



05/17/12

Technical Report for

XTO Energy

PCU 297-10B

1105-20A

Accutest Job Number: D34408

Sampling Date: 05/09/12

Report to:

KRW Consulting, Inc.
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Lakewood, CO 80214
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jhess@krwconsulting.com; crachak@krwconsulting.com;
ATTN: Dwayne Knudson

Total number of pages in report: 55



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.

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Sample Summary

XTO Energy

Job No: D34408

PCU 297-10B

Project No: 1105-20A

Sample Number	Collected		Time By	Received	Matrix		Client Sample ID
	Date				Code	Type	
D34408-1	05/09/12	10:50	CB	05/10/12	SO	Soil	SUBLINER EXCAVATION CRUSHED 5/2
D34408-2	05/09/12	10:55	CB	05/10/12	SO	Soil	SUBLINER EXCAVATION CRUSHED 5/3

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



CASE NARRATIVE / CONFORMANCE SUMMARY

Client: XTO Energy

Job No D34408

Site: PCU 297-10B

Report Date 5/17/2012 4:23:49 PM

On 05/10/2012, 2 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D34408 was assigned to the project. The lab sample IDs, client sample IDs, 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 GC By Method SW846 8015B

Matrix SO

Batch ID: GGB890

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34232-1MS, D34232-1MSD were used as the QC samples indicated.

Extractables by GC By Method SW846-8015B

Matrix SO

Batch ID: OP5868

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34406-1MS, D34406-1MSD were used as the QC samples indicated.

Metals By Method SW846 6020A

Matrix SO

Batch ID: MP7459

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D34340-5MS, D34340-5MSD, D34340-5SDL were used as the QC samples for the metals analysis.

Wet Chemistry By Method SM19 2540B M

Matrix SO

Batch ID: GN14914

- 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:	SUBLINER EXCAVATION CRUSHED 5/2					Date Sampled:	05/09/12
Lab Sample ID:	D34408-1					Date Received:	05/10/12
Matrix:	SO - Soil					Percent Solids:	89.3
Method:	SW846 8015B						
Project:	PCU 297-10B						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB15977.D	1	05/10/12	SK	n/a	n/a	GGB890
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)	20.2	12	6.2	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	92%		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:	SUBLINER EXCAVATION CRUSHED 5/2					Date Sampled:	05/09/12
Lab Sample ID:	D34408-1					Date Received:	05/10/12
Matrix:	SO - Soil					Percent Solids:	89.3
Method:	SW846-8015B SW846 3546						
Project:	PCU 297-10B						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD13693.D	1	05/11/12	AV	05/11/12	OP5868	GFD722
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)	2240	15	9.7	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	92%		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

Report of Analysis

Client Sample ID:	SUBLINER EXCAVATION CRUSHED 5/2	Date Sampled:	05/09/12
Lab Sample ID:	D34408-1	Date Received:	05/10/12
Matrix:	SO - Soil	Percent Solids:	89.3
Project:	PCU 297-10B		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	10.6	0.11	mg/kg	5	05/11/12	05/17/12 GJ	SW846 6020A ¹	SW846 3050B ²

(1) Instrument QC Batch: MA2430
(2) Prep QC Batch: MP7459

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Page 1 of 1

Client Sample ID:	SUBLINER EXCAVATION CRUSHED 5/3					Date Sampled:	05/09/12
Lab Sample ID:	D34408-2					Date Received:	05/10/12
Matrix:	SO - Soil					Percent Solids:	88.8
Method:	SW846 8015B						
Project:	PCU 297-10B						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB15978.D	1	05/10/12	SK	n/a	n/a	GGB890
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.1 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	24.8	12	6.2	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	93%		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:	SUBLINER EXCAVATION CRUSHED 5/3					Date Sampled:	05/09/12
Lab Sample ID:	D34408-2					Date Received:	05/10/12
Matrix:	SO - Soil					Percent Solids:	88.8
Method:	SW846-8015B SW846 3546						
Project:	PCU 297-10B						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD13695.D	1	05/11/12	AV	05/11/12	OP5868	GFD722
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)	2570	15	9.8	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	107%		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

Report of Analysis

Client Sample ID:	SUBLINER EXCAVATION CRUSHED 5/3	Date Sampled:	05/09/12
Lab Sample ID:	D34408-2	Date Received:	05/10/12
Matrix:	SO - Soil	Percent Solids:	88.8
Project:	PCU 297-10B		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	10.3	0.11	mg/kg	5	05/11/12	05/17/12 GJ	SW846 6020A ¹	SW846 3050B ²

(1) Instrument QC Batch: MA2430
(2) Prep QC Batch: MP7459

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- 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

FED-EX Tracking #	Bottle Order Control #
Accutest Quote #	Accutest Job # D34408

[illegible]

D34408: Chain of Custody

Page 1 of 3

Job Change Order: D34408_5/11/2012

Requested	5/11/2012	Received Date:	5/10/2012
Account Name:	XTO Energy	Due Date:	5/17/2012
Project	PCU 297-10B	Deliverable:	COMMBN+
CSR:	RR	TAT (Days):	5
Sample #: D34408-1, 2		Change:	Please log and analyze for ASMS on a standard turn. Please leave the original due date. Thank you.

Above Changes Per: Client - Dwayne Knudson **Date:** 5/11/2012

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

Page 1 of 1

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D34408

Client: KRW

Immediate Client Services Action Required: No

Date / Time Received: 5/10/2012 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

GC 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: D34408
Account: XTOKRWR XTO Energy
Project: PCU 297-10B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB890-MB	GB15966.D	1	05/10/12	SK	n/a	n/a	GGB890

The QC reported here applies to the following samples:

Method: SW846 8015B

D34408-1, D34408-2

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	92% 60-140%

Blank Spike Summary

Job Number: D34408
Account: XTOKRWR XTO Energy
Project: PCU 297-10B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB890-BS	GB15967.D	1	05/10/12	SK	n/a	n/a	GGB890

The QC reported here applies to the following samples:

Method: SW846 8015B

D34408-1, D34408-2

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	121	110	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	104%	60-140%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D34408
Account: XTOKRWR XTO Energy
Project: PCU 297-10B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D34232-1MS	GB15970.D	1	05/10/12	SK	n/a	n/a	GGB890
D34232-1MSD	GB15971.D	1	05/10/12	SK	n/a	n/a	GGB890
D34232-1	GB15968.D	1	05/10/12	SK	n/a	n/a	GGB890

The QC reported here applies to the following samples: Method: SW846 8015B

D34408-1, D34408-2

CAS No.	Compound	D34232-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	88.8		161	255	103	252	101	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D34232-1	Limits
120-82-1	1,2,4-Trichlorobenzene	92%	88%	88%	60-140%

GC Volatiles

Raw Data



Koroush Vaziri
05/11/12 09:32

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\051012\GB15977.D\FID1A.CH Vial: 15
 Signal #2 : Y:\1\DATA\051012\GB15977.D\FID2B.CH
 Acq On : 10 May 2012 8:44 pm Operator: StephK
 Sample : D34408-1, 50X Inst : GC/MS Ins
 Misc : GC2827,GGB890,5.037,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: May 11 08:42:45 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Fri May 11 08:39:03 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	2869306	91.572 %	m
10) S	1,2,4-Trichlorobenzene (P)	14.33	35842246	220.530 %	
Target Compounds					
1) H	TVH-Gasoline	7.23	22735280	0.328 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	119651	0.302 ug/L	
7) T	Ethylbenzene	0.00	0	N.D. ug/L	d
8) T	m,p-Xylene	10.42	523599	1.061 ug/L	
9) T	o-Xylene	10.92	175965	0.536 ug/L	
11) T	Naphthalene	14.53	30690030	155.543 ug/L	

