
Operator : AC
Sample : C311251603
Misc : cc frax92 500ng/ml
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Nov 29 13:40:59 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Acenaphthene-d10	1.000	1.000	0.0	85	0.01
2	A1	trans-Decalin	0.433	0.356	17.8	74	-0.01
3	t	cis-Decalin	0.325	0.296	8.9	82	-0.03
8	s	Naphthalene-d8	2.145	2.080	3.0	85	0.05
9	A1	Naphthalene	2.359	2.381	-0.9	86	0.06
14	t	2-Methylnaphthalene	1.500	1.336	10.9	77	0.08
15	t	1-Methylnaphthalene	1.421	1.357	4.5	82	0.05
16	A1	Benzothiophene	2.089	2.035	2.6	82	0.06
21	t	Biphenyl	1.904	1.893	0.6	86	0.06
22	t	2,6-Dimethylnaphthalene	1.301	1.231	5.4	82	0.09
23	t	Dibenzofuran	1.998	2.069	-3.6	86	0.06
24	t	Acenaphthylene	2.284	2.254	1.3	84	0.02
25	t	Acenaphthene	1.397	1.454	-4.1	89	0.03
26	t	2,3,5-Trimethylnaphthalene	1.118	1.080	3.4	83	0.05
27	A1	Fluorene	1.525	1.562	-2.4	86	0.08
31	A1	Dibenzothiophene	2.250	2.248	0.1	84	0.03
40	s	Phenanthrene-d10	1.644	1.714	-4.3	93	0.05
41	A1	Phenanthrene	2.138	2.212	-3.5	84	0.03
52	t	Retene	0.595	0.606	-1.8	94	-0.01
53	t	Anthracene	2.029	2.124	-4.7	87	0.06
54	t	Carbazole	1.982	2.069	-4.4	87	0.05
55	t	1-Methylphenanthrene	1.577	1.604	-1.7	88	0.05
56	A1	Fluoranthene	2.373	2.448	-3.2	86	0.02
57	t	Benzo(b)fluorene	1.406	1.487	-5.8	92	0.02
58	A1	Pyrene	2.572	2.758	-7.2	89	0.00
63	A1	Naphthobenzothiophene	2.229	2.445	-9.7	94	-0.01
64	A2	Naphthobenzothiophene-2,1-D	2.229	2.445	-9.7	94	-0.01
71	i	Chrysene-d12	1.000	1.000	0.0	95	-0.01
72	t	Benz[a]anthracene	1.385	1.361	1.7	94	-0.01
73	A1	Chrysene	1.299	1.382	-6.4	99	-0.01
74	A2	Chrysene/Triphenylene	1.299	1.382	-6.4	99	-0.01
80	s	Benzo[b]fluoranthene-d12	1.041	1.025	1.5	96	-0.08
81	t	Benzo[b]fluoranthene	1.410	1.313	6.9	85	-0.08
82	A1	Benzo[j]+[k]fluoranthene	1.299	1.555	-19.7	116	-0.06
84	t	Benzo[e]pyrene	1.311	1.325	-1.1	96	-0.08
85	s	Benzo[a]pyrene-d12	0.838	0.855	-2.0	95	-0.08
86	t	Benzo[a]pyrene	1.251	1.358	-8.6	98	-0.06
87	t	Perylene	1.266	1.371	-8.3	99	-0.06
88	t	Indeno[1,2,3-cd]pyrene	1.615	1.660	-2.8	100	-0.12
89	t	Dibenz[ah]+[ac]anthracene	1.378	1.473	-6.9	103	-0.14
90	t	Benzo[g,h,i]perylene	1.562	1.604	-2.7	100	-0.12
91	A1	Hopane (T19)	0.286	0.247	13.6	81	-0.18
92	A2	17a(H),21B(H)-hopane - C30H	0.286	0.247	13.6	81	-0.18
126	SA1	5B(H)Cholane - Surr	0.162	0.155	4.3	96	-0.08

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Concentration)	Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene	0.99	0.70 - 1.30

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251619.D
Acq On : 26 Nov 2016 2:25 pm
Operator : AC
Sample : C311251603
Misc : cc frax92 500ng/ml
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Nov 29 13:40:59 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area% Dev(min)
Mass Discrimination (Response)			Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene			1.20	0.70 - 2.00

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251619.D
Acq On : 26 Nov 2016 2:25 pm
Operator : AC
Sample : C311251603
Misc : cc frax92 500ng/ml
ALS Vial : 19 Sample Multiplier: 1

MJS
11-29-2016

Quant Time: Nov 29 13:40:59 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.250	164	60655	500.000	ng/ml	0.03
71) Chrysene-d12	43.735	240	100070	500.000	ng/ml	0.03
System Monitoring Compounds						
8) Naphthalene-d8	20.295	136	126147M4	484.862	ng/ml	0.06
Spiked Amount 1000.000	Range 50 - 130		Recovery = 48.49%#			
40) Phenanthrene-d10	33.166	188	103939	521.327	ng/ml	0.06
Spiked Amount 1000.000	Range 50 - 130		Recovery = 52.13%			
80) Benzo[b]fluoranthene-d12	47.635	264	102575	492.108	ng/ml	0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery = 49.21%#			
85) Benzo[a]pyrene-d12	48.885	264	85587	510.090	ng/ml	0.03
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.01%			
126) 5B(H)Cholane - Surr	44.262	217	15507	477.167	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 47.72%#			
Target Compounds						Qvalue
2) trans-Decalin	16.847	138	10789	205.310	ng/ml	100
3) cis-Decalin	18.067	138	8975	227.366	ng/ml	100
9) Naphthalene	20.385	128	144399M4	504.655	ng/ml	
14) 2-Methylnaphthalene	23.110	142	81043	445.507	ng/ml	100
15) 1-Methylnaphthalene	23.501	142	82319	477.694	ng/ml	100
16) Benzothiophene	20.611	134	123444	487.133	ng/ml	100
21) Biphenyl	24.977	154	114799	497.098	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.609	156	74656	472.868	ng/ml	100
23) Dibenzofuran	28.078	168	125473	517.615	ng/ml	99
24) Acenaphthylene	26.648	152	136724M4	493.358	ng/ml	
25) Acenaphthene	27.385	153	88188	520.415	ng/ml	98
26) 2,3,5-Trimethylnaphthalen	28.966	170	65522	482.989	ng/ml	94
27) Fluorene	29.463	166	94729	512.042	ng/ml	98
31) Dibenzothiophene	32.745	184	136331	499.403	ng/ml	98
41) Phenanthrene	33.241	178	134174	517.394	ng/ml	99
52) Retene	40.182	234	36730	509.055	ng/ml	91
53) Anthracene	33.452	178	128818M4	523.401	ng/ml	
54) Carbazole	34.099	167	125487	521.896	ng/ml	99
55) 1-Methylphenanthrene	35.771	192	97294	508.711	ng/ml	99
56) Fluoranthene	38.014	202	148496	515.924	ng/ml	97
57) Benzo(b)fluorene	40.543	216	90200	528.897	ng/ml	99
58) Pyrene	38.887	202	167297	536.191	ng/ml	96
63) Naphthobenzothiophene	42.742	234	148325	548.496	ng/ml	95
64) Naphthobenzothiophene-2,1	42.742	234	148325	548.496	ng/ml	95
72) Benz[a]anthracene	43.675	228	136228	491.298	ng/ml	100
73) Chrysene	43.841	228	138278	531.751	ng/mL	100
74) Chrysene/Triphenylene	43.841	228	138278	531.751	ng/ml	100
81) Benzo[b]fluoranthene	47.726	252	131429	465.860	ng/ml	97
82) Benzo[j]+[k]fluoranthene	47.816	252	155595	598.289	ng/ml	97
84) Benzo[e]pyrene	48.780	252	132591	505.415	ng/ml	97
86) Benzo[a]pyrene	48.991	252	135919	543.027	ng/ml	95
87) Perylene	49.322	252	137237	541.507	ng/ml	95
88) Indeno[1,2,3-cd]pyrene	54.081	276	166084M3	513.830	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.126	278	147357	534.136	ng/ml	98
90) Benzo[g,h,i]perylene	55.481	276	160526	513.447	ng/ml	100
91) Hopane (T19)	52.982	191	24733	432.427	ng/mL#	91
92) 17a(H),21B(H)-hopane - C3	52.982	191	24733	432.427	ng/mL#	91

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251619.D
Acq On : 26 Nov 2016 2:25 pm
Operator : AC
Sample : C311251603
Misc : cc frax92 500ng/ml
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Nov 29 13:40:59 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

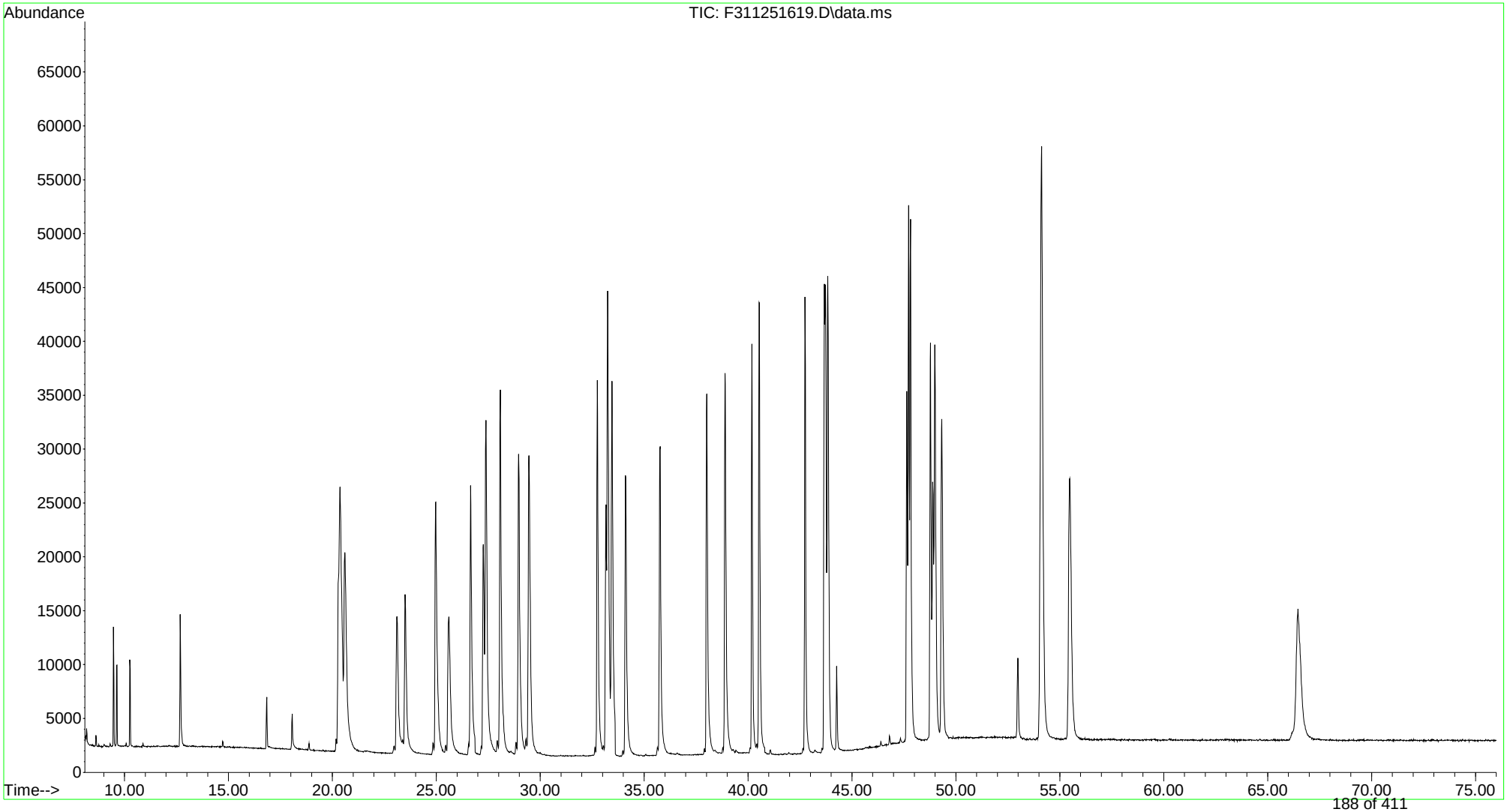
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251619.D
Acq On : 26 Nov 2016 2:25 pm
Operator : AC
Sample : C311251603
Misc : cc frax92 500ng/ml
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Nov 29 13:40:59 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251624.D
Acq On : 27 Nov 2016 10:13 am
Operator : AC
Sample : c311251604
Misc : cc frax92 500ng/ml
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Nov 29 13:41:09 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Acenaphthene-d10	1.000	1.000	0.0	79	0.05
2	A1	trans-Decalin	0.433	0.336	22.4	64	-0.01
3	t	cis-Decalin	0.325	0.265	18.5	68	-0.03
8	s	Naphthalene-d8	2.145	2.136	0.4	81	0.06
9	A1	Naphthalene	2.359	2.650	-12.3	88	0.09
14	t	2-Methylnaphthalene	1.500	1.419	5.4	76	0.11
15	t	1-Methylnaphthalene	1.421	1.467	-3.2	81	0.06
16	A1	Benzothiophene	2.089	2.275	-8.9	84	0.08
21	t	Biphenyl	1.904	2.010	-5.6	84	0.08
22	t	2,6-Dimethylnaphthalene	1.301	1.283	1.4	79	0.11
23	t	Dibenzofuran	1.998	2.222	-11.2	85	0.08
24	t	Acenaphthylene	2.284	2.297	-0.6	79	0.03
25	t	Acenaphthene	1.397	1.552	-11.1	87	0.05
26	t	2,3,5-Trimethylnaphthalene	1.118	1.087	2.8	77	0.06
27	A1	Fluorene	1.525	1.646	-7.9	84	0.09
31	A1	Dibenzothiophene	2.250	2.441	-8.5	84	0.05
40	s	Phenanthrene-d10	1.644	1.766	-7.4	88	0.06
41	A1	Phenanthrene	2.138	2.269	-6.1	80	0.06
52	t	Retene	0.595	0.571	4.0	82	0.00
53	t	Anthracene	2.029	2.249	-10.8	85	0.09
54	t	Carbazole	1.982	2.170	-9.5	84	0.08
55	t	1-Methylphenanthrene	1.577	1.594	-1.1	80	0.06
56	A1	Fluoranthene	2.373	2.480	-4.5	80	0.03
57	t	Benzo(b)fluorene	1.406	1.467	-4.3	84	0.02
58	A1	Pyrene	2.572	2.715	-5.6	81	0.03
63	A1	Naphthobenzothiophene	2.229	2.457	-10.2	87	0.00
64	A2	Naphthobenzothiophene-2,1-D	2.229	2.457	-10.2	87	0.00
71	i	Chrysene-d12	1.000	1.000	0.0	82	0.00
72	t	Benz[a]anthracene	1.385	1.355	2.2	81	0.00
73	A1	Chrysene	1.299	1.516	-16.7	94	0.00
74	A2	Chrysene/Triphenylene	1.299	1.516	-16.7	94	0.00
80	s	Benzo[b]fluoranthene-d12	1.041	1.024	1.6	83	-0.06
81	t	Benzo[b]fluoranthene	1.410	1.329	5.7	74	-0.06
82	A1	Benzo[j]+[k]fluoranthene	1.299	1.613	-24.2	104	-0.04
84	t	Benzo[e]pyrene	1.311	1.341	-2.3	84	-0.08
85	s	Benzo[a]pyrene-d12	0.838	0.842	-0.5	81	-0.04
86	t	Benzo[a]pyrene	1.251	1.364	-9.0	85	-0.04
87	t	Perylene	1.266	1.400	-10.6	88	-0.04
88	t	Indeno[1,2,3-cd]pyrene	1.615	1.655	-2.5	86	-0.08
89	t	Dibenz[ah]+[ac]anthracene	1.378	1.482	-7.5	90	-0.11
90	t	Benzo[g,h,i]perylene	1.562	1.613	-3.3	87	-0.11
91	A1	Hopane (T19)	0.286	0.258	9.8	73	-0.18
92	A2	17a(H),21B(H)-hopane - C30H	0.286	0.258	9.8	73	-0.18
126	SA1	5B(H)Cholane - Surr	0.162	0.158	2.5	85	-0.08

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Concentration)	Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene	0.97	0.70 - 1.30

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251624.D
Acq On : 27 Nov 2016 10:13 am
Operator : AC
Sample : c311251604
Misc : cc frax92 500ng/ml
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Nov 29 13:41:09 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
Mass Discrimination (Response)			Ratio	Range	Limits
Benzo[g,h,i]perylene to Phenanthrene			1.10	0.70 - 2.00	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251624.D
Acq On : 27 Nov 2016 10:13 am
Operator : AC
Sample : c311251604
Misc : cc frax92 500ng/ml
ALS Vial : 24 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:41:09 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.280	164	55944	500.000	ng/ml	0.06
71) Chrysene-d12	43.751	240	86750	500.000	ng/ml	0.05
System Monitoring Compounds						
8) Naphthalene-d8	20.310	136	119518M4	498.066	ng/ml	0.08
Spiked Amount 1000.000	Range 50 - 130		Recovery = 49.81%#			
40) Phenanthrene-d10	33.181	188	98776	537.151	ng/ml	0.08
Spiked Amount 1000.000	Range 50 - 130		Recovery = 53.72%			
80) Benzo[b]fluoranthene-d12	47.651	264	88789	491.374	ng/ml	0.05
Spiked Amount 1000.000	Range 50 - 130		Recovery = 49.14%#			
85) Benzo[a]pyrene-d12	48.916	264	73053	502.240	ng/ml	0.06
Spiked Amount 1000.000	Range 50 - 130		Recovery = 50.22%			
126) 5B(H)Cholane - Surr	44.262	217	13704	486.434	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 48.64%#			
Target Compounds						Qvalue
2) trans-Decalin	16.847	138	9404	194.024	ng/ml	100
3) cis-Decalin	18.067	138	7422	203.857	ng/ml	100
9) Naphthalene	20.415	128	148226M4	561.653	ng/ml	
14) 2-Methylnaphthalene	23.140	142	79389	473.165	ng/ml	100
15) 1-Methylnaphthalene	23.516	142	82058	516.278	ng/ml	100
16) Benzothiophene	20.626	134	127263	544.494	ng/ml	100
21) Biphenyl	24.992	154	112452	527.939	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.624	156	71792	493.020	ng/ml	100
23) Dibenzofuran	28.093	168	124316	556.028	ng/ml	98
24) Acenaphthylene	26.663	152	128503M4	502.740	ng/ml	
25) Acenaphthene	27.400	153	86846	555.653	ng/ml	99
26) 2,3,5-Trimethylnaphthalen	28.981	170	60829	486.154	ng/ml	90
27) Fluorene	29.478	166	92097	539.735	ng/ml	99
31) Dibenzothiophene	32.760	184	136552	542.335	ng/ml	97
41) Phenanthrene	33.272	178	126959	530.799	ng/ml	99
52) Retene	40.197	234	31964	480.306	ng/ml	87
53) Anthracene	33.482	178	125811M4	554.229	ng/ml	
54) Carbazole	34.130	167	121392	547.379	ng/ml	99
55) 1-Methylphenanthrene	35.786	192	89163	505.456	ng/ml	99
56) Fluoranthene	38.029	202	138758	522.687	ng/ml	98
57) Benzo(b)fluorene	40.544	216	82083	521.832	ng/ml	99
58) Pyrene	38.917	202	151910	527.875	ng/ml	100
63) Naphthobenzothiophene	42.757	234	137460	551.123	ng/ml	94
64) Naphthobenzothiophene-2,1	42.757	234	137460	551.123	ng/ml	94
72) Benz[a]anthracene	43.690	228	117565	489.093	ng/ml	99
73) Chrysene	43.856	228	131509	583.371	ng/mL	99
74) Chrysene/Triphenylene	43.856	228	131509	583.371	ng/ml	99
81) Benzo[b]fluoranthene	47.741	252	115331	471.568	ng/ml	96
82) Benzo[j]+[k]fluoranthene	47.831	252	139922	620.634	ng/ml	97
84) Benzo[e]pyrene	48.780	252	116323	511.487	ng/ml	97
86) Benzo[a]pyrene	49.006	252	118323	545.312	ng/ml	95
87) Perylene	49.337	252	121427	552.692	ng/ml	94
88) Indeno[1,2,3-cd]pyrene	54.126	276	143536M3	512.256	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.156	278	128557	537.541	ng/ml	98
90) Benzo[g,h,i]perylene	55.497	276	139904	516.196	ng/ml	99
91) Hopane (T19)	52.982	191	22383	451.429	ng/mL	92
92) 17a(H),21B(H)-hopane - C3	52.982	191	22383	451.429	ng/mL	92

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251624.D
Acq On : 27 Nov 2016 10:13 am
Operator : AC
Sample : c311251604
Misc : cc frax92 500ng/ml
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Nov 29 13:41:09 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

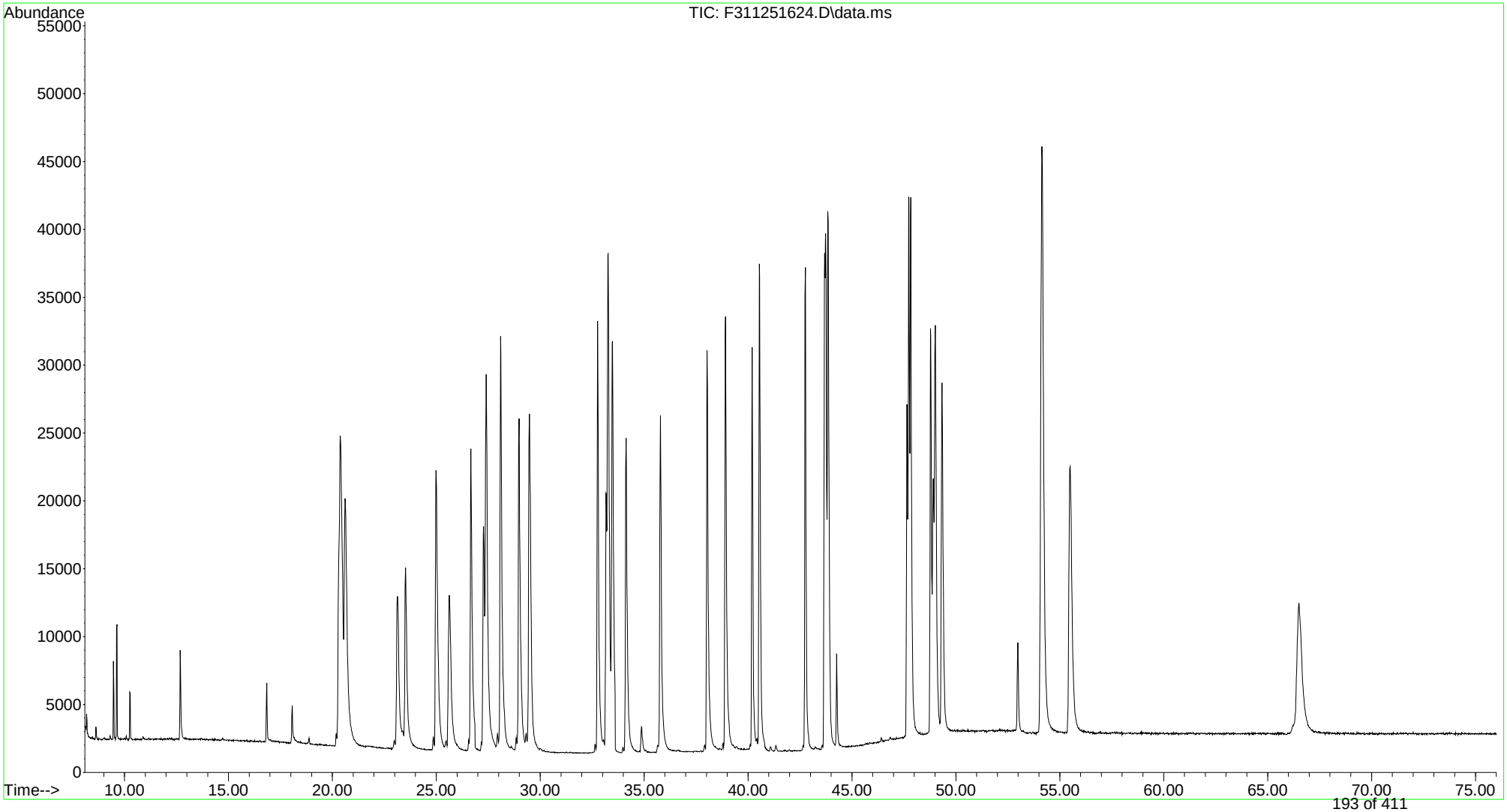
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251624.D
Acq On : 27 Nov 2016 10:13 am
Operator : AC
Sample : c311251604
Misc : cc frax92 500ng/ml
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Nov 29 13:41:09 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251631.D
Acq On : 27 Nov 2016 8:19 pm
Operator : AC
Sample : c311251605
Misc : cc frax92 500ng/ml
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Nov 29 13:42:20 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Acenaphthene-d10	1.000	1.000	0.0	77	0.04
2	A1	trans-Decalin	0.433	0.308	28.9#	57	-0.02
3	t	cis-Decalin	0.325	0.272	16.3	68	-0.03
8	s	Naphthalene-d8	2.145	2.336	-8.9	86	0.09
9	A1	Naphthalene	2.359	2.465	-4.5	80	0.09
14	t	2-Methylnaphthalene	1.500	1.399	6.7	73	0.11
15	t	1-Methylnaphthalene	1.421	1.395	1.8	75	0.08
16	A1	Benzothiophene	2.089	2.011	3.7	72	0.08
21	t	Biphenyl	1.904	1.872	1.7	76	0.09
22	t	2,6-Dimethylnaphthalene	1.301	1.219	6.3	73	0.14
23	t	Dibenzofuran	1.998	2.072	-3.7	77	0.11
24	t	Acenaphthylene	2.284	2.201	3.6	73	0.05
25	t	Acenaphthene	1.397	1.478	-5.8	81	0.05
26	t	2,3,5-Trimethylnaphthalene	1.118	1.046	6.4	72	0.08
27	A1	Fluorene	1.525	1.562	-2.4	77	0.11
31	A1	Dibenzothiophene	2.250	2.293	-1.9	77	0.06
40	s	Phenanthrene-d10	1.644	1.785	-8.6	87	0.06
41	A1	Phenanthrene	2.138	2.150	-0.6	73	0.08
52	t	Retene	0.595	0.594	0.2	83	0.02
53	t	Anthracene	2.029	2.105	-3.7	77	0.11
54	t	Carbazole	1.982	2.072	-4.5	78	0.09
55	t	1-Methylphenanthrene	1.577	1.561	1.0	77	0.08
56	A1	Fluoranthene	2.373	2.420	-2.0	76	0.05
57	t	Benzo(b)fluorene	1.406	1.463	-4.1	82	0.03
58	A1	Pyrene	2.572	2.652	-3.1	77	0.03
63	A1	Naphthobenzothiophene	2.229	2.415	-8.3	83	0.02
64	A2	Naphthobenzothiophene-2,1-D	2.229	2.415	-8.3	83	0.02
71	i	Chrysene-d12	1.000	1.000	0.0	82	0.00
72	t	Benz[a]anthracene	1.385	1.320	4.7	80	0.02
73	A1	Chrysene	1.299	1.477	-13.7	92	0.00
74	A2	Chrysene/Triphenylene	1.299	1.477	-13.7	92	0.00
80	s	Benzo[b]fluoranthene-d12	1.041	1.038	0.3	85	-0.06
81	t	Benzo[b]fluoranthene	1.410	1.247	11.6	70	-0.06
82	A1	Benzo[j]+[k]fluoranthene	1.299	1.684	-29.6#	109	-0.05
84	t	Benzo[e]pyrene	1.311	1.315	-0.3	83	-0.06
85	s	Benzo[a]pyrene-d12	0.838	0.864	-3.1	84	-0.05
86	t	Benzo[a]pyrene	1.251	1.326	-6.0	83	-0.03
87	t	Perylene	1.266	1.397	-10.3	88	-0.05
88	t	Indeno[1,2,3-cd]pyrene	1.615	1.654	-2.4	87	-0.06
89	t	Dibenz[ah]+[ac]anthracene	1.378	1.472	-6.8	89	-0.08
90	t	Benzo[g,h,i]perylene	1.562	1.580	-1.2	86	-0.08
91	A1	Hopane (T19)	0.286	0.221	22.7	63	-0.18
92	A2	17a(H),21B(H)-hopane - C30H	0.286	0.221	22.7	63	-0.18
126	SA1	5B(H)Cholane - Surr	0.162	0.154	4.9	83	-0.08

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Mass Discrimination (Concentration)	Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene	1.01	0.70 - 1.30

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251631.D
Acq On : 27 Nov 2016 8:19 pm
Operator : AC
Sample : c311251605
Misc : cc frax92 500ng/ml
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Nov 29 13:42:20 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

Compound	AvgRF	CCRF	%Dev	Area% Dev(min)
Mass Discrimination (Response)			Ratio	Range Limits
Benzo[g,h,i]perylene to Phenanthrene			1.18	0.70 - 2.00

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251631.D
Acq On : 27 Nov 2016 8:19 pm
Operator : AC
Sample : c311251605
Misc : cc frax92 500ng/ml
ALS Vial : 31 Sample Multiplier: 1

MWS
11-29-2016

Quant Time: Nov 29 13:42:20 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Acenaphthene-d10	27.280	164	54471	500.000	ng/ml	0.06
71) Chrysene-d12	43.750	240	87149	500.000	ng/ml	0.05
System Monitoring Compounds						
8) Naphthalene-d8	20.340	136	127270M4	544.714	ng/ml	0.11
Spiked Amount 1000.000	Range 50 - 130		Recovery = 54.47%			
40) Phenanthrene-d10	33.181	188	97211	542.936	ng/ml	0.08
Spiked Amount 1000.000	Range 50 - 130		Recovery = 54.29%			
80) Benzo[b]fluoranthene-d12	47.650	264	90498	498.539	ng/ml	0.05
Spiked Amount 1000.000	Range 50 - 130		Recovery = 49.85%#			
85) Benzo[a]pyrene-d12	48.915	264	75317	515.434	ng/ml	0.06
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.54%			
126) 5B(H)Cholane - Surr	44.262	217	13396	473.325	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 47.33%#			
Target Compounds						Qvalue
2) trans-Decalin	16.847	138	8385	177.678	ng/ml	100
3) cis-Decalin	18.066	138	7416	209.200	ng/ml	100
9) Naphthalene	20.415	128	134280M4	522.569	ng/ml	
14) 2-Methylnaphthalene	23.140	142	76189	466.372	ng/ml	100
15) 1-Methylnaphthalene	23.531	142	75974	490.926	ng/ml	100
16) Benzothiophene	20.626	134	109535	481.318	ng/ml	100
21) Biphenyl	25.007	154	101983	491.737	ng/ml	100
22) 2,6-Dimethylnaphthalene	25.654	156	66418	468.449	ng/ml	100
23) Dibenzofuran	28.123	168	112872	518.494	ng/ml	98
24) Acenaphthylene	26.678	152	119879M4	481.683	ng/ml	
25) Acenaphthene	27.400	153	80504	529.004	ng/ml	98
26) 2,3,5-Trimethylnaphthalen	28.996	170	56977	467.683	ng/ml	92
27) Fluorene	29.493	166	85084	512.120	ng/ml	98
31) Dibenzothiophene	32.775	184	124884	509.406	ng/ml	98
41) Phenanthrene	33.286	178	117138	502.982	ng/ml	99
52) Retene	40.212	234	32366	499.498	ng/ml	91
53) Anthracene	33.497	178	114671M4	518.815	ng/ml	
54) Carbazole	34.145	167	112878	522.752	ng/ml	99
55) 1-Methylphenanthrene	35.801	192	85037	495.102	ng/ml	100
56) Fluoranthene	38.044	202	131841	510.061	ng/ml	97
57) Benzo(b)fluorene	40.558	216	79692	520.332	ng/ml	100
58) Pyrene	38.917	202	144451	515.529	ng/ml	97
63) Naphthobenzothiophene	42.772	234	131523	541.579	ng/ml	94
64) Naphthobenzothiophene-2,1	42.772	234	131523	541.579	ng/ml	94
72) Benz[a]anthracene	43.705	228	115041	476.402	ng/ml	99
73) Chrysene	43.856	228	128711	568.345	ng/mL	99
74) Chrysene/Triphenylene	43.856	228	128711	568.345	ng/ml	99
81) Benzo[b]fluoranthene	47.741	252	108642	442.184	ng/ml	97
82) Benzo[j]+[k]fluoranthene	47.831	252	146740	647.896	ng/ml	96
84) Benzo[e]pyrene	48.795	252	114605	501.625	ng/ml	97
86) Benzo[a]pyrene	49.021	252	115574	530.204	ng/ml	96
87) Perylene	49.337	252	121718	551.480	ng/ml	93
88) Indeno[1,2,3-cd]pyrene	54.141	276	144158M3	512.120	ng/ml	
89) Dibenz[ah]+[ac]anthracene	54.186	278	128246	533.785	ng/ml	99
90) Benzo[g,h,i]perylene	55.527	276	137730	505.848	ng/ml	100
91) Hopane (T19)	52.982	191	19285	387.166	ng/mL	93
92) 17a(H),21B(H)-hopane - C3	52.982	191	19285	387.166	ng/mL	93

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251631.D
Acq On : 27 Nov 2016 8:19 pm
Operator : AC
Sample : c311251605
Misc : cc frax92 500ng/ml
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Nov 29 13:42:20 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

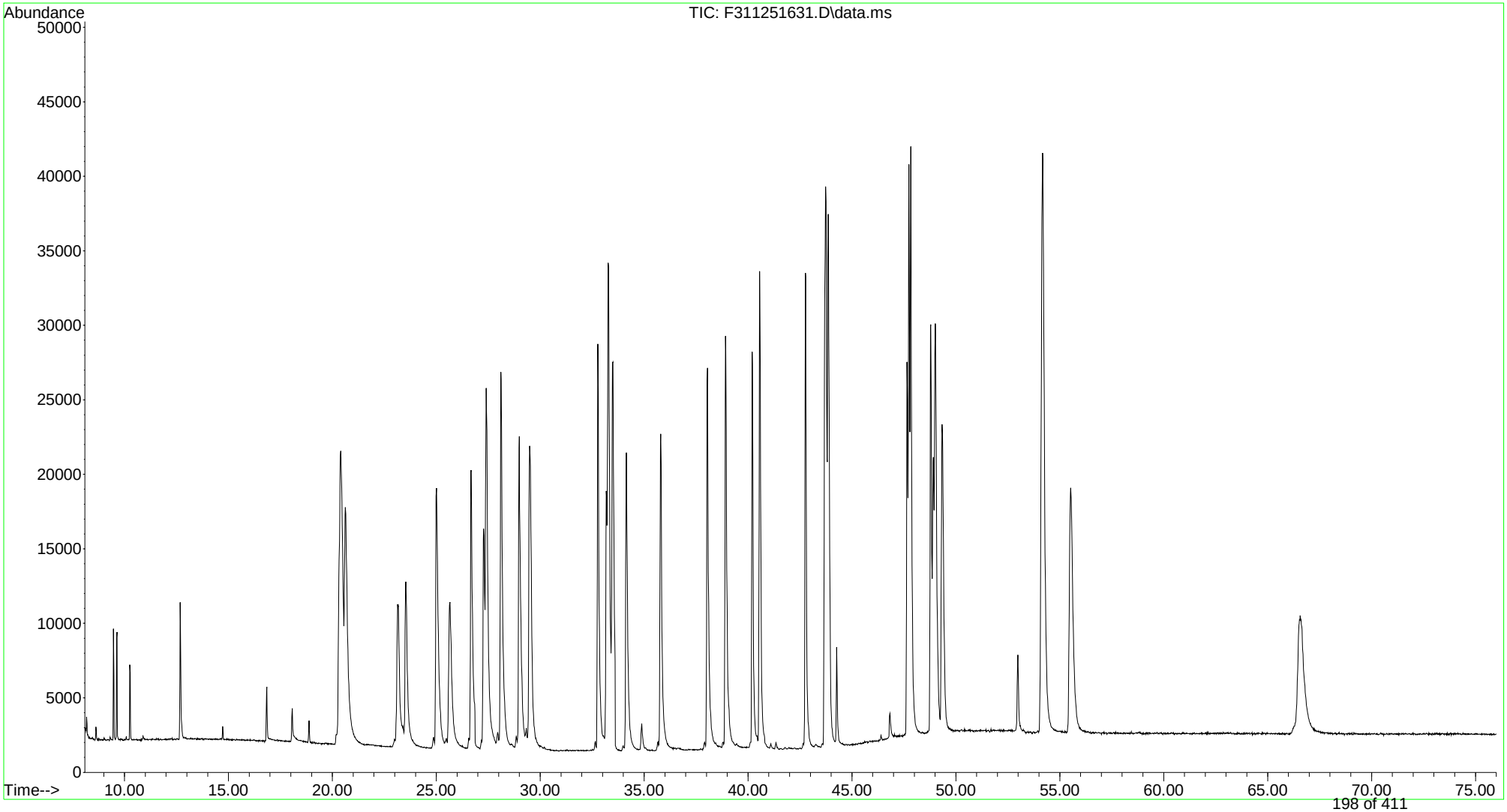
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH3\2016\NOV16\NOV25\
Data File : F311251631.D
Acq On : 27 Nov 2016 8:19 pm
Operator : AC
Sample : c311251605
Misc : cc frax92 500ng/ml
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Nov 29 13:42:20 2016
Quant Method : C:\msdchem\1\METHODS\PAH3\PAH3110916.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Sat Nov 26 10:42:22 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Form VIII
Internal Standard Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **C311221601**

Case: **N/A** SDG: **N/A**

		Chrysene-d12		Acenaphthene-d10	
		Area	**RT**	**Area**	**RT**
Standard:		138717	43.77	87846	27.25
Upper Limit:		277434	44.27	175692	27.75
Lower Limit:		69358	43.27	43923	26.75
Client ID	**Lab ID**				
Blank	SS110116B03	164936	43.75	105539	27.24
LCS	SS110116LCS02	116633	43.75	70977	27.22
LCSD	SS110116LCSD02	121186	43.75	74711	27.22
CCV	C311221602	183724	43.77	121485	27.24

N/A - Not Applicable

Area Upper Limit = +100% of internal standard.
Area Lower Limit = -50% of internal standard.
RT = Retention Time.
RT Upper Limit = +0.5 minutes of internal standard RT.
RT Lower Limit = -0.5 minutes of internal standard RT.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Form VIII
Internal Standard Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **C311251601**

Case: **N/A** SDG: **N/A**

		Chrysene-d12		Acenaphthene-d10	
		Area	**RT**	**Area**	**RT**
Standard:		138241	43.71	78981	27.22
Upper Limit:		276482	44.21	157962	27.72
Lower Limit:		69120	43.21	39490	26.72
Client ID	**Lab ID**				
NFSB-04 0-1'	1610011-01	163845	43.69	103105	27.21
NFSB-05 5-6'	1610011-04	125682	43.68	59244	27.21
NFSB-05 5-6'	1610011-04 D	119446	43.69	57900	27.21
NFSB-08 11-15'	1610011-12	138107	43.69	86805	27.21
NFSB-06 1-2'	1610011-05	102141	43.69	72150	27.21
NFSB-08 1-2'	1610011-10	107317	43.69	76356	27.21
CCV	C311251602	126555	43.72	75068	27.25

N/A - Not Applicable

Area Upper Limit = +100% of internal standard.
Area Lower Limit = -50% of internal standard.
RT = Retention Time.
RT Upper Limit = +0.5 minutes of internal standard RT.
RT Lower Limit = -0.5 minutes of internal standard RT.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Form VIII
Internal Standard Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **C311251602**

Case: **N/A** SDG: **N/A**

		Chrysene-d12		Acenaphthene-d10	
		Area	**RT**	**Area**	**RT**
Standard:		126555	43.72	75068	27.25
Upper Limit:		253110	44.22	150136	27.75
Lower Limit:		63278	43.22	37534	26.75
Client ID	**Lab ID**				
NFSB-07 13-15'	1610011-09E	98201	43.69	43441	27.21
CCV	C311251603	100070	43.74	60655	27.25

N/A - Not Applicable

Area Upper Limit = +100% of internal standard.
Area Lower Limit = -50% of internal standard.
RT = Retention Time.
RT Upper Limit = +0.5 minutes of internal standard RT.
RT Lower Limit = -0.5 minutes of internal standard RT.

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Form VIII
Internal Standard Summary
Alkylated Polynuclear Aromatic Hydrocarbons

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **C311251604**

Case: **N/A** SDG: **N/A**

		Chrysene-d12		Acenaphthene-d10	
		Area	**RT**	**Area**	**RT**
Standard:		86750	43.75	55944	27.28
Upper Limit:		173500	44.25	111888	27.78
Lower Limit:		43375	43.25	27972	26.78
Client ID	**Lab ID**				
NFSB-07 13-15'	1610011-09	83973	43.69	31156	27.21
NFSB-08 7-8'	1610011-11	92490	43.74	36519	27.21
NFSB-09 3-4'	1610011-14	99446	43.69	69150	27.21
NFSB-09 3-4'	1610011-14E	101305	43.72	62833	27.24
DUP-2	1610011-15	91685	43.69	54768	27.21
DUP-2	1610011-15E	100869	43.75	60904	27.24
CCV	C311251605	87149	43.75	54471	27.28

N/A - Not Applicable

Area Upper Limit = +100% of internal standard.
Area Lower Limit = -50% of internal standard.
RT = Retention Time.
RT Upper Limit = +0.5 minutes of internal standard RT.
RT Lower Limit = -0.5 minutes of internal standard RT.

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Total Petroleum Hydrocarbons by GC/FID

Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-04 0-1'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-01**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/09/16	96.1	30.48	2	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**3.74**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	96	50-130
d50-Tetracosane	93	50-130

1/4/2016 14:43

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081645.D
Signal(s) : FID2B.CH
Acq On : 09 Nov 2016 10:51 pm
Operator : FID17:NL
Sample : 1610011-01
Misc : 1X
ALS Vial : 69 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 16 17:30:56 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081602R
Blank File : F1711081637.D

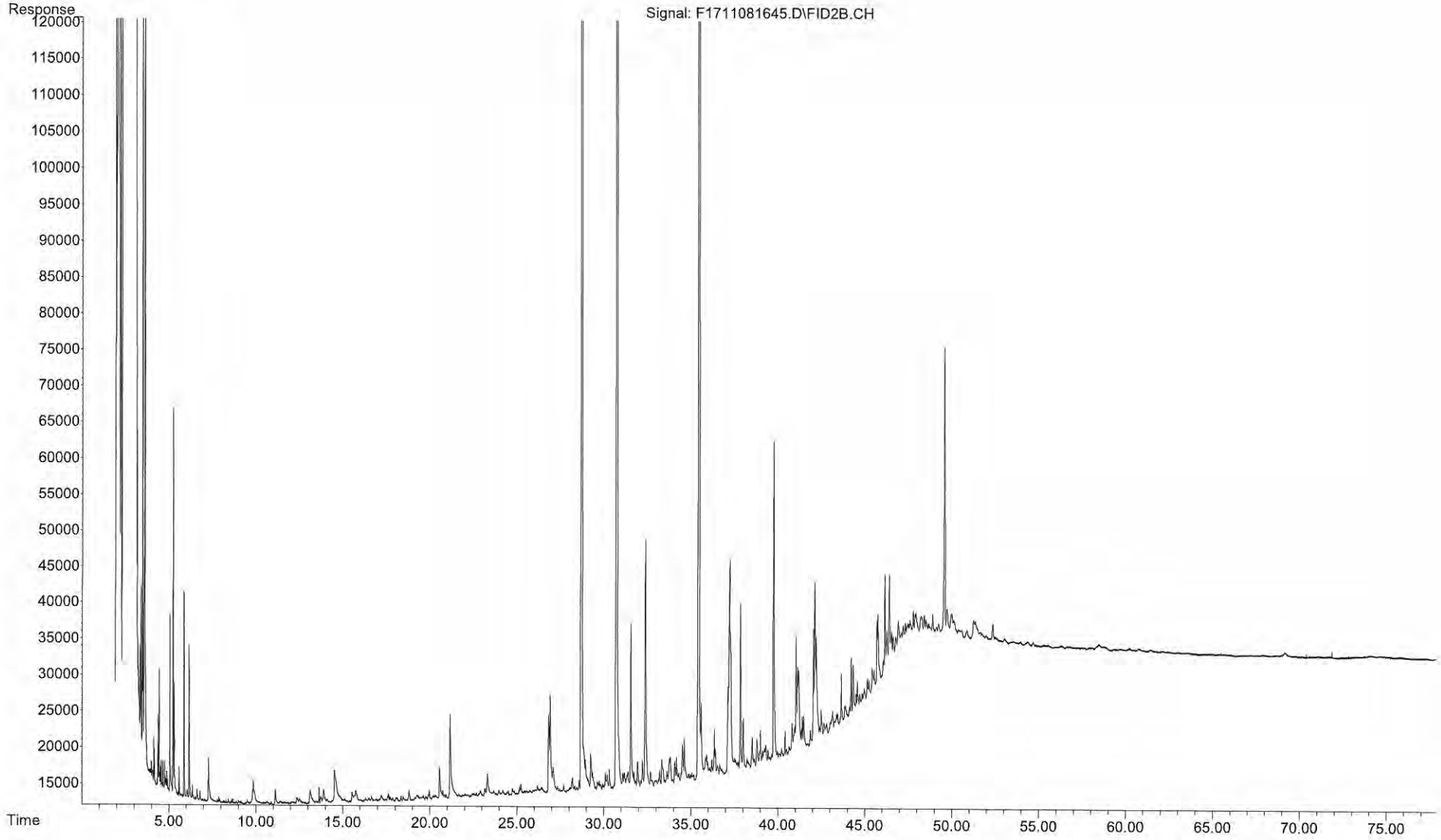
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.735	57203366	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.709	29275780	23.913 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery =	47.83%#
24) s d50-Tetracosane	35.439	23659000	23.195 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery =	46.39%#
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	511723923	476.044 ug/mL m
42) h C9-C44 Total Petroleu BS	39.803	58912353	54.805 ug/mLm
46) h Total Resolved Hydroc...	39.803	30873099	28.720 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081645.D
Operator : FID17:NL
Acquired : 09 Nov 2016 10:51 pm using AcqMethod FID17.M
Instrument: FID17
Sample : 1610011-01
Misc Info : 1X
ALS Vial : 69



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-04 12.5-15'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-02**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/24/16	10/28/16	11/01/16	11/10/16	73.3	5.23	4	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**8600**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	93	50-130
d50-Tetracosane	93	50-130

1/23/16 14:43

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081647.D
Signal(s) : FID2B.CH
Acq On : 10 Nov 2016 12:19 am
Operator : FID17:NL
Sample : 1610011-02
Misc : 1X
ALS Vial : 70 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 16 17:32:10 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081602R
Blank File : F1711081637.D

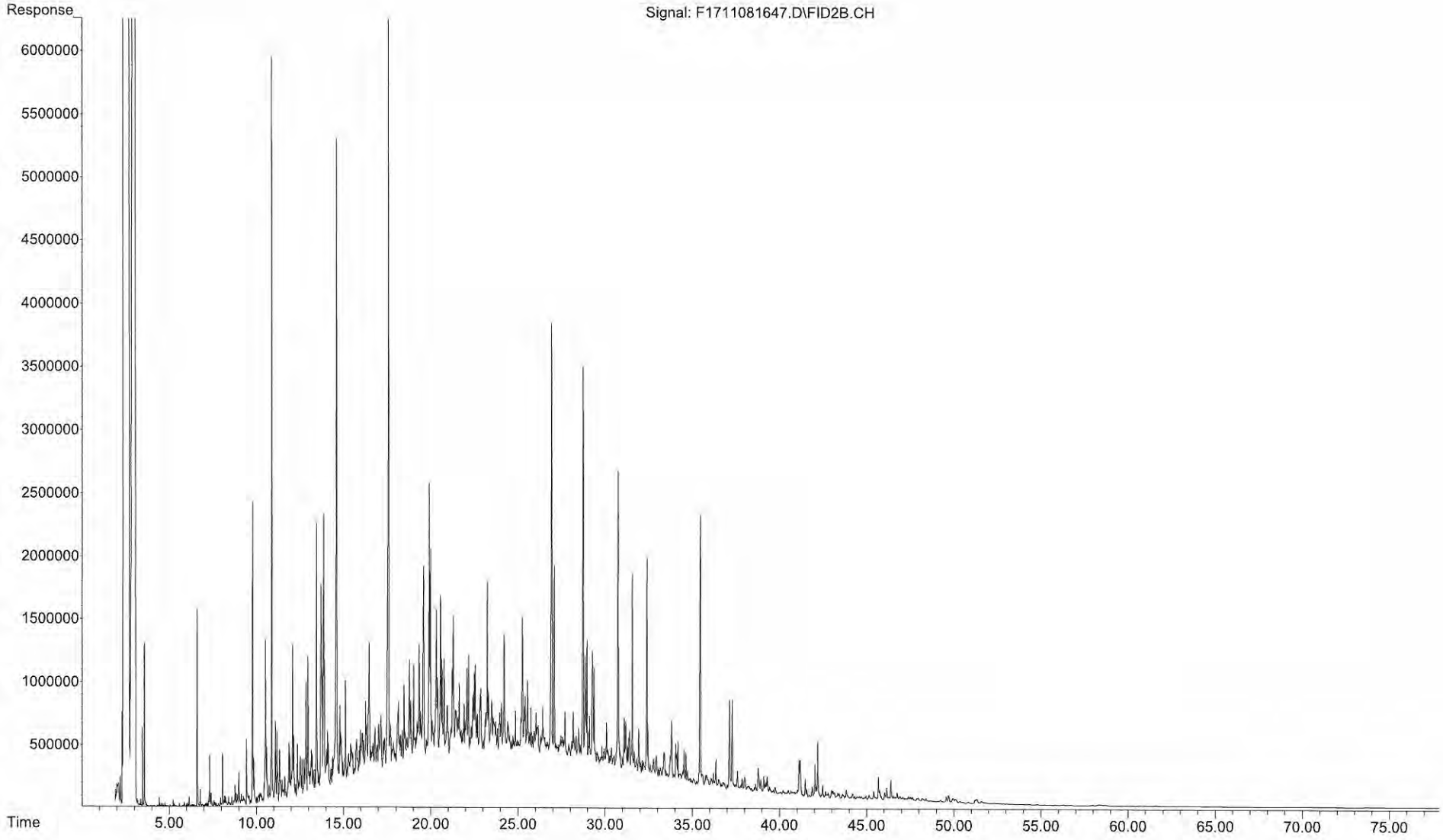
Sub List : TPH - TPH

	Compound		R.T.	Response	Conc	Units	
Internal Standards							
1) I	5-alpha-androstane		30.752	60451885	50.000	ug/mL	m
System Monitoring Compounds							
19) s	ortho-terphenyl		28.745	74905365	57.897	ug/mL	M4
Spiked Amount	50.000	Range	50 - 130	Recovery =	115.79%		
24) s	d50-Tetracosane		35.460	62970155	58.419	ug/mL	M4
Spiked Amount	50.000	Range	50 - 130	Recovery =	116.84%		
Target Compounds							
42) h	C9-C44 Total Petroleu...		39.803	9814596820	8639.643	ug/mL	m
42) h	C9-C44 Total Petroleu BS		39.803	9361785250	8241.040	ug/mL	m
46) h	Total Resolved Hydroc...		39.803	3735466773	3288.276	ug/mL	m
SemiQuant Compounds - Not Calibrated on this Instrument							

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081647.D
Operator : FID17:NL
Acquired : 10 Nov 2016 12:19 am using AcqMethod FID17.M
Instrument: FID17
Sample : 1610011-02
Misc Info : 1X
ALS Vial : 70



HC17102615R.M Fri Nov 25 14:29:53 2016

Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 1-2'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-03**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/10/16	91.4	15.17	10	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**1980**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	98	50-130
d50-Tetracosane	95	50-130

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081649.D
Signal(s) : FID2B.CH
Acq On : 10 Nov 2016 1:48 am
Operator : FID17:NL
Sample : 1610011-03
Misc : 1X
ALS Vial : 71 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 25 14:16:39 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081602R
Blank File : F1711081637.D

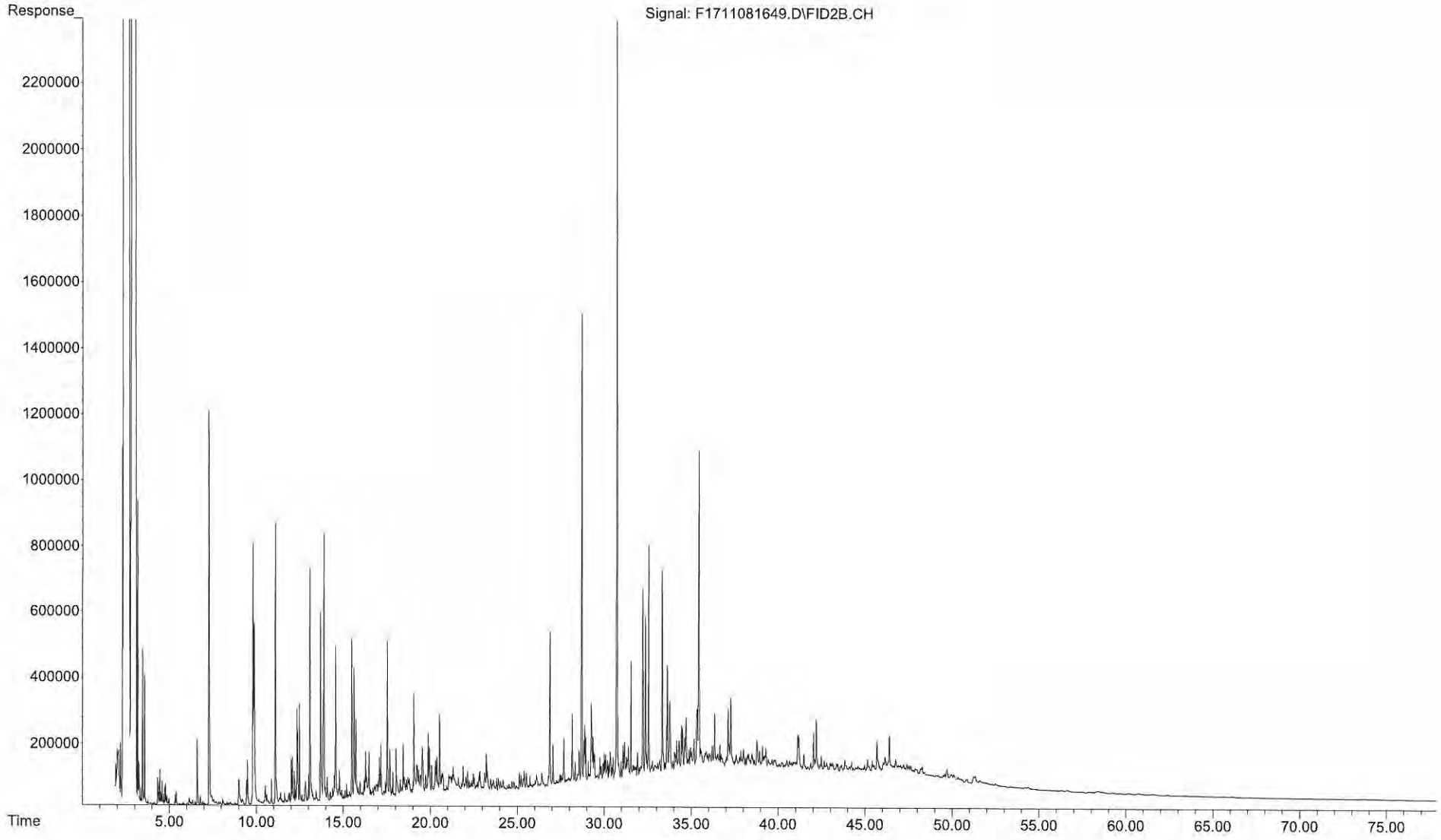
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.743	57683137	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.712	30363043	24.595 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery =	49.19%#
24) s d50-Tetracosane	35.440	24519538	23.839 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery =	47.68%#
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	3425337164	3160.004 ug/mL m
42) h C9-C44 Total Petroleu BS	39.803	2972525594	2742.268 ug/mLm
46) h Total Resolved Hydroc...	39.803	807713271	745.146 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081649.D
Operator : FID17:NL
Acquired : 10 Nov 2016 1:48 am using AcqMethod FID17.M
Instrument: FID17
Sample : 1610011-03
Misc Info : 1X
ALS Vial : 71



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/10/16	91.9	5.22	20	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**8420**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	101	50-130
d50-Tetracosane	106	50-130

1/2016 14:43

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081651.D
Signal(s) : FID2B.CH
Acq On : 10 Nov 2016 3:16 am
Operator : FID17:NL
Sample : 1610011-04
Misc : 1X
ALS Vial : 72 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 16 17:35:14 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081602R
Blank File : F1711081637.D

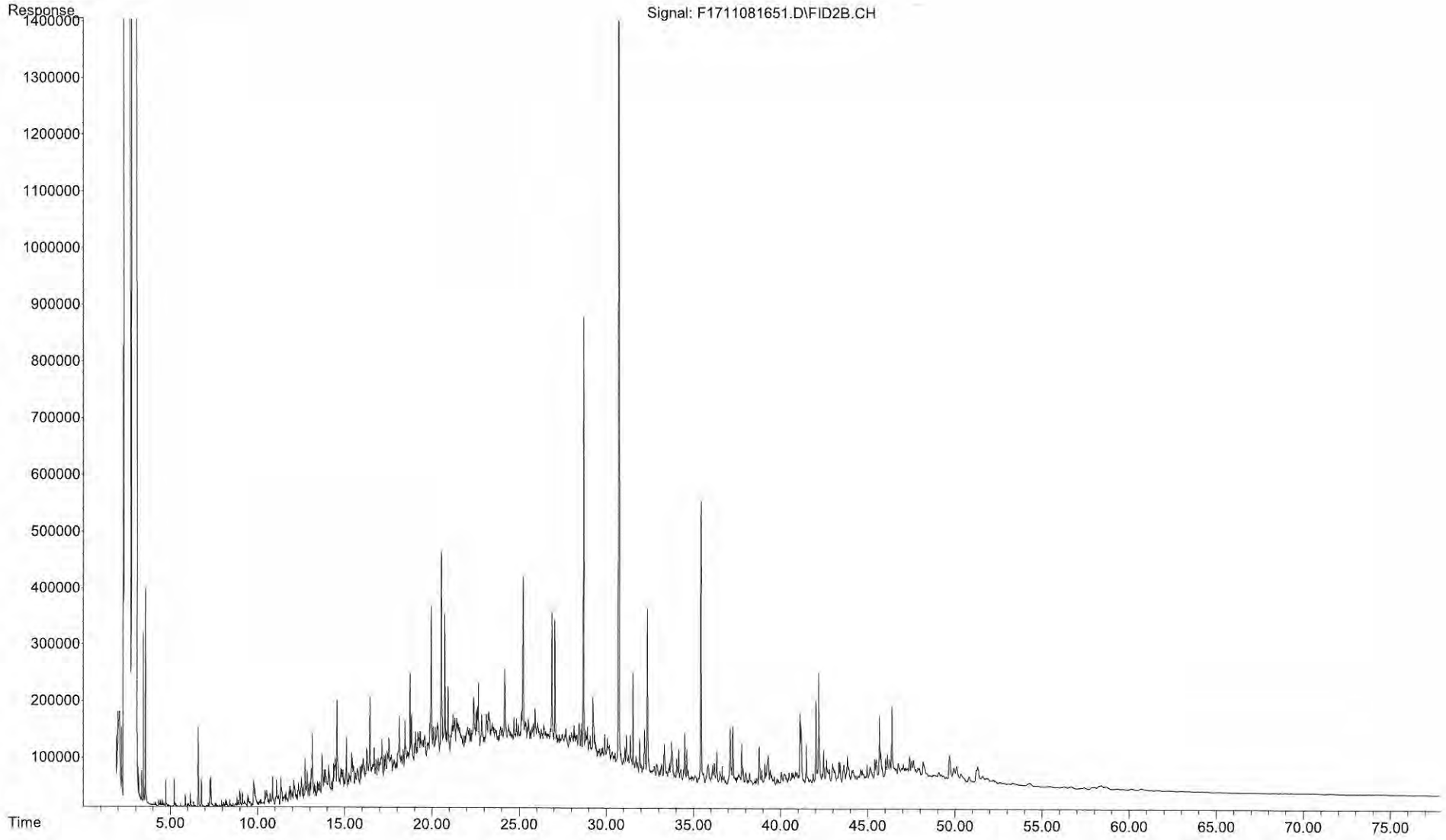
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.736	56749707	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.705	15341956	12.632 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 25.26%#	
24) s d50-Tetracosane	35.431	13363722	13.207 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 26.41%#	
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	2607307084	2444.904 ug/mL m
42) h C9-C44 Total Petroleu BS	39.803	2154495514	2020.297 ug/mLm
46) h Total Resolved Hydroc...	39.803	480552582	450.620 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081651.D
Operator : FID17:NL
Acquired : 10 Nov 2016 3:16 am using AcqMethod FID17.M
Instrument: FID17
Sample : 1610011-04
Misc Info : 1X
ALS Vial : 72



Form I
Duplicate
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04 D**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/10/16	91.9	5.35	20	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**8180**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	101	50-130
d50-Tetracosane	107	50-130

1/16 14:43

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081653.D
Signal(s) : FID2B.CH
Acq On : 10 Nov 2016 4:44 am
Operator : FID17:NL
Sample : 1610011-04D
Misc : 1X
ALS Vial : 73 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 16 17:42:23 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081602R
Blank File : F1711081637.D

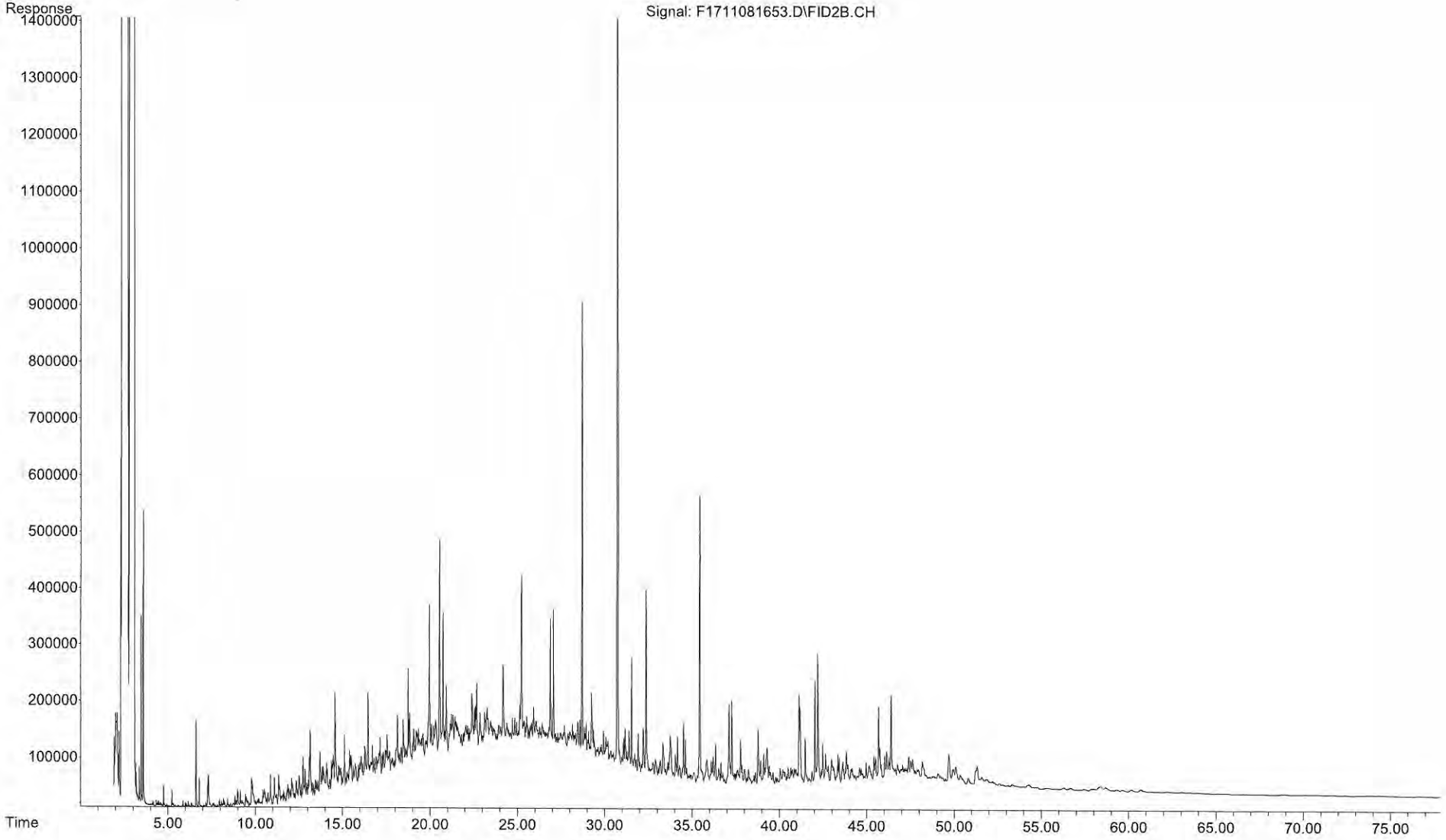
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.740	58093311	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.706	15629557	12.571 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 25.14%#	
24) s d50-Tetracosane	35.431	13811847	13.334 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 26.67%#	
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	2648392838	2425.992 ug/mL m
42) h C9-C44 Total Petroleu BS	39.803	2195581268	2011.206 ug/mLm
46) h Total Resolved Hydroc...	39.803	534540681	489.652 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081653.D
Operator : FID17:NL
Acquired : 10 Nov 2016 4:44 am using AcqMethod FID17.M
Instrument: FID17
Sample : 1610011-04D
Misc Info : 1X
ALS Vial : 73



Duplicate
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
10/20/16	10/28/16	11/01/16	91.9	NLJr

Parameter	Sample Result	Duplicate Result	RPD	RPD Limit
Total Petroleum Hydrocarbons (C9-C44)	**8420**	**8180**	3	30

N/A - Not Applicable

Surrogate	% Recovery		Acceptance Range (%)
ortho-Terphenyl	101	101	50-130
d50-Tetracosane	106	107	50-130

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

11/2016 14:43

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Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-06 1-2'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-05**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/10/16	89.6	15.46	4	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**1260**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	96	50-130
d50-Tetracosane	103	50-130

1/11/16 14:43

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081655.D
Signal(s) : FID2B.CH
Acq On : 10 Nov 2016 6:13 am
Operator : FID17:NL
Sample : 1610011-05
Misc : 1X
ALS Vial : 74 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 16 17:43:42 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081602R
Blank File : F1711081637.D

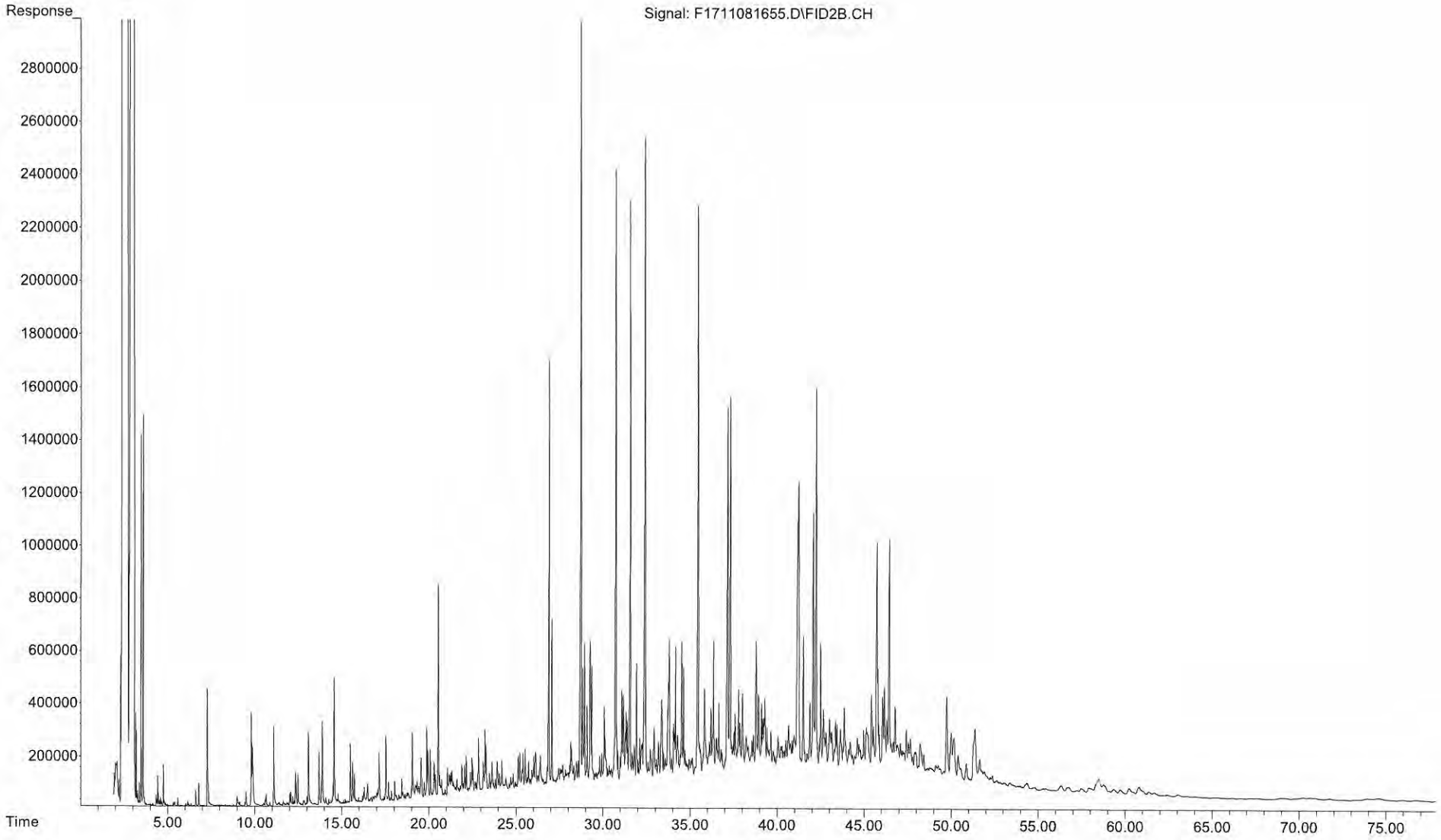
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.739	57311429	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.732	73831538	60.194 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 120.39%	
24) s d50-Tetracosane	35.456	65578853	64.173 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 128.35%	
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	5142913381	4775.305 ug/mL m
42) h C9-C44 Total Petroleu BS	39.803	4690101811	4354.860 ug/mLm
46) h Total Resolved Hydroc...	39.803	1675463398	1555.704 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081655.D
Operator : FID17:NL
Acquired : 10 Nov 2016 6:13 am using AcqMethod FID17.M
Instrument: FID17
Sample : 1610011-05
Misc Info : 1X
ALS Vial : 74



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-06 12.5-15'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-06**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/25/16	10/28/16	11/01/16	11/10/16	85.9	5.55	20	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**24100**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	105	50-130
d50-Tetracosane	110	50-130

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081657.D
Signal(s) : FID2B.CH
Acq On : 10 Nov 2016 7:41 am
Operator : FID17:NL
Sample : 1610011-06
Misc : 1X
ALS Vial : 75 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 16 17:45:01 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081602R
Blank File : F1711081637.D

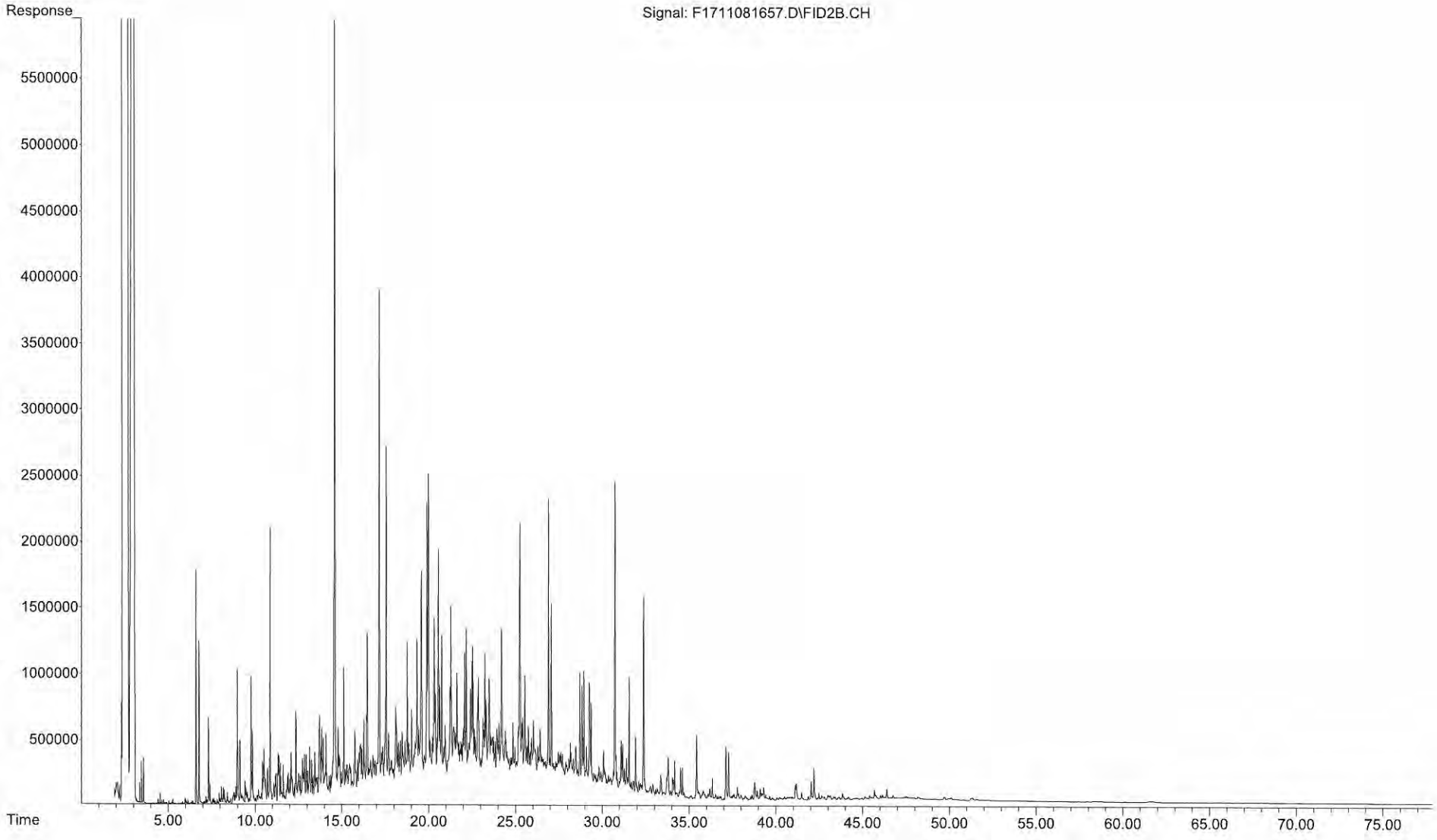
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.742	56837548	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.715	15944606	13.108 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery =	26.22%#
24) s d50-Tetracosane	35.433	13960132	13.775 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery =	27.55%#
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	6594203432	6173.908 ug/mL m
42) h C9-C44 Total Petroleu BS	39.803	6141391862	5749.958 ug/mLm
46) h Total Resolved Hydroc...	39.803	2978486977	2788.647 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081657.D
Operator : FID17:NL
Acquired : 10 Nov 2016 7:41 am using AcqMethod FID17.M
Instrument: FID17
Sample : 1610011-06
Misc Info : 1X
ALS Vial : 75



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-07 1-2'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-07**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/10/16	91.2	15.22	2	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**549**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	94	50-130
d50-Tetracosane	94	50-130

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081665.D
Signal(s) : FID2B.CH
Acq On : 10 Nov 2016 2:43 pm
Operator : FID17:NL
Sample : 1610011-07
Misc : 1X
ALS Vial : 79 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 16 17:58:38 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081603R
Blank File : F1711081663.D

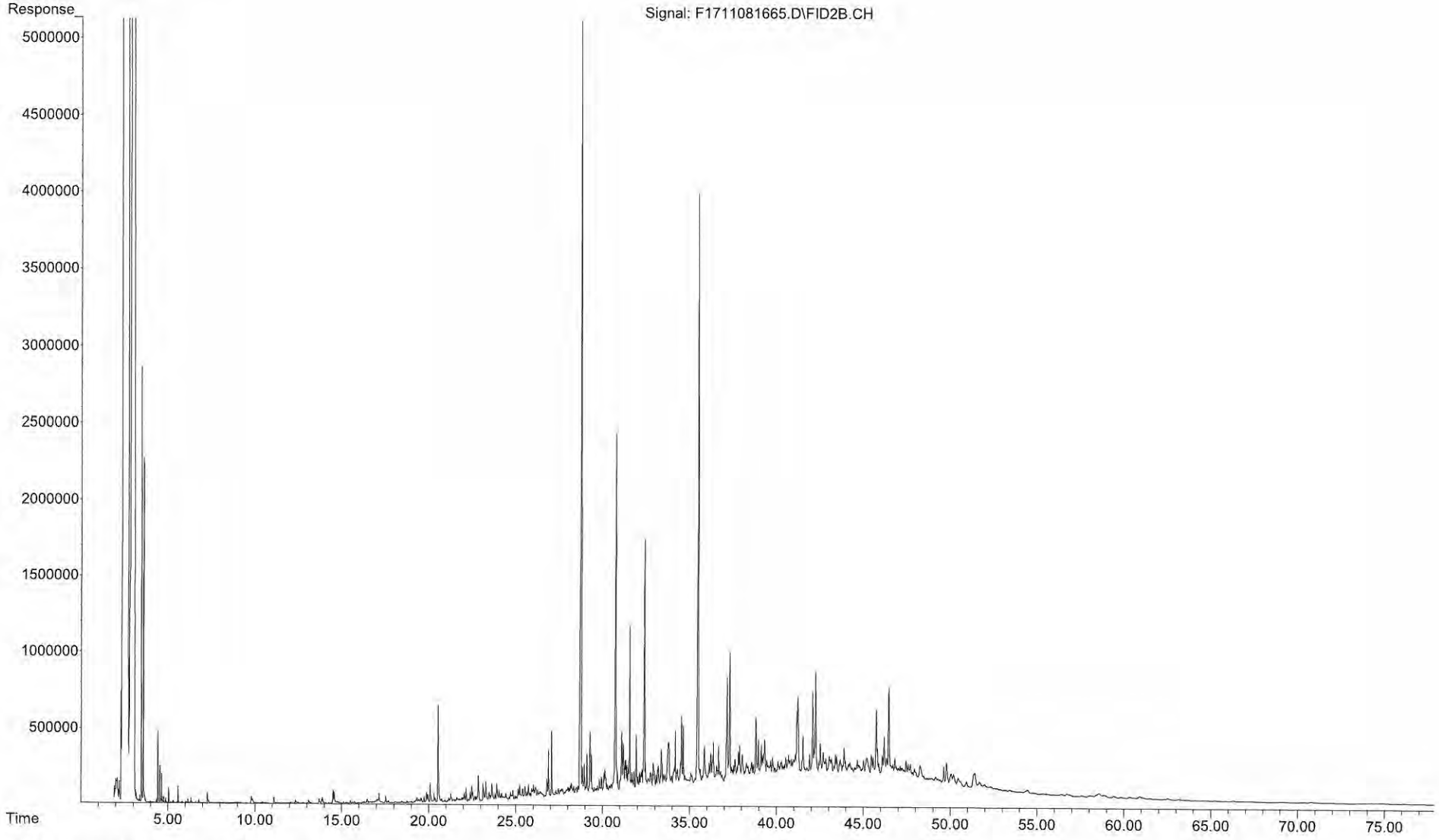
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.750	60549308	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.760	152845738	117.949 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 235.90%#	
24) s d50-Tetracosane	35.492	127075146	117.701 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 235.40%#	
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	4761829962	4185.023 ug/mL m
42) h C9-C44 Total Petroleu BS	39.803	4332726840	3807.898 ug/mLm
46) h Total Resolved Hydroc...	39.803	1017828381	894.537 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081665.D
Operator : FID17:NL
Acquired : 10 Nov 2016 2:43 pm using AcqMethod FID17.M
Instrument: FID17
Sample : 1610011-07
Misc Info : 1X
ALS Vial : 79



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-07 6-7'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-08**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/10/16	84.8	5.12	20	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**28200**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	92	50-130
d50-Tetracosane	117	50-130

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081667.D
Signal(s) : FID2B.CH
Acq On : 10 Nov 2016 4:11 pm
Operator : FID17:NL
Sample : 1610011-08
Misc : 1X
ALS Vial : 80 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 25 14:21:03 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081603R
Blank File : F1711081663.D

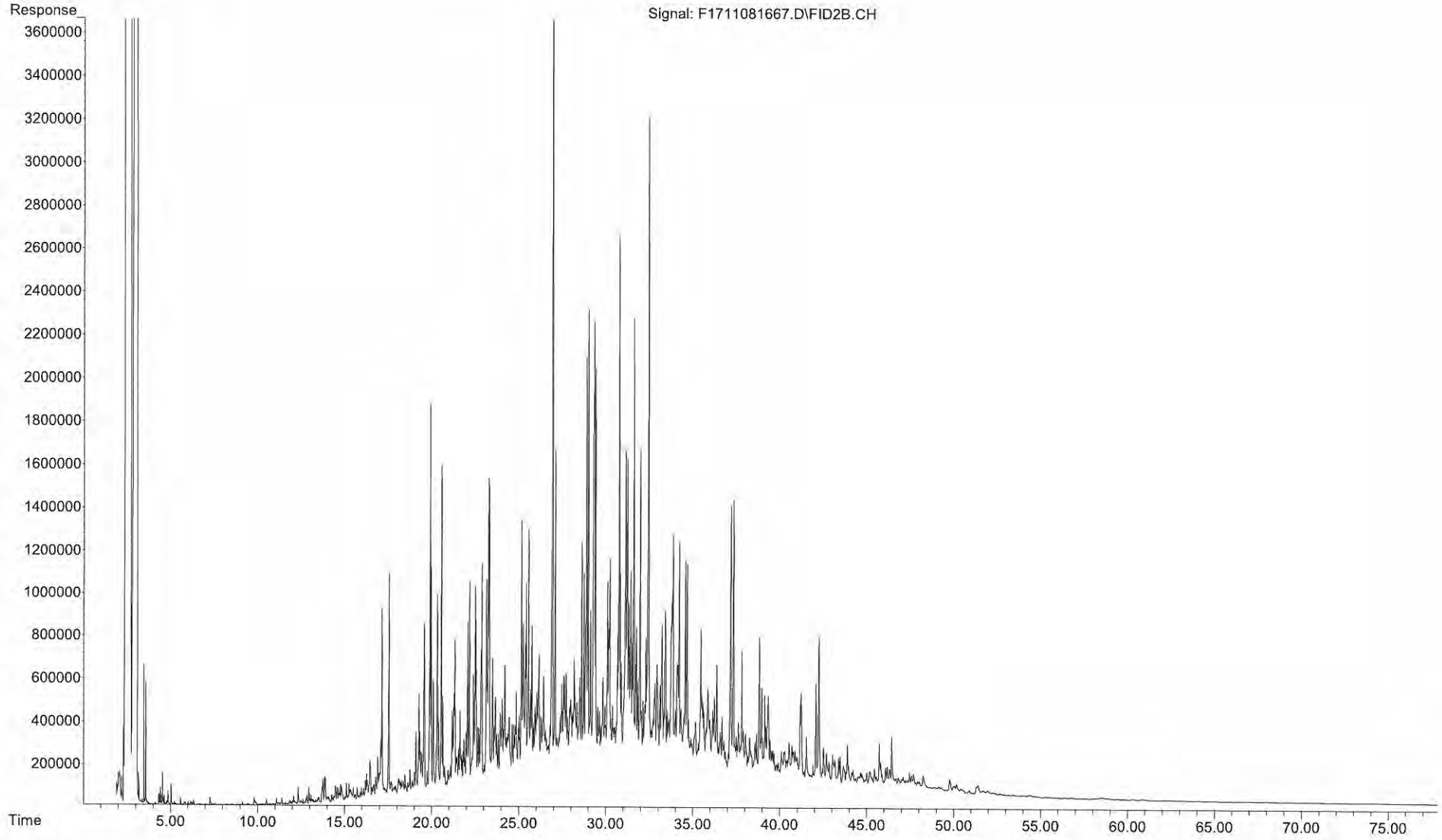
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.771	61620781	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.744	15245232	11.560 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery =	23.12%#
24) s d50-Tetracosane	35.464	16102986	14.656 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery =	29.31%#
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	7519074136	6493.373 ug/mL m
42) h C9-C44 Total Petroleu BS	39.803	7089971014	6122.805 ug/mLm
46) h Total Resolved Hydroc...	39.803	2922666075	2523.976 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081667.D
Operator : FID17:NL
Acquired : 10 Nov 2016 4:11 pm using AcqMethod FID17.M
Instrument: FID17
Sample : 1610011-08
Misc Info : 1X
ALS Vial : 80



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-07 13-15'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-09**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/24/16	10/28/16	11/01/16	11/10/16	88.8	5.30	2	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**9140**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	86	50-130
d50-Tetracosane	94	50-130

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081669.D
Signal(s) : FID2B.CH
Acq On : 10 Nov 2016 5:40 pm
Operator : FID17:NL
Sample : 1610011-09
Misc : 1X
ALS Vial : 81 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 25 14:21:43 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081603R
Blank File : F1711081663.D

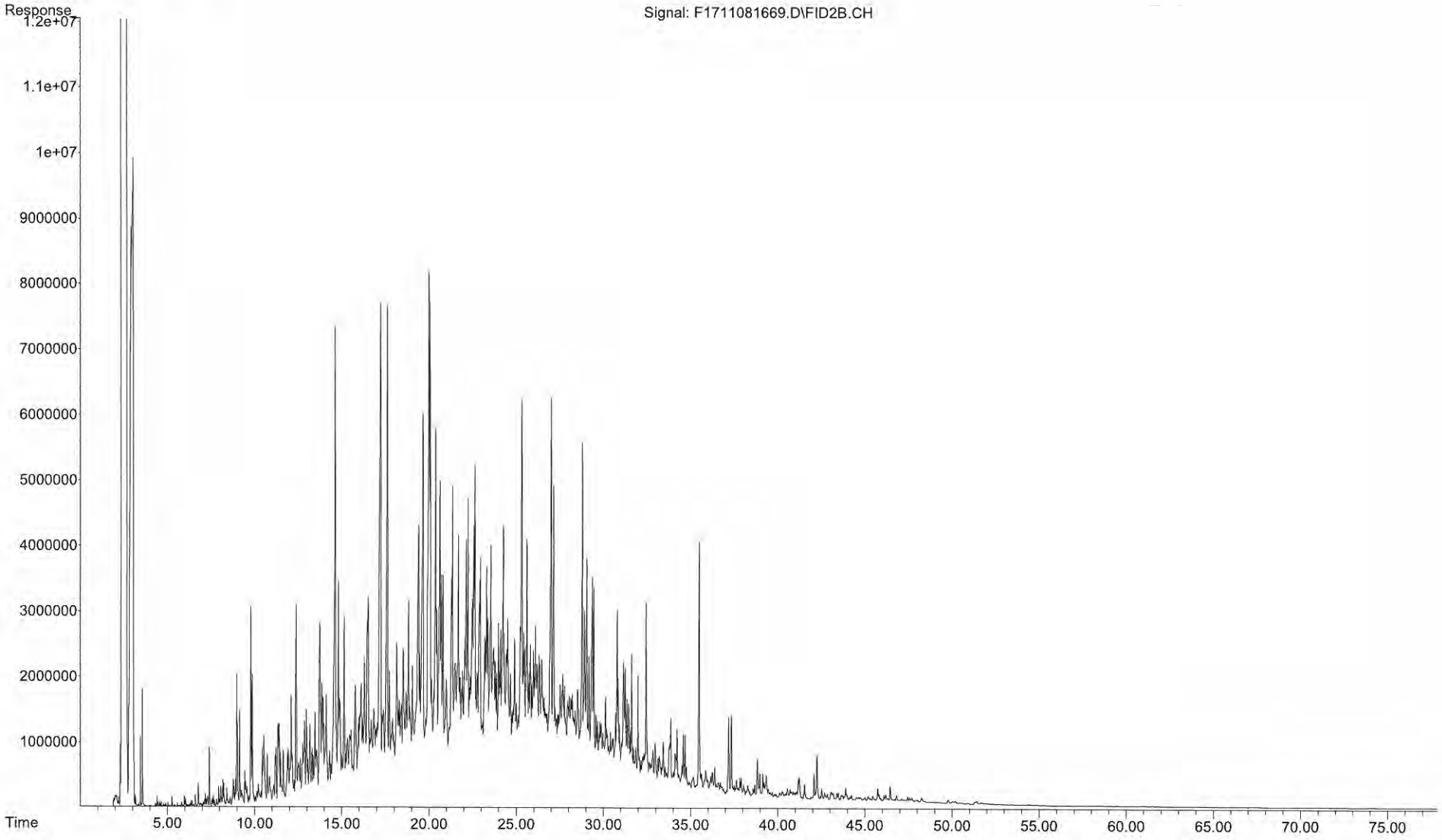
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.800	61154924	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.811	140248886	107.157 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 214.31%#	
24) s d50-Tetracosane	35.504	128357042	117.711 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 235.42%#	
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	25124191978	21862.199 ug/mL m
42) h C9-C44 Total Petroleu BS	39.803	24695088856	21488.808 ug/mLm
46) h Total Resolved Hydroc...	39.803	10921365363	9503.393 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081669.D
Operator : FID17:NL
Acquired : 10 Nov 2016 5:40 pm using AcqMethod FID17.M
Instrument: FID17
Sample : 1610011-09
Misc Info : 1X
ALS Vial : 81



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 1-2'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-10**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/10/16	91.5	5.24	2	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	1210

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	97	50-130
d50-Tetracosane	97	50-130

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081671.D
Signal(s) : FID2B.CH
Acq On : 10 Nov 2016 7:09 pm
Operator : FID17:NL
Sample : 1610011-10
Misc : 1X
ALS Vial : 82 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 16 18:07:01 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081603R
Blank File : F1711081663.D

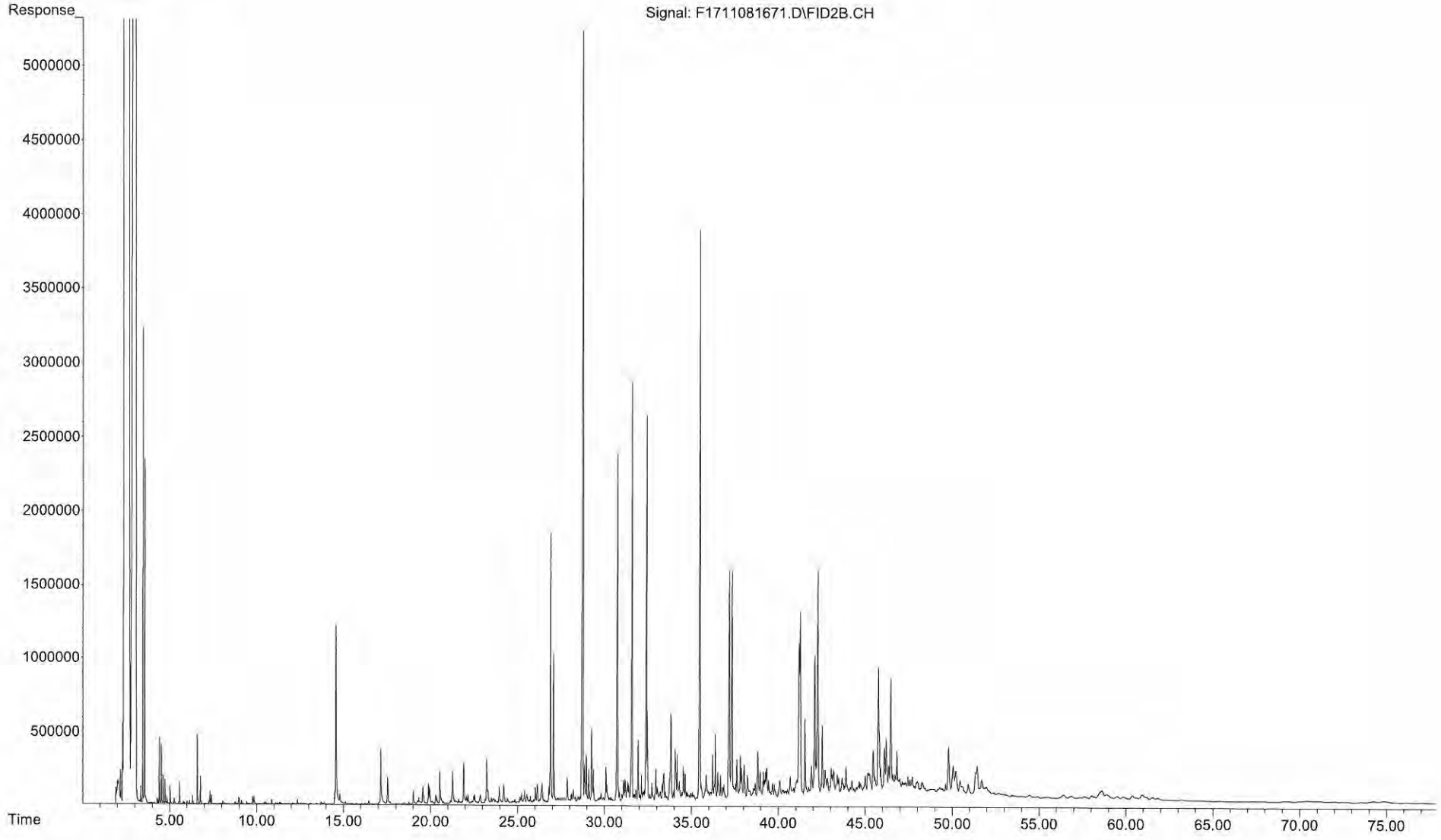
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.748	57743033	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.762	150309485	121.629 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 243.26%#	
24) s d50-Tetracosane	35.495	124495910	120.916 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 241.83%#	
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	3572467233	3292.318 ug/mL m
42) h C9-C44 Total Petroleu BS	39.803	3143364111	2896.865 ug/mLm
46) h Total Resolved Hydroc...	39.803	1426718116	1314.837 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081671.D
Operator : FID17:NL
Acquired : 10 Nov 2016 7:09 pm using AcqMethod FID17.M
Instrument: FID17
Sample : 1610011-10
Misc Info : 1X
ALS Vial : 82



HC17102615R.M Fri Nov 25 14:30:53 2016

Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 7-8'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-11**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/10/16	87.3	15.88	2	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	467

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	97	50-130
d50-Tetracosane	93	50-130

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081673.D
Signal(s) : FID2B.CH
Acq On : 10 Nov 2016 8:37 pm
Operator : FID17:NL
Sample : 1610011-11
Misc : 1X
ALS Vial : 83 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 25 14:23:18 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081603R
Blank File : F1711081663.D

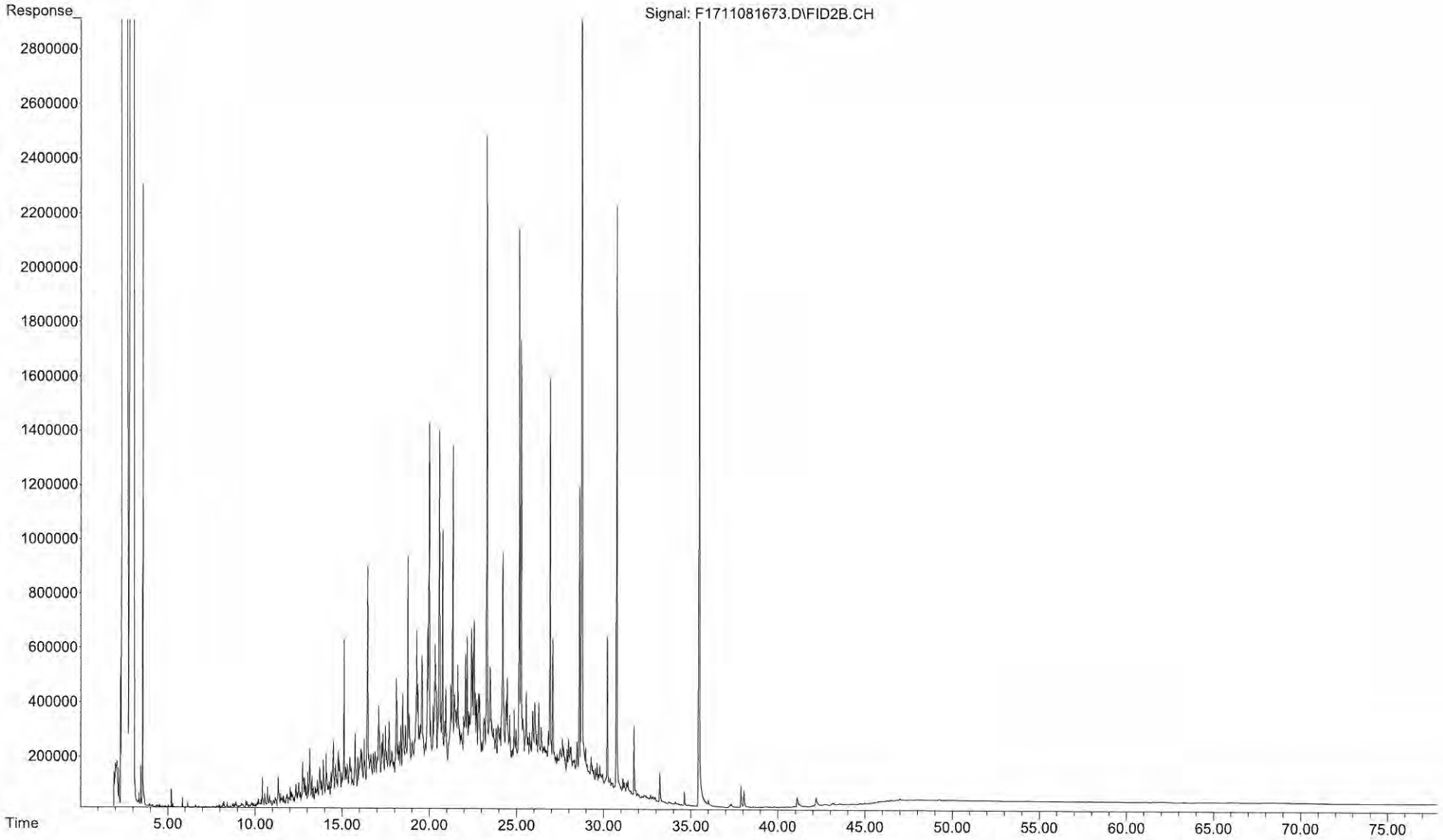
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.751	53090961	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.762	138462103	121.860 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 243.72%#	
24) s d50-Tetracosane	35.486	109585540	115.761 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 231.52%#	
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	3657916797	3666.455 ug/mL m
42) h C9-C44 Total Petroleu BS	39.803	3228813675	3236.351 ug/mLm
46) h Total Resolved Hydroc...	39.803	1243315351	1246.218 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081673.D
Operator : FID17:NL
Acquired : 10 Nov 2016 8:37 pm using AcqMethod FID17.M
Instrument: FID17
Sample : 1610011-11
Misc Info : 1X
ALS Vial : 83



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 11-15'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-12**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/24/16	10/28/16	11/01/16	11/10/16	76.1	15.83	2	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**37.2**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	99	50-130
d50-Tetracosane	97	50-130

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081675.D
Signal(s) : FID2B.CH
Acq On : 10 Nov 2016 10:06 pm
Operator : FID17:NL
Sample : 1610011-12
Misc : 1X
ALS Vial : 84 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 16 18:08:45 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081603R
Blank File : F1711081663.D

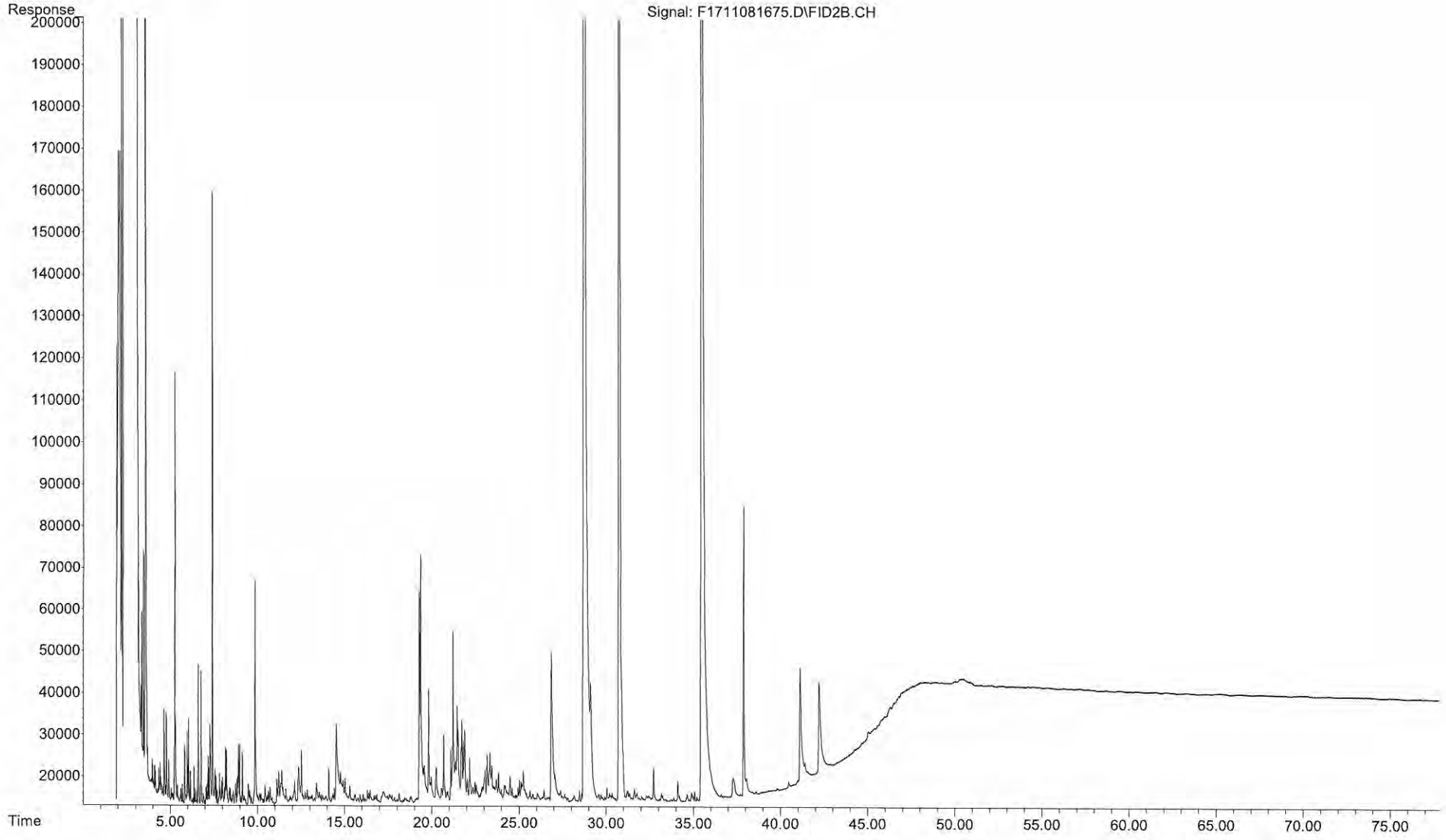
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.742	52957622	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.754	139674723	123.237 ug/mL M4
Spiked Amount 50.000 Range 50 - 130		Recovery = 246.47%#	
24) s d50-Tetracosane	35.488	114937169	121.719 ug/mL M4
Spiked Amount 50.000 Range 50 - 130		Recovery = 243.44%#	
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	651894046	655.061 ug/mL m
42) h C9-C44 Total Petroleu BS	39.803	222790924	223.873 ug/mLm
46) h Total Resolved Hydroc...	39.803	43741363	43.954 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081675.D
Operator : FID17:NL
Acquired : 10 Nov 2016 10:06 pm using AcqMethod FID17.M
Instrument: FID17
Sample : 1610011-12
Misc Info : 1X
ALS Vial : 84



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-09 1-2'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-13**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/21/16	10/28/16	11/01/16	11/10/16	87.9	15.84	4	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**1840**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	101	50-130
d50-Tetracosane	118	50-130

1/31/16 14:43
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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081677.D
Signal(s) : FID2B.CH
Acq On : 10 Nov 2016 11:35 pm
Operator : FID17:NL
Sample : 1610011-13
Misc : 1X
ALS Vial : 85 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 16 18:10:09 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081603R
Blank File : F1711081663.D

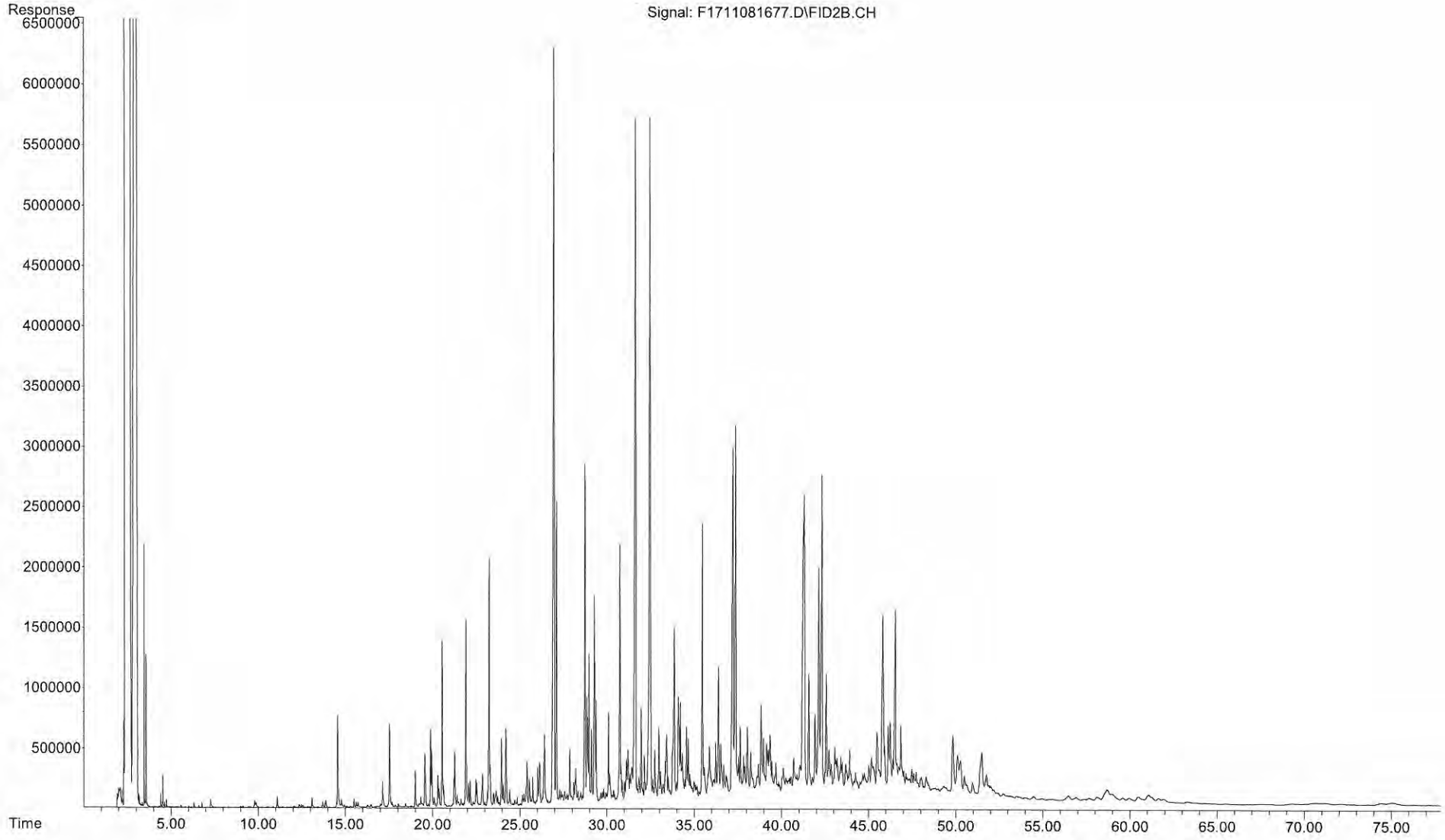
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.751	56153487	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.748	75782717	63.059 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 126.12%	
24) s d50-Tetracosane	35.479	73877787	73.785 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 147.57%#	
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	7193781972	6817.320 ug/mL m
42) h C9-C44 Total Petroleu BS	39.803	6764678850	6410.673 ug/mLm
46) h Total Resolved Hydroc...	39.803	3709546774	3515.421 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081677.D
Operator : FID17:NL
Acquired : 10 Nov 2016 11:35 pm using AcqMethod FID17.M
Instrument: FID17
Sample : 1610011-13
Misc Info : 1X
ALS Vial : 85



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-09 3-4'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-14**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/21/16	10/28/16	11/01/16	11/11/16	80.9	5.69	6.67	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**9300**

N/A - Not Applicable
§ - Surrogate value outside of acceptable range.

