



12/05/11

Technical Report for

KRW Consulting, Inc.

XOM PCU 297-12A

1105-16A

Accutest Job Number: D29786

Sampling Date: 11/28/11

Report to:

KRW Consulting, Inc.
8000 West 14th Avenue Suite 200
Lakewood, CO 80214
cburger@krwconsulting.com; gknell@krwconsulting.com;
dknudson@krwconsulting.com; jhess@krwconsulting.com;
ATTN: Joe Hess

Total number of pages in report: 48



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: 303-425-6021

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

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-

Section 1: Sample Summary	3
Section 2: Case Narrative/Conformance Summary	4
Section 3: Sample Results	5
3.1: D29786-1: FRESHWATER PIT SUBLINER	6
Section 4: Misc. Forms	9
4.1: Chain of Custody	10
Section 5: GC/MS Volatiles - QC Data Summaries	12
5.1: Method Blank Summary	13
5.2: Blank Spike Summary	14
5.3: Matrix Spike/Matrix Spike Duplicate Summary	15
Section 6: GC/MS Volatiles - Raw Data	16
6.1: Samples	17
6.2: Method Blanks	20
Section 7: GC Volatiles - QC Data Summaries	23
7.1: Method Blank Summary	24
7.2: Blank Spike Summary	25
7.3: Matrix Spike/Matrix Spike Duplicate Summary	26
Section 8: GC Volatiles - Raw Data	27
8.1: Samples	28
8.2: Method Blanks	33
Section 9: GC Semi-volatiles - QC Data Summaries	38
9.1: Method Blank Summary	39
9.2: Blank Spike Summary	40
9.3: Matrix Spike/Matrix Spike Duplicate Summary	41
Section 10: GC Semi-volatiles - Raw Data	42
10.1: Samples	43
10.2: Method Blanks	46

1

2

3

4

5

6

7

8

9

10



Sample Summary

KRW Consulting, Inc.

Job No: D29786

XOM PCU 297-12A
Project No: 1105-16A

Sample Number	Collected		Matrix			Client Sample ID
	Date	Time By	Received	Code	Type	
D29786-1	11/28/11	00:00 RR	11/29/11	SO	Soil	FRESHWATER PIT SUBLINER

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: KRW Consulting, Inc.

Job No D29786

Site: XOM PCU 297-12A

Report Dat 12/5/2011 3:53:51 PM

On 11/29/2011, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 1.9 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D29786 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

Matrix SO	Batch ID: V3V857
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29786-1MS, D29786-1MSD were used as the QC samples indicated.

Volatiles by GC By Method SW846 8015B

Matrix SO	Batch ID: GGB798
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29759-1MS, D29759-1MSD were used as the QC samples indicated.

Extractables by GC By Method SW846-8015B

Matrix SO	Batch ID: OP4919
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D29759-1MS, D29759-1MSD were used as the QC samples indicated.

Wet Chemistry By Method SM19 2540B M

Matrix SO	Batch ID: GN12688
------------------	--------------------------

- 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

Client Sample ID:	FRESHWATER PIT SUBLINER	Date Sampled:	11/28/11
Lab Sample ID:	D29786-1	Date Received:	11/29/11
Matrix:	SO - Soil	Percent Solids:	84.3
Method:	SW846 8260B		
Project:	XOM PCU 297-12A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V14769.D	1	11/30/11	KV	n/a	n/a	V3V857
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.01 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	69	30	ug/kg	
108-88-3	Toluene	ND	140	69	ug/kg	
100-41-4	Ethylbenzene	ND	140	34	ug/kg	
1330-20-7	Xylene (total)	ND	270	140	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	116%		61-130%
460-00-4	4-Bromofluorobenzene	115%		53-131%
17060-07-0	1,2-Dichloroethane-D4	107%		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

Client Sample ID:	FRESHWATER PIT SUBLINER	Date Sampled:	11/28/11
Lab Sample ID:	D29786-1	Date Received:	11/29/11
Matrix:	SO - Soil	Percent Solids:	84.3
Method:	SW846 8015B		
Project:	XOM PCU 297-12A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB14113.D	1	11/29/11	SK	n/a	n/a	GGB798
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)	ND	14	6.9	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	94%		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

Client Sample ID:	FRESHWATER PIT SUBLINER	Date Sampled:	11/28/11
Lab Sample ID:	D29786-1	Date Received:	11/29/11
Matrix:	SO - Soil	Percent Solids:	84.3
Method:	SW846-8015B SW846 3546		
Project:	XOM PCU 297-12A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD11944.D	1	12/04/11	TR	11/29/11	OP4919	GFD613
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	59.2	16	10	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	83%		61-142%		

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

Accutest Laboratories Mountain States
4036 Youngfield Street Wheat Ridge, Co 80033
TEL: 303-425-6021 877-737-4521
FAX: 303-425-6021

Client / Reporting Information			Project Information			Requested Analysis (see TEST CODE sheet)										Matrix Codes		
Company Name KRW CONSULTING, INC			Project Name PCU 297-12A			<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);"> TPH (Geo + Org) BTEX </div> <div style="width: 80%;"></div> </div>										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Waste FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank		
Street Address 8000 W 14th AVE STE 200			Street															
City, State, Zip LAKWOOD CO 80214			Billing Information (if different from Report to)															
Project Contact JOE HESS			Project# 1105-16A															
Phone # 303.239.9011 / 303.237.0745			Client PO#															
Sample(s) Name(s) CONCRETE 990-386-2893 JOE HESS			Project Manager															
Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vol #	Date	Time	Sampled by	Matrix	# of bottles	HCl	NH ₄ H	HNO ₃	H ₂ SO ₄	NONE	D/Water	MEOH	ENCORE	Blank/late	LAB USE ONLY	
1	FRESHWATER PIT SUB-WATER		11/28/11		RR	SO	3						X				X	X

Data Deliverable Information			Comments / Special Instructions	
Turnaround Time (Business days) <input type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> Std. 5 Business Days (By Contract only) <input type="checkbox"/> 5 Day R/SH <input checked="" type="checkbox"/> 3 Day EMERGENCY <input type="checkbox"/> 2 Day EMERGENCY <input type="checkbox"/> 1 Day EMERGENCY <small>Emergency & Rush T/A data available VIA Lablink</small>		Approved By (Accutest PM): / Date: _____	<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> State Forms <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> EDD Format <input type="checkbox"/> Commercial "B" - Narrative <input checked="" type="checkbox"/> PDF <input type="checkbox"/> FULLT1 (Level 3-4) <small>Commercial "A" = Results Only Commercial "B" = Results + QC Summary</small>	PLEASE E-MAIL RESULTS TO: PCU/COM TEAM crachak@krcwconsulting.com

Sample Custody must be documented below each time samples change possession, including courier delivery.					
Relinquished by Sampler: Tom Risher	Date Time: 11/28/11 1700	Received By: Tina Service Center	Relinquished By: WR	Date Time:	Received By: David R
Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
Relinquished by:	Date Time:	Received By:	Custody Seal # H20	<input checked="" type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Preserved where applicable <input type="checkbox"/> On Ice <input checked="" type="checkbox"/> Cooler Temp. 1.9

D29786: Chain of Custody

Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D29786

Client: KRW CONSULTING INC.

Immediate Client Services Action Required: No

Date / Time Received: 11/29/2011 11:45:00 A

No. Coolers: 1

Client Service Action Required at Login: No

Project: PCU 297-12A

Airbill #'s: HD/CO

<u>Cooler Security</u>	<u>Y or N</u>		<u>Y or N</u>	
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"/>

<u>Cooler Temperature</u>	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	Infrared gun	
3. Cooler media:	Ice (bag)	

<u>Quality Control Preservation</u>	<u>Y or N</u>		<u>N/A</u>
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"/>

<u>Sample Integrity - Documentation</u>	<u>Y or N</u>	
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"/>

<u>Sample Integrity - Condition</u>	<u>Y or N</u>	
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	

<u>Sample Integrity - Instructions</u>	<u>Y or N</u>		<u>N/A</u>
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

4.1
4

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

Job Number: D29786
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU 297-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V857-MB	3V14767.D	1	11/30/11	KV	n/a	n/a	V3V857

The QC reported here applies to the following samples:

Method: SW846 8260B

D29786-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	22	ug/kg	
100-41-4	Ethylbenzene	ND	100	25	ug/kg	
108-88-3	Toluene	ND	100	50	ug/kg	
1330-20-7	Xylene (total)	ND	200	100	ug/kg	

CAS No.	Surrogate Recoveries	Limits	
2037-26-5	Toluene-D8	113%	61-130%
460-00-4	4-Bromofluorobenzene	107%	53-131%
17060-07-0	1,2-Dichloroethane-D4	104%	62-130%

Blank Spike Summary

Job Number: D29786
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU 297-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V857-BS	3V14768.D	1	11/30/11	KV	n/a	n/a	V3V857

The QC reported here applies to the following samples:

Method: SW846 8260B

D29786-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	49.7	99	70-130
100-41-4	Ethylbenzene	50	49.4	99	70-130
108-88-3	Toluene	50	49.5	99	70-130
1330-20-7	Xylene (total)	150	148	99	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	113%	61-130%
460-00-4	4-Bromofluorobenzene	116%	53-131%
17060-07-0	1,2-Dichloroethane-D4	110%	62-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D29786
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU 297-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D29786-1MS	3V14770.D	1	11/30/11	KV	n/a	n/a	V3V857
D29786-1MSD	3V14771.D	1	11/30/11	KV	n/a	n/a	V3V857
D29786-1	3V14769.D	1	11/30/11	KV	n/a	n/a	V3V857

The QC reported here applies to the following samples:

Method: SW846 8260B

D29786-1

CAS No.	Compound	D29786-1 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	3430	3570	104	3690	108	3	70-134/30
100-41-4	Ethylbenzene	ND	3430	3480	102	3640	106	4	70-137/30
108-88-3	Toluene	ND	3430	3410	100	3630	106	6	70-130/30
1330-20-7	Xylene (total)	ND	10300	10700	104	11100	108	4	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D29786-1	Limits
2037-26-5	Toluene-D8	112%	113%	116%	61-130%
460-00-4	4-Bromofluorobenzene	127%	129%	115%	53-131%
17060-07-0	1,2-Dichloroethane-D4	106%	105%	107%	62-130%

5.3.1
5

GC/MS Volatiles

Raw Data



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3113011.S\
Data File : 3V14769.D
Acq On : 30 Nov 2011 11:04 am
Operator : korooushv
Sample : D29786-1, 50x
Misc : MS3016,V3V857,5.009,,100,5,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 01 08:18:21 2011
Quant Method : C:\msdchem\1\METHODS\V3AP850TVH850.M
Quant Title : 8260
QLast Update : Sat Nov 26 09:28:41 2011
Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.879	168	318071	50.00	ug/l	-0.01
35) 1,4-Difluorobenzene	12.671	114	525789	50.00	ug/l	-0.01
53) Chlorobenzene-d5	15.309	117	461251	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.302	152	260115	50.00	ug/l	0.00
System Monitoring Compounds						
33) 1,2-Dichloroethane-d4	12.273	102	46682	53.64	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	107.28%
61) Toluene-d8	14.064	98	756186	57.93	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	115.86%
69) 4-Bromofluorobenzene	16.259	95	246972	57.73	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	115.46%
Target Compounds						
91) Naphthalene	19.881	128	38212	2.80	ug/l	Qvalue 100

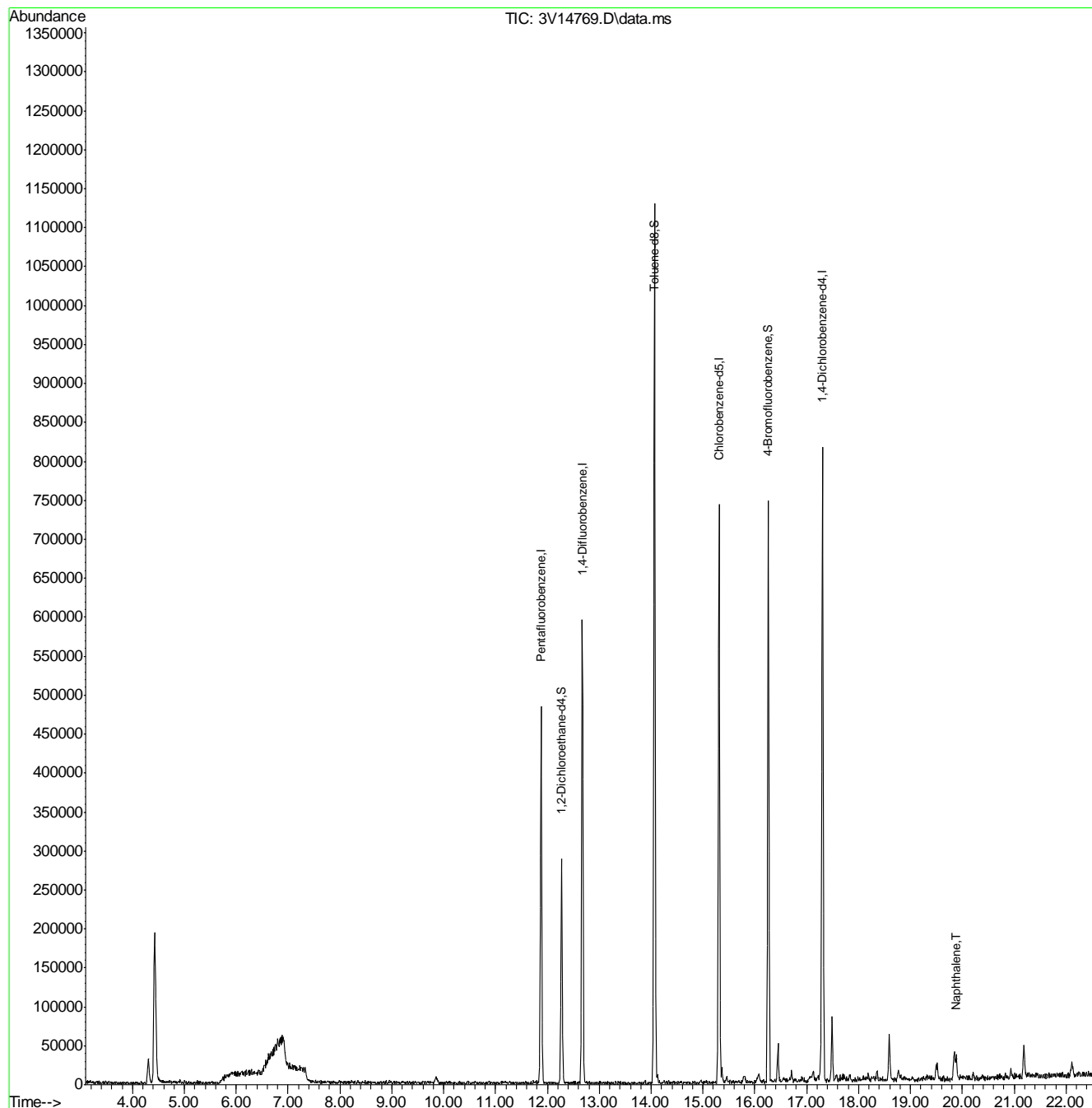
(#) = qualifier out of range (m) = manual integration (+) = signals summed

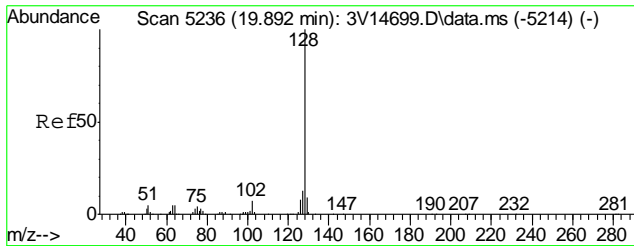
6.1.1
6

Quantitation Report (QT Reviewed)

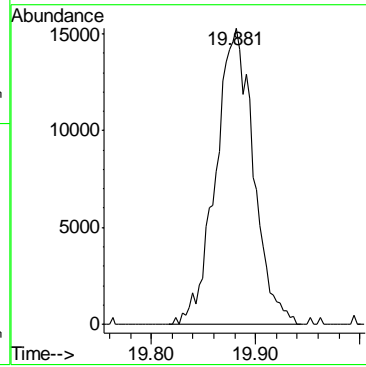
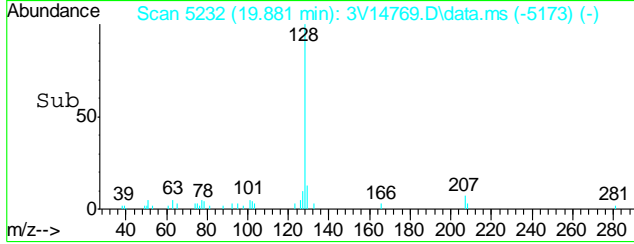
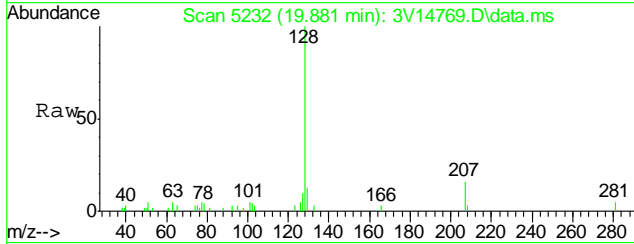
Data Path : C:\msdchem\1\DATA\V3113011.S\
Data File : 3V14769.D
Acq On : 30 Nov 2011 11:04 am
Operator : korooushv
Sample : D29786-1, 50x
Misc : MS3016,V3V857,5.009,,100,5,1
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 01 08:18:21 2011
Quant Method : C:\msdchem\1\METHODS\V3AP850TVH850.M
Quant Title : 8260
QLast Update : Sat Nov 26 09:28:41 2011
Response via : Initial Calibration





#91
 Naphthalene
 Concen: 2.80 ug/l
 RT: 19.881 min Scan# 5232
 Delta R.T. -0.011 min
 Lab File: 3V14769.D
 Acq: 30 Nov 2011 11:04 am
 Tgt Ion:128 Resp: 38212



6.1.1
6

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\V3113011.S\
 Data File : 3V14767.D
 Acq On : 30 Nov 2011 9:03 am
 Operator : korooushv
 Sample : MB
 Misc : MS3016,V3V857,5.006,,100,5,1
 ALS Vial : 3 Sample Multiplier: 1

Quant Time: Dec 01 08:07:41 2011
 Quant Method : C:\msdchem\1\METHODS\V3AP850TVH850.M
 Quant Title : 8260
 QLast Update : Sat Nov 26 09:28:41 2011
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
2) Pentafluorobenzene	11.888	168	295722	50.00	ug/l	0.00
35) 1,4-Difluorobenzene	12.681	114	500987	50.00	ug/l	0.00
53) Chlorobenzene-d5	15.315	117	443254	50.00	ug/l	0.00
74) 1,4-Dichlorobenzene-d4	17.311	152	235028	50.00	ug/l	0.00

System Monitoring Compounds

33) 1,2-Dichloroethane-d4	12.283	102	42164	52.11	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	104.22%
61) Toluene-d8	14.073	98	710306	56.62	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	113.24%
69) 4-Bromofluorobenzene	16.265	95	220631	53.67	ug/l	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	107.34%

