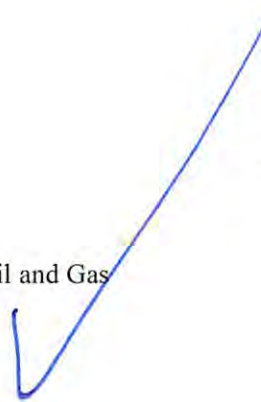


State of West Virginia  
Department of Environmental Protection - Office of Oil and Gas  
Well Operator's Report of Well Work



API 47 - 085 - 10141 County Ritchie District Clay  
Quad Pullman 7.5' Pad Name Edwin Field/Pool Name ----  
Farm name Quimby, Franklin P. Well Number Moats Unit 3H  
Operator (as registered with the OOG) Antero Resources Corporation  
Address 1615 Wynkoop St. City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4342350m Easting 508388m  
Landing Point of Curve Northing 4341515.16m Easting 508655.97m  
Bottom Hole Northing 4340305m Easting 509186m

Elevation (ft) 1191' GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other \_\_\_\_\_  
Drilled with  Cable  Rotary

Drilling Media Surface hole  Air  Mud  Fresh Water Intermediate hole  Air  Mud  Fresh Water  Brine  
Production hole  Air  Mud  Fresh Water  Brine

Mud Type(s) and Additive(s)  
Air- Foam & 4% KCL

Mud- Polymer

Date permit issued 9/23/2014 Date drilling commenced 1/6/2015 Date drilling ceased 9/15/2015  
Date completion activities began 10/18/2015 Date completion activities ceased 3/3/2016  
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 49' Open mine(s) (Y/N) depths No  
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths No  
Coal depth(s) ft 1287' Cavern(s) encountered (Y/N) depths No  
Is coal being mined in area (Y/N) No

**APPROVED**

NAME: Michael Duff  
DATE: 6/13/16

Reviewed by: \_\_\_\_\_

09/16/2016  
RBDMs 09/16/16

API 47-085 - 10141 Farm name Quimby, Franklin P. Well number Moats Unit 3H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	30"	20"	40'	New	94# J-55	N/A	Y
Surface	17- 1/2"	13- 3/8"	376'	New	48# H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2548'	New	36# J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	13594'	New	20# P-110	N/A	Y
Tubing		2-3/8"	6745'		4.7# N-80	N/A	
Packer type and depth set		N/A					

Comment Details \_\_\_\_\_

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	193 sx	15.6	1.18	38	0'	8 Hrs.
Surface	Class A	451 sx	15.6	1.18	261	0'	8 Hrs.
Coal							
Intermediate 1	Class A	997 sx	15.6	1.18	798	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	986 sx (Lead) 1030 sx (Tail)	13.5 Lead 15.2 Tail	1.44 Lead 1.83 Tail	2645	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 13594' MD, 6649' TVD (BHL), 6672' (Deepest Point Drilled) Loggers TD (ft) 13544'  
 Deepest formation penetrated Marcellus Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) 5933'

\*\* This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Hornet Unit 1H API #47-085-10062). Please reference the wireline logs submitted with Form WR-35 for Hornet Unit 1H. A Cement Bond Log has been included with this submittal.

Check all wireline logs run  caliper  density  deviated/directional  induction  neutron  resistivity  gamma ray  temperature  sonic

Well cored  Yes  No  Conventional  Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING \_\_\_\_\_  
 Conductor- 0  
 Surface- 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface  
 Intermediate- 1 above float joint, 1 above float collar, 1 every 4th joint to surface  
 Production- 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_

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WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

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WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_

WV Department of Environmental Protection

09/16/2016

API 47- 085 - 10141 Farm name Quimby, Franklin P. Well number Moats Unit 3H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
<b>*PLEASE SEE ATTACHED EXHIBIT 1</b>					

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
<b>*PLEASE SEE ATTACHED EXHIBIT 2</b>								

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Please insert additional pages as applicable.

API 47- 085 - 10141 Farm name Quimby, Franklin P. Well number Moats Unit 3H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>6573' (top)</u> TVD	<u>6898' (top)</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump  
 SHUT-IN PRESSURE Surface 3000 psi Bottom Hole --- psi DURATION OF TEST --- hrs  
 OPEN FLOW Gas 10113 mcfpd Oil 152 bpd NGL --- bpd Water 2 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		

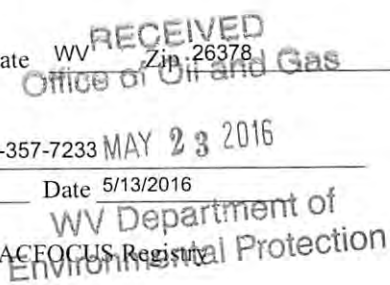
**\*PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling Company, LP  
 Address 2640 Reach Rd. City Williamsport State PA Zip 17701  
 Logging Company Rush Wellsite Services  
 Address 60 Alpha Dr. City Canonsburg State PA Zip 15317  
 Cementing Company Allied Oil & Gas Services, LLC  
 Address 1036 East Main St. City Bridgeport State WV Zip 26330  
 Stimulating Company US Well Services  
 Address 533 Industrial Park Dr. City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Kara Quackenbush Telephone 303-357-7233  
 Signature [Signature] Title Permit Representative Date 5/13/2016



**EXHIBIT 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	18-Oct-15	13,334	13,503	60	Marcellus
2	23-Dec-15	13,134	13,303	60	Marcellus
3	28-Dec-15	12,934	13,103	60	Marcellus
4	29-Dec-15	12,734	12,903	60	Marcellus
5	29-Dec-15	12,534	12,702	60	Marcellus
6	29-Dec-15	12,334	12,502	60	Marcellus
7	29-Dec-15	12,133	12,302	60	Marcellus
8	29-Dec-15	11,933	12,102	60	Marcellus
9	30-Dec-15	11,733	11,902	60	Marcellus
10	30-Dec-15	11,533	11,702	60	Marcellus
11	30-Dec-15	11,333	11,502	60	Marcellus
12	30-Dec-15	11,133	11,302	60	Marcellus
13	31-Dec-15	10,933	11,101	60	Marcellus
14	31-Dec-15	10,733	10,901	60	Marcellus
15	31-Dec-15	10,532	10,701	60	Marcellus
16	31-Dec-15	10,332	10,501	60	Marcellus
17	1-Jan-16	10,132	10,301	60	Marcellus
18	1-Jan-16	9,932	10,101	60	Marcellus
19	1-Jan-16	9,732	9,901	60	Marcellus
20	1-Jan-16	9,532	9,701	60	Marcellus
21	2-Jan-16	9,332	9,500	60	Marcellus
22	2-Jan-16	9,131	9,300	60	Marcellus
23	2-Jan-16	8,931	9,100	60	Marcellus
24	2-Jan-16	8,731	8,900	60	Marcellus
25	2-Jan-16	8,531	8,700	60	Marcellus
26	3-Jan-16	8,331	8,500	60	Marcellus
27	3-Jan-16	8,131	8,300	60	Marcellus
28	3-Jan-16	7,931	8,099	60	Marcellus
29	3-Jan-16	7,731	7,899	60	Marcellus
30	3-Jan-16	7,530	7,699	60	Marcellus
31	4-Jan-16	7,330	7,499	60	Marcellus
32	4-Jan-16	7,130	7,299	60	Marcellus
33	4-Jan-16	6,930	7,099	60	Marcellus

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**EXHIBIT 2**

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	23-Dec-15	69.6	6,786	5,341	4,526	237,250	6,597	N/A
2	23-Dec-15	69.5	6,726	5,682	4,611	230,500	6,277	N/A
3	28-Dec-15	72.0	6,490	5,135	4,647	251,270	6,441	N/A
4	29-Dec-15	72.1	6,499	5,655	4,522	249,260	6,682	N/A
5	29-Dec-15	71.7	6,156	4,868	5,081	251,000	6,515	N/A
6	29-Dec-15	72.5	6,301	5,444	4,876	248,600	6,511	N/A
7	29-Dec-15	70.5	6,508	5,695	4,755	250,840	6,448	N/A
8	29-Dec-15	72.9	6,406	5,003	4,512	250,600	6,537	N/A
9	30-Dec-15	71.6	6,170	5,083	5,584	249,840	6,440	N/A
10	30-Dec-15	69.1	6,629	5,820	4,395	243,270	6,479	N/A
11	30-Dec-15	74.5	6,261	5,196	3,366	250,670	6,523	N/A
12	30-Dec-15	71.9	6,491	4,907	4,279	251,220	6,965	N/A
13	31-Dec-15	70.2	6,566	5,174	4,823	245,400	6,341	N/A
14	31-Dec-15	72.3	6,478	5,243	3,761	250,840	6,466	N/A
15	31-Dec-15	71.6	6,445	5,378	4,102	252,420	6,356	N/A
16	31-Dec-15	70.2	6,442	5,391	3,306	251,400	6,359	N/A
17	1-Jan-16	71.6	6,743	5,622	5,100	250,590	6,579	N/A
18	1-Jan-16	70.0	6,721	5,234	5,010	245,520	6,445	N/A
19	1-Jan-16	67.5	6,774	5,281	4,318	224,510	6,269	N/A
20	1-Jan-16	72.3	6,614	5,251	3,995	250,840	6,538	N/A
21	2-Jan-16	72.9	6,836	5,125	4,653	181,600	6,339	N/A
22	2-Jan-16	56.1	7,851	5,332	4,277	49,400	6,854	N/A
23	2-Jan-16	72.4	6,492	5,178	4,321	239,800	6,244	N/A
24	2-Jan-16	72.7	6,471	5,404	4,750	251,000	6,366	N/A
25	2-Jan-16	72.9	6,263	5,559	5,138	251,120	6,223	N/A
26	3-Jan-16	72.5	6,281	5,109	4,120	250,500	6,249	N/A
27	3-Jan-16	72.5	6,287	5,195	3,318	253,360	6,237	N/A
28	3-Jan-16	73.9	6,254	5,390	4,522	254,280	6,194	N/A
29	3-Jan-16	72.6	6,136	5,135	4,799	251,290	6,171	N/A
30	3-Jan-16	72.9	6,206	5,135	4,605	252,440	6,185	N/A
31	4-Jan-16	72.5	6,192	4,996	3,799	250,100	6,149	N/A
32	4-Jan-16	69.1	6,018	4,966	4,749	250,570	6,208	N/A
33	4-Jan-16	72.0	5,793	4,915	3,361	253,000	6,214	N/A
<b>AVG=</b>		<b>71.2</b>	<b>6,463</b>	<b>5,268</b>	<b>4,424</b>	<b>7,924,300</b>	<b>6,406</b>	<b>TOTAL</b>