Surrogate	% Recovery		Acceptance Range (%)
ortho-Terphenyl	103		50-130
d50-Tetracosane	133	§	50-130

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081679.D
Signal(s) : FID2B.CH
Acq On : 11 Nov 2016 1:03 am
Operator : FID17:NL
Sample : 1610011-14
Misc : 1X
ALS Vial : 86 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 16 18:12:52 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081603R
Blank File : F1711081663.D

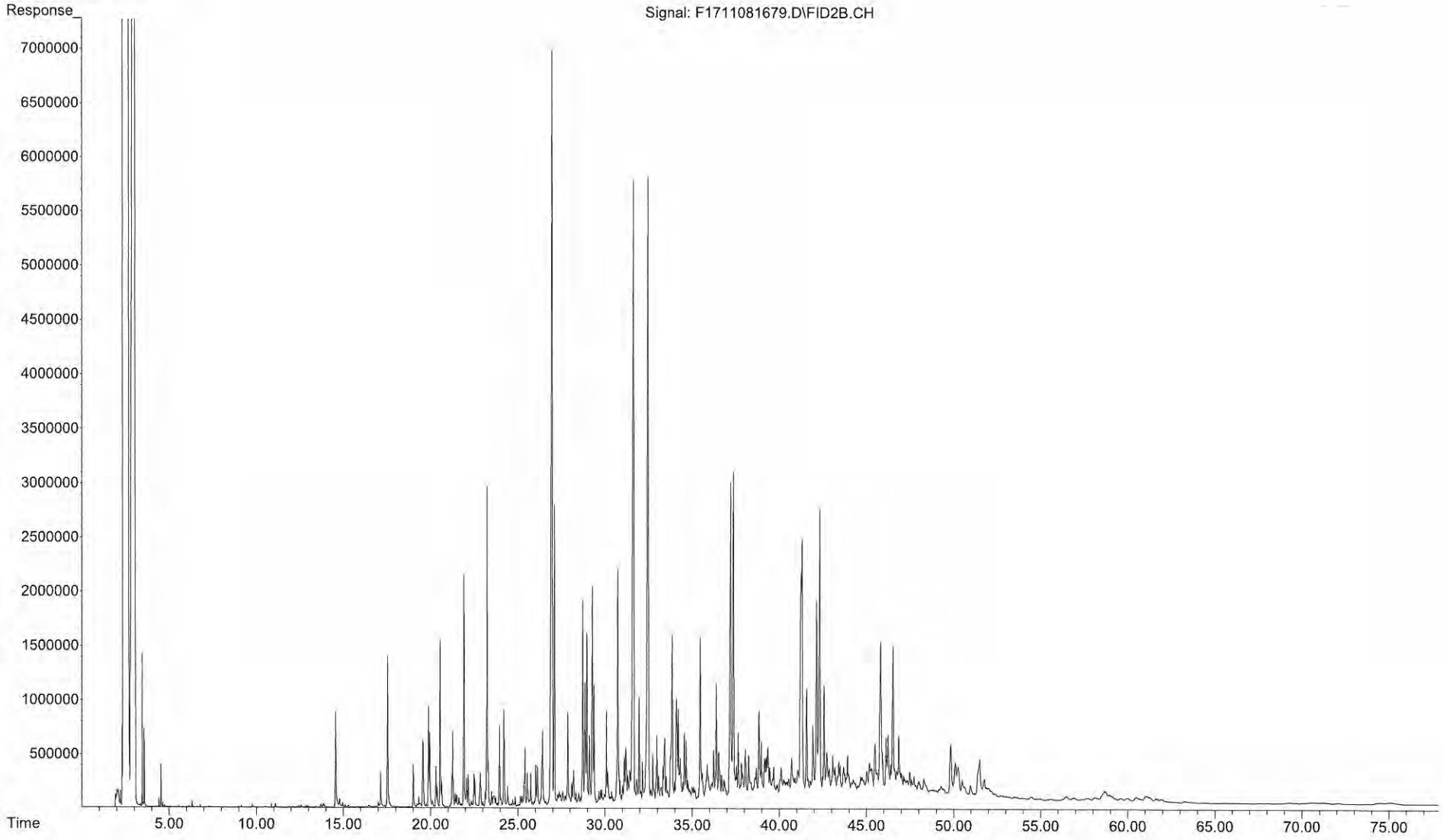
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.753	56697411	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.743	46830067	38.593 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 77.19%	
24) s d50-Tetracosane	35.471	50405343	49.859 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 99.72%	
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	7270783691	6824.191 ug/mL m
42) h C9-C44 Total Petroleu BS	39.803	6841680569	6421.445 ug/mLm
46) h Total Resolved Hydroc...	39.803	3926017501	3684.870 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081679.D
Operator : FID17:NL
Acquired : 11 Nov 2016 1:03 am using AcqMethod FID17.M
Instrument: FID17
Sample : 1610011-14
Misc Info : 1X
ALS Vial : 86



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **DUP-2**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-15**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/25/16	10/28/16	11/01/16	11/11/16	83.2	5.49	4	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**6160**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	98	50-130
d50-Tetracosane	98	50-130

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081681.D
Signal(s) : FID2B.CH
Acq On : 11 Nov 2016 2:32 am
Operator : FID17:NL
Sample : 1610011-15
Misc : 1X
ALS Vial : 87 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 16 18:14:58 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081603R
Blank File : F1711081663.D

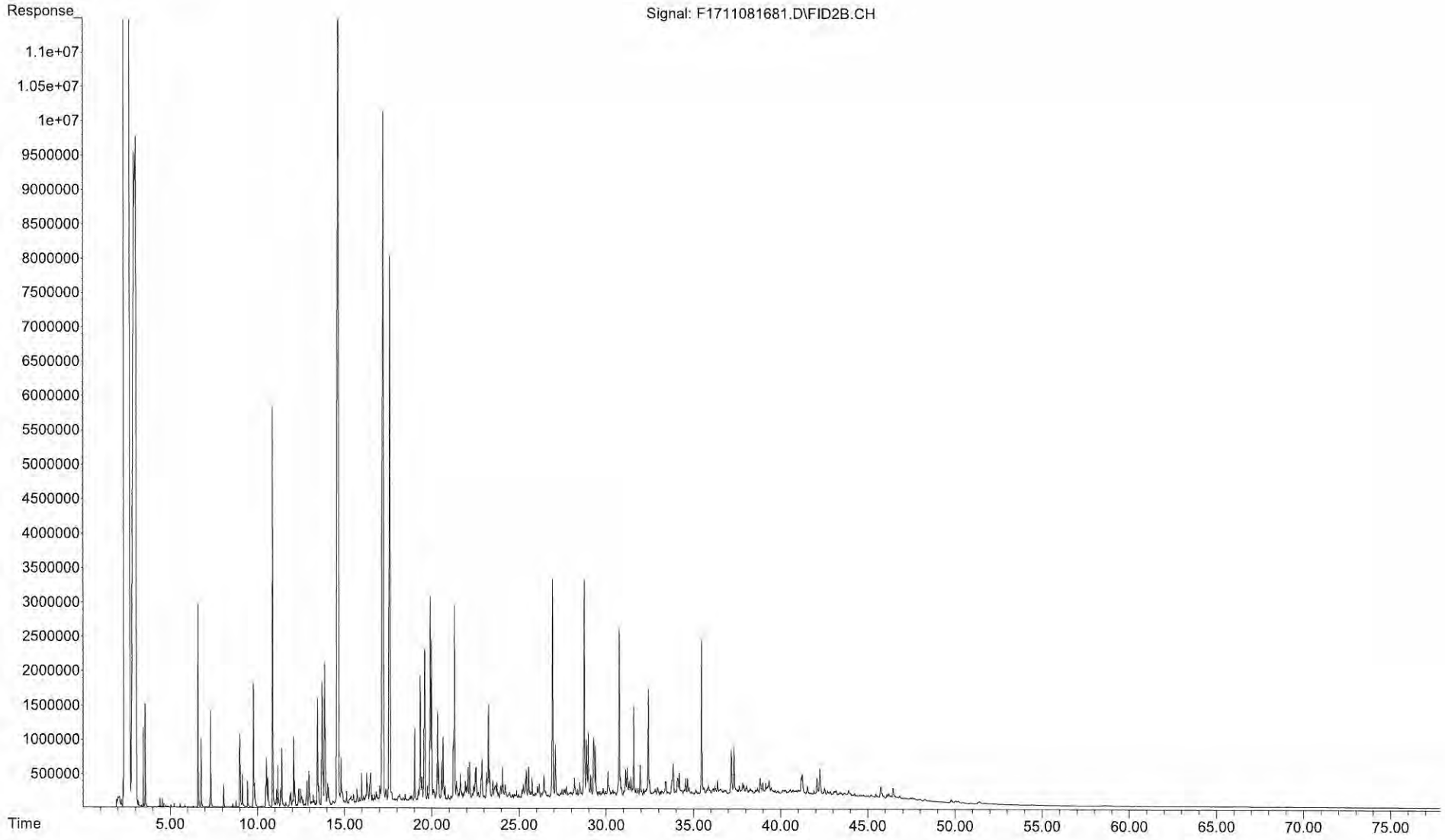
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.758	61832238	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.751	81105754	61.290 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 122.58%	
24) s d50-Tetracosane	35.480	67742361	61.443 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 122.89%	
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	8599701303	7401.190 ug/mL m
42) h C9-C44 Total Petroleu BS	39.803	8170598181	7031.890 ug/mLm
46) h Total Resolved Hydroc...	39.803	4074144486	3506.345 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081681.D
Operator : FID17:NL
Acquired : 11 Nov 2016 2:32 am using AcqMethod FID17.M
Instrument: FID17
Sample : 1610011-15
Misc Info : 1X
ALS Vial : 87



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116B03**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/09/16	100	11.00	2	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	6.00 U

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	88	50-130
d50-Tetracosane	84	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081639.D
Signal(s) : FID2B.CH
Acq On : 09 Nov 2016 6:26 pm
Operator : FID17:NL
Sample : SS110116B03
Misc : 1X ETR 1610011
ALS Vial : 66 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 25 14:10:41 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081602R
Blank File : F1711081637.D

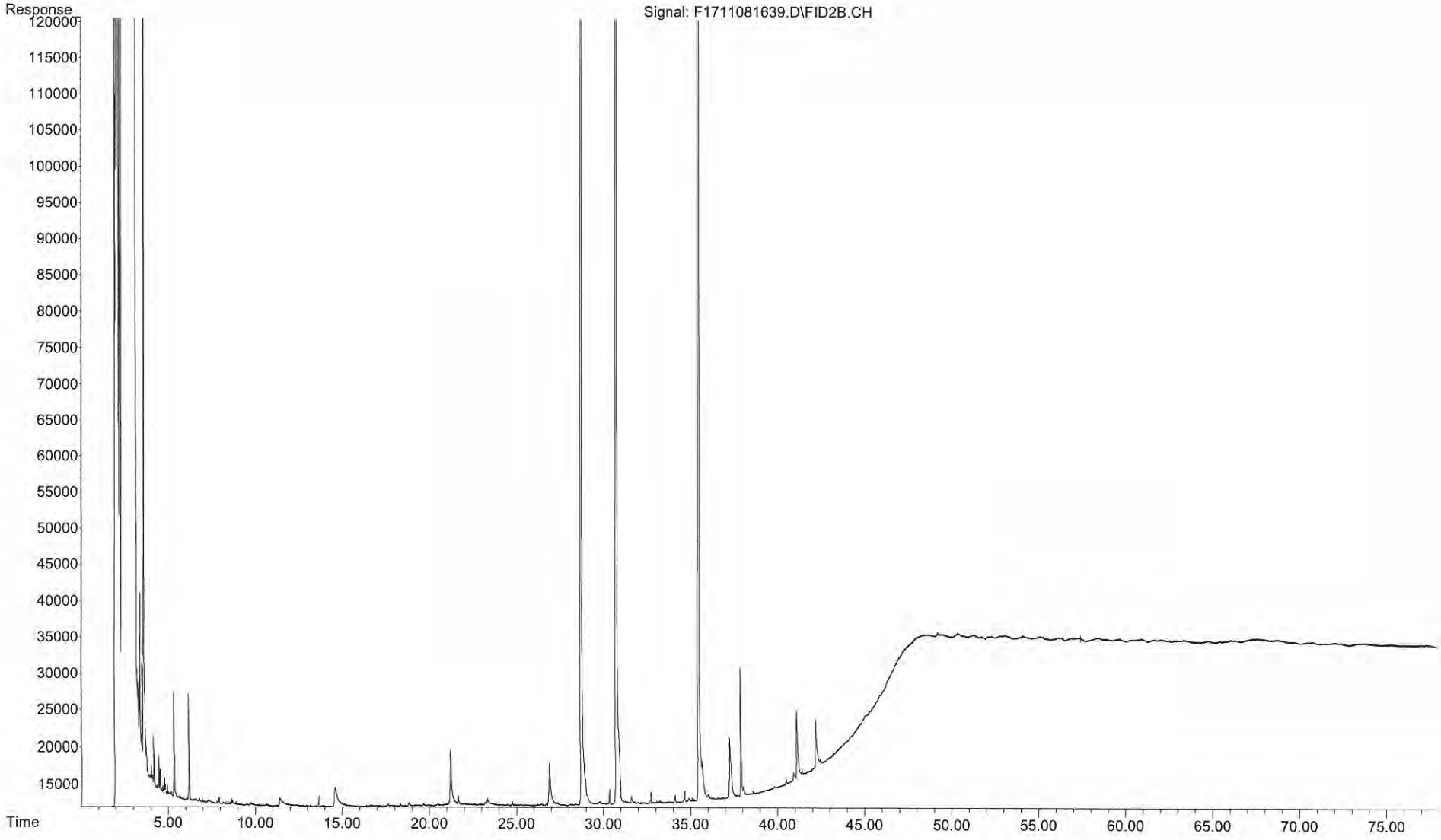
Sub List : TPH - TPH

Compound		R.T.	Response	Conc Units
Internal Standards				
1) I 5-alpha-androstane		30.736	57054394	50.000 ug/mL M4
System Monitoring Compounds				
19) s ortho-terphenyl		28.709	26901663	22.031 ug/mL M4
Spiked Amount 50.000	Range 50 - 130		Recovery =	44.06%#
24) s d50-Tetracosane		35.439	21463320	21.098 ug/mL M4
Spiked Amount 50.000	Range 50 - 130		Recovery =	42.20%#
Target Compounds				
42) h C9-C44 Total Petroleu...		39.803	441025210	411.346 ug/mL m
42) h C9-C44 Total Petroleu BS		39.803	-11786360	N.D. ug/mLm
46) h Total Resolved Hydroc...		39.803	6830970	6.371 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument				

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081639.D
Operator : FID17:NL
Acquired : 09 Nov 2016 6:26 pm using AcqMethod FID17.M
Instrument: FID17
Sample : SS110116B03
Misc Info : 1X ETR 1610011
ALS Vial : 66



Form III
Spike Recovery Summary
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **See Below**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	11/01/16	100	NLJr

Lab ID:		SS110116B03	SS110116LCS02		SS110116LCSD02				
Parameter		**Blank Conc.**	**LCS Conc.**	**LCS % Recovery**	**LCSD Conc.**	**LCSD % Recovery**	**% RPD**	**RPD Limit**	**% Recovery Limits**
n-Nonane (C9)		0.182 U	1.31	72	1.29	71	2	30	50-130
n-Decane (C10)		0.182 U	1.57	86	1.51	83	4	30	50-130
n-Dodecane (C12)		0.182 U	1.75	96	1.71	94	3	30	50-130
n-Tetradecane (C14)		0.182 U	1.81	100	1.76	97	3	30	50-130
n-Hexadecane (C16)		0.182 U	2.01	110	1.99	110	1	30	50-130
n-Octadecane (C18)		0.182 U	2.05	113	2.07	114	1	30	50-130
n-Nonadecane (C19)		0.182 U	1.92	105	1.94	107	1	30	50-130
n-Eicosane (C20)		0.182 U	2.02	111	2.05	113	1	30	50-130
n-Docosane (C22)		0.182 U	2.02	111	2.06	113	2	30	50-130
n-Tetracosane (C24)		0.182 U	2.04	112	2.08	114	2	30	50-130
n-Hexacosane (C26)		0.182 U	2.02	111	2.06	113	2	30	50-130
n-Octacosane (C28)		0.182 U	2.07	114	2.11	116	2	30	50-130
n-Triacontane (C30)		0.182 U	2.07	114	2.11	116	2	30	50-130
n-Hexatriacontane (C36)		0.182 U	2.02	111	2.05	113	1	30	50-130

Surrogate	% Recovery		Acceptance Range (%)
ortho-Terphenyl	100	100	50-130
d50-Tetracosane	94	95	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

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Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116LCS02**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/09/16	100	11.00	2	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**24.4**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	100	50-130
d50-Tetracosane	94	50-130

11/21/16 14:43

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081641.D
Signal(s) : FID2B.CH
Acq On : 09 Nov 2016 7:54 pm
Operator : FID17:NL
Sample : SS110116LCS02
Misc : 1X ETR 1610011
ALS Vial : 67 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 25 14:12:56 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081602R
Blank File : F1711081637.D

Sub List : TPH_QC_Samples - TPH_QC_Samples

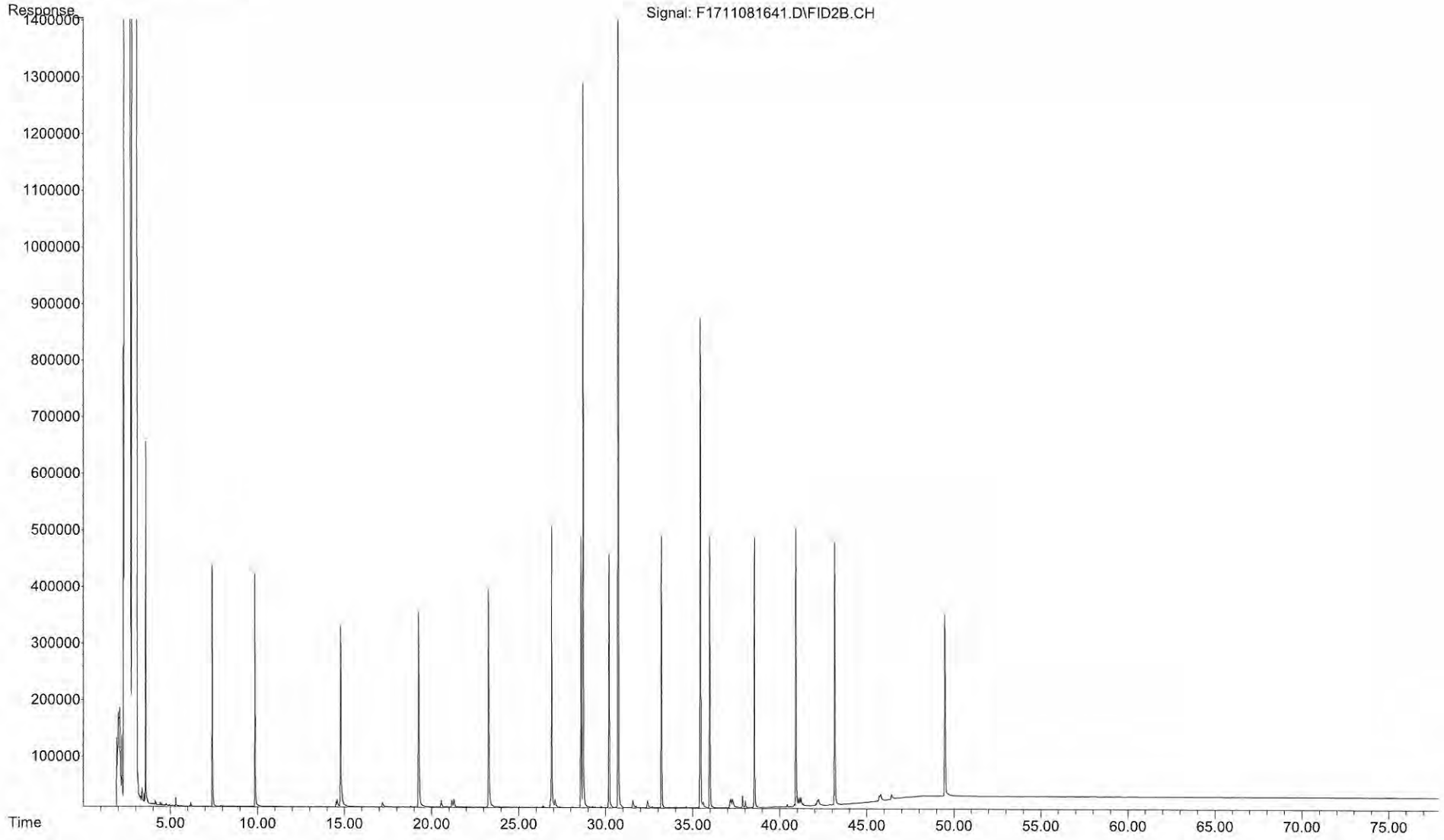
	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.732	54946263	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.708	29308982	24.924 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	49.85%#
24) s	d50-Tetracosane	35.438	23095028	23.573 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	47.15%#
	Target Compounds			
3) t	n-Nonane (C9)	7.410	6802687	7.221 ug/mL M4
4) t	n-Decane (C10)	9.859	8394434	8.619 ug/mL M4
6) t	n-Dodecane (C12)	14.777	9600248	9.642 ug/mL M4
9) t	n-Tetradecane (C14)	19.259	10079434	9.953 ug/mL M4
12) t	n-Hexadecane (C16)	23.278	11334449	11.046 ug/mL M4
16) t	n-Octadecane (C18)	26.902	11822871	11.278 ug/mL M4
18) t	n-Nonadecane (C19)	28.585	10950146	10.546 ug/mL M4
20) t	n-Eicosane (C20)	30.195	11504651	11.137 ug/mL M4
22) t	n-Docosane (C22)	33.206	11624766	11.111 ug/mL M4
25) t	n-Tetracosane (C24)	35.977	11825954	11.228 ug/mL M4
27) t	n-Hexacosane (C26)	38.543	11803789	11.117 ug/mL M4
29) t	n-Octacosane (C28)	40.927	11874789	11.371 ug/mL M4
31) t	n-Triacontane (C30)	43.156	11951710	11.373 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.492	12110012	11.126 ug/mL M4
42) h	C9-C44 Total Petroleu...	39.803	591583145	572.942 ug/mL m
42) h	C9-C44 Total Petroleu BS	39.803	138771575	134.399 ug/mLm
46) h	Total Resolved Hydroc...	39.803	166507751	161.261 ug/mL m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081641.D
Operator : FID17:NL
Acquired : 09 Nov 2016 7:54 pm using AcqMethod FID17.M
Instrument: FID17
Sample : SS110116LCS02
Misc Info : 1X ETR 1610011
ALS Vial : 67



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Laboratory Control Sample Dup**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116LCSD02**
Associated Blank: **SS110116B03**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/09/16	100	11.00	2	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**23.2**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	100	50-130
d50-Tetracosane	95	50-130

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081643.D
Signal(s) : FID2B.CH
Acq On : 09 Nov 2016 9:23 pm
Operator : FID17:NL
Sample : SS110116LCSD02
Misc : 1X ETR 1610011
ALS Vial : 68 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 25 14:14:35 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711081602R
Blank File : F1711081637.D

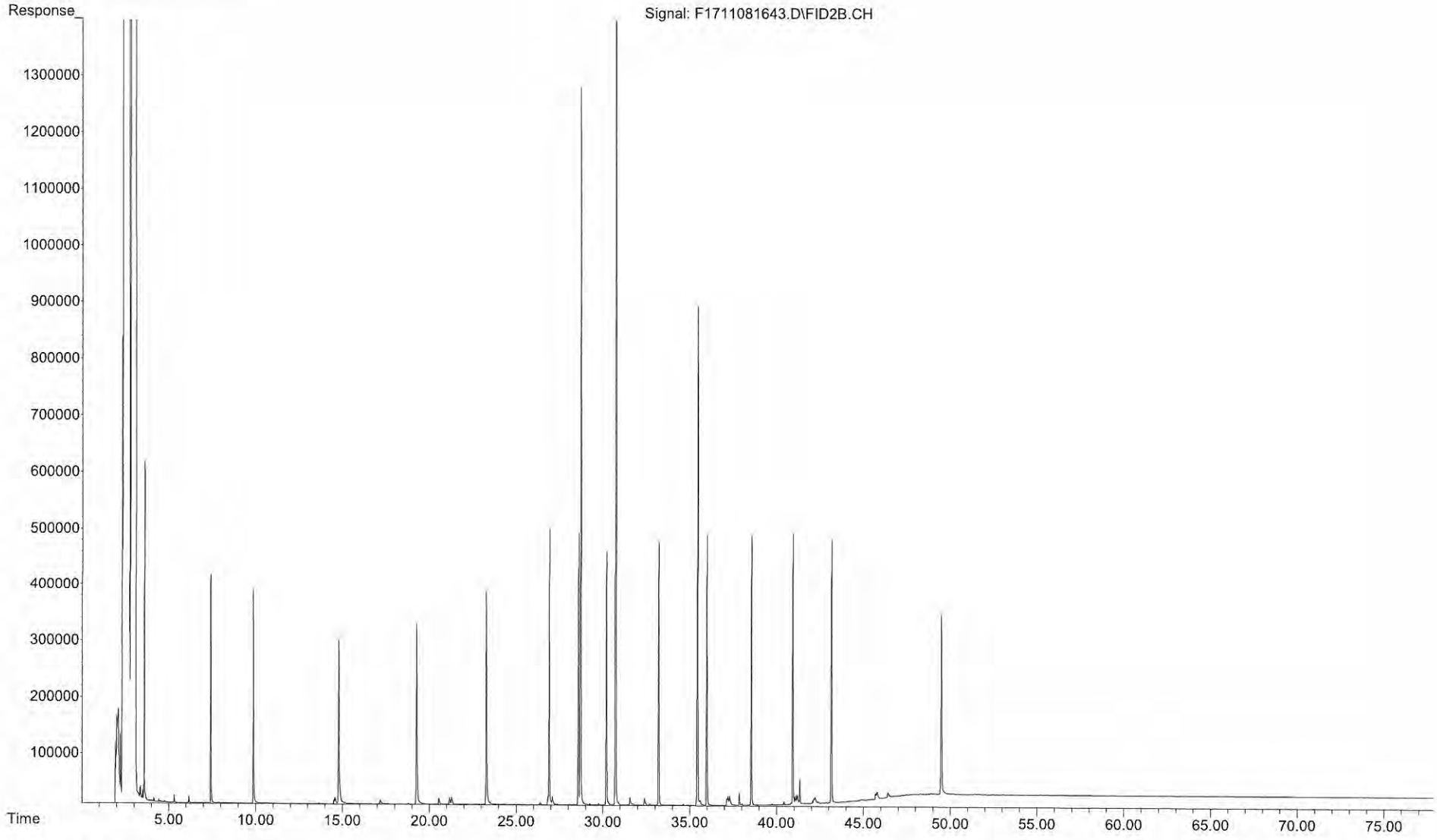
Sub List : TPH_QC_Samples - TPH_QC_Samples

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.732	53456100	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.708	28608445	25.006 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	50.01%
24) s	d50-Tetracosane	35.437	22749927	23.868 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	47.74%#
	Target Compounds			
3) t	n-Nonane (C9)	7.412	6498886	7.091 ug/mL M4
4) t	n-Decane (C10)	9.861	7867248	8.303 ug/mL M4
6) t	n-Dodecane (C12)	14.778	9107020	9.401 ug/mL M4
9) t	n-Tetradecane (C14)	19.261	9549722	9.692 ug/mL M4
12) t	n-Hexadecane (C16)	23.279	10939256	10.958 ug/mL M4
16) t	n-Octadecane (C18)	26.901	11590621	11.365 ug/mL M4
18) t	n-Nonadecane (C19)	28.586	10770687	10.662 ug/mL M4
20) t	n-Eicosane (C20)	30.194	11355559	11.299 ug/mL M4
22) t	n-Docosane (C22)	33.203	11520795	11.318 ug/mL M4
25) t	n-Tetracosane (C24)	35.976	11725766	11.443 ug/mL M4
27) t	n-Hexacosane (C26)	38.539	11708333	11.334 ug/mL M4
29) t	n-Octacosane (C28)	40.926	11808495	11.623 ug/mL M4
31) t	n-Triacontane (C30)	43.157	11856542	11.597 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.490	11935144	11.272 ug/mL M4
42) h	C9-C44 Total Petroleu...	39.803	580916363	578.295 ug/mL m
42) h	C9-C44 Total Petroleu BS	39.803	128104793	127.527 ug/mLm
46) h	Total Resolved Hydroc...	39.803	165214749	164.469 ug/mL m
	SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081643.D
Operator : FID17:NL
Acquired : 09 Nov 2016 9:23 pm using AcqMethod FID17.M
Instrument: FID17
Sample : SS110116LCSD02
Misc Info : 1X ETR 1610011
ALS Vial : 68



Form III
Spike Recovery Summary
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **TO103015ANC02**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	NLJr

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
Total Petroleum Hydrocarbons (C9-C44)	554993	600000	108	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

11/16 14:40

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Form I
Alaska North Slope Crude
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **TO103015ANC02**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	10/27/15	100	0.10382	10	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**600000**

N/A - Not Applicable

11/16 14:43

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615025.D
Signal(s) : FID2B.CH
Acq On : 27 Oct 2015 6:02 am
Operator : FID17:NL
Sample : TO103015ANC02
Misc : ,FRAW36 10.382mg/mL
ALS Vial : 63 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 19 08:31:40 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 19 08:30:39 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1710261501R
Blank File : F17102615021.D

Sub List : Default - All compounds listed

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	31.381	62993161	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	29.358	66685118	49.464 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery =	98.93%
24) s	d50-Tetracosane	36.005	56609587	50.399 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery =	100.80%
	Target Compounds			
2) t	n-Octane (C8)	5.659	99153658	96.110 ug/mL M4
3) t	n-Nonane (C9)	7.882	75549931	69.951 ug/mL M4
4) t	n-Decane (C10)	10.379	63797059	57.134 ug/mL M4
5) t	n-Undecane (C11)	12.897	58158963	51.656 ug/mL M4
6) t	n-Dodecane (C12)	15.328	54099841	47.393 ug/mL M4
7) t	n-Tridecane (C13)	17.638	49906316	43.497 ug/mL M4
8) t	1380	19.314	11915193	10.262 ug/mL M4
9) t	n-Tetradecane (C14)	19.823	46871416	40.369 ug/mL M4
10) t	1470	21.107	17264386	14.628 ug/mL M4
11) t	n-Pentadecane (C15)	21.889	54961790	46.569 ug/mL M4
12) t	n-Hexadecane (C16)	23.845	42898821	36.466 ug/mL M4
13) t	1650	24.749	16178967	13.640 ug/mL M4
14) t	n-Heptadecane (C17)	25.705	37303202	31.449 ug/mL M4
15) t	Pristane	25.798	29306941	24.595 ug/mL M4
16) t	n-Octadecane (C18)	27.471	32591310	27.118 ug/mL M4
17) t	Phytane	27.630	16478416	15.680 ug/mL M4
18) t	n-Nonadecane (C19)	29.157	31332430	26.321 ug/mL M4
20) t	n-Eicosane (C20)	30.763	34009779	28.716 ug/mL M4
21) t	n-Heneicosane (C21)	32.297	27963825	23.426 ug/mL M4
22) t	n-Docosane (C22)	33.770	26258304	21.891 ug/mL M4
23) t	n-Tricosane (C23)	35.181	23349620	19.375 ug/mL M4
25) t	n-Tetracosane (C24)	36.536	22234117	18.413 ug/mL M4
26) t	n-Pentacosane (C25)	37.838	22029695	18.453 ug/mL M4
27) t	n-Hexacosane (C26)	39.092	18435782	15.145 ug/mL M4
28) t	n-Heptacosane (C27)	40.301	14530027	12.080 ug/mL M4
29) t	n-Octacosane (C28)	41.470	10476590	8.750 ug/mL M4
30) t	n-Nonacosane (C29)	42.596	10575487	8.787 ug/mL M4
31) t	n-Triacontane (C30)	43.688	8294585	6.884 ug/mL M4
32) t	n-Hentriacontane (C31)	44.743	6786919	5.623 ug/mL M4
33) t	n-Dotriacontane (C32)	45.769	7658286	6.286 ug/mL M4
34) t	n-Tritriacontane (C33)	46.758	4168971	3.618 ug/mL M4
35) t	n-tetratriacontane (C34)	47.771	3917007	3.246 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.917	3501375	2.884 ug/mL M4
37) t	n-Hexatriacontane (C36)	50.227	2236863	1.793 ug/mL M4
38) t	n-Heptatriacontane (C37)	51.744	2172362	1.780 ug/mL M4
39) t	n-Octatriacontane (C38)	53.504	1849231	1.545 ug/mL M4
40) t	n-Nonatriacontane (C39)	55.556	1233055	0.994 ug/mL M4
41) t	n-Tetracontane (C40)	58.011	1227799	0.990 ug/mL M4
42) h	C9-C44 Total Petroleu...	40.600	7611738070	6430.187 ug/mL m
42) h	C9-C44 Total Petroleu BS	40.600	7370774868	6226.628 ug/mLm
44) h	C10-C28 DRO	25.935	5037808549	4255.802 ug/mL m

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615025.D
Signal(s) : FID2B.CH
Acq On : 27 Oct 2015 6:02 am
Operator : FID17:NL
Sample : TO103015ANC02
Misc : ,FRAW36 10.382mg/mL
ALS Vial : 63 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 19 08:31:40 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 19 08:30:39 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1710261501R
Blank File : F17102615021.D

Sub List : Default - All compounds listed

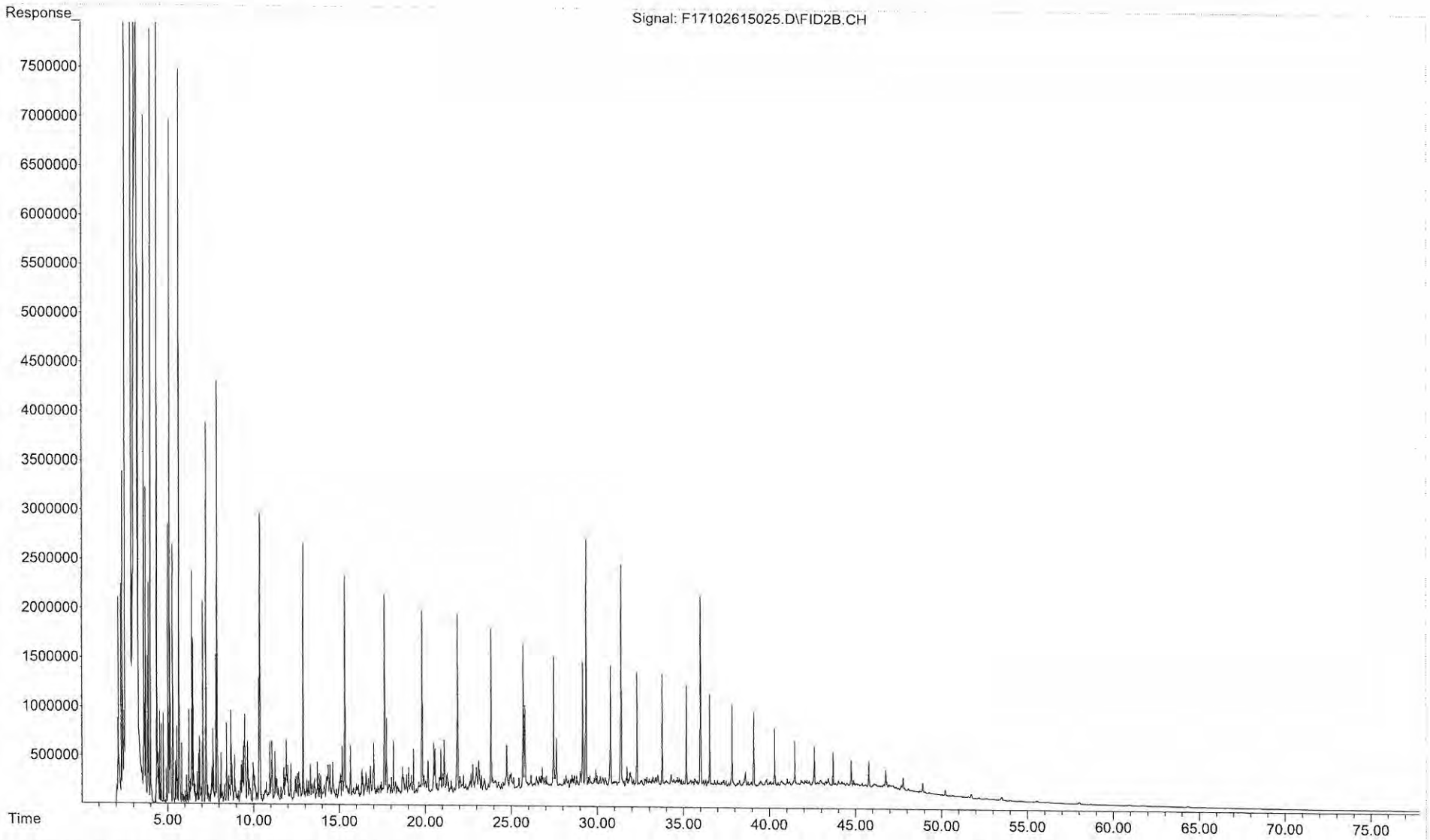
	Compound	R.T.	Response	Conc	Units
44) h	C10-C28 DRO BS	25.935	5028167431	4247.658	ug/mLm
45) h	Total Resolved Hydroc...	40.600	2369905691	2002.031	ug/mL m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615025.D
Operator : FID17:NL
Acquired : 27 Oct 2015 6:02 am using AcqMethod FID17.M
Instrument: FID17
Sample : TO103015ANC02
Misc Info : ,FRAW36 10.382mg/mL
ALS Vial : 63



Instrument Blank
Raw Data

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615021.D
Signal(s) : FID2B.CH
Acq On : 27 Oct 2015 3:06 am
Operator : FID17:NL
Sample : IB1710261501R
Misc : DCM
ALS Vial : 61 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 19 08:18:43 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Fri Nov 13 17:32:24 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

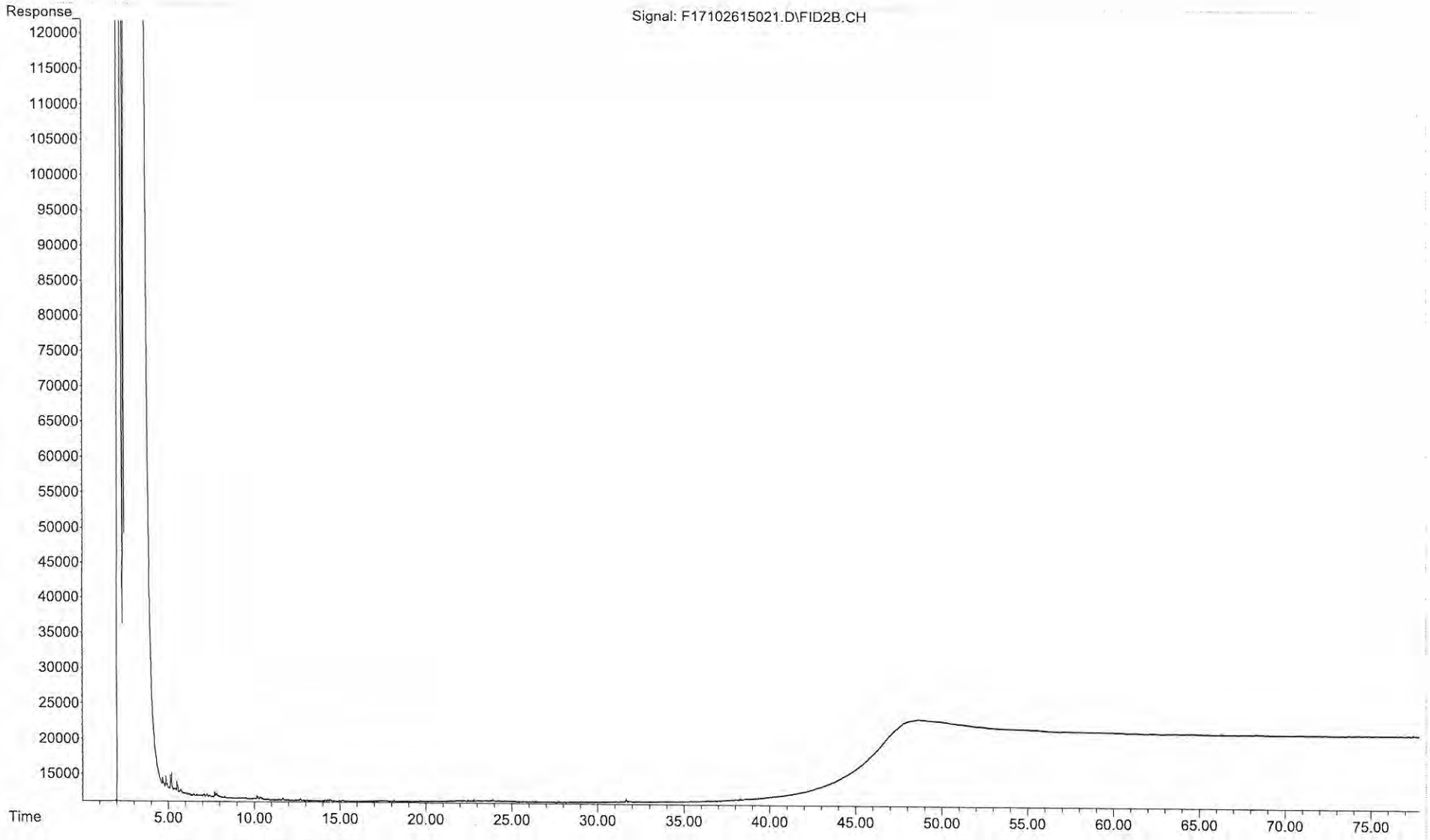
Sub List : Default - All compounds listed

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	31.400	3518	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	0.000	0	N.D. ug/mL d
Spiked Amount 50.000	Range 50 - 130	Recovery =	0.00%#
24) s d50-Tetracosane	0.000	0	N.D. ug/mL d
Spiked Amount 50.000	Range 50 - 130	Recovery =	0.00%#
Target Compounds			
42) h C9-C44 Total Petroleu...	40.600	240963202	3644153.223 ug/mL M5
44) h C10-C28 DRO	25.935	9641118	145805.291 ug/mL M5
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615021.D
Operator : FID17:NL
Acquired : 27 Oct 2015 3:06 am using AcqMethod FID17.M
Instrument: FID17
Sample : IB1710261501R
Misc Info : DCM
ALS Vial : 61



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081637.D
Signal(s) : FID2B.CH
Acq On : 09 Nov 2016 4:58 pm
Operator : FID17:NL
Sample : IB1711081602R
Misc : DCM
ALS Vial : 65 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 25 14:07:50 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

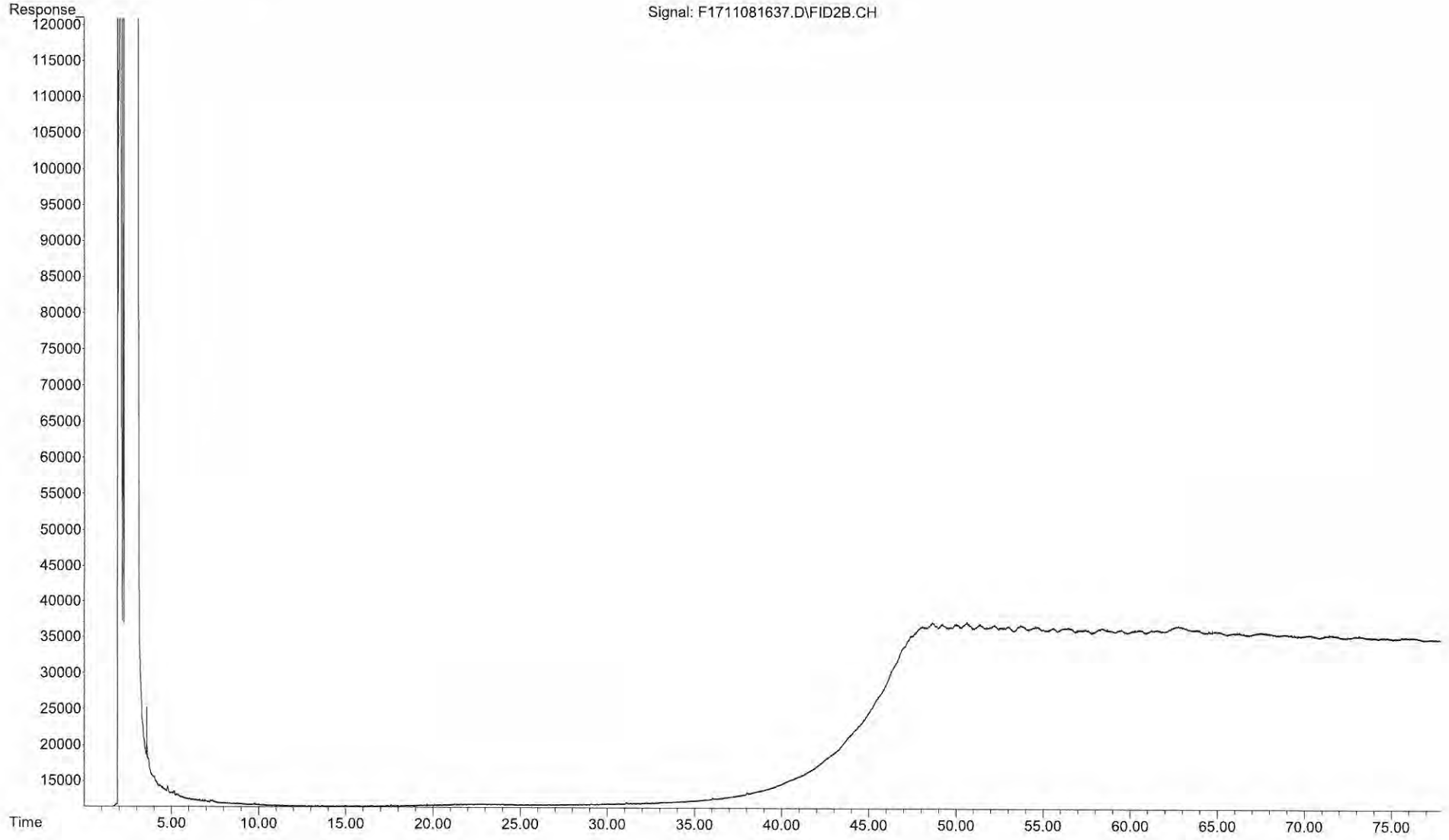
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.751	1883	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	0.000	0	N.D. ug/mL
Spiked Amount 50.000	Range 50 - 130	Recovery =	0.00%#
24) s d50-Tetracosane	0.000	0	N.D. ug/mL
Spiked Amount 50.000	Range 50 - 130	Recovery =	0.00%#
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	452811570	12799429.504 ug/mL M5
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081637.D
Operator : FID17:NL
Acquired : 09 Nov 2016 4:58 pm using AcqMethod FID17.M
Instrument: FID17
Sample : IB1711081602R
Misc Info : DCM
ALS Vial : 65



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081663.D
Signal(s) : FID2B.CH
Acq On : 10 Nov 2016 1:14 pm
Operator : FID17:NL
Sample : IB1711081603R
Misc : DCM
ALS Vial : 78 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 25 14:08:58 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

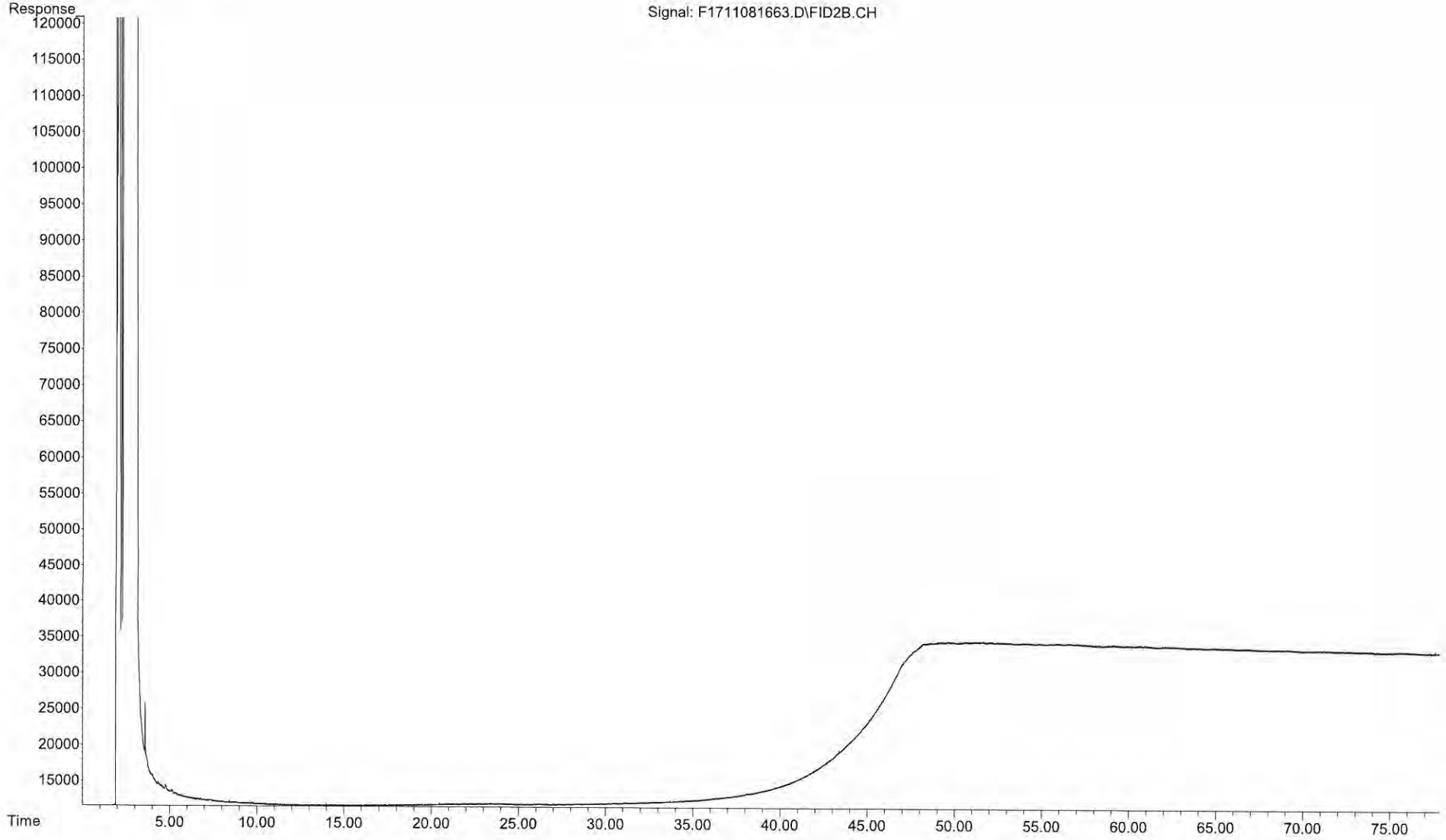
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.736	1245	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	0.000	0	N.D. ug/mL
Spiked Amount 50.000	Range 50 - 130	Recovery =	0.00%#
24) s d50-Tetracosane	0.000	0	N.D. ug/mL
Spiked Amount 50.000	Range 50 - 130	Recovery =	0.00%#
Target Compounds			
42) h C9-C44 Total Petroleu...	39.803	429103122	18341022.225 ug/mL M5
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081663.D
Operator : FID17:NL
Acquired : 10 Nov 2016 1:14 pm using AcqMethod FID17.M
Instrument: FID17
Sample : IB1711081603R
Misc Info : DCM
ALS Vial : 78



Analysis log File

11/20/15

Total Files Reported in Log : 16
Log Generated From Directory: O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\

No.	DATA FILE	INJ METH	SAMPLE NAME	MISC	DATE INJ'D
1	F17102615001.D	FID17.M	Primer	Primer	10/26/2015 11:48 a
2	F17102615003.D	FID17.M	DCM	DCM	10/26/2015 1:16 p
3	F17102615005.D	FID17.M	L1 Primer	Primer	10/26/2015 3:20 p
4	F17102615007.D	FID17.M	I1710261501R	,FRAW60 1ug/ml	10/26/2015 4:48 p
5	F17102615009.D	FID17.M	I1710261502R	,FRAW61 10ug/ml	10/26/2015 6:17 p
6	F17102615011.D	FID17.M	I1710261503R	,FRAW35 50ug/ml	10/26/2015 7:45 p
7	F17102615013.D	FID17.M	I1710261504R	,FRAW62 100ug/ml	10/26/2015 9:13 p
8	F17102615015.D	FID17.M	I1710261505R	,FRAW63 200ug/ml	10/26/2015 10:42 p
9	F17102615017.D	FID17.M	I1710261506R	,FRAW64 500ug/ml	10/27/2015 12:10 a
10	F17102615019.D	FID17.M	DCM	DCM	10/27/2015 1:38 a
11	F17102615021.D	FID17.M	IB1710261501R	DCM	10/27/2015 3:06 a
12	F17102615023.D	FID17.M	CQ1710261501R	,FRAW65 50ug/ml	10/27/2015 4:34 a
13	F17102615025.D	FID17.M	TO103015ANC02	,FRAW36 10.382mg/mL	10/27/2015 6:02 a
14	F17102615027.D	FID17.M	DCM	DCM	10/27/2015 7:30 a
15	F17102615029.D	FID17.M	IB1710261502R	DCM	10/27/2015 8:59 a
16	F17102615031.D	FID17.M			10/27/2015 10:27 a

ICAL files

CQ1710261501R ✓ PASS

TO103015ANC02 ✓ PASS

SegLog 1.0 - (c) 2009 Abacus Database Applications

Analysis log File

Total Files Reported in Log : 44
Log Generated From Directory: O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\

No.	DATA FILE	INJ METH	SAMPLE NAME	MISC	DATE INJ'D
1	F1711081601.D	FID17.M	Low Level	Low Level	11/8/2016 2:26 pm
2	F1711081603.D	FID17.M	ANS	ANS	11/8/2016 3:55 pm
3	F1711081605.D	FID17.M	C1711081601R	FRAX76 50ug/mL	11/8/2016 5:23 pm
4	F1711081607.D	FID17.M	DCM	DCM	11/8/2016 6:51 pm
5	F1711081609.D	FID17.M	IB1711081601R	DCM	11/8/2016 8:20 pm
6	F1711081611.D	FID17.M			11/8/2016 9:48 pm
7	F1711081613.D	FID17.M			11/8/2016 11:17 pm
8	F1711081615.D	FID17.M			11/9/2016 12:45 am
9	F1711081617.D	FID17.M			11/9/2016 2:14 am
10	F1711081619.D	FID17.M			11/9/2016 3:42 am
11	F1711081621.D	FID17.M			11/9/2016 5:11 am
12	F1711081623.D	FID17.M			11/9/2016 6:39 am
13	F1711081625.D	FID17.M			11/9/2016 8:07 am
14	F1711081627.D	FID17.M			11/9/2016 9:36 am
15	F1711081629.D	FID17.M	Low Level	Low Level	11/9/2016 11:04 am
16	F1711081631.D	FID17.M	ANS	ANS	11/9/2016 12:33 pm
17	F1711081633.D	FID17.M	C1711081602R	FRAX76 50ug/mL	11/9/2016 2:01 pm
18	F1711081635.D	FID17.M	DCM	DCM	11/9/2016 3:29 pm
19	F1711081637.D	FID17.M	IB1711081602R	DCM	11/9/2016 4:58 pm
20	F1711081639.D	FID17.M	SS110116B03	1X ETR 1610011	11/9/2016 6:26 pm
21	F1711081641.D	FID17.M	SS110116LCS02	1X ETR 1610011	11/9/2016 7:54 pm
22	F1711081643.D	FID17.M	SS110116LCSD02	1X ETR 1610011	11/9/2016 9:23 pm
23	F1711081645.D	FID17.M	1610011-01	1X	11/9/2016 10:51 pm
24	F1711081647.D	FID17.M	1610011-02	1X	11/10/2016 12:19 am
25	F1711081649.D	FID17.M	1610011-03	1X	11/10/2016 1:48 am
26	F1711081651.D	FID17.M	1610011-04	1X	11/10/2016 3:16 am
27	F1711081653.D	FID17.M	1610011-04D	1X	11/10/2016 4:44 am
28	F1711081655.D	FID17.M	1610011-05	1X	11/10/2016 6:13 am
29	F1711081657.D	FID17.M	1610011-06	1X	11/10/2016 7:41 am
30	F1711081659.D	FID17.M	C1711081603R	FRAX76 50ug/mL	11/10/2016 10:18 am
31	F1711081661.D	FID17.M	DCM	DCM	11/10/2016 11:46 am
32	F1711081663.D	FID17.M	IB1711081603R	DCM	11/10/2016 1:14 pm
33	F1711081665.D	FID17.M	1610011-07	1X	11/10/2016 2:43 pm
34	F1711081667.D	FID17.M	1610011-08	1X	11/10/2016 4:11 pm
35	F1711081669.D	FID17.M	1610011-09	1X	11/10/2016 5:40 pm
36	F1711081671.D	FID17.M	1610011-10	1X	11/10/2016 7:09 pm
37	F1711081673.D	FID17.M	1610011-11	1X	11/10/2016 8:37 pm
38	F1711081675.D	FID17.M	1610011-12	1X	11/10/2016 10:06 pm
39	F1711081677.D	FID17.M	1610011-13	1X	11/10/2016 11:35 pm
40	F1711081679.D	FID17.M	1610011-14	1X	11/11/2016 1:03 am
41	F1711081681.D	FID17.M	1610011-15	1X	11/11/2016 2:32 am
42	F1711081683.D	FID17.M	C1711081604R	FRAX76 50ug/mL	11/11/2016 4:01 am
43	F1711081685.D	FID17.M	DCM	DCM	11/11/2016 5:29 am
44	F1711081687.D	FID17.M	IB1711081604R	DCM	11/11/2016 6:58 am

Processing Method: HC171026015R.M CCAL - FRAX76 - 50ug/mL

SeqLog 1.0 - (c) 2009 Abacus Database Applications

Supporting Quality Control Results

Form IV
Method Blank Summary
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Case: **N/A** SDG: **N/A**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116B03**
Date Analyzed: **11/09/16 18:26**

Client ID	Lab ID	Date/Time Analyzed
LCS	SS110116LCS02	11/09/16 19:54
LCSD	SS110116LCSD02	11/09/16 21:23
NFSB-04 0-1'	1610011-01	11/09/16 22:51
NFSB-04 12.5-15'	1610011-02	11/10/16 00:19
NFSB-05 1-2'	1610011-03	11/10/16 01:48
NFSB-05 5-6'	1610011-04	11/10/16 03:16
NFSB-05 5-6'	1610011-04 D	11/10/16 04:44
NFSB-06 1-2'	1610011-05	11/10/16 06:13
NFSB-06 12.5-15'	1610011-06	11/10/16 07:41
NFSB-07 1-2'	1610011-07	11/10/16 14:43
NFSB-07 6-7'	1610011-08	11/10/16 16:11
NFSB-07 13-15'	1610011-09	11/10/16 17:40
NFSB-08 1-2'	1610011-10	11/10/16 19:09
NFSB-08 7-8'	1610011-11	11/10/16 20:37
NFSB-08 11-15'	1610011-12	11/10/16 22:06
NFSB-09 1-2'	1610011-13	11/10/16 23:35
NFSB-09 3-4'	1610011-14	11/11/16 01:03
DUP-2	1610011-15	11/11/16 02:32

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Analysis log File

Total Files Reported in Log : 16
Log Generated From Directory: O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\

11/20/15

No.	DATA FILE	INJ METH	SAMPLE NAME	MISC	DATE INJ'D	
1	F17102615001.D	FID17.M	Primer	Primer	10/26/2015 11:48	a
2	F17102615003.D	FID17.M	DCM	DCM	10/26/2015 1:16	p
3	F17102615005.D	FID17.M	L1 Primer	Primer	10/26/2015 3:20	p
4	F17102615007.D	FID17.M	I1710261501R	,FRAW60 1ug/ml	10/26/2015 4:48	p
5	F17102615009.D	FID17.M	I1710261502R	,FRAW61 10ug/ml	10/26/2015 6:17	p
6	F17102615011.D	FID17.M	I1710261503R	,FRAW35 50ug/ml	10/26/2015 7:45	p
7	F17102615013.D	FID17.M	I1710261504R	,FRAW62 100ug/ml	10/26/2015 9:13	p
8	F17102615015.D	FID17.M	I1710261505R	,FRAW63 200ug/ml	10/26/2015 10:42	p
9	F17102615017.D	FID17.M	I1710261506R	,FRAW64 500ug/ml	10/27/2015 12:10	a
10	F17102615019.D	FID17.M	DCM	DCM	10/27/2015 1:38	a
11	F17102615021.D	FID17.M	IB1710261501R	DCM	10/27/2015 3:06	a
12	F17102615023.D	FID17.M	CQ1710261501R	,FRAW65 50ug/ml	10/27/2015 4:34	a
13	F17102615025.D	FID17.M	TO103015ANC02	,FRAW36 10.382mg/mL	10/27/2015 6:02	a
14	F17102615027.D	FID17.M	DCM	DCM	10/27/2015 7:30	a
15	F17102615029.D	FID17.M	IB1710261502R	DCM	10/27/2015 8:59	a
16	F17102615031.D	FID17.M			10/27/2015 10:27	a

ICAL file

✓PASS

✓PASS

Processing Method: HC171026151R.M

Printed: 11/13/15

SeqLog 1.0 - (c) 2009 Abacus Database Applications

Response Factor Report FID17

Method Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Method File : HC17102615R.M
Title : FID Forensics
Last Update : Thu Nov 19 08:25:05 2015
Response Via : Initial Calibration

Calibration Files
1 =F17102615007.D 10 =F17102615009.D 50 =F17102615011.D 100 =F17102615013.D 200 =F17102615015.D 500 =F17102615017.D

		Compound	1	10	50	100	200	500	Avg	%RSD
1)	I	5-alpha-androstane	----------ISTD----------							
2)	t	n-Octane (C8)	0.795	0.808	0.846	0.808	0.836		0.819	2.64
3)	t	n-Nonane (C9)	0.817	0.840	0.876	0.884	0.870		0.857	3.25
4)	t	n-Decane (C10)	0.835	0.872	0.910	0.913	0.901		0.886	3.72
5)	t	n-Undecane (C11)	0.828	0.882	0.922	0.923	0.913		0.894	4.51
6)	t	n-Dodecane (C12)	0.837	0.893	0.937	0.938	0.925		0.906	4.70
7)	t	n-Tridecane (...	0.843	0.901	0.940	0.942	0.927		0.911	4.55
8)	t	1380	0.859	0.912	0.950	0.952	0.935		0.922	4.19
9)	t	n-Tetradecane...	0.859	0.912	0.950	0.952	0.935		0.922	4.19
10)	t	1470	0.872	0.928	0.966	0.968	0.950		0.937	4.25
11)	t	n-Pentadecane...	0.872	0.928	0.966	0.968	0.950		0.937	4.25
12)	t	n-Hexadecane ...	0.869	0.926	0.963	0.965	0.946		0.934	4.23
13)	t	1650	0.871	0.931	0.968	0.973	0.965		0.941	4.53
14)	t	n-Heptadecane...	0.871	0.931	0.968	0.973	0.965		0.941	4.53
15)	t	Pristane	0.897	0.941	0.975	0.974	0.942		0.946	3.36
16)	t	n-Octadecane ...	0.895	0.946	0.982	0.983	0.965		0.954	3.82
17)	t	Phytane	0.786	0.827	0.857	0.859	0.841		0.834	3.59
18)	t	n-Nonadecane ...	0.887	0.940	0.972	0.972	0.954		0.945	3.73
19)	s	ortho-terphenyl	1.036	1.101	1.080	1.056	1.057	1.091	1.070	2.32
20)	t	n-Eicosane (C20)	0.886	0.936	0.964	0.966	0.949		0.940	3.48
21)	t	n-Heneicosane...	0.900	0.941	0.970	0.972	0.955		0.947	3.08
22)	t	n-Docosane (C22)	0.901	0.947	0.976	0.978	0.959		0.952	3.30
23)	t	n-Tricosane (...	0.905	0.952	0.980	0.983	0.962		0.957	3.31
24)	s	d50-Tetracosane	0.869	0.917	0.898	0.878	0.876	0.912	0.892	2.27
25)	t	n-Tetracosane...	0.912	0.952	0.981	0.984	0.962		0.958	3.04
26)	t	n-Pentacosane...	0.899	0.942	0.970	0.975	0.952		0.948	3.20
27)	t	n-Hexacosane ...	0.916	0.960	0.990	0.994	0.971		0.966	3.25
28)	t	n-Heptacosane...	0.908	0.948	0.976	0.982	0.959		0.955	3.05
29)	t	n-Octacosane ...	0.906	0.943	0.970	0.977	0.957		0.950	2.95
30)	t	n-Nonacosane ...	0.912	0.946	0.973	0.982	0.963		0.955	2.88
31)	t	n-Triacontane...	0.913	0.945	0.972	0.984	0.967		0.956	2.91
32)	t	n-Hentriacont...	0.916	0.946	0.972	0.985	0.972		0.958	2.89
33)	t	n-Dotriaconta...	0.926	0.951	0.979	0.996	0.984		0.967	2.93
34)	t	n-Tritriacont...	0.870	0.899	0.928	0.945	0.932		0.915	3.28
35)	t	n-tetratriaco...	0.912	0.938	0.970	0.990	0.978		0.958	3.31
36)	t	n-Pentatriaco...	0.902	0.943	0.979	1.004	0.990		0.964	4.28
37)	t	n-Hexatriacon...	0.934	0.969	1.007	1.029	1.013		0.990	3.87
38)	t	n-Heptatriaco...	0.915	0.947	0.986	1.007	0.989		0.969	3.85
39)	t	n-Octatriacon...	0.894	0.930	0.969	0.989	0.968		0.950	3.97
40)	t	n-Nonatriacon...	0.920	0.967	1.008	1.028	1.000		0.985	4.28
41)	t	n-Tetracontan...	0.920	0.967	1.008	1.028	1.000		0.985	4.28
42)	h	C9-C44 Total ...	0.886	0.928	0.962	0.970	0.952		0.940	3.58

Response Factor Report FID17

Method Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Method File : HC17102615R.M
Title : FID Forensics
Last Update : Thu Nov 19 08:25:05 2015
Response Via : Initial Calibration

Calibration Files
1 =F17102615007.D 10 =F17102615009.D 50 =F17102615011.D 100 =F17102615013.D 200 =F17102615015.D 500 =F17102615017.D

	Compound	1	10	50	100	200	500	Avg	%RSD
43) h	C9-C40 Total ...	0.886	0.928	0.962	0.970	0.952		0.940	3.58
44) h	C10-C28 DRO	0.886	0.928	0.962	0.970	0.952		0.940	3.58
45) h	Total Resolve...	0.886	0.928	0.962	0.970	0.952		0.940	3.58

(#) = Out of Range

rfupdate

RSF Update Summary Report

Method Path.....: O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Method File.....: HC17102615R.M
Method Title.....: FID Forensics
Last Update.....: Thu Nov 19 08:16:58 2015

Generating Average Response Factor For: C9-C44 Total Petroleum Hydroca

No	Compound	Level	Conc	Response
1	n-Nonane (C9)	1	1.00000	968668.949
2	n-Decane (C10)	1	1.00000	990154.872
3	n-Undecane (C11)	1	1.00000	981744.480
4	n-Dodecane (C12)	1	1.00000	992317.434
5	n-Tridecane (C13)	1	1.00000	998806.197
6	n-Tetradecane (C14)	1	1.00000	1018047.994
7	n-Pentadecane (C15)	1	1.00000	1033320.657
8	n-Hexadecane (C16)	1	1.00000	1029869.388
9	n-Heptadecane (C17)	1	1.00000	1032935.543
10	Pristane	1	1.00000	1063521.518
11	n-Octadecane (C18)	1	1.00000	1060429.172
12	Phytane	1	1.00000	931588.138
13	n-Nonadecane (C19)	1	1.00000	1051123.802
14	n-Eicosane (C20)	1	1.00000	1050163.400
15	n-Heneicosane (C21)	1	1.00000	1067184.320
16	n-Docosane (C22)	1	1.00000	1067898.857
17	n-Tricosane (C23)	1	1.00000	1072581.753
18	n-Tetracosane (C24)	1	1.00000	1081213.086
19	n-Pentacosane (C25)	1	1.00000	1065438.875
20	n-Hexacosane (C26)	1	1.00000	1085319.369
21	n-Heptacosane (C27)	1	1.00000	1076873.643
22	n-Octacosane (C28)	1	1.00000	1073657.426
23	n-Nonacosane (C29)	1	1.00000	1081457.936
24	n-Triacontane (C30)	1	1.00000	1082482.345
25	n-Hentriacontane (C31)	1	1.00000	1085564.816
26	n-Dotriacontane (C32)	1	1.00000	1097131.010
27	n-Tritriacontane (C33)	1	1.00000	1031606.466
28	n-tetratriacontane (C34)	1	1.00000	1081492.588
29	n-Pentatriacontane (C35)	1	1.00000	1069274.342
30	n-Hexatriacontane (C36)	1	1.00000	1107585.182
31	n-Heptatriacontane (C37)	1	1.00000	1084574.542
32	n-Octatriacontane (C38)	1	1.00000	1060006.758
33	n-Tetracontane (C40)	1	1.00000	1090812.389
Avg RSF For: C9-C44 Total Petroleum			1.00000	1050449.917
1	n-Nonane (C9)	2	10.00000	9810343.268
2	n-Decane (C10)	2	10.00000	10179234.076
3	n-Undecane (C11)	2	10.00000	10295430.948
4	n-Dodecane (C12)	2	10.00000	10433227.711
5	n-Tridecane (C13)	2	10.00000	10526967.878
6	n-Tetradecane (C14)	2	10.00000	10650946.722
7	n-Pentadecane (C15)	2	10.00000	10834692.528
8	n-Hexadecane (C16)	2	10.00000	10814604.755
9	n-Heptadecane (C17)	2	10.00000	10867450.185
10	Pristane	2	10.00000	10986971.786
11	n-Octadecane (C18)	2	10.00000	11043042.714

rfupdate

12	Phytane	2	10.00000	9659838.729
13	n-Nonadecane (C19)	2	10.00000	10973425.846
14	n-Eicosane (C20)	2	10.00000	10926826.517
15	n-Heneicosane (C21)	2	10.00000	10991010.382
16	n-Docosane (C22)	2	10.00000	11054540.892
17	n-Tricosane (C23)	2	10.00000	11117071.569
18	n-Tetracosane (C24)	2	10.00000	11120893.129
19	n-Pentacosane (C25)	2	10.00000	11004102.331
20	n-Hexacosane (C26)	2	10.00000	11216468.577
21	n-Heptacosane (C27)	2	10.00000	11074386.040
22	n-Octacosane (C28)	2	10.00000	11012436.964
23	n-Nonacosane (C29)	2	10.00000	11047708.212
24	n-Triacontane (C30)	2	10.00000	11042486.402
25	n-Hentriacontane (C31)	2	10.00000	11043418.305
26	n-Dotriacontane (C32)	2	10.00000	11109895.614
27	n-Tritriacontane (C33)	2	10.00000	10493878.666
28	n-tetratriacontane (C34)	2	10.00000	10960106.628
29	n-Pentatriacontane (C35)	2	10.00000	11018123.921
30	n-Hexatriacontane (C36)	2	10.00000	11317890.708
31	n-Heptatriacontane (C37)	2	10.00000	11057681.274
32	n-Octatriacontane (C38)	2	10.00000	10862354.266
33	n-Tetracontane (C40)	2	10.00000	11293425.644
Avg RSF For: C9-C44 Total Petroleum			10.00000	10843663.127

1	n-Nonane (C9)	3	50.00000	51611899.260
2	n-Decane (C10)	3	50.00000	53659318.377
3	n-Undecane (C11)	3	50.00000	54361934.135
4	n-Dodecane (C12)	3	50.00000	55222942.983
5	n-Tridecane (C13)	3	50.00000	55432396.681
6	n-Tetradecane (C14)	3	50.00000	55993581.825
7	n-Pentadecane (C15)	3	50.00000	56938769.489
8	n-Hexadecane (C16)	3	50.00000	56750603.801
9	n-Heptadecane (C17)	3	50.00000	57049035.842
10	Pristane	3	50.00000	57479124.144
11	n-Octadecane (C18)	3	50.00000	57874991.836
12	Phytane	3	50.00000	50531691.724
13	n-Nonadecane (C19)	3	50.00000	57301582.494
14	n-Eicosane (C20)	3	50.00000	56836238.703
15	n-Heneicosane (C21)	3	50.00000	57159926.136
16	n-Docosane (C22)	3	50.00000	57513554.731
17	n-Tricosane (C23)	3	50.00000	57786169.132
18	n-Tetracosane (C24)	3	50.00000	57831552.125
19	n-Pentacosane (C25)	3	50.00000	57203091.661
20	n-Hexacosane (C26)	3	50.00000	58333922.003
21	n-Heptacosane (C27)	3	50.00000	57529482.932
22	n-Octacosane (C28)	3	50.00000	57162249.101
23	n-Nonacosane (C29)	3	50.00000	57365160.605
24	n-Triacontane (C30)	3	50.00000	57311444.239
25	n-Hentriacontane (C31)	3	50.00000	57282795.293
26	n-Dotriacontane (C32)	3	50.00000	57714013.604
27	n-Tritriacontane (C33)	3	50.00000	54684679.187
28	n-tetratriacontane (C34)	3	50.00000	57154184.849
29	n-Pentatriacontane (C35)	3	50.00000	57685419.690
30	n-Hexatriacontane (C36)	3	50.00000	59356980.902
31	n-Heptatriacontane (C37)	3	50.00000	58131494.551
32	n-Octatriacontane (C38)	3	50.00000	57123515.884
33	n-Tetracontane (C40)	3	50.00000	59449348.023
Avg RSF For: C9-C44 Total Petroleum			50.00000	56691608.968

		rfupdate		
1	n-Nonane (C9)	4	100.00000	103906557.086
2	n-Decane (C10)	4	100.00000	107361148.750
3	n-Undecane (C11)	4	100.00000	108585004.558
4	n-Dodecane (C12)	4	100.00000	110344442.756
5	n-Tridecane (C13)	4	100.00000	110821344.851
6	n-Tetradecane (C14)	4	100.00000	111974283.704
7	n-Pentadecane (C15)	4	100.00000	113859269.250
8	n-Hexadecane (C16)	4	100.00000	113472867.482
9	n-Heptadecane (C17)	4	100.00000	114420858.432
10	Pristane	4	100.00000	114502650.182
11	n-Octadecane (C18)	4	100.00000	115558376.746
12	Phytane	4	100.00000	101033372.216
13	n-Nonadecane (C19)	4	100.00000	114330914.201
14	n-Eicosane (C20)	4	100.00000	113556668.399
15	n-Heneicosane (C21)	4	100.00000	114283358.778
16	n-Docosane (C22)	4	100.00000	115039021.692
17	n-Tricosane (C23)	4	100.00000	115645893.400
18	n-Tetracosane (C24)	4	100.00000	115759805.218
19	n-Pentacosane (C25)	4	100.00000	114611403.116
20	n-Hexacosane (C26)	4	100.00000	116905132.579
21	n-Heptacosane (C27)	4	100.00000	115468417.539
22	n-Octacosane (C28)	4	100.00000	114835614.425
23	n-Nonacosane (C29)	4	100.00000	115464545.290
24	n-Triacontane (C30)	4	100.00000	115657195.511
25	n-Hentriacontane (C31)	4	100.00000	115875179.049
26	n-Dotriacontane (C32)	4	100.00000	117071638.073
27	n-Tritriacontane (C33)	4	100.00000	111063980.067
28	n-tetratriacontane (C34)	4	100.00000	116373947.227
29	n-Pentatriacontane (C35)	4	100.00000	118104215.064
30	n-Hexatriacontane (C36)	4	100.00000	121021919.871
31	n-Heptatriacontane (C37)	4	100.00000	118447921.870
32	n-Octatriacontane (C38)	4	100.00000	116271552.854
33	n-Tetracontane (C40)	4	100.00000	120836554.190
Avg RSF For: C9-C44 Total Petroleum			100.00000	114014092.558

1	n-Nonane (C9)	5	200.00000	209844482.579
2	n-Decane (C10)	5	200.00000	217413173.320
3	n-Undecane (C11)	5	200.00000	220194673.447
4	n-Dodecane (C12)	5	200.00000	223041970.047
5	n-Tridecane (C13)	5	200.00000	223534205.653
6	n-Tetradecane (C14)	5	200.00000	225516777.986
7	n-Pentadecane (C15)	5	200.00000	229216550.922
8	n-Hexadecane (C16)	5	200.00000	228245843.312
9	n-Heptadecane (C17)	5	200.00000	232694878.332
10	Pristane	5	200.00000	227288728.829
11	n-Octadecane (C18)	5	200.00000	232757178.053
12	Phytane	5	200.00000	202950963.098
13	n-Nonadecane (C19)	5	200.00000	230040463.166
14	n-Eicosane (C20)	5	200.00000	228873075.536
15	n-Heneicosane (C21)	5	200.00000	230232750.274
16	n-Docosane (C22)	5	200.00000	231335280.740
17	n-Tricosane (C23)	5	200.00000	232114603.474
18	n-Tetracosane (C24)	5	200.00000	232137807.855
19	n-Pentacosane (C25)	5	200.00000	229573726.743
20	n-Hexacosane (C26)	5	200.00000	234273551.310
21	n-Heptacosane (C27)	5	200.00000	231279566.892
22	n-Octacosane (C28)	5	200.00000	230736031.793
23	n-Nonacosane (C29)	5	200.00000	232252727.126
24	n-Triacontane (C30)	5	200.00000	233263156.631
25	n-Hentriacontane (C31)	5	200.00000	234400539.379
26	n-Dotriacontane (C32)	5	200.00000	237312988.582

rfupdate

27	n-Tritriacontane (C33)	5	200.00000	224850529.751
28	n-tetratriacontane (C34)	5	200.00000	235988326.380
29	n-Pentatriacontane (C35)	5	200.00000	238880749.607
30	n-Hexatriacontane (C36)	5	200.00000	244224041.996
31	n-Heptatriacontane (C37)	5	200.00000	238420773.589
32	n-Octatriacontane (C38)	5	200.00000	233418941.868
33	n-Tetracontane (C40)	5	200.00000	241190802.640
Avg RSF For: C9-C44 Total Petroleum			200.00000	229621207.906

Generating Reference Response Factors

No	Compound	No	Refrence Compound
8	1380	9	n-Tetradecane (C14)
10	1470	11	n-Pentadecane (C15)
13	1650	14	n-Heptadecane (C17)
40	n-Nonatriacontane (C39)	41	n-Tetracontane (C40)
43	C9-C40 Total Petroleum Hydrocarbons	42	C9-C44 Total Petroleum Hydr
44	C10-C28 DRO	42	C9-C44 Total Petroleum Hydr
45	Total Resolved Hydrocarbons	42	C9-C44 Total Petroleum Hydr

Abacus Response Factor Update Macro Ver. 1.0

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615007.D
Signal(s) : FID2B.CH
Acq On : 26 Oct 2015 4:48 pm
Operator : FID17:NL
Sample : I1710261501R
Misc : ,FRAW60 1ug/ml
ALS Vial : 54 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 19 08:01:19 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Fri Nov 13 17:31:18 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

11/20/15

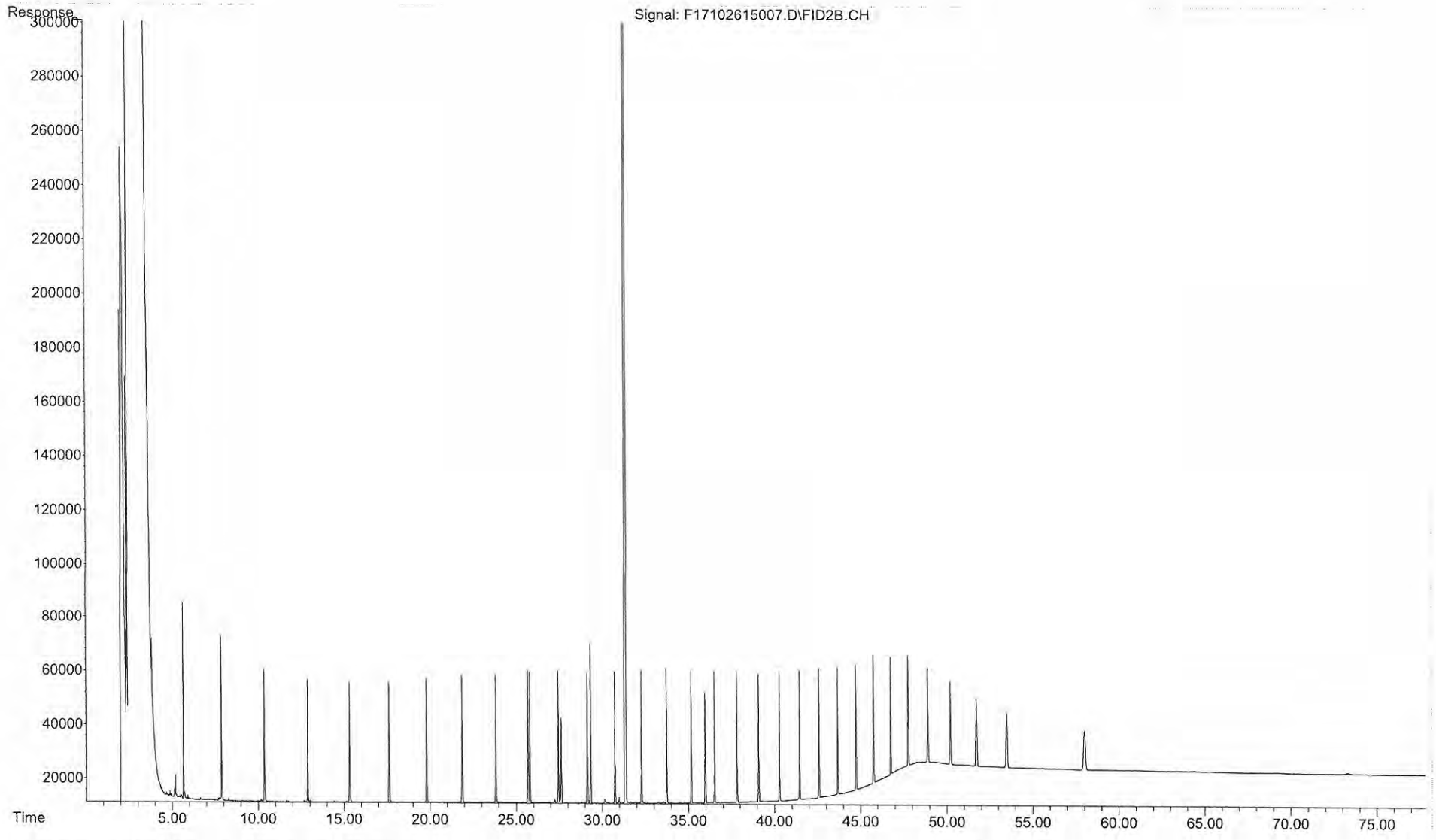
Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	31.379	59271171	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	29.330	1227767	0.968 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery =	1.94%#
24) s d50-Tetracosane	35.976	1029870	0.975 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery =	1.95%#
Target Compounds			
2) t n-Octane (C8)	5.657	942286	0.965 ug/mL M4
3) t n-Nonane (C9)	7.872	968669	0.953 ug/mL M4
4) t n-Decane (C10)	10.367	990155	0.941 ug/mL M4
5) t n-Undecane (C11)	12.885	981744	0.927 ug/mL M4
6) t n-Dodecane (C12)	15.315	992317	0.922 ug/mL M4
7) t n-Tridecane (C13)	17.623	998806	0.924 ug/mL M4
9) t n-Tetradecane (C14)	19.807	1018048	0.932 ug/mL M4
11) t n-Pentadecane (C15)	21.873	1033321	0.930 ug/mL M4
12) t n-Hexadecane (C16)	23.831	1029869	0.929 ug/mL M4
14) t n-Heptadecane (C17)	25.688	1032936	0.926 ug/mL M4
15) t Pristane	25.797	1063522	0.949 ug/mL M4
16) t n-Octadecane (C18)	27.455	1060429	0.938 ug/mL M4
17) t Phytane	27.618	931588	0.942 ug/mL M4
18) t n-Nonadecane (C19)	29.140	1051124	0.938 ug/mL M4
20) t n-Eicosane (C20)	30.746	1050163	0.942 ug/mL M4
21) t n-Heneicosane (C21)	32.282	1067184	0.949 ug/mL M4
22) t n-Docosane (C22)	33.754	1067899	0.946 ug/mL M4
23) t n-Tricosane (C23)	35.164	1072582	0.946 ug/mL M4
25) t n-Tetracosane (C24)	36.519	1081213	0.951 ug/mL M4
26) t n-Pentacosane (C25)	37.825	1065439	0.948 ug/mL M4
27) t n-Hexacosane (C26)	39.080	1085319	0.948 ug/mL M4
28) t n-Heptacosane (C27)	40.290	1076874	0.952 ug/mL M4
29) t n-Octacosane (C28)	41.458	1073657	0.953 ug/mL M4
30) t n-Nonacosane (C29)	42.587	1081458	0.955 ug/mL M4
31) t n-Triacontane (C30)	43.678	1082482	0.955 ug/mL M4
32) t n-Hentriacontane (C31)	44.736	1085565	0.956 ug/mL M4
33) t n-Dotriacontane (C32)	45.759	1097131	0.958 ug/mL M4
34) t n-Tritriacontane (C33)	46.752	1031606	0.951 ug/mL M4
35) t n-tetratriacontane (C34)	47.769	1081493	0.953 ug/mL M4
36) t n-Pentatriacontane (C35)	48.910	1069274	0.936 ug/mL M4
37) t n-Hexatriacontane (C36)	50.218	1107585	0.943 ug/mL M4
38) t n-Heptatriacontane (C37)	51.733	1084575	0.946 ug/mL M4
39) t n-Octatriacontane (C38)	53.492	1060007	0.942 ug/mL M4
41) t n-Tetracontane (C40)	58.009	1090812	0.935 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615007.D
Operator : FID17:NL
Acquired : 26 Oct 2015 4:48 pm using AcqMethod FID17.M
Instrument: FID17
Sample : I1710261501R
Misc Info : ,FRAW60 1ug/ml
ALS Vial : 54



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615009.D
Signal(s) : FID2B.CH
Acq On : 26 Oct 2015 6:17 pm
Operator : FID17:NL
Sample : I1710261502R
Misc : ,FRAW61 10ug/ml
ALS Vial : 55 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 19 08:05:31 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Fri Nov 13 17:31:29 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

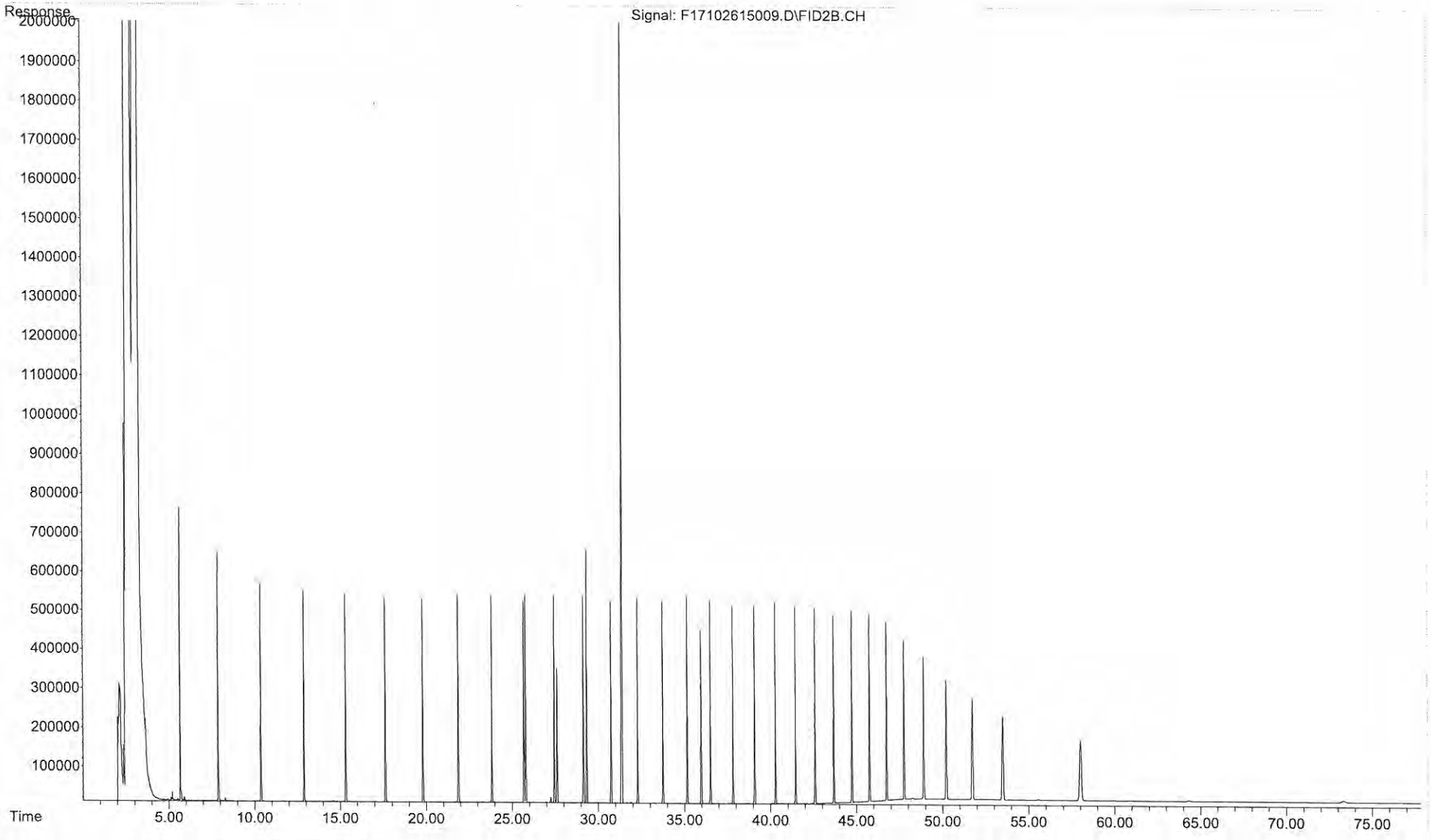
	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	31.376	58395290	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	29.336	12858284	10.289 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	20.58%#
24) s	d50-Tetracosane	35.980	10711181	10.297 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	20.59%#
	Target Compounds			
2) t	n-Octane (C8)	5.662	9441518	9.819 ug/mL M4
3) t	n-Nonane (C9)	7.875	9810343	9.798 ug/mL M4
4) t	n-Decane (C10)	10.370	10179234	9.824 ug/mL M4
5) t	n-Undecane (C11)	12.886	10295431	9.864 ug/mL M4
6) t	n-Dodecane (C12)	15.316	10433228	9.836 ug/mL M4
7) t	n-Tridecane (C13)	17.624	10526968	9.880 ug/mL M4
9) t	n-Tetradecane (C14)	19.810	10650947	9.893 ug/mL M4
11) t	n-Pentadecane (C15)	21.875	10834693	9.901 ug/mL M4
12) t	n-Hexadecane (C16)	23.832	10814605	9.898 ug/mL M4
14) t	n-Heptadecane (C17)	25.691	10867450	9.883 ug/mL M4
15) t	Pristane	25.800	10986972	9.946 ug/mL M4
16) t	n-Octadecane (C18)	27.459	11043043	9.912 ug/mL M4
17) t	Phytane	27.621	9659839	9.915 ug/mL M4
18) t	n-Nonadecane (C19)	29.144	10973426	9.944 ug/mL M4
20) t	n-Eicosane (C20)	30.749	10926827	9.953 ug/mL M4
21) t	n-Heneicosane (C21)	32.286	10991010	9.916 ug/mL M4
22) t	n-Docosane (C22)	33.757	11054541	9.936 ug/mL M4
23) t	n-Tricosane (C23)	35.169	11117072	9.950 ug/mL M4
25) t	n-Tetracosane (C24)	36.523	11120893	9.932 ug/mL M4
26) t	n-Pentacosane (C25)	37.829	11004102	9.941 ug/mL M4
27) t	n-Hexacosane (C26)	39.081	11216469	9.940 ug/mL M4
28) t	n-Heptacosane (C27)	40.294	11074386	9.932 ug/mL M4
29) t	n-Octacosane (C28)	41.459	11012437	9.922 ug/mL M4
30) t	n-Nonacosane (C29)	42.592	11047708	9.903 ug/mL M4
31) t	n-Triacontane (C30)	43.683	11042486	9.887 ug/mL M4
32) t	n-Hentriacontane (C31)	44.739	11043418	9.870 ug/mL M4
33) t	n-Dotriacontane (C32)	45.765	11109896	9.842 ug/mL M4
34) t	n-Tritriacontane (C33)	46.757	10493879	9.824 ug/mL M4
35) t	n-tetratriacontane (C34)	47.774	10960107	9.799 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.917	11018124	9.789 ug/mL M4
37) t	n-Hexatriacontane (C36)	50.223	11317891	9.785 ug/mL M4
38) t	n-Heptatriacontane (C37)	51.733	11057681	9.793 ug/mL M4
39) t	n-Octatriacontane (C38)	53.507	10862354	9.802 ug/mL M4
41) t	n-Tetracontane (C40)	58.027	11293426	9.830 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615009.D
Operator : FID17:NL
Acquired : 26 Oct 2015 6:17 pm using AcqMethod FID17.M
Instrument: FID17
Sample : I1710261502R
Misc Info : ,FRAW61 10ug/ml
ALS Vial : 55



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615011.D
Signal(s) : FID2B.CH
Acq On : 26 Oct 2015 7:45 pm
Operator : FID17:NL
Sample : I1710261503R
Misc : ,FRAW35 50ug/ml
ALS Vial : 56 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 19 08:07:56 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Fri Nov 13 17:31:40 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

11/20/15

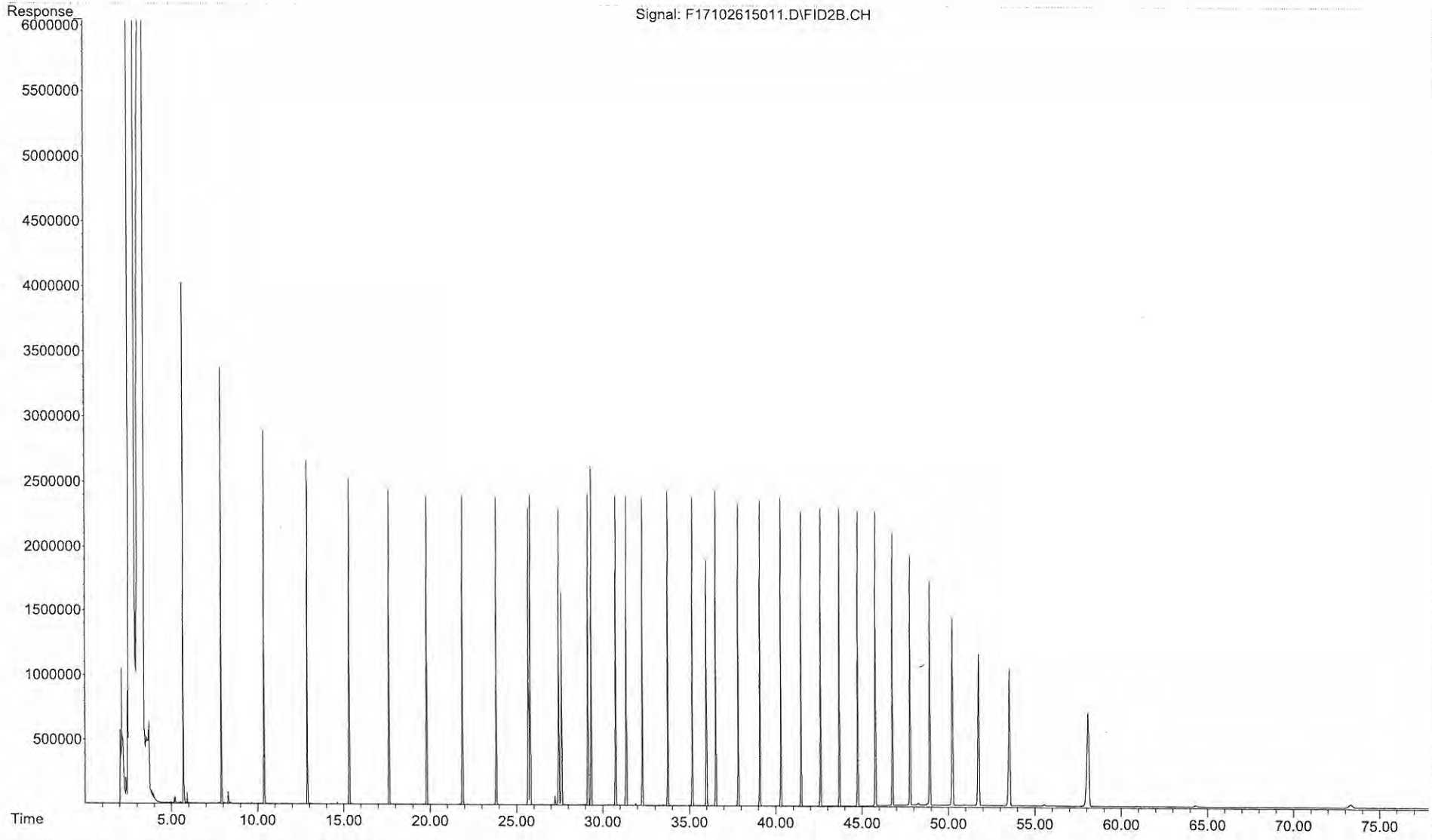
Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	31.377	58948732	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	29.357	63658943	50.459 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 100.92%	
24) s d50-Tetracosane	35.999	52907094	50.386 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 100.77%	
Target Compounds			
2) t n-Octane (C8)	5.691	49896609	51.405 ug/mL M4
3) t n-Nonane (C9)	7.896	51611899	51.066 ug/mL M4
4) t n-Decane (C10)	10.384	53659318	51.301 ug/mL M4
5) t n-Undecane (C11)	12.900	54361934	51.597 ug/mL M4
6) t n-Dodecane (C12)	15.329	55222943	51.574 ug/mL M4
7) t n-Tridecane (C13)	17.638	55432397	51.538 ug/mL M4
9) t n-Tetradecane (C14)	19.823	55993582	51.521 ug/mL M4
11) t n-Pentadecane (C15)	21.890	56938769	51.546 ug/mL M4
12) t n-Hexadecane (C16)	23.848	56750604	51.454 ug/mL M4
14) t n-Heptadecane (C17)	25.709	57049036	51.396 ug/mL M4
15) t Pristane	25.820	57479124	51.547 ug/mL M4
16) t n-Octadecane (C18)	27.479	57874992	51.460 ug/mL M4
17) t Phytane	27.640	50531692	51.381 ug/mL M4
18) t n-Nonadecane (C19)	29.162	57301582	51.438 ug/mL M4
20) t n-Eicosane (C20)	30.769	56836239	51.282 ug/mL M4
21) t n-Heneicosane (C21)	32.305	57159926	51.085 ug/mL M4
22) t n-Docosane (C22)	33.777	57513555	51.208 ug/mL M4
23) t n-Tricosane (C23)	35.190	57786169	51.233 ug/mL M4
25) t n-Tetracosane (C24)	36.547	57831552	51.167 ug/mL M4
26) t n-Pentacosane (C25)	37.851	57203092	51.194 ug/mL M4
27) t n-Hexacosane (C26)	39.106	58333922	51.209 ug/mL M4
28) t n-Heptacosane (C27)	40.315	57529483	51.112 ug/mL M4
29) t n-Octacosane (C28)	41.485	57162249	51.020 ug/mL M4
30) t n-Nonacosane (C29)	42.612	57365161	50.936 ug/mL M4
31) t n-Triacontane (C30)	43.706	57311444	50.832 ug/mL M4
32) t n-Hentriacontane (C31)	44.762	57282795	50.714 ug/mL M4
33) t n-Dotriacontane (C32)	45.786	57714014	50.650 ug/mL M4
34) t n-Tritriacontane (C33)	46.778	54684679	50.712 ug/mL M4
35) t n-tetratriacontane (C34)	47.800	57154185	50.620 ug/mL M4
36) t n-Pentatriacontane (C35)	48.950	57685420	50.768 ug/mL M4
37) t n-Hexatriacontane (C36)	50.265	59356981	50.833 ug/mL M4
38) t n-Heptatriacontane (C37)	51.780	58131495	50.999 ug/mL M4
39) t n-Octatriacontane (C38)	53.554	57123516	51.063 ug/mL M4
41) t n-Tetracontane (C40)	58.099	59449348	51.259 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615011.D
Operator : FID17:NL
Acquired : 26 Oct 2015 7:45 pm using AcqMethod FID17.M
Instrument: FID17
Sample : I1710261503R
Misc Info : ,FRAW35 50ug/ml
ALS Vial : 56



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615013.D
Signal(s) : FID2B.CH
Acq On : 26 Oct 2015 9:13 pm
Operator : FID17:NL
Sample : I1710261504R
Misc : ,FRAW62 100ug/ml
ALS Vial : 57 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 19 08:13:08 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Fri Nov 13 17:31:55 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

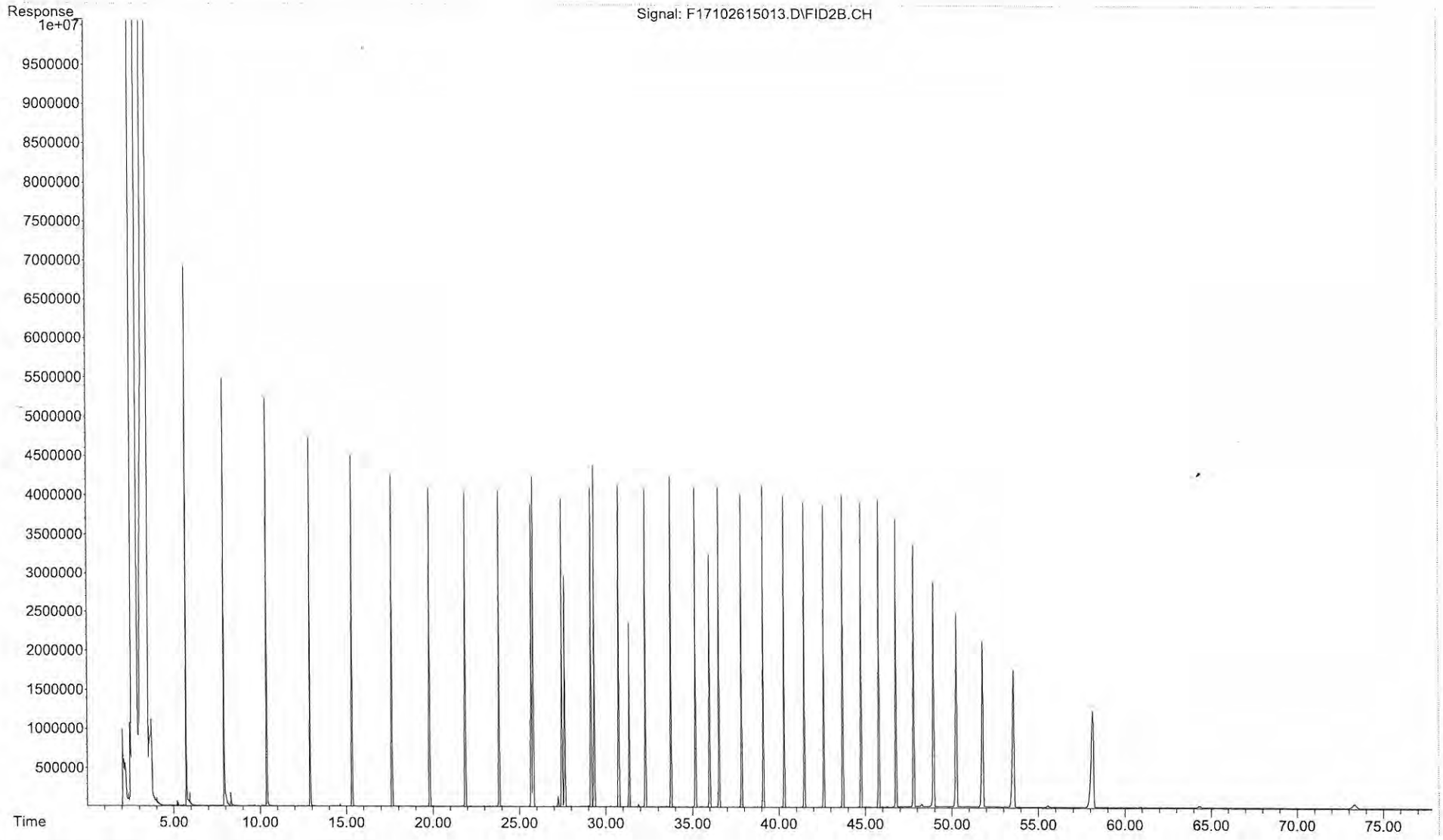
	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	31.380	58795026	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	29.376	124125372	98.644 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	197.29%#
24) s	d50-Tetracosane	36.015	103256195	98.592 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	197.18%#
	Target Compounds			
2) t	n-Octane (C8)	5.723	95030473	98.159 ug/mL M4
3) t	n-Nonane (C9)	7.919	103906557	103.075 ug/mL M4
4) t	n-Decane (C10)	10.402	107361149	102.911 ug/mL M4
5) t	n-Undecane (C11)	12.914	108585005	103.331 ug/mL M4
6) t	n-Dodecane (C12)	15.343	110344443	103.323 ug/mL M4
7) t	n-Tridecane (C13)	17.652	110821345	103.306 ug/mL M4
9) t	n-Tetradecane (C14)	19.838	111974284	103.299 ug/mL M4
11) t	n-Pentadecane (C15)	21.905	113859269	103.344 ug/mL M4
12) t	n-Hexadecane (C16)	23.863	113472867	103.151 ug/mL M4
14) t	n-Heptadecane (C17)	25.727	114420858	103.352 ug/mL M4
15) t	Pristane	25.837	114502650	102.953 ug/mL M4
16) t	n-Octadecane (C18)	27.496	115558377	103.019 ug/mL M4
17) t	Phytane	27.658	101033372	103.001 ug/mL M4
18) t	n-Nonadecane (C19)	29.182	114330914	102.900 ug/mL M4
20) t	n-Eicosane (C20)	30.787	113556668	102.728 ug/mL M4
21) t	n-Heneicosane (C21)	32.323	114283359	102.404 ug/mL M4
22) t	n-Docosane (C22)	33.797	115039022	102.694 ug/mL M4
23) t	n-Tricosane (C23)	35.209	115645893	102.799 ug/mL M4
25) t	n-Tetracosane (C24)	36.567	115759805	102.686 ug/mL M4
26) t	n-Pentacosane (C25)	37.870	114611403	102.840 ug/mL M4
27) t	n-Hexacosane (C26)	39.128	116905133	102.895 ug/mL M4
28) t	n-Heptacosane (C27)	40.336	115468418	102.856 ug/mL M4
29) t	n-Octacosane (C28)	41.507	114835614	102.764 ug/mL M4
30) t	n-Nonacosane (C29)	42.633	115464545	102.793 ug/mL M4
31) t	n-Triacontane (C30)	43.727	115657196	102.849 ug/mL M4
32) t	n-Hentriacontane (C31)	44.783	115875179	102.855 ug/mL M4
33) t	n-Dotriacontane (C32)	45.810	117071638	103.011 ug/mL M4
34) t	n-Tritriacontane (C33)	46.801	111063980	103.265 ug/mL M4
35) t	n-tetratriacontane (C34)	47.826	116373947	103.339 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.980	118104215	104.214 ug/mL M4
37) t	n-Hexatriacontane (C36)	50.298	121021920	103.914 ug/mL M4
38) t	n-Heptatriacontane (C37)	51.825	118447922	104.187 ug/mL M4
39) t	n-Octatriacontane (C38)	53.607	116271553	104.208 ug/mL M4
41) t	n-Tetracontane (C40)	58.173	120836554	104.461 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615013.D
Operator : FID17:NL
Acquired : 26 Oct 2015 9:13 pm using AcqMethod FID17.M
Instrument: FID17
Sample : I1710261504R
Misc Info : ,FRAW62 100ug/ml
ALS Vial : 57



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615015.D
Signal(s) : FID2B.CH
Acq On : 26 Oct 2015 10:42 pm
Operator : FID17:NL
Sample : I1710261505R
Misc : ,FRAW63 200ug/ml
ALS Vial : 58 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 13 17:32:10 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Fri Nov 13 17:32:05 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

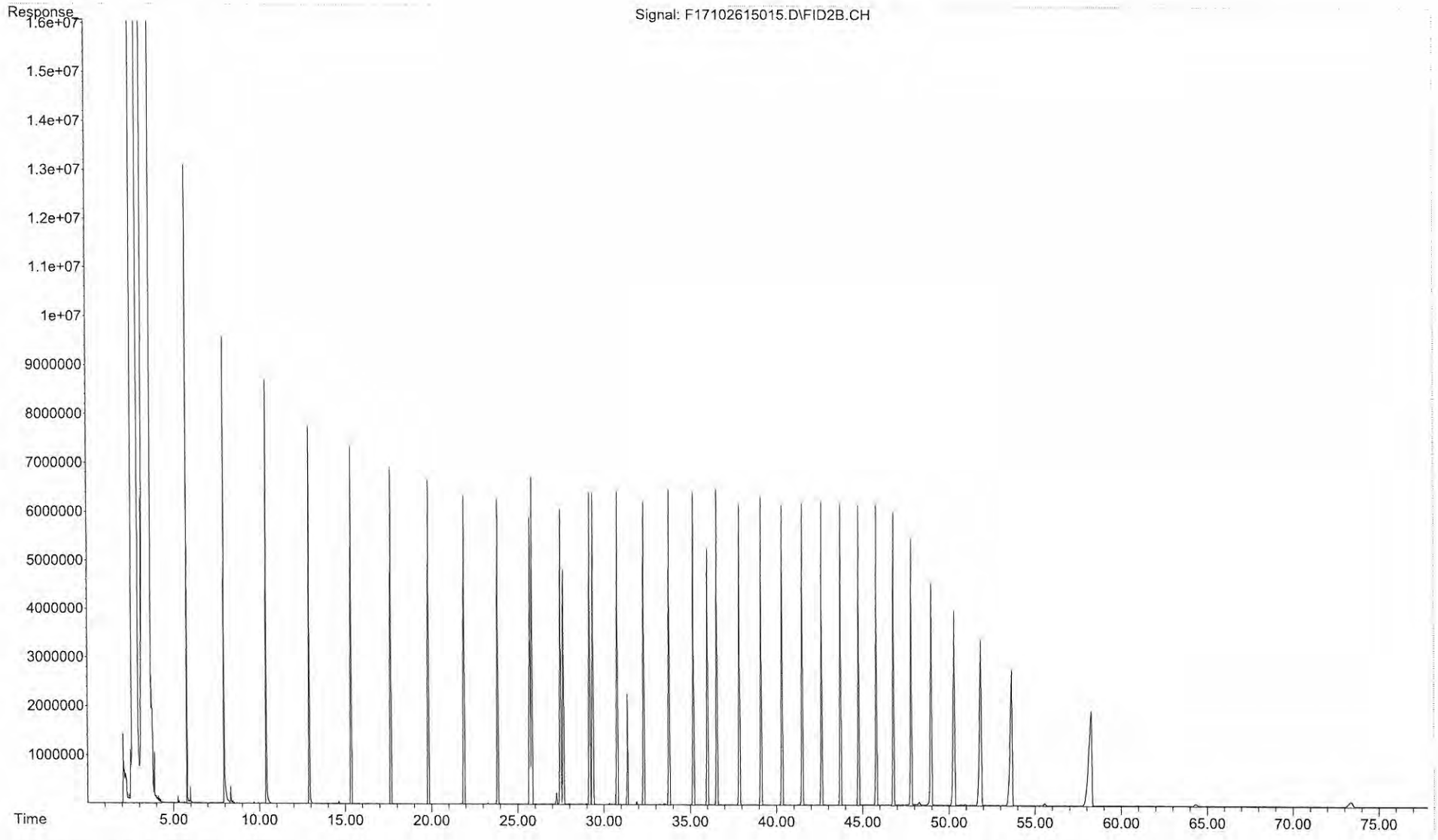
Sub List : CCAL - CCAL

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	31.384	60298196	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	29.400	254926737	197.543 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 395.09%#	
24) s d50-Tetracosane	36.038	211243419	196.674 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 393.35%#	
Target Compounds			
2) t n-Octane (C8)	5.795f	201751965	203.199 ug/mL M3
3) t n-Nonane (C9)	7.967	209844483	202.977 ug/mL M4
4) t n-Decane (C10)	10.431	217413173	203.207 ug/mL M4
5) t n-Undecane (C11)	12.938	220194673	204.317 ug/mL M4
6) t n-Dodecane (C12)	15.365	223041970	203.644 ug/mL M4
7) t n-Tridecane (C13)	17.671	223534206	203.180 ug/mL M4
9) t n-Tetradecane (C14)	19.857	225516778	202.859 ug/mL M4
11) t n-Pentadecane (C15)	21.924	229216551	202.862 ug/mL M4
12) t n-Hexadecane (C16)	23.883	228245843	202.312 ug/mL M4
14) t n-Heptadecane (C17)	25.751	232694878	204.944 ug/mL M4
15) t Pristane	25.862	227288729	199.268 ug/mL M4
16) t n-Octadecane (C18)	27.520	232757178	202.327 ug/mL M4
17) t Phytane	27.681	202950963	201.745 ug/mL M4
18) t n-Nonadecane (C19)	29.207	230040463	201.880 ug/mL M4
20) t n-Eicosane (C20)	30.811	228873076	201.886 ug/mL M4
21) t n-Heneicosane (C21)	32.349	230232750	201.158 ug/mL M4
22) t n-Docosane (C22)	33.824	231335281	201.363 ug/mL M4
23) t n-Tricosane (C23)	35.237	232114603	201.185 ug/mL M4
25) t n-Tetracosane (C24)	36.595	232137808	200.788 ug/mL M4
26) t n-Pentacosane (C25)	37.899	229573727	200.859 ug/mL M4
27) t n-Hexacosane (C26)	39.156	234273551	201.058 ug/mL M4
28) t n-Heptacosane (C27)	40.365	231279567	200.882 ug/mL M4
29) t n-Octacosane (C28)	41.537	230736032	201.333 ug/mL M4
30) t n-Nonacosane (C29)	42.664	232252727	201.609 ug/mL M4
31) t n-Triacontane (C30)	43.760	233263157	202.261 ug/mL M4
32) t n-Hentriacontane (C31)	44.819	234400539	202.875 ug/mL M4
33) t n-Dotriacontane (C32)	45.842	237312989	203.605 ug/mL M4
34) t n-Tritriacontane (C33)	46.836	224850530	203.851 ug/mL M4
35) t n-tetratriacontane (C34)	47.867	235988326	204.332 ug/mL M4
36) t n-Pentatriacontane (C35)	49.023	238880750	205.532 ug/mL M4
37) t n-Hexatriacontane (C36)	50.354	244224042	204.473 ug/mL M4
38) t n-Heptatriacontane (C37)	51.889	238420774	204.488 ug/mL M2
39) t n-Octatriacontane (C38)	53.678	233418942	203.986 ug/mL M2
41) t n-Tetracontane (C40)	58.286	241190803	203.307 ug/mL M2
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615015.D
Operator : FID17:NL
Acquired : 26 Oct 2015 10:42 pm using AcqMethod FID17.M
Instrument: FID17
Sample : I1710261505R
Misc Info : ,FRAW63 200ug/ml
ALS Vial : 58



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615017.D
Signal(s) : FID2B.CH
Acq On : 27 Oct 2015 12:10 am
Operator : FID17:NL
Sample : I1710261506R
Misc : ,FRAW64 500ug/ml
ALS Vial : 59 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 13 17:32:18 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Fri Nov 13 17:32:15 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

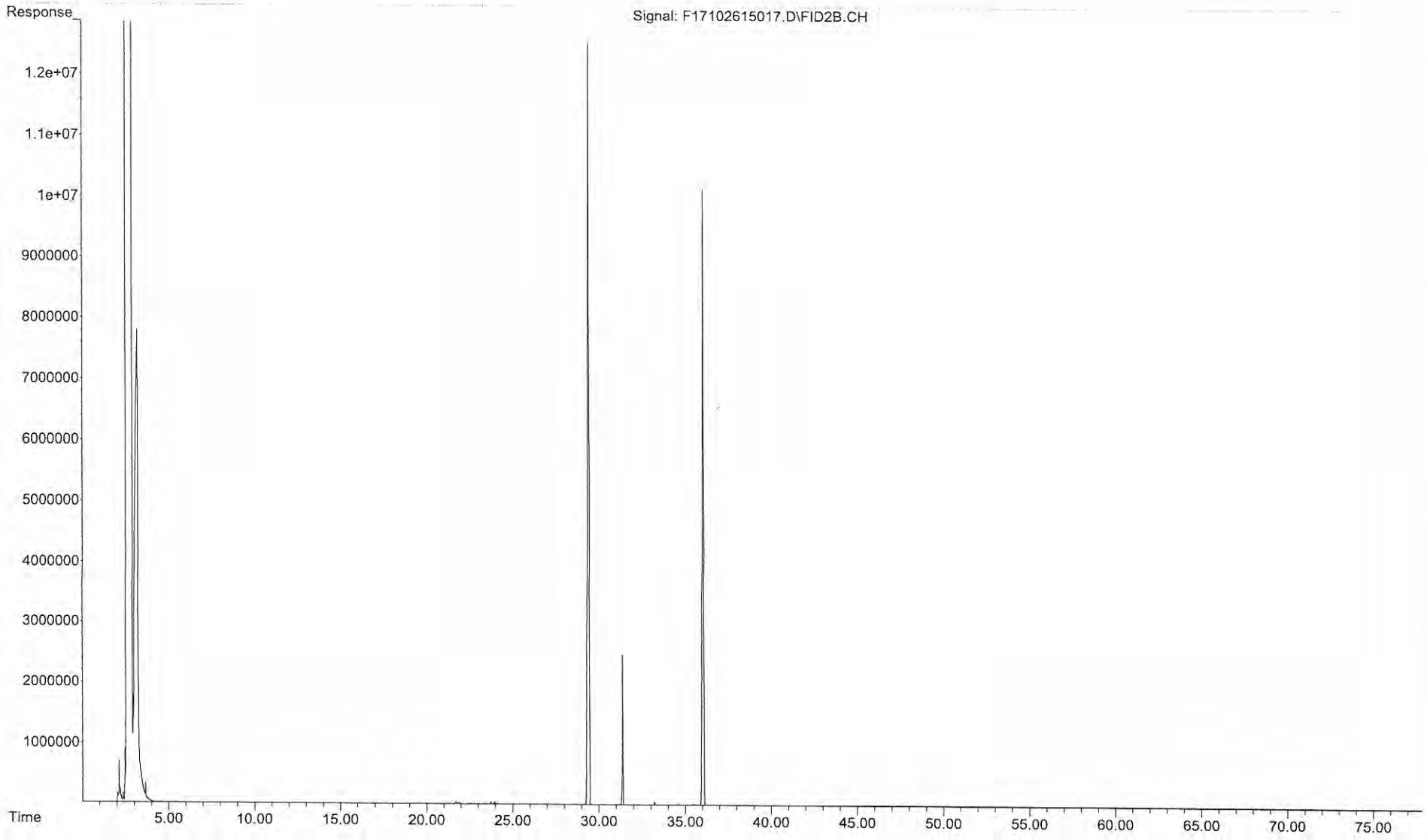
Sub List : CCAL - CCAL

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	31.377	58567827	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	29.447	639217938	509.965 ug/mL
Spiked Amount 50.000	Range 50 - 130	Recovery	= 1019.93%#
24) s d50-Tetracosane	36.094	534084137	511.938 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery	= 1023.88%#
Target Compounds			
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615017.D
Operator : FID17:NL
Acquired : 27 Oct 2015 12:10 am using AcqMethod FID17.M
Instrument: FID17
Sample : I1710261506R
Misc Info : ,FRAW64 500ug/ml
ALS Vial : 59



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615023.D
Signal(s) : FID2B.CH
Acq On : 27 Oct 2015 4:34 am
Operator : FID17:NL
Sample : CQ1710261501R
Misc : ,FRAW65 50ug/ml
ALS Vial : 62 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 19 08:21:00 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 19 08:19:11 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(Min)
1	I	5-alpha-androstane	50.000	50.000	0.0	114	0.00
2	t	n-Octane (C8)	50.000	44.971	10.1	99	0.00
3	t	n-Nonane (C9)	50.000	45.005	10.0	100	0.00
4	t	n-Decane (C10)	50.000	46.583	6.8	103	0.00
5	t	n-Undecane (C11)	50.000	45.280	9.4	100	0.00
6	t	n-Dodecane (C12)	50.000	45.147	9.7	99	0.00
7	t	n-Tridecane (C13)	50.000	44.986	10.0	99	0.00
9	t	n-Tetradecane (C14)	50.000	46.148	7.7	102	0.00
11	t	n-Pentadecane (C15)	50.000	44.902	10.2	99	0.00
12	t	n-Hexadecane (C16)	50.000	45.387	9.2	100	0.00
14	t	n-Heptadecane (C17)	50.000	45.370	9.3	100	0.00
15	t	Pristane	50.000	45.203	9.6	100	0.00
16	t	n-Octadecane (C18)	50.000	44.470	11.1	98	0.00
17	t	Phytane	50.000	51.577	-3.2	114	0.00
18	t	n-Nonadecane (C19)	50.000	44.555	10.9	99	0.00
19	s	ortho-terphenyl	50.000	45.165	9.7	102	0.00
20	t	n-Eicosane (C20)	50.000	44.833	10.3	100	0.00
21	t	n-Heneicosane (C21)	50.000	44.872	10.3	100	0.00
22	t	n-Docosane (C22)	50.000	44.835	10.3	100	0.00
23	t	n-Tricosane (C23)	50.000	44.735	10.5	99	0.00
24	s	d50-Tetracosane	50.000	45.274	9.5	102	0.00
25	t	n-Tetracosane (C24)	50.000	44.562	10.9	99	0.00
26	t	n-Pentacosane (C25)	50.000	45.045	9.9	100	0.00
27	t	n-Hexacosane (C26)	50.000	44.904	10.2	100	0.00
28	t	n-Heptacosane (C27)	50.000	44.845	10.3	100	0.00
29	t	n-Octacosane (C28)	50.000	45.007	10.0	100	0.00
30	t	n-Nonacosane (C29)	50.000	44.966	10.1	100	0.00
31	t	n-Triacontane (C30)	50.000	44.789	10.4	100	0.00
32	t	n-Hentriacontane (C31)	50.000	44.771	10.5	100	0.00
33	t	n-Dotriacontane (C32)	50.000	43.935	12.1	99	0.00
34	t	n-Tritriacontane (C33)	50.000	44.897	10.2	101	0.00
35	t	n-tetratriacontane (C34)	50.000	45.254	9.5	102	0.00
36	t	n-Pentatriacontane (C35)	50.000	45.067	9.9	101	0.00
37	t	n-Hexatriacontane (C36)	50.000	47.139	5.7	106	0.00
38	t	n-Heptatriacontane (C37)	50.000	45.140	9.7	101	0.00
39	t	n-Octatriacontane (C38)	50.000	45.966	8.1	103	0.00
41	t	n-Tetracontane (C40)	50.000	42.407	15.2	94	-0.01

Evaluate Continuing Calibration Report - Not Founds

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

Mass Discrimination (Response)	Ratio	Range Limits
n-Hexatriacontane (C36) to n-Eicosane (C20)	1.11	0.85 - 1.15

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615023.D
Signal(s) : FID2B.CH
Acq On : 27 Oct 2015 4:34 am
Operator : FID17:NL
Sample : CQ1710261501R
Misc : ,FRAW65 50ug/ml
ALS Vial : 62 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 19 08:21:00 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 19 08:19:11 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

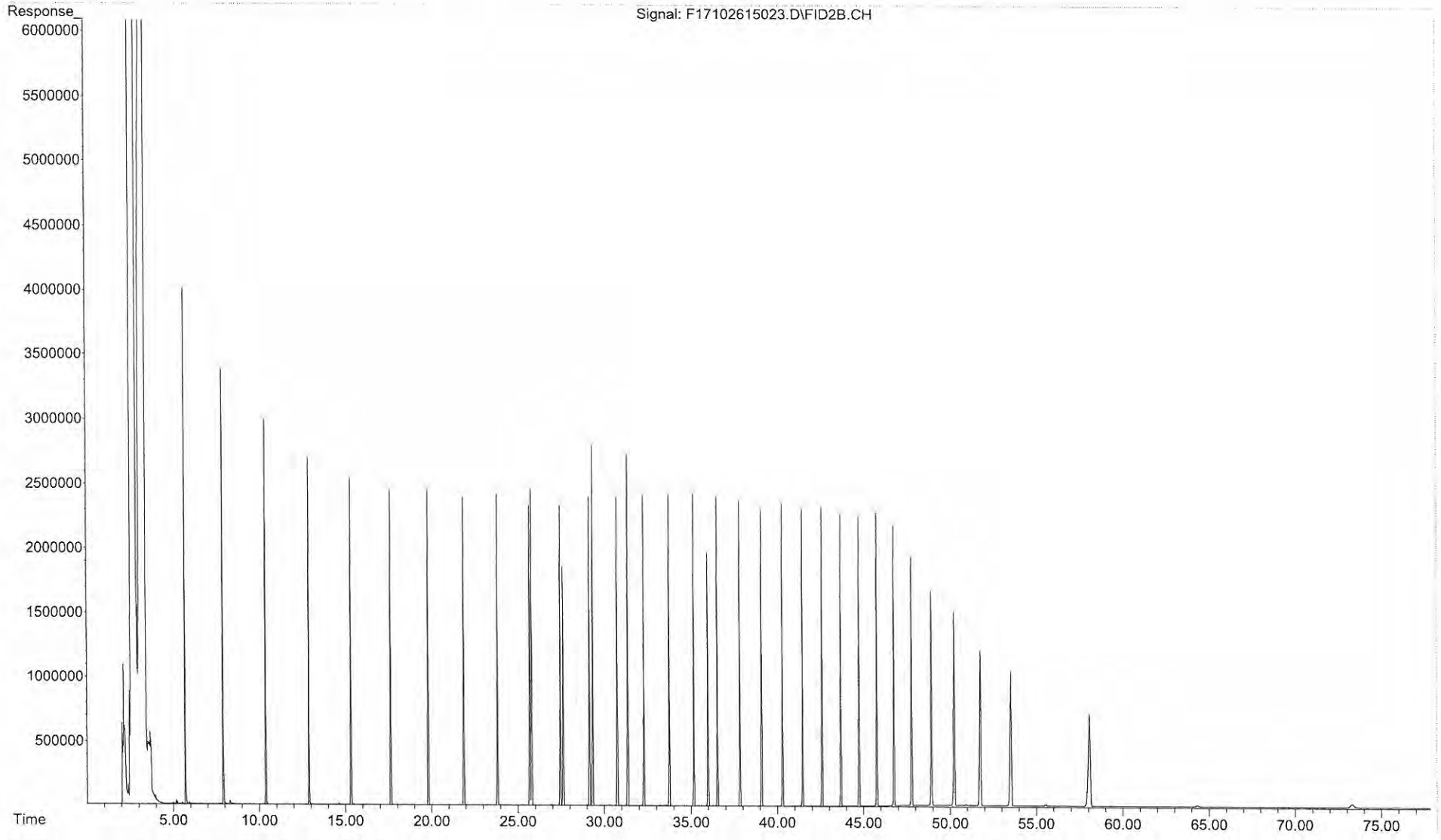
Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	31.377	67093766	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	29.354	64853049	45.165 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 90.33%	
24) s d50-Tetracosane	35.994	54163069	45.274 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 90.55%	
Target Compounds			
2) t n-Octane (C8)	5.693	49415034	44.971 ug/mL M4
3) t n-Nonane (C9)	7.896	51770898	45.005 ug/mL M4
4) t n-Decane (C10)	10.383	55402208	46.583 ug/mL M4
5) t n-Undecane (C11)	12.897	54298660	45.280 ug/mL M4
6) t n-Dodecane (C12)	15.327	54891281	45.147 ug/mL M4
7) t n-Tridecane (C13)	17.635	54974907	44.986 ug/mL M4
9) t n-Tetradecane (C14)	19.821	57068908	46.148 ug/mL M4
11) t n-Pentadecane (C15)	21.887	56443466	44.902 ug/mL M4
12) t n-Hexadecane (C16)	23.846	56868826	45.387 ug/mL M4
14) t n-Heptadecane (C17)	25.707	57319272	45.370 ug/mL M6
15) t Pristane	25.816	57369817	45.203 ug/mL M4
16) t n-Octadecane (C18)	27.474	56923770	44.470 ug/mL M4
17) t Phytane	27.639	57732490	51.577 ug/mL M4
18) t n-Nonadecane (C19)	29.160	56492174	44.555 ug/mL M4
20) t n-Eicosane (C20)	30.764	56554225	44.833 ug/mL M4
21) t n-Heneicosane (C21)	32.301	57051261	44.872 ug/mL M4
22) t n-Docosane (C22)	33.773	57280739	44.835 ug/mL M4
23) t n-Tricosane (C23)	35.186	57421711	44.735 ug/mL M4
25) t n-Tetracosane (C24)	36.543	57312351	44.562 ug/mL M4
26) t n-Pentacosane (C25)	37.846	57275416	45.045 ug/mL M4
27) t n-Hexacosane (C26)	39.102	58219441	44.904 ug/mL M4
28) t n-Heptacosane (C27)	40.314	57449688	44.845 ug/mL M4
29) t n-Octacosane (C28)	41.481	57392962	45.007 ug/mL M4
30) t n-Nonacosane (C29)	42.610	57638644	44.966 ug/mL M4
31) t n-Triacontane (C30)	43.702	57475874	44.789 ug/mL M4
32) t n-Hentriacontane (C31)	44.761	57558084	44.771 ug/mL M4
33) t n-Dotriacontane (C32)	45.781	57013957	43.935 ug/mL M4
34) t n-Tritriacontane (C33)	46.774	55103173	44.897 ug/mL M4
35) t n-tetratriacontane (C34)	47.799	58155491	45.254 ug/mL M4
36) t n-Pentatriacontane (C35)	48.943	58282465	45.067 ug/mL M4
37) t n-Hexatriacontane (C36)	50.260	62648110	47.139 ug/mL M4
38) t n-Heptatriacontane (C37)	51.776	58677700	45.140 ug/mL M4
39) t n-Octatriacontane (C38)	53.545	58595258	45.966 ug/mL M4
41) t n-Tetracontane (C40)	58.086	56031865	42.407 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615023.D
Operator : FID17:NL
Acquired : 27 Oct 2015 4:34 am using AcqMethod FID17.M
Instrument: FID17
Sample : CQ1710261501R
Misc Info : ,FRAW65 50ug/ml
ALS Vial : 62



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615025.D
Signal(s) : FID2B.CH
Acq On : 27 Oct 2015 6:02 am
Operator : FID17:NL
Sample : TO103015ANC02
Misc : ,FRAW36 10.382mg/mL
ALS Vial : 63 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 19 08:31:40 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 19 08:30:39 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1710261501R
Blank File : F17102615021.D

Sub List : Default - All compounds listed

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	31.381	62993161	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	29.358	66685118	49.464 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	98.93%
24) s	d50-Tetracosane	36.005	56609587	50.399 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	100.80%
	Target Compounds			
2) t	n-Octane (C8)	5.659	99153658	96.110 ug/mL M4
3) t	n-Nonane (C9)	7.882	75549931	69.951 ug/mL M4
4) t	n-Decane (C10)	10.379	63797059	57.134 ug/mL M4
5) t	n-Undecane (C11)	12.897	58158963	51.656 ug/mL M4
6) t	n-Dodecane (C12)	15.328	54099841	47.393 ug/mL M4
7) t	n-Tridecane (C13)	17.638	49906316	43.497 ug/mL M4
8) t	1380	19.314	11915193	10.262 ug/mL M4
9) t	n-Tetradecane (C14)	19.823	46871416	40.369 ug/mL M4
10) t	1470	21.107	17264386	14.628 ug/mL M4
11) t	n-Pentadecane (C15)	21.889	54961790	46.569 ug/mL M4
12) t	n-Hexadecane (C16)	23.845	42898821	36.466 ug/mL M4
13) t	1650	24.749	16178967	13.640 ug/mL M4
14) t	n-Heptadecane (C17)	25.705	37303202	31.449 ug/mL M4
15) t	Pristane	25.798	29306941	24.595 ug/mL M4
16) t	n-Octadecane (C18)	27.471	32591310	27.118 ug/mL M4
17) t	Phytane	27.630	16478416	15.680 ug/mL M4
18) t	n-Nonadecane (C19)	29.157	31332430	26.321 ug/mL M4
20) t	n-Eicosane (C20)	30.763	34009779	28.716 ug/mL M4
21) t	n-Heneicosane (C21)	32.297	27963825	23.426 ug/mL M4
22) t	n-Docosane (C22)	33.770	26258304	21.891 ug/mL M4
23) t	n-Tricosane (C23)	35.181	23349620	19.375 ug/mL M4
25) t	n-Tetracosane (C24)	36.536	22234117	18.413 ug/mL M4
26) t	n-Pentacosane (C25)	37.838	22029695	18.453 ug/mL M4
27) t	n-Hexacosane (C26)	39.092	18435782	15.145 ug/mL M4
28) t	n-Heptacosane (C27)	40.301	14530027	12.080 ug/mL M4
29) t	n-Octacosane (C28)	41.470	10476590	8.750 ug/mL M4
30) t	n-Nonacosane (C29)	42.596	10575487	8.787 ug/mL M4
31) t	n-Triacontane (C30)	43.688	8294585	6.884 ug/mL M4
32) t	n-Hentriacontane (C31)	44.743	6786919	5.623 ug/mL M4
33) t	n-Dotriacontane (C32)	45.769	7658286	6.286 ug/mL M4
34) t	n-Tritriacontane (C33)	46.758	4168971	3.618 ug/mL M4
35) t	n-tetratriacontane (C34)	47.771	3917007	3.246 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.917	3501375	2.884 ug/mL M4
37) t	n-Hexatriacontane (C36)	50.227	2236863	1.793 ug/mL M4
38) t	n-Heptatriacontane (C37)	51.744	2172362	1.780 ug/mL M4
39) t	n-Octatriacontane (C38)	53.504	1849231	1.545 ug/mL M4
40) t	n-Nonatriacontane (C39)	55.556	1233055	0.994 ug/mL M4
41) t	n-Tetracontane (C40)	58.011	1227799	0.990 ug/mL M4
42) h	C9-C44 Total Petroleu...	40.600	7611738070	6430.187 ug/mL m
42) h	C9-C44 Total Petroleu BS	40.600	7370774868	6226.628 ug/mLm
44) h	C10-C28 DRO	25.935	5037808549	4255.802 ug/mL m

