



06/25/12

## Technical Report for

**XTO Energy**

**FRU 297-8B**

**Accutest Job Number: D35617**

**Sampling Date: 06/18/12**


### Report to:

KRW Consulting, Inc.  
8000 West 14th Avenue  
Lakewood, CO 80214  
cburger@krwconsulting.com; dknudson@krwconsulting.com;  
jhess@krwconsulting.com; crachak@krwconsulting.com;  
ATTN: Dwayne Knudson

**Total number of pages in report: 69**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

  
**Brad Madadian**  
Laboratory Director

**Client Service contact: Renea Jackson 303-425-6021**

Certifications: CO, ID, NE, NM, ND (R-027) (PW), UT (NELAP CO00049), TX (T104704511-12-1)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.

Test results relate only to samples analyzed.

# Table of Contents

-1-

<b>Section 1: Sample Summary .....</b>	<b>3</b>
<b>Section 2: Case Narrative/Conformance Summary .....</b>	<b>4</b>
<b>Section 3: Sample Results .....</b>	<b>6</b>
<b>3.1: D35617-1: CUT 1 MB DAY 5 (6/14) .....</b>	<b>7</b>
<b>Section 4: Misc. Forms .....</b>	<b>10</b>
<b>4.1: Chain of Custody .....</b>	<b>11</b>
<b>Section 5: GC/MS Volatiles - QC Data Summaries .....</b>	<b>13</b>
<b>5.1: Method Blank Summary .....</b>	<b>14</b>
<b>5.2: Blank Spike Summary .....</b>	<b>15</b>
<b>5.3: Matrix Spike/Matrix Spike Duplicate Summary .....</b>	<b>16</b>
<b>Section 6: GC/MS Volatiles - Raw Data .....</b>	<b>17</b>
<b>6.1: Samples .....</b>	<b>18</b>
<b>6.2: Method Blanks .....</b>	<b>33</b>
<b>Section 7: GC Volatiles - QC Data Summaries .....</b>	<b>44</b>
<b>7.1: Method Blank Summary .....</b>	<b>45</b>
<b>7.2: Blank Spike Summary .....</b>	<b>46</b>
<b>7.3: Matrix Spike/Matrix Spike Duplicate Summary .....</b>	<b>47</b>
<b>Section 8: GC Volatiles - Raw Data .....</b>	<b>48</b>
<b>8.1: Samples .....</b>	<b>49</b>
<b>8.2: Method Blanks .....</b>	<b>54</b>
<b>Section 9: GC Semi-volatiles - QC Data Summaries .....</b>	<b>59</b>
<b>9.1: Method Blank Summary .....</b>	<b>60</b>
<b>9.2: Blank Spike Summary .....</b>	<b>61</b>
<b>9.3: Matrix Spike/Matrix Spike Duplicate Summary .....</b>	<b>62</b>
<b>Section 10: GC Semi-volatiles - Raw Data .....</b>	<b>63</b>
<b>10.1: Samples .....</b>	<b>64</b>
<b>10.2: Method Blanks .....</b>	<b>67</b>



Sample Summary

XTO Energy  
FRU 297-8B

Job No: D35617

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D35617-1	06/18/12	10:30	DS	06/19/12	SO	Soil	CUT 1 MB DAY 5 (6/14)

Soil samples reported on a dry weight basis unless otherwise indicated on result page.



## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** XTO Energy

**Job No** D35617

**Site:** FRU 297-8B

**Report Date** 6/25/2012 3:15:13 PM

On 06/19/2012, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 3.0 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D35617 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> SO	<b>Batch ID:</b> V5V1348
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D35588-3MS, D35588-3MSD were used as the QC samples indicated.
- The matrix spike (MS) recovery(s) of Benzene are outside control limits. Outside control limits due to possible matrix interference.
- The RPD(s) for the MS and MSD recoveries of Benzene are outside control limits for sample D35588-3MSD. Variability of recovery may be due to sample matrix/homogeneity.
- Sample(s) D35588-3MS have surrogates outside control limits. Probable cause due to matrix interference.
- D35588-3MS: Outside control limits due to possible matrix interference.
- D35588-3MSD: Variability of recovery may be due to sample matrix/homogeneity.
- D35588-3MS for 4-Bromofluorobenzene: Outside control limits due to possible matrix interference.

### Volatiles by GC By Method SW846 8015B

<b>Matrix</b> SO	<b>Batch ID:</b> GGB909
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) D35405-1MS, D35405-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### Extractables by GC By Method SW846-8015B

<b>Matrix</b> SO	<b>Batch ID:</b> OP6107
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D35662-1MS, D35662-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### Wet Chemistry By Method SM19 2540B M

<b>Matrix</b> SO	<b>Batch ID:</b> GN15505
------------------	--------------------------

- The data for SM19 2540B M meets quality control requirements.

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

### Sample Results

### Report of Analysis

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUT 1 MB DAY 5 (6/14)	
<b>Lab Sample ID:</b>	D35617-1	<b>Date Sampled:</b> 06/18/12
<b>Matrix:</b>	SO - Soil	<b>Date Received:</b> 06/19/12
<b>Method:</b>	SW846 8260B	<b>Percent Solids:</b> 88.7
<b>Project:</b>	FRU 297-8B	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V22030.D	1	06/19/12	BD	n/a	n/a	V5V1348
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.03 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.062	0.024	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	76%		61-130%
460-00-4	4-Bromofluorobenzene	83%		53-131%
17060-07-0	1,2-Dichloroethane-D4	87%		62-130%

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUT 1 MB DAY 5 (6/14)	
<b>Lab Sample ID:</b>	D35617-1	<b>Date Sampled:</b> 06/18/12
<b>Matrix:</b>	SO - Soil	<b>Date Received:</b> 06/19/12
<b>Method:</b>	SW846 8015B	<b>Percent Solids:</b> 88.7
<b>Project:</b>	FRU 297-8B	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB16398.D	1	06/20/12	SK	n/a	n/a	GGB909
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.0 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	27.6	12	6.2	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	95%		60-140%		

ND = Not detected      MDL - Method Detection Limit  
RL = Reporting Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



Accutest Laboratories

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b>	CUT 1 MB DAY 5 (6/14)	
<b>Lab Sample ID:</b>	D35617-1	<b>Date Sampled:</b> 06/18/12
<b>Matrix:</b>	SO - Soil	<b>Date Received:</b> 06/19/12
<b>Method:</b>	SW846-8015B SW846 3546	<b>Percent Solids:</b> 88.7
<b>Project:</b>	FRU 297-8B	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD14723.D	1	06/23/12	AW	06/21/12	OP6107	GFD765
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	243	15	9.7	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	96%		43-136%		

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Misc. Forms

---

### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody



## CHAIN OF CUSTODY

PAGE 1 OF 1

4036 Youngfield Street, Wheat Ridge, CO 80033  
TEL: 303-425-6021 FAX: 303-425-6854  
www.accutest.com

FED-EX Tracking #		Bottle Order Control #	
Accutest Quote #		Accutest Job # <b>D35617</b>	
Client / Reporting Information		Project Information	
Company Name <b>KRW Consulting</b>		Project Name: <b>XTO FRU 297-8B</b>	
Street Address <b>8000 West 14th Street; Suite 200</b>		Street	
City <b>Lakewood, CO 80214</b>		City State	
Project Contact <b>Dwayne Knudson</b>		Billing Information (if different from Report to) Company Name <b>XTO Energy</b>	
Phone # <b>(970) 488-1098</b>		Street Address <b>21459 CR5</b>	
Sampler(s) Name(s) <b>DAVID SANDERS</b>		City <b>Rifle, CO 81650</b>	
Project Manager <b>Joe Hess</b>		Attention: <b>Jessica Dooling</b>	
Client Purchase Order #		City	
Collection		Number of preserved Bottles	
Accutest Sample #	Field ID / Point of Collection	MECH/DI Vial #	Date
	<b>CUTIMB3 DAY 5 (6/14)</b>		<b>6/18/12</b>
		Time	<b>10:30</b>
		Sampled by	<b>DL3</b>
		Matrix	<b>SO</b>
		# of bottles	<b>3</b>
		PC1	
		PC2	
		PC3	
		PC4	
		PC5	
		PC6	
		PC7	
		PC8	
		PC9	
		PC10	
		PC11	
		PC12	
		PC13	
		PC14	
		PC15	
		PC16	
		PC17	
		PC18	
		PC19	
		PC20	
		PC21	
		PC22	
		PC23	
		PC24	
		PC25	
		PC26	
		PC27	
		PC28	
		PC29	
		PC30	
		PC31	
		PC32	
		PC33	
		PC34	
		PC35	
		PC36	
		PC37	
		PC38	
		PC39	
		PC40	
		PC41	
		PC42	
		PC43	
		PC44	
		PC45	
		PC46	
		PC47	
		PC48	
		PC49	
		PC50	
		PC51	
		PC52	
		PC53	
		PC54	
		PC55	
		PC56	
		PC57	
		PC58	
		PC59	
		PC60	
		PC61	
		PC62	
		PC63	
		PC64	
		PC65	
		PC66	
		PC67	
		PC68	
		PC69	
		PC70	
		PC71	
		PC72	
		PC73	
		PC74	
		PC75	
		PC76	
		PC77	
		PC78	
		PC79	
		PC80	
		PC81	
		PC82	
		PC83	
		PC84	
		PC85	
		PC86	
		PC87	
		PC88	
		PC89	
		PC90	
		PC91	
		PC92	
		PC93	
		PC94	
		PC95	
		PC96	
		PC97	
		PC98	
		PC99	
		PC100	
		PC101	
		PC102	
		PC103	
		PC104	
		PC105	
		PC106	
		PC107	
		PC108	
		PC109	
		PC110	
		PC111	
		PC112	
		PC113	
		PC114	
		PC115	
		PC116	
		PC117	
		PC118	
		PC119	
		PC120	
		PC121	
		PC122	
		PC123	
		PC124	
		PC125	
		PC126	
		PC127	
		PC128	
		PC129	
		PC130	
		PC131	
		PC132	
		PC133	
		PC134	
		PC135	
		PC136	
		PC137	
		PC138	
		PC139	
		PC140	
		PC141	
		PC142	
		PC143	
		PC144	
		PC145	
		PC146	
		PC147	
		PC148	
		PC149	
		PC150	
		PC151	
		PC152	
		PC153	
		PC154	
		PC155	
		PC156	
		PC157	
		PC158	
		PC159	
		PC160	
		PC161	
		PC162	
		PC163	
		PC164	
		PC165	
		PC166	
		PC167	
		PC168	
		PC169	
		PC170	
		PC171	
		PC172	
		PC173	
		PC174	
		PC175	
		PC176	
		PC177	
		PC178	
		PC179	
		PC180	
		PC181	
		PC182	
		PC183	
		PC184	
		PC185	
		PC186	
		PC187	
		PC188	
		PC189	
		PC190	
		PC191	
		PC192	
		PC193	
		PC194	
		PC195	
		PC196	
		PC197	
		PC198	
		PC199	
		PC200	
		PC201	
		PC202	
		PC203	
		PC204	
		PC205	
		PC206	
		PC207	
		PC208	
		PC209	
		PC210	
		PC211	
		PC212	
		PC213	
		PC214	
		PC215	
		PC216	
		PC217	
		PC218	
		PC219	
		PC220	
		PC221	
		PC222	
		PC223	
		PC224	
		PC225	
		PC226	
		PC227	
		PC228	
		PC229	
		PC230	
		PC231	
		PC232	
		PC233	
		PC234	
		PC235	
		PC236	
		PC237	
		PC238	
		PC239	
		PC240	
		PC241	
		PC242	
		PC243	
		PC244	
		PC245	
		PC246	
		PC247	
		PC248	
		PC249	
		PC250	
		PC251	
		PC252	
		PC253	
		PC254	
		PC255	
		PC256	
		PC257	
		PC258	
		PC259	
		PC260	
		PC261	
		PC262	
		PC263	
		PC264	
		PC265	
		PC266	
		PC267	
		PC268	
		PC269	
		PC270	
		PC271	
		PC272	
		PC273	
		PC274	
		PC275	
		PC276	
		PC277	
		PC278	
		PC279	
		PC280	
		PC281	
		PC282	
		PC283	
		PC284	
		PC285	
		PC286	
		PC287	
		PC288	
		PC289	
		PC290	
		PC291	
		PC292	
		PC293	
		PC294	
		PC295	
		PC296	
		PC297	
		PC298	
		PC299	
		PC300	
		PC301	
		PC302	
		PC303	
		PC304	
		PC305	
		PC306	
		PC307	
		PC308	
		PC309	
		PC310	
		PC311	
		PC312	
		PC313	
		PC314	
		PC315	
		PC316	
		PC317	
		PC318	
		PC319	
		PC320	
		PC321	
		PC322	
		PC323	
		PC324	
		PC325	
		PC326	
		PC327	
		PC328	
		PC329	
		PC330	
		PC331	
		PC332	
		PC333	
		PC334	
		PC335	
		PC336	
		PC337	
		PC338	
		PC339	
		PC340	
		PC341	
		PC342	
		PC343	
		PC344	
		PC345	
		PC346	
		PC347	
		PC348	
		PC349	
		PC350	
		PC351	
		PC352	
		PC353	
		PC354	
		PC355	
		PC356	
		PC357	
		PC358	
		PC359	
		PC360	
		PC361	
		PC362	
		PC363	
		PC364	
		PC365	
		PC366	
		PC367	
		PC368	
		PC369	
		PC370	
		PC371	
		PC372	
		PC373	
		PC374	
		PC375	
		PC376	
		PC377	
		PC378	
		PC379	
		PC380	
		PC381	
		PC382	
		PC383	
		PC384	
		PC385	
		PC386	
		PC387	
		PC388	
		PC389	
		PC390	
		PC391	
		PC392	
		PC393	
		PC394	
		PC395	
		PC396	
		PC397	
		PC398	
		PC399	
		PC400	
		PC401	
		PC402	
		PC403	
		PC404	
		PC405	
		PC406	
		PC407	
		PC408	
		PC409	
		PC410	
		PC411	
		PC412	
		PC413	
		PC414	
		PC415	
		PC416	
		PC417	
		PC418	
		PC419	
		PC420	
		PC421	
		PC422	
		PC423	
		PC424	
		PC425	
		PC426	
		PC427	
		PC428	
		PC429	
		PC430	
		PC431	
		PC432	
		PC433	
		PC434	
		PC435	
		PC436	
		PC437	
		PC438	
		PC439	
		PC440	
		PC441	
		PC442	
		PC443	
		PC444	
		PC445	
		PC446	
		PC447	
		PC448	
		PC449	
		PC450	
		PC451	
		PC452	
		PC453	
		PC454	
		PC455	
		PC456	
		PC457	
		PC458	
		PC459	
		PC460	
		PC461	
		PC462	
		PC463	

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D35617

Client: KRW

Immediate Client Services Action Required: No

Date / Time Received: 6/19/2012 12:30:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XTO

Airbill #'s: CO

## Cooler Security

Y or N

Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

## Cooler Temperature

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | Infrared gun                        |                          |
| 3. Cooler media:             | Ice (bag)                           |                          |

## Quality Control Preservation

Y or N

N/A

- |                                 |                                     |                          |                                     |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

## Sample Integrity - Documentation

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

## Sample Integrity - Condition

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |                          |

## Sample Integrity - Instructions

Y or N N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume rec'd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Comments

Accutest Laboratories  
V:(303) 425-6021

4036 Youngfield Street  
F: (303) 425-6854

Wheat Ridge, CO  
www.accutest.com

## GC/MS Volatiles

5

### QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

**Method Blank Summary**

Page 1 of 1

**Job Number:** D35617  
**Account:** XTOKRWR XTO Energy  
**Project:** FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1348-MB	5V22012.D	1	06/19/12	BD	n/a	n/a	V5V1348

The QC reported here applies to the following samples:

Method: SW846 8260B

D35617-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	19	ug/kg	

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	89% 61-130%
460-00-4	4-Bromofluorobenzene	85% 53-131%
17060-07-0	1,2-Dichloroethane-D4	101% 62-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D35617  
**Account:** XTOKRWR XTO Energy  
**Project:** FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1348-BS	5V22013.D	1	06/19/12	BD	n/a	n/a	V5V1348

The QC reported here applies to the following samples:

Method: SW846 8260B

D35617-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	53.1	106	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	90%	61-130%
460-00-4	4-Bromofluorobenzene	101%	53-131%
17060-07-0	1,2-Dichloroethane-D4	100%	62-130%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D35617  
**Account:** XTOKRWR XTO Energy  
**Project:** FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D35588-3MS <sup>a</sup>	5V22015.D	1	06/19/12	BD	n/a	n/a	V5V1348
D35588-3MSD <sup>b</sup>	5V22016.D	1	06/19/12	BD	n/a	n/a	V5V1348
D35588-3	5V22014.D	1	06/19/12	BD	n/a	n/a	V5V1348

The QC reported here applies to the following samples:

Method: SW846 8260B

D35617-1

CAS No.	Compound	D35588-3 ug/kg	Spike Q	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	3190	4480	141*	3080	97	37*	70-134/30

CAS No.	Surrogate Recoveries	MS	MSD	D35588-3	Limits
2037-26-5	Toluene-D8	113%	77%	89%	61-130%
460-00-4	4-Bromofluorobenzene	140%* <sup>a</sup>	93%	93%	53-131%
17060-07-0	1,2-Dichloroethane-D4	130%	85%	101%	62-130%

(a) Outside control limits due to possible matrix interference.

(b) Variability of recovery may be due to sample matrix/homogeneity.

\* = Outside of Control Limits.



GC/MS Volatiles

Raw Data



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5061912.S\  
 Data File : 5V22030.D  
 Acq On : 19 Jun 2012 10:38 pm  
 Operator : BRETD  
 Sample : D35617-1, X50  
 Misc : MS4134,V5V1348,5.026,,100,5,1  
 ALS Vial : 21 Sample Multiplier: 1

Quant Time: Jun 20 08:43:51 2012  
 Quant Method : C:\msdchem\1\METHODS\V5AP1304TVH1304.M  
 Quant Title : 8260  
 QLast Update : Thu May 24 07:55:17 2012  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	204860	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.446	114	324665	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.095	117	419454	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.070	152	294517	50.00	ug/l	0.00

## System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.035	102	27490	43.47	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	86.94%
61) Toluene-d8	13.850	98	537337	37.90	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	75.80%
69) 4-Bromofluorobenzene	16.042	95	240076	41.34	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	82.68%

## Target Compounds

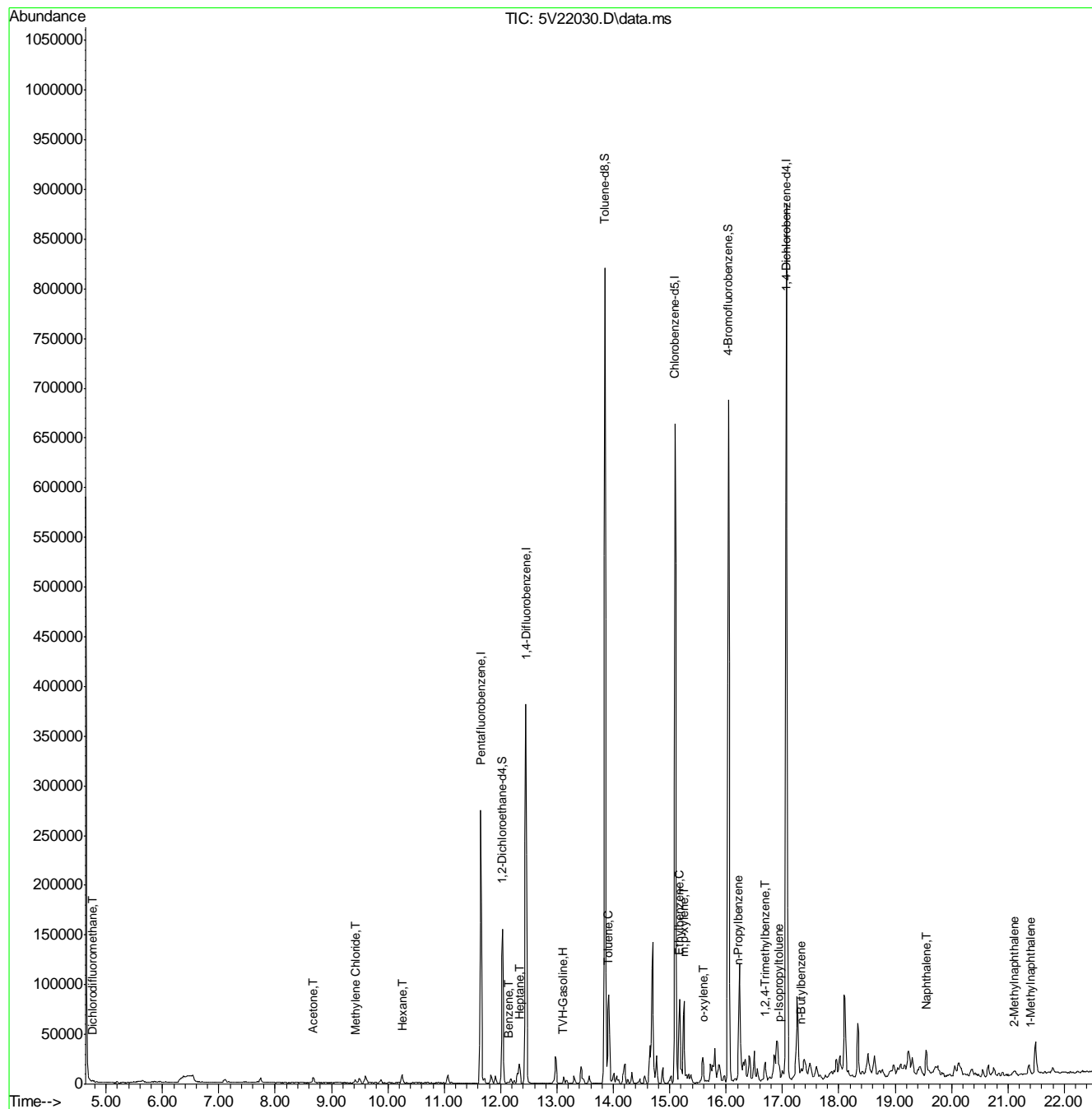
						Qvalue
1) TVH-Gasoline	13.102	TIC	1660798m	84.24	ug/l	
3) Dichlorodifluoromethane	4.763	85	1493	0.82	ug/l #	62
15) Acetone	8.679	58	2695	6.62	ug/l #	73
17) Methylene Chloride	9.421	84	2023	0.59	ug/l	87
41) Hexane	10.254	57	4215	0.94	ug/l	100
43) Heptane	12.332	43	7314	1.52	ug/l	87
50) Benzene	12.138	78	1391	0.10	ug/l	100
62) Toluene	13.907	92	26517	2.43	ug/l	99
66) Ethylbenzene	15.175	91	18036	0.89	ug/l	96
72) m,p-xylene	15.255	106	26491	3.28	ug/l	97
73) o-xylene	15.597	106	2628	0.34	ug/l	94
77) n-Propylbenzene	16.225	91	8830	0.33	ug/l #	80
82) 1,2,4-Trimethylbenzene	16.693	105	7455	0.39	ug/l	87
86) p-Isopropyltoluene	16.944	119	6216	0.29	ug/l #	86
88) n-Butylbenzene	17.333	91	4533	0.23	ug/l #	74
91) Naphthalene	19.559	128	4940	0.91	ug/l	100
94) 2-Methylnaphthalene	21.112	142	2911	1.82	ug/l #	85
95) 1-Methylnaphthalene	21.408	142	1478	1.44	ug/l #	86

