

**Technical Report for**

**XTO Energy**

**FRU 297-20A**

**1108-10A**

**Accutest Job Number: D31354**

**Sampling Date: 01/25/12**

**Report to:**

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**Total number of pages in report: 25**



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.



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**Laboratory Director**

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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: D31354

FRU 297-20A

Project No: 1108-10A

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
D31354-1	01/25/12	11:00	CB	01/26/12	SO Soil	RP MIX BLEND 1/24
D31354-1R	01/25/12	11:00	CB	01/26/12	SO Soil	RP MIX BLEND 1/24
D31354-2	01/25/12	11:15	CB	01/26/12	SO Soil	RP MIX BLEND 1/25
D31354-2R	01/25/12	11:15	CB	01/26/12	SO Soil	RP MIX BLEND 1/25

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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** D31354

**Site:** FRU 297-20A

**Report Dat** 1/31/2012 1:26:32 PM

On 01/26/2012, 2 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 3.9 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D31354 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.

### Metals By Method SW846 6010C

<b>Matrix</b> SO	<b>Batch ID:</b> MP6738
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- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D31355-1MSD, D31355-1SDL, D31355-1MS were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Barium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

### Wet Chemistry By Method SM19 2540B M

<b>Matrix</b> SO	<b>Batch ID:</b> GN13424
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- The data for SM19 2540B M meets quality control requirements.

### Wet Chemistry By Method SW846 9045C

<b>Matrix</b> SO	<b>Batch ID:</b> GN13479
------------------	--------------------------

- The following sample was run outside of holding time for method SW846 9045C: D31354-1R.

<b>Matrix</b> SO	<b>Batch ID:</b> GN13480
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- The following sample was run outside of holding time for method SW846 9045C: D31354-2R.

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**

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**Report of Analysis**

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## Report of Analysis

<b>Client Sample ID:</b> RP MIX BLEND 1/24	<b>Date Sampled:</b> 01/25/12
<b>Lab Sample ID:</b> D31354-1	<b>Date Received:</b> 01/26/12
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 55.8
<b>Project:</b> FRU 297-20A	

### Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Barium	13300	9.1	mg/kg	5	01/27/12	01/27/12 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: MA2145

(2) Prep QC Batch: MP6738

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RL = Reporting Limit

## Report of Analysis

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3

<b>Client Sample ID:</b> RP MIX BLEND 1/24	<b>Date Sampled:</b> 01/25/12
<b>Lab Sample ID:</b> D31354-1R	<b>Date Received:</b> 01/26/12
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 55.8
<b>Project:</b> FRU 297-20A	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
pH	10.05		su	1	01/31/12 10:45	CT	SW846 9045C

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RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> RP MIX BLEND 1/25	<b>Date Sampled:</b> 01/25/12
<b>Lab Sample ID:</b> D31354-2	<b>Date Received:</b> 01/26/12
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 55.9
<b>Project:</b> FRU 297-20A	

### Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Barium	15400	8.9	mg/kg	5	01/27/12	01/27/12 JB	SW846 6010C <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: MA2145

(2) Prep QC Batch: MP6738

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RL = Reporting Limit

# Report of Analysis

<b>Client Sample ID:</b> RP MIX BLEND 1/25	
<b>Lab Sample ID:</b> D31354-2R	<b>Date Sampled:</b> 01/25/12
<b>Matrix:</b> SO - Soil	<b>Date Received:</b> 01/26/12
	<b>Percent Solids:</b> 55.9
<b>Project:</b> FRU 297-20A	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
pH	12.43		su	1	01/31/12 10:45	JK	SW846 9045C

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RL = Reporting Limit

**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 Sample Receipt Summary

Accutest Job Number: D31354

Client:

Immediate Client Services Action Required: No

Date / Time Received: 1/26/2012

No. Coolers:

Client Service Action Required at Login: No

Project:

Airbill #'s:

<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</u>	<u>or</u>	<u>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</u>	<u>or</u>	<u>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</u>	<u>or</u>	<u>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</u>	<u>or</u>	<u>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

## Metals Analysis

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## QC Data Summaries

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### 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: D31354  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-20A

QC Batch ID: MP6738  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date: 01/27/12