11/20/15

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615025.D
Signal(s) : FID2B.CH
Acq On : 27 Oct 2015 6:02 am
Operator : FID17:NL
Sample : TO103015ANC02
Misc : ,FRAW36 10.382mg/mL
ALS Vial : 63 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 19 08:31:40 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 19 08:30:39 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1710261501R
Blank File : F17102615021.D

Sub List : Default - All compounds listed

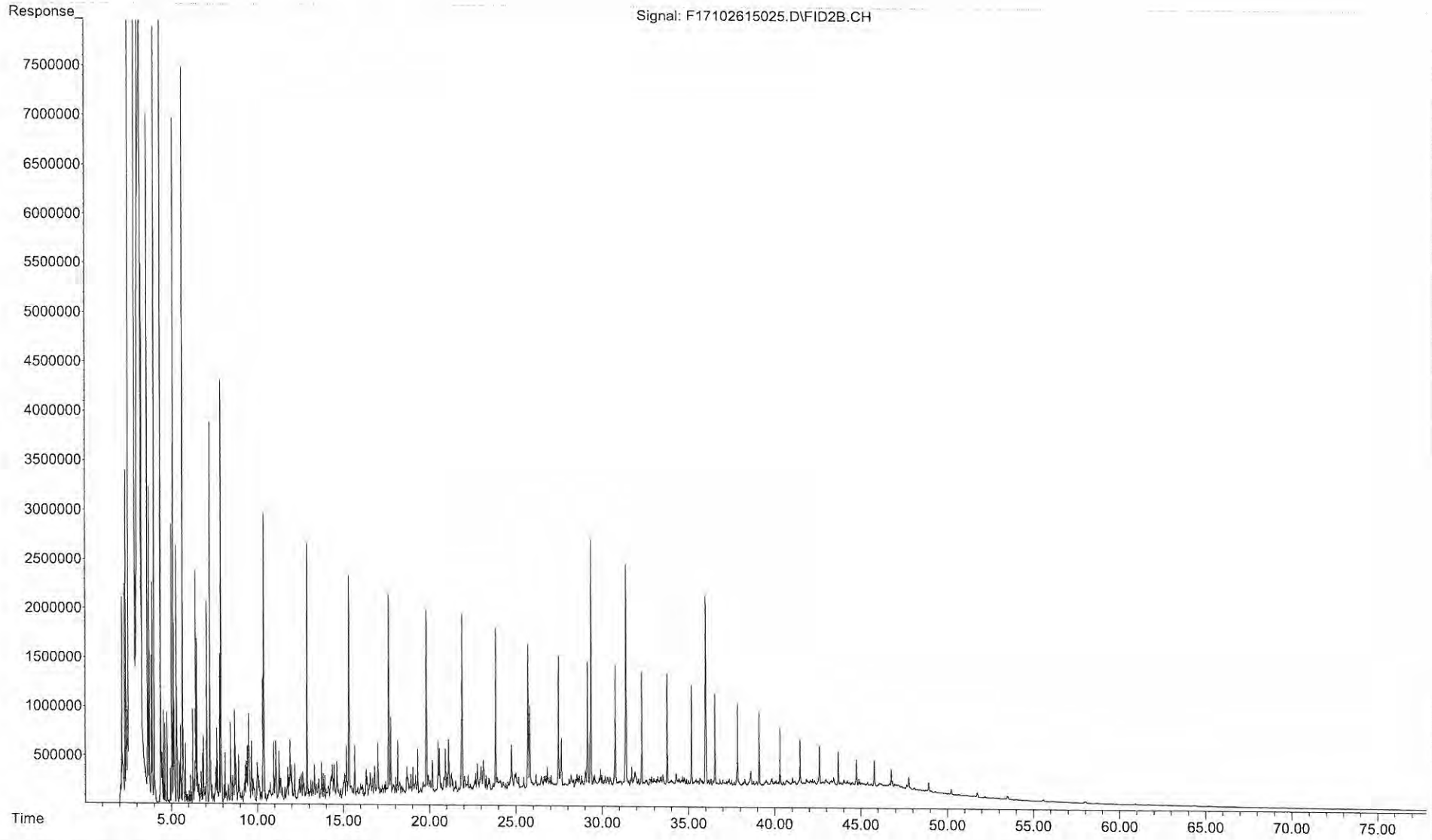
	Compound	R.T.	Response	Conc	Units
44) h	C10-C28 DRO BS	25.935	5028167431	4247.658	ug/mLm
45) h	Total Resolved Hydroc...	40.600	2369905691	2002.031	ug/mL m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\OCT26.SEC\
Data File : F17102615025.D
Operator : FID17:NL
Acquired : 27 Oct 2015 6:02 am using AcqMethod FID17.M
Instrument: FID17
Sample : TO103015ANC02
Misc Info : ,FRAW36 10.382mg/mL
ALS Vial : 63



HC17102615R.M Thu Nov 19 08:33:13 2015

Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081633.D
Signal(s) : FID2B.CH
Acq On : 09 Nov 2016 2:01 pm
Operator : FID17:NL
Sample : C1711081602R
Misc : FRAX76 50ug/mL
ALS Vial : 63 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 10 20:09:14 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Wed Oct 12 12:14:51 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(Min)
1	I	5-alpha-androstane	50.000	50.000	0.0	97	0.00
2	t	n-Octane (C8)	50.000	49.135	1.7	92	0.00
3	t	n-Nonane (C9)	50.000	48.763	2.5	93	0.00
4	t	n-Decane (C10)	50.000	50.137	-0.3	95	0.00
5	t	n-Undecane (C11)	50.000	50.959	-1.9	96	0.00
6	t	n-Dodecane (C12)	50.000	51.081	-2.2	96	0.00
7	t	n-Tridecane (C13)	50.000	51.558	-3.1	97	0.00
9	t	n-Tetradecane (C14)	50.000	51.823	-3.6	98	0.00
11	t	n-Pentadecane (C15)	50.000	51.033	-2.1	96	0.00
12	t	n-Hexadecane (C16)	50.000	51.847	-3.7	98	0.00
14	t	n-Heptadecane (C17)	50.000	50.661	-1.3	96	0.00
15	t	Pristane	50.000	52.890	-5.8	100	0.00
16	t	n-Octadecane (C18)	50.000	50.855	-1.7	96	0.00
17	t	Phytane	50.000	53.792	-7.6	102	0.00
18	t	n-Nonadecane (C19)	50.000	51.507	-3.0	97	0.00
19	s	ortho-terphenyl	50.000	51.221	-2.4	99	0.00
20	t	n-Eicosane (C20)	50.000	52.300	-4.6	99	0.00
21	t	n-Heneicosane (C21)	50.000	52.703	-5.4	100	0.00
22	t	n-Docosane (C22)	50.000	52.490	-5.0	100	0.00
23	t	n-Tricosane (C23)	50.000	52.448	-4.9	99	0.00
24	s	d50-Tetracosane	50.000	49.914	0.2	96	0.00
25	t	n-Tetracosane (C24)	50.000	52.543	-5.1	100	0.00
26	t	n-Pentacosane (C25)	50.000	52.654	-5.3	100	-0.01
27	t	n-Hexacosane (C26)	50.000	52.017	-4.0	99	-0.01
28	t	n-Heptacosane (C27)	50.000	51.268	-2.5	97	-0.01
29	t	n-Octacosane (C28)	50.000	53.384	-6.8	102	-0.01
30	t	n-Nonacosane (C29)	50.000	52.809	-5.6	101	-0.02
31	t	n-Triacontane (C30)	50.000	52.205	-4.4	100	-0.02
32	t	n-Hentriacontane (C31)	50.000	52.523	-5.0	101	-0.02
33	t	n-Dotriacontane (C32)	50.000	51.571	-3.1	99	-0.02
34	t	n-Tritriacontane (C33)	50.000	54.208	-8.4	104	-0.02
35	t	n-tetratriacontane (C34)	50.000	54.025	-8.0	104	-0.02
36	t	n-Pentatriacontane (C35)	50.000	52.237	-4.5	100	-0.03
37	t	n-Hexatriacontane (C36)	50.000	54.317	-8.6	104	-0.03
38	t	n-Heptatriacontane (C37)	50.000	52.368	-4.7	100	-0.03
39	t	n-Octatriacontane (C38)	50.000	57.740	-15.5	110	-0.04
41	t	n-Tetracontane (C40)	50.000	52.892	-5.8	100	-0.06

Evaluate Continuing Calibration Report - Not Founds

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

Mass Discrimination (Response)	Ratio	Range Limits
n-Hexatriacontane (C36) to n-Eicosane (C20)	1.09	0.85 - 1.15

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081633.D
Signal(s) : FID2B.CH
Acq On : 09 Nov 2016 2:01 pm
Operator : FID17:NL
Sample : C1711081602R
Misc : FRAX76 50ug/mL
ALS Vial : 63 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 10 20:09:14 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Wed Oct 12 12:14:51 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

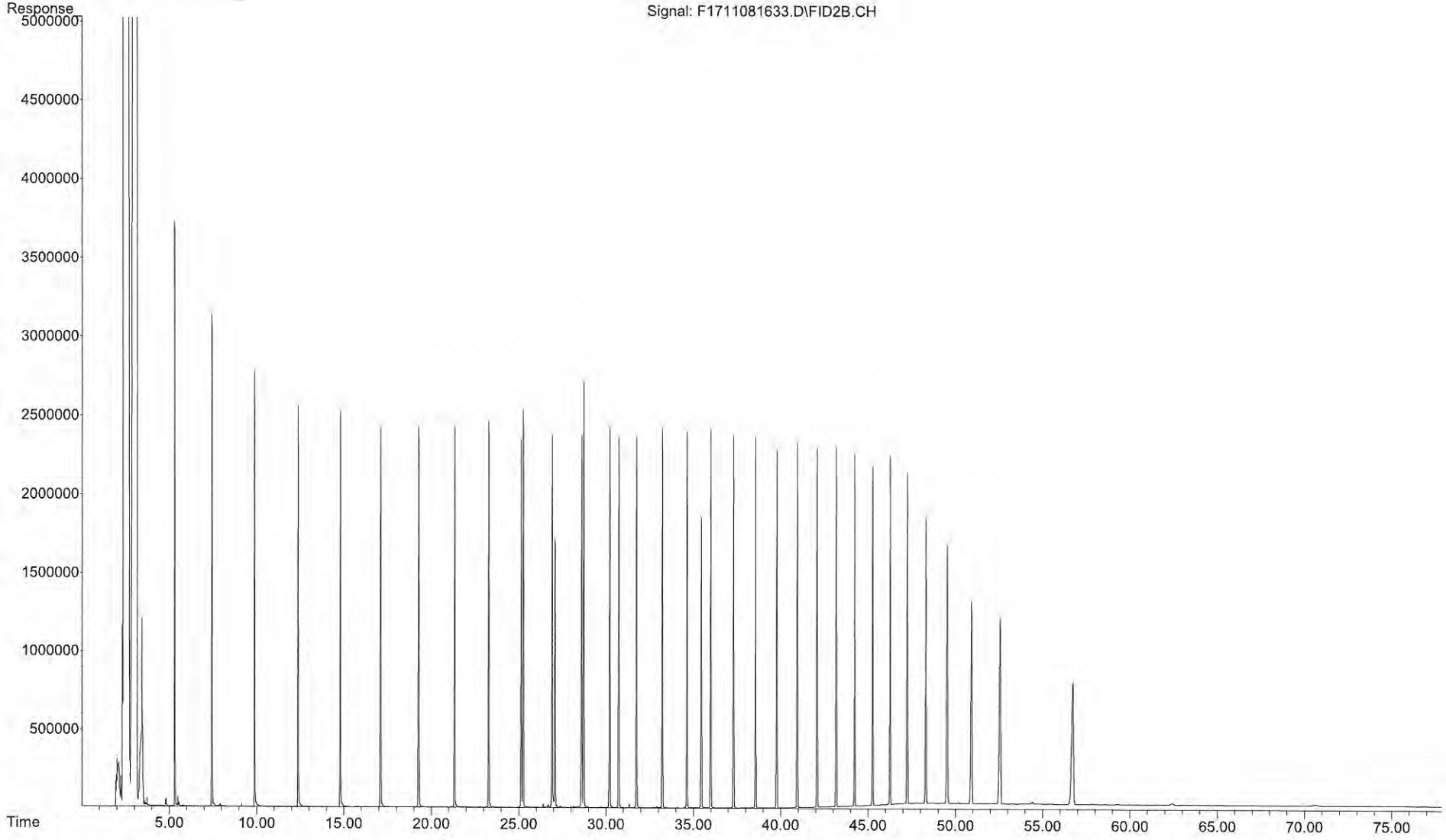
	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.742	57283837	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.727	62795128	51.221 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery = 102.44%	
24) s	d50-Tetracosane	35.454	50982638	49.914 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery = 99.83%	
	Target Compounds			
2) t	n-Octane (C8)	5.299	46096415	49.135 ug/mL M4
3) t	n-Nonane (C9)	7.436	47892827	48.763 ug/mL M4
4) t	n-Decane (C10)	9.879	50910409	50.137 ug/mL M4
5) t	n-Undecane (C11)	12.373	52173897	50.959 ug/mL M4
6) t	n-Dodecane (C12)	14.792	53024814	51.081 ug/mL M4
7) t	n-Tridecane (C13)	17.095	53794188	51.558 ug/mL M4
9) t	n-Tetradecane (C14)	19.276	54716856	51.823 ug/mL M4
11) t	n-Pentadecane (C15)	21.340	54771645	51.033 ug/mL M4
12) t	n-Hexadecane (C16)	23.295	55464927	51.847 ug/mL M4
14) t	n-Heptadecane (C17)	25.155	54645560	50.661 ug/mL M4
15) t	Pristane	25.266	57311049	52.890 ug/mL M4
16) t	n-Octadecane (C18)	26.923	55579229	50.855 ug/mL M4
17) t	Phytane	27.083	51408358	53.792 ug/mL M4
18) t	n-Nonadecane (C19)	28.609	55757337	51.507 ug/mL M4
20) t	n-Eicosane (C20)	30.214	56327016	52.300 ug/mL M4
21) t	n-Heneicosane (C21)	31.751	57210112	52.703 ug/mL M4
22) t	n-Docosane (C22)	33.228	57255940	52.490 ug/mL M4
23) t	n-Tricosane (C23)	34.643	57477778	52.448 ug/mL M4
25) t	n-Tetracosane (C24)	36.002	57695553	52.543 ug/mL M4
26) t	n-Pentacosane (C25)	37.309	57162144	52.654 ug/mL M4
27) t	n-Hexacosane (C26)	38.568	57580278	52.017 ug/mL M4
28) t	n-Heptacosane (C27)	39.783	56075501	51.268 ug/mL M4
29) t	n-Octacosane (C28)	40.956	58121354	53.384 ug/mL M4
30) t	n-Nonacosane (C29)	42.089	57794650	52.809 ug/mL M4
31) t	n-Triacontane (C30)	43.185	57196617	52.205 ug/mL M4
32) t	n-Hentriacontane (C31)	44.247	57650813	52.523 ug/mL M4
33) t	n-Dotriacontane (C32)	45.275	57137820	51.571 ug/mL M4
34) t	n-Tritriacontane (C33)	46.276	56802803	54.208 ug/mL M4
35) t	n-tetratriacontane (C34)	47.257	59275363	54.025 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.322	57677637	52.237 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.538	61633680	54.317 ug/mL M4
38) t	n-Heptatriacontane (C37)	50.940	58120349	52.368 ug/mL M4
39) t	n-Octatriacontane (C38)	52.575	62841752	57.740 ug/mL M4
41) t	n-Tetracontane (C40)	56.737	59667627	52.892 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081633.D
Operator : FID17:NL
Acquired : 09 Nov 2016 2:01 pm using AcqMethod FID17.M
Instrument: FID17
Sample : C1711081602R
Misc Info : FRAX76 50ug/mL
ALS Vial : 63



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081659.D
Signal(s) : FID2B.CH
Acq On : 10 Nov 2016 10:18 am
Operator : FID17:NL
Sample : C1711081603R
Misc : FRAX76 50ug/mL
ALS Vial : 76 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 16 17:54:27 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(Min)
1	I	5-alpha-androstane	50.000	50.000	0.0	107	0.00
2	t	n-Octane (C8)	50.000	48.073	3.9	99	0.00
3	t	n-Nonane (C9)	50.000	48.937	2.1	102	0.00
4	t	n-Decane (C10)	50.000	50.331	-0.7	104	0.00
5	t	n-Undecane (C11)	50.000	51.509	-3.0	106	0.00
6	t	n-Dodecane (C12)	50.000	52.015	-4.0	107	0.00
7	t	n-Tridecane (C13)	50.000	52.200	-4.4	108	0.00
9	t	n-Tetradecane (C14)	50.000	52.298	-4.6	108	0.00
11	t	n-Pentadecane (C15)	50.000	51.367	-2.7	106	0.00
12	t	n-Hexadecane (C16)	50.000	51.981	-4.0	108	0.00
14	t	n-Heptadecane (C17)	50.000	50.480	-1.0	105	0.00
15	t	Pristane	50.000	52.993	-6.0	110	0.00
16	t	n-Octadecane (C18)	50.000	51.873	-3.7	107	0.00
17	t	Phytane	50.000	53.782	-7.6	112	0.00
18	t	n-Nonadecane (C19)	50.000	51.319	-2.6	106	0.00
19	s	ortho-terphenyl	50.000	51.503	-3.0	109	0.00
20	t	n-Eicosane (C20)	50.000	52.015	-4.0	108	0.00
21	t	n-Heneicosane (C21)	50.000	52.367	-4.7	109	0.00
22	t	n-Docosane (C22)	50.000	52.054	-4.1	108	0.00
23	t	n-Tricosane (C23)	50.000	51.930	-3.9	108	0.00
24	s	d50-Tetracosane	50.000	49.398	1.2	105	0.00
25	t	n-Tetracosane (C24)	50.000	51.953	-3.9	108	0.00
26	t	n-Pentacosane (C25)	50.000	52.039	-4.1	108	0.00
27	t	n-Hexacosane (C26)	50.000	51.369	-2.7	107	0.00
28	t	n-Heptacosane (C27)	50.000	50.422	-0.8	105	0.00
29	t	n-Octacosane (C28)	50.000	52.538	-5.1	110	0.00
30	t	n-Nonacosane (C29)	50.000	51.927	-3.9	109	0.00
31	t	n-Triacontane (C30)	50.000	51.293	-2.6	108	0.00
32	t	n-Hentriacontane (C31)	50.000	51.458	-2.9	108	0.00
33	t	n-Dotriacontane (C32)	50.000	50.384	-0.8	106	0.00
34	t	n-Tritriacontane (C33)	50.000	52.852	-5.7	111	0.00
35	t	n-tetratriacontane (C34)	50.000	52.548	-5.1	111	0.00
36	t	n-Pentatriacontane (C35)	50.000	50.609	-1.2	106	0.00
37	t	n-Hexatriacontane (C36)	50.000	52.361	-4.7	110	0.00
38	t	n-Heptatriacontane (C37)	50.000	50.350	-0.7	105	0.00
39	t	n-Octatriacontane (C38)	50.000	55.526	-11.1	116	0.00
41	t	n-Tetracontane (C40)	50.000	50.425	-0.8	105	0.00

Evaluate Continuing Calibration Report - Not Founds

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

Mass Discrimination (Response)	Ratio	Range Limits
n-Hexatriacontane (C36) to n-Eicosane (C20)	1.06	0.85 - 1.15

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081659.D
Signal(s) : FID2B.CH
Acq On : 10 Nov 2016 10:18 am
Operator : FID17:NL
Sample : C1711081603R
Misc : FRAX76 50ug/mL
ALS Vial : 76 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 16 17:54:27 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

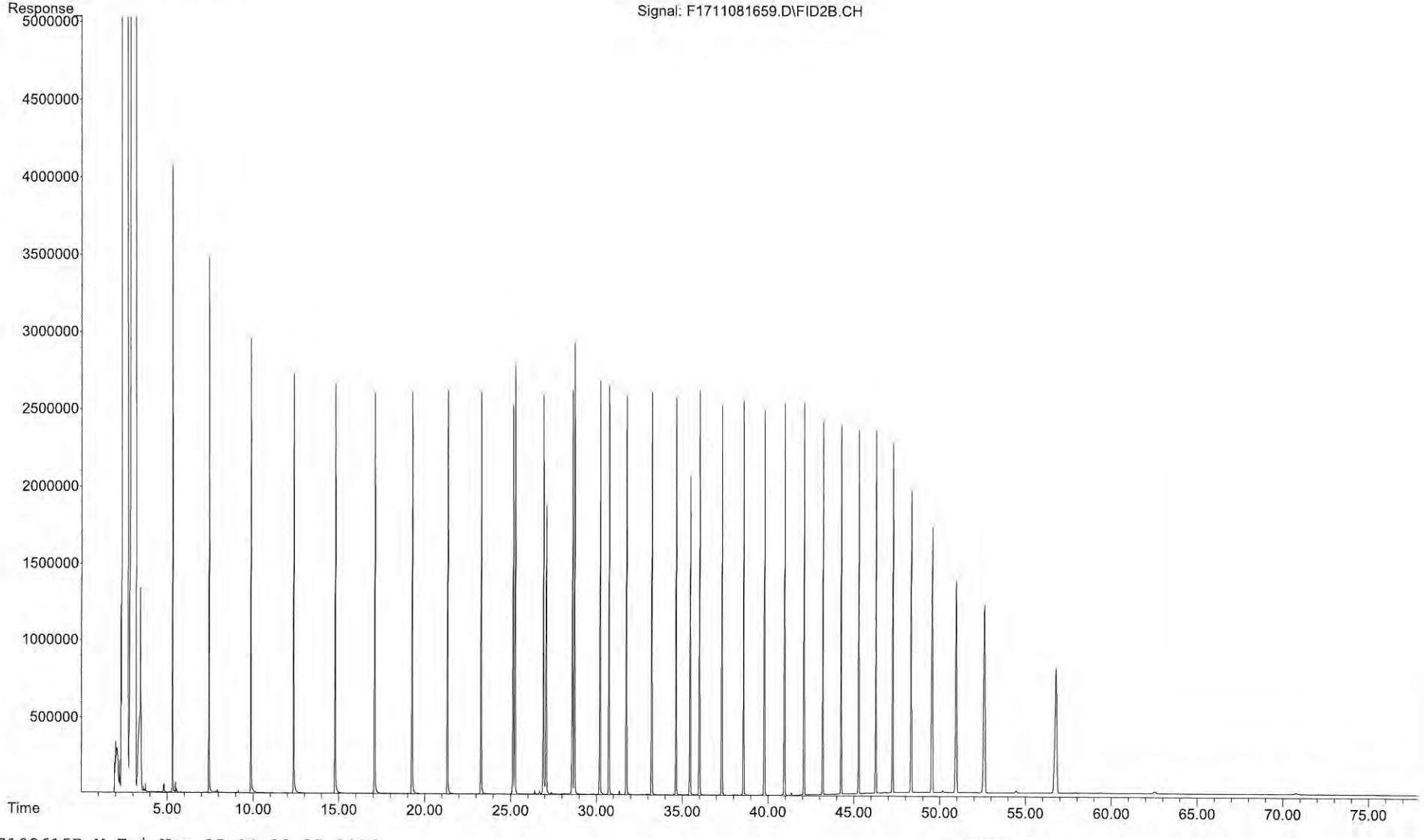
	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.744	62846626	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.731	69272950	51.503 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	103.01%
24) s	d50-Tetracosane	35.464	55356094	49.398 ug/mL M4
Spiked Amount	50.000 Range	50 - 130	Recovery =	98.80%
	Target Compounds			
2) t	n-Octane (C8)	5.302	49480483	48.073 ug/mL M4
3) t	n-Nonane (C9)	7.434	52730784	48.937 ug/mL M4
4) t	n-Decane (C10)	9.875	56070686	50.331 ug/mL M4
5) t	n-Undecane (C11)	12.369	57857602	51.509 ug/mL M4
6) t	n-Dodecane (C12)	14.789	59238847	52.015 ug/mL M4
7) t	n-Tridecane (C13)	17.093	59752990	52.200 ug/mL M4
9) t	n-Tetradecane (C14)	19.274	60579982	52.298 ug/mL M4
11) t	n-Pentadecane (C15)	21.339	60483057	51.367 ug/mL M4
12) t	n-Hexadecane (C16)	23.296	61008034	51.981 ug/mL M4
14) t	n-Heptadecane (C17)	25.157	59737454	50.480 ug/mL M4
15) t	Pristane	25.268	62998855	52.993 ug/mL M4
16) t	n-Octadecane (C18)	26.926	62197219	51.873 ug/mL M4
17) t	Phytane	27.087	56389804	53.782 ug/mL M4
18) t	n-Nonadecane (C19)	28.611	60948985	51.319 ug/mL M4
20) t	n-Eicosane (C20)	30.220	61460728	52.015 ug/mL M4
21) t	n-Heneicosane (C21)	31.760	62365333	52.367 ug/mL M4
22) t	n-Docosane (C22)	33.234	62293976	52.054 ug/mL M4
23) t	n-Tricosane (C23)	34.651	62437287	51.930 ug/mL M4
25) t	n-Tetracosane (C24)	36.012	62587998	51.953 ug/mL M4
26) t	n-Pentacosane (C25)	37.320	61980999	52.039 ug/mL M4
27) t	n-Hexacosane (C26)	38.580	62385227	51.369 ug/mL M4
28) t	n-Heptacosane (C27)	39.796	60505180	50.422 ug/mL M4
29) t	n-Octacosane (C28)	40.971	62755345	52.538 ug/mL M4
30) t	n-Nonacosane (C29)	42.105	62347469	51.927 ug/mL M4
31) t	n-Triacontane (C30)	43.204	61654811	51.293 ug/mL M4
32) t	n-Hentriacontane (C31)	44.265	61967168	51.458 ug/mL M4
33) t	n-Dotriacontane (C32)	45.296	61244278	50.384 ug/mL M4
34) t	n-Tritriacontane (C33)	46.294	60760303	52.852 ug/mL M4
35) t	n-tetratriacontane (C34)	47.276	63254112	52.548 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.349	61307157	50.609 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.572	65183772	52.361 ug/mL M4
38) t	n-Heptatriacontane (C37)	50.974	61307555	50.350 ug/mL M4
39) t	n-Octatriacontane (C38)	52.612	66300695	55.526 ug/mL M4
41) t	n-Tetracontane (C40)	56.796	62408393	50.425 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081659.D
Operator : FID17:NL
Acquired : 10 Nov 2016 10:18 am using AcqMethod FID17.M
Instrument: FID17
Sample : C1711081603R
Misc Info : FRAX76 50ug/mL
ALS Vial : 76



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081683.D
Signal(s) : FID2B.CH
Acq On : 11 Nov 2016 4:01 am
Operator : FID17:NL
Sample : C1711081604R
Misc : FRAX76 50ug/mL
ALS Vial : 88 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 16 18:24:15 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(Min)
1	I	5-alpha-androstane	50.000	50.000	0.0	101	0.00
2	t	n-Octane (C8)	50.000	47.379	5.2	93	0.00
3	t	n-Nonane (C9)	50.000	47.646	4.7	94	0.00
4	t	n-Decane (C10)	50.000	49.679	0.6	98	0.00
5	t	n-Undecane (C11)	50.000	51.427	-2.9	101	0.00
6	t	n-Dodecane (C12)	50.000	51.742	-3.5	101	0.00
7	t	n-Tridecane (C13)	50.000	52.073	-4.1	102	0.00
9	t	n-Tetradecane (C14)	50.000	52.297	-4.6	103	0.00
11	t	n-Pentadecane (C15)	50.000	51.817	-3.6	102	0.00
12	t	n-Hexadecane (C16)	50.000	52.560	-5.1	103	0.00
14	t	n-Heptadecane (C17)	50.000	49.967	0.1	98	0.00
15	t	Pristane	50.000	54.534	-9.1	107	0.00
16	t	n-Octadecane (C18)	50.000	52.150	-4.3	102	0.00
17	t	Phytane	50.000	54.483	-9.0	107	0.00
18	t	n-Nonadecane (C19)	50.000	51.053	-2.1	100	0.00
19	s	ortho-terphenyl	50.000	52.332	-4.7	105	0.00
20	t	n-Eicosane (C20)	50.000	52.558	-5.1	104	0.00
21	t	n-Heneicosane (C21)	50.000	52.921	-5.8	105	0.00
22	t	n-Docosane (C22)	50.000	52.678	-5.4	104	0.00
23	t	n-Tricosane (C23)	50.000	52.524	-5.0	104	0.00
24	s	d50-Tetracosane	50.000	50.020	-0.0	100	0.00
25	t	n-Tetracosane (C24)	50.000	52.549	-5.1	104	0.00
26	t	n-Pentacosane (C25)	50.000	52.770	-5.5	104	0.00
27	t	n-Hexacosane (C26)	50.000	51.993	-4.0	103	0.00
28	t	n-Heptacosane (C27)	50.000	51.145	-2.3	101	0.00
29	t	n-Octacosane (C28)	50.000	53.422	-6.8	106	0.00
30	t	n-Nonacosane (C29)	50.000	52.817	-5.6	105	0.00
31	t	n-Triacontane (C30)	50.000	52.239	-4.5	104	0.00
32	t	n-Hentriacontane (C31)	50.000	52.515	-5.0	105	0.00
33	t	n-Dotriacontane (C32)	50.000	51.488	-3.0	103	0.00
34	t	n-Tritriacontane (C33)	50.000	54.353	-8.7	108	0.00
35	t	n-tetratriacontane (C34)	50.000	53.879	-7.8	108	0.01
36	t	n-Pentatriacontane (C35)	50.000	51.919	-3.8	103	0.01
37	t	n-Hexatriacontane (C36)	50.000	53.501	-7.0	106	0.01
38	t	n-Heptatriacontane (C37)	50.000	51.339	-2.7	102	0.01
39	t	n-Octatriacontane (C38)	50.000	56.551	-13.1	112	0.02
41	t	n-Tetracontane (C40)	50.000	50.932	-1.9	101	0.02

Evaluate Continuing Calibration Report - Not Founds

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

Mass Discrimination (Response)	Ratio	Range Limits
n-Hexatriacontane (C36) to n-Eicosane (C20)	1.07	0.85 - 1.15

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081683.D
Signal(s) : FID2B.CH
Acq On : 11 Nov 2016 4:01 am
Operator : FID17:NL
Sample : C1711081604R
Misc : FRAX76 50ug/mL
ALS Vial : 88 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 16 18:24:15 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\HC17102615R.M
Quant Title : FID Forensics
QLast Update : Thu Nov 10 14:55:21 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

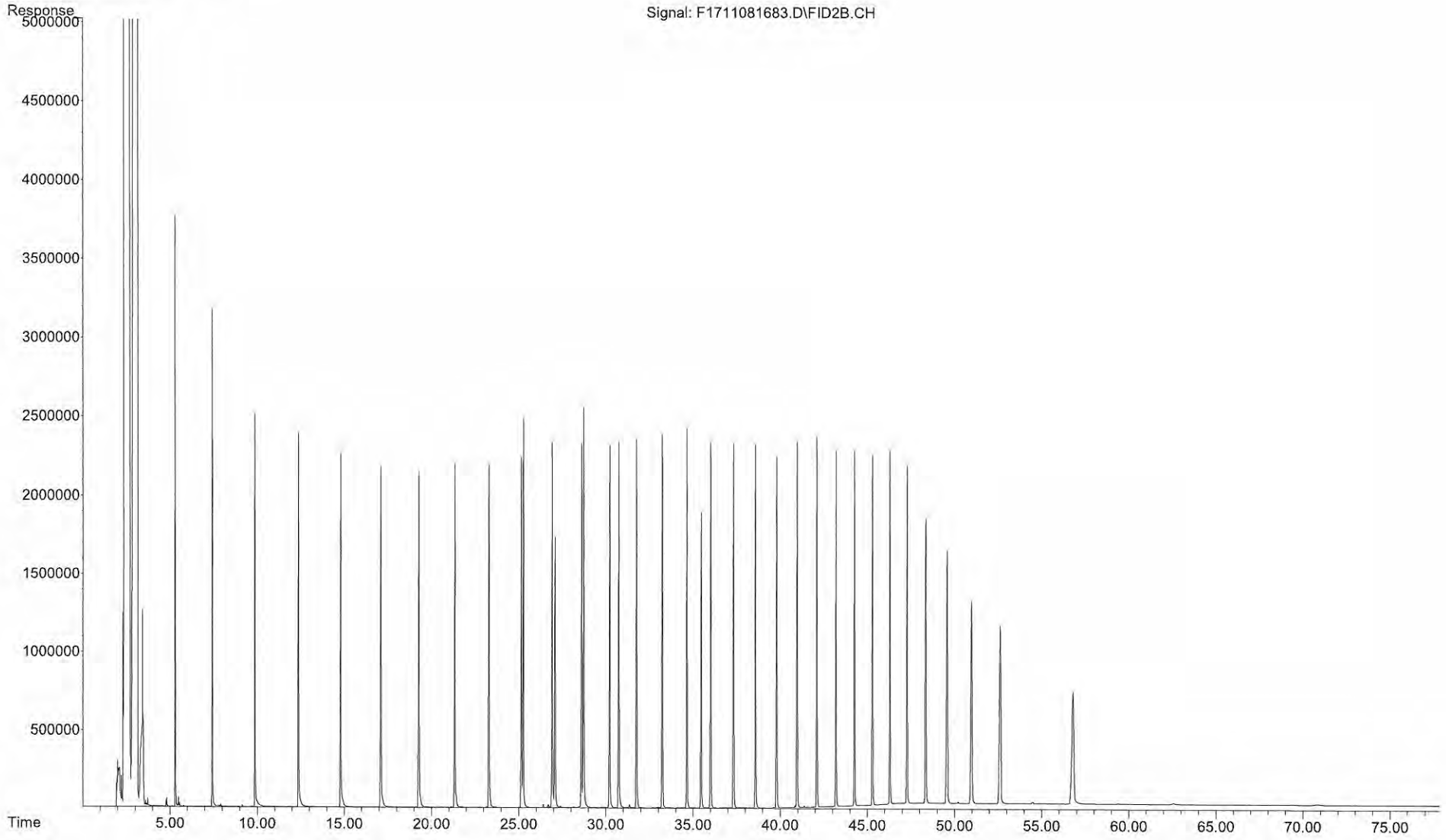
	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.749	59592661	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.735	66743779	52.332 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	104.66%
24) s	d50-Tetracosane	35.472	53150101	50.020 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	100.04%
	Target Compounds			
2) t	n-Octane (C8)	5.292	46241258	47.379 ug/mL M4
3) t	n-Nonane (C9)	7.428	48682254	47.646 ug/mL M4
4) t	n-Decane (C10)	9.872	52478934	49.679 ug/mL M4
5) t	n-Undecane (C11)	12.368	54774554	51.427 ug/mL M4
6) t	n-Dodecane (C12)	14.788	55876864	51.742 ug/mL M4
7) t	n-Tridecane (C13)	17.093	56520910	52.073 ug/mL M4
9) t	n-Tetradecane (C14)	19.275	57441940	52.297 ug/mL M4
11) t	n-Pentadecane (C15)	21.340	57853625	51.817 ug/mL M4
12) t	n-Hexadecane (C16)	23.298	58494024	52.560 ug/mL M4
14) t	n-Heptadecane (C17)	25.160	56068959	49.967 ug/mL M4
15) t	Pristane	25.269	61474150	54.534 ug/mL M4
16) t	n-Octadecane (C18)	26.930	59291064	52.150 ug/mL M4
17) t	Phytane	27.091	54167596	54.483 ug/mL M4
18) t	n-Nonadecane (C19)	28.616	57493288	51.053 ug/mL M4
20) t	n-Eicosane (C20)	30.225	58886133	52.558 ug/mL M4
21) t	n-Heneicosane (C21)	31.764	59761394	52.921 ug/mL M4
22) t	n-Docosane (C22)	33.240	59776520	52.678 ug/mL M4
23) t	n-Tricosane (C23)	34.658	59881935	52.524 ug/mL M4
25) t	n-Tetracosane (C24)	36.018	60028592	52.549 ug/mL M4
26) t	n-Pentacosane (C25)	37.325	59597226	52.770 ug/mL M4
27) t	n-Hexacosane (C26)	38.587	59873167	51.993 ug/mL M4
28) t	n-Heptacosane (C27)	39.802	58194635	51.145 ug/mL M4
29) t	n-Octacosane (C28)	40.978	60507304	53.422 ug/mL M4
30) t	n-Nonacosane (C29)	42.110	60133202	52.817 ug/mL M4
31) t	n-Triacontane (C30)	43.211	59540839	52.239 ug/mL M4
32) t	n-Hentriacontane (C31)	44.272	59965146	52.515 ug/mL M4
33) t	n-Dotriacontane (C32)	45.303	59345538	51.488 ug/mL M4
34) t	n-Tritriacontane (C33)	46.302	59251290	54.353 ug/mL M4
35) t	n-tetratriacontane (C34)	47.286	61498073	53.879 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.359	59637121	51.919 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.584	63154624	53.501 ug/mL M4
38) t	n-Heptatriacontane (C37)	50.987	59275439	51.339 ug/mL M4
39) t	n-Octatriacontane (C38)	52.630	64029209	56.551 ug/mL M4
41) t	n-Tetracontane (C40)	56.818	59771544	50.932 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\NOV08.SEC\
Data File : F1711081683.D
Operator : FID17:NL
Acquired : 11 Nov 2016 4:01 am using AcqMethod FID17.M
Instrument: FID17
Sample : C1711081604R
Misc Info : FRAX76 50ug/mL
ALS Vial : 88



Sample Preparation

Alpha Woods Hole Lab
Batch Prep Report

11/01/2016 1610011 - OP Steranes/Triterpanes

Lab ID	Prep Method	Analyst	Prep Start Date	Prep Completed	TCLP Date	Initial Amount (g or ml)	Split	PIV (ml)	Final Volume (ml)	Solvent Ex	Conc. Analyst	Conc. Date	Conc. Method	Transfer Volume (ml)	Vialed By	Vialed Date
1610011-01 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/25/2016		30.48	4	0.5	2	False	TJ	11/5/2016	KD Flask		BA	11/25/2016
1610011-02 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/25/2016		5.23	1			False	TJ	11/5/2016	KD Flask		BA	11/25/2016
1610011-03 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/25/2016		15.17	1			False	TJ	11/5/2016	KD Flask		BA	11/25/2016
1610011-04D (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/25/2016		5.35	16	0.5	8	False	TJ	11/5/2016	KD Flask		BA	11/25/2016
1610011-04 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/25/2016		5.22	16	0.5	8	False	TJ	11/5/2016	KD Flask		BA	11/25/2016
1610011-05 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	12/1/2016		15.46	4	0.5	2	False	TJ	11/5/2016	KD Flask		BA	12/1/2016
1610011-06 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/25/2016		5.55	1			False	TJ	11/5/2016	KD Flask		BA	11/25/2016
1610011-07 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/25/2016		15.22	1			False	TJ	11/5/2016	KD Flask		BA	11/25/2016
1610011-08 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/25/2016		5.12	1			False	TJ	11/5/2016	KD Flask		BA	11/25/2016
1610011-09 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/25/2016		5.3	4	0.5	2	False	TJ	11/5/2016	KD Flask		BA	11/25/2016
1610011-10 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/25/2016		5.24	4	0.5	2	False	TJ	11/5/2016	KD Flask		BA	11/25/2016
1610011-11 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/25/2016		15.88	4	0.5	2	False	TJ	11/5/2016	KD Flask		BA	11/25/2016
1610011-12 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/25/2016		15.83	4	0.5	2	False	TJ	11/5/2016	KD Flask		BA	11/25/2016
1610011-13 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/25/2016		15.84	1			False	TJ	11/5/2016	KD Flask		BA	11/25/2016
1610011-14 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/25/2016		5.69	6.66666	0.5	3.33	False	TJ	11/5/2016	KD Flask		BA	11/25/2016
1610011-15 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/25/2016		5.49	3.2	0.5	1.6	False	TJ	11/5/2016	KD Flask		BA	11/25/2016
SS110116B03 (Soil - 1610011)	Shaker	BA	11/1/2016 10:00:00 AM	11/25/2016		11	4	0.5	2	False	TJ	11/5/2016	KD Flask		BA	11/25/2016
SS110116LCS02 (Soil - 1610011)		BA	11/1/2016 10:00:00 AM	11/9/2016		11	1			False	TJ	11/5/2016	KD Flask		BA	11/9/2016
SS110116LCSD02 (Soil - 1610011)		BA	11/1/2016 10:00:00 AM	11/9/2016		11	1			False	TJ	11/5/2016	KD Flask		BA	11/9/2016
SS112516B01 (Soil - 1610011)	No Prep	BA	11/25/2016 4:00:00 AM	11/25/2016		11	2	0.5	1						BA	11/25/2016
SS112516PRM01 (Soil - 1610011)	No Prep	BA	11/25/2016 4:00:00 AM	11/25/2016		0.04945	2	0.5	1						BA	11/25/2016

Alpha Woods Hole Lab
Batch Prep Report

11/01/2016 1610011 - OP Steranes/Triterpanes

Lab ID	Notes
1610011-01 (Soil - 1610011)	1st Prep
1610011-02 (Soil - 1610011)	1st Prep
1610011-03 (Soil - 1610011)	1st Prep
1610011-04D (Soil - 1610011)	1st Prep
1610011-04 (Soil - 1610011)	1st Prep
1610011-05 (Soil - 1610011)	1st Prep
1610011-06 (Soil - 1610011)	1st Prep
1610011-07 (Soil - 1610011)	1st Prep
1610011-08 (Soil - 1610011)	1st Prep
1610011-09 (Soil - 1610011)	1st Prep
1610011-10 (Soil - 1610011)	1st Prep
1610011-11 (Soil - 1610011)	1st Prep
1610011-12 (Soil - 1610011)	1st Prep
1610011-13 (Soil - 1610011)	1st Prep
1610011-14 (Soil - 1610011)	1st Prep
1610011-15 (Soil - 1610011)	1st Prep
SS110116B03 (Soil - 1610011)	1st Prep
SS110116LCS02 (Soil - 1610011)	1st Prep
SS110116LCSD02 (Soil - 1610011)	1st Prep
SS112516B01 (Soil - 1610011)	1st Prep
SS112516PRM01 (Soil - 1610011)	1st Prep

Alpha Woods Hole Lab
Batch Prep Spike Report

11/01/2016 1610011 - OP Steranes/Tri Analyst: BA Witness: BA

Lab ID	QC Type	OP Steranes/Tri - surr	Vol OP Steranes/Tri - surr	Units OP Steranes/Tri - surr	OP Steranes/Tri - spk 1	Vol OP Steranes/Tri - spk 1	Units OP Steranes/Tri - spk 1	OP Steranes/Tri - spk 2	Vol OP Steranes/Tri - spk 2	Units OP Steranes/Tri - spk 2
1610011-01	SAM	MSAX17	100	µl	FRAX53	50	µl			
1610011-02	SAM	MSAX17			FRAX53		µl			
1610011-03	SAM	MSAX17			FRAX53		µl			
1610011-04	D	MSAX17	500	µl	FRAX53	50	µl			
1610011-04	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610011-05	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610011-06	SAM	MSAX17			FRAX53		µl			
1610011-07	SAM	MSAX17			FRAX53		µl			
1610011-08	SAM	MSAX17			FRAX53		µl			
1610011-09	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610011-10	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610011-11	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610011-12	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610011-13	SAM	MSAX17			FRAX53		µl			
1610011-14	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610011-15	SAM	MSAX17	500	µl	FRAX53	50	µl			
SS110116B03	B	MSAX17	100	µl	FRAX53	50	µl			
SS110116LCS02	LCS	MSAX17			FRAX53		µl			
SS110116LCSD02	LCSD	MSAX17			FRAX53		µl			
SS112516B01	B	MSAX17	100	µl	FRAX53	50	µl			
SS112516PRM01	PRM	MSAX17			FRAX53	50	µl			

STD ID	TITLE	CONTENTS	SOLVENT	LOT
MSAX17	Biomarker Surrogate	5b(H)Cholane = 10 ug/mL	DCM	DO105
FRAX53	PAH/SHC RIS Spiking Solution	5 Alpha Androstane = 500 ug/mL Acenaphthene D10, Chrysene D12 = 5 ug/mL	DCM	dp875

Alpha Woods Hole Lab
Batch Clean Up Report
11/01/2016 1610011 - OP Steranes/Triterpanes

Lab ID	QC Type	Clean Up Method	Analyst	Clean Up Date	Flow Rate	Coll. Start	Coll. End	Concentration Analyst	Conc. Date	Solvent Ex.	Pre Vol (ml)	Frac Amt (ml)	Frac Split	Frac Fact	Tran Vol (ml)	Active
1610011-01	SAM	3630F1	BA	11/25/2016							4	2	2	1		True
1610011-02	SAM	3630F1	BA	11/25/2016												True
1610011-03	SAM	3630F1	BA	11/25/2016												True
1610011-04	D	3630F1	BA	11/25/2016							10	1.25	8	1		True
1610011-04	SAM	3630F1	BA	11/25/2016							10	1.25	8	1		True
1610011-05	SAM	3630F1	BA	12/1/2016							4	2	2	1		True
1610011-06	SAM	3630F1	BA	11/25/2016												True
1610011-07	SAM	3630F1	BA	11/25/2016												True
1610011-08	SAM	3630F1	BA	11/25/2016												True
1610011-09	SAM	3630F1	BA	11/25/2016							4	2	2	1		True
1610011-10	SAM	3630F1	BA	11/25/2016							4	2	2	1		True
1610011-11	SAM	3630F1	BA	11/25/2016							4	2	2	1		True
1610011-12	SAM	3630F1	BA	11/25/2016							4	2	2	1		True
1610011-13	SAM	3630F1	BA	11/25/2016												True
1610011-14	SAM	3630F1	BA	11/25/2016							10	3	3.33333	1		True
1610011-15	SAM	3630F1	BA	11/25/2016							4	2.5	1.6	1		True
SS110116B03	B	3630F1	BA	11/25/2016							4	2	2	1		True
SS110116LCS02	LCS	3630F1														True
SS110116LCSD02	LCSD	3630F1														True
SS112516B01	B	3630F1	BA	11/25/2016							1	1	1	1		True
SS112516PRM01	PRM	3630F1	BA	11/25/2016							1	1	1	1		True

Alpha Woods Hole Lab
Batch Clean Up Report
11/01/2016 1610011 - OP Steranes/Triterpanes

Lab ID	Notes
1610011-01	
1610011-02	
1610011-03	
1610011-04	
1610011-04	
1610011-05	
1610011-06	
1610011-07	
1610011-08	
1610011-09	
1610011-10	
1610011-11	
1610011-12	
1610011-13	
1610011-14	
1610011-15	
SS110116B03	
SS110116LCS02	
SS110116LCSD02	
SS112516B01	
SS112516PRM01	

Alpha Woods Hole Lab
Batch Clean Up Report

11/01/2016 1610010 - OP Steranes/Triterpanes

Lab ID	QC Type	Clean Up Method	Analyst	Clean Up Date	Flow Rate	Coll. Start	Coll. End	Concentration Analyst	Conc. Date	Solvent Ex.	Pre Vol (ml)	Frac Amt (ml)	Frac Split	Frac Fact	Tran Vol (ml)	Active
1610010-01	SAM	split	BA								0.9	0.45	2			True
1610010-02	SAM	split	BA								0.9	0.45	2			True
1610010-03	SAM	split	BA								0.9	0.45	2			True
1610010-04	SAM	split	BA								0.9	0.45	2			True
1610010-05	SAM	split	BA								0.9	0.45	2			True
1610010-06	SAM	split	BA								0.9	0.45	2			True
1610010-07	SAM	split	BA								0.9	0.45	2			True
1610010-08	SAM	split	BA								0.9	0.45	2			True
1610010-09	SAM	split	BA								0.9	0.45	2			True
1610010-10	SAM	split	BA								0.9	0.45	2			True
1610010-11	SAM	split	BA								0.9	0.45	2			True
1610010-12	SAM	split	BA								0.9	0.45	2			True
1610010-13	SAM	split	BA								0.9	0.45	2			True
1610010-14	D	split	BA								0.9	0.45	2			True
1610010-14	SAM	split	BA								0.9	0.45	2			True
1610010-15	SAM	split	BA								0.9	0.45	2			True
SS110116B01	B	split	BA								0.9	0.45	2			True
SS110116B01	B	split	BA								0.9	0.45	2			True
SS110116LCS01	LCS	split														True
SS110116LCS01	LCS	split														True
SS110116LCSD01	LCSD	split														True
SS110116LCSD01	LCSD	split														True
SS112316B01	B	split	BA								0.9	0.45	2			True
SS112316B01	B	split	BA								0.9	0.45	2			True
SS112316PRM01	PRM	split	BA								0.9	0.45	2			True
SS112316PRM01	PRM	split	BA								0.9	0.45	2			True

Alpha Woods Hole Lab
Batch Clean Up Report
11/01/2016 1610010 - OP Steranes/Triterpanes

Lab ID	Notes
1610010-01	
1610010-02	
1610010-03	
1610010-04	
1610010-05	
1610010-06	
1610010-07	
1610010-08	
1610010-09	
1610010-10	
1610010-11	
1610010-12	
1610010-13	
1610010-14	
1610010-14	
1610010-15	
SS110116B01	
SS110116B01	
SS110116LCS01	
SS110116LCS01	
SS110116LCSD01	
SS110116LCSD01	
SS112316B01	
SS112316B01	
SS112316PRM01	
SS112316PRM01	

ETR 1610011

Analyst TJ

Date 11/08/2016

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Alpha Analytical

- ☐ Pre-Alumina
- ☐ Post-Alumina
- ☑ Pre-Silica
- ☐ Oily Material Prep.
- ☐ Other

ETR	Lab ID	QC	Extract Volume (µL)	Aliquot Removed (µL)	Aliquot Weight (mg)	Total Extract Weight (mg)	Volume Removed for Column (µl)	Extract Weight to Column (mg)	Split Factor	QC (%R)
	FRAX35	**Gravimetric Standard**	10000	50	0.268	53.60	N/A	N/A	N/A	104%
1610011	1		4000	50	0.008	0.64	2000	0.32	2.00	
	4	D	10000	50	0.765	153.00	1250	19.13	8.00	12%RPD
	4		10000	50	0.859	171.80	1250	21.48	8.00	
	5		4000	50	0.523	41.84	2000	20.92	2.00	
	9		4000	50	0.305	24.40	2000	12.20	2.00	
	10		4000	50	0.137	10.96	2000	5.48	2.00	
	11		4000	50	0.072	5.76	2000	2.88	2.00	
	12		4000	50	0.009	0.72	2000	0.36	2.00	
	14		10000	50	0.335	67.00	3000	20.12	3.33	
	15		4000	50	0.404	32.32	2500	20.20	1.60	

Note:

Total Extract Weight (mg) = (Extract Volume ÷ Aliquot Removed) (Aliquot Weight)

Gravimetric Standard = 5 mg/mL

LCS Acceptance Criteria: 95% - 105%

Verified by: _____

Date: _____

Batch ID: 161001L F1 Client: Newfields Project: National Grid Water St.

Anomalies are noted in the Prep Process Notes section below.

Test(s) Spiked for:
Choose from the following:
F1B, POIB, POIH, POIHX, POITAS, TPH+A

Identify Matrix:
Filter • Filter (L) • NAPL • Net • Oil Product • PUF • Sediment • Sheen Soil • Solid • SPMD • Tissue Pom Pom • 1L Water • 4L Water • Floc Water

Extraction HT:

	Date:	Initials:
COC/ETR Check:		
1st Extraction:		
2nd Extraction:		
3rd Extraction:		BA 11/28/16

Cleanup Methods:		Date/ Initials:
No Cleanup Required		
Alumina Column (3610)		
Silica Column (3630)		
Fractionation Column (3630F1)	X	11/25/16 BA
GPC (3640)		
Copper (3660B)		
Water pH<2 verified		
	Date/Initials:	ID & Amount:
RIS Spike Analyst:	11/25/16 BA	FRAX 88 SOL
RIS Spike Witness:	11/25/16 TJ	

Prep Process Notes

Original extraction information can be referenced in PAH/STIC paperwork. 2.5mL FRAX93 (19.78mg/mL) used for analysis of pencil pitch. BA 11/28/16

REAGENT	LOT #
DCM	DQ341
SODIUM SULFATE	0000 144062
SILICA GEL	BCBR9428V
ALUMINA	N/A

REAGENT	LOT #
COPPER	N/A
GLASS WOOL	144001
Pentane	56000
Hexane	0000 139887

BATCH COMPLETE Analyst:	BA	Date:	11/28/16

BATCH REVIEWED Analyst:	EP	Date:	11/29/16

Batch ID: 1610081 F1 **Client:** Newfields **Project:** National Grid

Prep Process Notes

Sample ID	Low Volume	High H2O	Plant Material	Other	Difficult to homogenize	Potential High Level		Spiked High
						Visual	Odor	

11/28/16

Present

Steranes and Triterpanes by GC/MS-SIM

Form I
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-04 0-1'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-01F1**
Associated Blank: **SS110116B03F1**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/27/16	96.1	30.48	2	1	AC

Parameter	Result	
C23 Tricyclic Terpane	**0.159**	J
C24 Tricyclic Terpane	**0.123**	J
C25 Tricyclic Terpane	**0.159**	J
C24 Tetracyclic Terpane	**0.111**	J
C26 Tricyclic Terpane-22S	0.683	U
C26 Tricyclic Terpane-22R	0.683	U
C28 Tricyclic Terpane-22S	0.683	U
C28 Tricyclic Terpane-22R	0.683	U
C29 Tricyclic Terpane-22S	0.683	U
C29 Tricyclic Terpane-22R	0.683	U
18a-22,29,30-Trisnorneohopane-TS	**0.340**	J
C30 Tricyclic Terpane-22S	0.683	U
C30 Tricyclic Terpane-22R	0.683	U
17a(H)-22,29,30-Trisnorhopane-TM	**0.304**	J
17a/b,21b/a 28,30-Bisnorhopane	0.683	U
17a(H),21b(H)-25-Norhopane	0.683	U
30-Norhopane	**1.10**	
18a(H)-30-Norneohopane-C29Ts	**0.307**	J
17a(H)-Diahopane	0.683	U
30-Normoretane	**0.271**	J
18a(H)&18b(H)-Oleananes	0.683	U
Hopane	**1.52**	
Moretane	**0.244**	J
30-Homohopane-22S	**0.556**	J
30-Homohopane-22R	**0.511**	J
30,31-Bishomohopane-22S	**0.608**	GJ

Parameter	Result	
30,31-Bishomohopane-22R	0.683	U
30,31-Trishomohopane-22S	0.683	U
30,31-Trishomohopane-22R	0.683	U
Tetrakishomohopane-22S	0.683	U
Tetrakishomohopane-22R	0.683	U
Pentakishomohopane-22S	0.683	U
Pentakishomohopane-22R	0.683	U
13b(H),17a(H)-20S-Diacholestane	**0.262**	J
13b(H),17a(H)-20R-Diacholestane	**0.125**	J
13b,17a-20S-Methyldiacholestane	**0.131**	J
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**0.381**	J
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**0.330**	J
Unknown Sterane (S18)	0.683	U
13a,17b-20S-Ethyldiacholestane	0.683	U
14a,17a-20S-Methylcholestane	**0.159**	J
14a,17a-20R-Methylcholestane	0.683	U
14a(H),17a(H)-20S-Ethylcholestane	**0.176**	J
14a(H),17a(H)-20R-Ethylcholestane	**0.165**	J
14b(H),17b(H)-20R-Cholestane	**0.211**	J
14b(H),17b(H)-20S-Cholestane	**0.199**	J
14b,17b-20R-Methylcholestane	**0.188**	J
14b,17b-20S-Methylcholestane	**0.267**	J
14b(H),17b(H)-20R-Ethylcholestane	**0.245**	J
14b(H),17b(H)-20S-Ethylcholestane	**0.267**	J
T22a-Gammacerane/C32-diahopane	**0.181**	J

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	106	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
J - Estimated value, below quantitation limit.
N/A - Not Applicable
G - Matrix Interference

12/01/16 19:17

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251629.D
Acq On : 27 Nov 2016 4:25 pm
Operator : PAH14:AC
Sample : 1610011-01-RF1
Misc : 1x
ALS Vial : 28 Sample Multiplier: 1

MJS
12-1-2016

Quant Time: Nov 29 15:19:43 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.201	240	39598	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.797	217	6373	531.250	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 53.13%			
Target Compounds						Qvalue
2) Hopane (T19)	52.245	191	507M4	22.338	ng/mL	
4) C23 Tricyclic Terpane (T4	40.828	191	53M3	2.335	ng/ml	
5) C24 Tricyclic Terpane (T5	41.543	191	41M2	1.806	ng/ml	
6) C25 Tricyclic Terpane (T6	43.028	191	53M2	2.335	ng/ml	
7) C24 Tetracyclic Terpane (	44.362	191	37M2	1.630	ng/ml	
14) 18a-22,29,30-Trisnorneoho	48.469	191	113	4.979	ng/ml	100
17) 17a(H)-22,29,30-Trisnorho	49.027	191	101	4.450	ng/ml	100
20) 30-Norhopane (T15)	50.881	191	364	16.037	ng/ml	100
21) 18a(H)-30-Norneohopane-C2	50.979	191	102M3	4.494	ng/ml	
23) 30-Normoretane (T17)	51.650	191	90M4	3.965	ng/ml	
25) Moretane (T20)	52.916	191	81M2	3.569	ng/ml	
26) 30-Homohopane-22S (T21)	54.039	191	185	8.151	ng/ml	100
27) 30-Homohopane-22R (T22)	54.272	191	170M4	7.490	ng/ml	
28) Gammacerane/C32-diahopane	54.823	191	60M2	2.644	ng/mL	
29) 30,31-Bishomohopane-22S (	55.569	191G	202M4	8.900	ng/ml	
38) 13b(H),17a(H)-20S-Diachol	45.304	217	46M2	3.835	ng/ml	
39) 13b(H),17a(H)-20R-Diachol	45.726	217	22M2	1.834	ng/ml	
40) 13b,17a-20S-Methyldiachol	46.427	217	23M2	1.917	ng/ml	
41) 14a,17a-20S-Chol/13b,17a-	47.294	217	67M2	5.585	ng/ml	
42) 14a,17a-20R-Chol/13b,17a-	47.814	217	58M2	4.835	ng/ml	
45) 14a,17a-20S-Methylcholest	48.492	217	28M2	2.334	ng/ml	
47) 14a(H),17a(H)-20S-Ethylch	49.540	217	31M2	2.584	ng/ml	
48) 14a(H),17a(H)-20R-Ethylch	50.474	217	29M2	2.417	ng/ml	
49) 14b(H),17b(H)-20R-Cholest	47.377	218	37M2	3.084	ng/ml	
50) 14b(H),17b(H)-20S-Cholest	47.452	218	35M2	2.918	ng/ml	
51) 14b,17b-20R-Methylcholest	48.680	218	33M2	2.751	ng/ml	
52) 14b,17b-20S-Methylcholest	48.763	218	47M2	3.918	ng/ml	
53) 14b(H),17b(H)-20R-Ethylch	49.811	218	43M2	3.584	ng/ml	
54) 14b(H),17b(H)-20S-Ethylch	49.856	218	47M2	3.918	ng/ml	

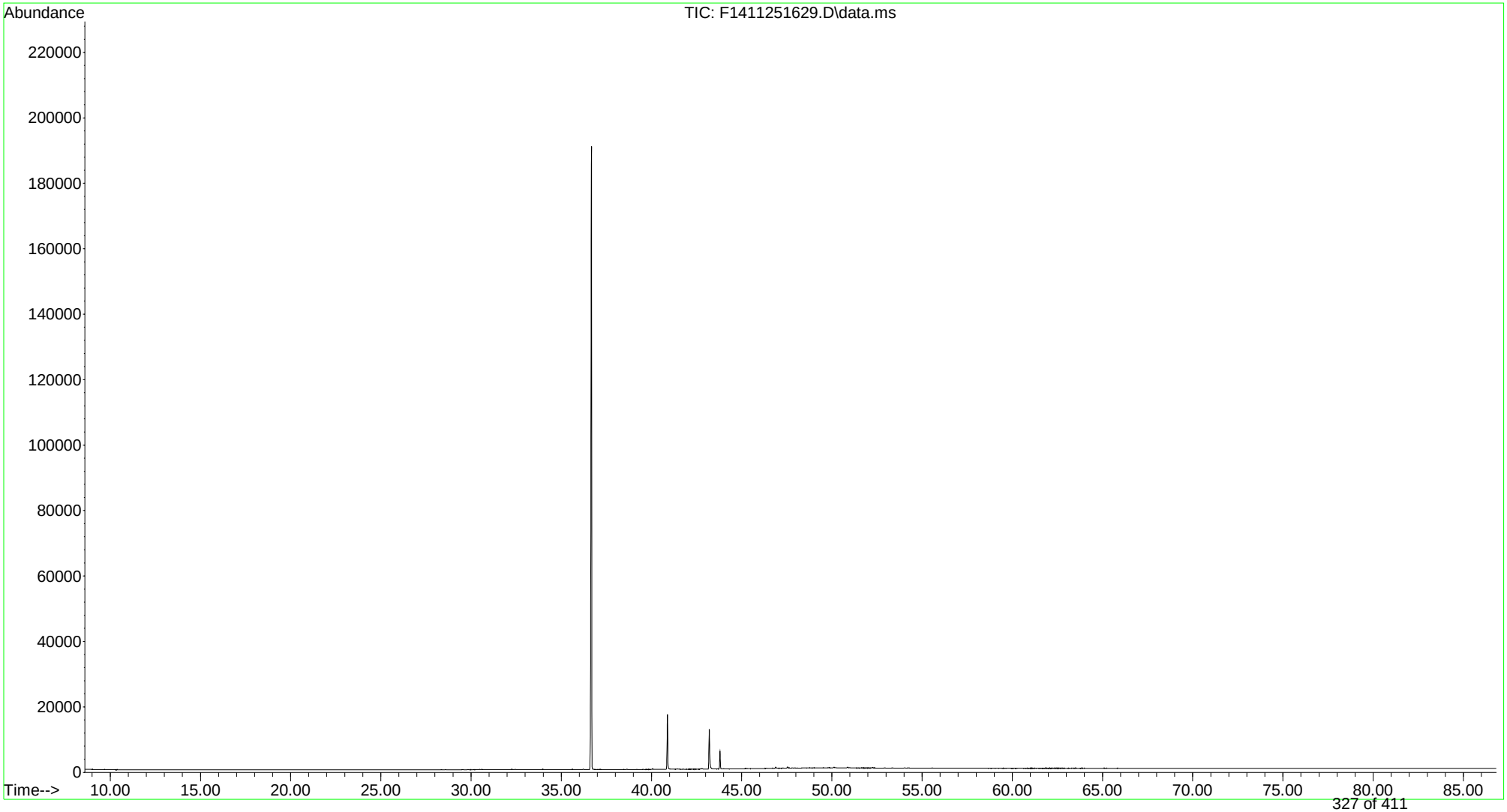
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251629.D
Acq On : 27 Nov 2016 4:25 pm
Operator : PAH14:AC
Sample : 1610011-01-RF1
Misc : 1x
ALS Vial : 28 Sample Multiplier: 1

Quant Time: Nov 29 15:19:43 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS



Form I
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04F1**
Associated Blank: **SS110116B03F1**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/27/16	91.9	5.22	8	1	AC

Parameter	Result	
C23 Tricyclic Terpane	**116**	
C24 Tricyclic Terpane	**58.5**	
C25 Tricyclic Terpane	**41.0**	
C24 Tetracyclic Terpane	**38.2**	
C26 Tricyclic Terpane-22S	**13.9**	J
C26 Tricyclic Terpane-22R	**13.8**	J
C28 Tricyclic Terpane-22S	**10.4**	J
C28 Tricyclic Terpane-22R	**12.4**	J
C29 Tricyclic Terpane-22S	**12.7**	J
C29 Tricyclic Terpane-22R	**11.9**	J
18a-22,29,30-Trisnorneohopane-TS	**58.4**	
C30 Tricyclic Terpane-22S	**11.4**	J
C30 Tricyclic Terpane-22R	**8.20**	J
17a(H)-22,29,30-Trisnorhopane-TM	**58.4**	
17a/b,21b/a 28,30-Bisnorhopane	**13.1**	J
17a(H),21b(H)-25-Norhopane	**4.93**	J
30-Norhopane	**117**	
18a(H)-30-Norneohopane-C29Ts	**49.4**	
17a(H)-Diahopane	**17.5**	
30-Normoretane	**24.8**	
18a(H)&18b(H)-Oleananes	**20.0**	
Hopane	**180**	
Moretane	**32.0**	
30-Homohopane-22S	**47.0**	
30-Homohopane-22R	**37.1**	
30,31-Bishomohopane-22S	**52.7**	G

Parameter	Result	
30,31-Bishomohopane-22R	**19.6**	
30,31-Trishomohopane-22S	**17.7**	
30,31-Trishomohopane-22R	**9.99**	J
Tetrakishomohopane-22S	**8.26**	J
Tetrakishomohopane-22R	**7.23**	J
Pentakishomohopane-22S	16.7	U
Pentakishomohopane-22R	16.7	U
13b(H),17a(H)-20S-Diacholestane	**54.6**	
13b(H),17a(H)-20R-Diacholestane	**27.4**	
13b,17a-20S-Methyldiacholestane	**28.5**	
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**61.6**	
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**58.5**	
Unknown Sterane (S18)	**11.5**	J
13a,17b-20S-Ethyldiacholestane	16.7	U
14a,17a-20S-Methylcholestane	**25.6**	
14a,17a-20R-Methylcholestane	**22.2**	
14a(H),17a(H)-20S-Ethylcholestane	**20.5**	
14a(H),17a(H)-20R-Ethylcholestane	**21.1**	
14b(H),17b(H)-20R-Cholestane	**32.6**	
14b(H),17b(H)-20S-Cholestane	**32.3**	
14b,17b-20R-Methylcholestane	**25.9**	
14b,17b-20S-Methylcholestane	**39.1**	
14b(H),17b(H)-20R-Ethylcholestane	**43.4**	
14b(H),17b(H)-20S-Ethylcholestane	**29.2**	
T22a-Gammacerane/C32-diahopane	**11.7**	J

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	101	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
J - Estimated value, below quantitation limit.
N/A - Not Applicable
G - Matrix Interference

12/01/16 19:17

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251630.D
Acq On : 27 Nov 2016 5:59 pm
Operator : PAH14:AC
Sample : 1610011-04-RF1
Misc : 1x
ALS Vial : 29 Sample Multiplier: 1

MOS
12-1-2016

Quant Time: Nov 29 15:20:17 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.201	240	45436	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.797	217	8709	632.698	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 63.27%			
Target Compounds						Qvalue
2) Hopane (T19)	52.245	191	2819	108.243	ng/mL#	89
4) C23 Tricyclic Terpane (T4	40.827	191	1815	69.692	ng/ml	100
5) C24 Tricyclic Terpane (T5	41.543	191	914	35.096	ng/ml	100
6) C25 Tricyclic Terpane (T6	43.028	191	641M1	24.613	ng/ml	
7) C24 Tetracyclic Terpane (	44.354	191	596	22.885	ng/ml	100
8) C26 Tricyclic Terpane-22S	44.083	191	217	8.332	ng/ml	100
9) C26 Tricyclic Terpane-22R	44.181	191	216M4	8.294	ng/ml	
10) C28 Tricyclic Terpane-22S	46.465	191	162M4	6.220	ng/ml	
11) C28 Tricyclic Terpane-22R	46.623	191	194M4	7.449	ng/ml	
12) C29 Tricyclic Terpane-22S	47.143	191	199	7.641	ng/ml	100
13) C29 Tricyclic Terpane-22R	47.339	191	186M4	7.142	ng/ml	
14) 18a-22,29,30-Trisnorneoho	48.469	191	913	35.057	ng/ml	100
15) C30 Tricyclic Terpane-22S	48.560	191	178M4	6.835	ng/mL	
16) C30 Tricyclic Terpane-22R	48.793	191	128	4.915	ng/mL	100
17) 17a(H)-22,29,30-Trisnorho	49.019	191	912M4	35.019	ng/ml	
18) 17a/b,21b/a 28,30-Bisnorh	50.195	191	204M4	7.833	ng/ml	
19) 17a(H),21b(H)-25-Norhopan	49.999	191	77M3	2.957	ng/ml	
20) 30-Norhopane (T15)	50.881	191	1829M4	70.230	ng/ml	
21) 18a(H)-30-Norneohopane-C2	50.979	191	772M4	29.643	ng/ml	
22) 17a(H)-Diahopane (X)	51.100	191	273M4	10.483	ng/ml	
23) 30-Normoretane (T17)	51.657	191	387	14.860	ng/ml	100
24) 18a(H)&18b(H)-Oleananes (	52.064	191	313	12.019	ng/ml	100
25) Moretane (T20)	52.931	191	500M4	19.199	ng/ml	
26) 30-Homohopane-22S (T21)	54.031	191	734	28.184	ng/ml	100
27) 30-Homohopane-22R (T22)	54.265	191	579	22.232	ng/ml	100
28) Gammacerane/C32-diahopane	54.815	191	183	7.027	ng/mL	100
29) 30,31-Bishomohopane-22S (	55.576	191G	823	31.601	ng/ml	100
30) 30,31-Bishomohopane-22R (	55.983	191	307M4	11.788	ng/ml	
31) 30,31-Trishomohopane-22S	57.716	191	277	10.636	ng/ml	100
32) 30,31-Trishomohopane-22R	58.342	191	156M2	5.990	ng/ml	
33) Tetrakishomohopane-22S (T	60.354	191	129M4	4.953	ng/ml	
34) Tetrakishomohopane-22R (T	61.266	191	113M4	4.339	ng/ml	
38) 13b(H),17a(H)-20S-Diachol	45.297	217	451	32.765	ng/ml	100
39) 13b(H),17a(H)-20R-Diachol	45.726	217	226	16.419	ng/ml	100
40) 13b,17a-20S-Methyldiachol	46.419	217	235M4	17.072	ng/ml	
41) 14a,17a-20S-Chol/13b,17a-	47.286	217	509	36.978	ng/ml	100
42) 14a,17a-20R-Chol/13b,17a-	47.799	217	483	35.089	ng/ml	100
43) Unknown Sterane (S18)	48.085	217	95M2	6.902	ng/ml	
45) 14a,17a-20S-Methylcholest	48.492	217	211M4	15.329	ng/ml	
46) 14a,17a-20R-Methylcholest	49.215	217	183M4	13.295	ng/ml	
47) 14a(H),17a(H)-20S-Ethylch	49.555	217	169M4	12.278	ng/ml	
48) 14a(H),17a(H)-20R-Ethylch	50.482	217	174M4	12.641	ng/ml	
49) 14b(H),17b(H)-20R-Cholest	47.377	218	269M4	19.543	ng/ml	
50) 14b(H),17b(H)-20S-Cholest	47.459	218	267M4	19.397	ng/ml	
51) 14b,17b-20R-Methylcholest	48.673	218	214	15.547	ng/ml	100
52) 14b,17b-20S-Methylcholest	48.748	218	323M4	23.466	ng/ml	
53) 14b(H),17b(H)-20R-Ethylch	49.811	218	358	26.008	ng/ml	100
54) 14b(H),17b(H)-20S-Ethylch	49.856	218	241M3	17.508	ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251630.D
Acq On : 27 Nov 2016 5:59 pm
Operator : PAH14:AC
Sample : 1610011-04-RF1
Misc : 1x
ALS Vial : 29 Sample Multiplier: 1

Quant Time: Nov 29 15:20:17 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

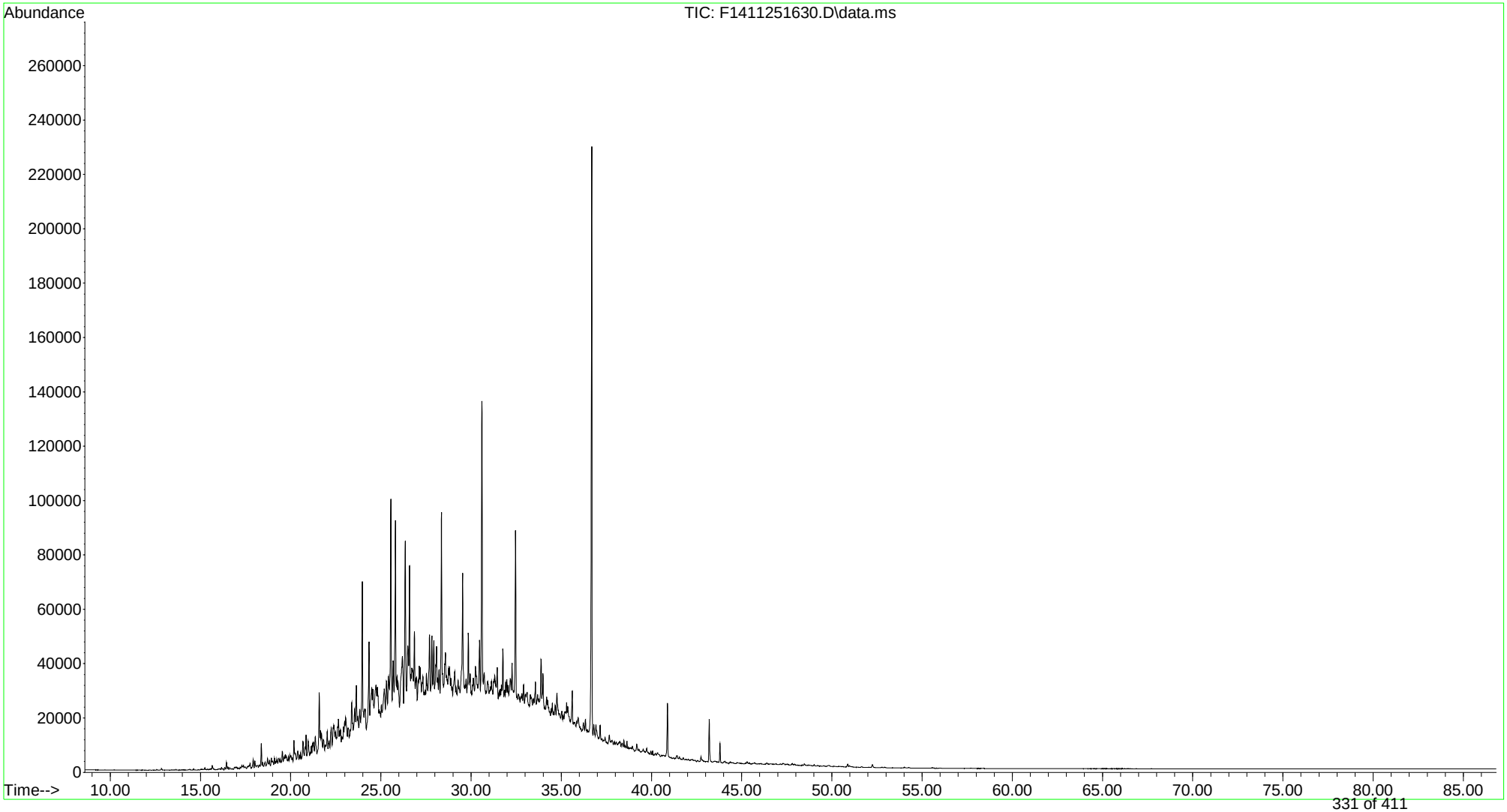
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251630.D
Acq On : 27 Nov 2016 5:59 pm
Operator : PAH14:AC
Sample : 1610011-04-RF1
Misc : 1x
ALS Vial : 29 Sample Multiplier: 1

Quant Time: Nov 29 15:20:17 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS



Form I
Duplicate
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04F1 D**
Associated Blank: **SS110116B03F1**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/27/16	91.9	5.35	8	1	AC

Parameter	Result	
C23 Tricyclic Terpane	**107**	
C24 Tricyclic Terpane	**53.4**	
C25 Tricyclic Terpane	**37.7**	
C24 Tetracyclic Terpane	**32.5**	
C26 Tricyclic Terpane-22S	**12.6**	J
C26 Tricyclic Terpane-22R	**12.3**	J
C28 Tricyclic Terpane-22S	**10.8**	J
C28 Tricyclic Terpane-22R	**12.7**	J
C29 Tricyclic Terpane-22S	**11.0**	J
C29 Tricyclic Terpane-22R	**9.22**	J
18a-22,29,30-Trisnorneohopane-TS	**52.4**	
C30 Tricyclic Terpane-22S	**11.5**	J
C30 Tricyclic Terpane-22R	**4.93**	J
17a(H)-22,29,30-Trisnorhopane-TM	**50.2**	
17a/b,21b/a 28,30-Bisnorhopane	**11.0**	J
17a(H),21b(H)-25-Norhopane	**5.63**	J
30-Norhopane	**97.5**	
18a(H)-30-Norneohopane-C29Ts	**44.1**	
17a(H)-Diahopane	**15.9**	J
30-Normoretane	**19.8**	
18a(H)&18b(H)-Oleananes	**17.3**	
Hopane	**158**	
Moretane	**25.8**	
30-Homohopane-22S	**35.6**	
30-Homohopane-22R	**30.8**	
30,31-Bishomohopane-22S	**44.8**	G

Parameter	Result	
30,31-Bishomohopane-22R	**14.5**	J
30,31-Trishomohopane-22S	**12.4**	J
30,31-Trishomohopane-22R	**7.11**	J
Tetrakishomohopane-22S	16.3	U
Tetrakishomohopane-22R	16.3	U
Pentakishomohopane-22S	16.3	U
Pentakishomohopane-22R	16.3	U
13b(H),17a(H)-20S-Diacholestane	**50.5**	
13b(H),17a(H)-20R-Diacholestane	**27.7**	
13b,17a-20S-Methyldiacholestane	**24.4**	
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**56.7**	
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**51.3**	
Unknown Sterane (S18)	**12.9**	J
13a,17b-20S-Ethyldiacholestane	**2.00**	J
14a,17a-20S-Methylcholestane	**23.8**	
14a,17a-20R-Methylcholestane	**17.0**	
14a(H),17a(H)-20S-Ethylcholestane	**16.2**	J
14a(H),17a(H)-20R-Ethylcholestane	**19.6**	
14b(H),17b(H)-20R-Cholestane	**27.2**	
14b(H),17b(H)-20S-Cholestane	**28.4**	
14b,17b-20R-Methylcholestane	**21.3**	
14b,17b-20S-Methylcholestane	**31.0**	
14b(H),17b(H)-20R-Ethylcholestane	**36.4**	
14b(H),17b(H)-20S-Ethylcholestane	**30.2**	
T22a-Gammacerane/C32-diahopane	**7.95**	J

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	95	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
J - Estimated value, below quantitation limit.
N/A - Not Applicable
G - Matrix Interference

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251631.D
Acq On : 27 Nov 2016 7:33 pm
Operator : PAH14:AC
Sample : 1610011-04d-RF1
Misc : 1x
ALS Vial : 30 Sample Multiplier: 1

MOS
12-1-2016

Quant Time: Nov 29 13:46:35 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.201	240	40323	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.797	217	7239	592.589	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 59.26%			
Target Compounds						Qvalue
2) Hopane (T19)	52.238	191	2242	97.004	ng/mL#	87
4) C23 Tricyclic Terpane (T4	40.827	191	1523M4	65.895	ng/ml	
5) C24 Tricyclic Terpane (T5	41.543	191	759	32.839	ng/ml	100
6) C25 Tricyclic Terpane (T6	43.028	191	536M1	23.191	ng/ml	
7) C24 Tetracyclic Terpane (	44.354	191	462	19.989	ng/ml	100
8) C26 Tricyclic Terpane-22S	44.091	191	179	7.745	ng/ml	100
9) C26 Tricyclic Terpane-22R	44.181	191	175	7.572	ng/ml	100
10) C28 Tricyclic Terpane-22S	46.465	191	153M4	6.620	ng/ml	
11) C28 Tricyclic Terpane-22R	46.630	191	180M4	7.788	ng/ml	
12) C29 Tricyclic Terpane-22S	47.143	191	156	6.750	ng/ml	100
13) C29 Tricyclic Terpane-22R	47.339	191	131M4	5.668	ng/ml	
14) 18a-22,29,30-Trisnorneoho	48.469	191	744	32.190	ng/ml	100
15) C30 Tricyclic Terpane-22S	48.552	191	163M4	7.052	ng/mL	
16) C30 Tricyclic Terpane-22R	48.808	191	70M3	3.029	ng/mL	
17) 17a(H)-22,29,30-Trisnorho	49.012	191	713M4	30.849	ng/ml	
18) 17a/b,21b/a 28,30-Bisnorh	50.203	191	157M4	6.793	ng/ml	
19) 17a(H),21b(H)-25-Norhopan	49.992	191	80M3	3.461	ng/ml	
20) 30-Norhopane (T15)	50.873	191	1385M4	59.924	ng/ml	
21) 18a(H)-30-Norneohopane-C2	50.986	191	626M4	27.085	ng/ml	
22) 17a(H)-Diahopane (X)	51.100	191	226M4	9.778	ng/ml	
23) 30-Normoretane (T17)	51.657	191	282	12.201	ng/ml	100
24) 18a(H)&18b(H)-Oleananes (	52.049	191	246	10.644	ng/ml	100
25) Moretane (T20)	52.931	191	366M4	15.836	ng/ml	
26) 30-Homohopane-22S (T21)	54.039	191	506	21.893	ng/ml	100
27) 30-Homohopane-22R (T22)	54.265	191	437	18.908	ng/ml	100
28) Gammacerane/C32-diahopane	54.807	191	113	4.889	ng/mL	100
29) 30,31-Bishomohopane-22S (	55.561	191G	636	27.518	ng/ml	100
30) 30,31-Bishomohopane-22R (	55.961	191	206M4	8.913	ng/ml	
31) 30,31-Trishomohopane-22S	57.716	191	176M4	7.615	ng/ml	
32) 30,31-Trishomohopane-22R	58.334	191	101M2	4.370	ng/ml	
38) 13b(H),17a(H)-20S-Diachol	45.297	217	379M4	31.025	ng/ml	
39) 13b(H),17a(H)-20R-Diachol	45.726	217	208	17.027	ng/ml	100
40) 13b,17a-20S-Methyldiachol	46.419	217	183M4	14.981	ng/ml	
41) 14a,17a-20S-Chol/13b,17a-	47.286	217	426	34.873	ng/ml	100
42) 14a,17a-20R-Chol/13b,17a-	47.799	217	385M4	31.516	ng/ml	
43) Unknown Sterane (S18)	48.085	217	97M3	7.940	ng/ml	
44) 13a,17b-20S-Ethyldiachole	48.341	217	15M3	1.228	ng/ml	
45) 14a,17a-20S-Methylcholest	48.492	217	179M4	14.653	ng/ml	
46) 14a,17a-20R-Methylcholest	49.208	217	128M4	10.478	ng/ml	
47) 14a(H),17a(H)-20S-Ethylch	49.555	217	122M4	9.987	ng/ml	
48) 14a(H),17a(H)-20R-Ethylch	50.474	217	147M4	12.034	ng/ml	
49) 14b(H),17b(H)-20R-Cholest	47.377	218	204M4	16.700	ng/ml	
50) 14b(H),17b(H)-20S-Cholest	47.459	218	213M4	17.436	ng/ml	
51) 14b,17b-20R-Methylcholest	48.673	218	160	13.098	ng/ml	100
52) 14b,17b-20S-Methylcholest	48.756	218	233M4	19.074	ng/ml	
53) 14b(H),17b(H)-20R-Ethylch	49.811	218	273	22.348	ng/ml	100
54) 14b(H),17b(H)-20S-Ethylch	49.849	218	227M3	18.582	ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251631.D
Acq On : 27 Nov 2016 7:33 pm
Operator : PAH14:AC
Sample : 1610011-04d-RF1
Misc : 1x
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Nov 29 13:46:35 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

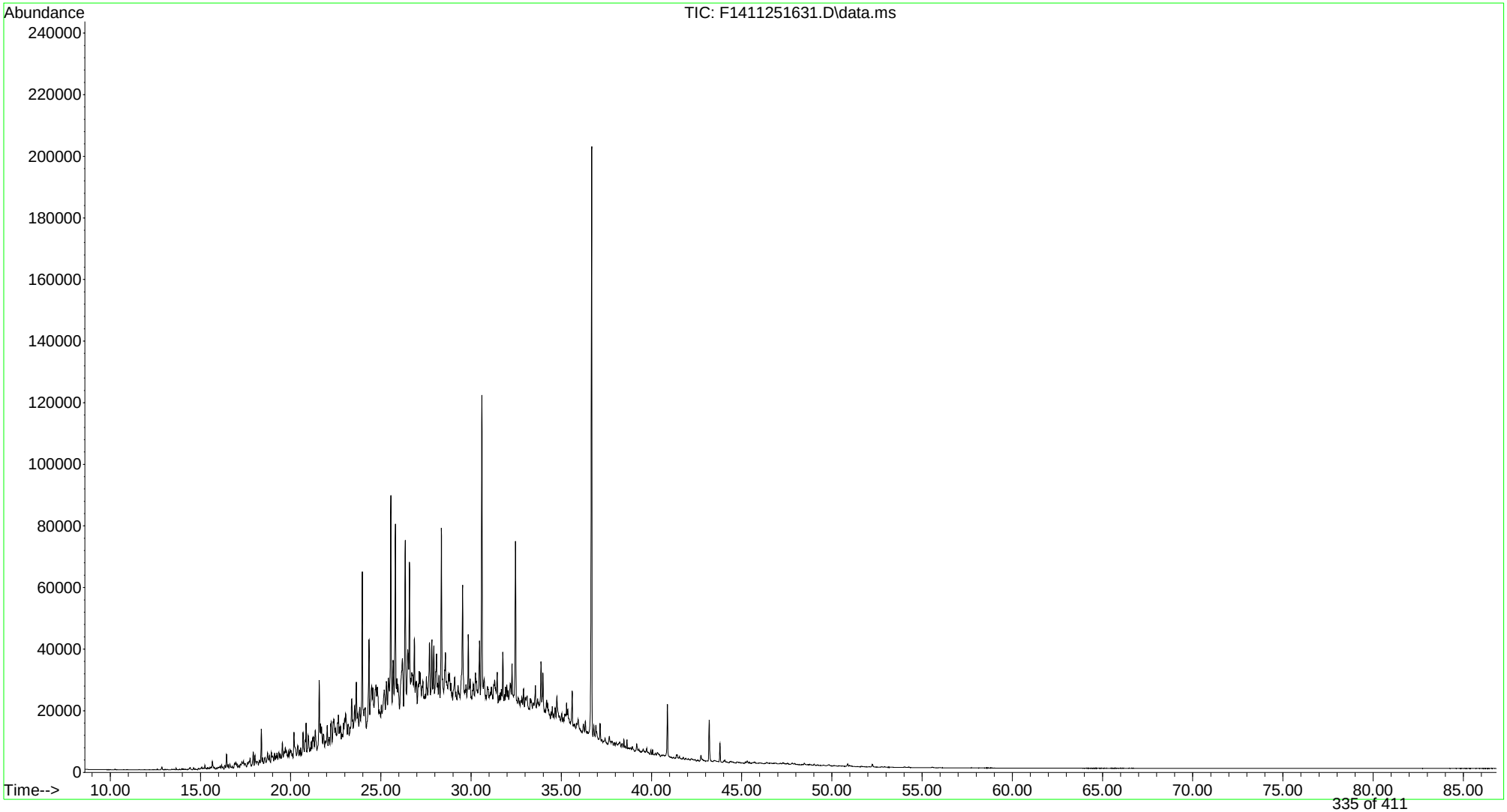
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251631.D
Acq On : 27 Nov 2016 7:33 pm
Operator : PAH14:AC
Sample : 1610011-04d-RF1
Misc : 1x
ALS Vial : 30 Sample Multiplier: 1

Quant Time: Nov 29 13:46:35 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS



Duplicate
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04F1**
Associated Blank: **SS110116B03F1**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
10/20/16	10/28/16	11/01/16	91.9	AC

Parameter	Sample Result	Duplicate Result	RPD	RPD Limit
C23 Tricyclic Terpane	**116**	**107**	8	30
C24 Tricyclic Terpane	**58.5**	**53.4**	9	30
C25 Tricyclic Terpane	**41.0**	**37.7**	8	30
C24 Tetracyclic Terpane	**38.2**	**32.5**	16	30
C26 Tricyclic Terpane-22S	**13.9** J	**12.6** J	10	30
C26 Tricyclic Terpane-22R	**13.8** J	**12.3** J	12	30
C28 Tricyclic Terpane-22S	**10.4** J	**10.8** J	4	30
C28 Tricyclic Terpane-22R	**12.4** J	**12.7** J	2	30
C29 Tricyclic Terpane-22S	**12.7** J	**11.0** J	15	30
C29 Tricyclic Terpane-22R	**11.9** J	**9.22** J	25	30
18a-22,29,30-Trisnorneohopane-TS	**58.4**	**52.4**	11	30
C30 Tricyclic Terpane-22S	**11.4** J	**11.5** J	1	30
C30 Tricyclic Terpane-22R	**8.20** J	**4.93** J	50[a]	30
17a(H)-22,29,30-Trisnorhopane-TM	**58.4**	**50.2**	15	30
17a/b,21b/a 28,30-Bisnorhopane	**13.1** J	**11.0** J	17	30
17a(H),21b(H)-25-Norhopane	**4.93** J	**5.63** J	13	30
30-Norhopane	**117**	**97.5**	18	30
18a(H)-30-Norneohopane-C29Ts	**49.4**	**44.1**	11	30
17a(H)-Diahopane	**17.5**	**15.9** J	9	30
30-Normoretane	**24.8**	**19.8**	22	30
18a(H)&18b(H)-Oleananes	**20.0**	**17.3**	15	30
Hopane	**180**	**158**	13	30
Moretane	**32.0**	**25.8**	22	30
30-Homohopane-22S	**47.0**	**35.6**	28	30
30-Homohopane-22R	**37.1**	**30.8**	19	30
30,31-Bishomohopane-22S	**52.7** G	**44.8** G	16	30
30,31-Bishomohopane-22R	**19.6**	**14.5** J	30	30
30,31-Trishomohopane-22S	**17.7**	**12.4** J	35[a]	30
30,31-Trishomohopane-22R	**9.99** J	**7.11** J	34[a]	30
Tetrakishomohopane-22S	**8.26** J	16.3 U	X	30
Tetrakishomohopane-22R	**7.23** J	16.3 U	X	30
Pentakishomohopane-22S	16.7 U	16.3 U	N/A	30
Pentakishomohopane-22R	16.7 U	16.3 U	N/A	30
13b(H),17a(H)-20S-Diacholestane	**54.6**	**50.5**	8	30
13b(H),17a(H)-20R-Diacholestane	**27.4**	**27.7**	1	30

[a] - Value outside of QC Limits.
X - It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.
J - Estimated value, below quantitation limit.
N/A - Not Applicable
G - Matrix Interference

Duplicate
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-05 5-6'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-04F1**
Associated Blank: **SS110116B03F1**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
10/20/16	10/28/16	11/01/16	91.9	AC

Parameter	Sample Result	Duplicate Result	RPD	RPD Limit
13b,17a-20S-Methyldiacholestane	**28.5**	**24.4**	15	30
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**61.6**	**56.7**	8	30
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**58.5**	**51.3**	13	30
Unknown Sterane (S18)	**11.5** J	**12.9** J	12	30
13a,17b-20S-Ethyldiacholestane	16.7 U	**2.00** J	X	30
14a,17a-20S-Methylcholestane	**25.6**	**23.8**	7	30
14a,17a-20R-Methylcholestane	**22.2**	**17.0**	26	30
14a(H),17a(H)-20S-Ethylcholestane	**20.5**	**16.2** J	23	30
14a(H),17a(H)-20R-Ethylcholestane	**21.1**	**19.6**	7	30
14b(H),17b(H)-20R-Cholestane	**32.6**	**27.2**	18	30
14b(H),17b(H)-20S-Cholestane	**32.3**	**28.4**	13	30
14b,17b-20R-Methylcholestane	**25.9**	**21.3**	20	30
14b,17b-20S-Methylcholestane	**39.1**	**31.0**	23	30
14b(H),17b(H)-20R-Ethylcholestane	**43.4**	**36.4**	18	30
14b(H),17b(H)-20S-Ethylcholestane	**29.2**	**30.2**	3	30
T22a-Gammacerane/C32-diahopane	**11.7** J	**7.95** J	38[a]	30

Surrogate	% Recovery		Acceptance Range (%)
5B(H)Cholane	101	95	50-130

[a] - Value outside of QC Limits.
X - It is not possible to calculate RPD, one result is below the detection limit, the other is above reporting limit.
U - The analyte was analyzed for but not detected at the sample specific level reported.
J - Estimated value, below quantitation limit.
N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. RPD values are reported based on the unrounded calculated result.

12/01/16 19:18

Form I
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-06 1-2'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-05F1**
Associated Blank: **SS110116B03F1**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	12/01/16	89.6	15.46	2	1	AC

Parameter	Result	Parameter	Result	
C23 Tricyclic Terpane	**22.8**	30,31-Bishomohopane-22R	**19.3**	
C24 Tricyclic Terpane	**13.0**	30,31-Trishomohopane-22S	**17.5**	
C25 Tricyclic Terpane	**12.0**	30,31-Trishomohopane-22R	**9.38**	
C24 Tetracyclic Terpane	**10.1**	Tetrakishomohopane-22S	**9.39**	
C26 Tricyclic Terpane-22S	**4.59**	Tetrakishomohopane-22R	**5.70**	
C26 Tricyclic Terpane-22R	**4.59**	Pentakishomohopane-22S	**7.02**	
C28 Tricyclic Terpane-22S	**4.95**	Pentakishomohopane-22R	**4.97**	
C28 Tricyclic Terpane-22R	**6.31**	13b(H),17a(H)-20S-Diacholestane	**15.4**	
C29 Tricyclic Terpane-22S	**5.76**	13b(H),17a(H)-20R-Diacholestane	**8.52**	
C29 Tricyclic Terpane-22R	**5.27**	13b,17a-20S-Methyldiacholestane	**10.9**	
18a-22,29,30-Trisnorneohopane-TS	**25.6**	14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**29.3**	
C30 Tricyclic Terpane-22S	**5.57**			
C30 Tricyclic Terpane-22R	**4.16**	14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**29.0**	
17a(H)-22,29,30-Trisnorhopane-TM	**36.5**			
17a/b,21b/a 28,30-Bisnorhopane	**10.2**	Unknown Sterane (S18)	**6.20**	
17a(H),21b(H)-25-Norhopane	**1.56**	13a,17b-20S-Ethyldiacholestane	**1.00**	J
30-Norhopane	**90.5**	14a,17a-20S-Methylcholestane	**14.5**	
18a(H)-30-Norneohopane-C29Ts	**30.7**	14a,17a-20R-Methylcholestane	**10.6**	
17a(H)-Diahopane	**11.4**	14a(H),17a(H)-20S-Ethylcholestane	**13.2**	
30-Normoretane	**18.2**	14a(H),17a(H)-20R-Ethylcholestane	**15.4**	
18a(H)&18b(H)-Oleananes	**14.4**	14b(H),17b(H)-20R-Cholestane	**13.8**	
Hopane	**138**	14b(H),17b(H)-20S-Cholestane	**13.6**	
Moretane	**24.7**	14b,17b-20R-Methylcholestane	**16.0**	
30-Homohopane-22S	**43.3**	14b,17b-20S-Methylcholestane	**22.6**	
30-Homohopane-22R	**33.1**	14b(H),17b(H)-20R-Ethylcholestane	**22.9**	
30,31-Bishomohopane-22S	**37.8**	14b(H),17b(H)-20S-Ethylcholestane	**23.5**	
		T22a-Gammacerane/C32-diahopane	**9.90**	

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	114	50-130

J - Estimated value, below quantitation limit.
N/A - Not Applicable

12/01/16 19:18

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251666.D
Acq On : 1 Dec 2016 8:50 am
Operator : PAH14:AC
Sample : 1610011-05-RF1
Misc : 1x
ALS Vial : 64 Sample Multiplier: 1

MOS
12-1-2016

Quant Time: Dec 01 13:26:16 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.194	240	40957	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.789	217	35275	2842.936	ng/ml	-0.01
Spiked Amount 1000.000	Range 50 - 130		Recovery = 284.29%#			
Target Compounds						Qvalue
2) Hopane (T19)	52.238	191	22520M4	959.282	ng/mL	
4) C23 Tricyclic Terpane (T4	40.820	191	3716	158.290	ng/ml	100
5) C24 Tricyclic Terpane (T5	41.543	191	2113	90.007	ng/ml	100
6) C25 Tricyclic Terpane (T6	43.028	191	1943M1	82.766	ng/ml	
7) C24 Tetracyclic Terpane (	44.354	191	1642	69.944	ng/ml	100
8) C26 Tricyclic Terpane-22S	44.076	191	747M4	31.820	ng/ml	
9) C26 Tricyclic Terpane-22R	44.181	191	747M4	31.820	ng/ml	
10) C28 Tricyclic Terpane-22S	46.457	191	805M4	34.290	ng/ml	
11) C28 Tricyclic Terpane-22R	46.623	191	1027M4	43.747	ng/ml	
12) C29 Tricyclic Terpane-22S	47.143	191	937	39.913	ng/ml	100
13) C29 Tricyclic Terpane-22R	47.339	191	857M4	36.506	ng/ml	
14) 18a-22,29,30-Trisnorneoho	48.469	191	4158	177.118	ng/ml	100
15) C30 Tricyclic Terpane-22S	48.545	191	906M4	38.593	ng/mL	
16) C30 Tricyclic Terpane-22R	48.793	191	676M4	28.795	ng/mL	
17) 17a(H)-22,29,30-Trisnorho	49.012	191	5931	252.642	ng/ml	100
18) 17a/b,21b/a 28,30-Bisnorh	50.195	191	1657	70.583	ng/ml	100
19) 17a(H),21b(H)-25-Norhopan	49.999	191	254	10.820	ng/ml	100
20) 30-Norhopane (T15)	50.866	191	14723M4	627.154	ng/ml	
21) 18a(H)-30-Norneohopane-C2	50.979	191	4996M4	212.814	ng/ml	
22) 17a(H)-Diahopane (X)	51.100	191	1859M4	79.188	ng/ml	
23) 30-Normoretane (T17)	51.650	191	2960	126.087	ng/ml	100
24) 18a(H)&18b(H)-Oleananes (	52.057	191	2347	99.975	ng/ml	100
25) Moretane (T20)	52.923	191	4017M4	171.112	ng/ml	
26) 30-Homohopane-22S (T21)	54.024	191	7046	300.138	ng/ml	100
27) 30-Homohopane-22R (T22)	54.257	191	5390	229.597	ng/ml	100
28) Gammacerane/C32-diahopane	54.807	191	1610M4	68.581	ng/mL	
29) 30,31-Bishomohopane-22S (	55.576	191	6142	261.630	ng/ml	100
30) 30,31-Bishomohopane-22R (	55.961	191	3144	133.925	ng/ml	100
31) 30,31-Trishomohopane-22S	57.709	191	2842M4	121.060	ng/ml	
32) 30,31-Trishomohopane-22R	58.327	191	1525	64.960	ng/ml	100
33) Tetrakishomohopane-22S (T	60.347	191	1527	65.045	ng/ml	100
34) Tetrakishomohopane-22R (T	61.244	191	927	39.487	ng/ml	100
35) Pentakishomohopane-22S (T	63.474	191	1141	48.603	ng/ml	100
36) Pentakishomohopane-22R (T	64.771	191	809	34.461	ng/ml	100
38) 13b(H),17a(H)-20S-Diachol	45.297	217	1324M4	106.706	ng/ml	
39) 13b(H),17a(H)-20R-Diachol	45.719	217	732M4	58.994	ng/ml	
40) 13b,17a-20S-Methyldiachol	46.419	217	935M4	75.355	ng/ml	
41) 14a,17a-20S-Chol/13b,17a-	47.286	217	2521	203.176	ng/ml	100
42) 14a,17a-20R-Chol/13b,17a-	47.799	217	2489	200.597	ng/ml	100
43) Unknown Sterane (S18)	48.077	217	533	42.956	ng/ml	100
44) 13a,17b-20S-Ethyldiachole	48.341	217	86M3	6.931	ng/ml	
45) 14a,17a-20S-Methylcholest	48.492	217	1249M4	100.661	ng/ml	
46) 14a,17a-20R-Methylcholest	49.208	217	907M4	73.098	ng/ml	
47) 14a(H),17a(H)-20S-Ethylch	49.555	217	1131M4	91.151	ng/ml	
48) 14a(H),17a(H)-20R-Ethylch	50.466	217	1326M4	106.867	ng/ml	
49) 14b(H),17b(H)-20R-Cholest	47.369	218	1189M4	95.826	ng/ml	
50) 14b(H),17b(H)-20S-Cholest	47.452	218	1172M4	94.456	ng/ml	
51) 14b,17b-20R-Methylcholest	48.665	218	1380M4	111.219	ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251666.D
Acq On : 1 Dec 2016 8:50 am
Operator : PAH14:AC
Sample : 1610011-05-RF1
Misc : 1x
ALS Vial : 64 Sample Multiplier: 1

Quant Time: Dec 01 13:26:16 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
52) 14b,17b-20S-Methylcholest	48.748	218	1940M4	156.351	ng/ml	
53) 14b(H),17b(H)-20R-Ethylch	49.811	218	1966	158.447	ng/ml	100
54) 14b(H),17b(H)-20S-Ethylch	49.841	218	2017M3	162.557	ng/ml	

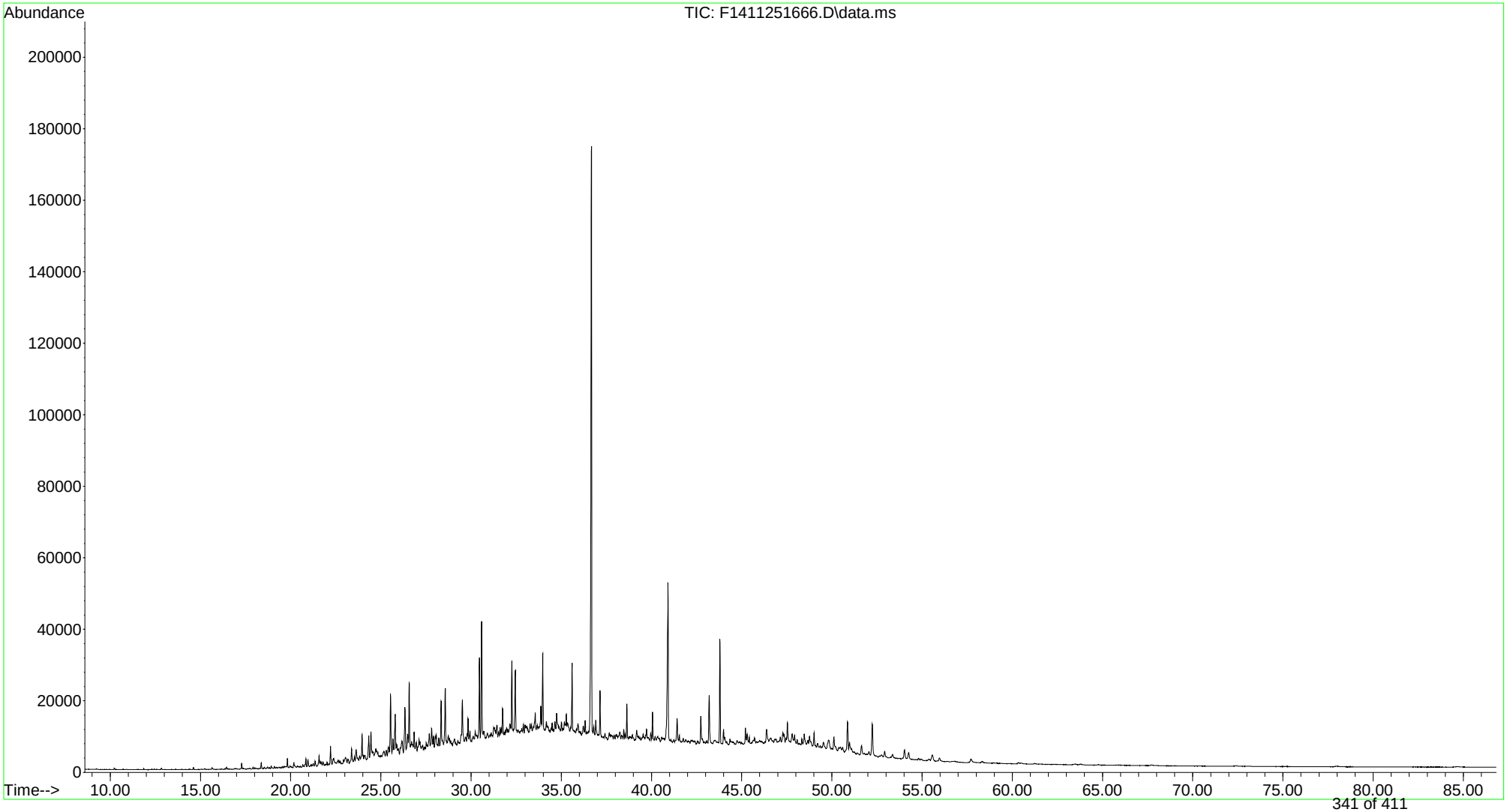
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251666.D
Acq On : 1 Dec 2016 8:50 am
Operator : PAH14:AC
Sample : 1610011-05-RF1
Misc : 1x
ALS Vial : 64 Sample Multiplier: 1

Quant Time: Dec 01 13:26:16 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS



Form I
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-07 13-15'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-09F1**
Associated Blank: **SS110116B03F1**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/24/16	10/28/16	11/01/16	11/27/16	88.8	5.30	2	1	AC

Parameter	Result	
C23 Tricyclic Terpane	**79.1**	
C24 Tricyclic Terpane	**34.9**	
C25 Tricyclic Terpane	**21.1**	
C24 Tetracyclic Terpane	**14.0**	
C26 Tricyclic Terpane-22S	**7.42**	
C26 Tricyclic Terpane-22R	**7.00**	
C28 Tricyclic Terpane-22S	**5.09**	
C28 Tricyclic Terpane-22R	**5.46**	
C29 Tricyclic Terpane-22S	**4.01**	J
C29 Tricyclic Terpane-22R	**4.15**	J
18a-22,29,30-Trisnorneohopane-TS	**18.8**	
C30 Tricyclic Terpane-22S	**3.01**	J
C30 Tricyclic Terpane-22R	**2.00**	J
17a(H)-22,29,30-Trisnorhopane-TM	**18.8**	
17a/b,21b/a 28,30-Bisnorhopane	**3.95**	J
17a(H),21b(H)-25-Norhopane	**1.50**	J
30-Norhopane	**37.0**	
18a(H)-30-Norneohopane-C29Ts	**15.3**	
17a(H)-Diahopane	**4.92**	
30-Normoretane	**9.01**	
18a(H)&18b(H)-Oleananes	**5.09**	
Hopane	**61.0**	
Moretane	**10.9**	
30-Homohopane-22S	**12.4**	
30-Homohopane-22R	**10.0**	
30,31-Bishomohopane-22S	**7.66**	

Parameter	Result	
30,31-Bishomohopane-22R	**5.38**	
30,31-Trishomohopane-22S	**3.55**	J
30,31-Trishomohopane-22R	**2.30**	J
Tetrakishomohopane-22S	4.25	U
Tetrakishomohopane-22R	4.25	U
Pentakishomohopane-22S	4.25	U
Pentakishomohopane-22R	4.25	U
13b(H),17a(H)-20S-Diacholestane	**23.5**	
13b(H),17a(H)-20R-Diacholestane	**11.6**	
13b,17a-20S-Methyldiacholestane	**9.34**	
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**24.0**	
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**19.9**	
Unknown Sterane (S18)	**4.89**	
13a,17b-20S-Ethyldiacholestane	4.25	U
14a,17a-20S-Methylcholestane	**8.54**	
14a,17a-20R-Methylcholestane	**4.71**	
14a(H),17a(H)-20S-Ethylcholestane	**5.40**	
14a(H),17a(H)-20R-Ethylcholestane	**5.07**	
14b(H),17b(H)-20R-Cholestane	**10.1**	
14b(H),17b(H)-20S-Cholestane	**10.0**	
14b,17b-20R-Methylcholestane	**6.24**	
14b,17b-20S-Methylcholestane	**9.70**	
14b(H),17b(H)-20R-Ethylcholestane	**13.4**	
14b(H),17b(H)-20S-Ethylcholestane	**7.41**	
T22a-Gammacerane/C32-diahopane	**3.57**	J

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	120	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
J - Estimated value, below quantitation limit.
N/A - Not Applicable

12/01/16 19:17

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251632.D
Acq On : 27 Nov 2016 9:07 pm
Operator : PAH14:AC
Sample : 1610011-09-RE
Misc : 1x
ALS Vial : 31 Sample Multiplier: 1

MJS
12-1-2016

Quant Time: Nov 29 15:21:14 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:14 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.201	240	38462	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.804	217	34932	2997.918	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 299.79%#			
Target Compounds						Qvalue
2) Hopane (T19)	52.245	191	3162M4	143.429	ng/mL	
4) C23 Tricyclic Terpane (T4	40.835	191	4103	186.113	ng/ml	100
5) C24 Tricyclic Terpane (T5	41.551	191	1808	82.011	ng/ml	100
6) C25 Tricyclic Terpane (T6	43.036	191	1093M1	49.579	ng/ml	
7) C24 Tetracyclic Terpane (	44.355	191	724	32.841	ng/ml	100
8) C26 Tricyclic Terpane-22S	44.083	191	385M4	17.464	ng/ml	
9) C26 Tricyclic Terpane-22R	44.181	191	363M4	16.466	ng/ml	
10) C28 Tricyclic Terpane-22S	46.457	191	264M4	11.975	ng/ml	
11) C28 Tricyclic Terpane-22R	46.623	191	283M4	12.837	ng/ml	
12) C29 Tricyclic Terpane-22S	47.135	191	208	9.435	ng/ml	100
13) C29 Tricyclic Terpane-22R	47.339	191	215M3	9.752	ng/ml	
14) 18a-22,29,30-Trisnorneoho	48.469	191	974	44.181	ng/ml	100
15) C30 Tricyclic Terpane-22S	48.560	191	156M4	7.076	ng/mL	
16) C30 Tricyclic Terpane-22R	48.801	191	104	4.717	ng/mL	100
17) 17a(H)-22,29,30-Trisnorho	49.020	191	973	44.135	ng/ml	100
18) 17a/b,21b/a 28,30-Bisnorh	50.188	191	205M4	9.299	ng/ml	
19) 17a(H),21b(H)-25-Norhopan	49.999	191	78M3	3.538	ng/ml	
20) 30-Norhopane (T15)	50.874	191	1920M4	87.091	ng/ml	
21) 18a(H)-30-Norneohopane-C2	50.979	191	792M4	35.925	ng/ml	
22) 17a(H)-Diahopane (X)	51.092	191	255M4	11.567	ng/ml	
23) 30-Normoretane (T17)	51.650	191	467	21.183	ng/ml	100
24) 18a(H)&18b(H)-Oleananes (	52.064	191	264M4	11.975	ng/ml	
25) Moretane (T20)	52.923	191	566	25.674	ng/ml	100
26) 30-Homohopane-22S (T21)	54.031	191	643	29.167	ng/ml	100
27) 30-Homohopane-22R (T22)	54.257	191	521M4	23.633	ng/ml	
28) Gammacerane/C32-diahopane	54.800	191	185	8.392	ng/mL	100
29) 30,31-Bishomohopane-22S (	55.584	191	397	18.008	ng/ml	100
30) 30,31-Bishomohopane-22R (	55.961	191	279M4	12.655	ng/ml	
31) 30,31-Trishomohopane-22S	57.724	191	184M4	8.346	ng/ml	
32) 30,31-Trishomohopane-22R	58.327	191	119M2	5.398	ng/ml	
38) 13b(H),17a(H)-20S-Diachol	45.297	217	644M4	55.269	ng/ml	
39) 13b(H),17a(H)-20R-Diachol	45.719	217	318	27.291	ng/ml	100
40) 13b,17a-20S-Methyldiachol	46.420	217	256M4	21.970	ng/ml	
41) 14a,17a-20S-Chol/13b,17a-	47.286	217	659	56.556	ng/ml	100
42) 14a,17a-20R-Chol/13b,17a-	47.799	217	546	46.859	ng/ml	100
43) Unknown Sterane (S18)	48.078	217	134	11.500	ng/ml	100
45) 14a,17a-20S-Methylcholest	48.492	217	234	20.082	ng/ml	100
46) 14a,17a-20R-Methylcholest	49.208	217	129M4	11.071	ng/ml	
47) 14a(H),17a(H)-20S-Ethylch	49.562	217	148M4	12.702	ng/ml	
48) 14a(H),17a(H)-20R-Ethylch	50.474	217	139	11.929	ng/ml	100
49) 14b(H),17b(H)-20R-Cholest	47.369	218	277M4	23.773	ng/ml	
50) 14b(H),17b(H)-20S-Cholest	47.460	218	274M4	23.515	ng/ml	
51) 14b,17b-20R-Methylcholest	48.673	218	171	14.675	ng/ml	100
52) 14b,17b-20S-Methylcholest	48.748	218	266M4	22.829	ng/ml	
53) 14b(H),17b(H)-20R-Ethylch	49.811	218	368M3	31.582	ng/ml	
54) 14b(H),17b(H)-20S-Ethylch	49.849	218	203M3	17.422	ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251632.D
Acq On : 27 Nov 2016 9:07 pm
Operator : PAH14:AC
Sample : 1610011-09-RE
Misc : 1x
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Nov 29 15:21:14 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:14 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

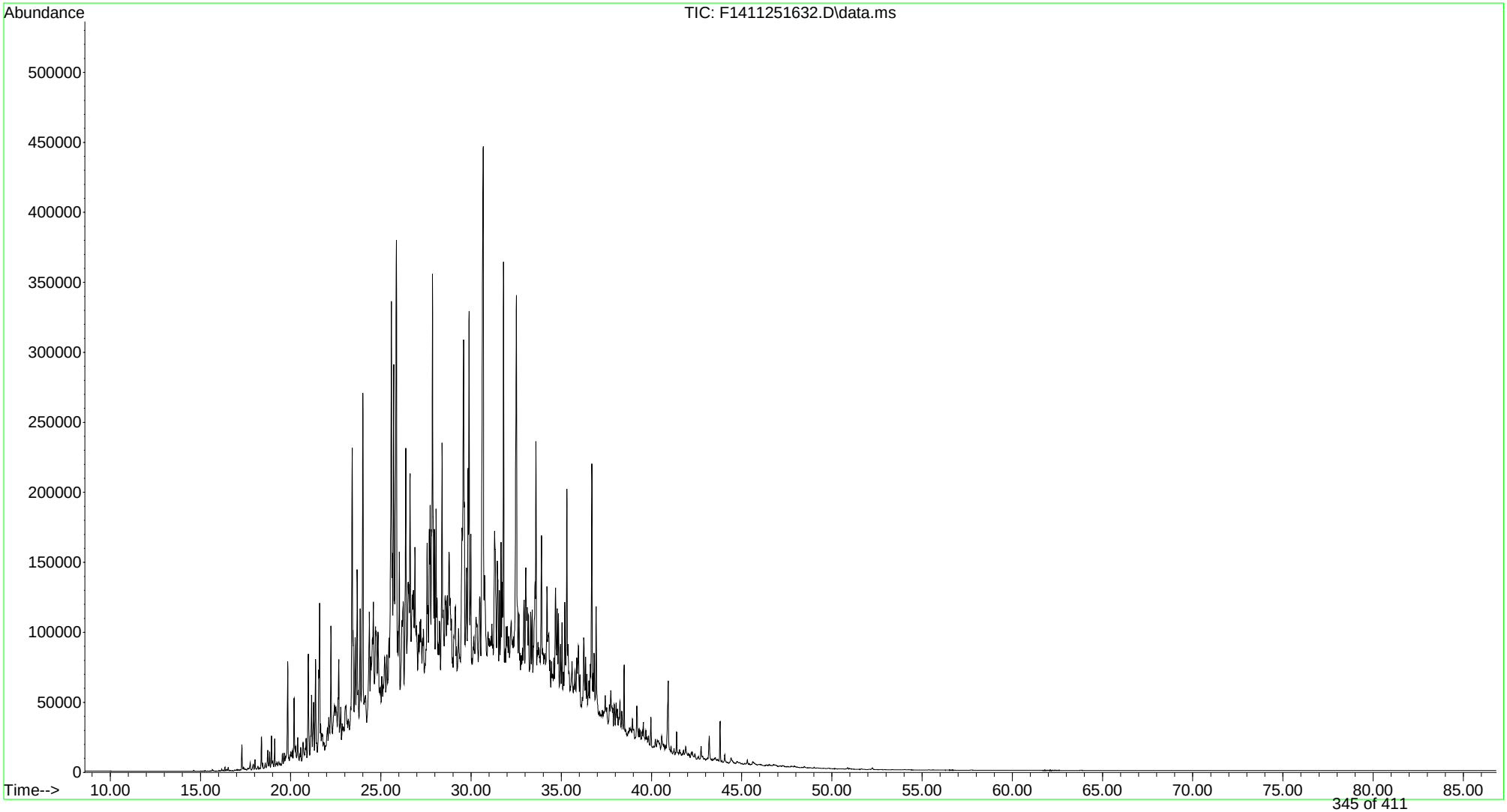
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251632.D
Acq On : 27 Nov 2016 9:07 pm
Operator : PAH14:AC
Sample : 1610011-09-RE
Misc : 1x
ALS Vial : 31 Sample Multiplier: 1

Quant Time: Nov 29 15:21:14 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:14 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS



Form I
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 1-2'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-10F1**
Associated Blank: **SS110116B03F1**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/27/16	91.5	5.24	2	1	AC

Parameter	Result	
C23 Tricyclic Terpane	**13.1**	
C24 Tricyclic Terpane	**5.99**	
C25 Tricyclic Terpane	**6.54**	
C24 Tetracyclic Terpane	**7.88**	
C26 Tricyclic Terpane-22S	**2.78**	J
C26 Tricyclic Terpane-22R	**2.75**	J
C28 Tricyclic Terpane-22S	**3.99**	J
C28 Tricyclic Terpane-22R	**4.37**	
C29 Tricyclic Terpane-22S	**5.17**	
C29 Tricyclic Terpane-22R	**5.12**	
18a-22,29,30-Trisnorneohopane-TS	**11.9**	
C30 Tricyclic Terpane-22S	**5.94**	
C30 Tricyclic Terpane-22R	**4.50**	
17a(H)-22,29,30-Trisnorhopane-TM	**32.5**	
17a/b,21b/a 28,30-Bisnorhopane	**8.19**	
17a(H),21b(H)-25-Norhopane	**2.09**	J
30-Norhopane	**78.4**	
18a(H)-30-Norneohopane-C29Ts	**13.3**	
17a(H)-Diahopane	**6.34**	
30-Normoretane	**11.4**	
18a(H)&18b(H)-Oleananes	**5.59**	
Hopane	**111**	
Moretane	**14.4**	
30-Homohopane-22S	**43.2**	
30-Homohopane-22R	**36.1**	
30,31-Bishomohopane-22S	**41.4**	G

Parameter	Result	
30,31-Bishomohopane-22R	**21.6**	
30,31-Trishomohopane-22S	**18.5**	
30,31-Trishomohopane-22R	**11.5**	
Tetrakishomohopane-22S	**12.9**	
Tetrakishomohopane-22R	**8.76**	
Pentakishomohopane-22S	**10.7**	
Pentakishomohopane-22R	**7.19**	
13b(H),17a(H)-20S-Diacholestane	**6.96**	
13b(H),17a(H)-20R-Diacholestane	**3.51**	J
13b,17a-20S-Methyldiacholestane	**5.06**	
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**16.1**	
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**18.5**	
Unknown Sterane (S18)	**2.82**	J
13a,17b-20S-Ethyldiacholestane	**1.45**	J
14a,17a-20S-Methylcholestane	**11.3**	
14a,17a-20R-Methylcholestane	**11.4**	
14a(H),17a(H)-20S-Ethylcholestane	**12.5**	
14a(H),17a(H)-20R-Ethylcholestane	**14.4**	
14b(H),17b(H)-20R-Cholestane	**14.0**	
14b(H),17b(H)-20S-Cholestane	**14.6**	
14b,17b-20R-Methylcholestane	**16.3**	
14b,17b-20S-Methylcholestane	**22.7**	
14b(H),17b(H)-20R-Ethylcholestane	**23.9**	
14b(H),17b(H)-20S-Ethylcholestane	**19.7**	
T22a-Gammacerane/C32-diahopane	**16.4**	

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	113	50-130

J - Estimated value, below quantitation limit.
N/A - Not Applicable
G - Matrix Interference

12/01/16 19:17

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251633.D
Acq On : 27 Nov 2016 10:41 pm
Operator : PAH14:AC
Sample : 1610011-10-RF1
Misc : 1x
ALS Vial : 32 Sample Multiplier: 1