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## EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Fresh Water	49'	N/A	49'	N/A
Sandy Shale	0	187	0	187
Sandstone	est. 187	447	est. 187	447
Shale/Siltstone	est. 447	647	est. 447	647
Shaley Limestone	est. 647	727	est. 647	727
Shale/Siltstone	est. 727	1127	est. 727	1127
Shaley Limestone	est. 1127	1287	est. 1127	1287
Coal	est. 1287	1307	est. 1287	1307
Shaley Limestone (trace coal)	est. 1307	1627	est. 1307	1627
Shale/Siltstone	est. 1627	1787	est. 1627	1787
Sandstone/Siltstone	est. 1787	1827	est. 1787	1827
Sandstone/Siltstone with trace coal	est. 1827	2007	est. 1827	2007
Silty Sandstone	est. 2007	2165	est. 2007	2167
Big Lime	2165	2259	2167	2261
Big Injun	2259	2659	2261	2661
Gantz Sand	2659	2858	2661	2860
Fifty Foot Sandstone	2858	2914	2860	2916
Gordon	2914	3063	2916	3065
Fifth Sandstone	3063	3197	3065	3199
Bayard	3197	3628	3199	3630
Warren	3628	4034	3630	4036
Speechley	4034	4286	4036	4288
Baltown	4286	4718	4288	4720
Bradford	4718	5101	4720	5103
Benson	5101	5362	5103	5364
Alexander	5362	5550	5364	5552
Elk	5550	5950	5552	5952
Rhinestreet	5950	6249	5952	6279
Sycamore	6249	6408	6279	6489
Middlesex	6408	6518	6489	6703
Burkett	6518	6549	6703	6783
Tully	6549	6573	6783	6898
Marcellus	6573	NA	6898	NA

\*Please note Antero determines formation tops based on mud logs that are only run on one well on a multi-well pad. The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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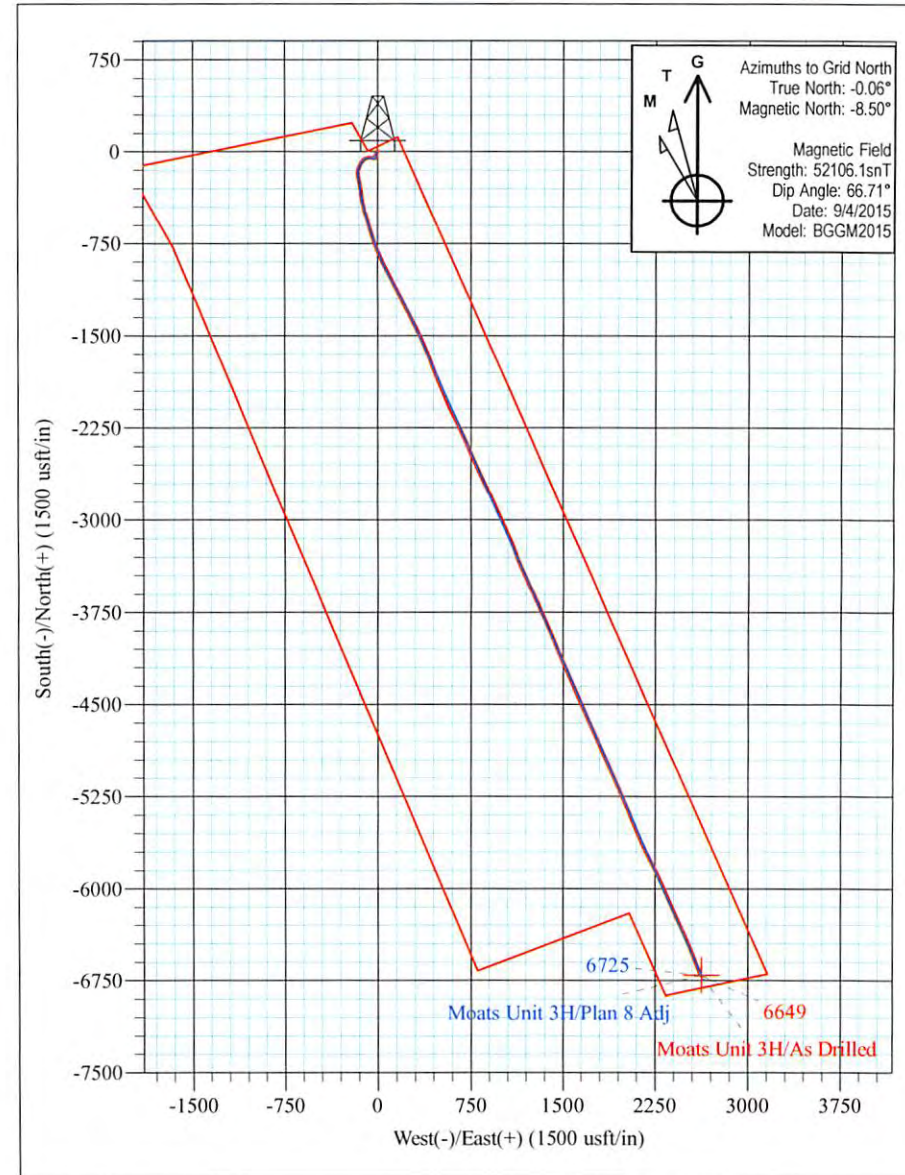
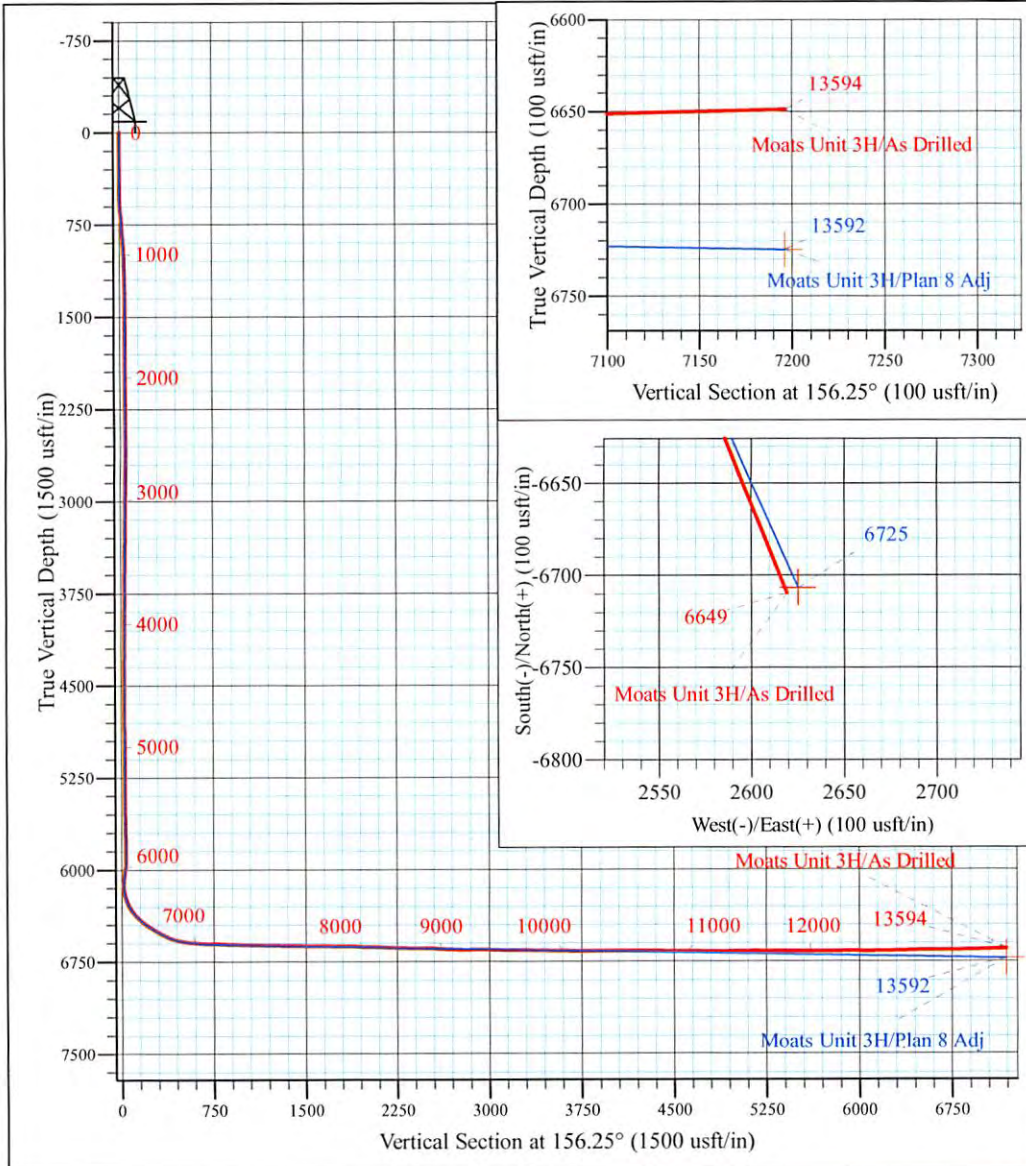
Edwin Pad: Hornet/Miracle/Moats/Myrtle  
 Moats Unit 3H  
 Plan 8 Adj  
 Precision 522: GL 1191' + KB 18' @ 1209.0usft  
 Ritchie County WV

PROJECT DETAILS:  
 Geodetic System: Universal Transverse Mercator (US Survey Feet)  
 Datum: NAD 1927 (NADCON CONUS)  
 Ellipsoid: Clarke 1866  
 Zone: Zone 17N (84 W to 78 W)  
 System Datum: Mean Sea Level



WELL DETAILS: **Moats Unit 3H SHL**

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14245815.55	1667885.91	39° 13' 49.194 N	80° 54' 10.786 W



**Moats Unit 3H**  
 Approx. BHL  
**39° 12' 42.821 N 80° 53' 37.587 W**

Shane Rhodes  
 15:17, September 14 2015  
 Scientific Drilling International  
 124 Vista Drive  
 Charleroi, PA 15022