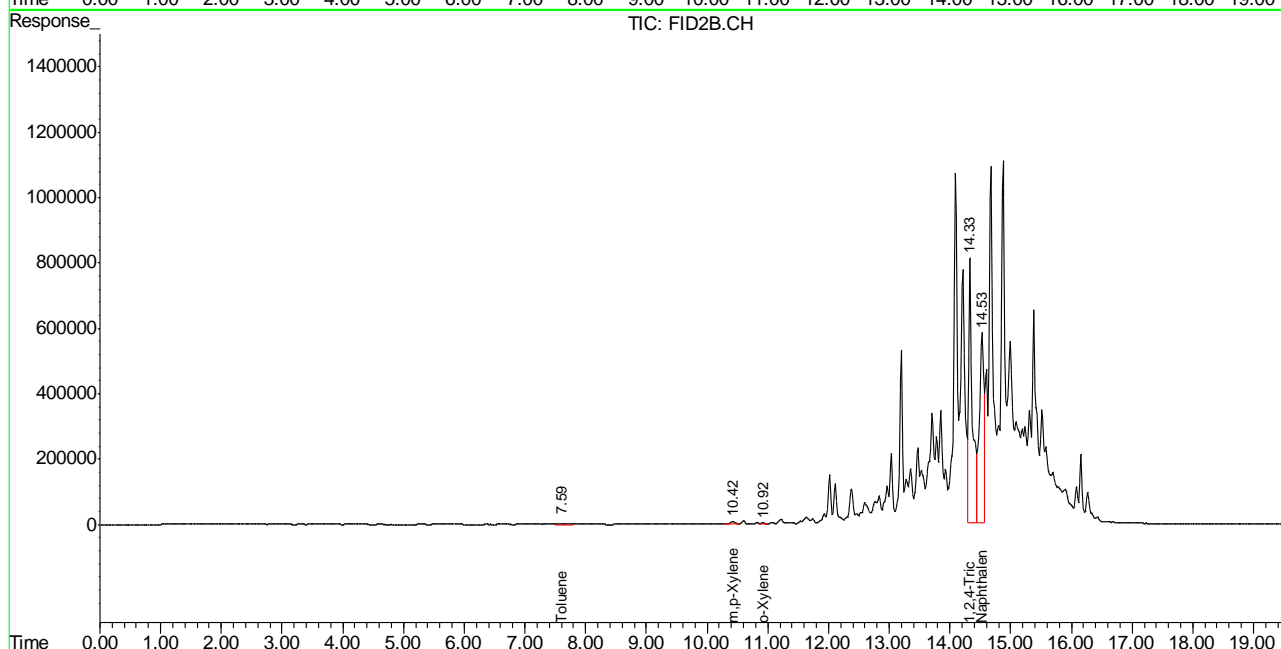
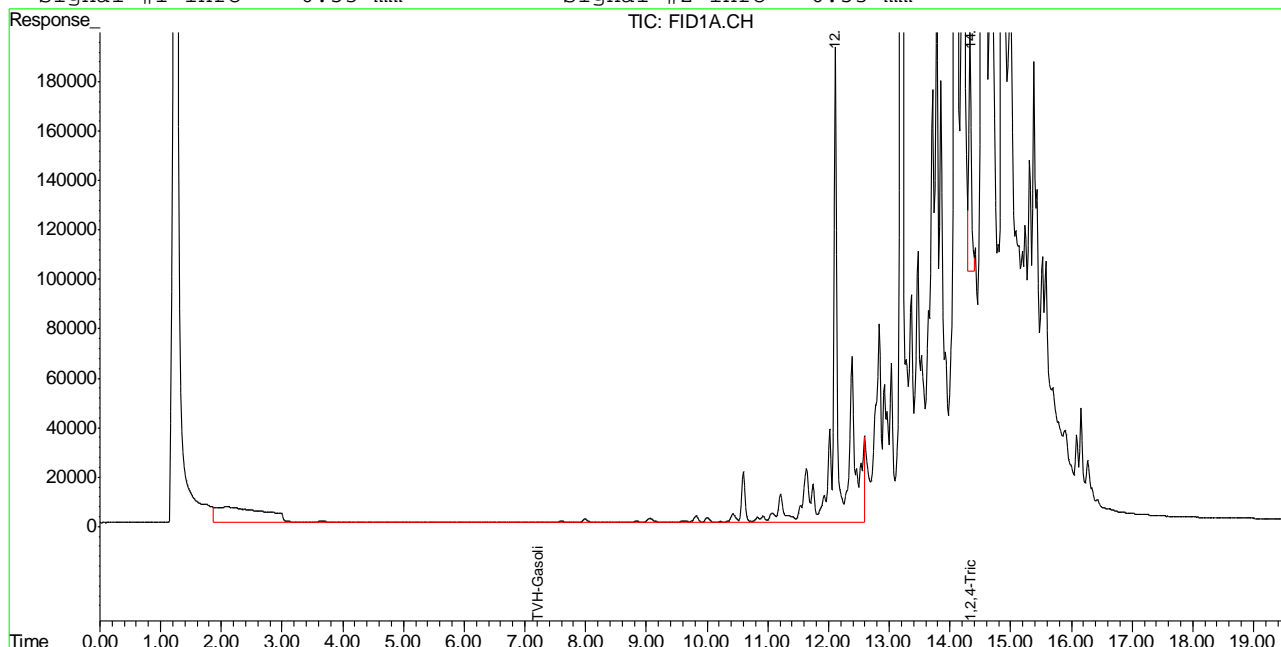
(f)=RT Delta > 1/2 Window (m)=manual int.
 GB15977.D TB868GB868SOIL.M Fri May 11 09:00:10 2012 GC

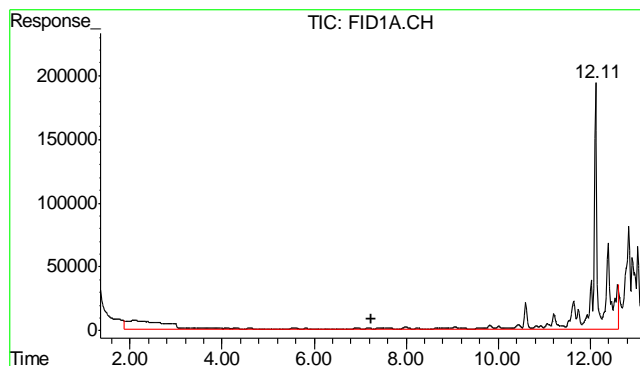
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\051012\GB15977.D\FID1A.CH Vial: 15
 Signal #2 : Y:\1\DATA\051012\GB15977.D\FID2B.CH
 Acq On : 10 May 2012 8:44 pm Operator: StephK
 Sample : D34408-1, 50X Inst : GC/MS Ins
 Misc : GC2827,GGB890,5.037,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: May 11 7:54 2012 Quant Results File: TB868GB868SOIL.RES

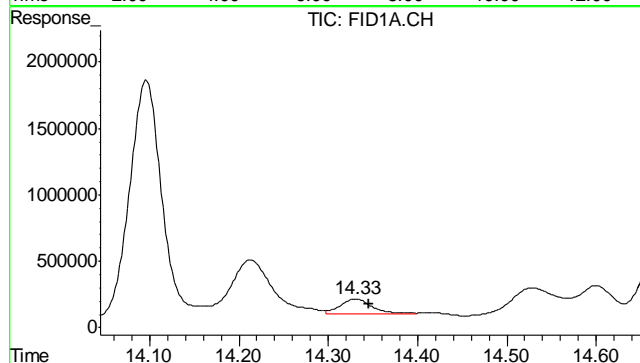
Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Fri May 11 08:39:03 2012
 Response via : Multiple Level Calibration
 DataAcq Meth : TVB4.M

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

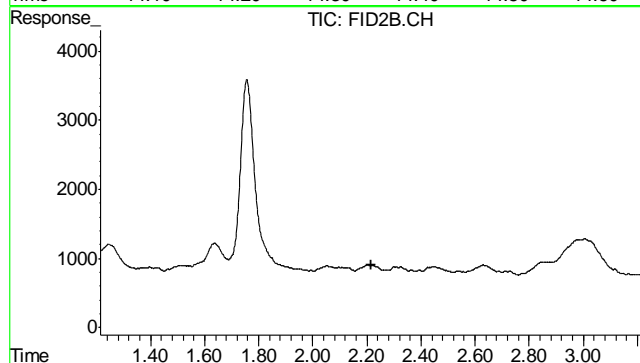




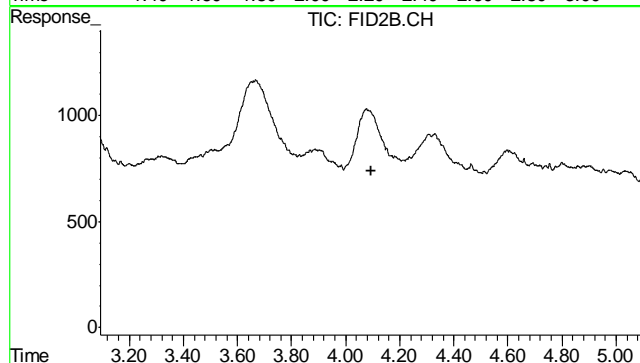
#1 TVH-Gasoline
 R.T.: 7.230 min
 Delta R.T.: 0.000 min
 Response: 22735280
 Conc: 0.33 mg/L m



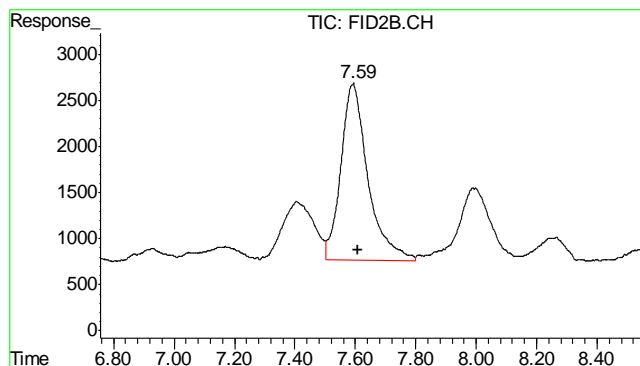
#2 1,2,4-Trichlorobenzene
 R.T.: 14.330 min
 Delta R.T.: -0.015 min
 Response: 2869306
 Conc: 91.57 % m



#4 Methyl-t-butyl-ether
 R.T.: 0.000 min
 Exp R.T.: 2.215 min
 Response: 0
 Conc: N.D.

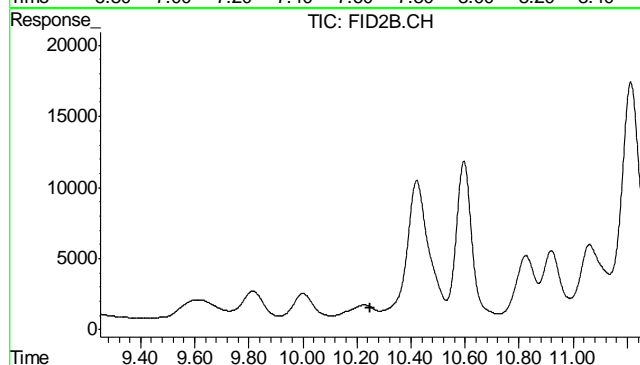


#5 Benzene
 R.T.: 0.000 min
 Exp R.T.: 4.093 min
 Response: 0
 Conc: N.D.



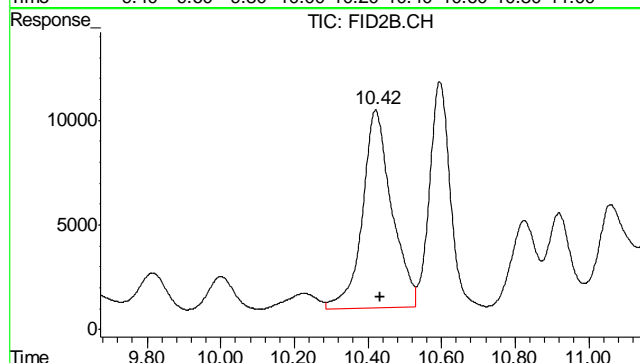
#6 Toluene

R.T.: 7.593 min
Delta R.T.: -0.017 min
Response: 119651
Conc: 0.30 ug/L



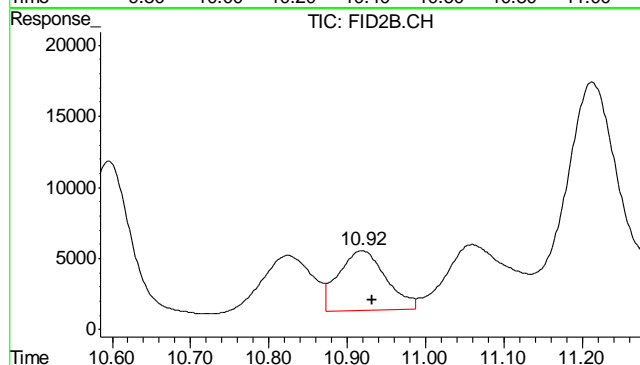
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T.: 10.250 min
Response: 0
Conc: N.D.