MJS
12-1-2016

Quant Time: Nov 29 13:46:50 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.201	240	39978	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.797	217	34361	2837.088	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 283.71%#			
Target Compounds						Qvalue
2) Hopane (T19)	52.245	191	6082	265.419	ng/mL#	87
4) C23 Tricyclic Terpane (T4	40.827	191	718	31.334	ng/ml	100
5) C24 Tricyclic Terpane (T5	41.543	191	329	14.358	ng/ml	100
6) C25 Tricyclic Terpane (T6	43.028	191	359M1	15.667	ng/ml	
7) C24 Tetracyclic Terpane (	44.354	191	433	18.896	ng/ml	100
8) C26 Tricyclic Terpane-22S	44.083	191	153M4	6.677	ng/ml	
9) C26 Tricyclic Terpane-22R	44.181	191	151M4	6.590	ng/ml	
10) C28 Tricyclic Terpane-22S	46.457	191	219M4	9.557	ng/ml	
11) C28 Tricyclic Terpane-22R	46.623	191	240M4	10.474	ng/ml	
12) C29 Tricyclic Terpane-22S	47.143	191	284M4	12.394	ng/ml	
13) C29 Tricyclic Terpane-22R	47.339	191	281M4	12.263	ng/ml	
14) 18a-22,29,30-Trisnorneoho	48.469	191	653	28.497	ng/ml	100
15) C30 Tricyclic Terpane-22S	48.560	191	326M4	14.227	ng/mL	
16) C30 Tricyclic Terpane-22R	48.801	191	247	10.779	ng/mL	100
17) 17a(H)-22,29,30-Trisnorho	49.019	191	1785M4	77.897	ng/ml	
18) 17a/b,21b/a 28,30-Bisnorh	50.210	191	450M4	19.638	ng/ml	
19) 17a(H),21b(H)-25-Norhopan	49.992	191	115	5.019	ng/ml	100
20) 30-Norhopane (T15)	50.873	191	4308M4	188.001	ng/ml	
21) 18a(H)-30-Norneohopane-C2	50.979	191	731M4	31.901	ng/ml	
22) 17a(H)-Diahopane (X)	51.099	191	348M4	15.187	ng/ml	
23) 30-Normoretane (T17)	51.657	191	628	27.406	ng/ml	100
24) 18a(H)&18b(H)-Oleananes (	52.057	191	307	13.397	ng/ml	100
25) Moretane (T20)	52.931	191	791M4	34.519	ng/ml	
26) 30-Homohopane-22S (T21)	54.031	191	2373	103.558	ng/ml	100
27) 30-Homohopane-22R (T22)	54.257	191	1985	86.625	ng/ml	100
28) Gammacerane/C32-diahopane	54.807	191	898M4	39.189	ng/mL	
29) 30,31-Bishomohopane-22S (	55.576	191G	2277	99.368	ng/ml	100
30) 30,31-Bishomohopane-22R (	55.975	191	1187	51.801	ng/ml	100
31) 30,31-Trishomohopane-22S	57.716	191	1014	44.251	ng/ml	100
32) 30,31-Trishomohopane-22R	58.334	191	633M4	27.624	ng/ml	
33) Tetrakishomohopane-22S (T	60.362	191	710	30.984	ng/ml	100
34) Tetrakishomohopane-22R (T	61.236	191	481	20.991	ng/ml	100
35) Pentakishomohopane-22S (T	63.482	191	590M4	25.748	ng/ml	
36) Pentakishomohopane-22R (T	64.786	191	395M4	17.238	ng/ml	
38) 13b(H),17a(H)-20S-Diachol	45.296	217	202	16.679	ng/ml	100
39) 13b(H),17a(H)-20R-Diachol	45.718	217	102	8.422	ng/ml	100
40) 13b,17a-20S-Methyldiachol	46.412	217	147M4	12.137	ng/ml	
41) 14a,17a-20S-Chol/13b,17a-	47.279	217	467	38.559	ng/ml	100
42) 14a,17a-20R-Chol/13b,17a-	47.799	217	536M4	44.256	ng/ml	
43) Unknown Sterane (S18)	48.077	217	82M3	6.771	ng/ml	
44) 13a,17b-20S-Ethyldiachole	48.334	217	42M3	3.468	ng/ml	
45) 14a,17a-20S-Methylcholest	48.492	217	328M4	27.082	ng/ml	
46) 14a,17a-20R-Methylcholest	49.215	217	330M4	27.247	ng/ml	
47) 14a(H),17a(H)-20S-Ethylch	49.562	217	363M3	29.972	ng/ml	
48) 14a(H),17a(H)-20R-Ethylch	50.474	217	417M4	34.430	ng/ml	
49) 14b(H),17b(H)-20R-Cholest	47.376	218	405M4	33.440	ng/ml	
50) 14b(H),17b(H)-20S-Cholest	47.459	218	424M4	35.008	ng/ml	
51) 14b,17b-20R-Methylcholest	48.673	218	472	38.972	ng/ml	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251633.D
Acq On : 27 Nov 2016 10:41 pm
Operator : PAH14:AC
Sample : 1610011-10-RF1
Misc : 1x
ALS Vial : 32 Sample Multiplier: 1

Quant Time: Nov 29 13:46:50 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
52) 14b,17b-20S-Methylcholest	48.748	218	658M4	54.329	ng/ml	
53) 14b(H),17b(H)-20R-Ethylch	49.811	218	694	57.302	ng/ml	100
54) 14b(H),17b(H)-20S-Ethylch	49.856	218	572M3	47.228	ng/ml	

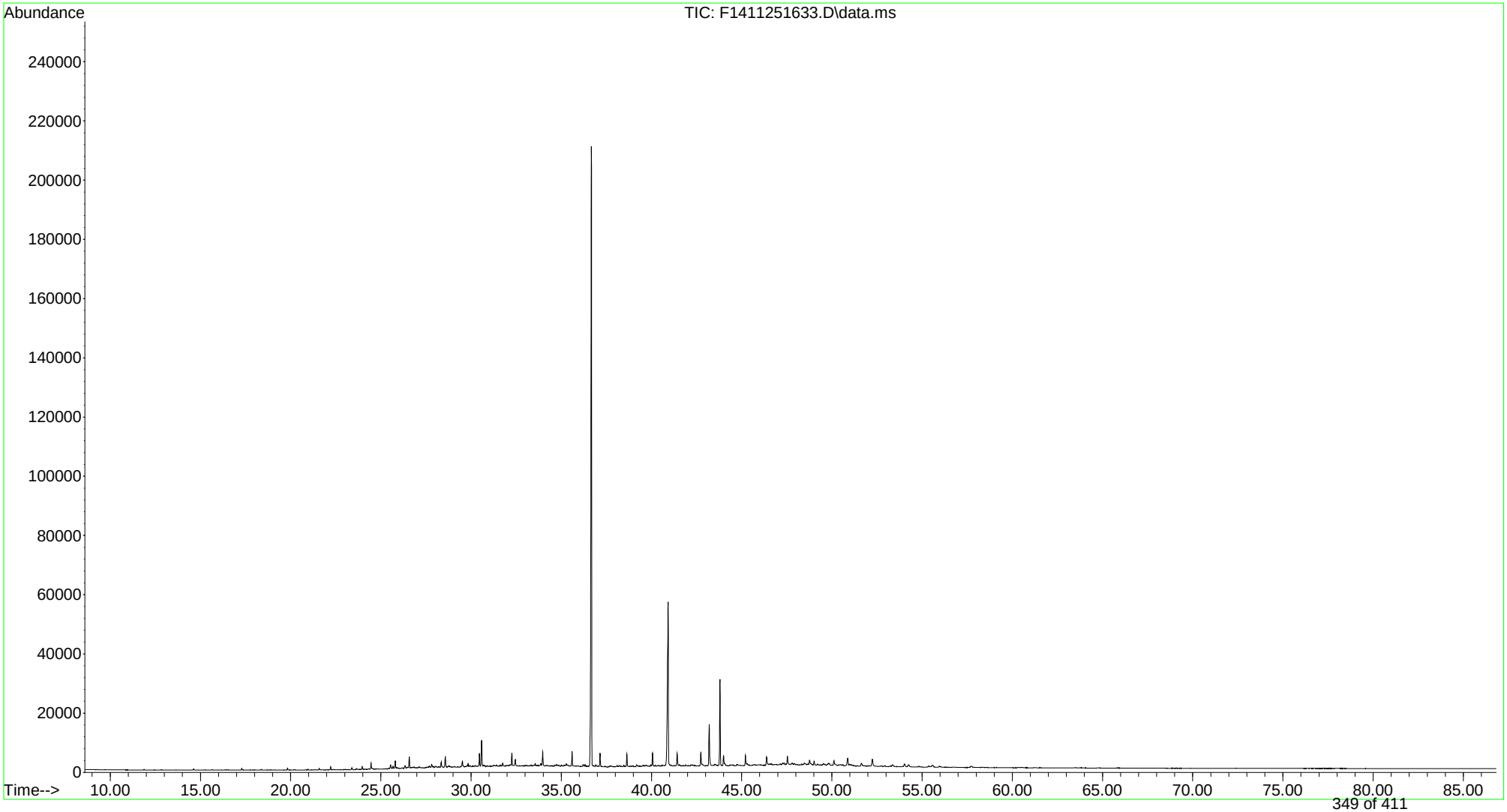
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251633.D
Acq On : 27 Nov 2016 10:41 pm
Operator : PAH14:AC
Sample : 1610011-10-RF1
Misc : 1x
ALS Vial : 32 Sample Multiplier: 1

Quant Time: Nov 29 13:46:50 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS



Form I
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 7-8'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-11F1**
Associated Blank: **SS110116B03F1**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/20/16	10/28/16	11/01/16	11/28/16	87.3	15.88	2	1	AC

Parameter	Result	
C23 Tricyclic Terpane	**1.18**	J
C24 Tricyclic Terpane	**0.469**	J
C25 Tricyclic Terpane	**0.302**	J
C24 Tetracyclic Terpane	**0.424**	J
C26 Tricyclic Terpane-22S	1.44	U
C26 Tricyclic Terpane-22R	1.44	U
C28 Tricyclic Terpane-22S	1.44	U
C28 Tricyclic Terpane-22R	1.44	U
C29 Tricyclic Terpane-22S	1.44	U
C29 Tricyclic Terpane-22R	1.44	U
18a-22,29,30-Trisnorneohopane-TS	**0.431**	J
C30 Tricyclic Terpane-22S	1.44	U
C30 Tricyclic Terpane-22R	1.44	U
17a(H)-22,29,30-Trisnorhopane-TM	**0.508**	J
17a/b,21b/a 28,30-Bisnorhopane	1.44	U
17a(H),21b(H)-25-Norhopane	1.44	U
30-Norhopane	**1.16**	J
18a(H)-30-Norneohopane-C29Ts	1.44	U
17a(H)-Diahopane	1.44	U
30-Normoretane	1.44	U
18a(H)&18b(H)-Oleananes	1.44	U
Hopane	**1.31**	J
Moretane	1.44	U
30-Homohopane-22S	1.44	U
30-Homohopane-22R	1.44	U
30,31-Bishomohopane-22S	**1.97**	G

Parameter	Result	
30,31-Bishomohopane-22R	1.44	U
30,31-Trishomohopane-22S	1.44	U
30,31-Trishomohopane-22R	1.44	U
Tetrakishomohopane-22S	1.44	U
Tetrakishomohopane-22R	1.44	U
Pentakishomohopane-22S	1.44	U
Pentakishomohopane-22R	1.44	U
13b(H),17a(H)-20S-Diacholestane	1.44	U
13b(H),17a(H)-20R-Diacholestane	1.44	U
13b,17a-20S-Methyldiacholestane	1.44	U
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**0.304**	J
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	1.44	U
Unknown Sterane (S18)	1.44	U
13a,17b-20S-Ethyldiacholestane	1.44	U
14a,17a-20S-Methylcholestane	1.44	U
14a,17a-20R-Methylcholestane	1.44	U
14a(H),17a(H)-20S-Ethylcholestane	1.44	U
14a(H),17a(H)-20R-Ethylcholestane	1.44	U
14b(H),17b(H)-20R-Cholestane	1.44	U
14b(H),17b(H)-20S-Cholestane	1.44	U
14b,17b-20R-Methylcholestane	1.44	U
14b,17b-20S-Methylcholestane	1.44	U
14b(H),17b(H)-20R-Ethylcholestane	1.44	U
14b(H),17b(H)-20S-Ethylcholestane	1.44	U
T22a-Gammacerane/C32-diahopane	1.44	U

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	96	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
J - Estimated value, below quantitation limit.
N/A - Not Applicable
G - Matrix Interference

12/01/16 19:17

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251634.D
Acq On : 28 Nov 2016 12:15 am
Operator : PAH14:AC
Sample : 1610011-11-RF1
Misc : 1x
ALS Vial : 33 Sample Multiplier: 1

MOS
12-1-2016

Quant Time: Nov 29 15:22:39 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.201	240	39135	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.797	217	28548	2407.900	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 240.79%#			
Target Compounds						Qvalue
2) Hopane (T19)	52.245	191	204	9.094	ng/mL#	67
4) C23 Tricyclic Terpane (T4	40.827	191	184M3	8.203	ng/ml	
5) C24 Tricyclic Terpane (T5	41.543	191	73M2	3.254	ng/ml	
6) C25 Tricyclic Terpane (T6	43.028	191	47M2	2.095	ng/ml	
7) C24 Tetracyclic Terpane (	44.354	191	66M2	2.942	ng/ml	
14) 18a-22,29,30-Trisnorneoho	48.477	191	67M2	2.987	ng/ml	
17) 17a(H)-22,29,30-Trisnorho	49.012	191	79M2	3.522	ng/ml	
20) 30-Norhopane (T15)	50.873	191	180	8.024	ng/ml	100
29) 30,31-Bishomohopane-22S (	55.553	191G	307M4	13.686	ng/ml	
41) 14a,17a-20S-Chol/13b,17a-	47.279	217	25M2	2.109	ng/ml	

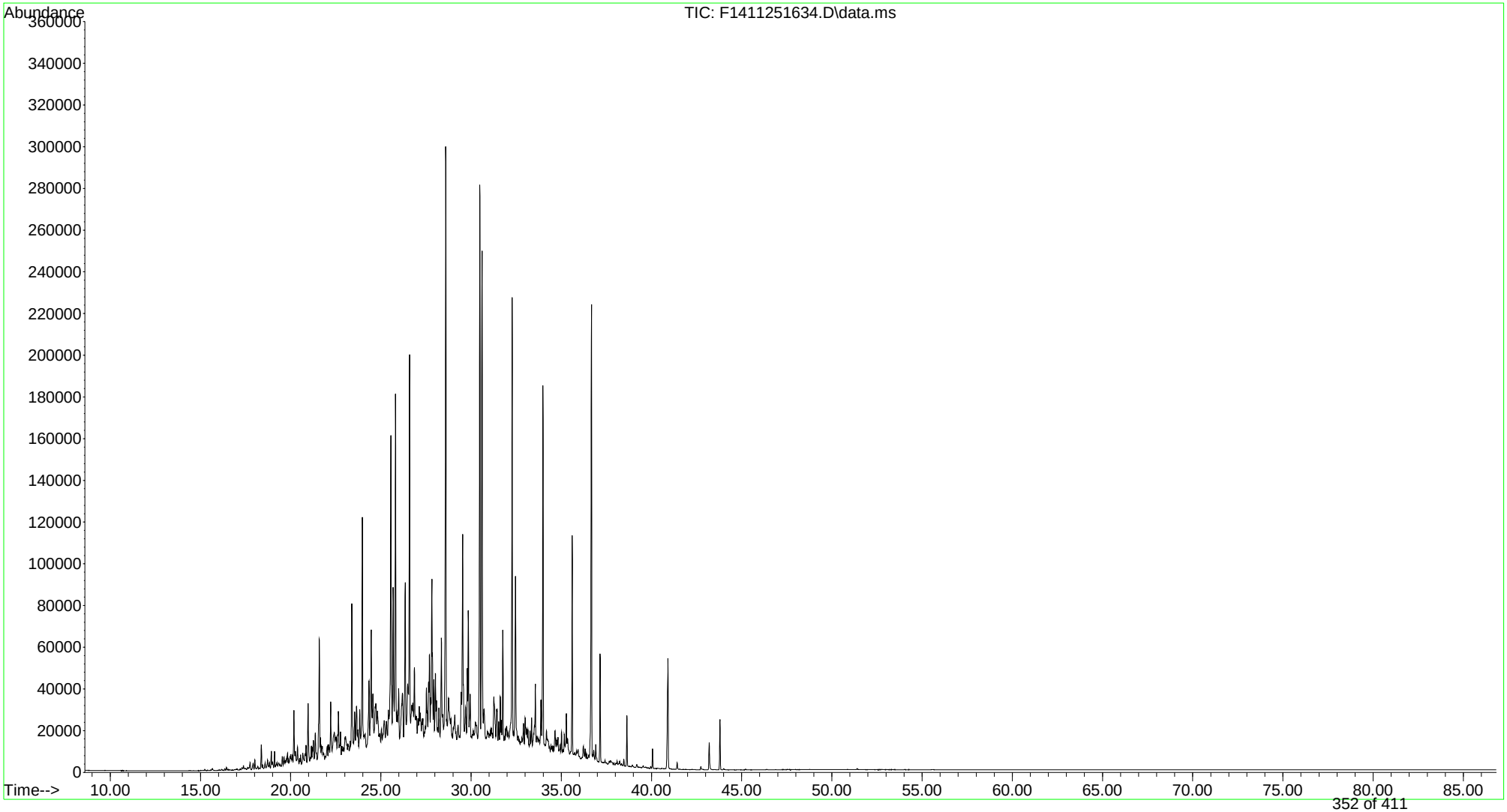
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251634.D
Acq On : 28 Nov 2016 12:15 am
Operator : PAH14:AC
Sample : 1610011-11-RF1
Misc : 1x
ALS Vial : 33 Sample Multiplier: 1

Quant Time: Nov 29 15:22:39 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS



Form I
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-08 11-15'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-12F1**
Associated Blank: **SS110116B03F1**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/24/16	10/28/16	11/01/16	11/28/16	76.1	15.83	2	1	AC

Parameter	Result		Parameter	Result	
C23 Tricyclic Terpane	1.66	U	30,31-Bishomohopane-22R	1.66	U
C24 Tricyclic Terpane	1.66	U	30,31-Trishomohopane-22S	1.66	U
C25 Tricyclic Terpane	1.66	U	30,31-Trishomohopane-22R	1.66	U
C24 Tetracyclic Terpane	1.66	U	Tetrakishomohopane-22S	1.66	U
C26 Tricyclic Terpane-22S	1.66	U	Tetrakishomohopane-22R	1.66	U
C26 Tricyclic Terpane-22R	1.66	U	Pentakishomohopane-22S	1.66	U
C28 Tricyclic Terpane-22S	1.66	U	Pentakishomohopane-22R	1.66	U
C28 Tricyclic Terpane-22R	1.66	U	13b(H),17a(H)-20S-Diacholestane	1.66	U
C29 Tricyclic Terpane-22S	1.66	U	13b(H),17a(H)-20R-Diacholestane	1.66	U
C29 Tricyclic Terpane-22R	1.66	U	13b,17a-20S-Methyldiacholestane	1.66	U
18a-22,29,30-Trisnorneohopane-TS	1.66	U	14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	1.66	U
C30 Tricyclic Terpane-22S	1.66	U			
C30 Tricyclic Terpane-22R	1.66	U	14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	1.66	U
17a(H)-22,29,30-Trisnorhopane-TM	1.66	U			
17a/b,21b/a 28,30-Bisnorhopane	1.66	U	Unknown Sterane (S18)	1.66	U
17a(H),21b(H)-25-Norhopane	1.66	U	13a,17b-20S-Ethyldiacholestane	1.66	U
30-Norhopane	1.66	U	14a,17a-20S-Methylcholestane	1.66	U
18a(H)-30-Norneohopane-C29Ts	1.66	U	14a,17a-20R-Methylcholestane	1.66	U
17a(H)-Diahopane	1.66	U	14a(H),17a(H)-20S-Ethylcholestane	1.66	U
30-Normoretane	1.66	U	14a(H),17a(H)-20R-Ethylcholestane	1.66	U
18a(H)&18b(H)-Oleananes	1.66	U	14b(H),17b(H)-20R-Cholestane	1.66	U
Hopane	1.66	U	14b(H),17b(H)-20S-Cholestane	1.66	U
Moretane	1.66	U	14b,17b-20R-Methylcholestane	1.66	U
30-Homohopane-22S	1.66	U	14b,17b-20S-Methylcholestane	1.66	U
30-Homohopane-22R	1.66	U	14b(H),17b(H)-20R-Ethylcholestane	1.66	U
30,31-Bishomohopane-22S	1.66	U	14b(H),17b(H)-20S-Ethylcholestane	1.66	U
			T22a-Gammacerane/C32-diahopane	1.66	U

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	114	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251635.D
Acq On : 28 Nov 2016 1:49 am
Operator : PAH14:AC
Sample : 1610011-12-RF1
Misc : 1x
ALS Vial : 34 Sample Multiplier: 1

MJS
12-1-2016

Quant Time: Nov 29 13:47:04 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.201	240	36692	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.797	217	31693	2851.150	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 285.12%#			
Target Compounds						Qvalue

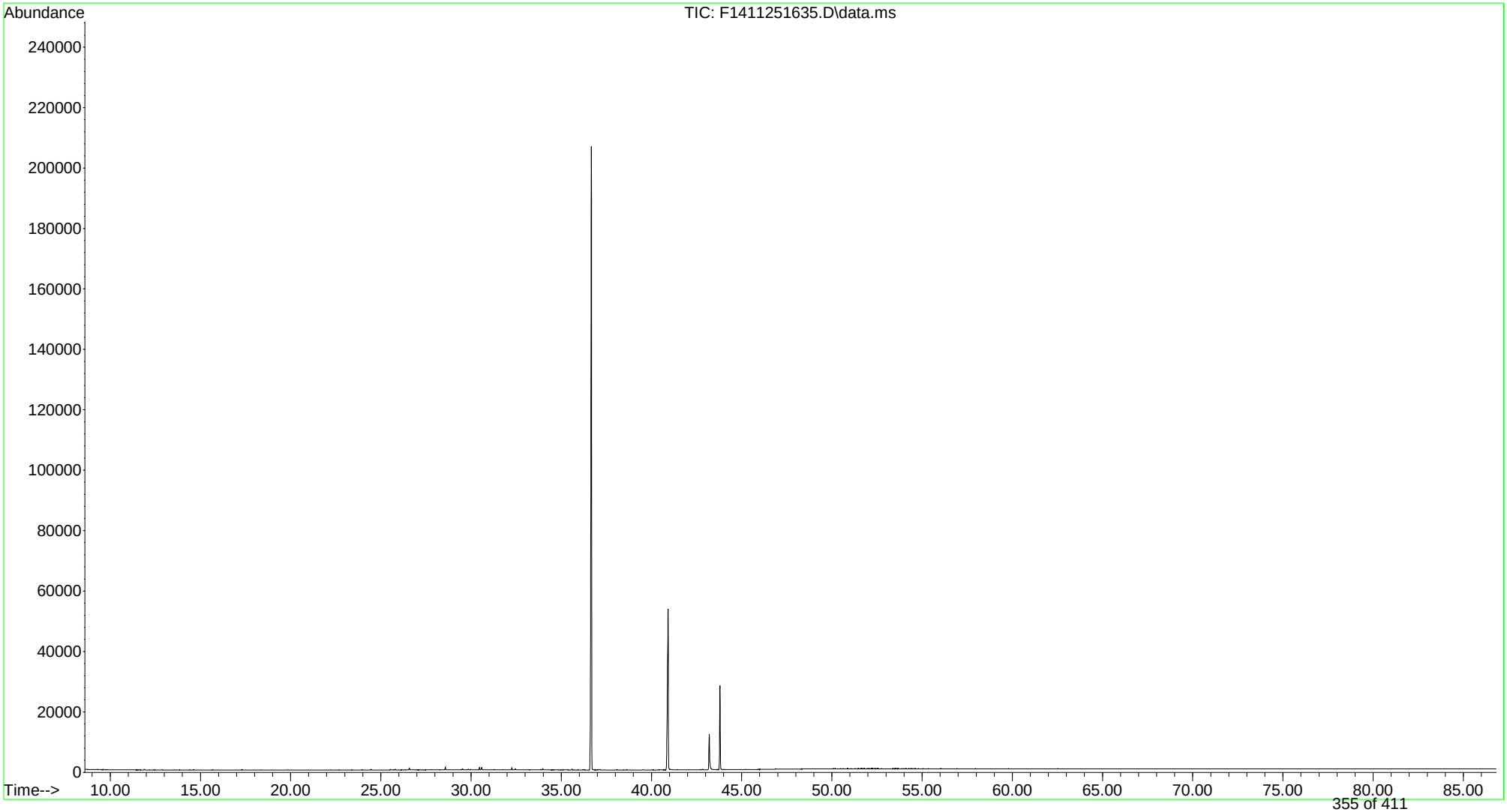
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251635.D
Acq On : 28 Nov 2016 1:49 am
Operator : PAH14:AC
Sample : 1610011-12-RF1
Misc : 1x
ALS Vial : 34 Sample Multiplier: 1

Quant Time: Nov 29 13:47:04 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS



Form I
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFSB-09 3-4'**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-14F1**
Associated Blank: **SS110116B03F1**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/21/16	10/28/16	11/01/16	11/28/16	80.9	5.69	3.33	1	AC

Parameter	Result	
C23 Tricyclic Terpane	**11.7**	
C24 Tricyclic Terpane	**11.7**	
C25 Tricyclic Terpane	**12.4**	
C24 Tetracyclic Terpane	**21.0**	
C26 Tricyclic Terpane-22S	**4.04**	J
C26 Tricyclic Terpane-22R	**5.54**	J
C28 Tricyclic Terpane-22S	**4.34**	J
C28 Tricyclic Terpane-22R	**4.79**	J
C29 Tricyclic Terpane-22S	**5.09**	J
C29 Tricyclic Terpane-22R	**6.32**	J
18a-22,29,30-Trisnorneohopane-TS	**43.9**	
C30 Tricyclic Terpane-22S	**8.01**	
C30 Tricyclic Terpane-22R	**3.16**	J
17a(H)-22,29,30-Trisnorhopane-TM	**119**	
17a/b,21b/a 28,30-Bisnorhopane	**14.1**	
17a(H),21b(H)-25-Norhopane	7.23	U
30-Norhopane	**200**	
18a(H)-30-Norneohopane-C29Ts	**54.0**	
17a(H)-Diahopane	**25.8**	
30-Normoretane	**50.4**	
18a(H)&18b(H)-Oleananes	**22.6**	
Hopane	**314**	
Moretane	**93.1**	
30-Homohopane-22S	**72.6**	
30-Homohopane-22R	**57.4**	
30,31-Bishomohopane-22S	**220**	G

Parameter	Result	
30,31-Bishomohopane-22R	**30.6**	
30,31-Trishomohopane-22S	**22.1**	
30,31-Trishomohopane-22R	**12.5**	
Tetrakishomohopane-22S	**11.0**	
Tetrakishomohopane-22R	**6.74**	J
Pentakishomohopane-22S	**4.73**	J
Pentakishomohopane-22R	**3.94**	J
13b(H),17a(H)-20S-Diacholestane	**18.2**	
13b(H),17a(H)-20R-Diacholestane	**9.51**	
13b,17a-20S-Methyldiacholestane	**12.3**	
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**33.0**	
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**33.8**	
Unknown Sterane (S18)	**7.12**	J
13a,17b-20S-Ethyldiacholestane	7.23	U
14a,17a-20S-Methylcholestane	**23.1**	
14a,17a-20R-Methylcholestane	**14.9**	
14a(H),17a(H)-20S-Ethylcholestane	**21.0**	
14a(H),17a(H)-20R-Ethylcholestane	**18.7**	
14b(H),17b(H)-20R-Cholestane	**11.4**	
14b(H),17b(H)-20S-Cholestane	**12.7**	
14b,17b-20R-Methylcholestane	**20.0**	
14b,17b-20S-Methylcholestane	**27.1**	
14b(H),17b(H)-20R-Ethylcholestane	**34.8**	
14b(H),17b(H)-20S-Ethylcholestane	**25.5**	
T22a-Gammacerane/C32-diahopane	**12.6**	

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	109	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
J - Estimated value, below quantitation limit.
N/A - Not Applicable
G - Matrix Interference

12/01/16 19:17

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251636.D
Acq On : 28 Nov 2016 3:22 am
Operator : PAH14:AC
Sample : 1610011-14-RF1
Misc : 1x
ALS Vial : 35 Sample Multiplier: 1

MJS
12-1-2016

Quant Time: Nov 29 15:23:50 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.194	240	41899	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.797	217	20866	1643.856	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 164.39%#			
Target Compounds						Qvalue
2) Hopane (T19)	52.245	191	10412	433.547	ng/mL#	88
4) C23 Tricyclic Terpane (T4	40.820	191	390M4	16.239	ng/ml	
5) C24 Tricyclic Terpane (T5	41.543	191	389M4	16.198	ng/ml	
6) C25 Tricyclic Terpane (T6	43.066	191	413M1	17.197	ng/ml	
7) C24 Tetracyclic Terpane (	44.354	191	696	28.981	ng/ml	100
8) C26 Tricyclic Terpane-22S	44.083	191	134M3	5.580	ng/ml	
9) C26 Tricyclic Terpane-22R	44.174	191	184M4	7.662	ng/ml	
10) C28 Tricyclic Terpane-22S	46.457	191	144M4	5.996	ng/ml	
11) C28 Tricyclic Terpane-22R	46.623	191	159	6.621	ng/ml	100
12) C29 Tricyclic Terpane-22S	47.135	191	169M4	7.037	ng/ml	
13) C29 Tricyclic Terpane-22R	47.339	191	210	8.744	ng/ml	100
14) 18a-22,29,30-Trisnorneoho	48.469	191	1457M4	60.668	ng/ml	
15) C30 Tricyclic Terpane-22S	48.552	191	266M4	11.076	ng/mL	
16) C30 Tricyclic Terpane-22R	48.801	191	105M3	4.372	ng/mL	
17) 17a(H)-22,29,30-Trisnorho	49.019	191	3965M4	165.099	ng/ml	
18) 17a/b,21b/a 28,30-Bisnorh	50.195	191	468M3	19.487	ng/ml	
20) 30-Norhopane (T15)	50.873	191	6635M4	276.276	ng/ml	
21) 18a(H)-30-Norneohopane-C2	50.979	191	1794M4	74.701	ng/ml	
22) 17a(H)-Diahopane (X)	51.099	191	858M4	35.726	ng/ml	
23) 30-Normoretane (T17)	51.650	191	1674	69.704	ng/ml	100
24) 18a(H)&18b(H)-Oleananes (	52.057	191	751	31.271	ng/ml	100
25) Moretane (T20)	52.923	191	3092M4	128.748	ng/ml	
26) 30-Homohopane-22S (T21)	54.031	191	2411	100.392	ng/ml	100
27) 30-Homohopane-22R (T22)	54.257	191	1908	79.448	ng/ml	100
28) Gammacerane/C32-diahopane	54.815	191	419	17.447	ng/mL	100
29) 30,31-Bishomohopane-22S (	55.546	191G	7303	304.091	ng/ml	100
30) 30,31-Bishomohopane-22R (	55.968	191	1018M4	42.389	ng/ml	
31) 30,31-Trishomohopane-22S	57.709	191	733M4	30.522	ng/ml	
32) 30,31-Trishomohopane-22R	58.319	191	415	17.280	ng/ml	100
33) Tetrakishomohopane-22S (T	60.354	191	367M4	15.282	ng/ml	
34) Tetrakishomohopane-22R (T	61.228	191	224M4	9.327	ng/ml	
35) Pentakishomohopane-22S (T	63.474	191	157M4	6.537	ng/ml	
36) Pentakishomohopane-22R (T	64.786	191	131M4	5.455	ng/ml	
38) 13b(H),17a(H)-20S-Diachol	45.296	217	320	25.210	ng/ml	100
39) 13b(H),17a(H)-20R-Diachol	45.718	217	167M4	13.157	ng/ml	
40) 13b,17a-20S-Methyldiachol	46.412	217	216M4	17.017	ng/ml	
41) 14a,17a-20S-Chol/13b,17a-	47.286	217	580	45.693	ng/ml	100
42) 14a,17a-20R-Chol/13b,17a-	47.799	217	593M4	46.717	ng/ml	
43) Unknown Sterane (S18)	48.077	217	125	9.848	ng/ml	100
45) 14a,17a-20S-Methylcholest	48.484	217	405M4	31.907	ng/ml	
46) 14a,17a-20R-Methylcholest	49.208	217	262	20.641	ng/ml	100
47) 14a(H),17a(H)-20S-Ethylch	49.562	217	369M4	29.070	ng/ml	
48) 14a(H),17a(H)-20R-Ethylch	50.474	217	329M4	25.919	ng/ml	
49) 14b(H),17b(H)-20R-Cholest	47.369	218	200M4	15.756	ng/ml	
50) 14b(H),17b(H)-20S-Cholest	47.459	218	223M4	17.568	ng/ml	
51) 14b,17b-20R-Methylcholest	48.673	218	352	27.731	ng/ml	100
52) 14b,17b-20S-Methylcholest	48.741	218	475	37.421	ng/ml	100
53) 14b(H),17b(H)-20R-Ethylch	49.811	218	611M3	48.136	ng/ml	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251636.D
Acq On : 28 Nov 2016 3:22 am
Operator : PAH14:AC
Sample : 1610011-14-RF1
Misc : 1x
ALS Vial : 35 Sample Multiplier: 1

Quant Time: Nov 29 15:23:50 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
54) 14b(H),17b(H)-20S-Ethylch	49.841	218	448M3	35.294	ng/ml	

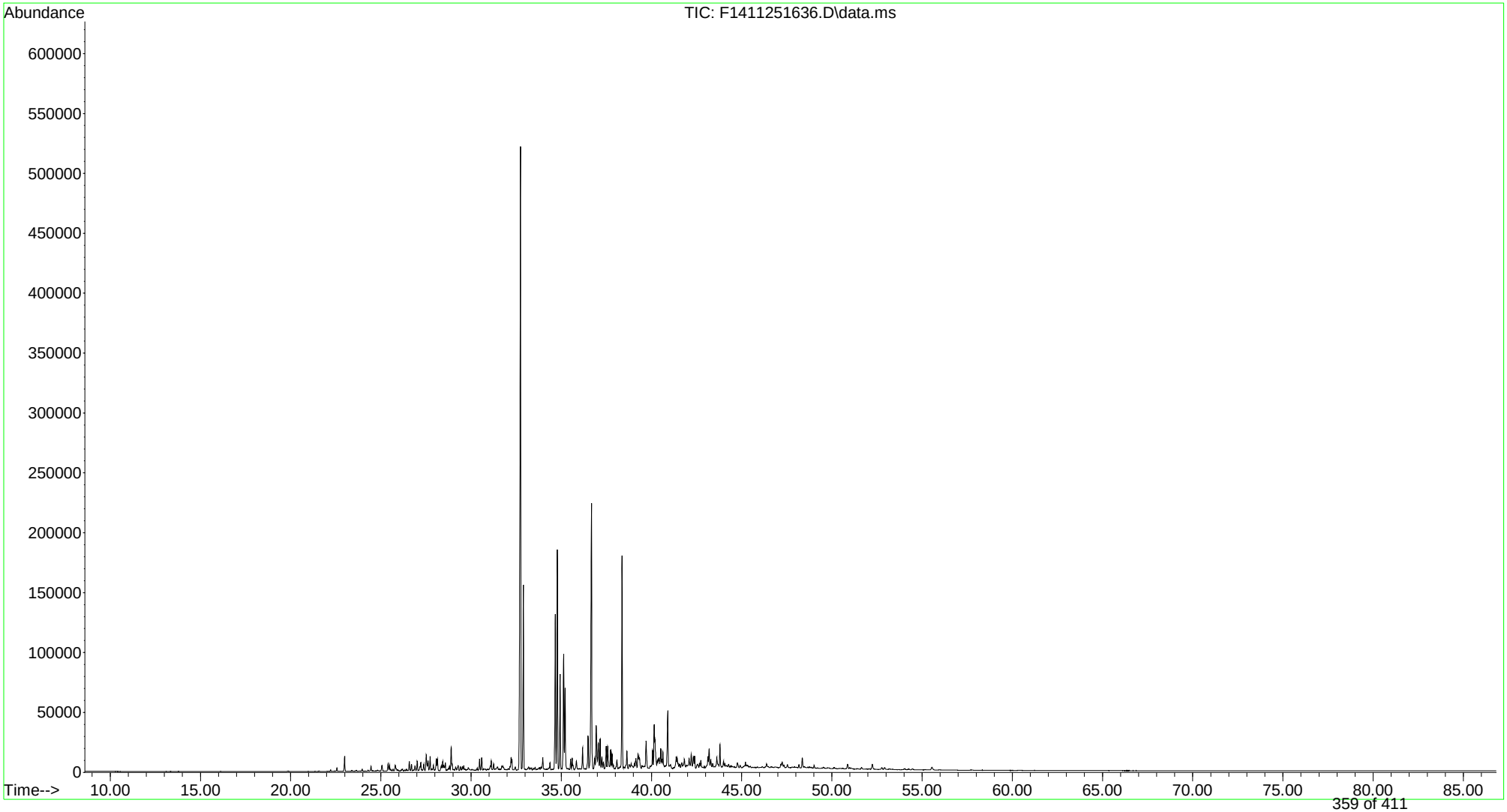
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251636.D
Acq On : 28 Nov 2016 3:22 am
Operator : PAH14:AC
Sample : 1610011-14-RF1
Misc : 1x
ALS Vial : 35 Sample Multiplier: 1

Quant Time: Nov 29 15:23:50 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS



Form I
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **DUP-2**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **1610011-15F1**
Associated Blank: **SS110116B03F1**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/25/16	10/28/16	11/01/16	11/28/16	83.2	5.49	1.6	1	AC

Parameter	Result		Parameter	Result	
C23 Tricyclic Terpane	**79.0**		30,31-Bishomohopane-22R	**17.0**	
C24 Tricyclic Terpane	**44.1**		30,31-Trishomohopane-22S	**12.7**	
C25 Tricyclic Terpane	**39.7**		30,31-Trishomohopane-22R	**8.08**	
C24 Tetracyclic Terpane	**30.0**		Tetrakishomohopane-22S	**7.04**	
C26 Tricyclic Terpane-22S	**19.5**		Tetrakishomohopane-22R	**3.62**	
C26 Tricyclic Terpane-22R	**18.3**		Pentakishomohopane-22S	**2.88**	J
C28 Tricyclic Terpane-22S	**20.7**		Pentakishomohopane-22R	**2.43**	J
C28 Tricyclic Terpane-22R	**24.8**		13b(H),17a(H)-20S-Diacholestane	**78.2**	
C29 Tricyclic Terpane-22S	**18.9**		13b(H),17a(H)-20R-Diacholestane	**46.4**	
C29 Tricyclic Terpane-22R	**20.0**		13b,17a-20S-Methyldiacholestane	**33.1**	
18a-22,29,30-Trisnorneohopane-TS	**60.4**		14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**121**	
C30 Tricyclic Terpane-22S	**15.8**				
C30 Tricyclic Terpane-22R	**13.9**		14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**104**	
17a(H)-22,29,30-Trisnorhopane-TM	**66.1**		Unknown Sterane (S18)	**27.8**	
17a/b,21b/a 28,30-Bisnorhopane	**15.8**		13a,17b-20S-Ethyldiacholestane	**2.06**	J
17a(H),21b(H)-25-Norhopane	**8.35**		14a,17a-20S-Methylcholestane	**45.6**	
30-Norhopane	**109**		14a,17a-20R-Methylcholestane	**28.6**	
18a(H)-30-Norneohopane-C29Ts	**47.7**		14a(H),17a(H)-20S-Ethylcholestane	**35.5**	
17a(H)-Diahopane	**20.8**		14a(H),17a(H)-20R-Ethylcholestane	**34.1**	
30-Normoretane	**22.8**		14b(H),17b(H)-20R-Cholestane	**52.8**	
18a(H)&18b(H)-Oleananes	**13.8**		14b(H),17b(H)-20S-Cholestane	**49.6**	
Hopane	**177**		14b,17b-20R-Methylcholestane	**38.4**	
Moretane	**28.8**		14b,17b-20S-Methylcholestane	**62.4**	
30-Homohopane-22S	**39.8**		14b(H),17b(H)-20R-Ethylcholestane	**72.2**	
30-Homohopane-22R	**38.1**		14b(H),17b(H)-20S-Ethylcholestane	**61.4**	
30,31-Bishomohopane-22S	**23.8**		T22a-Gammacerane/C32-diahopane	**10.7**	

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	99	50-130

J - Estimated value, below quantitation limit.
N/A - Not Applicable

12/01/16 19:17

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251637.D
Acq On : 28 Nov 2016 4:56 am
Operator : PAH14:AC
Sample : 1610011-15-RF1
Misc : 1x
ALS Vial : 36 Sample Multiplier: 1

MJS
12-1-2016

Quant Time: Nov 29 15:24:25 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.209	240	38205	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.812	217	35942	3105.347	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 310.53%#			
Target Compounds						Qvalue
2) Hopane (T19)	52.252	191	11075M3	505.743	ng/mL	
4) C23 Tricyclic Terpane (T4	40.835	191	4937	225.449	ng/ml	100
5) C24 Tricyclic Terpane (T5	41.558	191	2757	125.899	ng/ml	100
6) C25 Tricyclic Terpane (T6	43.043	191	2481M1	113.295	ng/ml	
7) C24 Tetracyclic Terpane (	44.362	191	1876	85.668	ng/ml	100
8) C26 Tricyclic Terpane-22S	44.098	191	1216	55.529	ng/ml	100
9) C26 Tricyclic Terpane-22R	44.196	191	1142M4	52.150	ng/ml	
10) C28 Tricyclic Terpane-22S	46.472	191	1295M4	59.137	ng/ml	
11) C28 Tricyclic Terpane-22R	46.638	191	1547M4	70.644	ng/ml	
12) C29 Tricyclic Terpane-22S	47.150	191	1180	53.885	ng/ml	100
13) C29 Tricyclic Terpane-22R	47.354	191	1248M4	56.990	ng/ml	
14) 18a-22,29,30-Trisnorneoho	48.484	191	3777M4	172.478	ng/ml	
15) C30 Tricyclic Terpane-22S	48.567	191	988M4	45.117	ng/mL	
16) C30 Tricyclic Terpane-22R	48.808	191	870M4	39.729	ng/mL	
17) 17a(H)-22,29,30-Trisnorho	49.034	191	4131	188.643	ng/ml	100
18) 17a/b,21b/a 28,30-Bisnorh	50.210	191	987M4	45.072	ng/ml	
19) 17a(H),21b(H)-25-Norhopan	50.007	191	522	23.837	ng/ml	100
20) 30-Norhopane (T15)	50.888	191	6813M4	311.117	ng/ml	
21) 18a(H)-30-Norneohopane-C2	50.994	191	2979M4	136.037	ng/ml	
22) 17a(H)-Diahopane (X)	51.115	191	1298	59.273	ng/ml	100
23) 30-Normoretane (T17)	51.665	191	1424	65.027	ng/ml	100
24) 18a(H)&18b(H)-Oleananes (	52.072	191	865M4	39.500	ng/ml	
25) Moretane (T20)	52.938	191	1801M4	82.243	ng/ml	
26) 30-Homohopane-22S (T21)	54.039	191	2489	113.661	ng/ml	100
27) 30-Homohopane-22R (T22)	54.265	191	2382	108.775	ng/ml	100
28) Gammacerane/C32-diahopane	54.822	191	669M4	30.550	ng/mL	
29) 30,31-Bishomohopane-22S (	55.591	191	1484M4	67.767	ng/ml	
30) 30,31-Bishomohopane-22R (	55.975	191	1059	48.360	ng/ml	100
31) 30,31-Trishomohopane-22S	57.724	191	794	36.258	ng/ml	100
32) 30,31-Trishomohopane-22R	58.349	191	505M4	23.061	ng/ml	
33) Tetrakishomohopane-22S (T	60.369	191	440	20.093	ng/ml	100
34) Tetrakishomohopane-22R (T	61.251	191	226M2	10.320	ng/ml	
35) Pentakishomohopane-22S (T	63.489	191	180M3	8.220	ng/ml	
36) Pentakishomohopane-22R (T	64.793	191	152M4	6.941	ng/ml	
38) 13b(H),17a(H)-20S-Diachol	45.311	217	2584	223.255	ng/ml	100
39) 13b(H),17a(H)-20R-Diachol	45.734	217	1532	132.363	ng/ml	100
40) 13b,17a-20S-Methyldiachol	46.427	217	1092M4	94.348	ng/ml	
41) 14a,17a-20S-Chol/13b,17a-	47.301	217	4000	345.595	ng/ml	100
42) 14a,17a-20R-Chol/13b,17a-	47.814	217	3453	298.335	ng/ml	100
43) Unknown Sterane (S18)	48.092	217	918M4	79.314	ng/ml	
44) 13a,17b-20S-Ethyldiachole	48.356	217	68M3	5.875	ng/ml	
45) 14a,17a-20S-Methylcholest	48.507	217	1507M4	130.203	ng/ml	
46) 14a,17a-20R-Methylcholest	49.223	217	944M4	81.561	ng/ml	
47) 14a(H),17a(H)-20S-Ethylch	49.570	217	1174M4	101.432	ng/ml	
48) 14a(H),17a(H)-20R-Ethylch	50.489	217	1125	97.199	ng/ml	100
49) 14b(H),17b(H)-20R-Cholest	47.384	218	1745M4	150.766	ng/ml	
50) 14b(H),17b(H)-20S-Cholest	47.467	218	1637M4	141.435	ng/ml	
51) 14b,17b-20R-Methylcholest	48.688	218	1267	109.467	ng/ml	100

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251637.D
Acq On : 28 Nov 2016 4:56 am
Operator : PAH14:AC
Sample : 1610011-15-RF1
Misc : 1x
ALS Vial : 36 Sample Multiplier: 1

Quant Time: Nov 29 15:24:25 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
52) 14b,17b-20S-Methylcholest	48.763	218	2062M4	178.154	ng/ml	
53) 14b(H),17b(H)-20R-Ethylch	49.826	218	2386	206.148	ng/ml	100
54) 14b(H),17b(H)-20S-Ethylch	49.863	218	2029M3	175.303	ng/ml	

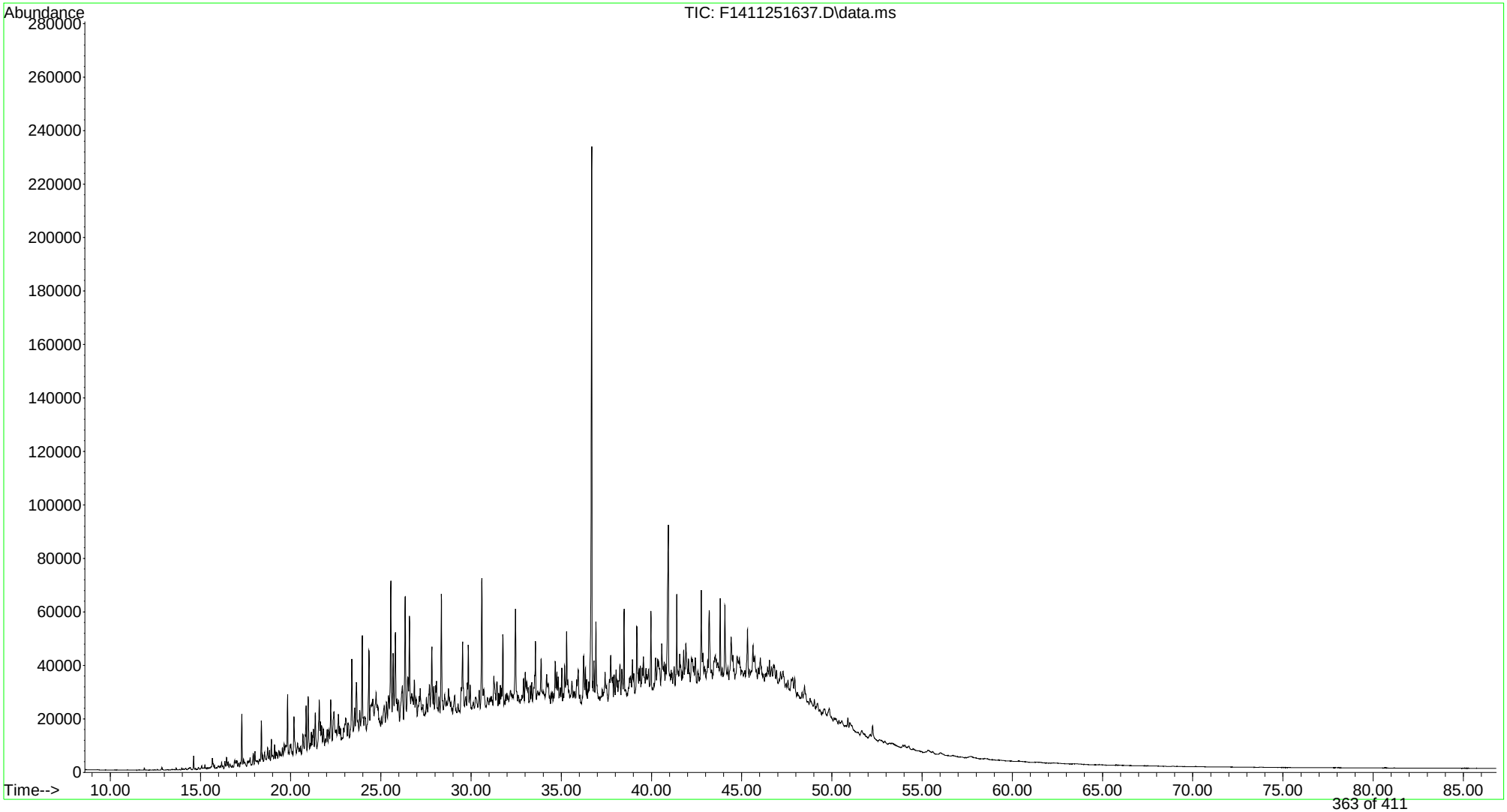
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251637.D
Acq On : 28 Nov 2016 4:56 am
Operator : PAH14:AC
Sample : 1610011-15-RF1
Misc : 1x
ALS Vial : 36 Sample Multiplier: 1

Quant Time: Nov 29 15:24:25 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS



Form I
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116B03F1**
Associated Blank: **N/A**
Concentration Units: **µg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/27/16	100	11.00	2	1	AC

Parameter	Result		Parameter	Result	
C23 Tricyclic Terpane	1.82	U	30,31-Bishomohopane-22R	1.82	U
C24 Tricyclic Terpane	1.82	U	30,31-Trishomohopane-22S	1.82	U
C25 Tricyclic Terpane	1.82	U	30,31-Trishomohopane-22R	1.82	U
C24 Tetracyclic Terpane	1.82	U	Tetrakishomohopane-22S	1.82	U
C26 Tricyclic Terpane-22S	1.82	U	Tetrakishomohopane-22R	1.82	U
C26 Tricyclic Terpane-22R	1.82	U	Pentakishomohopane-22S	1.82	U
C28 Tricyclic Terpane-22S	1.82	U	Pentakishomohopane-22R	1.82	U
C28 Tricyclic Terpane-22R	1.82	U	13b(H),17a(H)-20S-Diacholestane	1.82	U
C29 Tricyclic Terpane-22S	1.82	U	13b(H),17a(H)-20R-Diacholestane	1.82	U
C29 Tricyclic Terpane-22R	1.82	U	13b,17a-20S-Methyldiacholestane	1.82	U
18a-22,29,30-Trisnorneohopane-TS	1.82	U	14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	1.82	U
C30 Tricyclic Terpane-22S	1.82	U	14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	1.82	U
C30 Tricyclic Terpane-22R	1.82	U	Unknown Sterane (S18)	1.82	U
17a(H)-22,29,30-Trisnorhopane-TM	1.82	U	13a,17b-20S-Ethyldiacholestane	1.82	U
17a/b,21b/a 28,30-Bisnorhopane	1.82	U	14a,17a-20S-Methylcholestane	1.82	U
17a(H),21b(H)-25-Norhopane	1.82	U	14a,17a-20R-Methylcholestane	1.82	U
30-Norhopane	1.82	U	14a(H),17a(H)-20S-Ethylcholestane	1.82	U
18a(H)-30-Norneohopane-C29Ts	1.82	U	14a(H),17a(H)-20R-Ethylcholestane	1.82	U
17a(H)-Diahopane	1.82	U	14b(H),17b(H)-20R-Cholestane	1.82	U
30-Normoretane	1.82	U	14b(H),17b(H)-20S-Cholestane	1.82	U
18a(H)&18b(H)-Oleananes	1.82	U	14b,17b-20R-Methylcholestane	1.82	U
Hopane	1.82	U	14b,17b-20S-Methylcholestane	1.82	U
Moretane	1.82	U	14b(H),17b(H)-20R-Ethylcholestane	1.82	U
30-Homohopane-22S	1.82	U	14b(H),17b(H)-20S-Ethylcholestane	1.82	U
30-Homohopane-22R	1.82	U	T22a-Gammacerane/C32-diahopane	1.82	U
30,31-Bishomohopane-22S	1.82	U			

Surrogate	% Recovery	Acceptance Range (%)
5B(H)Cholane	103	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251628.D
Acq On : 27 Nov 2016 2:51 pm
Operator : PAH14:AC
Sample : ss110116b03-RF1
Misc : 1x
ALS Vial : 27 Sample Multiplier: 1

MJS
12-1-2016

Quant Time: Nov 29 13:46:13 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.209	240	34185	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.797	217	5349	516.494	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.65%			
Target Compounds						Qvalue

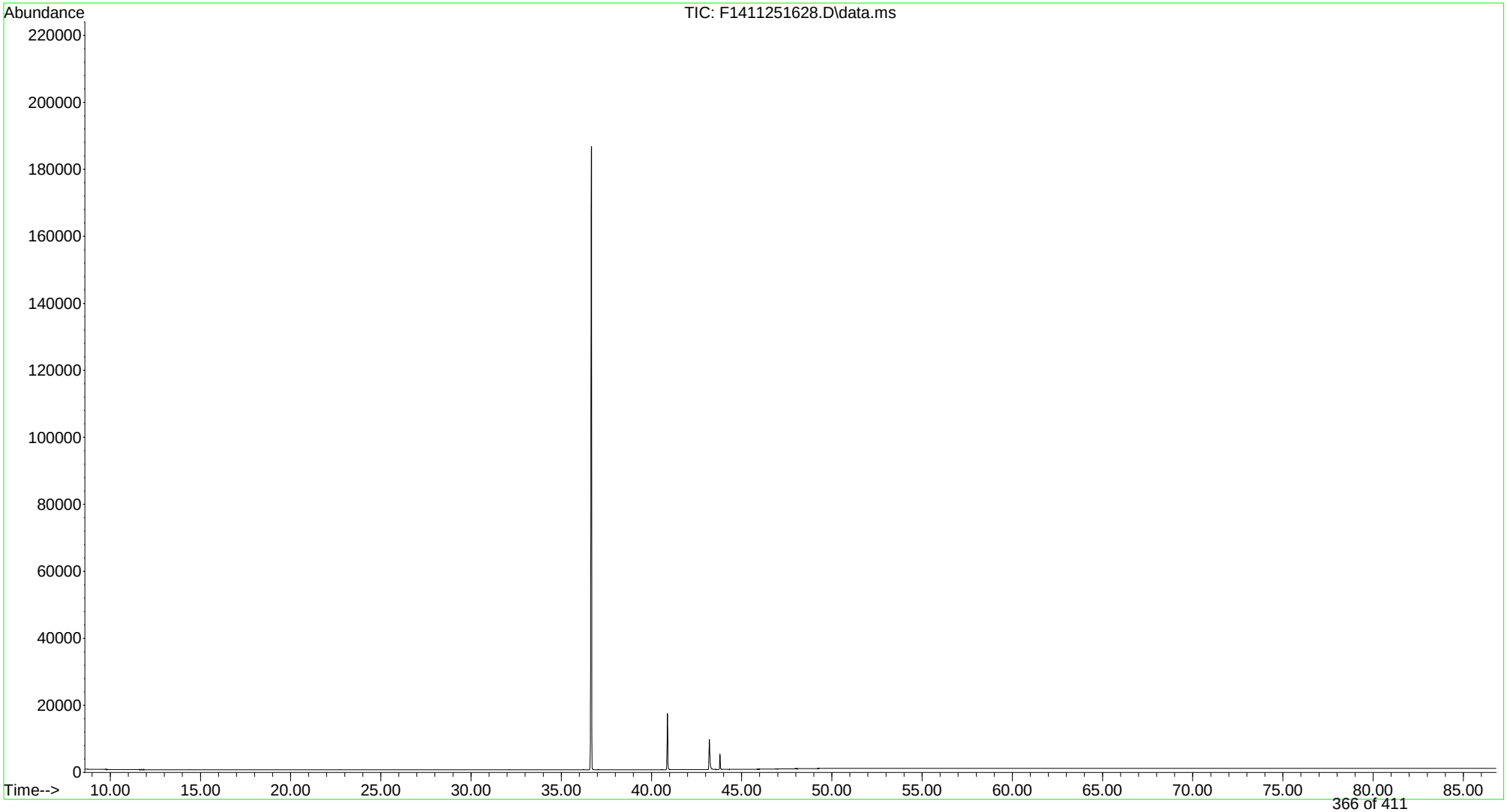
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251628.D
Acq On : 27 Nov 2016 2:51 pm
Operator : PAH14:AC
Sample : ss110116b03-RF1
Misc : 1x
ALS Vial : 27 Sample Multiplier: 1

Quant Time: Nov 29 13:46:13 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Biomarkers_F1 - ALL Biomarkers except TAS



Form III
Spike Recovery Summary
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS112816ANC02**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	AC

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
C23 Tricyclic Terpane	67.3	85.0	126	65-135
C24 Tricyclic Terpane	43.0	48.4	113	65-135
C25 Tricyclic Terpane	42.0	46.8	111	65-135
C24 Tetracyclic Terpane	14.8	15.4	104	65-135
C26 Tricyclic Terpane-22S	17.7	18.0	102	65-135
C26 Tricyclic Terpane-22R	15.4	16.6	108	65-135
C28 Tricyclic Terpane-22S	16.8	15.6	93	65-135
C28 Tricyclic Terpane-22R	18.1	17.8	98	65-135
C29 Tricyclic Terpane-22S	20.8	21.4	103	65-135
C29 Tricyclic Terpane-22R	22.6	23.6	104	65-135
18a-22,29,30-Trisnorneohopane-TS	31.3	31.4	100	65-135
C30 Tricyclic Terpane-22S	16.2	17.4	107	65-135
C30 Tricyclic Terpane-22R	16.4	17.9	109	65-135
17a(H)-22,29,30-Trisnorhopane-TM	37.8	39.8	105	65-135
17a/b,21b/a 28,30-Bisnorhopane	7.00	7.23	103	65-135
17a(H),21b(H)-25-Norhopane	8.7	8.45	97	65-135
30-Norhopane	99.7	106	106	65-135
18a(H)-30-Norneohopane-C29Ts	25.2	26.9	107	65-135
17a(H)-Diahopane	14.2	15.2	107	65-135
30-Normoretane	11.6	12.4	107	65-135
Hopane	173.6	190	110	65-135
Moretane	17.5	19.0	108	65-135
30-Homohopane-22S	75.1	76.7	102	65-135
30-Homohopane-22R	64.1	64.9	101	65-135
30,31-Bishomohopane-22S	53.6	55.0	103	65-135
30,31-Bishomohopane-22R	39.6	40.2	102	65-135
30,31-Trishomohopane-22S	41.8	44.4	106	65-135
30,31-Trishomohopane-22R	27.2	28.6	105	65-135
Tetrakishomohopane-22S	29.8	30.1	101	65-135
Tetrakishomohopane-22R	21.2	21.2	100	65-135
Pentakishomohopane-22S	30.2	30.0	99	65-135
Pentakishomohopane-22R	23.5	23.4	100	65-135
13b(H),17a(H)-20S-Diacholestane	50.0	48.3	97	65-135

Form III
Spike Recovery Summary
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS112816ANC02**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	AC

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
13b(H),17a(H)-20R-Diacholestane	26.3	28.0	106	65-135
13b,17a-20S-Methyldiacholestane	25.7	24.4	95	65-135
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	65.0	64.6	99	65-135
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	75.8	77.5	102	65-135
Unknown Sterane (S18)	21.3	19.9	93	65-135
13a,17b-20S-Ethyldiacholestane	3.9	3.45	88	65-135
14a,17a-20S-Methylcholestane	37.3	35.6	95	65-135
14a,17a-20R-Methylcholestane	34.5	34.7	101	65-135
14a(H),17a(H)-20S-Ethylcholestane	51.0	48.5	95	65-135
14a(H),17a(H)-20R-Ethylcholestane	39.5	44.4	112	65-135
14b(H),17b(H)-20R-Cholestane	41.5	50.2	121	65-135
14b(H),17b(H)-20S-Cholestane	42.5	50.1	118	65-135
14b,17b-20R-Methylcholestane	44.8	52.3	117	65-135
14b,17b-20S-Methylcholestane	55.4	64.8	117	65-135
14b(H),17b(H)-20R-Ethylcholestane	60.9	66.3	109	65-135
14b(H),17b(H)-20S-Ethylcholestane	40.3	50.6	125	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

12/01/16 19:47

Form I
Alaska North Slope Crude
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS112816ANC02**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	11/24/16	100	0.0502	10	1	AC

Parameter	Result
C23 Tricyclic Terpane	**85.0**
C24 Tricyclic Terpane	**48.4**
C25 Tricyclic Terpane	**46.8**
C24 Tetracyclic Terpane	**15.4**
C26 Tricyclic Terpane-22S	**18.0**
C26 Tricyclic Terpane-22R	**16.6**
C28 Tricyclic Terpane-22S	**15.6**
C28 Tricyclic Terpane-22R	**17.8**
C29 Tricyclic Terpane-22S	**21.4**
C29 Tricyclic Terpane-22R	**23.6**
18a-22,29,30-Trisnorneohopane-TS	**31.4**
C30 Tricyclic Terpane-22S	**17.4**
C30 Tricyclic Terpane-22R	**17.9**
17a(H)-22,29,30-Trisnorhopane-TM	**39.8**
17a/b,21b/a 28,30-Bisnorhopane	**7.23**
17a(H),21b(H)-25-Norhopane	**8.45**
30-Norhopane	**106**
18a(H)-30-Norneohopane-C29Ts	**26.9**
17a(H)-Diahopane	**15.2**
30-Normoretane	**12.4**
18a(H)&18b(H)-Oleananes	**2.71**
Hopane	**190**
Moretane	**19.0**
30-Homohopane-22S	**76.7**
30-Homohopane-22R	**64.9**
30,31-Bishomohopane-22S	**55.0**

Parameter	Result
30,31-Bishomohopane-22R	**40.2**
30,31-Trishomohopane-22S	**44.4**
30,31-Trishomohopane-22R	**28.6**
Tetrakishomohopane-22S	**30.1**
Tetrakishomohopane-22R	**21.2**
Pentakishomohopane-22S	**30.0**
Pentakishomohopane-22R	**23.4**
13b(H),17a(H)-20S-Diacholestane	**48.3**
13b(H),17a(H)-20R-Diacholestane	**28.0**
13b,17a-20S-Methyldiacholestane	**24.4**
14a(H),17a(H)-20S-Cholestane/ 13b(H),17a(H)-20S-Ethyldiacholestane (S12)	**64.6**
14a(H),17a(H)-20R-Cholestane/ 13b(H),17a(H)-20R-Ethyldiacholestane (S17)	**77.5**
Unknown Sterane (S18)	**19.9**
13a,17b-20S-Ethyldiacholestane	**3.45**
14a,17a-20S-Methylcholestane	**35.6**
14a,17a-20R-Methylcholestane	**34.7**
14a(H),17a(H)-20S-Ethylcholestane	**48.5**
14a(H),17a(H)-20R-Ethylcholestane	**44.4**
14b(H),17b(H)-20R-Cholestane	**50.2**
14b(H),17b(H)-20S-Cholestane	**50.1**
14b,17b-20R-Methylcholestane	**52.3**
14b,17b-20S-Methylcholestane	**64.8**
14b(H),17b(H)-20R-Ethylcholestane	**66.3**
14b(H),17b(H)-20S-Ethylcholestane	**50.6**
T22a-Gammacerane/C32-diahopane	**13.0**

N/A - Not Applicable

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Data File : F1411231610.D
Acq On : 24 Nov 2016 1:28 am
Operator : PAH14:AC
Sample : SS112816ANC02
Misc : frax36 5.02
ALS Vial : 10 Sample Multiplier: 1

NAL 11/28/16

Quant Time: Nov 25 11:07:25 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.201	240	45542	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.804	217	16789	1216.861	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 121.69%			
Target Compounds						Qvalue
2) Hopane (T19)	52.253	191	24967	956.446	ng/mL#	85
3) 17a(H),21B(H)-hopane - C3	52.253	191	24967	956.446	ng/mL#	85
4) C23 Tricyclic Terpane (T4	40.827	191	11137M4	426.641	ng/ml	
5) C24 Tricyclic Terpane (T5	41.551	191	6348	243.182	ng/ml	100
6) C25 Tricyclic Terpane (T6	43.036	191	6126M1	234.677	ng/ml	
7) C24 Tetracyclic Terpane (	44.362	191	2017	77.268	ng/ml	100
8) C26 Tricyclic Terpane-22S	44.091	191	2355	90.216	ng/ml	100
9) C26 Tricyclic Terpane-22R	44.189	191	2180	83.512	ng/ml	100
10) C28 Tricyclic Terpane-22S	46.472	191	2051M4	78.571	ng/ml	
11) C28 Tricyclic Terpane-22R	46.630	191	2336	89.488	ng/ml	100
12) C29 Tricyclic Terpane-22S	47.151	191	2804	107.417	ng/ml	100
13) C29 Tricyclic Terpane-22R	47.346	191	3088	118.296	ng/ml	100
14) 18a-22,29,30-Trisnorneoho	48.477	191	4116	157.677	ng/ml	100
15) C30 Tricyclic Terpane-22S	48.560	191	2276	87.190	ng/mL	100
16) C30 Tricyclic Terpane-22R	48.801	191	2345M4	89.833	ng/mL	
17) 17a(H)-22,29,30-Trisnorho	49.027	191	5216	199.817	ng/ml	100
18) 17a/b,21b/a 28,30-Bisnorh	50.218	191	948	36.316	ng/ml	100
19) 17a(H),21b(H)-25-Norhopan	50.007	191	1107	42.407	ng/ml	100
20) 30-Norhopane (T15)	50.889	191	13847M4	530.456	ng/ml	
21) 18a(H)-30-Norneohopane-C2	50.987	191	3530M4	135.229	ng/ml	
22) 17a(H)-Diahopane (X)	51.115	191	1985M4	76.042	ng/ml	
23) 30-Normoretane (T17)	51.657	191	1619	62.021	ng/ml	100
24) 18a(H)&18b(H)-Oleananes (	52.049	191	355M4	13.599	ng/ml	
25) Moretane (T20)	52.938	191	2488M4	95.311	ng/ml	
26) 30-Homohopane-22S (T21)	54.039	191	10056	385.229	ng/ml	100
27) 30-Homohopane-22R (T22)	54.272	191	8509	325.966	ng/ml	100
28) Gammacerane/C32-diahopane	54.823	191	1704M4	65.278	ng/mL	
29) 30,31-Bishomohopane-22S (	55.599	191	7204	275.974	ng/ml	100
30) 30,31-Bishomohopane-22R (	55.983	191	5269	201.847	ng/ml	100
31) 30,31-Trishomohopane-22S	57.724	191	5814	222.725	ng/ml	100
32) 30,31-Trishomohopane-22R	58.350	191	3746	143.503	ng/ml	100
33) Tetrakishomohopane-22S (T	60.369	191	3945	151.127	ng/ml	100
34) Tetrakishomohopane-22R (T	61.266	191	2775	106.306	ng/ml	100
35) Pentakishomohopane-22S (T	63.497	191	3937	150.820	ng/ml	100
36) Pentakishomohopane-22R (T	64.801	191	3071M4	117.645	ng/ml	
38) 13b(H),17a(H)-20S-Diachol	45.304	217	3343	242.299	ng/ml	100
39) 13b(H),17a(H)-20R-Diachol	45.726	217	1936	140.321	ng/ml	100
40) 13b,17a-20S-Methyldiachol	46.419	217	1690M4	122.491	ng/ml	
41) 14a,17a-20S-Chol/13b,17a-	47.286	217	4474	324.274	ng/ml	100
42) 14a,17a-20R-Chol/13b,17a-	47.806	217	5366M4	388.926	ng/ml	
43) Unknown Sterane (S18)	48.085	217	1376	99.732	ng/ml	100
44) 13a,17b-20S-Ethyldiachole	48.349	217	239	17.323	ng/ml	100
45) 14a,17a-20S-Methylcholest	48.507	217	2463M4	178.517	ng/ml	
46) 14a,17a-20R-Methylcholest	49.223	217	2404M4	174.241	ng/ml	
47) 14a(H),17a(H)-20S-Ethylch	49.577	217	3362M4	243.677	ng/ml	
48) 14a(H),17a(H)-20R-Ethylch	50.482	217	3076M4	222.947	ng/ml	
49) 14b(H),17b(H)-20R-Cholest	47.377	218	3477M4	252.012	ng/ml	
50) 14b(H),17b(H)-20S-Cholest	47.467	218	3469M4	251.432	ng/ml	
51) 14b,17b-20R-Methylcholest	48.680	218	3625	262.739	ng/ml	100
52) 14b,17b-20S-Methylcholest	48.756	218	4488M4	325.289	ng/ml	
53) 14b(H),17b(H)-20R-Ethylch	49.818	218	4592	332.827	ng/ml	100
54) 14b(H),17b(H)-20S-Ethylch	49.856	218	3501M3	253.751	ng/ml	
55) C26,20R- +C27,20S- triaro	49.532	231	19380M4	1404.655	ng/mL	

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Data File : F1411231610.D
Acq On : 24 Nov 2016 1:28 am
Operator : PAH14:AC
Sample : SS112816ANC02
Misc : frax36 5.02
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 25 11:07:25 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Default - All compounds listed

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
56) C28,20S-triaromatic stero	50.399	231	12158	881.208	ng/mL	100
57) C27,20R-triaromatic stero	50.851	231	11949	866.059	ng/mL	100
58) C28,20R-triaromatic stero	52.049	231	9860	714.649	ng/mL	100

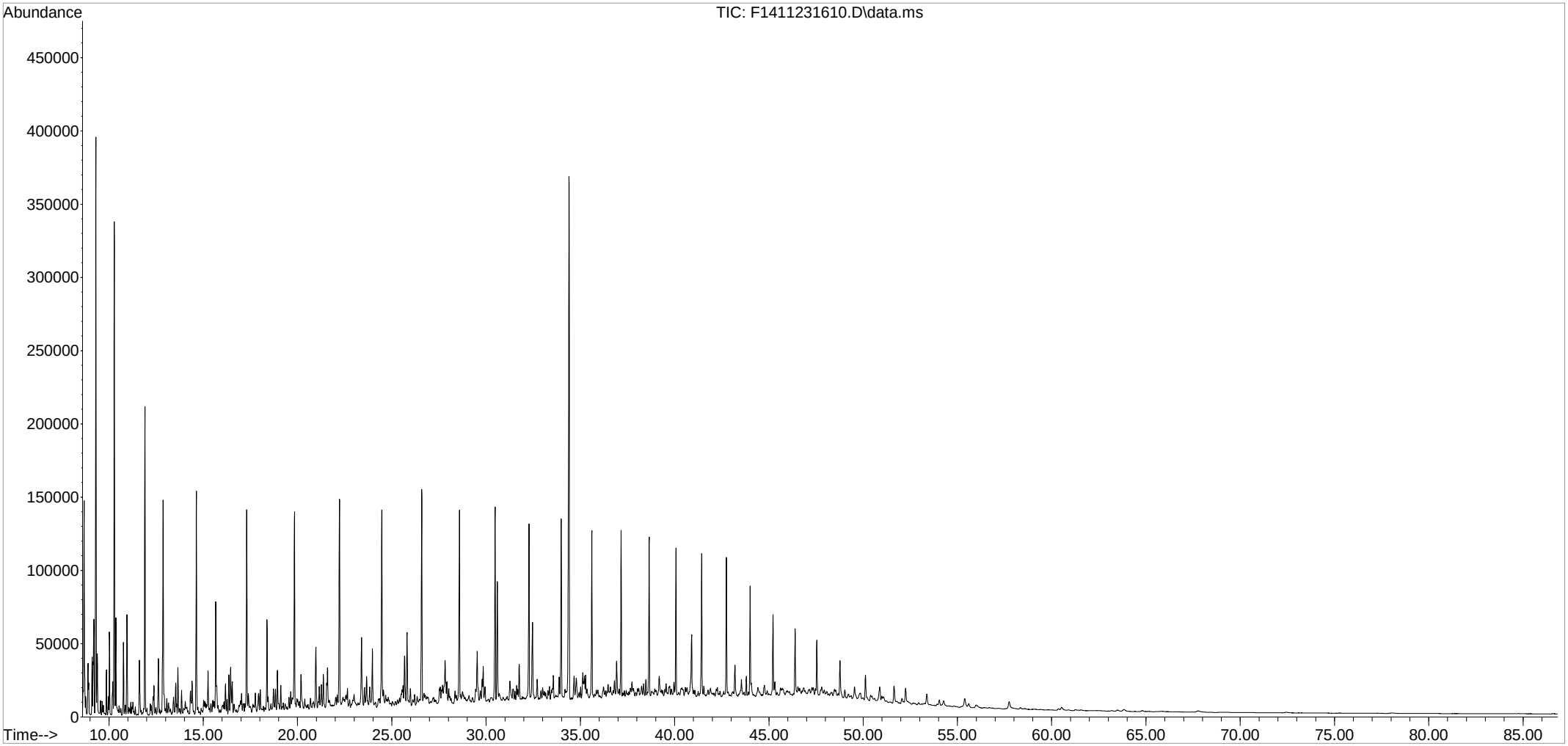
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Data File : F1411231610.D
Acq On : 24 Nov 2016 1:28 am
Operator : PAH14:AC
Sample : SS112816ANC02
Misc : frax36 5.02
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Nov 25 11:07:25 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : Default - All compounds listed



Analysis log File

Total Files Reported in Log : 67
Log Generated From Directory: O:\Forensics\Data\PAH14\2016\Nov16\nov25\

No.	DATA FILE	INJ METH	SAMPLE NAME	MISC	DATE INJ'D
1	F1411251601.D	FRBIO14A.M	PRIME	1x	11/25/2016 9:55 am
2	F1411251602.D	FRBIO14A.M	C1411251601	CC FRAX92	11/25/2016 11:29 am
3	F1411251603.D	FRBIO14A.M	dcm	1x	11/25/2016 1:03 pm
4	F1411251604.D	FRBIO14A.M	dcm	1x	11/25/2016 2:37 pm
5	F1411251605.D	FRBIO14A.M	ss112316b01	1x	11/25/2016 4:11 pm
6	F1411251606.D	FRBIO14A.M	ss110116b01-RF1	1x	11/25/2016 5:45 pm
7	F1411251607.D	FRBIO14A.M	1610010-01-RF1	1x	11/25/2016 7:19 pm
8	F1411251608.D	FRBIO14A.M	1610010-02-RF1	1x	11/25/2016 8:52 pm
9	F1411251609.D	FRBIO14A.M	1610010-04-RF1	1x	11/25/2016 10:26 pm
10	F1411251610.D	FRBIO14A.M	1610010-05-RF1	1x	11/26/2016 12:00 am
11	F1411251611.D	FRBIO14A.M	1610010-06-RF1	1x	11/26/2016 1:34 am
12	F1411251612.D	FRBIO14A.M	1610010-08-RF1	1x	11/26/2016 3:08 am
13	F1411251613.D	FRBIO14A.M	1610010-09-RF1	1x	11/26/2016 4:42 am
14	F1411251614.D	FRBIO14A.M	C1411251602	CC FRAX92	11/26/2016 6:15 am
15	F1411251615.D	FRBIO14A.M	1610010-10-RF1	1x	11/26/2016 7:49 am
16	F1411251616.D	FRBIO14A.M	1610010-11-RF1	1x	11/26/2016 9:23 am
17	F1411251617.D	FRBIO14A.M	1610010-12-RF1	1x	11/26/2016 10:57 am
18	F1411251618.D	FRBIO14A.M	1610010-14-RF1	1x	11/26/2016 12:30 pm
19	F1411251619.D	FRBIO14A.M	1610010-14D-RF1	1x	11/26/2016 2:04 pm
20	F1411251620.D	FRBIO14A.M	1610010-15-RF1	1x	11/26/2016 3:38 pm
21	F1411251621.D	FRBIO14A.M	SS112916PRM01	1x	11/26/2016 5:12 pm
22	F1411251622.D	FRBIO14A.M	C1411251603	CC FRAX92	11/26/2016 6:46 pm
23	F1411251623.D	FRBIO14A.M	C1411251604	CC FRAX92	11/26/2016 8:20 pm
24	F1411251624.D	FRBIO14A.M	C1411251605	1x	11/27/2016 8:35 am
25	F1411251625.D	FRBIO14A.M	dcm	dcm	11/27/2016 10:09 am
26	F1411251626.D	FRBIO14A.M	dcm	dcm	11/27/2016 11:43 am
27	F1411251627.D	FRBIO14A.M	ss112616b01	1x	11/27/2016 1:17 pm
28	F1411251628.D	FRBIO14A.M	ss110116b03-RF1	1x	11/27/2016 2:51 pm
29	F1411251629.D	FRBIO14A.M	1610011-01-RF1	1x	11/27/2016 4:25 pm
30	F1411251630.D	FRBIO14A.M	1610011-04-RF1	1x	11/27/2016 5:59 pm
31	F1411251631.D	FRBIO14A.M	1610011-04d-RF1	1x	11/27/2016 7:33 pm
32	F1411251632.D	FRBIO14A.M	1610011-09-RF1	1x	11/27/2016 9:07 pm
33	F1411251633.D	FRBIO14A.M	1610011-10-RF1	1x	11/27/2016 10:41 pm
34	F1411251634.D	FRBIO14A.M	1610011-11-RF1	1x	11/28/2016 12:15 am
35	F1411251635.D	FRBIO14A.M	1610011-12-RF1	1x	11/28/2016 1:49 am
36	F1411251636.D	FRBIO14A.M	1610011-14-RF1	1x	11/28/2016 3:22 am
37	F1411251637.D	FRBIO14A.M	1610011-15-RF1	1x	11/28/2016 4:56 am
38	F1411251638.D	FRBIO14A.M	ss112516prm01	1x	11/28/2016 6:30 am
39	F1411251639.D	FRBIO14A.M	C1411251606	cc frax92	11/28/2016 8:03 am
40	F1411251640.D	FRNC14A.M		1x	11/28/2016 9:37 am
41	F1411251641.D	FRBIO14A.M	dcm	dcm	11/28/2016 11:01 am
42	F1411251642.D	FRBIO14A.M	dcm	dcm	11/28/2016 12:35 pm
43	F1411251643.D	FRBIO14A.M	so11016b02F1	oil	11/28/2016 4:44 pm
44	F1411251644.D	FRBIO14A.M	so11116b03F1	sheen	11/28/2016 6:18 pm
45	F1411251645.D	FRBIO14A.M	sw110716b01F1	water	11/28/2016 7:53 pm
46	F1411251646.D	FRBIO14A.M	1611004-01F1	oil	11/28/2016 9:27 pm
47	F1411251647.D	FRBIO14A.M	1611004-02F1	oil	11/28/2016 11:02 pm
48	F1411251648.D	FRBIO14A.M	1611004-02dF1	oil	11/29/2016 12:36 am
49	F1411251649.D	FRBIO14A.M	1611004-03F1	oil	11/29/2016 2:10 am
50	F1411251650.D	FRBIO14A.M	1611004-04F1	sheen	11/29/2016 3:45 am
51	F1411251651.D	FRBIO14A.M	1611004-05F1	sheen	11/29/2016 5:19 am
52	F1411251652.D	FRBIO14A.M	1611004-05dF1	sheen	11/29/2016 6:53 am
53	F1411251653.D	FRBIO14A.M	1611004-06F1	sheen	11/29/2016 8:28 am
54	F1411251654.D	FRBIO14A.M	C1411251607	cc frax92 500ng/ml	11/29/2016 10:02 am
55	F1411251655.D	FRBIO14A.M	dcm	dcm	11/29/2016 11:37 am
56	F1411251656.D	FRBIO14A.M	sw112816b01F1	1x	11/29/2016 1:12 pm

SeqLog 1.0 - (c) 2009 Abacus Database Applications

Total Files Reported in Log : 67
Log Generated From Directory: O:\Forensics\Data\PAH14\2016\Nov16\nov25\

No.	DATA FILE	INJ METH	SAMPLE NAME	MISC	DATE INJ'D
57	F1411251657.D	FRBIO14A.M	1610010-11-RF1	recolumn	11/29/2016 2:47 pm
58	F1411251658.D	FRBIO14A.M	sw112816srm01F1	1x	11/29/2016 4:22 pm
59	F1411251659.D	FRBIO14A.M	1611004-07F1	water	11/29/2016 5:56 pm
60	F1411251660.D	FRBIO14A.M	1611004-08F1	water	11/29/2016 7:30 pm
61	F1411251661.D	FRBIO14A.M	1611004-09F1	water	11/29/2016 9:05 pm
62	F1411251662.D	FRBIO14A.M	1611004-09dF1	water	11/29/2016 10:39 pm
63	F1411251663.D	FRBIO14A.M	c1411251608	cc frax92 500ng/ml	11/30/2016 12:13 am
64	F1411251664.D	FRBIO14A.M	c1411251609	cc frax92 500ng/ml	11/30/2016 1:51 pm
65	F1411251665.D	FRBIO14A.M	✓c1411251610	cc frax92 500ng/ml	12/1/2016 7:16 am
66	F1411251666.D	FRBIO14A.M	✓1610011-05-RF1	1x	12/1/2016 8:50 am
67	F1411251667.D	FRBIO14A.M	✓c1411251611	cc frax92 500ng/ml	12/1/2016 10:24 am

method: BIO14112316

Supporting Quality Control Results

Form IV
Method Blank Summary
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**

Case: **N/A** SDG: **N/A**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **SS110116B03F1**
Date Analyzed: **11/27/16 14:51**

Client ID	Lab ID	Date/Time Analyzed
NFSB-04 0-1'	1610011-01F1	11/27/16 16:25
NFSB-05 5-6'	1610011-04F1	11/27/16 17:59
NFSB-05 5-6'	1610011-04F1 D	11/27/16 19:33
NFSB-07 13-15'	1610011-09F1	11/27/16 21:07
NFSB-08 1-2'	1610011-10F1	11/27/16 22:41
NFSB-08 7-8'	1610011-11F1	11/28/16 00:15
NFSB-08 11-15'	1610011-12F1	11/28/16 01:49
NFSB-09 3-4'	1610011-14F1	11/28/16 03:22
DUP-2	1610011-15F1	11/28/16 04:56
NFSB-06 1-2'	1610011-05F1	12/01/16 08:50

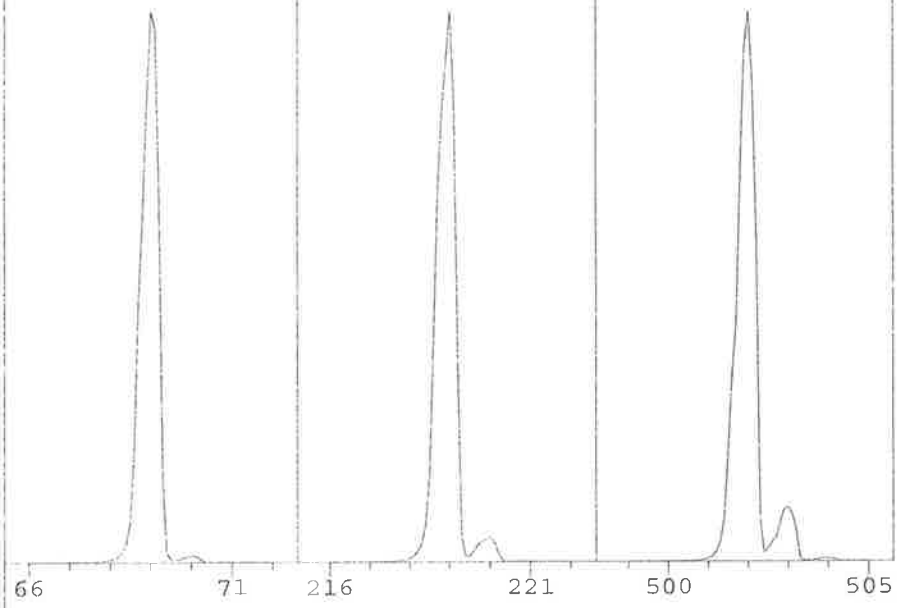
N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Tue Nov 22 14:08:02 2016
C:\MSDCHEM\1\5975\pftba.u

Instrument: PAH 14
US10223404

Mass	69.00	Mass	219.00	Mass	502.00
Ab	484611	Ab	284763	Ab	50629
Pw50	0.51	Pw50	0.55	Pw50	0.50

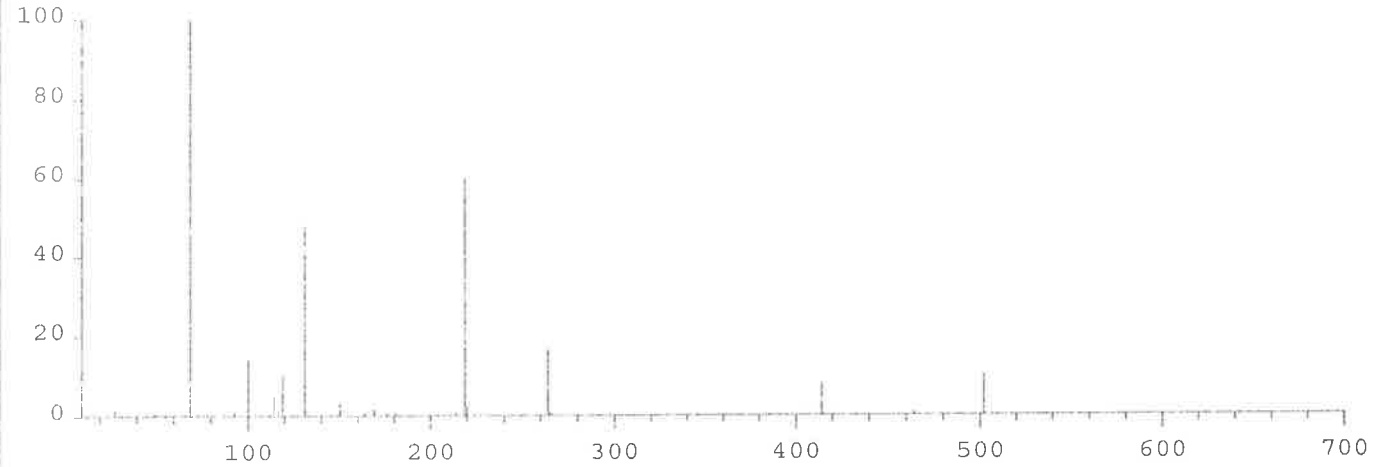


Ion Pol	Pos	MassGain	-1067
		MassOffs	-42
Emission	34.6	AmuGain	1191
EIEnrgy	69.9	AmuOffs	130.75
Filament	1	Wid219	-0.022
		DC Pol	Pos
Repeller	34.81		
IonFcus	90.2	HEDEnab	On
EntLens	0.0	EMVolts	1576
EntOffs	Var		
		Samples	8
PFTBA	Open	Averages	3
		Stepsize	0.10

Temperatures and Pressures:

MS Source	230	TurboSpd	100
MS Quad	150	HiVac	0.00e00

Scan: 10.00 - 701.00 Samples: 8 Thresh: 100 Step: 0.10
125 peaks Base: 69.00 Abundance: 439360



Mass	Abund	Rel Abund	Iso Mass	Iso Abund	Iso Ratio
69.00	439360	100.00	70.00	4942	1.12
219.00	263296	59.93	220.00	11441	4.35
502.00	44792	10.19	503.00	4701	10.50

Air/Water Check: H20~0.13% N2~1.60% O2~0.36% CO2~0.13% N2/H2O~1263.44%

Ramp Criteria:
Ion Focus Maximum 90 volts using ion 502; EM Gain 17054
Repeller Maximum 35 volts using ion 219; Gain Factor 0.17

MassGain Values(Samples): -1059(3) -1052(2) -1051(1) -1027(0) -984(FS)

TARGET MASS:	50	69	131	219	414	502	1050
Amu Offset:	130.8	130.8	130.8	130.8	130.8	130.8	130.8
Entrance Lens Offset:	19.6	18.8	20.3	17.6	23.8	24.6	24.6
Target Abund(%):	1.0	100.0	45.0	55.0	8.0	10.0	
Actual Tune Abund(%):	0.8	100.0	48.6	59.9	8.2	10.2	

Analysis log File

Total Files Reported in Log : 10
Log Generated From Directory: O:\Forensics\Data\PAH14\2016\Nov16\nov23\

No.	DATA FILE	INJ METH	SAMPLE NAME	MISC	DATE INJ'D
1	F1411231601.D	FRBIO14A.M	PRIME	1x	11/23/2016 11:23 am
2	F1411231602.D	FRBIO14A.M	dcm	1x	11/23/2016 12:57 pm
3	F1411231603.D	FRBIO14A.M	I1411251601	1x frax28	11/23/2016 2:31 pm
4	F1411231604.D	FRBIO14A.M	I1411251602	1x frax29	11/23/2016 4:05 pm
5	F1411231605.D	FRBIO14A.M	I1411251603	1x frax30	11/23/2016 5:39 pm
6	F1411231606.D	FRBIO14A.M	I1411251604	1x frax92	11/23/2016 7:13 pm
7	F1411231607.D	FRBIO14A.M	I1411251605	1x frax32	11/23/2016 8:47 pm
8	F1411231608.D	FRBIO14A.M	I1411251606	1x frax33	11/23/2016 10:21 pm
9	F1411231609.D	FRBIO14A.M	dcm	dcm	11/23/2016 11:55 pm
10	F1411231610.D	FRBIO14A.M	SS112816ANC02	frax36 5.02	11/24/2016 1:28 am



SeqLog 1.0 - (c) 2009 Abacus Database Applications

Response Factor Report PAH 14

Method Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Method File : BIO14112316.M
Title : Decalins & Alkylated PAH's
Last Update : Thu Nov 24 07:37:14 2016
Response Via : Initial Calibration

Calibration Files
10 =F1411231603.D 25 =F1411231604.D 100 =F1411231605.D 500 =F1411231606.D 5000=F1411231607.D 1e4 =F1411231608.D

		Compound	10	25	100	500	5000	1e4	Avg	%RSD
1)	i	Chrysene-d12	----------ISTD----------							
2)	A1	Hopane (T19)	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
3)	A2	17a(H),21B(H)-...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
4)	A2	C23 Tricyclic ...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
5)	A2	C24 Tricyclic ...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
6)	A2	C25 Tricyclic ...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
7)	A2	C24 Tetracycli...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
8)	A2	C26 Tricyclic ...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
9)	A2	C26 Tricyclic ...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
10)	A2	C28 Tricyclic ...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
11)	A2	C28 Tricyclic ...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
12)	A2	C29 Tricyclic ...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
13)	A2	C29 Tricyclic ...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
14)	A2	18a-22,29,30-T...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
15)	A2	C30 Tricyclic ...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
16)	A2	C30 Tricyclic ...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
17)	A2	17a(H)-22,29,3...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
18)	A2	17a/b,21b/a 28...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
19)	A2	17a(H),21b(H)-...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
20)	A2	30-Norhopane (...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
21)	A2	18a(H)-30-Norn...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
22)	A2	17a(H)-Diahopa...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
23)	A2	30-Normoretane...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
24)	A2	18a(H)&18b(H)-...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
25)	A2	Moretane (T20)	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
26)	A2	30-Homohopane-...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
27)	A2	30-Homohopane-...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
28)	A2	Gammacerane/C3...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
29)	A2	30,31-Bishomoh...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
30)	A2	30,31-Bishomoh...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
31)	A2	30,31-Trishomo...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
32)	A2	30,31-Trishomo...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
33)	A2	Tetrakishomoho...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
34)	A2	Tetrakishomoho...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
35)	A2	Pentakishomoho...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
36)	A2	Pentakishomoho...	0.324	0.299	0.271	0.254	0.280	0.291	0.287	8.40
37)	SA1	5B(H)Cholane -...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
38)	A2	13b(H),17a(H)-...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
39)	A2	13b(H),17a(H)-...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
40)	A2	13b,17a-20S-Me...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
41)	A2	14a,17a-20S-Ch...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
42)	A2	14a,17a-20R-Ch...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33

Response Factor Report PAH 14

Method Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Method File : BIO14112316.M
Title : Decalins & Alkylated PAH's
Last Update : Thu Nov 24 07:37:14 2016
Response Via : Initial Calibration

Calibration Files
10 =F1411231603.D 25 =F1411231604.D 100 =F1411231605.D 500 =F1411231606.D 5000=F1411231607.D 1e4 =F1411231608.D

	Compound	10	25	100	500	5000	1e4	Avg	%RSD
43) A2	Unknown Steran...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
44) A2	13a,17b-20S-Et...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
45) A2	14a,17a-20S-Me...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
46) A2	14a,17a-20R-Me...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
47) A2	14a(H),17a(H)-...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
48) A2	14a(H),17a(H)-...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
49) A2	14b(H),17b(H)-...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
50) A2	14b(H),17b(H)-...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
51) A2	14b,17b-20R-Me...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
52) A2	14b,17b-20S-Me...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
53) A2	14b(H),17b(H)-...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
54) A2	14b(H),17b(H)-...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
55) A2	C26,20R- +C27,...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
56) A2	C28,20S-triaro...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
57) A2	C27,20R-triaro...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33
58) A2	C28,20R-triaro...	0.144	0.132	0.131	0.150	0.175	0.176	0.151	13.33

(#) = Out of Range

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Data File : F1411231603.D
Acq On : 23 Nov 2016 2:31 pm
Operator : PAH14:AC
Sample : I1411251601
Misc : 1x frax28
ALS Vial : 3 Sample Multiplier: 1

NAL
11/28/16

Quant Time: Nov 25 11:06:48 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Aug 11 09:53:10 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.201	240	35651	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.797	217	103M4	8.858	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	0.89%#		
Target Compounds						Qvalue
2) Hopane (T19)	52.245	191	231	9.763	ng/mL#	67
3) 17a(H),21B(H)-hopane - C3	52.245	191	231	9.763	ng/mL#	67

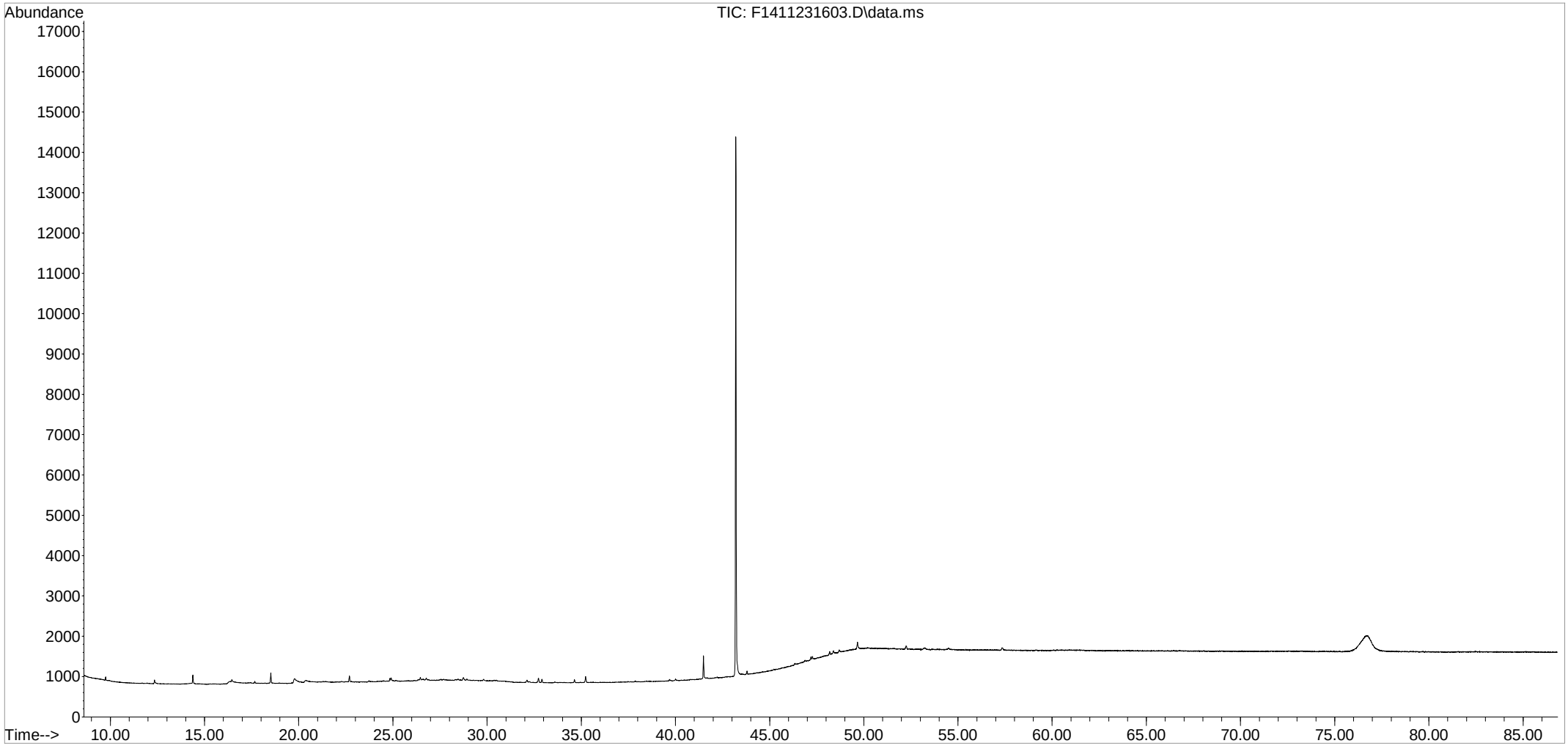
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Data File : F1411231603.D
Acq On : 23 Nov 2016 2:31 pm
Operator : PAH14:AC
Sample : I1411251601
Misc : 1x frax28
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Nov 25 11:06:48 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Aug 11 09:53:10 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Data File : F1411231604.D
Acq On : 23 Nov 2016 4:05 pm
Operator : PAH14:AC
Sample : I1411251602
Misc : 1x frax29
ALS Vial : 4 Sample Multiplier: 1

NAL 11/28/16

Quant Time: Nov 25 11:06:54 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:28:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.201	240	35832	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.797	217	236	20.193	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	2.02%#		
Target Compounds						Qvalue
2) Hopane (T19)	52.252	191	535	22.498	ng/mL#	67
3) 17a(H),21B(H)-hopane - C3	52.252	191	535	22.498	ng/mL#	67

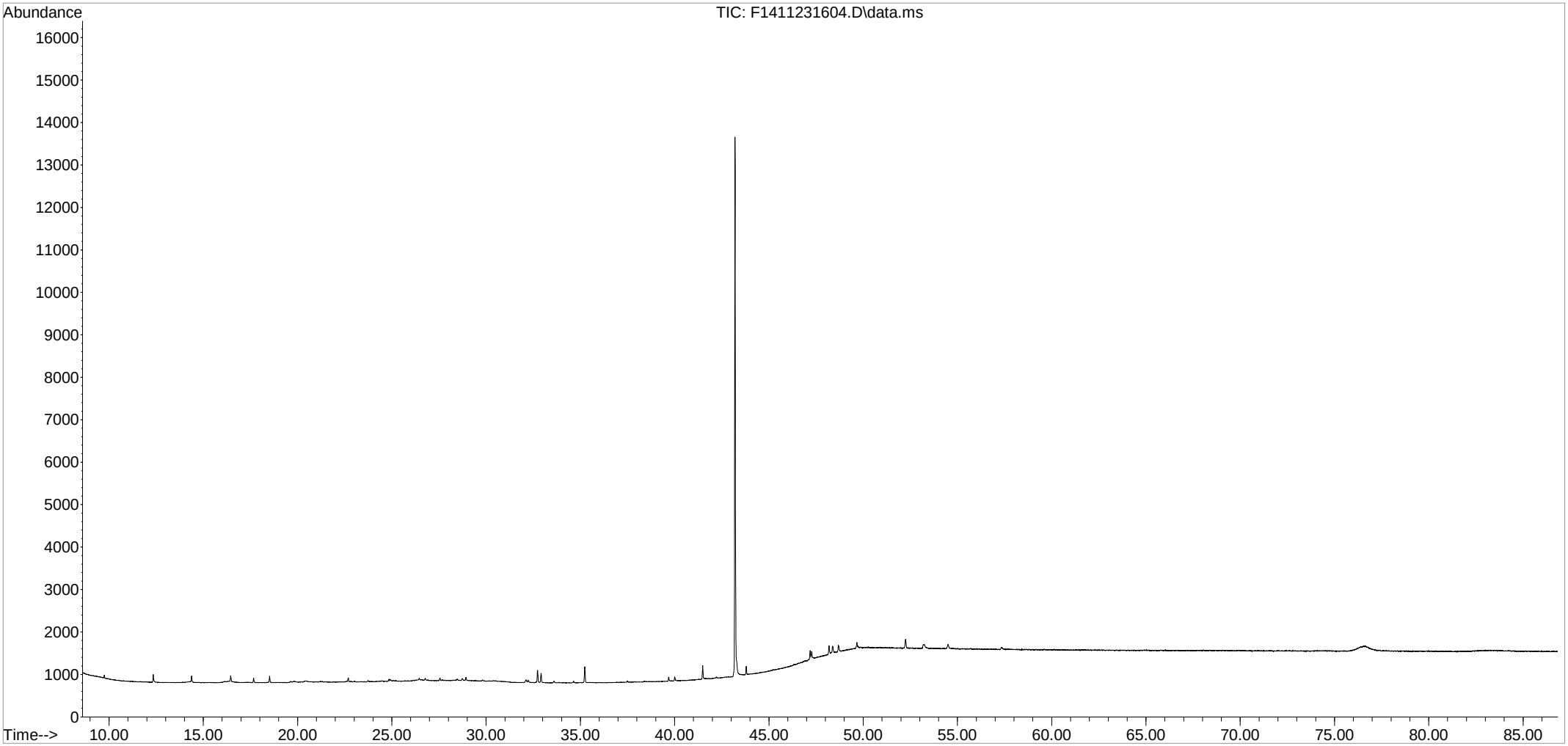
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Data File : F1411231604.D
Acq On : 23 Nov 2016 4:05 pm
Operator : PAH14:AC
Sample : I1411251602
Misc : 1x frax29
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Nov 25 11:06:54 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:28:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Data File : F1411231605.D
Acq On : 23 Nov 2016 5:39 pm
Operator : PAH14:AC
Sample : I1411251603
Misc : 1x frax30
ALS Vial : 5 Sample Multiplier: 1

MAL 11/28/16

Quant Time: Nov 25 11:06:59 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:28:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.201	240	35806	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.797	217	940	80.487	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery =	8.05%#		
Target Compounds						Qvalue
2) Hopane (T19)	52.245	191	1942	81.725	ng/mL#	90
3) 17a(H),21B(H)-hopane - C3	52.245	191	1942	81.725	ng/mL#	90

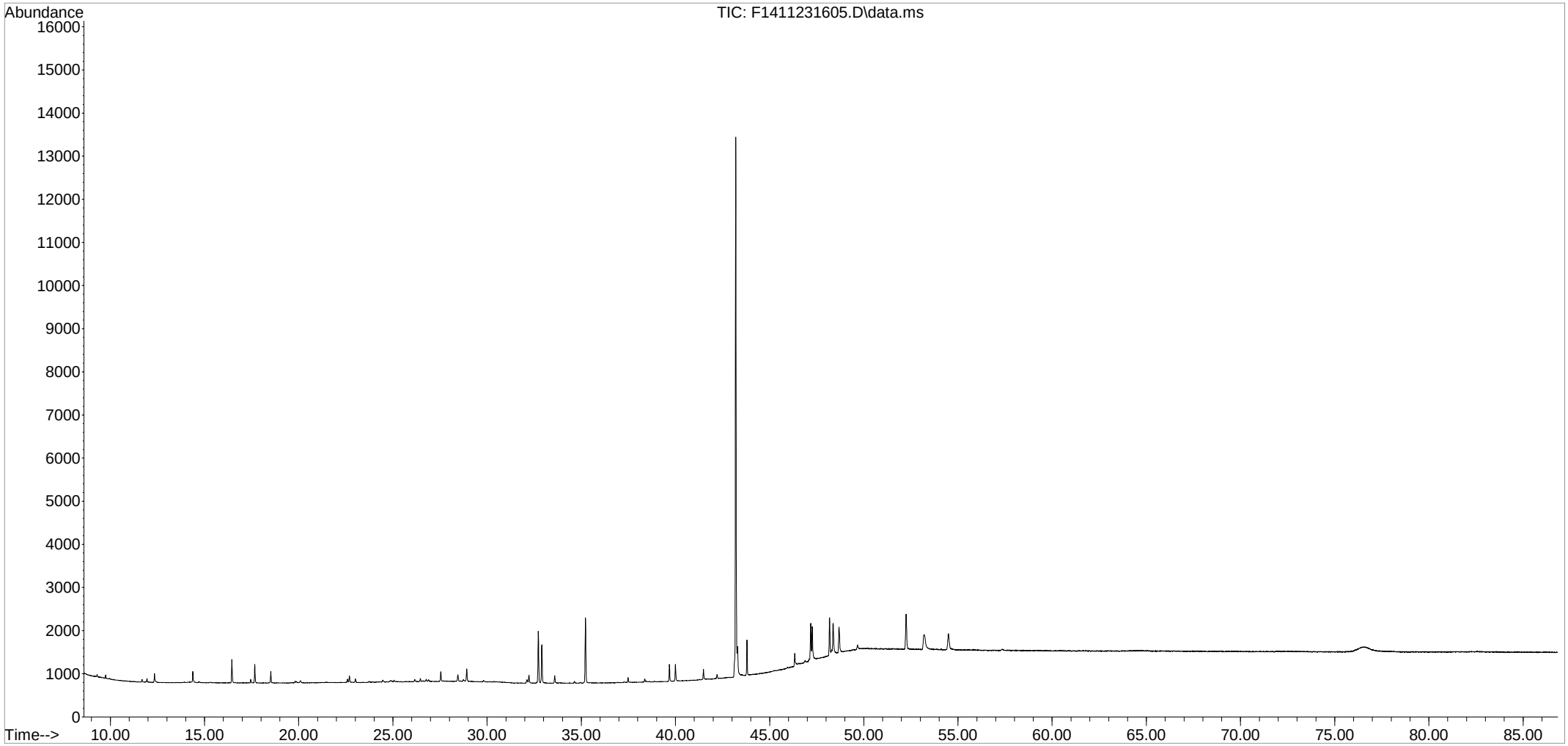
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Data File : F1411231605.D
Acq On : 23 Nov 2016 5:39 pm
Operator : PAH14:AC
Sample : I1411251603
Misc : 1x frax30
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Nov 25 11:06:59 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:28:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Data File : F1411231606.D
Acq On : 23 Nov 2016 7:13 pm
Operator : PAH14:AC
Sample : I1411251604
Misc : 1x frax92
ALS Vial : 6 Sample Multiplier: 1

MAL 11/28/16

Quant Time: Nov 25 11:07:06 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:28:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.201	240	39350	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.797	217	5891	458.987	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 45.90%#			
Target Compounds						Qvalue
2) Hopane (T19)	52.245	191	9998	382.850	ng/mL#	87
3) 17a(H),21B(H)-hopane - C3	52.245	191	9998	382.850	ng/mL#	87

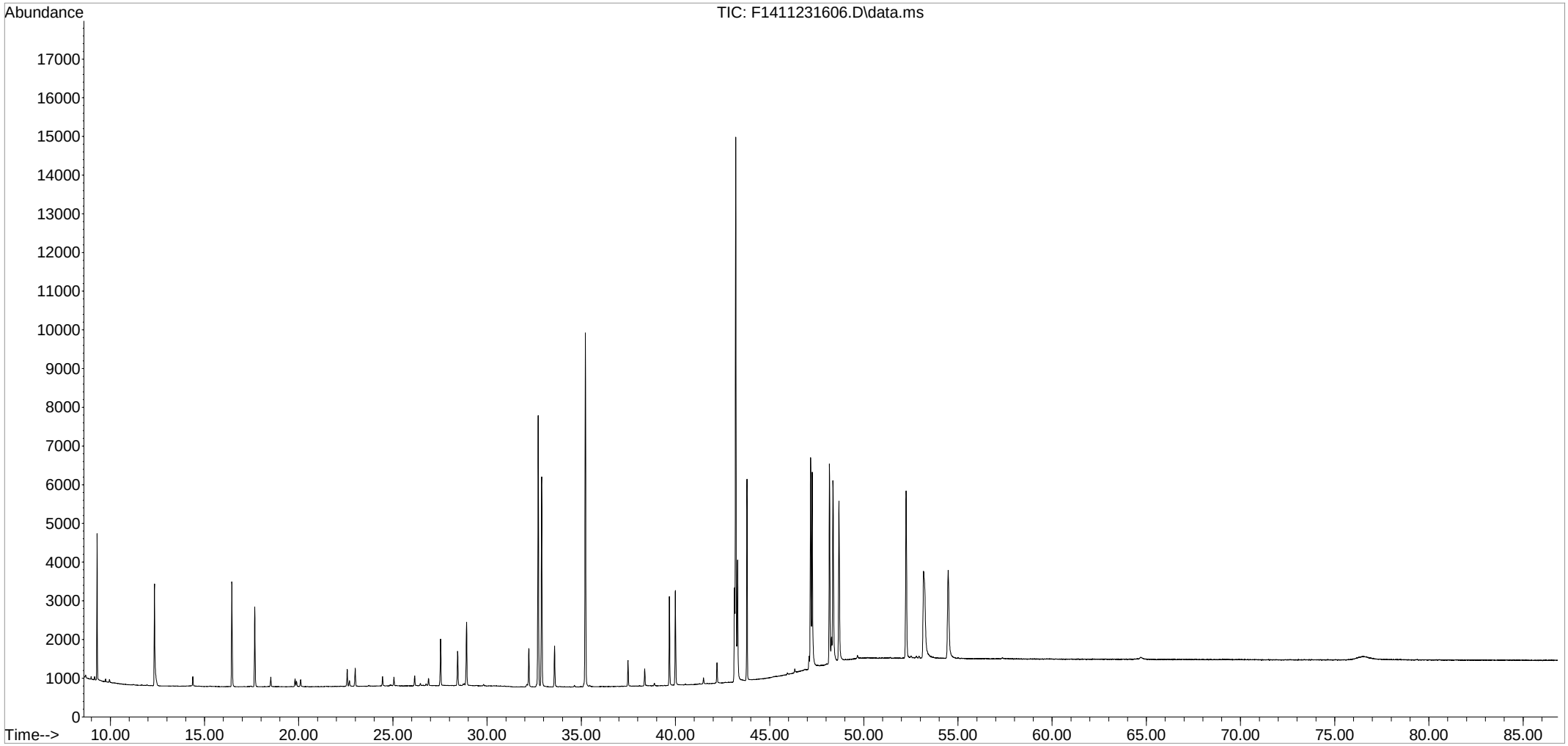
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Data File : F1411231606.D
Acq On : 23 Nov 2016 7:13 pm
Operator : PAH14:AC
Sample : I1411251604
Misc : 1x frax92
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Nov 25 11:07:06 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:28:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Data File : F1411231607.D
Acq On : 23 Nov 2016 8:47 pm
Operator : PAH14:AC
Sample : I1411251605
Misc : 1x frax32
ALS Vial : 7 Sample Multiplier: 1

MAL 11/28/16

Quant Time: Nov 25 11:07:14 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:28:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.201	240	47932	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.797	217	84116	5380.332	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 538.03%#			
Target Compounds						Qvalue
2) Hopane (T19)	52.252	191	134349M3	4223.471	ng/mL	
3) 17a(H),21B(H)-hopane - C3	52.252	191	134248M3	4220.296	ng/mL	

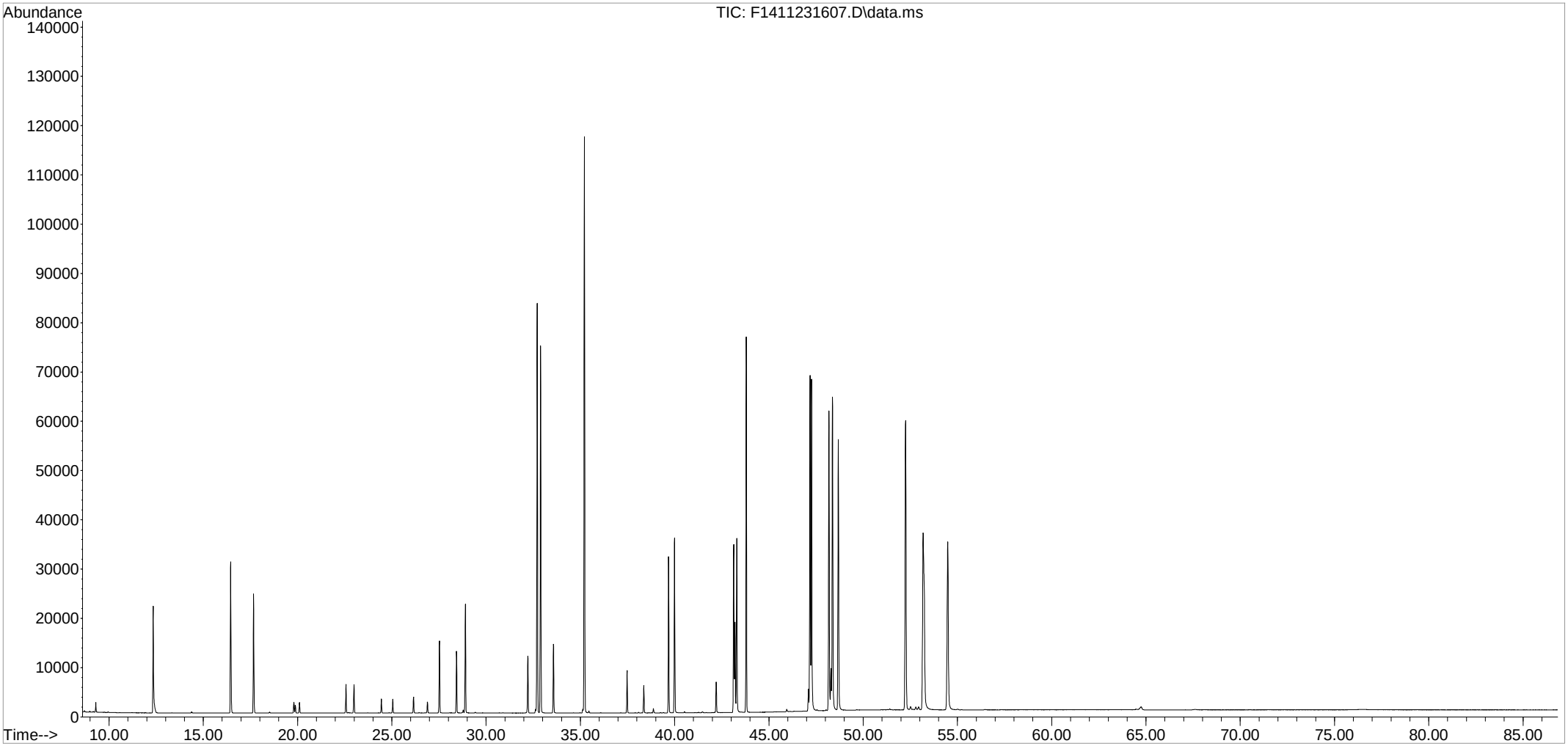
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Data File : F1411231607.D
Acq On : 23 Nov 2016 8:47 pm
Operator : PAH14:AC
Sample : I1411251605
Misc : 1x frax32
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Nov 25 11:07:14 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:28:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Data File : F1411231608.D
Acq On : 23 Nov 2016 10:21 pm
Operator : PAH14:AC
Sample : I1411251606
Misc : 1x frax33
ALS Vial : 8 Sample Multiplier: 1

NAL
11/28/16

Quant Time: Nov 25 11:07:18 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:28:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.202	240	51091	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.805	217	180054	10804.741	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 1080.47%#			
Target Compounds						Qvalue
2) Hopane (T19)	52.253	191	297767	8781.988	ng/mL#	86
3) 17a(H),21B(H)-hopane - C3	52.253	191	297767	8781.988	ng/mL#	86

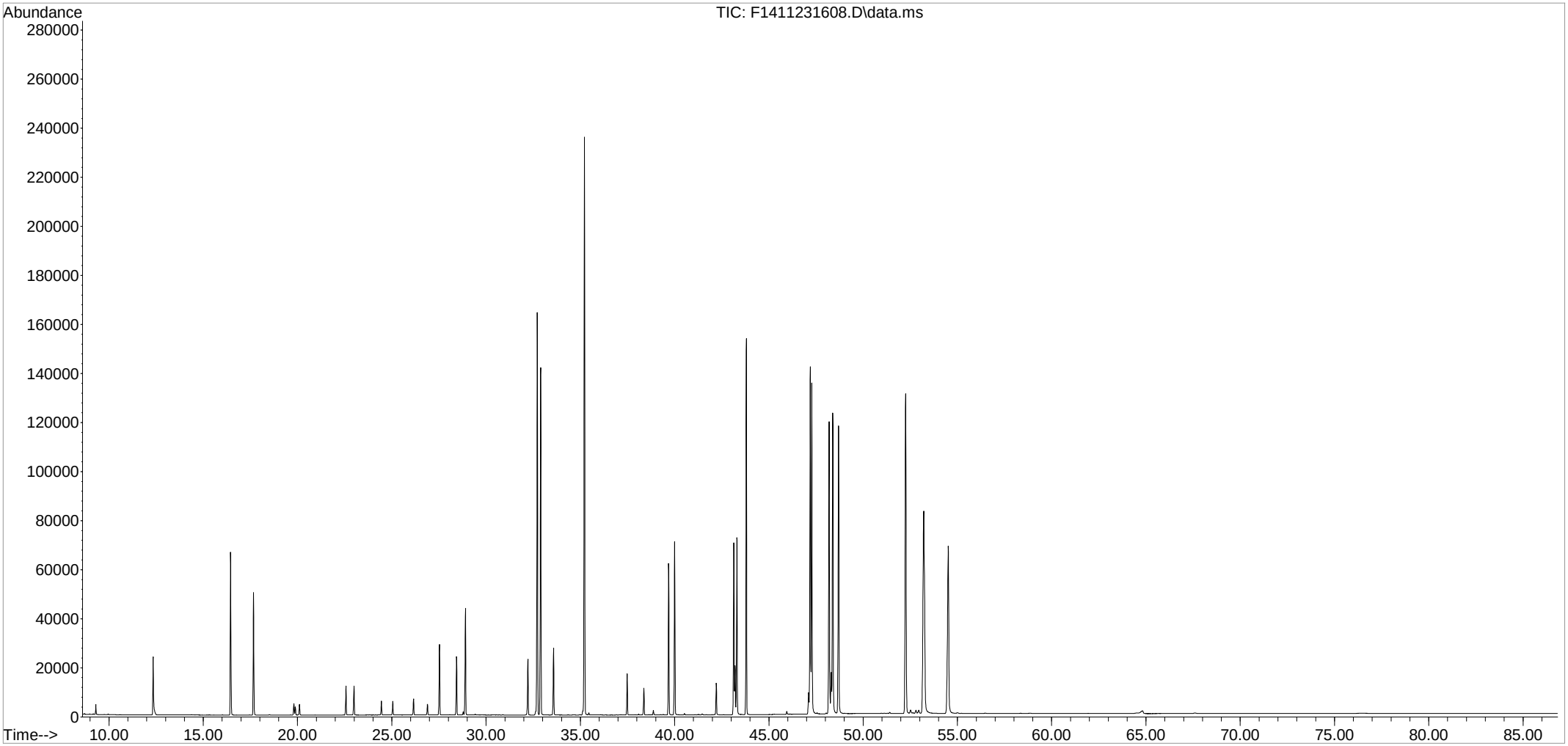
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov23\
Data File : F1411231608.D
Acq On : 23 Nov 2016 10:21 pm
Operator : PAH14:AC
Sample : I1411251606
Misc : 1x frax33
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Nov 25 11:07:18 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:28:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251624.D
Acq On : 27 Nov 2016 8:35 am
Operator : PAH14:AC
Sample : C1411251605
Misc : 1x
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Nov 29 13:45:52 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 10% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Chrysene-d12	1.000	1.000	0.0	90	0.00
2	A1	Hopane (T19)	0.287	0.285	0.7	101	0.00
3	A2	17a(H),21B(H)-hopane - C30H	0.287	0.285	0.7	101	0.00
37	SA1	5B(H)Cholane - Surr	0.151	0.161	-6.6	97	0.00

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251624.D
Acq On : 27 Nov 2016 8:35 am
Operator : PAH14:AC
Sample : C1411251605
Misc : 1x
ALS Vial : 23 Sample Multiplier: 1

MJS
12-1-2016

Quant Time: Nov 29 13:45:52 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.201	240	35348	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.797	217	5689	531.250	ng/ml	0.00
Spiked Amount 1000.000	Range 50 - 130		Recovery = 53.13%			
Target Compounds						Qvalue
2) Hopane (T19)	52.245	191	10066	496.819	ng/mL#	87
3) 17a(H),21B(H)-hopane - C3	52.245	191	10066	496.819	ng/mL#	87