## Antero

Ritchie County WV  
Edwin Pad: Hornet/Miracle/Moats/Myrtle  
Moats Unit 3H

Original Wellpath

Design: As Drilled

## Standard Survey Report

14 September, 2015



[www.scientificdrilling.com](http://www.scientificdrilling.com)

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<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Moats Unit 3H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Site:</b>	Edwin Pad: Hornet/Miracle/Moats/Myrtle	<b>MD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Well:</b>	Moats Unit 3H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Antero NE

<b>Project</b>	Ritchie County WV, Ritchie County WV, WV North		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	Zone 17N (84 W to 78 W)		

<b>Site</b>	Edwin Pad: Hornet/Miracle/Moats/Myrtle		
<b>Site Position:</b>	<b>Northing:</b>	14,245,885.63 usft	<b>Latitude:</b> 39° 13' 49.887 N
<b>From:</b> Map	<b>Easting:</b>	1,667,891.73 usft	<b>Longitude:</b> 80° 54' 10.711 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b> 13-3/16 "	<b>Grid Convergence:</b> 0.06 °

<b>Well</b>	Moats Unit 3H, Marcellus		
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b> 14,245,815.55 usft
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b> 1,667,885.90 usft
			<b>Latitude:</b> 39° 13' 49.194 N
			<b>Longitude:</b> 80° 54' 10.786 W
<b>Position Uncertainty</b>	2.0 usft	<b>Wellhead Elevation:</b>	1,209.0 usft
		<b>Ground Level:</b>	1,191.0 usft

<b>Wellbore</b>	Original Wellpath				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2015	9/4/2015	-8.44	66.71	52,106

<b>Design</b>	As Drilled			
<b>Audit Notes:</b>				
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b> 0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	156.25

<b>Survey Program</b>	<b>Date</b>	9/14/2015		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
105.0	5,767.0	Survey #6 Final Gyro to KOP (Original We	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
5,810.0	13,594.0	Survey #7 SDI MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
105.0	1.13	264.91	105.0	-0.1	-1.0	-0.3	1.08	1.08	0.00	
<b>First SDI Gyro @ 105 MD</b>										
130.0	1.37	263.89	130.0	-0.1	-1.6	-0.5	0.96	0.96	-4.08	
155.0	1.16	253.28	155.0	-0.3	-2.1	-0.6	1.25	-0.84	-42.44	
180.0	0.85	256.25	180.0	-0.4	-2.5	-0.7	1.26	-1.24	11.88	
205.0	0.60	261.28	205.0	-0.4	-2.8	-0.8	1.03	-1.00	20.12	
230.0	0.46	271.00	230.0	-0.4	-3.1	-0.8	0.66	-0.56	38.88	
255.0	0.30	263.19	255.0	-0.5	-3.2	-0.9	0.67	-0.64	-31.24	
280.0	0.18	242.64	280.0	-0.5	-3.3	-0.9	0.58	-0.48	-82.20	



Scientific Drilling International  
Survey Report



<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Moats Unit 3H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Site:</b>	Edwin Pad: Hornet/Miracle/Moats/Myrtle	<b>MD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Well:</b>	Moats Unit 3H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Antero NE

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
305.0	0.21	266.21	305.0	-0.5	-3.4	-0.9	0.34	0.12	94.28
330.0	0.16	285.72	330.0	-0.5	-3.5	-1.0	0.32	-0.20	78.04
355.0	0.17	248.10	355.0	-0.5	-3.6	-1.0	0.43	0.04	-150.48
380.0	0.41	282.64	380.0	-0.5	-3.7	-1.0	1.15	0.96	138.16
405.0	0.46	243.13	405.0	-0.5	-3.9	-1.1	1.19	0.20	-158.04
430.0	0.66	220.11	430.0	-0.7	-4.0	-1.0	1.19	0.80	-92.08
455.0	1.40	211.94	455.0	-1.0	-4.3	-0.8	3.01	2.96	-32.68
480.0	2.24	204.06	480.0	-1.8	-4.7	-0.3	3.50	3.36	-31.52
505.0	2.85	203.28	504.9	-2.8	-5.1	0.5	2.44	2.44	-3.12
530.0	3.40	203.45	529.9	-4.0	-5.6	1.4	2.20	2.20	0.68
555.0	3.68	202.69	554.8	-5.4	-6.3	2.5	1.14	1.12	-3.04
580.0	3.84	202.87	579.8	-6.9	-6.9	3.6	0.64	0.64	0.72
605.0	4.30	199.48	604.7	-8.6	-7.5	4.8	2.08	1.84	-13.56
630.0	5.06	195.36	629.6	-10.6	-8.1	6.4	3.32	3.04	-16.48
655.0	5.44	191.41	654.5	-12.8	-8.7	8.2	2.10	1.52	-15.80
680.0	5.50	191.62	679.4	-15.1	-9.1	10.2	0.25	0.24	0.84
705.0	5.50	191.45	704.3	-17.5	-9.6	12.1	0.07	0.00	-0.68
730.0	5.48	192.64	729.2	-19.8	-10.1	14.0	0.46	-0.08	4.76
755.0	5.55	193.75	754.1	-22.1	-10.7	16.0	0.51	0.28	4.44
780.0	5.61	193.66	779.0	-24.5	-11.2	17.9	0.24	0.24	-0.36
805.0	5.64	193.87	803.8	-26.9	-11.8	19.8	0.15	0.12	0.84
830.0	5.71	194.60	828.7	-29.3	-12.4	21.8	0.40	0.28	2.92
855.0	5.38	195.56	853.6	-31.6	-13.1	23.7	1.37	-1.32	3.84
880.0	4.93	196.32	878.5	-33.8	-13.7	25.4	1.82	-1.80	3.04
905.0	4.67	197.37	903.4	-35.8	-14.3	27.0	1.10	-1.04	4.20
930.0	4.51	197.43	928.3	-37.7	-14.9	28.5	0.64	-0.64	0.24
955.0	4.08	198.31	953.3	-39.5	-15.4	29.9	1.74	-1.72	3.52
980.0	3.78	197.96	978.2	-41.1	-16.0	31.2	1.20	-1.20	-1.40
1,005.0	3.62	198.42	1,003.2	-42.6	-16.5	32.4	0.65	-0.64	1.84
1,030.0	3.22	200.03	1,028.1	-44.0	-17.0	33.5	1.65	-1.60	6.44
1,055.0	3.13	199.64	1,053.1	-45.3	-17.4	34.5	0.37	-0.36	-1.56
1,080.0	2.64	203.15	1,078.0	-46.5	-17.9	35.4	2.08	-1.96	14.04
1,105.0	2.49	204.36	1,103.0	-47.5	-18.4	36.1	0.64	-0.60	4.84
1,130.0	2.34	203.40	1,128.0	-48.5	-18.8	36.8	0.62	-0.60	-3.84
1,155.0	2.29	204.30	1,153.0	-49.4	-19.2	37.5	0.25	-0.20	3.60
1,180.0	1.89	204.92	1,178.0	-50.2	-19.6	38.1	1.60	-1.60	2.48
1,205.0	1.71	206.61	1,202.9	-51.0	-19.9	38.6	0.75	-0.72	6.76
1,230.0	1.62	207.97	1,227.9	-51.6	-20.2	39.1	0.39	-0.36	5.44
1,255.0	1.48	208.95	1,252.9	-52.2	-20.6	39.5	0.57	-0.56	3.92
1,280.0	1.44	212.89	1,277.9	-52.7	-20.9	39.9	0.43	-0.16	15.76
1,305.0	1.35	208.65	1,302.9	-53.3	-21.2	40.2	0.55	-0.36	-16.96
1,330.0	1.03	208.55	1,327.9	-53.7	-21.4	40.5	1.28	-1.28	-0.40
1,355.0	0.91	210.93	1,352.9	-54.1	-21.7	40.8	0.51	-0.48	9.52

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Survey Report



<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Moats Unit 3H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Site:</b>	Edwin Pad: Hornet/Miracle/Moats/Myrtle	<b>MD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Well:</b>	Moats Unit 3H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Antero NE