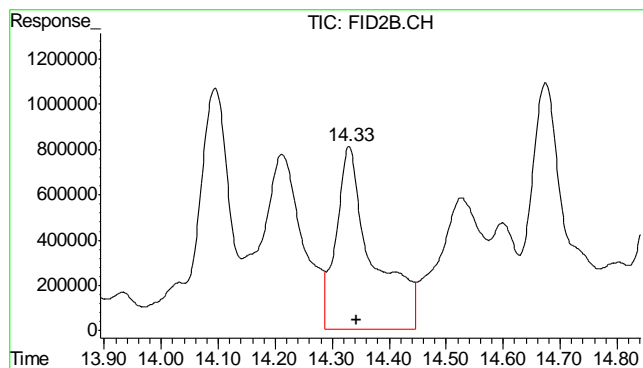
#8 m,p-Xylene

R.T.: 10.421 min
Delta R.T.: -0.011 min
Response: 523599
Conc: 1.06 ug/L



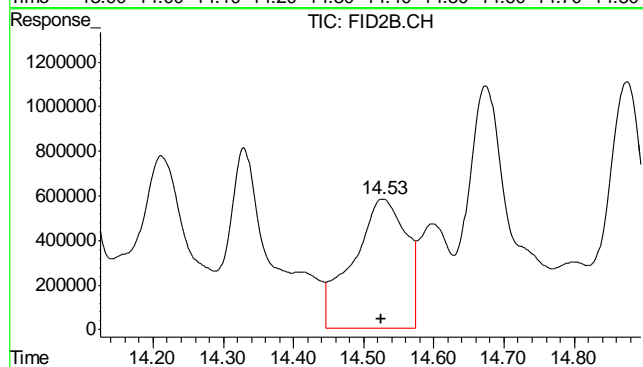
#9 o-Xylene

R.T.: 10.919 min
Delta R.T.: -0.014 min
Response: 175965
Conc: 0.54 ug/L



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

R.T.: 14.330 min
Delta R.T.: -0.013 min
Response: 35842246
Conc: 220.53 %



#11 Naphthalene

R.T.: 14.527 min
Delta R.T.: 0.003 min
Response: 30690030
Conc: 155.54 ug/L

6.1.1

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Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\051012\GB15978.D\FID1A.CH Vial: 16
Signal #2 : Y:\1\DATA\051012\GB15978.D\FID2B.CH
Acq On : 10 May 2012 9:20 pm Operator: StephK
Sample : D34408-2, 50X Inst : GC/MS Ins
Misc : GC2827,GGB890,5.082,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: May 11 08:42:48 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Fri May 11 08:39:03 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

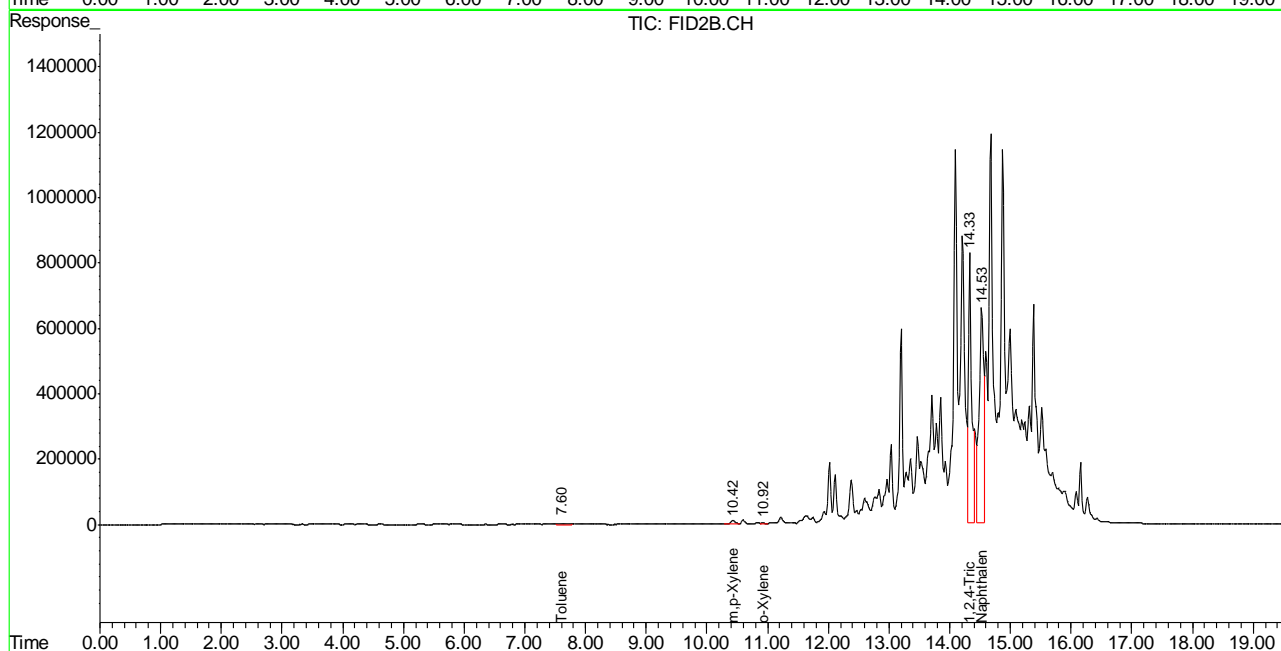
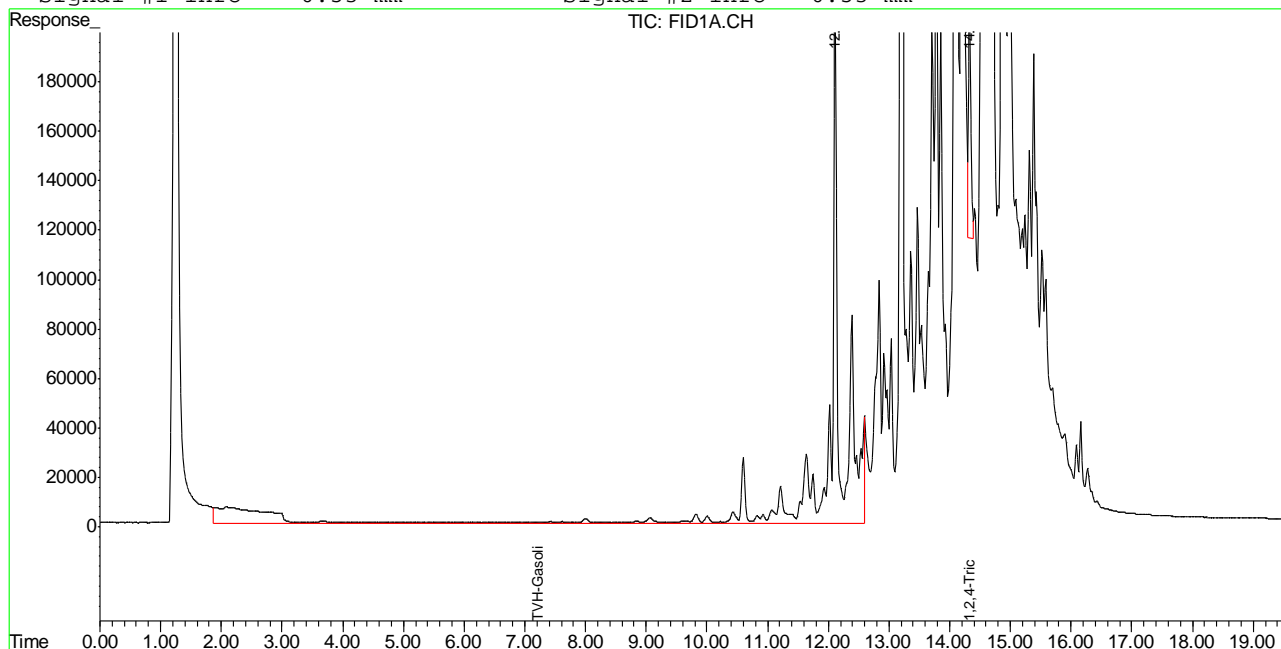
System Monitoring Compounds				
2) S 1,2,4-Trichlorobenzene	14.33	2925226	93.356 %	m
10) S 1,2,4-Trichlorobenzene (P)	14.33	30709759	188.951 %	
Target Compounds				
1) H TVH-Gasoline	7.23	27341717	0.402 mg/L	
4) T Methyl-t-butyl-ether	0.00	0	N.D. ug/L	d
5) T Benzene	0.00	0	N.D. ug/L	d
6) T Toluene	7.60	97770	0.247 ug/L	
7) T Ethylbenzene	0.00	0	N.D. ug/L	d
8) T m,p-Xylene	10.42	645681	1.395 ug/L	
9) T o-Xylene	10.92	218236	0.665 ug/L	
11) T Naphthalene	14.53	34775346	176.248 ug/L	

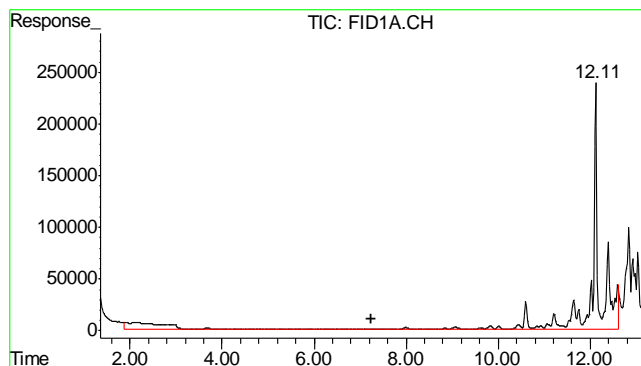
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\051012\GB15978.D\FID1A.CH Vial: 16
Signal #2 : Y:\1\DATA\051012\GB15978.D\FID2B.CH
Acq On : 10 May 2012 9:20 pm Operator: StephK
Sample : D34408-2, 50X Inst : GC/MS Ins
Misc : GC2827,GGB890,5.082,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: May 11 7:55 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Fri May 11 08:39:03 2012
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