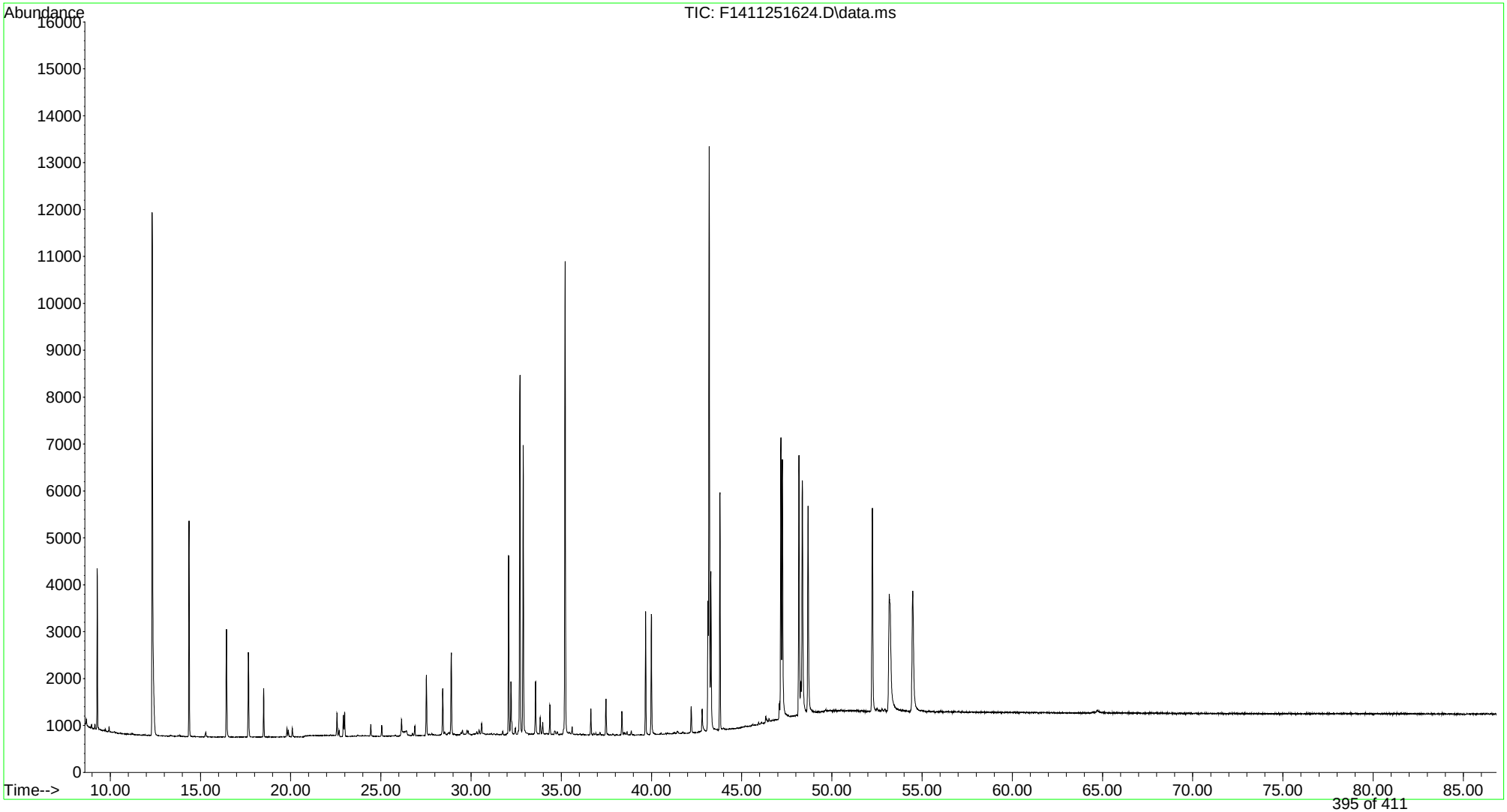
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251624.D
Acq On : 27 Nov 2016 8:35 am
Operator : PAH14:AC
Sample : C1411251605
Misc : 1x
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Nov 29 13:45:52 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251639.D
Acq On : 28 Nov 2016 8:03 am
Operator : PAH14:AC
Sample : C1411251606
Misc : cc frax92
ALS Vial : 38 Sample Multiplier: 1

Quant Time: Nov 29 13:47:34 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 10% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Chrysene-d12	1.000	1.000	0.0	98	0.00
2	A1	Hopane (T19)	0.287	0.261	9.1	100	-0.02
3	A2	17a(H),21B(H)-hopane - C30H	0.287	0.261	9.1	100	-0.02
37	SA1	5B(H)Cholane - Surr	0.151	0.155	-2.6	101	-0.01

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251639.D
Acq On : 28 Nov 2016 8:03 am
Operator : PAH14:AC
Sample : C1411251606
Misc : cc frax92
ALS Vial : 38 Sample Multiplier: 1

MJS
12-1-2016

Quant Time: Nov 29 13:47:34 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.194	240	38424	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.789	217	5937	510.026	ng/ml	-0.01
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.00%			
Target Compounds						Qvalue
2) Hopane (T19)	52.237	191	10011	454.549	ng/mL#	86
3) 17a(H),21B(H)-hopane - C3	52.237	191	10011	454.549	ng/mL#	86

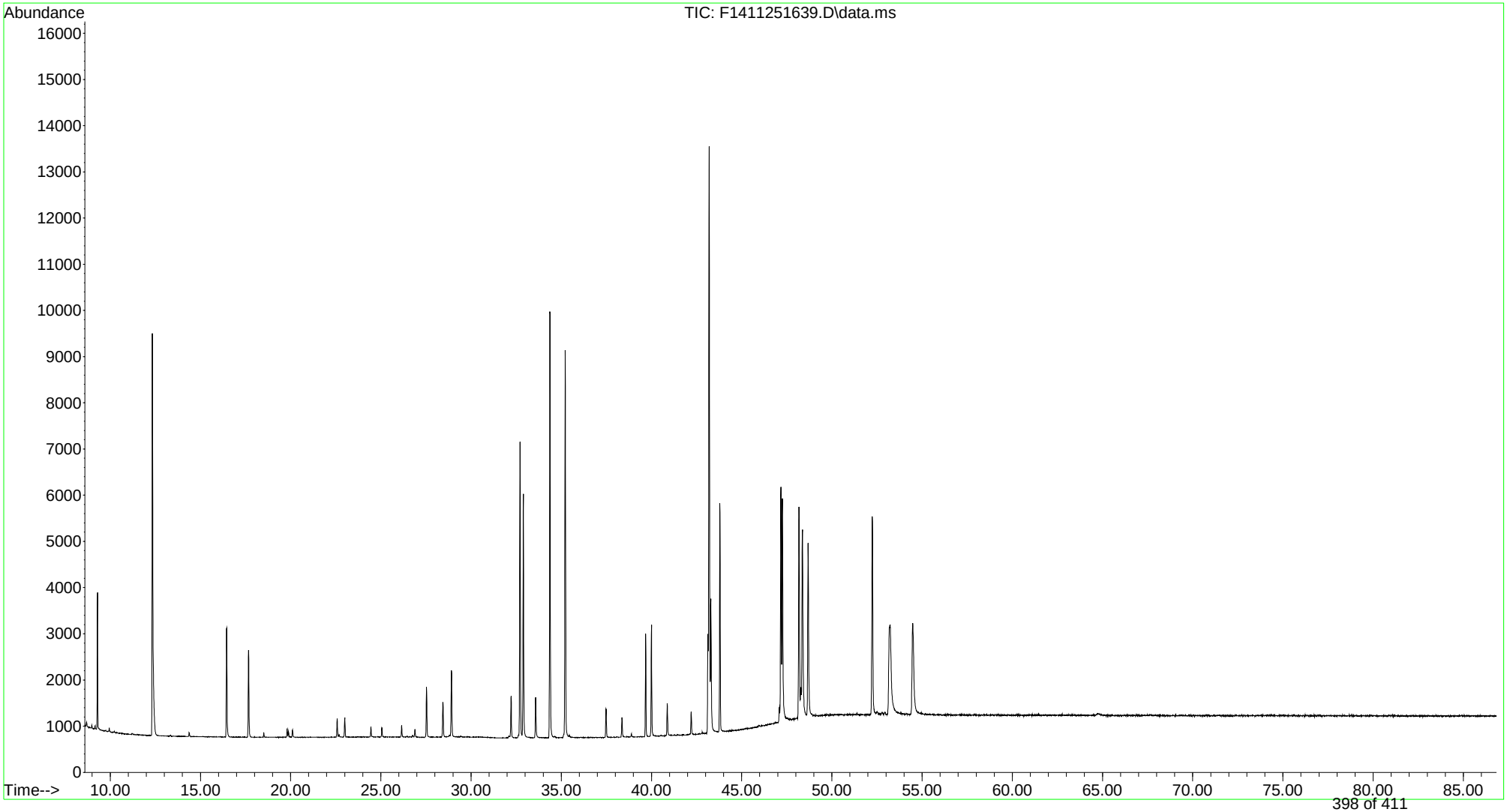
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251639.D
Acq On : 28 Nov 2016 8:03 am
Operator : PAH14:AC
Sample : C1411251606
Misc : cc frax92
ALS Vial : 38 Sample Multiplier: 1

Quant Time: Nov 29 13:47:34 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251665.D
Acq On : 1 Dec 2016 7:16 am
Operator : PAH14:AC
Sample : c1411251610
Misc : cc frax92 500ng/ml
ALS Vial : 63 Sample Multiplier: 1

Quant Time: Dec 01 13:26:00 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 10% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Chrysene-d12	1.000	1.000	0.0	74	0.00
2	A1	Hopane (T19)	0.287	0.280	2.4	82	-0.02
3	A2	17a(H),21B(H)-hopane - C30H	0.287	0.280	2.4	82	-0.02
37	SA1	5B(H)Cholane - Surr	0.151	0.155	-2.6	77	-0.01

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251665.D
Acq On : 1 Dec 2016 7:16 am
Operator : PAH14:AC
Sample : c1411251610
Misc : cc frax92 500ng/ml
ALS Vial : 63 Sample Multiplier: 1

MSS
12-1-2016

Quant Time: Dec 01 13:26:00 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.194	240	29218	500.000	ng/mL	# 0.00
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.789	217	4526	511.319	ng/ml	-0.01
Spiked Amount 1000.000	Range 50 - 130		Recovery = 51.13%			
Target Compounds						Qvalue
2) Hopane (T19)	52.237	191	8188	488.915	ng/mL	# 87
3) 17a(H),21B(H)-hopane - C3	52.237	191	8188	488.915	ng/mL	# 87

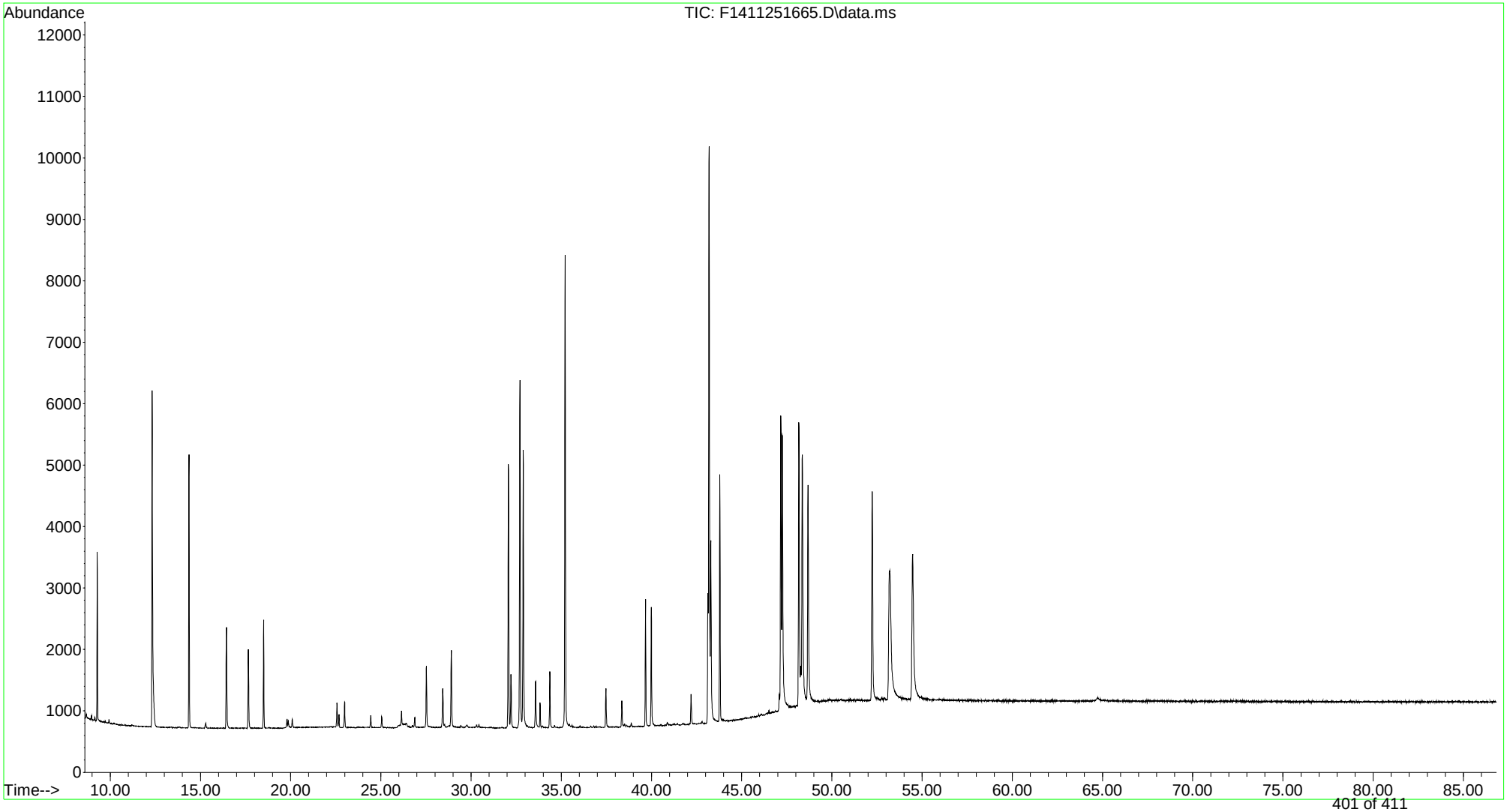
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251665.D
Acq On : 1 Dec 2016 7:16 am
Operator : PAH14:AC
Sample : c1411251610
Misc : cc frax92 500ng/ml
ALS Vial : 63 Sample Multiplier: 1

Quant Time: Dec 01 13:26:00 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251667.D
Acq On : 1 Dec 2016 10:24 am
Operator : PAH14:AC
Sample : c1411251611
Misc : cc frax92 500ng/ml
ALS Vial : 65 Sample Multiplier: 1

Quant Time: Dec 01 13:26:31 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Min. RRF : 0.050 Min. Rel. Area : 10% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	i	Chrysene-d12	1.000	1.000	0.0	102	0.04
2	A1	Hopane (T19)	0.287	0.305	-6.3	122	0.00
3	A2	17a(H),21B(H)-hopane - C30H	0.287	0.305	-6.3	122	0.00
37	SA1	5B(H)Cholane - Surr	0.151	0.160	-6.0	109	0.02

* Evaluation of CC level amount vs concentration.
(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251667.D
Acq On : 1 Dec 2016 10:24 am
Operator : PAH14:AC
Sample : c1411251611
Misc : cc frax92 500ng/ml
ALS Vial : 65 Sample Multiplier: 1

MJS
12-1-2016

Quant Time: Dec 01 13:26:31 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) Chrysene-d12	43.239	240	40063	500.000	ng/mL	# 0.04
System Monitoring Compounds						
37) 5B(H)Cholane - Surr	43.827	217	6430	529.780	ng/ml	0.02
Spiked Amount 1000.000	Range 50 - 130		Recovery = 52.98%			
Target Compounds						Qvalue
2) Hopane (T19)	52.253	191	12238	532.934	ng/mL	# 86
3) 17a(H),21B(H)-hopane - C3	52.253	191	12238	532.934	ng/mL	# 86

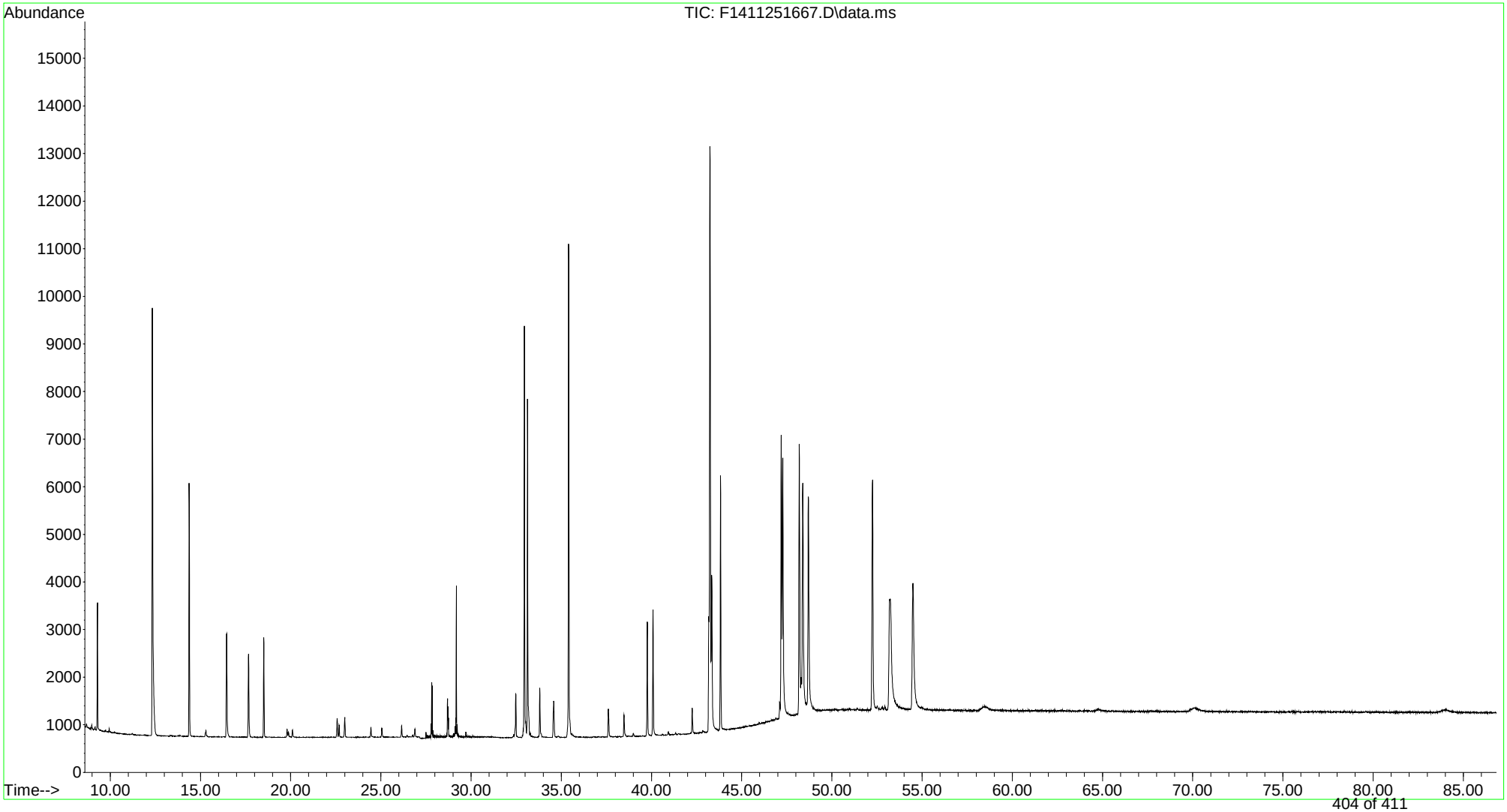
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\PAH14\2016\Nov16\nov25\
Data File : F1411251667.D
Acq On : 1 Dec 2016 10:24 am
Operator : PAH14:AC
Sample : c1411251611
Misc : cc frax92 500ng/ml
ALS Vial : 65 Sample Multiplier: 1

Quant Time: Dec 01 13:26:31 2016
Quant Method : C:\msdchem\1\METHODS\PAH14\BIO14112316.M
Quant Title : Decalins & Alkylated PAH's
QLast Update : Thu Nov 24 07:37:36 2016
Response via : Initial Calibration

Sub List : ICAL_CCALT_REV2 - CC with five surrogates



Form VIII
Internal Standard Summary
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **C1411251605**

Case: **N/A** SDG: **N/A**

		Chrysene-d12	
		Area	**RT**
Standard:		35348	43.20
Upper Limit:		70696	43.70
Lower Limit:		17674	42.70
Client ID	**Lab ID**		
Blank	SS110116B03F1	34185	43.21
NFSB-04 0-1'	1610011-01F1	39598	43.20
NFSB-05 5-6'	1610011-04F1	45436	43.20
NFSB-05 5-6'	1610011-04F1 D	40323	43.20
NFSB-07 13-15'	1610011-09F1	38462	43.20
NFSB-08 1-2'	1610011-10F1	39978	43.20
NFSB-08 7-8'	1610011-11F1	39135	43.20
NFSB-08 11-15'	1610011-12F1	36692	43.20
NFSB-09 3-4'	1610011-14F1	41899	43.19
DUP-2	1610011-15F1	38205	43.21
CCV	C1411251606	38424	43.19

N/A - Not Applicable

Area Upper Limit = +100% of internal standard.
Area Lower Limit = -50% of internal standard.
RT = Retention Time.
RT Upper Limit = +0.5 minutes of internal standard RT.
RT Lower Limit = -0.5 minutes of internal standard RT.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Form VIII
Internal Standard Summary
Steranes and Triterpanes

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**

Case: **N/A** SDG: **N/A**

Lab Code: **MA00030**
ETR: **1610011**
Lab ID: **C1411251610**

		Chrysene-d12	
		Area	**RT**
Standard:		29218	43.19
Upper Limit:		58436	43.69
Lower Limit:		14609	42.69
Client ID	**Lab ID**		
NFSB-06 1-2'	1610011-05F1	40957	43.19
CCV	C1411251611	40063	43.24

N/A - Not Applicable

Area Upper Limit = +100% of internal standard.
Area Lower Limit = -50% of internal standard.
RT = Retention Time.
RT Upper Limit = +0.5 minutes of internal standard RT.
RT Lower Limit = -0.5 minutes of internal standard RT.

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Chain of Custody Records

SHP20161028O1

CHAIN OF CUSTODY

PAGE 2 OF 3

Date Rec'd in Lab: 10/28/16

ALPHA Job #: ETR: 161011

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Client Information

Client: Newfields

Address: 300 Ledgewood Place Suite 305
Rockland, MA 02370

Phone: 781-681-5040 x103

Email: SMattingly@Newfields.com
Elitman@Newfields.com

Additional Project Information:

Project Information

Project Name: Winter St Haverhill

Project Location: 284 Winter St,

Project #:

Project Manager: S. Mattingly

ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Report Information - Data Deliverables

☑ ADEx ☑ EMAIL

Billing Information

☑ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
HAH2-FRP, SHC, PAH, BTEX

SAMPLE INFO

Filtration
☐ Field
☐ Lab to do

Preservation
☐ Lab to do

Sample Comments

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	HAH2-FRP, SHC, PAH, BTEX	TOTAL # BOTTLES
ETR'161011- -91	NFSB-03 S-5A 15-17'	10-25-16	1414	S	ADS/MBF	X	1
ETR -01/-92	NFSB-04 S-1 0-1'	10-20-16	1538		ADS		
-02/-93	NFSB-04 S-11B 12.5-15'	10-24-16	1304		ADS/MBF		
-03/-94	NFSB-05 S-2 1-2'	10-20-16	1437		ADS		
-04/-95	NFSB-05 S-5 5-6'	10-20-16	1517		ADS		
-05/-96	NFSB-06 S-2 1-2'	10-20-16	1002		ADS		
-06/-97	NFSB-06 S-9B 12.5-15'	10-25-16	1019		ADS/MBF		
-07/-98	NFSB-07 S-2 1-2'	10-20-16	1108		ADS		
-08/-99	NFSB-07 S-7 6-7'	10-20-16	1123		ADS		
-09/-100	NFSB-07 S-10C 13-15'	10-24-16	1546	S	ADS/MBF	X	1
					Container Type	A	
					Preservative	A	

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
	10-27-16/1900		10/28/16 1300
	10/28/16 1745		10/28/16
	10/28/16 2311		10/28/16 23:11

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

SHP20161102801

CHAIN OF CUSTODY

PAGE 3 OF 3

Date Rec'd in Lab: 10/28/16

ALPHA Job #: ETR: 161001 1

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Project Information

Project Name: Winter St Hanah:11 /MA
Project Location: 284 Winter St
Project #:
Project Manager: S. Mattingly
ALPHA Quote #:

Report Information - Data Deliverables

☑ ADEx ☑ EMAIL

Billing Information

☑ Same as Client info PO #:

Client Information

Client: Newfields
Address: 300 Ledgewood Place Suite 305
Rockland, MA 02370
Phone: 781-681-5040 X103
Email: Smattingly@Newfields.com
Elstrain@Newfields.com
Additional Project Information:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due:

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
HVHF-BTEX, Suc, MAH, BSD

SAMPLE INFO
Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Sample Comments	TOTAL # BOTTLES
ETR:161001 1-01	NFSB-08 S-2 1-2'	10-20-16	1156	S	ADS	X	1
-02 / -102	NFSB-08 S-10B 11-15'	10-24-16	1015		ADS/MBF		
-13 / -103	NFSB-09 S-2 1-2'	10-21-16	1128		ADS		
-14 / -104	NFSB-09 S-4 3-4'	10-21-16	1159		ADS		
-105	Dup-1	10-24-16	PM		ADS/MBF		
-15 / -106	Dup-2	10-25-16	PM	S	ADS/MBF	X	1

Container Type												A						
Preservative												A						

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
	10/27/16 1900	ANL	10/28/16 1300
	10/28/16 1745		10/28/16 1745
	10/28/16 2311		10/28/16 23:11

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

SHP 2016 102801

CHAIN OF CUSTODY

PAGE 8 OF 8

Date Rec'd in Lab: 10/28/16

ALPHA Job #:

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Client Information

Client: Newfields

Address: 300 Ledgewood Place Suite 305
Rockland MA 02370

Phone: 781-681-5040 x103

Email: smattingly@newfields.com
ajitnarc@newfields.com

Additional Project Information:

Project Information

Project Name: Winter St Haverhill MA

Project Location: 284 Winter St

Project #:

Project Manager: S. Mattingly

ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☒ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	ANALYSIS: VOC: ☐ 8260 ☐ 624 ☐ 524.2 / SVOC: ☐ ABN ☐ PAH / METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15 / METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13 / EPH: ☐ Ranges & Targets ☐ Ranges Only / VPH: ☐ Ranges & Targets ☐ Ranges Only / ☐ PCB ☐ PEST / TPH: ☐ Quant Only ☐ Fingerprint / HRHF-FID, SHG, PAH, BTS	Sample Comments	TOTAL # BOTTLES
ETR 160011-11 74	NFSB-08 S-8 7-8'	10-24-16	1215	S	ADS	X	Archive	1
-75	S-9 8-10'	10-24-16	11:50		ADS/MBF			
-76	S-10A 10-11'		10:10					
-77	S-11A 15-17.5'		10:20					
-78	NFSB-08 S-11B 17.5-20'	10-24-16	10:30		ADS/MBF			
-79	NFSB-09 S-1 0-1'	10-21-16	1126		ADS			
-80	NFSB-09 S-3 2-3'	10-21-16	1130	S	ADS	X		
							Archive	1
					Container Type	A		
					Preservative	A		

SAMPLE INFO
Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Maria Fairbanks GZA	10/28/16 11:30		10/28/16 1300
	10/28/16 1745		10/28/16 17:45
	102816 2311	Beth Bedard	10/28/16 23:11

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ETR:161011

Laboratory Job No: SHP 201610280 **Client:** Newfields
Receipt Date/Time: 10/28/16 13:00 **SDG Reviewer:** Bethany Bedard

Samples Delivered By:
[✓] Alpha Courier [ ] Client [ ] UPS [ ] FedEx [ ] Other _____
Bill of Laden: [ ]Yes [ ] Unavailable Tracking #: N/A

Chain of Custody: [✓] Present [ ] Absent: _____
Custody Seals: [✓] Absent [ ] Present/Intact [ ] Present/Broken

Cooler/Sample Temperature:
Is Ice/Blue Ice present? [✓] Yes [ ] No [ ] N/A _____

Temp taken from: Temp Blank:(a)_____ (b)_____ (c)_____ (d)_____ (e)_____
IR Gun: (a) 2.0 (b) 2.7 (c) 2.1 (d)_____ (e)_____
IR Gun Serial #: 9849
Was Temp: [✓] 2-6 Celsius
[ ] <2 Celsius ... were samples frozen upon receipt? [ ] Yes [ ] No
[ ] >6 Celsius ... were samples delivered direct from site? [ ] Yes [ ] No

Containers Received: [✓] Intact
[ ] Broken/Leaking Sample IDs: _____
Sample IDs: _____

All Containers Accounted For? [✓] Yes
[ ] No: _____
Extra Samples Received? [✓] No
[ ] Yes: _____
Do Sample Labels and COC agree? [✓] Yes
[ ] No: _____

Are Samples in Appropriate Containers? [✓] Yes
[ ] No: _____
Are samples rec'd within holding time? [✓] Yes
[ ] No: _____
* Please note: the analysis of pH will always be performed beyond the regulatory-required holding time of 15 min. from the time of collection.

pH of samples upon receipt: [✓] N/A [ ] <2 [ ] >12 and/or [ ] _____
Are samples properly preserved? [ ] Yes [ ] No If No then.....
Initial pH= _____ preserved In-House with [ ] HCL [ ] H_2SO_4 [ ] HNO_3 [ ] NAOH <<Final pH = _____>>
Other Issues: _____
Chlorine Check: [✓] N/A [ ] Present [ ] Absent

VOA/VPH vials: [ ] Yes [✓] No Preserved? [ ] Yes [ ] No If yes: [ ] HCL, [ ] _____
Aqueous: vials contain head space? [ ] No [ ] Yes: _____
Soils: MeOH covering soil? [ ] Yes [ ] No: _____
Reagent H_2O Preserved vials Frozen @ date/time: _____
Frozen by Client? [ ] No [ ] Yes @ date/time: _____

Was Client notified of any discrepancies listed above? [ ] Yes [ ] No [X] N/A
If Yes: Call Tracker # _____

ANALYTICAL REPORT

Prepared for:
NewFields
300 Ledgewood Place, Suite 305
Rockland, MA 02370

Project:	National Grid Winter St. Haverhill
ETR:	1610010
Report Date:	December 02, 2016

Certifications and Accreditations
Massachusetts M-MA030
Connecticut PH-0141
New Hampshire 2206
Rhode Island LAO00289
New Jersey MA015
Maine MA0030
New York 11627
Louisiana 03090
Florida E87814
Pennsylvania 68-02089
Army Corps of Engineers
Department of the Navy

This report shall not be reproduced except in full, without written approval from the laboratory.

Sample ID Cross Reference

Client: **NewFields** Lab Code: **MA00030**

Project: **National Grid Winter St. Haverhill** ETR: **1610010**

Lab Sample ID	Client Sample ID	Matrix
1610010-01	NFCB-01	Sediment
1610010-02	NFCB-02	Sediment
1610010-03	NFCB-03	Sediment
1610010-04	NFSB-01 2-3'	Soil
1610010-05	NFSB-01 7-8'	Soil
1610010-06	NFSB-01 10-15'	Soil
1610010-07	NFSB-01 15-16'	Soil
1610010-08	NFSB-01 16-20'	Soil
1610010-09	NFSB-02 2-3'	Soil
1610010-10	NFSB-02 12-15'	Soil
1610010-11	NFSB-02 15-20'	Soil
1610010-12	NFSB-03 1-2'	Soil
1610010-13	NFSB-03 10-15'	Soil
1610010-14	NFSB-03 15-17'	Soil
1610010-15	DUP-1	Soil

Gaps in Lab Sample IDs are indicative of samples not analyzed per client request.

Certificate/Approval Program Summary

Method numbers assume the most recent EPA revisions. For a complete listing of analytes for the referenced methods please contact your Alpha Woods Hole Lab Project Manager or the Quality Assurance Manager.

Connecticut Department of Public Health Certificate/Lab ID : PH-0141 - *Wastewater* (General Chemistry: EPA 120.1, 150.1, 160.1, 160.2, 180.1, 300.0, 310.1, 335.2, 365.2; Metals: 200.8, 245.1; Organics: 608, 624, 625, ETPH) *Solid Waste/Soil* (General Chemistry: 1010, 9010/9014, 9045, 9060; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270, ETPH).

Florida Department of Health Certificate/Lab ID : E87814 - Primary NELAP Accreditation Authority for Air & Emissions. Secondary NELAP Accreditation for Wastwater and Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 335.2, 365.2, SM2320B, SM2340B, SM2540G, SM4500NH3; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: 9010/9014, 9045, 9050, 9056, 9065, Reactivity 7.3; Metals: 6020, 7470, 7471; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Louisiana Department of Environmental Quality Certificate/Lab ID : 03090 - Primary NELAP Accrediting Authority for Wastewater, Solid & Hazardous Waste. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1, 6020; Organics: 608, 624, 625, 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Solid and Hazardous Waste* (General Chemistry: 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060, Reactivity 7.3; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270).

Maine Department of Human Services Certificate/Lab ID : MA0030 - *Wastewater* (General Chemistry: EPA 120.1/ SM2510B, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: 608, 624).

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA030 - *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 335.2, 365.2; Metals: EPA 245.1; Organics: EPA 608, 624).

New Hampshire Department of Environmental Services Certificate/Lab ID: 2206 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 365.2, 376.2, SM2540G; Metals: 200.8, 245.4; Organics: 608, 624, 625).

New Jersey Department of Environmental Protection Certificate/Lab ID : MA015 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 180.1, 300.0, 310.1/SM2320B, 335.2, 376.2, 9010/9014, 9056, SM2540G; Metals: 200.8, 245.1 6020; Organics: 608, 624, 625, 8081, 8082, 8260, 8270). *Solid & Hazardous Waste* (General Chemistry: EPA 1010, 1311, 9010/9014, 9040, 9045, 9056, 9060; Metals: 6020, 7196, 7470, 7471; Organics: 8015-DRO/GRO, 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

New York Department of Health Certificate/Lab ID : 11627 - Secondary NELAP Accreditation. *Wastewater* (General Chemistry: EPA 120.1/SM2510B, 150.1, 160.1/SM2540C, 160.2/SM2540D, 300.0, 310.1/SM2320B, 365.2, 376.2; Metals: 245.1; Organics: 608, 624, 625). *Solid and Hazardous Waste* (General Chemistry: EPA 1010, 1311; : 245.1; 6020, 7041; Organics: 8081, 8082, 8260, 8270). *Air & Emissions* (Organics: EPA TO-15).

Rhode Island Department of Health Certificate/Lab ID : LAO00289 - Chemistry: *Organic and Inorganic in Non-Poratable Water, Wastewater/Sewage and Soil* (Refer to LADEQ and MADEP certificates for method numbers.)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-02089 - Registered laboratory

U.S. Army Corps of Engineers

Department of the Navy

CASE NARRATIVE
Alpha Analytical

ETR: 1610010
Project: National Grid Winter St. Haverhill

All analyses were performed according to the Alpha Analytical quality assurance program and documented Standard Operating Procedures (SOPs). The analytical results contained in this report were performed within holding time, and with appropriate quality control measures, except where noted. A summary of all state and federal accreditations is provided within this report. Blank correction of results is not performed in the laboratory for any parameter. Alpha Analytical certifies that the test results within meet all of the requirements of NELAC, for all NELAC accredited parameters.

Sample Receipt

Samples 1610010-01 through -15 were received on October 21 and October 28, 2016, in good condition, between 2° and 6° C, without discrepancies. Sample ID's were provided by the client and may differ slightly from the nomenclature on the chain of custody. Samples -01 through -15 were released for SHC analysis and samples -01, -02, -04, -05, -06, -08, -09, -10, -11, -12, -14 and -15 for PAH/BIO analysis.

Sample Preparation

Note that LIMs assigns QC samples based on matrix. One set of QC samples has been reported for both soil and sediment samples, extracted as one preparation batch. The average weight of all samples in the batch was used to quantify the QC samples.

Alkylated Polynuclear Aromatic Hydrocarbons and Triaromatic Steroids by GC/MS-SIM - Soil

Polynuclear aromatic hydrocarbons and geochemical biomarkers were analyzed following Alpha Analytical SOP *Analysis of Parent and Alkylated Polynuclear Aromatic Hydrocarbons, Selected Heterocyclic Compounds, Steranes, Triterpanes, and Triaromatic Steroids by Gas Chromatography/Mass Spectrometry with Selected Ion Monitoring (SOP 2247, Rev. 9, 03/21/2016).* Soil samples are spiked with surrogate compounds and extracted by *Shaker Table Extraction (SOP 2261, Rev. 7, 01/21/2016).* Solvent extracts are dried over sodium sulfate and concentrated to an appropriate volume by *Gravimetric Determination (SOP 2263, Rev. 5, 08/03/2015).* A pre-determined volume of the extract is alumina cleaned by *Alumina Column Cleanup of Organic Extract (SOP 2260, Rev. 6, 03/21/2016)* and concentrated to 1mL. Qualitative identifications are confirmed by analyzing standards under the same conditions used for samples, comparing mass spectra, GC retention times, and patterns generated from reference oils. Quantification is based on response factors derived from a multi-level initial calibration using internal standard techniques. Alkyl homologues are quantified using the response factor of the parent PAH compound. Target steroids are quantified using the response factor of 5β(H)-Cholane. All enclosed data was evaluated below the reporting limits to three times signal to noise. The sample specific reporting limit is the value reported for all compounds which are not detected ("U" qualified).

1. The method blank SS110116B01 contained low-level target compounds detected below the reporting limit. Associated field sample results are flagged with "B" qualifiers if the concentration of the analyte in the sample is less than 10X the concentration in the blank. Please note that no "B" qualifiers were utilized.

2. Concentrations for compounds flagged with "G" qualifiers may be biased high due to matrix interference included in the quantitation.

3. Several samples required dilutions due to over-calibration concentrations of target compounds. The diluted analyses are only quantified for the compounds that were over the calibration range of the analytical instrument in the un-diluted analyses. Additionally, the final diluted analysis on samples 1610010-08E, -11E and -15E had the surrogates diluted out.

Steranes and Triterpanes by GC/MS-SIM - (F1) Soil

Geochemical biomarkers were analyzed following Alpha Analytical SOP *Analysis of Parent and Alkylated Polynuclear Aromatic Hydrocarbons, Selected Heterocyclic Compounds, Steranes, Triterpanes, and Triaromatic Steroids by Gas Chromatography/Mass Spectrometry with Selected Ion Monitoring (SOP 2247, Rev. 9, 03/21/2016)*. Soil samples are extracted as stated above for the PAH analysis. A pre-determined volume of the pre alumina extract is silica fractionated (*Silica Gel Cleanup Preparation (Manual), SOP 2267, Rev. 2, 03/21/2012*) and concentrated to 900uL, split in half and spiked with internal standard for biomarker analysis. The average weight of all samples included in the extraction batch is used as the weight for the blank, laboratory control sample, and laboratory control sample duplicate. The final value is rounded accordingly. Qualitative identifications are confirmed by analyzing standards under the same conditions used for samples, comparing mass spectra, GC retention times, and patterns generated from reference oils. Quantification is based on response factors derived from a multi-level initial calibration using internal standard techniques. Target triterpane biomarker concentrations are quantified using the response factor of Hopane and the steranes are quantified using the response factor of 5β(H)Cholane. All enclosed data was evaluated below the reporting limits to three times signal to noise. The sample specific reporting limit is the value reported for all compounds which are not detected ("U" qualified). Any sample preparation method deviations can be found in the "Sample Preparation and Extraction" section of this document or noted on the *Forensic Preparation Checklist* located in the sample preparation document.

In the "Steranes and Triterpanes" report section, the Lab IDs are reported with a suffix "F1" on all forms to indicate that the data reported is for fractionated biomarker analysis. The sample name in the analytical data (Quantitation Report and Injection Log) may be entered with a suffix "RF1" as a keyword requirement for LIMS data transfer.

1. Concentrations for compounds flagged with "G" qualifiers may be biased high due to matrix interference included in the quantitation.

Total Petroleum Hydrocarbons by GC/FID – Soil/Sediment

Samples for total saturated hydrocarbons were analyzed following the procedures in Alpha Analytical SOP *Total Petroleum and Saturated Hydrocarbons by Gas Chromatography/Flame Ionization Detector (SOP 2246, Rev. 7, 9/5/2015)* Method 8100/8015mod. Samples were prepared as stated above for the PAH analysis. A portion of the final extract was analyzed for GC/FID (gas chromatography with flame ionization detection). A multi-level initial calibration over the n-alkane range from C9-C40 was evaluated and quantified using internal standard techniques prior to sample analysis. All enclosed data was evaluated below the reporting limits to three times signal to noise. The sample specific reporting limit is the value reported for all compounds which are not detected ("U" qualified).

1. The analysis for sample 1610010-10 has the surrogate ortho-Terphenyl recovered above the upper recovery limit of 130%, at 132%, potentially due to the sample matrix. The surrogate d50-Tetracosane was recovered within acceptance criteria.

The enclosed results of analyses are representative of the samples as received by the laboratory. Alpha Analytical makes no representations or certifications as to the method of sample collection, sample identification, or transporting/handling procedures used prior to the receipt of samples by Alpha Analytical. To the best of my knowledge, the information contained in this report is accurate and complete. For any questions regarding this report, please contact the signatory below at 508-822-9300.

Approved by: Susan O'Neil Title: Project Manager Date: 12/8/16

Susan O'Neil

Sample Preparation

Alpha Woods Hole Lab
Batch Prep Report
11/01/2016 1610010 - OP NEWFIE

Lab ID	Prep Method	Analyst	Prep Start Date	Prep Completed	TCLP Date	Initial Amount (g or ml)	Split	PIV (ml)	Final Volume (ml)	Solvent Ex	Conc. Analyst	Conc. Date	Conc. Method	Transfer Volume (ml)	Vialed By	Vialed Date
1610010-01 (Sediment - 1610010)	Shaker	BA	11/1/2016	11/4/2016		5.69	20	0.5	10	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
1610010-02 (Sediment - 1610010)	Shaker	BA	11/1/2016	11/4/2016		15.14	40	0.5	20	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
1610010-03 (Sediment - 1610010)	Shaker	BA	11/1/2016	11/4/2016		15.24	40	0.5	20	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
1610010-04 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		5.02	10	0.5	5	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
1610010-05 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		5.72	40	0.5	20	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
1610010-06 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		15.81	8	0.5	4	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
1610010-07 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		15.4	4	0.5	2	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
1610010-08 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		5.63	20	0.5	10	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
1610010-09 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		5.28	20	0.5	10	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
1610010-10 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		5.5	100	0.5	50	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
1610010-11 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		5.79	40	0.5	20	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
1610010-12 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		5.28	16	0.5	8	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
1610010-13 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		5.71	10	0.5	5	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
1610010-14D (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		5.57	4	0.5	2	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
1610010-14 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		5.78	4	0.5	2	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
1610010-15 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		5.83	50	0.5	25	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
SS110116B01 (Sediment - 1610010)	Shaker	BA	11/1/2016	11/4/2016		12	4	0.5	2	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
SS110116B01 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		7	4	0.5	2	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
SS110116LCS01 (Sediment - 1610010)	Shaker	BA	11/1/2016	11/4/2016		12	4	0.5	2	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
SS110116LCS01 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		7	4	0.5	2	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
SS110116LCSD01 (Sediment - 1610010)	Shaker	BA	11/1/2016	11/4/2016		12	4	0.5	2	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
SS110116LCSD01 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		7	4	0.5	2	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016

Alpha Woods Hole Lab
Batch Prep Report
11/01/2016 1610010 - OP NEWFIE

Lab ID	Notes
1610010-01 (Sediment - 1610010)	1st Prep
1610010-02 (Sediment - 1610010)	1st Prep
1610010-03 (Sediment - 1610010)	1st Prep
1610010-04 (Soil - 1610010)	1st Prep
1610010-05 (Soil - 1610010)	1st Prep
1610010-06 (Soil - 1610010)	1st Prep
1610010-07 (Soil - 1610010)	1st Prep
1610010-08 (Soil - 1610010)	1st Prep
1610010-09 (Soil - 1610010)	1st Prep
1610010-10 (Soil - 1610010)	1st Prep
1610010-11 (Soil - 1610010)	1st Prep
1610010-12 (Soil - 1610010)	1st Prep
1610010-13 (Soil - 1610010)	1st Prep
1610010-14D (Soil - 1610010)	1st Prep
1610010-14 (Soil - 1610010)	1st Prep
1610010-15 (Soil - 1610010)	1st Prep
SS110116B01 (Sediment - 1610010)	1st Prep
SS110116B01 (Soil - 1610010)	1st Prep
SS110116LCS01 (Sediment - 1610010)	1st Prep
SS110116LCS01 (Soil - 1610010)	1st Prep
SS110116LCSD01 (Sediment - 1610010)	1st Prep
SS110116LCSD01 (Soil - 1610010)	1st Prep

Alpha Woods Hole Lab
Batch Prep Spike Report

11/01/2016 1610010 - OP NEWFIE Analyst: BA Witness: BA

Lab ID	QC Type	OP NEWFIE - surr	Vol OP NEWFIE - surr	Units OP NEWFIE - surr	OP NEWFIE - spk 1	Vol OP NEWFIE - spk 1	Units OP NEWFIE - spk 1	OP NEWFIE - spk 2	Vol OP NEWFIE - spk 2	Units OP NEWFIE - spk 2
1610010-01	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610010-02	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610010-03	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610010-04	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610010-05	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610010-06	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610010-07	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610010-08	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610010-09	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610010-10	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610010-11	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610010-12	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610010-13	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610010-14	D	FRAX85	500	µl	MSAX17	500	µl			
1610010-14	SAM	FRAX85	500	µl	MSAX17	500	µl			
1610010-15	SAM	FRAX85	500	µl	MSAX17	500	µl			
SS110116B01	B	FRAX85	100	µl	MSAX17	100	µl			
SS110116B01	B	FRAX85	100	µl	MSAX17	100	µl			
SS110116LCS01	LCS	FRAX85	100	µl	MSAX17	100	µl	FRAX73	100	µl
SS110116LCS01	LCS	FRAX85	100	µl	MSAX17	100	µl	FRAX73	100	µl
SS110116LCSD01	LCSD	FRAX85	100	µl	MSAX17	100	µl	FRAX73	100	µl
SS110116LCSD01	LCSD	FRAX85	100	µl	MSAX17	100	µl	FRAX73	100	µl
SS112316B01	B									
SS112316B01	B									
SS112316PRM01	PRM									
SS112316PRM01	PRM									

STD ID	TITLE	CONTENTS	SOLVENT	LOT
MSAX17	Biomarker Surrogate	5b(H)Cholane = 10 ug/mL	DCM	DO105
FRAX73	LCS Solution PAH /SHC	Aromatic Hydrocarbon STD = 10 ug/mL MA EPH Aliphatic Std = 200 ug/mL	DCM	DP875
FRAX85	PAH/SHC SURROGATE	Deuterated PAH Surrogate = 10 ug/mL OTP = 500 ug/mL D50 Tetracosane = 500 ug/mL	DCM	DQ092

Alpha Woods Hole Lab
Batch Prep Spike Report

11/01/2016 1610010 - OP SHC Analyst: BA Witness: BA

Lab ID	QC Type	OP SHC - surr	Vol OP SHC - surr	Units OP SHC - surr	OP SHC - spk 1	Vol OP SHC - spk 1	Units OP SHC - spk 1	OP SHC - spk 2	Vol OP SHC - spk 2	Units OP SHC - spk 2
1610010-01	SAM	FRAX85	500	µl				FRAX53	50	µl
1610010-02	SAM	FRAX85	500	µl				FRAX53	50	µl
1610010-03	SAM	FRAX85	500	µl				FRAX53	50	µl
1610010-04	SAM	FRAX85	500	µl				FRAX53	50	µl
1610010-05	SAM	FRAX85	500	µl				FRAX53	50	µl
1610010-06	SAM	FRAX85	500	µl				FRAX53	50	µl
1610010-07	SAM	FRAX85	500	µl				FRAX53	50	µl
1610010-08	SAM	FRAX85	500	µl				FRAX53	50	µl
1610010-09	SAM	FRAX85	500	µl				FRAX53	50	µl
1610010-10	SAM	FRAX85	500	µl				FRAX53	50	µl
1610010-11	SAM	FRAX85	500	µl				FRAX53	50	µl
1610010-12	SAM	FRAX85	500	µl				FRAX53	50	µl
1610010-13	SAM	FRAX85	500	µl				FRAX53	50	µl
1610010-14	D	FRAX85	500	µl				FRAX53	50	µl
1610010-14	SAM	FRAX85	500	µl				FRAX53	50	µl
1610010-15	SAM	FRAX85	500	µl				FRAX53	50	µl
SS110116B01	B	FRAX85	100	µl				FRAX53	50	µl
SS110116B01	B	FRAX85	100	µl				FRAX53	50	µl
SS110116LCS01	LCS	FRAX85	100	µl	FRAX73	100	µl	FRAX53	50	µl
SS110116LCS01	LCS	FRAX85	100	µl	FRAX73	100	µl	FRAX53	50	µl
SS110116LCSD01	LCSD	FRAX85	100	µl	FRAX73	100	µl	FRAX53	50	µl
SS110116LCSD01	LCSD	FRAX85	100	µl	FRAX73	100	µl	FRAX53	50	µl
SS112316B01	B	-99	-99	-99	-99	-99	-99	-99	-99	-99
SS112316B01	B	-99	-99	-99	-99	-99	-99	-99	-99	-99
SS112316PRM01	PRM	-99	-99	-99	-99	-99	-99	-99	-99	-99
SS112316PRM01	PRM	-99	-99	-99	-99	-99	-99	-99	-99	-99

STD ID	TITLE	CONTENTS	SOLVENT	LOT
FRAX53	PAH/SHC RIS Spiking Solution	5 Alpha Androstane = 500 ug/mL Acenaphthene D10, Chrysene D12 = 5 ug/mL	DCM	dp875
FRAX73	LCS Solution PAH /SHC	Aromatic Hydrocarbon STD = 10 ug/mL MA EPH Aliphatic Std = 200 ug/mL	DCM	DP875
FRAX85	PAH/SHC SURROGATE	Deuterated PAH Surrogate = 10 ug/mL OTP = 500 ug/mL D50 Tetracosane = 500 ug/mL	DCM	DQ092

Alpha Woods Hole Lab
Batch Clean Up Report
11/01/2016 1610010 - OP NEWFIE

Lab ID	QC Type	Clean Up Method	Analyst	Clean Up Date	Flow Rate	Coll. Start	Coll. End	Concentration Analyst	Conc. Date	Solvent Ex.	Pre Vol (ml)	Frac Amt (ml)	Frac Split	Frac Fact	Tran Vol (ml)	Active
1610010-01	SAM	3660B	TJ	11/3/2016												True
1610010-02	SAM	3660B	TJ	11/3/2016												True
1610010-03	SAM	3660B	TJ	11/3/2016												True
1610010-04	SAM	3660B	TJ	11/3/2016												True
1610010-05	SAM	3660B	TJ	11/3/2016												True
1610010-06	SAM	3660B	TJ	11/3/2016												True
1610010-07	SAM	3660B	TJ	11/3/2016												True
1610010-08	SAM	3660B	TJ	11/3/2016												True
1610010-09	SAM	3660B	TJ	11/3/2016												True
1610010-10	SAM	3660B	TJ	11/3/2016												True
1610010-11	SAM	3660B	TJ	11/3/2016												True
1610010-12	SAM	3660B	TJ	11/3/2016												True
1610010-13	SAM	3660B	TJ	11/3/2016												True
1610010-14	D	3660B	TJ	11/3/2016												True
1610010-14	SAM	3660B	TJ	11/3/2016												True
1610010-15	SAM	3660B	TJ	11/3/2016												True
SS110116B01	B	3660B	TJ	11/3/2016												True
SS110116B01	B	3660B	TJ	11/3/2016												True
SS110116LCS01	LCS	3660B	TJ	11/3/2016												True
SS110116LCS01	LCS	3660B	TJ	11/3/2016												True
SS110116LCSD01	LCSD	3660B	TJ	11/3/2016												True
SS110116LCSD01	LCSD	3660B	TJ	11/3/2016												True

ETR 1610010

Analyst TJ

Date 11/03/2016

Alpha Analytical

- [x] Pre-Alumina
- [ ] Post-Alumina
- [ ] Pre-Silica
- [ ] Oily Material Prep.
- [ ] Other

ETR	Lab ID	QC	Extract Volume (µL)	Aliquot Removed (µL)	Aliquot Weight (mg)	Total Extract Weight (mg)	Volume Removed for Column (µl)	Extract Weight to Column (mg)	Split Factor	QC (%R)
	FRAX35	Gravimetric Standard	10000	50	0.267	53.40	N/A	N/A	N/A	103%
1610010	1		10000	50	0.415	83.00	1000	8.30	10.00	
	2		10000	50	0.963	192.60	500	9.63	20.00	
	3		10000	50	1.228	245.60	500	12.28	20.00	
	4		10000	50	0.124	24.80	2000	4.96	5.00	
	5		10000	50	0.870	174.00	500	8.70	20.00	
	6		4000	50	0.401	32.08	1000	8.02	4.00	
	7		4000	50	0.076	6.08	2000	3.04	2.00	
	8		10000	50	0.507	101.40	1000	10.14	10.00	
	9		10000	50	0.457	91.40	1000	9.14	10.00	
	10		10000	50	2.079	415.80	200	8.32	50.00	
	11		10000	50	0.755	151.00	500	7.55	20.00	
	12		4000	50	0.779	62.32	500	7.79	8.00	
	13		4000	50	0.672	53.76	800	10.75	5.00	
	14	D	4000	50	0.300	24.00	2000	12.00	2.00	6%RPD
	14		4000	50	0.282	22.56	2000	11.28	2.00	
	15		10000	50	1.504	300.80	400	12.03	25.00	

Note:

Total Extract Weight (mg) = (Extract Volume ÷ Aliquot Removed) (Aliquot Weight)

Gravimetric Standard = 5 mg/mL

LCS Acceptance Criteria: 95% - 105%

Verified by: SMB

Date: 11/4/16

ETR 1610010

Alpha Analytical

Analyst TJ

Date 11/03/2016

- ☐ Pre-Alumina
- ☐ Post-Alumina
- ☐ Pre-Silica
- ☐ Oily Material Prep.
- ☐ Other

ETR	Lab ID	QC	Extract Volume (µL)	Aliquot Removed (µL)	Aliquot Weight (mg)	Total Extract Weight (mg)	Volume Removed for Column (µl)	Extract Weight to Column (mg)	Split Factor	QC (%R)
	FRAX35	Gravimetric Standard	10000	50	0.267		N/A	N/A	N/A	0%
1610010	1		10000	50	0.415					
	2		10000	50	0.963					
	3		10000	50	1.228					
	4		10000	50	0.124					
	5		10000	50	0.870					
	6		4000	50	0.401					
	7		4000	50	0.076					
	8		10000	50	0.507					
	9		10000	50	0.457					
	10		10000	50	2.079					
	11		10000	50	0.755					
	12		4000	50	0.779					
	13		4000	50	0.672					
	14	D	4000	50	0.300					#VALUE!
	14		4000	50	0.282					
	15		10000	50	1.504					

Note:

Total Extract Weight (mg) = (Extract Volume ÷ Aliquot Removed) (Aliquot Weight)

Gravimetric Standard = 5 mg/mL

LCS Acceptance Criteria: 95% - 105%

Verified by: _____

Date: _____

Alpha Woods Hole Lab
Batch Clean Up Report
11/01/2016 1610010 - OP NEWFIE

Lab ID	QC Type	Clean Up Method	Analyst	Clean Up Date	Flow Rate	Coll. Start	Coll. End	Concentration Analyst	Conc. Date	Solvent Ex.	Pre Vol (ml)	Frac Amt (ml)	Frac Split	Frac Fact	Tran Vol (ml)	Active
1610010-01	SAM	3610	TJ	11/4/2016				TJ	11/4/2016	False	10	1	10			True
1610010-02	SAM	3610	TJ	11/4/2016				TJ	11/4/2016	False	10	0.5	20			True
1610010-03	SAM	3610	TJ	11/4/2016				TJ	11/4/2016	False	10	0.5	20			True
1610010-04	SAM	3610	TJ	11/4/2016				TJ	11/4/2016	False	10	2	5			True
1610010-05	SAM	3610	TJ	11/4/2016				TJ	11/4/2016	False	10	0.5	20			True
1610010-06	SAM	3610	TJ	11/4/2016				TJ	11/4/2016	False	4	1	4			True
1610010-07	SAM	3610	TJ	11/4/2016				TJ	11/4/2016	False	4	2	2			True
1610010-08	SAM	3610	TJ	11/4/2016				TJ	11/4/2016	False	10	1	10			True
1610010-09	SAM	3610	TJ	11/4/2016				TJ	11/4/2016	False	10	1	10			True
1610010-10	SAM	3610	TJ	11/4/2016				TJ	11/4/2016	False	10	0.2	50			True
1610010-11	SAM	3610	TJ	11/4/2016				TJ	11/4/2016	False	10	0.5	20			True
1610010-12	SAM	3610	TJ	11/4/2016				TJ	11/4/2016	False	4	0.5	8			True
1610010-13	SAM	3610	TJ	11/4/2016				TJ	11/4/2016	False	4	0.8	5			True
1610010-14	D	3610	TJ	11/4/2016				TJ	11/4/2016	False	4	2	2			True
1610010-14	SAM	3610	TJ	11/4/2016				TJ	11/4/2016	False	4	2	2			True
1610010-15	SAM	3610	TJ	11/4/2016				TJ	11/4/2016	False	10	0.4	25			True
SS110116B01	B	3610	TJ	11/4/2016				TJ	11/4/2016	False	4	2	2			True
SS110116B01	B	3610	TJ	11/4/2016				TJ	11/4/2016	False	4	2	2			True
SS110116LCS01	LCS	3610	TJ	11/4/2016				TJ	11/4/2016	False	4	2	2			True
SS110116LCS01	LCS	3610	TJ	11/4/2016				TJ	11/4/2016	False	4	2	2			True
SS110116LCSD01	LCSD	3610	TJ	11/4/2016				TJ	11/4/2016	False	4	2	2			True
SS110116LCSD01	LCSD	3610	TJ	11/4/2016				TJ	11/4/2016	False	4	2	2			True

Alpha Woods Hole Lab
Batch Clean Up Report
11/01/2016 1610010 - OP NEWFIE

Lab ID	QC Type	Clean Up Method	Analyst	Clean Up Date	Flow Rate	Coll. Start	Coll. End	Concentration Analyst	Conc. Date	Solvent Ex.	Pre Vol (ml)	Frac Amt (ml)	Frac Split	Frac Fact	Tran Vol (ml)	Active
1610010-01	SAM	split	TJ	11/4/2016							0.9	0.45	2			True
1610010-02	SAM	split	TJ	11/4/2016							0.9	0.45	2			True
1610010-03	SAM	split	TJ	11/4/2016							0.9	0.45	2			True
1610010-04	SAM	split	TJ	11/4/2016							0.9	0.45	2			True
1610010-05	SAM	split	TJ	11/4/2016							0.9	0.45	2			True
1610010-06	SAM	split	TJ	11/4/2016							0.9	0.45	2			True
1610010-07	SAM	split	TJ	11/4/2016							0.9	0.45	2			True
1610010-08	SAM	split	TJ	11/4/2016							0.9	0.45	2			True
1610010-09	SAM	split	TJ	11/4/2016							0.9	0.45	2			True
1610010-10	SAM	split	TJ	11/4/2016							0.9	0.45	2			True
1610010-11	SAM	split	TJ	11/4/2016							0.9	0.45	2			True
1610010-12	SAM	split	TJ	11/4/2016							0.9	0.45	2			True
1610010-13	SAM	split	TJ	11/4/2016							0.9	0.45	2			True
1610010-14	D	split	TJ	11/4/2016							0.9	0.45	2			True
1610010-14	SAM	split	TJ	11/4/2016							0.9	0.45	2			True
1610010-15	SAM	split	TJ	11/4/2016							0.9	0.45	2			True
SS110116B01	B	split	TJ	11/4/2016							0.9	0.45	2			True
SS110116B01	B	split	TJ	11/4/2016							0.9	0.45	2			True
SS110116LCS01	LCS	split	TJ	11/4/2016							0.9	0.45	2			True
SS110116LCS01	LCS	split	TJ	11/4/2016							0.9	0.45	2			True
SS110116LCSD01	LCSD	split	TJ	11/4/2016							0.9	0.45	2			True
SS110116LCSD01	LCSD	split	TJ	11/4/2016							0.9	0.45	2			True

Alpha Woods Hole Lab
Batch Clean Up Report
11/01/2016 1610010 - OP NEWFIE

Lab ID	Notes
1610010-01	
1610010-02	
1610010-03	
1610010-04	
1610010-05	
1610010-06	
1610010-07	
1610010-08	
1610010-09	
1610010-10	
1610010-11	
1610010-12	
1610010-13	
1610010-14	
1610010-14	
1610010-15	
SS110116B01	
SS110116B01	
SS110116LCS01	
SS110116LCS01	
SS110116LCSD01	
SS110116LCSD01	

Batch ID: 1610010 Client: Newfields Project: National Grid Water St. Haverhill

Anomalies are noted in the Prep Process Notes section below.

Test(s) Spiked for:
Choose from the following:
F1B, POIB, POIH, POIHX, POITAS, TPH+A

Identify Matrix:
Filter • Filter (L) • NAPL • Net • Oil Product • PUF • Sediment • Sheen • Soil • Solid • SPMD • Tissue • Pom Pom • 1L Water • 4L Water • Floc Water

Extraction HT:
11/2/16

	Date:	Initials:
COC/ETR Check:	11/1/16	TJ
1st Extraction:	11/1/16	TJ
2nd Extraction:	11/3/16	TJ
3rd Extraction:	11/3/16	TJ

Cleanup Methods:		Date/ Initials:
No Cleanup Required		
Alumina Column (3610)	x	11/4/16 TJ
Silica Column (3630)		
Fractionation Column (3630F1)		
GPC (3640)		
Copper (3660B)	x	11/3/16 TJ
Water pH<2 verified		
	Date/Initials:	ID & Amount:
RIS Spike Analyst:	11/4/16 SMB	FRAX53 50uL
RIS Spike Witness:	11/4/16 TJ	

Prep Process Notes

REAGENT	LOT #
DCM	DQ092
SODIUM SULFATE	0000131774
SILICA GEL	N/A
ALUMINA	214

REAGENT	LOT #
COPPER	OWR110316A
GLASS WOOL	11414001

BATCH COMPLETE Analyst:	TJ	Date:	11/4/16

BATCH REVIEWED Analyst:	EP	Date:	11/8/16

Batch ID: 161001O **Client:** Newfields **Project:** National Grid Winter St. Haverhill

Prep Process Notes

Sample ID	Low Volume	High H2O	Plant Material	Other	Difficult to homogenize	Potential High Level		Spiked High
						Visual	Odor	
1						X	X	X
2						X		X
3						X		X
4						X	X	X
5						X	X	X
6						X		X
7						X	X	X
8						X		X
9						X		X
10						X	X	X
11						X	X	X
12						X	X	X
13						X	X	X
14						X	X	X
15						X	X	X

Present

#4 - Small black furballs present in sample

Alpha Woods Hole Lab
Batch Weight Report
11/01/2016

Lab ID	QC Type	PS1610010 - Pan Weight	PS1610010 - Wet Weight	PS1610010 - Dry Weight	PS1610010 - Dry Weight #2	PS1610010 - Dry Weight #3	Percent Solid	RPD
1610010-01	SAM	1.13	8.14	6.43	6.43		75.61	
1610010-02	SAM	1.15	8.4	6.06	6.06		67.72	
1610010-03	SAM	1.14	6.07	5.47	5.47		87.83	
1610010-04	SAM	1.15	5.17	4.78	4.77		90.05	
1610010-05	SAM	1.15	6.44	5.67	5.67		85.44	
1610010-06	SAM	1.14	6.53	6	5.99		89.98	
1610010-07	SAM	1.15	8.66	7.26	7.26		81.36	
1610010-08	SAM	1.16	9.16	7.83	7.83		83.38	
1610010-09	SAM	1.14	7.49	6.72	6.72		87.87	
1610010-10	SAM	1.14	7.43	6.8	6.8		89.98	
1610010-11	SAM	1.16	8.83	7.91	7.9		87.87	
1610010-12	SAM	1.16	6.91	6.49	6.49		92.70	
1610010-13	SAM	1.15	9.61	8.35	8.35		85.11	
1610010-14	D	1.16	6.79	5.55	5.55		77.98	0.46%
1610010-14	SAM	1.17	6.89	5.61	5.61		77.62	
1610010-15	SAM	1.16	5.99	5.48	5.48		89.44	
PSS110116B02	B	-99	-99	-99	-99	-99	100.00	
PSS110116B02	B	1.15	1.15	1.15	1.15		100.00	

Initial: 11/1/2016 7:27:24 AM TS
Weight #1: 11/4/2016 4:48:18 AM BA
Weight #2: 11/4/2016 7:01:47 AM BA

Alkylated Polynuclear Aromatic Hydrocarbons and Triaromatic Steroids by GC/MS-SIM

Total Petroleum Hydrocarbons by GC/FID

Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **NFCB-03**
Case: **N/A** SDG: **N/A**
Matrix: **Sediment**

Lab Code: **MA00030**
ETR: **1610010**
Lab ID: **1610010-03**
Associated Blank: **SS110116B01**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
10/18/16	10/21/16	11/01/16	11/05/16	87.8	15.24	20	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**2050**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	103	50-130
d50-Tetracosane	96	50-130

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041622.d
Signal(s) : FID1A.CH
Acq On : 05 Nov 2016 7:39 am
Operator : FID17:NL
Sample : 1610010-03
Misc : 1X
ALS Vial : 11 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 10 16:10:23 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\Nov04\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Tue Nov 08 17:33:03 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711041601F
Blank File : F1711041610.d

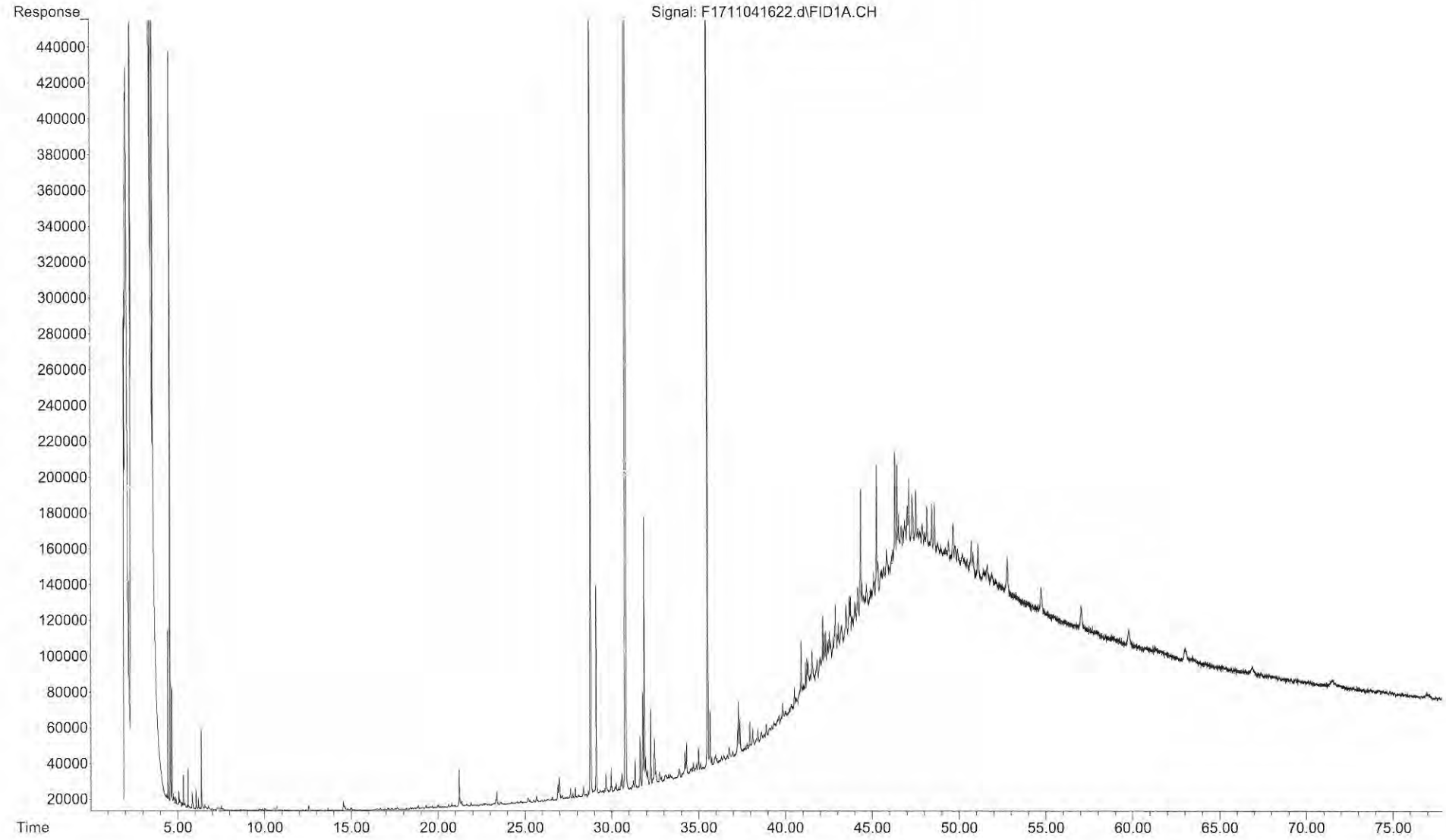
Sub List : TPH - TPH

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.812	65886678	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.781	18004996	12.854 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	25.71%#
24) s	d50-Tetracosane	35.516	14151438	12.062 ug/mL M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	24.12%#
	Target Compounds			
42) h	C9-C44 Total Petroleu...	39.461	2244143546	1820.974 ug/mL m
42) h	C9-C44 Total Petroleu BS	39.461	1687937544	1369.650 ug/mLm
46) h	Total Resolved Hydroc...	39.844	114596272	92.987 ug/mL m
	SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041622.d
Operator : FID17:NL
Acquired : 05 Nov 2016 7:39 am using AcqMethod FID17.M
Instrument: FID17
Sample : 1610010-03
Misc Info : 1X
ALS Vial : 11



Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Blank**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610010**
Lab ID: **SS110116B01**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/05/16	100	7.00	2	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	9.43 U

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	99	50-130
d50-Tetracosane	94	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041612.d
Signal(s) : FID1A.CH
Acq On : 05 Nov 2016 12:17 am
Operator : FID17:NL
Sample : SS110116B01
Misc : 1X ETR 1610010
ALS Vial : 6 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 10 16:06:01 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\Nov04\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Tue Nov 08 17:33:03 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711041601F
Blank File : F1711041610.d

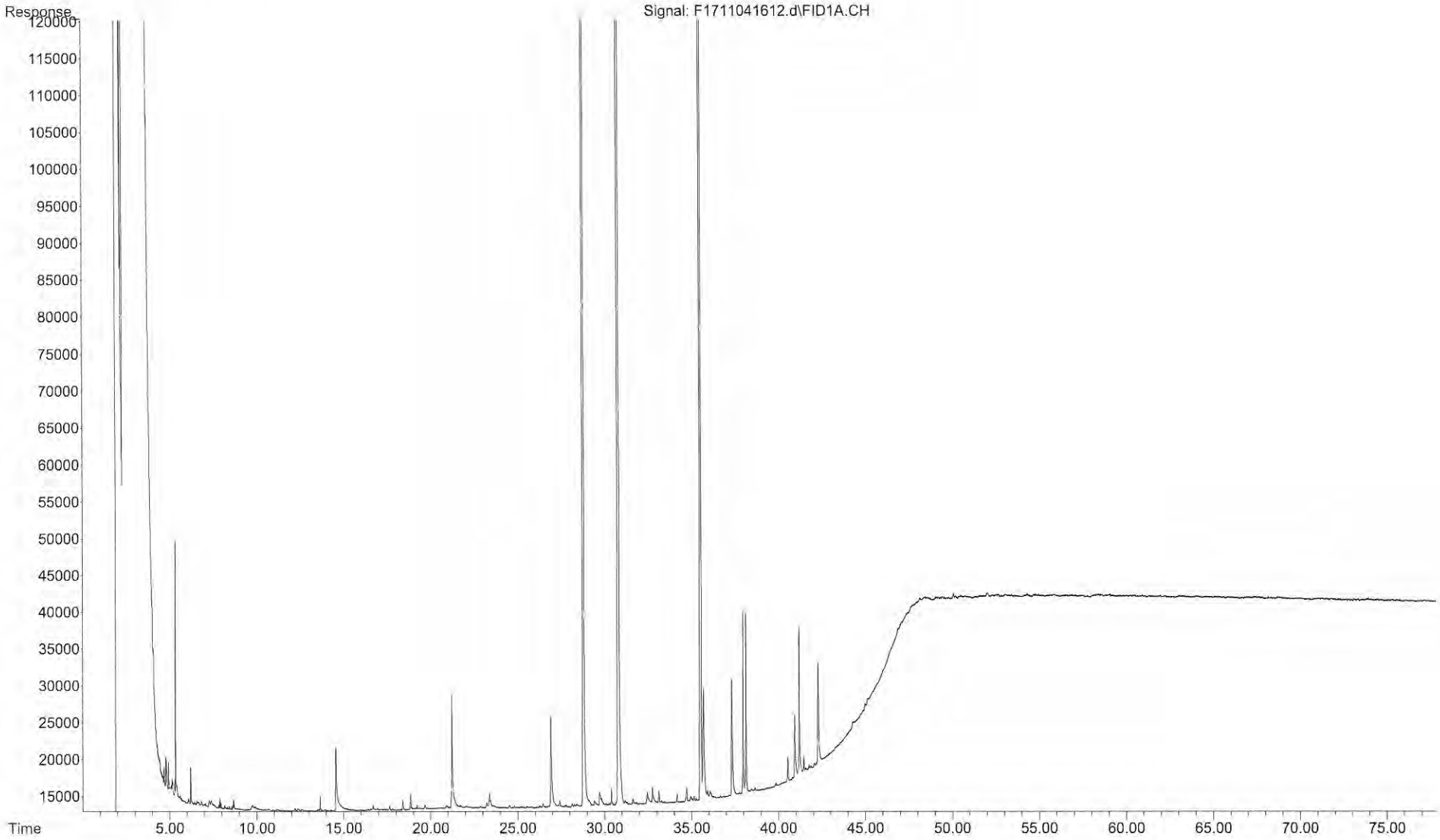
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.812	66113500	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.789	34880253	24.816 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery =	49.63%#
24) s d50-Tetracosane	35.520	27543271	23.396 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery =	46.79%#
Target Compounds			
42) h C9-C44 Total Petroleu...	39.461	536362125	433.729 ug/mL m
42) h C9-C44 Total Petroleu BS	39.461	-19843877	N.D. ug/mLm
46) h Total Resolved Hydroc...	39.844	11288710	9.129 ug/mL m
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041612.d
Operator : FID17:NL
Acquired : 05 Nov 2016 12:17 am using AcqMethod FID17.M
Instrument: FID17
Sample : SS110116B01
Misc Info : 1X ETR 1610010
ALS Vial : 6



Form III
Spike Recovery Summary
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610010**
Lab ID: **See Below**
Associated Blank: **SS110116B01**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	11/01/16	100	NLJr

Lab ID:		SS110116B01	SS110116LCS01		SS110116LCSD01				
Parameter		**Blank Conc.**	**LCS Conc.**	**LCS % Recovery**	**LCSD Conc.**	**LCSD % Recovery**	**% RPD**	**RPD Limit**	**% Recovery Limits**
n-Nonane (C9)		0.286 U	2.19	77	2.12	74	3	30	50-130
n-Decane (C10)		0.286 U	2.57	90	2.50	88	2	30	50-130
n-Dodecane (C12)		0.286 U	2.70	95	2.69	94	1	30	50-130
n-Tetradecane (C14)		0.286 U	2.70	95	2.74	96	1	30	50-130
n-Hexadecane (C16)		0.286 U	3.08	108	3.10	108	0	30	50-130
n-Octadecane (C18)		0.286 U	3.28	115	3.27	114	0	30	50-130
n-Nonadecane (C19)		0.286 U	3.00	105	2.99	105	1	30	50-130
n-Eicosane (C20)		0.286 U	3.06	107	3.04	107	1	30	50-130
n-Docosane (C22)		0.286 U	3.05	107	3.04	106	0	30	50-130
n-Tetracosane (C24)		0.286 U	3.05	107	3.04	107	0	30	50-130
n-Hexacosane (C26)		0.286 U	3.02	106	3.00	105	0	30	50-130
n-Octacosane (C28)		0.286 U	3.13	110	3.09	108	1	30	50-130
n-Triacontane (C30)		0.286 U	3.09	108	3.06	107	1	30	50-130
n-Hexatriacontane (C36)		0.286 U	3.10	109	3.07	107	1	30	50-130

Surrogate	% Recovery		Acceptance Range (%)
ortho-Terphenyl	102	101	50-130
d50-Tetracosane	97	95	50-130

U - The analyte was analyzed for but not detected at the sample specific level reported.
N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

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Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Laboratory Control Sample**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610010**
Lab ID: **SS110116LCS01**
Associated Blank: **SS110116B01**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/05/16	100	7.00	2	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	33.7

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	102	50-130
d50-Tetracosane	97	50-130

11/16 13:04

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041614.d
Signal(s) : FID1A.CH
Acq On : 05 Nov 2016 1:45 am
Operator : FID17:NL
Sample : SS110116LCS01
Misc : 1X ETR 1610010
ALS Vial : 7 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 10 16:07:12 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\Nov04\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Tue Nov 08 17:33:03 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711041601F
Blank File : F1711041610.d

Sub List : TPH_QC_Samples - TPH_QC_Samples

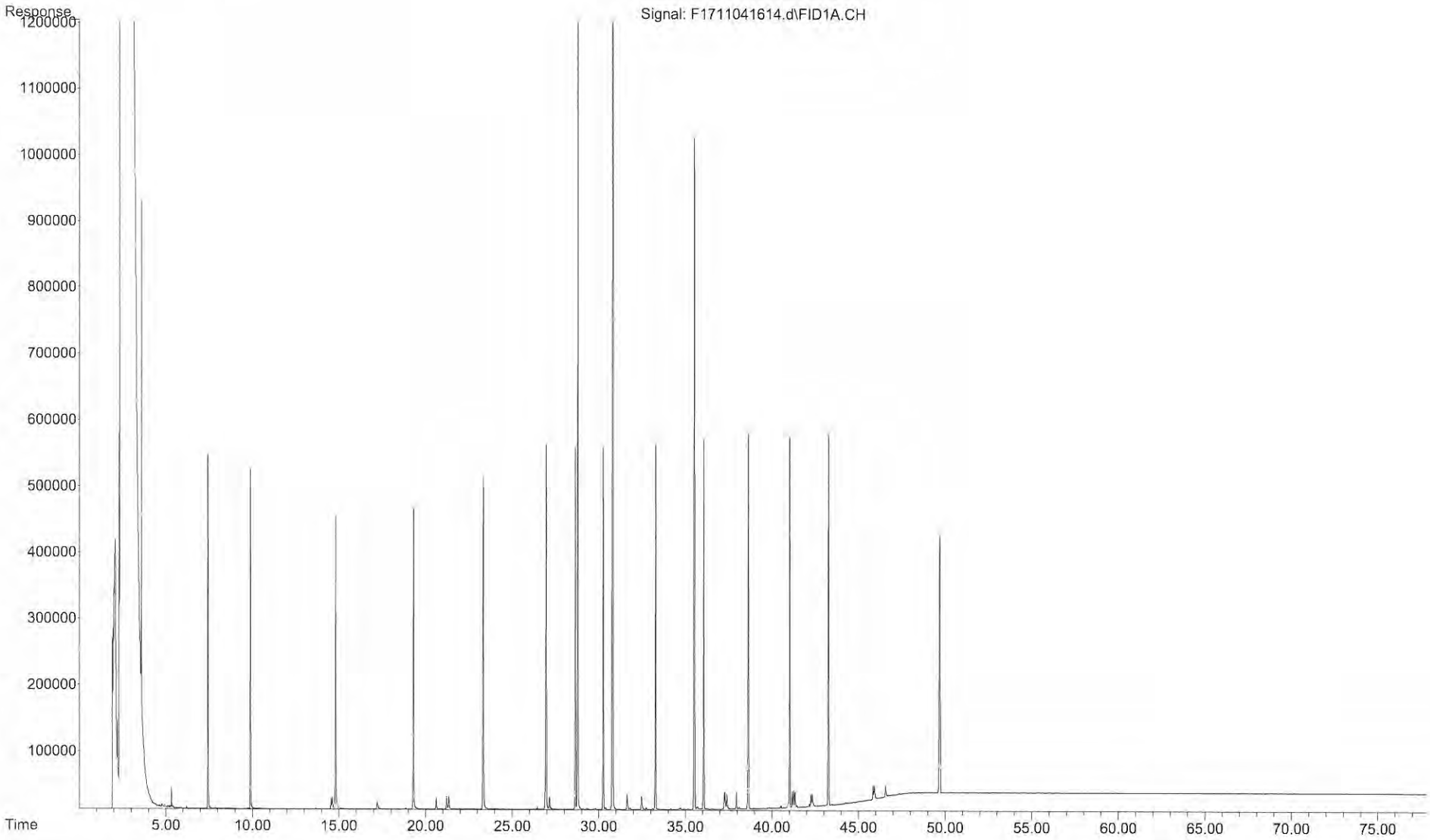
	Compound	R.T.	Response	Conc	Units	
	Internal Standards					
1) I	5-alpha-androstane	30.810	63789201	50.000	ug/mL	M4
	System Monitoring Compounds					
19) s	ortho-terphenyl	28.789	34743560	25.620	ug/mL	M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	51.24%		
24) s	d50-Tetracosane	35.519	27548714	24.253	ug/mL	M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	48.51%#		
	Target Compounds					
3) t	n-Nonane (C9)	7.418	8193076	7.668	ug/mL	M4
4) t	n-Decane (C10)	9.874	9915673	8.984	ug/mL	M4
6) t	n-Dodecane (C12)	14.801	10723971	9.469	ug/mL	M4
9) t	n-Tetradecane (C14)	19.294	10902686	9.464	ug/mL	M4
12) t	n-Hexadecane (C16)	23.321	12640986	10.798	ug/mL	M4
16) t	n-Octadecane (C18)	26.954	13800647	11.483	ug/mL	M4
18) t	n-Nonadecane (C19)	28.645	12550708	10.506	ug/mL	M4
20) t	n-Eicosane (C20)	30.257	12763218	10.712	ug/mL	M4
22) t	n-Docosane (C22)	33.279	12917676	10.667	ug/mL	M4
25) t	n-Tetracosane (C24)	36.059	13080725	10.680	ug/mL	M4
27) t	n-Hexacosane (C26)	38.635	13102702	10.565	ug/mL	M4
29) t	n-Octacosane (C28)	41.030	13392769	10.965	ug/mL	M4
31) t	n-Triacontane (C30)	43.269	13305804	10.819	ug/mL	M4
37) t	n-Hexatriacontane (C36)	49.695	13763283	10.859	ug/mL	M4
42) h	C9-C44 Total Petroleu...	39.461	696853192	584.043	ug/mL	m
42) h	C9-C44 Total Petroleu BS	39.461	140647190	117.879	ug/mLm	
46) h	Total Resolved Hydroc...	39.844	187877323	157.463	ug/mL	m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041614.d
Operator : FID17:NL
Acquired : 05 Nov 2016 1:45 am using AcqMethod FID17.M
Instrument: FID17
Sample : SS110116LCS01
Misc Info : 1X ETR 1610010
ALS Vial : 7



HC17102615F.M Thu Nov 10 17:28:54 2016

Form I
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Laboratory Control Sample Dup**
Case: **N/A** SDG: **N/A**
Matrix: **Soil**

Lab Code: **MA00030**
ETR: **1610010**
Lab ID: **SS110116LCSD01**
Associated Blank: **SS110116B01**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	11/01/16	11/05/16	100	7.00	2	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**30.1**

N/A - Not Applicable

Surrogate	% Recovery	Acceptance Range (%)
ortho-Terphenyl	101	50-130
d50-Tetracosane	95	50-130

11/16 13:04

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041616.d
Signal(s) : FID1A.CH
Acq On : 05 Nov 2016 3:14 am
Operator : FID17:NL
Sample : SS110116LCSD01
Misc : 1X ETR 1610010
ALS Vial : 8 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 10 16:08:42 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\Nov04\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Tue Nov 08 17:33:03 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1711041601F
Blank File : F1711041610.d

Sub List : TPH_QC_Samples - TPH_QC_Samples

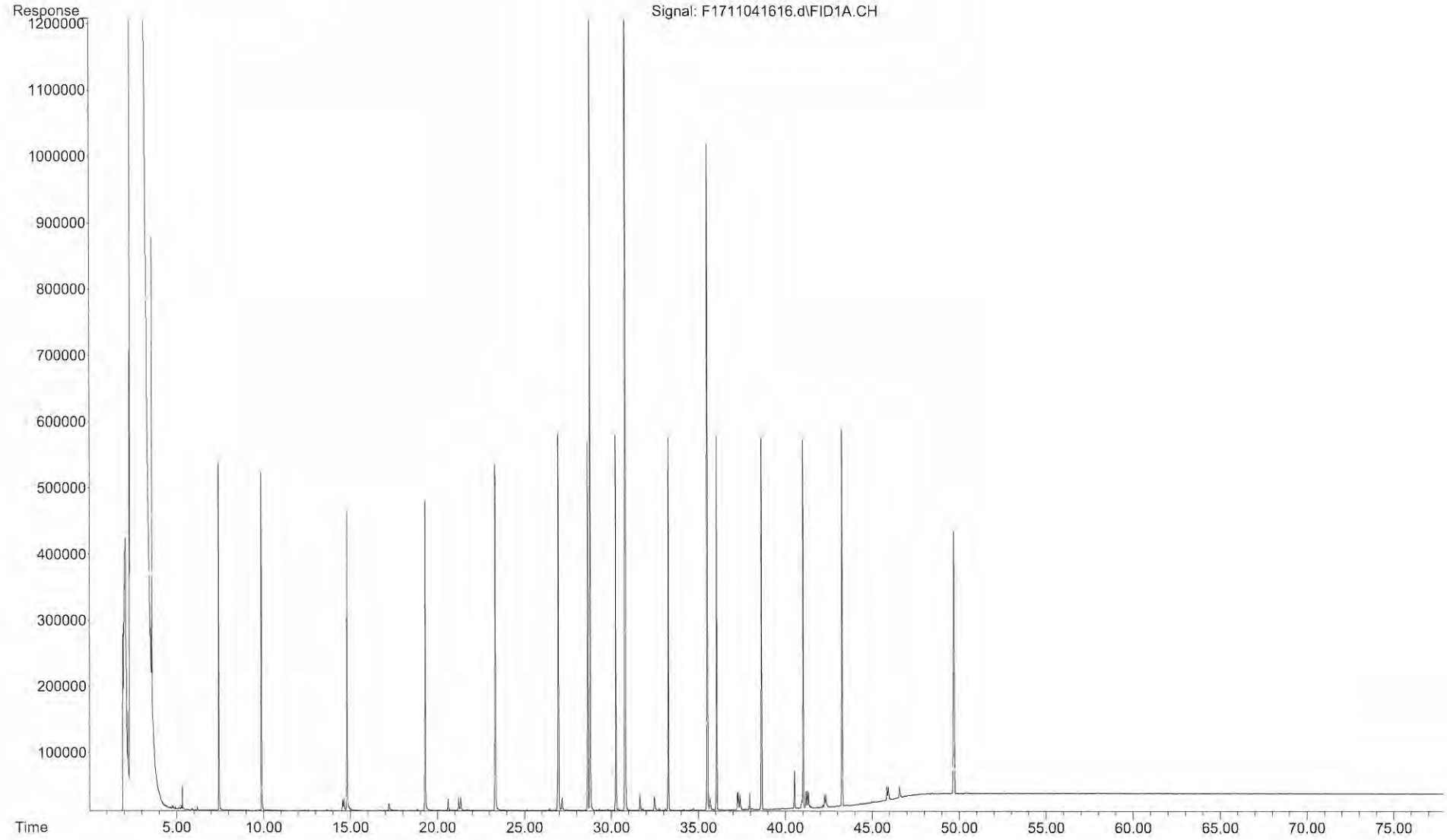
	Compound	R.T.	Response	Conc	Units	
	Internal Standards					
1) I	5-alpha-androstane	30.810	64553006	50.000	ug/mL	M4
	System Monitoring Compounds					
19) s	ortho-terphenyl	28.787	34488051	25.130	ug/mL	M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	50.26%		
24) s	d50-Tetracosane	35.521	27419442	23.853	ug/mL	M4
Spiked Amount	50.000	Range 50 - 130	Recovery =	47.71%#		
	Target Compounds					
3) t	n-Nonane (C9)	7.419	8015122	7.412	ug/mL	M4
4) t	n-Decane (C10)	9.875	9787282	8.763	ug/mL	M4
6) t	n-Dodecane (C12)	14.801	10775152	9.402	ug/mL	M4
9) t	n-Tetradecane (C14)	19.294	11186789	9.595	ug/mL	M4
12) t	n-Hexadecane (C16)	23.322	12845331	10.842	ug/mL	M4
16) t	n-Octadecane (C18)	26.956	13914438	11.441	ug/mL	M4
18) t	n-Nonadecane (C19)	28.644	12636237	10.453	ug/mL	M4
20) t	n-Eicosane (C20)	30.257	12850507	10.657	ug/mL	M4
22) t	n-Docosane (C22)	33.280	13017432	10.622	ug/mL	M4
25) t	n-Tetracosane (C24)	36.060	13209660	10.658	ug/mL	M4
27) t	n-Hexacosane (C26)	38.637	13198747	10.517	ug/mL	M4
29) t	n-Octacosane (C28)	41.034	13369504	10.816	ug/mL	M4
31) t	n-Triacontane (C30)	43.274	13351512	10.727	ug/mL	M4
37) t	n-Hexatriacontane (C36)	49.698	13766599	10.733	ug/mL	M4
42) h	C9-C44 Total Petroleu...	39.461	683359138	565.957	ug/mL	m
42) h	C9-C44 Total Petroleu BS	39.461	127153136	105.308	ug/mLm	
46) h	Total Resolved Hydroc...	39.844	191465603	158.571	ug/mL	m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041616.d
Operator : FID17:NL
Acquired : 05 Nov 2016 3:14 am using AcqMethod FID17.M
Instrument: FID17
Sample : SS110116LCSD01
Misc Info : 1X ETR 1610010
ALS Vial : 8



Form III
Spike Recovery Summary
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1610010**
Lab ID: **TS111315ANC04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Percent Solid	Analyst
N/A	N/A	N/A	100	NLJr

Parameter	True Conc.	Conc.	% Recovery	% Recovery Limits
Total Petroleum Hydrocarbons (C9-C44)	544000	613000	113	65-135

N/A - Not Applicable

Concentrations reported as calculated values, which includes rounding for significant figures. Percent recoveries and RPD values are calculated from the unrounded result.

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Form I
Alaska North Slope Crude
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**
Client ID: **Alaska North Slope Crude**
Case: **N/A** SDG: **N/A**
Matrix: **Oil**

Lab Code: **MA00030**
ETR: **1610010**
Lab ID: **TS111315ANC04**
Associated Blank: **N/A**
Concentration Units: **mg/Kg**

Date Collected	Date Received	Date Extracted	Date Analyzed	Percent Solid	Sample Amount (g)	Final Volume (ml)	Dilution Factor	Analyst
N/A	N/A	N/A	10/27/15	100	0.10382	10	1	NLJr

Parameter	Result
Total Petroleum Hydrocarbons (C9-C44)	**613000**

N/A - Not Applicable

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Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615026.d
Signal(s) : FID1A.CH
Acq On : 27 Oct 2015 6:02 am
Operator : FID17:NL
Sample : TS111315ANC04
Misc : 1X FRAW36 10.382mg/mL
ALS Vial : 13 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 30 08:44:52 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\Oct26\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Mon Nov 30 08:44:44 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1710261501F
Blank File : F17102615022.d

Sub List : Default - All compounds listed

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	31.349	58688702	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	29.328	63176161	50.634 ug/mL M4
Spiked Amount 50.000 Range 50 - 130		Recovery = 101.27%	
24) s d50-Tetracosane	36.007	54334032	51.991 ug/mL M4
Spiked Amount 50.000 Range 50 - 130		Recovery = 103.98%	
Target Compounds			
2) t n-Octane (C8)	5.591	96771624	101.681 ug/mL M4
3) t n-Nonane (C9)	7.810	72629434	73.880 ug/mL M4
4) t n-Decane (C10)	10.312	60104173	59.192 ug/mL M4
5) t n-Undecane (C11)	12.834	55067214	53.760 ug/mL M4
6) t n-Dodecane (C12)	15.268	51137347	49.080 ug/mL M4
7) t n-Tridecane (C13)	17.583	47387729	45.249 ug/mL M4
8) t 1380	19.263	10893458	10.277 ug/mL M4
9) t n-Tetradecane (C14)	19.773	44328667	41.822 ug/mL M4
10) t 1470	21.061	16852449	15.624 ug/mL M4
11) t n-Pentadecane (C15)	21.844	49433784	45.829 ug/mL M4
12) t n-Hexadecane (C16)	23.805	40324740	37.438 ug/mL M4
13) t 1650	24.711	13155499	12.084 ug/mL M3
14) t n-Heptadecane (C17)	25.669	35487222	32.597 ug/mL M4
15) t Pristane	25.764	27773341	25.329 ug/mL M4
16) t n-Octadecane (C18)	27.441	30954890	27.996 ug/mL M4
17) t Phytane	27.599	15125810	15.610 ug/mL M4
18) t n-Nonadecane (C19)	29.129	30434964	27.691 ug/mL M4
20) t n-Eicosane (C20)	30.741	32122015	29.301 ug/mL M4
21) t n-Heneicosane (C21)	32.284	26733661	24.181 ug/mL M4
22) t n-Docosane (C22)	33.761	25171300	22.592 ug/mL M4
23) t n-Tricosane (C23)	35.179	22338504	19.883 ug/mL M4
25) t n-Tetracosane (C24)	36.540	21481069	19.063 ug/mL M4
26) t n-Pentacosane (C25)	37.848	20621772	18.464 ug/mL M4
27) t n-Hexacosane (C26)	39.108	17901180	15.689 ug/mL M4
28) t n-Heptacosane (C27)	40.323	13767578	12.187 ug/mL M4
29) t n-Octacosane (C28)	41.498	9862987	8.777 ug/mL M4
30) t n-Nonacosane (C29)	42.633	9926472	8.788 ug/mL M4
31) t n-Triacontane (C30)	43.726	7895992	6.978 ug/mL M4
32) t n-Hentriacontane (C31)	44.788	6220028	5.483 ug/mL M4
33) t n-Dotriacontane (C32)	45.814	6643628	5.817 ug/mL M4
34) t n-Tritriacontane (C33)	46.816	4324311	4.008 ug/mL M4
35) t n-tetratriacontane (C34)	47.846	4344810	3.847 ug/mL M4
36) t n-Pentatriacontane (C35)	49.008	3133256	2.759 ug/mL M4
37) t n-Hexatriacontane (C36)	50.330	2402490	2.060 ug/mL M4
38) t n-Heptatriacontane (C37)	51.863	1993023	1.751 ug/mL M4
39) t n-Octatriacontane (C38)	53.658	1665027	1.492 ug/mL M4
40) t n-Nonatriacontane (C39)	55.763	1167255	1.007 ug/mL M4
41) t n-Tetracontane (C40)	58.242	1078747	0.931 ug/mL M4
42) h C9-C44 Total Petroleu...	40.847	7220192928	6577.261 ug/mL m
42) h C9-C44 Total Petroleu BS	40.847	6991375319	6368.819 ug/mLm
44) h C10-C28 DRO	25.916	4780196984	4354.538 ug/mL m

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615026.d
Signal(s) : FID1A.CH
Acq On : 27 Oct 2015 6:02 am
Operator : FID17:NL
Sample : TS111315ANC04
Misc : 1X FRAW36 10.382mg/mL
ALS Vial : 13 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 30 08:44:52 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\Oct26\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Mon Nov 30 08:44:44 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1710261501F
Blank File : F17102615022.d

Sub List : Default - All compounds listed

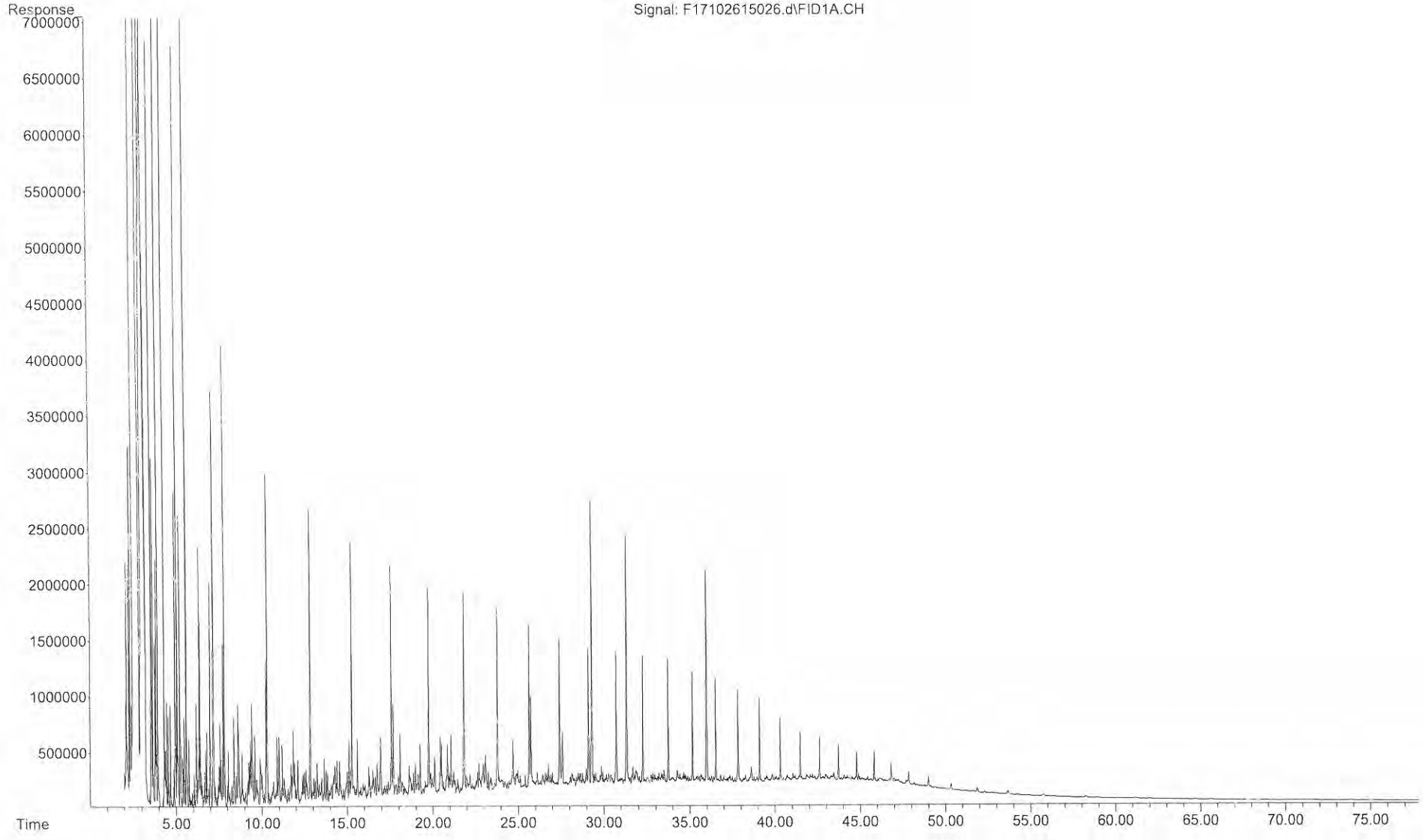
	Compound	R.T.	Response	Conc	Units
44) h	C10-C28 DRO BS	25.916	4751144923	4328.073	ug/mLm
45) h	Total Resolved Hydroc...	40.847	2299169207	2094.437	ug/mL m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615026.d
Operator : FID17:NL
Acquired : 27 Oct 2015 6:02 am using AcqMethod FID17.M
Instrument: FID17
Sample : TS111315ANC04
Misc Info : 1X FRAW36 10.382mg/mL
ALS Vial : 13



Instrument Blank
Raw Data

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615022.d
Signal(s) : FID1A.CH
Acq On : 27 Oct 2015 3:06 am
Operator : FID17:NL
Sample : IB1710261501F
Misc : DCM
ALS Vial : 11 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 30 08:44:31 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\Oct26\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Mon Nov 30 08:44:27 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

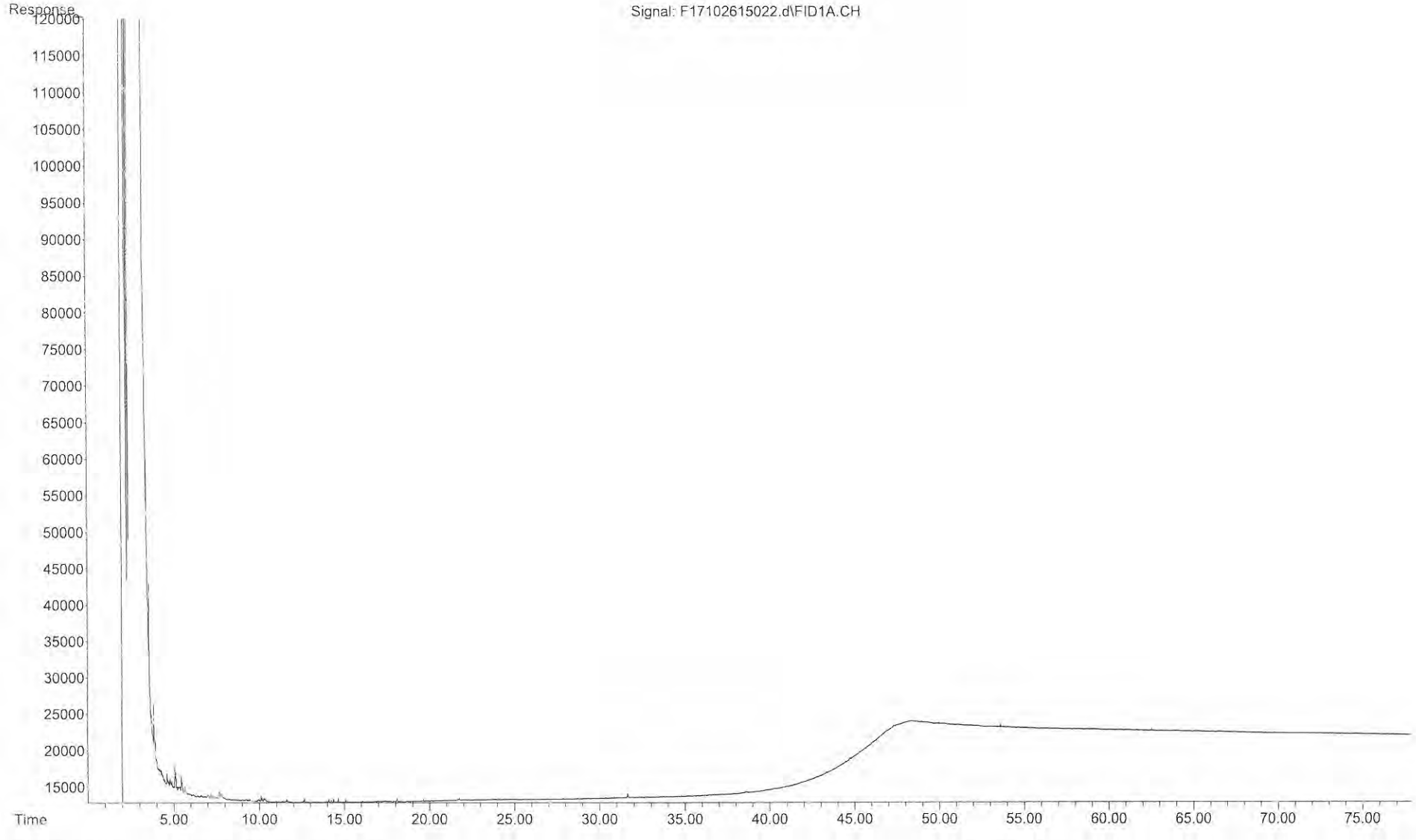
Sub List : Default - All compounds listed

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	31.337	1624	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	0.000	0	N.D. ug/mL d
Spiked Amount 50.000	Range 50 - 130	Recovery =	0.00%#
24) s d50-Tetracosane	0.000	0	N.D. ug/mL d
Spiked Amount 50.000	Range 50 - 130	Recovery =	0.00%#
Target Compounds			
42) h C9-C44 Total Petroleu...	40.847	228817609	7532302.296 ug/mL M5
44) h C10-C28 DRO	25.916	29052061	956346.441 ug/mL M5
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615022.d
Operator : FID17:NL
Acquired : 27 Oct 2015 3:06 am using AcqMethod FID17.M
Instrument: FID17
Sample : IB1710261501F
Misc Info : DCM
ALS Vial : 11



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041610.d
Signal(s) : FID1A.CH
Acq On : 04 Nov 2016 10:49 pm
Operator : FID17:NL
Sample : IB1711041601F
Misc : DCM
ALS Vial : 5 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 10 16:03:55 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\Nov04\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Tue Nov 08 17:33:01 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

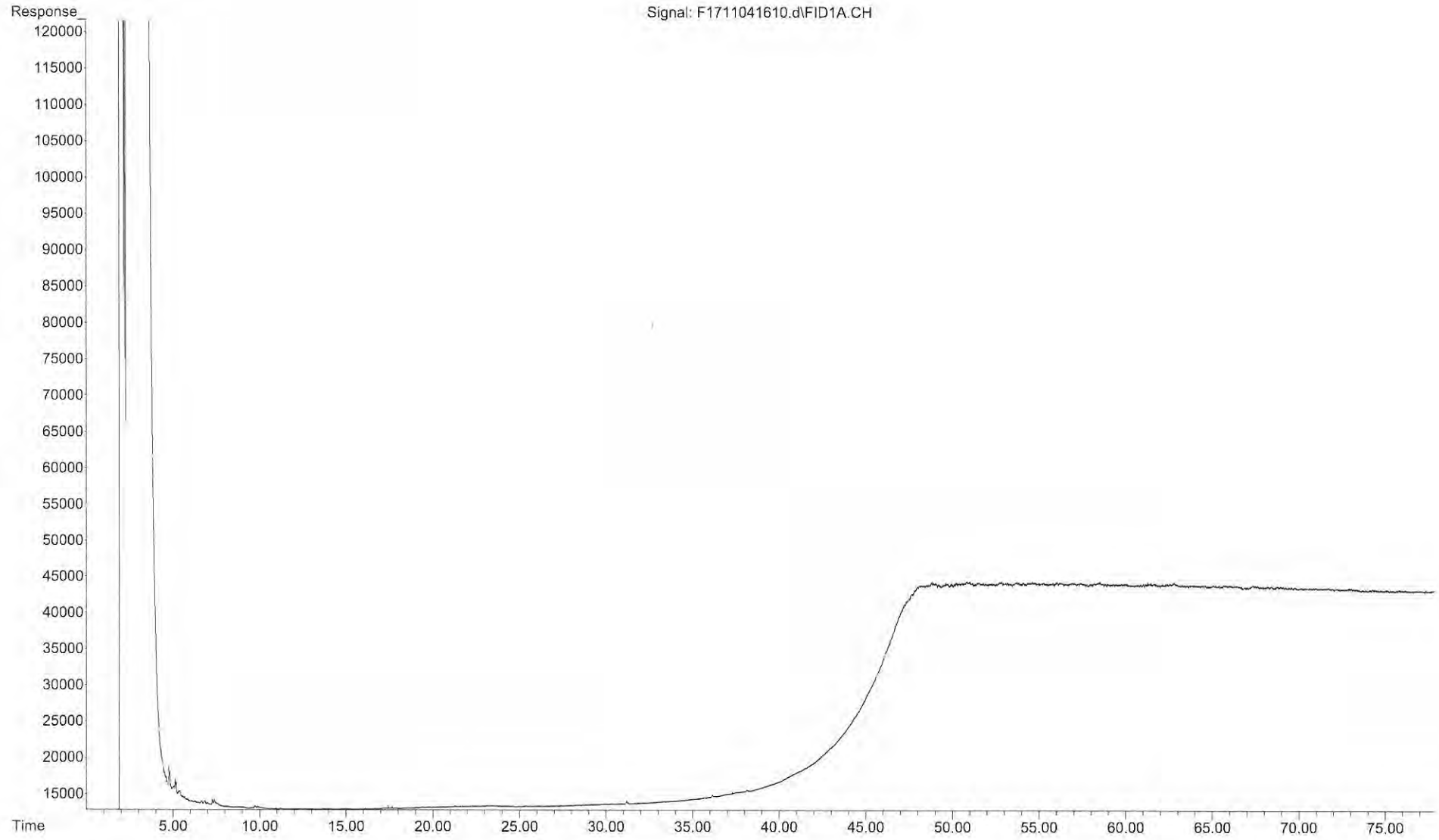
Sub List : TPH - TPH

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.847	737	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	0.000	0	N.D. ug/mL
Spiked Amount 50.000	Range 50 - 130	Recovery =	0.00%#
24) s d50-Tetracosane	0.000	0	N.D. ug/mL
Spiked Amount 50.000	Range 50 - 130	Recovery =	0.00%#
Target Compounds			
42) h C9-C44 Total Petroleu...	39.461	556206002	40344937.416 ug/mL M5
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041610.d
Operator : FID17:NL
Acquired : 04 Nov 2016 10:49 pm using AcqMethod FID17.M
Instrument: FID17
Sample : IB1711041601F
Misc Info : DCM
ALS Vial : 5



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041636.d
Signal(s) : FID1A.CH
Acq On : 05 Nov 2016 5:57 pm
Operator : FID17:NL
Sample : IB1711041602F
Misc : DCM
ALS Vial : 18 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 10 16:04:30 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\Nov04\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Tue Nov 08 17:33:03 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : TPH - TPH

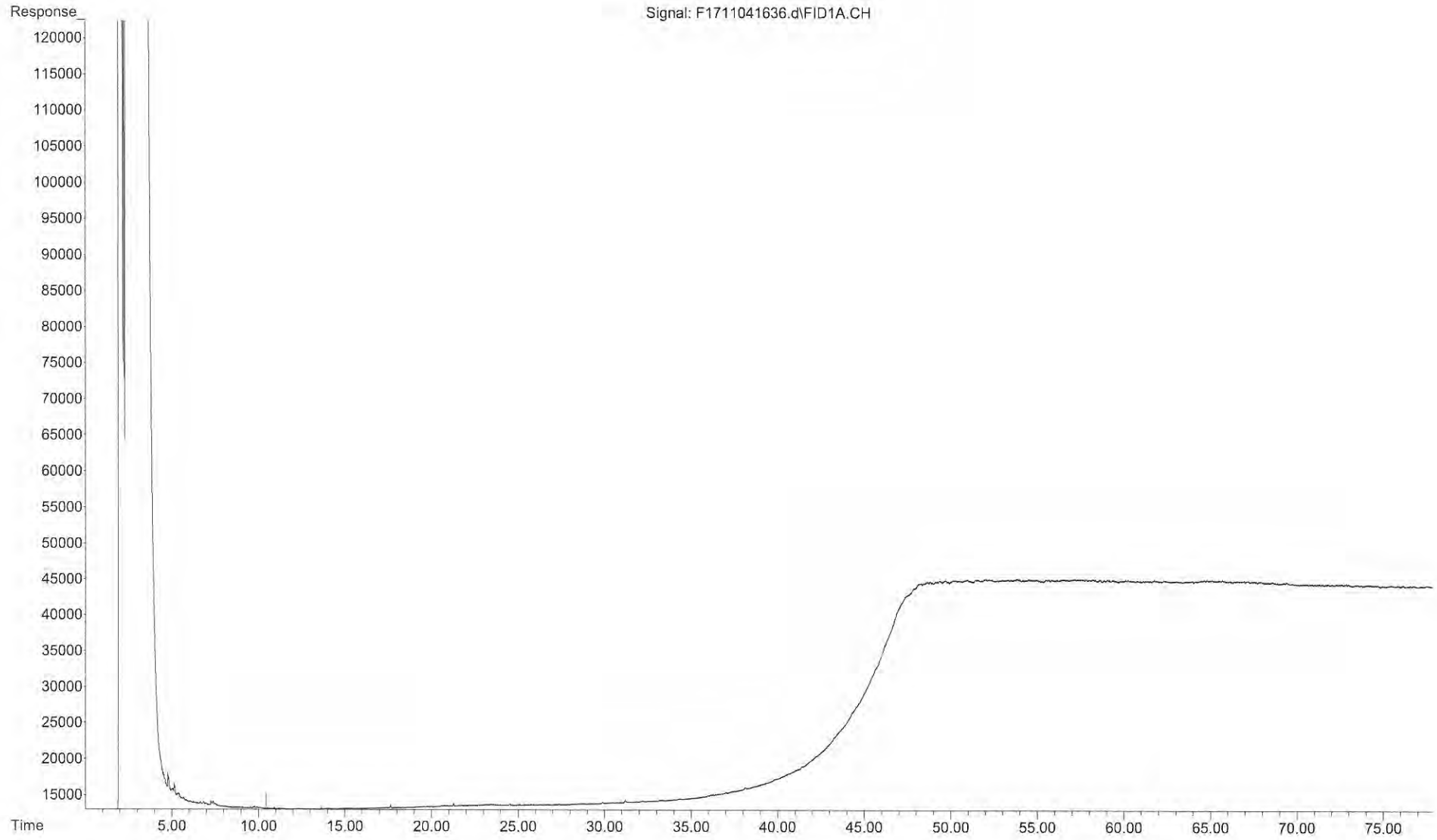
Compound	R.T.	Response	Conc	Units	
Internal Standards					
1) I 5-alpha-androstane	30.770	892	50.000	ug/mL	M4
System Monitoring Compounds					
19) s ortho-terphenyl	0.000	0	N.D.	ug/mL	
Spiked Amount 50.000	Range 50 - 130	Recovery =	0.00%#		
24) s d50-Tetracosane	0.000	0	N.D.	ug/mL	
Spiked Amount 50.000	Range 50 - 130	Recovery =	0.00%#		
Target Compounds					
42) h C9-C44 Total Petroleu...	39.461	593047579	35546217.749	ug/mL	M5
SemiQuant Compounds - Not Calibrated on this Instrument					

(f)=RT Delta > 1/2 Window (m)=manual int.

