FORM 4
Rev 12/05

State of Colorado
Oil and Gas Conservation Com
1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (30

02577510

DE | ET | DE | ES

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COGCC/Rifle Office

SUNDRY NOTICE

Submit original plus one copy. This form is to be used for general, technical and environmental sundry information. For proposed or completed operations, describe in full on Technical Information Page (Page 2 of this form.) Identify well or other facility by API Number or by OGCC Facility ID. Operator shall send an informational copy of all sundry notices for wells located in High Density Areas to the Local Government Designee (Rule 603b.)

1. OGCC Operator Number: 10079
2. Name of Operator: Antero Resources Piceance Corporation
3. Address: 1625 17th Street
City: Denver State: CO Zip: 80202
4. Contact Name: Hannah Knopping
Phone: (303) 357-6412
Fax: (303) 357-7315
5. API Number 05- 045-19639-00
OGCC Facility ID Number
6. Well/Facility Name: Frei
7. Well/Facility Number A21
8. Location (QtrQtr, Sec, Twp, Rng, Meridian): Lot 10 (SWSW), Section 7, T6S, R91W, 6th P.M.
9. County: Garfield
10. Field Name: Kokopelli
11. Federal, Indian or State Lease Number:

Complete the Attachment Checklist

	OP	OGCC
Survey Plat		
Directional Survey		
Surface Eqpmt Diagram		
Technical Info Page	X	
Other Analytical Data	X	

General Notice

☐ CHANGE OF LOCATION: Attach New Survey Plat (a change of surface qtr/qtr is substantive and requires a new permit)

	FNL/FSL		FEL/FWL	
Change of **Surface** Footage **from** Exterior Section Lines:				
Change of **Surface** Footage **to** Exterior Section Lines:				
Change of **Bottomhole** Footage **from** Exterior Section Lines:				
Change of **Bottomhole** Footage **to** Exterior Section Lines:				

attach directional survey

Bottomhole location Qtr/Qtr, Sec, Twp, Rng, Mer
Latitude
Longitude
Ground Elevation
Distance to nearest property line
Distance to nearest lease line
Distance to nearest well same formation
Distance to nearest bldg, public rd, utility or RR
Is location in a High Density Area (rule 603b)? Yes/No
Surface owner consultation date:

GPS DATA:
Date of Measurement PDOP Reading Instrument Operator's Name

☐ CHANGE SPACING UNIT

Formation	Formation Code	Spacing order number	Unit Acreage	Unit configuration

☐ Remove from surface bond
Signed surface use agreement attached

☐ CHANGE OF OPERATOR (prior to drilling):
Effective Date:
Plugging Bond: ☐ Blanket ☐ Individual

☐ CHANGE WELL NAME NUMBER
From:
To:
Effective Date:

☐ ABANDONED LOCATION:
Was location ever built? ☐ Yes ☐ No
Is site ready for Inspection? ☐ Yes ☐ No
Date Ready for Inspection:

☐ NOTICE OF CONTINUED SHUT IN STATUS
Date well shut in or temporarily abandoned:
Has Production Equipment been removed from site? ☐ Yes ☐ No
MIT required if shut in longer than two years. Date of last MIT

☐ SPUD DATE:

☐ REQUEST FOR CONFIDENTIAL STATUS (6 mos from date casing set)

☐ SUBSEQUENT REPORT OF STAGE, SQUEEZE OR REMEDIAL CEMENT WORK *submit cbl and cement job summaries

Method used	Cementing tool setting/perf depth	Cement volume	Cement top	Cement bottom	Date

☐ RECLAMATION: Attach technical page describing final reclamation procedures per Rule 1004.
Final reclamation will commence on approximately
☐ Final reclamation is completed and site is ready for inspection.

Technical Engineering/Environmental Notice

☐ Notice of Intent
Approximate Start Date:

☒ Report of Work Done
Date Work Completed: November 3, 2010

Details of work must be described in full on Technical Information Page (Page 2 must be submitted.)

☐ Intent to Recomplete (submit form 2)
☐ Change Drilling Plans
☐ Gross Interval Changed?
☐ Casing/Cementing Program Change
☒ Request to Vent or Flare
☐ Repair Well
☐ Rule 502 variance requested
☒ Other: Analytical Results
☐ E&P Waste Disposal
☐ Beneficial Reuse of E&P Waste
☐ Status Update/Change of Remediation Plans for Spills and Releases

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct and complete.