Target Compounds

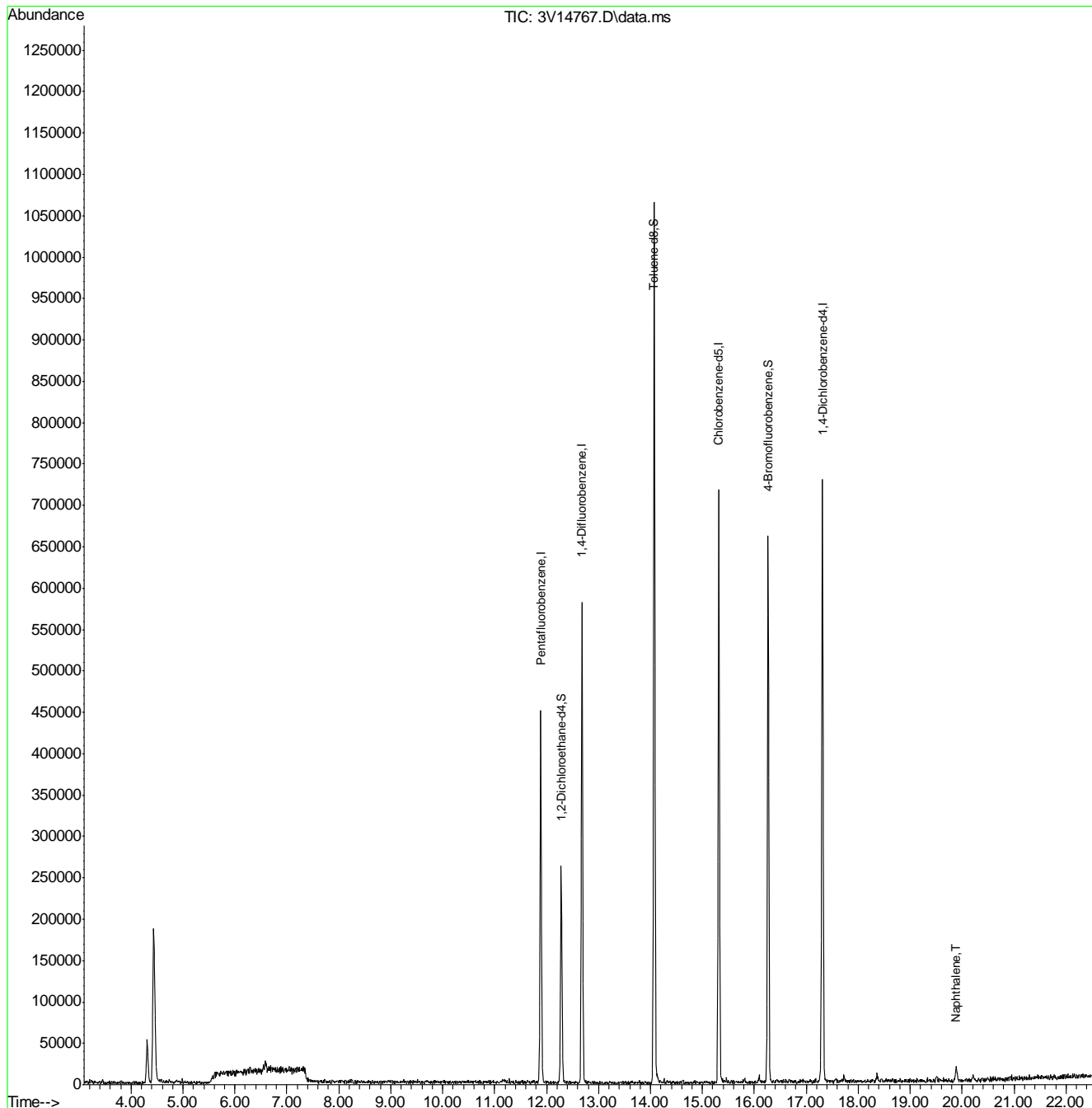
	R.T.	QIon	Response	Conc	Units	Qvalue
91) Naphthalene	19.888	128	19778m	1.60	ug/l	

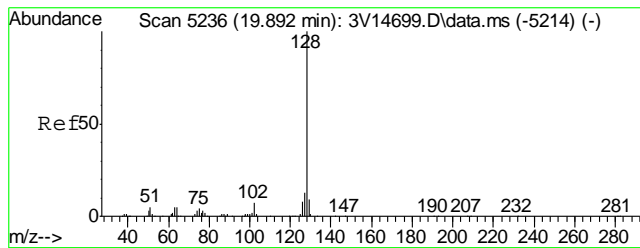
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

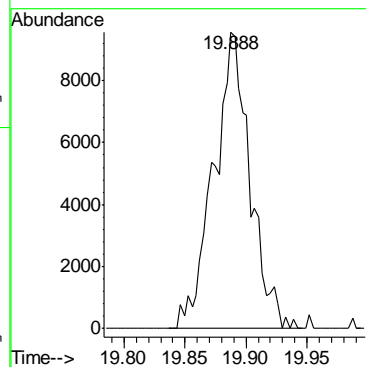
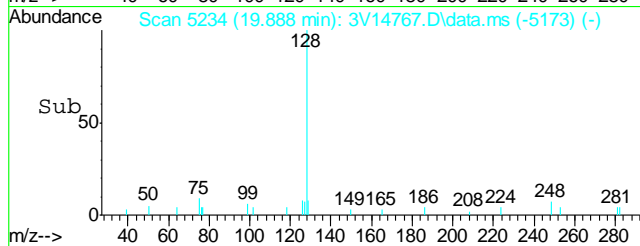
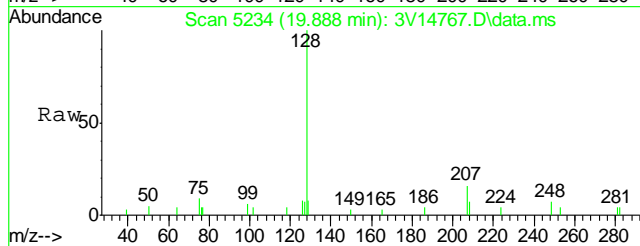
Data Path : C:\msdchem\1\DATA\V3113011.S\
 Data File : 3V14767.D
 Acq On : 30 Nov 2011 9:03 am
 Operator : korooushv
 Sample : MB
 Misc : MS3016,V3V857,5.006,,100,5,1
 ALS Vial : 3 Sample Multiplier: 1

Quant Time: Dec 01 08:07:41 2011
 Quant Method : C:\msdchem\1\METHODS\V3AP850TVH850.M
 Quant Title : 8260
 QLast Update : Sat Nov 26 09:28:41 2011
 Response via : Initial Calibration





#91
Naphthalene
Concen: 1.60 ug/l m
RT: 19.888 min Scan# 5234
Delta R.T. -0.005 min
Lab File: 3V14767.D
Acq: 30 Nov 2011 9:03 am
Tgt Ion:128 Resp: 19778



GC Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D29786
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU 297-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB798-MB	GB14101.D	1	11/29/11	SK	n/a	n/a	GGB798

The QC reported here applies to the following samples:

Method: SW846 8015B

D29786-1

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	93% 60-140%

Blank Spike Summary

Job Number: D29786
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU 297-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB798-BS	GB14102.D	1	11/29/11	SK	n/a	n/a	GGB798

The QC reported here applies to the following samples:

Method: SW846 8015B

D29786-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	114	104	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	108%	60-140%

7.2.1

7

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D29786
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU 297-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D29759-1MS	GB14104.D	1	11/29/11	SK	n/a	n/a	GGB798
D29759-1MSD	GB14105.D	1	11/29/11	SK	n/a	n/a	GGB798
D29759-1	GB14103.D	1	11/29/11	SK	n/a	n/a	GGB798

The QC reported here applies to the following samples:

Method: SW846 8015B

D29786-1

CAS No.	Compound	D29759-1 mg/kg	Spike Q	mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	10.3	J	150	156	97	155	97	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D29759-1	Limits
120-82-1	1,2,4-Trichlorobenzene	104%	110%	91%	60-140%

7.3.1

7

GC Volatiles

Raw Data

∞

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\112911\GB14113.D\FID1A.CH Vial: 14
 Signal #2 : Y:\1\DATA\112911\GB14113.D\FID2B.CH
 Acq On : 29 Nov 2011 6:41 pm Operator: StephK
 Sample : D29786-1, 50X Inst : GC/MS Ins
 Misc : GC2437,GGB798,5.009,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Nov 30 08:13:06 2011 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Tue Nov 29 13:18:36 2011
 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	14.37	2761844	94.405 %	m
10) S 1,2,4-Trichlorobenzene (P)	14.37	22425547	97.570 %	
Target Compounds				
1) H TVH-Gasoline	7.32	5864011	<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	7.68	114619	0.202	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	14.56	687007	2.669	ug/L