11/15/16

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041636.d
Operator : FID17:NL
Acquired : 05 Nov 2016 5:57 pm using AcqMethod FID17.M
Instrument: FID17
Sample : IB1711041602F
Misc Info : DCM
ALS Vial : 18



Analysis log File

Total Files Reported in Log : 16
Log Generated From Directory: O:\Forensics\Data\FID17\2015\Oct\Oct26\

11/25/15

No.	DATA FILE	INJ METH	SAMPLE NAME	MISC	DATE INJ	D
1	F17102615002.d	FID17.M	Primer	Primer	10/26/2015 11:48	a
2	F17102615004.d	FID17.M	DCM	DCM	10/26/2015 1:16	p
3	F17102615006.d	FID17.M	L1 Primer	Primer	10/26/2015 3:20	p
4	F17102615008.d	FID17.M	I1710261501F		10/26/2015 4:48	p
5	F17102615010.d	FID17.M	I1710261502F		10/26/2015 6:17	p
6	F17102615012.d	FID17.M	I1710261503F	ICAL	10/26/2015 7:45	p
7	F17102615014.d	FID17.M	I1710261504F	Datafiles	10/26/2015 9:13	p
8	F17102615016.d	FID17.M	I1710261505F		10/26/2015 10:42	p
9	F17102615018.d	FID17.M	I1710261506F		10/27/2015 12:10	a
10	F17102615020.d	FID17.M	DCM	DCM	10/27/2015 1:38	a
11	F17102615022.d	FID17.M	IB1710261501F	DCM	10/27/2015 3:06	a
12	F17102615024.d	FID17.M	CQ1710261501F ✓ RAW		10/27/2015 4:34	a
13	F17102615026.d	FID17.M	TS111315ANC04 ✓ RAW	1X FRAW36 10.382mg/m..	10/27/2015 6:02	a
14	F17102615028.d	FID17.M	DCM	DCM	10/27/2015 7:30	a
15	F17102615030.d	FID17.M	IB1710261502F	DCM	10/27/2015 8:59	a
16	F17102615032.d	FID17.M	L2 10-26-15 Canbery Oil		10/27/2015 10:27	a

Processing Method: HC1710261SF.M

Printed: 11/25/15

SeqLog 1.0 - (c) 2009 Abacus Database Applications

Analysis log File

Total Files Reported in Log : 30
Log Generated From Directory: O:\Forensics\Data\FID17\2016\Nov\Nov04\

No.	DATA FILE	INJ METH	SAMPLE NAME	MISC	DATE INJ'D
1	F1711041602.d	FID17.M	LOW LEVEL	LOW LEVEL	11/4/2016 4:55 pm
2	F1711041604.d	FID17.M	ANS	ANS	11/4/2016 6:23 pm
3	F1711041606.d	FID17.M	C1711041601F	FRAX76 50ug/mL	11/4/2016 7:52 pm
4	F1711041608.d	FID17.M	DCM	DCM	11/4/2016 9:20 pm
5	F1711041610.d	FID17.M	IB1711041601F	DCM	11/4/2016 10:49 pm
6	F1711041612.d	FID17.M	SS110116B01	1X ETR 1610010	11/5/2016 12:17 am
7	F1711041614.d	FID17.M	SS110116LCS01	1X ETR 1610010	11/5/2016 1:45 am
8	F1711041616.d	FID17.M	SS110116LCSD01	1X ETR 1610010	11/5/2016 3:14 am
9	F1711041618.d	FID17.M	1610010-01	1X	11/5/2016 4:42 am
10	F1711041620.d	FID17.M	1610010-02	1X	11/5/2016 6:11 am
11	F1711041622.d	FID17.M	1610010-03	1X	11/5/2016 7:39 am
12	F1711041624.d	FID17.M	1610010-04	1X	11/5/2016 9:07 am
13	F1711041626.d	FID17.M	1610010-05	1X	11/5/2016 10:36 am
14	F1711041628.d	FID17.M	1610010-06	1X	11/5/2016 12:04 pm
15	F1711041630.d	FID17.M	1610010-07	1X	11/5/2016 1:32 pm
16	F1711041632.d	FID17.M	C1711041602F	FRAX76 50ug/mL	11/5/2016 3:00 pm
17	F1711041634.d	FID17.M	DCM	DCM	11/5/2016 4:29 pm
18	F1711041636.d	FID17.M	IB1711041602F	DCM	11/5/2016 5:57 pm
19	F1711041638.d	FID17.M	1610010-08	1X	11/5/2016 7:25 pm
20	F1711041640.d	FID17.M	1610010-09	1X	11/5/2016 8:54 pm
21	F1711041642.d	FID17.M	1610010-10	1X	11/5/2016 10:22 pm
22	F1711041644.d	FID17.M	1610010-11	1X	11/5/2016 11:51 pm
23	F1711041646.d	FID17.M	1610010-12	1X	11/6/2016 1:19 am
24	F1711041648.d	FID17.M	1610010-13	1X	11/6/2016 1:48 am
25	F1711041650.d	FID17.M	1610010-14	1X	11/6/2016 3:16 am
26	F1711041652.d	FID17.M	1610010-14D	1X	11/6/2016 4:45 am
27	F1711041654.d	FID17.M	1610010-15	1X	11/6/2016 6:13 am
28	F1711041656.d	FID17.M	C1711041603F	FRAX76 50ug/mL	11/6/2016 7:41 am
29	F1711041658.d	FID17.M	DCM	DCM	11/6/2016 9:10 am
30	F1711041660.d	FID17.M	IB1711041603F	DCM	11/6/2016 10:38 am

Processing Method: HC171026IS F.m CCU – FRAX76 -50ug/mL

SeqLog 1.0 - (c) 2009 Abacus Database Applications

Supporting Quality Control Results

Form IV
Method Blank Summary
Total Saturated Hydrocarbons by GC/FID

Client: **NewFields**
Project: **National Grid Winter St. Haverhill**

Case: **N/A** SDG: **N/A**

Lab Code: **MA00030**
ETR: **1610010**
Lab ID: **SS110116B01**
Date Analyzed: **11/05/16 00:17**

Client ID	Lab ID	Date/Time Analyzed
LCS	SS110116LCS01	11/05/16 01:45
LCSD	SS110116LCSD01	11/05/16 03:14
NFCB-01	1610010-01	11/05/16 04:42
NFCB-02	1610010-02	11/05/16 06:11
NFCB-03	1610010-03	11/05/16 07:39
NFSB-01 2-3'	1610010-04	11/05/16 09:07
NFSB-01 7-8'	1610010-05	11/05/16 10:36
NFSB-01 10-15'	1610010-06	11/05/16 12:04
NFSB-01 15-16'	1610010-07	11/05/16 13:32
NFSB-01 16-20'	1610010-08	11/05/16 19:25
NFSB-02 2-3'	1610010-09	11/05/16 20:54
NFSB-02 12-15'	1610010-10	11/05/16 22:22
NFSB-02 15-20'	1610010-11	11/05/16 23:51
NFSB-03 1-2'	1610010-12	11/06/16 01:19
NFSB-03 10-15'	1610010-13	11/06/16 01:48
NFSB-03 15-17'	1610010-14	11/06/16 03:16
NFSB-03 15-17'	1610010-14 D	11/06/16 04:45
DUP-1	1610010-15	11/06/16 06:13

N/A - Not Applicable

320 Forbes Blvd, Mansfield, MA 02048, (508) 822-9300, Fax (508) 822-3288

Analysis log File

11/25/15

Total Files Reported in Log : 16
Log Generated From Directory: O:\Forensics\Data\FID17\2015\Oct\Oct26\

No.	DATA FILE	INJ METH	SAMPLE NAME	MISC	DATE INJ'D
1	F17102615002.d	FID17.M	Primer	Primer	10/26/2015 11:48 a
2	F17102615004.d	FID17.M	DCM	DCM	10/26/2015 1:16 p
3	F17102615006.d	FID17.M	L1 Primer	Primer	10/26/2015 3:20 p
4	F17102615008.d	FID17.M	I1710261501F		10/26/2015 4:48 p
5	F17102615010.d	FID17.M	I1710261502F		10/26/2015 6:17 p
6	F17102615012.d	FID17.M	I1710261503F	ICAL	10/26/2015 7:45 p
7	F17102615014.d	FID17.M	I1710261504F	Datafiles	10/26/2015 9:13 p
8	F17102615016.d	FID17.M	I1710261505F		10/26/2015 10:42 p
9	F17102615018.d	FID17.M	I1710261506F		10/27/2015 12:10 a
10	F17102615020.d	FID17.M	DCM	DCM	10/27/2015 1:38 a
11	F17102615022.d	FID17.M	IB1710261501F	DCM	10/27/2015 3:06 a
12	F17102615024.d	FID17.M	CQ1710261501F ✓ PASS		10/27/2015 4:34 a
13	F17102615026.d	FID17.M	TS111315ANC04 ✓ PASS	1X FRAW36 10.382mg/m..	10/27/2015 6:02 a
14	F17102615028.d	FID17.M	DCM	DCM	10/27/2015 7:30 a
15	F17102615030.d	FID17.M	IB1710261502F	DCM	10/27/2015 8:59 a
16	F17102615032.d	FID17.M	L2 10-26-15 Canbery Oil		10/27/2015 10:27 a

Processing Method: HC171026615F.M

Printed: 11/30/15

SeqLog 1.0 - (c) 2009 Abacus Database Applications

Response Factor Report FID17

Method Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Method File : HC17102615F.M
Title : FID Forensics
Last Update : Sun Nov 29 19:58:11 2015
Response Via : Initial Calibration

Calibration Files
1 =F17102615008.d 10 =F17102615010.d 50 =F17102615012.d 100 =F17102615014.d 200 =F17102615016.d 500 =F17102615018.d

		Compound	1	10	50	100	200	500	Avg	%RSD
1)	I	5-alpha-androstane	----------ISTD----------							
2)	t	n-Octane (C8)	0.773	0.807	0.815	0.824	0.834		0.811	2.88
3)	t	n-Nonane (C9)	0.796	0.830	0.849	0.845	0.868		0.838	3.23
4)	t	n-Decane (C10)	0.807	0.858	0.883	0.876	0.902		0.865	4.15
5)	t	n-Undecane (C11)	0.795	0.866	0.899	0.891	0.913		0.873	5.36
6)	t	n-Dodecane (C12)	0.811	0.883	0.914	0.907	0.924		0.888	5.12
7)	t	n-Tridecane (...	0.820	0.887	0.917	0.912	0.925		0.892	4.78
8)	t	1380	0.831	0.898	0.929	0.925	0.933		0.903	4.71
9)	t	n-Tetradecane...	0.831	0.898	0.929	0.925	0.933		0.903	4.71
10)	t	1470	0.845	0.913	0.946	0.943	0.947		0.919	4.74
11)	t	n-Pentadecane...	0.845	0.913	0.946	0.943	0.947		0.919	4.74
12)	t	n-Hexadecane ...	0.847	0.911	0.944	0.944	0.943		0.918	4.56
13)	t	1650	0.854	0.916	0.951	0.954	0.963		0.927	4.86
14)	t	n-Heptadecane...	0.854	0.916	0.951	0.954	0.963		0.927	4.86
15)	t	Pristane	0.882	0.933	0.962	0.959	0.934		0.934	3.44
16)	t	n-Octadecane ...	0.879	0.932	0.967	0.971	0.962		0.942	4.10
17)	t	Phytane	0.773	0.818	0.849	0.849	0.838		0.826	3.89
18)	t	n-Nonadecane ...	0.873	0.928	0.963	0.967	0.951		0.936	4.14
19)	s	ortho-terphenyl	1.030	1.098	1.070	1.040	1.053	1.087	1.063	2.49
20)	t	n-Eicosane (C20)	0.872	0.924	0.961	0.967	0.946		0.934	4.12
21)	t	n-Heneicosane...	0.881	0.932	0.968	0.976	0.952		0.942	4.05
22)	t	n-Docosane (C22)	0.889	0.938	0.976	0.986	0.957		0.949	4.02
23)	t	n-Tricosane (...	0.900	0.946	0.984	0.994	0.962		0.957	3.91
24)	s	d50-Tetracosane	0.858	0.911	0.900	0.889	0.876	0.908	0.890	2.28
25)	t	n-Tetracosane...	0.905	0.949	0.986	0.998	0.963		0.960	3.81
26)	t	n-Pentacosane...	0.896	0.940	0.977	0.991	0.953		0.951	3.87
27)	t	n-Hexacosane ...	0.915	0.961	0.999	1.014	0.972		0.972	3.93
28)	t	n-Heptacosane...	0.914	0.950	0.987	1.003	0.958		0.962	3.59
29)	t	n-Octacosane ...	0.905	0.946	0.982	0.999	0.954		0.957	3.76
30)	t	n-Nonacosane ...	0.907	0.952	0.988	1.006	0.958		0.962	3.94
31)	t	n-Triacontane...	0.910	0.953	0.989	1.008	0.960		0.964	3.88
32)	t	n-Hentriacont...	0.917	0.954	0.990	1.009	0.963		0.967	3.66
33)	t	n-Dotriaconta...	0.917	0.960	0.997	1.019	0.972		0.973	3.98
34)	t	n-Tritriacont...	0.862	0.908	0.942	0.963	0.921		0.919	4.17
35)	t	n-tetratriaco...	0.905	0.945	0.985	1.009	0.966		0.962	4.12
36)	t	n-Pentatriaco...	0.901	0.949	0.991	1.018	0.980		0.968	4.62
37)	t	n-Hexatriacon...	0.927	0.973	1.019	1.046	1.002		0.993	4.58
38)	t	n-Heptatriaco...	0.899	0.949	0.996	1.023	0.981		0.970	4.93
39)	t	n-Octatriacon...	0.881	0.929	0.978	1.004	0.962		0.951	5.03
40)	t	n-Nonatriacon...	0.914	0.962	1.018	1.044	0.999		0.988	5.13
41)	t	n-Tetracontan...	0.914	0.962	1.018	1.044	0.999		0.988	5.13
42)	h	C9-C44 Total ...	0.874	0.924	0.960	0.970	0.948		0.935	4.12

Response Factor Report FID17

Method Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Method File : HC17102615F.M
Title : FID Forensics
Last Update : Sun Nov 29 19:58:11 2015
Response Via : Initial Calibration

Calibration Files
1 =F17102615008.d 10 =F17102615010.d 50 =F17102615012.d 100 =F17102615014.d 200 =F17102615016.d 500 =F17102615018.d

	Compound	1	10	50	100	200	500	Avg	%RSD
43) h	C9-C40 Total ...	0.874	0.924	0.960	0.970	0.948		0.935	4.12
44) h	C10-C28 DRO	0.874	0.924	0.960	0.970	0.948		0.935	4.12
45) h	Total Resolve...	0.874	0.924	0.960	0.970	0.948		0.935	4.12

(#) = Out of Range

rfupdate

RSF Update Summary Report

Method Path.....: C:\msdchem\1\DATA\FID17\Oct26\
Method File.....: HC17102615F.M
Method Title.....: FID Forensics
Last Update.....: Sun Nov 29 19:56:57 2015

Generating Average Response Factor For: C9-C44 Total Petroleum Hydrocarbons

No	Compound	Level	Conc	Response
1	n-Nonane (C9)	1	1.00000	941529.146
2	n-Decane (C10)	1	1.00000	955458.589
3	n-Undecane (C11)	1	1.00000	940282.307
4	n-Dodecane (C12)	1	1.00000	960008.176
5	n-Tridecane (C13)	1	1.00000	970819.864
6	n-Tetradecane (C14)	1	1.00000	983463.277
7	n-Pentadecane (C15)	1	1.00000	1000130.186
8	n-Hexadecane (C16)	1	1.00000	1002442.198
9	n-Heptadecane (C17)	1	1.00000	1010186.937
10	Pristane	1	1.00000	1044145.595
11	n-Octadecane (C18)	1	1.00000	1039982.333
12	Phytane	1	1.00000	914422.956
13	n-Nonadecane (C19)	1	1.00000	1032918.066
14	n-Eicosane (C20)	1	1.00000	1031528.300
15	n-Heneicosane (C21)	1	1.00000	1042336.775
16	n-Docosane (C22)	1	1.00000	1052463.769
17	n-Tricosane (C23)	1	1.00000	1064585.730
18	n-Tetracosane (C24)	1	1.00000	1070528.126
19	n-Pentacosane (C25)	1	1.00000	1060758.178
20	n-Hexacosane (C26)	1	1.00000	1083154.156
21	n-Heptacosane (C27)	1	1.00000	1081455.476
22	n-Octacosane (C28)	1	1.00000	1071417.869
23	n-Nonacosane (C29)	1	1.00000	1073368.166
24	n-Triacontane (C30)	1	1.00000	1076841.740
25	n-Hentriacontane (C31)	1	1.00000	1085157.098
26	n-Dotriacontane (C32)	1	1.00000	1084865.282
27	n-Tritriacontane (C33)	1	1.00000	1020371.454
28	n-tetratriacontane (C34)	1	1.00000	1071288.918
29	n-Pentatriacontane (C35)	1	1.00000	1066331.161
30	n-Hexatriacontane (C36)	1	1.00000	1097313.045
31	n-Heptatriacontane (C37)	1	1.00000	1063711.876
32	n-Octatriacontane (C38)	1	1.00000	1042012.276
33	n-Tetracontane (C40)	1	1.00000	1081953.562
Avg RSF For: C9-C44 Total Petroleum			1.00000	1033855.533
1	n-Nonane (C9)	2	10.00000	9555776.639
2	n-Decane (C10)	2	10.00000	9871644.972
3	n-Undecane (C11)	2	10.00000	9969992.553
4	n-Dodecane (C12)	2	10.00000	10157748.489
5	n-Tridecane (C13)	2	10.00000	10204784.741
6	n-Tetradecane (C14)	2	10.00000	10331143.516
7	n-Pentadecane (C15)	2	10.00000	10511558.079
8	n-Hexadecane (C16)	2	10.00000	10484871.880
9	n-Heptadecane (C17)	2	10.00000	10537798.551
10	Pristane	2	10.00000	10733851.001
11	n-Octadecane (C18)	2	10.00000	10721612.390
12	Phytane	2	10.00000	9416356.095
13	n-Nonadecane (C19)	2	10.00000	10676100.951
14	n-Eicosane (C20)	2	10.00000	10638828.868

		rfupdate		
15	n-Heneicosane (C21)	2	10.00000	10728861.350
16	n-Docosane (C22)	2	10.00000	10793628.925
17	n-Tricosane (C23)	2	10.00000	10883323.766
18	n-Tetracosane (C24)	2	10.00000	10917416.716
19	n-Pentacosane (C25)	2	10.00000	10815842.305
20	n-Hexacosane (C26)	2	10.00000	11055422.805
21	n-Heptacosane (C27)	2	10.00000	10933962.768
22	n-Octacosane (C28)	2	10.00000	10890536.644
23	n-Nonacosane (C29)	2	10.00000	10959846.868
24	n-Triacontane (C30)	2	10.00000	10969597.907
25	n-Hentriacontane (C31)	2	10.00000	10980686.265
26	n-Dotriacontane (C32)	2	10.00000	11051250.442
27	n-Tritriacontane (C33)	2	10.00000	10446289.402
28	n-tetratriacontane (C34)	2	10.00000	10880741.386
29	n-Pentatriacontane (C35)	2	10.00000	10919195.487
30	n-Hexatriacontane (C36)	2	10.00000	11198016.198
31	n-Heptatriacontane (C37)	2	10.00000	10919966.970
32	n-Octatriacontane (C38)	2	10.00000	10693160.986
33	n-Tetracontane (C40)	2	10.00000	11077926.055
Avg RSF For: C9-C44 Total Petroleum			10.00000	10634173.999
1	n-Nonane (C9)	3	50.00000	49804089.793
2	n-Decane (C10)	3	50.00000	51804945.007
3	n-Undecane (C11)	3	50.00000	52720099.432
4	n-Dodecane (C12)	3	50.00000	53594052.505
5	n-Tridecane (C13)	3	50.00000	53796498.897
6	n-Tetradecane (C14)	3	50.00000	54473255.379
7	n-Pentadecane (C15)	3	50.00000	55485364.983
8	n-Hexadecane (C16)	3	50.00000	55382774.599
9	n-Heptadecane (C17)	3	50.00000	55813114.860
10	Pristane	3	50.00000	56463994.239
11	n-Octadecane (C18)	3	50.00000	56736079.569
12	Phytane	3	50.00000	49807260.376
13	n-Nonadecane (C19)	3	50.00000	56481450.224
14	n-Eicosane (C20)	3	50.00000	56361133.570
15	n-Heneicosane (C21)	3	50.00000	56804509.290
16	n-Docosane (C22)	3	50.00000	57254811.557
17	n-Tricosane (C23)	3	50.00000	57748752.267
18	n-Tetracosane (C24)	3	50.00000	57843128.378
19	n-Pentacosane (C25)	3	50.00000	57310055.355
20	n-Hexacosane (C26)	3	50.00000	58601376.090
21	n-Heptacosane (C27)	3	50.00000	57896012.412
22	n-Octacosane (C28)	3	50.00000	57618308.127
23	n-Nonacosane (C29)	3	50.00000	57968446.840
24	n-Triacontane (C30)	3	50.00000	58028561.342
25	n-Hentriacontane (C31)	3	50.00000	58066506.002
26	n-Dotriacontane (C32)	3	50.00000	58517080.015
27	n-Tritriacontane (C33)	3	50.00000	55272592.244
28	n-tetratriacontane (C34)	3	50.00000	57811887.880
29	n-Pentatriacontane (C35)	3	50.00000	58164408.733
30	n-Hexatriacontane (C36)	3	50.00000	59770838.199
31	n-Heptatriacontane (C37)	3	50.00000	58446095.367
32	n-Octatriacontane (C38)	3	50.00000	57378042.923
33	n-Tetracontane (C40)	3	50.00000	59733154.873
Avg RSF For: C9-C44 Total Petroleum			50.00000	56332081.252
1	n-Nonane (C9)	4	100.00000	97122682.989
2	n-Decane (C10)	4	100.00000	100639718.444
3	n-Undecane (C11)	4	100.00000	102433929.926
4	n-Dodecane (C12)	4	100.00000	104203910.950
5	n-Tridecane (C13)	4	100.00000	104798778.203
6	n-Tetradecane (C14)	4	100.00000	106294490.242
7	n-Pentadecane (C15)	4	100.00000	108422632.708
8	n-Hexadecane (C16)	4	100.00000	108450949.825

		rfupdate		
9	n-Heptadecane (C17)	4	100.00000	109638204.780
10	Pristane	4	100.00000	110267024.399
11	n-Octadecane (C18)	4	100.00000	111570242.230
12	Phytane	4	100.00000	97626411.384
13	n-Nonadecane (C19)	4	100.00000	111198160.039
14	n-Eicosane (C20)	4	100.00000	111118270.533
15	n-Heneicosane (C21)	4	100.00000	112202336.657
16	n-Docosane (C22)	4	100.00000	113282317.008
17	n-Tricosane (C23)	4	100.00000	114291922.214
18	n-Tetracosane (C24)	4	100.00000	114744817.040
19	n-Pentacosane (C25)	4	100.00000	113938109.732
20	n-Hexacosane (C26)	4	100.00000	116542598.124
21	n-Heptacosane (C27)	4	100.00000	115271605.283
22	n-Octacosane (C28)	4	100.00000	114824338.149
23	n-Nonacosane (C29)	4	100.00000	115617025.828
24	n-Triacontane (C30)	4	100.00000	115820261.377
25	n-Hentriacontane (C31)	4	100.00000	116009535.084
26	n-Dotriacontane (C32)	4	100.00000	117066514.251
27	n-Tritriacontane (C33)	4	100.00000	110738874.574
28	n-tetratriacontane (C34)	4	100.00000	116002677.891
29	n-Pentatriacontane (C35)	4	100.00000	116954543.390
30	n-Hexatriacontane (C36)	4	100.00000	120190051.166
31	n-Heptatriacontane (C37)	4	100.00000	117568201.457
32	n-Octatriacontane (C38)	4	100.00000	115406150.026
33	n-Tetracontane (C40)	4	100.00000	120019746.900
Avg RSF For: C9-C44 Total Petroleum			100.00000	111523546.449

1	n-Nonane (C9)	5	200.00000	210106388.642
2	n-Decane (C10)	5	200.00000	218295260.235
3	n-Undecane (C11)	5	200.00000	220951831.422
4	n-Dodecane (C12)	5	200.00000	223797559.292
5	n-Tridecane (C13)	5	200.00000	224001547.415
6	n-Tetradecane (C14)	5	200.00000	225892624.587
7	n-Pentadecane (C15)	5	200.00000	229322721.378
8	n-Hexadecane (C16)	5	200.00000	228191939.555
9	n-Heptadecane (C17)	5	200.00000	233125466.707
10	Pristane	5	200.00000	226129761.670
11	n-Octadecane (C18)	5	200.00000	232851431.466
12	Phytane	5	200.00000	202966620.761
13	n-Nonadecane (C19)	5	200.00000	230285952.056
14	n-Eicosane (C20)	5	200.00000	229093741.660
15	n-Heneicosane (C21)	5	200.00000	230494269.858
16	n-Docosane (C22)	5	200.00000	231775125.246
17	n-Tricosane (C23)	5	200.00000	232893602.036
18	n-Tetracosane (C24)	5	200.00000	233065405.246
19	n-Pentacosane (C25)	5	200.00000	230753122.227
20	n-Hexacosane (C26)	5	200.00000	235239801.629
21	n-Heptacosane (C27)	5	200.00000	232031072.888
22	n-Octacosane (C28)	5	200.00000	231016954.099
23	n-Nonacosane (C29)	5	200.00000	232018947.035
24	n-Triacontane (C30)	5	200.00000	232488922.395
25	n-Hentriacontane (C31)	5	200.00000	233022219.802
26	n-Dotriacontane (C32)	5	200.00000	235407470.460
27	n-Tritriacontane (C33)	5	200.00000	222973969.316
28	n-tetratriacontane (C34)	5	200.00000	233893381.771
29	n-Pentatriacontane (C35)	5	200.00000	237163086.500
30	n-Hexatriacontane (C36)	5	200.00000	242688725.254
31	n-Heptatriacontane (C37)	5	200.00000	237496717.459
32	n-Octatriacontane (C38)	5	200.00000	232982497.823
33	n-Tetracontane (C40)	5	200.00000	241739986.239
Avg RSF For: C9-C44 Total Petroleum			200.00000	229519943.155

Generating Reference Response Factors

rfupdate

No	Compound	No	Refrence Compound
8	1380	9	n-Tetradecane (C14)
10	1470	11	n-Pentadecane (C15)
13	1650	14	n-Heptadecane (C17)
40	n-Nonatriacontane (C39)	41	n-Tetracontane (C40)
43	C9-C40 Total Petroleum Hydrocarbons	42	C9-C44 Total Petroleum Hydrocarbons
44	C10-C28 DRO	42	C9-C44 Total Petroleum Hydrocarbons
45	Total Resolved Hydrocarbons	42	C9-C44 Total Petroleum Hydrocarbons

Abacus Response Factor Update Macro Ver. 1.0

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615008.d
Signal(s) : FID1A.CH
Acq On : 26 Oct 2015 4:48 pm
Operator : FID17:NL
Sample : I1710261501F
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 30 08:43:34 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\Oct26\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Mon Nov 30 08:43:23 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

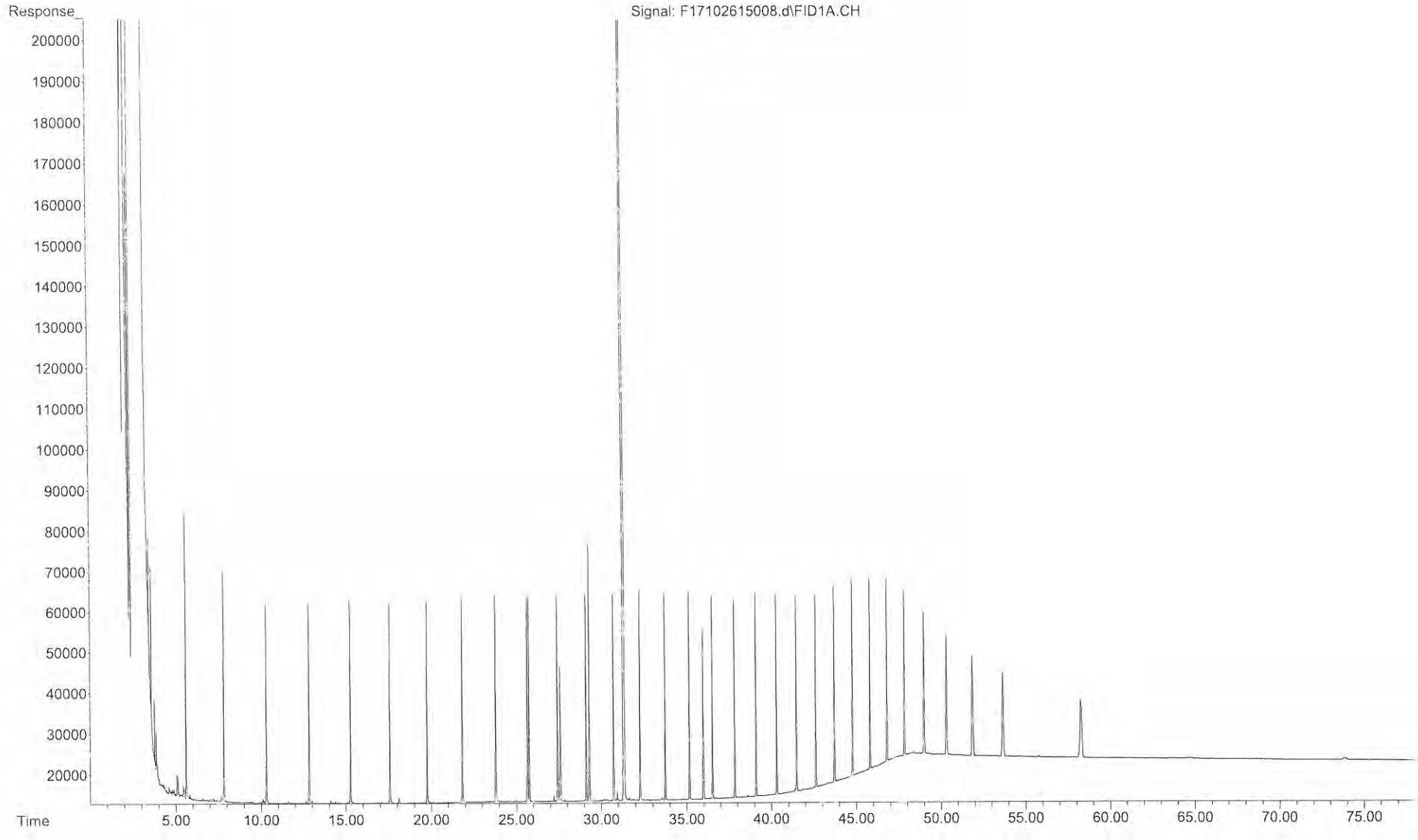
Sub List : CCAL - CCAL

	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	31.350	59170945	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	29.302	1219368	0.969 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery =	1.94%#
24) s	d50-Tetracosane	35.981	1015579	0.964 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery =	1.93%#
	Target Compounds			
2) t	n-Octane (C8)	5.586	914734	0.953 ug/mL M4
3) t	n-Nonane (C9)	7.800	941529	0.950 ug/mL M4
4) t	n-Decane (C10)	10.299	955459	0.933 ug/mL M4
5) t	n-Undecane (C11)	12.821	940282	0.910 ug/mL M4
6) t	n-Dodecane (C12)	15.254	960008	0.914 ug/mL M4
7) t	n-Tridecane (C13)	17.568	970820	0.919 ug/mL M4
9) t	n-Tetradecane (C14)	19.758	983463	0.920 ug/mL M4
11) t	n-Pentadecane (C15)	21.828	1000130	0.920 ug/mL M4
12) t	n-Hexadecane (C16)	23.791	1002442	0.923 ug/mL M4
14) t	n-Heptadecane (C17)	25.653	1010187	0.920 ug/mL M4
15) t	Pristane	25.764	1044146	0.944 ug/mL M4
16) t	n-Octadecane (C18)	27.427	1039982	0.933 ug/mL M4
17) t	Phytane	27.591	914423	0.936 ug/mL M4
18) t	n-Nonadecane (C19)	29.117	1032918	0.932 ug/mL M4
20) t	n-Eicosane (C20)	30.729	1031528	0.933 ug/mL M4
21) t	n-Heneicosane (C21)	32.270	1042337	0.935 ug/mL M3
22) t	n-Docosane (C22)	33.748	1052464	0.937 ug/mL M4
23) t	n-Tricosane (C23)	35.165	1064586	0.940 ug/mL M4
25) t	n-Tetracosane (C24)	36.526	1070528	0.942 ug/mL M4
26) t	n-Pentacosane (C25)	37.837	1060758	0.942 ug/mL M4
27) t	n-Hexacosane (C26)	39.097	1083154	0.942 ug/mL M4
28) t	n-Heptacosane (C27)	40.313	1081455	0.950 ug/mL M4
29) t	n-Octacosane (C28)	41.488	1071418	0.946 ug/mL M4
30) t	n-Nonacosane (C29)	42.622	1073368	0.943 ug/mL M4
31) t	n-Triacontane (C30)	43.720	1076842	0.944 ug/mL M4
32) t	n-Hentriacontane (C31)	44.781	1085157	0.949 ug/mL M4
33) t	n-Dotriacontane (C32)	45.813	1084865	0.942 ug/mL M4
34) t	n-Tritriacontane (C33)	46.813	1020371	0.938 ug/mL M4
35) t	n-tetratriacontane (C34)	47.843	1071289	0.941 ug/mL M4
36) t	n-Pentatriacontane (C35)	49.001	1066331	0.931 ug/mL M4
37) t	n-Hexatriacontane (C36)	50.329	1097313	0.933 ug/mL M4
38) t	n-Heptatriacontane (C37)	51.867	1063712	0.927 ug/mL M4
39) t	n-Octatriacontane (C38)	53.656	1042012	0.926 ug/mL M4
41) t	n-Tetracontane (C40)	58.245	1081954	0.926 ug/mL M4
	SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615008.d
Operator : FID17:NL
Acquired : 26 Oct 2015 4:48 pm using AcqMethod FID17.M
Instrument: FID17
Sample : I1710261501F
Misc Info :
ALS Vial : 4



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615010.d
Signal(s) : FID1A.CH
Acq On : 26 Oct 2015 6:17 pm
Operator : FID17:NL
Sample : I1710261502F
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 30 08:43:45 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\Oct26\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Mon Nov 30 08:43:38 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

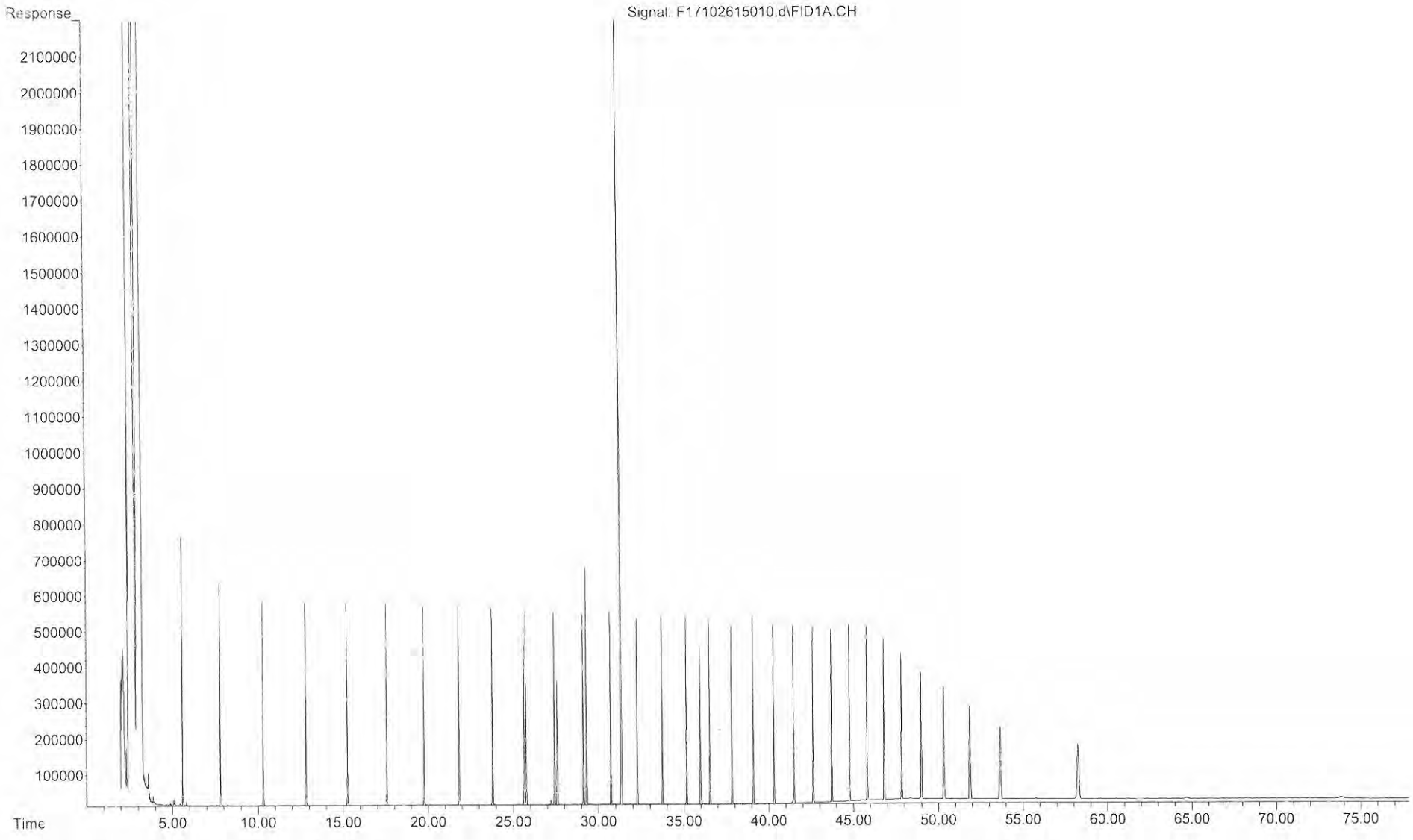
	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	31.347	57549119	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	29.306	12632476	10.325 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery =	20.65%#
24) s	d50-Tetracosane	35.983	10484375	10.231 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery =	20.46%#
	Target Compounds			
2) t	n-Octane (C8)	5.595	9293767	9.959 ug/mL M4
3) t	n-Nonane (C9)	7.804	9555777	9.913 ug/mL M4
4) t	n-Decane (C10)	10.302	9871645	9.914 ug/mL M4
5) t	n-Undecane (C11)	12.822	9969993	9.926 ug/mL M4
6) t	n-Dodecane (C12)	15.256	10157748	9.942 ug/mL M4
7) t	n-Tridecane (C13)	17.570	10204785	9.937 ug/mL M4
9) t	n-Tetradecane (C14)	19.759	10331144	9.940 ug/mL M4
11) t	n-Pentadecane (C15)	21.830	10511558	9.938 ug/mL M3
12) t	n-Hexadecane (C16)	23.792	10484872	9.927 ug/mL M4
14) t	n-Heptadecane (C17)	25.656	10537799	9.871 ug/mL M4
15) t	Pristane	25.767	10733851	9.983 ug/mL M4
16) t	n-Octadecane (C18)	27.430	10721612	9.889 ug/mL M4
17) t	Phytane	27.594	9416356	9.910 ug/mL M4
18) t	n-Nonadecane (C19)	29.121	10676101	9.906 ug/mL M4
20) t	n-Eicosane (C20)	30.731	10638829	9.897 ug/mL M4
21) t	n-Heneicosane (C21)	32.273	10728861	9.896 ug/mL M4
22) t	n-Docosane (C22)	33.752	10793629	9.879 ug/mL M4
23) t	n-Tricosane (C23)	35.167	10883324	9.879 ug/mL M4
25) t	n-Tetracosane (C24)	36.529	10917417	9.880 ug/mL M4
26) t	n-Pentacosane (C25)	37.839	10815842	9.876 ug/mL M4
27) t	n-Hexacosane (C26)	39.101	11055423	9.881 ug/mL M4
28) t	n-Heptacosane (C27)	40.318	10933963	9.871 ug/mL M4
29) t	n-Octacosane (C28)	41.491	10890537	9.883 ug/mL M4
30) t	n-Nonacosane (C29)	42.626	10959847	9.895 ug/mL M4
31) t	n-Triacontane (C30)	43.722	10969598	9.886 ug/mL M4
32) t	n-Hentriacontane (C31)	44.786	10980686	9.871 ug/mL M4
33) t	n-Dotriacontane (C32)	45.816	11051250	9.867 ug/mL M4
34) t	n-Tritriacontane (C33)	46.812	10446289	9.873 ug/mL M4
35) t	n-tetratriacontane (C34)	47.844	10880741	9.824 ug/mL M4
36) t	n-Pentatriacontane (C35)	49.005	10919195	9.804 ug/mL M4
37) t	n-Hexatriacontane (C36)	50.331	11198016	9.793 ug/mL M4
38) t	n-Heptatriacontane (C37)	51.870	10919967	9.785 ug/mL M4
39) t	n-Octatriacontane (C38)	53.666	10693161	9.771 ug/mL M4
41) t	n-Tetracontane (C40)	58.260	11077926	9.746 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615010.d
Operator : FID17:NL
Acquired : 26 Oct 2015 6:17 pm using AcqMethod FID17.M
Instrument: FID17
Sample : I1710261502F
Misc Info :
ALS Vial : 5



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615012.d
Signal(s) : FID1A.CH
Acq On : 26 Oct 2015 7:45 pm
Operator : FID17:NL
Sample : I1710261503F
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 30 08:43:55 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\Oct26\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Mon Nov 30 08:43:48 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

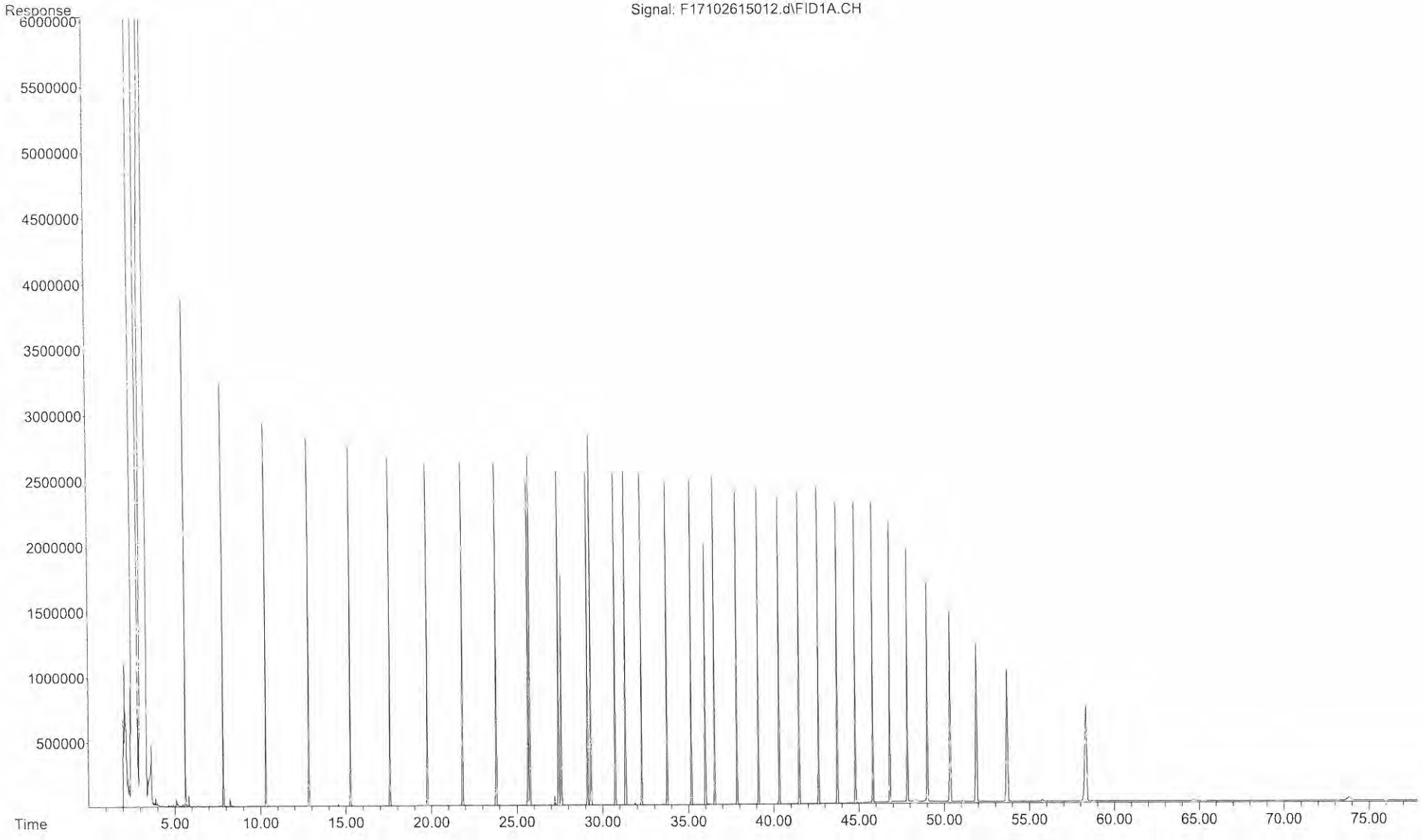
	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	31.349	58663919	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	29.329	62744928	50.310 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery = 100.62%	
24) s	d50-Tetracosane	36.003	52814585	50.558 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery = 101.12%	
	Target Compounds			
2) t	n-Octane (C8)	5.618	47822352	50.269 ug/mL M4
3) t	n-Nonane (C9)	7.822	49804090	50.683 ug/mL M4
4) t	n-Decane (C10)	10.317	51804945	51.040 ug/mL M4
5) t	n-Undecane (C11)	12.836	52720099	51.490 ug/mL M4
6) t	n-Dodecane (C12)	15.271	53594053	51.459 ug/mL M4
7) t	n-Tridecane (C13)	17.585	53796499	51.391 ug/mL M4
9) t	n-Tetradecane (C14)	19.775	54473255	51.415 ug/mL M4
11) t	n-Pentadecane (C15)	21.847	55485365	51.462 ug/mL M4
12) t	n-Hexadecane (C16)	23.810	55382775	51.440 ug/mL M4
14) t	n-Heptadecane (C17)	25.675	55813115	51.289 ug/mL M4
15) t	Pristane	25.787	56463994	51.517 ug/mL M4
16) t	n-Octadecane (C18)	27.449	56736080	51.334 ug/mL M4
17) t	Phytane	27.613	49807260	51.424 ug/mL M4
18) t	n-Nonadecane (C19)	29.140	56481450	51.411 ug/mL M4
20) t	n-Eicosane (C20)	30.751	56361134	51.434 ug/mL M4
21) t	n-Heneicosane (C21)	32.293	56804509	51.401 ug/mL M4
22) t	n-Docosane (C22)	33.772	57254812	51.410 ug/mL M4
23) t	n-Tricosane (C23)	35.190	57748752	51.421 ug/mL M4
25) t	n-Tetracosane (C24)	36.553	57843128	51.353 ug/mL M4
26) t	n-Pentacosane (C25)	37.863	57310055	51.336 ug/mL M4
27) t	n-Hexacosane (C26)	39.123	58601376	51.381 ug/mL M4
28) t	n-Heptacosane (C27)	40.339	57896012	51.273 ug/mL M4
29) t	n-Octacosane (C28)	41.514	57618308	51.294 ug/mL M4
30) t	n-Nonacosane (C29)	42.648	57968447	51.341 ug/mL M4
31) t	n-Triacontane (C30)	43.744	58028561	51.303 ug/mL M4
32) t	n-Hentriacontane (C31)	44.811	58066506	51.204 ug/mL M4
33) t	n-Dotriacontane (C32)	45.840	58517080	51.256 ug/mL M4
34) t	n-Tritriacontane (C33)	46.838	55272592	51.245 ug/mL M4
35) t	n-tetratriacontane (C34)	47.872	57811888	51.204 ug/mL M4
36) t	n-Pentatriacontane (C35)	49.036	58164409	51.230 ug/mL M4
37) t	n-Hexatriacontane (C36)	50.373	59770838	51.280 ug/mL M4
38) t	n-Heptatriacontane (C37)	51.914	58446095	51.378 ug/mL M4
39) t	n-Octatriacontane (C38)	53.716	57378043	51.434 ug/mL M4
41) t	n-Tetracontane (C40)	58.340	59733155	51.553 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615012.d
Operator : FID17:NL
Acquired : 26 Oct 2015 7:45 pm using AcqMethod FID17.M
Instrument: FID17
Sample : I1710261503F
Misc Info :
ALS Vial : 6



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615014.d
Signal(s) : FID1A.CH
Acq On : 26 Oct 2015 9:13 pm
Operator : FID17:NL
Sample : I1710261504F
Misc :
ALS Vial : 7 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 30 08:44:06 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\Oct26\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Mon Nov 30 08:43:59 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

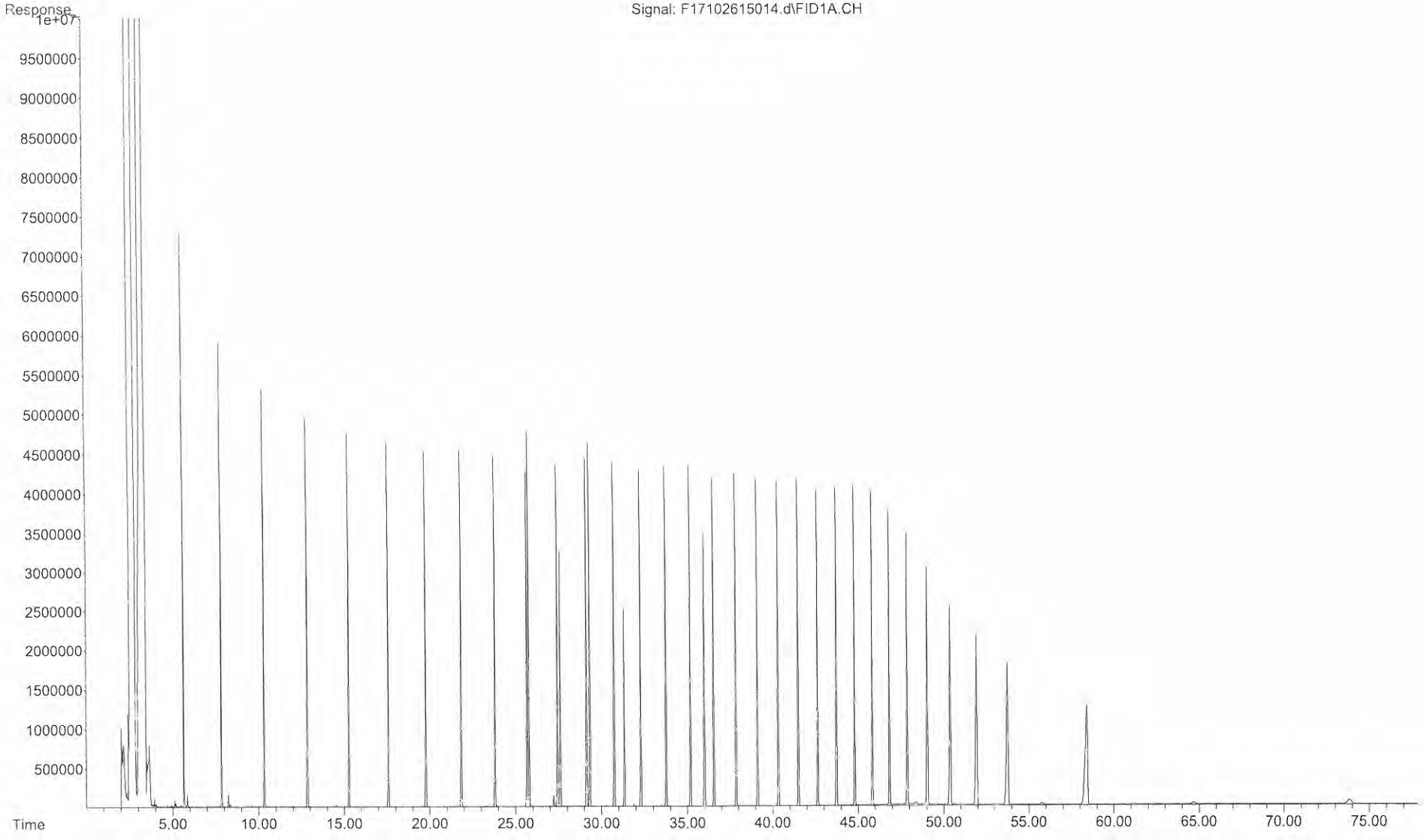
	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	31.350	57467589	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	29.350	119576233	97.874 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery = 195.75%#	
24) s	d50-Tetracosane	36.022	102208664	99.879 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery = 199.76%#	
	Target Compounds			
2) t	n-Octane (C8)	5.653	94763643	101.687 ug/mL M4
3) t	n-Nonane (C9)	7.847	97122683	100.894 ug/mL M4
4) t	n-Decane (C10)	10.335	100639718	101.218 ug/mL M4
5) t	n-Undecane (C11)	12.852	102433930	102.127 ug/mL M4
6) t	n-Dodecane (C12)	15.287	104203911	102.136 ug/mL M4
7) t	n-Tridecane (C13)	17.600	104798778	102.196 ug/mL M4
9) t	n-Tetradecane (C14)	19.791	106294490	102.415 ug/mL M4
11) t	n-Pentadecane (C15)	21.863	108422633	102.653 ug/mL M4
12) t	n-Hexadecane (C16)	23.827	108450950	102.826 ug/mL M4
14) t	n-Heptadecane (C17)	25.694	109638205	102.849 ug/mL M4
15) t	Pristane	25.806	110267024	102.700 ug/mL M4
16) t	n-Octadecane (C18)	27.468	111570242	103.049 ug/mL M4
17) t	Phytane	27.633	97626411	102.893 ug/mL M4
18) t	n-Nonadecane (C19)	29.160	111198160	103.322 ug/mL M4
20) t	n-Eicosane (C20)	30.769	111118271	103.515 ug/mL M4
21) t	n-Heneicosane (C21)	32.313	112202337	103.643 ug/mL M4
22) t	n-Docosane (C22)	33.791	113282317	103.835 ug/mL M4
23) t	n-Tricosane (C23)	35.210	114291922	103.888 ug/mL M4
25) t	n-Tetracosane (C24)	36.575	114744817	103.990 ug/mL M4
26) t	n-Pentacosane (C25)	37.882	113938110	104.187 ug/mL M4
27) t	n-Hexacosane (C26)	39.142	116542598	104.311 ug/mL M4
28) t	n-Heptacosane (C27)	40.360	115271605	104.210 ug/mL M4
29) t	n-Octacosane (C28)	41.534	114824338	104.349 ug/mL M4
30) t	n-Nonacosane (C29)	42.670	115617026	104.530 ug/mL M4
31) t	n-Triacontane (C30)	43.770	115820261	104.529 ug/mL M4
32) t	n-Hentriacontane (C31)	44.832	116009535	104.429 ug/mL M4
33) t	n-Dotriacontane (C32)	45.863	117066514	104.675 ug/mL M4
34) t	n-Tritriacontane (C33)	46.860	110738875	104.807 ug/mL M4
35) t	n-tetratriacontane (C34)	47.900	116002678	104.883 ug/mL M4
36) t	n-Pentatriacontane (C35)	49.072	116954543	105.155 ug/mL M4
37) t	n-Hexatriacontane (C36)	50.405	120190051	105.263 ug/mL M4
38) t	n-Heptatriacontane (C37)	51.959	117568201	105.502 ug/mL M4
39) t	n-Octatriacontane (C38)	53.770	115406150	105.604 ug/mL M4
41) t	n-Tetracontane (C40)	58.422	120019747	105.741 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615014.d
Operator : FID17:NL
Acquired : 26 Oct 2015 9:13 pm using AcqMethod FID17.M
Instrument: FID17
Sample : I1710261504F
Misc Info :
ALS Vial : 7



Signal: F17102615014.d\FID1A.CH

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615016.d
Signal(s) : FID1A.CH
Acq On : 26 Oct 2015 10:42 pm
Operator : FID17:NL
Sample : I1710261505F
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 30 08:44:16 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\Oct26\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Mon Nov 30 08:44:09 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

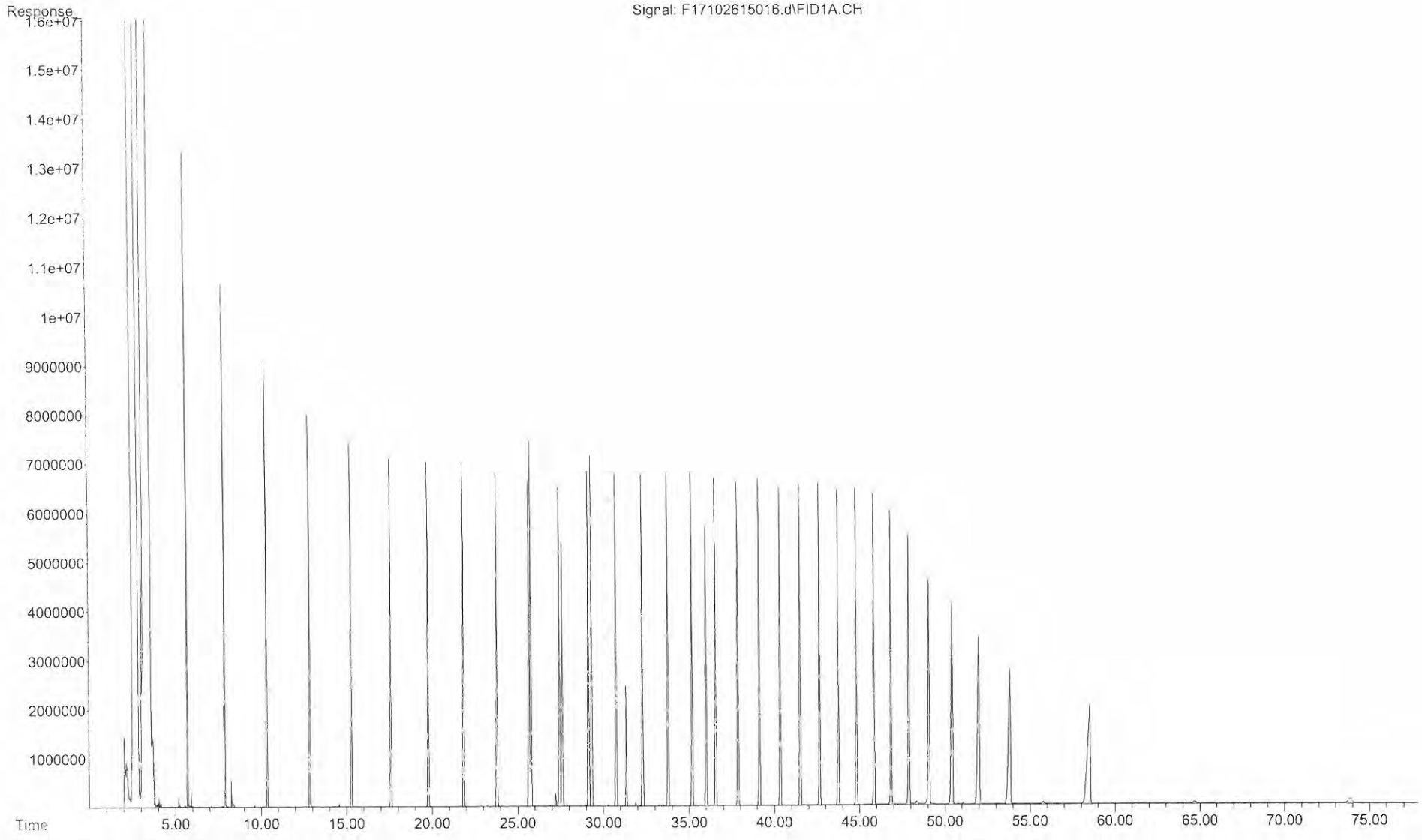
	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	31.356	60524125	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	29.379	254854584	198.067 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery = 396.13%#	
24) s	d50-Tetracosane	36.049	212048564	196.750 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery = 393.50%#	
	Target Compounds			
2) t	n-Octane (C8)	5.716	201907909	205.717 ug/mL M3
3) t	n-Nonane (C9)	7.894	210106389	207.241 ug/mL M3
4) t	n-Decane (C10)	10.363	218295260	208.462 ug/mL M3
5) t	n-Undecane (C11)	12.874	220951831	209.166 ug/mL M4
6) t	n-Dodecane (C12)	15.306	223797559	208.278 ug/mL M4
7) t	n-Tridecane (C13)	17.618	224001547	207.407 ug/mL M4
9) t	n-Tetradecane (C14)	19.809	225892625	206.656 ug/mL M4
11) t	n-Pentadecane (C15)	21.883	229322721	206.155 ug/mL M4
12) t	n-Hexadecane (C16)	23.847	228191940	205.431 ug/mL M4
14) t	n-Heptadecane (C17)	25.719	233125467	207.646 ug/mL M6
15) t	Pristane	25.833	226129762	199.975 ug/mL M6
16) t	n-Octadecane (C18)	27.494	232851431	204.207 ug/mL M4
17) t	Phytane	27.655	202966621	203.113 ug/mL M4
18) t	n-Nonadecane (C19)	29.185	230285952	203.169 ug/mL M4
20) t	n-Eicosane (C20)	30.796	229093742	202.640 ug/mL M4
21) t	n-Heneicosane (C21)	32.340	230494270	202.159 ug/mL M4
22) t	n-Docosane (C22)	33.819	231775125	201.717 ug/mL M4
23) t	n-Tricosane (C23)	35.238	232893602	201.003 ug/mL M4
25) t	n-Tetracosane (C24)	36.604	233065405	200.554 ug/mL M4
26) t	n-Pentacosane (C25)	37.911	230753122	200.348 ug/mL M4
27) t	n-Hexacosane (C26)	39.174	235239802	199.918 ug/mL M4
28) t	n-Heptacosane (C27)	40.392	232031073	199.171 ug/mL M4
29) t	n-Octacosane (C28)	41.566	231016954	199.339 ug/mL M4
30) t	n-Nonacosane (C29)	42.702	232018947	199.177 ug/mL M4
31) t	n-Triacontane (C30)	43.800	232488922	199.228 ug/mL M4
32) t	n-Hentriacontane (C31)	44.863	233022220	199.169 ug/mL M4
33) t	n-Dotriacontane (C32)	45.896	235407470	199.859 ug/mL M4
34) t	n-Tritriacontane (C33)	46.892	222973969	200.372 ug/mL M4
35) t	n-tetratriacontane (C34)	47.936	233893382	200.794 ug/mL M4
36) t	n-Pentatriacontane (C35)	49.113	237163087	202.467 ug/mL M4
37) t	n-Hexatriacontane (C36)	50.467	242688725	201.814 ug/mL M4
38) t	n-Heptatriacontane (C37)	52.024	237496717	202.360 ug/mL M2
39) t	n-Octatriacontane (C38)	53.847	232982498	202.427 ug/mL M2
41) t	n-Tetracontane (C40)	58.533	241739986	202.224 ug/mL M2

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615016.d
Operator : FID17:NL
Acquired : 26 Oct 2015 10:42 pm using AcqMethod FID17.M
Instrument: FID17
Sample : I1710261505F
Misc Info :
ALS Vial : 8



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615018.d
Signal(s) : FID1A.CH
Acq On : 27 Oct 2015 12:10 am
Operator : FID17:NL
Sample : I1710261506F
Misc :
ALS Vial : 9 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 30 08:44:24 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\Oct26\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Mon Nov 30 08:44:20 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

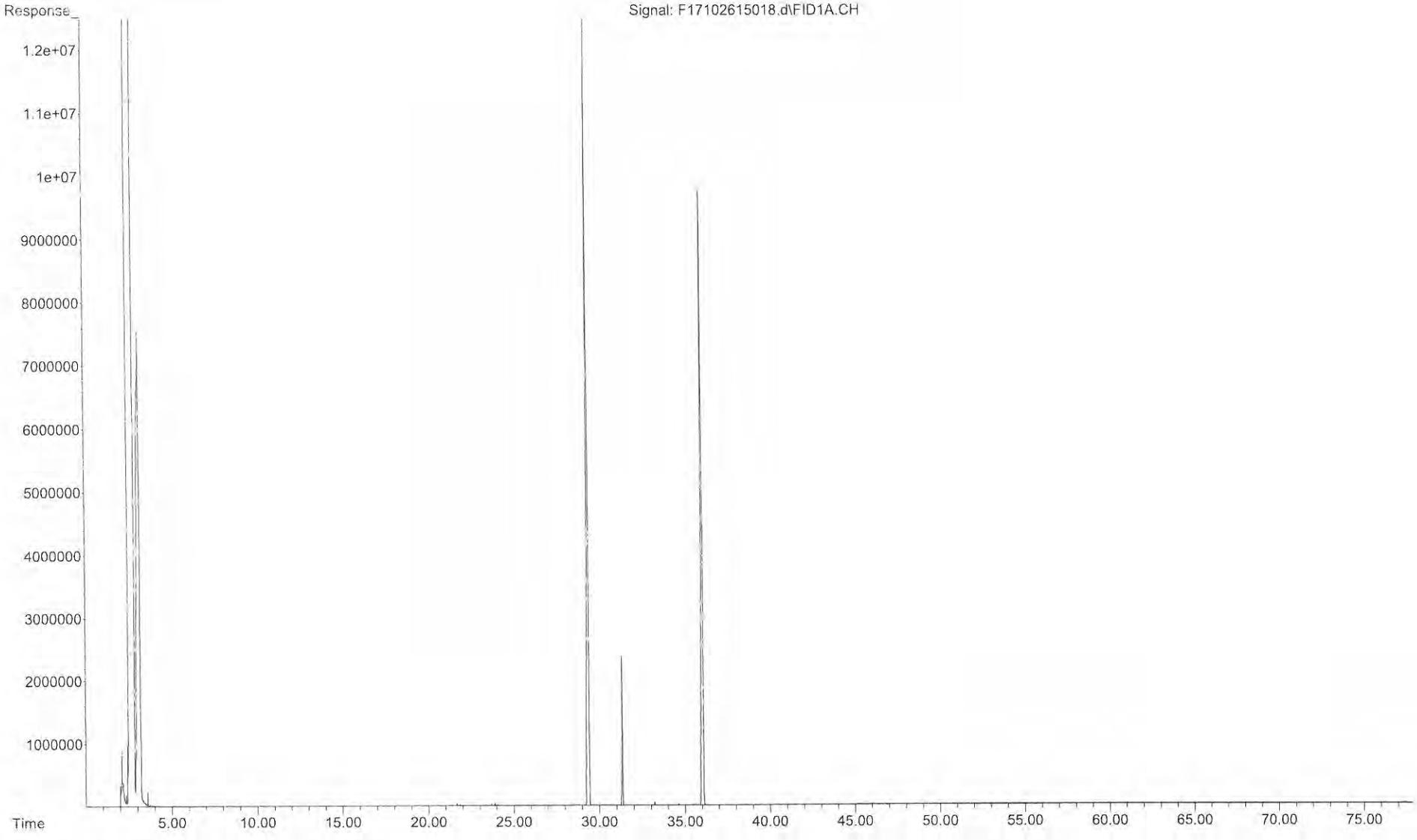
Sub List : CCAL - CCAL

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	31.346	56607985	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	29.423	615490926	511.436 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery	= 1022.87%#
24) s d50-Tetracosane	36.092	513769189	509.680 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery	= 1019.36%#
Target Compounds			
SemiQuant Compounds - Not Calibrated on this Instrument			

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615018.d
Operator : FID17:NL
Acquired : 27 Oct 2015 12:10 am using AcqMethod FID17.M
Instrument: FID17
Sample : I1710261506F
Misc Info :
ALS Vial : 9



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615024.d
Signal(s) : FID1A.CH
Acq On : 27 Oct 2015 4:34 am
Operator : FID17:NL
Sample : CQ1710261501F
Misc :
ALS Vial : 12 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 30 08:44:41 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\Oct26\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Mon Nov 30 08:44:34 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(Min)
1	I	5-alpha-androstane	50.000	50.000	0.0	107	0.00
2	t	n-Octane (C8)	50.000	43.981	12.0	94	0.00
3	t	n-Nonane (C9)	50.000	44.696	10.6	95	0.00
4	t	n-Decane (C10)	50.000	46.241	7.5	97	0.00
5	t	n-Undecane (C11)	50.000	45.095	9.8	94	0.00
6	t	n-Dodecane (C12)	50.000	44.916	10.2	94	0.00
7	t	n-Tridecane (C13)	50.000	44.811	10.4	93	0.00
9	t	n-Tetradecane (C14)	50.000	46.141	7.7	96	0.00
11	t	n-Pentadecane (C15)	50.000	44.950	10.1	94	0.00
12	t	n-Hexadecane (C16)	50.000	45.465	9.1	95	0.00
14	t	n-Heptadecane (C17)	50.000	45.430	9.1	95	0.00
15	t	Pristane	50.000	45.352	9.3	94	0.00
16	t	n-Octadecane (C18)	50.000	44.693	10.6	93	0.00
17	t	Phytane	50.000	51.814	-3.6	108	0.00
18	t	n-Nonadecane (C19)	50.000	44.882	10.2	94	0.00
19	s	ortho-terphenyl	50.000	45.003	10.0	96	0.00
20	t	n-Eicosane (C20)	50.000	45.316	9.4	94	0.00
21	t	n-Heneicosane (C21)	50.000	45.440	9.1	95	0.00
22	t	n-Docosane (C22)	50.000	45.462	9.1	95	0.00
23	t	n-Tricosane (C23)	50.000	45.350	9.3	95	0.00
24	s	d50-Tetracosane	50.000	45.991	8.0	97	0.00
25	t	n-Tetracosane (C24)	50.000	45.214	9.6	94	0.00
26	t	n-Pentacosane (C25)	50.000	45.737	8.5	95	0.00
27	t	n-Hexacosane (C26)	50.000	45.639	8.7	95	0.00
28	t	n-Heptacosane (C27)	50.000	45.594	8.8	95	0.00
29	t	n-Octacosane (C28)	50.000	45.888	8.2	96	0.00
30	t	n-Nonacosane (C29)	50.000	45.929	8.1	96	0.00
31	t	n-Triacontane (C30)	50.000	45.803	8.4	96	0.00
32	t	n-Hentriacontane (C31)	50.000	45.796	8.4	96	0.00
33	t	n-Dotriacontane (C32)	50.000	45.024	10.0	94	0.00
34	t	n-Tritriacontane (C33)	50.000	46.048	7.9	96	0.00
35	t	n-tetratriacontane (C34)	50.000	46.431	7.1	97	0.00
36	t	n-Pentatriacontane (C35)	50.000	46.211	7.6	97	0.00
37	t	n-Hexatriacontane (C36)	50.000	48.313	3.4	101	-0.01
38	t	n-Heptatriacontane (C37)	50.000	46.289	7.4	97	-0.02
39	t	n-Octatriacontane (C38)	50.000	47.116	5.8	98	0.00
41	t	n-Tetracontane (C40)	50.000	43.369	13.3	90	-0.03

Evaluate Continuing Calibration Report - Not Founds

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

Mass Discrimination (Response)	Ratio	Range Limits
n-Hexatriacontane (C36) to n-Eicosane (C20)	1.13	0.85 - 1.15

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615024.d
Signal(s) : FID1A.CH
Acq On : 27 Oct 2015 4:34 am
Operator : FID17:NL
Sample : CQ1710261501F
Misc :
ALS Vial : 12 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 30 08:44:41 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\Oct26\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Mon Nov 30 08:44:34 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

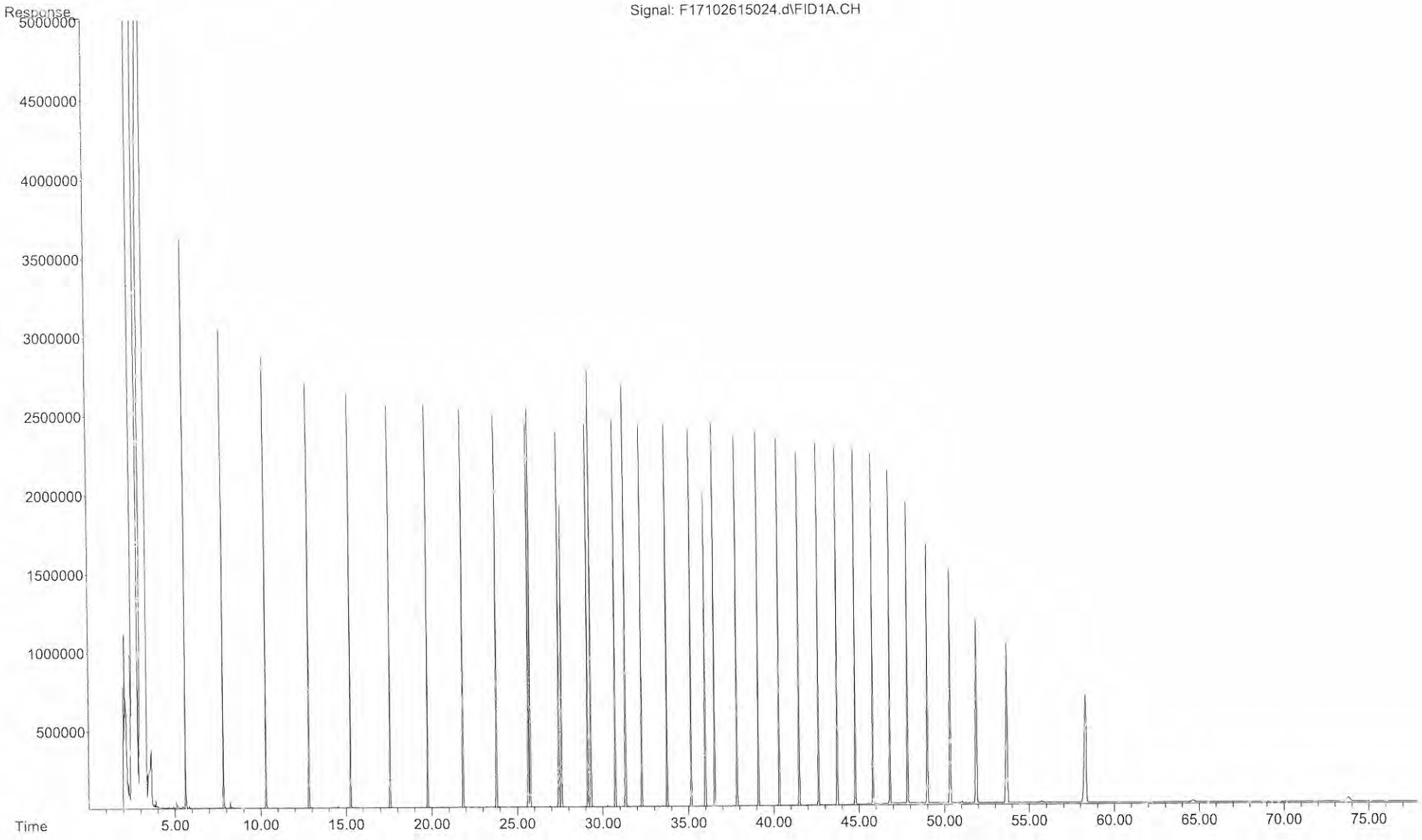
Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	31.346	62877484	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	29.326	60156799	45.003 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 90.01%	
24) s d50-Tetracosane	35.998	51494217	45.991 ug/mL M4
Spiked Amount 50.000	Range 50 - 130	Recovery = 91.98%	
Target Compounds			
2) t n-Octane (C8)	5.618	44845093	43.981 ug/mL M4
3) t n-Nonane (C9)	7.822	47075475	44.696 ug/mL M4
4) t n-Decane (C10)	10.315	50304875	46.241 ug/mL M4
5) t n-Undecane (C11)	12.834	49487828	45.095 ug/mL M4
6) t n-Dodecane (C12)	15.268	50139018	44.916 ug/mL M4
7) t n-Tridecane (C13)	17.582	50277500	44.811 ug/mL M4
9) t n-Tetradecane (C14)	19.772	52396731	46.141 ug/mL M4
11) t n-Pentadecane (C15)	21.844	51945388	44.950 ug/mL M4
12) t n-Hexadecane (C16)	23.806	52466374	45.465 ug/mL M4
14) t n-Heptadecane (C17)	25.671	52987990	45.430 ug/mL M4
15) t Pristane	25.784	53277190	45.352 ug/mL M4
16) t n-Octadecane (C18)	27.446	52943709	44.693 ug/mL M4
17) t Phytane	27.614	53789993	51.814 ug/mL M4
18) t n-Nonadecane (C19)	29.136	52850891	44.882 ug/mL M4
20) t n-Eicosane (C20)	30.747	53223293	45.316 ug/mL M4
21) t n-Heneicosane (C21)	32.288	53823089	45.440 ug/mL M4
22) t n-Docosane (C22)	33.768	54266852	45.462 ug/mL M4
23) t n-Tricosane (C23)	35.186	54587798	45.350 ug/mL M4
25) t n-Tetracosane (C24)	36.548	54586573	45.214 ug/mL M4
26) t n-Pentacosane (C25)	37.857	54725856	45.737 ug/mL M4
27) t n-Hexacosane (C26)	39.118	55790745	45.639 ug/mL M4
28) t n-Heptacosane (C27)	40.335	55181111	45.594 ug/mL M4
29) t n-Octacosane (C28)	41.508	55248302	45.888 ug/mL M4
30) t n-Nonacosane (C29)	42.644	55582564	45.929 ug/mL M4
31) t n-Triacontane (C30)	43.741	55527763	45.803 ug/mL M4
32) t n-Hentriacontane (C31)	44.805	55663585	45.796 ug/mL M4
33) t n-Dotriacontane (C32)	45.834	55094481	45.024 ug/mL M4
34) t n-Tritriacontane (C33)	46.831	53234516	46.048 ug/mL M4
35) t n-tetratriacontane (C34)	47.864	56187899	46.431 ug/mL M4
36) t n-Pentatriacontane (C35)	49.027	56234177	46.211 ug/mL M4
37) t n-Hexatriacontane (C36)	50.362	60356682	48.313 ug/mL M4
38) t n-Heptatriacontane (C37)	51.897	56438492	46.289 ug/mL M4
39) t n-Octatriacontane (C38)	53.707	56336940	47.116 ug/mL M4
41) t n-Tetracontane (C40)	58.309	53858975	43.369 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615024.d
Operator : FID17:NL
Acquired : 27 Oct 2015 4:34 am using AcqMethod FID17.M
Instrument: FID17
Sample : CQ1710261501F
Misc Info :
ALS Vial : 12



Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615026.d
Signal(s) : FID1A.CH
Acq On : 27 Oct 2015 6:02 am
Operator : FID17:NL
Sample : TS111315ANC04
Misc : 1X FRAW36 10.382mg/mL
ALS Vial : 13 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 30 08:44:52 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\Oct26\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Mon Nov 30 08:44:44 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1710261501F
Blank File : F17102615022.d

Sub List : Default - All compounds listed

Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	31.349	58688702	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	29.328	63176161	50.634 ug/mL M4
Spiked Amount 50.000 Range 50 - 130		Recovery = 101.27%	
24) s d50-Tetracosane	36.007	54334032	51.991 ug/mL M4
Spiked Amount 50.000 Range 50 - 130		Recovery = 103.98%	
Target Compounds			
2) t n-Octane (C8)	5.591	96771624	101.681 ug/mL M4
3) t n-Nonane (C9)	7.810	72629434	73.880 ug/mL M4
4) t n-Decane (C10)	10.312	60104173	59.192 ug/mL M4
5) t n-Undecane (C11)	12.834	55067214	53.760 ug/mL M4
6) t n-Dodecane (C12)	15.268	51137347	49.080 ug/mL M4
7) t n-Tridecane (C13)	17.583	47387729	45.249 ug/mL M4
8) t 1380	19.263	10893458	10.277 ug/mL M4
9) t n-Tetradecane (C14)	19.773	44328667	41.822 ug/mL M4
10) t 1470	21.061	16852449	15.624 ug/mL M4
11) t n-Pentadecane (C15)	21.844	49433784	45.829 ug/mL M4
12) t n-Hexadecane (C16)	23.805	40324740	37.438 ug/mL M4
13) t 1650	24.711	13155499	12.084 ug/mL M3
14) t n-Heptadecane (C17)	25.669	35487222	32.597 ug/mL M4
15) t Pristane	25.764	27773341	25.329 ug/mL M4
16) t n-Octadecane (C18)	27.441	30954890	27.996 ug/mL M4
17) t Phytane	27.599	15125810	15.610 ug/mL M4
18) t n-Nonadecane (C19)	29.129	30434964	27.691 ug/mL M4
20) t n-Eicosane (C20)	30.741	32122015	29.301 ug/mL M4
21) t n-Heneicosane (C21)	32.284	26733661	24.181 ug/mL M4
22) t n-Docosane (C22)	33.761	25171300	22.592 ug/mL M4
23) t n-Tricosane (C23)	35.179	22338504	19.883 ug/mL M4
25) t n-Tetracosane (C24)	36.540	21481069	19.063 ug/mL M4
26) t n-Pentacosane (C25)	37.848	20621772	18.464 ug/mL M4
27) t n-Hexacosane (C26)	39.108	17901180	15.689 ug/mL M4
28) t n-Heptacosane (C27)	40.323	13767578	12.187 ug/mL M4
29) t n-Octacosane (C28)	41.498	9862987	8.777 ug/mL M4
30) t n-Nonacosane (C29)	42.633	9926472	8.788 ug/mL M4
31) t n-Triacontane (C30)	43.726	7895992	6.978 ug/mL M4
32) t n-Hentriacontane (C31)	44.788	6220028	5.483 ug/mL M4
33) t n-Dotriacontane (C32)	45.814	6643628	5.817 ug/mL M4
34) t n-Tritriacontane (C33)	46.816	4324311	4.008 ug/mL M4
35) t n-tetratriacontane (C34)	47.846	4344810	3.847 ug/mL M4
36) t n-Pentatriacontane (C35)	49.008	3133256	2.759 ug/mL M4
37) t n-Hexatriacontane (C36)	50.330	2402490	2.060 ug/mL M4
38) t n-Heptatriacontane (C37)	51.863	1993023	1.751 ug/mL M4
39) t n-Octatriacontane (C38)	53.658	1665027	1.492 ug/mL M4
40) t n-Nonatriacontane (C39)	55.763	1167255	1.007 ug/mL M4
41) t n-Tetracontane (C40)	58.242	1078747	0.931 ug/mL M4
42) h C9-C44 Total Petroleu...	40.847	7220192928	6577.261 ug/mL m
42) h C9-C44 Total Petroleu BS	40.847	6991375319	6368.819 ug/mLm
44) h C10-C28 DRO	25.916	4780196984	4354.538 ug/mL m

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615026.d
Signal(s) : FID1A.CH
Acq On : 27 Oct 2015 6:02 am
Operator : FID17:NL
Sample : TS111315ANC04
Misc : 1X FRAW36 10.382mg/mL
ALS Vial : 13 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 30 08:44:52 2015
Quant Method : O:\Forensics\Data\FID17\2015\Oct\Oct26\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Mon Nov 30 08:44:44 2015
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Blank Name : IB1710261501F
Blank File : F17102615022.d

Sub List : Default - All compounds listed

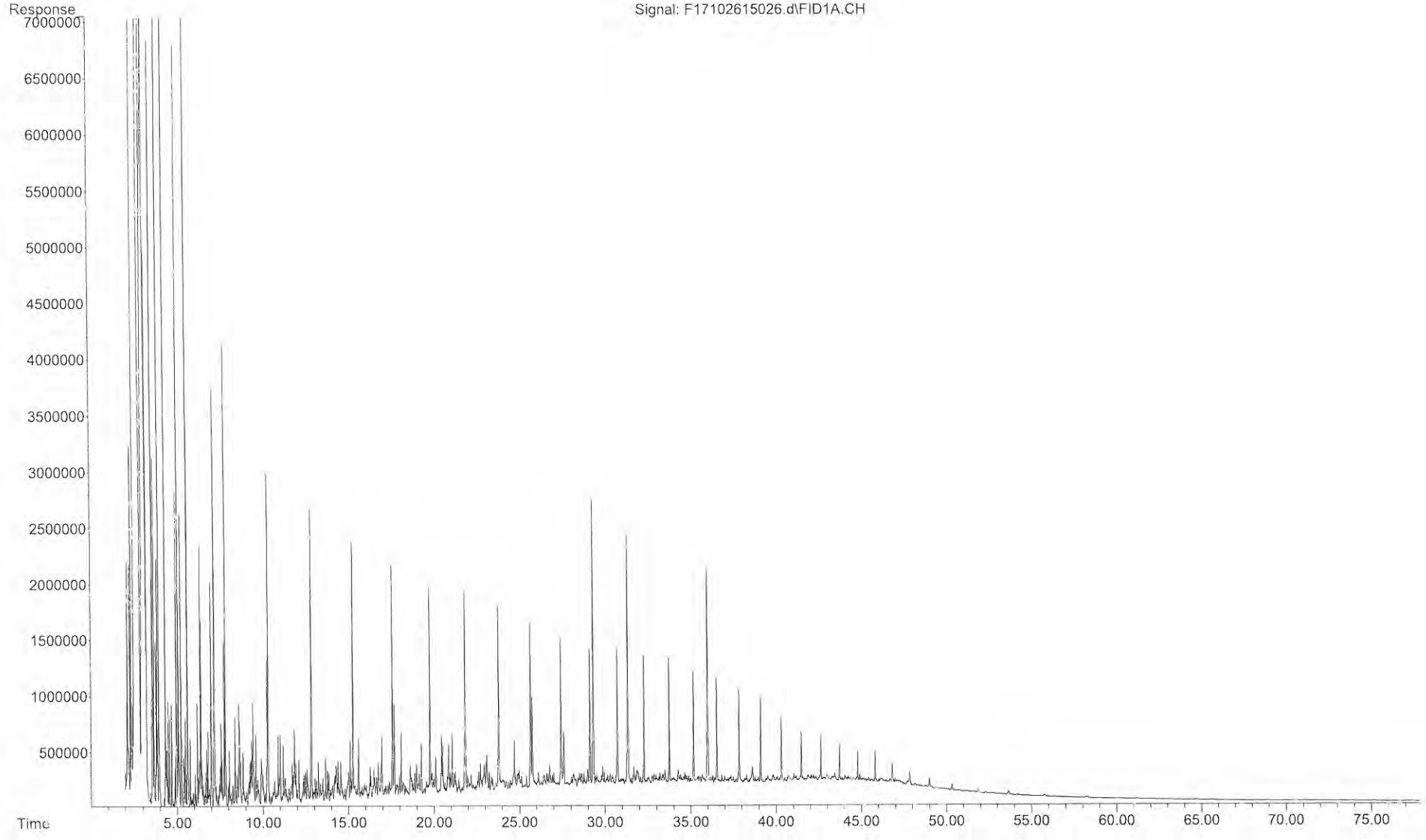
	Compound	R.T.	Response	Conc	Units
44) h	C10-C28 DRO BS	25.916	4751144923	4328.073	ug/mLm
45) h	Total Resolved Hydroc...	40.847	2299169207	2094.437	ug/mL m

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2015\Oct\Oct26\
Data File : F17102615026.d
Operator : FID17:NL
Acquired : 27 Oct 2015 6:02 am using AcqMethod FID17.M
Instrument: FID17
Sample : TS111315ANC04
Misc Info : 1X FRAW36 10.382mg/mL
ALS Vial : 13



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041606.d
Signal(s) : FID1A.CH
Acq On : 04 Nov 2016 7:52 pm
Operator : FID17:NL
Sample : C1711041601F
Misc : FRAX76 50ug/mL
ALS Vial : 3 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 08 17:32:10 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\Nov04\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Wed Oct 12 12:07:10 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(Min)
1	I	5-alpha-androstane	50.000	50.000	0.0	92	0.00
2	t	n-Octane (C8)	50.000	51.420	-2.8	103	0.00
3	t	n-Nonane (C9)	50.000	52.759	-5.5	101	0.00
4	t	n-Decane (C10)	50.000	52.693	-5.4	100	0.00
5	t	n-Undecane (C11)	50.000	53.035	-6.1	97	0.00
6	t	n-Dodecane (C12)	50.000	52.926	-5.9	97	0.00
7	t	n-Tridecane (C13)	50.000	52.940	-5.9	96	0.00
9	t	n-Tetradecane (C14)	50.000	52.992	-6.0	95	0.00
11	t	n-Pentadecane (C15)	50.000	52.156	-4.3	93	0.00
12	t	n-Hexadecane (C16)	50.000	52.717	-5.4	94	0.00
14	t	n-Heptadecane (C17)	50.000	51.628	-3.3	93	0.00
15	t	Pristane	50.000	52.628	-5.3	93	0.00
16	t	n-Octadecane (C18)	50.000	51.683	-3.4	92	0.00
17	t	Phytane	50.000	53.322	-6.6	95	0.00
18	t	n-Nonadecane (C19)	50.000	51.749	-3.5	93	0.00
19	s	ortho-terphenyl	50.000	51.131	-2.3	92	0.00
20	t	n-Eicosane (C20)	50.000	52.040	-4.1	93	0.00
21	t	n-Heneicosane (C21)	50.000	52.315	-4.6	93	0.00
22	t	n-Docosane (C22)	50.000	51.831	-3.7	93	0.00
23	t	n-Tricosane (C23)	50.000	51.585	-3.2	92	0.00
24	s	d50-Tetracosane	50.000	49.113	1.8	90	0.00
25	t	n-Tetracosane (C24)	50.000	51.591	-3.2	93	0.00
26	t	n-Pentacosane (C25)	50.000	51.570	-3.1	92	0.00
27	t	n-Hexacosane (C26)	50.000	50.885	-1.8	91	0.00
28	t	n-Heptacosane (C27)	50.000	49.917	0.2	90	0.00
29	t	n-Octacosane (C28)	50.000	52.045	-4.1	93	0.00
30	t	n-Nonacosane (C29)	50.000	51.454	-2.9	93	0.00
31	t	n-Triacontane (C30)	50.000	50.769	-1.5	92	0.00
32	t	n-Hentriacontane (C31)	50.000	50.834	-1.7	92	0.00
33	t	n-Dotriacontane (C32)	50.000	49.864	0.3	91	0.00
34	t	n-Tritriacontane (C33)	50.000	52.299	-4.6	95	0.00
35	t	n-tetratriacontane (C34)	50.000	51.821	-3.6	95	0.00
36	t	n-Pentatriacontane (C35)	50.000	49.735	0.5	90	0.00
37	t	n-Hexatriacontane (C36)	50.000	51.580	-3.2	94	0.00
38	t	n-Heptatriacontane (C37)	50.000	49.765	0.5	91	0.00
39	t	n-Octatriacontane (C38)	50.000	55.100	-10.2	101	0.00
41	t	n-Tetracontane (C40)	50.000	50.574	-1.1	93	0.00

Evaluate Continuing Calibration Report - Not Founds

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

Mass Discrimination (Response)	Ratio	Range Limits
n-Hexatriacontane (C36) to n-Eicosane (C20)	1.05	0.85 - 1.15

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041606.d
Signal(s) : FID1A.CH
Acq On : 04 Nov 2016 7:52 pm
Operator : FID17:NL
Sample : C1711041601F
Misc : FRAX76 50ug/mL
ALS Vial : 3 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 08 17:32:10 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\Nov04\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Wed Oct 12 12:07:10 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

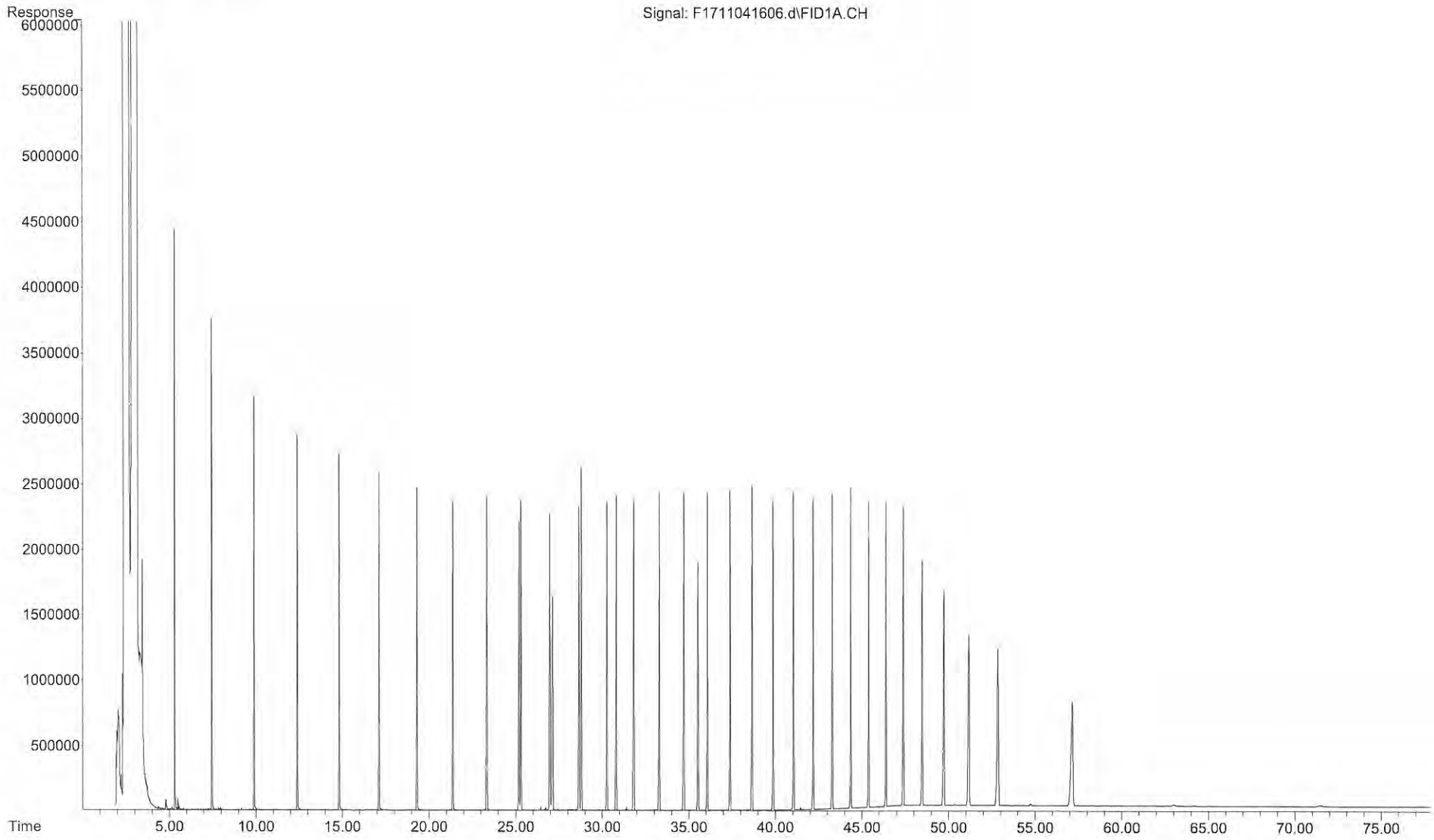
	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.818	63793296	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.807	69345160	51.131 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery =	102.26%
24) s	d50-Tetracosane	35.537	55790423	49.113 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery =	98.23%
	Target Compounds			
2) t	n-Octane (C8)	5.306	53193786	51.420 ug/mL M4
3) t	n-Nonane (C9)	7.447	56377318	52.759 ug/mL M4
4) t	n-Decane (C10)	9.898	58158592	52.693 ug/mL M4
5) t	n-Undecane (C11)	12.397	59049813	53.035 ug/mL M4
6) t	n-Dodecane (C12)	14.820	59941971	52.926 ug/mL M4
7) t	n-Tridecane (C13)	17.128	60264156	52.940 ug/mL M4
9) t	n-Tetradecane (C14)	19.314	61053783	52.992 ug/mL M4
11) t	n-Pentadecane (C15)	21.381	61151560	52.156 ug/mL M4
12) t	n-Hexadecane (C16)	23.341	61720508	52.717 ug/mL M4
14) t	n-Heptadecane (C17)	25.205	61094142	51.628 ug/mL M4
15) t	Pristane	25.314	62725882	52.628 ug/mL M4
16) t	n-Octadecane (C18)	26.978	62115652	51.683 ug/mL M4
17) t	Phytane	27.134	56161511	53.322 ug/mL M4
18) t	n-Nonadecane (C19)	28.668	61824352	51.749 ug/mL M4
20) t	n-Eicosane (C20)	30.281	62011814	52.040 ug/mL M4
21) t	n-Heneicosane (C21)	31.823	62869451	52.315 ug/mL M4
22) t	n-Docosane (C22)	33.302	62770741	51.831 ug/mL M4
23) t	n-Tricosane (C23)	34.721	62998358	51.585 ug/mL M4
25) t	n-Tetracosane (C24)	36.087	63192960	51.591 ug/mL M4
26) t	n-Pentacosane (C25)	37.399	62604327	51.570 ug/mL M4
27) t	n-Hexacosane (C26)	38.662	63109131	50.885 ug/mL M4
28) t	n-Heptacosane (C27)	39.882	61293120	49.917 ug/mL M4
29) t	n-Octacosane (C28)	41.058	63573650	52.045 ug/mL M4
30) t	n-Nonacosane (C29)	42.202	63175226	51.454 ug/mL M4
31) t	n-Triacontane (C30)	43.299	62444486	50.769 ug/mL m
32) t	n-Hentriacontane (C31)	44.367	62686353	50.834 ug/mL M4
33) t	n-Dotriacontane (C32)	45.401	61906166	49.864 ug/mL M4
34) t	n-Tritriacontane (C33)	46.404	61341374	52.299 ug/mL M4
35) t	n-tetratriacontane (C34)	47.399	63623810	51.821 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.495	61404798	49.735 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.743	65376991	51.580 ug/mL M4
38) t	n-Heptatriacontane (C37)	51.186	61560428	49.765 ug/mL M4
39) t	n-Octatriacontane (C38)	52.866	66843189	55.100 ug/mL M4
41) t	n-Tetracontane (C40)	57.153	63721970	50.574 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041606.d
Operator : FID17:NL
Acquired : 04 Nov 2016 7:52 pm using AcqMethod FID17.M
Instrument: FID17
Sample : C1711041601F
Misc Info : FRAX76 50ug/mL
ALS Vial : 3



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041632.d
Signal(s) : FID1A.CH
Acq On : 05 Nov 2016 3:00 pm
Operator : FID17:NL
Sample : C1711041602F
Misc : FRAX76 50ug/mL
ALS Vial : 16 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 08 19:41:31 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\Nov04\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Tue Nov 08 17:33:03 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(Min)
1	I	5-alpha-androstane	50.000	50.000	0.0	96	0.00
2	t	n-Octane (C8)	50.000	48.922	2.2	102	0.00
3	t	n-Nonane (C9)	50.000	51.632	-3.3	103	0.00
4	t	n-Decane (C10)	50.000	51.938	-3.9	103	0.00
5	t	n-Undecane (C11)	50.000	52.875	-5.8	101	0.00
6	t	n-Dodecane (C12)	50.000	52.724	-5.4	100	0.00
7	t	n-Tridecane (C13)	50.000	52.820	-5.6	100	0.00
9	t	n-Tetradecane (C14)	50.000	52.993	-6.0	100	0.00
11	t	n-Pentadecane (C15)	50.000	52.249	-4.5	98	0.00
12	t	n-Hexadecane (C16)	50.000	52.890	-5.8	98	0.00
14	t	n-Heptadecane (C17)	50.000	51.851	-3.7	97	0.00
15	t	Pristane	50.000	52.829	-5.7	98	0.00
16	t	n-Octadecane (C18)	50.000	51.979	-4.0	97	0.00
17	t	Phytane	50.000	53.478	-7.0	99	0.00
18	t	n-Nonadecane (C19)	50.000	52.139	-4.3	97	0.00
19	s	ortho-terphenyl	50.000	51.295	-2.6	96	0.00
20	t	n-Eicosane (C20)	50.000	52.312	-4.6	97	0.00
21	t	n-Heneicosane (C21)	50.000	52.606	-5.2	98	0.00
22	t	n-Docosane (C22)	50.000	52.180	-4.4	97	0.00
23	t	n-Tricosane (C23)	50.000	51.923	-3.8	97	0.00
24	s	d50-Tetracosane	50.000	49.430	1.1	94	0.00
25	t	n-Tetracosane (C24)	50.000	51.925	-3.8	97	0.00
26	t	n-Pentacosane (C25)	50.000	51.986	-4.0	97	0.00
27	t	n-Hexacosane (C26)	50.000	51.276	-2.6	96	0.00
28	t	n-Heptacosane (C27)	50.000	50.298	-0.6	94	0.00
29	t	n-Octacosane (C28)	50.000	52.509	-5.0	98	0.00
30	t	n-Nonacosane (C29)	50.000	52.068	-4.1	98	0.00
31	t	n-Triacontane (C30)	50.000	51.420	-2.8	97	0.00
32	t	n-Hentriacontane (C31)	50.000	51.583	-3.2	98	0.00
33	t	n-Dotriacontane (C32)	50.000	50.662	-1.3	96	0.00
34	t	n-Tritriacontane (C33)	50.000	53.223	-6.4	101	0.00
35	t	n-tetratriacontane (C34)	50.000	52.822	-5.6	101	0.00
36	t	n-Pentatriacontane (C35)	50.000	50.789	-1.6	96	0.00
37	t	n-Hexatriacontane (C36)	50.000	52.567	-5.1	100	0.00
38	t	n-Heptatriacontane (C37)	50.000	50.636	-1.3	97	0.00
39	t	n-Octatriacontane (C38)	50.000	55.891	-11.8	107	0.00
41	t	n-Tetracontane (C40)	50.000	51.106	-2.2	98	0.01

Evaluate Continuing Calibration Report - Not Founds

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

Mass Discrimination (Response)	Ratio	Range Limits
n-Hexatriacontane (C36) to n-Eicosane (C20)	1.07	0.85 - 1.15

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041632.d
Signal(s) : FID1A.CH
Acq On : 05 Nov 2016 3:00 pm
Operator : FID17:NL
Sample : C1711041602F
Misc : FRAX76 50ug/mL
ALS Vial : 16 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 08 19:41:31 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\Nov04\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Tue Nov 08 17:33:03 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

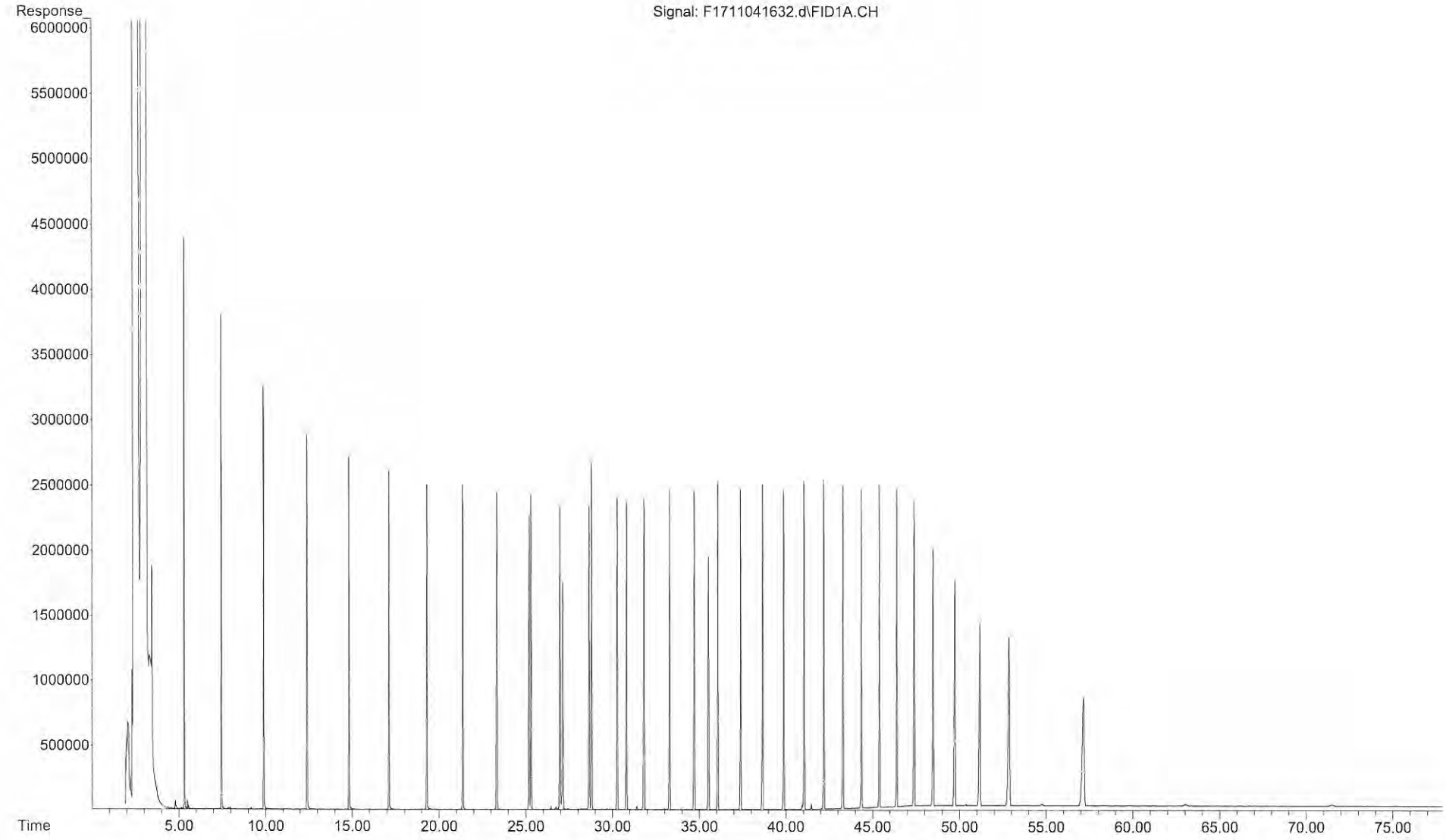
	Compound	R.T.	Response	Conc Units
	Internal Standards			
1) I	5-alpha-androstane	30.817	66640756	50.000 ug/mL M4
	System Monitoring Compounds			
19) s	ortho-terphenyl	28.803	72672546	51.295 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery = 102.59%	
24) s	d50-Tetracosane	35.535	58656988	49.430 ug/mL M4
Spiked Amount	50.000 Range 50 - 130		Recovery = 98.86%	
	Target Compounds			
2) t	n-Octane (C8)	5.302	52868700	48.922 ug/mL M4
3) t	n-Nonane (C9)	7.445	57635469	51.632 ug/mL M4
4) t	n-Decane (C10)	9.893	59884484	51.938 ug/mL M4
5) t	n-Undecane (C11)	12.393	61499219	52.875 ug/mL M4
6) t	n-Dodecane (C12)	14.816	62377701	52.724 ug/mL M4
7) t	n-Tridecane (C13)	17.123	62810857	52.820 ug/mL M4
9) t	n-Tetradecane (C14)	19.308	63779907	52.993 ug/mL M4
11) t	n-Pentadecane (C15)	21.376	63994598	52.249 ug/mL M4
12) t	n-Hexadecane (C16)	23.336	64687306	52.890 ug/mL M4
14) t	n-Heptadecane (C17)	25.204	64096789	51.851 ug/mL M4
15) t	Pristane	25.311	65776157	52.829 ug/mL M4
16) t	n-Octadecane (C18)	26.975	65260160	51.979 ug/mL M4
17) t	Phytane	27.133	58840386	53.478 ug/mL M4
18) t	n-Nonadecane (C19)	28.665	65070024	52.139 ug/mL M4
20) t	n-Eicosane (C20)	30.278	65117544	52.312 ug/mL M4
21) t	n-Heneicosane (C21)	31.822	66041312	52.606 ug/mL M4
22) t	n-Docosane (C22)	33.302	66014472	52.180 ug/mL M4
23) t	n-Tricosane (C23)	34.721	66240877	51.923 ug/mL M4
25) t	n-Tetracosane (C24)	36.087	66441191	51.925 ug/mL M4
26) t	n-Pentacosane (C25)	37.399	65927144	51.986 ug/mL M4
27) t	n-Hexacosane (C26)	38.664	66433723	51.276 ug/mL M4
28) t	n-Heptacosane (C27)	39.884	64518406	50.298 ug/mL M4
29) t	n-Octacosane (C28)	41.062	67003105	52.509 ug/mL M4
30) t	n-Nonacosane (C29)	42.200	66783264	52.068 ug/mL M4
31) t	n-Triacontane (C30)	43.303	66068230	51.420 ug/mL M4
32) t	n-Hentriacontane (C31)	44.368	66449895	51.583 ug/mL M4
33) t	n-Dotriacontane (C32)	45.404	65703940	50.662 ug/mL M4
34) t	n-Tritriacontane (C33)	46.407	65211635	53.223 ug/mL M4
35) t	n-tetratriacontane (C34)	47.401	67747766	52.822 ug/mL M4
36) t	n-Pentatriacontane (C35)	48.497	65504635	50.789 ug/mL M4
37) t	n-Hexatriacontane (C36)	49.747	69602182	52.567 ug/mL M4
38) t	n-Heptatriacontane (C37)	51.185	65433384	50.636 ug/mL M4
39) t	n-Octatriacontane (C38)	52.873	70829215	55.891 ug/mL M4
41) t	n-Tetracontane (C40)	57.167	67266548	51.106 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041632.d
Operator : FID17:NL
Acquired : 05 Nov 2016 3:00 pm using AcqMethod FID17.M
Instrument: FID17
Sample : C1711041602F
Misc Info : FRAX76 50ug/mL
ALS Vial : 16



Evaluate Continuing Calibration Report

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041656.d
Signal(s) : FID1A.CH
Acq On : 06 Nov 2016 7:41 am
Operator : FID17:NL
Sample : C1711041603F
Misc : FRAX76 50ug/mL
ALS Vial : 28 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 10 16:02:51 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\Nov04\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Tue Nov 08 17:33:03 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 25% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(Min)
1	I	5-alpha-androstane	50.000	50.000	0.0	105	0.00
2	t	n-Octane (C8)	50.000	42.916	14.2	98	-0.01
3	t	n-Nonane (C9)	50.000	47.884	4.2	105	0.00
4	t	n-Decane (C10)	50.000	50.245	-0.5	109	0.00
5	t	n-Undecane (C11)	50.000	51.770	-3.5	108	0.00
6	t	n-Dodecane (C12)	50.000	51.864	-3.7	108	0.00
7	t	n-Tridecane (C13)	50.000	52.159	-4.3	108	0.00
9	t	n-Tetradecane (C14)	50.000	52.492	-5.0	108	0.00
11	t	n-Pentadecane (C15)	50.000	51.895	-3.8	107	0.00
12	t	n-Hexadecane (C16)	50.000	52.647	-5.3	107	0.00
14	t	n-Heptadecane (C17)	50.000	51.585	-3.2	106	0.00
15	t	Pristane	50.000	52.681	-5.4	107	0.00
16	t	n-Octadecane (C18)	50.000	51.889	-3.8	106	0.00
17	t	Phytane	50.000	53.583	-7.2	109	0.00
18	t	n-Nonadecane (C19)	50.000	51.968	-3.9	107	0.00
19	s	ortho-terphenyl	50.000	51.302	-2.6	105	0.00
20	t	n-Eicosane (C20)	50.000	52.308	-4.6	107	0.00
21	t	n-Heneicosane (C21)	50.000	52.590	-5.2	108	0.00
22	t	n-Docosane (C22)	50.000	52.195	-4.4	107	0.00
23	t	n-Tricosane (C23)	50.000	51.995	-4.0	107	0.00
24	s	d50-Tetracosane	50.000	49.458	1.1	103	0.00
25	t	n-Tetracosane (C24)	50.000	51.961	-3.9	107	0.00
26	t	n-Pentacosane (C25)	50.000	52.084	-4.2	107	0.00
27	t	n-Hexacosane (C26)	50.000	51.261	-2.5	105	0.00
28	t	n-Heptacosane (C27)	50.000	50.413	-0.8	104	0.00
29	t	n-Octacosane (C28)	50.000	52.669	-5.3	108	0.00
30	t	n-Nonacosane (C29)	50.000	52.082	-4.2	107	0.00
31	t	n-Triacontane (C30)	50.000	51.400	-2.8	107	0.00
32	t	n-Hentriacontane (C31)	50.000	51.529	-3.1	107	0.00
33	t	n-Dotriacontane (C32)	50.000	50.634	-1.3	106	0.00
34	t	n-Tritriacontane (C33)	50.000	53.129	-6.3	110	0.00
35	t	n-tetratriacontane (C34)	50.000	52.697	-5.4	110	0.00
36	t	n-Pentatriacontane (C35)	50.000	50.602	-1.2	105	0.00
37	t	n-Hexatriacontane (C36)	50.000	52.315	-4.6	109	0.00
38	t	n-Heptatriacontane (C37)	50.000	50.390	-0.8	106	0.00
39	t	n-Octatriacontane (C38)	50.000	55.608	-11.2	117	0.00
41	t	n-Tetracontane (C40)	50.000	50.534	-1.1	106	0.00

Evaluate Continuing Calibration Report - Not Founds

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

Mass Discrimination (Response)	Ratio	Range Limits
n-Hexatriacontane (C36) to n-Eicosane (C20)	1.06	0.85 - 1.15

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041656.d
Signal(s) : FID1A.CH
Acq On : 06 Nov 2016 7:41 am
Operator : FID17:NL
Sample : C1711041603F
Misc : FRAX76 50ug/mL
ALS Vial : 28 Sample Multiplier: 1

Integration File: SHCINT2.E
Quant Time: Nov 10 16:02:51 2016
Quant Method : O:\Forensics\Data\FID17\2016\Nov\Nov04\HC17102615F.M
Quant Title : FID Forensics
QLast Update : Tue Nov 08 17:33:03 2016
Response via : Initial Calibration
Integrator: ChemStation 6890 Scale Mode: Large solvent peaks clipped

Volume Inj. : 1.0
Signal Phase : Rtx-5MS
Signal Info : 0.25mm

Sub List : CCAL - CCAL

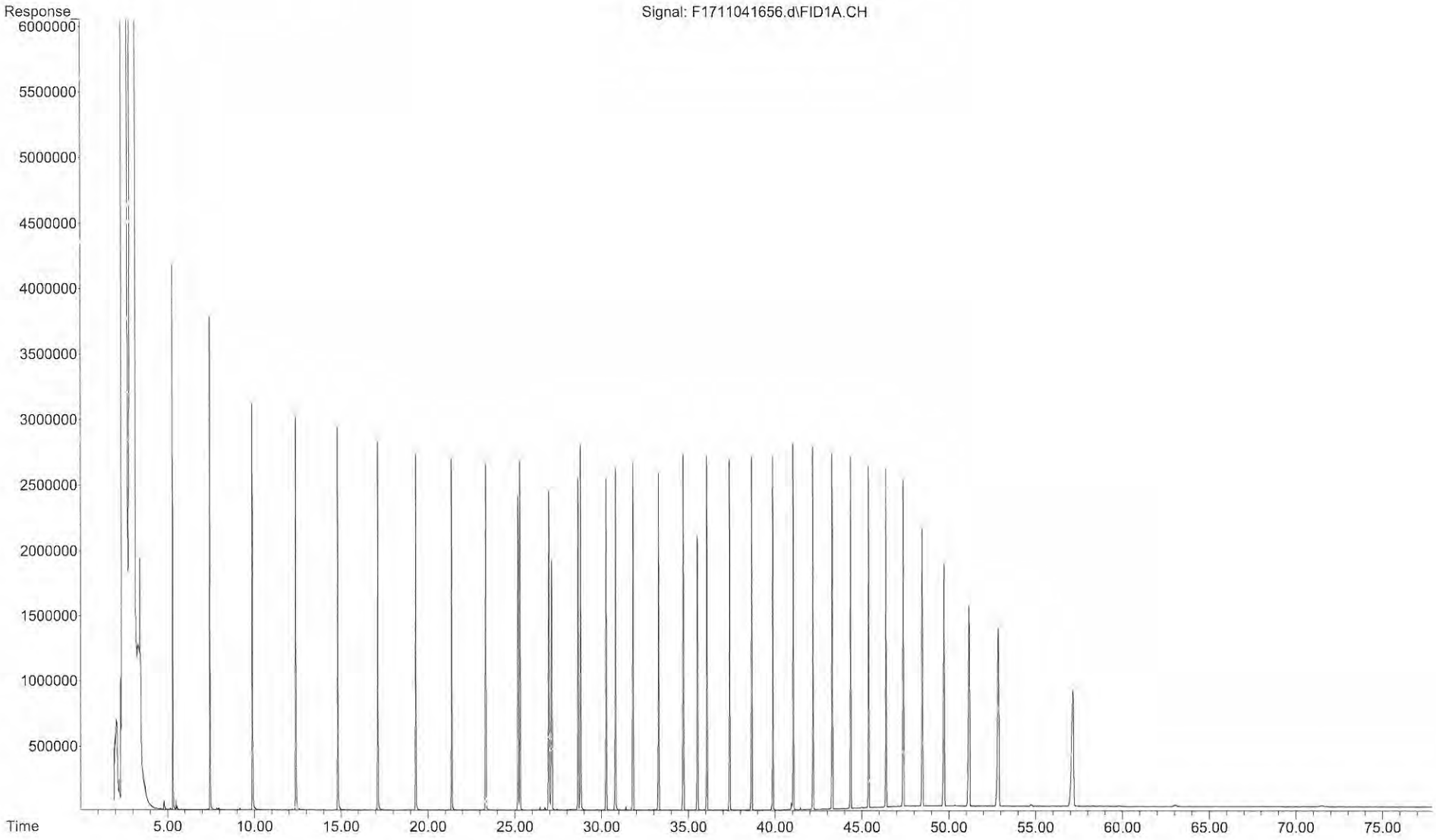
Compound	R.T.	Response	Conc Units
Internal Standards			
1) I 5-alpha-androstane	30.817	73131531	50.000 ug/mL M4
System Monitoring Compounds			
19) s ortho-terphenyl	28.805	79761846	51.302 ug/mL M4
Spiked Amount 50.000 Range 50 - 130		Recovery = 102.60%	
24) s d50-Tetracosane	35.532	64407098	49.458 ug/mL M4
Spiked Amount 50.000 Range 50 - 130		Recovery = 98.92%	
Target Compounds			
2) t n-Octane (C8)	5.293	50895199	42.916 ug/mL M4
3) t n-Nonane (C9)	7.439	58658654	47.884 ug/mL M4
4) t n-Decane (C10)	9.889	63574516	50.245 ug/mL M4
5) t n-Undecane (C11)	12.393	66079075	51.770 ug/mL M4
6) t n-Dodecane (C12)	14.817	67336998	51.864 ug/mL M4
7) t n-Tridecane (C13)	17.124	68066015	52.159 ug/mL M4
9) t n-Tetradecane (C14)	19.310	69330752	52.492 ug/mL M4
11) t n-Pentadecane (C15)	21.375	69751824	51.895 ug/mL M4
12) t n-Hexadecane (C16)	23.336	70662276	52.647 ug/mL M4
14) t n-Heptadecane (C17)	25.201	69978825	51.585 ug/mL M4
15) t Pristane	25.311	71980486	52.681 ug/mL M4
16) t n-Octadecane (C18)	26.975	71492922	51.889 ug/mL M4
17) t Phytane	27.129	64697747	53.583 ug/mL M4
18) t n-Nonadecane (C19)	28.665	71174086	51.968 ug/mL M4
20) t n-Eicosane (C20)	30.278	71455451	52.308 ug/mL M4
21) t n-Heneicosane (C21)	31.821	72451189	52.590 ug/mL M4
22) t n-Docosane (C22)	33.301	72465731	52.195 ug/mL M4
23) t n-Tricosane (C23)	34.724	72794254	51.995 ug/mL M4
25) t n-Tetracosane (C24)	36.085	72961992	51.961 ug/mL M4
26) t n-Pentacosane (C25)	37.399	72483805	52.084 ug/mL M4
27) t n-Hexacosane (C26)	38.666	72882669	51.261 ug/mL M4
28) t n-Heptacosane (C27)	39.885	70963840	50.413 ug/mL M4
29) t n-Octacosane (C28)	41.062	73753398	52.669 ug/mL M4
30) t n-Nonacosane (C29)	42.202	73307476	52.082 ug/mL M4
31) t n-Triacontane (C30)	43.301	72475697	51.400 ug/mL M4
32) t n-Hentriacontane (C31)	44.369	72845701	51.529 ug/mL M4
33) t n-Dotriacontane (C32)	45.405	72062998	50.634 ug/mL M4
34) t n-Tritriacontane (C33)	46.403	71436679	53.129 ug/mL M4
35) t n-tetratriacontane (C34)	47.399	74170691	52.697 ug/mL M4
36) t n-Pentatriacontane (C35)	48.493	71619914	50.602 ug/mL M4
37) t n-Hexatriacontane (C36)	49.745	76015208	52.315 ug/mL M4
38) t n-Heptatriacontane (C37)	51.182	71457829	50.390 ug/mL M4
39) t n-Octatriacontane (C38)	52.874	77333611	55.608 ug/mL M4
41) t n-Tetracontane (C40)	57.152	72991596	50.534 ug/mL M4

SemiQuant Compounds - Not Calibrated on this Instrument

(f)=RT Delta > 1/2 Window (m)=manual int.

Quantitation Report (QT Reviewed)

Data Path : O:\Forensics\Data\FID17\2016\Nov\Nov04\
Data File : F1711041656.d
Operator : FID17:NL
Acquired : 06 Nov 2016 7:41 am using AcqMethod FID17.M
Instrument: FID17
Sample : C1711041603F
Misc Info : FRAX76 50ug/mL
ALS Vial : 28



Sample Preparation

Alpha Woods Hole Lab
Batch Prep Report
11/01/2016 1610010 - OP Steranes/Triterpanes

Lab ID	Prep Method	Analyst	Prep Start Date	Prep Completed Date	TCLP	Initial Amount (g or ml)	Split	PIV (ml)	Final Volume (ml)	Solvent Ex	Conc. Analyst	Conc. Date	Conc. Method	Transfer Volume (ml)	Vialed By	Vialed Date
1610010-01 (Sediment - 1610010)	Shaker	BA	11/1/2016	11/25/2016		5.69	8	0.5	4	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
1610010-02 (Sediment - 1610010)	Shaker	BA	11/1/2016	11/25/2016		15.14	20	0.5	10	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
1610010-03 (Sediment - 1610010)	Shaker	BA	11/1/2016	11/4/2016		15.24	2	0.5	1	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
1610010-04 (Soil - 1610010)	Shaker	BA	11/1/2016	11/25/2016		5.02	2.5	0.5	1.25	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
1610010-05 (Soil - 1610010)	Shaker	BA	11/1/2016	11/25/2016		5.72	16.6667	0.5	8.33	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
1610010-06 (Soil - 1610010)	Shaker	BA	11/1/2016	11/25/2016		15.81	3.2	0.5	1.6	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
1610010-07 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		15.4	2	0.5	1	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
1610010-08 (Soil - 1610010)	Shaker	BA	11/1/2016	11/25/2016		5.63	10	0.5	5	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
1610010-09 (Soil - 1610010)	Shaker	BA	11/1/2016	11/25/2016		5.28	10	0.5	5	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
1610010-10 (Soil - 1610010)	Shaker	BA	11/1/2016	11/25/2016		5.5	40	0.5	20	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
1610010-11 (Soil - 1610010)	Shaker	BA	11/1/2016	11/25/2016		5.79	15.3846	0.5	7.69	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
1610010-12 (Soil - 1610010)	Shaker	BA	11/1/2016	11/25/2016		5.28	6.15384	0.5	3.08	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
1610010-13 (Soil - 1610010)	Shaker	BA	11/1/2016	11/4/2016		5.71	2	0.5	1	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
1610010-14D (Soil - 1610010)	Shaker	BA	11/1/2016	11/25/2016		5.57	4	0.5	2	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
1610010-14 (Soil - 1610010)	Shaker	BA	11/1/2016	11/25/2016		5.78	4	0.5	2	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
1610010-15 (Soil - 1610010)	Shaker	BA	11/1/2016	11/25/2016		5.83	28.5714	0.5	14.29	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
SS110116B01 (Sediment - 1610010)	Shaker	BA	11/1/2016	11/25/2016		12	4	0.5	2	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
SS110116B01 (Soil - 1610010)	Shaker	BA	11/1/2016	11/25/2016		7	4	0.5	2	False	TJ	11/4/2016	KD Flask		BA	11/25/2016
SS110116LCS01 (Sediment - 1610010)		BA	11/1/2016	11/4/2016		12	1	0.5	0.5	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
SS110116LCS01 (Soil - 1610010)		BA	11/1/2016	11/4/2016		7	1	0.5	0.5	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
SS110116LCSD01 (Sediment - 1610010)		BA	11/1/2016	11/4/2016		12	1	0.5	0.5	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
SS110116LCSD01 (Soil - 1610010)		BA	11/1/2016	11/4/2016		7	1	0.5	0.5	False	TJ	11/4/2016	KD Flask		TJ	11/4/2016
SS112316B01 (Sediment - 1610010)	No Prep	BA	11/13/2016 6:00:00 AM	11/25/2016		7	2	0.5	1						BA	11/25/2016
SS112316B01 (Soil - 1610010)	No Prep	BA	11/13/2016 6:00:00 AM	11/25/2016		7	2	0.5	1						BA	11/25/2016
SS112316PRM01 (Sediment - 1610010)	No Prep	BA	11/13/2016 6:00:00 AM	11/25/2016		0.04945	2	0.5	1						BA	11/25/2016
SS112316PRM01 (Soil - 1610010)	No Prep	BA	11/13/2016 6:00:00 AM	11/25/2016		0.04945	2	0.5	1						BA	11/25/2016

Alpha Woods Hole Lab
Batch Prep Report
11/01/2016 1610010 - OP Steranes/Triterpanes

Lab ID	Notes
1610010-01 (Sediment - 1610010)	1st Prep
1610010-02 (Sediment - 1610010)	1st Prep
1610010-03 (Sediment - 1610010)	1st Prep
1610010-04 (Soil - 1610010)	1st Prep
1610010-05 (Soil - 1610010)	1st Prep
1610010-06 (Soil - 1610010)	1st Prep
1610010-07 (Soil - 1610010)	1st Prep
1610010-08 (Soil - 1610010)	1st Prep
1610010-09 (Soil - 1610010)	1st Prep
1610010-10 (Soil - 1610010)	1st Prep
1610010-11 (Soil - 1610010)	1st Prep
1610010-12 (Soil - 1610010)	1st Prep
1610010-13 (Soil - 1610010)	1st Prep
1610010-14D (Soil - 1610010)	1st Prep
1610010-14 (Soil - 1610010)	1st Prep
1610010-15 (Soil - 1610010)	1st Prep
SS110116B01 (Sediment - 1610010)	1st Prep
SS110116B01 (Soil - 1610010)	1st Prep
SS110116LCS01 (Sediment - 1610010)	1st Prep
SS110116LCS01 (Soil - 1610010)	1st Prep
SS110116LCSD01 (Sediment - 1610010)	1st Prep
SS110116LCSD01 (Soil - 1610010)	1st Prep
SS112316B01 (Sediment - 1610010)	1st Prep
SS112316B01 (Soil - 1610010)	1st Prep
SS112316PRM01 (Sediment - 1610010)	1st Prep
SS112316PRM01 (Soil - 1610010)	1st Prep

Alpha Woods Hole Lab
Batch Prep Spike Report

11/01/2016 1610010 - OP Steranes/Tri Analyst: BA Witness: BA

Lab ID	QC Type	OP Steranes/Tri - surr	Vol OP Steranes/Tri - surr	Units OP Steranes/Tri - surr	OP Steranes/Tri - spk 1	Vol OP Steranes/Tri - spk 1	Units OP Steranes/Tri - spk 1	OP Steranes/Tri - spk 2	Vol OP Steranes/Tri - spk 2	Units OP Steranes/Tri - spk 2
1610010-01	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610010-02	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610010-03	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610010-04	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610010-05	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610010-06	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610010-07	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610010-08	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610010-09	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610010-10	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610010-11	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610010-12	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610010-13	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610010-14	D	MSAX17	500	µl	FRAX53	50	µl			
1610010-14	SAM	MSAX17	500	µl	FRAX53	50	µl			
1610010-15	SAM	MSAX17	500	µl	FRAX53	50	µl			
SS110116B01	B	MSAX17	100	µl	FRAX53	50	µl			
SS110116B01	B	MSAX17	100	µl	FRAX53	50	µl			
SS110116LCS01	LCS	MSAX17	100	µl	FRAX53	50	µl			
SS110116LCS01	LCS	MSAX17	100	µl	FRAX53	50	µl			
SS110116LCSD01	LCSD	MSAX17	100	µl	FRAX53	50	µl			
SS110116LCSD01	LCSD	MSAX17	100	µl	FRAX53	50	µl			
SS112316B01	B	FRAX07	100	µl	FRAX53	50	µl			
SS112316B01	B	FRAX07	100	µl	FRAX53	50	µl			
SS112316PRM01	PRM				FRAX53	50	µl			
SS112316PRM01	PRM				FRAX53	50	µl			

STD ID	TITLE	CONTENTS	SOLVENT	LOT
FRAX07	Biomarker Surrogate	5b(H)Cholane = 10 ug/mL	dcm	DN770
MSAX17	Biomarker Surrogate	5b(H)Cholane = 10 ug/mL	DCM	DO105
FRAX53	PAH/SHC RIS Spiking Solution	5 Alpha Androstane = 500 ug/mL Acenaphthene D10, Chrysene D12 = 5 ug/mL	DCM	dp875

Alpha Woods Hole Lab
Batch Clean Up Report
11/01/2016 1610010 - OP Steranes/Triterpanes

Lab ID	QC Type	Clean Up Method	Analyst	Clean Up Date	Flow Rate	Coll. Start	Coll. End	Concentration Analyst	Conc. Date	Solvent Ex.	Pre Vol (ml)	Frac Amt (ml)	Frac Split	Frac Fact	Tran Vol (ml)	Active
1610010-01	SAM	3630F1	BA	11/23/2016						True	10	2.5	4	1		True
1610010-02	SAM	3630F1	BA	11/23/2016						True	10	1	10	1		True
1610010-03	SAM	3630F1	BA							True						True
1610010-04	SAM	3630F1	BA	11/23/2016						True	10	8	1.25	1		True
1610010-05	SAM	3630F1	BA	11/23/2016						True	10	1.2	8.33333	1		True
1610010-06	SAM	3630F1	BA	11/23/2016						True	4	2.5	1.6	1		True
1610010-07	SAM	3630F1	BA							True						True
1610010-08	SAM	3630F1	BA	11/23/2016						True	10	2	5	1		True
1610010-09	SAM	3630F1	BA	11/23/2016						True	10	2	5	1		True
1610010-10	SAM	3630F1	BA	11/23/2016						True	10	0.5	20	1		True
1610010-11	SAM	3630F1	BA	11/23/2016						True	10	1.3	7.69231	1		True
1610010-12	SAM	3630F1	BA	11/23/2016						True	4	1.3	3.07692	1		True
1610010-13	SAM	3630F1	BA							True						True
1610010-14	D	3630F1	BA	11/23/2016						True	4	2	2	1		True
1610010-14	SAM	3630F1	BA	11/23/2016						True	4	2	2	1		True
1610010-15	SAM	3630F1	BA	11/23/2016						True	10	0.7	14.2857	1		True
SS110116B01	B	3630F1	BA	11/23/2016						True	4	2	2	1		True
SS110116B01	B	3630F1	BA	11/23/2016						True	4	2	2	1		True
SS110116LCS01	LCS	3630F1														True
SS110116LCS01	LCS	3630F1														True
SS110116LCSD01	LCSD	3630F1														True
SS110116LCSD01	LCSD	3630F1														True
SS112316B01	B	3630F1	BA	11/23/2016						True	1	1	1	1		True
SS112316B01	B	3630F1	BA	11/23/2016						True	1	1	1	1		True
SS112316PRM01	PRM	3630F1	BA	11/23/2016						True	1	1	1	1		True
SS112316PRM01	PRM	3630F1	BA	11/23/2016						True	1	1	1	1		True

Alpha Woods Hole Lab
Batch Clean Up Report
11/01/2016 1610010 - OP Steranes/Triterpanes

Lab ID	Notes
1610010-01	
1610010-02	
1610010-03	
1610010-04	
1610010-05	
1610010-06	
1610010-07	
1610010-08	
1610010-09	
1610010-10	
1610010-11	
1610010-12	
1610010-13	
1610010-14	
1610010-14	
1610010-15	
SS110116B01	
SS110116B01	
SS110116LCS01	
SS110116LCS01	
SS110116LCSD01	
SS110116LCSD01	
SS112316B01	
SS112316B01	
SS112316PRM01	
SS112316PRM01	

Alpha Woods Hole Lab
Batch Clean Up Report
11/01/2016 1610010 - OP Steranes/Triterpanes

Lab ID	QC Type	Clean Up Method	Analyst	Clean Up Date	Flow Rate	Coll. Start	Coll. End	Concentration Analyst	Conc. Date	Solvent Ex.	Pre Vol (ml)	Frac Amt (ml)	Frac Split	Frac Fact	Tran Vol (ml)	Active
1610010-01	SAM	split	BA								0.9	0.45	2			True
1610010-02	SAM	split	BA								0.9	0.45	2			True
1610010-03	SAM	split	BA								0.9	0.45	2			True
1610010-04	SAM	split	BA								0.9	0.45	2			True
1610010-05	SAM	split	BA								0.9	0.45	2			True
1610010-06	SAM	split	BA								0.9	0.45	2			True
1610010-07	SAM	split	BA								0.9	0.45	2			True
1610010-08	SAM	split	BA								0.9	0.45	2			True
1610010-09	SAM	split	BA								0.9	0.45	2			True
1610010-10	SAM	split	BA								0.9	0.45	2			True
1610010-11	SAM	split	BA								0.9	0.45	2			True
1610010-12	SAM	split	BA								0.9	0.45	2			True
1610010-13	SAM	split	BA								0.9	0.45	2			True
1610010-14	D	split	BA								0.9	0.45	2			True
1610010-14	SAM	split	BA								0.9	0.45	2			True
1610010-15	SAM	split	BA								0.9	0.45	2			True
SS110116B01	B	split	BA								0.9	0.45	2			True
SS110116B01	B	split	BA								0.9	0.45	2			True
SS110116LCS01	LCS	split														True
SS110116LCS01	LCS	split														True
SS110116LCSD01	LCSD	split														True
SS110116LCSD01	LCSD	split														True
SS112316B01	B	split	BA								0.9	0.45	2			True
SS112316B01	B	split	BA								0.9	0.45	2			True
SS112316PRM01	PRM	split	BA								0.9	0.45	2			True
SS112316PRM01	PRM	split	BA								0.9	0.45	2			True

Alpha Woods Hole Lab
Batch Clean Up Report
11/01/2016 1610010 - OP Steranes/Triterpanes

Lab ID	Notes
1610010-01	
1610010-02	
1610010-03	
1610010-04	
1610010-05	
1610010-06	
1610010-07	
1610010-08	
1610010-09	
1610010-10	
1610010-11	
1610010-12	
1610010-13	
1610010-14	
1610010-14	
1610010-15	
SS110116B01	
SS110116B01	
SS110116LCS01	
SS110116LCS01	
SS110116LCSD01	
SS110116LCSD01	
SS112316B01	
SS112316B01	
SS112316PRM01	
SS112316PRM01	

ETR 1610010

Analyst TJ

Date 11/03/2016

Alpha Analytical

- [x] Pre-Alumina
- [ ] Post-Alumina
- [ ] Pre-Silica
- [ ] Oily Material Prep.
- [ ] Other

ETR	Lab ID	QC	Extract Volume (µL)	Aliquot Removed (µL)	Aliquot Weight (mg)	Total Extract Weight (mg)	Volume Removed for Column (µl)	Extract Weight to Column (mg)	Split Factor	QC (%R)
	FRAX35	Gravimetric Standard	10000	50	0.267	53.40	N/A	N/A	N/A	103%
1610010	1		10000	50	0.415	83.00	2500	20.75	4.00	
	2		10000	50	0.963	192.60	1000	19.26	10.00	
	4		10000	50	0.124	24.80	8000	19.84	1.25	
	5		10000	50	0.870	174.00	1200	20.89	8.33	
	6		4000	50	0.401	32.08	1500	12.01	2.67	
	8		10000	50	0.507	101.40	2000	20.28	5.00	
	9		10000	50	0.457	91.40	2000	18.28	5.00	
	10		10000	50	2.079	415.80	500	20.79	20.00	
	11		10000	50	0.755	151.00	1300	19.64	7.69	
	12		4000	50	0.779	62.32	1300	20.23	3.08	
			4000	50	0.672	53.76	1500	20.13	2.67	
	14	D	4000	50	0.300	24.00	2000	12.00	2.00	6%RPD
	14		4000	50	0.282	22.56	2000	11.28	2.00	
	15		10000	50	1.504	300.80	700	21.05	14.29	

Note:

Total Extract Weight (mg) = (Extract Volume ÷ Aliquot Removed) (Aliquot Weight)

Gravimetric Standard = 5 mg/mL

LCS Acceptance Criteria: 95% - 105%

Verified by: _____

Date: _____

Batch ID: 161001O F1 Client: Newfields Project: National Grid. Water St.