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
1,380.0	0.81	212.92	1,377.9	-54.4	-21.9	41.0	0.42	-0.40	7.96
1,405.0	0.59	221.76	1,402.9	-54.6	-22.0	41.1	0.98	-0.88	35.36
1,430.0	0.70	225.80	1,427.9	-54.9	-22.2	41.3	0.48	0.44	16.16
1,455.0	0.70	228.69	1,452.9	-55.1	-22.5	41.3	0.14	0.00	11.56
1,480.0	0.67	232.24	1,477.9	-55.2	-22.7	41.4	0.21	-0.12	14.20
1,505.0	0.68	228.81	1,502.9	-55.4	-22.9	41.5	0.17	0.04	-13.72
1,530.0	0.50	235.72	1,527.9	-55.6	-23.1	41.6	0.77	-0.72	27.64
1,555.0	0.35	230.92	1,552.9	-55.7	-23.3	41.6	0.62	-0.60	-19.20
1,580.0	0.36	237.77	1,577.9	-55.8	-23.4	41.6	0.17	0.04	27.40
1,605.0	0.27	243.49	1,602.9	-55.9	-23.5	41.7	0.38	-0.36	22.88
1,630.0	0.24	269.45	1,627.9	-55.9	-23.6	41.6	0.47	-0.12	103.84
1,655.0	0.32	265.11	1,652.9	-55.9	-23.7	41.6	0.33	0.32	-17.36
1,680.0	0.25	283.41	1,677.9	-55.9	-23.9	41.5	0.46	-0.28	73.20
1,705.0	0.38	263.55	1,702.9	-55.9	-24.0	41.5	0.67	0.52	-79.44
1,730.0	0.36	268.85	1,727.9	-55.9	-24.2	41.4	0.16	-0.08	21.20
1,755.0	0.35	255.19	1,752.9	-55.9	-24.3	41.4	0.34	-0.04	-54.64
1,780.0	0.30	256.55	1,777.9	-56.0	-24.4	41.4	0.20	-0.20	5.44
1,805.0	0.35	241.52	1,802.9	-56.0	-24.6	41.4	0.39	0.20	-60.12
1,830.0	0.24	245.03	1,827.9	-56.1	-24.7	41.4	0.45	-0.44	14.04
1,855.0	0.26	245.62	1,852.9	-56.1	-24.8	41.4	0.08	0.08	2.36
1,880.0	0.32	245.18	1,877.9	-56.2	-24.9	41.4	0.24	0.24	-1.76
1,905.0	0.32	248.96	1,902.9	-56.2	-25.0	41.4	0.08	0.00	15.12
1,930.0	0.28	241.59	1,927.9	-56.3	-25.2	41.4	0.22	-0.16	-29.48
1,955.0	0.22	246.30	1,952.9	-56.3	-25.3	41.4	0.25	-0.24	18.84
1,980.0	0.25	238.54	1,977.9	-56.4	-25.3	41.4	0.17	0.12	-31.04
2,005.0	0.27	251.11	2,002.9	-56.4	-25.4	41.4	0.24	0.08	50.28
2,030.0	0.19	242.61	2,027.9	-56.5	-25.5	41.4	0.35	-0.32	-34.00
2,055.0	0.17	219.44	2,052.9	-56.5	-25.6	41.4	0.30	-0.08	-92.68
2,080.0	0.17	232.47	2,077.9	-56.5	-25.7	41.4	0.15	0.00	52.12
2,105.0	0.08	250.83	2,102.9	-56.6	-25.7	41.4	0.39	-0.36	73.44
2,130.0	0.06	234.16	2,127.9	-56.6	-25.7	41.4	0.11	-0.08	-66.68
2,155.0	0.26	219.63	2,152.9	-56.6	-25.8	41.5	0.81	0.80	-58.12
2,180.0	0.13	265.76	2,177.9	-56.7	-25.8	41.5	0.78	-0.52	184.52
2,205.0	0.06	282.72	2,202.9	-56.7	-25.9	41.5	0.30	-0.28	67.84
2,230.0	0.02	274.54	2,227.9	-56.7	-25.9	41.5	0.16	-0.16	-32.72
2,255.0	0.17	348.47	2,252.9	-56.6	-25.9	41.4	0.66	0.60	295.72
2,280.0	0.19	332.15	2,277.9	-56.6	-25.9	41.3	0.22	0.08	-65.28
2,305.0	0.20	288.14	2,302.9	-56.5	-26.0	41.3	0.59	0.04	-176.04
2,330.0	0.10	281.30	2,327.9	-56.5	-26.1	41.2	0.41	0.40	-27.36
2,355.0	0.08	321.61	2,352.9	-56.5	-26.1	41.2	0.26	-0.08	61.24
2,380.0	0.11	310.58	2,377.9	-56.5	-26.1	41.2	0.14	0.12	-44.12
2,405.0	0.14	317.37	2,402.9	-56.4	-26.2	41.1	0.13	0.12	27.16
2,430.0	0.25	295.72	2,427.9	-56.4	-26.2	41.0	0.52	0.44	86.60

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Survey Report



<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Moats Unit 3H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Site:</b>	Edwin Pad: Hornet/Miracle/Moats/Myrtle	<b>MD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Well:</b>	Moats Unit 3H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Antero NE

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,455.0	0.27	318.70	2,452.9	-56.3	-26.3	40.9	0.42	0.08	91.92
2,480.0	0.37	291.40	2,477.9	-56.2	-26.4	40.8	0.72	0.40	-109.20
2,505.0	0.11	271.32	2,502.9	-56.2	-26.5	40.8	1.08	-1.04	-80.32
2,530.0	0.11	286.81	2,527.9	-56.2	-26.6	40.7	0.12	0.00	61.96
2,555.0	0.12	301.29	2,552.9	-56.2	-26.6	40.7	0.12	0.04	57.92
2,580.0	0.21	304.95	2,577.9	-56.1	-26.7	40.6	0.36	0.36	14.64
2,605.0	0.18	307.21	2,602.9	-56.1	-26.7	40.6	0.12	-0.12	9.04
2,630.0	0.27	309.28	2,627.9	-56.0	-26.8	40.5	0.36	0.36	8.28
2,655.0	0.23	306.37	2,652.9	-56.0	-26.9	40.4	0.17	-0.16	-11.64
2,680.0	0.31	293.77	2,677.9	-55.9	-27.0	40.3	0.40	0.32	-50.40
2,705.0	0.25	276.99	2,702.9	-55.9	-27.1	40.2	0.40	-0.24	-67.12
2,730.0	0.40	299.89	2,727.9	-55.8	-27.3	40.1	0.78	0.60	91.60
2,755.0	0.44	297.04	2,752.9	-55.7	-27.4	40.0	0.18	0.16	-11.40
2,780.0	0.37	300.62	2,777.9	-55.6	-27.6	39.8	0.30	-0.28	14.32
2,805.0	0.34	300.79	2,802.9	-55.6	-27.7	39.7	0.12	-0.12	0.68
2,830.0	0.37	305.36	2,827.9	-55.5	-27.8	39.6	0.16	0.12	18.28
2,855.0	0.47	300.37	2,852.9	-55.4	-28.0	39.4	0.43	0.40	-19.96
2,880.0	0.41	301.38	2,877.9	-55.3	-28.2	39.3	0.24	-0.24	4.04
2,905.0	0.50	295.99	2,902.9	-55.2	-28.3	39.1	0.40	0.36	-21.56
2,930.0	0.44	300.00	2,927.9	-55.1	-28.5	38.9	0.27	-0.24	16.04
2,955.0	0.52	298.84	2,952.9	-55.0	-28.7	38.8	0.32	0.32	-4.64
2,980.0	0.57	298.16	2,977.9	-54.9	-28.9	38.6	0.20	0.20	-2.72
3,005.0	0.58	296.65	3,002.9	-54.8	-29.1	38.4	0.07	0.04	-6.04
3,030.0	0.50	293.87	3,027.9	-54.7	-29.3	38.2	0.34	-0.32	-11.12
3,055.0	0.53	296.56	3,052.9	-54.6	-29.5	38.0	0.15	0.12	10.76
3,080.0	0.51	300.59	3,077.9	-54.5	-29.7	37.9	0.17	-0.08	16.12
3,105.0	0.57	300.92	3,102.9	-54.3	-29.9	37.7	0.24	0.24	1.32
3,130.0	0.47	295.75	3,127.9	-54.2	-30.1	37.5	0.44	-0.40	-20.68
3,155.0	0.51	299.18	3,152.9	-54.1	-30.3	37.3	0.20	0.16	13.72
3,180.0	0.55	302.92	3,177.9	-54.0	-30.5	37.1	0.21	0.16	14.96
3,205.0	0.58	306.71	3,202.9	-53.9	-30.7	36.9	0.19	0.12	15.16
3,230.0	0.59	303.17	3,227.9	-53.7	-30.9	36.7	0.15	0.04	-14.16
3,255.0	0.59	304.82	3,252.9	-53.6	-31.2	36.5	0.07	0.00	6.60
3,280.0	0.57	305.30	3,277.9	-53.4	-31.4	36.3	0.08	-0.08	1.92
3,305.0	0.62	300.37	3,302.8	-53.3	-31.6	36.1	0.29	0.20	-19.72
3,330.0	0.70	300.82	3,327.8	-53.1	-31.8	35.8	0.32	0.32	1.80
3,355.0	0.69	302.64	3,352.8	-53.0	-32.1	35.6	0.10	-0.04	7.28
3,380.0	0.58	296.69	3,377.8	-52.8	-32.3	35.4	0.51	-0.44	-23.80
3,405.0	0.68	298.45	3,402.8	-52.7	-32.6	35.1	0.41	0.40	7.04
3,430.0	0.68	299.70	3,427.8	-52.6	-32.8	34.9	0.06	0.00	5.00
3,455.0	0.67	300.09	3,452.8	-52.4	-33.1	34.7	0.04	-0.04	1.56
3,480.0	0.62	299.61	3,477.8	-52.3	-33.3	34.4	0.20	0.20	-1.92
3,505.0	0.67	299.71	3,502.8	-52.2	-33.6	34.2	0.20	0.20	0.40
3,530.0	0.59	295.57	3,527.8	-52.0	-33.8	34.0	0.37	0.32	-16.56

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Scientific Drilling International  
Survey Report



<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Moats Unit 3H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Site:</b>	Edwin Pad: Hornet/Miracle/Moats/Myrtle	<b>MD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Well:</b>	Moats Unit 3H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Antero NE

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,555.0	0.61	296.00	3,552.8	-51.9	-34.1	33.8	0.08	0.08	1.72
3,580.0	0.64	298.80	3,577.8	-51.8	-34.3	33.6	0.17	0.12	11.20
3,605.0	0.63	298.14	3,602.8	-51.7	-34.5	33.4	0.05	-0.04	-2.64
3,630.0	0.58	295.64	3,627.8	-51.5	-34.8	33.2	0.23	-0.20	-10.00
3,655.0	0.70	298.28	3,652.8	-51.4	-35.0	32.9	0.49	0.48	10.56
3,680.0	0.68	300.27	3,677.8	-51.3	-35.3	32.7	0.12	-0.08	7.96
3,705.0	0.67	302.60	3,702.8	-51.1	-35.5	32.5	0.12	-0.04	9.32
3,730.0	0.54	295.21	3,727.8	-51.0	-35.8	32.3	0.61	-0.52	-29.56
3,755.0	0.61	299.49	3,752.8	-50.9	-36.0	32.1	0.33	0.28	17.12
3,780.0	0.61	300.98	3,777.8	-50.7	-36.2	31.8	0.06	0.00	5.96
3,805.0	0.68	301.72	3,802.8	-50.6	-36.5	31.6	0.28	0.28	2.96
3,830.0	0.59	303.46	3,827.8	-50.4	-36.7	31.4	0.37	-0.36	6.96
3,855.0	0.62	304.76	3,852.8	-50.3	-36.9	31.2	0.13	0.12	5.20
3,880.0	0.63	306.96	3,877.8	-50.1	-37.1	30.9	0.10	0.04	8.80
3,905.0	0.63	304.40	3,902.8	-50.0	-37.4	30.7	0.11	0.00	-10.24
3,930.0	0.67	302.97	3,927.8	-49.8	-37.6	30.4	0.17	0.16	-5.72
3,955.0	0.66	301.47	3,952.8	-49.7	-37.8	30.2	0.08	-0.04	-6.00
3,980.0	0.60	300.23	3,977.8	-49.5	-38.1	30.0	0.25	-0.24	-4.96
4,005.0	0.60	297.79	4,002.8	-49.4	-38.3	29.8	0.10	0.00	-9.76
4,030.0	0.62	296.67	4,027.8	-49.3	-38.5	29.6	0.09	0.08	-4.48
4,055.0	0.60	302.78	4,052.8	-49.1	-38.8	29.4	0.27	-0.08	24.44
4,080.0	0.57	304.85	4,077.8	-49.0	-39.0	29.1	0.15	-0.12	8.28
4,105.0	0.55	298.84	4,102.8	-48.9	-39.2	28.9	0.25	-0.08	-24.04
4,130.0	0.55	298.79	4,127.8	-48.7	-39.4	28.7	0.00	0.00	-0.20
4,155.0	0.44	299.04	4,152.8	-48.6	-39.6	28.6	0.44	-0.44	1.00
4,180.0	0.64	303.56	4,177.8	-48.5	-39.8	28.4	0.82	0.80	18.08
4,205.0	0.61	303.26	4,202.8	-48.4	-40.0	28.2	0.12	-0.12	-1.20
4,230.0	0.53	296.79	4,227.8	-48.2	-40.2	28.0	0.41	-0.32	-25.88
4,255.0	0.49	292.28	4,252.8	-48.1	-40.4	27.8	0.23	-0.16	-18.04
4,280.0	0.35	289.31	4,277.8	-48.1	-40.6	27.7	0.57	-0.56	-11.88
4,305.0	0.24	292.26	4,302.8	-48.0	-40.7	27.6	0.44	-0.44	11.80
4,330.0	0.27	292.15	4,327.8	-48.0	-40.8	27.5	0.12	0.12	-0.44
4,355.0	0.26	296.63	4,352.8	-47.9	-40.9	27.4	0.09	-0.04	17.92
4,380.0	0.22	292.72	4,377.8	-47.9	-41.0	27.3	0.17	-0.16	-15.64
4,405.0	0.21	295.84	4,402.8	-47.9	-41.1	27.3	0.06	-0.04	12.48
4,430.0	0.17	300.21	4,427.8	-47.8	-41.2	27.2	0.17	-0.16	17.48
4,455.0	0.17	321.50	4,452.8	-47.8	-41.2	27.1	0.25	0.00	85.16
4,480.0	0.09	295.37	4,477.8	-47.7	-41.3	27.1	0.39	-0.32	104.52
4,505.0	0.06	283.13	4,502.8	-47.7	-41.3	27.0	0.14	-0.12	-48.96
4,530.0	0.00	9.52	4,527.8	-47.7	-41.3	27.0	0.24	-0.24	0.00
4,555.0	0.09	46.06	4,552.8	-47.7	-41.3	27.0	0.36	-0.36	0.00
4,580.0	0.10	38.39	4,577.8	-47.7	-41.3	27.0	0.06	0.04	-30.68
4,605.0	0.11	78.20	4,602.8	-47.7	-41.2	27.0	0.29	0.04	159.24

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Survey Report



<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Moats Unit 3H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Site:</b>	Edwin Pad: Hornet/Miracle/Moats/Myrtle	<b>MD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Well:</b>	Moats Unit 3H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Antero NE

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,630.0	0.16	118.43	4,627.8	-47.7	-41.2	27.0	0.42	0.20	160.92
4,655.0	0.08	99.07	4,652.8	-47.7	-41.1	27.1	0.35	-0.32	-77.44
4,680.0	0.08	44.89	4,677.8	-47.7	-41.1	27.1	0.29	0.00	-216.72
4,705.0	0.19	90.55	4,702.8	-47.7	-41.1	27.1	0.58	0.44	182.64
4,730.0	0.19	94.58	4,727.8	-47.7	-41.0	27.1	0.05	0.00	16.12
4,755.0	0.15	62.39	4,752.8	-47.7	-40.9	27.1	0.41	-0.16	-128.76
4,780.0	0.11	36.31	4,777.8	-47.6	-40.9	27.1	0.28	-0.16	-104.32
4,805.0	0.10	68.39	4,802.8	-47.6	-40.8	27.1	0.24	-0.04	128.32
4,830.0	0.11	83.36	4,827.8	-47.6	-40.8	27.1	0.12	0.04	59.88
4,855.0	0.19	101.80	4,852.8	-47.6	-40.7	27.2	0.37	0.32	73.76
4,880.0	0.20	112.22	4,877.8	-47.6	-40.6	27.2	0.15	0.04	41.68
4,905.0	0.22	120.19	4,902.8	-47.7	-40.6	27.3	0.14	0.08	31.88
4,930.0	0.38	107.09	4,927.8	-47.7	-40.4	27.4	0.69	0.64	-52.40
4,955.0	0.36	119.01	4,952.8	-47.8	-40.3	27.5	0.32	-0.08	47.68
4,980.0	0.30	112.34	4,977.8	-47.8	-40.2	27.6	0.28	-0.24	-26.68
5,005.0	0.38	122.25	5,002.8	-47.9	-40.0	27.7	0.40	0.32	39.64
5,030.0	0.29	119.63	5,027.8	-48.0	-39.9	27.8	0.37	-0.36	-10.48
5,055.0	0.43	128.84	5,052.8	-48.1	-39.8	28.0	0.60	0.56	36.84
5,080.0	0.40	125.76	5,077.8	-48.2	-39.6	28.1	0.15	-0.12	-12.32
5,105.0	0.39	120.84	5,102.8	-48.3	-39.5	28.3	0.14	-0.04	-19.68
5,130.0	0.50	121.84	5,127.8	-48.4	-39.3	28.4	0.44	0.44	4.00
5,155.0	0.48	112.64	5,152.8	-48.5	-39.1	28.6	0.32	-0.08	-36.80
5,180.0	0.45	122.07	5,177.8	-48.6	-39.0	28.8	0.33	-0.12	37.72
5,205.0	0.41	118.66	5,202.8	-48.7	-38.8	28.9	0.19	-0.16	-13.64
5,230.0	0.46	120.13	5,227.8	-48.8	-38.6	29.1	0.20	0.20	5.88
5,255.0	0.36	117.18	5,252.8	-48.8	-38.5	29.2	0.41	-0.40	-11.80
5,280.0	0.47	117.00	5,277.8	-48.9	-38.3	29.3	0.44	0.44	-0.72
5,305.0	0.49	130.68	5,302.8	-49.0	-38.1	29.5	0.46	0.08	54.72
5,330.0	0.54	118.61	5,327.8	-49.2	-38.0	29.7	0.48	0.20	-48.28
5,355.0	0.44	124.70	5,352.8	-49.3	-37.8	29.9	0.45	-0.40	24.36
5,380.0	0.54	123.08	5,377.8	-49.4	-37.6	30.1	0.40	0.40	-6.48
5,405.0	0.32	123.29	5,402.8	-49.5	-37.4	30.2	0.88	-0.88	0.84
5,430.0	0.40	125.43	5,427.8	-49.6	-37.3	30.4	0.32	0.32	8.56
5,455.0	0.41	134.19	5,452.8	-49.7	-37.2	30.5	0.25	0.04	35.04
5,480.0	0.28	139.15	5,477.8	-49.8	-37.1	30.7	0.53	-0.52	19.84
5,505.0	0.41	133.06	5,502.8	-49.9	-37.0	30.8	0.54	0.52	-24.36
5,530.0	0.61	123.23	5,527.8	-50.0	-36.8	31.0	0.67	0.80	-39.32
5,555.0	0.45	131.21	5,552.8	-50.2	-36.6	31.2	0.70	0.64	31.92
5,580.0	0.48	134.51	5,577.8	-50.3	-36.4	31.4	0.16	0.12	13.20
5,605.0	0.54	127.39	5,602.8	-50.5	-36.3	31.6	0.35	0.24	-28.48
5,630.0	0.41	130.07	5,627.8	-50.6	-36.1	31.8	0.53	0.52	10.72
5,655.0	0.45	135.96	5,652.8	-50.7	-36.0	31.9	0.24	0.16	23.56
5,680.0	0.33	124.32	5,677.8	-50.8	-35.9	32.1	0.57	0.48	-46.56

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Survey Report



<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Moats Unit 3H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Site:</b>	Edwin Pad: Hornet/Miracle/Moats/Myrtle	<b>MD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Well:</b>	Moats Unit 3H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Antero NE