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.59	.59		
Antimony	3.0	.31	.31		
Arsenic	2.5	.59	.59		
Barium	1.0	.11	.11	0.11	<1.0
Beryllium	1.0	.044	.1		
Boron	5.0	.48	.48		
Cadmium	1.0	.027	.27		
Calcium	40	.96	1.1		
Chromium	1.0	.018	.031		
Cobalt	0.50	.035	.035		
Copper	1.0	.085	.16		
Iron	7.0	.34	2		
Lead	5.0	.16	.21		
Lithium	0.20	.028	.031		
Magnesium	20	.58	1.4		
Manganese	0.50	.0053	.012		
Molybdenum	1.0	.045	.054		
Nickel	3.0	.043	.099		
Phosphorus	10	1.1	1.2		
Potassium	200	5.5	9.2		
Selenium	5.0	.38	.5		
Silicon	5.0	.38	.51		
Silver	3.0	.018	.051		
Sodium	40	11	11		
Strontium	5.0		.017		
Thallium	1.0	.29	.34		
Tin	5.0	.55	1.3		
Titanium	1.0	.011	.1		
Uranium	5.0	.15	.2		
Vanadium	1.0	.016	.025		
Zinc	3.0	.028	.06		

Associated samples MP6738: D31354-1, D31354-2

Results < IDL are shown as zero for calculation purposes  
(\* ) Outside of QC limits

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D31354  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-20A

QC Batch ID: MP6738  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

5.1.1

5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31354  
 Account: XTOKRWR - XTO Energy  
 Project: FRU 297-20A

QC Batch ID: MP6738  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: mg/kg

Prep Date: 01/27/12

Metal	D31355-1 Original MS		SpikeLot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	1180	1240	220	27.3 (a)	75-125
Beryllium					
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper	anr				
Iron					
Lead	anr				
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	anr				
Phosphorus					
Potassium					
Selenium	anr				
Silicon					
Silver	anr				
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	anr				

Associated samples MP6738: D31354-1, D31354-2

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

5.1.2  
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31354  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-20A

QC Batch ID: MP6738  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested
- (a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

5.1.2

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MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31354  
 Account: XTOKRWR - XTO Energy  
 Project: FRU 297-20A

QC Batch ID: MP6738  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: mg/kg

Prep Date: 01/27/12

Metal	D31355-1 Original MSD	Spikelot MPICPALL % Rec	MSD RPD	QC Limit	
Aluminum					
Antimony					
Arsenic					
Barium	1180	1280	222	45.0 (a) 3.2	20
Beryllium					
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper	anr				
Iron					
Lead	anr				
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	anr				
Phosphorus					
Potassium					
Selenium	anr				
Silicon					
Silver	anr				
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	anr				

Associated samples MP6738: D31354-1, D31354-2

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

5.1.2  
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D31354  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-20A

QC Batch ID: MP6738  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested
- (a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31354  
 Account: XTOKRWR - XTO Energy  
 Project: FRU 297-20A

QC Batch ID: MP6738  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: mg/kg

Prep Date: 01/27/12

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	198	200	99.0	80-120
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron				
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Phosphorus				
Potassium				
Selenium	anr			
Silicon				
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP6738: D31354-1, D31354-2

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

5.1.3  
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SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D31354  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-20A

QC Batch ID: MP6738  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

5.1.3

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SERIAL DILUTION RESULTS SUMMARY

Login Number: D31354  
 Account: XTOKRWR - XTO Energy  
 Project: FRU 297-20A

QC Batch ID: MP6738  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: ug/l

Prep Date: 01/27/12

Metal	D31355-1 Original SDL 1:5		%DIF	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	11700	11300	8.8	0-10
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron				
Lead	anr			
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Phosphorus				
Potassium				
Selenium	anr			
Silicon				
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP6738: D31354-1, D31354-2

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

5.1.4  
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SERIAL DILUTION RESULTS SUMMARY

Login Number: D31354  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-20A

QC Batch ID: MP6738  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

## General Chemistry

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### QC Data Summaries

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#### Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D31354  
Account: XTOKRWR - XTO Energy  
Project: FRU 297-20A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
pH	GN13479			su	8.00	7.95	99.4	99.3-100.7%
pH	GN13480			su	8.00	8.00	100.0	99.3-100.7%

Associated Samples:  
Batch GN13479: D31354-1R  
Batch GN13480: D31354-2R  
(\* ) Outside of QC limits

6.1

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