Anomalies are noted in the Prep Process Notes section below.

Test(s) Spiked for:
Choose from the following:
F1B, POIB, POIH, POIHX, POITAS, TPH+A

Identify Matrix:
Filter • Filter (L) • NAPL • Net • Oil
Product • PUF • Sediment •
Sheen Soil • Solid • SPMD •
Tissue Pom Pom • 1L
Water • 4L Water • Floc Water

	Date:	Initials:
COC/ETR Check:	11/25/16	
1st Extraction:	11/25/16	RA
2nd Extraction:		
3rd Extraction:		

Extraction HT:
11/1/16

Cleanup Methods:		Date/ Initials:
No Cleanup Required		
Alumina Column (3610)		
Silica Column (3630)		
Fractionation Column (3630F1)	X	11/23/16 RA
GPC (3640)		
Copper (3660B)		
Water pH<2 verified		
	Date/Initials:	ID & Amount:
RIS Spike Analyst:	11/23/16 RA	FRAX 53 50uL
RIS Spike Witness:	11/23/16 TJ	

Prep Process Notes

Original extraction information can be referenced in PAH/SHC paperwork. RA 11/25/16

2.5mL FRAX93 (19.78 mg/mL) used for analysis of pencil pitch. RA 11/25/16

REAGENT	LOT #
DCM	DQ341
SODIUM SULFATE	0000144908
SILICA GEL	BCBR6550V
ALUMINA	N/A

REAGENT	LOT #
COPPER	N/A
GLASS WOOL	1141400
Pentane	56020
Hexane	0000139817

BATCH COMPLETE Analyst:	RA 11/25/16	Date:	
BATCH REVIEWED Analyst:	EP	Date:	11/29/16

Batch ID: 160010 F1 **Client:** Newfields **Project:** National Grid

Prep Process Notes								
Sample ID	Low Volume	High H2O	Plant Material	Other	Difficult to homogenize	Potential High Level		Spiked High
						Visual	Odor	

Present

Chain of Custody Records

SHP2016102801

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 10/21/16

ALPHA Job #: ETR: 1610010

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Client Information

Client: Newfields

Address: 300 Ledgewood Place Suite 305
Rockland, MA 02370

Phone: 781-681-5040

Email: SMattingly@newfieldsllc.com
elitman@newfieldsllc.com

Additional Project Information:

Project Information

Project Name: Winter St. Haverhill

Project Location: 284 Winter St.

Project #:

Project Manager: Stephen Ensbo-Mattingly

ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Report Information - Data Deliverables

☑ ADEx ☑ EMAIL

Billing Information

☑ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☑ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☐ No CT RCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
S/HC

SAMPLE INFO
Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	S/HC	Sample Comments	TOTAL # BOTTLES
ETR.16 0010-03 -03	NFCB-03	10-19-16	1302	SE	AP/SRC	X		1
Container Type						A		
Preservative						A		

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
	10-21-16/1920		10-21-16 8:55
	10-21-16/2100		10/21/16 1400
	10/22/16 05:00		10/22/16 0500

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

Laboratory Job No: SHP2016102801 **Client:** Newfields
Receipt Date/Time: 10/21/16 8:55 **SDG Reviewer:** Bethany Bedard

Samples Delivered By:
[✓] Alpha Courier [ ] Client [ ] UPS [ ] FedEx [ ] Other _____
Bill of Laden: [ ] Yes [ ] Unavailable Tracking #: N/A

Chain of Custody: [✓] Present [ ] Absent: _____
Custody Seals: [✓] Absent [ ] Present/Intact [ ] Present/Broken

Cooler/Sample Temperature:
Is Ice/Blue Ice present? [✓] Yes [ ] No [ ] N/A _____

Temp taken from: Temp Blank:(a)_____ (b)_____ (c)_____ (d)_____ (e)_____
IR Gun: (a) 2.4 (b)_____ (c)_____ (d)_____ (e)_____
IR Gun Serial #: 9849
Was Temp: [✓] 2-6 Celsius
[ ] <2 Celsius ... were samples frozen upon receipt? [ ] Yes [ ] No
[ ] >6 Celsius ... were samples delivered direct from site? [ ] Yes [ ] No

Containers Received: [✓] Intact
[ ] Broken/Leaking Sample IDs: _____
Sample IDs: _____

All Containers Accounted For? [✓] Yes
[ ] No: _____
Extra Samples Received? [✓] No
[ ] Yes: _____
Do Sample Labels and COC agree? [✓] Yes
[ ] No: _____
Are Samples in Appropriate Containers? [✓] Yes
[ ] No: _____
Are samples rec'd within holding time? [✓] Yes
[ ] No: _____
* Please note: the analysis of pH will always be performed beyond the regulatory-required holding time of 15 min. from the time of collection.

pH of samples upon receipt: [✓] N/A [ ] <2 [ ] >12 and/or [ ] _____
Are samples properly preserved? [✓] Yes [ ] No If No then.....
Initial pH= _____ preserved In-House with [ ] HCL [ ] H_2SO_4 [ ] HNO_3 [ ] NAOH <<Final pH = _____>>
Other Issues: _____
Chlorine Check: [✓] N/A [ ] Present [ ] Absent

VOA/VPH vials: [ ] Yes [✓] No Preserved? [ ] Yes [ ] No If yes: [ ] HCL, [ ] _____
Aqueous: vials contain head space? [ ] No [ ] Yes: _____
Soils: MeOH covering soil? [ ] Yes [ ] No: _____
Reagent H_2O Preserved vials Frozen @ date/time: _____
Frozen by Client? [ ] No [ ] Yes @ date/time: _____

Was Client notified of any discrepancies listed above? [ ] Yes [ ] No [✓] N/A
If Yes: Call Tracker # _____

CERTIFICATE OF ANALYSIS

Kyle Maxfield
GZA GeoEnvironmental, Inc.
249 Vanderbilt Avenue
Norwood, MA 02062

RE: 284 Winter Street (01.0172397.10)
ESS Laboratory Work Order Number: 20A0729

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.



Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 5:44 pm, Feb 06, 2020

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0729

SAMPLE RECEIPT

The following samples were received on January 24, 2020 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Question I: All samples for Metals were analyzed for a subset of the required MCP list per the client's request.

Lab Number	Sample Name	Matrix	Analysis
20A0729-01	B-102 S-1	Soil	6010C, EPH8270, MA PAC, MADEP-EPH, MA-VPH-2.1
20A0729-02	B-103 S-1	Soil	6010C, EPH8270, MA PAC, MADEP-EPH, MA-VPH-2.1
20A0729-03	B-104 S-1	Soil	6010C, EPH8270, MA PAC, MADEP-EPH, MA-VPH-2.1
20A0729-04	B-106 S-1	Soil	6010C, EPH8270, MA PAC, MADEP-EPH, MA-VPH-2.1
20A0729-05	B-107 S-2	Soil	6010C, EPH8270, MA PAC, MADEP-EPH, MA-VPH-2.1
20A0729-06	B-109 S-1	Soil	6010C, EPH8270, MA PAC, MADEP-EPH, MA-VPH-2.1
20A0729-07	B-110 S-2	Soil	6010C, EPH8270, MA PAC, MADEP-EPH, MA-VPH-2.1

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0729

PROJECT NARRATIVE

MADEP-EPH Extractable Petroleum Hydrocarbons

20A0729-03	**Elevated Method Reporting Limits due to sample matrix (EL).**
20A0729-04	**Elevated Method Reporting Limits due to sample matrix (EL).**
20A0729-04	**Surrogate recovery(ies) outside of criteria. Reextraction/Reanalysis confirms results (SC).**
	O-Terphenyl (26% @ 40-140%)
20A0729-05	**Elevated Method Reporting Limits due to sample matrix (EL).**
	Dibenzo(a,h)Anthracene
20A0729-07	**Elevated Method Reporting Limits due to sample matrix (EL).**
D0A0208-CCV4	**Continuing Calibration %Diff/Drift is below control limit (CD-).**
	Benzo(g,h,i)perylene (34% @ 20%), Indeno(1,2,3-cd)Pyrene (21% @ 20%)
D0A0220-CCV5	**Continuing Calibration %Diff/Drift is below control limit (CD-).**
	Hexatriacontane (C36) (51% @ 25%)
D0B0027-CCV2	**Continuing Calibration %Diff/Drift is below control limit (CD-).**
	Hexatriacontane (C36) (29% @ 25%)
D0B0027-CCV3	**Continuing Calibration %Diff/Drift is below control limit (CD-).**
	Hexatriacontane (C36) (40% @ 25%)

MADEP-VPH Volatile Petroleum Hydrocarbon

20A0729-01	**Surrogate recovery(ies) above upper control limit (S+).**
	Trifluorotoluene - FID (131% @ 70-130%), Trifluorotoluene - PID (132% @ 70-130%)
20A0729-05	**Surrogate recovery(ies) above upper control limit (S+).**
	Trifluorotoluene - FID (131% @ 70-130%), Trifluorotoluene - PID (131% @ 70-130%)
20A0729-06	**Surrogate recovery(ies) above upper control limit (S+).**
	Trifluorotoluene - FID (138% @ 70-130%), Trifluorotoluene - PID (141% @ 70-130%)
20A0729-07	**Surrogate recovery(ies) above upper control limit (S+).**
	Trifluorotoluene - FID (143% @ 70-130%), Trifluorotoluene - PID (145% @ 70-130%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0729

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0729

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **20A0729-01 through 20A0729-07**

Matrices: ( ) Ground Water/Surface Water (X) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other:_____

CAM Protocol (check all that apply below):

( ) 8260 VOC CAM II A	( ) 7470/7471 Hg CAM III B	(X) MassDEP VPH (GC/PID/FID) CAM IV A	( ) 8082 PCB CAM V A	(X) 9014 Total Cyanide/PAC CAM VI A	( ) 6860 Perchlorate CAM VIII B
( ) 8270 SVOC CAM II B	( ) 7010 Metals CAM III C	( ) MassDEP VPH (GC/MS) CAM IV C	( ) 8081 Pesticides CAM V B	( ) 7196 Hex Cr CAM VI B	( ) MassDEP APH CAM IX A
(X) 6010 Metals CAM III A	( ) 6020 Metals CAM III D	(X) MassDEP EPH CAM IV B	( ) 8151 Herbicides CAM V C	( ) Explosives CAM VIII A	( ) TO-15 VOC CAM IX B

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes (X) No ( )
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (X) No ( )
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes (X) No ( )
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (X) No ( )
E	VPH, EPH, APH and TO-15 only: a. Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes (X) No ( )
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes ( ) No ( )
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes (X) No ( )

Responses to Questions G, H and I below are required for "'Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)? ***Data User Note:*** ***Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.***	Yes ( ) No (X)*
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes ( ) No (X)*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes ( ) No (X)*

****All negative responses must be addressed in an attached laboratory narrative.***

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Laurel Stoddard Date: February 06, 2020

Printed Name: Laurel Stoddard Position: Laboratory Director

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-102 S-1
Date Sampled: 01/16/20 09:30
Percent Solids: 91

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**4.72** (2.09)		6010C		1	KJK	01/29/20 5:05	2.62	100	DA02848
Chromium	**11.1** (0.84)		6010C		1	KJK	01/29/20 5:05	2.62	100	DA02848
Lead	**33.7** (4.18)		6010C		1	KJK	01/29/20 5:05	2.62	100	DA02848

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-102 S-1
Date Sampled: 01/16/20 09:30
Percent Solids: 91

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-01
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Cyanide (PAC)	**1.58** (1.00)		MA PAC		1	EEM	01/30/20 11:30	mg/kg dry	DA03016

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-102 S-1
Date Sampled: 01/16/20 09:30
Percent Solids: 91
Initial Volume: 25.1
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-01
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 1/28/20 14:17

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (16.4)		MADEP-EPH		1	CAD	01/30/20 18:16	D0A0220	DA02803
C19-C36 Aliphatics1	ND (16.4)		MADEP-EPH		1	CAD	01/30/20 18:16	D0A0220	DA02803
C11-C22 Unadjusted Aromatics1	**62.5** (16.4)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
C11-C22 Aromatics1,2	**44.1** (16.4)		EPH8270			VSC	01/29/20 10:59		[CALC]
2-Methylnaphthalene	**0.38** (0.22)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
Acenaphthene	ND (0.44)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
Naphthalene	**0.68** (0.44)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
Phenanthrene	**0.91** (0.44)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
Acenaphthylene	**0.30** (0.22)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
Anthracene	ND (0.44)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
Benzo(a)anthracene	**1.48** (0.44)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
Benzo(a)pyrene	**2.01** (0.44)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
Benzo(b)fluoranthene	**1.88** (0.44)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
Benzo(g,h,i)perylene	**1.07** (0.44)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
Benzo(k)fluoranthene	**1.10** (0.44)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
Chrysene	**1.45** (0.44)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
Dibenzo(a,h)Anthracene	**0.33** (0.22)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
Fluoranthene	**2.72** (0.44)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
Fluorene	ND (0.44)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
Indeno(1,2,3-cd)Pyrene	**1.25** (0.44)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803
Pyrene	**2.86** (0.44)		EPH8270		1	VSC	01/29/20 10:59	D0A0208	DA02803

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*55 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*108 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*94 %*		*40-140*
Surrogate: O-Terphenyl	*58 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-102 S-1
Date Sampled: 01/16/20 09:30
Percent Solids: 91
Initial Volume: 22.8
Final Volume: 15
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (8.15)		MA-VPH-2.1		1	01/27/20 19:02	D0A0187	DA02741
C5-C8 Aliphatics1,2	ND (8.52)		MA-VPH-2.1		1	01/27/20 19:02		[CALC]
C9-C12 Aliphatics2,3	ND (17.0)		MA-VPH-2.1		1	01/27/20 19:02		[CALC]
Benzene	ND (0.16)		MA-VPH-2.1		1	01/27/20 19:02	D0A0187	DA02741
Ethylbenzene	ND (0.16)		MA-VPH-2.1		1	01/27/20 19:02	D0A0187	DA02741
Methyl tert-Butyl Ether	ND (0.04)		MA-VPH-2.1		1	01/27/20 19:02	D0A0187	DA02741
Naphthalene	ND (0.16)		MA-VPH-2.1		1	01/27/20 19:02	D0A0187	DA02741
Toluene	ND (0.16)		MA-VPH-2.1		1	01/27/20 19:02	D0A0187	DA02741
Xylene O	ND (0.16)		MA-VPH-2.1		1	01/27/20 19:02	D0A0187	DA02741
Xylene P,M	ND (0.33)		MA-VPH-2.1		1	01/27/20 19:02	D0A0187	DA02741
1:1 Methanol/Soil Ratio %D	**52** (N/A)		MA-VPH-2.1			01/27/20 8:00		DA02741
Preservative:	**MeOH - covered**		MA-VPH-2.1					DA02741

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*103 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*100 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*131 %*	*S+*	*70-130*
Surrogate: Trifluorotoluene - PID	*132 %*	*S+*	*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-103 S-1
Date Sampled: 01/16/20 08:25
Percent Solids: 82

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**10.6** (1.94)		6010C		1	KJK	01/29/20 5:09	3.13	100	DA02848
Chromium	**40.2** (0.78)		6010C		1	KJK	01/29/20 5:09	3.13	100	DA02848
Lead	**205** (3.89)		6010C		1	KJK	01/29/20 5:09	3.13	100	DA02848

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-103 S-1
Date Sampled: 01/16/20 08:25
Percent Solids: 82

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-02
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Cyanide (PAC)	**1.25** (1.11)		MA PAC		1	EEM	01/30/20 11:30	mg/kg dry	DA03016

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-103 S-1
Date Sampled: 01/16/20 08:25
Percent Solids: 82
Initial Volume: 25.1
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-02
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 1/28/20 14:17

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (18.2)		MADEP-EPH		1	CAD	01/30/20 19:06	D0A0220	DA02803
C19-C36 Aliphatics1	ND (18.2)		MADEP-EPH		1	CAD	01/30/20 19:06	D0A0220	DA02803
C11-C22 Unadjusted Aromatics1	**60.6** (18.2)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
C11-C22 Aromatics1,2	**45.2** (18.2)		EPH8270			VSC	01/29/20 11:35		[CALC]
2-Methylnaphthalene	ND (0.24)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
Acenaphthene	ND (0.48)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
Naphthalene	ND (0.48)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
Phenanthrene	**1.30** (0.48)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
Acenaphthylene	ND (0.24)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
Anthracene	ND (0.48)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
Benzo(a)anthracene	**1.50** (0.48)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
Benzo(a)pyrene	**1.80** (0.48)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
Benzo(b)fluoranthene	**1.61** (0.48)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
Benzo(g,h,i)perylene	**0.83** (0.48)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
Benzo(k)fluoranthene	**1.20** (0.48)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
Chrysene	**1.42** (0.48)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
Dibenzo(a,h)Anthracene	**0.34** (0.24)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
Fluoranthene	**2.55** (0.48)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
Fluorene	ND (0.48)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
Indeno(1,2,3-cd)Pyrene	**0.91** (0.48)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803
Pyrene	**2.00** (0.48)		EPH8270		1	VSC	01/29/20 11:35	D0A0208	DA02803

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*49 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*120 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*103 %*		*40-140*
Surrogate: O-Terphenyl	*59 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-103 S-1
Date Sampled: 01/16/20 08:25
Percent Solids: 82
Initial Volume: 20.6
Final Volume: 15
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (11.0)		MA-VPH-2.1		1	01/27/20 19:36	D0A0187	DA02741
C5-C8 Aliphatics1,2	ND (11.5)		MA-VPH-2.1		1	01/27/20 19:36		[CALC]
C9-C12 Aliphatics2,3	ND (22.9)		MA-VPH-2.1		1	01/27/20 19:36		[CALC]
Benzene	ND (0.22)		MA-VPH-2.1		1	01/27/20 19:36	D0A0187	DA02741
Ethylbenzene	ND (0.22)		MA-VPH-2.1		1	01/27/20 19:36	D0A0187	DA02741
Methyl tert-Butyl Ether	ND (0.06)		MA-VPH-2.1		1	01/27/20 19:36	D0A0187	DA02741
Naphthalene	ND (0.22)		MA-VPH-2.1		1	01/27/20 19:36	D0A0187	DA02741
Toluene	ND (0.22)		MA-VPH-2.1		1	01/27/20 19:36	D0A0187	DA02741
Xylene O	ND (0.22)		MA-VPH-2.1		1	01/27/20 19:36	D0A0187	DA02741
Xylene P,M	ND (0.44)		MA-VPH-2.1		1	01/27/20 19:36	D0A0187	DA02741
1:1 Methanol/Soil Ratio %D	**37** (N/A)		MA-VPH-2.1			01/27/20 8:00		DA02741
Preservative:	**MeOH - covered**		MA-VPH-2.1					DA02741

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*109 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*106 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*124 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*127 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-104 S-1
Date Sampled: 01/16/20 12:00
Percent Solids: 95

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**8.37** (2.13)		6010C		1	KJK	01/29/20 5:13	2.47	100	DA02848
Chromium	**15.8** (0.85)		6010C		1	KJK	01/29/20 5:13	2.47	100	DA02848
Lead	**94.8** (4.27)		6010C		1	KJK	01/29/20 5:13	2.47	100	DA02848

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-104 S-1
Date Sampled: 01/16/20 12:00
Percent Solids: 95

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-03
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Cyanide (PAC)	**1.37** (0.99)		MA PAC		1	EEM	01/30/20 11:30	mg/kg dry	DA03016

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-104 S-1
Date Sampled: 01/16/20 12:00
Percent Solids: 95
Initial Volume: 24.1
Final Volume: 2
Extraction Method: 3546

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-03
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 1/28/20 14:17

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (32.8)		MADEP-EPH		1	CAD	01/30/20 19:57	D0A0220	DA02803
C19-C36 Aliphatics1	ND (32.8)		MADEP-EPH		1	CAD	01/30/20 19:57	D0A0220	DA02803
C11-C22 Unadjusted Aromatics1	**102** (32.8)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
C11-C22 Aromatics1,2	**93.5** (32.8)		EPH8270			VSC	01/29/20 12:12		[CALC]
2-Methylnaphthalene	ND (0.44)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
Acenaphthene	ND (0.87)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
Naphthalene	ND (0.87)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
Phenanthrene	ND (0.87)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
Acenaphthylene	**0.55** (0.44)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
Anthracene	ND (0.87)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
Benzo(a)anthracene	ND (0.87)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
Benzo(a)pyrene	**1.18** (0.87)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
Benzo(b)fluoranthene	**1.15** (0.87)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
Benzo(g,h,i)perylene	**1.01** (0.87)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
Benzo(k)fluoranthene	ND (0.87)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
Chrysene	**0.90** (0.87)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
Dibenzo(a,h)Anthracene	ND (0.44)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
Fluoranthene	**0.89** (0.87)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
Fluorene	ND (0.87)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
Indeno(1,2,3-cd)Pyrene	**1.02** (0.87)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803
Pyrene	**1.49** (0.87)		EPH8270		1	VSC	01/29/20 12:12	D0A0208	DA02803

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*42 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*137 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*122 %*		*40-140*
Surrogate: O-Terphenyl	*46 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-104 S-1
Date Sampled: 01/16/20 12:00
Percent Solids: 95
Initial Volume: 23
Final Volume: 15
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (7.42)		MA-VPH-2.1		1	01/27/20 20:45	D0A0187	DA02741
C5-C8 Aliphatics1,2	ND (7.75)		MA-VPH-2.1		1	01/27/20 20:45		[CALC]
C9-C12 Aliphatics2,3	ND (15.4)		MA-VPH-2.1		1	01/27/20 20:45		[CALC]
Benzene	**0.71** (0.15)		MA-VPH-2.1		1	01/27/20 20:45	D0A0187	DA02741
Ethylbenzene	**0.23** (0.15)		MA-VPH-2.1		1	01/27/20 20:45	D0A0187	DA02741
Methyl tert-Butyl Ether	ND (0.04)		MA-VPH-2.1		1	01/27/20 20:45	D0A0187	DA02741
Naphthalene	ND (0.15)		MA-VPH-2.1		1	01/27/20 20:45	D0A0187	DA02741
Toluene	**0.83** (0.15)		MA-VPH-2.1		1	01/27/20 20:45	D0A0187	DA02741
Xylene O	**0.31** (0.15)		MA-VPH-2.1		1	01/27/20 20:45	D0A0187	DA02741
Xylene P,M	**0.44** (0.30)		MA-VPH-2.1		1	01/27/20 20:45	D0A0187	DA02741
1:1 Methanol/Soil Ratio %D	**53** (N/A)		MA-VPH-2.1			01/27/20 8:00		DA02741
Preservative:	**MeOH - covered**		MA-VPH-2.1					DA02741

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*97 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*95 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*110 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*112 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-106 S-1
Date Sampled: 01/17/20 09:30
Percent Solids: 88

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-04
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**4.47** (2.09)		6010C		1	KJK	01/29/20 5:17	2.73	100	DA02848
Chromium	**14.9** (0.84)		6010C		1	KJK	01/29/20 5:17	2.73	100	DA02848
Lead	**10.3** (4.18)		6010C		1	KJK	01/29/20 5:17	2.73	100	DA02848

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-106 S-1
Date Sampled: 01/17/20 09:30
Percent Solids: 88

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-04
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Cyanide (PAC)	**9.46** (1.04)		MA PAC		1	EEM	01/30/20 11:30	mg/kg dry	DA03016

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-106 S-1
Date Sampled: 01/17/20 09:30
Percent Solids: 88
Initial Volume: 25
Final Volume: 2
Extraction Method: 3546

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-04
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 1/28/20 14:17

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	**168** (34.2)		MADEP-EPH		1	CAD	01/30/20 20:48	D0A0220	DA02803
C19-C36 Aliphatics1	**73.2** (34.2)		MADEP-EPH		1	CAD	01/30/20 20:48	D0A0220	DA02803
C11-C22 Unadjusted Aromatics1	**1090** (34.2)		EPH8270		1	VSC	01/30/20 9:23	D0A0238	DA02803
C11-C22 Aromatics1,2	**803** (34.2)		EPH8270			VSC	01/31/20 20:43		[CALC]
2-Methylnaphthalene	**40.6** (11.4)		EPH8270		25	VSC	01/31/20 20:43	D0A0238	DA02803
Acenaphthene	**13.3** (4.57)		EPH8270		5	VSC	01/31/20 20:02	D0A0238	DA02803
Naphthalene	**55.1** (22.8)		EPH8270		25	VSC	01/31/20 20:43	D0A0238	DA02803
Phenanthrene	**69.0** (22.8)		EPH8270		25	VSC	01/31/20 20:43	D0A0238	DA02803
Acenaphthylene	**2.59** (0.46)		EPH8270		1	VSC	01/30/20 9:23	D0A0238	DA02803
Anthracene	**4.62** (0.91)		EPH8270		1	VSC	01/30/20 9:23	D0A0238	DA02803
Benzo(a)anthracene	**6.93** (0.91)		EPH8270		1	VSC	01/30/20 9:23	D0A0238	DA02803
Benzo(a)pyrene	**4.39** (0.91)		EPH8270		1	VSC	01/30/20 9:23	D0A0238	DA02803
Benzo(b)fluoranthene	**2.33** (0.91)		EPH8270		1	VSC	01/30/20 9:23	D0A0238	DA02803
Benzo(g,h,i)perylene	**1.52** (0.91)		EPH8270		1	VSC	01/30/20 9:23	D0A0238	DA02803
Benzo(k)fluoranthene	**1.84** (0.91)		EPH8270		1	VSC	01/30/20 9:23	D0A0238	DA02803
Chrysene	**8.33** (0.91)		EPH8270		1	VSC	01/30/20 9:23	D0A0238	DA02803
Dibenzo(a,h)Anthracene	ND (0.46)		EPH8270		1	VSC	01/30/20 9:23	D0A0238	DA02803
Fluoranthene	**18.9** (4.57)		EPH8270		5	VSC	01/31/20 20:02	D0A0238	DA02803
Fluorene	**28.7** (4.57)		EPH8270		5	VSC	01/31/20 20:02	D0A0238	DA02803
Indeno(1,2,3-cd)Pyrene	**1.47** (0.91)		EPH8270		1	VSC	01/30/20 9:23	D0A0238	DA02803
Pyrene	**31.2** (4.57)		EPH8270		5	VSC	01/31/20 20:02	D0A0238	DA02803

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*40 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*100 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*86 %*		*40-140*
Surrogate: O-Terphenyl	*26 %*	*SC*	*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-106 S-1
Date Sampled: 01/17/20 09:30
Percent Solids: 88
Initial Volume: 22.3
Final Volume: 15
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	**286** (9.09)		MA-VPH-2.1		1	01/27/20 22:27	D0A0187	DA02741
C5-C8 Aliphatics1,2	**20.7** (9.50)		MA-VPH-2.1		1	01/27/20 22:27		[CALC]
C9-C12 Aliphatics2,3	**120** (18.9)		MA-VPH-2.1		1	01/27/20 22:27		[CALC]
Benzene	**5.51** (0.18)		MA-VPH-2.1		1	01/27/20 22:27	D0A0187	DA02741
Ethylbenzene	**6.58** (0.18)		MA-VPH-2.1		1	01/27/20 22:27	D0A0187	DA02741
Methyl tert-Butyl Ether	ND (0.05)		MA-VPH-2.1		1	01/27/20 22:27	D0A0187	DA02741
Naphthalene	**281** (18.2)		MA-VPH-2.1		100	01/30/20 17:46	D0A0187	DA02741
Toluene	**0.52** (0.18)		MA-VPH-2.1		1	01/27/20 22:27	D0A0187	DA02741
Xylene O	**6.36** (0.18)		MA-VPH-2.1		1	01/27/20 22:27	D0A0187	DA02741
Xylene P,M	**6.40** (0.36)		MA-VPH-2.1		1	01/27/20 22:27	D0A0187	DA02741
1:1 Methanol/Soil Ratio %D	**49** (N/A)		MA-VPH-2.1			01/27/20 8:00		DA02741
Preservative:	**MeOH - covered**		MA-VPH-2.1					DA02741

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*93 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*98 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*122 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*125 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-107 S-2
Date Sampled: 01/17/20 14:30
Percent Solids: 86

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-05
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**9.55** (2.41)		6010C		1	KJK	01/29/20 5:21	2.41	100	DA02848
Chromium	**16.8** (0.96)		6010C		1	KJK	01/29/20 5:21	2.41	100	DA02848
Lead	**96.4** (4.81)		6010C		1	KJK	01/29/20 5:21	2.41	100	DA02848

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-107 S-2
Date Sampled: 01/17/20 14:30
Percent Solids: 86

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-05
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Cyanide (PAC)	**2.55** (1.15)		MA PAC		1	EEM	01/30/20 11:30	mg/kg dry	DA03016

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-107 S-2
Date Sampled: 01/17/20 14:30
Percent Solids: 86
Initial Volume: 10.4
Final Volume: 2
Extraction Method: 3546

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-05
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 1/31/20 12:53

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	**102** (83.7)		MADEP-EPH		1	CAD	02/03/20 23:50	D0B0027	DA03104
C19-C36 Aliphatics1	**217** (83.7)		MADEP-EPH		1	CAD	02/03/20 23:50	D0B0027	DA03104
C11-C22 Unadjusted Aromatics1	**772** (83.7)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
C11-C22 Aromatics1,2	**689** (83.7)		EPH8270			VSC	02/05/20 22:12		[CALC]
2-Methylnaphthalene	**3.21** (1.12)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
Acenaphthene	ND (2.23)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
Naphthalene	**13.6** (2.23)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
Phenanthrene	**13.7** (2.23)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
Acenaphthylene	**5.89** (1.12)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
Anthracene	**3.74** (2.23)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
Benzo(a)anthracene	**3.54** (2.23)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
Benzo(a)pyrene	**3.65** (2.23)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
Benzo(b)fluoranthene	ND (2.23)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
Benzo(g,h,i)perylene	**2.78** (2.23)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
Benzo(k)fluoranthene	**2.75** (2.23)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
Chrysene	**4.29** (2.23)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
Dibenzo(a,h)Anthracene	**EL** ND (1.12)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
Fluoranthene	**7.74** (2.23)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
Fluorene	**3.61** (2.23)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
Indeno(1,2,3-cd)Pyrene	**2.40** (2.23)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104
Pyrene	**12.0** (2.23)		EPH8270		1	VSC	02/05/20 22:12	D0B0071	DA03104

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*71 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*105 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*90 %*		*40-140*
Surrogate: O-Terphenyl	*72 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-107 S-2
Date Sampled: 01/17/20 14:30
Percent Solids: 86
Initial Volume: 18.9
Final Volume: 15
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	**17.9** (10.8)		MA-VPH-2.1		1	01/27/20 21:19	D0A0187	DA02741
C5-C8 Aliphatics1,2	ND (11.3)		MA-VPH-2.1		1	01/27/20 21:19		[CALC]
C9-C12 Aliphatics2,3	ND (22.5)		MA-VPH-2.1		1	01/27/20 21:19		[CALC]
Benzene	ND (0.22)		MA-VPH-2.1		1	01/27/20 21:19	D0A0187	DA02741
Ethylbenzene	**1.71** (0.22)		MA-VPH-2.1		1	01/27/20 21:19	D0A0187	DA02741
Methyl tert-Butyl Ether	ND (0.05)		MA-VPH-2.1		1	01/27/20 21:19	D0A0187	DA02741
Naphthalene	**15.6** (0.22)		MA-VPH-2.1		1	01/27/20 21:19	D0A0187	DA02741
Toluene	ND (0.22)		MA-VPH-2.1		1	01/27/20 21:19	D0A0187	DA02741
Xylene O	ND (0.22)		MA-VPH-2.1		1	01/27/20 21:19	D0A0187	DA02741
Xylene P,M	ND (0.43)		MA-VPH-2.1		1	01/27/20 21:19	D0A0187	DA02741
1:1 Methanol/Soil Ratio %D	**26** (N/A)		MA-VPH-2.1			01/27/20 8:00		DA02741
Preservative:	**MeOH - covered**		MA-VPH-2.1					DA02741

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*108 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*105 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*131 %*	*S+*	*70-130*
Surrogate: Trifluorotoluene - PID	*131 %*	*S+*	*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-109 S-1
Date Sampled: 01/17/20 15:45
Percent Solids: 89

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-06
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**7.17** (2.33)		6010C		1	KJK	01/29/20 5:24	2.42	100	DA02848
Chromium	**15.4** (0.93)		6010C		1	KJK	01/29/20 5:24	2.42	100	DA02848
Lead	**74.1** (4.66)		6010C		1	KJK	01/29/20 5:24	2.42	100	DA02848

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-109 S-1
Date Sampled: 01/17/20 15:45
Percent Solids: 89

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-06
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Cyanide (PAC)	**11.3** (1.12)		MA PAC		1	EEM	01/30/20 11:30	mg/kg dry	DA03016

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-109 S-1
Date Sampled: 01/17/20 15:45
Percent Solids: 89
Initial Volume: 24
Final Volume: 2
Extraction Method: 3546

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-06
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 1/28/20 14:17

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	**170** (35.2)		MADEP-EPH		1	CAD	01/30/20 22:29	D0A0220	DA02803
C19-C36 Aliphatics1	**109** (35.2)		MADEP-EPH		1	CAD	01/30/20 22:29	D0A0220	DA02803
C11-C22 Unadjusted Aromatics1	**422** (35.2)		EPH8270		1	VSC	01/29/20 14:02	D0A0208	DA02803
C11-C22 Aromatics1,2	**314** (35.2)		EPH8270			VSC	01/30/20 19:58		[CALC]
2-Methylnaphthalene	**5.53** (0.47)		EPH8270		1	VSC	01/29/20 14:02	D0A0208	DA02803
Acenaphthene	**1.36** (0.94)		EPH8270		1	VSC	01/29/20 14:02	D0A0208	DA02803
Naphthalene	**8.11** (0.94)		EPH8270		1	VSC	01/29/20 14:02	D0A0208	DA02803
Phenanthrene	**22.1** (4.70)		EPH8270		5	VSC	01/30/20 19:58	D0A0208	DA02803
Acenaphthylene	**2.81** (0.47)		EPH8270		1	VSC	01/29/20 14:02	D0A0208	DA02803
Anthracene	**4.62** (0.94)		EPH8270		1	VSC	01/29/20 14:02	D0A0208	DA02803
Benzo(a)anthracene	**5.59** (0.94)		EPH8270		1	VSC	01/29/20 14:02	D0A0208	DA02803
Benzo(a)pyrene	**5.03** (0.94)		EPH8270		1	VSC	01/29/20 14:02	D0A0208	DA02803
Benzo(b)fluoranthene	**3.90** (0.94)		EPH8270		1	VSC	01/29/20 14:02	D0A0208	DA02803
Benzo(g,h,i)perylene	**1.56** (0.94)		EPH8270		1	VSC	01/29/20 14:02	D0A0208	DA02803
Benzo(k)fluoranthene	**2.57** (0.94)		EPH8270		1	VSC	01/29/20 14:02	D0A0208	DA02803
Chrysene	**5.79** (0.94)		EPH8270		1	VSC	01/29/20 14:02	D0A0208	DA02803
Dibenzo(a,h)Anthracene	**0.61** (0.47)		EPH8270		1	VSC	01/29/20 14:02	D0A0208	DA02803
Fluoranthene	**12.3** (4.70)		EPH8270		5	VSC	01/30/20 19:58	D0A0208	DA02803
Fluorene	**5.50** (0.94)		EPH8270		1	VSC	01/29/20 14:02	D0A0208	DA02803
Indeno(1,2,3-cd)Pyrene	**1.58** (0.94)		EPH8270		1	VSC	01/29/20 14:02	D0A0208	DA02803
Pyrene	**18.5** (4.70)		EPH8270		5	VSC	01/30/20 19:58	D0A0208	DA02803

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*69 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*130 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*119 %*		*40-140*
Surrogate: O-Terphenyl	*76 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-109 S-1
Date Sampled: 01/17/20 15:45
Percent Solids: 89
Initial Volume: 20.7
Final Volume: 15
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	**53.2** (9.44)		MA-VPH-2.1		1	01/27/20 21:53	D0A0187	DA02741
C5-C8 Aliphatics1,2	ND (9.86)		MA-VPH-2.1		1	01/27/20 21:53		[CALC]
C9-C12 Aliphatics2,3	**33.4** (19.6)		MA-VPH-2.1		1	01/27/20 21:53		[CALC]
Benzene	**0.61** (0.19)		MA-VPH-2.1		1	01/27/20 21:53	D0A0187	DA02741
Ethylbenzene	**0.70** (0.19)		MA-VPH-2.1		1	01/27/20 21:53	D0A0187	DA02741
Methyl tert-Butyl Ether	ND (0.05)		MA-VPH-2.1		1	01/27/20 21:53	D0A0187	DA02741
Naphthalene	**23.1** (0.19)		MA-VPH-2.1		1	01/27/20 21:53	D0A0187	DA02741
Toluene	**0.36** (0.19)		MA-VPH-2.1		1	01/27/20 21:53	D0A0187	DA02741
Xylene O	**1.05** (0.19)		MA-VPH-2.1		1	01/27/20 21:53	D0A0187	DA02741
Xylene P,M	**0.60** (0.38)		MA-VPH-2.1		1	01/27/20 21:53	D0A0187	DA02741
1:1 Methanol/Soil Ratio %D	**38** (N/A)		MA-VPH-2.1			01/27/20 8:00		DA02741
Preservative:	**MeOH - covered**		MA-VPH-2.1					DA02741

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*102 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*102 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*138 %*	*S+*	*70-130*
Surrogate: Trifluorotoluene - PID	*141 %*	*S+*	*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-110 S-2
Date Sampled: 01/20/20 09:53
Percent Solids: 87

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-07
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**7.40** (2.14)		6010C		1	KJK	01/29/20 5:28	2.69	100	DA02848
Chromium	**13.9** (0.86)		6010C		1	KJK	01/29/20 5:28	2.69	100	DA02848
Lead	**55.8** (4.29)		6010C		1	KJK	01/29/20 5:28	2.69	100	DA02848

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-110 S-2
Date Sampled: 01/20/20 09:53
Percent Solids: 87

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-07
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Cyanide (PAC)	**9.74** (1.10)		MA PAC		1	EEM	01/30/20 11:30	mg/kg dry	DA03016

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-110 S-2
Date Sampled: 01/20/20 09:53
Percent Solids: 87
Initial Volume: 24
Final Volume: 2
Extraction Method: 3546

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-07
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 1/28/20 14:17

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	**52.2** (36.1)		MADEP-EPH		1	CAD	01/30/20 23:19	D0A0220	DA02803
C19-C36 Aliphatics1	**53.0** (36.1)		MADEP-EPH		1	CAD	01/30/20 23:19	D0A0220	DA02803
C11-C22 Unadjusted Aromatics1	**261** (36.1)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
C11-C22 Aromatics1,2	**224** (36.1)		EPH8270			VSC	01/29/20 14:39		[CALC]
2-Methylnaphthalene	**1.82** (0.48)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
Acenaphthene	ND (0.96)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
Naphthalene	**1.45** (0.96)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
Phenanthrene	**4.91** (0.96)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
Acenaphthylene	**1.21** (0.48)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
Anthracene	**1.47** (0.96)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
Benzo(a)anthracene	**2.39** (0.96)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
Benzo(a)pyrene	**3.05** (0.96)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
Benzo(b)fluoranthene	**2.12** (0.96)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
Benzo(g,h,i)perylene	**1.36** (0.96)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
Benzo(k)fluoranthene	**1.71** (0.96)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
Chrysene	**2.48** (0.96)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
Dibenzo(a,h)Anthracene	**0.50** (0.48)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
Fluoranthene	**4.00** (0.96)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
Fluorene	**0.97** (0.96)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
Indeno(1,2,3-cd)Pyrene	**1.27** (0.96)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803
Pyrene	**7.09** (0.96)		EPH8270		1	VSC	01/29/20 14:39	D0A0208	DA02803

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*50 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*124 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*112 %*		*40-140*
Surrogate: O-Terphenyl	*52 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-110 S-2
Date Sampled: 01/20/20 09:53
Percent Solids: 87
Initial Volume: 20.5
Final Volume: 15
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 20A0729
ESS Laboratory Sample ID: 20A0729-07
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (9.98)		MA-VPH-2.1		1	01/27/20 20:11	D0A0187	DA02741
C5-C8 Aliphatics1,2	ND (10.4)		MA-VPH-2.1		1	01/27/20 20:11		[CALC]
C9-C12 Aliphatics2,3	ND (20.8)		MA-VPH-2.1		1	01/27/20 20:11		[CALC]
Benzene	ND (0.20)		MA-VPH-2.1		1	01/27/20 20:11	D0A0187	DA02741
Ethylbenzene	ND (0.20)		MA-VPH-2.1		1	01/27/20 20:11	D0A0187	DA02741
Methyl tert-Butyl Ether	ND (0.05)		MA-VPH-2.1		1	01/27/20 20:11	D0A0187	DA02741
Naphthalene	**0.97** (0.20)		MA-VPH-2.1		1	01/27/20 20:11	D0A0187	DA02741
Toluene	ND (0.20)		MA-VPH-2.1		1	01/27/20 20:11	D0A0187	DA02741
Xylene O	ND (0.20)		MA-VPH-2.1		1	01/27/20 20:11	D0A0187	DA02741
Xylene P,M	ND (0.40)		MA-VPH-2.1		1	01/27/20 20:11	D0A0187	DA02741
1:1 Methanol/Soil Ratio %D	**37** (N/A)		MA-VPH-2.1			01/27/20 8:00		DA02741
Preservative:	**MeOH - covered**		MA-VPH-2.1					DA02741

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*103 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*98 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*143 %*	*S+*	*70-130*
Surrogate: Trifluorotoluene - PID	*145 %*	*S+*	*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0729

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DA02848 - 3050B										
Blank										
Arsenic	ND	2.50	mg/kg wet							
Chromium	ND	1.00	mg/kg wet							
Lead	ND	5.00	mg/kg wet							
LCS										
Arsenic	186	8.20	mg/kg wet	202.0		92	80-120			
Chromium	169	3.28	mg/kg wet	182.0		93	80-120			
Lead	318	16.4	mg/kg wet	333.0		95	80-120			
LCS Dup										
Arsenic	203	7.25	mg/kg wet	202.0		100	80-120	9	20	
Chromium	181	2.90	mg/kg wet	182.0		99	80-120	7	20	
Lead	320	14.5	mg/kg wet	333.0		96	80-120	0.5	20	
Reference										
Chromium	475	5.41	mg/kg wet	500.0		95	70-130			
Lead	467	27.0	mg/kg wet	500.0		93	70-130			
Classical Chemistry										
Batch DA03016 - TCN Prep										
Blank										
Cyanide (PAC)	ND	1.00	mg/kg wet							
LCS										
Cyanide (PAC)	4.89	1.00	mg/kg wet	5.015		97	80-120			
LCS										
Cyanide (PAC)	20.3	1.00	mg/kg wet	20.06		101	80-120			
LCS Dup										
Cyanide (PAC)	20.2	1.00	mg/kg wet	20.06		101	80-120	0.6	20	
Reference										
Cyanide (PAC)	2.95	1.00	mg/kg wet	76.30		4	0-10			
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DA02803 - 3546										
Blank										
C19-C36 Aliphatics1	ND	15.0	mg/kg wet							
C9-C18 Aliphatics1	ND	15.0	mg/kg wet							
Decane (C10)	ND	0.5	mg/kg wet							
Docosane (C22)	ND	0.5	mg/kg wet							
Dodecane (C12)	ND	0.5	mg/kg wet							
Eicosane (C20)	ND	0.5	mg/kg wet							
Hexacosane (C26)	ND	0.5	mg/kg wet							
Hexadecane (C16)	ND	0.5	mg/kg wet							
Hexatriacontane (C36)	ND	0.5	mg/kg wet							
Nonadecane (C19)	ND	0.5	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0729

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DA02803 - 3546										
Nonane (C9)	ND	0.5	mg/kg wet							
Octacosane (C28)	ND	0.5	mg/kg wet							
Octadecane (C18)	ND	0.5	mg/kg wet							
Tetracosane (C24)	ND	0.5	mg/kg wet							
Tetradecane (C14)	ND	0.5	mg/kg wet							
Triacontane (C30)	ND	0.5	mg/kg wet							
Surrogate: 1-Chlorooctadecane	*1.51*		mg/kg wet	*2.020*		*75*	*40-140*			
Blank										
2-Methylnaphthalene	ND	0.20	mg/kg wet							
Acenaphthene	ND	0.40	mg/kg wet							
Acenaphthylene	ND	0.20	mg/kg wet							
Anthracene	ND	0.40	mg/kg wet							
Benzo(a)anthracene	ND	0.40	mg/kg wet							
Benzo(a)pyrene	ND	0.40	mg/kg wet							
Benzo(b)fluoranthene	ND	0.40	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet							
Benzo(k)fluoranthene	ND	0.40	mg/kg wet							
C11-C22 Unadjusted Aromatics1	ND	15.0	mg/kg wet							
Chrysene	ND	0.40	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet							
Fluoranthene	ND	0.40	mg/kg wet							
Fluorene	ND	0.40	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet							
Naphthalene	ND	0.40	mg/kg wet							
Phenanthrene	ND	0.40	mg/kg wet							
Pyrene	ND	0.40	mg/kg wet							
Surrogate: 2-Bromonaphthalene	*45.7*		mg/L	*50.00*		*91*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*40.2*		mg/L	*50.00*		*80*	*40-140*			
Surrogate: O-Terphenyl	*1.46*		mg/kg wet	*2.008*		*73*	*40-140*			
LCS										
C19-C36 Aliphatics1	14.9	15.0	mg/kg wet	16.00		93	40-140			
C9-C18 Aliphatics1	9.1	15.0	mg/kg wet	12.00		76	40-140			
Decane (C10)	0.9	0.5	mg/kg wet	2.000		46	40-140			
Docosane (C22)	1.7	0.5	mg/kg wet	2.000		87	40-140			
Dodecane (C12)	1.0	0.5	mg/kg wet	2.000		52	40-140			
Eicosane (C20)	1.7	0.5	mg/kg wet	2.000		85	40-140			
Hexacosane (C26)	1.7	0.5	mg/kg wet	2.000		85	40-140			
Hexadecane (C16)	1.6	0.5	mg/kg wet	2.000		82	40-140			
Hexatriacontane (C36)	1.5	0.5	mg/kg wet	2.000		74	40-140			
Nonadecane (C19)	1.7	0.5	mg/kg wet	2.000		84	40-140			
Nonane (C9)	0.8	0.5	mg/kg wet	2.000		38	30-140			
Octacosane (C28)	1.7	0.5	mg/kg wet	2.000		84	40-140			
Octadecane (C18)	1.7	0.5	mg/kg wet	2.000		86	40-140			
Tetracosane (C24)	1.7	0.5	mg/kg wet	2.000		86	40-140			

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0729

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DA02803 - 3546										
Tetradecane (C14)	1.4	0.5	mg/kg wet	2.000		69	40-140			
Triacontane (C30)	1.7	0.5	mg/kg wet	2.000		83	40-140			
Surrogate: 1-Chlorooctadecane	*1.56*		mg/kg wet	*2.020*		*77*	*40-140*			
LCS										
2-Methylnaphthalene	1.28	0.20	mg/kg wet	2.000		64	40-140			
Acenaphthene	1.43	0.40	mg/kg wet	2.000		72	40-140			
Acenaphthylene	1.38	0.20	mg/kg wet	2.000		69	40-140			
Anthracene	1.87	0.40	mg/kg wet	2.000		94	40-140			
Benzo(a)anthracene	1.58	0.40	mg/kg wet	2.000		79	40-140			
Benzo(a)pyrene	1.66	0.40	mg/kg wet	2.000		83	40-140			
Benzo(b)fluoranthene	1.53	0.40	mg/kg wet	2.000		76	40-140			
Benzo(g,h,i)perylene	1.41	0.40	mg/kg wet	2.000		71	40-140			
Benzo(k)fluoranthene	1.64	0.40	mg/kg wet	2.000		82	40-140			
C11-C22 Unadjusted Aromatics1	27.9	15.0	mg/kg wet	34.00		82	40-140			
Chrysene	1.56	0.40	mg/kg wet	2.000		78	40-140			
Dibenzo(a,h)Anthracene	1.55	0.20	mg/kg wet	2.000		77	40-140			
Fluoranthene	1.83	0.40	mg/kg wet	2.000		91	40-140			
Fluorene	1.58	0.40	mg/kg wet	2.000		79	40-140			
Indeno(1,2,3-cd)Pyrene	1.57	0.40	mg/kg wet	2.000		78	40-140			
Naphthalene	1.14	0.40	mg/kg wet	2.000		57	40-140			
Phenanthrene	1.76	0.40	mg/kg wet	2.000		88	40-140			
Pyrene	1.80	0.40	mg/kg wet	2.000		90	40-140			
Surrogate: 2-Bromonaphthalene	*45.9*		mg/L	*50.00*		*92*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*42.1*		mg/L	*50.00*		*84*	*40-140*			
Surrogate: O-Terphenyl	*1.59*		mg/kg wet	*2.008*		*79*	*40-140*			
LCS										
2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			
LCS Dup										
C19-C36 Aliphatics1	15.3	15.0	mg/kg wet	16.00		96	40-140	3	25	
C9-C18 Aliphatics1	9.5	15.0	mg/kg wet	12.00		80	40-140	5	25	
Decane (C10)	1.0	0.5	mg/kg wet	2.000		52	40-140	12	25	
Docosane (C22)	1.8	0.5	mg/kg wet	2.000		91	40-140	4	25	
Dodecane (C12)	1.2	0.5	mg/kg wet	2.000		58	40-140	10	25	
Eicosane (C20)	1.8	0.5	mg/kg wet	2.000		88	40-140	4	25	
Hexacosane (C26)	1.8	0.5	mg/kg wet	2.000		88	40-140	4	25	
Hexadecane (C16)	1.7	0.5	mg/kg wet	2.000		84	40-140	3	25	
Hexatriacontane (C36)	1.5	0.5	mg/kg wet	2.000		76	40-140	3	25	
Nonadecane (C19)	1.8	0.5	mg/kg wet	2.000		88	40-140	4	25	
Nonane (C9)	0.8	0.5	mg/kg wet	2.000		42	30-140	12	25	
Octacosane (C28)	1.8	0.5	mg/kg wet	2.000		88	40-140	4	25	
Octadecane (C18)	1.8	0.5	mg/kg wet	2.000		90	40-140	4	25	
Tetracosane (C24)	1.8	0.5	mg/kg wet	2.000		89	40-140	4	25	
Tetradecane (C14)	1.4	0.5	mg/kg wet	2.000		71	40-140	4	25	

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0729

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DA02803 - 3546										
Triacontane (C30)	1.7	0.5	mg/kg wet	2.000		86	40-140	4	25	
Surrogate: 1-Chlorooctadecane	*1.62*		mg/kg wet	*2.020*		*80*	*40-140*			
LCS Dup										
2-Methylnaphthalene	1.47	0.20	mg/kg wet	2.000		73	40-140	14	30	
Acenaphthene	1.54	0.40	mg/kg wet	2.000		77	40-140	7	30	
Acenaphthylene	1.51	0.20	mg/kg wet	2.000		76	40-140	9	30	
Anthracene	1.89	0.40	mg/kg wet	2.000		94	40-140	1	30	
Benzo(a)anthracene	1.58	0.40	mg/kg wet	2.000		79	40-140	0.03	30	
Benzo(a)pyrene	1.67	0.40	mg/kg wet	2.000		83	40-140	0.2	30	
Benzo(b)fluoranthene	1.53	0.40	mg/kg wet	2.000		76	40-140	0.2	30	
Benzo(g,h,i)perylene	1.41	0.40	mg/kg wet	2.000		71	40-140	0.1	30	
Benzo(k)fluoranthene	1.66	0.40	mg/kg wet	2.000		83	40-140	0.8	30	
C11-C22 Unadjusted Aromatics1	28.6	15.0	mg/kg wet	34.00		84	40-140	3	25	
Chrysene	1.58	0.40	mg/kg wet	2.000		79	40-140	1	30	
Dibenzo(a,h)Anthracene	1.54	0.20	mg/kg wet	2.000		77	40-140	0.3	30	
Fluoranthene	1.83	0.40	mg/kg wet	2.000		91	40-140	0.09	30	
Fluorene	1.67	0.40	mg/kg wet	2.000		84	40-140	6	30	
Indeno(1,2,3-cd)Pyrene	1.56	0.40	mg/kg wet	2.000		78	40-140	0.7	30	
Naphthalene	1.26	0.40	mg/kg wet	2.000		63	40-140	10	30	
Phenanthrene	1.82	0.40	mg/kg wet	2.000		91	40-140	3	30	
Pyrene	1.83	0.40	mg/kg wet	2.000		92	40-140	2	30	
Surrogate: 2-Bromonaphthalene	*45.8*		mg/L	*50.00*		*92*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*40.3*		mg/L	*50.00*		*81*	*40-140*			
Surrogate: O-Terphenyl	*1.61*		mg/kg wet	*2.008*		*80*	*40-140*			
LCS Dup										
2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	
Batch DA03104 - 3546										
Blank										
C19-C36 Aliphatics1	ND	15.0	mg/kg wet							
C9-C18 Aliphatics1	ND	15.0	mg/kg wet							
Decane (C10)	ND	0.5	mg/kg wet							
Docosane (C22)	ND	0.5	mg/kg wet							
Dodecane (C12)	ND	0.5	mg/kg wet							
Eicosane (C20)	ND	0.5	mg/kg wet							
Hexacosane (C26)	ND	0.5	mg/kg wet							
Hexadecane (C16)	ND	0.5	mg/kg wet							
Hexatriacontane (C36)	ND	0.5	mg/kg wet							
Nonadecane (C19)	ND	0.5	mg/kg wet							
Nonane (C9)	ND	0.5	mg/kg wet							
Octacosane (C28)	ND	0.5	mg/kg wet							
Octadecane (C18)	ND	0.5	mg/kg wet							
Tetracosane (C24)	ND	0.5	mg/kg wet							
Tetradecane (C14)	ND	0.5	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0729

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DA03104 - 3546										
Triacontane (C30)	ND	0.5	mg/kg wet							
Surrogate: 1-Chlorooctadecane	*1.70*		mg/kg wet	*2.020*		*84*	*40-140*			
Blank										
2-Methylnaphthalene	ND	0.20	mg/kg wet							
Acenaphthene	ND	0.40	mg/kg wet							
Acenaphthylene	ND	0.20	mg/kg wet							
Anthracene	ND	0.40	mg/kg wet							
Benzo(a)anthracene	ND	0.40	mg/kg wet							
Benzo(a)pyrene	ND	0.40	mg/kg wet							
Benzo(b)fluoranthene	ND	0.40	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet							
Benzo(k)fluoranthene	ND	0.40	mg/kg wet							
C11-C22 Unadjusted Aromatics1	ND	15.0	mg/kg wet							
Chrysene	ND	0.40	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet							
Fluoranthene	ND	0.40	mg/kg wet							
Fluorene	ND	0.40	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet							
Naphthalene	ND	0.40	mg/kg wet							
Phenanthrene	ND	0.40	mg/kg wet							
Pyrene	ND	0.40	mg/kg wet							
Surrogate: 2-Bromonaphthalene	*58.3*		mg/L	*50.00*		*117*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*52.6*		mg/L	*50.00*		*105*	*40-140*			
Surrogate: O-Terphenyl	*1.67*		mg/kg wet	*2.008*		*83*	*40-140*			
LCS										
C19-C36 Aliphatics1	15.1	15.0	mg/kg wet	16.00		94	40-140			
C9-C18 Aliphatics1	9.8	15.0	mg/kg wet	12.00		82	40-140			
Decane (C10)	1.1	0.5	mg/kg wet	2.000		56	40-140			
Docosane (C22)	1.9	0.5	mg/kg wet	2.000		93	40-140			
Dodecane (C12)	1.2	0.5	mg/kg wet	2.000		62	40-140			
Eicosane (C20)	1.8	0.5	mg/kg wet	2.000		91	40-140			
Hexacosane (C26)	1.8	0.5	mg/kg wet	2.000		90	40-140			
Hexadecane (C16)	1.6	0.5	mg/kg wet	2.000		81	40-140			
Hexatriacontane (C36)	1.5	0.5	mg/kg wet	2.000		73	40-140			
Nonadecane (C19)	1.8	0.5	mg/kg wet	2.000		90	40-140			
Nonane (C9)	0.9	0.5	mg/kg wet	2.000		47	30-140			
Octacosane (C28)	1.8	0.5	mg/kg wet	2.000		88	40-140			
Octadecane (C18)	1.8	0.5	mg/kg wet	2.000		89	40-140			
Tetracosane (C24)	1.8	0.5	mg/kg wet	2.000		91	40-140			
Tetradecane (C14)	1.5	0.5	mg/kg wet	2.000		73	40-140			
Triacontane (C30)	1.7	0.5	mg/kg wet	2.000		86	40-140			
Surrogate: 1-Chlorooctadecane	*1.64*		mg/kg wet	*2.020*		*81*	*40-140*			
LCS										

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0729

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DA03104 - 3546										
2-Methylnaphthalene	1.54	0.20	mg/kg wet	2.000		77	40-140			
Acenaphthene	1.70	0.40	mg/kg wet	2.000		85	40-140			
Acenaphthylene	1.73	0.20	mg/kg wet	2.000		86	40-140			
Anthracene	2.16	0.40	mg/kg wet	2.000		108	40-140			
Benzo(a)anthracene	1.91	0.40	mg/kg wet	2.000		95	40-140			
Benzo(a)pyrene	1.87	0.40	mg/kg wet	2.000		93	40-140			
Benzo(b)fluoranthene	1.80	0.40	mg/kg wet	2.000		90	40-140			
Benzo(g,h,i)perylene	1.79	0.40	mg/kg wet	2.000		90	40-140			
Benzo(k)fluoranthene	1.86	0.40	mg/kg wet	2.000		93	40-140			
C11-C22 Unadjusted Aromatics1	33.2	15.0	mg/kg wet	34.00		98	40-140			
Chrysene	2.06	0.40	mg/kg wet	2.000		103	40-140			
Dibenzo(a,h)Anthracene	1.66	0.20	mg/kg wet	2.000		83	40-140			
Fluoranthene	2.09	0.40	mg/kg wet	2.000		105	40-140			
Fluorene	1.81	0.40	mg/kg wet	2.000		90	40-140			
Indeno(1,2,3-cd)Pyrene	1.73	0.40	mg/kg wet	2.000		87	40-140			
Naphthalene	1.45	0.40	mg/kg wet	2.000		72	40-140			
Phenanthrene	1.96	0.40	mg/kg wet	2.000		98	40-140			
Pyrene	2.13	0.40	mg/kg wet	2.000		106	40-140			
Surrogate: 2-Bromonaphthalene	*54.2*		mg/L	*50.00*		*108*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*49.2*		mg/L	*50.00*		*98*	*40-140*			
Surrogate: O-Terphenyl	*1.65*		mg/kg wet	*2.008*		*82*	*40-140*			
LCS										
2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			
LCS Dup										
C19-C36 Aliphatics1	15.1	15.0	mg/kg wet	16.00		95	40-140	0.03	25	
C9-C18 Aliphatics1	9.8	15.0	mg/kg wet	12.00		82	40-140	0.05	25	
Decane (C10)	1.1	0.5	mg/kg wet	2.000		54	40-140	5	25	
Docosane (C22)	1.9	0.5	mg/kg wet	2.000		94	40-140	1	25	
Dodecane (C12)	1.2	0.5	mg/kg wet	2.000		62	40-140	0.4	25	
Eicosane (C20)	1.9	0.5	mg/kg wet	2.000		93	40-140	2	25	
Hexacosane (C26)	1.8	0.5	mg/kg wet	2.000		91	40-140	1	25	
Hexadecane (C16)	1.7	0.5	mg/kg wet	2.000		85	40-140	4	25	
Hexatriacontane (C36)	1.5	0.5	mg/kg wet	2.000		73	40-140	0.1	25	
Nonadecane (C19)	1.8	0.5	mg/kg wet	2.000		92	40-140	2	25	
Nonane (C9)	0.9	0.5	mg/kg wet	2.000		43	30-140	8	25	
Octacosane (C28)	1.8	0.5	mg/kg wet	2.000		90	40-140	1	25	
Octadecane (C18)	1.9	0.5	mg/kg wet	2.000		93	40-140	4	25	
Tetracosane (C24)	1.9	0.5	mg/kg wet	2.000		93	40-140	1	25	
Tetradecane (C14)	1.5	0.5	mg/kg wet	2.000		74	40-140	1	25	
Triacontane (C30)	1.7	0.5	mg/kg wet	2.000		87	40-140	1	25	
Surrogate: 1-Chlorooctadecane	*1.67*		mg/kg wet	*2.020*		*83*	*40-140*			
LCS Dup										
2-Methylnaphthalene	1.66	0.20	mg/kg wet	2.000		83	40-140	8	30	

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0729

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DA03104 - 3546										
Acenaphthene	1.85	0.40	mg/kg wet	2.000		92	40-140	8	30	
Acenaphthylene	1.84	0.20	mg/kg wet	2.000		92	40-140	6	30	
Anthracene	2.27	0.40	mg/kg wet	2.000		114	40-140	5	30	
Benzo(a)anthracene	2.03	0.40	mg/kg wet	2.000		102	40-140	6	30	
Benzo(a)pyrene	2.00	0.40	mg/kg wet	2.000		100	40-140	7	30	
Benzo(b)fluoranthene	1.94	0.40	mg/kg wet	2.000		97	40-140	7	30	
Benzo(g,h,i)perylene	1.93	0.40	mg/kg wet	2.000		97	40-140	8	30	
Benzo(k)fluoranthene	2.02	0.40	mg/kg wet	2.000		101	40-140	8	30	
C11-C22 Unadjusted Aromatics1	34.7	15.0	mg/kg wet	34.00		102	40-140	5	25	
Chrysene	2.21	0.40	mg/kg wet	2.000		110	40-140	7	30	
Dibenzo(a,h)Anthracene	1.79	0.20	mg/kg wet	2.000		89	40-140	7	30	
Fluoranthene	2.21	0.40	mg/kg wet	2.000		111	40-140	6	30	
Fluorene	1.93	0.40	mg/kg wet	2.000		97	40-140	7	30	
Indeno(1,2,3-cd)Pyrene	1.87	0.40	mg/kg wet	2.000		93	40-140	8	30	
Naphthalene	1.54	0.40	mg/kg wet	2.000		77	40-140	6	30	
Phenanthrene	2.08	0.40	mg/kg wet	2.000		104	40-140	6	30	
Pyrene	2.24	0.40	mg/kg wet	2.000		112	40-140	5	30	
Surrogate: 2-Bromonaphthalene	*55.5*		mg/L	*50.00*		*111*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*51.5*		mg/L	*50.00*		*103*	*40-140*			
Surrogate: O-Terphenyl	*1.72*		mg/kg wet	*2.008*		*85*	*40-140*			
LCS Dup										
2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch DA02741 - 5030B										
Blank										
1,2,4-Trimethylbenzene	ND	0.20	mg/kg wet							
2,2,4-Trimethylpentane	ND	5.00	mg/kg wet							
2-Methylpentane	ND	5.00	mg/kg wet							
Benzene	ND	0.20	mg/kg wet							
C5-C8 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
C9-C10 Aromatics	ND	10.0	mg/kg wet							
C9-C12 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
Ethylbenzene	ND	0.20	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.05	mg/kg wet							
Naphthalene	ND	0.20	mg/kg wet							
n-Butylcyclohexane	ND	5.00	mg/kg wet							
n-Decane	ND	5.00	mg/kg wet							
Nonane (C9)	ND	5.00	mg/kg wet							
Pentane	ND	5.00	mg/kg wet							
Toluene	ND	0.20	mg/kg wet							
Xylene O	ND	0.20	mg/kg wet							
Xylene P,M	ND	0.40	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0729

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch DA02741 - 5030B										
Surrogate: 2,5-Dibromotoluene - FID	*5.06*		mg/kg wet	*5.000*		*101*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*5.05*		mg/kg wet	*5.000*		*101*	*70-130*			
Surrogate: Trifluorotoluene - FID	*5.09*		mg/kg wet	*5.333*		*95*	*70-130*			
Surrogate: Trifluorotoluene - PID	*5.14*		mg/kg wet	*5.333*		*96*	*70-130*			
LCS										
Benzene	4.72	0.20	mg/kg wet	5.000		94	70-130			
C5-C8 Unadjusted Aliphatics	42.7	10.0	mg/kg wet	40.00		107	70-130			
C9-C10 Aromatics	10.3	10.0	mg/kg wet	10.00		103	70-130			
C9-C12 Unadjusted Aliphatics	26.5	10.0	mg/kg wet	30.00		88	70-130			
Ethylbenzene	4.96	0.20	mg/kg wet	5.000		99	70-130			
Methyl tert-Butyl Ether	14.0	0.05	mg/kg wet	15.00		93	70-130			
Naphthalene	10.7	0.20	mg/kg wet	10.00		107	70-130			
Toluene	14.8	0.20	mg/kg wet	15.00		99	70-130			
Xylene O	9.60	0.20	mg/kg wet	10.00		96	70-130			
Xylene P,M	19.5	0.40	mg/kg wet	20.00		98	70-130			
Surrogate: 2,5-Dibromotoluene - FID	*5.26*		mg/kg wet	*5.000*		*105*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*5.21*		mg/kg wet	*5.000*		*104*	*70-130*			
Surrogate: Trifluorotoluene - FID	*5.07*		mg/kg wet	*5.333*		*95*	*70-130*			
Surrogate: Trifluorotoluene - PID	*5.17*		mg/kg wet	*5.333*		*97*	*70-130*			
LCS Dup										
Benzene	5.49	0.20	mg/kg wet	5.000		110	70-130	15	25	
C5-C8 Unadjusted Aliphatics	47.8	10.0	mg/kg wet	40.00		119	70-130	11	25	
C9-C10 Aromatics	10.5	10.0	mg/kg wet	10.00		105	70-130	1	25	
C9-C12 Unadjusted Aliphatics	29.6	10.0	mg/kg wet	30.00		99	70-130	11	25	
Ethylbenzene	5.07	0.20	mg/kg wet	5.000		101	70-130	2	25	
Methyl tert-Butyl Ether	15.8	0.05	mg/kg wet	15.00		105	70-130	12	25	
Naphthalene	10.1	0.20	mg/kg wet	10.00		101	70-130	6	25	
Toluene	15.5	0.20	mg/kg wet	15.00		103	70-130	5	25	
Xylene O	9.71	0.20	mg/kg wet	10.00		97	70-130	1	25	
Xylene P,M	19.8	0.40	mg/kg wet	20.00		99	70-130	1	25	
Surrogate: 2,5-Dibromotoluene - FID	*5.26*		mg/kg wet	*5.000*		*105*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*5.24*		mg/kg wet	*5.000*		*105*	*70-130*			
Surrogate: Trifluorotoluene - FID	*5.74*		mg/kg wet	*5.333*		*108*	*70-130*			
Surrogate: Trifluorotoluene - PID	*5.77*		mg/kg wet	*5.333*		*108*	*70-130*			

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0729

Notes and Definitions

Z-04	MeOH - covered
U	Analyte included in the analysis, but not detected
SC	Surrogate recovery(ies) outside of criteria. Reextraction/Reanalysis confirms results (SC).
S+	Surrogate recovery(ies) above upper control limit (S+).
EL	Elevated Method Reporting Limits due to sample matrix (EL).
D	Diluted.
CD-	Continuing Calibration %Diff/Drift is below control limit (CD-).
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probably Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0729

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GZA - Norwood, MA - GZA/TB

Shipped/Delivered Via: Client

ESS Project ID: 20A0729
Date Received: 1/24/2020
Project Due Date: 1/31/2020
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 5.3 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** Yes / No / NA
10. Were any analyses received outside of hold time? Yes / No

11. Any Subcontracting needed? Yes / No
    ESS Sample IDs:
    Analysis:
    TAT:
12. Were VOAs received? Yes / No
    a. Air bubbles in aqueous VOAs? Yes / No
    b. Does methanol cover soil completely? Yes / No / NA
13. Are the samples properly preserved? Yes / No
    a. If metals preserved upon receipt: Date: Time: By:
    b. Low Level VOA vials frozen: Date: Time: By:

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / No
    a. Was there a need to contact the client? Yes / No
    Who was contacted? Date: Time: By:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	8547	Yes	N/A	Yes	VOA Vial	MeOH	
1	8554	Yes	N/A	Yes	4 oz. Jar	NP	
1	8555	Yes	N/A	Yes	4 oz. Jar	NP	
2	8548	Yes	N/A	Yes	VOA Vial	MeOH	
2	8556	Yes	N/A	Yes	4 oz. Jar	NP	
2	8557	Yes	N/A	Yes	4 oz. Jar	NP	
3	8549	Yes	N/A	Yes	VOA Vial	MeOH	
3	8558	Yes	N/A	Yes	4 oz. Jar	NP	
3	8559	Yes	N/A	Yes	4 oz. Jar	NP	
4	8550	Yes	N/A	Yes	VOA Vial	MeOH	
4	8560	Yes	N/A	Yes	4 oz. Jar	NP	
4	8561	Yes	N/A	Yes	4 oz. Jar	NP	
5	8551	Yes	N/A	Yes	VOA Vial	MeOH	
5	8562	Yes	N/A	Yes	4 oz. Jar	NP	
5	8563	Yes	N/A	Yes	4 oz. Jar	NP	
6	8552	Yes	N/A	Yes	VOA Vial	MeOH	
6	8564	Yes	N/A	Yes	4 oz. Jar	NP	

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GZA - Norwood, MA - GZA/TB

ESS Project ID: 20A0729
Date Received: 1/24/2020

6	8565	Yes	N/A	Yes	4 oz. Jar	NP
7	8553	Yes	N/A	Yes	VOA Vial	MeOH
7	8566	Yes	N/A	Yes	4 oz. Jar	NP
7	8567	Yes	N/A	Yes	4 oz. Jar	NP

2nd Review

Were all containers scanned into storage/lab? Initials MC

Are barcode labels on correct containers? Yes / No

Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA

Are all Hex Chrome stickers attached? Yes / No / NA

Are all QC stickers attached? Yes / No / NA

Are VOA stickers attached if bubbles noted? Yes / No / NA

Completed By: _____ Date & Time: 1/24/20 1931

Reviewed By: _____ Date & Time: 1/24/20 2007

Delivered By: _____ 1/24/20 2007

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS LAB PROJECT ID: 20A0729

Turn Time ___X___ Standard Rush_____ Approved By: _____

Reporting Limits - S-1

State where samples were collected: **MA**

Is this project for any of the following: (please circle)
MA-MCP

Electronic Deliverable Yes_X__ No___
Format: Excel_X_ Access___ PDF_X_ Other_____

GZA Project Manager: Kyle Maxfield
GZA GeoEnvironmental, Inc.
249 Vanderbilt Avenue
Norwood, MA 02062
(781) 278-3700
PRESUMPTIVE CERTAINTY REQUIRED

Project No.: 01.0172397.10
Project Name: 284 Winter Street
Contract Pricing ____
Special Pricing WO#: _____

ESS Lab Sample ID	Date	Collection Time	Grab -G Composite-C	Matrix	Sample Identification	# of Containers	EPH (MADEP EPH04-1)	VPH (MADEP VPH04-1)	Physically Available Cyanide (PAC)	Metals (arsenic, chromium, lead)			Comment #
						Analysis							
1	1/16/2020	0930	Composite	Soil	B-102_S-1		X	X	X	X			
2	1/16/2020	0825	Composite	Soil	B-103_S-1		X	X	X	X			
3	1/16/2020	1200	Composite	Soil	B-104_S-1		X	X	X	X			
4	1/17/20	0930	Composite	Soil	B-106_S-1		X	X	X	X			
					B-106_S-3		X	X	X	X			
5	1/17/20	1430	Composite	Soil	B-107_S-2		X	X	X	X			
							X	X	X	X			
6	1/17/20	1545	Composite	Soil	B-109_S-1		X	X	X	X			
							X	X	X	X			
7	1/20/20	0955	Composite	Soil	B-110_S-2		X	X	X	X			
Preservation Code: 1-NP, 2-HCl, 3-H2SO4, 4-HNO3, 5-NaOH, 6-MeOH, 7-Asorbic Acid, 8-ZnAct, 9-_____													
Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA							AG	V	AG	AG			

Matrix: S-Soil SD-Solid D-Sludge WW-Wastewater GW-Groundwater SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filter

Cooler Present ___V___Yes _____No
Seals Intact _____Yes _____No NA: _____
Cooler Temperature: ___5-3___ Ice

Sampled by : Matt Brady
Comments:

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Matt Brady	1/24 1823				
		1/24/20 1823			
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Please E-mail all changes to Chain of Custody in writing.

Page ____ of ____

CERTIFICATE OF ANALYSIS

Kyle Maxfield
GZA GeoEnvironmental, Inc.
249 Vanderbilt Avenue
Norwood, MA 02062

RE: 284 Winter Street (01.0172397.10)
ESS Laboratory Work Order Number: 20A0786

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.



Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 5:42 pm, Feb 04, 2020

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0786

SAMPLE RECEIPT

The following samples were received on January 28, 2020 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Question I: All samples for Metals were analyzed for a subset of the required MCP list per the client's request.

Lab Number	Sample Name	Matrix	Analysis
20A0786-01	B-107 S-4	Soil	MA-VPH-2.1
20A0786-02	B-107 S-4 and S-5	Soil	EPH8270, MADEP-EPH
20A0786-03	B-102 S-6	Soil	EPH8270, MADEP-EPH, MA-VPH-2.1
20A0786-04	B-108 S-2	Soil	6010C, EPH8270, MA PAC, MADEP-EPH, MA-VPH-2.1
20A0786-05	B-104 S-12	Soil	EPH8270, MADEP-EPH, MA-VPH-2.1
20A0786-06	B-109 S-12	Soil	EPH8270, MADEP-EPH, MA-VPH-2.1

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0786

PROJECT NARRATIVE

MADEP-EPH Extractable Petroleum Hydrocarbons

20A0786-02	**Elevated Method Reporting Limits due to sample matrix (EL).**
20A0786-03	**Elevated Method Reporting Limits due to sample matrix (EL).**
20A0786-04	**Elevated Method Reporting Limits due to sample matrix (EL).**
20A0786-05	**Elevated Method Reporting Limits due to sample matrix (EL).**
20A0786-06	**Elevated Method Reporting Limits due to sample matrix (EL).**
D0A0208-CCV4	**Continuing Calibration %Diff/Drift is below control limit (CD-).**
	Benzo(g,h,i)perylene (34% @ 20%), Indeno(1,2,3-cd)Pyrene (21% @ 20%)
D0A0220-CCV5	**Continuing Calibration %Diff/Drift is below control limit (CD-).**
	Hexatriacontane (C36) (51% @ 25%)

MADEP-VPH Volatile Petroleum Hydrocarbon

20A0786-01	**Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM).**
	Trifluorotoluene - FID (136% @ 70-130%), Trifluorotoluene - PID (145% @ 70-130%)
20A0786-03	**Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM).**
	Trifluorotoluene - FID (133% @ 70-130%), Trifluorotoluene - PID (133% @ 70-130%)
20A0786-04	**Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM).**
	Trifluorotoluene - FID (137% @ 70-130%), Trifluorotoluene - PID (140% @ 70-130%)
20A0786-05	**Surrogate recovery(ies) outside of criteria. Reextraction/Reanalysis confirms results (SC).**
	Trifluorotoluene - FID (182% @ 70-130%), Trifluorotoluene - PID (190% @ 70-130%)
20A0786-05RE1	**Surrogate recovery(ies) outside of criteria. Reextraction/Reanalysis confirms results (SC).**
	Trifluorotoluene - FID (179% @ 70-130%), Trifluorotoluene - PID (186% @ 70-130%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0786

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0786

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **20A0786-01 through 20A0786-06**

Matrices: ( ) Ground Water/Surface Water (X) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other:_____

CAM Protocol (check all that apply below):

( ) 8260 VOC CAM II A	( ) 7470/7471 Hg CAM III B	(X) MassDEP VPH (GC/PID/FID) CAM IV A	( ) 8082 PCB CAM V A	(X) 9014 Total Cyanide/PAC CAM VI A	( ) 6860 Perchlorate CAM VIII B
( ) 8270 SVOC CAM II B	( ) 7010 Metals CAM III C	( ) MassDEP VPH (GC/MS) CAM IV C	( ) 8081 Pesticides CAM V B	( ) 7196 Hex Cr CAM VI B	( ) MassDEP APH CAM IX A
(X) 6010 Metals CAM III A	( ) 6020 Metals CAM III D	(X) MassDEP EPH CAM IV B	( ) 8151 Herbicides CAM V C	( ) Explosives CAM VIII A	( ) TO-15 VOC CAM IX B

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes (X) No ( )
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (X) No ( )
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes (X) No ( )
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (X) No ( )
E	VPH, EPH, APH and TO-15 only: a. Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes (X) No ( )
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes ( ) No ( )
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes (X) No ( )

Responses to Questions G, H and I below are required for "'Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)?	Yes ( ) No (X)*
	***Data User Note:* Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**	
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes ( ) No (X)*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes ( ) No (X)*

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Laurel Stoddard Date: February 04, 2020

Printed Name: Laurel Stoddard Position: Laboratory Director

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-107 S-4
Date Sampled: 01/21/20 10:30
Percent Solids: 73
Initial Volume: 15.2
Final Volume: 15
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 20A0786
ESS Laboratory Sample ID: 20A0786-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	**687** (17.2)		MA-VPH-2.1		1	01/30/20 3:52	D0A0228	DA02914
C5-C8 Aliphatics1,2	**609** (51.6)		MA-VPH-2.1		50	01/30/20 12:25		[CALC]
C9-C12 Aliphatics2,3	**261** (52.6)		MA-VPH-2.1		50	01/30/20 12:25		[CALC]
Benzene	**155** (17.2)		MA-VPH-2.1		50	01/30/20 12:25	D0A0228	DA02914
Ethylbenzene	**33.7** (0.34)		MA-VPH-2.1		1	01/30/20 3:52	D0A0228	DA02914
Methyl tert-Butyl Ether	ND (0.09)		MA-VPH-2.1		1	01/30/20 3:52	D0A0228	DA02914
Naphthalene	**1070** (17.2)		MA-VPH-2.1		50	01/30/20 12:25	D0A0228	DA02914
Toluene	**63.4** (17.2)		MA-VPH-2.1		50	01/30/20 12:25	D0A0228	DA02914
Xylene O	**36.7** (17.2)		MA-VPH-2.1		50	01/30/20 12:25	D0A0228	DA02914
Xylene P,M	**48.3** (0.69)		MA-VPH-2.1		1	01/30/20 3:52	D0A0228	DA02914
1:1 Methanol/Soil Ratio %D	**1** (N/A)		MA-VPH-2.1			01/29/20 8:00		DA02914
Preservative:	**MeOH - covered**		MA-VPH-2.1					DA02914

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*98 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*98 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*136 %*	*SM*	*70-130*
Surrogate: Trifluorotoluene - PID	*145 %*	*SM*	*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-107 S-4 and S-5
Date Sampled: 01/21/20 10:30
Percent Solids: 73
Initial Volume: 5.38
Final Volume: 3
Extraction Method: 3546

ESS Laboratory Work Order: 20A0786
ESS Laboratory Sample ID: 20A0786-02
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 1/29/20 9:45

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (286)		MADEP-EPH		1	CAD	01/31/20 3:32	D0A0220	DA02803
C19-C36 Aliphatics1	ND (286)		MADEP-EPH		1	CAD	01/31/20 3:32	D0A0220	DA02803
C11-C22 Unadjusted Aromatics1	**1880** (286)		EPH8270		1	VSC	01/30/20 5:19	D0A0238	DA02803
C11-C22 Aromatics1,2	**813** (286)		EPH8270			VSC	01/31/20 21:23		[CALC]
2-Methylnaphthalene	**108** (38.2)		EPH8270		10	VSC	01/31/20 21:23	D0A0238	DA02803
Acenaphthene	**10.1** (7.63)		EPH8270		1	VSC	01/30/20 5:19	D0A0238	DA02803
Naphthalene	**289** (76.3)		EPH8270		10	VSC	01/31/20 21:23	D0A0238	DA02803
Phenanthrene	**203** (76.3)		EPH8270		10	VSC	01/31/20 21:23	D0A0238	DA02803
Acenaphthylene	**70.3** (3.82)		EPH8270		1	VSC	01/30/20 5:19	D0A0238	DA02803
Anthracene	**50.5** (7.63)		EPH8270		1	VSC	01/30/20 5:19	D0A0238	DA02803
Benzo(a)anthracene	**25.8** (7.63)		EPH8270		1	VSC	01/30/20 5:19	D0A0238	DA02803
Benzo(a)pyrene	**22.4** (7.63)		EPH8270		1	VSC	01/30/20 5:19	D0A0238	DA02803
Benzo(b)fluoranthene	**11.8** (7.63)		EPH8270		1	VSC	01/30/20 5:19	D0A0238	DA02803
Benzo(g,h,i)perylene	**11.0** (7.63)		EPH8270		1	VSC	01/30/20 5:19	D0A0238	DA02803
Benzo(k)fluoranthene	**11.1** (7.63)		EPH8270		1	VSC	01/30/20 5:19	D0A0238	DA02803
Chrysene	**28.4** (7.63)		EPH8270		1	VSC	01/30/20 5:19	D0A0238	DA02803
Dibenzo(a,h)Anthracene	ND (3.82)		EPH8270		1	VSC	01/30/20 5:19	D0A0238	DA02803
Fluoranthene	**59.5** (7.63)		EPH8270		1	VSC	01/30/20 5:19	D0A0238	DA02803
Fluorene	**42.5** (7.63)		EPH8270		1	VSC	01/30/20 5:19	D0A0238	DA02803
Indeno(1,2,3-cd)Pyrene	**10.2** (7.63)		EPH8270		1	VSC	01/30/20 5:19	D0A0238	DA02803
Pyrene	**116** (76.3)		EPH8270		10	VSC	01/31/20 21:23	D0A0238	DA02803

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*65 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*115 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*107 %*		*40-140*
Surrogate: O-Terphenyl	*76 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-102 S-6
Date Sampled: 01/22/20 12:00
Percent Solids: 81
Initial Volume: 5.74
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20A0786
ESS Laboratory Sample ID: 20A0786-03
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 1/29/20 9:45

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	**102** (80.6)		MADEP-EPH		1	CAD	01/31/20 4:23	D0A0220	DA02803
C19-C36 Aliphatics1	ND (80.6)		MADEP-EPH		1	CAD	01/31/20 4:23	D0A0220	DA02803
C11-C22 Unadjusted Aromatics1	**190** (80.6)		EPH8270		1	VSC	01/30/20 6:00	D0A0238	DA02803
C11-C22 Aromatics1,2	**88.5** (80.6)		EPH8270			VSC	01/31/20 22:03		[CALC]
2-Methylnaphthalene	**24.7** (10.7)		EPH8270		10	VSC	01/31/20 22:03	D0A0238	DA02803
Acenaphthene	ND (2.15)		EPH8270		1	VSC	01/30/20 6:00	D0A0238	DA02803
Naphthalene	**73.8** (21.5)		EPH8270		10	VSC	01/31/20 22:03	D0A0238	DA02803
Phenanthrene	ND (2.15)		EPH8270		1	VSC	01/30/20 6:00	D0A0238	DA02803
Acenaphthylene	**2.86** (1.07)		EPH8270		1	VSC	01/30/20 6:00	D0A0238	DA02803
Anthracene	ND (2.15)		EPH8270		1	VSC	01/30/20 6:00	D0A0238	DA02803
Benzo(a)anthracene	ND (2.15)		EPH8270		1	VSC	01/30/20 6:00	D0A0238	DA02803
Benzo(a)pyrene	ND (2.15)		EPH8270		1	VSC	01/30/20 6:00	D0A0238	DA02803
Benzo(b)fluoranthene	ND (2.15)		EPH8270		1	VSC	01/30/20 6:00	D0A0238	DA02803
Benzo(g,h,i)perylene	ND (2.15)		EPH8270		1	VSC	01/30/20 6:00	D0A0238	DA02803
Benzo(k)fluoranthene	ND (2.15)		EPH8270		1	VSC	01/30/20 6:00	D0A0238	DA02803
Chrysene	ND (2.15)		EPH8270		1	VSC	01/30/20 6:00	D0A0238	DA02803
Dibenzo(a,h)Anthracene	ND (1.07)		EPH8270		1	VSC	01/30/20 6:00	D0A0238	DA02803
Fluoranthene	ND (2.15)		EPH8270		1	VSC	01/30/20 6:00	D0A0238	DA02803
Fluorene	ND (2.15)		EPH8270		1	VSC	01/30/20 6:00	D0A0238	DA02803
Indeno(1,2,3-cd)Pyrene	ND (2.15)		EPH8270		1	VSC	01/30/20 6:00	D0A0238	DA02803
Pyrene	ND (2.15)		EPH8270		1	VSC	01/30/20 6:00	D0A0238	DA02803

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*75 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*108 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*95 %*		*40-140*
Surrogate: O-Terphenyl	*86 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-102 S-6
Date Sampled: 01/22/20 12:00
Percent Solids: 81
Initial Volume: 24.5
Final Volume: 15
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 20A0786
ESS Laboratory Sample ID: 20A0786-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	**748** (9.88)		MA-VPH-2.1		1	01/30/20 1:35	D0A0228	DA02914
C5-C8 Aliphatics1,2	**315** (10.3)		MA-VPH-2.1		1	01/30/20 1:35		[CALC]
C9-C12 Aliphatics2,3	**339** (59.7)		MA-VPH-2.1		100	01/30/20 11:51		[CALC]
Benzene	ND (0.20)		MA-VPH-2.1		1	01/30/20 1:35	D0A0228	DA02914
Ethylbenzene	**27.0** (0.20)		MA-VPH-2.1		1	01/30/20 1:35	D0A0228	DA02914
Methyl tert-Butyl Ether	ND (0.05)		MA-VPH-2.1		1	01/30/20 1:35	D0A0228	DA02914
Naphthalene	**119** (19.8)		MA-VPH-2.1		100	01/30/20 11:51	D0A0228	DA02914
Toluene	**1.32** (0.20)		MA-VPH-2.1		1	01/30/20 1:35	D0A0228	DA02914
Xylene O	**29.4** (0.20)		MA-VPH-2.1		1	01/30/20 1:35	D0A0228	DA02914
Xylene P,M	**59.1** (39.5)		MA-VPH-2.1		100	01/30/20 11:51	D0A0228	DA02914
1:1 Methanol/Soil Ratio %D	**63** (N/A)		MA-VPH-2.1			01/29/20 8:00		DA02914
Preservative:	**MeOH - covered**		MA-VPH-2.1					DA02914

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*95 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*109 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*133 %*	*SM*	*70-130*
Surrogate: Trifluorotoluene - PID	*133 %*	*SM*	*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-108 S-2
Date Sampled: 01/23/20 14:00
Percent Solids: 90

ESS Laboratory Work Order: 20A0786
ESS Laboratory Sample ID: 20A0786-04
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V	Batch
Arsenic	**6.38** (2.00)		6010C		1	KJK	01/30/20 0:59	2.79	100	DA02943
Chromium	**12.1** (0.80)		6010C		1	KJK	01/30/20 0:59	2.79	100	DA02943
Lead	**24.7** (3.99)		6010C		1	KJK	01/30/20 0:59	2.79	100	DA02943

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-108 S-2
Date Sampled: 01/23/20 14:00
Percent Solids: 90

ESS Laboratory Work Order: 20A0786
ESS Laboratory Sample ID: 20A0786-04
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Cyanide (PAC)	**21.2** (1.10)		MA PAC		1	EEM	01/30/20 11:30	mg/kg dry	DA03016

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-108 S-2
Date Sampled: 01/23/20 14:00
Percent Solids: 90
Initial Volume: 5.01
Final Volume: 3
Extraction Method: 3546

ESS Laboratory Work Order: 20A0786
ESS Laboratory Sample ID: 20A0786-04
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 1/29/20 9:45

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	**360** (250)		MADEP-EPH		1	CAD	01/31/20 10:18	D0A0220	DA02803
C19-C36 Aliphatics1	ND (250)		MADEP-EPH		1	CAD	01/31/20 10:18	D0A0220	DA02803
C11-C22 Unadjusted Aromatics1	**1400** (250)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
C11-C22 Aromatics1,2	**1140** (250)		EPH8270			VSC	01/30/20 6:41		[CALC]
2-Methylnaphthalene	**45.2** (3.34)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
Acenaphthene	**7.22** (6.67)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
Naphthalene	**45.0** (6.67)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
Phenanthrene	**56.2** (6.67)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
Acenaphthylene	**6.41** (3.34)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
Anthracene	**7.90** (6.67)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
Benzo(a)anthracene	**8.50** (6.67)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
Benzo(a)pyrene	**7.67** (6.67)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
Benzo(b)fluoranthene	ND (6.67)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
Benzo(g,h,i)perylene	ND (6.67)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
Benzo(k)fluoranthene	ND (6.67)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
Chrysene	**9.68** (6.67)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
Dibenzo(a,h)Anthracene	ND (3.34)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
Fluoranthene	**18.9** (6.67)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
Fluorene	**17.1** (6.67)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
Indeno(1,2,3-cd)Pyrene	ND (6.67)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803
Pyrene	**30.7** (6.67)		EPH8270		1	VSC	01/30/20 6:41	D0A0238	DA02803

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*62 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*117 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*105 %*		*40-140*
Surrogate: O-Terphenyl	*73 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-108 S-2
Date Sampled: 01/23/20 14:00
Percent Solids: 90
Initial Volume: 12.8
Final Volume: 15
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 20A0786
ESS Laboratory Sample ID: 20A0786-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	**165** (14.2)		MA-VPH-2.1		1	01/30/20 0:26	D0A0228	DA02914
C5-C8 Aliphatics1,2	**17.7** (14.8)		MA-VPH-2.1		1	01/30/20 0:26		[CALC]
C9-C12 Aliphatics2,3	**134** (29.5)		MA-VPH-2.1		1	01/30/20 0:26		[CALC]
Benzene	**0.87** (0.28)		MA-VPH-2.1		1	01/30/20 0:26	D0A0228	DA02914
Ethylbenzene	**3.68** (0.28)		MA-VPH-2.1		1	01/30/20 0:26	D0A0228	DA02914
Methyl tert-Butyl Ether	ND (0.07)		MA-VPH-2.1		1	01/30/20 0:26	D0A0228	DA02914
Naphthalene	**158** (28.4)		MA-VPH-2.1		100	01/30/20 11:17	D0A0228	DA02914
Toluene	ND (0.28)		MA-VPH-2.1		1	01/30/20 0:26	D0A0228	DA02914
Xylene O	**2.58** (0.28)		MA-VPH-2.1		1	01/30/20 0:26	D0A0228	DA02914
Xylene P,M	**2.57** (0.57)		MA-VPH-2.1		1	01/30/20 0:26	D0A0228	DA02914
1:1 Methanol/Soil Ratio %D	**15** (N/A)		MA-VPH-2.1			01/29/20 8:00		DA02914
Preservative:	**MeOH - covered**		MA-VPH-2.1					DA02914

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*93 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*100 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*137 %*	*SM*	*70-130*
Surrogate: Trifluorotoluene - PID	*140 %*	*SM*	*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-104 S-12
Date Sampled: 01/23/20 11:00
Percent Solids: 80
Initial Volume: 5.63
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20A0786
ESS Laboratory Sample ID: 20A0786-05
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 1/29/20 9:45

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (83.3)		MADEP-EPH		1	CAD	01/31/20 11:09	D0A0220	DA02803
C19-C36 Aliphatics1	ND (83.3)		MADEP-EPH		1	CAD	01/31/20 11:09	D0A0220	DA02803
C11-C22 Unadjusted Aromatics1	ND (83.3)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
C11-C22 Aromatics1,2	ND (83.3)		EPH8270			VSC	01/30/20 7:21		[CALC]
2-Methylnaphthalene	ND (1.11)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
Acenaphthene	ND (2.22)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
Naphthalene	ND (2.22)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
Phenanthrene	ND (2.22)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
Acenaphthylene	ND (1.11)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
Anthracene	ND (2.22)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
Benzo(a)anthracene	ND (2.22)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
Benzo(a)pyrene	ND (2.22)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
Benzo(b)fluoranthene	ND (2.22)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
Benzo(g,h,i)perylene	ND (2.22)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
Benzo(k)fluoranthene	ND (2.22)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
Chrysene	ND (2.22)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
Dibenzo(a,h)Anthracene	ND (1.11)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
Fluoranthene	ND (2.22)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
Fluorene	ND (2.22)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
Indeno(1,2,3-cd)Pyrene	ND (2.22)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803
Pyrene	ND (2.22)		EPH8270		1	VSC	01/30/20 7:21	D0A0238	DA02803

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*65 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*124 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*115 %*		*40-140*
Surrogate: O-Terphenyl	*84 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-104 S-12
Date Sampled: 01/23/20 11:00
Percent Solids: 80
Initial Volume: 18
Final Volume: 15
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 20A0786
ESS Laboratory Sample ID: 20A0786-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (12.9)		MA-VPH-2.1		1	01/30/20 10:42	D0A0228	DA02914
C5-C8 Aliphatics1,2	ND (13.5)		MA-VPH-2.1		1	01/30/20 10:42		[CALC]
C9-C12 Aliphatics2,3	ND (26.9)		MA-VPH-2.1		1	01/30/20 10:42		[CALC]
Benzene	ND (0.26)		MA-VPH-2.1		1	01/30/20 10:42	D0A0228	DA02914
Ethylbenzene	ND (0.26)		MA-VPH-2.1		1	01/30/20 10:42	D0A0228	DA02914
Methyl tert-Butyl Ether	ND (0.06)		MA-VPH-2.1		1	01/30/20 10:42	D0A0228	DA02914
Naphthalene	**0.54** (0.26)		MA-VPH-2.1		1	01/30/20 10:42	D0A0228	DA02914
Toluene	ND (0.26)		MA-VPH-2.1		1	01/30/20 10:42	D0A0228	DA02914
Xylene O	ND (0.26)		MA-VPH-2.1		1	01/30/20 10:42	D0A0228	DA02914
Xylene P,M	ND (0.52)		MA-VPH-2.1		1	01/30/20 10:42	D0A0228	DA02914
1:1 Methanol/Soil Ratio %D	**20** (N/A)		MA-VPH-2.1			01/29/20 8:00		DA02914
Preservative:	**MeOH - covered**		MA-VPH-2.1					DA02914

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*80 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*80 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*182 %*	*SC*	*70-130*
Surrogate: Trifluorotoluene - PID	*190 %*	*SC*	*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-104 S-12
Date Sampled: 01/23/20 11:00
Percent Solids: 80
Initial Volume: 18
Final Volume: 15
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 20A0786
ESS Laboratory Sample ID: 20A0786-05RE1
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	**26.4** (12.9)		MA-VPH-2.1		1	01/30/20 1:00	D0A0228	DA02914
C5-C8 Aliphatics1,2	**17.8** (13.5)		MA-VPH-2.1		1	01/30/20 1:00		[CALC]
C9-C12 Aliphatics2,3	ND (26.9)		MA-VPH-2.1		1	01/30/20 1:00		[CALC]
Benzene	ND (0.26)		MA-VPH-2.1		1	01/30/20 1:00	D0A0228	DA02914
Ethylbenzene	ND (0.26)		MA-VPH-2.1		1	01/30/20 1:00	D0A0228	DA02914
Methyl tert-Butyl Ether	ND (0.06)		MA-VPH-2.1		1	01/30/20 1:00	D0A0228	DA02914
Naphthalene	**2.27** (0.26)		MA-VPH-2.1		1	01/30/20 1:00	D0A0228	DA02914
Toluene	ND (0.26)		MA-VPH-2.1		1	01/30/20 1:00	D0A0228	DA02914
Xylene O	ND (0.26)		MA-VPH-2.1		1	01/30/20 1:00	D0A0228	DA02914
Xylene P,M	ND (0.52)		MA-VPH-2.1		1	01/30/20 1:00	D0A0228	DA02914

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*79 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*86 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*179 %*	*SC*	*70-130*
Surrogate: Trifluorotoluene - PID	*186 %*	*SC*	*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-109 S-12
Date Sampled: 01/21/20 15:00
Percent Solids: 91
Initial Volume: 5.76
Final Volume: 1
Extraction Method: 3546

ESS Laboratory Work Order: 20A0786
ESS Laboratory Sample ID: 20A0786-06
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 1/29/20 9:45

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (71.5)		MADEP-EPH		1	CAD	01/31/20 11:59	D0A0220	DA02803
C19-C36 Aliphatics1	ND (71.5)		MADEP-EPH		1	CAD	01/31/20 11:59	D0A0220	DA02803
C11-C22 Unadjusted Aromatics1	**87.2** (71.5)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
C11-C22 Aromatics1,2	**76.8** (71.5)		EPH8270			VSC	01/30/20 8:01		[CALC]
2-Methylnaphthalene	ND (0.95)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
Acenaphthene	ND (1.91)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
Naphthalene	ND (1.91)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
Phenanthrene	**6.24** (1.91)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
Acenaphthylene	**1.50** (0.95)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
Anthracene	ND (1.91)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
Benzo(a)anthracene	ND (1.91)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
Benzo(a)pyrene	ND (1.91)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
Benzo(b)fluoranthene	ND (1.91)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
Benzo(g,h,i)perylene	ND (1.91)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
Benzo(k)fluoranthene	ND (1.91)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
Chrysene	ND (1.91)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
Dibenzo(a,h)Anthracene	ND (0.95)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
Fluoranthene	ND (1.91)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
Fluorene	ND (1.91)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
Indeno(1,2,3-cd)Pyrene	ND (1.91)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803
Pyrene	**2.59** (1.91)		EPH8270		1	VSC	01/30/20 8:01	D0A0238	DA02803

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*82 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*119 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*111 %*		*40-140*
Surrogate: O-Terphenyl	*84 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street
Client Sample ID: B-109 S-12
Date Sampled: 01/21/20 15:00
Percent Solids: 91
Initial Volume: 17
Final Volume: 15
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 20A0786
ESS Laboratory Sample ID: 20A0786-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (10.7)		MA-VPH-2.1		1	01/30/20 10:08	D0A0228	DA02914
C5-C8 Aliphatics1,2	ND (11.2)		MA-VPH-2.1		1	01/30/20 10:08		[CALC]
C9-C12 Aliphatics2,3	ND (22.2)		MA-VPH-2.1		1	01/30/20 10:08		[CALC]
Benzene	ND (0.21)		MA-VPH-2.1		1	01/30/20 10:08	D0A0228	DA02914
Ethylbenzene	ND (0.21)		MA-VPH-2.1		1	01/30/20 10:08	D0A0228	DA02914
Methyl tert-Butyl Ether	ND (0.05)		MA-VPH-2.1		1	01/30/20 10:08	D0A0228	DA02914
Naphthalene	ND (0.21)		MA-VPH-2.1		1	01/30/20 10:08	D0A0228	DA02914
Toluene	ND (0.21)		MA-VPH-2.1		1	01/30/20 10:08	D0A0228	DA02914
Xylene O	ND (0.21)		MA-VPH-2.1		1	01/30/20 10:08	D0A0228	DA02914
Xylene P,M	ND (0.43)		MA-VPH-2.1		1	01/30/20 10:08	D0A0228	DA02914
1:1 Methanol/Soil Ratio %D	**13** (N/A)		MA-VPH-2.1			01/29/20 8:00		DA02914
Preservative:	**MeOH - covered**		MA-VPH-2.1					DA02914

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*84 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*85 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*124 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*129 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0786

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DA02943 - 3050B										
Blank										
Arsenic	ND	2.50	mg/kg wet							
Chromium	ND	1.00	mg/kg wet							
Lead	ND	5.00	mg/kg wet							
LCS										
Arsenic	185	8.20	mg/kg wet	202.0		92	80-120			
Chromium	165	3.28	mg/kg wet	182.0		91	80-120			
Lead	313	16.4	mg/kg wet	333.0		94	80-120			
LCS Dup										
Arsenic	184	7.69	mg/kg wet	202.0		91	80-120	0.7	20	
Chromium	165	3.08	mg/kg wet	182.0		91	80-120	0.1	20	
Lead	299	15.4	mg/kg wet	333.0		90	80-120	5	20	
Classical Chemistry										
Batch DA03016 - TCN Prep										
Blank										
Cyanide (PAC)	ND	1.00	mg/kg wet							
LCS										
Cyanide (PAC)	4.89	1.00	mg/kg wet	5.015		97	80-120			
LCS										
Cyanide (PAC)	20.3	1.00	mg/kg wet	20.06		101	80-120			
LCS Dup										
Cyanide (PAC)	20.2	1.00	mg/kg wet	20.06		101	80-120	0.6	20	
Reference										
Cyanide (PAC)	2.95	1.00	mg/kg wet	76.30		4	0-10			
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DA02803 - 3546										
Blank										
C19-C36 Aliphatics1	ND	15.0	mg/kg wet							
C9-C18 Aliphatics1	ND	15.0	mg/kg wet							
Decane (C10)	ND	0.5	mg/kg wet							
Docosane (C22)	ND	0.5	mg/kg wet							
Dodecane (C12)	ND	0.5	mg/kg wet							
Eicosane (C20)	ND	0.5	mg/kg wet							
Hexacosane (C26)	ND	0.5	mg/kg wet							
Hexadecane (C16)	ND	0.5	mg/kg wet							
Hexatriacontane (C36)	ND	0.5	mg/kg wet							
Nonadecane (C19)	ND	0.5	mg/kg wet							
Nonane (C9)	ND	0.5	mg/kg wet							
Octacosane (C28)	ND	0.5	mg/kg wet							
Octadecane (C18)	ND	0.5	mg/kg wet							
Tetracosane (C24)	ND	0.5	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0786

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DA02803 - 3546										
Tetradecane (C14)	ND	0.5	mg/kg wet							
Triacontane (C30)	ND	0.5	mg/kg wet							
Surrogate: 1-Chlorooctadecane	*1.51*		mg/kg wet	*2.020*		*75*	*40-140*			
Blank										
2-Methylnaphthalene	ND	0.20	mg/kg wet							
Acenaphthene	ND	0.40	mg/kg wet							
Acenaphthylene	ND	0.20	mg/kg wet							
Anthracene	ND	0.40	mg/kg wet							
Benzo(a)anthracene	ND	0.40	mg/kg wet							
Benzo(a)pyrene	ND	0.40	mg/kg wet							
Benzo(b)fluoranthene	ND	0.40	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet							
Benzo(k)fluoranthene	ND	0.40	mg/kg wet							
C11-C22 Unadjusted Aromatics1	ND	15.0	mg/kg wet							
Chrysene	ND	0.40	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet							
Fluoranthene	ND	0.40	mg/kg wet							
Fluorene	ND	0.40	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet							
Naphthalene	ND	0.40	mg/kg wet							
Phenanthrene	ND	0.40	mg/kg wet							
Pyrene	ND	0.40	mg/kg wet							
Surrogate: 2-Bromonaphthalene	*45.7*		mg/L	*50.00*		*91*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*40.2*		mg/L	*50.00*		*80*	*40-140*			
Surrogate: O-Terphenyl	*1.46*		mg/kg wet	*2.008*		*73*	*40-140*			
LCS										
C19-C36 Aliphatics1	14.9	15.0	mg/kg wet	16.00		93	40-140			
C9-C18 Aliphatics1	9.1	15.0	mg/kg wet	12.00		76	40-140			
Decane (C10)	0.9	0.5	mg/kg wet	2.000		46	40-140			
Docosane (C22)	1.7	0.5	mg/kg wet	2.000		87	40-140			
Dodecane (C12)	1.0	0.5	mg/kg wet	2.000		52	40-140			
Eicosane (C20)	1.7	0.5	mg/kg wet	2.000		85	40-140			
Hexacosane (C26)	1.7	0.5	mg/kg wet	2.000		85	40-140			
Hexadecane (C16)	1.6	0.5	mg/kg wet	2.000		82	40-140			
Hexatriacontane (C36)	1.5	0.5	mg/kg wet	2.000		74	40-140			
Nonadecane (C19)	1.7	0.5	mg/kg wet	2.000		84	40-140			
Nonane (C9)	0.8	0.5	mg/kg wet	2.000		38	30-140			
Octacosane (C28)	1.7	0.5	mg/kg wet	2.000		84	40-140			
Octadecane (C18)	1.7	0.5	mg/kg wet	2.000		86	40-140			
Tetracosane (C24)	1.7	0.5	mg/kg wet	2.000		86	40-140			
Tetradecane (C14)	1.4	0.5	mg/kg wet	2.000		69	40-140			
Triacontane (C30)	1.7	0.5	mg/kg wet	2.000		83	40-140			
Surrogate: 1-Chlorooctadecane	*1.56*		mg/kg wet	*2.020*		*77*	*40-140*			

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0786

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DA02803 - 3546										
LCS										
2-Methylnaphthalene	1.28	0.20	mg/kg wet	2.000		64	40-140			
Acenaphthene	1.43	0.40	mg/kg wet	2.000		72	40-140			
Acenaphthylene	1.38	0.20	mg/kg wet	2.000		69	40-140			
Anthracene	1.87	0.40	mg/kg wet	2.000		94	40-140			
Benzo(a)anthracene	1.58	0.40	mg/kg wet	2.000		79	40-140			
Benzo(a)pyrene	1.66	0.40	mg/kg wet	2.000		83	40-140			
Benzo(b)fluoranthene	1.53	0.40	mg/kg wet	2.000		76	40-140			
Benzo(g,h,i)perylene	1.41	0.40	mg/kg wet	2.000		71	40-140			
Benzo(k)fluoranthene	1.64	0.40	mg/kg wet	2.000		82	40-140			
C11-C22 Unadjusted Aromatics1	27.9	15.0	mg/kg wet	34.00		82	40-140			
Chrysene	1.56	0.40	mg/kg wet	2.000		78	40-140			
Dibenzo(a,h)Anthracene	1.55	0.20	mg/kg wet	2.000		77	40-140			
Fluoranthene	1.83	0.40	mg/kg wet	2.000		91	40-140			
Fluorene	1.58	0.40	mg/kg wet	2.000		79	40-140			
Indeno(1,2,3-cd)Pyrene	1.57	0.40	mg/kg wet	2.000		78	40-140			
Naphthalene	1.14	0.40	mg/kg wet	2.000		57	40-140			
Phenanthrene	1.76	0.40	mg/kg wet	2.000		88	40-140			
Pyrene	1.80	0.40	mg/kg wet	2.000		90	40-140			
Surrogate: 2-Bromonaphthalene	*45.9*		mg/L	*50.00*		*92*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*42.1*		mg/L	*50.00*		*84*	*40-140*			
Surrogate: O-Terphenyl	*1.59*		mg/kg wet	*2.008*		*79*	*40-140*			
LCS										
2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			
LCS Dup										
C19-C36 Aliphatics1	15.3	15.0	mg/kg wet	16.00		96	40-140	3	25	
C9-C18 Aliphatics1	9.5	15.0	mg/kg wet	12.00		80	40-140	5	25	
Decane (C10)	1.0	0.5	mg/kg wet	2.000		52	40-140	12	25	
Docosane (C22)	1.8	0.5	mg/kg wet	2.000		91	40-140	4	25	
Dodecane (C12)	1.2	0.5	mg/kg wet	2.000		58	40-140	10	25	
Eicosane (C20)	1.8	0.5	mg/kg wet	2.000		88	40-140	4	25	
Hexacosane (C26)	1.8	0.5	mg/kg wet	2.000		88	40-140	4	25	
Hexadecane (C16)	1.7	0.5	mg/kg wet	2.000		84	40-140	3	25	
Hexatriacontane (C36)	1.5	0.5	mg/kg wet	2.000		76	40-140	3	25	
Nonadecane (C19)	1.8	0.5	mg/kg wet	2.000		88	40-140	4	25	
Nonane (C9)	0.8	0.5	mg/kg wet	2.000		42	30-140	12	25	
Octacosane (C28)	1.8	0.5	mg/kg wet	2.000		88	40-140	4	25	
Octadecane (C18)	1.8	0.5	mg/kg wet	2.000		90	40-140	4	25	
Tetracosane (C24)	1.8	0.5	mg/kg wet	2.000		89	40-140	4	25	
Tetradecane (C14)	1.4	0.5	mg/kg wet	2.000		71	40-140	4	25	
Triacontane (C30)	1.7	0.5	mg/kg wet	2.000		86	40-140	4	25	
Surrogate: 1-Chlorooctadecane	*1.62*		mg/kg wet	*2.020*		*80*	*40-140*			
LCS Dup										

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0786

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DA02803 - 3546										
2-Methylnaphthalene	1.47	0.20	mg/kg wet	2.000		73	40-140	14	30	
Acenaphthene	1.54	0.40	mg/kg wet	2.000		77	40-140	7	30	
Acenaphthylene	1.51	0.20	mg/kg wet	2.000		76	40-140	9	30	
Anthracene	1.89	0.40	mg/kg wet	2.000		94	40-140	1	30	
Benzo(a)anthracene	1.58	0.40	mg/kg wet	2.000		79	40-140	0.03	30	
Benzo(a)pyrene	1.67	0.40	mg/kg wet	2.000		83	40-140	0.2	30	
Benzo(b)fluoranthene	1.53	0.40	mg/kg wet	2.000		76	40-140	0.2	30	
Benzo(g,h,i)perylene	1.41	0.40	mg/kg wet	2.000		71	40-140	0.1	30	
Benzo(k)fluoranthene	1.66	0.40	mg/kg wet	2.000		83	40-140	0.8	30	
C11-C22 Unadjusted Aromatics1	28.6	15.0	mg/kg wet	34.00		84	40-140	3	25	
Chrysene	1.58	0.40	mg/kg wet	2.000		79	40-140	1	30	
Dibenzo(a,h)Anthracene	1.54	0.20	mg/kg wet	2.000		77	40-140	0.3	30	
Fluoranthene	1.83	0.40	mg/kg wet	2.000		91	40-140	0.09	30	
Fluorene	1.67	0.40	mg/kg wet	2.000		84	40-140	6	30	
Indeno(1,2,3-cd)Pyrene	1.56	0.40	mg/kg wet	2.000		78	40-140	0.7	30	
Naphthalene	1.26	0.40	mg/kg wet	2.000		63	40-140	10	30	
Phenanthrene	1.82	0.40	mg/kg wet	2.000		91	40-140	3	30	
Pyrene	1.83	0.40	mg/kg wet	2.000		92	40-140	2	30	
Surrogate: 2-Bromonaphthalene	*45.8*		mg/L	*50.00*		*92*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*40.3*		mg/L	*50.00*		*81*	*40-140*			
Surrogate: O-Terphenyl	*1.61*		mg/kg wet	*2.008*		*80*	*40-140*			
LCS Dup										
2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch DA02914 - 5030B										
Blank										
Benzene	ND	0.20	mg/kg wet							
C5-C8 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
C9-C10 Aromatics	ND	10.0	mg/kg wet							
C9-C12 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
Ethylbenzene	ND	0.20	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.05	mg/kg wet							
Naphthalene	ND	0.20	mg/kg wet							
Toluene	ND	0.20	mg/kg wet							
Xylene O	ND	0.20	mg/kg wet							
Xylene P,M	ND	0.40	mg/kg wet							
Surrogate: 2,5-Dibromotoluene - FID	*5.00*		mg/kg wet	*5.000*		*100*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*4.95*		mg/kg wet	*5.000*		*99*	*70-130*			
Surrogate: Trifluorotoluene - FID	*4.72*		mg/kg wet	*5.333*		*88*	*70-130*			
Surrogate: Trifluorotoluene - PID	*4.87*		mg/kg wet	*5.333*		*91*	*70-130*			
LCS										
Benzene	4.81	0.20	mg/kg wet	5.000		96	70-130			

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0786

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch DA02914 - 5030B										
C5-C8 Unadjusted Aliphatics	42.1	10.0	mg/kg wet	40.00		105	70-130			
C9-C10 Aromatics	10.4	10.0	mg/kg wet	10.00		104	70-130			
C9-C12 Unadjusted Aliphatics	25.9	10.0	mg/kg wet	30.00		86	70-130			
Ethylbenzene	4.98	0.20	mg/kg wet	5.000		100	70-130			
Methyl tert-Butyl Ether	13.7	0.05	mg/kg wet	15.00		92	70-130			
Naphthalene	10.6	0.20	mg/kg wet	10.00		106	70-130			
Toluene	14.9	0.20	mg/kg wet	15.00		99	70-130			
Xylene O	9.67	0.20	mg/kg wet	10.00		97	70-130			
Xylene P,M	19.6	0.40	mg/kg wet	20.00		98	70-130			
Surrogate: 2,5-Dibromotoluene - FID	*5.11*		mg/kg wet	*5.000*		*102*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*5.06*		mg/kg wet	*5.000*		*101*	*70-130*			
Surrogate: Trifluorotoluene - FID	*5.11*		mg/kg wet	*5.333*		*96*	*70-130*			
Surrogate: Trifluorotoluene - PID	*5.31*		mg/kg wet	*5.333*		*99*	*70-130*			
LCS Dup										
Benzene	4.84	0.20	mg/kg wet	5.000		97	70-130	0.7	25	
C5-C8 Unadjusted Aliphatics	43.9	10.0	mg/kg wet	40.00		110	70-130	4	25	
C9-C10 Aromatics	10.5	10.0	mg/kg wet	10.00		105	70-130	0.6	25	
C9-C12 Unadjusted Aliphatics	33.1	10.0	mg/kg wet	30.00		110	70-130	24	25	
Ethylbenzene	5.04	0.20	mg/kg wet	5.000		101	70-130	1	25	
Methyl tert-Butyl Ether	14.2	0.05	mg/kg wet	15.00		94	70-130	3	25	
Naphthalene	11.4	0.20	mg/kg wet	10.00		114	70-130	8	25	
Toluene	15.0	0.20	mg/kg wet	15.00		100	70-130	0.8	25	
Xylene O	9.71	0.20	mg/kg wet	10.00		97	70-130	0.4	25	
Xylene P,M	19.8	0.40	mg/kg wet	20.00		99	70-130	0.6	25	
Surrogate: 2,5-Dibromotoluene - FID	*5.21*		mg/kg wet	*5.000*		*104*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*5.24*		mg/kg wet	*5.000*		*105*	*70-130*			
Surrogate: Trifluorotoluene - FID	*5.24*		mg/kg wet	*5.333*		*98*	*70-130*			
Surrogate: Trifluorotoluene - PID	*5.40*		mg/kg wet	*5.333*		*101*	*70-130*			

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0786

Notes and Definitions

Z-04	MeOH - covered
U	Analyte included in the analysis, but not detected
SM	Surrogate recovery(ies) outside of criteria due to matrix (UCM/coelution/matrix is present) (SM).
SC	Surrogate recovery(ies) outside of criteria. Reextraction/Reanalysis confirms results (SC).
EL	Elevated Method Reporting Limits due to sample matrix (EL).
D	Diluted.
CD-	Continuing Calibration %Diff/Drift is below control limit (CD-).
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probably Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: 284 Winter Street

ESS Laboratory Work Order: 20A0786

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GZA - Norwood, MA - GZA/TB

Shipped/Delivered Via: ESS Courier

ESS Project ID: 20A0786
Date Received: 1/28/2020
Project Due Date: 2/4/2020
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 0.3 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** Yes / No / (NA)
10. Were any analyses received outside of hold time? Yes / (No)

11. Any Subcontracting needed? Yes / (No)
    ESS Sample IDs:
    Analysis:
    TAT:
12. Were VOAs received? (Yes) / No
    a. Air bubbles in aqueous VOAs? Yes / No
    b. Does methanol cover soil completely? Yes / No / NA

13. Are the samples properly preserved? (Yes) / No
    a. If metals preserved upon receipt: Date: Time: By:
    b. Low Level VOA vials frozen: Date: Time: By:

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / (No)
    a. Was there a need to contact the client? Yes / (No)
    Who was contacted? Date: Time: By:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	8965	Yes	N/A	Yes	VOA Vial	MeOH	
2	9119	Yes	N/A	Yes	8 oz jar	NP	
3	8966	Yes	N/A	Yes	VOA Vial	MeOH	
3	9120	Yes	N/A	Yes	8 oz jar	NP	
4	8967	Yes	N/A	Yes	VOA Vial	MeOH	
4	9121	Yes	N/A	Yes	8 oz jar	NP	
4	9122	Yes	N/A	Yes	8 oz jar	NP	
5	8968	Yes	N/A	Yes	VOA Vial	MeOH	
5	9123	Yes	N/A	Yes	8 oz jar	NP	
6	8969	Yes	N/A	Yes	VOA Vial	MeOH	
6	9124	Yes	N/A	Yes	8 oz jar	NP	

2nd Review
Were all containers scanned into storage/lab? Initials
Are barcode labels on correct containers? Yes / No
Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
Are all Hex Chrome stickers attached? Yes / No / NA
Are all QC stickers attached? Yes / No / NA

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GZA - Norwood, MA - GZA/TB

ESS Project ID: 20A0786
Date Received: 1/28/2020

Are VOA stickers attached if bubbles noted? Yes / No (NA)

Completed By: [signature] Date & Time: 1/28/20 1804

Reviewed By: [signature] Date & Time: 1/28/20 1833

Delivered By: [signature] 1/28/20 1833

ESS Laboratory
Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211 Tel.
(401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS LAB PROJECT ID: 20A0156

Turn Time ___X___ Standard Rush_____ Approved By: _____

State where samples were collected: **MA RI CT NH NJ NY ME** Other_____

Is this project for any of the following: (please circle)
MA-MCP CT-RCP RGP DOD Other_____

Reporting Limits -

Electonic Deliverable Yes__x__ No____
Format: Excel_x__ Access___ PDF_x__ Other_____

GZA Project Manager: ____Kyle Maxfield_____
GZA GeoEnvironmental, Inc.
249 Vanderbilt Avenue
Norwood, MA 02062
(617) 352-2994
PRESUMPTIVE CERTAINTY REQUIRED

Project #: 01.0172397.10
Project Name: 284 Winter Street
Contract Pricing ____
Special Pricing WO#: _____

ESS Lab Sample ID	Date	Collection Time	Grab -G Composite-C	Matrix	Sample Identification	Analysis: # of Containers	EPH (MADEP EPH04-1)	VHP (MADEP VPH04-1)	PHYSICAL AVAILABLE CYANIDE (PAC)	METALS (arsenic, chromium, lead)							Comment #
1	1/21/20	1030	Boring	Soil	B-107_S-4	1		X									
2	1/21/20	1030	Composite	Soil	B-107_S-4 & S-5	1	X										
3	1/22/20	1200	Boring	Soil	B-102_S-6	2	X	X									
4	1/23/20	1400	Boring	Soil	B-108_S-2	3	X	X	X	X							
5	1/23/20	1100	Boring	Soil	B-104_S-12	2	X	X									
6	1/21/20	1500	Boring	Soil	B-109_S-12	2	X	X									

Preservation Code: 1-NP, 2-HCl, 3-H2SO4, 4-HNO3, 5-NaOH, 6-MeOH, 7-Asorbic Acid, 8-ZnAct, 9-_____

Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA

Matrix: S-Soil SD-Solid D-Sludge WW-Wastewater GW-Groundwater SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filter

Cooler Present _____Yes _____No
Seals Intact _____ Yes ____No NA: _____
Cooler Temperature: 3

Sampled by : K. Maxfield
Comments:

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
1445	1/27/20		1/24/20 11:25		1/24/20 11:25
1/24/20 1612		1/24/20 1612			

Please E-mail all changes to Chain of Custody in writing.