8.1.1
 8

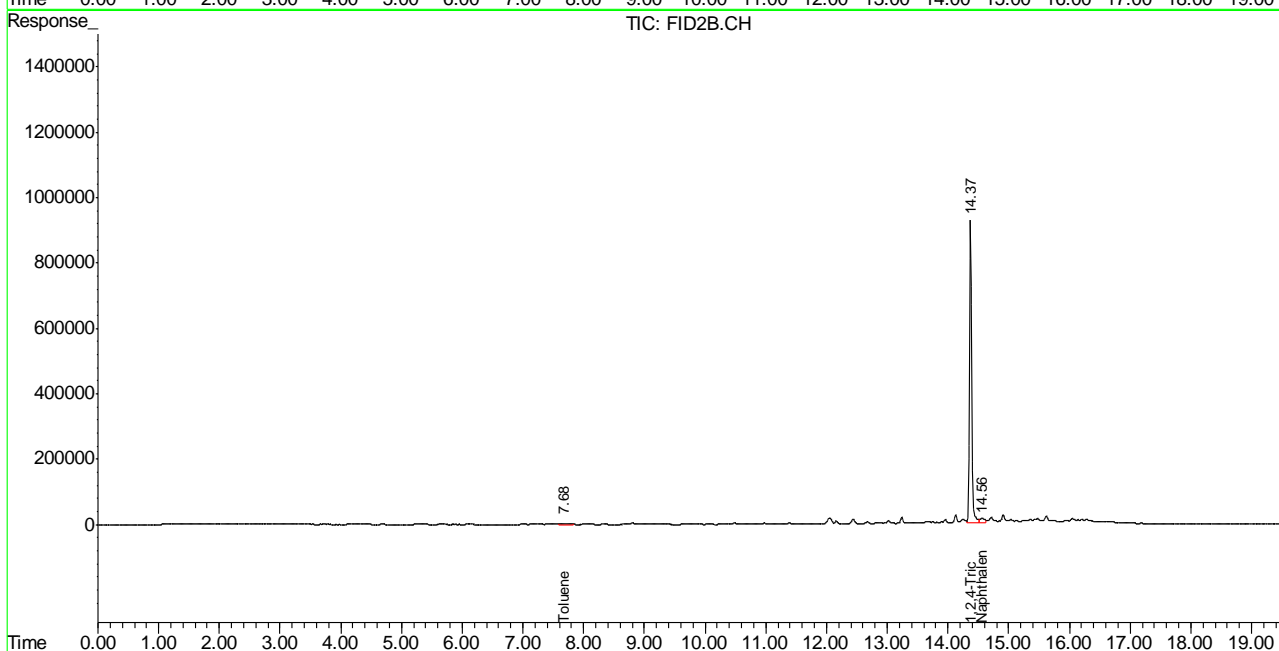
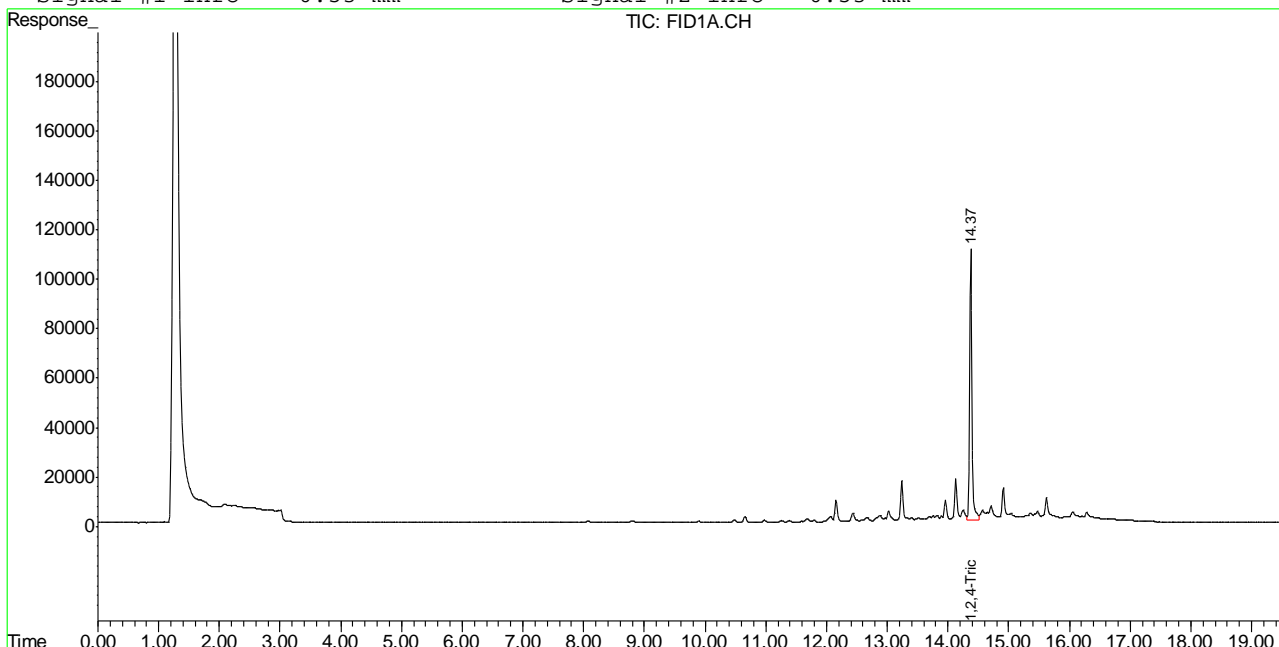
(f)=RT Delta > 1/2 Window (m)=manual int.
 GB14113.D TB791GB791SOIL.M Wed Nov 30 08:17:43 2011 GC

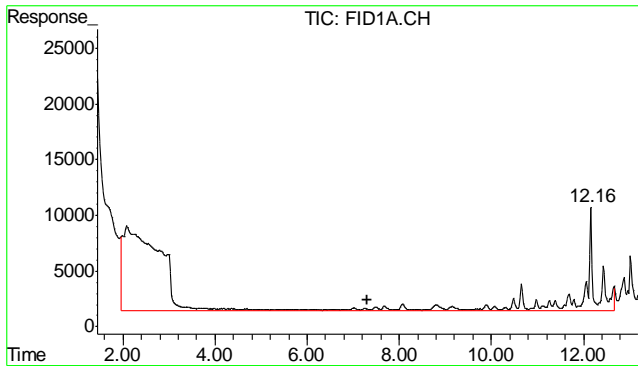
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\112911\GB14113.D\FID1A.CH Vial: 14
 Signal #2 : Y:\1\DATA\112911\GB14113.D\FID2B.CH
 Acq On : 29 Nov 2011 6:41 pm Operator: StephK
 Sample : D29786-1, 50X Inst : GC/MS Ins
 Misc : GC2437,GGB798,5.009,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Nov 30 8:13 2011 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Tue Nov 29 13:18:36 2011
 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





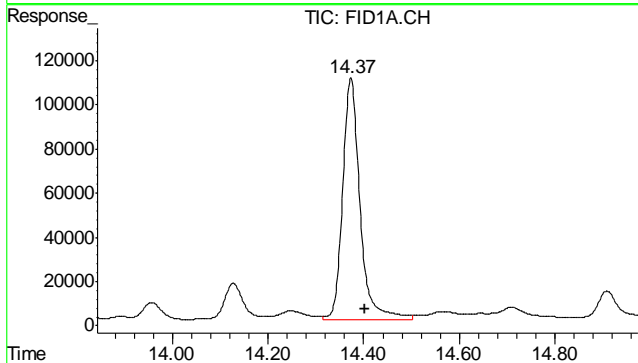
#1 TVH-Gasoline

R.T.: 7.315 min

Delta R.T.: 0.000 min

Response: 5864011

Conc: N.D.



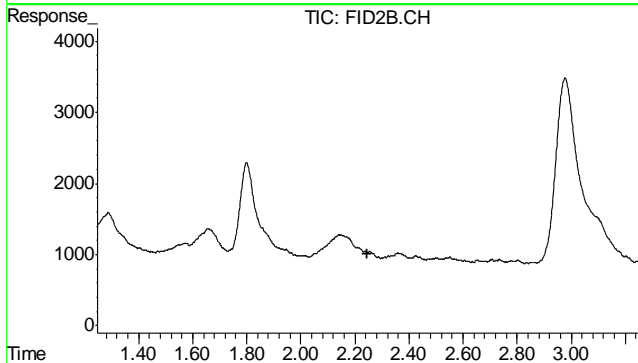
#2 1,2,4-Trichlorobenzene

R.T.: 14.373 min

Delta R.T.: -0.031 min

Response: 2761844

Conc: 94.41 % m



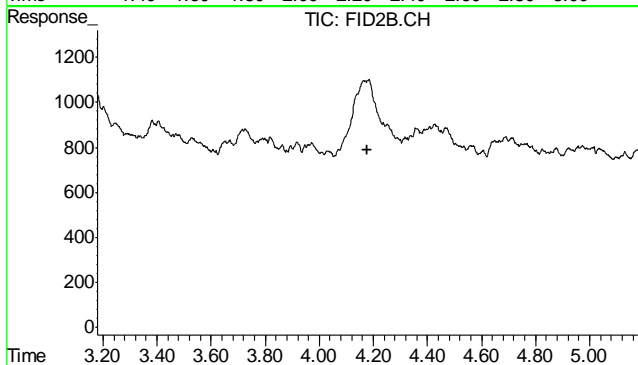
#4 Methyl-t-butyl-ether

R.T.: 0.000 min

Exp R.T. : 2.247 min

Response: 0

Conc: N.D.



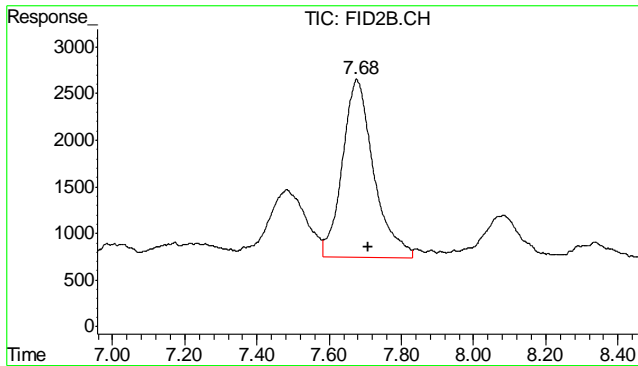
#5 Benzene

R.T.: 0.000 min

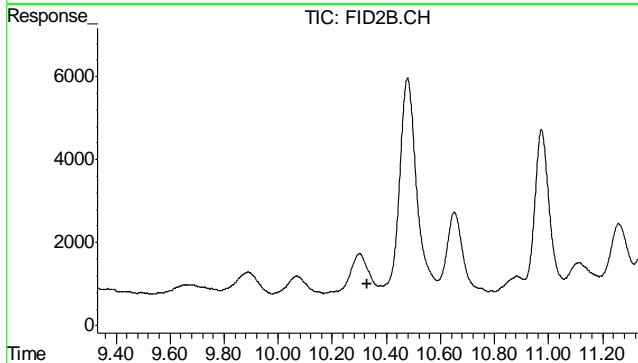
Exp R.T. : 4.179 min

Response: 0

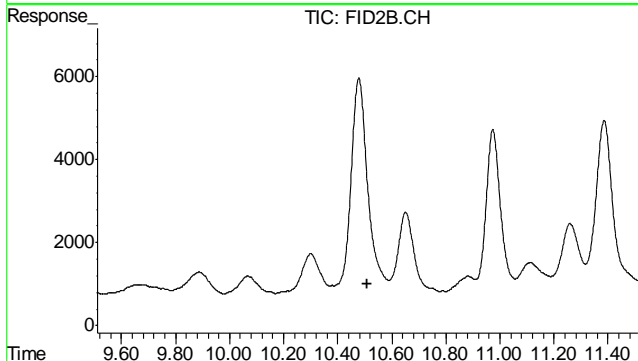
Conc: N.D.



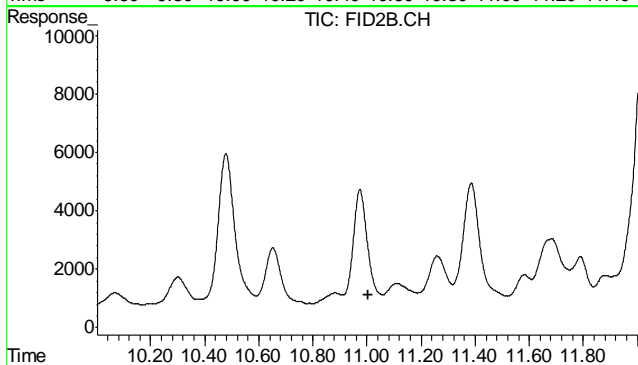
#6 Toluene
 R.T.: 7.676 min
 Delta R.T.: -0.031 min
 Response: 114619
 Conc: 0.20 ug/L



#7 Ethylbenzene
 R.T.: 0.000 min
 Exp R.T. : 10.331 min
 Response: 0
 Conc: N.D.

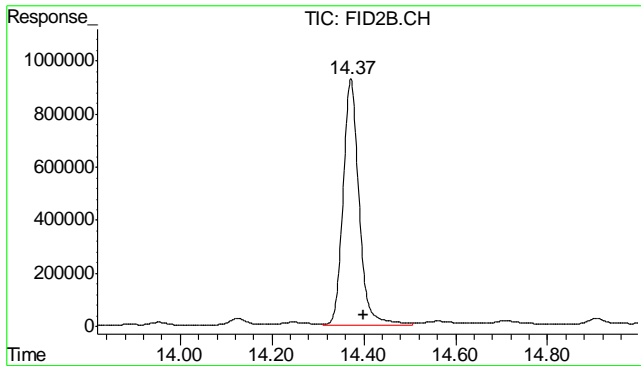


#8 m,p-Xylene
 R.T.: 0.000 min
 Exp R.T. : 10.510 min
 Response: 0
 Conc: N.D.



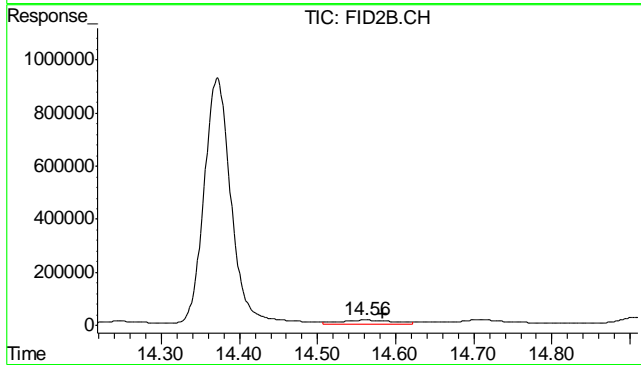
#9 o-Xylene
 R.T.: 0.000 min
 Exp R.T. : 11.003 min
 Response: 0
 Conc: N.D.

8.1.1
8



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

R.T.: 14.372 min
Delta R.T.: -0.029 min
Response: 22425547
Conc: 97.57 %



#11 Naphthalene

R.T.: 14.562 min
Delta R.T.: -0.021 min
Response: 687007
Conc: 2.67 ug/L

8.1.1
8

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\112911\GB14101.D\FID1A.CH Vial: 2
 Signal #2 : Y:\1\DATA\112911\GB14101.D\FID2B.CH
 Acq On : 29 Nov 2011 11:32 am Operator: StephK
 Sample : MB, S Inst : GC/MS Ins
 Misc : GC2437,GGB798,5.000,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Nov 29 10:57:03 2011 Quant Results File: TB791GB791SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Tue Nov 29 10:18:20 2011
 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	14.41	2709662	92.622 %	m
10) S 1,2,4-Trichlorobenzene (P)	14.41	22554142	98.130 %	
Target Compounds				
1) H TVH-Gasoline	7.32	5280135	<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	7.72	176271	0.311	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	14.59	417773	1.623	ug/L

(f)=RT Delta > 1/2 Window (m)=manual int.
 GB14101.D TB791GB791SOIL.M Wed Nov 30 08:17:07 2011 GC

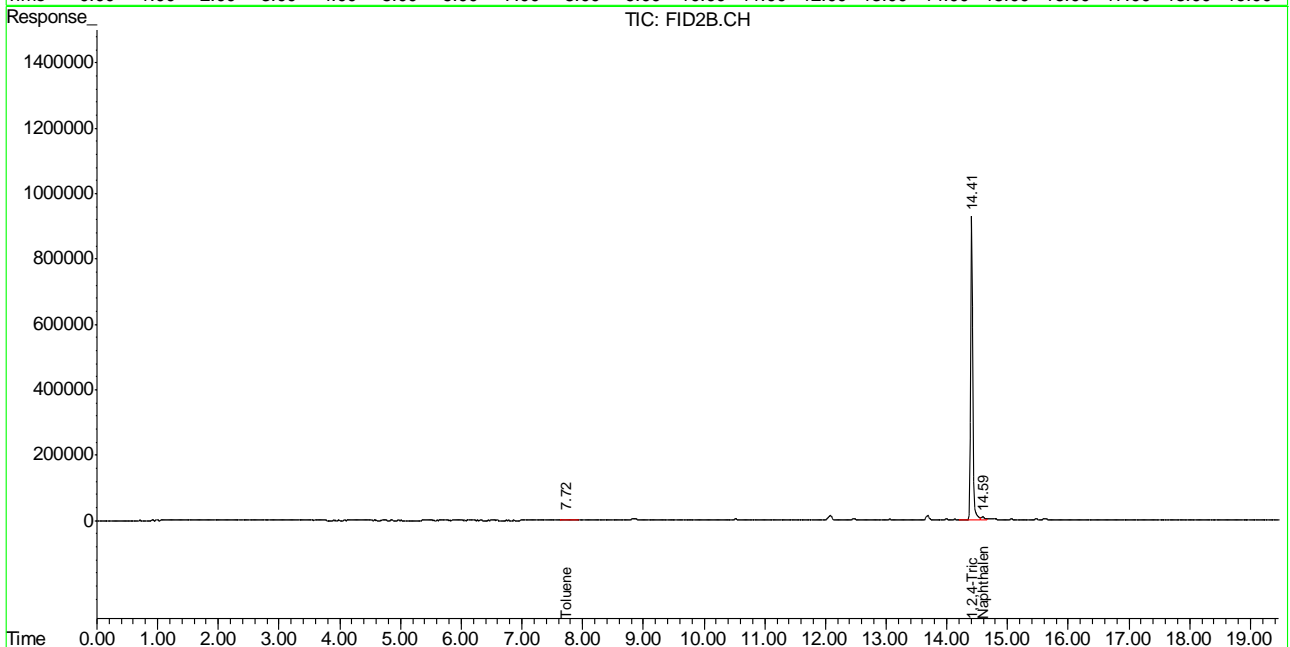
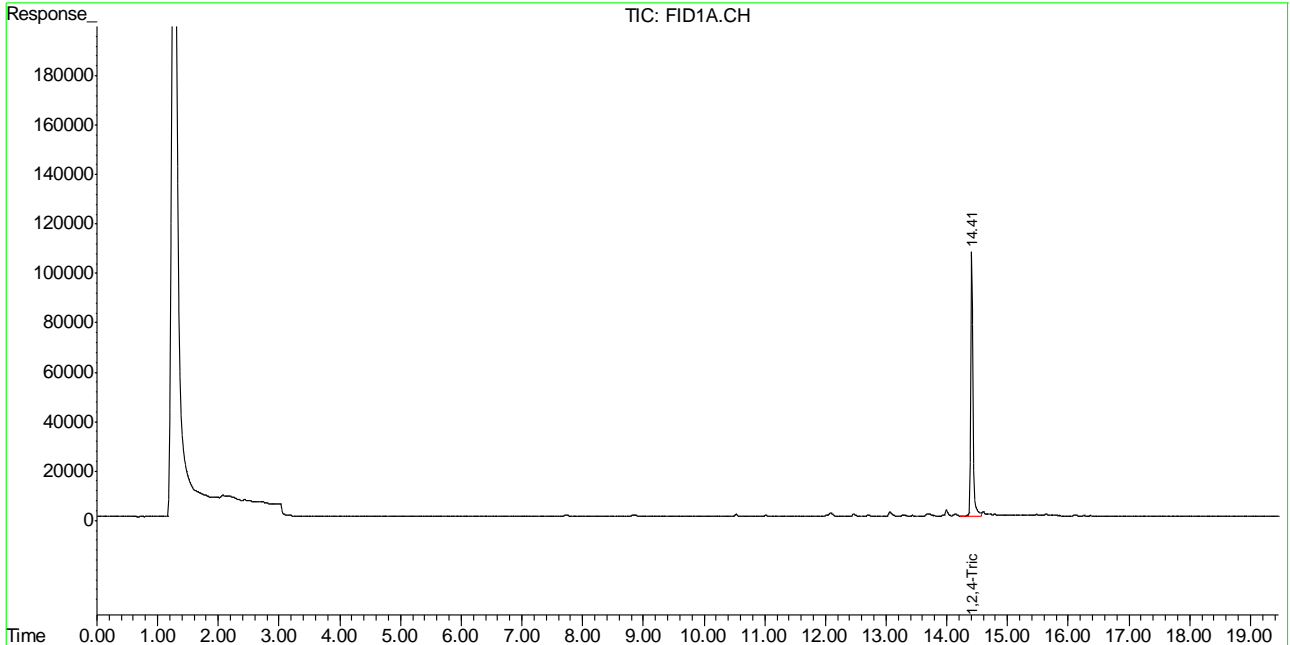
8.2.1
8

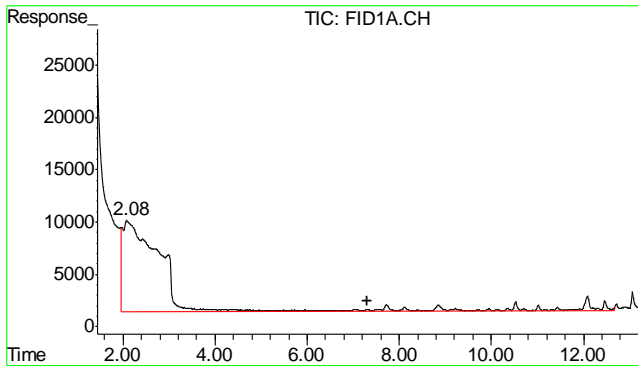
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\112911\GB14101.D\FID1A.CH Vial: 2
 Signal #2 : Y:\1\DATA\112911\GB14101.D\FID2B.CH
 Acq On : 29 Nov 2011 11:32 am Operator: StephK
 Sample : MB, S Inst : GC/MS Ins
 Misc : GC2437,GGB798,5.000,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: Nov 29 10:56 2011 Quant Results File: TB791GB791SOIL.RES

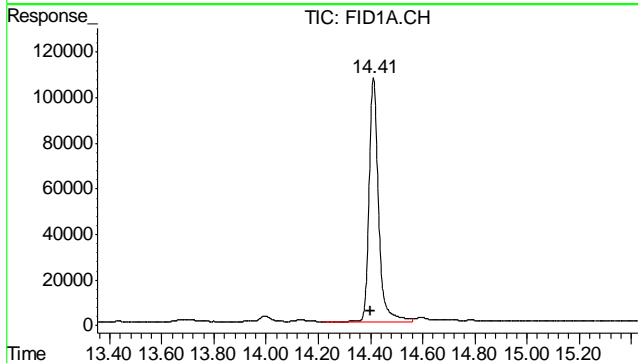
Quant Method : C:\MSDCHEM\1...\TB791GB791SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Tue Nov 29 10:18:20 2011
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

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

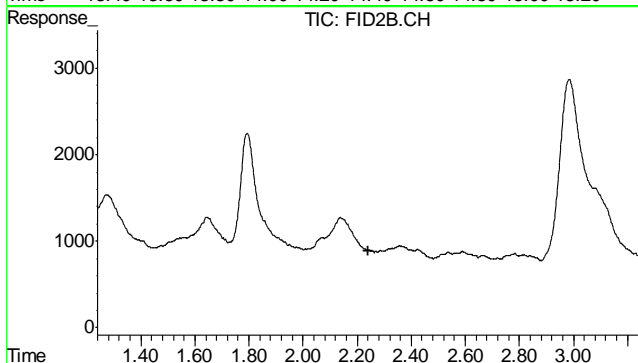




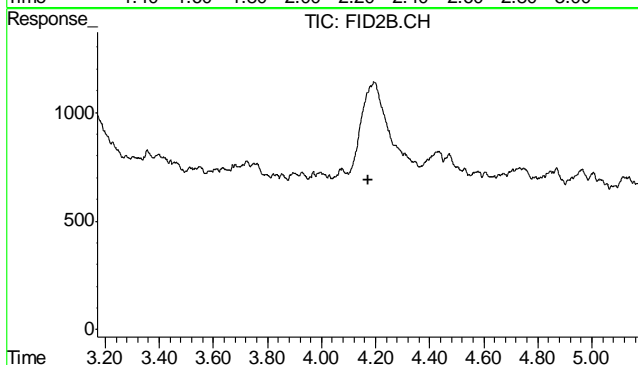
#1 TVH-Gasoline
 R.T.: 7.315 min
 Delta R.T.: 0.000 min
 Response: 5280135
 Conc: N.D.



#2 1,2,4-Trichlorobenzene
 R.T.: 14.410 min
 Delta R.T.: 0.010 min
 Response: 2709662
 Conc: 92.62 % m

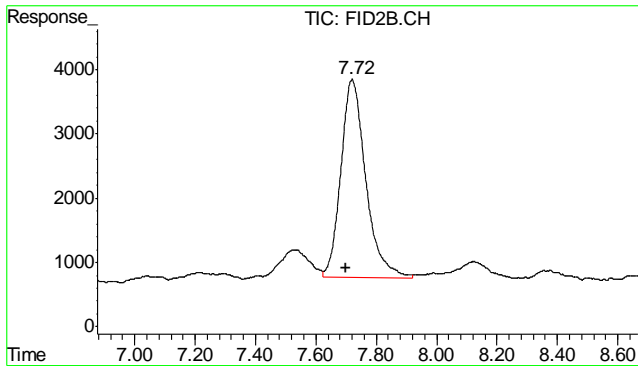


#4 Methyl-t-butyl-ether
 R.T.: 0.000 min
 Exp R.T.: 2.240 min
 Response: 0
 Conc: N.D.

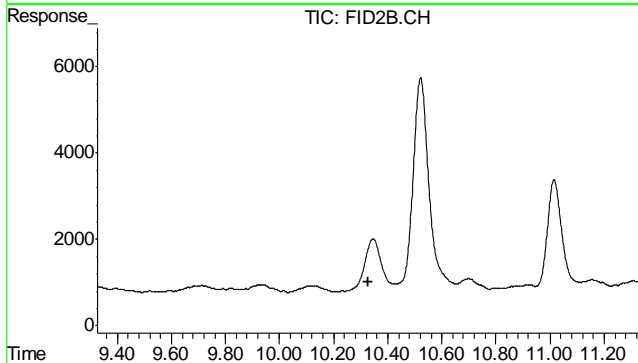


#5 Benzene
 R.T.: 0.000 min
 Exp R.T.: 4.171 min
 Response: 0
 Conc: N.D.

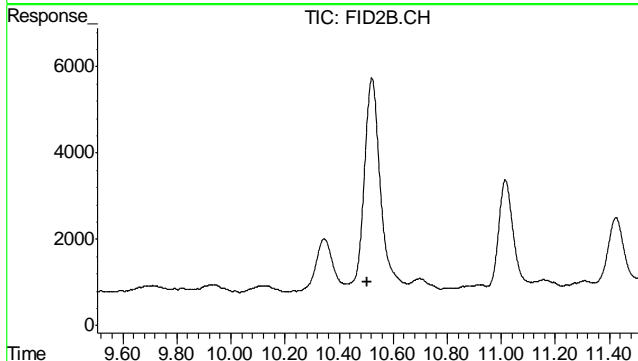
8.2.1
 8



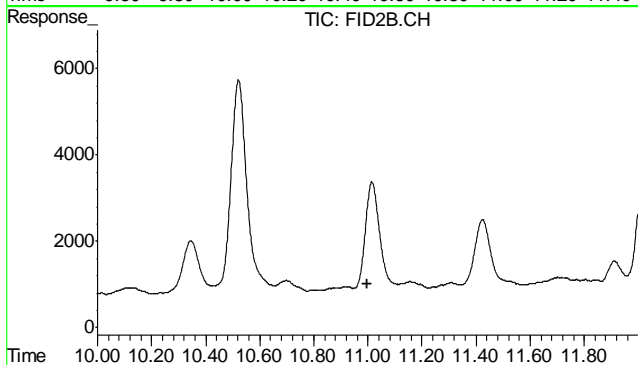
#6 Toluene
 R.T.: 7.720 min
 Delta R.T.: 0.020 min
 Response: 176271
 Conc: 0.31 ug/L



#7 Ethylbenzene
 R.T.: 0.000 min
 Exp R.T. : 10.326 min
 Response: 0
 Conc: N.D.

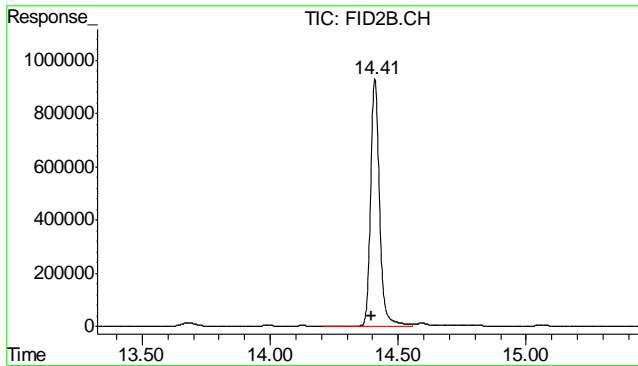


#8 m,p-Xylene
 R.T.: 0.000 min
 Exp R.T. : 10.505 min
 Response: 0
 Conc: N.D.