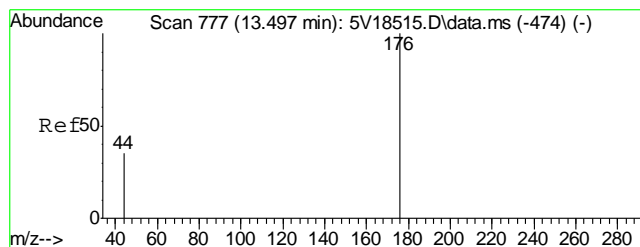
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5061912.S\  
Data File : 5V22030.D  
Acq On : 19 Jun 2012 10:38 pm  
Operator : BRETD  
Sample : D35617-1, X50  
Misc : MS4134,V5V1348,5.026,,100,5,1  
ALS Vial : 21 Sample Multiplier: 1

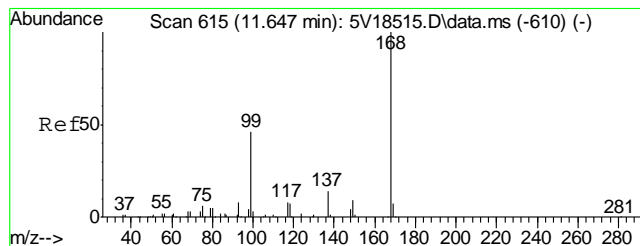
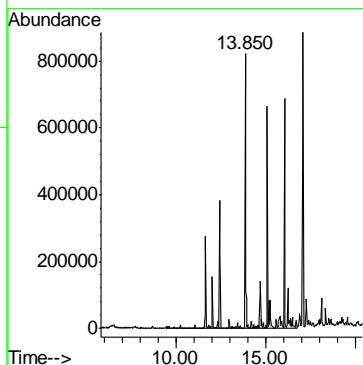
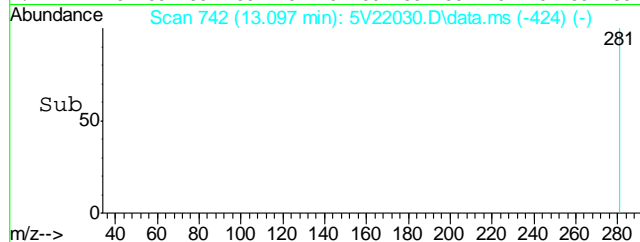
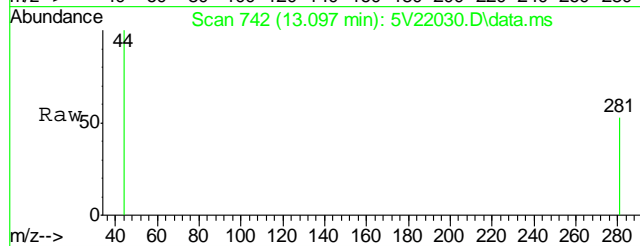
Quant Time: Jun 20 08:43:51 2012  
Quant Method : C:\msdchem\1\METHODS\V5AP1304TVH1304.M  
Quant Title : 8260  
QLast Update : Thu May 24 07:55:17 2012  
Response via : Initial Calibration





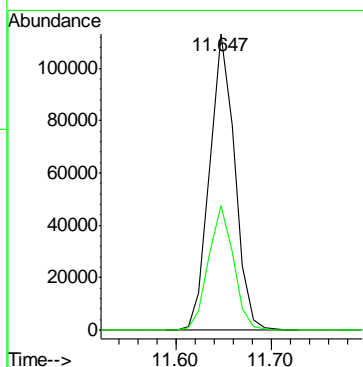
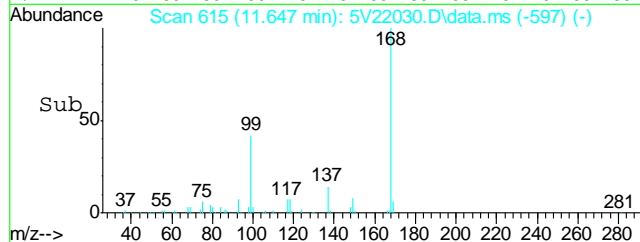
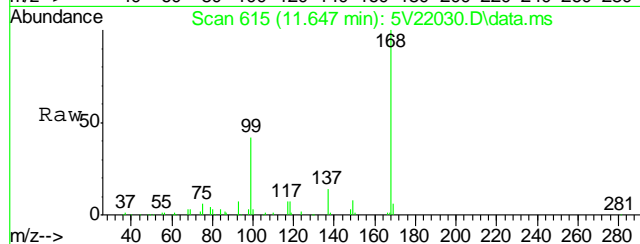
#1  
TVH-Gasoline  
Concen: 84.24 ug/l m  
RT: 13.102 min Scan# 742  
Delta R.T. 0.000 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

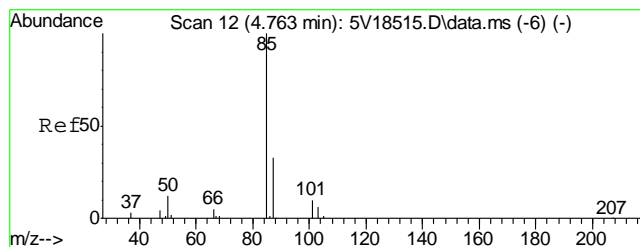
Tgt Ion:TIC Resp: 1660798



#2  
Pentafluorobenzene  
Concen: 50.00 ug/l  
RT: 11.647 min Scan# 615  
Delta R.T. -0.000 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

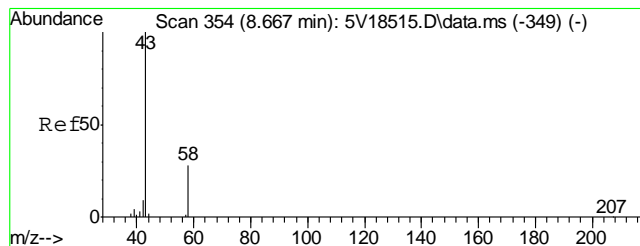
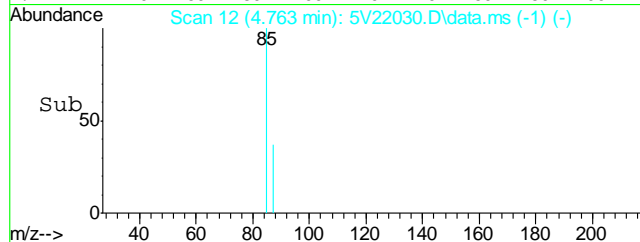
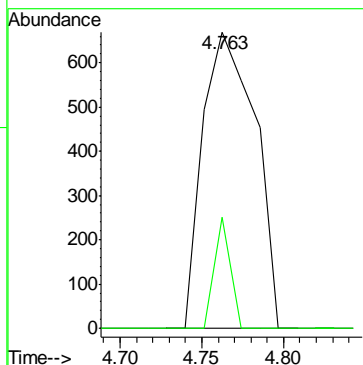
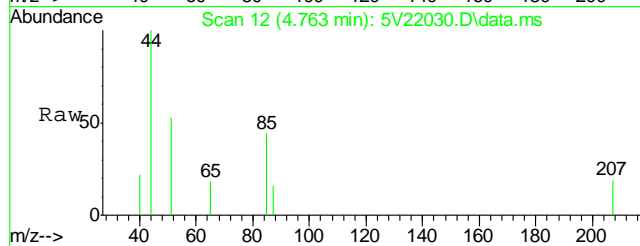
Tgt Ion:168 Resp: 204860  
Ion Ratio Lower Upper  
168 100  
99 41.9 37.4 56.2





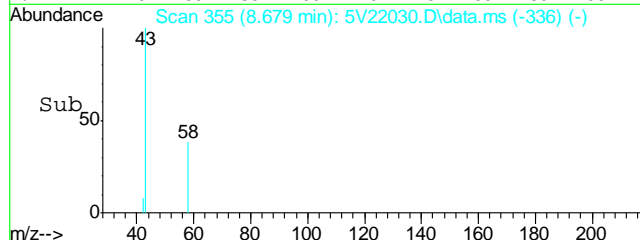
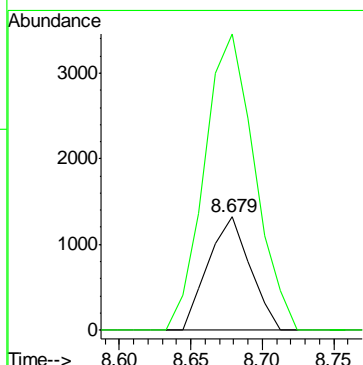
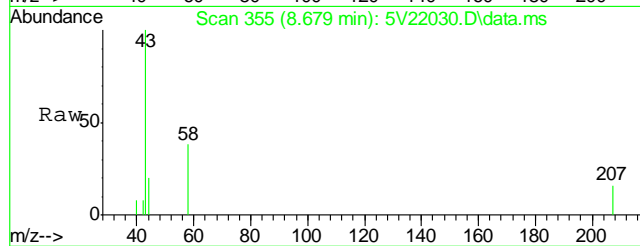
#3  
Dichlorodifluoromethane  
Concen: 0.82 ug/l  
RT: 4.763 min Scan# 12  
Delta R.T. 0.001 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

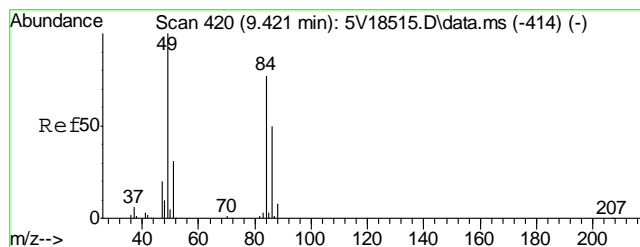
Tgt Ion: 85 Resp: 1493  
Ion Ratio Lower Upper  
85 100  
87 11.5 12.9 52.9#



#15  
Acetone  
Concen: 6.62 ug/l  
RT: 8.679 min Scan# 355  
Delta R.T. 0.012 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

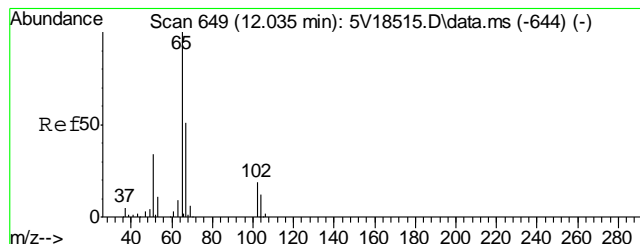
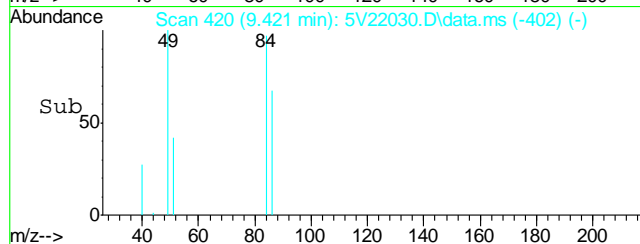
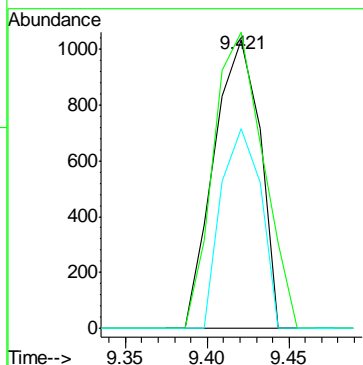
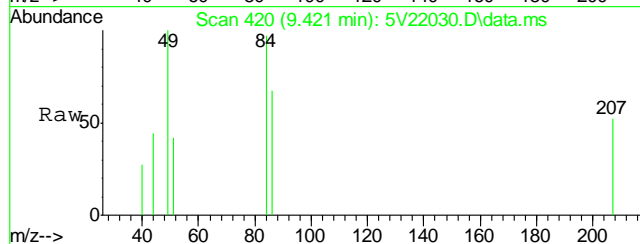
Tgt Ion: 58 Resp: 2695  
Ion Ratio Lower Upper  
58 100  
43 312.0 353.6 393.6#





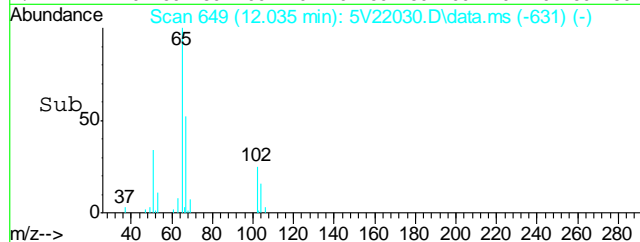
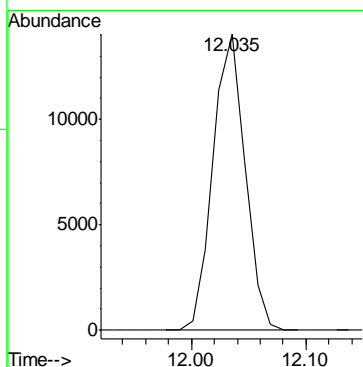
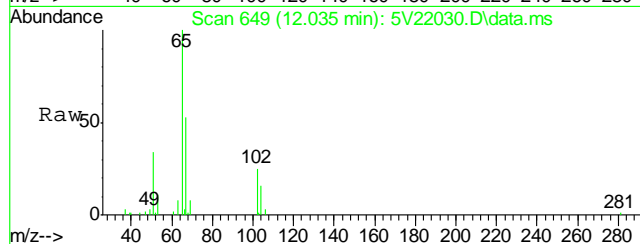
#17  
Methylene Chloride  
Concen: 0.59 ug/l  
RT: 9.421 min Scan# 420  
Delta R.T. -0.000 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

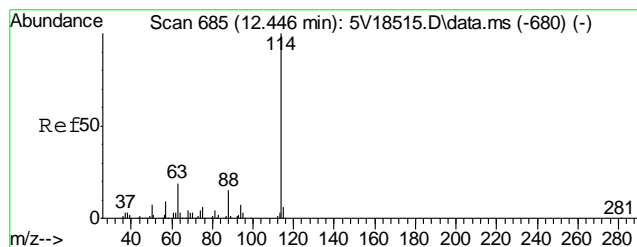
Tgt Ion: 84 Resp: 2023  
Ion Ratio Lower Upper  
84 100  
49 110.6 110.4 150.4  
86 59.7 44.0 84.0



#33  
1,2-Dichloroethane-d4  
Concen: 43.47 ug/l  
RT: 12.035 min Scan# 649  
Delta R.T. 0.000 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

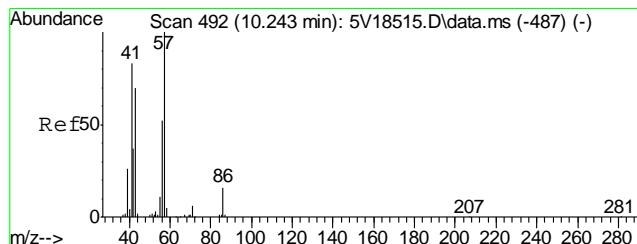
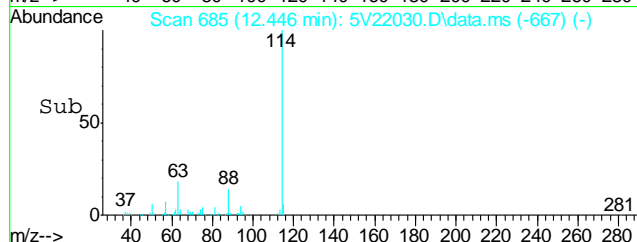
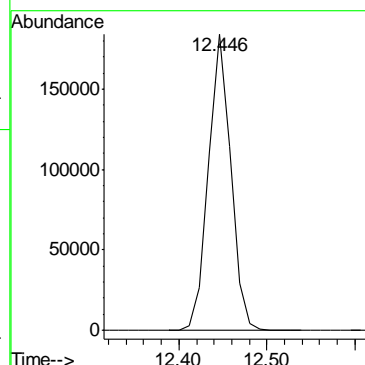
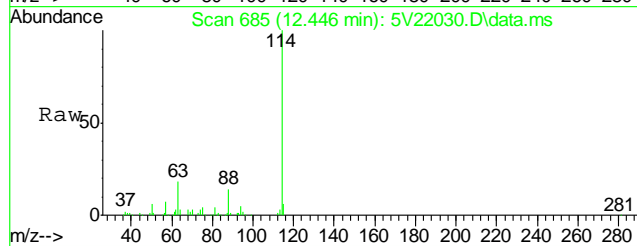
Tgt Ion: 102 Resp: 27490





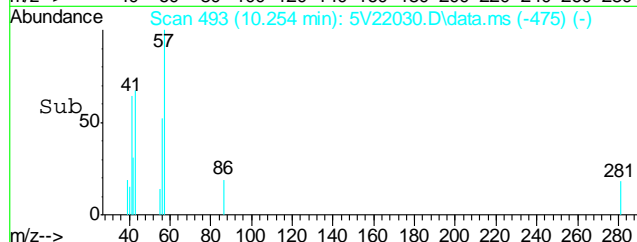
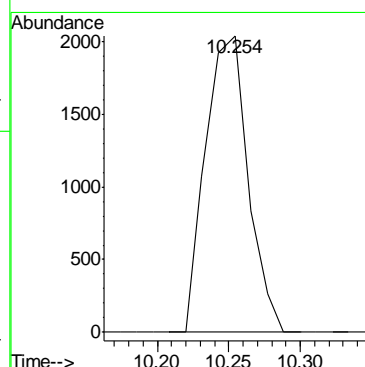
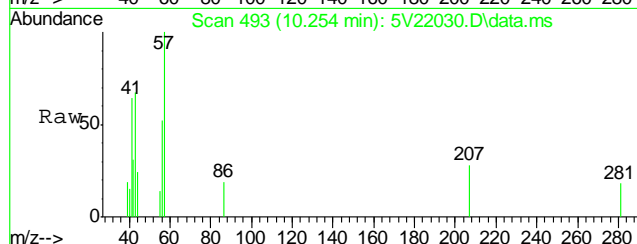
#35  
1,4-Difluorobenzene  
Concen: 50.00 ug/l  
RT: 12.446 min Scan# 685  
Delta R.T. -0.000 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

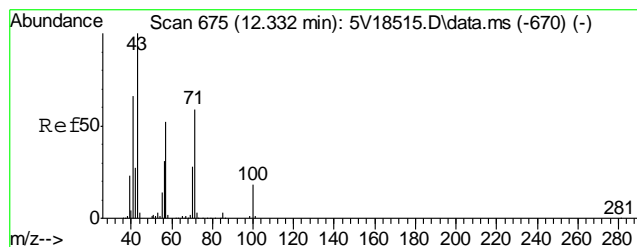
Tgt Ion: 114 Resp: 324665



#41  
Hexane  
Concen: 0.94 ug/l  
RT: 10.254 min Scan# 493  
Delta R.T. -0.000 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