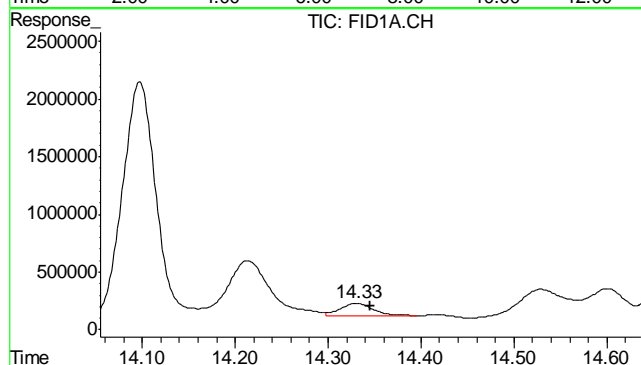
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





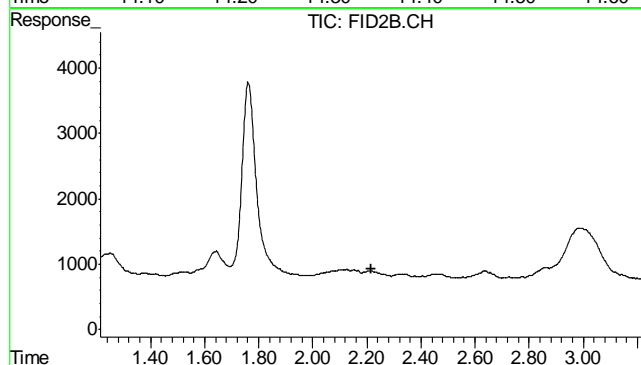
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 27341717
Conc: 0.40 mg/L m



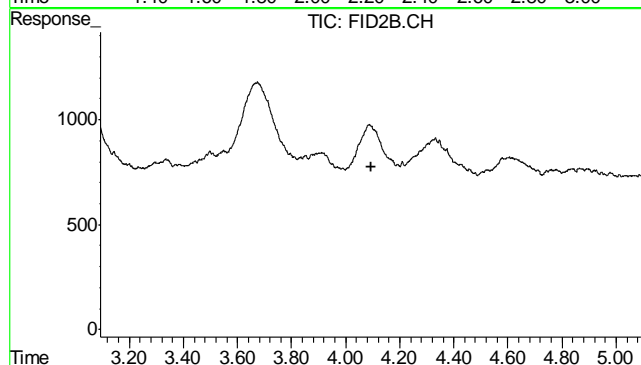
#2 1,2,4-Trichlorobenzene

R.T.: 14.330 min
Delta R.T.: -0.015 min
Response: 2925226
Conc: 93.36 % m



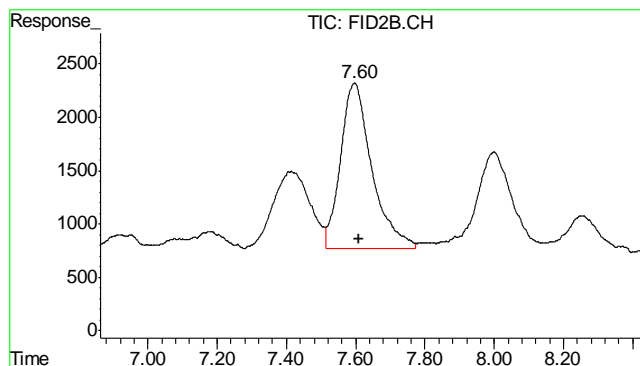
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T.: 2.215 min
Response: 0
Conc: N.D.



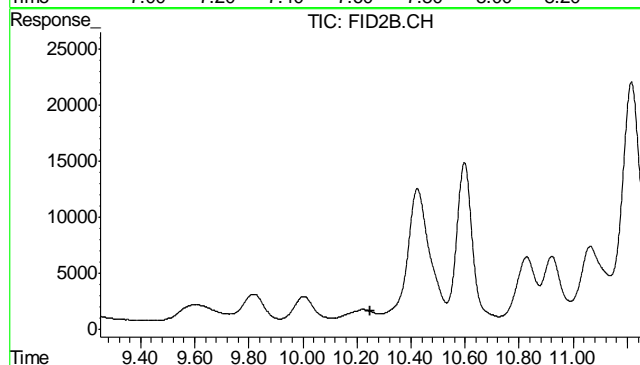
#5 Benzene

R.T.: 0.000 min
Exp R.T.: 4.093 min
Response: 0
Conc: N.D.



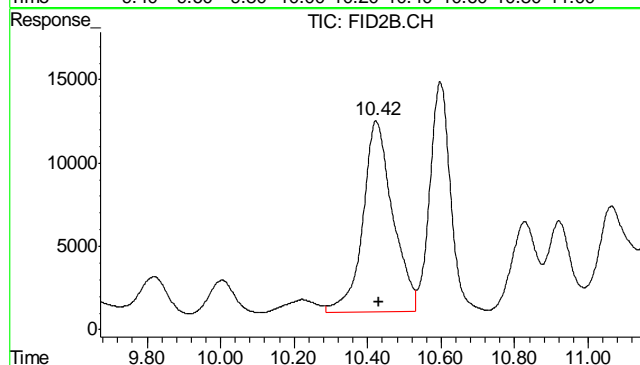
#6 Toluene

R.T.: 7.596 min
Delta R.T.: -0.013 min
Response: 97770
Conc: 0.25 ug/L



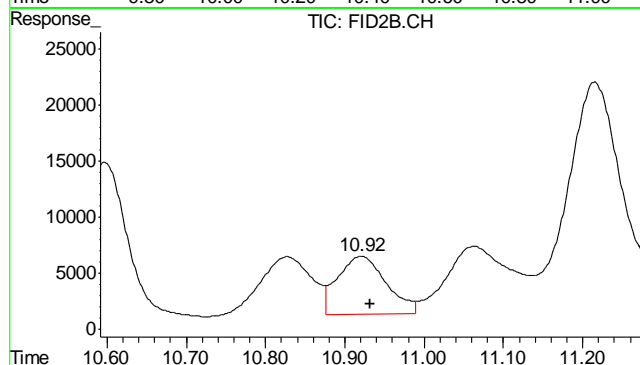
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T.: 10.250 min
Response: 0
Conc: N.D.



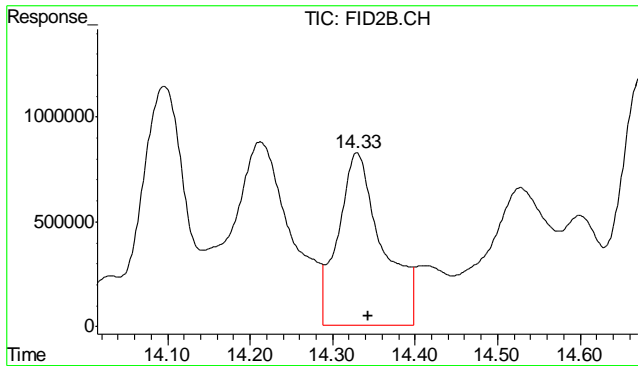
#8 m,p-Xylene

R.T.: 10.423 min
Delta R.T.: -0.009 min
Response: 645681
Conc: 1.40 ug/L



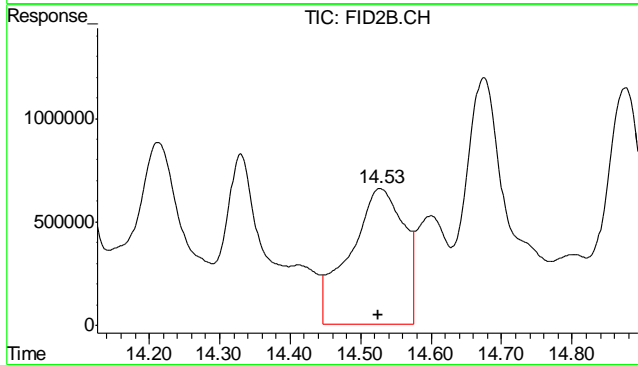
#9 o-Xylene

R.T.: 10.920 min
Delta R.T.: -0.012 min
Response: 218236
Conc: 0.66 ug/L



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

R.T.: 14.330 min
Delta R.T.: -0.013 min
Response: 30709759
Conc: 188.95 %



#11 Naphthalene

R.T.: 14.528 min
Delta R.T.: 0.003 min
Response: 34775346
Conc: 176.25 ug/L

Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\051012\GB15966.D\FID1A.CH Vial: 4
 Signal #2 : Y:\1\DATA\051012\GB15966.D\FID2B.CH
 Acq On : 10 May 2012 2:12 pm Operator: StephK
 Sample : MB Inst : GC/MS Ins
 Misc : GC2827,GGB890,5.000,,100,5,1 Multiplr: 1.00
 IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
 Quant Time: May 11 08:39:25 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
 Title : 8015B/8021B TVH/BTEX
 Last Update : Fri May 11 08:39:03 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	2878837	91.876	%
10) S	1,2,4-Trichlorobenzene (P)	14.33	15334877	94.352	%
Target Compounds					
1) H	TVH-Gasoline	7.23	4122924	<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	7.60	107197	0.271	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	14.51	280800	1.423	ug/L m