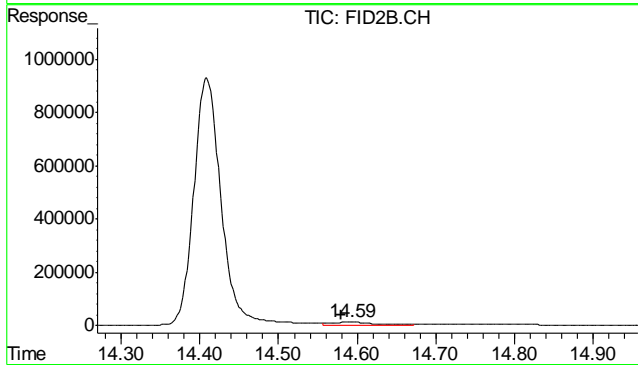
#9 o-Xylene
 R.T.: 0.000 min
 Exp R.T. : 10.999 min
 Response: 0
 Conc: N.D.

8.2.1
8



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

R.T.: 14.409 min
 Delta R.T.: 0.011 min
 Response: 22554142
 Conc: 98.13 %



#11 Naphthalene

R.T.: 14.592 min
 Delta R.T.: 0.011 min
 Response: 417773
 Conc: 1.62 ug/L

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

Job Number: D29786
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU 297-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4919-MB	FD11933.D	1	12/04/11	TR	11/29/11	OP4919	GFD613

The QC reported here applies to the following samples:

Method: SW846-8015B

D29786-1

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	98% 61-142%

Blank Spike Summary

Job Number: D29786
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU 297-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4919-BS	FD11934.D	1	12/04/11	TR	11/29/11	OP4919	GFD613

The QC reported here applies to the following samples:

Method: SW846-8015B

D29786-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	613	92	60-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	101%	61-142%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D29786
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU 297-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4919-MS	FD11935.D	1	12/04/11	TR	11/29/11	OP4919	GFD613
OP4919-MSD	FD11936.D	1	12/04/11	TR	11/29/11	OP4919	GFD613
D29759-1	FD11937.D	1	12/04/11	TR	11/29/11	OP4919	GFD613

The QC reported here applies to the following samples:

Method: SW846-8015B

D29786-1

CAS No.	Compound	D29759-1 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	593	787	833	30	848	32	2	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D29759-1	Limits
84-15-1	o-Terphenyl	59%	60%	85%	43-136%

9.3.1
9



GC Semi-volatiles

Raw Data

Manual Integrations
APPROVED
(compounds with "m" flag)
Judy Melson
12/05/11 15:10

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2011\DEC\FD120411\FD11944.D Vial: 14
Acq On : 12-4-2011 04:28:00 PM Operator: TEDR
Sample : D29786-1 Inst : FID5
Misc : OP4919,GFD613,30.02,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Dec 04 18:25:12 2011 Quant Results File: GFD599.RES

Quant Method : C:\MSDCHEM\2\METHODS\GFD599.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Tue Nov 29 09:00:39 2011
Response via : Initial Calibration
DataAcq Meth : JH080911.M

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

Compound	R.T.	Response	Conc Units
System Monitoring Compounds			
1) S O-Terphenyl	9.65	44087026	832.409 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	7.46	38623464	748.742 mg/L

10.1.1
10

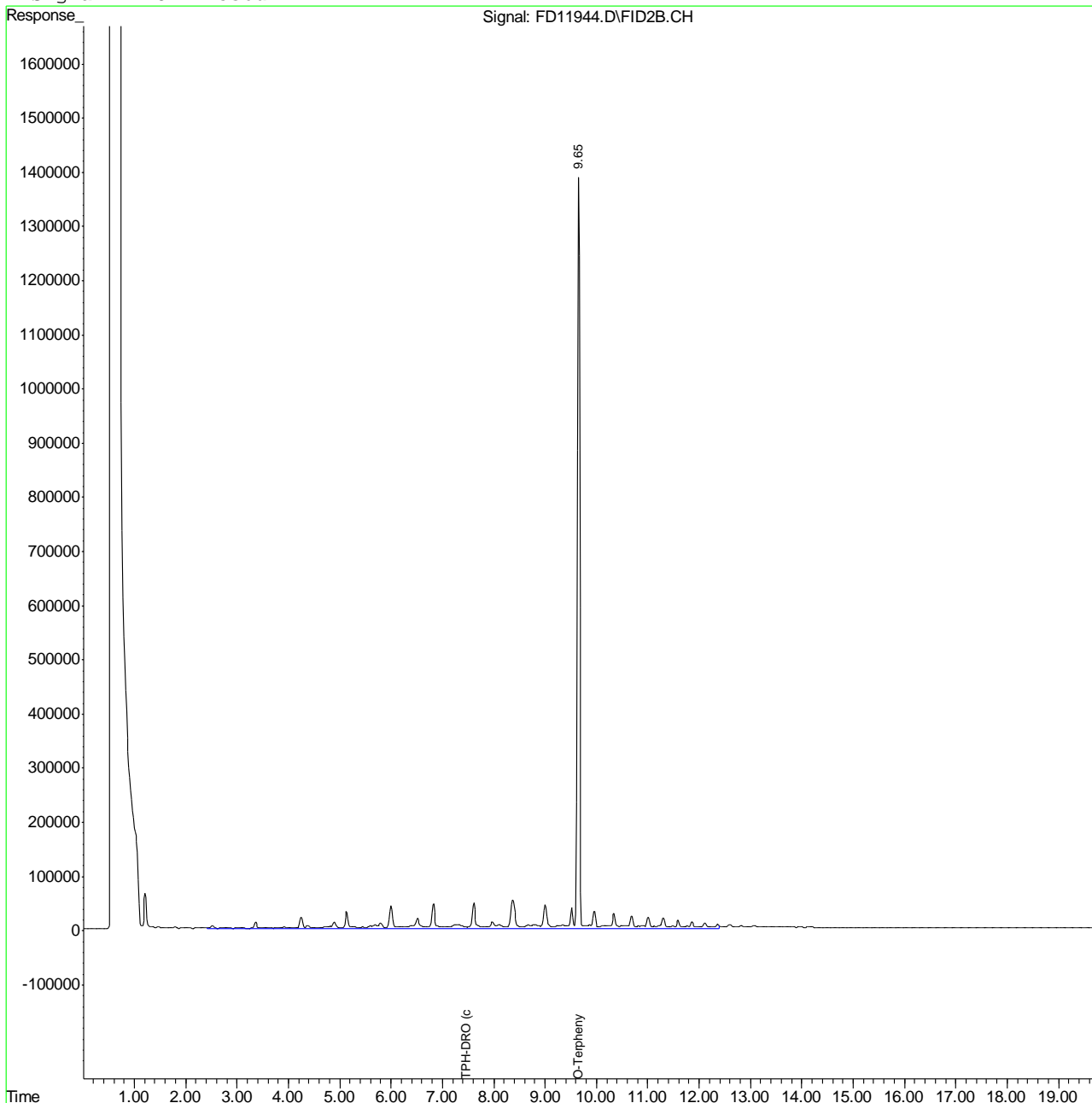
(f)=RT Delta > 1/2 Window (m)=manual int.
FD11944.D GFD599.M Mon Dec 05 13:37:17 2011 GC

Quantitation Report (QT Reviewed)

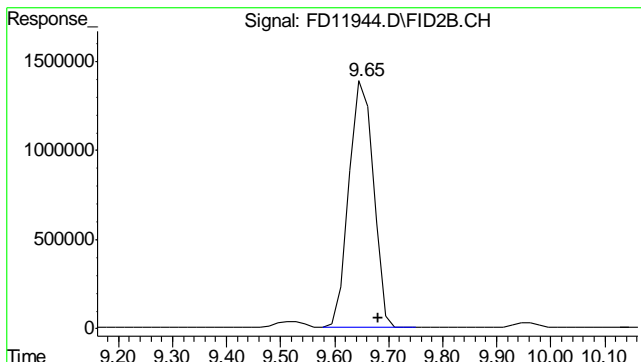
Data File : C:\MSDCHEM\2\DATA\2011\DEC\FD120411\FD11944.D Vial: 14
Acq On : 12-4-2011 04:28:00 PM Operator: TEDR
Sample : D29786-1 Inst : FID5
Misc : OP4919,GFD613,30.02,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: Dec 4 18:25 2011 Quant Results File: GFD599.RES

Quant Method : C:\MSDCHEM\2\METHODS\GFD599.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Tue Nov 29 09:00:39 2011
Response via : Multiple Level Calibration
DataAcq Meth : JH080911.M

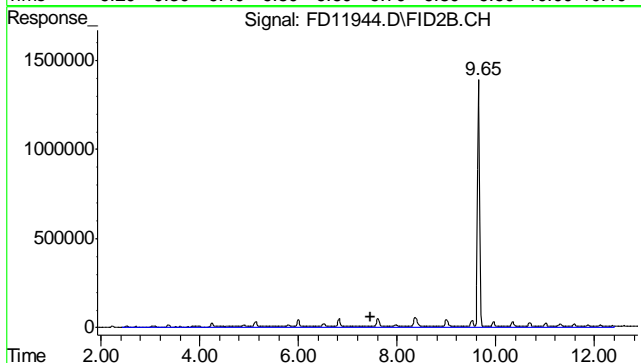
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um



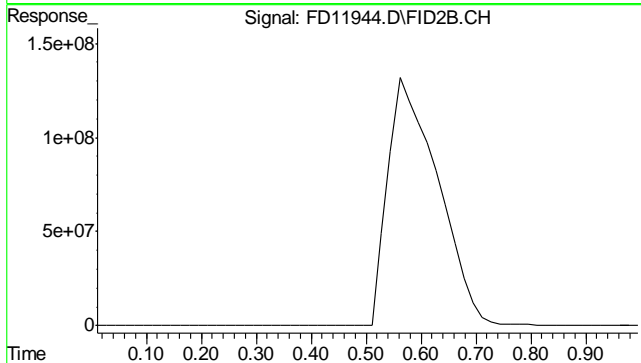
10.1.1
10



#1 O-Terphenyl
R.T.: 9.649 min
Delta R.T.: -0.031 min
Response: 44087026
Conc: 832.41 mg/L m



#2 TPH-DRO (c10-c28)
R.T.: 7.455 min
Delta R.T.: 0.000 min
Response: 38623464
Conc: 748.74 mg/L m



#9 5a-Androstane
R.T.: 0.000 min
Exp R.T.: 0.000 min
Response: 0
Conc: N.D.