Page ____ of ____

ANALYTICAL REPORT

Lab Number:	L2038564
Client:	GZA GeoEnvironmental, Inc. 249 Vanderbilt Ave. Norwood, MA 02062
ATTN:	Kyle Maxfield
Phone:	(781) 278-5845
Project Name:	284 WINTER ST.
Project Number:	172397.10
Report Date:	09/28/20

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: 284 WINTER ST.
Project Number: 172397.10

Lab Number: L2038564
Report Date: 09/28/20

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2038564-01	GZA-1_FINGERPRINT	SOIL	HAVERHILL, MA	09/01/20 09:30	09/16/20

Project Name: 284 WINTER ST. **Lab Number:** L2038564

Project Number: 172397.10 **Report Date:** 09/28/20

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	N/A
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	N/A
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E a.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	N/A

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	N/A
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	N/A
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	N/A

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name:	284 WINTER ST.	**Lab Number:**	L2038564
Project Number:	172397.10	**Report Date:**	09/28/20

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	284 WINTER ST.	**Lab Number:**	L2038564
Project Number:	172397.10	**Report Date:**	09/28/20

Case Narrative (continued)

Sample Receipt

L2038564-01: The collection date and time on the chain of custody was 31-AUG-20 09:30; however, the collection date/time on the container label was 15-SEP-20 09:30. At the client's request, the collection date/time is reported as 01-SEP-20 09:30.

All MCP required questions were answered with affirmative responses where applicable; therefore, there are no relevant protocol-specific QC and/or performance standard non-conformances to report. Note that Petroleum Hydrocarbon Identification is not an analysis under the MA DEP-CAM.

Non-MCP Related Narratives

Petroleum Hydrocarbon Identification by GC-FID

L2038564-01 was extracted with the method required holding time exceeded.

L2038564-01: The sample was extracted and then analyzed using a gas chromatograph equipped with a flame ionization detector (GC/FID). The temperature program and associated experimental conditions were optimized to obtain maximum resolution in an eighty minute chromatographic run representative of hydrocarbons in the n-Octane (C8) to n-Tetracontane (C40) range. Qualitative evaluation of the sample was conducted by reviewing the sample chromatogram in conjunction with a chromatogram of a normal alkane series generated with the same chromatographic conditions. Chromatograms of hydrocarbon reference materials obtained from our library of 82 reference standards were also utilized to provide the best possible sample match. Quantitative determination of the sample's hydrocarbon concentration was performed in accordance with EPA Method 8015M. The sample's total hydrocarbon concentration and all associated quality control data are included in the report.

The following qualitative information is based on a tentative interpretation of chromatographic pattern recognition and boiling point ranges:

Total Petroleum Hydrocarbon Identification

L2038564-01 contains hydrocarbons eluting in the range of n-Octane (C8) to after the elution of n-Tetradecane (C14).

Project Name:	284 WINTER ST.	**Lab Number:**	L2038564
Project Number:	172397.10	**Report Date:**	09/28/20

Case Narrative (continued)

Based on the data generated, L2038564-01 contains material eluting in the low weight range of the chromatogram. The material present is similar to an Aviation Fuel.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Elizabeth Porta

Title: Technical Director/Representative Date: 09/28/20

QC OUTLIER SUMMARY REPORT

Project Name: 284 WINTER ST.
Project Number: 172397.10

Lab Number: L2038564
Report Date: 09/28/20

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment

There are no QC Outliers associated with this report.

ORGANICS

PETROLEUM HYDROCARBONS

Project Name: 284 WINTER ST.
Lab Number: L2038564
Project Number: 172397.10
Report Date: 09/28/20

SAMPLE RESULTS

Lab ID: L2038564-01
Client ID: GZA-1_FINGERPRINT
Sample Location: HAVERHILL, MA

Date Collected: 09/01/20 09:30
Date Received: 09/16/20
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8015D(M)
Analytical Date: 09/22/20 03:41
Analyst: WR
Percent Solids: 88%

Extraction Method: ALPHA OP-013
Extraction Date: 09/19/20 10:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Identification by GC-FID - Mansfield Lab						
Total Petroleum Hydrocarbons (C9-C44)	411		mg/kg	12.3	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	118		50-130
d50-Tetracosane	124		50-130

Project Name: 284 WINTER ST.
Project Number: 172397.10

Lab Number: L2038564
Report Date: 09/28/20

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8015D(M)
Analytical Date: 09/21/20 17:23
Analyst: WR

Extraction Method: ALPHA OP-013
Extraction Date: 09/19/20 10:06

Parameter	Result	Qualifier	Units	RL	MDL
Petroleum Hydrocarbon Identification by GC-FID - Mansfield Lab for sample(s): 01 Batch: WG1412005-1					
Total Petroleum Hydrocarbons (C9-C44)	ND		mg/kg	2.20	–

Surrogate	%Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	113		50-130
d50-Tetracosane	117		50-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: 284 WINTER ST.
Project Number: 172397.10
Lab Number: L2038564
Report Date: 09/28/20

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Petroleum Hydrocarbon Identification by GC-FID - Mansfield Lab Associated sample(s): 01 Batch: WG1412005-2 WG1412005-3								
Nonane (C9)	88		84		50-130	5		30
Decane (C10)	95		90		50-130	5		30
Dodecane (C12)	97		93		50-130	4		30
Tetradecane (C14)	98		93		50-130	5		30
Hexadecane (C16)	101		97		50-130	4		30
Octadecane (C18)	104		100		50-130	4		30
Nonadecane (C19)	103		100		50-130	3		30
Eicosane (C20)	106		102		50-130	4		30
Docosane (C22)	103		100		50-130	3		30
Tetracosane (C24)	103		100		50-130	3		30
Hexacosane (C26)	104		102		50-130	2		30
Octacosane (C28)	111		108		50-130	3		30
Triacontane (C30)	108		105		50-130	3		30
Hexatriacontane (C36)	105		103		50-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
o-Terphenyl	122		100		50-130
d50-Tetracosane	124		103		50-130

INORGANICS
&
MISCELLANEOUS

Project Name: 284 WINTER ST.
Project Number: 172397.10
Lab Number: L2038564
Report Date: 09/28/20

SAMPLE RESULTS

Lab ID: L2038564-01
Client ID: GZA-1_FINGERPRINT
Sample Location: HAVERHILL, MA
Sample Depth:
Matrix: Soil

Date Collected: 09/01/20 09:30
Date Received: 09/16/20
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Mansfield Lab										
Solids, Total	88.0		%	0.100	–	1	-	09/19/20 10:06	121,2540G	AL

Project Name: 284 WINTER ST.
Project Number: 172397.10

Lab Number: L2038564
Report Date: 09/28/20

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2038564-01A	Glass 250ml/8oz unpreserved	A	NA		3.1	Y	Absent		A2-TS(7),A2-PHI(14)

*Values in parentheses indicate holding time in days

Project Name:	284 WINTER ST.	**Lab Number:**	L2038564
Project Number:	172397.10	**Report Date:**	09/28/20

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

Report Format: Data Usability Report

Project Name:	284 WINTER ST.	**Lab Number:**	L2038564
Project Number:	172397.10	**Report Date:**	09/28/20

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration

Report Format: Data Usability Report

Project Name:	284 WINTER ST.	**Lab Number:**	L2038564
Project Number:	172397.10	**Report Date:**	09/28/20

Data Qualifiers

Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: Data Usability Report

Project Name: 284 WINTER ST.
Project Number: 172397.10
Lab Number: L2038564
Report Date: 09/28/20

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
EPA TO-12 Non-methane organics
EPA 3C Fixed gases
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D.**

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 9/16/20

ALPHA Job #: L2038564

Westborough, MA TEL: 508-898-9220 FAX: 508-898-9193
Mansfield, MA TEL: 508-822-9300 FAX: 508-822-3288

Project Information

Project Name: 284 Winter St

Project Location: Haverhill, MA

Project #: 172397.10

Project Manager: Kyle Maxfield

ALPHA Quote #:

Client Information

Client: GZA GeoEnvironmental Inc

Address: 249 Vanderbilt Ave

Norwood, MA 02062

Phone: 781-278-3700

Fax:

Email: kyle.maxfield@gza.com

☐ These samples have been Previously analyzed by Alpha

Turn-Around Time

☒ Standard ☐ Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Report Information Data Deliverables

☐ FAX ☒ EMAIL

☒ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State/Fed Program Criteria

MCP PRESUMPTIVE CERTAINTY-CT REASONABLE CONFIDENCE PROTOCOLS

☒ Yes ☐ No Are MCP Analytical Methods Required?

☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

ANALYSIS

Petroleum Hydrocarbon Identification

SAMPLE HANDLING
Filtration
☐ Done
☐ Not Needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Petroleum Hydrocarbon Identification	SAMPLE HANDLING	Sample Specific Comments	TOTAL # BOTTLES
38564-01	GZA-1_Fingerprint	9/3/20	930	SOIL	MLM	☒			1
						☐			
						☐			
						☐			
						☐			
						☐			
						☐			
						☐			
						☐			
						☐			

Container Type	A	-	-	-	-	-	-	-	-	-	-	-
Preservative	A	-	-	-	-	-	-	-	-	-	-	-

PLEASE ANSWER QUESTIONS ABOVE!

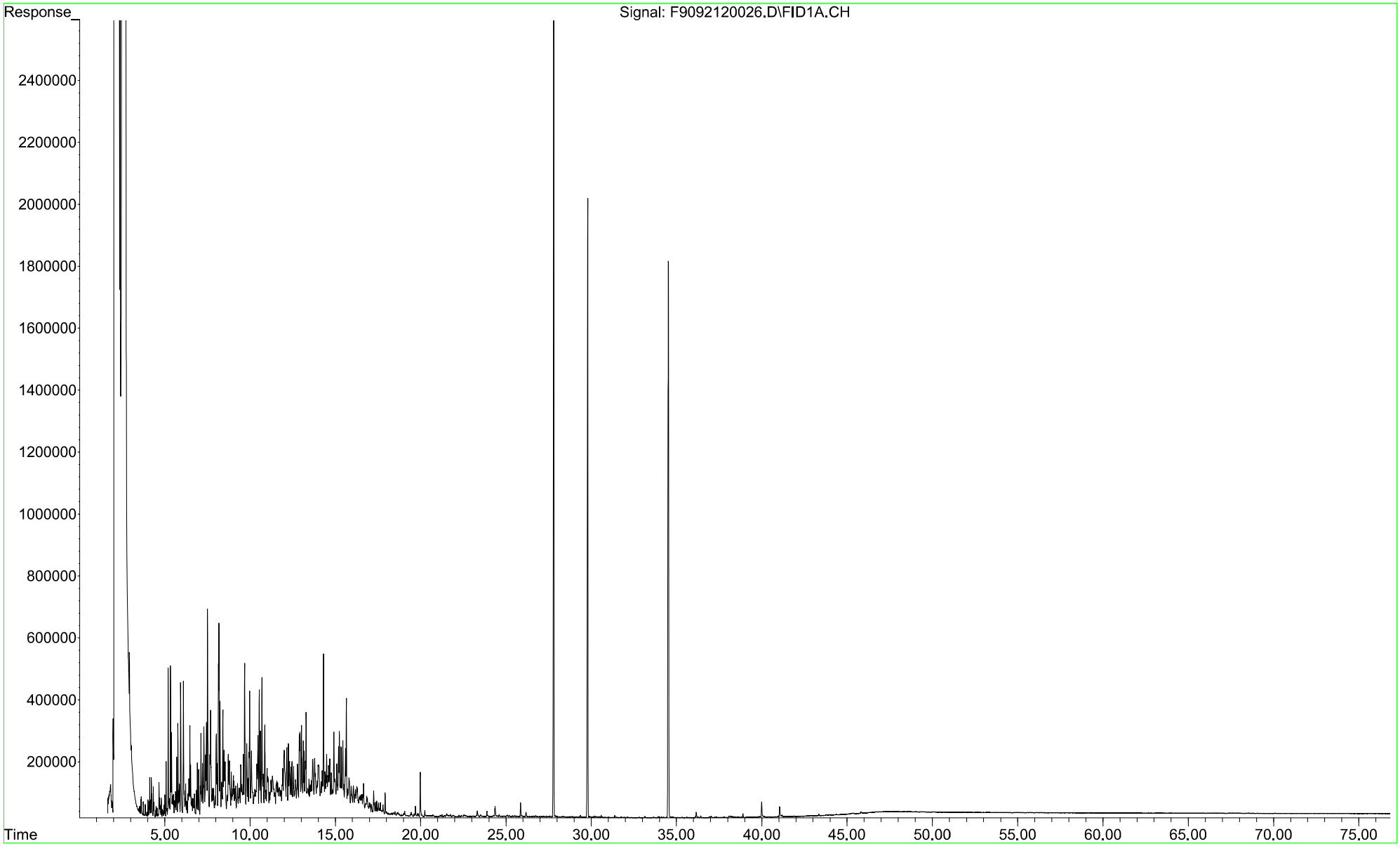
IS YOUR PROJECT MA MCP or CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
Matt McGarvie	9/15/20 1720	Via Alpha AM	9/16/20 1105
	9/16/20 1741	Nellia Mar	9/16/20 1741

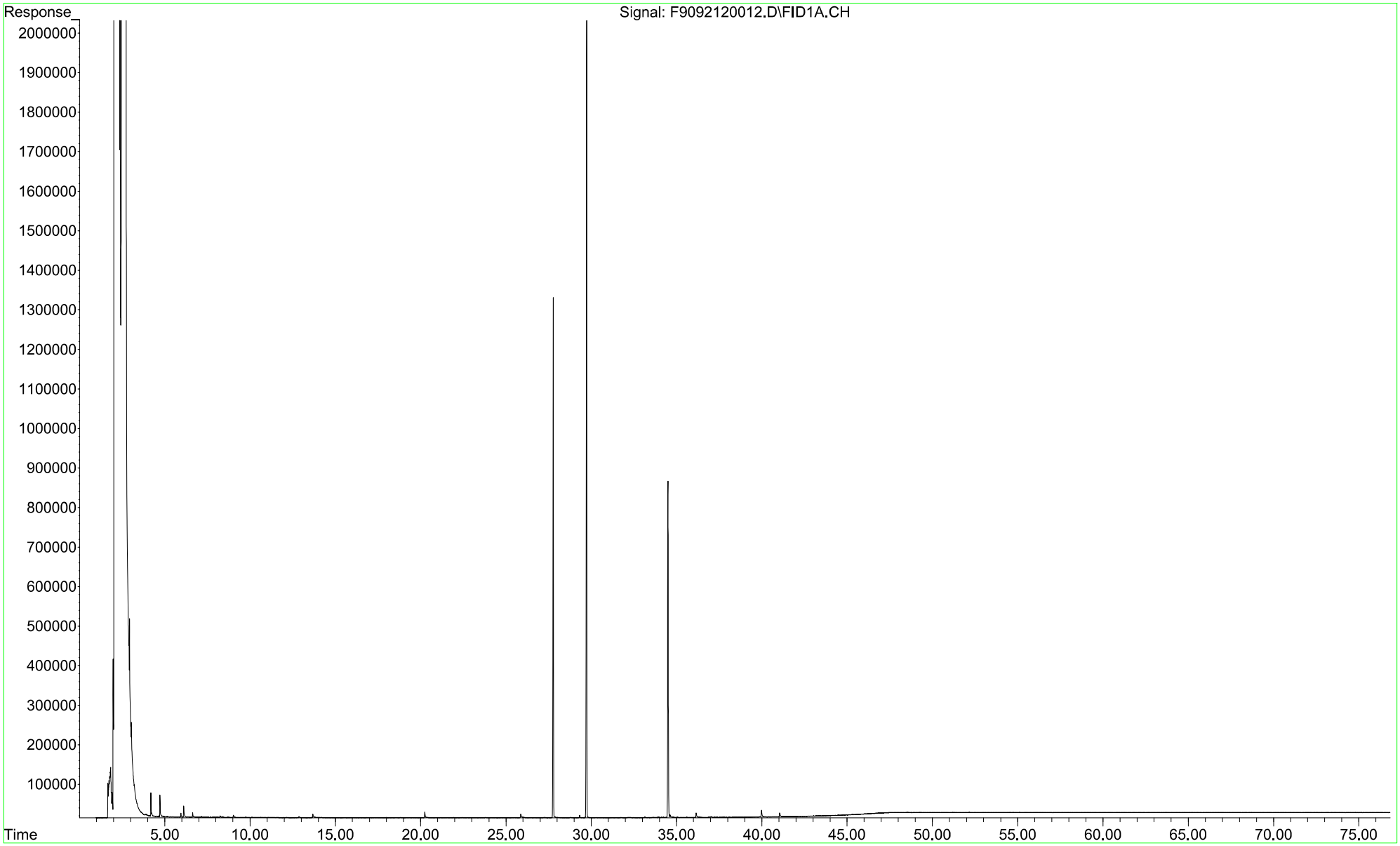
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

GC-FID Chromatogram

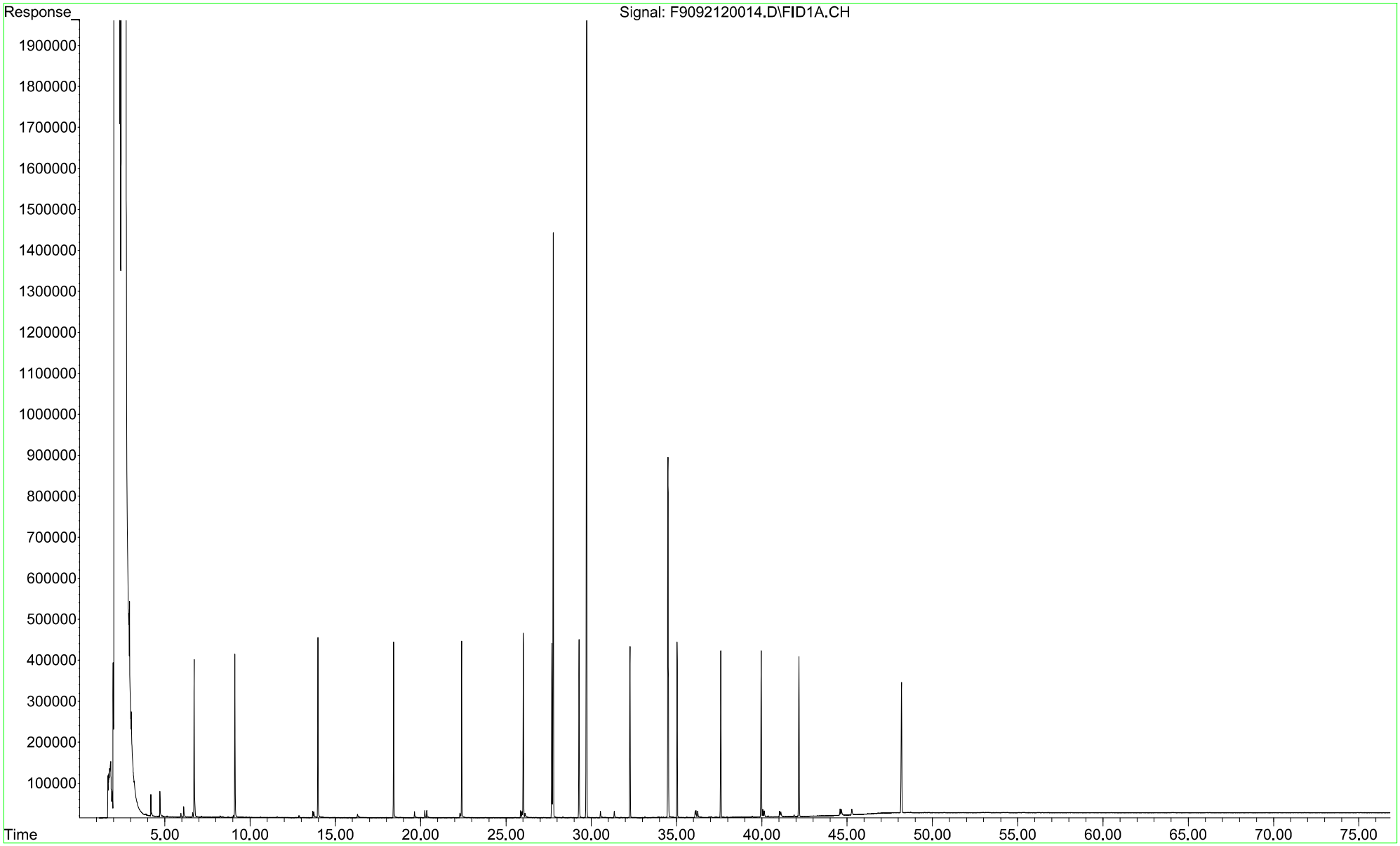
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Operator : FID9:WR
Acquired : 22 Sep 2020 3:41 am using AcqMethod FID9A.M
Instrument : FID 9
Sample Name: L2038564-01
Misc Info : WG1412603,WG1412005,ICAL16844
Vial Number: 13



File :O:\Forensics\Data\FID9\2020\SEP\SEP21\F9092120012.D
Operator : FID9:WR
Acquired : 21 Sep 2020 5:23 pm using AcqMethod FID9A.M
Instrument : FID 9
Sample Name: WG1412005-1 (Method Blank)
Misc Info : WG1412603,WG1412004,ICAL16844
Vial Number: 6

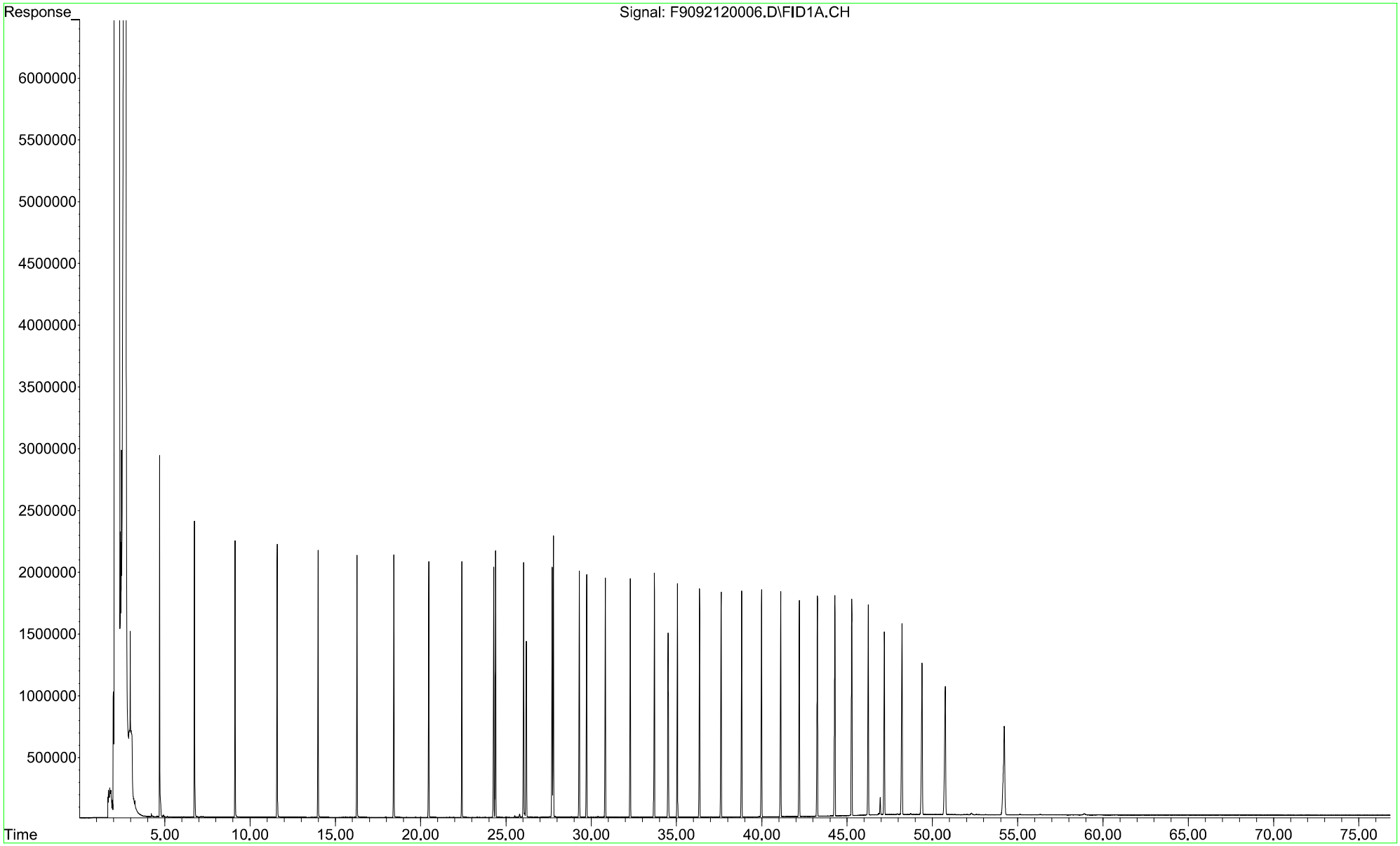


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Operator : FID9:WR
Acquired : 21 Sep 2020 6:52 pm using AcqMethod FID9A.M
Instrument : FID 9
Sample Name: WG1412005-2 (Laboratory Control Sample)
Misc Info : WG1412603,WG1412004,ICAL16844
Vial Number: 7

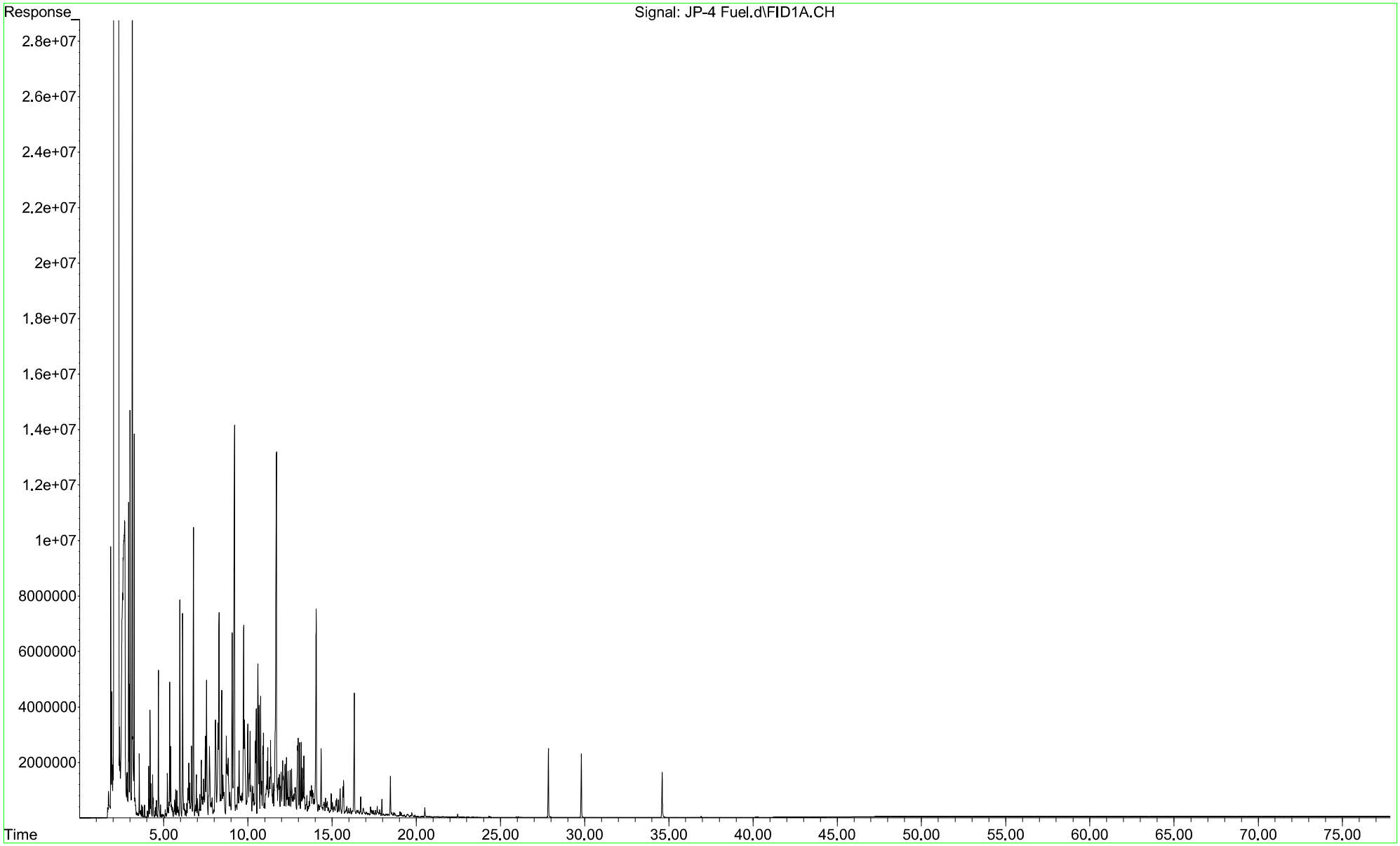


Petroleum Reference Standards

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Operator : FID9:WR
Acquired : 21 Sep 2020 1:00 pm using AcqMethod FID9A.M
Instrument : FID 9
Sample Name: WG1412603-1 (Alkane Reference Standard)
Misc Info : WG1412603,FRBC72,ICAL16844
Vial Number: 3



```
File       :O:\Forensics\Data\LIBRARY\Hydrocarbon Reference Standards\JP
...         -4 Fuel.d
Operator   : FID17:WR
Instrument :   FID17
Acquired   : 24 Feb 2018   6:35 am using AcqMethod FID17.M
Sample Name: JP4 AT10UG/ML
Misc Info  :
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Appendix J – GZA Boring and Monitoring Well Logs

TEST BORING LOG

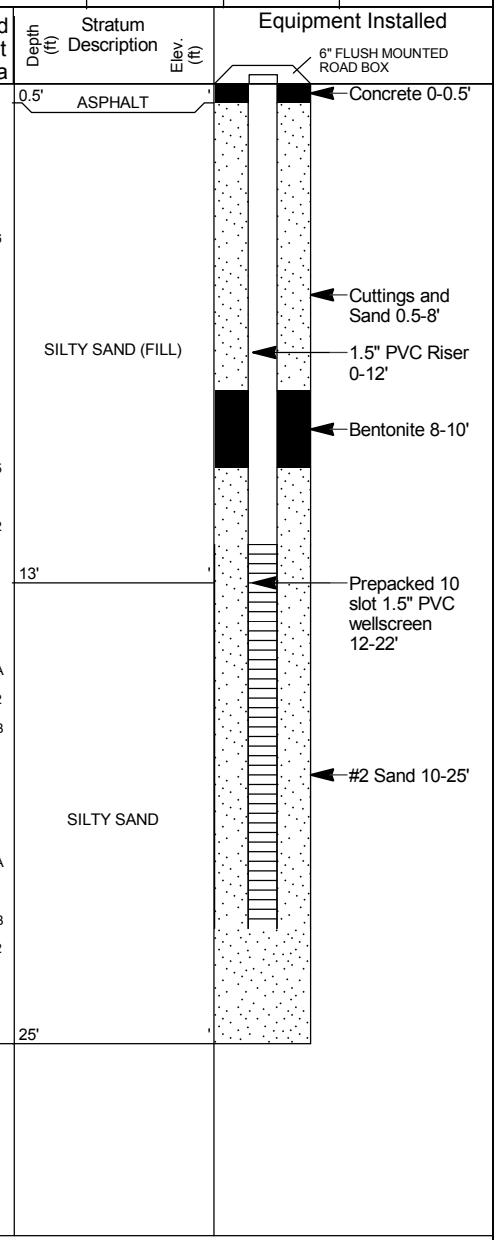
GZA GeoEnvironmental, Inc. *Engineers and Scientists*	**284 Winter Street Haverhill, MA**	**BORING NO.:** NFSB-01 (MW) **SHEET:** 1 of 1 **PROJECT NO:** 01.0172397.00 **REVIEWED BY:** JRC

Drilling Co.: Technical Drilling Services, Inc. **Foreman:** Alfred Allen **Logged By:** Andrew Sargent	**Type of Rig:** Geoprobe **Rig Model:** 6610 **Drilling Method:** Direct Push	**Boring Location:** See PlanN - E **Ground Surface Elev. (ft.):** **Final Boring Depth (ft.):** 25 **Date Start - Finish:** 10/20/2016 - 10/25/2016	**H. Datum:** **V. Datum:**

Auger/Casing Type: Geoprobe **I.D./O.D.:** 2.25" O.D. **Hmr Weight (lb.):** **Hmr Fall (in.):** **Other:** Steel Casing	**Sampler Type:** Dual Tube Sampler (DT22) **I.D./O.D (in.):** 1.375" O.D. **Sampler Hmr Wt:** **Sampler Hmr Fall:** **Other:** 5' Acetate Sleeve	**Groundwater Depth (ft.)**

Date	Time	Water Depth	Casing	Stab. Time
10/25/16	1500	14.04		1.5 hrs.
11/1/16		13.87		6 days

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data
		S-1	0-1	12	12			S-1: Dry, tan, fine to medium SAND, little Silt, trace Gravel.		S-1 ND
		S-2	1-2	12	12			S-2: Dry, tan, fine to medium SAND, little Silt, trace Gravel.	1	S-2 32.9
		S-3	2-3	12	12			S-3: Dry, gray, fine SAND, little Silt, trace Gravel.	2	S-3 154.6
		S-4	3-4	12	12			S-4: Dry, gray, fine SAND, little Silt.	3	S-4 28.9
5		S-5	4-5	12	12			S-5: Dry, gray, fine SAND, little Silt.	4	S-5 24.5
		S-6	5-6	12	12			S-6: Dry, gray, fine SAND, little Silt, slight petroleum-like odor.		S-6 24.5
		S-7	6-7	12	12			S-7: Dry, dark gray, fine SAND, little Silt, strong petroleum-like odor.		S-7 183.5
		S-8	7-8	12	12			S-8: Dry, dark gray, fine SAND, little Silt, strong petroleum-like odor.		S-8 281.2
		S-9	8-10	24	0			S-9: No soil recovery.		S-9 NA
10		S-10	10-15	60	16			S-10: Top 2": Moist, brown, fine to medium SAND, trace Brick, trace Gravel. Middle 2": Crushed ROCK. Bottom 12": Moist, gray/black, fine SAND, little Silt, strong petroleum-like odor.		S-10 433.1
15		S-11	15-20	60	50			S-11A: (15-16') Top 19": Wet, gray/tan, fine SAND and SILT, heavy sheen and strong petroleum-like odor. S-11B: (16-20') Middle 19-50": Wet, black/brown/tan, fine SAND and SILT, sheen and strong petroleum-like odor from 27-38" of recovery.		S-11A 478.2 S-11B 1084
20		S-12	20-25	60	45			NAPL staining on sleeve at 23-27" of recovery. Sample collected from 23-35" of recovery. S-12A: (20-22.5') Wet, gray fine to coarse SAND, some Silt, sheen noted. S-12B: (22.5-25') Wet, gray/brown, fine to coarse SAND, some Silt, trace Gravel.	5	S-12A 340.1 S-12B 299.2
25								Bottom of boring at 25 feet.	6 7	
30										



REMARKS

1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmv). ND indicates not detected above instrument detection limit (<0.1 ppmv).
2. Photographic logs of each soil sample were taken in the field and are on file in the GZA electronic file directory.
3. Vacuum excavated to 8 feet using Vacmaster System 4000 vac truck, samples from 0 to 8 feet recovered via hand auger in advance of vacuum excavator.
4. Soil samples S-3, S-8, S-10, S-11A and S-11B submitted for forensic analyses.
5. Ramboll Environ collected split soil samples S-11B and S-12A for 8260 VOC analysis during vacuum excavation.
6. Refusal at 2.75 feet below ground surface in NFSB-01A approximately 4 feet east of boring NFSB-01.
7. Soil samples S-1 and S-2 obtained from boring NFSB-01A for PID screening.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: NFSB-01 (MW)

172397 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMPL W/N/E 2PG; 12/16/2016

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

284 Winter Street
Haverhill, MA

BORING NO.: NFSB-02 (MW)
SHEET: 1 of 1
PROJECT NO: 01.0172397.00
REVIEWED BY: JRC

Drilling Co.: Technical Drilling Services, Inc.
Foreman: Alfred Allen
Logged By: Andrew Sargent

Type of Rig: Geoprobe
Rig Model: 6610
Drilling Method: Direct Push

Boring Location: See PlanN - E
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 25
Date Start - Finish: 10/21/2016 - 10/24/2016

H. Datum:
V. Datum:

Auger/Casing Type: Geoprobe
I.D./O.D.: 2.25" O.D.
Hmr Weight (lb.):
Hmr Fall (in.):
Other: Steel Casing

Sampler Type: Dual Tube Sampler (D22)
I.D./O.D (in.): 1.375" O.D.
Sampler Hmr Wt:
Sampler Hmr Fall:
Other: 5' Acetate Sleeve

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time
10/24/16	1445	14.00		2.5 hrs.
11/1/16		14.20		7 days

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data
		S-1	0-1	12	12			S-1: Dry, tan, fine to medium SAND, little Silt, trace Gravel.		S-1
		S-2	1-2	12	12			S-2: Dry, tan, fine to medium SAND, little Silt, trace Gravel, trace Brick.	1	0.4
		S-3	2-3	12	12			S-3: Dry, dark brown, fine to medium SAND, little Silt, trace Brick, Wood Fragments.	2	S-2
		S-4	3-4	12	12			S-4: Dry, dark brown, fine to medium SAND, little Silt, trace Brick, trace Gravel.	3	0.2
5		S-5	4-5	12	12			S-5: Dry, black, fine to medium SAND, little Silt, trace Gravel, strong petroleum-like odor.	4	S-3
		S-6	5-6	12	12			S-6: Dry, black, fine to medium SAND, little Silt, trace Gravel, strong petroleum-like odor.	5	175.7
		S-7	6-7	12	12			S-7: Dry, black, fine to medium SAND, little Silt, trace Gravel, strong petroleum-like odor.		S-4
		S-8	7-8	12	12			S-8: Dry, black, fine to medium SAND, little Silt, trace Gravel, strong petroleum-like odor.	6	308.7
		S-9	8-10	24	0			S-9: No recovery.		S-5
10		S-10	10-15	60	41			S-10A: (10-12') Moist, black, fine SAND, little Silt.		705.2
								S-10B: (12-15') Wet, black, fine SAND, little Silt, heavy sheen.		S-6
								S-11: Wet, black, fine to medium SAND, trace Silt, heavy sheen, strong petroleum-like odor. Color grades to gray in bottom 4" of recovery.		1065
15								S-12A: (20-22') Wet, gray, fine SAND and SILT, trace medium Sand.		S-7
								S-12B: (22-25') Wet, black/gray, fine SAND and SILT, heavy sheen, strong petroleum-like odor.	7	1065
										S-8
										991.2
										S-10A
										1112
										S-10B
										1162
		S-11	15-20	60	40				8	S-11
										1074
20		S-12	20-25	60	43					S-12A
										462.8
										S-12B
										261.9
25								Bottom of boring at 25 feet.		
30										

Stratum Description
0.5' ASPHALT
SILTY SAND (FILL)
4'
SILTY SAND
25'

Equipment Installed
6" FLUSH MOUNTED ROAD BOX
Concrete 0-0.5'
Cuttings & Sand 0.5-8'
1.5" PVC Riser 0-12'
Bentonite 8-10'
10-25' #2 Sand
Prepacked 10 slot 1.5" PVC wellscreen 12-22'

REMARKS

1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmv). ND indicates not detected above instrument detection limit (<0.1 ppmv).
2. Photographic logs of each soil sample were taken in the field and are on file in the GZA electronic file directory.
3. Vacuum excavated to 8 feet using Vacmaster System 4000 vac truck, samples from 0 to 8 feet recovered via hand auger in advance of vacuum excavator.
4. Soil samples S-3, S-10 and S-11 collected for forensic analyses.
5. Soil samples S-1 and S-2 collected from boring NFSB-02A.
6. Ramboll Environ collects split soil samples from S-8 and S-10B for 8260 VOC analysis.
7. Refusals at 1.75 feet below ground surface in borings NFSB-02A and NFSB-02B approximately 9.5 feet and 5 feet east of NFSB-02 respectively.
8. Duplicate sample collected from S-11.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: NFSB-02 (MW)

172397 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMPL W/N/E 2PG; 12/16/2016

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*	**284 Winter Street Haverhill, MA**	**BORING NO.:** NFSB-03 **SHEET:** 1 of 1 **PROJECT NO:** 01.0172397.00 **REVIEWED BY:** JRC

Drilling Co.: Technical Drilling Services, Inc. **Foreman:** Alfred Allen **Logged By:** Andrew Sargent	**Type of Rig:** Geoprobe **Rig Model:** 6610 **Drilling Method:** Direct Push	**Boring Location:** See PlanN - E **Ground Surface Elev. (ft.):** **Final Boring Depth (ft.):** 20 **Date Start - Finish:** 10/21/2016 - 10/25/2016	**H. Datum:** **V. Datum:**

Auger/Casing Type: Geoprobe **I.D./O.D.:** 2.25" O.D. **Hmr Weight (lb.):** **Hmr Fall (in.):** **Other:** Steel Casing	**Sampler Type:** Dual Tube Sampler(DT22) **I.D./O.D (in.):** 1.375" O.D. **Sampler Hmr Wt:** **Sampler Hmr Fall:** **Other:** 5' Acetate Sleeve	**Groundwater Depth (ft.)**

Date	Time	Water Depth	Casing	Stab. Time

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft)	Stratum Description	Stratum Elev. (ft)	Equipment Installed
		S-1	0-1	12	12			S-1: Dry, tan, fine SAND, little Silt, trace Gravel.		S-1	0.33'	ASPHALT		No Equipment Installed
		S-2	1-2	12	12			S-2: Dry, tan, fine SAND, little Silt, trace Gravel. Bottom 2-3" of recovery grades to black, fine to coarse SAND, little Gavel.	1 2 3 3	1.0 S-2 20.3	2'	SAND AND GRAVEL BRICK AND COBBLES (FILL)		
5		S-3	5-10	60	9			S-3: Top 5": Moist, brown, fine to medium SAND, little Silt. Bottom 4": Moist, black, fine SAND and SILT.	5 6 7	S-3 139.2	5'			
10		S-4	10-15	60	25			S-4: Top 12": Moist, brown/black, fine SAND, little Silt. Bottom 13": Wet, gray/black, fine to coarse SAND, trace Silt, Gravel. Strong petroleum-like odor noted.		S-4 658.6		FINE SAND AND SILT		
15		S-5	15-20	60	45			S-5A: (15-17') Wet, black, fine SAND, little Silt, heavy sheen. S-5B: (17-19') Wet, gray, fine SAND, little Silt. S-5C: (19-20') Moist, light gray/brown, fine SAND, some Silt.		S-5A 413.4 S-5B 136.8 S-5C 64.3				
20								Bottom of boring at 20 feet.			20'			
25														
30														

REMARKS

1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmv). ND indicates not detected above instrument detection limit (<0.1 ppmv).
2. Photographic logs of each soil sample were taken in the field and are on file in the GZA electronic file directory.
3. Vacuum excavated to 5 feet using Vacmaster System 4000 vac truck, samples from 0 to 5 feet recovered via hand auger in advance of vacuum excavator.
3. Soil samples S-2, S-4 and S-5 collected for forensic analyses.
5. Refusal at 1.75 feet below ground surface in borings NFSB-03A and NFSB-03B approximately 4 feet northeast and 3 feet north of NFSB-03.
6. Soil samples S-1 and S-2 taken from NFSB-03A.
7. Collected field duplicate of S-5 (15-17') for forensic analysis.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: NFSB-03

172397 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMPL W/N/E 2PG; 12/16/2016

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

284 Winter Street
Haverhill, MA

BORING NO.: NFSB-04
SHEET: 1 of 1
PROJECT NO: 01.0172397.00
REVIEWED BY: JRC

Drilling Co.: Technical Drilling Services, Inc.
Foreman: Alfred Allen
Logged By: Andrew Sargent

Type of Rig: Geoprobe
Rig Model: 6610
Drilling Method: Direct Push

Boring Location: See PlanN - E
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 25
Date Start - Finish: 10/20/2016 - 10/24/2016

H. Datum:
V. Datum:

Auger/Casing Type: Geoprobe
I.D./O.D.: 2.25" O.D.
Hmr Weight (lb.):
Hmr Fall (in.):
Other: Steel Casing

Sampler Type: Dual Tube Sampler (DT22)
I.D./O.D (in.): 1.375" O.D.
Sampler Hmr Wt:
Sampler Hmr Fall:
Other: 5' Acetate Sleeve

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft)	Stratum Description	Stratum Elev. (ft)	Equipment Installed
		S-1	0-1	12	12			S-1: Dry, tan, fine to medium SAND, trace Silt, Gravel.		S-1	0.33'	ASPHALT		No Equipment Installed
		S-2	1-2	12	12			S-2: Dry, tan, fine to medium SAND, trace Silt, Gravel.	1	1.3				
		S-3	2-3	12	12			S-3: Dry, light brown, medium SAND, little fine Sand, trace Gravel.	2	S-2				
		S-4	3-4	12	12			S-4: Dry, light brown, medium SAND, little fine Sand, trace Gravel.	3	0.5				
5		S-5	4-5	12	12			S-5: Top 9.5": Dry, light brown, fine to medium SAND, trace Gravel. Bottom 2.5": Dry, black, fine SAND, little Silt.	4	S-3				
		S-6	5-6	12	12			S-6: Dry, dark brown, fine to coarse SAND, trace Gravel.		0.2		FINE TO MEDIUM SAND (FILL)		
		S-7	6-7	12	12			S-7: Dry, dark brown, fine to coarse SAND, trace Gravel.		S-4				
		S-8	7-8	12	12			S-8: Dry, dark brown, fine to coarse SAND, trace Concrete.		0.3				
		S-9/ S-10	8-10	24	17			S-9: (8-9') Dry, tan, fine SAND, little Silt. S-10: (9-10') Dry, black, fine SAND, little Silt, strong petroleum-like odor.		S-5				
10		S-11	10-15	60	39			S-11A: (10-12.5') Moist, black, fine SAND, little Silt. S-11B: (12.5-15') Moist, black, fine SAND, little Silt.		0.9				
										S-6	8'			
										5.9				
										S-7				
										1.3				
										S-8				
										4.5				
										S-9				
										8.0 S-				
										10				
15		S-12	15-20	60	48			S-12A: (15-16') Wet, black, fine SAND, little Silt. S-12B: (16-20') Wet, brown, fine SAND, little Silt.		131.8				
										S-11A				
										354.5				
										S-11B		SILTY FINE SAND		
										652.9				
										S-12A				
										602.1				
20		S-13	20-25	60	37			S-13A: (21-22') Top 10" of recovery: Moist, brown, fine SAND and SILT, trace organics (section not sampled). Wet, brown/gray, fine SAND, little Silt, heavy sheen.		S-12B				
										783.1				
										S-13A				
										679.2				
										S-13B				
										241.5				
25								S-13B: (22-23') Wet, gray, fine to medium SAND, little Silt, light sheen.			25'			
								Bottom of boring at 25 feet.						
30														

REMARKS

1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmv). ND indicates not detected above instrument detection limit (<0.1 ppmv).
2. Photographic logs of each soil sample were taken in the field and are on file in the GZA electronic file directory.
3. Vacuum excavated to 8 feet using Vacmaster System 4000 vac truck, samples from 0 to 8 feet recovered via hand auger in advance of vacuum excavator.
4. Soil samples S-1 and S-11 collected for forensic analyses.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: NFSB-04

172397 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMPL W/N/E 2PG; 12/16/2016

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

284 Winter Street
Haverhill, MA

BORING NO.: NFSB-05
SHEET: 1 of 1
PROJECT NO: 01.0172397.00
REVIEWED BY: JRC

Drilling Co.: Technical Drilling Services, Inc.
Foreman: Alfred Allen
Logged By: Andrew Sargent

Type of Rig: Geoprobe
Rig Model: 6610
Drilling Method: Direct Push

Boring Location: See PlanN - E
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 14.75
Date Start - Finish: 10/20/2016 - 10/24/2016

H. Datum:
V. Datum:

Auger/Casing Type: Geoprobe
I.D./O.D.: 2.25" O.D.
Hmr Weight (lb.):
Hmr Fall (in.):
Other: Steel Casing

Sampler Type: Dual Tube Sampler (DT22)
I.D./O.D (in.): 1.375" O.D.
Sampler Hmr Wt:
Sampler Hmr Fall:
Other: 5' Acetate Sleeve

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft)	Stratum Description	Stratum Elev. (ft)	Equipment Installed
		S-1	0-1	12	12			S-1: Dry, orange/brown, fine to coarse SAND, trace Silt, Gravel.		S-1	0.33'	ASPHALT		No Equipment Installed
		S-2	1-2	12	12			S-2: Dry, black, fine to medium SAND, little Silt, trace Brick, Gravel, naphthalene-like odor.	1	0.9				
				12	12				2	S-2				
		S-3	3-4	12	12			S-3: Dry, black, fine to medium SAND, little Silt, trace Gravel and Brick Fragments.	3	75.2				
		S-4	4-5	12	12			S-4: Dry, black, fine to medium SAND, little Silt, trace Gravel and Brick Fragments.	4	S-3				
5		S-5	5-6	12	12			S-5: Dry, black, fine to medium SAND, little Silt, trace Gravel.		169.7		SILTY SAND AND GRAVEL (FILL)		
		S-6	6-7	12	12			S-6: Dry, black, fine to medium SAND, little Silt, trace Gravel.	5	S-5				
		S-7	7-8	12	12			S-7: Dry, black, fine to medium SAND, little Silt, trace Gravel.	6	324.6				
		S-8	8-10	24	14			S-8: Top 7": Moist, dark brown, fine SAND, little Silt. Bottom 7": Crushed Rock Fragments.	7	S-8				
10		S-9	10-17.75	57	2			S-9: Crushed Rock Fragments.		7.7	9'			
										S-9		COBBLES AND BOULDERS		
										NA				
15								Bottom of boring at 14.75 feet.			14.75'			
20														
25														
30														

REMARKS

1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmv). ND indicates not detected above instrument detection limit (<0.1 ppmv).
2. Photographic logs of each soil sample were taken in the field and are on file in the GZA electronic file directory.
3. Vacuum excavated to 8 feet using Vacmaster System 4000 vac truck, samples from 0 to 8 feet recovered via hand auger in advance of vacuum excavator.
4. Soil samples S-2 and S-5 collected for forensic analyses.
5. Refusal at 1.75 feet below ground surface in NFSB-05A located approximately 4 feet west of NFSB-05.
6. Soil sample S-2 obtained from boring NFSB-05A.
7. PID screen of sample S-8 (8 to 10 feet below ground surface) taken of recovery while in acetate sleeve.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: NFSB-05

172397 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMPL W/N/E 2PG; 12/16/2016

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

284 Winter Street
Haverhill, MA

BORING NO.: NFSB-06
SHEET: 1 of 1
PROJECT NO: 01.0172397.00
REVIEWED BY: JRC

Drilling Co.: Technical Drilling Services, Inc.	**Type of Rig:** Geoprobe	**Boring Location:** See PlanN - E	**H. Datum:**
Foreman: Alfred Allen	**Rig Model:** 6610	**Ground Surface Elev. (ft.):**	**V. Datum:**
Logged By: Andrew Sargent	**Drilling Method:** Direct Push	**Final Boring Depth (ft.):** 22	
		Date Start - Finish: 10/20/2016 - 10/25/2016	

Auger/Casing Type: Geoprobe	**Sampler Type:** Dual Tube Sampler (DT22)
I.D./O.D.: 2.25" O.D.	**I.D./O.D (in.):** 1.375" O.D.
Hmr Weight (lb.):	**Sampler Hmr Wt:**
Hmr Fall (in.):	**Sampler Hmr Fall:**
Other: Steel Casing	**Other:** 5' Acetate Sleeve

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft)	Stratum Description	Stratum Elev. (ft)	Equipment Installed
		S-1	0-1	12	12			S-1: Moist, brown, fine to coarse SAND and SILT.		S-1 ND				No Equipment Installed
		S-2	1-2	12	12			S-2: Moist, tan, fine to coarse SAND and SILT, trace Gravel.	1	S-2 2.8				
		S-3	2-3	12	12			S-3: Moist, dark brown, fine SAND and SILT, trace Gravel.	2	S-3 41.6				
		S-4	3-4	12	12			S-4: Moist, dark brown, fine SAND and SILT, trace Gravel.	3	S-4 93.6		SAND AND SILT (FILL)		
5		S-5	5-6	12	12			S-5: Moist, dark brown, fine to coarse SAND and SILT, trace Gravel, trace Brick.	4	S-5 83.1				
		S-6	6-7	12	12			S-6: Moist, orange/tan, fine SAND, some Silt, trace Gravel.		S-6 57.7	8'			
		S-7	7-8	12	12			S-7: Moist, orange/tan, fine SAND, some Silt, trace Gravel.		S-7 58.5		SAND AND SILT (FILL)		
		S-8	8-10	24	15			S-8: Moist, brown/black, fine SAND, tar coated wood chips.		S-8 103.2		WITH WOOD CHIPS		
10		S-9	10-15	60	28			S-9A: (10-12.5') Moist, black, tar-stained SILT, little wood chips, trace Gravel.		S-9A 1001	12.5'			
								S-9B: (12.5-15') Moist, brown, fine SAND and SILT.	5	S-9B 855.3				
15		S-10	15-20	60	38			S-10A: (15-17') Wet, black/gray, fine SAND and SILT, trace wood fibers, NAPL staining on acetate sleeve.		S-10A 894.4				
								S-10B: (17-20') Wet, gray/brown, fine to medium SAND, heavy sheen.		S-10B 833.1		FINE SAND AND SILT		
20		S-11	20-22	24	24			S-11A: (20-21') Wet, brown, fine SAND, trace Silt, trace Gravel.		S-11A 47.1				
								S-11B: (21-22') Wet, tan/gray, fine SAND and SILT.		S-11B 47.1	22'			
								Refusal of boring at 22 feet.						
25														
30														

REMARKS

1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmv). ND indicates not detected above instrument detection limit (<0.1 ppmv).
2. Photographic logs of each soil sample were taken in the field and are on file in the GZA electronic file directory.
3. Vacuum excavated to 8 feet using Vacmaster System 4000 vac truck, samples from 0 to 8 feet recovered via hand auger in advance of vacuum excavator.
4. Soil samples S-2 and S-9 collected for forensic analyses.
5. Ramboll Environ collected split soil samples of S-6 (6-7') and S-9B (12.5-15') for 8260 VOC analysis.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: NFSB-06

172397 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMPL W/N/E 2PG; 12/16/2016

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

284 Winter Street
Haverhill, MA

BORING NO.: NFSB-07
SHEET: 1 of 1
PROJECT NO: 01.0172397.00
REVIEWED BY: JRC

Drilling Co.: Technical Drilling Services, Inc.
Foreman: Alfred Allen
Logged By: Andrew Sargent

Type of Rig: Geoprobe
Rig Model: 6610
Drilling Method: Direct Push

Boring Location: See PlanN - E
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 20
Date Start - Finish: 10/20/2016 - 10/24/2016

H. Datum:
V. Datum:

Auger/Casing Type: Geoprobe
I.D./O.D.: 2.25" O.D.
Hmr Weight (lb.):
Hmr Fall (in.):
Other: Steel Casing

Sampler Type: Dual Tube Sampler (DT22)
I.D./O.D (in.): 1.375" O.D.
Sampler Hmr Wt:
Sampler Hmr Fall:
Other: 5' Acetate Sleeve

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft)	Stratum Description	Stratum Elev. (ft)	Equipment Installed
		S-1	0-1	12	12			S-1: Moist, orange/tan, fine to coarse SAND, trace Gravel.		S-1	0.33'	ASPHALT		No Equipment Installed
		S-2	1-2	12	12			S-2: Moist, light brown, fine SAND, little Silt.	1	ND	1'	SAND AND GRAVEL		
		S-3	2-3	12	12			S-3: Moist, light brown, fine SAND, little Silt, bricks within borehole.	2	S-2		SILTY SAND (FILL)		
		S-4	3-4	12	12			S-4: Moist, light brown, fine SAND, little Silt.	3	0.1	3'			
5		S-5	4-5	12	12			S-5: Moist, brown, fine SAND, little Silt.	4	S-3				
		S-6	5-6	12	12			S-6: Moist, dark brown, fine SAND, little Silt.		ND		SILTY SAND		
		S-7	6-7	12	12			S-7: Moist, dark brown, SILT.		S-4				
		S-8	7-8	12	12			S-8: Moist, gray, Clayey SILT.		0.1	6'			
		S-9	8-10	24	17			S-9: Moist, gray/tan, fine SAND and SILT.		S-5				
10										ND		SILT		
		S-10	10-15	60	47			S-10A: (10-11') Moist, brown, fine to medium SAND, trace Silt.		S-6	8'			
								S-10B: (11-13') Moist, gray, fine to medium SAND, trace Silt.		ND		SAND AND SILT		
								S-10C: (13-15') Wet, gray, fine to medium SAND, little Silt, sheen noted.		S-7				
15										18.3	10'			
		S-11	15-20	60	49			S-11A: (15-17') Wet, gray, fine SAND, little Clayey Silt. Heavy sheen.		S-8				
								S-11B: (17-20') Wet, brown, fine SAND and SILT.		75.1				
										S-9				
										220.1				
										S-10A				
20										197.3				
										S-10B		SILTY SAND		
										311.2				
										S-10C				
										518.8				
										S-11A				
										595.5				
										S-11B	20'			
								Bottom of boring at 20 feet.		46.3				
25														
30														

REMARKS

1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmv). ND indicates not detected above instrument detection limit (<0.1 ppmv).
2. Photographic logs of each soil sample were taken in the field and are on file in the GZA electronic file directory.
3. Vacuum excavated to 8 feet using Vacmaster System 4000 vac truck, samples from 0 to 8 feet recovered via hand auger in advance of vacuum excavator.
4. Soil sampleS S-2, S-7 and S-10 collected for forensic analyses.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: NFSB-07

172397 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMPL W/N/E 2PG; 12/16/2016

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

284 Winter Street
Haverhill, MA

BORING NO.: NFSB-08
SHEET: 1 of 1
PROJECT NO: 01.0172397.00
REVIEWED BY: JRC

Drilling Co.: Technical Drilling Services, Inc.
Foreman: Alfred Allen
Logged By: Andrew Sargent

Type of Rig: Geoprobe
Rig Model: 6610
Drilling Method: Direct Push

Boring Location: See PlanN - E
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 20
Date Start - Finish: 10/20/2016 - 10/24/2016

H. Datum:
V. Datum:

Auger/Casing Type: Geoprobe
I.D./O.D.: 2.25" O.D.
Hmr Weight (lb.):
Hmr Fall (in.):
Other: Steel Casing

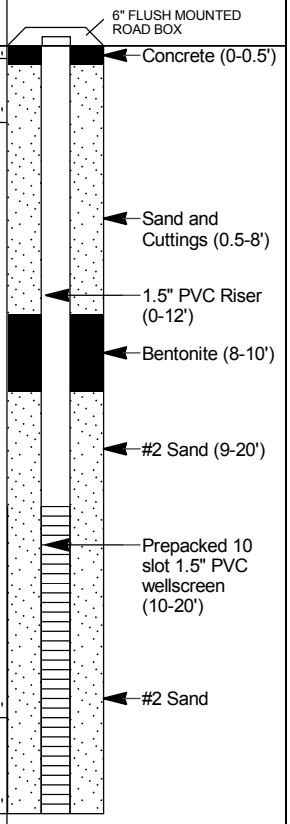
Sampler Type: Dual Tube Sampler (DT22)
I.D./O.D (in.): 1.375" O.D.
Sampler Hmr Wt:
Sampler Hmr Fall:
Other: 5' Acetate Sleeve

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time
10/25/16	1500	12.10		4 hrs.
11/1/16		12.04		1 week

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft)	Stratum Description	Stratum Elev. (ft)
		S-1	0-1	12	12			S-1: Dry, light brown, fine SAND and SILT, trace Gravel.		S-1 4.7	0.33'	ASPHALT	
		S-2	1-2	12	12			S-2: Dry, dark brown/black, fine to medium SAND and SILT, trace Gravel.	1	S-2 12.1	2'	SILTY SAND (FILL)	
		S-3	2-3	12	12			S-3: Dry, light brown, fine SAND, little Silt.	2	S-3 2.8			
		S-4	3-4	12	12			S-4: Dry, light brown, fine SAND, little Silt.	3	S-4 5.0			
5		S-5	4-5	12	12			S-5: Dry, light brown, fine SAND, little Silt.	4	S-5 3.4			
		S-6	5-6	12	12			S-6: Moist, fine SAND and SILT.		S-6 2.8			
		S-7	6-7	12	12			S-7: Moist, SAND, some Clayey Silt.		S-7 1.7			
		S-8	7-8	12	12			S-8: Moist, tan, fine to medium SAND, some Silt.		S-8 75.0			
		S-9	8-10	24	23			S-9: Moist, brown/tan, fine SAND and SILT.		S-9 18.6			
10		S-10	10-15	60	51			S-10A: (10-11') Moist, gray, fine SAND and SILT. S-10B: (11-15') Wet, light brown, fine SAND and SILT.		S-10A 46.5 S-10B 25.9		FINE SAND AND SILT	
15		S-11	15-20	60	60			S-11A: (15-17.5') Wet, gray, fine SAND and SILT. S-11B: (17.5-20') Wet, gray/tan, Clayey SILT.		S-11A 4.5 S-11B 2.7	17.5'	CLAYEY SILT	
20								Bottom of boring at 20 feet.			20'		
25													
30													

Equipment Installed



REMARKS

1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmv). ND indicates nothing detected (<0.1 ppmv).
2. Photographic logs of each soil sample were taken in the field and are on file in the GZA electronic file directory.
3. Vacuum excavated to 8 feet using Vacmaster System 4000 vac truck, samples from 0 to 8 feet recovered via hand auger in advance of vacuum excavator.
4. Soil samples S-3 and S-8 collected for forensic analyses.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: NFSB-08

172397 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMPL W/N/E 2PG; 12/16/2016

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

284 Winter Street
Haverhill, MA

BORING NO.: NFSB-09
SHEET: 1 of 1
PROJECT NO: 01.0172397.00
REVIEWED BY: JRC

Drilling Co.: Technical Drilling Services, Inc.
Foreman: Alfred Allen
Logged By: Andrew Sargent

Type of Rig: Geoprobe
Rig Model: 6610
Drilling Method: Direct Push

Boring Location: See PlanN - E
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 5
Date Start - Finish: 10/24/2016 - 10/24/2016

H. Datum:
V. Datum:

Auger/Casing Type: Geoprobe
I.D./O.D.: 2.25" O.D.
Hmr Weight (lb.):
Hmr Fall (in.):
Other: Steel Casing

Sampler Type: Dual Tube Sampler (DT22)
I.D./O.D (in.): 1.375" O.D.
Sampler Hmr Wt:
Sampler Hmr Fall:
Other: 5' Acetate Sleeve

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft)	Stratum Description	Stratum Elev. (ft)	Equipment Installed
		S-1	0-1	12	12			S-1: Dry, tan, fine to coarse SAND, trace Silt, Gravel.		S-1				No Equipment Installed
		S-2	1-2	12	12			S-2: Dry, brown, fine to coarse SAND, trace Silt, trace Gravel.	1	0.3				
		S-3	2-3	12	12			S-3: Moist, black, fine to coarse SAND, little Silt, little Gravel.	2	S-2				
		S-4	3-4	12	12			S-4: Moist, black, fine SAND, little Silt, trace Gravel, trace concrete fragments.	3	3.6		SAND AND GRAVEL (FILL)		
5									4	S-3				
										6.3				
										S-4	5'			
										13.4				
								Bottom of boring at 5 feet.	5					
									6					
10														
15														
20														
25														
30														

REMARKS

1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmv). ND indicates not detected above instrument detection limit (<0.1 ppmv).
2. Photographic logs of each soil sample were taken in the field and are on file in the GZA electronic file directory.
3. Vacuum excavated to 5 feet using Vacmaster System 4000 vac truck, samples from 0 to 5 feet recovered via hand auger in advance of vacuum excavator.
4. Soil samples S-2 and S-4 collected for forensic analyses.
5. Four boring refusals (9, 9A, 9B, 9C). During vacuum excavation, all borings encountered shallow refusal on cobbles and boulders located between 1.5 and 5 feet below ground surface.
6. PID screen sample NFSB-09A (1 to 2 feet below ground surface) during vacuum excavation had PID reading of 2.6 ppmv.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: NFSB-09

172397 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMPL W/N/E 2PG; 12/16/2016

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*	**191 Essex Street Haverhill, Massachusetts**	**BORING NO.: GZA-1** **SHEET: 1 of 1** **PROJECT NO: 01.0172397.10** **REVIEWED BY: CAL**

Drilling Co.: Geosearch, Inc.	**Type of Rig:** Truck Rig & Vac	**Boring Location:** See Plan	**H. Datum:**
Foreman: Kenny	**Rig Model:**	**Ground Surface Elev. (ft.):**	
Logged By: Matthew McGavick	**Drilling Method:** HSA & Vac	**Final Boring Depth (ft.):** 32	**V. Datum:**
		Date Start - Finish: 8/31/2020 - 9/1/2020	

Auger/Casing Type: HSA	**Sampler Type:** Split Spoon
I.D./O.D.: 4"/4.5"	**I.D./O.D (in.):** 1.375"/2"
Hmr Weight (lb.):	**Sampler Hmr Wt:** 140
Hmr Fall (in.):	**Sampler Hmr Fall:** 30
Other:	**Other:**

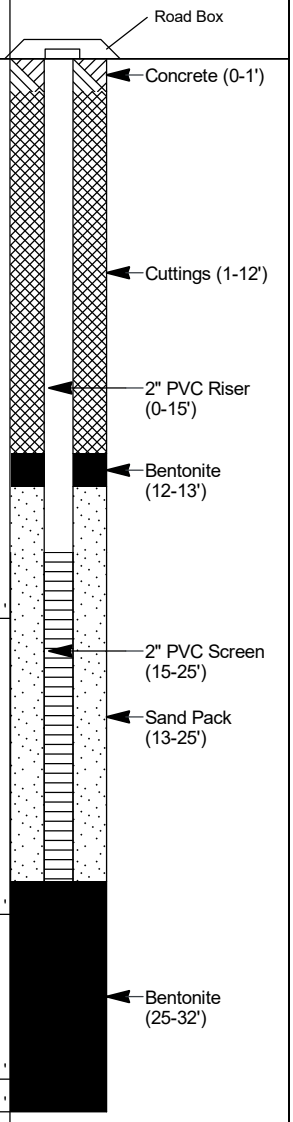
Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time
9/3/20	0845	15.43		24.96
9/15/20	0835	15.27		

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description Modified Burmister	Remark	Field Test Data
									1	
									2	
		S-1	2-2.5					S-1: Tan, fine to medium SAND, little Silt, trace Brick/Debris, trace Organics.	3	
									4	
5		S-2	4-4.5					S-2: Tan, fine to medium SAND, little Silt, little Gravel.		
		S-3	8-8.5					S-3: Tan, fine to medium SAND, little Silt.		
10		S-4	9-11	24	0	5 6 5 7	11	S-4: No recovery.		
15		S-5	15-17	24	10	4 9 9 17	18	S-5: (0-2") Loose, gray, SAND and SILT, moist.	5	30.9
		S-6	17-19	24	9	3 1 3 4	4	S-5: (2-4") Gray, Silty CLAY. S-5: (4-6") Loose, tan-orange, fine to medium SAND, little Silt.		
20		S-7	19-21	24	16	3 5 9 13	14	S-5: (6-10") Loose, black, fine to coarse SAND and GRAVEL. Coal-tar-diesel-like odor. S-6: Loose, gray-black, fine SAND, wet. S-7: (0-8") Loose, gray, fine SAND, moist/wet.		873.3 17.6 0.5
25		S-8	25-27	24	14	12 18 48 20	66	S-7: (8-24") Tan-orange, fine SAND, moist/wet. S-8: (0-8") Dense, tan/orange, fine SAND, wet. S-8: (8-14") Gray-tan, GRAVEL, some fine to medium Sand, little Silt, moist.		2.7 0.6
30		S-9	30-32	24	15	17 12 23 23	35	S-9: (0-9") Medium dense, gray-tan, GRAVEL, some fine to medium Sand, little Silt, moist. S-9: (9-15") Medium dense, gray-tan, SILT and fine Sand, little-some Gravel.		0.1
35								Bottom of boring at 32 feet.		

Depth (ft)	Stratum Description	Elev. (ft)
	FILL	
17'	FINE SAND	
26'	SAND AND GRAVEL	
31'		
32'	SILT AND SAND	

Equipment Installed



REMARKS

1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using a Ion Science Phocheck Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmv). ND indicates not detected above instrument detection limit (<0.1 ppmv).
2. Soil from each split spoon was composited and screened with a PID unless field observations required additional screening.
3. Borehole initiated by vacuum excavation techniques to an approximate depth of 9 feet below ground surface (bgs). Soil samples collected with hand auger in advance of vacuum excavator in this depth range.
4. Photographic logs of each soil sample were taken in the field and are on file in GZA's electronic file directory.
5. PID reading of 873 is associated with sample S-5 (6-10").

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: GZA-1

172397.10 NGRID 221 ESSEX ST HAVERHILL MA.GPJ; STANDARD BORING W/E W/O SMP 2PG2; 7/27/2021

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

191 Essex Street
Haverhill, Massachusetts

BORING NO.: GZA-1A
SHEET: 1 of 1
PROJECT NO: 01.0172397.10
REVIEWED BY: CAL

Drilling Co.: Geosearch, Inc.
Foreman: Kenny
Logged By: Matthew McGavick

Type of Rig: Truck Rig & Vac
Rig Model:
Drilling Method: HSA & Vac

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 27
Date Start - Finish: 8/31/2020 - 9/1/2020

H. Datum:
V. Datum:

Auger/Casing Type: HSA
I.D./O.D.: 4"/4.5"
Hmr Weight (lb.):
Hmr Fall (in.):
Other:

Sampler Type: Split Spoon
I.D./O.D (in.): 1.375"/2"
Sampler Hmr Wt: 140
Sampler Hmr Fall: 30
Other:

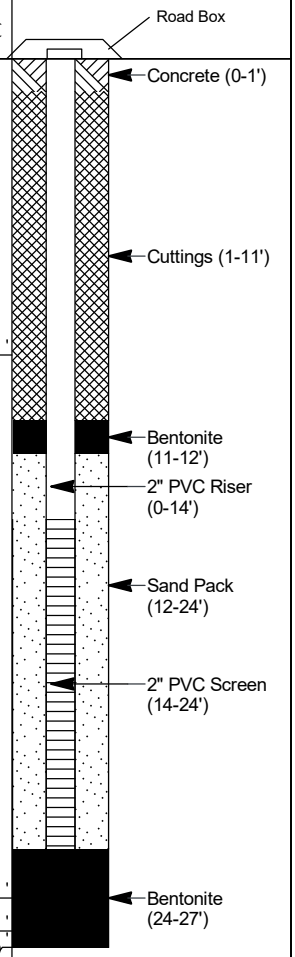
Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time
9/3/20	1115	11.51		23.25
9/15/20	1010	11.53		

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description Modified Burmister	Remark	Field Test Data
5		S-1	2-2.5					S-1: Brown, fine to medium SAND, little Silt, trace Gravel, trace Brick/Debris. No odor.	1 2 3 4	
		S-2	4-4.5					S-2: Brown-gray, SILT, some fine to medium Sand, trace Gravel.		
10		S-3	8-9					S-3: Tan, fine to medium SAND, little-trace Silt, trace Brick/Debris.		
		S-4	9-11	24	10	1 2 3 2	5	S-4: (0-5") Loose, dark brown, fine to medium SAND, little Silt. S-4: (5-10") Loose, tan-brown, fine to medium SAND, little Silt.		0.1
15		S-5	15-17	24	6	6 5 12 10	17	S-5: Loose, brown, fine to medium SAND, little Gravel, little Silt, wet.		0.3
20		S-6	20-22	24	12	1 2 3 1	5	S-6: (0-6") Loose, brown, fine to medium SAND, little Gravel, little Silt, wet. S-6: (6-12") Loose, gray, very fine SAND, moist.		0.1
25		S-7	25-27	24	20	7 9 25 23	34	S-7: (0-4") Medium dense, brown, fine to medium SAND, little Silt, wet. S-7: (4-17") Medium dense, gray, Silty CLAY, little Gravel, little-trace fine Sand, wet. S-7: (17-20") Medium dense, brown, fine to coarse SAND, little Gravel, little Silt, moist.		ND ND
30								Bottom of boring at 27 feet.		
35										

Depth (ft)	Stratum Description	Elev. (ft)
	FILL	
9'		
	FINE TO MEDIUM SAND	
25.5'		
26.5'	SILTY CLAY	
27'	FINE TO COARSE SAND	

Equipment Installed



REMARKS

1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using a ThermoEnvironmental 580B organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmv). ND indicates not detected above instrument detection limit (<0.1 ppmv).
2. Soil from each split spoon was composited and screened with a PID unless field observations required additional screening.
3. Borehole initiated by vacuum excavation techniques to an approximate depth of 9 feet below ground surface (bgs). Soil samples collected with hand auger in advance of vacuum excavator in this depth range.
4. Photographic logs of each soil sample were taken in the field and are on file in GZA's electronic file directory.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: GZA-1A

172397.10 NGRID 221 ESSEX ST HAVERHILL MA.GPJ; STANDARD BORING W/E W/O SMP 2PG2; 7/27/2021

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*	**221 Essex Street Haverhill, Massachusetts**	**BORING NO.: GZA-2** **SHEET: 1 of 1** **PROJECT NO: 01.0172397.10** **REVIEWED BY: CAL**

Drilling Co.: Geosearch, Inc.	**Type of Rig:** Truck Rig & Vac	**Boring Location:** See Plan	**H. Datum:**
Foreman: Kenny	**Rig Model:**	**Ground Surface Elev. (ft.):**	
Logged By: Matthew McGavick	**Drilling Method:** HSA & Vac	**Final Boring Depth (ft.):** 27	**V. Datum:**
		Date Start - Finish: 8/31/2020 - 9/1/2020	

Auger/Casing Type: HSA	**Sampler Type:** Split Spoon
I.D./O.D.: 4"/4.5"	**I.D./O.D (in.):** 1.375"/2"
Hmr Weight (lb.):	**Sampler Hmr Wt:** 140
Hmr Fall (in.):	**Sampler Hmr Fall:** 30
Other:	**Other:**

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time
9/3/20	0945	17.79		24.45
9/15/20	1140	17.63		

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description Modified Burmister	Remark	Field Test Data
									1	
									2	
		S-1	2-2.5					S-1: Brown, fine to medium SAND, little Silt, little Gravel, trace Debris/Brick.	3	
									4	
5		S-2	4-4.5					S-2: Brown-tan, fine to medium SAND, little Silt, little Gravel.	5	
		S-3	6-6.5					S-3: Brown-tan, fine to medium SAND, little-some Silt, trace Gravel.		
		S-4	8.5-9			5 2		S-4: Tan-brown, fine SAND, little Silt.		ND
10		S-5	9-11	24	12	2 4	4	S-5: (0-3") Loose, dark brown, fine to medium SAND, little Silt, little Gravel.		
								S-5: (3-9") Loose, tan-brown, fine to medium SAND, little Silt, trace Organics.		
15								S-5: (9-12") Loose, dark brown, fine to medium SAND, little Silt.		
		S-6	15-17	24	24	4 6		S-6: (0-12") Loose, tan, fine to medium SAND, some Silt, trace Gavel.		0.1 ND
						6 13	12	S-6: (12-24") Loose, tan, SILT and SAND, little Gravel.		
20		S-7	20-22	24	12	25 14		S-7: (0-2") Medium dense, dark brown, fine to medium SAND, little Silt, little Gravel.		ND
						13 15	27	S-7: (2-8") Medium dense, orange-tan, fine to medium SAND, little Gravel, trace Silt.		
25		S-8	25-27	24	24	7 9		S-7: (8-12") Medium dense, gray-tan, fine SAND, little Silt, little Gravel.		0.1 ND
						25 23	34	S-8: (0-11") Medium dense, tan-orange, fine to coarse SAND, trace-little Silt, little Gravel.		
30								S-8: (11-13") Medium dense, orange-gray, SILT and fine to coarse SAND, little Gravel.		
								S-8: (13-24") Medium dense, gray, Silty CLAY, trace Gravel.		
35								Bottom of boring at 27 feet.		

Stratum: FILL (0' – 9'); SAND AND SILT (9' – 16'); SAND AND SILT (16' – 20'); FINE TO MEDIUM SAND (20' – 26'); SILT (26' – 27')

Equipment Installed: Road Box; Concretge (0-1'); Cuttings (1-12'); 2" PVC Riser (0-15'); Bentonite (12-13'); 2" PVC Screen (15-25'); Sand (13-25'); Bentonite (25-27')

REMARKS

1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using a Ion Science Phocheck Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmv). ND indicates not detected above instrument detection limit (<0.1 ppmv).
2. Soil from each split spoon was composited and screened with a PID unless field observations required additional screening.
3. Borehole initiated by vacuum excavation techniques to an approximate depth of 9 feet below ground surface (bgs). Soil samples collected with hand auger in advance of vacuum excavator in this depth range.
4. Photographic logs of each soil sample were taken in the field and are on file in GZA's electronic file directory.
5. Encountered possible large boulder at approximately 4 feet bgs. Possibly part of old retaining wall. Moved boring location approximately 3 feet south (downstream).

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: GZA-2

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*	**221 Essex Street Haverhill, Massachusetts**	**BORING NO.: GZA-2A** **SHEET: 1 of 1** **PROJECT NO: 01.0172397.10** **REVIEWED BY: CAL**

Drilling Co.: Geosearch, Inc. **Foreman:** Kenny **Logged By:** Matthew McGavick	**Type of Rig:** Vac Ex **Rig Model:** **Drilling Method:** Vac Ex	**Boring Location:** See Plan **Ground Surface Elev. (ft.):** **Final Boring Depth (ft.):** 9 **Date Start - Finish:** 8/31/2021 - 8/31/2021	**H. Datum:** **V. Datum:**

Auger/Casing Type: None **I.D./O.D.:** **Hmr Weight (lb.):** **Hmr Fall (in.):** **Other:**	**Sampler Type:** Hand Auger **I.D./O.D (in.):** **Sampler Hmr Wt:** **Sampler Hmr Fall:** **Other:**	**Groundwater Depth (ft.)**

Date	Time	Water Depth	Casing	Stab. Time

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft)	Stratum Description	Stratum Elev. (ft)	Equipment Installed
		S-1	1-1.5					S-1: Tan, fine to medium SAND, little Silt, trace Gravel, trace Organics.	1 2 3	ND				No Equipment Installed
		S-2	3-3.5					S-2: Tan-brown, fine to medium SAND, little Silt, little Gravel.		ND				
5		S-3	5-6					S-3: Tan-brown, fine to medium SAND, little Silt, little Gravel.		ND		FILL		
		S-4	8-9					S-4: Brown-gray, fine to medium SANd, little Silt, little Gravel.		ND	9'			
10								Bottom of boring at 9 feet.						
15														
20														
25														
30														

REMARKS

1. Field testing results represent total organic vapor levels, referenced to a benzene standard, measured in the headspace of sealed soil sample jars using a Ion Science Phocheck Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmv). ND indicates not detected above instrument detection limit (<0.1 ppmv).
2. Soil from each split spoon was composited and screened with a PID unless field observations required additional screening.
3. Borehole initiated by vacuum excavation techniques to an approximate depth of 9 feet below ground surface (bgs). Soil samples collected with hand auger in advance of vacuum excavator in this depth range.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: GZA-2A

172397.10 NGRID 221 ESSEX ST HAVERHILL MA.GPJ; STANDARD BORING W/E W/O SMP 2PG2; 7/27/2021

GZA
GeoEnvironmental, Inc.
Engineers/Scientists

284 Winter Street
Haverhill, Massachusetts

Test Pit No. VE- 1
Page No. 1 of 1
File No. 01.0172397.10
Checked By:

Excavation Equipment

GZA Rep. Matthew Brady
Contractor Geosearch
Operator
Weather Sunny, 80-90s
Make Vac-Master Model
Capacity Reach

Date 8/11/2021
Ground Elev. 27+/-
Time Started
Time Completed

Depth	Soil Description	Sample No.	PID Reading (ppm)	Excav. Effort	Boulders: Count/ Class	Note No.
0						
1'	Brown to black, fine to coarse SAND, some fine to coarse Gravel, little Silt with Roots, Wood, Concrete and Brick fragments. (FILL) Several fragments of hardened tar observed with moderate weathered napthalene odor.					1
2'						
3'						2
4'						3
5'						
	Bottom of excavation at 5 feet					
6'						
7'						
8'						
9'						
10'						
11'						
12'						
13'						
14'						
15'						
16'						

Notes:

1. Test hole advanced using vacuum excavator.
2. Concrete and brick structure encountered at 2.5 feet (possible sidewall of historical holder).
3. Groundwater encountered at 4 feet.

Test Pit Plan

4'
1 1'
NORTH
Volume = _____ cu. yd.

Boulder Class

Letter Designation	Size Range Classification
A	6" - 17"
B	18" - 36"
C	36" and Larger

Excavation Effort
E-----Easy
M-----Moderate
D-----Difficult

Proportions Used

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

Abbreviations
F = Fine
M = Medium
C = Coarse
V = Very
F/M = Fine to medium
F/C = Fine to coarse
GR = Gray
BN = Brown
YEL = Yellow

GROUNDWATER
(x) Encountered
(x) Not Encountered

Elapsed Time to Reading (Hours)
Depth to Ground-water 4'

GZA
GeoEnvironmental, Inc.
Engineers/Scientists

284 Winter Street
Haverhill, Massachusetts

Test Pit No. VE- 2
Page No. 1 of 1
File No. 01.0172397.10
Checked By:

Excavation Equipment

GZA Rep. Matthew Brady
Contractor Geosearch
Operator
Weather Sunny, 80-90s
Make Vac-Master Model
Capacity Reach

Date 8/11/2021
Ground Elev. 27+/-
Time Started
Time Completed

Depth	Soil Description	Sample No.	PID Reading (ppm)	Excav. Effort	Boulders: Count/ Class	Note No.
0	Brown to black, fine to coarse SAND, some fine to coarse Gravel, little Silt with Roots, Wood, Concrete and Brick fragments. (FILL) Slight weathered naphthalene odor.					1
1'						
2'						
3'						
4'						
5'						
6'	Bottom of excavation at 5.5 feet					
7'						
8'						
9'						
10'						
11'						
12'						
13'						
14'						
15'						
16'						

Notes:

1. Test hole advanced using vacuum excavator.
2. Groundwater not encountered to 5.5 feet.

Test Pit Plan

1'
1'

NORTH

Volume = _____ cu. yd.

Boulder Class

Letter Designation	Size Range Classification
A	6" - 17"
B	18" - 36"
C	36" and Larger

Excavation Effort
E-----Easy
M-----Moderate
D-----Difficult

Proportions Used

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

Abbreviations
F = Fine
M = Medium
C = Coarse
V = Very
F/M = Fine to medium
F/C = Fine to coarse
GR = Gray
BN = Brown
YEL = Yellow

GROUNDWATER
( ) Encountered
(x) Not Encountered

Elapsed Time to Reading (Hours)

Depth to Ground-water

GZA
GeoEnvironmental, Inc.
Engineers/Scientists

284 Winter Street
Haverhill, Massachusetts

Test Pit No. VE- 3
Page No. 1 of 1
File No. 01.0172397.10
Checked By:

Excavation Equipment

GZA Rep. Matthew Brady
Contractor Geosearch
Operator
Weather Sunny, 80-90s
Make Vac-Master Model
Capacity Reach

Date 8/11/2021
Ground Elev. 27+/-
Time Started
Time Completed

Depth	Soil Description	Sample No.	PID Reading (ppm)	Excav. Effort	Boulders: Count/ Class	Note No.
0						
1'	Brown to black, fine to coarse SAND, some fine to coarse Gravel, little Silt with Roots, Wood, Concrete and Brick fragments. (FILL) Slight weathered naphthalene odor.					1
2'						
3'						2
4'						
5'						3
	Bottom of excavation at 5 feet					
6'						
7'						
8'						
9'						
10'						
11'						
12'						
13'						
14'						
15'						
16'						

Notes:

1. Test hole advanced using vacuum excavator.
2. Portion of concrete slab encountered at 3 feet.
3. Groundwater not encountered to 5 feet.

Test Pit Plan

1'
1'

NORTH

Volume = _____ cu. yd.

Boulder Class

Letter Designation	Size Range Classification
A	6" - 17"
B	18" - 36"
C	36" and Larger

Excavation Effort
E-----Easy
M-----Moderate
D-----Difficult

Proportions Used

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

Abbreviations
F = Fine
M = Medium
C = Coarse
V = Very
F/M = Fine to medium
F/C = Fine to coarse
GR = Gray
BN = Brown
YEL = Yellow

GROUNDWATER
( ) Encountered
(x) Not Encountered

Elapsed Time to Reading (Hours)
Depth to Ground-water

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*	**284 Winter Street Haverhill, Massachusetts**	**BORING NO.: B101** **SHEET: 1 of 1** **PROJECT NO: 172397.10** **REVIEWED BY: CAL**

Drilling Co.: Geosearch, Inc.	**Type of Rig:** Truck Mounted	**Boring Location:** See Plan	**H. Datum:**
Foreman: Mike DeAmicis	**Rig Model:** CME-75	**Ground Surface Elev. (ft.):** 24.1	**V. Datum:**
Logged By: Matthew Brady	**Drilling Method:** Hollow Stem	**Final Boring Depth (ft.):** 25	
		Date Start - Finish: 1/16/2020 - 1/17/2020	

Auger/Casing Type: HSA	**Sampler Type:** Split Spoon	
I.D./O.D.: 4.5" / 8"	**I.D./O.D (in.):** 1.375" / 2"	
Hmr Weight (lb.):	**Sampler Hmr Wt:** 140	
Hmr Fall (in.):	**Sampler Hmr Fall:** 30	
Other:	**Other:**	

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Description (Depth (ft) / Elev. (ft))	Equipment Installed
		S-1	0-5					S-1: Fine to coarse SAND with SILT, trace Gravel, trace Brick, dry.	1 2 3 4	5.3	0.25' ASPHALT 23.9'	No Equipment Installed
5		S-2	5-7	24	17	25 13		S-2: Medium dense, brown/gray, SILT		2.9		
		S-3	6-8			8 4	21	and SAND, some Cement and Brick, dry, faint coal tar-like odor.		3.4	FILL	
		S-4	7-9	24	16	19 6		S-3: Black/tan, fine to coarse SAND,		0.3		
						6 4	12	some Silt, trace Gravel, trace Brick, dry.				
		S-5	9-11	24	24	WOH		S-4: Medium dense, brown, SILT and		20.3		
10						WOH	0	fine SAND, trace Gravel, dry, faint coal tar-like odor.				
						WOH						
		S-6	11-12	24	0	WOH		S-5: Very loose, SILT, wet, stained,		NR	12' 12.1'	
		S-7	12-14	24	14	2 5		faint coal tar-like odor.		15.9		
						5 6	10	S-6: BRICK/GRAVEL in basket. S-7: Medium dense, brown/black, SILT				
		S-8	14-16	24	12	6 8		and SAND, wet, faint coal tar-like odor.		7.1		
15						7 5	15	S-8: Medium dense, brown/black, SILT, wet, faint coal tar-like odor.				
		S-9	16-18	24	11	5 5		S-9: Medium dense, brown/black, SILT,		4.3		
						6 5	11	wet, faint coal tar-like odor.				
											SANDY SILT	
20												
		S-10	23-25	24	9	2 1		S-10: Medium dense, yellowish gray,		2.5		
						9 8	10	SILT, wet, faint coal tar-like odor.				
25											25' -0.9'	
								Bottom of boring at 25 feet.	5			
30												

REMARKS

1. Field testing results represent organic vapor levels referenced to a benzene standard, measured in the headspace of sealed sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmV). ND indicates not detected above instrument detection limit (<0.1 ppmV).
2. Borehole initiated by vacuum excavation techniques to an approximate depth of 8 feet below ground surface (bgs). Soil samples collected with hand auger in advance of vacuum excavator in this depth range.
3. Photographic logs of each soil sample were taken in the field and are on file in GZA's electronic file directory.
4. Elevation should be considered approximate.
5. Boring terminated at depth of approximately 25 feet bgs. Borehole backfilled with a mix of cuttings and bentonite chips.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: B101

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

284 Winter Street
Haverhill, Massachusetts

BORING NO.: B102
SHEET: 1 of 1
PROJECT NO: 172397.10
REVIEWED BY: CAL

Drilling Co.: Geosearch, Inc.
Foreman: Mike DeAmicis
Logged By: Matthew Brady

Type of Rig: Truck Mounted
Rig Model: CME-75
Drilling Method: Hollow Stem

Boring Location: See Plan
Ground Surface Elev. (ft.): 25
Final Boring Depth (ft.): 20
Date Start - Finish: 1/16/2020 - 1/22/2020

H. Datum:
V. Datum:

Auger/Casing Type: HSA
I.D./O.D.: 4.5" / 8"
Hmr Weight (lb.):
Hmr Fall (in.):
Other:

Sampler Type: Split Spoon
I.D./O.D (in.): 1.375" / 2"
Sampler Hmr Wt: 140
Sampler Hmr Fall: 30
Other:

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time
2/5/20		11.86		

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description Modified Burmister	Remark	Field Test Data
		S-1	0-3					S-1: Brown, medium to coarse SAND with BRICK and COBBLES, trace Silt, dry.	1 2 3	1.7
		S-2	3-6					S-2: Tan, SILT and fine SAND, dry.	4 5	1.5
5		S-3	8-8.5	24	19	3 6		S-3: Tan/black, SILT, mild coal tar-like		0.1
		S-4	8-10			3 6	9	odor, dry.		42.3
10		S-5	10-12	24	14	8 14		S-4: Tan/black, fine to medium SAND, some Silt, dry.		39.3
						13 13	27	S-5: Medium dense, brown/tan, SILT, moist.		
		S-6	12-14	24	20	22 13				1660
						14 18	27	S-6: Medium dense, brown/tan, SILT, wet, strong coal tar-like odor.		
15		S-7	14-16	24	18	4 8		S-7: Medium dense, brown/tan, SILT,		27.2
						9 8	17	wet, mild coal tar-like odor.		
		S-8	16-18	24	16	9 8		S-8: Medium dense, gray, SILT, wet,		39.1
						11 8	19	mild coal tar-like odor.		
		S-9	18-20	24	22	1 1		S-9: Loose, gray, SILT, wet, mild coal		9.0
20						2 4	3	tar-like odor.		
								Bottom of boring at 20 feet.	6	
25										
30										

Stratum Description / Elev. (ft)
0.25' ASPHALT 24.8'
FILL
8' 17.0'
SILT
20' 5.0'

Equipment Installed
FLUSH MOUNTED GATED ROAD BOX
Native Fill (0-5')
2" PVC Riser (0-10')
Bentonite (5-8')
2" PVC Screen (10-20')
Sand (8-20')

REMARKS

1. Field testing results represent organic vapor levels referenced to a benzene standard, measured in the headspace of sealed sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmV). ND indicates not detected above instrument detection limit (<0.1 ppmV).
2. Borehole initiated by vacuum excavation techniques to an approximate depth of 8 feet below ground surface (bgs). Soil samples collected with hand auger in advance of vacuum excavator in this depth range.
3. Photographic logs of each soil sample were taken in the field and are on file in GZA's electronic file directory.
4. Elevation should be considered approximate.
5. Environmental samples collected at depths of 0 to 3 feet and 12 to 14 feet bgs for VPH, EPH, physiologically available cyanide, and metals (arsenic, chromium, and lead) analysis.
6. Boring terminated at depth of approximately 20 feet bgs. A 2-inch diameter groundwater monitoring well was installed as shown.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: B102

172397.00 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMP 2PG2; 7/12/2021

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*	**284 Winter Street Haverhill, Massachusetts**	**BORING NO.: B103** **SHEET: 1 of 1** **PROJECT NO: 172397.10** **REVIEWED BY: CAL**

Drilling Co.: Geosearch, Inc.	**Type of Rig:** Truck Mounted	**Boring Location:** See Plan	**H. Datum:**
Foreman: Mike DeAmicis	**Rig Model:** CME-75	**Ground Surface Elev. (ft.):** 24.8	**V. Datum:**
Logged By: Matthew Brady	**Drilling Method:** Hollow Stem	**Final Boring Depth (ft.):** 9	
		Date Start - Finish: 1/16/2020 - 1/24/2020	

Auger/Casing Type: HSA	**Sampler Type:** Split Spoon
I.D./O.D.: 4.5" / 8"	**I.D./O.D (in.):** 1.375" / 2"
Hmr Weight (lb.):	**Sampler Hmr Wt:** 140
Hmr Fall (in.):	**Sampler Hmr Fall:** 30
Other:	**Other:**

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Description (Depth (ft) / Elev. (ft))	Equipment Installed
		S-1	0-3					S-1: Brown, fine SAND and SILT, trace Organics, dry.	1 2 3	1.3	0.25' ASPHALT 24.6'	No Equipment Installed
		S-2	3-6					S-2: Tan, SILT, some fine Sand, dry.	4 5	1.7	FILL 4' 20.8'	
5		S-3	5-7	24	19	1 4 6 10	10	S-3: Loose, tan/brown, SILT, trace fine to coarse Sand, dry, faint coal tar-like odor.		9.9	SILTY SAND	
		S-4	7-9	24	18	9 9 11 11	20	S-4: Medium dense, tan/brown, SILT, faint coal tar-like odor.		20.4	9' 15.8'	
10								Bottom of boring at 9 feet.	6			
15												
20												
25												
30												

REMARKS

1. Field testing results represent organic vapor levels referenced to a benzene standard, measured in the headspace of sealed sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmV). ND indicates not detected above instrument detection limit (<0.1 ppmV).
2. Borehole initiated by vacuum excavation techniques to an approximate depth of 8 feet below ground surface (bgs). Soil samples collected with hand auger in advance of vacuum excavator in this depth range.
3. Photographic logs of each soil sample were taken in the field and are on file in GZA's electronic file directory.
4. Elevation should be considered approximate.
5. Environmental sample collected at a depth of 0 to 3 feet bgs for VPH, EPH, physiologically available cyanide, and metals (arsenic, chromium, and lead) analysis.
6. Boring terminated at depth of approximately 9 feet bgs. Borehole backfilled with a mix of cuttings and bentonite chips.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: B103

172397.00 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMP 2PG2; 7/12/2021

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*	**284 Winter Street Haverhill, Massachusetts**	**BORING NO.: B104** **SHEET: 1 of 2** **PROJECT NO: 172397.10** **REVIEWED BY: CAL**

Drilling Co.: Geosearch, Inc.	**Type of Rig:** Truck Mounted	**Boring Location:** See Plan	**H. Datum:**
Foreman: Mike DeAmicis	**Rig Model:** CME-75	**Ground Surface Elev. (ft.):** 24.3	**V. Datum:**
Logged By: Matthew Brady	**Drilling Method:** Hollow Stem	**Final Boring Depth (ft.):** 34	
		Date Start - Finish: 1/16/2020 - 1/23/2020	

Auger/Casing Type: HSA	**Sampler Type:** Split Spoon	
I.D./O.D.: 4.5" / 8"	**I.D./O.D (in.):** 1.375" / 2"	
Hmr Weight (lb.):	**Sampler Hmr Wt:** 140	
Hmr Fall (in.):	**Sampler Hmr Fall:** 30	
Other:	**Other:**	

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Description (Depth (ft) / Elev. (ft))	Equipment Installed
		S-1	0-3					S-1: Tan, fine to coarse SAND, trace Silt, dry.	1 2 3	1.2	0.25' ASPHALT 24.1'	No Equipment Installed
		S-2	3-6					S-2: Brown, coarse SAND, trace Gravel, trace Brick, trace Cobbles, dry.	4 5	3.1		
5		S-3	5-7	24	6	3 5 4 4	9	S-3: Loose, brown/black, coarse SAND, trace Gravel, trace Silt, trace Brick, dry, stained.		13.9		
		S-4	7-9	24	6	6 4 4 5	8	S-4: Loose, black/yellow/red, coarse SAND and BRICK, dry, stained.		12.0	FILL	
10		S-5	9-11	24	0	9 6 6 4	12	S-5: Medium dense, coarse SAND and GRAVEL, wet. (in basket)		NR		
		S-6	11-13	24	12	3 3 2 2	5	S-6: Loose, black/yellow, SILT, trace fine Sand, wet, stained, strong coal tar-like odor.		206.4		
		S-7	13-15	24	0	3 1 1 1	2	S-7: No recovery.		NR		
15											15' 9.3'	
		S-8	15-17	24	18	1 3 4 5	7	S-8: Loose, black, SILT, trace Organics, wet, stained, strong coal tar-like odor.		109.1		
		S-9	17-19	24	11	4 3 6 7	9	S-9: Loose, black, SILT, some fine Sand, some Organics, wet, stained, strong coal tar-like odor.		154.1		
20		S-10	19-21	24	13	4 3 3 3	6	S-10: Loose, gray, SILT, some fine Sand, some Organics, wet, stained, strong coal tar-like odor.		116.6	SILTY SAND	
25		S-11	25-27	24	20	11 11 15 18	26	S-11: Medium dense, gray, fine SAND, some Silt, wet, moderate coal tar-like odor.		18.5		
30												

REMARKS

1. Field testing results represent organic vapor levels referenced to a benzene standard, measured in the headspace of sealed sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmV). ND indicates not detected above instrument detection limit (<0.1 ppmV).
2. Borehole initiated by vacuum excavation techniques to an approximate depth of 8 feet below ground surface (bgs). Soil samples collected with hand auger in advance of vacuum excavator in this depth range.
3. Photographic logs of each soil sample were taken in the field and are on file in GZA's electronic file directory.
4. Elevation should be considered approximate.
5. Environmental samples collected at depths of 0 to 6 feet bgs (composite of S-1 and S-2, labeled S-1 for laboratory report) and 32 to 34 feet bgs for VPH, EPH, physiologically available cyanide, and metals (arsenic, chromium, and lead) analysis.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: B104

172397.00 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMP 2PG2; 7/12/2021

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

284 Winter Street
Haverhill, Massachusetts

BORING NO.: B104
SHEET: 2 of 2
PROJECT NO: 172397.10
REVIEWED BY: CAL

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft)	Stratum Description	Stratum Elev. (ft)	Equipment Installed
		S-12	32-34	24		0 3 7 6	10	S-12: Loose, gray, fine SAND, some Silt, wet, moderate coal tar-like odor.		6.1		SILTY SAND		
											34'		-9.7'	
35								Bottom of boring at 34 feet.	6					
40														
45														
50														
55														
60														
65														

REMARKS

6. Boring terminated at depth of approximately 34 feet bgs. Borehole backfilled with a mix of cuttings and bentonite chips.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: B104

TEST BORING LOG

GZA GeoEnvironmental, Inc. *Engineers and Scientists*	**284 Winter Street Haverhill, Massachusetts**	**BORING NO.: B106** **SHEET: 1 of 2** **PROJECT NO: 172397.10** **REVIEWED BY: CAL**

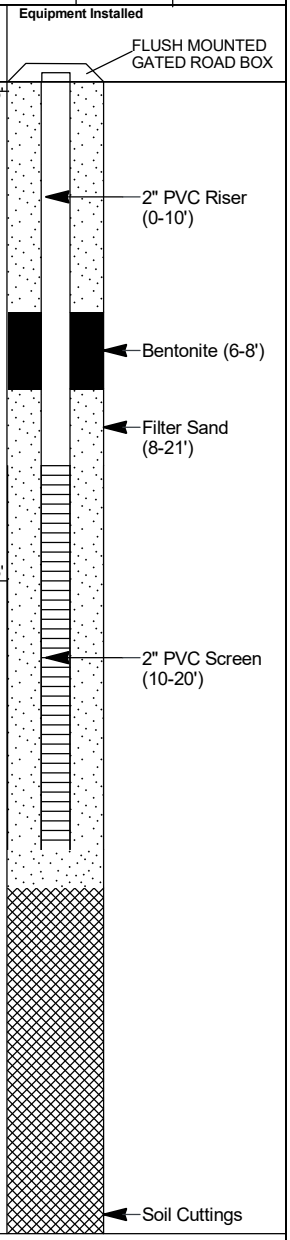
Drilling Co.: Geosearch, Inc.	**Type of Rig:** Truck Mounted	**Boring Location:** See Plan	**H. Datum:**
Foreman: Mike DeAmicis	**Rig Model:** CME-75	**Ground Surface Elev. (ft.):** 25.8	**V. Datum:**
Logged By: Matthew Brady	**Drilling Method:** Hollow Stem	**Final Boring Depth (ft.):** 38	
		Date Start - Finish: 1/17/2020 - 1/24/2020	

Auger/Casing Type: HSA	**Sampler Type:** Split Spoon
I.D./O.D.: 4.5" / 8"	**I.D./O.D (in.):** 1.375" / 2"
Hmr Weight (lb.):	**Sampler Hmr Wt:** 140
Hmr Fall (in.):	**Sampler Hmr Fall:** 30
Other:	**Other:**

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time
1/20/20	10:00	~13		

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data
		S-1	0-2					S-1: Tan, fine to coarse SAND, trace Silt, trace Gravel, dry.	1 2	NR
		S-2	2-2.5					S-2: Brown/black, medium to coarse	3	NR
		S-3	3-6					SAND, some find Sand, trace Asphalt, dry.	4 5	285
5								S-3: Black, SILT, stained to coated,		
		S-4	5-7	24	5	3 1 0 0	1	strong coal tar-like odor, dry. S-4: Very loose, brown/black, SAND		111.3
		S-5	7-9	24	7	3 5 4 6	9	and GRAVEL, trace Silt, strong coal tar-like odor, stained, dry. S-5: Loose, black, SILT and SAND,		351.4
10		S-6	9-11	24	0	5 5 4 3	9	trace Brick, strong coal tar-like odor, stained, dry. S-6: No recovery.		NR
		S-7	11-13	24	12	12 11 16 74	27	S-7: Medium dense, black, SILT, trace Brick, strong coal tar-like odor, stained.		1321
		S-8	13-15	24	16	8 17 14 11	31	S-8: Medium dense, black, SILT, strong coal tar-like odor, stained, wet.		1053
15		S-9	15-17	24	16	5 12 14 12	26	S-9: Medium dense, black, SILT, coal-tar-coated, strong coal tar-like odor, wet.		971
20										
		S-10	22-24	24	17	4 9 9 8	18	S-10: Medium dense, brown and black, SILT, coal-tar-coated, strong coal tar-like odor, wet.		1035
25										
30		S-11	29-31	24	14	22 17		S-11: Medium dense, brown, fine to		77.1



REMARKS

1. Field testing results represent organic vapor levels referenced to a benzene standard, measured in the headspace of sealed sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmV). ND indicates not detected above instrument detection limit (<0.1 ppmV).
2. Borehole initiated by vacuum excavation techniques to an approximate depth of 8 feet below ground surface (bgs). Soil samples collected with hand auger in advance of vacuum excavator in this depth range.
3. Photographic logs of each soil sample were taken in the field and are on file in GZA's electronic file directory.
4. Elevation should be considered approximate.
5. Environmental sample collected at a depth of 0 to 6 feet bgs (composite) for VPH, EPH, physiologically available cyanide, and metals (arsenic, chromium, and lead) analysis.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: B106

172397.00 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMP 2PG2; 7/12/2021

TEST BORING LOG

GZA
GeoEnvironmental, Inc.
Engineers and Scientists

284 Winter Street
Haverhill, Massachusetts

BORING NO.: B106
SHEET: 2 of 2
PROJECT NO: 172397.10
REVIEWED BY: CAL

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Description Depth (ft)	Stratum Description Elev. (ft)	Equipment Installed
						12 8	29	coarse SAND, some Gravel, trace Silt, wet.					mixed with Bentonite Chips (21-38')
35											SILTY SAND		
		S-12	36-38	24	14	9 15 22 25	37	S-12: Dense, coarse SAND, trace Silt, trace Gravel, faint coal tar-like odor, wet.		19.4	38'	-12.2'	
								Bottom of boring at 38 feet.	6				
40													
45													
50													
55													
60													
65													

REMARKS

6. Boring terminated at depth of approximately 38 feet bgs. A 2-inch diameter PVC groundwater monitoring well was installed as shown.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: B106

172397.00 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMP 2PG2; 7/12/2021

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

284 Winter Street
Haverhill, Massachusetts

BORING NO.: B107
SHEET: 1 of 1
PROJECT NO: 172397.10
REVIEWED BY: CAL

Drilling Co.: Geosearch, Inc.	**Type of Rig:** Truck Mounted	**Boring Location:** See Plan	**H. Datum:**
Foreman: Mike DeAmicis	**Rig Model:** CME-75	**Ground Surface Elev. (ft.):** 25.8	**V. Datum:**
Logged By: Matthew Brady	**Drilling Method:** Hollow Stem	**Final Boring Depth (ft.):** 15.5	
		Date Start - Finish: 1/17/2020 - 1/21/2020	

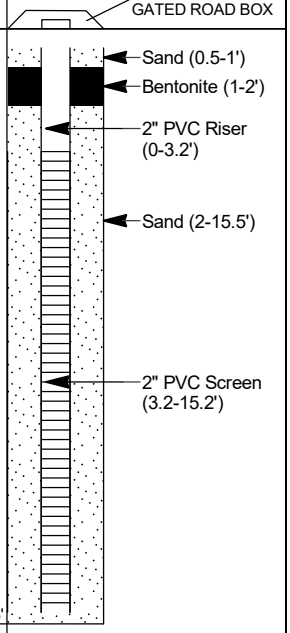
Auger/Casing Type: HSA	**Sampler Type:** Split Spoon
I.D./O.D.: 4.5" / 8"	**I.D./O.D (in.):** 1.375" / 2"
Hmr Weight (lb.):	**Sampler Hmr Wt:** 140
Hmr Fall (in.):	**Sampler Hmr Fall:** 30
Other:	**Other:**

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time
3/11/20	10:00	2.66	NA	50 days
8/11/20	10:00	3.30	NA	203 days
8/31/20	10:00	3.44	NA	223 days

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft)	Stratum Description	Stratum Elev. (ft)
		S-1	0-.5					S-1: Brown, fine to medium SAND,	1	0.1			
		S-2	0.5-3					trace Gravel, trace Silt, dry.	2	0.1			
								S-2: Brown/black, fine to coarse	3				
		S-3	3-5					SAND, little Gravel, little Silt, trace	4	7.4			
								Brick, some coal tar-like odor.	5				
5		S-4	5-7	24	9	5 3		S-3: Brown, fine to coarse SAND and					
						5 7	8	GRAVEL, trace Silt, some coal tar-like		2150			
								odor, wet.					
		S-5	7-9	24	10	12 7		S-4: Loose, black, SILT with fine to					
						7 5	14	coarse SAND, trace Gravel, trace		1852			
								Brick, stained, strong coal tar-like				FILL	
								odor, wet.					
10								S-5: Medium dense, BRICK with fine					
		S-6	10-12	24	15	10 2		to coarse SAND, trace Silt, stained,		3542			
						4 14	6	strong coal tar-like odor, wet.					
		S-7	12-14	24	3	3 5		S-6: Loose, black, SILT, with coarse		2555			
						5 4	10	SAND, coal tar saturated, strong coal					
								tar-like odor, wet.					
15								S-7: Loose, GRAVEL/BRICK with					
		S-8	15-15.5	6	5	14		SILT, coal tar saturated, strong coal	6	3640	15.5'		10.3'
								tar-like odor, wet.	7				
								S-8: Fine to coarse SAND with					
								WOOD, some Brick, wet.					
20								Bottom of boring at 15.5 feet.					
25													
30													

Equipment Installed



REMARKS

1. Field testing results represent organic vapor levels referenced to a benzene standard, measured in the headspace of sealed sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmV). ND indicates not detected above instrument detection limit (<0.1 ppmV).
2. Borehole initiated by vacuum excavation techniques to an approximate depth of 8 feet below ground surface (bgs). Soil samples collected with hand auger in advance of vacuum excavator in this depth range.
3. Photographic logs of each soil sample were taken in the field and are on file in GZA's electronic file directory.
4. Elevation should be considered approximate.
5. Environmental sample collected at a depth of 0.5 to 3 (composite) feet bgs for VPH, EPH, physiologically available cyanide, and metals (arsenic, chromium, and lead) analysis. Samples were also collected from 5 to 7 feet bgs and analyzed for VPH, and from 7-9 feet and analyzed for EPH.
6. Boring encountered refusal at approximately 15.5 feet bgs. Obstruction appeared to be the bottom of previously existing Holder from MGP operations at the Site.
7. Boring terminated at approximately 15.5 feet bgs. A 2-inch diameter PVC groundwater monitoring well was installed as shown.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: B107

172397.00 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMP 2PG2; 12/17/2021

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

284 Winter Street
Haverhill, Massachusetts

BORING NO.: B108
SHEET: 1 of 1
PROJECT NO: 172397.10
REVIEWED BY: CAL

Drilling Co.: Geosearch, Inc.
Foreman: Mike DeAmicis
Logged By: Matthew Brady

Type of Rig:
Rig Model:
Drilling Method:

Boring Location: See Plan
Ground Surface Elev. (ft.): 25.4
Final Boring Depth (ft.): 3
Date Start - Finish: 1/16/2020 - 1/16/2020

H. Datum:
V. Datum:

Auger/Casing Type:
I.D./O.D.:
Hmr Weight (lb.):
Hmr Fall (in.):
Other:

Sampler Type:
I.D./O.D (in.):
Sampler Hmr Wt:
Sampler Hmr Fall:
Other:

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft)	Stratum Description	Stratum Elev. (ft)	Equipment Installed
		S-1	0-1					S-1: Tan, fine to coarse SAND, trace Silt, dry.	1	2.5				No Equipment Installed
		S-2	1-3					S-2: Black, fine SAND and SILT, stained, mild coal tar-like odor, dry.	2	6.1				
									3					
								Bottom of boring at 3 feet.	4					
									5					
5														
10														
15														
20														
25														
30														

REMARKS

1. Field testing results represent organic vapor levels referenced to a benzene standard, measured in the headspace of sealed sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmV). ND indicates not detected above instrument detection limit (<0.1 ppmV).
2. Borehole initiated by vacuum excavation techniques to an approximate depth of 3 feet below ground surface (bgs). Soil samples collected with hand auger in advance of vacuum excavator in this depth range.
3. Sample S-2 submitted for analysis.
4. Elevation should be considered approximate.
5. Concrete encountered at 3 feet bgs. Boring terminated.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: B108

172397.00 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMP 2PG2; 7/12/2021

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

284 Winter Street
Haverhill, Massachusetts

BORING NO.: B109
SHEET: 1 of 2
PROJECT NO: 172397.10
REVIEWED BY: CAL

Drilling Co.: Geosearch, Inc.
Foreman: Mike DeAmicis
Logged By: Matthew Brady

Type of Rig: Truck Mounted
Rig Model: CME-75
Drilling Method: Hollow Stem

Boring Location: See Plan
Ground Surface Elev. (ft.): 25.8
Final Boring Depth (ft.): 52
Date Start - Finish: 1/17/2020 - 1/21/2020

H. Datum:
V. Datum:

Auger/Casing Type: HSA
I.D./O.D.: 4.5" / 8"
Hmr Weight (lb.):
Hmr Fall (in.):
Other:

Sampler Type: Split Spoon
I.D./O.D (in.): 1.375" / 2"
Sampler Hmr Wt: 140
Sampler Hmr Fall: 30
Other:

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft)	Stratum Description	Stratum Elev. (ft)	Equipment Installed
		S-1	0-3					S-1: Brown, fine to coarse SAND, trace Brick, trace Organics, faint coal tar-like odor, dry.	1 2 3	2.0	0.25'	ASPHALT	25.6'	No Equipment Installed
		S-2	3-6					S-2: Dark brown to black, coarse to medium SAND, trace Silt, stained, moderate coal tar-like odor, dry.	4 5	48.6				
5		S-3	6-8	24	5	5 4 6 5	10	S-3: Medium dense, SILT, some fine to coarse SAND, trace Brick, strong coal tar-like odor, dry.		352		FILL		
		S-4	8-10	24	16	12 15 11 8	26	S-4: Medium dense, gray/black/red, SILT with BRICK, trace Gravel, coal-tar-stained to coated, strong coal tar-like odor.		392				
10		S-5	10-12	24	18	13 20		S-5: Dense, gray/red/black, SILT and BRICK, saturated, strong coal tar-like odor, wet.	6	205	13'		12.8'	
		S-6	13-15	24	10	3 2 2 2	4	S-6: Loose, gray, SILT, strong coal tar-like odor, wet.		997				
15		S-7	15-17	24	18	1 2 3 6	5	S-7: Loose, gray, SILT, moderate coal tar-like odor, wet.		684				
20												SILT		
		S-8	22-29	24	12	8 8 11 9		S-8: Medium dense, gray, SILT, moderate coal tar-like odor, wet.		175				
25							19							
30		S-9	29-31	24	11	7 8		S-9: Medium dense, gray, SILT,		96				

REMARKS

1. Field testing results represent organic vapor levels referenced to a benzene standard, measured in the headspace of sealed sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmV). ND indicates not detected above instrument detection limit (<0.1 ppmV).
2. Borehole initiated by vacuum excavation techniques to an approximate depth of 8 feet below ground surface (bgs). Soil samples collected with hand auger in advance of vacuum excavator in this depth range.
3. Photographic logs of each soil sample were taken in the field and are on file in GZA's electronic file directory.
4. Elevation should be considered approximate.
5. Environmental sample collected at a depth of 0 to 3 feet bgs (composite) for VPH, EPH, physiologically available cyanide, and metals (arsenic, chromium, and lead) analysis. An additional sample was also collected from a depth of 50 to 52 feet bgs and analyzed for VPH and EPH.
6. Blow counts from 11 to 12 feet bgs were not recorded.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: B109

172397.00 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMP 2PG2; 7/12/2021

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

284 Winter Street
Haverhill, Massachusetts

BORING NO.: B109
SHEET: 2 of 2
PROJECT NO: 172397.10
REVIEWED BY: CAL

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft)	Stratum Description	Stratum Elev. (ft)	Equipment Installed
						7 9	15	moderate coal tar-like odor, wet.						
35		S-10	36-38	24	15	15 9 13 15	22	S-10: Medium dense, gray/brown, SILT, faint coal tar-like odor, wet.		147				
40												SILT		
		S-11	43-45	24	17	3 5 5 7	10	S-11: Medium dense, gray, SILT, trace fine to coarse Sand, faint coal tar-like odor, wet.		147				
45														
50		S-12	50-52	24	4	9 11 23 29	34	S-12: Dense, coarse SAND and GRAVEL, trace fine Sand, trace Silt, wet.		32.2	50'		-24.2'	
												SAND AND GRAVEL		
											52'		-26.2'	
									7					
								Bottom of boring at 52 feet.						
55														
60														
65														

REMARKS

7. Boring terminated at depth of approximately 52 feet bgs. Borehole backfilled with a mix of cuttings and bentonite chips.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: B109

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

284 Winter Street
Haverhill, Massachusetts

BORING NO.: B110
SHEET: 1 of 2
PROJECT NO: 172397.10
REVIEWED BY: CAL

Drilling Co.: Geosearch, Inc.
Foreman: Mike DeAmicis
Logged By: Matthew Brady

Type of Rig: Truck Mounted
Rig Model: CME-75
Drilling Method: Hollow Stem

Boring Location: See Plan
Ground Surface Elev. (ft.): 25.7
Final Boring Depth (ft.): 44
Date Start - Finish: 1/16/2020 - 1/20/2020

H. Datum:
V. Datum:

Auger/Casing Type: HSA
I.D./O.D.: 4.5" / 8"
Hmr Weight (lb.):
Hmr Fall (in.):
Other:

Sampler Type: Split Spoon
I.D./O.D (in.): 1.375" / 2"
Sampler Hmr Wt: 140
Sampler Hmr Fall: 30
Other:

Groundwater Depth (ft.)

Date	Time	Water Depth	Casing	Stab. Time

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft)	Stratum Description	Stratum Elev. (ft)	Equipment Installed
		S-1	0-1					S-1: Light brown, fine to coarse SAND and GRAVEL, trace Silt, dry.	1	NR				No Equipment Installed
		S-2	1-2					S-2: Light brown, fine to coarse SAND, some Gravel, trace Silt, dry.	2	NR				
		S-3	2-6					S-3: Brown, fine to coarse SAND, some Gravel, trace Silt.	3	NR				
5									4					
		S-4	8-10	24	12	8 4 12 5	16	S-4: Medium dense, black and brown, SILT with fine to coarse SAND, trace Gravel with Wood chips, stained, moderate coal tar-like odor, dry.		44.8		FILL		
10		S-5	10-12	24	3	2 2 3 3	5	S-5: Very loose, black, coarse SAND with GRAVEL, trace Silt, Brick, stained, moderate coal tar-odor, dry.		196				
		S-6	12-14	24	19	26 12 8 5	20	S-6: Medium dense, black, SILT, trace fine to medium SAND and Gravel, stained, moderate coal tar-like odor, dry.		671	14'		11.7'	
15		S-7	14-16	24	23	1 2 1 1	3	S-7: Very loose, black/brown, SILT, trace Organics, stained/coated, strong coal tar-like odor, wet.		1076				
20		S-8	21-23	24	18	2 2 2 4	4	S-8: Very loose, black, SILT, stained/coated, strong coal tar-like odor, wet.		738		SILT		
25											28'		-2.3'	
		S-9	28-30	24	23	6 11 12 16	23	S-9: Medium dense, gray/black, SILT, some fine to coarse Sand, trace Gravel, strong coal tar-like odor, wet.		119		SANDY SILT		
30														

REMARKS

1. Field testing results represent organic vapor levels referenced to a benzene standard, measured in the headspace of sealed sample jars using an Ion Science Tiger organic vapor meter equipped with a photoionization detector (PID) and 10.6eV lamp. Results in parts per million by volume (ppmV). ND indicates not detected above instrument detection limit (<0.1 ppmV).
2. Borehole initiated by vacuum excavation techniques to an approximate depth of 8 feet below ground surface (bgs). Soil samples collected with hand auger in advance of vacuum excavator in this depth range.
3. Photographic logs of each soil sample were taken in the field and are on file in GZA's electronic file directory.
4. Elevation should be considered approximate.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: B110

172397.00 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMP 2PG2; 7/12/2021

TEST BORING LOG

GZA
GeoEnvironmental, Inc.
Engineers and Scientists

284 Winter Street
Haverhill, Massachusetts

BORING NO.: B110
SHEET: 2 of 2
PROJECT NO: 172397.10
REVIEWED BY: CAL

Depth (ft)	Casing Blows/ Core Rate Min/ft	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft)	Stratum Description	Stratum Elev. (ft)	Equipment Installed
35		S-10	35-37	24	18	45 34 21 21	55	S-10: Very dense, gray, fine to coarse SAND, some Silt, trace Gravel, faint coal tar-like odor, wet.		94.5		SANDY SILT		
40		S-11	42-44	24		9 14 48 17	62	S-11: Very dense, gray, SILT.		0.1	44'		-18.3'	
45								Bottom of boring at 44 feet.	5					
50														
55														
60														
65														

REMARKS

5. Boring terminated at depth of approximately 44 feet bgs. Borehole backfilled with a mix of cuttings and bentonite chips.

See log key for explanation of sample descriptions and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Boring No.: B110

172397.00 NGRID 284 WINTER STREET.GPJ; STANDARD BORING W/E W/O SMP 2PG2; 7/12/2021



GZA GeoEnvironmental, Inc.