



03/05/12

## Technical Report for

**XTO Energy**

**FRU 197-33A**

**1103-03A**

**Accutest Job Number: D32155**

**Sampling Date: 02/21/12**

**Report to:**

**dknudson@krwconsulting.com**

**Total number of pages in report: 24**



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)

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Test results relate only to samples analyzed.

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## Sample Summary

XTO Energy

Job No: D32155

FRU 197-33A

Project No: 1103-03A

Sample Number	Collected			Received	Matrix		Client Sample ID
	Date	Time	By		Code	Type	
D32155-1	02/21/12	13:00	CH	02/24/12	SO	Soil	CUT 1 MIX BLEND DAY 4 (2/16)
D32155-2	02/21/12	13:10	CH	02/24/12	SO	Soil	CUT 1 MIX BLEND DAY 5 (2/17)
D32155-3	02/21/12	13:20	CH	02/24/12	SO	Soil	CUT 1 MIX BLEND DAY 6 (2/20)
D32155-4	02/21/12	13:30	CH	02/24/12	SO	Soil	CUT 1 MIX BLEND DAY 7 (2/21)

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

## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** XTO Energy**Job No** D32155**Site:** FRU 197-33A**Report Date** 2/28/2012 11:23:21 AM

On 02/24/2012, 4 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2.2 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D32155 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:** GGB847

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D32152-1MS, D32152-1MSD were used as the QC samples indicated.

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

**Matrix** SO**Batch ID:** OP5426

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D32154-1MS, D32154-1MSD were used as the QC samples indicated.

### Wet Chemistry By Method SM19 2540B M

**Matrix** SO**Batch ID:** GN13831

- 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

## Report of Analysis

**Client Sample ID:** CUT 1 MIX BLEND DAY 4 (2/16)**Lab Sample ID:** D32155-1**Date Sampled:** 02/21/12**Matrix:** SO - Soil**Date Received:** 02/24/12**Method:** SW846 8015B**Percent Solids:** 84.0**Project:** FRU 197-33A

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB15067.D	1	02/25/12	SK	n/a	n/a	GGB847
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)	ND	14	6.8	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	96%		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

## Report of Analysis

<b>Client Sample ID:</b>	CUT 1 MIX BLEND DAY 4 (2/16)					<b>Date Sampled:</b>	02/21/12
<b>Lab Sample ID:</b>	D32155-1					<b>Date Received:</b>	02/24/12
<b>Matrix:</b>	SO - Soil					<b>Percent Solids:</b>	84.0
<b>Method:</b>	SW846-8015B SW846 3546						
<b>Project:</b>	FRU 197-33A						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH001713.D	1	02/27/12	TR	02/24/12	OP5426	GFH88
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)	223	16	10	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	64%		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

<b>Client Sample ID:</b>	CUT 1 MIX BLEND DAY 5 (2/17)	
<b>Lab Sample ID:</b>	D32155-2	<b>Date Sampled:</b> 02/21/12
<b>Matrix:</b>	SO - Soil	<b>Date Received:</b> 02/24/12
<b>Method:</b>	SW846 8015B	<b>Percent Solids:</b> 83.6
<b>Project:</b>	FRU 197-33A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB15068.D	1	02/25/12	SK	n/a	n/a	GGB847
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)	19.2	14	6.9	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	88%		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



## Report of Analysis

**Client Sample ID:** CUT 1 MIX BLEND DAY 5 (2/17)**Lab Sample ID:** D32155-2**Matrix:** SO - Soil**Method:** SW846-8015B SW846 3546**Project:** FRU 197-33A**Date Sampled:** 02/21/12**Date Received:** 02/24/12**Percent Solids:** 83.6

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH001715.D	1	02/27/12	TR	02/24/12	OP5426	GFH88
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)	212	16	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	55%		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

<b>Client Sample ID:</b>	CUT 1 MIX BLEND DAY 6 (2/20)	<b>Date Sampled:</b>	02/21/12
<b>Lab Sample ID:</b>	D32155-3	<b>Date Received:</b>	02/24/12
<b>Matrix:</b>	SO - Soil	<b>Percent Solids:</b>	83.1
<b>Method:</b>	SW846 8015B		
<b>Project:</b>	FRU 197-33A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB15069.D	1	02/25/12	SK	n/a	n/a	GGB847
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)	19.4	14	7.0	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	90%		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

## Report of Analysis

**Client Sample ID:** CUT 1 MIX BLEND DAY 6 (2/20)**Lab Sample ID:** D32155-3**Matrix:** SO - Soil**Method:** SW846-8015B SW846 3546**Project:** FRU 197-33A**Date Sampled:** 02/21/12**Date Received:** 02/24/12**Percent Solids:** 83.1