10.1.1
10

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2011\DEC\FD120411\FD11933.D Vial: 3
 Acq On : 04 Dec 2011 11:46 am Operator: TEDR
 Sample : OP4919-MB Inst : FID5
 Misc : OP4919,GFD613,30.00,,,2,1 Multiplr: 1.00
 IntFile : autoint1.e
 Quant Time: Dec 04 12:13:21 2011 Quant Results File: GFD599.RES

Quant Method : C:\MSDCHEM\2\METHODS\GFD599.M (Chemstation Integrator)
 Title : 8015B TEH
 Last Update : Tue Nov 29 09:00:39 2011
 Response via : Initial Calibration
 DataAcq Meth : JH080911.M

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

Compound	R.T.	Response	Conc Units

System Monitoring Compounds			
1) S O-Terphenyl	9.65	51862949	984.269 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	7.46	2084125	40.327 mg/L

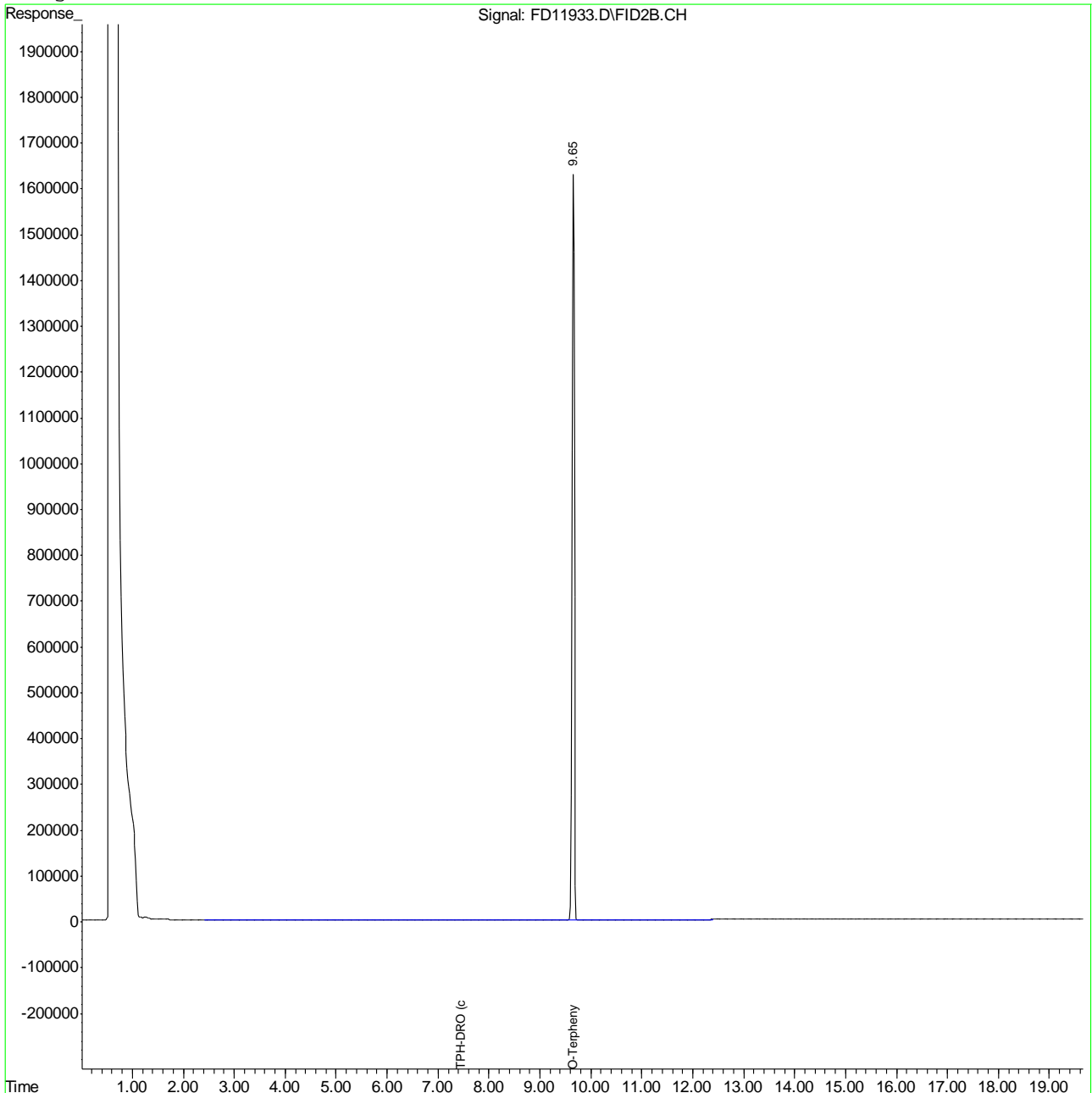
10.2.1
 10

Quantitation Report (QT Reviewed)

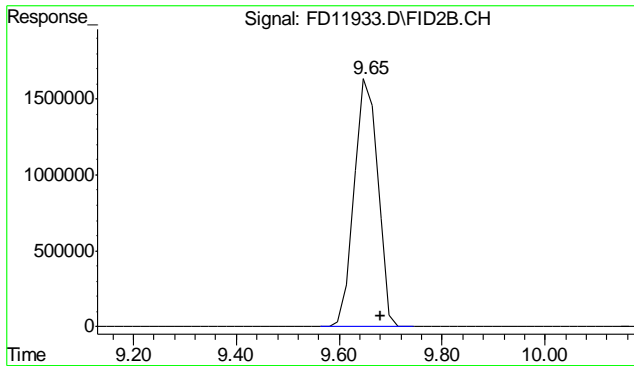
Data File : C:\MSDCHEM\2\DATA\2011\DEC\FD120411\FD11933.D Vial: 3
 Acq On : 04 Dec 2011 11:46 am Operator: TEDR
 Sample : OP4919-MB Inst : FID5
 Misc : OP4919,GFD613,30.00,,,2,1 Multiplr: 1.00
 IntFile : autoint1.e
 Quant Time: Dec 4 16:22 2011 Quant Results File: GFD599.RES

Quant Method : C:\MSDCHEM\2\METHODS\GFD599.M (Chemstation Integrator)
 Title : 8015B TEH
 Last Update : Tue Nov 29 09:00:39 2011
 Response via : Multiple Level Calibration
 DataAcq Meth : JH080911.M

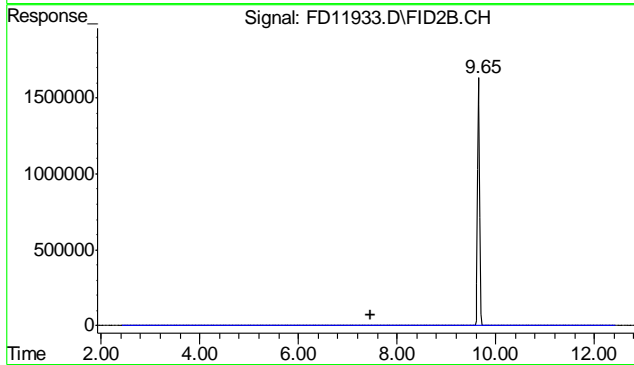
Volume Inj. : 1ul
 Signal Phase : RTX-5
 Signal Info : 530um



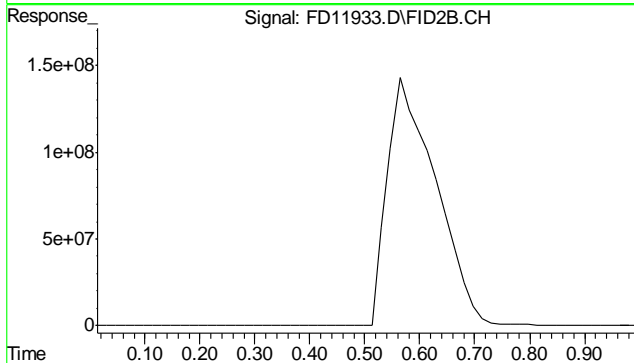
10.2.1
10



#1 O-Terphenyl
 R.T.: 9.652 min
 Delta R.T.: -0.028 min
 Response: 51862949
 Conc: 984.27 mg/L m



#2 TPH-DRO (c10-c28)
 R.T.: 7.455 min
 Delta R.T.: 0.000 min
 Response: 2084125
 Conc: 40.33 mg/L m



#9 5a-Androstane
 R.T.: 0.000 min
 Exp R.T.: 0.000 min
 Response: 0
 Conc: N.D.

10.2.1
10