Signed: Hannah Knopping
Date: 11/3/2010
Email: hknopping@anteroresources.com
Print Name: Hannah Knopping
Title: Permit Representative

COGCC Approved: Kevin J. King
Title: EIT III
Date: DEC 21 2010

CONDITIONS OF APPROVAL, IF ANY:

FORM 4 Rev 12/05

TECHNICAL INFORMATION PAGE

FOR OGCC USE ONLY

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1. OGCC Operator Number: 10079 API Number: 05-045-19639-00
2. Name of Operator: Antero Resources Piceance Corp OGCC Facility ID #
3. Well/Facility Name: Frei Well/Facility Number: A21
4. Location (QtrQtr, Sec, Twp, Rng, Meridian): Lot 10 (SWSW), Sec 7, T6S, R91W, 6th P.M.

This form is to be completed whenever a Sundry Notice is submitted requiring detailed report of work to be performed or completed. This form shall be transmitted within 30 days of work completed as a "subsequent" report and must accompany Form 4, page 1.

5. **DESCRIBE PROPOSED OR COMPLETED OPERATIONS**

Antero Resources Corporation has completed the 90-day venting program on the Frei A21 well, which was approved via Form 4 Sundry. As required by COA, Antero collected a gas sample from the production casing-surface casing annulus and analyzed the sample for composition (C1 through C12) and stable isotopes of methane, ethane, and propane.

Attachments:
1) Extended Gas Analysis (Composition)
2) Isotopic Analysis

EMPACT ANALYTICAL SYSTEMS INC.
365 S. MAIN ST.
BRIGHTON, CO
80601

303-637-0150

EXTENDED NATURAL GAS ANALYSIS (*DHA)

MAIN PAGE

PROJECT NO. :	201009170	ANALYSIS NO. :	02
COMPANY NAME :	ANTERO RESOURCES	ANALYSIS DATE:	OCTOBER 5, 2010
ACCOUNT NO. :		SAMPLE DATE :	SEPTEMBER 22, 2010
PRODUCER :		CYLINDER NO. :	695
LEASE NO. :		SAMPLED BY :	B. SLADE
NAME/DESCRIP :	FREI A-21		
FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	98	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	LAB: POSSIBLE 2 PHASE SAMPLE		

COMPONENT	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
ALCOHOLS	0.0010	0.0032		
HELIUM	0.02	0.00	---	---
HYDROGEN	0.00	0.00	---	---
OXYGEN/ARGON	0.00	0.00	---	---
NITROGEN	0.35	0.50	---	---
CARBON DIOXIDE	0.09	0.20	---	---
METHANE	85.03250	69.95460	---	---
ETHANE	8.7797	13.5385	2.3416	2.3544
PROPANE	3.3650	7.6094	0.9249	0.9299
I-BUTANE	0.7745	2.3085	0.2530	0.2543
N-BUTANE	0.7446	2.2194	0.2340	0.2352
I-PENTANE	0.2730	1.0094	0.0990	0.0995
N-PENTANE	0.1962	0.7259	0.0710	0.0714
HEXANES PLUS	0.3735	1.9311	0.1590	0.1594
TOTALS	100.00000	100.00000	4.0825	4.1041

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0032	0.0128
TOLUENE	0.0065	0.0307
ETHYLBENZENE	0.0008	0.0044
XYLENES	0.0049	0.0267
TOTAL BTEX	0.0154	0.0746

	BTU @	14.650	14.730
LOW	NET DRY REAL :	1074.1 /scf	1080.0 /scf
	NET WET REAL :	1055.3 /scf	1061.2 /scf
HIGH	GROSS DRY REAL :	1186.4 /scf	1192.9 /scf
	GROSS WET REAL :	1165.7 /scf	1172.2 /scf
	NET DRY REAL :	20925.9 /lb	21040.2 /lb
	GROSS DRY REAL :	23110.1 /lb	23236.3 /lb
	RELATIVE DENSITY (AIR=1):		0.6722
	COMPRESSIBILITY FACTOR :		0.99703

(CALC: GPA STD 2145 & TP-17 @14.696 & 60 F)

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993) ; ASTM D6730*

THIS DATA HAS BEEN ACQUIRED THROUGH APPLICATION OF CURRENT STATE-OF-THE-ART ANALYTICAL TECHNIQUES. THE USE OF THIS INFORMATION IS THE RESPONSIBLITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, ASSUMES NO RESPONSIBLITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF IT'S APPLICATION.

EMPACT ANALYTICAL SYSTEMS INC.
365 S. MAIN ST.
BRIGHTON, CO
80601

303-637-0150

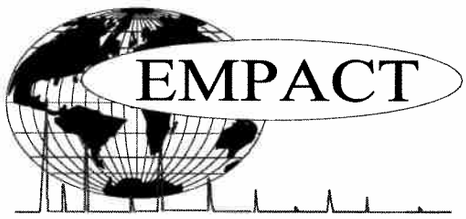
EXTENDED NATURAL GAS ANALYSIS (*DHA)

GLYCALC INFORMATION

PROJECT NO. :	201009170	ANALYSIS NO. :	02
COMPANY NAME :	ANTERO RESOURCES	ANALYSIS DATE:	OCTOBER 5, 2010
ACCOUNT NO. :		SAMPLE DATE :	SEPTEMBER 22, 2010
PRODUCER :		CYLINDER NO. :	695
LEASE NO. :		SAMPLED BY :	B. SLADE
NAME/DESCRIP :	FREI A-21		
FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	98	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	LAB: POSSIBLE 2 PHASE SAMPLE		

Componet	Mole %	Wt %
Helium	0.02	0.00
Hydrogen	0.00	0.00
Carbon Dioxide	0.09	0.20
Nitrogen	0.35	0.50
Methane	85.03250	69.95460
Ethane	8.7797	13.5385
Propane	3.3650	7.6094
Isobutane	0.7745	2.3085
n-Butane	0.7446	2.2194
Isopentane	0.2655	0.9824
n-Pentane	0.1962	0.7259
Cyclopentane	0.0075	0.0270
n-Hexane	0.0589	0.2603
Cyclohexane	0.0252	0.1088
Other Hexanes	0.1162	0.5116
Heptanes	0.0555	0.2843
Methycyclohexane	0.0337	0.1697
2,2,4 Trimethylpentane	0.0000	0.0000
Benzene	0.0032	0.0128
Toluene	0.0065	0.0307
Ethylbenzene	0.0008	0.0044
Xylenes	0.0049	0.0267
C8+ Heavies	0.0686	0.5218
Subtotal	99.99900	99.99680
Oxygen/Argon	0.00	0.00
Alcohols	0.0010	0.0032
Total	100.00000	100.00000

THE DATA PRESENTED HEREIN HAS BEEN ACQUIRED THROUGH JUDICIOUS APPLICATION OF CURRENT STATE-OF-THE ART ANALYTICAL TECHNIQUES. THE APPLICATIONS OF THIS INFORMATION IS THE RESPONSIBILITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, INC. ASSUMES NO RESPONSIBILITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF IT'S APPLICATION.



EXTENDED NATURAL GAS ANALYSIS (*DHA)

DHA COMPONENT LIST

PROJECT NO. :	201009170	ANALYSIS NO. :	02
COMPANY NAME :	ANTERO RESOURCES	ANALYSIS DATE:	OCTOBER 5, 2010
ACCOUNT NO. :		SAMPLE DATE :	SEPTEMBER 22, 2010
PRODUCER :		CYLINDER NO. :	695
LEASE NO. :		SAMPLED BY :	B. SLADE
NAME/DESCRIP :	FREI A-21		
FIELD DATA		SAMPLE TEMP. :	
SAMPLE PRES. :	98	AMBIENT TEMP.:	
VAPOR PRES. :		GRAVITY :	
COMMENTS :	LAB: POSSIBLE 2 PHASE SAMPLE		

COMPONENT	PIANO #	MOLE %	MASS %	GPM @ 14.650	GPM @ 14.730
Helium	---	0.02	0.00	---	---
Hydrogen	---	0.00	0.00	---	---
Oxygen/Argon	---	0.00	0.00	---	---
Nitrogen	---	0.35	0.50	---	---
Carbon Dioxide	---	0.09	0.20	---	---
Methane	P1	85.03250	69.95460	---	---
Ethane	P2	8.7797	13.5385	2.342	2.354
Propane	P3	3.3650	7.6094	0.925	0.930
i-Butane	I4	0.7745	2.3085	0.253	0.254
n-Butane	P4	0.7445	2.2191	0.234	0.235
2,2-Dimethylpropane	I5	0.0077	0.0285	0.003	0.003
Ethanol	X2	0.0001	0.0003	0.000	0.000
i-Pentane	I5	0.2578	0.9539	0.094	0.095
Acetone	X3	0.0005	0.0015	0.000	0.000
i-Propanol	X3	0.0002	0.0006	0.000	0.000
UnknownC4s	U4	0.0001	0.0003	0.000	0.000
n-Pentane	P5	0.1959	0.7248	0.071	0.071
t-Butanol	X4	0.0001	0.0004	0.000	0.000
2,2-Dimethylbutane	I6	0.0068	0.0301	0.003	0.003
Cyclopentane	N5	0.0075	0.0270	0.002	0.002
2,3-Dimethylbutane	I6	0.0116	0.0513	0.005	0.005
2-Methylpentane	I6	0.0520	0.2298	0.022	0.022
i-Butanol	X4	0.0001	0.0004	0.000	0.000
3-Methylpentane	I6	0.0254	0.1123	0.010	0.010
UnknownC5s	U5	0.0003	0.0011	0.000	0.000
n-Hexane	P6	0.0589	0.2603	0.024	0.024
2,2-Dimethylpentane	I7	0.0011	0.0056	0.001	0.001
Methylcyclopentane	N6	0.0202	0.0872	0.007	0.007
2,4-Dimethylpentane	I7	0.0024	0.0123	0.001	0.001
2,2,3-Trimethylbutane	I7	0.0005	0.0026	0.000	0.000
Benzene	A6	0.0032	0.0128	0.001	0.001
3,3-Dimethylpentane	I7	0.0006	0.0031	0.000	0.000
Cyclohexane	N6	0.0252	0.1088	0.009	0.009
2-Methylhexane	I7	0.0085	0.0437	0.004	0.004
2,3-Dimethylpentane	I7	0.0030	0.0154	0.001	0.001
1,1-Dimethylcyclopentane	N7	0.0017	0.0086	0.001	0.001

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3-Methylhexane	I7	0.0077	0.0396	0.004	0.004
1c,3-Dimethylcyclopentane	N7	0.0025	0.0126	0.001	0.001
1t,3-Dimethylcyclopentane	N7	0.0023	0.0116	0.001	0.001
3-Ethylpentane	I7	0.0001	0.0005	0.000	0.000
1t,2-Dimethylcyclopentane	N7	0.0039	0.0196	0.002	0.002
UnknownC6s	U6	0.0002	0.0009	0.000	0.000
n-Heptane	P7	0.0194	0.0997	0.009	0.009
1c,2-Dimethylcyclopentane	N7	0.0001	0.0005	0.000	0.000
Methylcyclohexane	N7	0.0337	0.1697	0.014	0.014
2,2-Dimethylhexane	I8	0.0006	0.0035	0.000	0.000
1,1,3-Trimethylcyclopentane	N7	0.0004	0.0023	0.000	0.000
Ethylcyclopentane	N7	0.0012	0.0061	0.000	0.000
2,5-Dimethylhexane	I8	0.0007	0.0041	0.000	0.000
2,4-Dimethylhexane	I8	0.0007	0.0041	0.000	0.000
1c,2t,4-Trimethylcyclopentane	N8	0.0006	0.0034	0.000	0.000
3,3-Dimethylhexane	I8	0.0002	0.0012	0.000	0.000
1t,2c,4-Trimethylcyclopentane	N8	0.0005	0.0029	0.000	0.000
2,3,4-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
2,3,3-Trimethylpentane	I8	0.0001	0.0006	0.000	0.000
Toluene	A7	0.0065	0.0307	0.002	0.002
2,3-Dimethylhexane	I8	0.0005	0.0029	0.000	0.000
2-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
2-Methylheptane	I8	0.0034	0.0199	0.002	0.002
4-Methylheptane	I8	0.0010	0.0059	0.001	0.001
3-Methyl-3-ethylpentane	I8	0.0001	0.0006	0.000	0.000
3-Methylheptane	I8	0.0004	0.0024	0.000	0.000
1c,2t,3-Trimethylcyclopentane	N8	0.0055	0.0316	0.003	0.003
3-Ethylhexane	I8	0.0003	0.0017	0.000	0.000
1t,4-Dimethylcyclohexane	N8	0.0017	0.0098	0.001	0.001
1,1-Dimethylcyclohexane	N8	0.0005	0.0029	0.000	0.000
3t-Ethylmethylcyclopentane	N8	0.0002	0.0011	0.000	0.000
2t-Ethylmethylcyclopentane	N8	0.0001	0.0006	0.000	0.000
1,1-Methylethylcyclopentane	N8	0.0002	0.0011	0.000	0.000
2,2,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1t,2-Dimethylcyclohexane	N8	0.0014	0.0081	0.001	0.001
UnknownC7s	U7	0.0001	0.0005	0.000	0.000
n-Octane	P8	0.0077	0.0451	0.004	0.004
1c,4-Dimethylcyclohexane	N8	0.0003	0.0017	0.000	0.000
i-Propylcyclopentane	I8	0.0001	0.0006	0.000	0.000
2,3,5-Trimethylhexane	I9	0.0002	0.0013	0.000	0.000
2,3,4-Trimethylhexane	I9	0.0001	0.0007	0.000	0.000
1c,2-Dimethylcyclohexane	N8	0.0002	0.0011	0.000	0.000
1,1,4-Trimethylcyclohexane	N9	0.0017	0.0110	0.001	0.001
2,2,3-Trimethylhexane	I9	0.0012	0.0079	0.001	0.001
Ethylcyclohexane	N8	0.0004	0.0023	0.000	0.000
n-Propylcyclopentane	N8	0.0007	0.0041	0.000	0.000
1c,3c,5-Trimethylcyclohexane	N9	0.0001	0.0007	0.000	0.000
Ethylbenzene	I8	0.0008	0.0044	0.000	0.000
1,3-Dimethylbenzene (m-Xylene)	A8	0.0032	0.0174	0.001	0.001
1,4-Dimethylbenzene (p-Xylene)	A8	0.0011	0.0060	0.000	0.000
3,4-Dimethylheptane (2)	I9	0.0001	0.0007	0.000	0.000
4-Ethylheptane	I9	0.0001	0.0007	0.000	0.000
4-Methyloctane	I9	0.0004	0.0026	0.000	0.000
2-Methyloctane	I9	0.0007	0.0046	0.000	0.000
3-Ethylheptane	I9	0.0001	0.0007	0.000	0.000
3-Methyloctane	I9	0.0006	0.0040	0.000	0.000
1c,2t,4c-Trimethylcyclohexane	I9	0.0001	0.0007	0.000	0.000
1,2-Dimethylbenzene (o-Xylene)	A8	0.0006	0.0033	0.000	0.000
i-Butylcyclopentane	N9	0.0005	0.0032	0.000	0.000
UnknownC8s	U8	0.0002	0.0012	0.000	0.000

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n-Nonane	P9	0.0031	0.0204	0.002	0.002
1,1-Methylethylcyclohexane	N9	0.0002	0.0013	0.000	0.000
i-Propylbenzene	A9	0.0001	0.0006	0.000	0.000
i-Propylcyclohexane	N9	0.0002	0.0013	0.000	0.000
2,2-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
2,4-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
2,5-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
n-Butylcyclopentane	N9	0.0003	0.0020	0.000	0.000
3,3-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
n-Propylbenzene	A9	0.0005	0.0031	0.000	0.000
3,6-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
3-Methyl-5-ethylheptane	I10	0.0001	0.0007	0.000	0.000
1,3-Methylethylbenzene	A9	0.0004	0.0025	0.000	0.000
1,4-Methylethylbenzene	A9	0.0002	0.0012	0.000	0.000
1,3,5-Trimethylbenzene	A9	0.0005	0.0031	0.000	0.000
2,3-Dimethyloctane	I10	0.0001	0.0007	0.000	0.000
5-Methylnonane	I10	0.0002	0.0014	0.000	0.000
1,2-Methylethylbenzene	A9	0.0003	0.0019	0.000	0.000
2-Methylnonane	I10	0.0001	0.0007	0.000	0.000
3-Methylnonane	I10	0.0001	0.0007	0.000	0.000
t-Butylbenzene	A10	0.0005	0.0034	0.000	0.000
i-Butylcyclohexane	N10	0.0001	0.0007	0.000	0.000
UnknownC9s	U9	0.0011	0.0072	0.001	0.001
n-Decane	P10	0.0011	0.0081	0.001	0.001
1,2,3-Trimethylbenzene	A9	0.0001	0.0006	0.000	0.000
1,3-Methyl-i-propylbenzene	A10	0.0001	0.0007	0.000	0.000
Sec-Butylcyclohexane	A10	0.0002	0.0014	0.000	0.000
1,2-Methyl-i-propylbenzene	A10	0.0001	0.0007	0.000	0.000
1,4-Diethylbenzene	A10	0.0001	0.0007	0.000	0.000
1,2-Diethylbenzene	A10	0.0001	0.0007	0.000	0.000
1,2-Methyl-n-propylbenzene	A10	0.0001	0.0007	0.000	0.000
1,2-Dimethyl-4-ethylbenzene	A10	0.0001	0.0007	0.000	0.000
UnknownC10s	U10	0.0010	0.0073	0.001	0.001
n-Undecane	P11	0.0003	0.0024	0.000	0.000
UnknownC11s	U11	0.0002	0.0016	0.000	0.000
n-Dodecane	P12	0.0001	0.0009	0.000	0.000
2-Methylnaphthalene	A11	0.0001	0.0007	0.000	0.000
n-Tridecane	P13	0.0001	0.0009	0.000	0.000
UnknownC13s	U13	0.0001	0.0009	0.000	0.000
n-Tetradecane	P14	0.0006	0.0061	0.000	0.000
UnknownC14s	U14	0.0074	0.0753	0.006	0.006
n-Pentadecane	P15	0.0005	0.0054	0.000	0.000
UnknownC15s	U15	0.0109	0.1187	0.009	0.009
n-Hexadecane	P16	0.0001	0.0012	0.000	0.000
UnknownC16s	U16	0.0019	0.0221	0.002	0.002
n-Heptadecane	P17	0.0001	0.0012	0.000	0.000
UnknownC17s	U17	0.0001	0.0012	0.000	0.000
TOTAL		100.00000	100.00000	4.0825	4.1041

EMPACT Analytical Systems, Inc 365 S. Main Street, Brighton, CO 80601 303-637-0150

BTEX COMPONENTS	MOLE%	WT%
BENZENE	0.0032	0.0128
TOLUENE	0.0065	0.0307
ETHYLBENZENE	0.0008	0.0044
XYLENES	0.0049	0.0267
TOTAL BTEX	0.0154	0.0746

	BTU @	14.650	14.730
LOW	NET DRY REAL :	1074.1 /scf	1080.0 /scf
	NET WET REAL :	1055.3 /scf	1061.2 /scf
HIGH	GROSS DRY REAL :	1186.4 /scf	1192.9 /scf
	GROSS WET REAL :	1165.7 /scf	1172.2 /scf
	NET DRY REAL :	20925.9 /lb	21040.2 /lb
	GROSS DRY REAL :	23110.1 /lb	23236.3 /lb
	RELATIVE DENSITY (AIR=1):		0.6722
	COMPRESSIBILITY FACTOR :		0.99703

(CALC: GPA STD 2145 & TP-17 @14.696 & 60 F)

**(DETAILED HYDROCARBON ANALYSIS/NJ 1993) ; ASTM D6730*

THIS DATA HAS BEEN ACQUIRED THROUGH APPLICATION OF CURRENT STATE-OF-THE-ART ANALYTICAL TECHNIQUES. THE USE OF THIS INFORMATION IS THE RESPONSIBLITY OF THE USER. EMPACT ANALYTICAL SYSTEMS, ASSUMES NO RESPONSIBLITY FOR ACCURACY OF THE REPORTED INFORMATION NOR ANY CONSEQUENCES OF IT'S APPLICATION.

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EMPACT

ISOTOPIC ANALYSIS

PROJECT NO. :	**201009114**	ANALYSIS NO. :	**02**
COMPANY NAME :	**ANTERO RESOURCES**	ANALYSIS DATE:	NOVEMBER 2, 2010
ACCOUNT NO. :		SAMPLE DATE :	SEPTEMBER 16, 2010
PRODUCER :		TO:	
LEASE NO. :		CYLINDER NO. :	0151
NAME/DESCRIP :	FREI #21; GRAVEL TREAD BRADEN HEAD		
FIELD DATA			
SAMPLED BY :	PSR	AMBIENT TEMP.:	
SAMPLE PRES. :	55 PSIG	GRAVITY :	
SAMPLE TEMP. :	81	VAPOR PRES. :	
COMMENTS :	*SPOT* *NO PROBE*		

COMPONENTS	**DELTA 13C** per mil	**DELTA D** per mil	**DELTA 15N** per mil
HELIUM			
HYDROGEN			
OXYGEN/ARGON			
NITROGEN			
CO2			
METHANE	-41.66	-194.50	
ETHANE	-28.10		
PROPANE	-25.56		
ISOBUTANE			
N-BUTANE			
ISOPENTANE			
N-PENTANE			
HEXANES+			

Note: Isotopic composition of carbon is relative to VPDM. Isoptopic composition of hydrogen is relative to VSMOW.

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