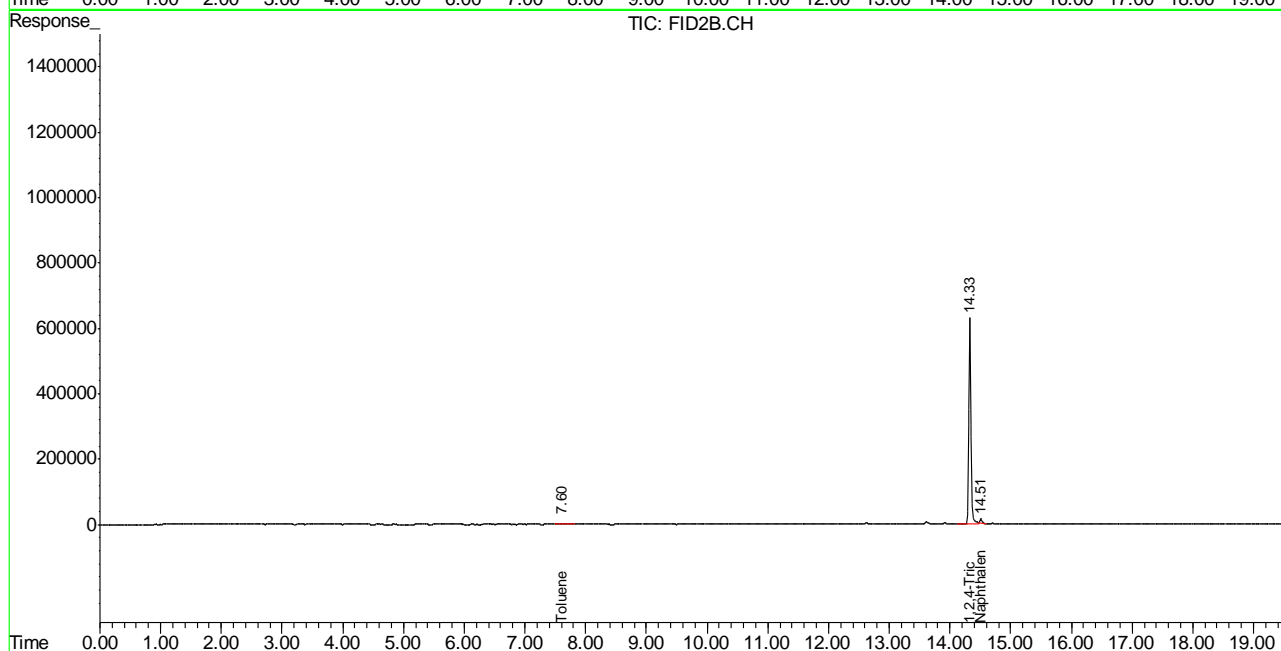
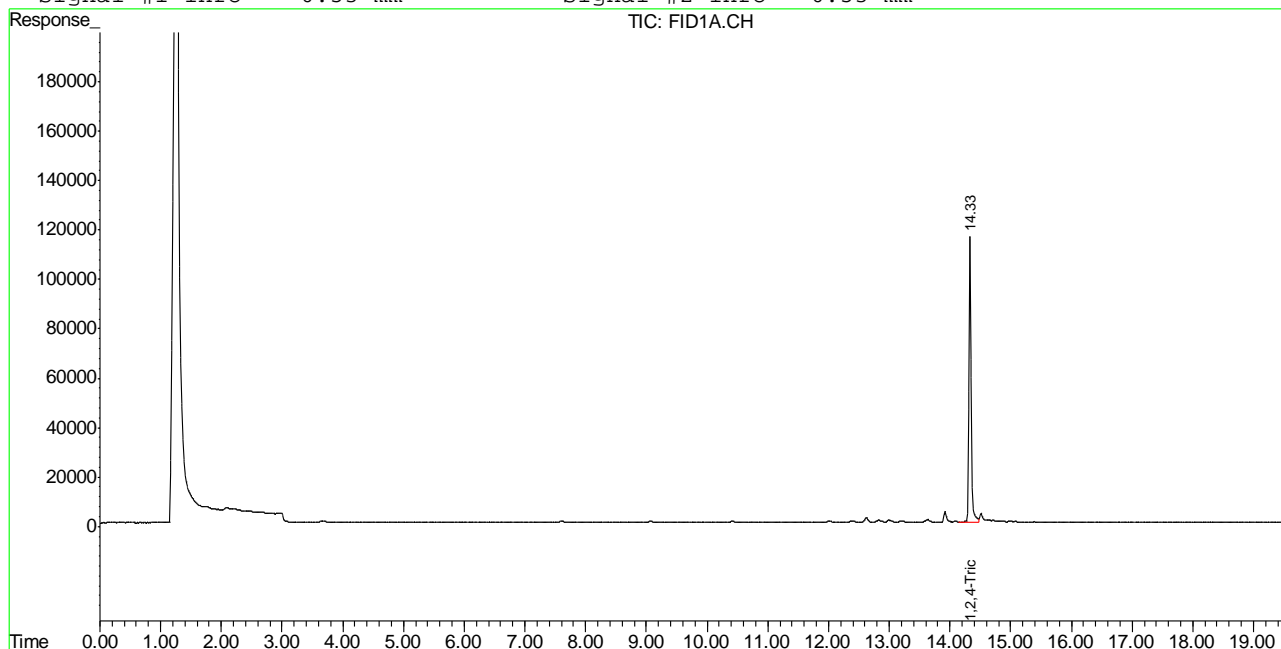
 (f)=RT Delta > 1/2 Window (m)=manual int.
 GB15966.D TB868GB868SOIL.M Fri May 11 08:59:43 2012 GC

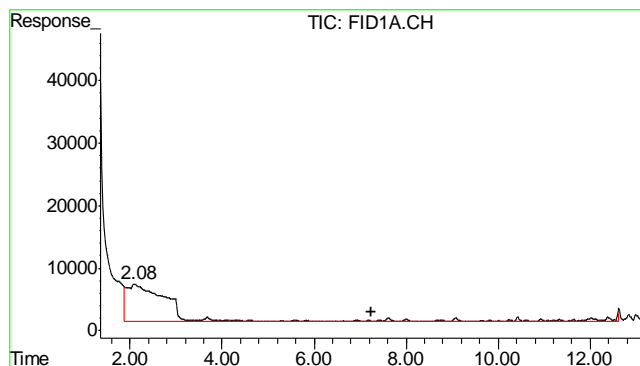
Quantitation Report (QT Reviewed)

Signal #1 : Y:\1\DATA\051012\GB15966.D\FID1A.CH Vial: 4
Signal #2 : Y:\1\DATA\051012\GB15966.D\FID2B.CH
Acq On : 10 May 2012 2:12 pm Operator: StephK
Sample : MB Inst : GC/MS Ins
Misc : GC2827,GGB890,5.000,,100,5,1 Multiplr: 1.00
IntFile Signal #1: TVH1.E IntFile Signal #2: FB2.E
Quant Time: May 11 7:50 2012 Quant Results File: TB868GB868SOIL.RES

Quant Method : C:\MSDCHEM\1...\TB868GB868SOIL.M (Chemstation Integrator)
Title : 8015B/8021B TVH/BTEX
Last Update : Fri May 11 08:39:03 2012
Response via : Multiple Level Calibration
DataAcq Meth : TVB4.M

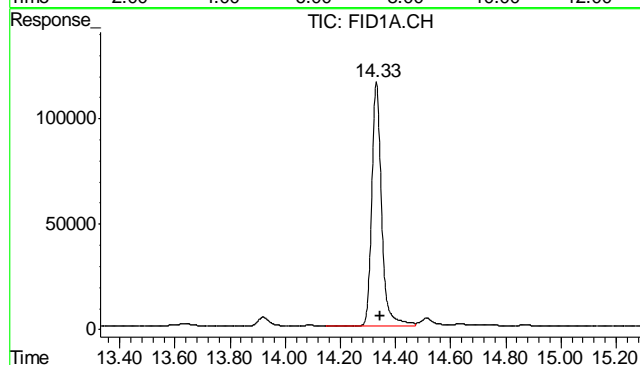
Volume Inj. :
Signal #1 Phase : DB-624 Signal #2 Phase: DB-624
Signal #1 Info : 0.53 mm Signal #2 Info : 0.53 mm





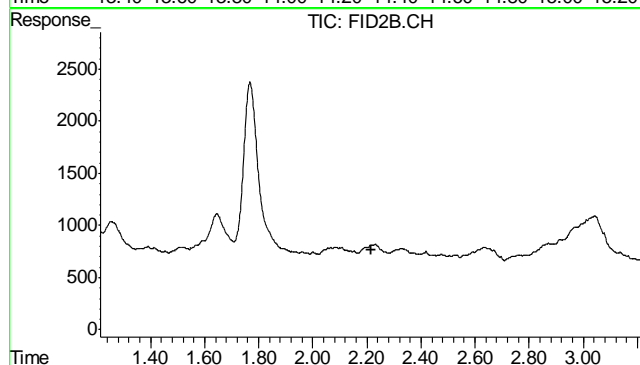
#1 TVH-Gasoline

R.T.: 7.230 min
Delta R.T.: 0.000 min
Response: 4122924
Conc: N.D.



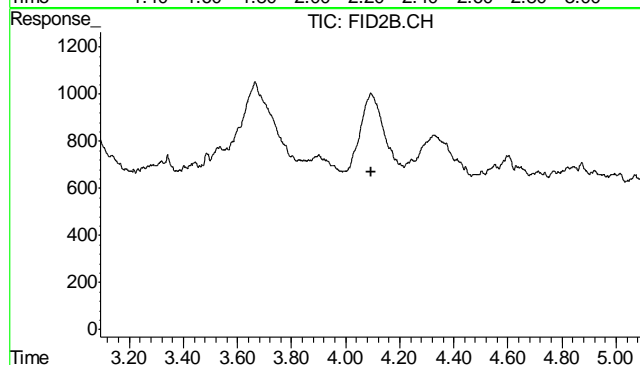
#2 1,2,4-Trichlorobenzene

R.T.: 14.331 min
Delta R.T.: -0.014 min
Response: 2878837
Conc: 91.88 %



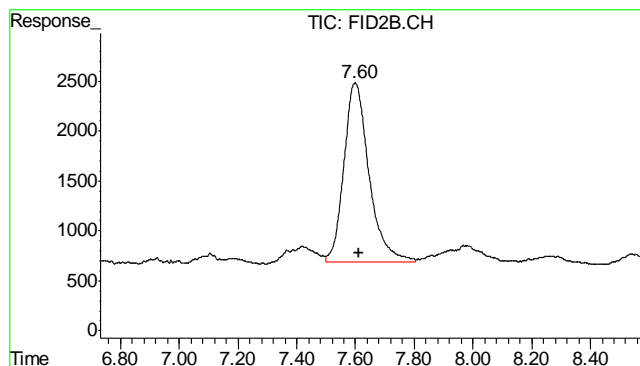
#4 Methyl-t-butyl-ether

R.T.: 0.000 min
Exp R.T.: 2.215 min
Response: 0
Conc: N.D.