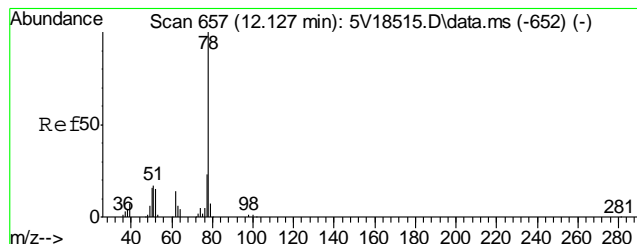
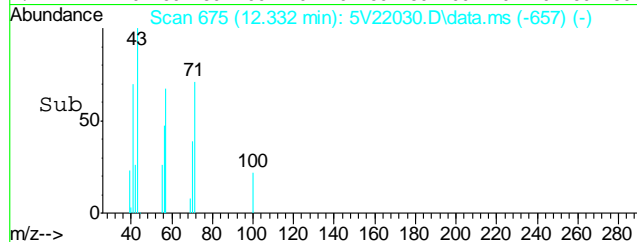
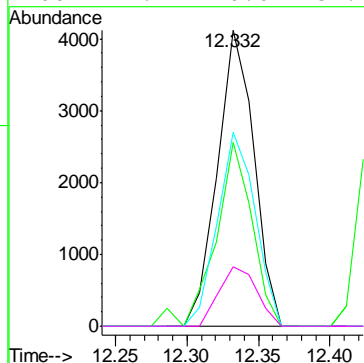
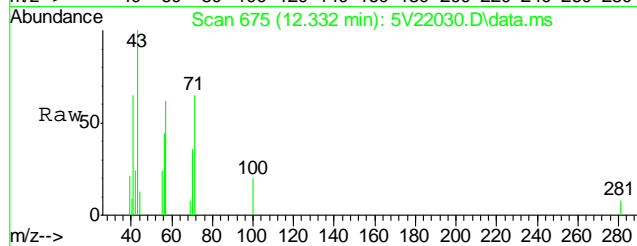
Tgt Ion: 57 Resp: 4215





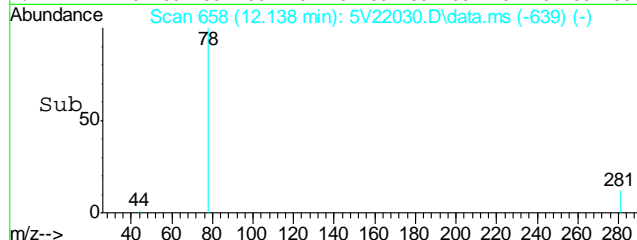
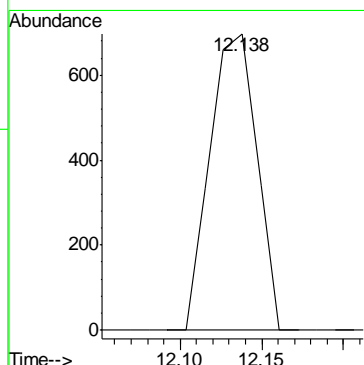
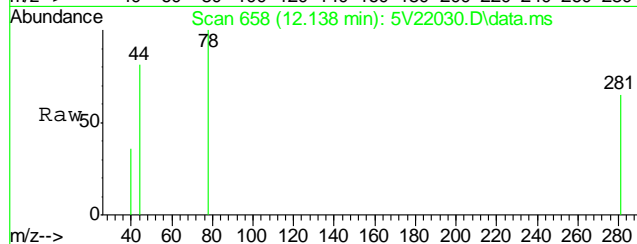
#43  
Heptane  
Concen: 1.52 ug/l  
RT: 12.332 min Scan# 675  
Delta R.T. -0.000 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

Tgt Ion: 43 Resp: 7314  
Ion Ratio Lower Upper  
43 100  
57 62.4 30.6 70.6  
71 67.5 38.9 78.9  
100 21.1 0.0 37.4

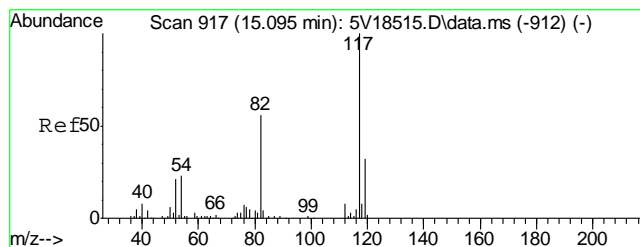


#50  
Benzene  
Concen: 0.10 ug/l  
RT: 12.138 min Scan# 658  
Delta R.T. 0.011 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

Tgt Ion: 78 Resp: 1391

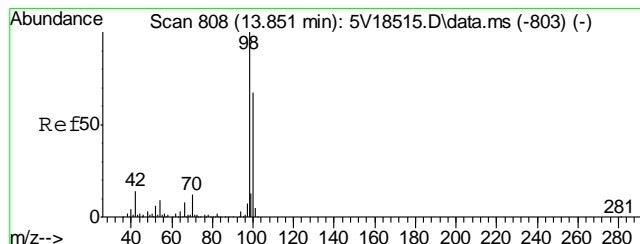
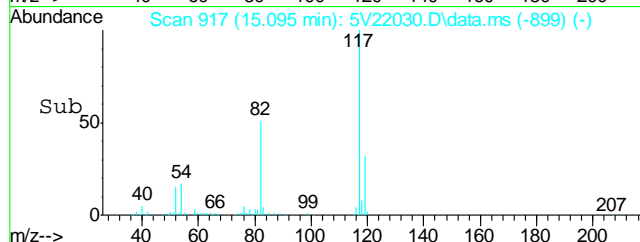
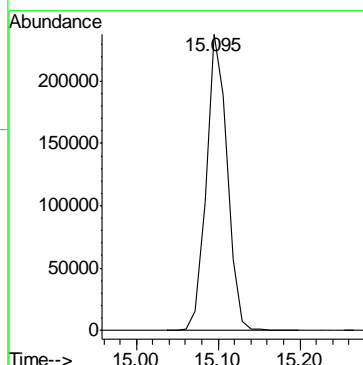
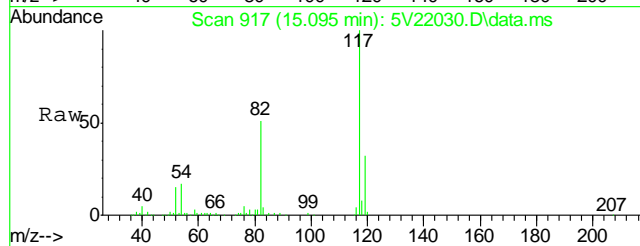






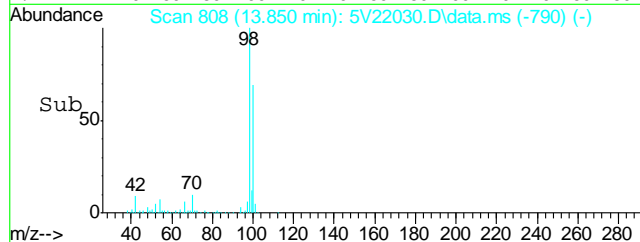
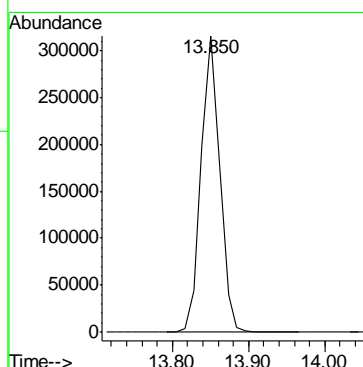
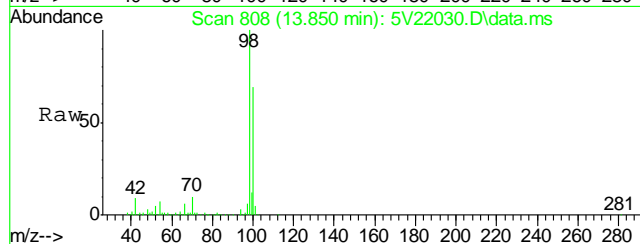
#53  
Chlorobenzene-d5  
Concen: 50.00 ug/l  
RT: 15.095 min Scan# 917  
Delta R.T. -0.000 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

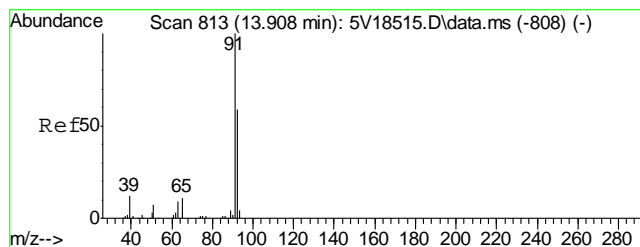
Tgt Ion:117 Resp: 419454



#61  
Toluene-d8  
Concen: 37.90 ug/l  
RT: 13.850 min Scan# 808  
Delta R.T. -0.000 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

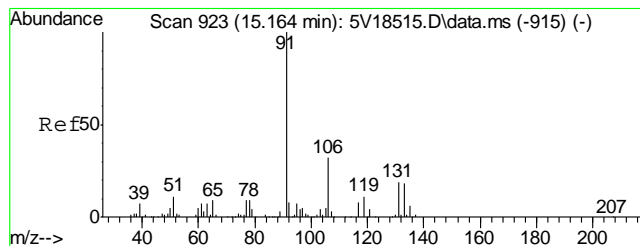
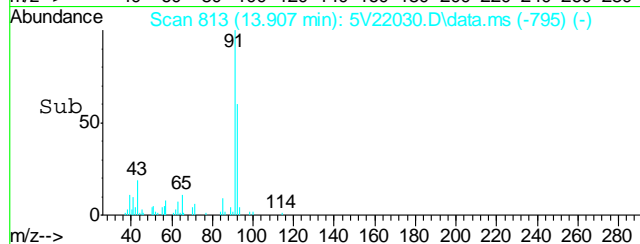
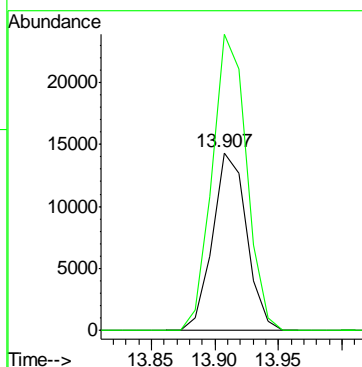
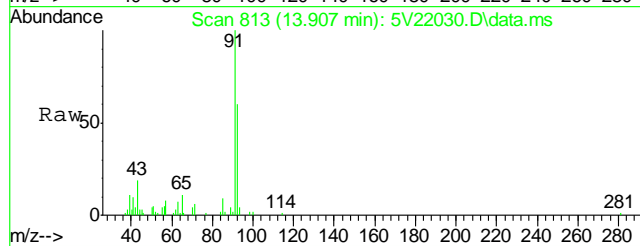
Tgt Ion: 98 Resp: 537337





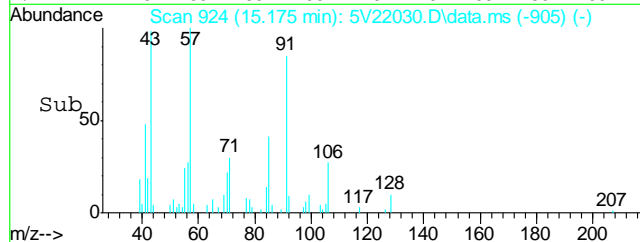
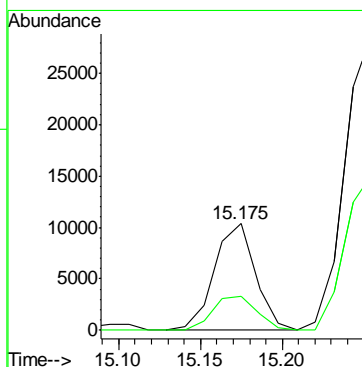
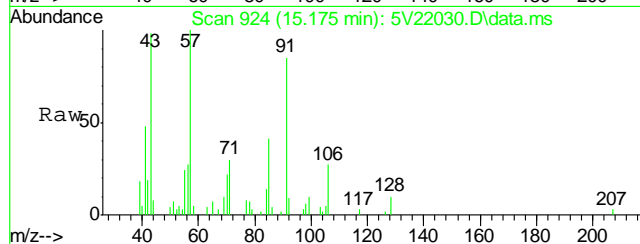
#62  
Toluene  
Concen: 2.43 ug/l  
RT: 13.907 min Scan# 813  
Delta R.T. -0.000 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

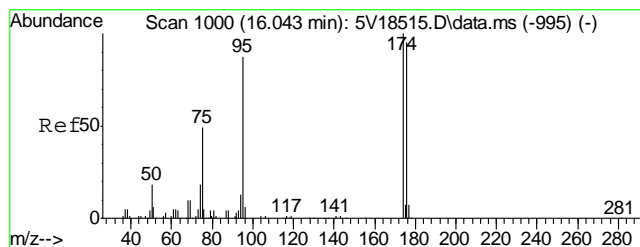
Tgt Ion	Resp	Lower	Upper
92	26517		
91	100		
91	168.7	149.8	189.8



#66  
Ethylbenzene  
Concen: 0.89 ug/l  
RT: 15.175 min Scan# 924  
Delta R.T. 0.011 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

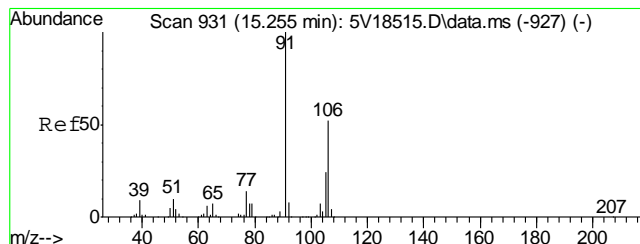
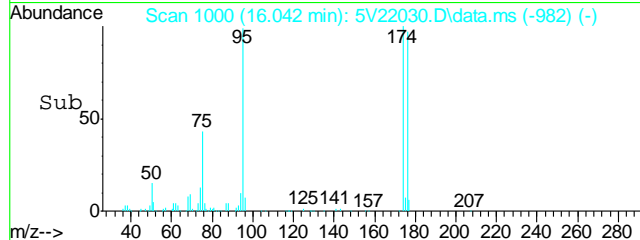
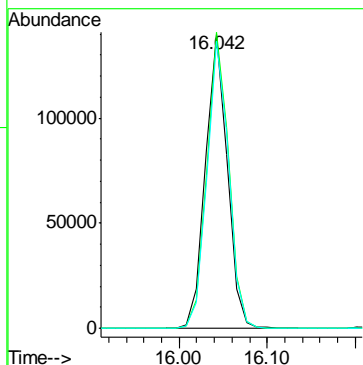
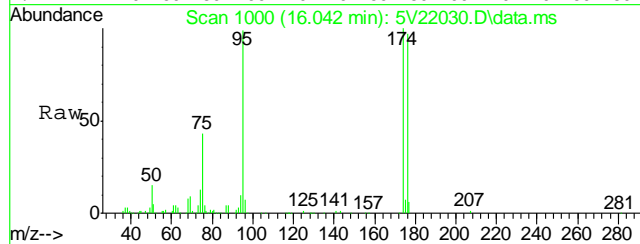
Tgt Ion	Resp	Lower	Upper
91	18036		
91	100		
106	33.8	11.7	51.7





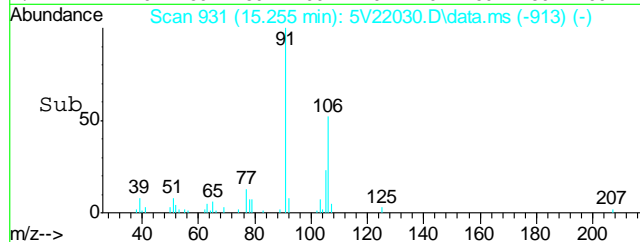
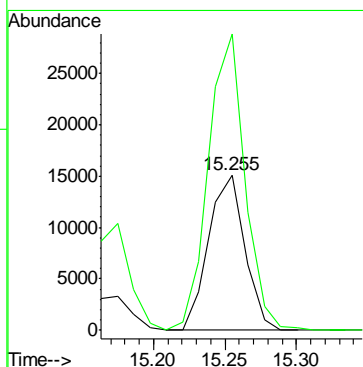
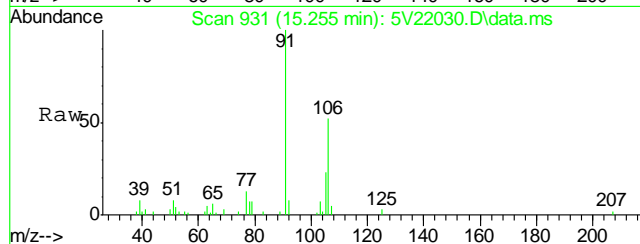
#69  
4-Bromofluorobenzene  
Concen: 41.34 ug/l  
RT: 16.042 min Scan# 1000  
Delta R.T. -0.000 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

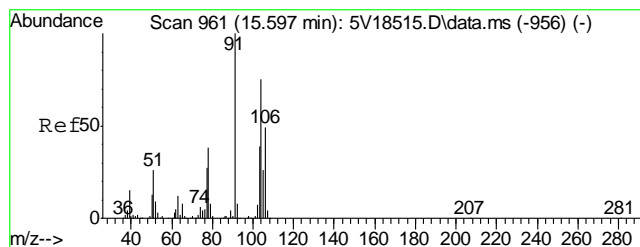
Tgt Ion	Ratio	Lower	Upper
95	100		
174	100.3	77.1	117.1
176	97.1	73.4	113.4



#72  
m,p-xylene  
Concen: 3.28 ug/l  
RT: 15.255 min Scan# 931  
Delta R.T. -0.000 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

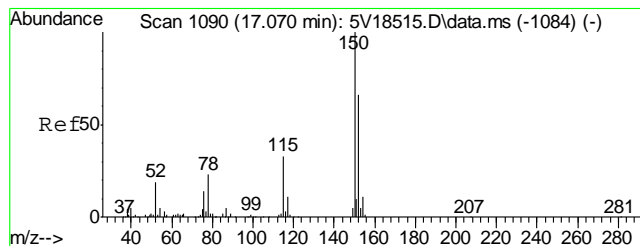
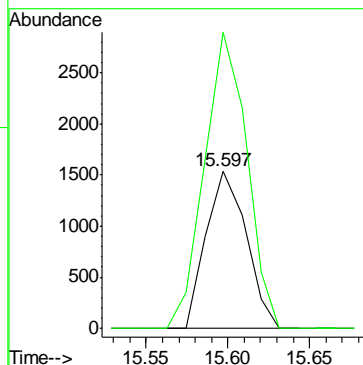
Tgt Ion	Ratio	Lower	Upper
106	100		
91	192.3	177.1	217.1





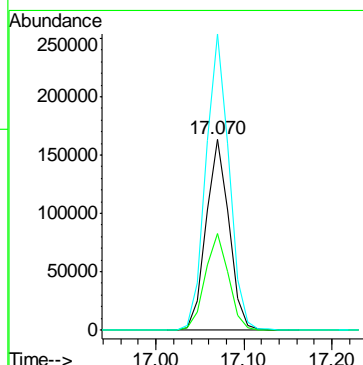
#73  
o-xylene  
Concen: 0.34 ug/l  
RT: 15.597 min Scan# 961  
Delta R.T. -0.000 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

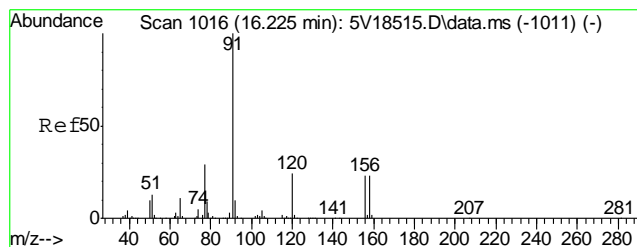
Tgt Ion:106 Resp: 2628  
Ion Ratio Lower Upper  
106 100  
91 198.7 166.6 249.8



#74  
1,4-Dichlorobenzene-d4  
Concen: 50.00 ug/l  
RT: 17.070 min Scan# 1090  
Delta R.T. -0.000 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

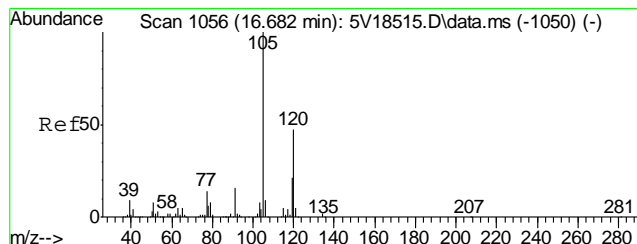
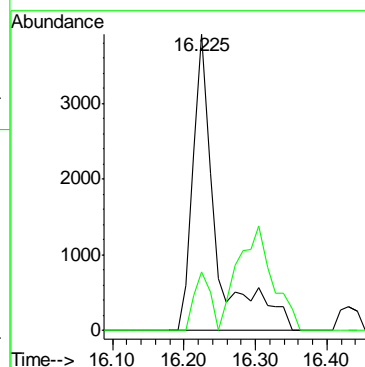
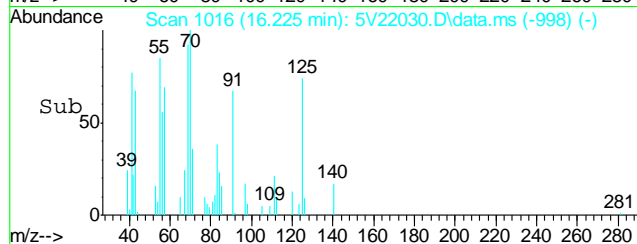
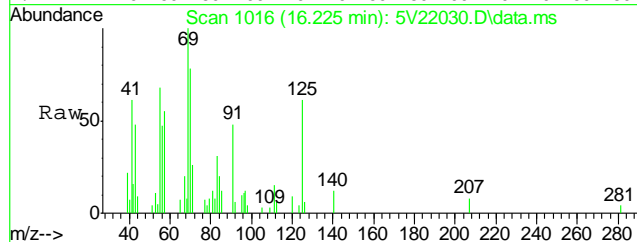
Tgt Ion:152 Resp: 294517  
Ion Ratio Lower Upper  
152 100  
115 51.6 41.4 62.0  
150 156.5 153.9 230.9