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH001717.D	1	02/27/12	TR	02/24/12	OP5426	GFH88
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)	251	16	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	69%		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

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<b>Client Sample ID:</b>	CUT 1 MIX BLEND DAY 7 (2/21)	
<b>Lab Sample ID:</b>	D32155-4	<b>Date Sampled:</b> 02/21/12
<b>Matrix:</b>	SO - Soil	<b>Date Received:</b> 02/24/12
<b>Method:</b>	SW846 8015B	<b>Percent Solids:</b> 82.2
<b>Project:</b>	FRU 197-33A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB15070.D	1	02/25/12	SK	n/a	n/a	GGB847
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)	38.3	14	7.1	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

## Report of Analysis

<b>Client Sample ID:</b>	CUT 1 MIX BLEND DAY 7 (2/21)	
<b>Lab Sample ID:</b>	D32155-4	<b>Date Sampled:</b> 02/21/12
<b>Matrix:</b>	SO - Soil	<b>Date Received:</b> 02/24/12
<b>Method:</b>	SW846-8015B SW846 3546	<b>Percent Solids:</b> 82.2
<b>Project:</b>	FRU 197-33A	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH001719.D	1	02/28/12	TR	02/24/12	OP5426	GFH88
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)	260	16	11	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	69%		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

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### Custody Documents and Other Forms

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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 # D32155

[illegible]

## D32155: Chain of Custody

Page 1 of 2

## Accutest Laboratories Sample Receipt Summary

**Accutest Job Number:** D32155

**Client:** KRW

**Immediate Client Services Action Required:** No

**Date / Time Received:** 2/24/2012 8:55:00 AM

**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 Volatiles

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## QC Data Summaries

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Includes the following where applicable:

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

## Method Blank Summary

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**Job Number:** D32155  
**Account:** XTOKRWR XTO Energy  
**Project:** FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB847-MB	GB15061.D	1	02/25/12	SK	n/a	n/a	GGB847

The QC reported here applies to the following samples:

Method: SW846 8015B

D32155-1, D32155-2, D32155-3, D32155-4

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	95% 60-140%

Blank Spike Summary

Job Number: D32155  
Account: XTOKRWR XTO Energy  
Project: FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB847-BS	GB15062.D	1	02/25/12	SK	n/a	n/a	GGB847

The QC reported here applies to the following samples:

Method: SW846 8015B

D32155-1, D32155-2, D32155-3, D32155-4

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	110	100	70-130

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

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D32155  
Account: XTOKRWR XTO Energy  
Project: FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D32152-1MS	GB15064.D	1	02/25/12	SK	n/a	n/a	GGB847
D32152-1MSD	GB15065.D	1	02/25/12	SK	n/a	n/a	GGB847
D32152-1	GB15063.D	1	02/25/12	SK	n/a	n/a	GGB847

The QC reported here applies to the following samples:

Method: SW846 8015B

D32155-1, D32155-2, D32155-3, D32155-4

CAS No.	Compound	D32152-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		142	141	99	141	99	0	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D32152-1	Limits
120-82-1	1,2,4-Trichlorobenzene	102%	109%	94%	60-140%

## GC Semi-volatiles

### QC Data Summaries

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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:** D32155  
**Account:** XTOKRWR XTO Energy  
**Project:** FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5426-MB	FH001697.D	1	02/27/12	TR	02/24/12	OP5426	GFH88

The QC reported here applies to the following samples:

Method: SW846-8015B

D32155-1, D32155-2, D32155-3, D32155-4

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	82% 43-136%

## Blank Spike Summary

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**Job Number:** D32155  
**Account:** XTOKRWR XTO Energy  
**Project:** FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5426-BS	FH001699.D	1	02/27/12	TR	02/24/12	OP5426	GFH88

The QC reported here applies to the following samples:

Method: SW846-8015B

D32155-1, D32155-2, D32155-3, D32155-4

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	548	82	58-130

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

6.2.1

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# Matrix Spike/Matrix Spike Duplicate Summary

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**Job Number:** D32155  
**Account:** XTOKRWR XTO Energy  
**Project:** FRU 197-33A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5426-MS	FH001701.D	1	02/27/12	TR	02/24/12	OP5426	GFH88
OP5426-MSD	FH001703.D	1	02/27/12	TR	02/24/12	OP5426	GFH88
D32154-1	FH001707.D	1	02/27/12	TR	02/24/12	OP5426	GFH88

The QC reported here applies to the following samples:

Method: SW846-8015B

D32155-1, D32155-2, D32155-3, D32155-4

CAS No.	Compound	D32154-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	643		799	1240	75	1310	83	5	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D32154-1	Limits
84-15-1	o-Terphenyl	70%	69%	73%	43-136%