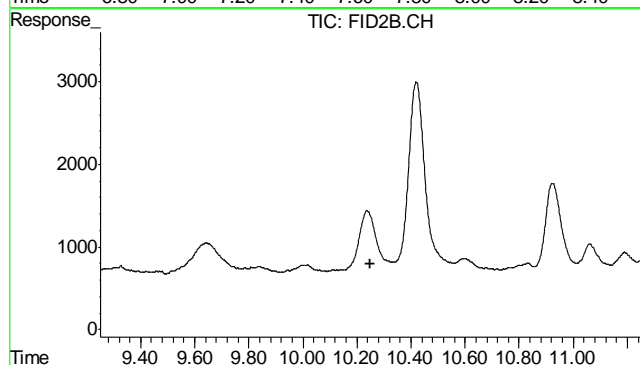
#5 Benzene

R.T.: 0.000 min
Exp R.T.: 4.093 min
Response: 0
Conc: N.D.



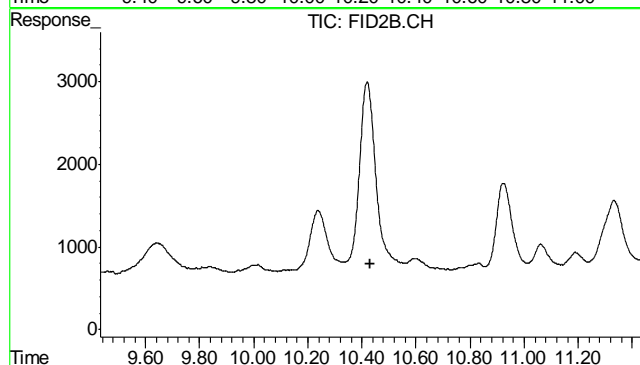
#6 Toluene

R.T.: 7.598 min
Delta R.T.: -0.012 min
Response: 107197
Conc: 0.27 ug/L



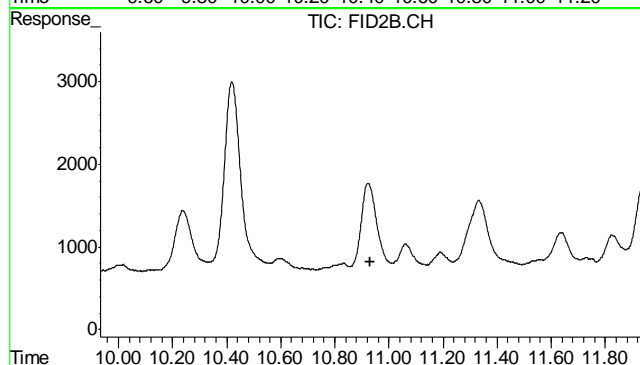
#7 Ethylbenzene

R.T.: 0.000 min
Exp R.T.: 10.250 min
Response: 0
Conc: N.D.



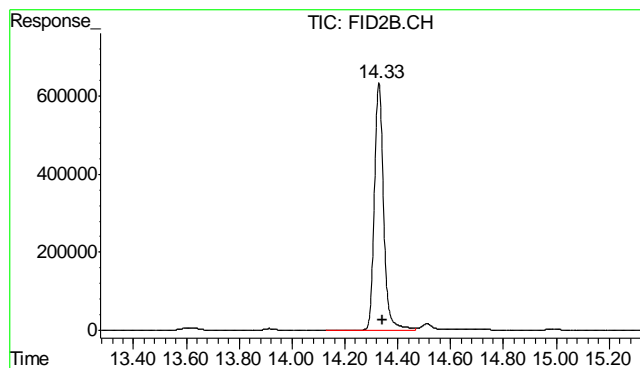
#8 m,p-Xylene

R.T.: 0.000 min
Exp R.T.: 10.432 min
Response: 0
Conc: N.D.



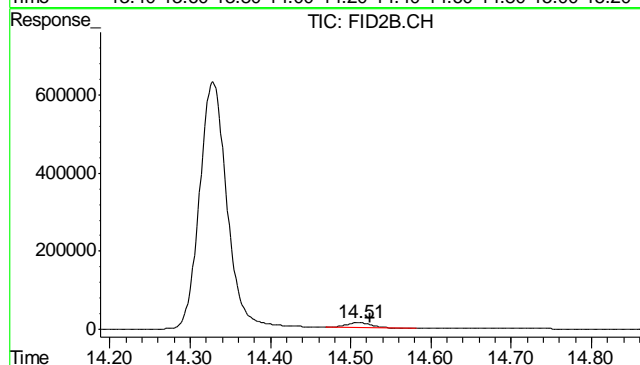
#9 o-Xylene

R.T.: 0.000 min
Exp R.T.: 10.932 min
Response: 0
Conc: N.D.



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

R.T.: 14.329 min
Delta R.T.: -0.014 min
Response: 15334877
Conc: 94.35 %



#11 Naphthalene

R.T.: 14.510 min
Delta R.T.: -0.015 min
Response: 280800
Conc: 1.42 ug/L m

6.2.1

6

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: D34408
Account: XTOKRWR XTO Energy
Project: PCU 297-10B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5868-MB	FD13681.D	1	05/11/12	AV	05/11/12	OP5868	GFD722

The QC reported here applies to the following samples:

Method: SW846-8015B

D34408-1, D34408-2

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	109% 43-136%

Blank Spike Summary

Page 1 of 1

Job Number: D34408
Account: XTOKRWR XTO Energy
Project: PCU 297-10B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5868-BS	FD13683.D	1	05/11/12	AV	05/11/12	OP5868	GFD722

The QC reported here applies to the following samples:

Method: SW846-8015B

D34408-1, D34408-2

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	563	84	58-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	105%	43-136%

7.2.1

7

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D34408
Account: XTOKRWR XTO Energy
Project: PCU 297-10B

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5868-MS	FD13685.D	1	05/11/12	AV	05/11/12	OP5868	GFD722
OP5868-MSD	FD13687.D	1	05/11/12	AV	05/11/12	OP5868	GFD722
D34406-1	FD13689.D	1	05/11/12	AV	05/11/12	OP5868	GFD722

The QC reported here applies to the following samples: Method: SW846-8015B

D34408-1, D34408-2

CAS No.	Compound	D34406-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	122		733	584	63	631	69	8	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D34406-1	Limits
84-15-1	o-Terphenyl	92%	93%	91%	43-136%

GC Semi-volatiles

Raw Data

∞

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\MAY\FD051112.SEC\FD13693.D Vial: 59
Acq On : 5-11-2012 04:34:44 PM Operator: ashleyv
Sample : D34408-1 Inst : FID5
Misc : OP5868,GFD722,30.01,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: May 14 08:05:41 2012 Quant Results File: DRO-GFD720R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD720R.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Fri May 11 09:49:49 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	9.56	34916193	923.523 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	7.37	1207038639	30004.233 mg/L