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,705.0	0.53	134.93	5,702.8	-51.0	-35.7	32.3	0.86	0.80	42.44
5,730.0	0.48	136.30	5,727.8	-51.1	-35.6	32.5	0.21	-0.20	5.48
5,755.0	0.68	130.89	5,752.8	-51.3	-35.4	32.7	0.83	0.80	-21.64
5,767.0	0.67	123.82	5,764.8	-51.4	-35.3	32.8	0.70	-0.08	-58.92
<b>Last SDI Gyro @ 5767 MD</b>									
5,810.0	0.54	108.92	5,807.8	-51.6	-34.9	33.2	0.47	-0.30	-34.65
<b>First SDI MWD @ 5810 MD</b>									
5,841.0	0.48	105.83	5,838.8	-51.7	-34.6	33.4	0.21	-0.19	-9.97
5,872.0	0.65	104.77	5,869.8	-51.7	-34.3	33.5	0.55	0.55	-3.42
5,902.0	0.17	177.95	5,899.8	-51.8	-34.1	33.7	2.07	-1.60	243.93
5,933.0	4.56	265.53	5,930.7	-52.0	-35.4	33.3	14.70	14.16	282.52
5,964.0	8.93	269.66	5,961.5	-52.1	-39.0	32.0	14.17	14.10	13.32
5,995.0	12.81	273.20	5,991.9	-51.9	-44.8	29.5	12.69	12.52	11.42
6,026.0	17.38	274.17	6,021.9	-51.4	-52.9	25.7	14.76	14.74	3.13
6,057.0	21.14	271.32	6,051.1	-50.9	-63.1	21.2	12.50	12.13	-9.19
6,088.0	23.68	264.15	6,079.8	-51.4	-74.9	16.9	12.02	8.19	-23.13
6,118.0	24.32	253.61	6,107.2	-53.8	-86.8	14.3	14.43	2.13	-35.13
6,149.0	23.42	240.90	6,135.6	-58.6	-98.3	14.0	16.81	-2.90	-41.00
6,180.0	23.79	230.74	6,164.0	-65.5	-108.6	16.3	13.16	1.19	-32.77
6,211.0	25.19	220.66	6,192.2	-74.5	-117.7	20.8	14.20	4.52	-32.52
6,242.0	28.16	214.20	6,219.9	-85.6	-126.1	27.5	13.38	9.58	-20.84
6,273.0	30.82	209.93	6,246.9	-98.5	-134.2	36.1	10.93	8.58	-13.77
6,293.0	33.20	206.83	6,263.9	-107.8	-139.2	42.6	14.46	11.90	-15.50
<b>Sycamore @ 6293 MD</b>									
6,304.0	34.54	205.29	6,273.0	-113.3	-141.9	46.6	14.46	12.17	-14.00
6,334.0	37.02	199.10	6,297.3	-129.6	-148.5	58.8	14.62	8.27	-20.63
6,365.0	38.39	192.59	6,321.9	-147.8	-153.7	73.4	13.58	4.42	-21.00
6,396.0	39.69	184.49	6,346.0	-167.1	-156.5	89.9	16.97	4.19	-26.13
6,427.0	41.53	177.82	6,369.5	-187.2	-156.9	108.2	15.20	5.94	-21.52
6,458.0	44.02	171.70	6,392.3	-208.1	-155.0	128.1	15.62	8.03	-19.74
6,488.0	47.88	169.62	6,413.1	-229.4	-151.5	149.0	13.80	12.87	-6.93
6,507.0	50.45	169.81	6,425.6	-243.6	-148.9	163.0	13.57	13.55	1.02
<b>Middlesex @ 6507 MD</b>									
6,519.0	52.08	169.93	6,433.1	-252.8	-147.2	172.1	13.57	13.55	0.96
6,550.0	55.57	170.88	6,451.4	-277.4	-143.1	196.3	11.53	11.26	3.06
6,581.0	57.98	171.00	6,468.3	-303.1	-139.0	221.4	7.78	7.77	0.39
6,612.0	60.12	171.82	6,484.3	-329.3	-135.0	247.1	7.27	6.90	2.65
6,642.0	61.27	172.09	6,499.0	-355.2	-131.4	272.2	3.91	5.82	0.90
6,673.0	61.88	171.86	6,513.7	-382.2	-127.6	298.5	2.07	1.97	-0.74
6,704.0	62.76	170.38	6,528.1	-409.4	-123.3	325.0	5.09	2.84	-4.77
6,721.0	63.69	169.10	6,535.8	-424.3	-120.6	339.8	8.66	5.46	7.53
<b>Burkett @ 6721 MD</b>									
6,735.0	64.46	168.06	6,541.9	-436.6	-118.1	352.1	8.66	5.52	-7.42
6,766.0	67.29	165.18	6,554.6	-464.1	-111.6	379.9	12.46	9.10	5.29
6,797.0	71.50	163.05	6,565.5	-492.0	-103.6	408.6	15.03	13.58	0.87

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<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Moats Unit 3H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Site:</b>	Edwin Pad: Hornet/Miracle/Moats/Myrtle	<b>MD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Well:</b>	Moats Unit 3H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Antero NE

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,801.0	72.03	163.06	6,566.7	-495.7	-102.5	412.4	13.23	13.23	0.20
<b>Tully @ 6801 MD</b>									
6,827.0	75.47	163.11	6,574.0	-519.6	-95.3	437.2	13.23	13.23	0.20
6,858.0	78.25	163.19	6,581.1	-548.4	-86.5	457.2	8.97	8.97	0.26
6,889.0	80.03	163.49	6,586.9	-577.6	-77.8	497.4	5.82	5.74	0.97
6,916.0	81.66	163.86	6,591.2	-603.2	-70.3	523.8	6.19	6.03	1.39
<b>MRCL_HOT @ 6916 MD</b>									
6,920.0	81.90	163.92	6,591.8	-607.0	-69.2	527.7	6.19	6.03	1.38
6,951.0	82.71	164.37	6,595.9	-636.5	-60.8	558.2	2.98	2.61	1.45
6,982.0	83.76	163.87	6,599.6	-666.2	-52.4	588.6	3.75	3.39	-1.61
7,012.0	85.19	162.96	6,602.5	-694.8	-43.9	618.3	5.64	4.77	-3.03
7,043.0	86.67	160.96	6,604.7	-724.2	-34.3	649.0	8.01	4.77	-6.45
7,071.0	87.75	159.15	6,606.0	-750.5	-24.7	676.9	7.52	3.86	-6.46
7,102.0	88.62	157.40	6,607.0	-779.2	-13.3	707.9	6.30	2.81	-5.65
7,133.0	88.79	157.32	6,607.7	-807.8	-1.3	738.9	0.61	0.55	-0.26
7,164.0	88.86	157.72	6,608.3	-836.5	10.5	769.9	1.31	0.23	1.29
7,225.0	88.29	155.55	6,609.9	-892.5	34.7	830.9	3.68	-0.93	-3.56
7,318.0	88.09	153.87	6,612.8	-976.5	74.4	923.8	1.82	-0.22	-1.81
7,411.0	88.36	152.42	6,615.7	-1,059.4	116.4	1,016.6	1.59	0.29	-1.56
7,503.0	88.43	152.52	6,618.2	-1,141.0	158.9	1,108.4	0.13	0.08	0.11
7,596.0	89.06	153.88	6,620.3	-1,224.0	200.8	1,201.2	1.61	0.68	1.46
7,688.0	89.13	153.66	6,621.7	-1,306.5	241.5	1,293.1	0.25	0.08	-0.24
7,781.0	89.30	153.92	6,623.0	-1,389.9	282.5	1,386.0	0.33	0.18	0.28
7,873.0	89.50	153.99	6,624.0	-1,472.6	322.9	1,477.9	0.23	0.22	0.08
7,966.0	89.57	155.58	6,624.7	-1,556.7	362.6	1,570.9	1.71	0.08	1.71
8,058.0	89.77	157.99	6,625.3	-1,641.2	398.8	1,662.9	2.63	0.22	2.62
8,151.0	89.03	159.15	6,626.2	-1,727.8	432.8	1,755.8	1.48	-0.80	1.25
8,244.0	88.26	158.29	6,628.4	-1,814.4	466.5	1,848.7	1.24	-0.83	-0.92
8,336.0	88.49	159.45	6,631.0	-1,900.2	499.7	1,940.5	1.28	0.25	1.26
8,429.0	88.73	156.76	6,633.3	-1,986.5	534.4	2,033.5	2.90	0.26	-2.89
8,521.0	87.15	154.70	6,636.6	-2,070.3	572.1	2,125.4	2.82	-1.72	-2.24
8,614.0	87.75	154.53	6,640.7	-2,154.2	612.0	2,218.3	0.67	0.65	-0.18
8,706.0	89.30	154.37	6,643.1	-2,237.2	651.6	2,310.2	1.69	1.68	-0.17
8,799.0	89.63	154.30	6,644.0	-2,321.0	691.9	2,403.1	0.36	0.35	-0.08
8,891.0	89.97	156.88	6,644.3	-2,404.8	729.9	2,495.1	2.83	0.37	2.80
8,984.0	87.00	156.37	6,646.8	-2,490.1	766.8	2,588.1	3.24	-3.19	-0.55
9,076.0	87.11	156.14	6,651.5	-2,574.2	803.8	2,679.9	0.28	0.12	-0.25
9,168.0	88.79	155.06	6,654.8	-2,657.9	841.8	2,771.9	2.17	1.83	1.17
9,261.0	90.59	153.70	6,655.3	-2,741.8	882.0	2,864.8	2.43	1.94	-1.46
9,353.0	89.32	155.34	6,655.4	-2,824.8	921.6	2,956.8	2.25	-1.38	1.78
9,446.0	89.02	155.27	6,656.7	-2,909.3	960.4	3,049.7	0.33	0.33	-0.08
9,538.0	89.22	156.00	6,658.1	-2,993.1	998.4	3,141.7	0.82	0.22	0.79
9,631.0	88.91	156.75	6,659.6	-3,078.3	1,035.6	3,234.7	0.87	0.53	0.81

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Scientific Drilling International  
Survey Report



<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Moats Unit 3H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Site:</b>	Edwin Pad: Hornet/Miracle/Moats/Myrtle	<b>MD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Well:</b>	Moats Unit 3H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Antero NE

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,723.0	88.65	157.85	6,661.6	-3,163.2	1,071.1	3,326.7	1.23	-0.28	1.20
9,816.0	89.66	159.48	6,663.0	-3,249.8	1,105.0	3,419.6	2.06	1.09	1.75
9,908.0	88.79	158.52	6,664.2	-3,335.7	1,137.9	3,511.5	1.41	-0.95	-1.04
10,001.0	89.49	156.62	6,665.6	-3,421.6	1,173.4	3,604.4	2.18	0.75	-2.04
10,094.0	88.95	154.65	6,666.9	-3,506.3	1,211.8	3,697.4	2.20	-0.58	-2.12
10,186.0	90.23	153.57	6,667.5	-3,589.1	1,251.9	3,789.3	1.82	1.39	-1.17
10,279.0	89.96	155.17	6,667.4	-3,672.9	1,292.2	3,882.3	1.74	-0.29	1.72
10,371.0	89.49	155.52	6,667.8	-3,756.5	1,330.5	3,974.3	0.64	-0.51	0.38
10,464.0	90.16	156.79	6,668.1	-3,841.6	1,368.1	4,067.3	1.54	0.72	1.37
10,557.0	90.13	156.76	6,667.9	-3,927.1	1,404.8	4,160.3	0.05	-0.03	-0.03
10,649.0	89.59	157.73	6,668.1	-4,011.9	1,440.4	4,252.2	1.21	-0.59	1.05
10,742.0	89.83	158.19	6,668.6	-4,098.1	1,475.3	4,345.2	0.56	0.26	0.49
10,834.0	89.02	156.88	6,669.5	-4,183.1	1,510.4	4,437.2	1.67	-0.88	-1.42
10,927.0	89.12	156.59	6,671.0	-4,268.5	1,547.2	4,530.2	0.33	0.11	-0.31
11,019.0	89.79	156.11	6,671.9	-4,352.8	1,584.1	4,622.2	0.90	0.73	-0.52
11,112.0	90.29	156.09	6,671.8	-4,437.8	1,621.8	4,715.2	0.54	0.54	-0.02
11,204.0	90.56	156.29	6,671.1	-4,522.0	1,658.9	4,807.1	0.37	0.29	0.22
11,297.0	90.13	155.45	6,670.6	-4,606.9	1,696.9	4,900.1	1.01	-0.46	-0.90
11,389.0	90.30	155.39	6,670.2	-4,690.5	1,735.2	4,992.1	0.20	0.18	-0.07
11,482.0	90.91	156.23	6,669.2	-4,775.4	1,773.3	5,085.1	1.12	0.66	0.90
11,575.0	89.60	156.34	6,668.8	-4,860.5	1,810.7	5,178.1	1.41	-1.41	0.12
11,667.0	89.80	156.36	6,669.3	-4,944.8	1,847.6	5,270.1	0.22	0.22	0.02
11,760.0	90.17	156.43	6,669.3	-5,030.0	1,884.8	5,363.1	0.40	0.40	0.08
11,852.0	90.17	156.14	6,669.1	-5,114.2	1,921.8	5,455.1	0.32	0.00	-0.32
11,945.0	89.06	156.06	6,669.7	-5,199.2	1,959.5	5,548.1	1.20	-1.19	-0.09
12,037.0	89.13	156.59	6,671.1	-5,283.5	1,996.4	5,640.1	0.58	0.08	0.58
12,130.0	90.64	157.03	6,671.3	-5,369.0	2,033.1	5,733.1	1.69	1.62	0.47
12,223.0	91.14	157.90	6,669.9	-5,454.9	2,068.7	5,826.1	1.08	0.54	0.94
12,315.0	90.27	157.21	6,668.7	-5,539.9	2,103.8	5,918.0	1.21	-0.95	-0.75
12,408.0	89.37	155.40	6,669.0	-5,625.0	2,141.2	6,011.0	2.17	-0.97	-1.95
12,501.0	89.57	153.99	6,669.9	-5,709.1	2,180.9	6,104.0	1.53	0.22	-1.52
12,593.0	91.68	152.99	6,668.9	-5,791.4	2,222.0	6,195.9	2.54	2.29	-1.09
12,686.0	91.68	154.63	6,666.2	-5,874.8	2,263.0	6,288.7	1.76	0.00	1.76
12,779.0	91.79	156.36	6,663.3	-5,959.4	2,301.6	6,381.7	1.86	0.12	1.86
12,871.0	90.98	156.03	6,661.1	-6,043.6	2,338.7	6,473.7	0.95	-0.88	-0.36
12,964.0	91.25	156.14	6,659.3	-6,128.6	2,376.4	6,566.6	0.31	0.29	0.12
13,056.0	90.41	155.82	6,658.0	-6,212.6	2,413.8	6,658.6	0.98	-0.91	-0.35
13,149.0	90.58	156.58	6,657.2	-6,297.7	2,451.4	6,751.6	0.84	0.18	0.82
13,241.0	90.71	157.20	6,656.1	-6,382.3	2,487.5	6,843.6	0.69	0.11	0.67
13,334.0	91.11	158.27	6,654.7	-6,468.3	2,522.7	6,936.6	1.23	0.43	1.15
13,426.0	91.15	158.06	6,652.8	-6,553.7	2,556.9	7,028.5	0.23	0.03	-0.23
13,519.0	91.42	158.23	6,650.8	-6,640.0	2,591.5	7,121.4	0.34	0.29	0.18
<b>Last SDI MWD @ 13519 MD</b>									
13,594.0	91.42	158.23	6,648.9	-6,709.7	2,619.3	7,196.4	0.00	0.00	0.00

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<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Moats Unit 3H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Site:</b>	Edwin Pad: Hornet/Miracle/Moats/Myrtle	<b>MD Reference:</b>	Precision 522: GL 1191' + KB 18' @ 1209.0usft
<b>Well:</b>	Moats Unit 3H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Antero NE

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Projection To Bit @ 13594 MD / 6648 TVD									

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,293.0	6,263.9	Sycamore @ 6293 MD		0.00	
6,507.0	6,425.6	Middlesex @ 6507 MD		0.00	
6,721.0	6,535.8	Burkett @ 6721 MD		0.00	
6,801.0	6,566.7	Tully @ 6801 MD		0.00	
6,916.0	6,591.2	MRCL_HOT @ 6916 MD		0.00	

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
105.0	105.0	-0.1	-1.0	First SDI Gyro @ 105 MD
5,767.0	5,764.8	-51.4	-35.3	Last SDI Gyro @ 5767 MD
5,810.0	5,807.8	-51.6	-34.9	First SDI MWD @ 5810 MD
13,519.0	6,650.8	-6,640.0	2,591.5	Last SDI MWD @ 13519 MD
13,594.0	6,648.9	-6,709.7	2,619.3	Projection To Bit @ 13594 MD / 6648 TVD

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

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09/16/2016

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/23/2015
Job End Date:	1/4/2016
State:	West Virginia
County:	Ritchie
API Number:	47-085-10141-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Moats 3H
Longitude:	-80.90281700
Latitude:	39.23040600
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,672
Total Base Water Volume (gal):	9,221,604
Total Base Non Water Volume:	0



## Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Antero Resources	Base Fluid	Water	7732-18-5	100.00000	90.31900	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	9.30610	
LGC-15	U.S. Well Services	Gelling Agents	Guar Gum	9000-30-0	50.00000	0.07436	
			Petroleum Distillates	64742-47-8	60.00000	0.07042	
			Suspending agent (solid)	14808-60-7	3.00000	0.01137	
			Surfactant	68439-51-0	3.00000	0.00446	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.50000	0.08668	
			Hydrogen Chloride	7647-01-0	18.00000	0.02071	
WFRA-405	U.S. Well Services	Friction Reducer	Water	7732-18-5	60.00000	0.04011	
			2-Propenoic acid, polymer with 2-propenamide	9003-06-9	30.00000	0.02005	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01614	
			Ethoxylated alcohol blend	68002-97-1	4.00000	0.00267	

SI-1100	U.S. Well Services	Scale Inhibitor				
			Water	7732-18-5	80.00000	0.01037
			Ethylene Glycol	107-21-1	25.00000	0.00366
			Copolymer of Maleic and Acrylic acid	52255-49-9	10.00000	0.00153
			Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8	7.50000	0.00131
			Hexamethylene tramine penta (methylene phosphonic acid)	34690-00-1	5.00000	0.00084
			Phosphino carboxylic acid polymer	71050-62-9	5.00000	0.00084
			Hexamethylene diamine penta (methylene phosphonic acid)	23605-74-5	2.00000	0.00034
K-BAC 1020	U.S. Well Services	Anti-Bacterial Agent				
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00428
			Deionized Water	7732-18-5	28.00000	0.00245
AP One	U.S. Well Services	Gel Breakers				
			Ammonium Persulfate	7727-54-0	100.00000	0.00187
AI-302	U.S. Well Services	Acid Corrosion Inhibitors				
			Water	7732-18-5	95.00000	0.00036
			2-Propyn-1-olcompound with methyloxirane	38172-91-7	15.00000	0.00006
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.						

\* Total Water Volume sources may include fresh water, produced water, and/or recycled water

\*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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LATITUDE 39°15'00"

7,928'

5,317' TO BOTTOM HOLE  
LATITUDE 39°15'00"

LONGITUDE 80°52'30"

7,165'

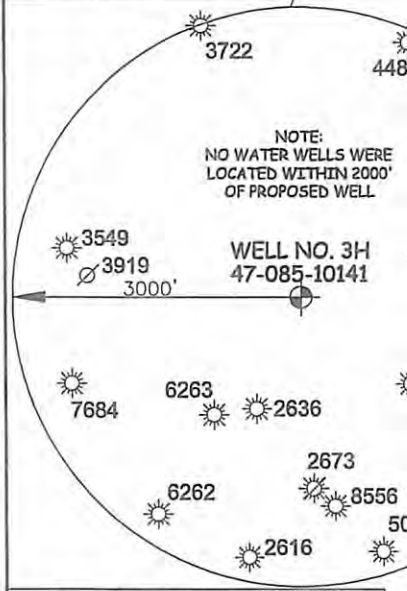
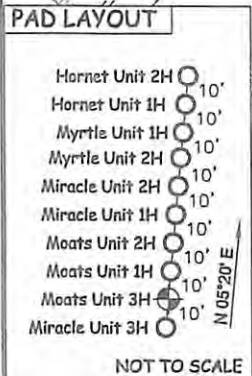
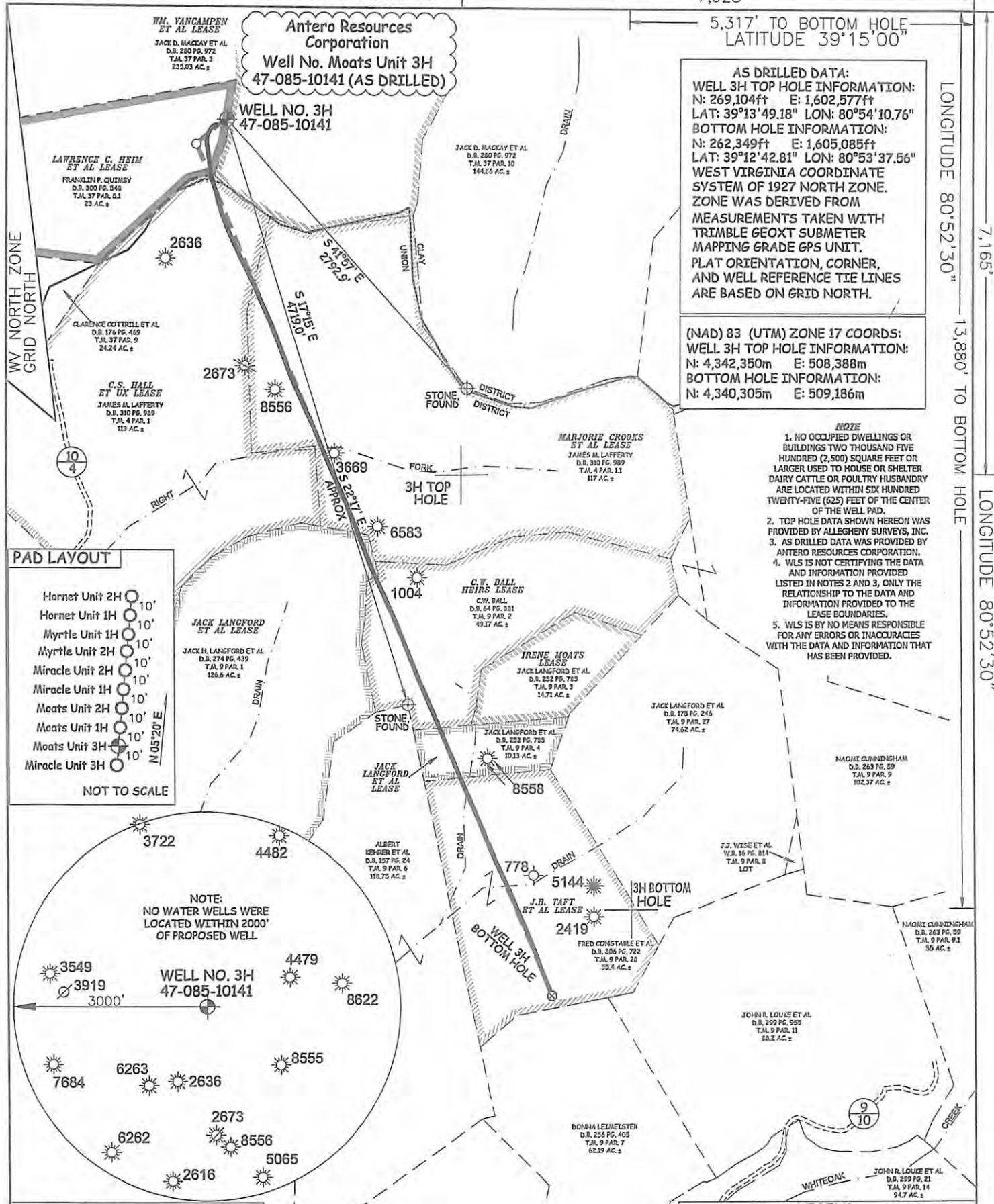
LONGITUDE 80°52'30"

Antero Resources Corporation  
Well No. Moats Unit 3H  
47-085-10141 (AS DRILLED)

AS DRILLED DATA:  
WELL 3H TOP HOLE INFORMATION:  
N: 269,104ft E: 1,602,577ft  
LAT: 39°13'49.18" LON: 80°54'10.76"  
BOTTOM HOLE INFORMATION:  
N: 262,349ft E: 1,605,085ft  
LAT: 39°12'42.81" LON: 80°53'37.56"  
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE.  
ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:  
WELL 3H TOP HOLE INFORMATION:  
N: 4,342,350m E: 508,388m  
BOTTOM HOLE INFORMATION:  
N: 4,340,305m E: 509,186m

- NOTE**
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
  2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
  3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
  4. WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.
  5. WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.



JOB # 13-051WA  
DRAWING # MOATS3HAD  
SCALE 1" = 1000'  
MINIMUM DEGREE OF ACCURACY SUBMETER  
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

WILLOW LAND SURVEYING PLLC  
220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

**LEGEND**

- Surface Owner Boundary Lines +/-
- Interior Surface Tracts +/-
- Existing Fence
- Found monument, as noted
- Proposed Well Path
- As Drilled Well Path

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

WELL TYPE: OIL \_\_\_ GAS  LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
(IF "GAS") PRODUCTION  STORAGE \_\_\_ DEEP \_\_\_ SHALLOW

LOCATION: ELEVATION 1,216' ORIGINAL - 1,191' AS DRILLED WATERSHED NORTH FORK HUGHES RIVER  
QUADRANGLE PULLMAN 7.5' DISTRICT CLAY (TH) UNION (BH) COUNTY RITCHIE

SURFACE OWNER FRANKLIN P. QUIMBY ACREAGE 23 ACRES #/ED 09/16/2016  
OIL & GAS ROYALTY OWNER LAWRENCE C. HEIM ET AL; C.S. HALL ET UX; LEASE ACREAGE 53 AC±; 113 AC±;  
MARJORIE CROOKS ET AL; JACK LANGFORD ET AL; C.W. BALL HEIRS; JACK LANGFORD ET AL; J.B. TAFT ET AL 117 AC±; 448.5 AC±; 49.27 AC±; 10 AC±; 57 AC±

PROPOSED WORK: DRILL \_\_\_ CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE \_\_\_  
PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) (AS DRILLED) PLUG & ABANDON \_\_\_ CLEAN OUT & REPLUG \_\_\_  
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,849' TVD 13,594' MD

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER  
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD  
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

COUNTY NAME PERMIT

LATITUDE 39°15'00"

7,928'

5,317' TO BOTTOM HOLE  
LATITUDE 39°15'00"

LONGITUDE 80°52'30"

7,165'

13,880' TO BOTTOM HOLE

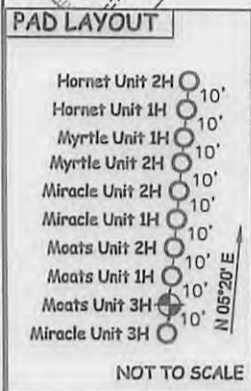
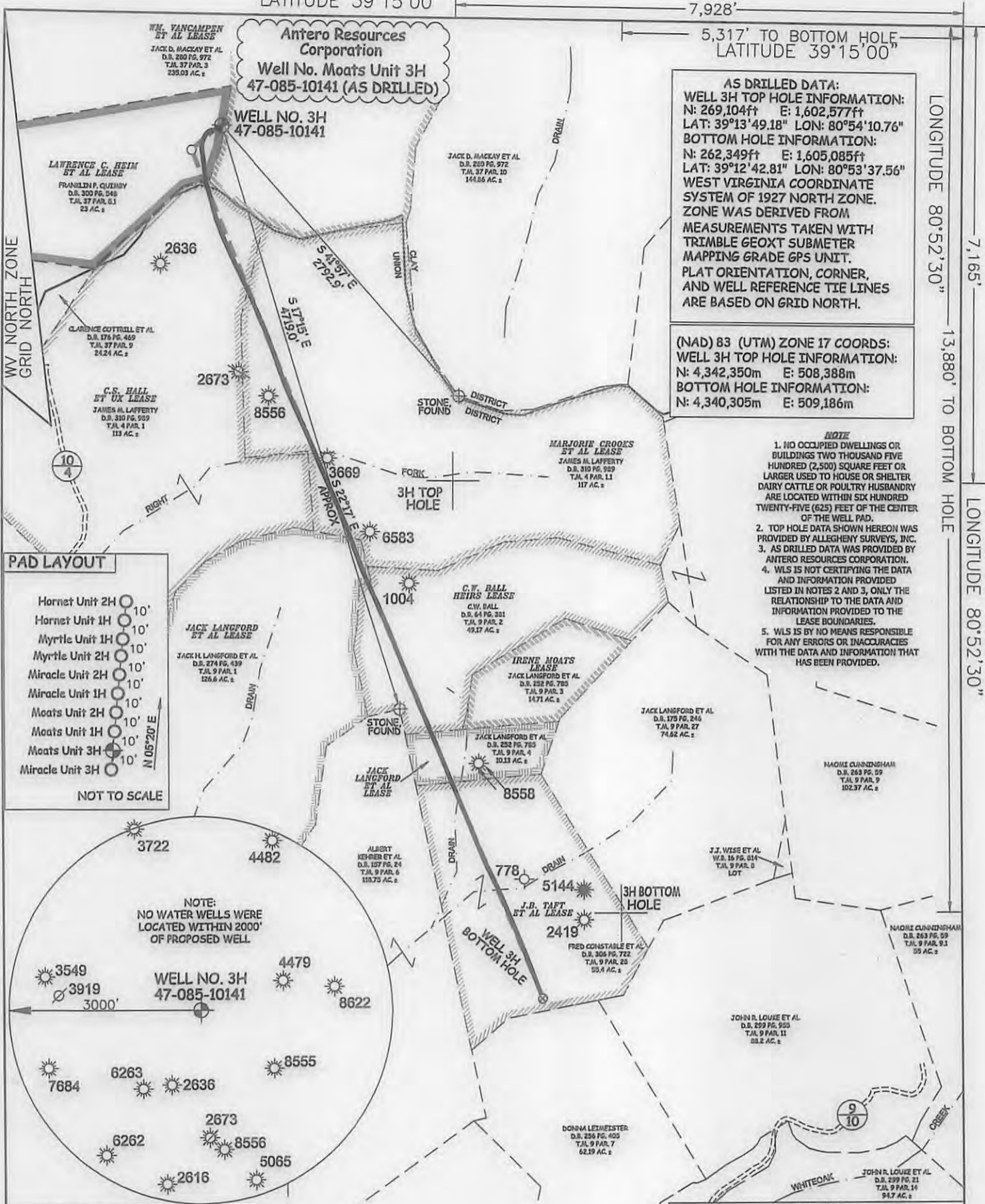
LONGITUDE 80°52'30"

Antero Resources Corporation  
Well No. Moats Unit 3H  
47-085-10141 (AS DRILLED)

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MINIMUM DEGREE OF ACCURACY SUBMETER  
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

WELL TYPE: OIL \_\_\_ GAS X LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
(IF "GAS") PRODUCTION X STORAGE \_\_\_ DEEP \_\_\_ SHALLOW X

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QUADRANGLE PULLMAN 7.5' DISTRICT CLAY (TH) UNION (BH) COUNTY CLAY PERMIT 09016/2016

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PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) (AS DRILLED) \_\_\_ PLUG & ABANDON \_\_\_ CLEAN OUT & REPLUG \_\_\_  
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,649' TVD 13,594' MD

WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER  
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD  
DENVER, CO 80202 CHARLESTON, WV 25313



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

WILLOW LAND SURVEYING PLLC  
220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

**LEGEND**

- Surface Owner Boundary Lines +/-
- - - Interior Surface Tracts +/-
- X Existing Fence
- ⊕ Found monument, as noted
- Proposed Well Path
- ⊗ As Drilled Well Path

DATE 2/24/2016  
OPERATOR'S WELL# MOATS UNIT #3H  
API WELL # 47 - 085 - 10141  
STATE COUNTY PERMIT