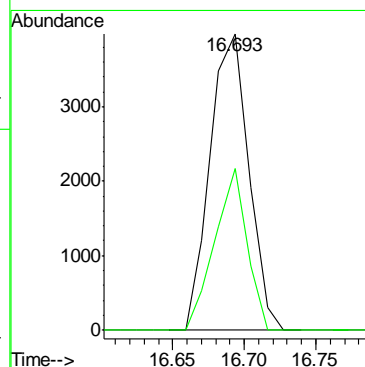
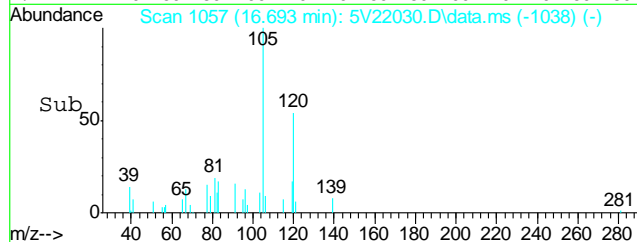
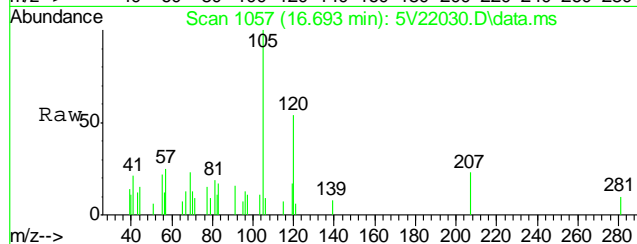
#77  
n-Propylbenzene  
Concen: 0.33 ug/l  
RT: 16.225 min Scan# 1016  
Delta R.T. -0.000 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

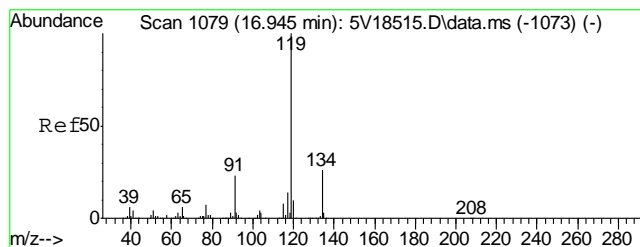
Tgt Ion: 91 Resp: 8830  
Ion Ratio Lower Upper  
91 100  
120 13.6 18.6 27.8#



#82  
1,2,4-Trimethylbenzene  
Concen: 0.39 ug/l  
RT: 16.693 min Scan# 1057  
Delta R.T. 0.011 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

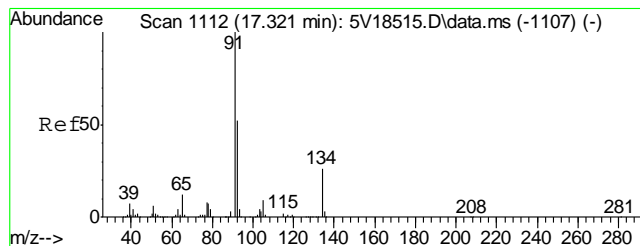
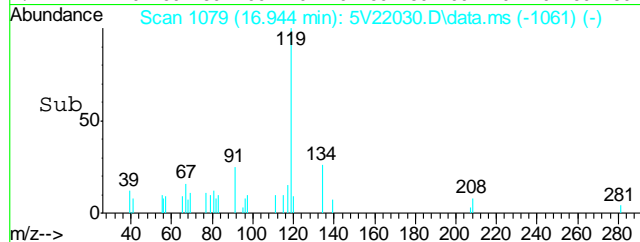
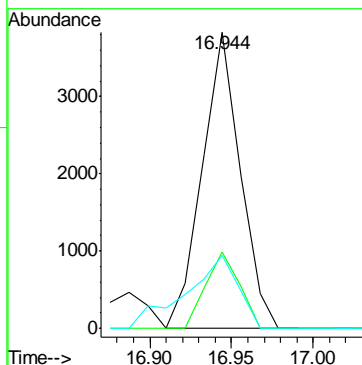
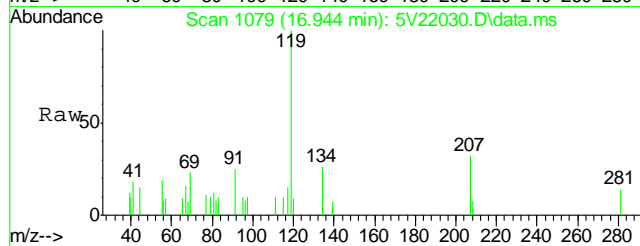
Tgt Ion: 105 Resp: 7455  
Ion Ratio Lower Upper  
105 100  
120 45.4 43.8 65.8





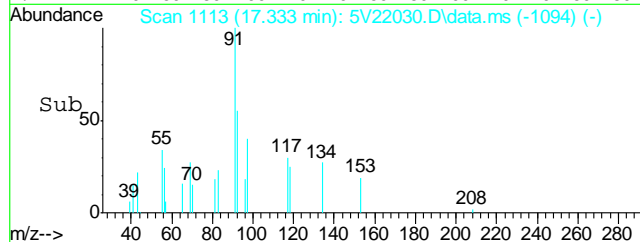
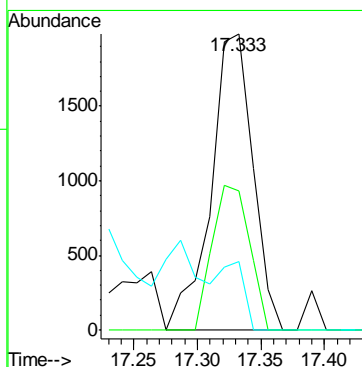
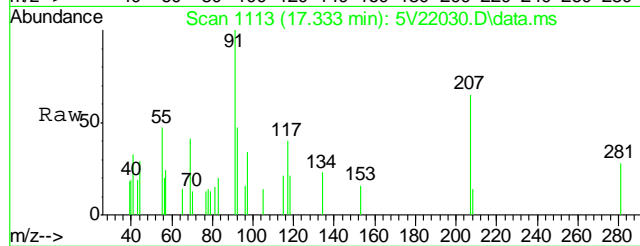
#86  
p-Isopropyltoluene  
Concen: 0.29 ug/l  
RT: 16.944 min Scan# 1079  
Delta R.T. -0.000 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

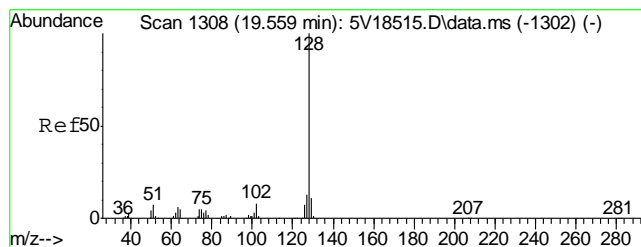
Tgt Ion:	119	Resp:	6216
Ion Ratio	Lower	Upper	
119	100		
134	22.7	21.3	31.9
91	33.8	19.0	28.6#



#88  
n-Butylbenzene  
Concen: 0.23 ug/l  
RT: 17.333 min Scan# 1113  
Delta R.T. 0.011 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

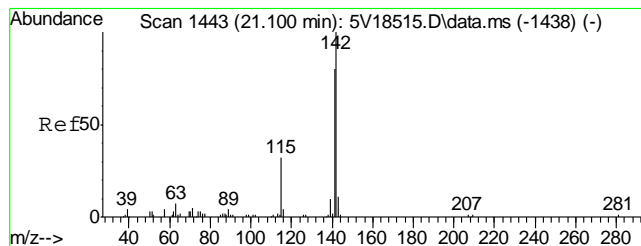
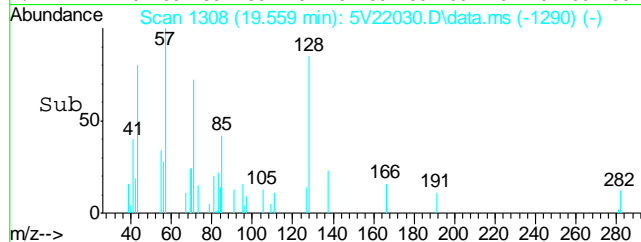
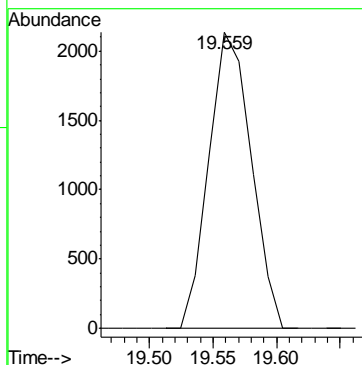
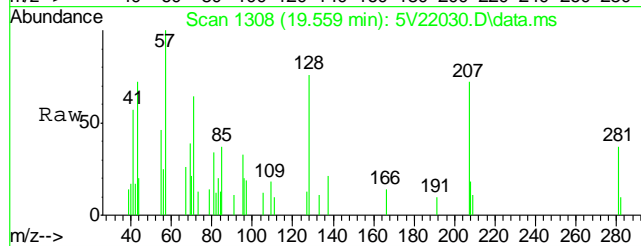
Tgt Ion:	91	Resp:	4533
Ion Ratio	Lower	Upper	
91	100		
92	43.4	42.2	63.4
134	0.0	21.4	32.2#





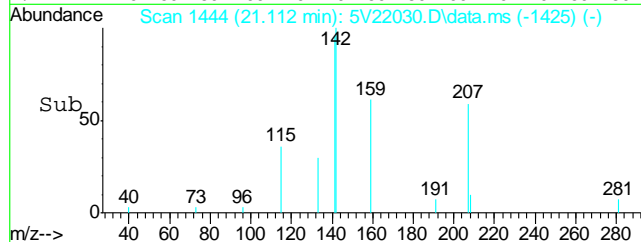
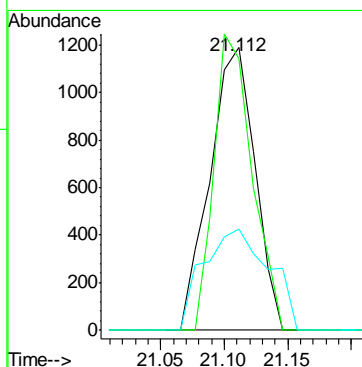
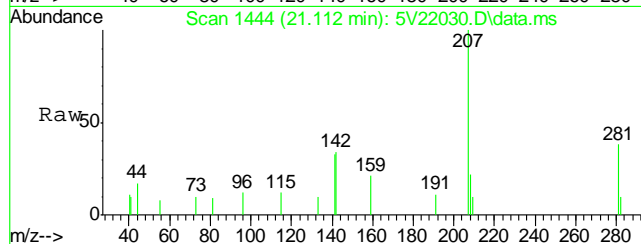
#91  
Naphthalene  
Concen: 0.91 ug/l  
RT: 19.559 min Scan# 1308  
Delta R.T. 0.001 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

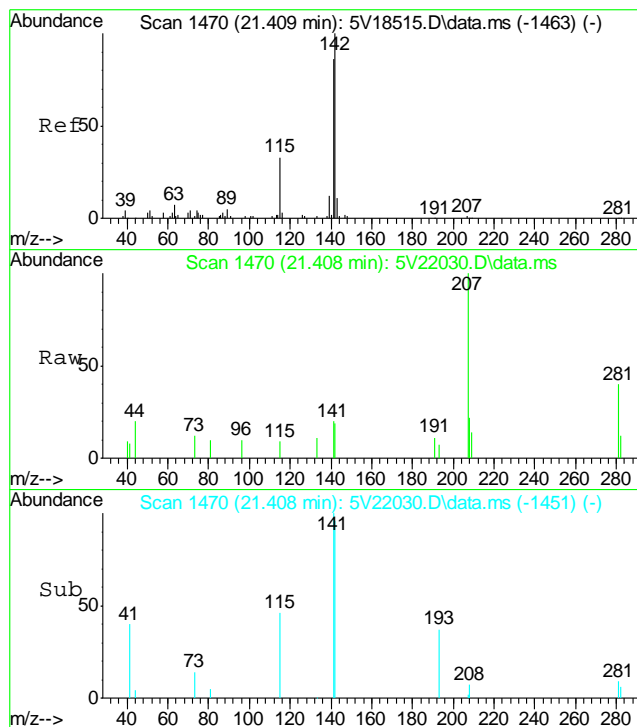
Tgt Ion:128 Resp: 4940



#94  
2-Methylnaphthalene  
Concen: 1.82 ug/l  
RT: 21.112 min Scan# 1444  
Delta R.T. 0.012 min  
Lab File: 5V22030.D  
Acq: 19 Jun 2012 10:38 pm

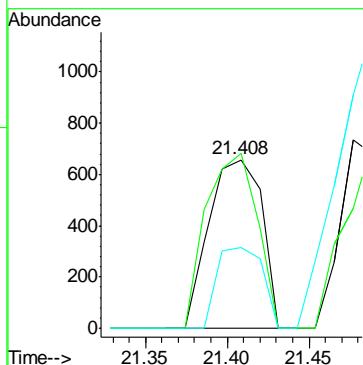
Tgt Ion:142 Resp: 2911  
Ion Ratio Lower Upper  
142 100  
141 88.7 66.2 99.4  
115 52.3 25.9 38.9#





#95  
 1-Methylnaphthalene  
 Concen: 1.44 ug/l  
 RT: 21.408 min Scan# 1470  
 Delta R.T. 0.011 min  
 Lab File: 5V22030.D  
 Acq: 19 Jun 2012 10:38 pm

Tgt Ion:	142	Resp:	1478
Ion Ratio	Lower	Upper	
142	100		
141	100.0	68.9	103.3
115	41.3	27.3	40.9#





## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5061912.S\  
 Data File : 5V22012.D  
 Acq On : 19 Jun 2012 12:57 pm  
 Operator : BRETD  
 Sample : MB  
 Misc : MS4134,V5V1348,5.00,,100,5,1  
 ALS Vial : 3 Sample Multiplier: 1

Quant Time: Jun 20 08:07:10 2012  
 Quant Method : C:\msdchem\1\METHODS\V5AP1304TVH1304.M  
 Quant Title : 8260  
 QLast Update : Thu May 24 07:55:17 2012  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.647	168	205488	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.446	114	327482	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.095	117	401757	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.070	152	256363	50.00	ug/l	0.00

## System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.035	102	31866	50.61	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	101.22%
61) Toluene-d8	13.850	98	603345	44.43	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	88.86%
69) 4-Bromofluorobenzene	16.042	95	235345	42.31	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	84.62%

## Target Compounds

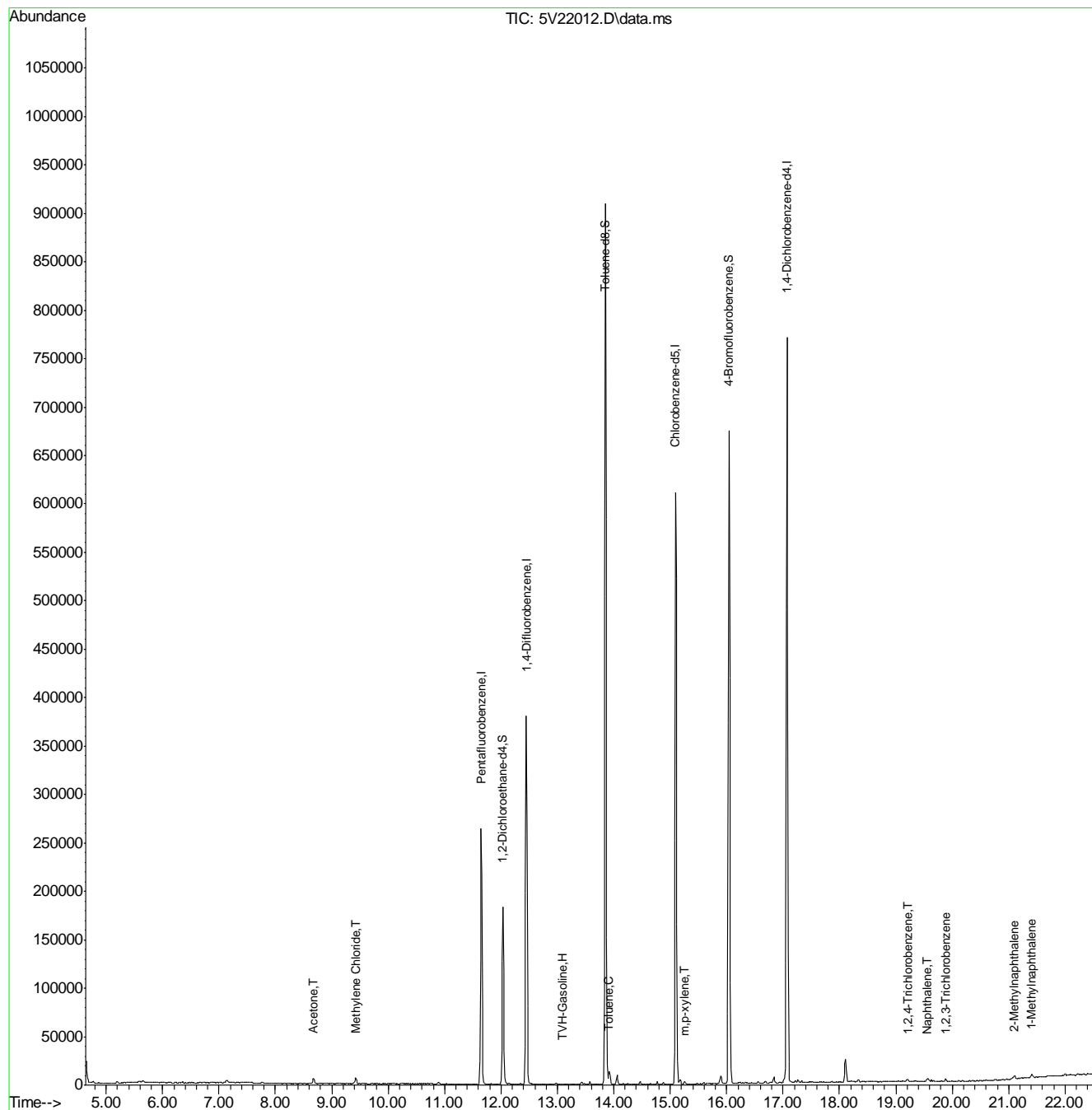
					Qvalue
1) TVH-Gasoline	13.102	TIC	11269m	1.97	ug/l
15) Acetone	8.678	58	3196	8.19	ug/l # 65
17) Methylene Chloride	9.421	84	3924	1.14	ug/l # 84
62) Toluene	13.907	92	2859	0.27	ug/l # 82
72) m,p-xylene	15.255	106	1180	0.15	ug/l 99
90) 1,2,4-Trichlorobenzene	19.205	180	1806	0.27	ug/l # 82
91) Naphthalene	19.559	128	4938	0.96	ug/l 100
93) 1,2,3-Trichlorobenzene	19.878	180	1958	0.31	ug/l # 89
94) 2-Methylnaphthalene	21.100	142	2625	1.83	ug/l # 94
95) 1-Methylnaphthalene	21.408	142	2954	1.75	ug/l # 94

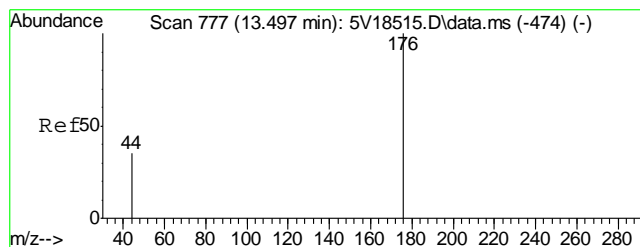
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V5061912.S\  
Data File : 5V22012.D  
Acq On : 19 Jun 2012 12:57 pm  
Operator : BRETD  
Sample : MB  
Misc : MS4134,V5V1348,5.00,,100,5,1  
ALS Vial : 3 Sample Multiplier: 1

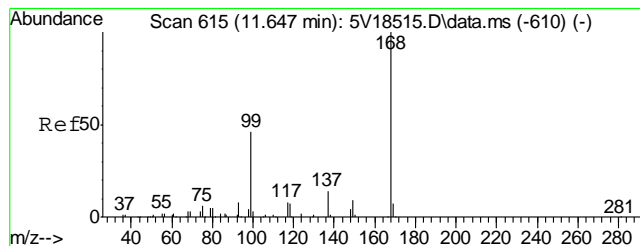
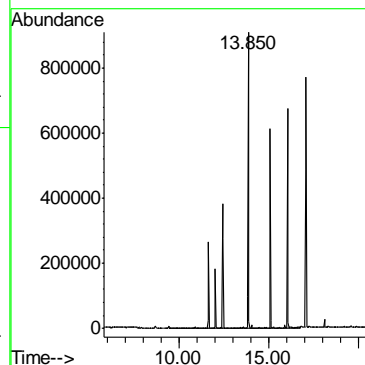
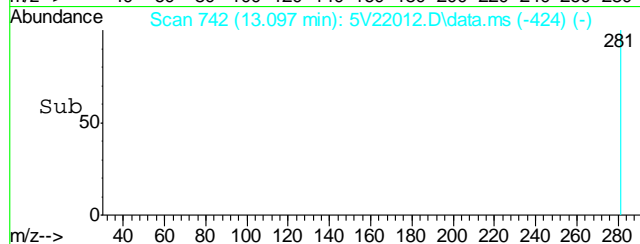
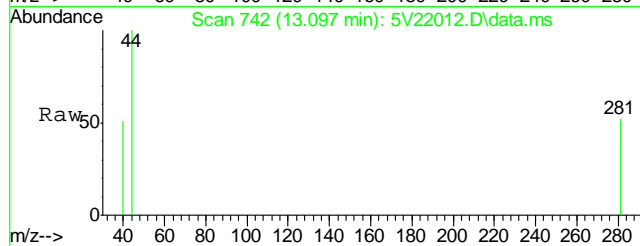
Quant Time: Jun 20 08:07:10 2012  
Quant Method : C:\msdchem\1\METHODS\V5AP1304TVH1304.M  
Quant Title : 8260  
QLast Update : Thu May 24 07:55:17 2012  
Response via : Initial Calibration





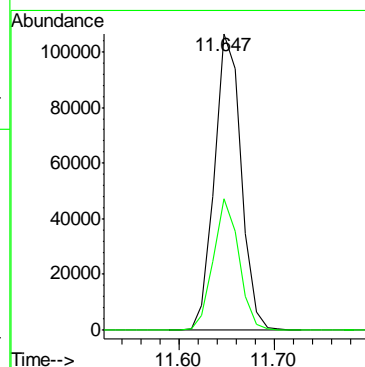
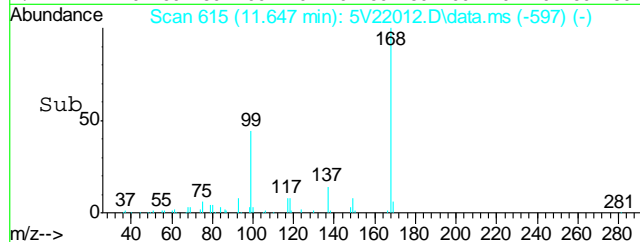
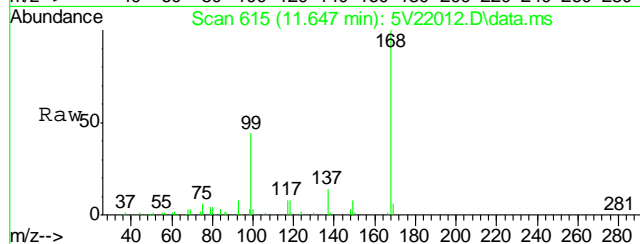
#1  
TVH-Gasoline  
Concen: 1.97 ug/l m  
RT: 13.102 min Scan# 742  
Delta R.T. 0.000 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

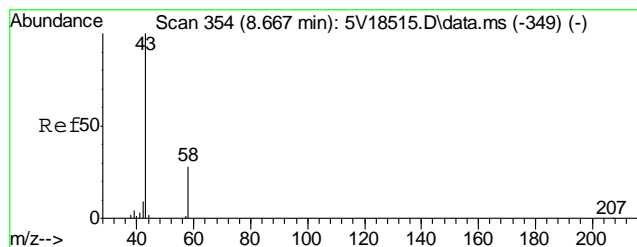
Tgt Ion:TIC Resp: 11269



#2  
Pentafluorobenzene  
Concen: 50.00 ug/l  
RT: 11.647 min Scan# 615  
Delta R.T. -0.000 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

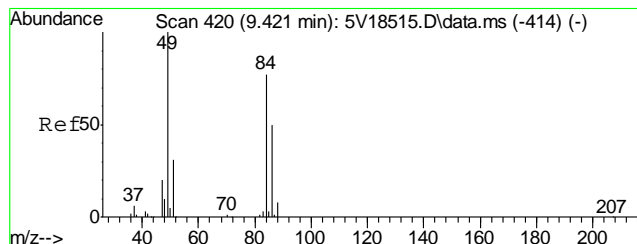
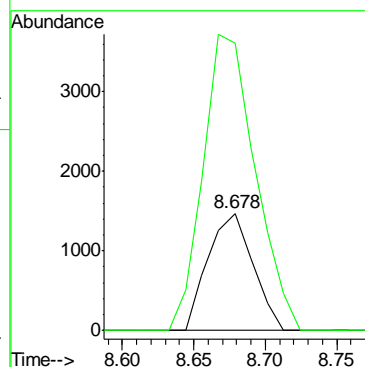
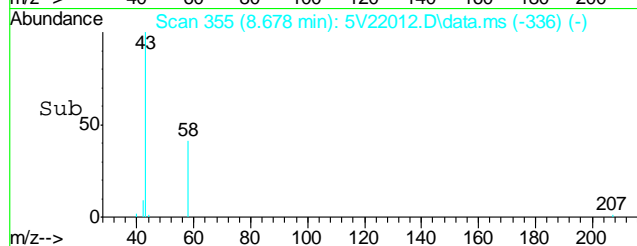
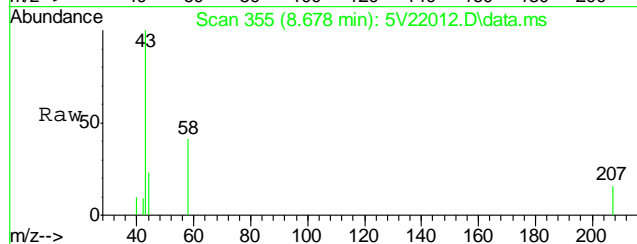
Tgt Ion:168 Resp: 205488  
Ion Ratio Lower Upper  
168 100  
99 42.5 37.4 56.2





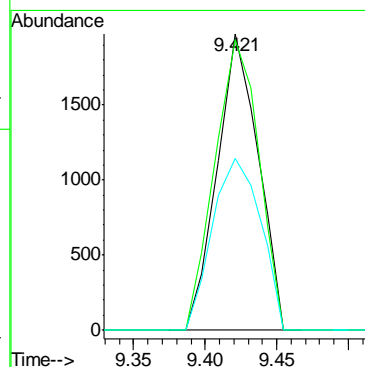
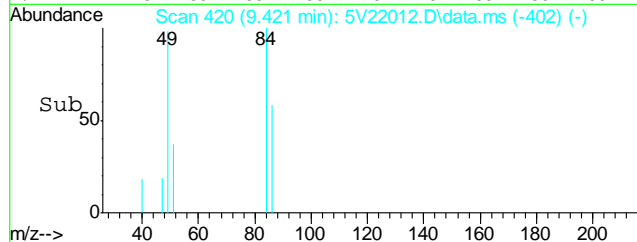
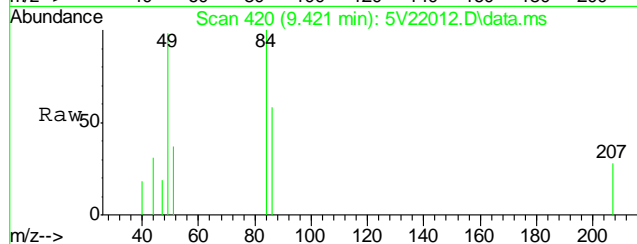
#15  
Acetone  
Concen: 8.19 ug/l  
RT: 8.678 min Scan# 355  
Delta R.T. 0.011 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

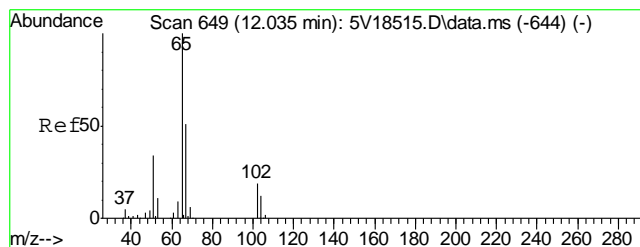
Tgt Ion: 58 Resp: 3196  
Ion Ratio Lower Upper  
58 100  
43 293.7 353.6 393.6#



#17  
Methylene Chloride  
Concen: 1.14 ug/l  
RT: 9.421 min Scan# 420  
Delta R.T. -0.000 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

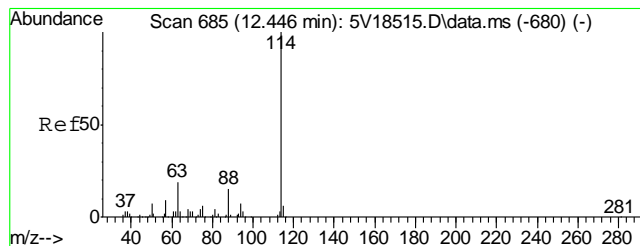
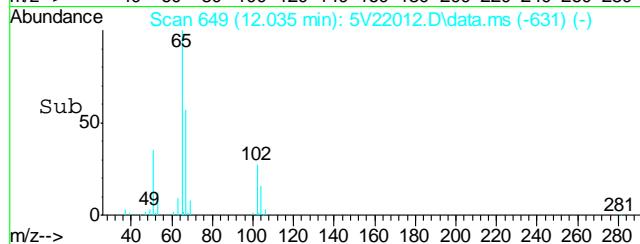
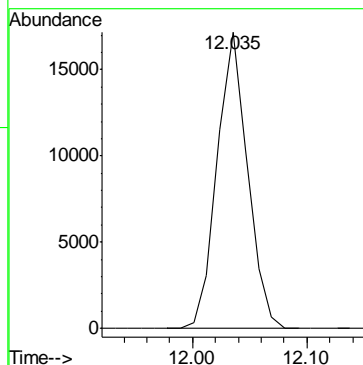
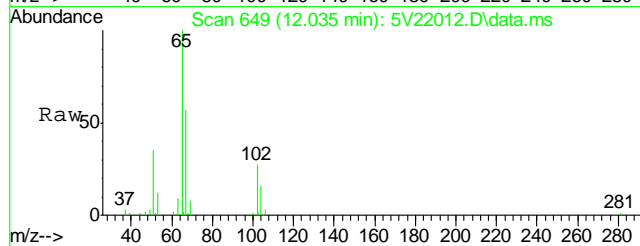
Tgt Ion: 84 Resp: 3924  
Ion Ratio Lower Upper  
84 100  
49 105.4 110.4 150.4#  
86 68.1 44.0 84.0





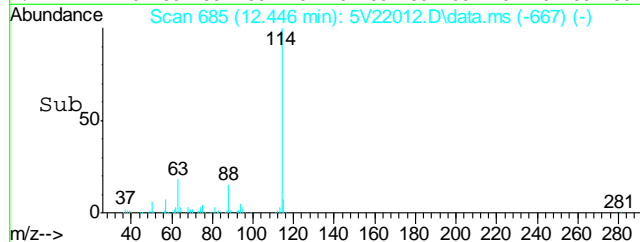
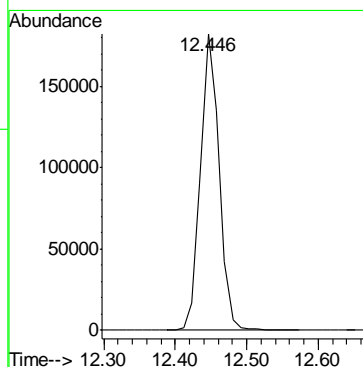
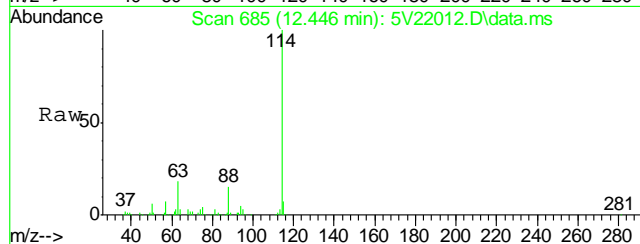
#33  
1,2-Dichloroethane-d4  
Concen: 50.61 ug/l  
RT: 12.035 min Scan# 649  
Delta R.T. 0.000 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

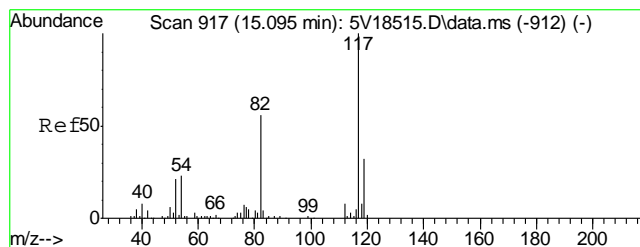
Tgt Ion:102 Resp: 31866



#35  
1,4-Difluorobenzene  
Concen: 50.00 ug/l  
RT: 12.446 min Scan# 685  
Delta R.T. -0.000 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

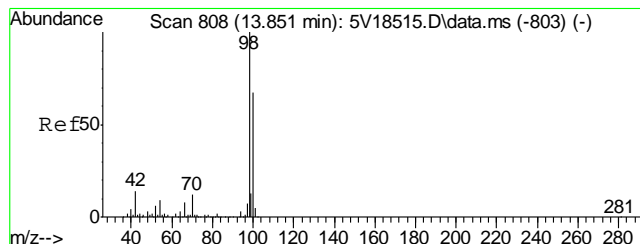
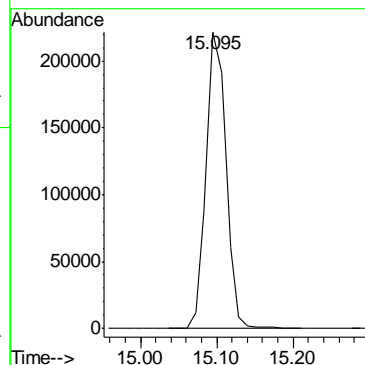
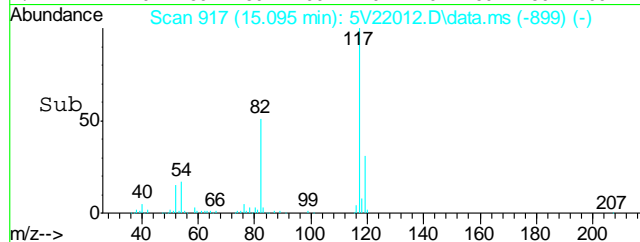
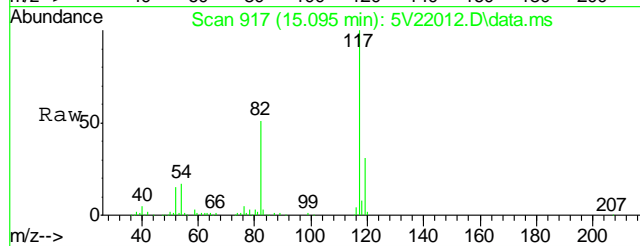
Tgt Ion:114 Resp: 327482





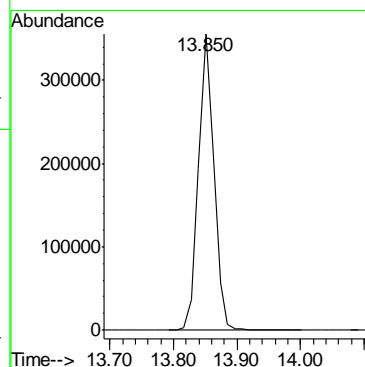
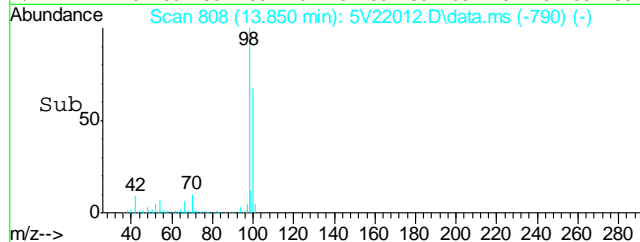
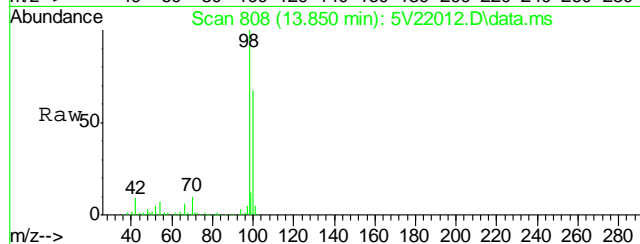
#53  
Chlorobenzene-d5  
Concen: 50.00 ug/l  
RT: 15.095 min Scan# 917  
Delta R.T. -0.000 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

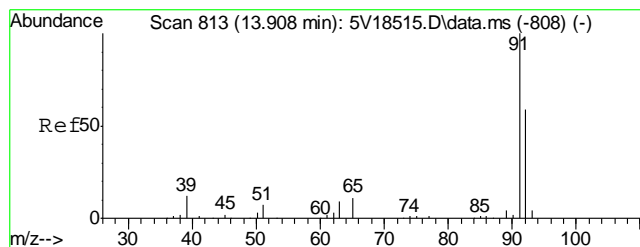
Tgt Ion: 117 Resp: 401757



#61  
Toluene-d8  
Concen: 44.43 ug/l  
RT: 13.850 min Scan# 808  
Delta R.T. -0.000 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

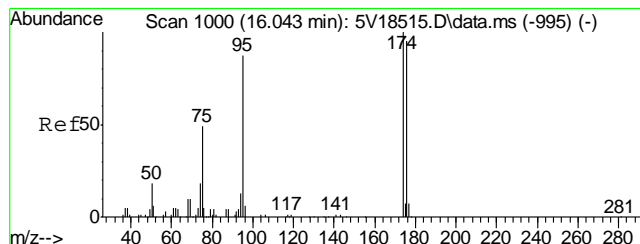
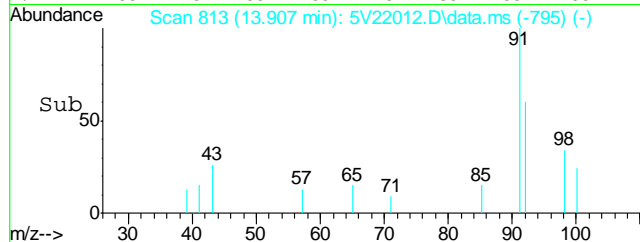
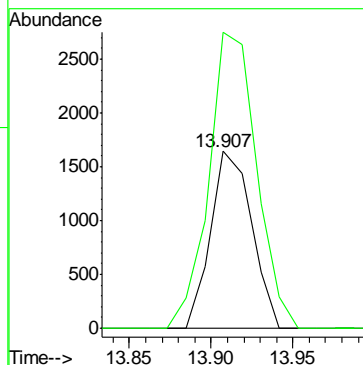
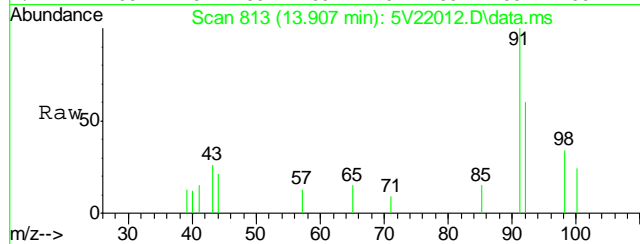
Tgt Ion: 98 Resp: 603345





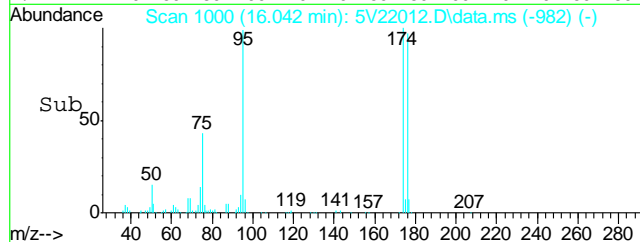
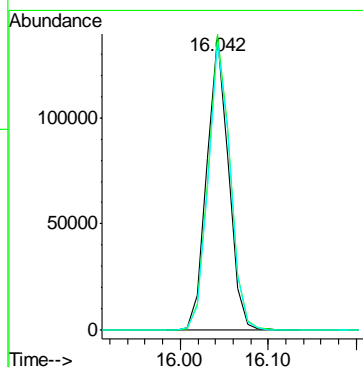
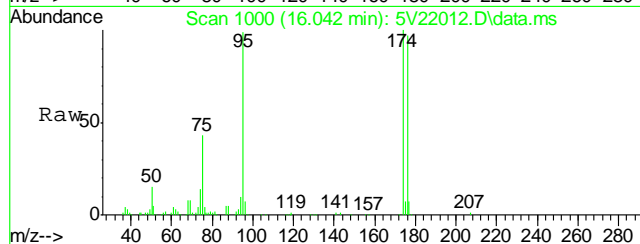
#62  
Toluene  
Concen: 0.27 ug/l  
RT: 13.907 min Scan# 813  
Delta R.T. -0.000 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

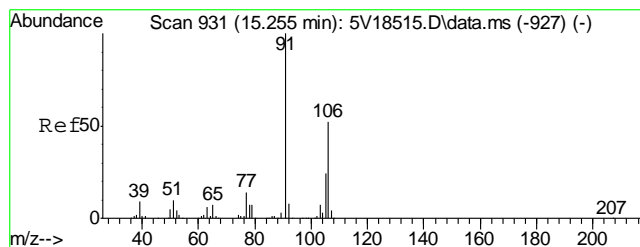
Tgt Ion: 92 Resp: 2859  
Ion Ratio Lower Upper  
92 100  
91 194.8 149.8 189.8#



#69  
4-Bromofluorobenzene  
Concen: 42.31 ug/l  
RT: 16.042 min Scan# 1000  
Delta R.T. -0.000 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

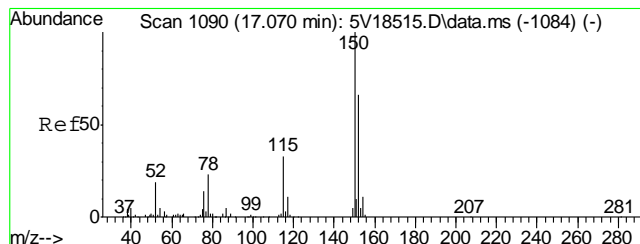
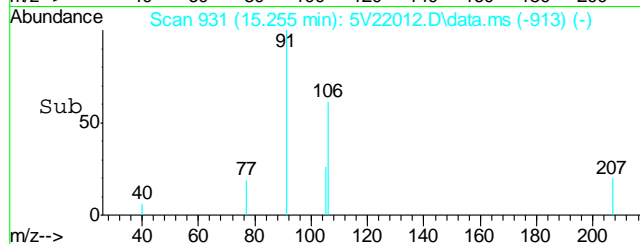
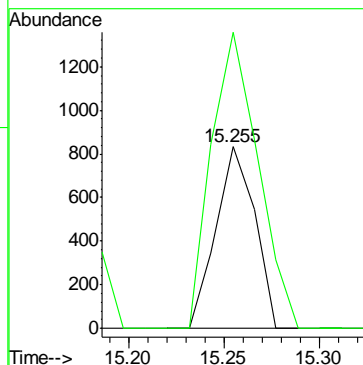
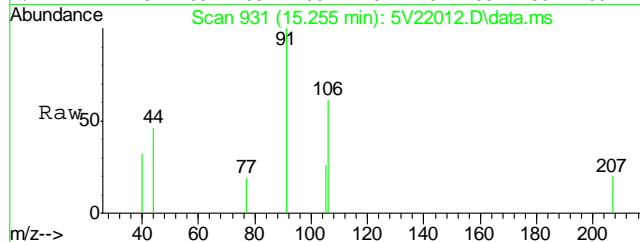
Tgt Ion: 95 Resp: 235345  
Ion Ratio Lower Upper  
95 100  
174 101.3 77.1 117.1  
176 98.5 73.4 113.4





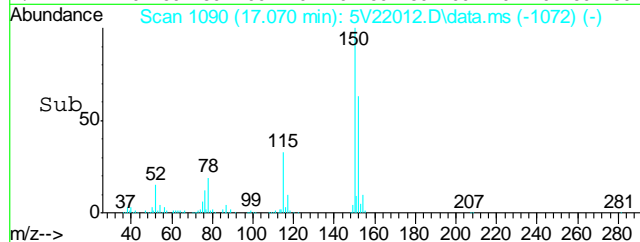
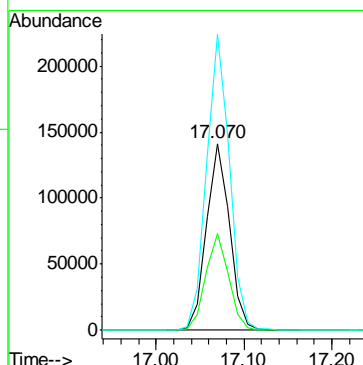
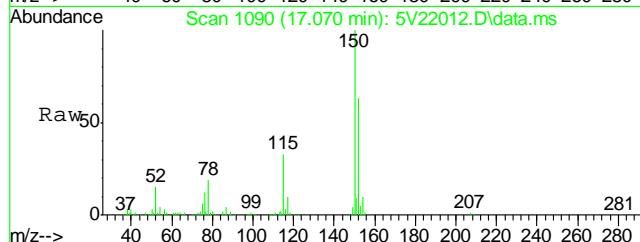
#72  
m,p-xylene  
Concen: 0.15 ug/l  
RT: 15.255 min Scan# 931  
Delta R.T. -0.000 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

Tgt Ion:106 Resp: 1180  
Ion Ratio Lower Upper  
106 100  
91 196.2 177.1 217.1

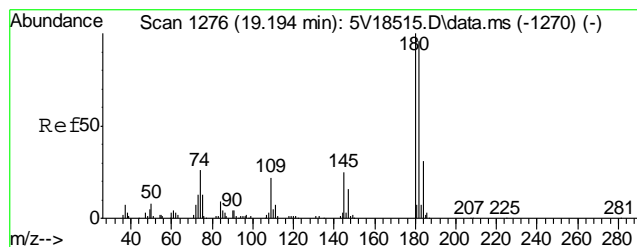


#74  
1,4-Dichlorobenzene-d4  
Concen: 50.00 ug/l  
RT: 17.070 min Scan# 1090  
Delta R.T. -0.000 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

Tgt Ion:152 Resp: 256363  
Ion Ratio Lower Upper  
152 100  
115 51.3 41.4 62.0  
150 157.5 153.9 230.9

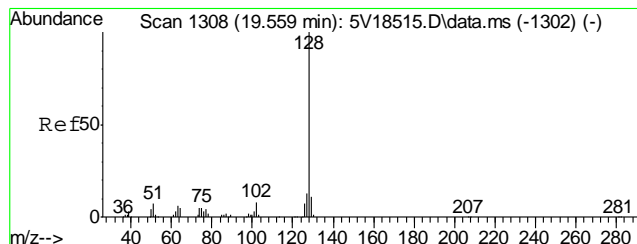
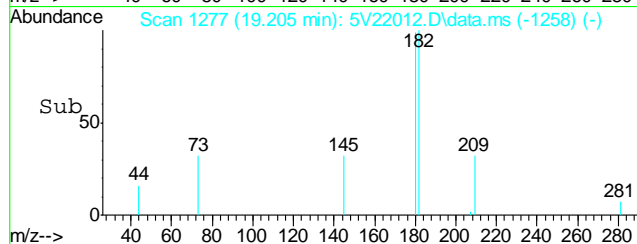
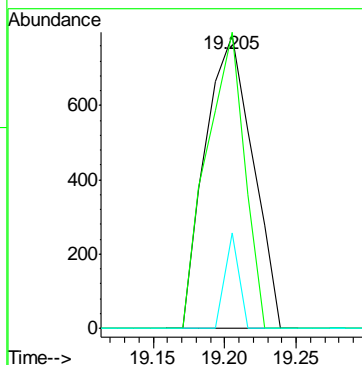
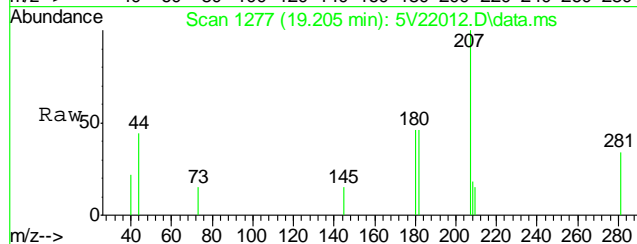






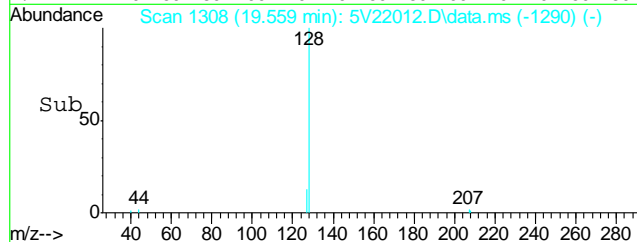
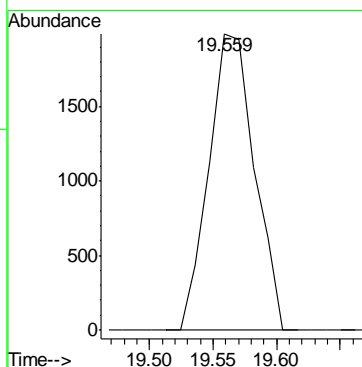
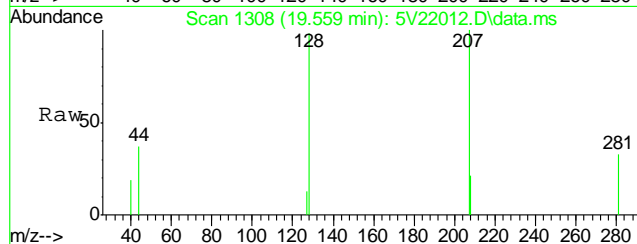
#90  
1,2,4-Trichlorobenzene  
Concen: 0.27 ug/l  
RT: 19.205 min Scan# 1277  
Delta R.T. 0.011 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

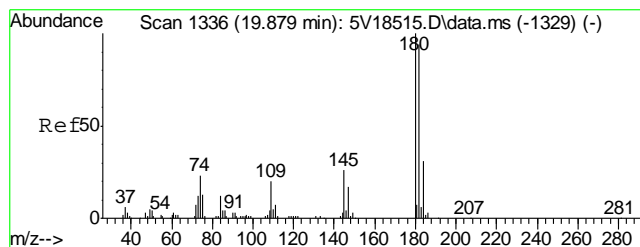
Tgt Ion	Ratio	Lower	Upper
180	100		
182	80.6	76.2	114.4
145	9.7	20.1	30.1#



#91  
Naphthalene  
Concen: 0.96 ug/l  
RT: 19.559 min Scan# 1308  
Delta R.T. 0.001 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

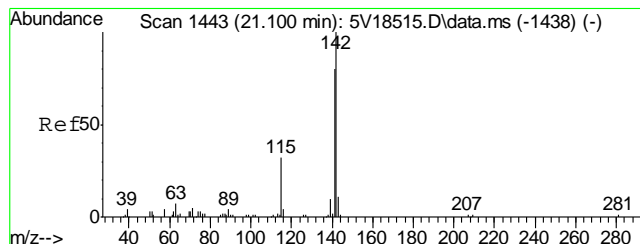
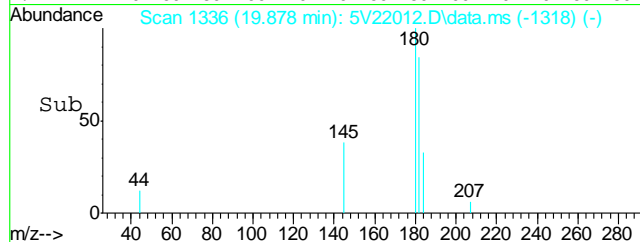
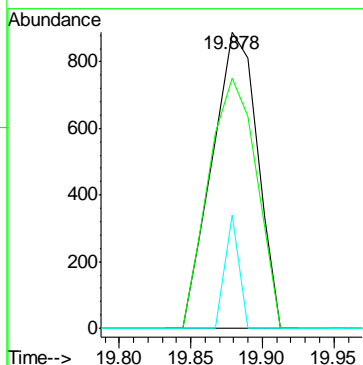
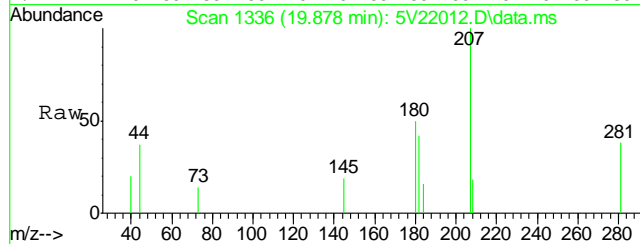
Tgt Ion: 128 Resp: 4938





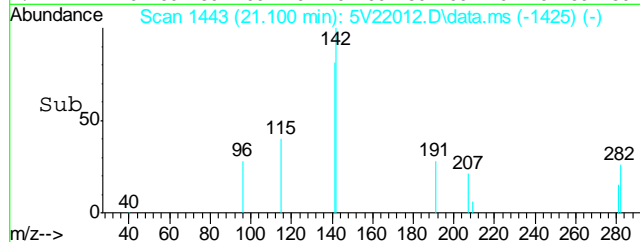
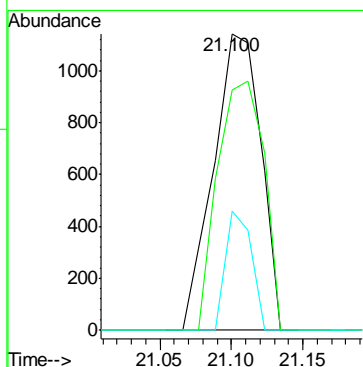
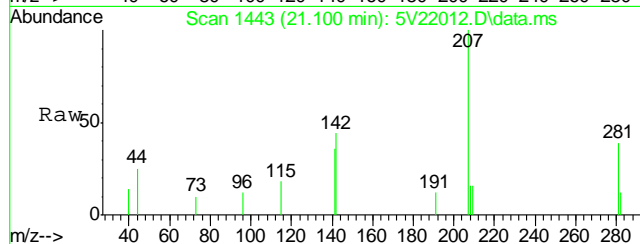
#93  
1,2,3-Trichlorobenzene  
Concen: 0.31 ug/l  
RT: 19.878 min Scan# 1336  
Delta R.T. -0.000 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

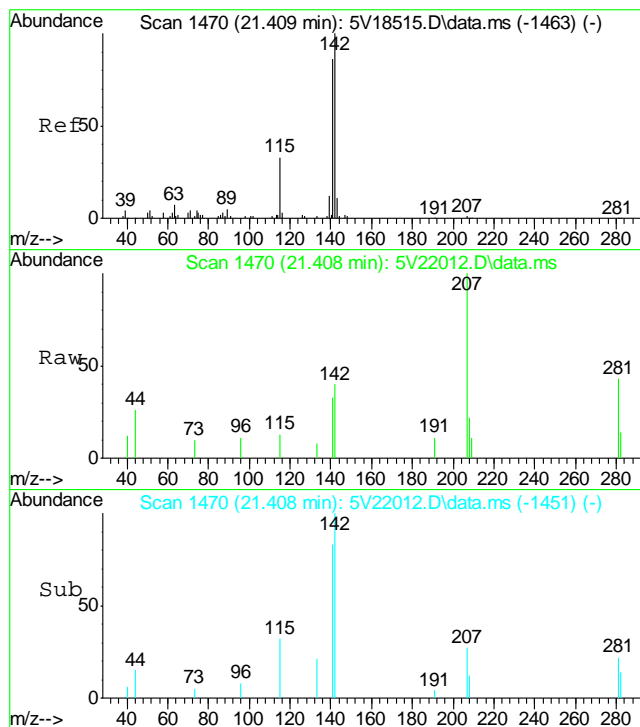
Tgt Ion:180	Resp:	1958
Ion Ratio	Lower	Upper
180	100	
182	88.9	76.0 114.0
145	11.8	21.4 32.0#



#94  
2-Methylnaphthalene  
Concen: 1.83 ug/l  
RT: 21.100 min Scan# 1443  
Delta R.T. 0.000 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

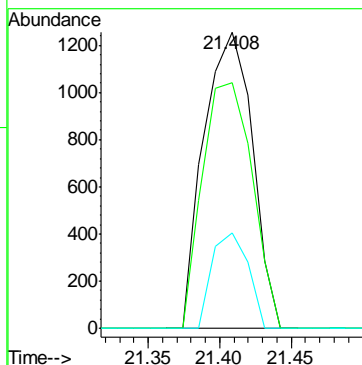
Tgt Ion:142	Resp:	2625
Ion Ratio	Lower	Upper
142	100	
141	82.4	66.2 99.4
115	22.0	25.9 38.9#





#95  
1-Methylnaphthalene  
Concen: 1.75 ug/l  
RT: 21.408 min Scan# 1470  
Delta R.T. 0.011 min  
Lab File: 5V22012.D  
Acq: 19 Jun 2012 12:57 pm

Tgt Ion	Ratio	Lower	Upper
142	100		
141	85.2	68.9	103.3
115	24.0	27.3	40.9



## GC Volatiles

## QC Data Summaries

---

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

**Method Blank Summary**

Page 1 of 1

**Job Number:** D35617  
**Account:** XTOKRWR XTO Energy  
**Project:** FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB909-MB	GB16388.D	1	06/20/12	SK	n/a	n/a	GGB909

The QC reported here applies to the following samples:

Method: SW846 8015B

D35617-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	106% 60-140%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D35617  
**Account:** XTOKRWR XTO Energy  
**Project:** FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB909-BS	GB16389.D	1	06/20/12	SK	n/a	n/a	GGB909

The QC reported here applies to the following samples:

Method: SW846 8015B

D35617-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	115	105	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	107%	60-140%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D35617  
**Account:** XTOKRWR XTO Energy  
**Project:** FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D35405-1MS	GB16391.D	1	06/20/12	SK	n/a	n/a	GGB909
D35405-1MSD	GB16392.D	1	06/20/12	SK	n/a	n/a	GGB909
D35405-1	GB16390.D	1	06/20/12	SK	n/a	n/a	GGB909

The QC reported here applies to the following samples:

Method: SW846 8015B

D35617-1

CAS No.	Compound	D35405-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		173	180	104	180	104	0	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D35405-1	Limits
120-82-1	1,2,4-Trichlorobenzene	106%	102%	95%	60-140%

\* = Outside of Control Limits.

GC Volatiles

Raw Data

∞



Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\062012\GB16398.D\FID1A.CH Vial: 16  
Signal #2 : Y:\1\DATA\062012\GB16398.D\FID2B.CH  
Acq On : 20 Jun 2012 6:31 pm Operator: StephK  
Sample : D35617-1, 50X Inst : GC/MS Ins  
Misc : GC2921,GGB909,5.026,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Jun 21 09:17:27 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Mon Jun 18 13:49:47 2012  
Response via : Initial Calibration  
DataAcq Meth : TVB4.M

Volume Inj. :  
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm

Compound	R.T.	Response	Conc	Units
-----				
System Monitoring Compounds				
2) S 1,2,4-Trichlorobenzene	14.33	2981971	95.167 %	m
10) S 1,2,4-Trichlorobenzene (P)	14.32	20043179	123.322 %	
Target Compounds				
1) H TVH-Gasoline	7.23	29856558	0.442 mg/L	
4) T Methyl-t-butyl-ether	0.00	0	N.D. ug/L	d
5) T Benzene	4.08	154218	0.383 ug/L	
6) T Toluene	7.59	4157218	10.491 ug/L	
7) T Ethylbenzene	10.23	1296190	3.832 ug/L	
8) T m,p-Xylene	10.41	5409866	14.448 ug/L	
9) T o-Xylene	10.92	442022	1.346 ug/L	
11) T Naphthalene	14.52	3975641	20.149 ug/L	

8.1.1

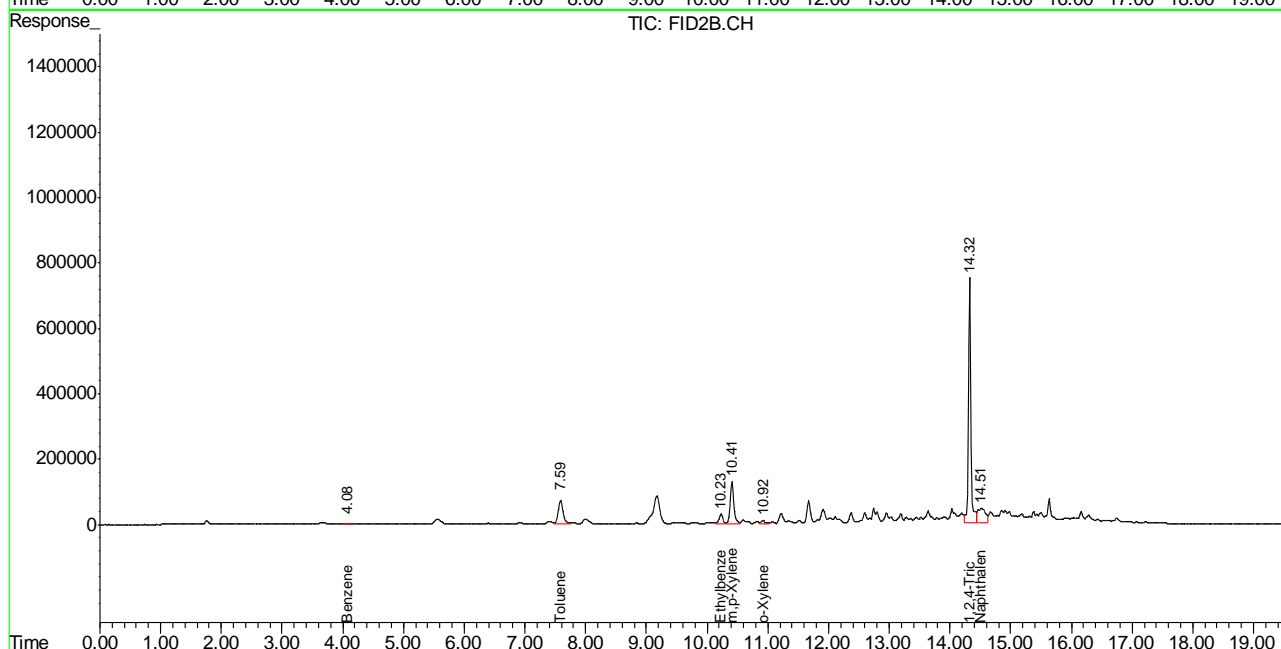
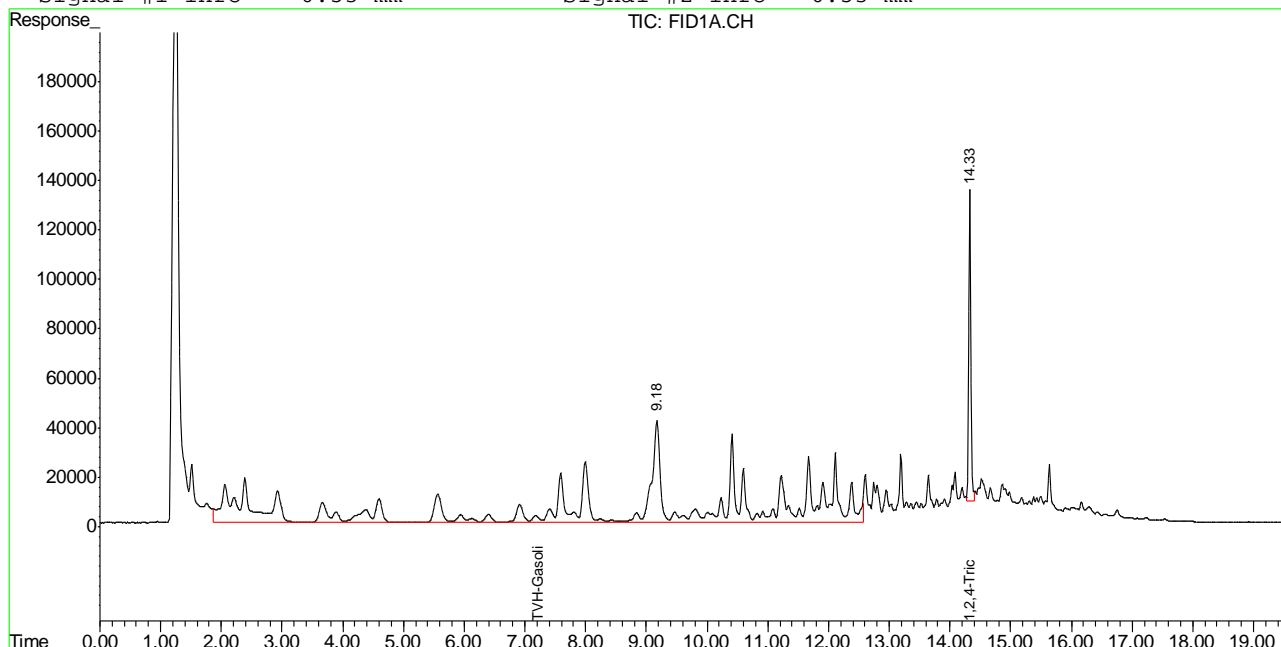
8

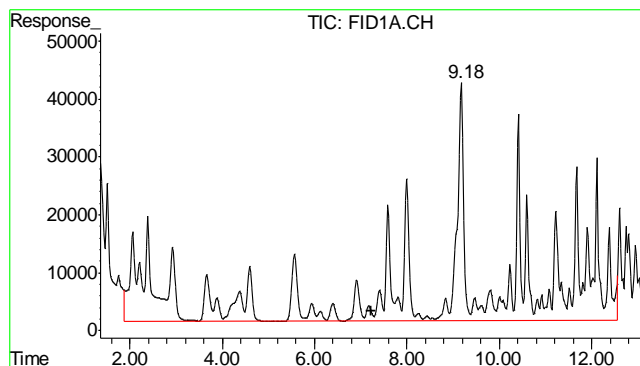
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\062012\GB16398.D\FID1A.CH Vial: 16  
 Signal #2 : Y:\1\DATA\062012\GB16398.D\FID2B.CH  
 Acq On : 20 Jun 2012 6:31 pm Operator: StephK  
 Sample : D35617-1, 50X Inst : GC/MS Ins  
 Misc : GC2921,GGB909,5.026,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Jun 21 8:24 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Mon Jun 18 13:49:47 2012  
 Response via : Multiple Level Calibration  
 DataAcq Meth : TVB4.M

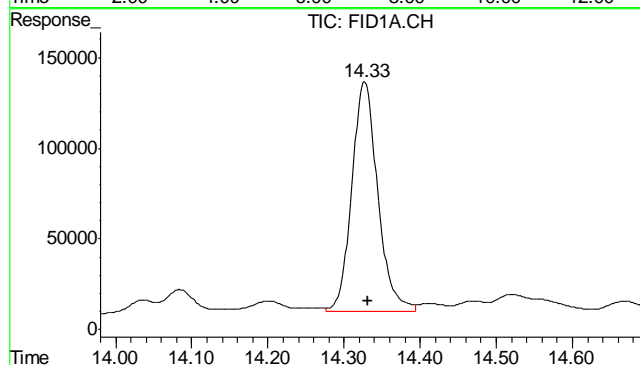
Volume Inj. :  
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





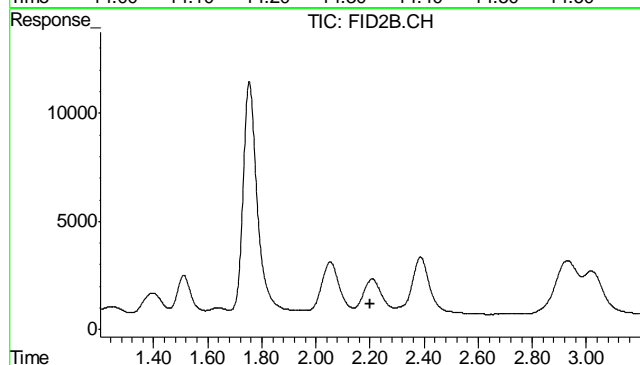
#1 TVH-Gasoline

R.T.: 7.230 min  
Delta R.T.: 0.000 min  
Response: 29856558  
Conc: 0.44 mg/L m



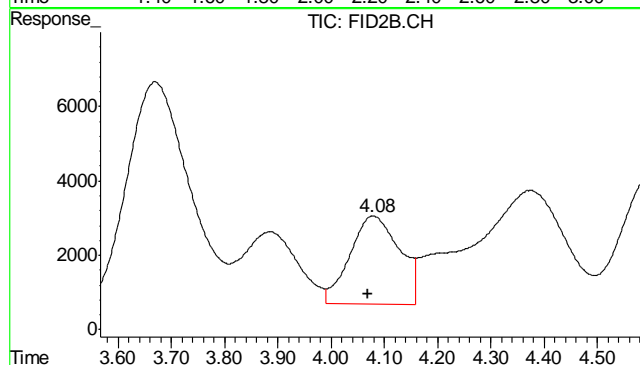
#2 1,2,4-Trichlorobenzene

R.T.: 14.326 min  
Delta R.T.: -0.005 min  
Response: 2981971  
Conc: 95.17 % m



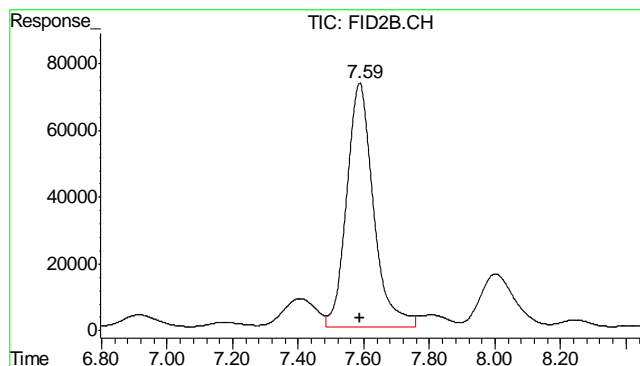
#4 Methyl-t-butyl-ether

R.T.: 0.000 min  
Exp R.T.: 2.202 min  
Response: 0  
Conc: N.D.



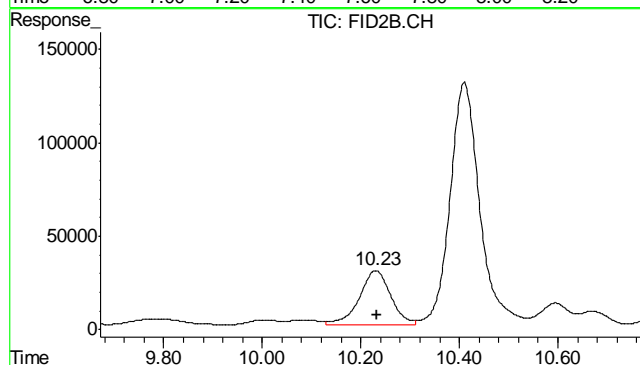
#5 Benzene

R.T.: 4.079 min  
Delta R.T.: 0.009 min  
Response: 154218  
Conc: 0.38 ug/L



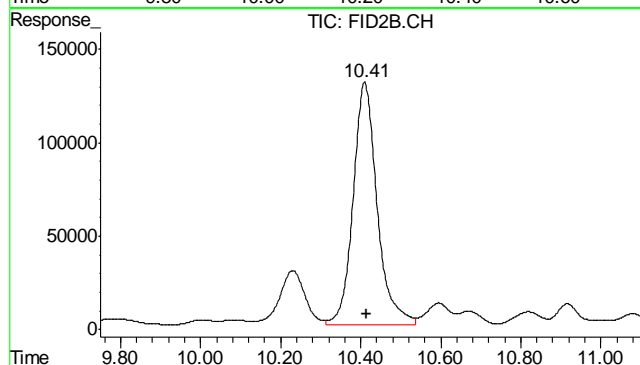
#6 Toluene

R.T.: 7.587 min  
Delta R.T.: -0.001 min  
Response: 4157218  
Conc: 10.49 ug/L



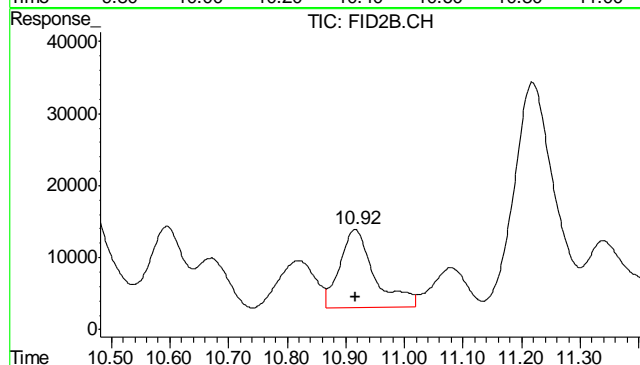
#7 Ethylbenzene

R.T.: 10.230 min  
Delta R.T.: -0.002 min  
Response: 1296190  
Conc: 3.83 ug/L



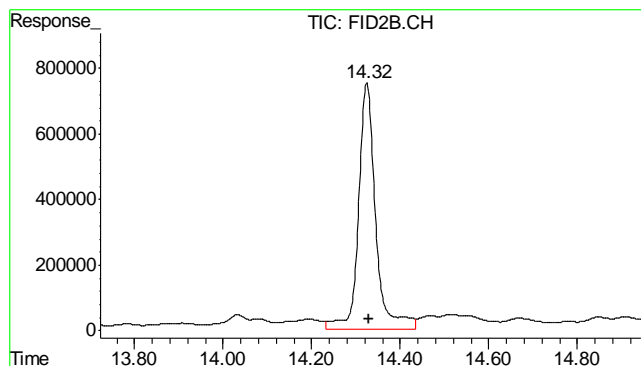
#8 m,p-Xylene

R.T.: 10.410 min  
Delta R.T.: -0.005 min  
Response: 5409866  
Conc: 14.45 ug/L



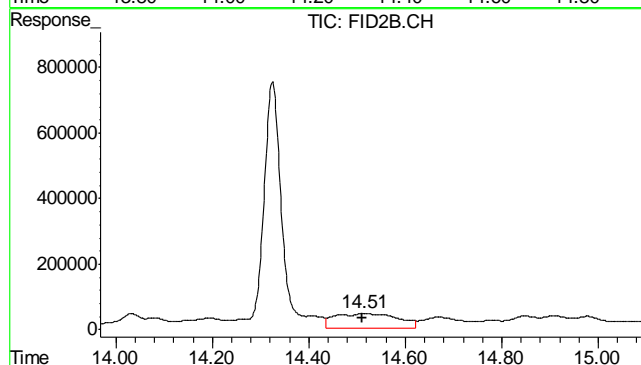
#9 o-Xylene

R.T.: 10.916 min  
Delta R.T.: -0.001 min  
Response: 442022  
Conc: 1.35 ug/L



#10 1,2,4-Trichlorobenzene (P)

R.T.: 14.325 min  
Delta R.T.: -0.004 min  
Response: 20043179  
Conc: 123.32 %



#11 Naphthalene

R.T.: 14.515 min  
Delta R.T.: 0.005 min  
Response: 3975641  
Conc: 20.15 ug/L

8.1.1

8

## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\062012\GB16388.D\FID1A.CH Vial: 6  
 Signal #2 : Y:\1\DATA\062012\GB16388.D\FID2B.CH  
 Acq On : 20 Jun 2012 12:38 pm Operator: StephK  
 Sample : MB Inst : GC/MS Ins  
 Misc : GC2921,GGB909,5.000,,100,5,1 Multiplr: 1.00  
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
 Quant Time: Jun 20 13:25:25 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
 Title : 8015B/8021B TVH/BTEX  
 Last Update : Mon Jun 18 13:49:47 2012  
 Response via : Initial Calibration  
 DataAcq Meth : TVB4.M

Volume Inj. :  
 Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
 Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm

	Compound	R.T.	Response	Conc	Units
-----					
System Monitoring Compounds					
2) S	1,2,4-Trichlorobenzene	14.32	3316309	105.837	%
10) S	1,2,4-Trichlorobenzene (P)	14.32	18657230	114.794	%
Target Compounds					
1) H	TVH-Gasoline	7.23	4296466	<MDL	mg/L
4) T	Methyl-t-butyl-ether	0.00	0	N.D.	ug/L d
5) T	Benzene	0.00	0	N.D.	ug/L d
6) T	Toluene	7.59	135248	0.341	ug/L
7) T	Ethylbenzene	0.00	0	N.D.	ug/L d
8) T	m,p-Xylene	0.00	0	N.D.	ug/L d
9) T	o-Xylene	0.00	0	N.D.	ug/L d
11) T	Naphthalene	14.50	282498	1.432	ug/L m

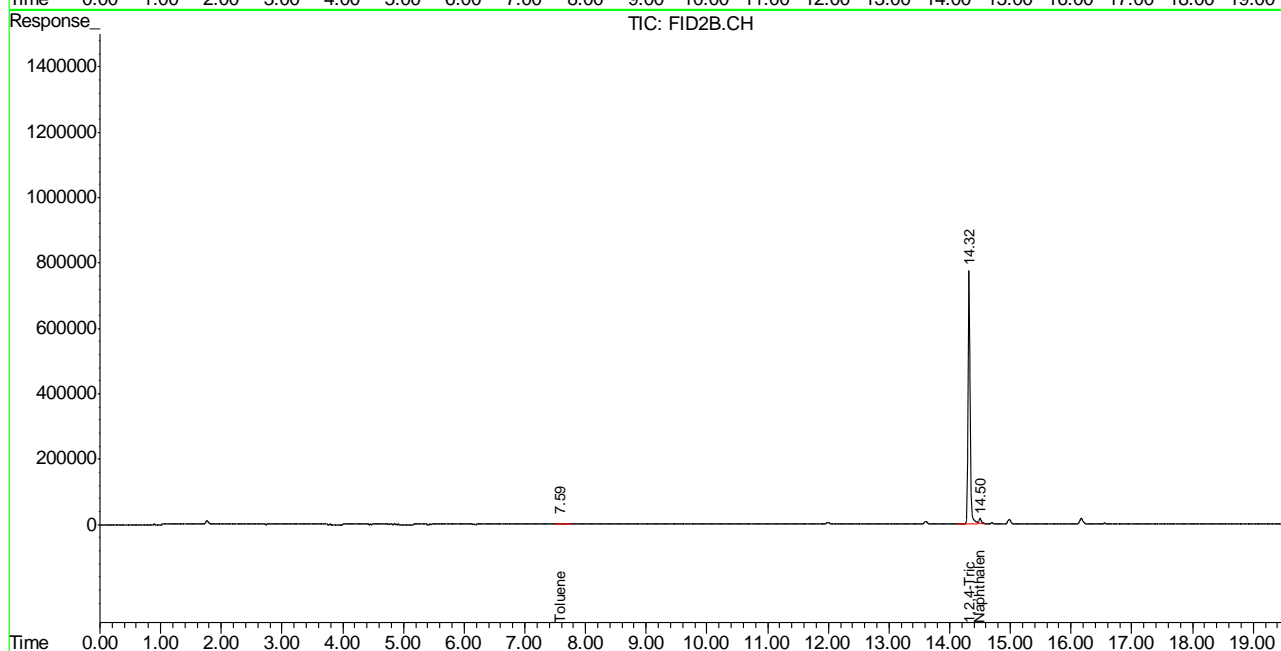
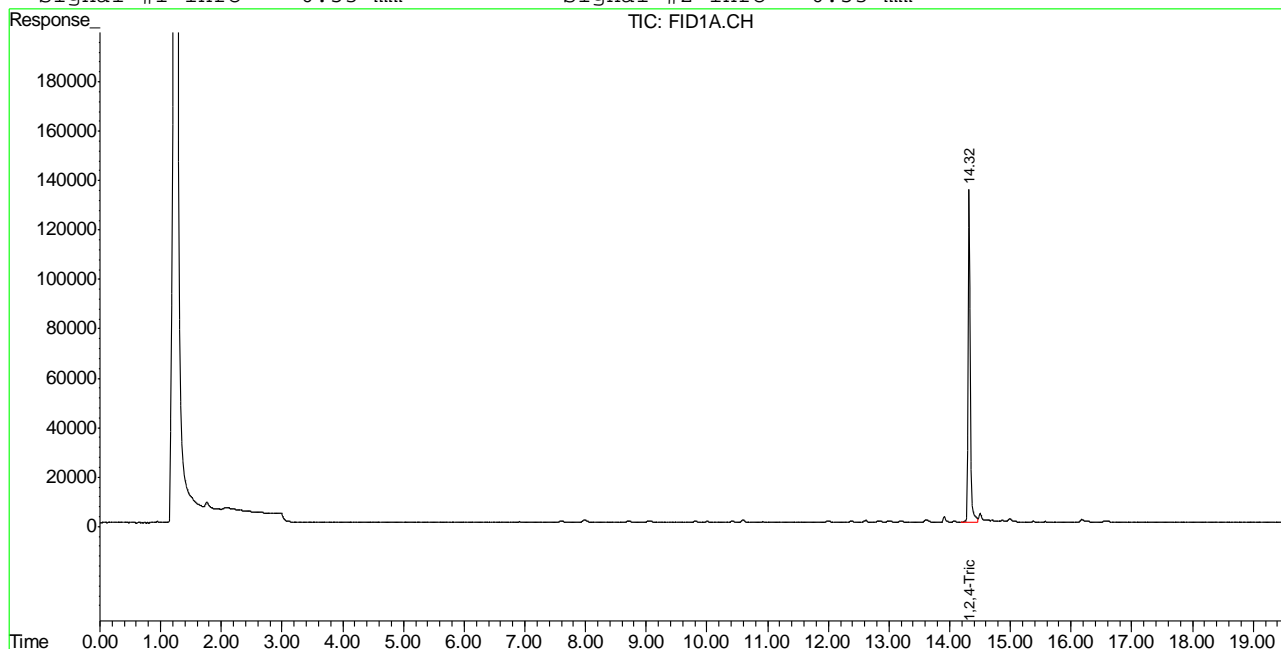
(f)=RT Delta > 1/2 Window (m)=manual int.  
 GB16388.D TB868GB868SOIL.M Thu Jun 21 10:00:24 2012 GC

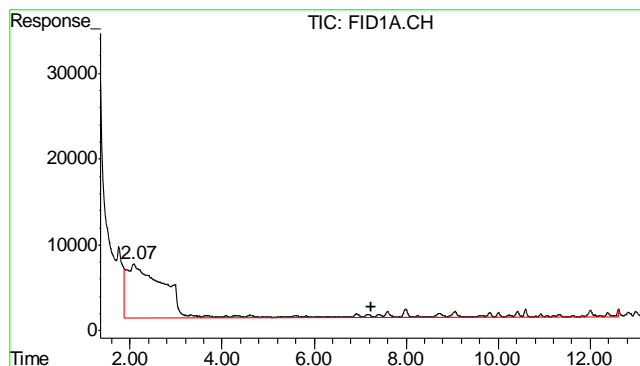
## Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\062012\GB16388.D\FID1A.CH Vial: 6  
Signal #2 : Y:\1\DATA\062012\GB16388.D\FID2B.CH  
Acq On : 20 Jun 2012 12:38 pm Operator: StephK  
Sample : MB Inst : GC/MS Ins  
Misc : GC2921,GGB909,5.000,,100,5,1 Multiplr: 1.00  
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E  
Quant Time: Jun 20 12:28 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)  
Title : 8015B/8021B TVH/BTEX  
Last Update : Mon Jun 18 13:49:47 2012  
Response via : Multiple Level Calibration  
DataAcq Meth : TVB4.M

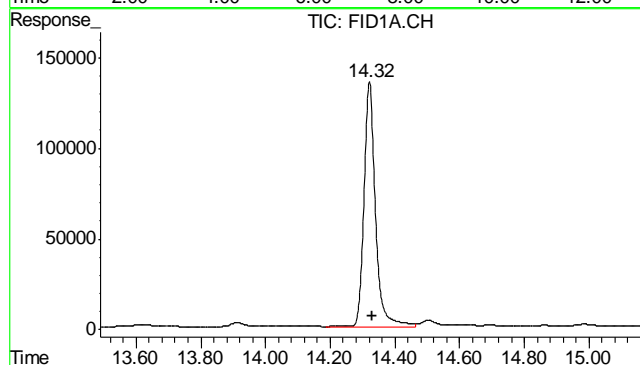
Volume Inj. :  
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624  
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





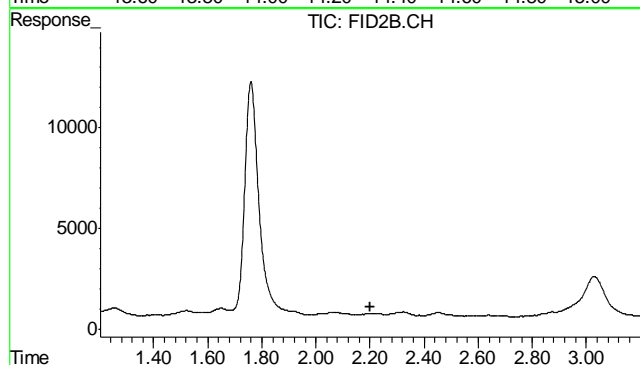
#1 TVH-Gasoline

R.T.: 7.230 min  
Delta R.T.: 0.000 min  
Response: 4296466  
Conc: N.D.