8.1.1

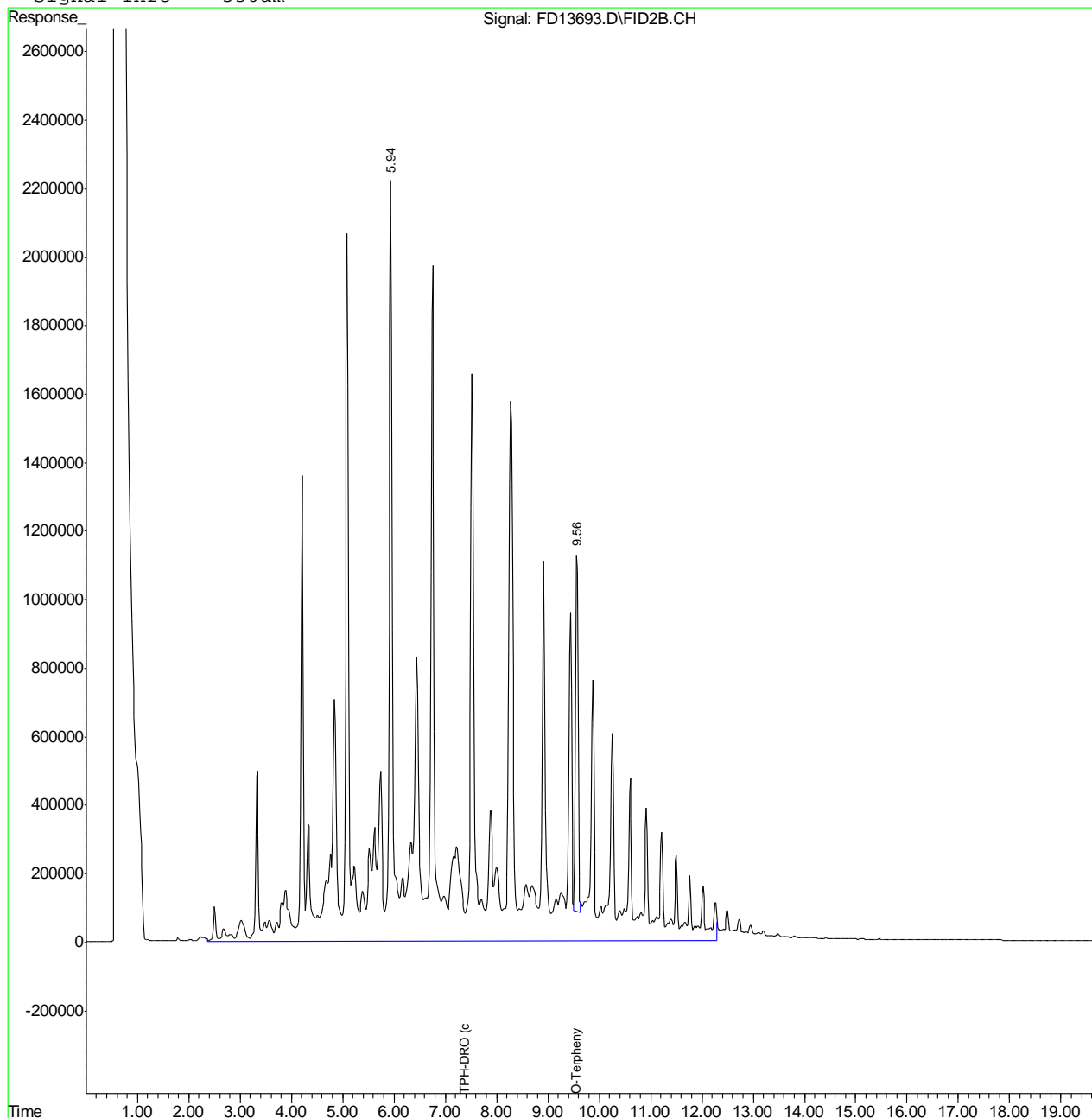
8

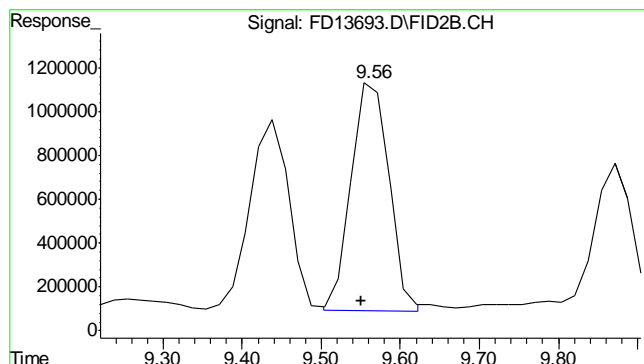
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\MAY\FD051112.SEC\FD13693.D Vial: 59
Acq On : 5-11-2012 04:34:44 PM Operator: ashleyv
Sample : D34408-1 Inst : FID5
Misc : OP5868,GFD722,30.01,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: May 14 9:26 2012 Quant Results File: DRO-GFD720R.RES

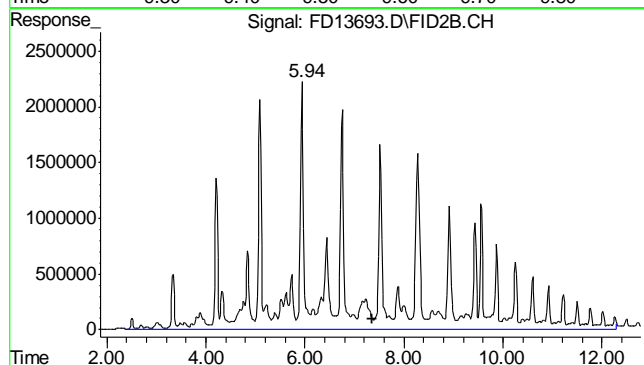
Quant Method : C:\MSDCHEM\2...\DRO-GFD720R.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Fri May 11 09:49:49 2012
Response via : Multiple Level Calibration
DataAcq Meth : DRODUAL.M

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





#1 O-Terphenyl
 R.T.: 9.561 min
 Delta R.T.: 0.011 min
 Response: 34916193
 Conc: 923.52 mg/L m



#2 TPH-DRO (c10-c28)
 R.T.: 7.370 min
 Delta R.T.: 0.000 min
 Response: 1207038639
 Conc: 30004.23 mg/L m

8.1.1

8

Manual Integrations

APPROVED

(compounds with "m" flag)

Judy Melson

05/14/12 14:45

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\MAY\FD051112.SEC\FD13695.D Vial: 60
Acq On : 5-11-2012 05:00:42 PM Operator: ashleyv
Sample : D34408-2 Inst : FID5
Misc : OP5868,GFD722,30.03,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: May 14 08:07:11 2012 Quant Results File: DRO-GFD720R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD720R.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Fri May 11 09:49:49 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	9.56	40327466	1066.650 mg/L m
Target Compounds			
2) H TPH-DRO (c10-c28)	7.37	1377158561	34233.027 mg/L

8.12

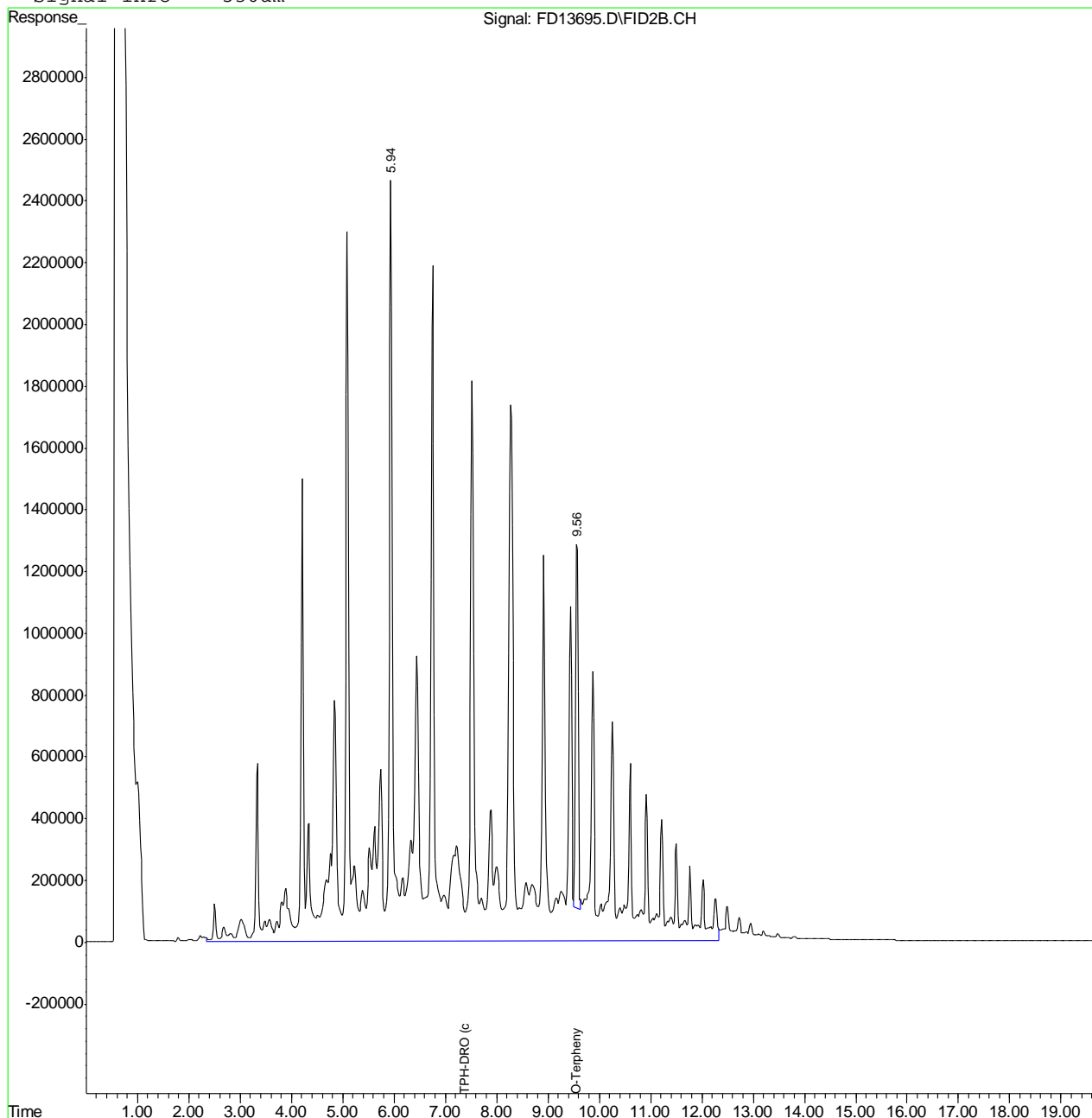
8

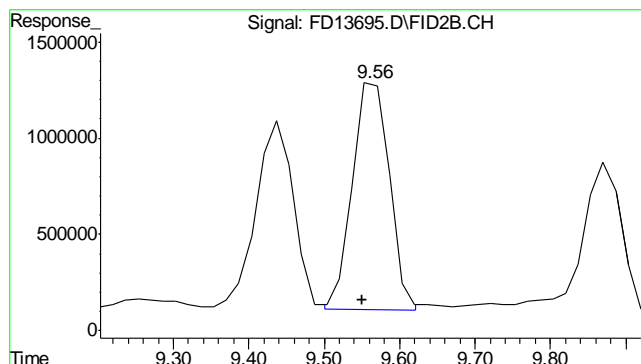
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\MAY\FD051112.SEC\FD13695.D Vial: 60
 Acq On : 5-11-2012 05:00:42 PM Operator: ashleyv
 Sample : D34408-2 Inst : FID5
 Misc : OP5868,GFD722,30.03,,,2,1 Multiplr: 1.00
 IntFile : autoint1.e
 Quant Time: May 14 8:08 2012 Quant Results File: DRO-GFD720R.RES

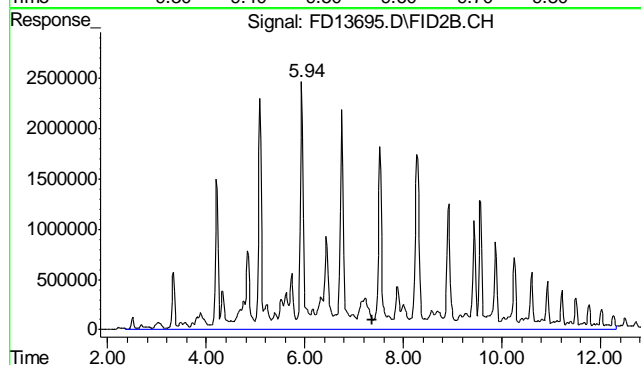
Quant Method : C:\MSDCHEM\2...\DRO-GFD720R.M (Chemstation Integrator)
 Title : 8015B TEH
 Last Update : Fri May 11 09:49:49 2012
 Response via : Multiple Level Calibration
 DataAcq Meth : DRODUAL.M

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





#1 O-Terphenyl
 R.T.: 9.561 min
 Delta R.T.: 0.011 min
 Response: 40327466
 Conc: 1066.65 mg/L m