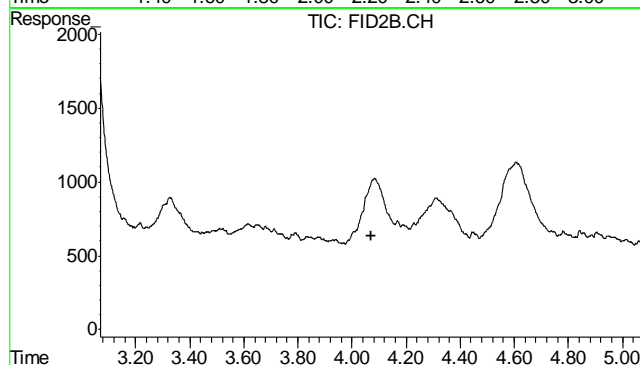
#2 1,2,4-Trichlorobenzene

R.T.: 14.321 min  
Delta R.T.: -0.010 min  
Response: 3316309  
Conc: 105.84 %



#4 Methyl-t-butyl-ether

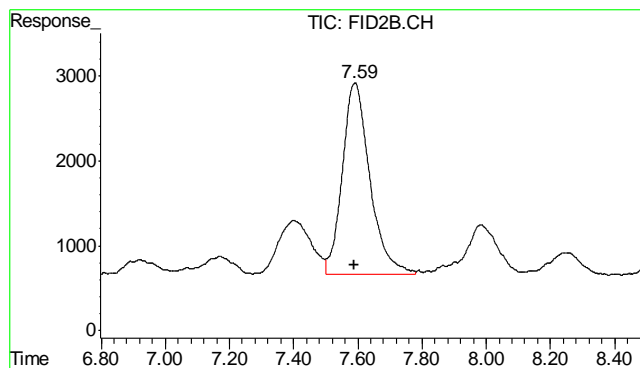
R.T.: 0.000 min  
Exp R.T.: 2.202 min  
Response: 0  
Conc: N.D.



#5 Benzene

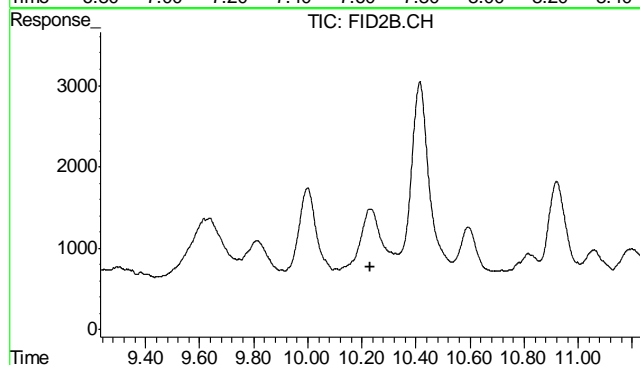
R.T.: 0.000 min  
Exp R.T.: 4.070 min  
Response: 0  
Conc: N.D.





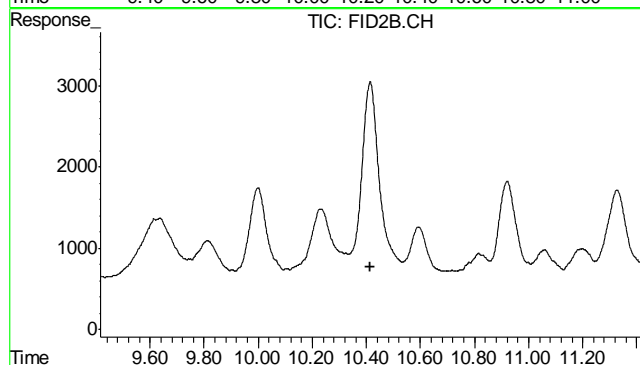
#6 Toluene

R.T.: 7.591 min  
Delta R.T.: 0.003 min  
Response: 135248  
Conc: 0.34 ug/L



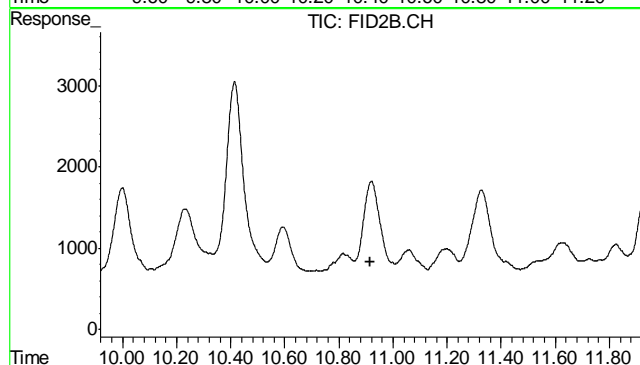
#7 Ethylbenzene

R.T.: 0.000 min  
Exp R.T.: 10.232 min  
Response: 0  
Conc: N.D.



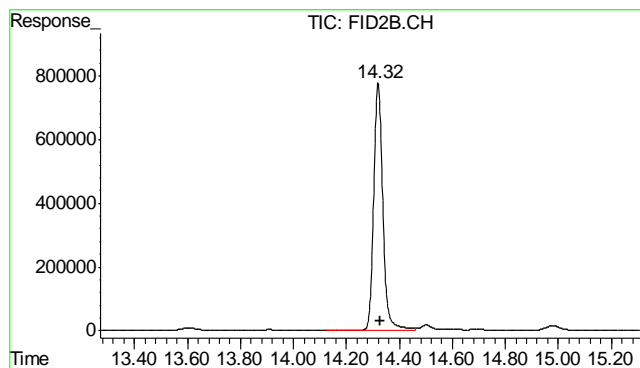
#8 m,p-Xylene

R.T.: 0.000 min  
Exp R.T.: 10.415 min  
Response: 0  
Conc: N.D.



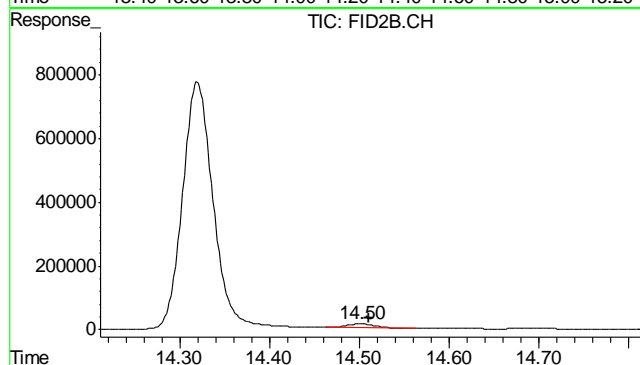
#9 o-Xylene

R.T.: 0.000 min  
Exp R.T.: 10.917 min  
Response: 0  
Conc: N.D.



#10 1,2,4-Trichlorobenzene (P)

R.T.: 14.320 min  
Delta R.T.: -0.009 min  
Response: 18657230  
Conc: 114.79 %



#11 Naphthalene

R.T.: 14.500 min  
Delta R.T.: -0.010 min  
Response: 282498  
Conc: 1.43 ug/L m

8.2.1

8

## GC Semi-volatiles

### QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

**Method Blank Summary**

Page 1 of 1

**Job Number:** D35617  
**Account:** XTOKRWR XTO Energy  
**Project:** FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6107-MB	FD14699.D	1	06/23/12	AW	06/21/12	OP6107	GFD765

The QC reported here applies to the following samples:

Method: SW846-8015B

D35617-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	13	8.7	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	80% 43-136%

9.1.1

9

## Blank Spike Summary

Page 1 of 1

**Job Number:** D35617  
**Account:** XTOKRWR XTO Energy  
**Project:** FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6107-BS	FD14701.D	1	06/23/12	AW	06/21/12	OP6107	GFD765

The QC reported here applies to the following samples:

Method: SW846-8015B

D35617-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	525	79	58-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	86%	43-136%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D35617  
**Account:** XTOKRWR XTO Energy  
**Project:** FRU 297-8B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP6107-MS	FD14703.D	1	06/23/12	AW	06/21/12	OP6107	GFD765
OP6107-MSD	FD14705.D	1	06/23/12	AW	06/21/12	OP6107	GFD765
D35662-1	FD14707.D	1	06/23/12	AW	06/21/12	OP6107	GFD765

The QC reported here applies to the following samples:

Method: SW846-8015B

D35617-1

CAS No.	Compound	D35662-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	61.8		740	543	65	483	57	12	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D35662-1	Limits
84-15-1	o-Terphenyl	86%	69%	71%	43-136%

\* = Outside of Control Limits.

GC Semi-volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\JUNE\FD062312\FD14723.D Vial: 15  
Acq On : 6-23-2012 05:45:42 PM Operator: alexwl  
Sample : D35617-1 Inst : FID5  
Misc : OP6107,GFD765,30.08,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Jun 25 10:00:32 2012 Quant Results File: DRO-GFD763F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD763F.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Mon Jun 25 09:09:48 2012  
Response via : Initial Calibration  
DataAcq Meth : DRODUAL.M

Volume Inj. : 1ul  
Signal Phase : RTX-5  
Signal Info : 530um

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	9.30	37514514	955.055 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	7.17	117548310	3235.674 mg/L

10.1.1  
10

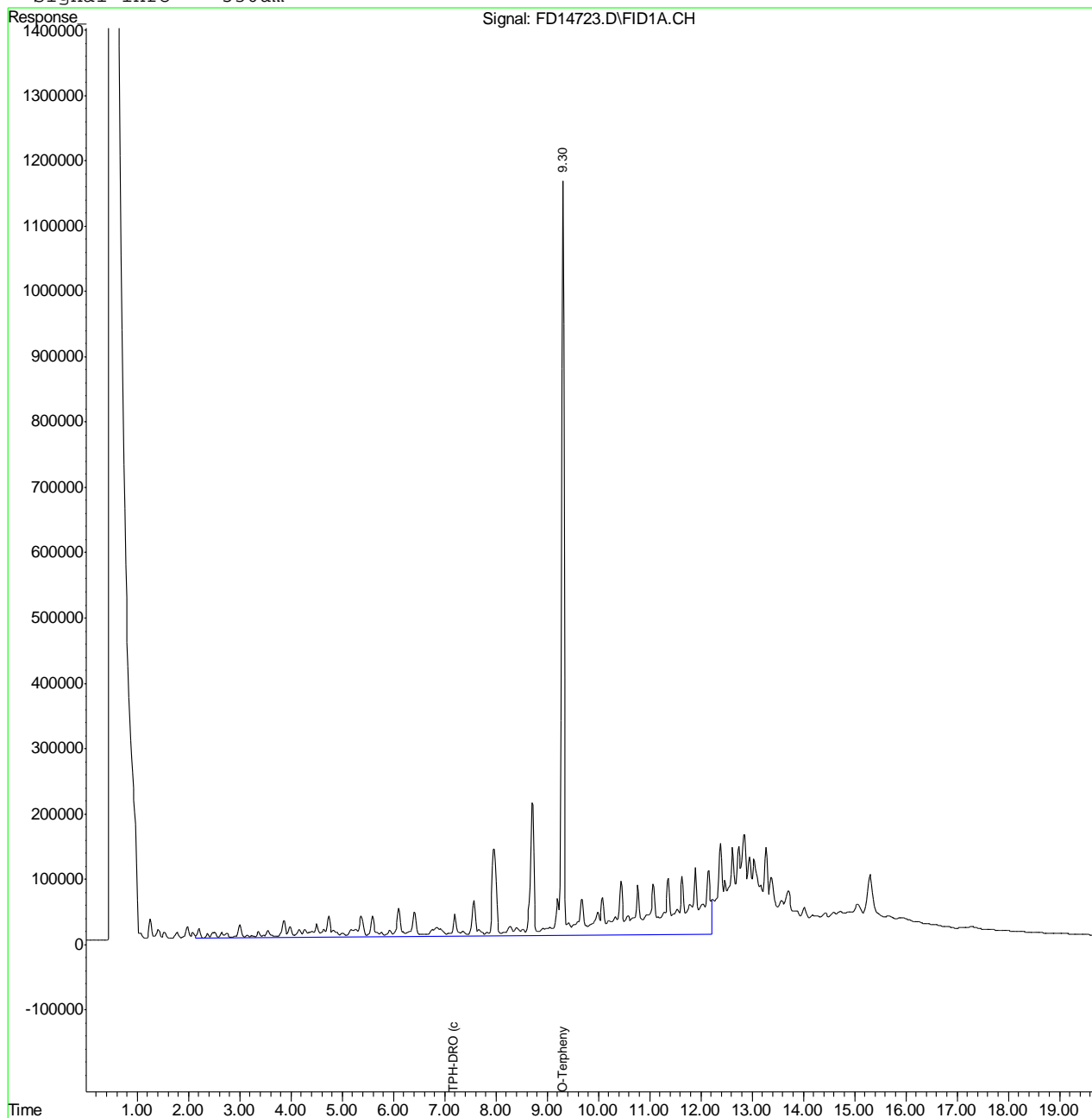


Quantitation Report (QT Reviewed)

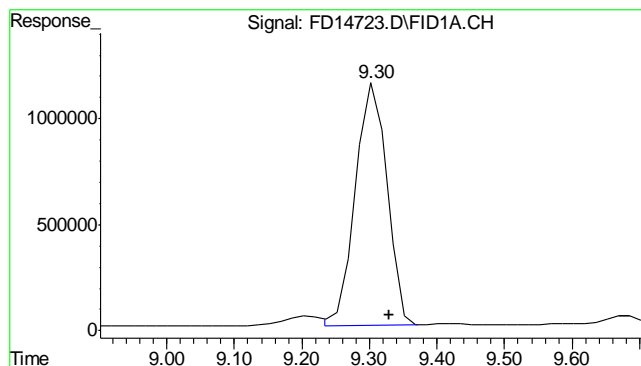
Data File : C:\MSDCHEM\2\DATA\2012\JUNE\FD062312\FD14723.D Vial: 15  
Acq On : 6-23-2012 05:45:42 PM Operator: alexwl  
Sample : D35617-1 Inst : FID5  
Misc : OP6107,GFD765,30.08,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Jun 25 10:01 2012 Quant Results File: DRO-GFD763F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD763F.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Mon Jun 25 09:09:48 2012  
Response via : Multiple Level Calibration  
DataAcq Meth : DRODUAL.M

Volume Inj. : 1ul  
Signal Phase : RTX-5  
Signal Info : 530um

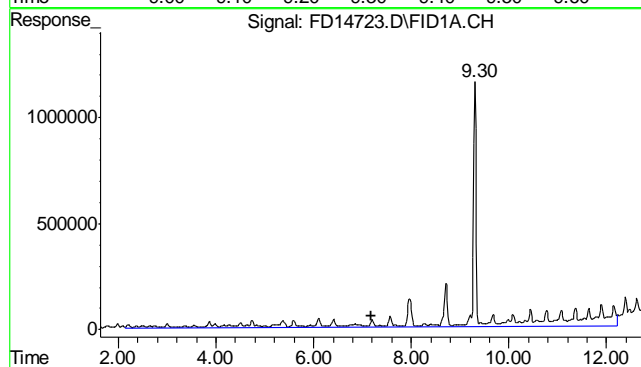


10.1.1  
10



#1 O-Terphenyl

R.T.: 9.303 min  
 Delta R.T.: -0.027 min  
 Response: 37514514  
 Conc: 955.06 mg/L m



#2 TPH-DRO (c10-c28)

R.T.: 7.170 min  
 Delta R.T.: 0.000 min  
 Response: 117548310  
 Conc: 3235.67 mg/L m

10.1.1  
 10

## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\JUNE\FD062312\FD14699.D Vial: 3  
Acq On : 23 Jun 2012 12:31 pm Operator: alexwl  
Sample : OP6107-MB Inst : FID5  
Misc : OP6107,GFD765,30.00,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Jun 25 09:55:00 2012 Quant Results File: DRO-GFD763F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD763F.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Mon Jun 25 09:09:48 2012  
Response via : Initial Calibration  
DataAcq Meth : DRODUAL.M

Volume Inj. : 1ul  
Signal Phase : RTX-5  
Signal Info : 530um

Compound	R.T.	Response	Conc Units
-----			
System Monitoring Compounds			
1) S O-Terphenyl	9.32	31605326	804.617 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	7.17	4595438	126.496 mg/L

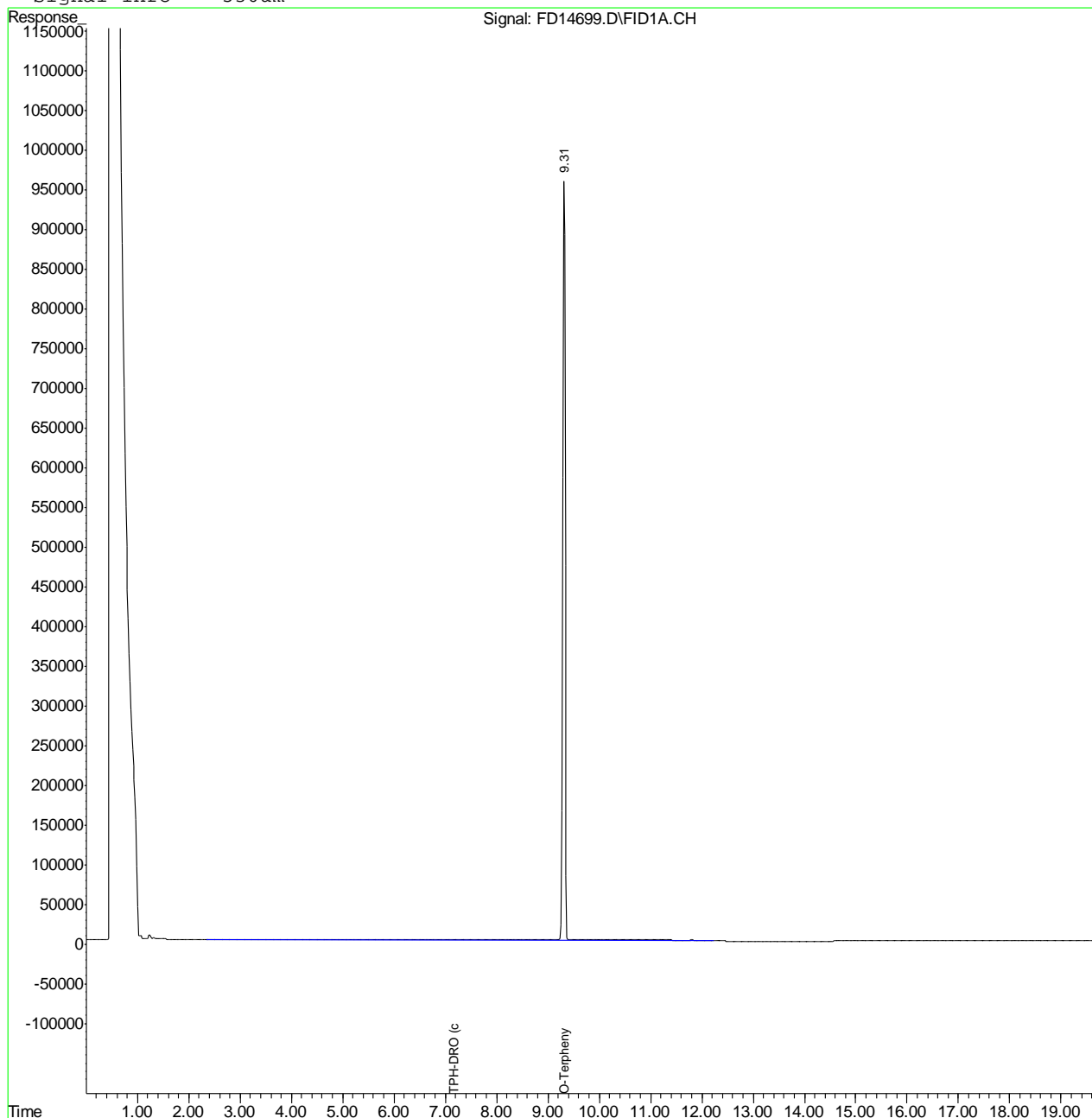
-----  
(f)=RT Delta > 1/2 Window (m)=manual int.  
FD14699.D DRO-GFD763F.M Mon Jun 25 14:12:28 2012 GC

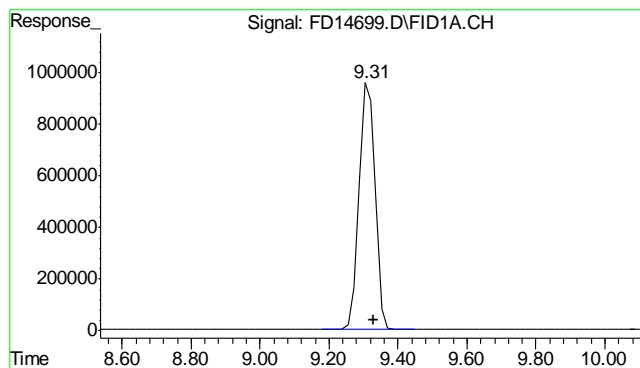
## Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\JUNE\FD062312\FD14699.D Vial: 3  
Acq On : 23 Jun 2012 12:31 pm Operator: alexwl  
Sample : OP6107-MB Inst : FID5  
Misc : OP6107,GFD765,30.00,,,2,1 Multiplr: 1.00  
IntFile : autoint1.e  
Quant Time: Jun 25 14:07 2012 Quant Results File: DRO-GFD763F.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD763F.M (Chemstation Integrator)  
Title : 8015B TEH  
Last Update : Mon Jun 25 09:09:48 2012  
Response via : Multiple Level Calibration  
DataAcq Meth : DRODUAL.M

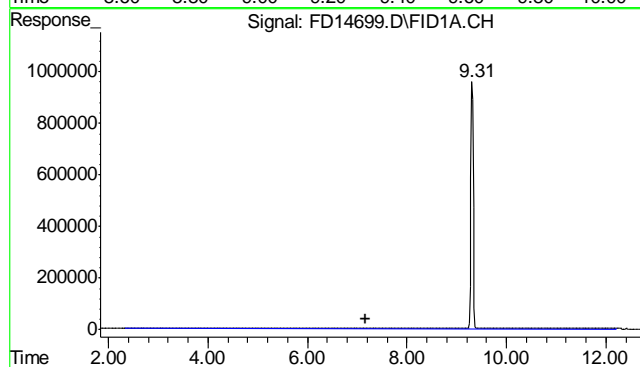
Volume Inj. : 1ul  
Signal Phase : RTX-5  
Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.317 min  
Delta R.T.: -0.013 min  
Response: 31605326  
Conc: 804.62 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 7.170 min  
Delta R.T.: 0.000 min  
Response: 4595438  
Conc: 126.50 mg/L m

10.2.1  
10