#2 TPH-DRO (c10-c28)
 R.T.: 7.370 min
 Delta R.T.: 0.000 min
 Response: 1377158561
 Conc: 34233.03 mg/L m

8.12
8

Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\MAY\FD051112.SEC\FD13681.D Vial: 53
Acq On : 5-11-2012 01:58:13 PM Operator: ashleyv
Sample : OP5868-MB Inst : FID5
Misc : OP5868,GFD722,30.00,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: May 14 09:29:06 2012 Quant Results File: DRO-GFD720R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD720R.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Fri May 11 09:49:49 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	9.57	41046326	1085.663 mg/L
Target Compounds			
2) H TPH-DRO (c10-c28)	7.37	2292326	56.982 mg/L

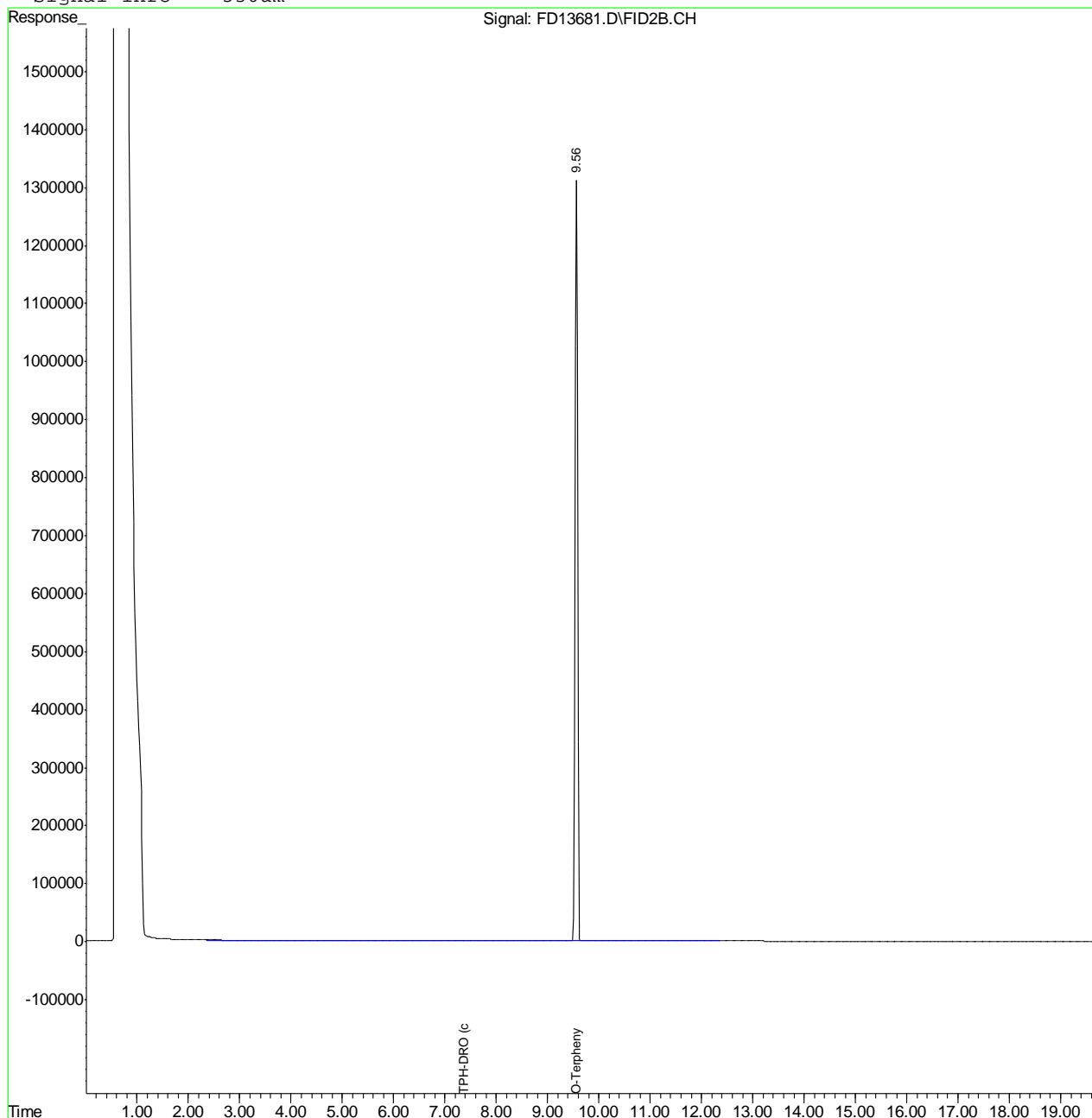
(f)=RT Delta > 1/2 Window (m)=manual int.
FD13681.D DRO-GFD720R.M Mon May 14 09:30:20 2012 GC

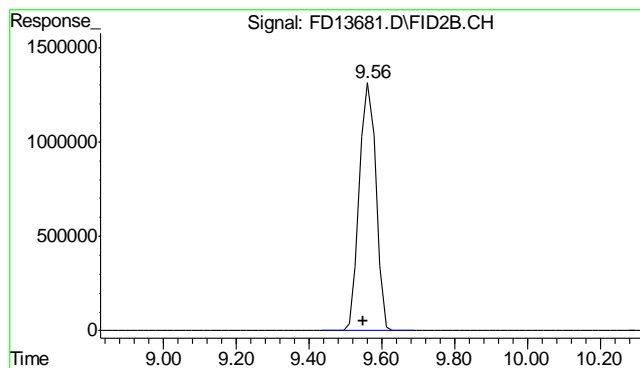
Quantitation Report (QT Reviewed)

Data File : C:\MSDCHEM\2\DATA\2012\MAY\FD051112.SEC\FD13681.D Vial: 53
Acq On : 5-11-2012 01:58:13 PM Operator: ashleyv
Sample : OP5868-MB Inst : FID5
Misc : OP5868,GFD722,30.00,,,2,1 Multiplr: 1.00
IntFile : autoint1.e
Quant Time: May 14 9:29 2012 Quant Results File: DRO-GFD720R.RES

Quant Method : C:\MSDCHEM\2...\DRO-GFD720R.M (Chemstation Integrator)
Title : 8015B TEH
Last Update : Fri May 11 09:49:49 2012
Response via : Multiple Level Calibration
DataAcq Meth : DRODUAL.M

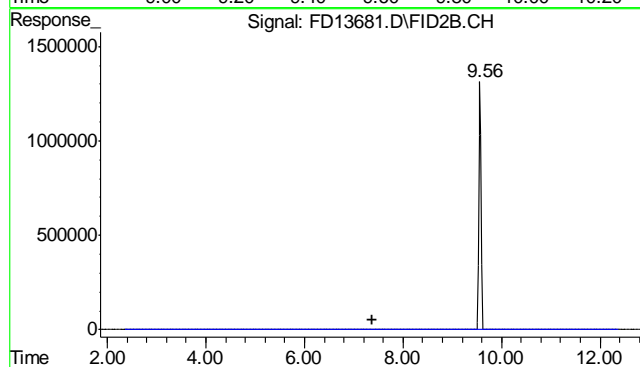
Volume Inj. : 1ul
Signal Phase : RTX-5
Signal Info : 530um





#1 O-Terphenyl

R.T.: 9.568 min
Delta R.T.: 0.018 min
Response: 41046326
Conc: 1085.66 mg/L



#2 TPH-DRO (c10-c28)

R.T.: 7.370 min
Delta R.T.: 0.000 min
Response: 2292326
Conc: 56.98 mg/L m

8.2.1

8

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D34408
Account: XTOKRWR - XTO Energy
Project: PCU 297-10B

QC Batch ID: MP7459
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 05/11/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.22	.31		
Antimony	0.20	.0018	.0075		
Arsenic	0.10	.042	.06	0.010	<0.10
Barium	1.0	.0065	.037		
Beryllium	0.10	.016	.09		
Boron	20	1.2	1.2		
Cadmium	0.050	.014	.021		
Calcium	200	7.9	8		
Chromium	1.0	.033	.19		
Cobalt	0.10	.0012	.015		
Copper	1.0	.017	.065		
Iron	20	.8	5		
Lead	0.25	.0011	.024		
Magnesium	50	.44	.85		
Manganese	0.50	.0043	.02		
Molybdenum	0.50	.018	.018		
Nickel	1.0	.0049	.011		
Phosphorus	30	1.4	3.6		
Potassium	100	9.8	10		
Selenium	0.20	.029	.14		
Silver	0.050	.0009	.0065		
Sodium	250	1.5	2.3		
Strontium	10	.036	.036		
Thallium	0.10	.00095	.0095		
Thorium	0.25	.009	.025		
Tin	5.0	.023	.34		
Titanium	1.0	.044	.1		
Uranium	0.25	.00085	.001		
Vanadium	2.0	.12	.21		
Zinc	5.0	.033	.35		

Associated samples MP7459: D34408-1, D34408-2

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34408
 Account: XTOKRWR - XTO Energy
 Project: PCU 297-10B

QC Batch ID: MP7459
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: mg/kg

Prep Date: 05/11/12

Metal	D34340-5 Original MS		Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	4.1	214	190	110.8	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Thorium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP7459: D34408-1, D34408-2

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D34408
Account: XTOKRWR - XTO Energy
Project: PCU 297-10B

QC Batch ID: MP7459
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 05/11/12

Metal	D34340-5 Original	MSD	Spikelot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	4.1	204	184	108.7	4.8	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Thorium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP7459: D34408-1, D34408-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D34408
Account: XTOKRWR - XTO Energy
Project: PCU 297-10B

QC Batch ID: MP7459
Matrix Type: SOLID

Methods: SW846 6020A
Units: mg/kg

Prep Date: 05/11/12

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	114	100	114.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Thorium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP7459: D34408-1, D34408-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D34408
 Account: XTOKRWR - XTO Energy
 Project: PCU 297-10B

QC Batch ID: MP7459
 Matrix Type: SOLID

Methods: SW846 6020A
 Units: ug/l

Prep Date: 05/11/12

Metal	D34340-5			QC	
	Original	SDL 5:25	%DIF	Limits	
Aluminum					
Antimony					
Arsenic	22.3	20.5	7.7	0-10	
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Thorium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP7459: D34408-1, D34408-2

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested