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Rev. 8/23/13

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

API 47 - 017 - 06223 County Doddridge District West Union
Quad West Union 7.5' Pad Name Bee Lewis Pad Field/Pool Name ----
Farm name Bee, Lewis P. Well Number Livingston Unit 1H
Operator (as registered with the OOG) Antero Resources Corportion
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 4345085m Easting 515282m
Landing Point of Curve Northing 4345581.92m Easting 514866.51m
Bottom Hole Northing 4347836m Easting 513813m

Elevation (ft) 1003' 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 5/28/2013 Date drilling commenced 11/21/2013 Date drilling ceased 12/26/2013
Date completion activities began 3/6/2014 Date completion activities ceased 6/17/2014
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 56', 136' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 466', 996' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 101', 590' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:
A.L. 5/26/15
W.S. 6/2/15 Erisonly

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API 47- 017 - 06223 Farm name Bee, Lewis P. Well number Livingston Unit 1H

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	24"	20"	59'	New	94# H-40	N/A	Y
Surface	17- 1/2"	13- 3/8"	359'	New	48# H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2622'	New	36# J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	16681'	New	23# P-110	N/A	Y
Tubing		2-3/8"	6743'		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 ^{3}/sks)	Volume (ft ^{3})	Cement Top (MD)	WOC (hrs)
Conductor	Class A	120 sx	16.0	1.09	57	0'	8 Hrs.
Surface	Class A	422 sx	15.6	1.18	249	0'	8 Hrs.
Coal							
Intermediate 1	Class A	968 sx	15.6	1.18	821	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	970 sx (Lead) 1132 sx (Tail)	14.25 Lead 15.2 Tail	1.3 Lead 1.86 Tail	3335	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 16681' MD, 6592' TVD (BHL); 6674' TVD (Deepest point drilled) Loggers TD (ft) 16630'

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6251'

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Squirrel Unit 1H API#47-017-06258). Please reference the wireline logs submitted with Form WR-35 for Squirrel 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 aboce 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

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

*PLEASE SEE ATTACHED EXHIBIT 1

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)

*PLEASE SEE ATTACHED EXHIBIT 2

Please insert additional pages as applicable.

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API 47- 017 - 06223 Farm name Bee, Lewis P. Well number Livingston Unit 1H

PRODUCING FORMATION(S)	DEPTHS			
Marcellus	6534' (TOP)	TVD	6831' (TOP)	MD

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Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST ■ Flow □ Pump

SHUT-IN PRESSURE Surface 3600 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 15892 mcfpd Oil 67 bpd NGL --- bpd Water 664 bpd GAS MEASURED BY □ Estimated ■ Orifice □ Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	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 600 Alpha Drive City Canonsburg State PA Zip 15317

Cementing Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378
Please insert additional pages as applicable.

Completed by Kara Quackenbush Telephone 303-357-7233
Signature Kara Quackenbush Title Permit Representative Date 1/27/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

API 47-017-06223 Farm Name Bee, Lewis P. Well Number Livingston Unit 1H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	6-Mar-14	16,422	16,590	60	Marcellus
2	30-Mar-14	16,223	16,391	60	Marcellus
3	30-Mar-14	16,024	16,192	60	Marcellus
4	30-Mar-14	15,825	15,993	60	Marcellus
5	31-Mar-14	15,626	15,794	60	Marcellus
6	31-Mar-14	15,427	15,595	60	Marcellus
7	31-Mar-14	15,228	15,396	60	Marcellus
8	1-Apr-14	15,029	15,197	60	Marcellus
9	1-Apr-14	14,830	14,998	60	Marcellus
10	1-Apr-14	14,631	14,799	60	Marcellus
11	2-Apr-14	14,432	14,600	60	Marcellus
12	2-Apr-14	14,233	14,401	60	Marcellus
13	2-Apr-14	14,034	14,202	60	Marcellus
14	3-Apr-14	13,835	14,003	60	Marcellus
15	3-Apr-14	13,636	13,804	60	Marcellus
16	3-Apr-14	13,437	13,605	60	Marcellus
17	3-Apr-14	13,238	13,406	60	Marcellus
18	3-Apr-14	13,039	13,207	60	Marcellus
19	4-Apr-14	12,840	13,008	60	Marcellus
20	4-Apr-14	12,641	12,809	60	Marcellus
21	4-Apr-14	12,442	12,610	60	Marcellus
22	4-Apr-14	12,243	12,411	60	Marcellus
23	5-Apr-14	12,044	12,212	60	Marcellus
24	5-Apr-14	11,845	12,013	60	Marcellus
25	5-Apr-14	11,646	11,814	60	Marcellus
26	5-Apr-14	11,447	11,615	60	Marcellus
27	6-Apr-14	11,248	11,416	60	Marcellus
28	6-Apr-14	11,049	11,217	60	Marcellus
29	6-Apr-14	10,850	11,018	60	Marcellus
30	6-Apr-14	10,651	10,819	60	Marcellus
31	7-Apr-14	10,452	10,620	60	Marcellus
32	7-Apr-14	10,253	10,421	60	Marcellus
33	7-Apr-14	10,054	10,222	60	Marcellus
34	7-Apr-14	9,855	10,023	60	Marcellus
35	8-Apr-14	9,656	9,824	60	Marcellus
36	8-Apr-14	9,457	9,625	60	Marcellus
37	8-Apr-14	9,258	9,426	60	Marcellus
38	8-Apr-14	9,059	9,227	60	Marcellus
39	8-Apr-14	8,860	9,028	60	Marcellus
40	9-Apr-14	8,661	8,829	60	Marcellus
41	10-Apr-14	8,462	8,630	60	Marcellus
42	10-Apr-14	8,263	8,431	60	Marcellus
43	10-Apr-14	8,064	8,232	60	Marcellus
44	10-Apr-14	7,865	8,033	60	Marcellus
45	10-Apr-14	7,666	7,834	60	Marcellus
46	10-Apr-14	7,467	7,635	60	Marcellus
47	11-Apr-14	7,268	7,436	60	Marcellus
48	11-Apr-14	7,069	7,237	60	Marcellus
49	11-Apr-14	6,870	7,038	60	Marcellus

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API 47-017-06223 Farm Name Bee, Lewis P. Well Number Livingston Unit 1H

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	30-Mar-14	78.8	7,884	5,810	5,403	220,200	6,203	N/A
2	30-Mar-14	73.8	7,611	6,565	4,906	229,200	6,218	N/A
3	30-Mar-14	76.6	7,808	5,875	5,544	230,500	6,173	N/A
4	31-Mar-14	72.1	7,617	5,961	4,898	230,200	6,168	N/A
5	31-Mar-14	73.7	7,977	5,549	4,873	227,700	6,142	N/A
6	31-Mar-14	73.3	7,569	5,588	5,313	229,600	6,036	N/A
7	1-Apr-14	74.4	7,666	5,457	4,364	221,400	5,948	N/A
8	1-Apr-14	70.3	7,516	5,961	4,723	229,000	6,046	N/A
9	1-Apr-14	70.4	7,587	5,695	4,862	227,600	6,028	N/A
10	1-Apr-14	80.0	7,495	5,186	5,172	227,800	6,111	N/A
11	2-Apr-14	71.8	7,864	5,801	3,393	227,700	5,011	N/A
12	2-Apr-14	70.8	7,677	5,247	4,882	231,400	6,075	N/A
13	2-Apr-14	75.1	8,033	5,779	5,109	230,800	6,041	N/A
14	3-Apr-14	74.3	7,639	5,487	4,730	226,600	5,994	N/A
15	3-Apr-14	75.7	7,387	5,425	4,545	230,100	5,997	N/A
16	3-Apr-14	71.7	7,663	5,274	4,406	229,400	5,978	N/A
17	3-Apr-14	80.4	7,185	4,775	4,932	225,200	5,943	N/A
18	4-Apr-14	76.2	7,126	5,500	4,898	184,100	6,465	N/A
19	4-Apr-14	79.9	7,110	5,454	4,746	199,300	6,431	N/A
20	4-Apr-14	77.6	7,441	4,819	4,799	226,500	5,856	N/A
21	4-Apr-14	78.6	7,189	5,127	4,288	228,300	5,885	N/A
22	4-Apr-14	80.5	7,241	5,332	5,112	228,100	5,913	N/A
23	5-Apr-14	77.3	7,221	5,325	4,803	227,100	5,754	N/A
24	5-Apr-14	73.1	7,446	5,290	5,280	160,500	6,369	N/A
25	5-Apr-14	75.2	7,755	5,307	5,076	215,600	6,386	N/A
26	6-Apr-14	76.4	7,788	5,786	4,456	229,200	5,888	N/A
27	6-Apr-14	75.8	7,672	5,450	5,335	228,800	5,814	N/A
28	6-Apr-14	78.3	7,494	5,545	5,203	227,000	5,789	N/A
29	6-Apr-14	68.5	7,917	5,325	5,225	184,100	6,147	N/A
30	6-Apr-14	75.3	7,797	5,779	4,653	221,400	6,244	N/A
31	7-Apr-14	76.1	7,560	5,281	5,144	228,800	5,798	N/A
32	7-Apr-14	71.2	7,729	5,549	4,656	98,500	5,972	N/A
33	7-Apr-14	67.4	7,863	6,167	5,317	143,900	6,315	N/A
34	8-Apr-14	64.1	7,999	5,947	4,807	100,800	5,826	N/A
35	8-Apr-14	73.7	7,725	5,900	5,254	203,400	5,688	N/A
36	8-Apr-14	65.9	7,734	5,251	5,402	122,100	5,763	N/A
37	8-Apr-14	73.3	7,590	5,439	4,346	229,900	5,817	N/A
38	8-Apr-14	73.0	7,578	5,384	5,240	198,300	5,672	N/A
39	9-Apr-14	75.4	7,430	5,370	5,586	221,100	5,791	N/A
40	9-Apr-14	77.1	6,727	5,835	5,622	221,600	5,712	N/A
41	10-Apr-14	80.5	6,635	5,310	5,288	229,500	5,454	N/A
42	10-Apr-14	81.4	6,725	5,808	5,361	231,100	5,749	N/A
43	10-Apr-14	80.5	7,004	5,962	5,462	225,700	5,645	N/A
44	10-Apr-14	79.0	7,016	5,508	4,918	229,700	5,572	N/A
45	10-Apr-14	77.9	7,118	6,401	4,946	230,500	5,606	N/A
46	11-Apr-14	77.8	7,055	6,483	4,996	229,800	5,690	N/A
47	11-Apr-14	78.5	7,294	6,079	4,633	162,400	5,551	N/A
48	11-Apr-14	77.9	7,216	5,955	5,521	167,400	6,036	N/A
49	11-Apr-14	80.7	6,614	6,248	4,302	200,300	5,160	N/A
AVG=		**75**	**7,469**	**5,619**	**4,954**	**10,309,200**	**289,870**	TOTAL

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API 47-017-06223 Farm Name Lewis, Bee P. Well Number Livingston Unit 1H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	**TOP DEPTH (TVD) From Surface**	**BOTTOM DEPTH (TVD) From Surface**	**TOP DEPTH (MD) From Surface**	**BOTTOM DEPTH (MD) From Surface**
Fresh Water	56'	N/A	56'	N/A
Fresh Water	136'	N/A	136'	N/A
Shale	0	101	0	101
Coal	est. 101	141	est. 101	141
Shale	est. 141	301	est. 141	301
Sandstone	est. 301	341	est. 301	341
Shale/Sandstone/Siltstone	est. 341	590	est. 341	590
Coal	est. 590	611	est. 590	611
Shale/Siltstone	est. 611	1486	est. 611	1486
Siltstone w/Coal	est. 1486	1541	est. 1486	1541
Siltstone/Sandstone	est. 1541	1879	est. 1541	1882
Big Lime	1879	1989	1882	1992
Big Injun	1989	2449	1992	2452
Gantz Sand	2449	2560	2452	2563
Fifty Foot Sandstone	2560	2638	2563	2641
Gordon	2638	2944	2641	2947
Fifth Sandstone	2944	2970	2947	2973
Bayard	2970	3348	2973	3351
Warren	3348	3682	3351	3685
Speechley	3682	4004	3685	4007
Baltown	4004	4461	4007	4464
Bradford	4461	4889	4464	4893
Benson	4889	5169	4893	5177
Alexander	5169	5341	5177	5356
Elk	5341	5745	5356	5783
Rhinestreet	5745	6234	5783	6234
Sycamore	6156	6334	6234	6446
Middlesex	6334	6464	6446	6653
Burkett	6464	6495	6653	6721
Tully	6495	6534	6721	6831
Marcellus	6534	NA	6831	NA

*Please note Antero determines shallow formation tops based on mud and/or wireline logs that are only run on one well on a multi-well pad (Please reference Wireline Logs submitted for the Squirrel Unit 1H API# 47-017-06258). The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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Antero Resources

WELL DETAILS: Livingston Unit 1H

Ground Level: 1003.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	14254786.12	1690508.16	39° 15' 17.554 N	80° 49' 22.970 W	

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Livingston Unit 1H, Grid North
Vertical (TVD) Reference: Livingston Unit 1H 1003' GL + 19' RKB @ 1022.0usft
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: Livingston Unit 1H 1003' GL + 19' RKB @ 1022.0usft
Calculation Method: Minimum Curvature

Scientific Drilling

Genie Lightfoot
Scientific Drilling
421 South Eagle Lane
Oklahoma City Oklahoma
405-787-3663

Antero Resources
Livingston Unit 1H
Doddridge County WV
Northing: 14254786.12
Easting: 1690508.16
As Drilled

LEGEND

Livingston Unit 1H, Original Wellpath, Plan 7 V0
As Drilled

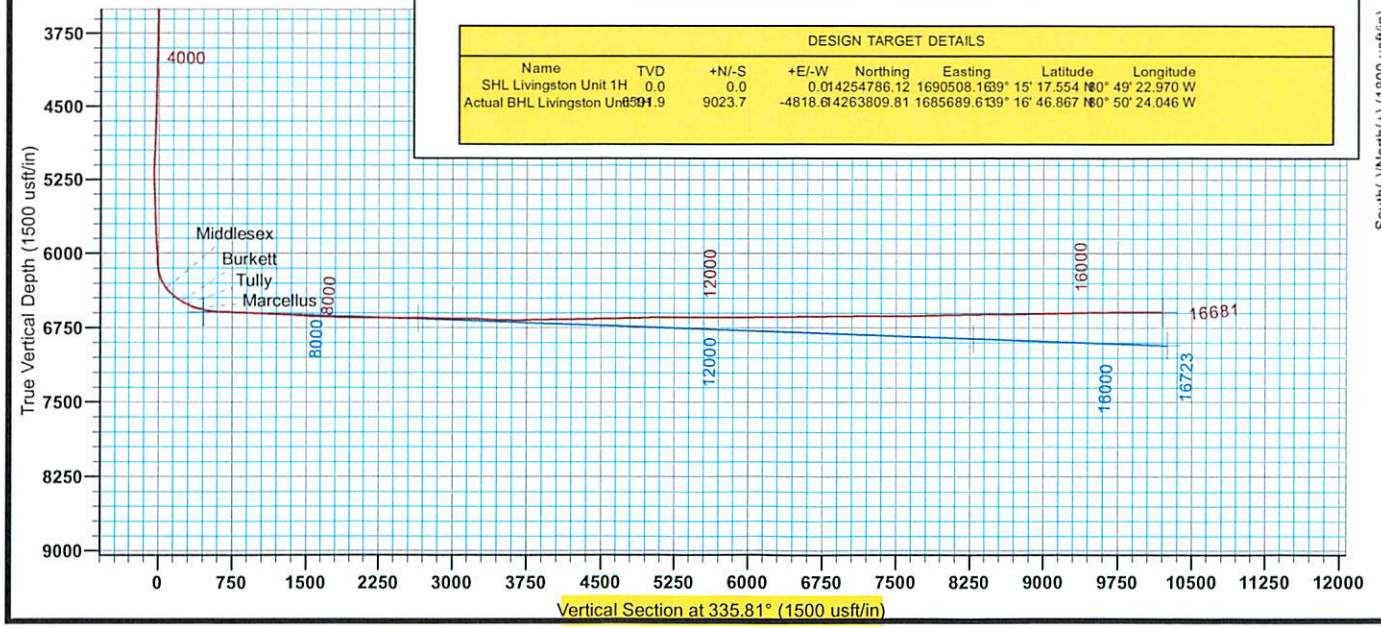
DESIGN TARGET DETAILS

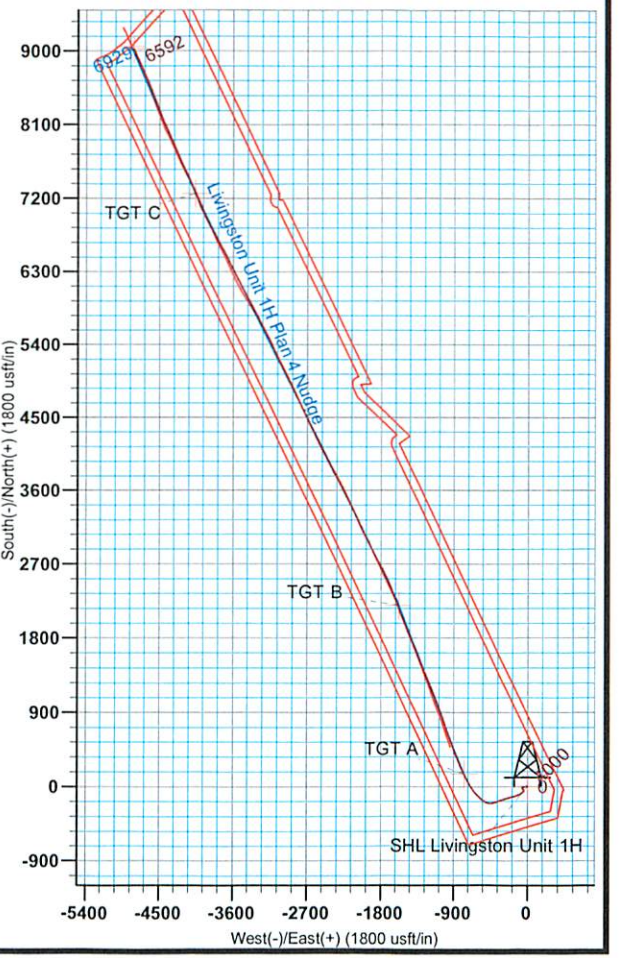
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Livingston Unit 1H	0.0	0.0	0.0	14254786.12	1690508.16	39° 15' 17.554 N	80° 49' 22.970 W
Actual BHL Livingston Unit	6591.9	9023.7	-4818.6	14263809.81	1685689.61	39° 16' 46.867 N	80° 50' 24.046 W

To convert Magnetic North to Grid, Subtract 8.53°
To convert True North to Grid, Subtract 0.11°

Azimuths to Grid North
True North: -0.11°
Magnetic North: -8.53°

Magnetic Field
Strength: 52352.5snT
Dip Angle: 66.84°
Date: 11/18/2013
Model: IGRF2010





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Doddridge County WV
Squirrel/Livingston/Vonda Pad
Livingston Unit 1H
Original Wellpath

Design: As Drilled

EOW Completion Report

27 December, 2013

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Scientific Drilling

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Livingston Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Livingston Unit 1H 1003' GL + 19' RKB @ 1022.0ı
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Livingston Unit 1H 1003' GL + 19' RKB @ 1022.0ı
Well:	Livingston Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Project Doddridge County WV, McClellan District

Map System:	Universal Transverse Mercator (US Survey Fee	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site Squirrel/Livingston/Vonda Pad

Site Position:		**Northing:**	14,254,779.42 usft	**Latitude:**	39° 15' 17.488 N
From:	Map	**Easting:**	1,690,526.27 usft	**Longitude:**	80° 49' 22.740 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.11 °

Well Livingston Unit 1H

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,254,786.12 usft	**Latitude:**	39° 15' 17.554 N
	+E/-W	0.0 usft	**Easting:**	1,690,508.16 usft	**Longitude:**	80° 49' 22.970 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**	1,022.0 usft	**Ground Level:**	1,003.0 usft

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/18/2013	-8.41	66.84	52,353

Design As Drilled

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	335.81

Survey Program **Date** 12/27/2013

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
25.3	248.5	Survey #2 Gyro to 248.5 (Original Wellpatl	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
300.0	6,086.3	Survey #4 Final Gyro (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
6,117.0	16,681.0	Survey #5 MWD (Original Wellpath)	MWD SDI	MWD - Standard ver 1.0.1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
25.3	0.49	87.92	25.3	0.0	0.1	0.0	1.94
50.5	0.63	88.79	50.5	0.0	0.4	-0.1	0.56
75.3	0.74	87.22	75.3	0.0	0.7	-0.2	0.45
100.0	0.77	94.65	100.0	0.0	1.0	-0.4	0.41
125.2	0.88	87.98	125.2	0.0	1.3	-0.5	0.58
150.6	0.91	96.35	150.6	0.0	1.7	-0.7	0.53
175.1	1.12	100.47	175.1	-0.1	2.2	-1.0	0.91
200.5	1.08	98.65	200.5	-0.2	2.6	-1.3	0.21
226.0	1.20	97.58	226.0	-0.2	3.1	-1.5	0.48

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Livingston Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Livingston Unit 1H 1003' GL + 19' RKB @ 1022.0
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Livingston Unit 1H 1003' GL + 19' RKB @ 1022.0
Well:	Livingston Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
248.5	1.16	97.81	248.4	-0.3	3.6	-1.7	0.18
300.0	0.64	104.62	300.0	-0.4	4.4	-2.2	1.03
400.0	1.49	273.17	400.0	-0.5	3.6	-1.9	2.12
500.0	3.43	274.57	499.9	-0.2	-0.6	0.1	1.94
600.0	4.90	271.80	599.6	0.2	-7.9	3.4	1.48
700.0	5.73	267.02	699.2	0.1	-17.1	7.1	0.94
800.0	5.88	258.56	798.7	-1.2	-27.2	10.0	0.87
900.0	5.81	251.28	898.1	-3.9	-37.0	11.6	0.74
1,000.0	5.01	244.83	997.7	-7.3	-45.7	12.0	1.00
1,100.0	3.42	241.59	1,097.4	-10.6	-52.3	11.7	1.61
1,200.0	2.63	236.89	1,197.3	-13.3	-56.8	11.2	0.83
1,300.0	1.66	233.91	1,297.2	-15.4	-59.9	10.5	0.98
1,400.0	1.26	223.75	1,397.2	-17.0	-61.9	9.8	0.47
1,500.0	1.04	221.04	1,497.1	-18.5	-63.2	9.0	0.23
1,600.0	0.82	204.27	1,597.1	-19.9	-64.1	8.2	0.35
1,700.0	0.53	171.32	1,697.1	-21.0	-64.3	7.2	0.47
1,800.0	0.42	141.80	1,797.1	-21.7	-64.0	6.4	0.26
1,900.0	0.38	131.65	1,897.1	-22.2	-63.6	5.8	0.08
2,000.0	0.37	127.48	1,997.1	-22.6	-63.1	5.2	0.03
2,100.0	0.37	141.48	2,097.1	-23.1	-62.6	4.6	0.09
2,200.0	0.42	128.34	2,197.1	-23.6	-62.1	4.0	0.10
2,300.0	0.37	135.06	2,297.1	-24.0	-61.6	3.3	0.07
2,400.0	0.36	139.29	2,397.1	-24.5	-61.2	2.7	0.03
2,500.0	0.38	129.21	2,497.1	-24.9	-60.7	2.1	0.07
2,600.0	0.47	135.61	2,597.1	-25.4	-60.2	1.4	0.10
2,700.0	0.47	138.76	2,697.1	-26.0	-59.6	0.7	0.03
2,800.0	0.92	161.93	2,797.1	-27.1	-59.1	-0.5	0.52
2,900.0	1.03	159.68	2,897.1	-28.7	-58.5	-2.2	0.12
3,000.0	0.91	153.17	2,997.1	-30.3	-57.8	-3.9	0.16
3,100.0	1.02	142.95	3,097.1	-31.7	-56.9	-5.6	0.20
3,200.0	0.95	143.49	3,197.0	-33.1	-55.9	-7.2	0.07
3,300.0	0.79	150.03	3,297.0	-34.3	-55.1	-8.7	0.19
3,400.0	0.88	140.17	3,397.0	-35.5	-54.2	-10.2	0.17
3,500.0	0.81	140.96	3,497.0	-36.7	-53.3	-11.6	0.07
3,600.0	0.75	138.88	3,597.0	-37.7	-52.4	-12.9	0.07
3,700.0	0.73	137.98	3,697.0	-38.7	-51.6	-14.1	0.02
3,800.0	0.73	140.35	3,797.0	-39.6	-50.7	-15.4	0.03
3,900.0	0.75	134.64	3,897.0	-40.6	-49.9	-16.6	0.08
4,000.0	0.88	134.02	3,997.0	-41.6	-48.9	-17.9	0.13
4,100.0	0.99	143.52	4,096.9	-42.8	-47.8	-19.5	0.19
4,200.0	1.03	149.63	4,196.9	-44.3	-46.8	-21.2	0.11
4,300.0	1.16	153.24	4,296.9	-45.9	-45.9	-23.1	0.15
4,400.0	1.17	155.33	4,396.9	-47.8	-45.1	-25.1	0.04
4,500.0	1.22	156.49	4,496.9	-49.7	-44.2	-27.2	0.06
4,600.0	1.25	154.39	4,596.8	-51.6	-43.3	-29.4	0.05

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Livingston Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Livingston Unit 1H 1003' GL + 19' RKB @ 1022.0
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Livingston Unit 1H 1003' GL + 19' RKB @ 1022.0
Well:	Livingston Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
4,682.9	1.44	155.06	4,679.8	-53.4	-42.4	-31.3	0.23
4,700.0	1.32	153.13	4,696.8	-53.8	-42.3	-31.7	0.75
4,800.0	3.04	211.05	4,796.8	-57.1	-43.1	-34.4	2.59
4,900.0	6.65	225.09	4,896.4	-63.4	-48.6	-38.0	3.77
5,000.0	9.08	227.28	4,995.4	-72.9	-58.5	-42.5	2.45
5,100.0	12.10	236.68	5,093.7	-84.0	-73.0	-46.7	3.47
5,200.0	14.11	244.12	5,191.1	-95.1	-92.8	-48.7	2.62
5,300.0	15.70	250.08	5,287.8	-105.0	-116.5	-48.1	2.21
5,400.0	17.16	254.19	5,383.7	-113.6	-143.4	-44.9	1.87
5,500.0	18.28	253.44	5,478.9	-122.1	-172.6	-40.7	1.14
5,600.0	19.07	252.72	5,573.7	-131.4	-203.2	-36.6	0.82
5,700.0	20.84	251.68	5,667.7	-141.9	-235.7	-32.8	1.81
5,800.0	22.86	251.52	5,760.5	-153.6	-271.0	-29.1	2.02
5,900.0	24.04	252.09	5,852.2	-166.1	-308.8	-24.9	1.20
6,000.0	23.79	251.93	5,943.6	-178.6	-347.4	-20.5	0.26
6,086.3	23.94	253.23	6,022.6	-189.0	-380.7	-16.4	0.63
6,117.0	24.09	253.12	6,050.6	-192.6	-392.7	-14.8	0.51
6,162.0	23.39	253.48	6,091.8	-197.9	-410.0	-12.5	1.59
6,207.0	23.39	257.78	6,133.1	-202.3	-427.3	-9.4	3.79
6,251.0	25.15	269.74	6,173.2	-204.2	-445.2	-3.8	11.84
6,296.0	27.44	280.19	6,213.6	-202.4	-465.0	5.9	11.46
6,341.0	30.24	290.41	6,253.0	-196.6	-485.8	19.7	12.58
6,386.0	33.77	298.56	6,291.2	-186.7	-507.5	37.7	12.38
6,431.0	37.99	305.16	6,327.7	-172.7	-529.8	59.6	12.71
6,465.0	41.36	308.48	6,353.8	-159.7	-547.1	78.6	11.71
Middlesex							
6,476.0	42.47	309.46	6,362.0	-155.0	-552.9	85.1	11.71
6,521.0	46.78	312.89	6,394.0	-134.2	-576.6	113.8	10.97
6,565.0	51.00	316.49	6,423.0	-110.9	-600.1	144.8	11.40
6,610.0	55.22	318.87	6,450.0	-84.3	-624.4	179.0	10.29
6,655.0	59.09	321.59	6,474.4	-55.2	-648.5	215.4	9.99
6,672.0	60.28	322.78	6,483.0	-43.6	-657.5	229.6	9.23
Burkett							
6,700.0	62.26	324.67	6,496.4	-23.8	-672.0	253.6	9.23
6,740.0	65.31	327.26	6,514.1	5.9	-692.1	289.0	9.57
Tully							
6,745.0	65.69	327.57	6,516.2	9.7	-694.6	293.5	9.57
6,790.0	69.56	330.20	6,533.3	45.4	-716.0	334.8	10.16
6,835.0	71.75	331.52	6,548.2	82.4	-736.7	377.1	5.60
6,850.0	72.34	331.88	6,552.8	95.0	-743.5	391.3	4.51
Marcellus							
6,880.0	73.51	332.58	6,561.6	120.4	-756.8	419.9	4.51
6,925.0	76.59	333.46	6,573.2	159.1	-776.6	463.4	7.10
6,969.0	80.11	334.86	6,582.1	197.9	-795.3	506.4	8.59
7,014.0	85.56	335.48	6,587.7	238.4	-814.1	551.1	12.19

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Well:	Livingston Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,076.0	88.99	337.41	6,590.7	295.2	-838.8	613.0	6.35
7,166.0	87.49	338.29	6,593.5	378.5	-872.7	702.9	1.93
7,255.0	87.23	338.38	6,597.6	461.1	-905.6	791.7	0.31
7,345.0	88.55	340.66	6,600.9	545.4	-937.0	881.4	2.93
7,435.0	87.05	340.40	6,604.3	630.1	-967.0	971.1	1.69
7,525.0	86.79	340.49	6,609.2	714.8	-997.1	1,060.6	0.31
7,614.0	88.55	341.63	6,612.8	798.9	-1,025.9	1,149.2	2.36
7,704.0	87.14	339.08	6,616.2	883.6	-1,056.2	1,238.8	3.24
7,794.0	87.49	338.99	6,620.4	967.6	-1,088.3	1,328.6	0.40
7,884.0	86.17	338.47	6,625.4	1,051.3	-1,120.9	1,418.3	1.58
7,973.0	85.38	338.47	6,631.9	1,133.9	-1,153.5	1,507.0	0.89
8,063.0	86.88	337.59	6,638.0	1,217.2	-1,187.1	1,596.7	1.93
8,153.0	88.20	337.67	6,641.8	1,300.3	-1,221.3	1,686.6	1.47
8,243.0	88.37	336.09	6,644.5	1,383.0	-1,256.6	1,776.5	1.76
8,333.0	88.29	335.48	6,647.2	1,465.1	-1,293.5	1,866.5	0.68
8,423.0	89.69	336.97	6,648.8	1,547.4	-1,329.8	1,956.5	2.27
8,512.0	90.13	337.41	6,648.9	1,629.5	-1,364.3	2,045.4	0.70
8,602.0	91.01	338.03	6,648.0	1,712.7	-1,398.4	2,135.4	1.20
8,692.0	88.99	337.67	6,648.0	1,796.1	-1,432.4	2,225.3	2.28
8,782.0	89.16	336.80	6,649.4	1,879.1	-1,467.2	2,315.3	0.98
8,872.0	89.69	338.47	6,650.4	1,962.3	-1,501.4	2,405.2	1.95
8,961.0	90.04	337.67	6,650.6	2,044.9	-1,534.7	2,494.2	0.98
9,051.0	88.55	337.94	6,651.7	2,128.2	-1,568.7	2,584.1	1.68
9,141.0	89.60	340.49	6,653.1	2,212.3	-1,600.6	2,673.9	3.06
9,230.0	88.55	338.47	6,654.6	2,295.6	-1,631.8	2,762.7	2.56
9,320.0	90.22	340.49	6,655.5	2,379.9	-1,663.3	2,852.5	2.91
9,410.0	89.08	334.95	6,656.1	2,463.2	-1,697.4	2,942.4	6.28
9,499.0	90.04	334.95	6,656.8	2,543.8	-1,735.1	3,031.4	1.08
9,589.0	89.78	331.52	6,656.9	2,624.1	-1,775.6	3,121.3	3.82
9,679.0	88.99	331.61	6,657.9	2,703.3	-1,818.5	3,211.1	0.88
9,769.0	86.61	332.75	6,661.3	2,782.8	-1,860.5	3,300.8	2.93
9,858.0	86.44	332.49	6,666.7	2,861.7	-1,901.3	3,389.5	0.35
9,948.0	87.41	333.02	6,671.5	2,941.6	-1,942.5	3,479.2	1.23
10,038.0	89.25	334.60	6,674.2	3,022.3	-1,982.2	3,569.1	2.69
10,128.0	91.10	334.95	6,673.9	3,103.7	-2,020.5	3,659.1	2.09
10,217.0	92.59	335.39	6,671.0	3,184.4	-2,057.9	3,748.1	1.75
10,307.0	91.45	334.86	6,667.9	3,266.0	-2,095.7	3,838.0	1.40
10,397.0	90.22	334.42	6,666.5	3,347.4	-2,134.2	3,928.0	1.45
10,486.0	90.84	335.65	6,665.7	3,428.0	-2,171.8	4,017.0	1.55
10,576.0	90.22	333.98	6,664.9	3,509.5	-2,210.1	4,106.9	1.98
10,666.0	90.57	332.58	6,664.3	3,589.9	-2,250.6	4,196.8	1.60
10,761.0	91.45	331.79	6,662.6	3,673.9	-2,294.9	4,291.6	1.24
10,854.0	90.66	330.38	6,660.9	3,755.3	-2,339.8	4,384.3	1.74
10,948.0	90.13	332.05	6,660.2	3,837.6	-2,385.7	4,478.0	1.86

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Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Livingston Unit 1H 1003' GL + 19' RKB @ 1022.0
Well:	Livingston Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
11,041.0	90.22	333.90	6,659.9	3,920.5	-2,427.4	4,570.9	1.99
11,136.0	92.24	334.07	6,657.9	4,005.8	-2,469.0	4,665.8	2.13
11,230.0	92.33	334.60	6,654.2	4,090.5	-2,509.7	4,759.7	0.57
11,324.0	91.10	333.46	6,651.3	4,175.0	-2,550.8	4,853.6	1.78
11,419.0	91.10	334.77	6,649.5	4,260.4	-2,592.3	4,948.5	1.38
11,513.0	90.48	333.72	6,648.2	4,345.1	-2,633.1	5,042.5	1.30
11,608.0	90.31	333.81	6,647.6	4,430.3	-2,675.1	5,137.4	0.20
11,702.0	89.87	335.48	6,647.4	4,515.2	-2,715.4	5,231.4	1.84
11,797.0	89.87	334.95	6,647.6	4,601.5	-2,755.2	5,326.4	0.56
11,886.0	89.96	335.57	6,647.8	4,682.3	-2,792.5	5,415.4	0.70
11,976.0	89.87	335.13	6,647.9	4,764.1	-2,830.0	5,505.4	0.50
12,066.0	90.04	334.51	6,648.0	4,845.5	-2,868.3	5,595.4	0.71
12,156.0	90.92	334.33	6,647.2	4,926.7	-2,907.2	5,685.4	1.00
12,246.0	89.90	334.45	6,646.6	5,007.9	-2,946.1	5,775.3	1.14
12,335.0	90.66	334.69	6,646.1	5,088.2	-2,984.3	5,864.3	0.90
12,425.0	91.10	334.16	6,644.8	5,169.4	-3,023.1	5,954.3	0.77
12,515.0	89.60	334.77	6,644.2	5,250.6	-3,061.9	6,044.2	1.80
12,605.0	89.25	335.48	6,645.1	5,332.3	-3,099.8	6,134.2	0.88
12,694.0	91.01	335.21	6,644.9	5,413.1	-3,136.9	6,223.2	2.00
12,784.0	91.71	335.39	6,642.8	5,494.9	-3,174.5	6,313.2	0.80
12,874.0	90.13	333.28	6,641.3	5,576.0	-3,213.5	6,403.1	2.93
12,964.0	89.78	331.87	6,641.4	5,655.9	-3,254.9	6,493.0	1.61
13,053.0	91.28	333.10	6,640.6	5,734.8	-3,296.0	6,581.8	2.18
13,143.0	91.28	333.46	6,638.6	5,815.2	-3,336.5	6,671.7	0.40
13,233.0	90.40	330.44	6,637.2	5,894.6	-3,378.8	6,761.5	3.49
13,322.0	90.22	332.75	6,636.8	5,972.9	-3,421.1	6,850.2	2.60
13,412.0	90.66	331.79	6,636.1	6,052.5	-3,463.0	6,940.1	1.17
13,502.0	90.84	333.81	6,634.9	6,132.6	-3,504.1	7,029.9	2.25
13,591.0	91.54	334.51	6,633.0	6,212.6	-3,542.9	7,118.9	1.11
13,681.0	90.40	334.60	6,631.5	6,293.9	-3,581.6	7,208.8	1.27
13,771.0	89.52	333.98	6,631.6	6,375.0	-3,620.6	7,298.8	1.20
13,860.0	89.52	332.58	6,632.3	6,454.5	-3,660.6	7,387.7	1.57
13,950.0	91.19	333.63	6,631.8	6,534.7	-3,701.3	7,477.6	2.19
14,040.0	91.01	329.94	6,630.0	6,614.0	-3,743.9	7,567.4	4.10
14,129.0	89.96	330.91	6,629.3	6,691.4	-3,787.8	7,656.0	1.61
14,219.0	91.45	333.63	6,628.2	6,771.1	-3,829.7	7,745.8	3.45
14,309.0	91.36	331.52	6,626.0	6,850.9	-3,871.1	7,835.6	2.35
14,399.0	90.31	331.35	6,624.7	6,930.0	-3,914.1	7,925.3	1.18
14,488.0	90.75	333.72	6,623.8	7,008.9	-3,955.2	8,014.2	2.71
14,578.0	90.48	337.94	6,622.9	7,091.0	-3,992.0	8,104.1	4.70
14,668.0	90.92	339.52	6,621.8	7,174.9	-4,024.7	8,194.0	1.82
14,758.0	91.54	338.11	6,619.8	7,258.8	-4,057.2	8,283.9	1.71
14,847.0	90.84	336.27	6,618.0	7,340.8	-4,091.7	8,372.8	2.21
14,937.0	90.92	335.74	6,616.6	7,423.0	-4,128.3	8,462.8	0.60
15,027.0	91.01	336.00	6,615.1	7,505.1	-4,164.7	8,552.8	0.31

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Livingston Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Livingston Unit 1H 1003' GL + 19' RKB @ 1022.0
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Livingston Unit 1H 1003' GL + 19' RKB @ 1022.0
Well:	Livingston Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
15,117.0	89.69	333.72	6,614.6	7,586.6	-4,203.3	8,642.8	2.93
15,206.0	91.01	335.74	6,614.0	7,667.1	-4,241.3	8,731.7	2.71
15,296.0	91.28	336.97	6,612.2	7,749.5	-4,277.4	8,821.7	1.40
15,386.0	91.19	337.06	6,610.3	7,832.3	-4,312.5	8,911.7	0.14
15,475.0	91.10	336.62	6,608.5	7,914.1	-4,347.5	9,000.6	0.50
15,565.0	91.10	336.27	6,606.8	7,996.6	-4,383.5	9,090.6	0.39
15,655.0	91.80	334.86	6,604.5	8,078.5	-4,420.7	9,180.6	1.75
15,745.0	91.89	338.11	6,601.6	8,161.0	-4,456.6	9,270.5	3.61
15,834.0	92.24	338.11	6,598.4	8,243.5	-4,489.7	9,359.4	0.39
15,924.0	91.28	340.49	6,595.6	8,327.7	-4,521.5	9,449.2	2.85
16,014.0	91.19	339.52	6,593.7	8,412.2	-4,552.3	9,538.9	1.08
16,104.0	90.13	336.36	6,592.6	8,495.6	-4,586.1	9,628.8	3.70
16,193.0	90.75	336.44	6,592.0	8,577.2	-4,621.7	9,717.8	0.70
16,283.0	89.69	336.36	6,591.6	8,659.6	-4,657.7	9,807.8	1.18
16,372.0	89.87	336.53	6,592.0	8,741.2	-4,693.3	9,896.8	0.28
16,462.0	89.96	336.27	6,592.1	8,823.7	-4,729.3	9,986.8	0.31
16,552.0	89.87	336.53	6,592.2	8,906.2	-4,765.4	10,076.8	0.31
16,626.0	90.22	335.30	6,592.2	8,973.7	-4,795.6	10,150.8	1.73
16,681.0	90.22	335.30	6,591.9	9,023.7	-4,818.6	10,205.8	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
6,465.0	6,353.8	-159.7	-547.1	Middlesex
6,672.0	6,483.0	-43.6	-657.5	Burkett
6,740.0	6,514.1	5.9	-692.1	Tully
6,850.0	6,552.8	95.0	-743.5	Marcellus

Checked By: _____ Approved By: _____ Date: _____

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	3/30/2014
Job End Date:	4/11/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06223-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Livingston Unit 1H
Longitude:	-80.82305000
Latitude:	39.25487780
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,674
Total Base Water Volume (gal):	12,174,540
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	Water					
			Water	7732-18-5	100.00000	92.24405	
WV Specific 40/70 mesh Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	4.45740	
			Aluminum Oxide	1344-28-1	1.10000	0.04908	
			Titanium Oxide	13463-67-7	0.10000	0.00446	
			Iron Oxide	1309-37-1	0.10000	0.00446	
WV Specific 20/40 mesh Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	2.46880	
			Aluminum Oxide	1344-28-1	1.10000	0.02718	
			Iron Oxide	1309-37-1	0.10000	0.00247	
			Titanium Oxide	13463-67-7	0.10000	0.00247	
WV Specific 100 mesh Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	0.49890	
			Aluminum Oxide	1344-28-1	1.10000	0.00549	

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			Iron Oxide	1309-37-1	0.10000	0.00050	
			Titanium Oxide	13463-67-7	0.10000	0.00050	
HCl Acid (12.5%-18.0%)	Nabors Completion and Production Services	Bulk Acid					
			Hydrogen Chloride	7647-01-0	18.00000	0.03294	
WFR-3B	Nabors Completion and Production Services	Friction Reducer					
			Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8	30.00000	0.01839	
			Ethoxylated alcohols	68002-97-1	15.00000	0.00919	
			Ethoxylated oleylamine	26635-93-8	5.00000	0.00306	
LSG-100L	Nabors Completion and Production Services	Gelling Agents					
			Petroleum Distillates	64742-47-8	70.00000	0.02858	
Super GREEN SOLV-M	Nabors Completion and Production Services	Paraffin & Scale Additives					
			Aliphatic Hydrocarbons	Proprietary	95.00000	0.00571	
			Dodecane	Proprietary	14.00000	0.00084	
			tetradecane	Proprietary	11.00000	0.00066	
			Tridecane	Proprietary	9.00000	0.00054	
			Undecane	Proprietary	8.00000	0.00048	
KR-153SL	Nabors Completion and Production Services	Biocides					
			Polyethlyene-Glycol	25322-68-3	50.00000	0.00549	
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00220	
OB-2 LT	Nabors Completion and Production Services	Gel Breakers					
			Ammonium Persulfate	7727-54-0	85.00000	0.00537	
			Crystalline Silica (in the form of quartz)	14808-60-7	10.00000	0.00063	
Acid Inhibitor 2 (AI-2)	Nabors Completion and Production Services	Acid Corrosion Inhibitors					
			Isopropyl Alcohol	67-63-0	40.00000	0.00014	
			Propargyl Alcohol	107-19-7	40.00000	0.00014	
			Glycol Ethers	111-46-6	40.00000	0.00014	
			Ethoxylated Nonylphenol	68412-54-4	13.00000	0.00005	
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	10.00000	0.00004	
EB-1L	Nabors Completion and Production Services	Gel Breakers					
			Ethylene Glycol	107-21-1	40.00000	0.00014	

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.

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Other Ingredients	Nabors Completion and Production Services	Other Ingredients					
			Water	7732-18-5	87.50000	0.16011	
			Water	7732-18-5	40.00000	0.02451	
			Anionic Polyacrylamide	910644-97-2	40.00000	0.02451	
			guar gum	9000-30-0	50.00000	0.02041	
			Propylene glycol	57-55-6	15.00000	0.00919	
			Water	7732-18-5	80.00000	0.00878	
			Water	7732-18-5	60.00000	0.00859	
			Proprietary	Proprietary	50.00000	0.00716	
			Proprietary	Proprietary	15.00000	0.00215	
			Proprietary	Proprietary	15.00000	0.00215	
			Proprietary	Proprietary	15.00000	0.00215	
			Proprietary	Proprietary	2.00000	0.00123	
			Alkali Chloride salt	Proprietary	15.00000	0.00095	
			Crystalline Silica (in the form of quartz)	14808-60-7	2.00000	0.00082	
			Surfactant	68439-51-0	2.00000	0.00082	
			Sugar	57-50-1	100.00000	0.00036	
			Proprietary	Proprietary	100.00000	0.00036	
			Water	7732-18-5	100.00000	0.00018	
			Water	7732-18-5	48.00000	0.00017	
			2-Butoxyethanol	111-76-2	13.00000	0.00005	
			Proprietary	Proprietary	1.00000	0.00000	
			Proprietary	Proprietary	1.00000	0.00000	
			Proprietary	Proprietary	1.00000	0.00000	
			Proprietary	Proprietary	1.00000	0.00000	
			Dioxane	123-91-1	1.00000	0.00000	
			Organophylic Clay	68953-58-2			

* 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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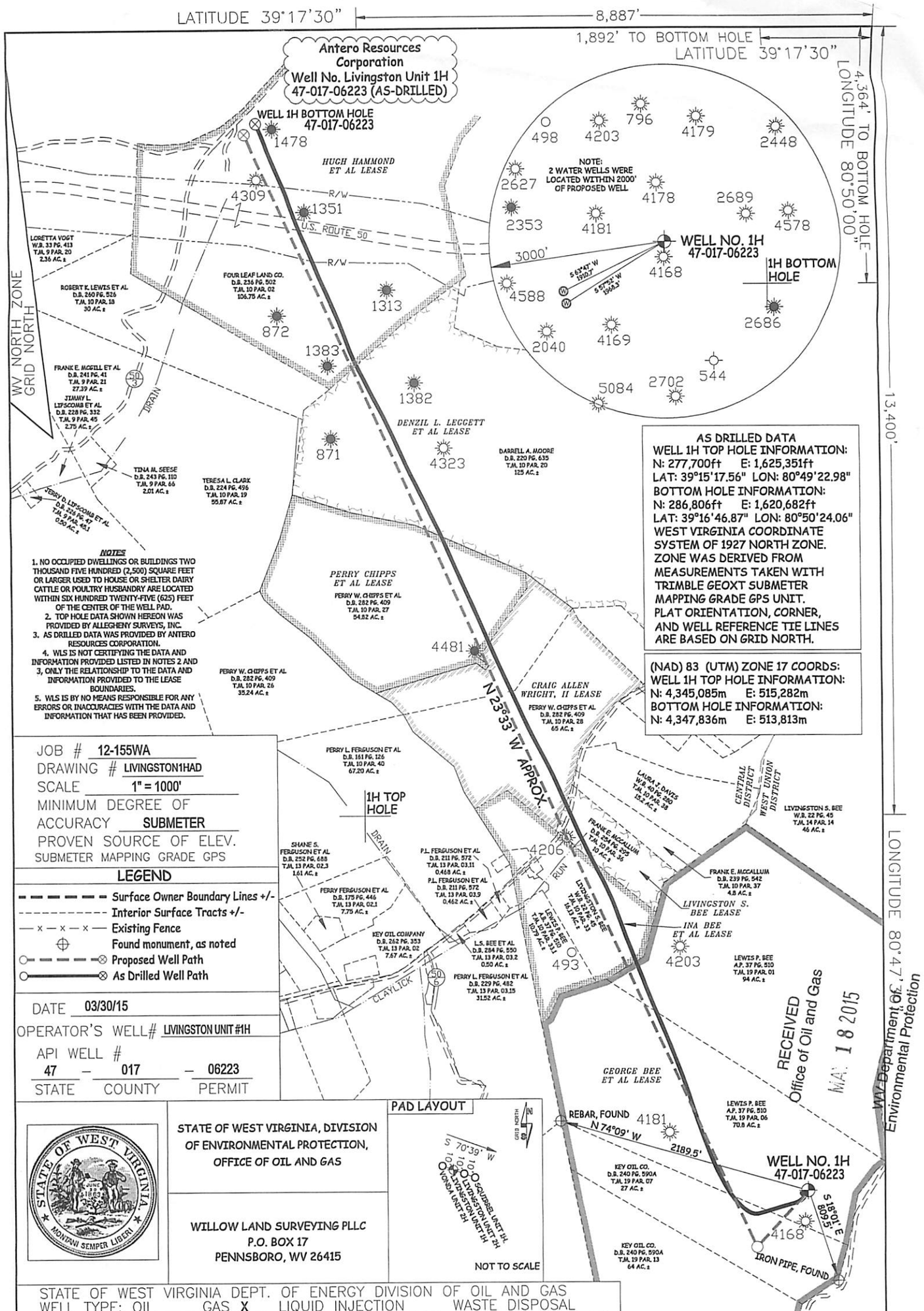

STATE OF WEST VIRGINIA DEPT. OF ENERGY DIVISION OF OIL AND GAS
WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,011' ORIGINAL - 1,003' AS DRILLED WATERSHED HEADWATERS MIDDLE ISLAND CREEK
QUADRANGLE WEST UNION 7.5' DISTRICT WEST UNION COUNTY DODDRIDGE
SURFACE OWNER LEWIS P. BEE ACREAGE 70.8 ACRES +/-
OIL & GAS ROYALTY OWNER GEORGE BEE ET AL; INA BEE ET AL; LIVINGSTON S. BEE; CRAIG ALLEN WRIGHT, II; PERRY CHIPPS ET AL; DENZIL L. LEGGETT ET AL; HUGH HAMMOND ET AL LEASE ACREAGE 356.5 AC±; 30 AC±; 9.159 AC±; 30.09 ±; 54.82 AC±; 140 AC±; 146 AC±
PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___
PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL
(SPECIFY) (X) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,592' TVD 16,681' MD

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

COUNTY NAME PERMIT

FORM WW-6

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

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API 47 - 017 - 06224 County Doddridge District West Union
Quad West Union 7.5' Pad Name Bee Lewis Pad Field/Pool Name ----
Farm name Bee, Lewis P. Well Number Livingston Unit 2H
Operator (as registered with the OOG) Antero Resources Corportion
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 4345084m Easting 515285m
Landing Point of Curve Northing 4346171.31m Easting 514830.65m
Bottom Hole Northing 4348006m Easting 513962m

Elevation (ft) 1003' 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 5/28/2013 Date drilling commenced 9/2/2013 Date drilling ceased 11/20/2013
Date completion activities began 3/6/2014 Date completion activities ceased 6/23/2014
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 56', 136' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 466', 996' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 101', 590' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:
A.L. 5/26/15 ✓
W.S. 6/02/15

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API 47- 017 - 06224 Farm name Bee, Lewis P. Well number Livingston Unit 2H

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	24"	20"	59'	New	94# J-55	N/A	Y
Surface	17- 1/2"	13- 3/8"	358'	New	48# J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2615'	New	36# J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	16613'	New	20# P-110	N/A	Y
Tubing		2-3/8"	6665'		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 ^{3}/sks)	Volume (ft ^{3})	Cement Top (MD)	WOC (hrs)
Conductor	Class A	120 sx	15.6	1.18	57	0'	8 Hrs.
Surface	Class H	450 sx	15.6	1.18	249	0'	8 Hrs.
Coal							
Intermediate 1	Class A	963 sx	15.6	1.18	819	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	724 sx (Lead) 1141 sx (Tail)	14.5 Lead 15.2 Tail	1.3 Lead 1.86 Tail	3321	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 16668' MD, 6580' TVD (BHL); 6667' TVD (Deepest Point Drilled) Loggers TD (ft) 16563'

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6382'

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Squirrel Unit 1H API#47-017-06258). Please reference the wireline logs submitted with Form WR-35 for Squirrel 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 aboce 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 _____

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS _____

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED _____

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API 47- 017 - 06224 Farm name Bee, Lewis P. Well number Livingston Unit 2H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

*PLEASE SEE ATTACHED EXHIBIT 1

Please insert additional pages as applicable.

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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)

*PLEASE SEE ATTACHED EXHIBIT 2

Please insert additional pages as applicable.

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API 47- 017 - 06224 Farm name Bee, Lewis P. Well number Livingston Unit 2H

PRODUCING FORMATION(S)	DEPTHS			
Marcellus	6536' (TOP)	TVD	7201' (TOP)	MD

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Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST ■ Flow □ Pump

SHUT-IN PRESSURE Surface 3600 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 14101 mcfpd Oil 34 bpd NGL --- bpd Water 610 bpd GAS MEASURED BY □ Estimated ■ Orifice □ Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	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 600 Alpha Drive City Canonsburg State PA Zip 15317

Cementing Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378
Please insert additional pages as applicable.

Completed by Kara Quackenbush Telephone 303-357-7233
Signature Kara Quackenbush Title Permit Representative Date 1/27/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

API 47-017-06224 Farm Name Bee, Lewis P. Well Number Livingston Unit 2H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	6-Mar-14	16,358	16,525	60	Marcellus
2	12-Apr-14	16,160	16,327	60	Marcellus
3	12-Apr-14	15,961	16,129	60	Marcellus
4	12-Apr-14	15,763	15,930	60	Marcellus
5	13-Apr-14	15,565	15,732	60	Marcellus
6	13-Apr-14	15,367	15,534	60	Marcellus
7	14-Apr-14	15,169	15,336	60	Marcellus
8	14-Apr-14	14,971	15,138	60	Marcellus
9	15-Apr-14	14,773	14,940	60	Marcellus
10	15-Apr-14	14,574	14,742	60	Marcellus
11	15-Apr-14	14,376	14,543	60	Marcellus
12	16-Apr-14	14,178	14,345	60	Marcellus
13	16-Apr-14	13,980	14,147	60	Marcellus
14	1-May-14	13,782	13,949	60	Marcellus
15	2-May-14	13,584	13,751	60	Marcellus
16	2-May-14	13,386	13,553	60	Marcellus
17	2-May-14	13,187	13,355	60	Marcellus
18	2-May-14	12,989	13,156	60	Marcellus
19	2-May-14	12,791	12,958	60	Marcellus
20	3-May-14	12,593	12,760	60	Marcellus
21	3-May-14	12,395	12,562	60	Marcellus
22	3-May-14	12,197	12,364	60	Marcellus
23	3-May-14	11,999	12,166	60	Marcellus
24	4-May-14	11,801	11,968	60	Marcellus
25	4-May-14	11,602	11,769	60	Marcellus
26	5-May-14	11,404	11,571	60	Marcellus
27	5-May-14	11,206	11,373	60	Marcellus
28	5-May-14	11,008	11,175	60	Marcellus
29	5-May-14	10,810	10,977	60	Marcellus
30	6-May-14	10,312	10,485	60	Marcellus
31	6-May-14	10,107	10,280	60	Marcellus
32	6-May-14	9,903	10,075	60	Marcellus
33	6-May-14	9,698	9,870	60	Marcellus
34	7-May-14	9,493	9,666	60	Marcellus
35	7-May-14	9,288	9,461	60	Marcellus
36	7-May-14	9,083	9,256	60	Marcellus
37	7-May-14	8,878	9,051	60	Marcellus
38	8-May-14	8,674	8,846	60	Marcellus
39	8-May-14	8,469	8,641	60	Marcellus
40	8-May-14	8,264	8,437	60	Marcellus
41	8-May-14	8,059	8,232	60	Marcellus
42	9-May-14	7,854	8,027	60	Marcellus
43	9-May-14	7,649	7,822	60	Marcellus
44	9-May-14	7,445	7,617	60	Marcellus
45	9-May-14	7,240	7,412	60	Marcellus

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API 47-017-06224 Farm Name Bee, Lewis P. Well Number Livingston Unit 2H

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	12-Apr-14	74.0	7,471	6,332	5,109	241,200	6,420	N/A
2	12-Apr-14	77.2	7,533	6,284	5,302	236,900	6,349	N/A
3	12-Apr-14	77.2	7,189	5,673	4,743	235,300	6,460	N/A
4	13-Apr-14	76.5	7,950	5,494	5,230	234,900	6,865	N/A
5	13-Apr-14	74.4	7,713	5,405	5,653	238,100	6,464	N/A
6	14-Apr-14	65.5	7,424	5,382	5,096	30,300	6,347	N/A
7	14-Apr-14	76.9	7,854	5,697	5,504	239,300	6,284	N/A
8	15-Apr-14	77.3	7,664	5,510	4,598	221,300	6,069	N/A
9	15-Apr-14	77.4	7,490	5,149	5,302	188,400	6,660	N/A
10	15-Apr-14	77.8	7,661	5,420	5,465	238,500	6,247	N/A
11	16-Apr-14	66.8	8,214	5,890	5,260	140,900	6,770	N/A
12	16-Apr-14	74.5	7,457	5,376	4,571	202,500	6,280	N/A
13	16-Apr-14	72.5	7,508	5,574	4,656	125,000	6,622	N/A
14	1-May-14	76.5	7,127	5,310	5,262	240,700	6,237	N/A
15	2-May-14	66.3	7,537	5,233	5,260	123,300	6,705	N/A
16	2-May-14	73.5	6,880	5,510	5,716	118,300	6,666	N/A
17	2-May-14	77.9	7,348	5,398	5,480	214,400	6,300	N/A
18	2-May-14	77.2	7,138	5,581	5,081	241,700	6,235	N/A
19	2-May-14	77.3	7,635	5,603	4,214	214,400	6,685	N/A
20	3-May-14	78.0	7,603	5,830	4,315	229,800	6,270	N/A
21	3-May-14	76.7	7,467	5,457	4,911	223,000	6,010	N/A
22	3-May-14	62.4	7,763	5,242	4,124	186,400	6,657	N/A
23	3-May-14	73.9	7,615	5,457	4,538	238,000	5,686	N/A
24	4-May-14	68.5	7,863	5,489	4,248	137,600	6,632	N/A
25	4-May-14	73.1	7,355	6,037	4,755	199,100	4,940	N/A
26	5-May-14	70.1	7,086	5,502	4,567	200,900	6,310	N/A
27	5-May-14	74.4	6,949	5,285	5,082	234,900	6,186	N/A
28	5-May-14	76.7	6,655	5,227	5,113	252,200	6,049	N/A
29	5-May-14	77.8	6,784	5,023	5,059	237,700	5,981	N/A
30	6-May-14	77.2	6,809	5,366	4,506	240,600	6,022	N/A
31	6-May-14	77.6	6,705	5,489	5,000	241,100	6,055	N/A
32	6-May-14	74.1	7,092	5,271	4,815	159,500	6,373	N/A
33	6-May-14	70.3	6,558	5,037	4,956	253,200	5,917	N/A
34	7-May-14	77.4	6,682	5,310	5,134	239,500	5,891	N/A
35	7-May-14	77.8	6,864	5,570	5,054	232,800	5,906	N/A
36	7-May-14	77.2	6,661	5,407	5,037	240,400	6,048	N/A
37	7-May-14	78.9	6,858	5,398	4,126	215,300	5,802	N/A
38	8-May-14	77.9	7,051	6,250	4,888	183,800	6,404	N/A
39	8-May-14	75.5	6,865	5,502	5,067	196,900	6,326	N/A
40	8-May-14	76.8	6,534	5,163	5,234	240,300	5,868	N/A
41	8-May-14	77.1	6,933	5,691	4,486	179,600	5,329	N/A
42	9-May-14	74.6	6,949	5,813	4,813	161,700	5,828	N/A
43	9-May-14	73.6	6,549	6,059	4,449	240,200	5,867	N/A
44	9-May-14	76.9	6,782	6,548	5,095	239,800	5,874	N/A
45	9-May-14	79.2	6,401	5,962	3,502	241,000	5,789	N/A
AVG=		**75**	**7,205**	**5,560**	**4,897**	**9,370,700**	**278,685**	TOTAL

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Office of Oil & Gas
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API 47-017-06224 Farm Name Lewis, Bee P. Well Number Livingston Unit 2H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	**TOP DEPTH (TVD) From Surface**	**BOTTOM DEPTH (TVD) From Surface**	**TOP DEPTH (MD) From Surface**	**BOTTOM DEPTH (MD) From Surface**
Fresh Water	56'	N/A	56'	N/A
Fresh Water	136'	N/A	136'	N/A
Shale	0	101	0	101
Coal	est. 101	141	est. 101	141
Shale	est. 141	301	est. 141	301
Sandstone	est. 301	341	est. 301	341
Shale/Sandstone/Siltstone	est. 341	590	est. 341	590
Coal	est. 590	611	est. 590	611
Shale/Siltstone	est. 611	1486	est. 611	1486
Siltstone w/Coal	est. 1486	1541	est. 1486	1541
Siltstone/Sandstone	est. 1541	1875	est. 1541	1876
Big Lime	1875	1989	1876	1991
Big Injun	1989	2447	1991	2449
Gantz Sand	2447	2543	2449	2545
Fifty Foot Sandstone	2543	2626	2545	2628
Gordon	2626	2940	2628	2942
Fifth Sandstone	2940	2970	2942	2972
Bayard	2970	3349	2972	3351
Warren	3349	3684	3351	3686
Speechley	3684	4009	3686	4011
Baltown	4009	4460	4011	4462
Bradford	4460	4889	4462	4891
Benson	4889	5170	4891	5172
Alexander	5170	5331	5172	5335
Elk	5331	5743	5335	5763
Rhinestreet	5743	6150	5763	6211
Sycamore	6150	6321	6211	6409
Middlesex	6321	6453	6409	6621
Burkett	6453	6483	6621	6688
Tully	6483	6536	6688	7201
Marcellus	6536	NA	7201	NA
Onondaga**	6642	NA	10486	NA

*Please note Antero determines shallow formation tops based on mud and/or wireline logs that are only run on one well on a multi-well pad (Please reference Wireline Logs submitted for the Squirrel Unit 1H API# 47-017-06258)). The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

**Antero drilled a small portion of this well into the Onondaga formation from approximately 10505'-10790' in the lateral but this section was not perforated or completed.

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MAY 18 2015

Antero Resources

Antero Resources
Livingston Unit 2H
Doddridge County WV
Northing: 14254783.27
Easting: 1690517.21
As Drilled ST1

WELL DETAILS: Livingston Unit 2H

Ground Level: 1003.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	14254783.27	1690517.21	39° 15' 17.526 N	80° 49' 22.855 W	

Genie Lightfoot
Scientific Drilling
421 South Eagle Lane
Oklahoma City Oklahoma
405-787-3663

Scientific Drilling

REFERENCE INFORMATION

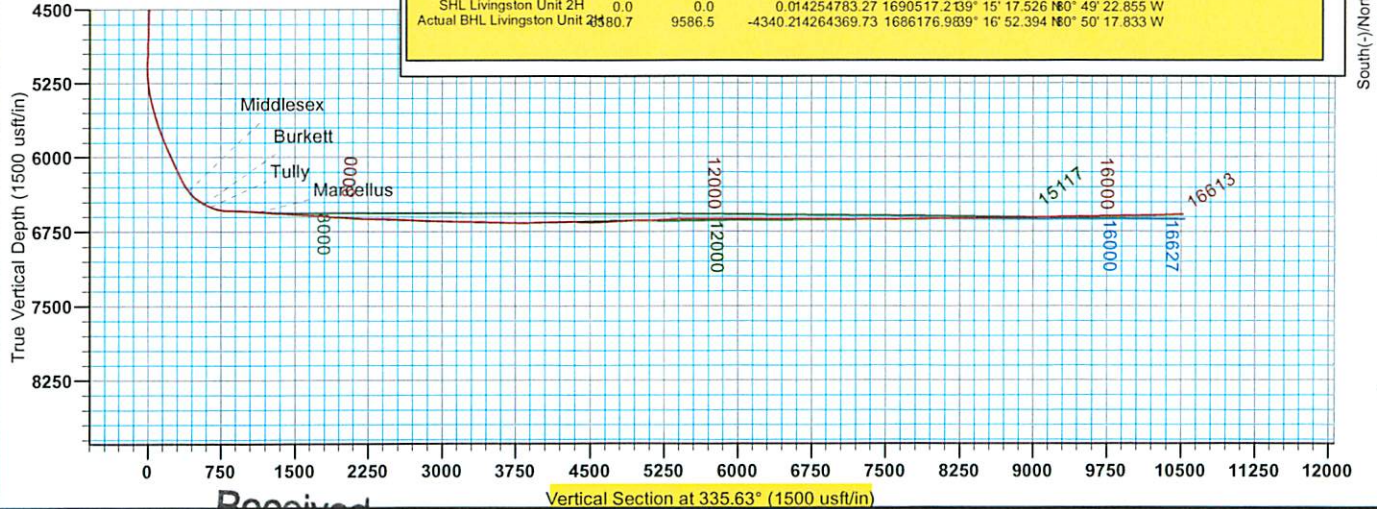
Co-ordinate (N/E) Reference: Well Livingston Unit 2H, Grid North
Vertical (TVD) Reference: Livingston Unit 2H 1003' GL + 19' KB @ 1022.0usft
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: Livingston Unit 2H 1003' GL + 19' KB @ 1022.0usft
Calculation Method: Minimum Curvature

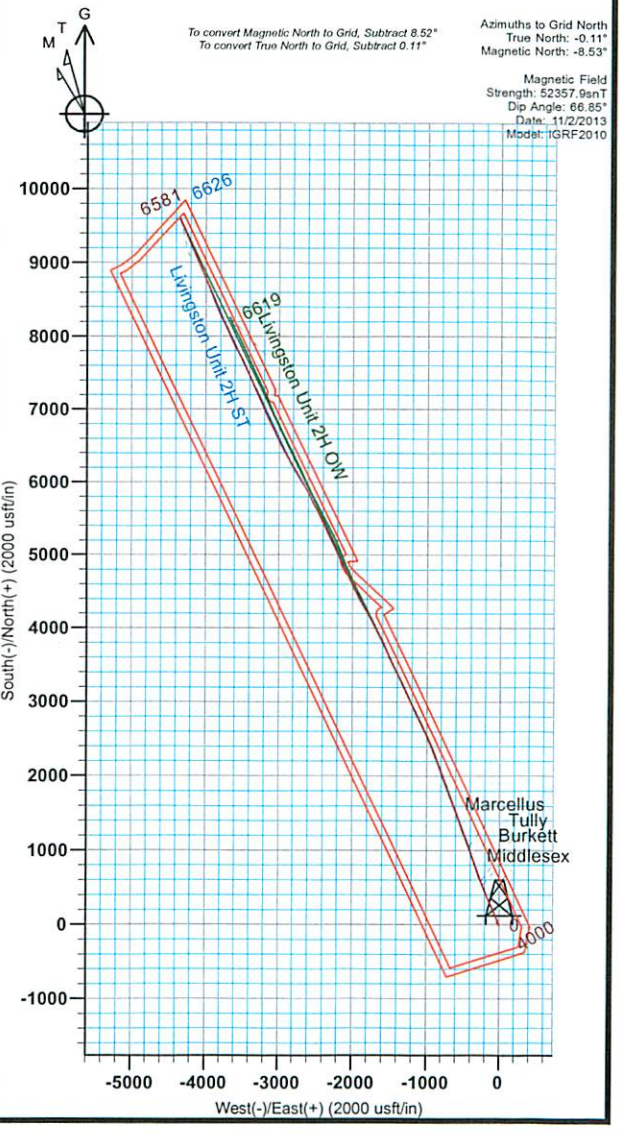
LEGEND

- Livingston Unit 2H, Original Wellpath, As Drilled V0
- Livingston Unit 2H, Original Wellpath, Plan 6 V0
- Livingston Unit 2H, Sidetrack 1, Sidetrack Plan 2 V0
- As Drilled ST1

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Livingston Unit 2H	0.0	0.0	0.0	14254783.27	1690517.21	39° 15' 17.526 N	80° 49' 22.855 W
Actual BHL Livingston Unit 2H	6580.7	9586.5	-4340.21	4264369.73	1686176.98	39° 16' 52.394 N	80° 50' 17.833 W





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Antero Resources

Doddridge County WV
Squirrel/Livingston/Vonda Pad
Livingston Unit 2H
Original Wellpath

Design: As Drilled

EOW Completion Report

18 November, 2013

Received
Office of Oil & Gas
MAY 18 2015

Scientific Drilling

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Livingston Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Livingston Unit 2H 1003' GL + 19' KB @ 1022.0us
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Livingston Unit 2H 1003' GL + 19' KB @ 1022.0us
Well:	Livingston Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Project Doddridge County WV, McClellan District

Map System:	Universal Transverse Mercator (US Survey Fee	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site Squirrel/Livingston/Vonda Pad

Site Position:		**Northing:**	14,254,779.42 usft	**Latitude:**	39° 15' 17.488 N
From:	Map	**Easting:**	1,690,526.27 usft	**Longitude:**	80° 49' 22.740 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.11 °

Well Livingston Unit 2H, Marcellus

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,254,783.27 usft	**Latitude:**	39° 15' 17.526 N
	+E/-W	0.0 usft	**Easting:**	1,690,517.21 usft	**Longitude:**	80° 49' 22.855 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**	1,022.0 usft	**Ground Level:**	1,003.0 usft

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/6/2013	-8.41	66.86	52,367

Design As Drilled

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	334.82

Survey Program **Date** 11/18/2013

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	4,961.9	Survey #2 Final Gyro (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
5,038.0	15,117.0	Survey #4 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
100.0	0.46	65.73	100.0	0.2	0.4	0.0	0.46
200.0	0.19	110.39	200.0	0.3	0.9	-0.1	0.35
300.0	0.35	83.25	300.0	0.3	1.3	-0.3	0.20
400.0	0.25	149.56	400.0	0.1	1.8	-0.7	0.34
500.0	0.14	178.00	500.0	-0.2	1.9	-1.0	0.14
600.0	0.38	106.67	600.0	-0.4	2.2	-1.3	0.36
700.0	0.34	134.56	700.0	-0.7	2.7	-1.8	0.18
800.0	0.37	106.68	800.0	-1.0	3.2	-2.3	0.17
900.0	0.28	145.78	900.0	-1.3	3.7	-2.8	0.23
1,000.0	0.53	116.98	1,000.0	-1.7	4.2	-3.4	0.31

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Livingston Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Livingston Unit 2H 1003' GL + 19' KB @ 1022.0us
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Livingston Unit 2H 1003' GL + 19' KB @ 1022.0us
Well:	Livingston Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,100.0	0.45	136.49	1,100.0	-2.2	4.9	-4.1	0.18
1,200.0	0.55	122.58	1,200.0	-2.8	5.6	-4.9	0.16
1,300.0	0.54	130.64	1,300.0	-3.3	6.4	-5.7	0.08
1,400.0	0.80	140.71	1,400.0	-4.2	7.2	-6.8	0.28
1,459.3	0.94	130.38	1,459.3	-4.8	7.8	-7.7	0.35
1,559.3	2.09	300.23	1,559.3	-4.4	6.8	-6.9	3.02
1,659.3	4.60	301.67	1,659.1	-1.4	1.9	-2.1	2.51
1,759.3	5.77	304.63	1,758.7	3.5	-5.7	5.6	1.20
1,859.3	6.07	306.60	1,858.2	9.6	-14.1	14.6	0.36
1,959.3	3.34	321.65	1,957.8	15.0	-20.1	22.1	2.97
2,059.3	2.78	323.73	2,057.7	19.2	-23.4	27.3	0.57
2,159.3	2.11	325.42	2,157.6	22.7	-25.9	31.5	0.67
2,259.3	1.49	328.72	2,257.5	25.3	-27.6	34.7	0.63
2,359.3	1.18	331.32	2,357.5	27.3	-28.7	37.0	0.32
2,459.3	0.64	336.20	2,457.5	28.8	-29.5	38.6	0.55
2,559.3	0.46	350.30	2,557.5	29.7	-29.8	39.5	0.22
2,659.3	0.31	22.79	2,657.5	30.3	-29.7	40.1	0.26
2,759.3	0.50	119.90	2,757.5	30.3	-29.2	39.9	0.62
2,859.3	0.89	139.34	2,857.5	29.5	-28.3	38.8	0.45
2,959.3	1.19	133.91	2,957.5	28.2	-27.1	37.1	0.32
3,059.3	1.10	130.51	3,057.5	26.9	-25.6	35.2	0.11
3,159.3	0.88	128.29	3,157.4	25.8	-24.3	33.7	0.22
3,259.3	0.84	123.21	3,257.4	24.9	-23.1	32.4	0.09
3,359.3	0.59	130.28	3,357.4	24.2	-22.1	31.3	0.26
3,459.3	0.46	134.78	3,457.4	23.6	-21.4	30.4	0.14
3,559.3	0.67	142.11	3,557.4	22.8	-20.7	29.5	0.22
3,659.3	0.65	138.72	3,657.4	21.9	-20.0	28.4	0.04
3,759.3	0.84	132.82	3,757.4	21.0	-19.1	27.1	0.20
3,859.3	0.84	123.62	3,857.4	20.1	-17.9	25.8	0.13
3,959.3	0.88	144.00	3,957.4	19.1	-16.9	24.4	0.31
4,059.3	1.24	153.57	4,057.4	17.5	-16.0	22.6	0.40
4,159.4	1.20	145.80	4,157.3	15.6	-14.9	20.5	0.17
4,259.4	1.45	155.97	4,257.3	13.6	-13.8	18.2	0.34
4,359.4	1.48	149.92	4,357.3	11.3	-12.6	15.6	0.16
4,459.4	1.49	154.31	4,457.2	9.1	-11.4	13.1	0.11
4,559.4	1.75	155.80	4,557.2	6.5	-10.2	10.2	0.26
4,659.4	1.79	157.90	4,657.2	3.7	-9.0	7.1	0.08
4,759.4	1.68	154.24	4,757.1	0.9	-7.8	4.1	0.16
4,859.4	1.69	159.91	4,857.1	-1.8	-6.6	1.2	0.17
4,959.4	2.00	162.86	4,957.0	-4.9	-5.6	-2.0	0.32
4,961.9	2.04	162.37	4,959.6	-5.0	-5.6	-2.1	1.68
5,038.0	2.14	161.89	5,035.6	-7.6	-4.7	-4.9	0.13
5,082.0	2.33	157.42	5,079.6	-9.2	-4.1	-6.6	0.59
5,172.0	2.28	359.88	5,169.5	-9.1	-3.4	-6.8	5.02

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Livingston Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Livingston Unit 2H 1003' GL + 19' KB @ 1022.0us
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Livingston Unit 2H 1003' GL + 19' KB @ 1022.0us
Well:	Livingston Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,262.0	7.58	341.55	5,259.2	-1.7	-5.3	0.7	6.07
5,347.0	10.83	334.83	5,343.1	10.9	-10.5	14.3	4.02
5,436.0	12.91	337.01	5,430.2	27.6	-17.9	32.6	2.39
5,526.0	15.30	338.62	5,517.5	47.9	-26.2	54.5	2.69
5,616.0	17.60	338.45	5,603.8	71.6	-35.5	79.9	2.56
5,705.0	19.04	337.79	5,688.3	97.6	-45.9	107.9	1.63
5,795.0	20.66	337.15	5,772.9	125.8	-57.7	138.4	1.82
5,885.0	22.47	336.46	5,856.6	156.2	-70.7	171.4	2.03
5,974.0	24.31	335.99	5,938.3	188.5	-84.9	206.8	2.08
6,064.0	25.33	335.02	6,020.0	222.9	-100.6	244.5	1.22
6,154.0	26.25	335.00	6,101.0	258.4	-117.2	283.7	1.02
6,247.0	27.00	334.25	6,184.1	296.1	-135.0	325.4	0.88
6,292.0	27.44	334.25	6,224.2	314.6	-144.0	346.0	0.98
6,337.0	27.79	333.46	6,264.0	333.3	-153.2	366.8	1.13
6,382.0	32.80	336.63	6,302.9	353.9	-162.7	389.5	11.68
6,427.0	39.39	337.42	6,339.2	378.3	-173.0	416.0	14.68
6,428.0	39.51	337.41	6,340.0	378.9	-173.3	416.6	11.94
Middlesex							
6,472.0	44.76	337.15	6,372.6	406.1	-184.7	446.1	11.94
6,517.0	49.24	336.89	6,403.3	436.4	-197.5	479.0	9.96
6,562.0	53.90	337.42	6,431.3	468.9	-211.2	514.2	10.40
6,606.0	58.30	338.12	6,455.8	502.7	-225.0	550.6	10.09
6,640.0	61.49	337.92	6,472.8	530.0	-236.0	580.0	9.39
Burkett							
6,651.0	62.52	337.86	6,478.0	539.0	-239.7	589.7	9.39
6,696.0	66.57	337.50	6,497.3	576.5	-255.1	630.3	9.03
6,707.0	67.64	337.55	6,501.6	585.9	-259.0	640.4	9.76
Tully							
6,741.0	70.96	337.68	6,513.6	615.3	-271.1	672.2	9.76
6,786.0	74.92	338.56	6,526.8	655.2	-287.1	715.1	9.00
6,831.0	80.81	340.14	6,536.3	696.4	-302.6	758.9	13.53
6,876.0	87.76	340.93	6,540.8	738.6	-317.5	803.5	15.54
6,937.0	88.99	340.41	6,542.5	796.1	-337.7	864.1	2.19
6,982.0	88.46	340.84	6,543.5	838.5	-352.6	908.9	1.52
7,026.0	88.46	340.76	6,544.7	880.1	-367.1	952.6	0.18
7,071.0	87.76	340.41	6,546.2	922.5	-382.0	997.4	1.74
7,116.0	87.14	340.76	6,548.2	964.9	-397.0	1,042.1	1.58
7,161.0	86.17	341.28	6,550.8	1,007.4	-411.6	1,086.8	2.44
7,204.0	85.42	340.86	6,554.0	1,047.9	-425.5	1,129.4	2.01
Marcellus							
7,206.0	85.38	340.84	6,554.1	1,049.8	-426.1	1,131.4	2.01
7,251.0	84.59	339.53	6,558.0	1,092.0	-441.3	1,176.0	3.39
7,296.0	85.36	339.99	6,562.0	1,134.0	-456.8	1,220.7	1.99
7,340.0	84.86	339.00	6,565.7	1,175.1	-472.2	1,264.3	2.51
7,385.0	85.65	338.47	6,569.5	1,216.9	-488.5	1,309.1	2.11

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Livingston Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Livingston Unit 2H 1003' GL + 19' KB @ 1022.0us
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Livingston Unit 2H 1003' GL + 19' KB @ 1022.0us
Well:	Livingston Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,430.0	86.70	338.38	6,572.5	1,258.7	-505.0	1,353.9	2.34
7,475.0	87.05	337.77	6,574.9	1,300.3	-521.8	1,398.8	1.56
7,520.0	87.05	338.38	6,577.2	1,342.0	-538.5	1,443.6	1.35
7,565.0	86.53	339.88	6,579.8	1,384.0	-554.5	1,488.4	3.52
7,610.0	86.79	340.14	6,582.4	1,426.2	-569.9	1,533.2	0.82
7,655.0	86.97	339.88	6,584.8	1,468.4	-585.3	1,577.9	0.70
7,700.0	86.44	339.70	6,587.4	1,510.6	-600.8	1,622.7	1.24
7,744.0	86.17	339.35	6,590.2	1,551.7	-616.1	1,666.4	1.00
7,789.0	86.09	339.35	6,593.3	1,593.8	-632.0	1,711.2	0.18
7,834.0	86.26	339.09	6,596.3	1,635.7	-647.9	1,756.0	0.69
7,879.0	86.35	339.53	6,599.2	1,677.7	-663.8	1,800.7	1.00
7,924.0	86.53	339.88	6,602.0	1,719.9	-679.3	1,845.5	0.87
7,969.0	86.61	339.61	6,604.7	1,762.0	-694.9	1,890.2	0.62
8,014.0	85.82	339.09	6,607.6	1,804.0	-710.7	1,935.0	2.10
8,059.0	85.91	338.74	6,610.9	1,845.9	-726.9	1,979.8	0.80
8,148.0	86.44	338.74	6,616.8	1,928.7	-759.1	2,068.4	0.60
8,238.0	86.79	338.47	6,622.1	2,012.3	-791.9	2,158.0	0.49
8,328.0	89.43	340.41	6,625.1	2,096.5	-823.4	2,247.6	3.64
8,418.0	89.08	339.44	6,626.3	2,181.0	-854.3	2,337.3	1.15
8,508.0	88.55	339.88	6,628.1	2,265.4	-885.6	2,426.9	0.77
8,597.0	88.20	338.12	6,630.7	2,348.5	-917.5	2,515.7	2.02
8,687.0	88.37	338.03	6,633.4	2,431.9	-951.1	2,605.5	0.21
8,777.0	87.75	335.63	6,636.4	2,514.6	-986.5	2,695.4	2.75
8,867.0	87.05	333.73	6,640.5	2,595.9	-1,024.9	2,785.3	2.25
8,956.0	88.29	333.46	6,644.1	2,675.5	-1,064.5	2,874.2	1.43
9,046.0	88.64	332.76	6,646.5	2,755.8	-1,105.1	2,964.1	0.87
9,136.0	88.29	333.55	6,648.9	2,836.0	-1,145.8	3,054.0	0.96
9,226.0	88.02	335.13	6,651.8	2,917.1	-1,184.7	3,144.0	1.78
9,315.0	88.37	336.01	6,654.6	2,998.1	-1,221.5	3,232.9	1.06
9,405.0	89.08	335.22	6,656.6	3,080.1	-1,258.7	3,322.9	1.18
9,495.0	89.25	336.63	6,657.9	3,162.2	-1,295.4	3,412.9	1.58
9,585.0	88.11	335.40	6,660.0	3,244.4	-1,331.9	3,502.8	1.86
9,674.0	88.29	332.58	6,662.8	3,324.4	-1,371.0	3,591.8	3.17
9,764.0	88.99	332.32	6,664.9	3,404.1	-1,412.6	3,681.6	0.83
9,854.0	88.46	333.55	6,666.9	3,484.3	-1,453.5	3,771.6	1.49
9,944.0	91.19	337.15	6,667.2	3,566.0	-1,491.0	3,861.5	5.02
10,033.0	92.15	337.24	6,664.6	3,648.0	-1,525.5	3,950.4	1.08
10,123.0	91.19	335.66	6,662.0	3,730.5	-1,561.5	4,040.4	2.05
10,213.0	91.63	334.08	6,659.8	3,812.0	-1,599.7	4,130.3	1.82
10,303.0	91.36	335.31	6,657.4	3,893.3	-1,638.1	4,220.3	1.40
10,392.0	91.10	334.25	6,655.5	3,973.8	-1,676.0	4,309.3	1.23
10,482.0	92.24	335.13	6,652.9	4,055.1	-1,714.5	4,399.2	1.60
10,572.0	91.36	335.66	6,650.1	4,136.9	-1,751.9	4,489.2	1.14
10,662.0	91.98	335.31	6,647.5	4,218.7	-1,789.3	4,579.1	0.79

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Livingston Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Livingston Unit 2H 1003' GL + 19' KB @ 1022.0us
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Livingston Unit 2H 1003' GL + 19' KB @ 1022.0us
Well:	Livingston Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
10,756.0	90.57	334.96	6,645.4	4,304.0	-1,828.8	4,673.1	1.55
10,851.0	91.10	334.52	6,644.0	4,389.9	-1,869.3	4,768.1	0.73
10,946.0	90.04	333.20	6,643.0	4,475.2	-1,911.2	4,863.1	1.78
11,041.0	89.43	333.73	6,643.5	4,560.2	-1,953.6	4,958.0	0.85
11,135.0	89.52	335.66	6,644.3	4,645.2	-1,993.8	5,052.0	2.06
11,230.0	89.87	335.48	6,644.8	4,731.7	-2,033.1	5,147.0	0.41
11,325.0	90.66	337.68	6,644.4	4,818.8	-2,070.8	5,242.0	2.46
11,419.0	89.78	336.98	6,644.0	4,905.6	-2,107.1	5,335.9	1.20
11,514.0	90.40	337.33	6,643.9	4,993.1	-2,143.9	5,430.8	0.75
11,608.0	91.10	339.53	6,642.7	5,080.5	-2,178.5	5,524.6	2.46
11,702.0	91.01	337.33	6,640.9	5,167.9	-2,213.0	5,618.4	2.34
11,796.0	90.66	333.46	6,639.6	5,253.3	-2,252.2	5,712.4	4.13
11,886.0	91.19	333.90	6,638.1	5,334.0	-2,292.1	5,802.3	0.77
11,976.0	90.31	332.93	6,636.9	5,414.5	-2,332.3	5,892.3	1.46
12,065.0	90.31	333.02	6,636.5	5,493.8	-2,372.8	5,981.2	0.10
12,155.0	90.22	330.83	6,636.0	5,573.2	-2,415.1	6,071.1	2.44
12,245.0	90.13	333.11	6,635.8	5,652.6	-2,457.4	6,161.0	2.54
12,335.0	90.92	331.97	6,634.9	5,732.5	-2,498.9	6,250.9	1.54
12,424.0	90.40	333.90	6,633.9	5,811.7	-2,539.4	6,339.9	2.25
12,514.0	89.16	334.25	6,634.3	5,892.6	-2,578.8	6,429.9	1.43
12,604.0	90.48	337.68	6,634.5	5,974.8	-2,615.4	6,519.8	4.08
12,694.0	90.48	336.36	6,633.8	6,057.7	-2,650.6	6,609.8	1.47
12,783.0	89.69	335.75	6,633.7	6,139.0	-2,686.7	6,698.7	1.12
12,873.0	90.04	334.34	6,633.9	6,220.6	-2,724.6	6,788.7	1.61
12,963.0	90.66	332.58	6,633.3	6,301.1	-2,764.9	6,878.7	2.07
13,053.0	89.52	333.46	6,633.2	6,381.3	-2,805.7	6,968.7	1.60
13,142.0	90.13	333.11	6,633.4	6,460.8	-2,845.7	7,057.6	0.79
13,232.0	91.19	333.73	6,632.4	6,541.3	-2,886.0	7,147.6	1.36
13,322.0	90.48	334.43	6,631.1	6,622.2	-2,925.3	7,237.6	1.11
13,411.0	89.96	335.92	6,630.8	6,703.0	-2,962.7	7,326.6	1.77
13,501.0	90.48	335.66	6,630.4	6,785.1	-2,999.6	7,416.5	0.65
13,591.0	89.96	334.87	6,630.1	6,866.8	-3,037.2	7,506.5	1.05
13,681.0	90.75	334.69	6,629.5	6,948.3	-3,075.6	7,596.5	0.90
13,771.0	89.69	335.66	6,629.2	7,029.9	-3,113.4	7,686.5	1.60
13,860.0	90.84	337.15	6,628.7	7,111.5	-3,149.0	7,775.5	2.11
13,950.0	90.66	335.83	6,627.6	7,194.0	-3,184.9	7,865.5	1.48
14,040.0	89.87	336.63	6,627.2	7,276.4	-3,221.2	7,955.4	1.25
14,130.0	90.92	337.86	6,626.5	7,359.4	-3,256.0	8,045.3	1.80
14,219.0	90.57	334.69	6,625.4	7,440.8	-3,291.8	8,134.3	3.58
14,309.0	90.57	333.37	6,624.5	7,521.7	-3,331.2	8,224.3	1.47
14,399.0	89.16	334.87	6,624.7	7,602.7	-3,370.5	8,314.3	2.29
14,489.0	89.96	335.92	6,625.4	7,684.5	-3,407.9	8,404.3	1.47
14,578.0	91.54	335.75	6,624.2	7,765.7	-3,444.4	8,493.2	1.79
14,668.0	90.31	335.40	6,622.8	7,847.6	-3,481.6	8,583.2	1.42
14,758.0	90.92	334.08	6,621.8	7,929.0	-3,520.0	8,673.2	1.62

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Livingston Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Livingston Unit 2H 1003' GL + 19' KB @ 1022.0us
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Livingston Unit 2H 1003' GL + 19' KB @ 1022.0us
Well:	Livingston Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
14,848.0	91.01	334.34	6,620.3	8,010.1	-3,559.1	8,763.2	0.31
14,938.0	89.60	335.31	6,619.8	8,091.5	-3,597.4	8,853.2	1.90
15,027.0	90.22	335.13	6,619.9	8,172.3	-3,634.7	8,942.2	0.73
15,117.0	91.19	334.78	6,618.8	8,253.8	-3,672.8	9,032.2	1.15

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
6,428.0	6,340.0	378.9	-173.3	Middlesex
6,640.0	6,472.8	530.0	-236.0	Burkett
6,707.0	6,501.6	585.9	-259.0	Tully
7,204.0	6,554.0	1,047.9	-425.5	Marcellus

Checked By: _____ Approved By: _____ Date: _____

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/12/2014
Job End Date:	5/9/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06224-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Livingston Unit 2H ST
Longitude:	-80.82301700
Latitude:	39.25486700
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,623
Total Base Water Volume (gal):	11,704,770
Total Base Non Water Volume:	0

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

Interstate Oil & Gas Compact Commission

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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	Water					
			Water	7732-18-5	100.00000	91.05112	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	5.50572	
			Aluminum Oxide	1344-28-1	1.10000	0.06062	
			Iron Oxide	1309-37-1	0.10000	0.00551	
			Titanium Oxide	13463-67-7	0.10000	0.00551	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	2.60615	
			Aluminum Oxide	1344-28-1	1.10000	0.02870	
			Iron Oxide	1309-37-1	0.10000	0.00261	
			Titanium Oxide	13463-67-7	0.10000	0.00261	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	0.61974	
			Aluminum Oxide	1344-28-1	1.10000	0.00682	

			Titanium Oxide	13463-67-7	0.10000	0.00062	
			Iron Oxide	1309-37-1	0.10000	0.00062	
LSG-100L	Nabors Completion and Production Services	Gelling Agents					
			Petroleum Distillates	64742-47-8	70.00000	0.04617	
WFR-3B	Nabors Completion and Production Services	Friction Reducer					
			Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8	30.00000	0.02089	
			Ethoxylated alcohols	68002-97-1	15.00000	0.01044	
			Ethoxylated oleylamine	26635-93-8	5.00000	0.00348	
HCl Acid (12.5-18.0%), 22 Baume	Nabors Completion and Production Services	Bulk Acid					
			Water	7732-18-5	100.00000	0.01427	
Super GREEN SOLV-M	Nabors Completion and Production Services	Paraffin & Scale Additives					
			Aliphatic Hydrocarbons	Proprietary	95.00000	0.00699	
			Dodecane	Proprietary	14.00000	0.00103	
			tetradecane	Proprietary	11.00000	0.00081	
			Tridecane	Proprietary	9.00000	0.00066	
			Undecane	Proprietary	8.00000	0.00059	
KR-153SL	Nabors Completion and Production Services	Biocides					
			Polyethlyene-Glycol	25322-68-3	50.00000	0.00642	
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00257	
Super TSC-LT	Nabors Completion and Production Services	Paraffin & Scale Additives					
			Water	7732-18-5	60.00000	0.00868	
OB-2 LT	Nabors Completion and Production Services	Gel Breakers					
			Ammonium Persulfate	7727-54-0	85.00000	0.00726	
			Crystalline Silica (in the form of quartz)	14808-60-7	10.00000	0.00085	
HCl Acid (12.5-18.0%), 22 Baume	Nabors Completion and Production Services	Bulk Acid					
			Hydrochloric Acid	7647-01-0	35.50000	0.00415	
Acid Inhibitor 2 (AI-2)	Nabors Completion and Production Services	Acid Corrosion Inhibitors					
			Propargyl Alcohol	107-19-7	40.00000	0.00016	
			Glycol Ethers	111-46-6	40.00000	0.00016	
			Isopropyl Alcohol	67-63-0	40.00000	0.00016	
			Ethoxylated Nonylphenol	68412-54-4	13.00000	0.00005	

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			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	10.00000	0.00004	
Super TSC 2 LT	Nabors Completion and Production Services	Paraffin & Scale Additives					
			Proprietary	35657-77-3	15.00000	0.00044	
EB-4L	Nabors Completion and Production Services	Gel Breakers					
			Ethylene Glycol	107-21-1	40.00000	0.00019	
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.							
Other Ingredients	Nabors Completion and Production Services	Other Ingredients					
			guar gum	9000-30-0	50.00000	0.03298	
			Water	7732-18-5	40.00000	0.02785	
			Anionic Polyacrylamide	910644-97-2	40.00000	0.02785	
			Propylene glycol	57-55-6	15.00000	0.01044	
			Water	7732-18-5	80.00000	0.01028	
			Water	7732-18-5	64.50000	0.00753	
			Proprietary	Proprietary	50.00000	0.00723	
			Water	7732-18-5	90.00000	0.00265	
			Proprietary	Proprietary	15.00000	0.00217	
			Proprietary	Proprietary	15.00000	0.00217	
			Proprietary	Proprietary	15.00000	0.00217	
			Proprietary	Proprietary	2.00000	0.00139	
			Surfactant	68439-51-0	2.00000	0.00132	
			Crystalline Silica (in the form of quartz)	14808-60-7	2.00000	0.00132	
			Alkali Chloride salt	Proprietary	15.00000	0.00128	
			Proprietary	Proprietary	100.00000	0.00048	
			Sugar	57-50-1	100.00000	0.00048	
			Water	7732-18-5	100.00000	0.00024	
			Water	7732-18-5	48.00000	0.00019	
			2-Butoxyethanol	111-76-2	13.00000	0.00005	
			Proprietary	Proprietary	1.00000	0.00001	
			Proprietary	Proprietary	1.00000	0.00001	
			Proprietary	Proprietary	1.00000	0.00001	
			Proprietary	Proprietary	1.00000	0.00001	
			Dioxane	123-91-1	1.00000	0.00000	
			Organophylic Clay	68953-58-2			

* 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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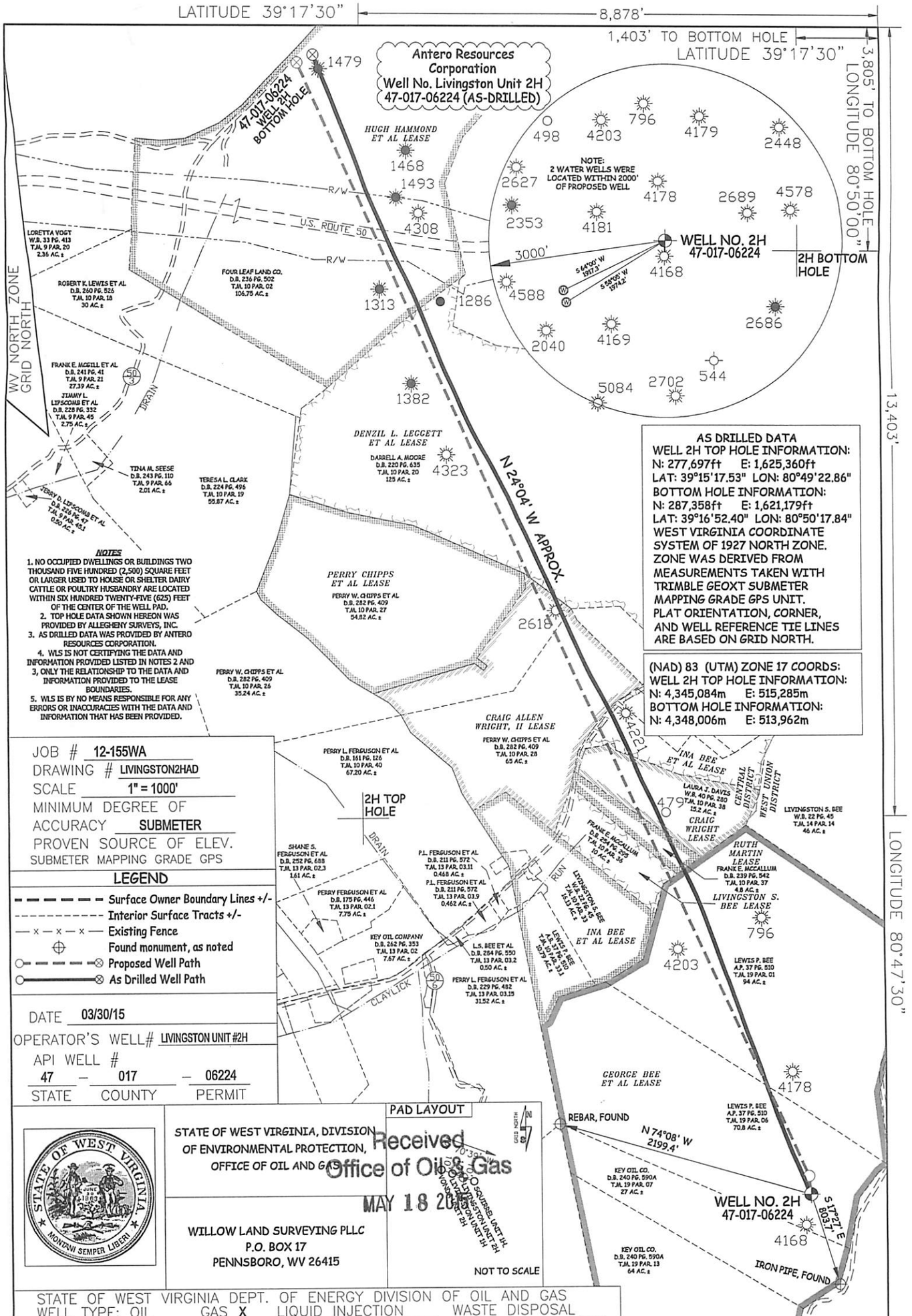

STATE OF WEST VIRGINIA DEPT. OF ENERGY DIVISION OF OIL AND GAS
WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,011' ORIGINAL - 1,003' AS DRILLED WATERSHED HEADWATERS MIDDLE ISLAND CREEK
QUADRANGLE WEST UNION 7.5' DISTRICT WEST UNION COUNTY DODDRIDGE
SURFACE OWNER LEWIS P. BEE ACREAGE 70.8 ACRES +/-
OIL & GAS ROYALTY OWNER GEORGE BEE ET AL; RUTH MARTIN; LEASE ACREAGE 356.5 AC±; 4.676 AC±;
CRAIG WRIGHT; INA BEE ET AL; CRAIG ALLEN WRIGHT, II; DENZIL L. LEGGETT ET AL; HUGH HAMMOND ET AL 15 AC±; 27 AC±; 30.09 ±; 140 AC±; 146 AC±
PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___
PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL
(SPECIFY) (X) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,581' TVD 16,613' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER
ADDRESS 1615 WYNKOOP STREET ADDRESS CT CORPORATION SYSTEM
DENVER, CO 80202 5400 D BIG TYLER ROAD
CHARLESTON, WV 25313
FORM WW-6

COUNTY NAME
PERMIT

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Rev. 8/23/13

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

API 47 - 017 - 06225 County Doddridge District West Union
Quad West Union 7.5' Pad Name Bee Lewis Pad Field/Pool Name ---
Farm name Bee, Lewis P. Well Number Vonda Unit 2H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street 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 4345086m Easting 515279m
Landing Point of Curve Northing 4345433.88m Easting 514707.11m
Bottom Hole Northing 4347750m Easting 513608m

Elevation (ft) 1003' 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 5/23/2013 Date drilling commenced 12/26/2013 Date drilling ceased 2/12/2014
Date completion activities began 3/7/2014 Date completion activities ceased 6/10/2014
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 56', 136' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 466', 996' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 101', 590' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:
A.L. 5/26/15 ✓
W.S. 6/02/15

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API 47- 017 - 06225 Farm name Bee, Lewis P. Well number Vonda Unit 2H

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	28"	20"	59'	New	94# J-55	N/A	Y
Surface	17-1/2"	13-3/8"	359'	New	48# H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2618'	New	36# J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	17017'	New	23# P-110	N/A	Y
Tubing		2-3/8"	6984'		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^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	150 sx	11.58	1.18	57	0'	8 Hrs.
Surface	Class A	355 sx	15.6	1.80	249	0'	8 Hrs.
Coal							
Intermediate 1	Class A	964 sx	15.6	1.18	820	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1017 sx (Lead) 1574 sx (Tail)	14.5 Lead 15.2 Tail	1.3 Lead 1.86 Tail	3413	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 17,017' MD, 6591' TVD (BHL); 6661' TVD (Deepest point drilled) Loggers TD (ft) 16,968' MD

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6147'

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Squirrel Unit 1H API# 47-017-06258). Please reference the wireline logs submitted with Form WR-35 for the Squirrel 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

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

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API 47- 017 - 06225 Farm name Bee, Lewis P. Well number Vonda Unit 2H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
		SEE ATTACHED EXHIBIT 1			

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)
			SEE ATTACHED EXHIBIT 2					

Please insert additional pages as applicable.

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API 47- 017 - 06225 Farm name Bee, Lewis P. Well number Vonda Unit 2H

PRODUCING FORMATION(S)	DEPTHS		
Marcellus	6536' (TOP) TVD	7009' (TOP) MD	

Please insert additional pages as applicable.

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GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST ■ Flow □ Pump

SHUT-IN PRESSURE Surface 3600 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 15,588 mcfpd Oil 50 bpd NGL --- bpd Water 205 bpd GAS MEASURED BY □ Estimated ■ Orifice □ Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
					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 Service
Address 600 Alpha Dr. City Canonsburg State PA Zip 15317

Cementing Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378
Please insert additional pages as applicable.

Completed by Kara Quackenbush Telephone 303-357-7233
Signature Kara Quackenbush Title Permit Representative Date 1/28/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

API 47-017-06225 Farm Name Bee, Lewis P. Well Number Vonda Unit 2H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	7-Mar-14	16,758	16,926	60	Marcellus
2	16-Mar-14	16,560	16,727	60	Marcellus
3	17-Mar-14	16,362	16,529	60	Marcellus
4	18-Mar-14	16,164	16,331	60	Marcellus
5	18-Mar-14	15,966	16,133	60	Marcellus
6	19-Mar-14	15,768	15,935	60	Marcellus
7	19-Mar-14	15,569	15,737	60	Marcellus
8	19-Mar-14	15,371	15,538	60	Marcellus
9	19-Mar-14	15,173	15,340	60	Marcellus
10	20-Mar-14	14,975	15,142	60	Marcellus
11	20-Mar-14	14,777	14,944	60	Marcellus
12	20-Mar-14	14,579	14,746	60	Marcellus
13	20-Mar-14	14,380	14,548	60	Marcellus
14	21-Mar-14	14,182	14,349	60	Marcellus
15	21-Mar-14	13,984	14,151	60	Marcellus
16	21-Mar-14	13,786	13,953	60	Marcellus
17	21-Mar-14	13,588	13,755	60	Marcellus
18	21-Mar-14	13,390	13,557	60	Marcellus
19	22-Mar-14	13,191	13,359	60	Marcellus
20	22-Mar-14	12,993	13,160	60	Marcellus
21	22-Mar-14	12,795	12,962	60	Marcellus
22	22-Mar-14	12,597	12,764	60	Marcellus
23	23-Mar-14	12,399	12,566	60	Marcellus
24	23-Mar-14	12,201	12,368	60	Marcellus
25	23-Mar-14	12,002	12,170	60	Marcellus
26	23-Mar-14	11,804	11,971	60	Marcellus
27	23-Mar-14	11,606	11,773	60	Marcellus
28	24-Mar-14	11,408	11,575	60	Marcellus
29	24-Mar-14	11,210	11,377	60	Marcellus
30	24-Mar-14	11,012	11,179	60	Marcellus
31	24-Mar-14	10,814	10,981	60	Marcellus
32	25-Mar-14	10,615	10,782	60	Marcellus
33	25-Mar-14	10,417	10,584	60	Marcellus
34	25-Mar-14	10,219	10,386	60	Marcellus
35	25-Mar-14	10,021	10,188	60	Marcellus
36	25-Mar-14	9,823	9,990	60	Marcellus
37	26-Mar-14	9,625	9,792	60	Marcellus
38	26-Mar-14	9,426	9,594	60	Marcellus
39	26-Mar-14	9,228	9,395	60	Marcellus
40	26-Mar-14	9,030	9,197	60	Marcellus
41	26-Mar-14	8,832	8,999	60	Marcellus
42	27-Mar-14	8,634	8,801	60	Marcellus
43	27-Mar-14	8,436	8,603	60	Marcellus
44	27-Mar-14	8,237	8,405	60	Marcellus
45	27-Mar-14	8,039	8,206	60	Marcellus
46	28-Mar-14	7,841	8,008	60	Marcellus
47	28-Mar-14	7,643	7,810	60	Marcellus
48	29-Mar-14	7,445	7,612	60	Marcellus
49	29-Mar-14	7,247	7,414	60	Marcellus
50	29-Mar-14	7,048	7,216	60	Marcellus

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API 47-017-06225 Farm Name Bee, Lewis P. Well Number Vonda Unit 2H

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	7-Mar-14	72.9	8,102	6,050	4,957	217,400	6,416	N/A
2	16-Mar-14	61.1	7,384	6,379	5,235	107,700	6,528	N/A
3	17-Mar-14	72.5	7,579	6,341	4,973	215,900	6,505	N/A
4	18-Mar-14	74.5	7,933	5,757	5,477	231,300	6,155	N/A
5	18-Mar-14	74.6	8,090	5,867	5,273	221,500	6,249	N/A
6	19-Mar-14	74.2	7,606	5,572	5,384	220,400	6,021	N/A
7	19-Mar-14	74.1	7,791	6,052	5,135	224,800	6,054	N/A
8	19-Mar-14	78.8	7,806	5,544	5,354	187,200	6,286	N/A
9	19-Mar-14	71.5	8,382	6,064	5,087	181,900	6,414	N/A
10	20-Mar-14	68.9	7,775	5,830	5,053	146,500	6,494	N/A
11	20-Mar-14	70.9	7,273	5,510	5,529	171,400	6,494	N/A
12	20-Mar-14	73.0	7,629	5,753	4,932	223,900	6,101	N/A
13	20-Mar-14	75.1	7,956	5,452	4,841	226,300	6,043	N/A
14	21-Mar-14	76.2	7,574	5,260	4,940	225,800	5,986	N/A
15	21-Mar-14	75.5	7,275	5,387	5,241	224,500	5,961	N/A
16	21-Mar-14	76.4	7,452	5,625	5,186	225,300	6,007	N/A
17	21-Mar-14	77.0	7,504	5,410	4,444	226,300	6,018	N/A
18	21-Mar-14	76.9	7,612	5,589	5,082	221,600	5,945	N/A
19	22-Mar-14	76.0	7,360	5,294	4,809	230,400	5,940	N/A
20	22-Mar-14	78.1	7,619	5,241	4,865	227,500	5,934	N/A
21	22-Mar-14	75.8	7,993	5,493	4,775	227,900	5,965	N/A
22	22-Mar-14	76.4	7,588	5,849	5,950	226,300	5,878	N/A
23	23-Mar-14	78.9	7,738	6,218	4,763	225,400	5,865	N/A
24	23-Mar-14	80.6	7,682	5,832	4,931	223,800	5,848	N/A
25	23-Mar-14	80.5	7,296	5,125	5,186	225,700	5,903	N/A
26	23-Mar-14	76.2	7,637	5,301	4,516	227,000	5,807	N/A
27	23-Mar-14	78.7	7,407	4,863	4,800	225,300	5,888	N/A
28	24-Mar-14	79.2	6,790	5,120	5,167	224,300	5,817	N/A
29	24-Mar-14	80.7	7,182	5,691	4,989	226,100	5,823	N/A
30	24-Mar-14	77.6	7,429	5,477	4,916	224,100	5,740	N/A
31	24-Mar-14	78.2	6,934	5,127	4,983	226,600	5,783	N/A
32	25-Mar-14	74.7	7,786	5,666	4,595	175,200	6,165	N/A
33	25-Mar-14	78.6	7,333	5,666	5,384	226,100	5,791	N/A
34	25-Mar-14	78.2	7,181	5,407	4,917	225,600	5,762	N/A
35	25-Mar-14	75.9	6,722	4,858	5,038	226,300	5,723	N/A
36	25-Mar-14	77.6	6,622	4,925	4,736	227,800	5,751	N/A
37	26-Mar-14	80.1	6,610	4,643	5,267	224,200	5,773	N/A
38	26-Mar-14	78.0	7,226	5,740	5,396	225,100	5,672	N/A
39	26-Mar-14	72.1	7,833	6,504	4,998	197,100	6,050	N/A
40	26-Mar-14	75.6	7,820	5,572	4,764	164,100	5,706	N/A
41	26-Mar-14	69.3	7,950	5,906	5,696	161,300	5,565	N/A
42	26-Mar-14	64.1	7,329	6,775	4,452	13,300	5,724	N/A
43	26-Mar-14	73.1	7,691	6,306	5,349	145,300	5,561	N/A
44	26-Mar-14	76.2	7,437	6,438	5,122	163,600	5,818	N/A
45	26-Mar-14	71.6	7,889	6,414	8,914	103,500	6,494	N/A
46	28-Mar-14	67.6	7,858	5,508	5,701	185,900	5,917	N/A
47	28-Mar-14	77.8	7,492	6,151	5,219	220,900	5,526	N/A
48	29-Mar-14	72.0	7,542	6,112	4,929	187,500	5,784	N/A
49	29-Mar-14	74.1	7,362	5,920	4,917	110,300	5,456	N/A
50	29-Mar-14	72.1	7,033	5,645	4,532	131,700	5,449	N/A
AVG=		**75**	**7,522**	**5,685**	**5,134**	**9,954,900**	**297,555**	TOTAL

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API 47-017-06225 Farm Name Lewis, Bee P. Well Number Vonda Unit 2H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	**TOP DEPTH (TVD) From Surface**	**BOTTOM DEPTH (TVD) From Surface**	**TOP DEPTH (MD) From Surface**	**BOTTOM DEPTH (MD) From Surface**
Fresh Water	56'	N/A	56'	N/A
Fresh Water	136'	N/A	136'	N/A
Shale	0	101	0	101
Coal	est. 101	141	est. 101	141
Shale	est. 141	301	est. 141	301
Sandstone	est. 301	341	est. 301	341
Shale/Sandstone/Siltstone	est. 341	590	est. 341	590
Coal	est. 590	611	est. 590	611
Shale/Siltstone	est. 611	1486	est. 611	1486
Siltstone w/Coal	est. 1486	1541	est. 1486	1541
Siltstone/Sandstone	est. 1541	1882	est. 1541	1882
Big Lime	1882	1987	1882	1987
Big Injun	1987	2462	1987	2462
Gantz Sand	2462	2567	2462	2567
Fifty Foot Sandstone	2567	2656	2567	2656
Gordon	2656	2958	2656	2958
Fifth Sandstone	2958	2991	2958	2991
Bayard	2991	3348	2991	3348
Warren	3348	3687	3348	3690
Speechley	3687	4009	3690	4024
Baltown	4009	4463	4024	4527
Bradford	4463	4896	4527	5015
Benson	4896	5180	5015	5336
Alexander	5180	5350	5336	5530
Elk	5350	5747	5530	5980
Rhinestreet	5747	6165	5980	6453
Sycamore	6165	6341	6453	6666
Middlesex	6341	6470	6666	6858
Burkett	6470	6498	6858	6914
Tully	6498	6536	6914	7009
Marcellus	6536	NA	7009	NA

*Please note Antero determines shallow formation tops based on mud and/or wireline logs that are only run on one well on a multi-well pad (Please reference Wireline Logs submitted for the Squirrel Unit 1H API# 47-017-06258). The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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Antero Resources

Antero Resources
Vonda Unit 2H
Doddridge County WV
Northing: 14254788.95
Easting: 1690498.12
As Drilled

WELL DETAILS: Vonda Unit 2H

Ground Level: 1003.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	14254788.95	1690498.12	39° 15' 17.583 N	80° 49' 23.098 W	

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Vonda Unit 2H, Grid North
Vertical (TVD) Reference: Vonda Unit 2H GL 1003' + 19' RKB @ 1022.0usft
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: Vonda Unit 2H GL 1003' + 19' RKB @ 1022.0usft
Calculation Method: Minimum Curvature

Scientific Drilling

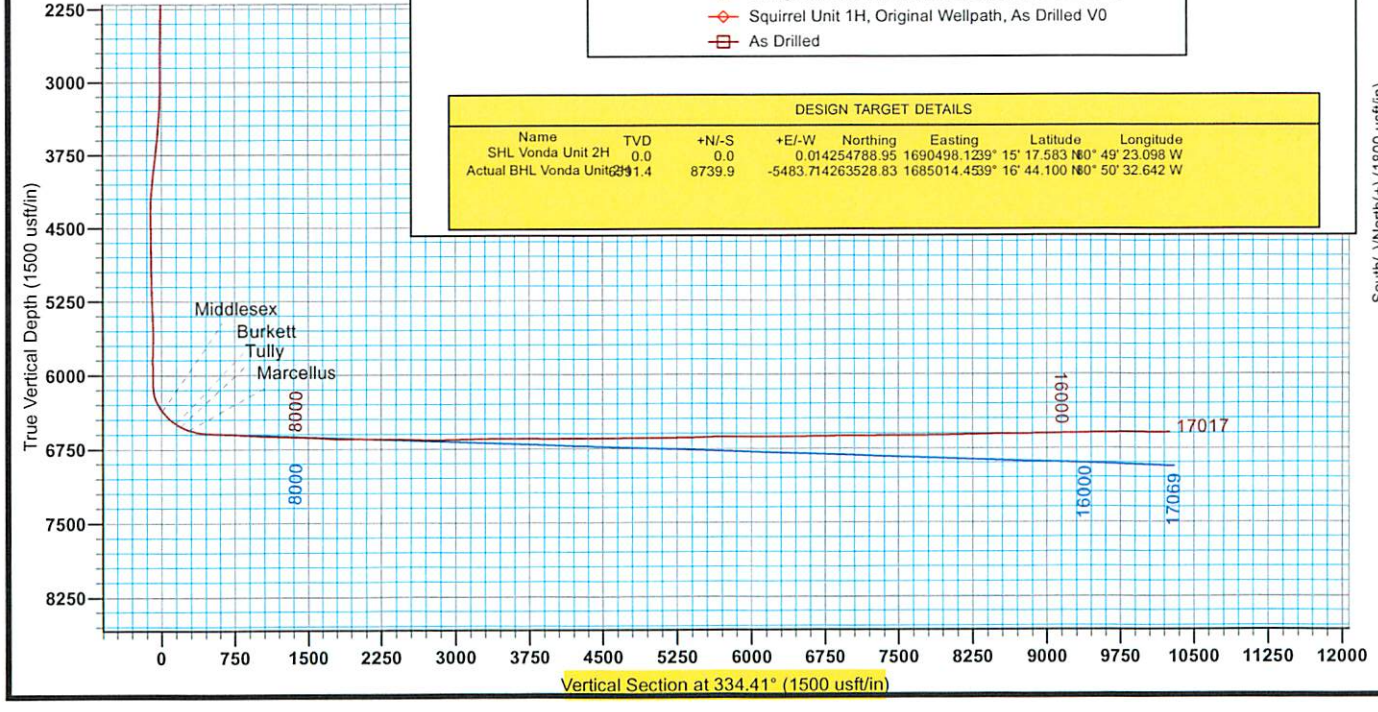
Genie Lightfoot
Scientific Drilling
421 South Eagle Lane
Oklahoma City Oklahoma
405-787-3663

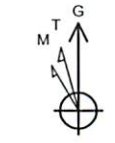
LEGEND

- Livingston Unit 1H, Original Wellpath, As Drilled V0
- Vonda Unit 2H, Original Wellpath, Plan 4 V0
- Livingston Unit 2H, Sidetrack 1, As Drilled ST1 V0
- Livingston Unit 2H, Original Wellpath, As Drilled V0
- Squirrel Unit 1H, Original Wellpath, As Drilled V0
- As Drilled

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Vonda Unit 2H	0.0	0.0	0.0	14254788.95	1690498.12	39° 15' 17.583 N	80° 49' 23.098 W
Actual BHL Vonda Unit 2H	6591.4	8739.9	-5483.7	14263528.83	1685014.45	39° 16' 44.100 N	80° 50' 32.642 W

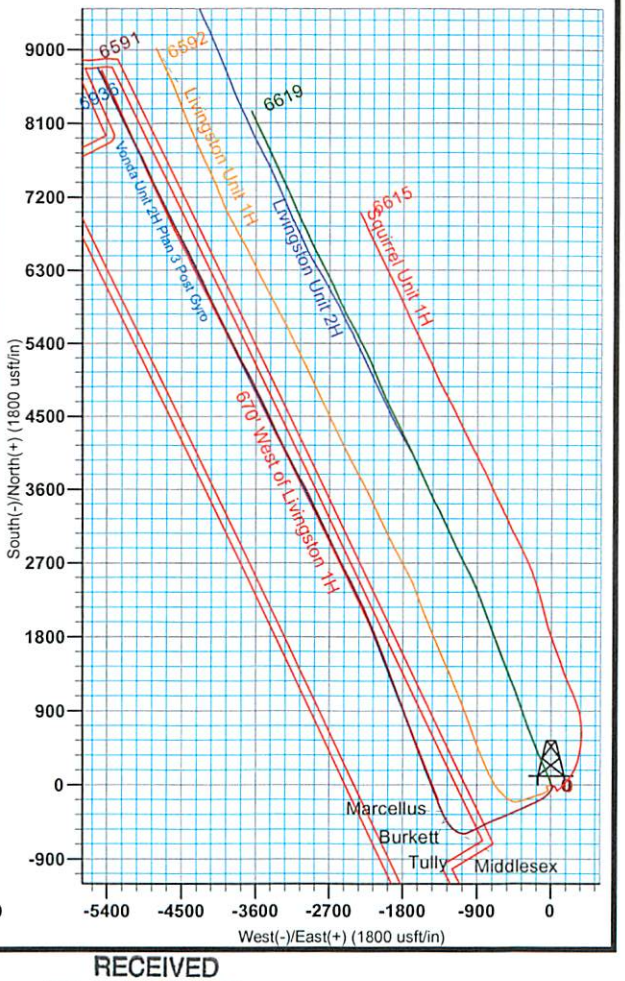




To convert Magnetic North to Grid, Subtract 8.53°
To convert True North to Grid, Subtract 0.11°

Azimuths to Grid North
True North: -0.11°
Magnetic North: -8.53°

Magnetic Field
Strength: 52351.9snT
Dip Angle: 66.84°
Date: 11/20/2013
Model: IGRF2010



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Environmental Protection

Antero Resources

Doddridge County WV
Squirrel/Livingston/Vonda Pad
Vonda Unit 2H
Original Wellpath

Design: As Drilled

EOW Completion Report

19 February, 2014

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WV Department of
Environmental Protection

Scientific Drilling

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Vonda Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Vonda Unit 2H GL 1003' + 19' RKB @ 1022.0usft
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Vonda Unit 2H GL 1003' + 19' RKB @ 1022.0usft
Well:	Vonda Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Project Doddridge County WV, McClellan District

Map System:	Universal Transverse Mercator (US Survey Fee	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site Squirrel/Livingston/Vonda Pad

Site Position:		**Northing:**	14,254,779.42 usft	**Latitude:**	39° 15' 17.488 N
From:	Map	**Easting:**	1,690,526.27 usft	**Longitude:**	80° 49' 22.740 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.11 °

Well Vonda Unit 2H

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,254,788.95 usft	**Latitude:**	39° 15' 17.583 N
	+E/-W	0.0 usft	**Easting:**	1,690,498.12 usft	**Longitude:**	80° 49' 23.098 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**	1,022.0 usft	**Ground Level:**	1,003.0 usft

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/20/2013	-8.41	66.84	52,352

Design As Drilled

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	334.41

Survey Program **Date** 2/19/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	6,261.0	Survey #4 Def Gyro to KOP (Original Well	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
6,295.0	17,017.0	Survey #5 MWD (Original Wellpath)	MWD SDI	MWD - Standard ver 1.0.1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
100.0	0.90	347.07	100.0	0.8	-0.2	0.8	0.90
200.0	0.24	4.72	200.0	1.7	-0.3	1.7	0.68
300.0	0.36	18.16	300.0	2.2	-0.2	2.1	0.14
400.0	0.34	55.14	400.0	2.7	0.1	2.4	0.22
500.0	0.31	71.79	500.0	3.0	0.6	2.4	0.10
600.0	0.26	86.13	600.0	3.1	1.1	2.3	0.09
700.0	0.22	99.97	700.0	3.1	1.5	2.1	0.07
800.0	0.40	95.70	800.0	3.0	2.1	1.8	0.18
900.0	0.31	98.85	900.0	2.9	2.7	1.5	0.09
1,000.0	0.54	91.89	1,000.0	2.8	3.4	1.1	0.24

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1,100.0	0.37	75.77	1,100.0	2.9	4.2	0.8	0.21
1,200.0	0.41	79.19	1,200.0	3.1	4.9	0.7	0.05
1,300.0	0.47	102.18	1,300.0	3.0	5.6	0.3	0.18
1,400.0	0.61	110.20	1,400.0	2.8	6.5	-0.3	0.16
1,500.0	0.88	119.24	1,500.0	2.2	7.7	-1.3	0.29
1,600.0	0.88	118.63	1,599.9	1.5	9.0	-2.6	0.01
1,700.0	0.59	114.97	1,699.9	0.9	10.2	-3.6	0.29
1,800.0	0.66	121.85	1,799.9	0.4	11.1	-4.5	0.10
1,900.0	0.51	121.36	1,899.9	-0.2	12.0	-5.3	0.15
2,000.0	0.63	126.02	1,999.9	-0.7	12.8	-6.2	0.13
2,100.0	0.56	134.53	2,099.9	-1.4	13.6	-7.1	0.11
2,200.0	0.42	132.93	2,199.9	-2.0	14.2	-7.9	0.14
2,300.0	0.61	133.78	2,299.9	-2.6	14.9	-8.8	0.19
2,400.0	0.51	119.00	2,399.9	-3.2	15.7	-9.6	0.17
2,500.0	0.54	127.24	2,499.9	-3.7	16.4	-10.4	0.08
2,600.0	0.53	128.63	2,599.9	-4.3	17.2	-11.3	0.02
2,700.0	0.60	134.34	2,699.9	-4.9	17.9	-12.2	0.09
2,800.0	0.77	134.29	2,799.9	-5.8	18.7	-13.3	0.17
2,900.0	0.49	142.02	2,899.9	-6.6	19.5	-14.3	0.29
3,000.0	0.69	144.25	2,999.9	-7.4	20.1	-15.3	0.20
3,100.0	0.67	122.11	3,099.9	-8.2	21.0	-16.4	0.26
3,200.0	0.94	143.01	3,199.9	-9.2	21.9	-17.7	0.39
3,300.0	2.57	189.44	3,299.8	-12.0	22.1	-20.4	2.04
3,400.0	5.18	180.29	3,399.6	-18.7	21.7	-26.3	2.67
3,500.0	7.00	189.08	3,499.0	-29.3	20.7	-35.3	2.04
3,600.0	9.13	202.80	3,598.0	-42.6	16.7	-45.6	2.86
3,700.0	10.88	211.47	3,696.5	-58.0	8.7	-56.0	2.30
3,800.0	12.67	217.63	3,794.4	-74.7	-3.0	-66.1	2.18
3,900.0	15.75	217.51	3,891.3	-94.2	-17.9	-77.2	3.08
4,000.0	18.32	226.71	3,986.9	-115.7	-37.6	-88.1	3.72
4,100.0	22.33	231.58	4,080.7	-138.3	-64.0	-97.1	4.35
4,200.0	25.17	236.30	4,172.2	-161.9	-96.6	-104.3	3.42
4,300.0	26.32	244.23	4,262.3	-183.4	-134.2	-107.4	3.63
4,400.0	28.27	245.33	4,351.2	-202.9	-175.7	-107.1	2.01
4,500.0	27.65	242.78	4,439.5	-223.4	-217.9	-107.4	1.35
4,600.0	27.31	246.10	4,528.3	-243.3	-259.5	-107.4	1.57
4,700.0	26.96	243.34	4,617.2	-262.8	-300.7	-107.1	1.31
4,800.0	26.38	244.16	4,706.6	-282.6	-341.0	-107.6	0.69
4,900.0	28.63	247.58	4,795.3	-301.4	-383.1	-106.4	2.75
5,000.0	28.87	246.90	4,883.0	-320.1	-427.5	-104.0	0.41
5,100.0	28.52	247.09	4,970.7	-338.8	-471.7	-101.9	0.36
5,200.0	26.71	246.37	5,059.3	-357.1	-514.9	-100.0	1.84
5,300.0	27.47	244.26	5,148.3	-376.1	-556.6	-99.3	1.22
5,400.0	28.40	249.52	5,236.7	-394.5	-598.7	-97.2	2.63

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Survey

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5,500.0	29.74	250.75	5,324.1	-411.0	-644.4	-92.3	1.47
5,600.0	28.95	248.86	5,411.3	-427.9	-690.4	-87.7	1.22
5,700.0	28.64	246.60	5,498.9	-446.1	-734.9	-84.9	1.13
5,800.0	27.60	244.48	5,587.1	-465.6	-777.8	-84.0	1.44
5,900.0	27.21	241.91	5,675.9	-486.4	-818.9	-85.0	1.25
6,000.0	26.58	240.47	5,765.1	-508.2	-858.6	-87.5	0.91
6,100.0	26.72	244.74	5,854.4	-528.8	-898.4	-88.9	1.92
6,200.0	27.43	246.48	5,943.5	-547.6	-939.8	-87.9	1.06
6,261.0	27.72	246.47	5,997.6	-558.9	-965.7	-86.9	0.48
6,295.0	27.52	246.00	6,027.7	-565.2	-980.1	-86.4	0.87
6,340.0	27.44	244.07	6,067.6	-574.0	-999.0	-86.2	1.99
6,385.0	27.61	244.95	6,107.5	-582.9	-1,017.7	-86.2	0.98
6,430.0	27.79	256.46	6,147.4	-589.8	-1,037.4	-83.9	11.88
6,474.0	29.63	268.94	6,186.0	-592.4	-1,058.3	-77.2	14.23
6,519.0	31.92	280.10	6,224.7	-590.5	-1,081.1	-65.6	13.65
6,564.0	33.50	289.16	6,262.6	-584.4	-1,104.6	-49.9	11.42
6,609.0	35.44	296.71	6,299.7	-574.4	-1,128.0	-30.9	10.42
6,654.0	37.99	303.22	6,335.8	-560.9	-1,151.2	-8.7	10.33
6,685.0	40.06	308.22	6,359.9	-549.5	-1,167.0	8.4	12.15
Middlesex							
6,699.0	41.06	310.34	6,370.5	-543.8	-1,174.1	16.7	12.15
6,744.0	43.88	315.17	6,403.7	-523.1	-1,196.4	44.9	9.58
6,789.0	48.10	318.86	6,435.0	-499.5	-1,218.4	75.8	11.08
6,833.0	52.23	323.78	6,463.2	-473.1	-1,239.4	108.7	12.72
6,877.0	56.71	328.61	6,488.7	-443.3	-1,259.3	144.1	13.53
Burkett							
6,878.0	56.81	328.71	6,489.3	-442.6	-1,259.8	144.9	13.53
6,923.0	60.32	331.17	6,512.8	-409.4	-1,279.0	183.2	9.09
6,933.0	61.31	331.71	6,517.6	-401.7	-1,283.1	191.9	11.02
Tully							
6,968.0	64.81	333.54	6,533.5	-374.0	-1,297.5	223.1	11.02
7,013.0	70.52	335.39	6,550.6	-336.5	-1,315.4	264.7	13.25
7,028.0	72.13	336.11	6,555.4	-323.5	-1,321.2	278.9	11.65
Marcellus							
7,058.0	75.36	337.50	6,563.8	-297.0	-1,332.6	307.7	11.65
7,073.0	76.24	338.46	6,567.5	-283.5	-1,338.0	322.2	8.54
7,118.0	79.67	338.64	6,576.8	-242.6	-1,354.1	366.1	7.63
7,163.0	81.25	338.46	6,584.3	-201.3	-1,370.3	410.3	3.53
7,208.0	84.06	338.64	6,590.1	-159.8	-1,386.7	454.9	6.26
7,253.0	88.72	339.17	6,592.9	-117.9	-1,402.8	499.6	10.42
7,297.0	89.43	339.17	6,593.6	-76.7	-1,418.5	543.5	1.61
7,342.0	89.52	338.99	6,594.0	-34.7	-1,434.5	588.3	0.45
7,432.0	86.00	339.25	6,597.5	49.3	-1,466.5	677.9	3.92
7,522.0	85.82	339.17	6,604.0	133.2	-1,498.5	767.4	0.22
7,611.0	86.26	338.46	6,610.1	216.0	-1,530.5	855.9	0.94

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7,701.0	87.14	337.67	6,615.3	299.4	-1,564.1	945.6	1.31
7,791.0	87.49	337.41	6,619.5	382.4	-1,598.4	1,035.3	0.48
7,881.0	87.23	338.37	6,623.6	465.7	-1,632.3	1,125.1	1.10
7,970.0	88.29	339.87	6,627.1	548.8	-1,664.0	1,213.7	2.06
8,060.0	89.43	340.66	6,628.9	633.5	-1,694.4	1,303.2	1.54
8,150.0	88.55	340.22	6,630.5	718.3	-1,724.5	1,392.7	1.09
8,239.0	87.23	340.31	6,633.8	802.0	-1,754.5	1,481.2	1.49
8,329.0	87.14	340.13	6,638.2	886.6	-1,784.9	1,570.6	0.22
8,419.0	87.23	340.22	6,642.6	971.2	-1,815.4	1,660.0	0.14
8,509.0	87.23	339.78	6,647.0	1,055.6	-1,846.2	1,749.5	0.49
8,598.0	90.48	339.34	6,648.7	1,139.0	-1,877.2	1,838.1	3.68
8,688.0	90.92	339.34	6,647.6	1,223.2	-1,909.0	1,927.8	0.49
8,778.0	89.60	339.43	6,647.2	1,307.5	-1,940.7	2,017.4	1.47
8,868.0	89.08	338.90	6,648.3	1,391.6	-1,972.7	2,107.1	0.82
8,957.0	89.34	338.99	6,649.5	1,474.6	-2,004.7	2,195.8	0.31
9,047.0	89.96	338.55	6,650.0	1,558.5	-2,037.3	2,285.6	0.84
9,137.0	90.04	337.76	6,650.0	1,642.0	-2,070.7	2,375.4	0.88
9,227.0	89.78	339.69	6,650.2	1,725.9	-2,103.4	2,465.1	2.16
9,316.0	85.91	338.20	6,653.5	1,808.9	-2,135.3	2,553.8	4.66
9,406.0	87.76	336.88	6,658.5	1,891.9	-2,169.7	2,643.5	2.52
9,496.0	89.08	336.26	6,661.0	1,974.5	-2,205.4	2,733.4	1.62
9,586.0	90.48	336.00	6,661.3	2,056.8	-2,241.9	2,823.3	1.58
9,675.0	90.84	336.35	6,660.3	2,138.2	-2,277.8	2,912.3	0.56
9,765.0	92.15	334.59	6,658.0	2,220.0	-2,315.2	3,002.2	2.44
9,855.0	92.24	333.98	6,654.5	2,301.0	-2,354.2	3,092.2	0.68
9,944.0	92.86	334.16	6,650.5	2,381.0	-2,393.1	3,181.1	0.73
10,034.0	90.22	332.66	6,648.1	2,461.4	-2,433.3	3,271.0	3.37
10,124.0	89.87	332.05	6,648.1	2,541.2	-2,475.1	3,361.0	0.78
10,214.0	90.48	332.31	6,647.8	2,620.8	-2,517.1	3,450.9	0.74
10,303.0	90.40	333.63	6,647.1	2,700.0	-2,557.5	3,539.9	1.49
10,393.0	90.40	334.33	6,646.5	2,780.9	-2,597.0	3,629.9	0.78
10,483.0	90.40	335.39	6,645.8	2,862.4	-2,635.2	3,719.8	1.18
10,573.0	89.52	334.77	6,645.9	2,944.0	-2,673.2	3,809.8	1.20
10,662.0	89.25	334.42	6,646.9	3,024.4	-2,711.3	3,898.8	0.50
10,757.0	89.87	333.98	6,647.6	3,109.9	-2,752.7	3,993.8	0.80
10,851.0	90.66	334.77	6,647.2	3,194.7	-2,793.3	4,087.8	1.19
10,945.0	89.43	334.51	6,647.1	3,279.6	-2,833.6	4,181.8	1.34
11,040.0	90.57	335.74	6,647.1	3,365.8	-2,873.6	4,276.8	1.77
11,134.0	89.87	335.21	6,646.7	3,451.3	-2,912.6	4,370.8	0.93
11,229.0	91.10	333.80	6,645.9	3,537.1	-2,953.5	4,465.8	1.97
11,323.0	90.04	331.69	6,645.0	3,620.6	-2,996.5	4,559.7	2.51
11,417.0	90.22	329.85	6,644.8	3,702.6	-3,042.4	4,653.5	1.97
11,511.0	90.66	331.96	6,644.0	3,784.8	-3,088.1	4,747.4	2.29
11,606.0	91.19	332.40	6,642.5	3,868.8	-3,132.4	4,842.3	0.73

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11,700.0	90.40	334.33	6,641.2	3,952.8	-3,174.6	4,936.2	2.22
11,794.0	90.31	332.84	6,640.6	4,037.0	-3,216.4	5,030.2	1.59
11,884.0	90.13	334.77	6,640.3	4,117.7	-3,256.1	5,120.2	2.15
11,974.0	90.04	333.45	6,640.1	4,198.7	-3,295.4	5,210.2	1.47
12,063.0	89.96	334.51	6,640.1	4,278.7	-3,334.5	5,299.2	1.19
12,153.0	91.28	336.44	6,639.2	4,360.5	-3,371.8	5,389.2	2.60
12,243.0	91.45	336.88	6,637.0	4,443.2	-3,407.5	5,479.1	0.52
12,333.0	91.45	335.47	6,634.8	4,525.5	-3,443.8	5,569.0	1.57
12,422.0	91.71	334.24	6,632.3	4,606.0	-3,481.6	5,658.0	1.41
12,512.0	89.78	333.80	6,631.1	4,686.9	-3,521.0	5,748.0	2.20
12,602.0	89.34	333.28	6,631.8	4,767.5	-3,561.1	5,838.0	0.76
12,691.0	89.52	334.77	6,632.7	4,847.5	-3,600.1	5,926.9	1.69
12,781.0	90.22	333.63	6,632.9	4,928.5	-3,639.3	6,016.9	1.49
12,871.0	90.48	331.52	6,632.4	5,008.4	-3,680.7	6,106.9	2.36
12,961.0	90.92	329.41	6,631.3	5,086.7	-3,725.1	6,196.7	2.39
13,048.0	90.40	332.57	6,630.3	5,162.7	-3,767.3	6,283.5	3.68
13,138.0	89.69	334.16	6,630.2	5,243.2	-3,807.6	6,373.5	1.93
13,227.0	89.78	333.98	6,630.6	5,323.2	-3,846.5	6,462.5	0.23
13,317.0	90.13	332.40	6,630.7	5,403.5	-3,887.1	6,552.4	1.80
13,407.0	91.19	335.12	6,629.6	5,484.2	-3,926.9	6,642.4	3.24
13,497.0	91.54	335.03	6,627.5	5,565.8	-3,964.8	6,732.4	0.40
13,587.0	90.31	333.28	6,626.0	5,646.8	-4,004.0	6,822.4	2.38
13,677.0	90.92	333.36	6,625.1	5,727.2	-4,044.5	6,912.4	0.68
13,766.0	90.22	334.33	6,624.2	5,807.1	-4,083.7	7,001.3	1.34
13,856.0	91.19	335.39	6,623.1	5,888.6	-4,121.9	7,091.3	1.60
13,946.0	90.04	335.39	6,622.1	5,970.4	-4,159.4	7,181.3	1.28
14,036.0	90.92	335.83	6,621.4	6,052.4	-4,196.6	7,271.3	1.09
14,126.0	91.54	336.44	6,619.4	6,134.7	-4,233.0	7,361.2	0.97
14,215.0	89.43	335.03	6,618.7	6,215.8	-4,269.5	7,450.2	2.85
14,305.0	89.69	334.51	6,619.4	6,297.2	-4,307.9	7,540.2	0.65
14,395.0	89.60	334.86	6,619.9	6,378.5	-4,346.4	7,630.2	0.40
14,485.0	89.16	333.63	6,620.9	6,459.6	-4,385.5	7,720.2	1.45
14,574.0	92.69	333.37	6,619.5	6,539.2	-4,425.2	7,809.1	3.98
14,664.0	91.10	333.10	6,616.5	6,619.5	-4,465.7	7,899.1	1.79
14,754.0	90.75	330.82	6,615.0	6,699.0	-4,508.0	7,989.0	2.56
14,844.0	90.40	330.82	6,614.1	6,777.5	-4,551.9	8,078.8	0.39
14,934.0	92.42	333.89	6,611.9	6,857.2	-4,593.6	8,168.7	4.08
15,023.0	91.28	334.16	6,609.0	6,937.2	-4,632.6	8,257.6	1.32
15,113.0	92.24	334.51	6,606.3	7,018.3	-4,671.5	8,347.6	1.14
15,203.0	91.36	334.68	6,603.4	7,099.5	-4,710.1	8,437.5	1.00
15,293.0	89.52	334.24	6,602.8	7,180.7	-4,748.9	8,527.5	2.10
15,383.0	89.34	334.59	6,603.7	7,261.9	-4,787.8	8,617.5	0.44
15,472.0	90.66	336.26	6,603.7	7,342.8	-4,824.8	8,706.5	2.39
15,562.0	90.04	335.56	6,603.1	7,425.0	-4,861.5	8,796.5	1.04
15,652.0	91.01	337.41	6,602.3	7,507.5	-4,897.4	8,886.4	2.32

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Vonda Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Vonda Unit 2H GL 1003' + 19' RKB @ 1022.0usft
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Vonda Unit 2H GL 1003' + 19' RKB @ 1022.0usft
Well:	Vonda Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
15,742.0	90.66	335.74	6,601.0	7,590.1	-4,933.2	8,976.3	1.90
15,831.0	90.92	334.42	6,599.7	7,670.8	-4,970.7	9,065.3	1.51
15,921.0	90.40	333.10	6,598.7	7,751.5	-5,010.5	9,155.3	1.58
16,011.0	90.92	332.22	6,597.7	7,831.4	-5,051.8	9,245.3	1.14
16,100.0	90.22	333.89	6,596.8	7,910.8	-5,092.1	9,334.2	2.03
16,190.0	91.28	334.16	6,595.6	7,991.7	-5,131.6	9,424.2	1.22
16,280.0	90.04	334.42	6,594.6	8,072.7	-5,170.6	9,514.2	1.41
16,370.0	90.92	335.21	6,593.8	8,154.2	-5,208.9	9,604.2	1.31
16,459.0	89.96	334.86	6,593.1	8,234.9	-5,246.5	9,693.2	1.15
16,549.0	90.75	334.95	6,592.6	8,316.4	-5,284.6	9,783.2	0.88
16,639.0	90.84	334.86	6,591.3	8,397.9	-5,322.8	9,873.2	0.14
16,729.0	89.16	333.63	6,591.3	8,478.9	-5,361.9	9,963.2	2.31
16,818.0	89.53	334.64	6,592.3	8,559.0	-5,400.7	10,052.2	1.21
16,908.0	90.22	335.21	6,592.5	8,640.5	-5,438.9	10,142.2	0.99
16,964.0	90.75	335.91	6,592.1	8,691.5	-5,462.0	10,198.1	1.57
17,017.0	90.75	335.91	6,591.4	8,739.9	-5,483.7	10,251.1	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
6,685.0	6,359.9	-549.5	-1,167.0	Middlesex
6,877.0	6,488.7	-443.3	-1,259.3	Burkett
6,933.0	6,517.6	-401.7	-1,283.1	Tully
7,028.0	6,555.4	-323.5	-1,321.2	Marcellus

Checked By: _____ Approved By: _____ Date: _____

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	3/16/2014
Job End Date:	3/29/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06225-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Vonda 2H
Longitude:	-80.82308330
Latitude:	39.25488610
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,661
Total Base Water Volume (gal):	12,497,310
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	Water					
			Water	7732-18-5	100.00000	90.93946	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	5.20916	
			Aluminum Oxide	1344-28-1	1.10000	0.05736	
			Iron Oxide	1309-37-1	0.10000	0.00521	
			Titanium Oxide	13463-67-7	0.10000	0.00521	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	2.85025	
			Aluminum Oxide	1344-28-1	1.10000	0.03138	
			Iron Oxide	1309-37-1	0.10000	0.00285	
			Titanium Oxide	13463-67-7	0.10000	0.00285	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	0.61764	
			Aluminum Oxide	1344-28-1	1.10000	0.00680	

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			Titanium Oxide	13463-67-7	0.10000	0.00062	
			Iron Oxide	1309-37-1	0.10000	0.00062	
HCl Acid (12.5%-18.0%)	Nabors Completion and Production Services	Bulk Acid					
			Hydrogen Chloride	7647-01-0	18.00000	0.03920	
WFR-3B	Nabors Completion and Production Services	Friction Reducer					
			Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8	30.00000	0.02048	
			Ethoxylated alcohols	68002-97-1	15.00000	0.01024	
			Ethoxylated oleylamine	26635-93-8	5.00000	0.00341	
LSG-100L	Nabors Completion and Production Services	Gelling Agents					
			Petroleum Distillates	64742-47-8	70.00000	0.02946	
Super GREEN SOLV-M	Nabors Completion and Production Services	Paraffin & Scale Additives					
			Aliphatic Hydrocarbons	Proprietary	95.00000	0.00815	
			Dodecane	Proprietary	14.00000	0.00120	
			tetradecane	Proprietary	11.00000	0.00094	
			Tridecane	Proprietary	9.00000	0.00077	
			Undecane	Proprietary	8.00000	0.00069	
KR-153SL	Nabors Completion and Production Services	Biocides					
			Polyethlyene-Glycol	25322-68-3	50.00000	0.00658	
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00263	
OB-2 LT	Nabors Completion and Production Services	Gel Breakers					
			Ammonium Persulfate	7727-54-0	85.00000	0.00595	
			Crystalline Silica (in the form of quartz)	14808-60-7	10.00000	0.00070	
Acid Inhibitor 2 (AI-2)	Nabors Completion and Production Services	Acid Corrosion Inhibitors					
			Glycol Ethers	111-46-6	40.00000	0.00016	
			Propargyl Alcohol	107-19-7	40.00000	0.00016	
			Isopropyl Alcohol	67-63-0	40.00000	0.00016	
			Ethoxylated Nonylphenol	68412-54-4	13.00000	0.00005	
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	10.00000	0.00004	
EB-4L	Nabors Completion and Production Services	Gel Breakers					
			Ethylene Glycol	107-21-1	40.00000	0.00018	

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.

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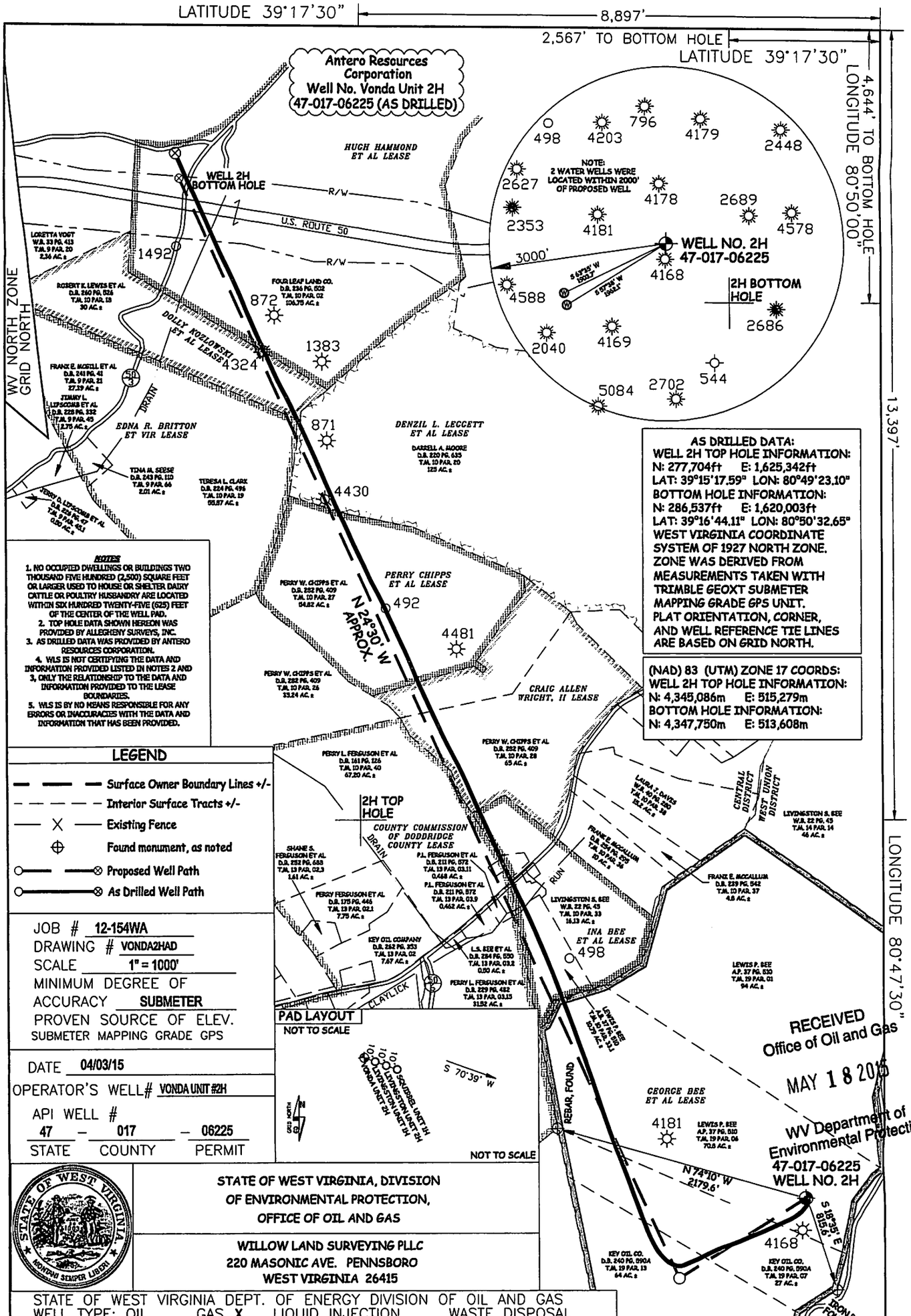
Other Ingredients	Nabors Completion and Production Services	Other Ingredients					
			Water	7732-18-5	87.50000	0.19054	
			Water	7732-18-5	40.00000	0.02730	
			Anionic Polyacrylamide	910644-97-2	40.00000	0.02730	
			guar gum	9000-30-0	50.00000	0.02104	
			Water	7732-18-5	80.00000	0.01054	
			Water	7732-18-5	60.00000	0.01026	
			Propylene glycol	57-55-6	15.00000	0.01024	
			Proprietary	Proprietary	50.00000	0.00855	
			Proprietary	Proprietary	15.00000	0.00257	
			Proprietary	Proprietary	15.00000	0.00257	
			Proprietary	Proprietary	15.00000	0.00257	
			Proprietary	Proprietary	2.00000	0.00137	
			Alkali Chloride salt	Proprietary	15.00000	0.00105	
			Surfactant	68439-51-0	2.00000	0.00084	
			Crystalline Silica (in the form of quartz)	14808-60-7	2.00000	0.00084	
			Proprietary	Proprietary	100.00000	0.00045	
			Sugar	57-50-1	100.00000	0.00045	
			Water	7732-18-5	100.00000	0.00023	
			Water	7732-18-5	48.00000	0.00020	
			2-Butoxyethanol	111-76-2	13.00000	0.00005	
			Proprietary	Proprietary	1.00000	0.00001	
			Proprietary	Proprietary	1.00000	0.00001	
			Proprietary	Proprietary	1.00000	0.00001	
			Proprietary	Proprietary	1.00000	0.00001	
			Dioxane	123-91-1	1.00000	0.00000	
			Organophylic Clay	68953-58-2			

* 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)



NOTES

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.

AS DRILLED DATA:
WELL 2H TOP HOLE INFORMATION:
N: 277,704ft E: 1,625,342ft
LAT: 39°15'17.59" LON: 80°49'23.10"
BOTTOM HOLE INFORMATION:
N: 286,537ft E: 1,620,003ft
LAT: 39°16'44.11" LON: 80°50'32.65"
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 2H TOP HOLE INFORMATION:
N: 4,345,086m E: 515,279m
BOTTOM HOLE INFORMATION:
N: 4,347,750m E: 513,608m

LEGEND

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

JOB # 12-154WA
DRAWING # VONDA2HAD
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

DATE 04/03/15
OPERATOR'S WELL# VONDA UNIT #2H
API WELL # 47 – 017 – 06225
STATE COUNTY PERMIT

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

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

RECEIVED
Office of Oil and Gas
MAY 18 2015
WV Department of Environmental Protection
47-017-06225
WELL NO. 2H

STATE OF WEST VIRGINIA DEPT. OF ENERGY DIVISION OF OIL AND GAS
WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,011' ORIGINAL - 1,003' AS-DRILLED WATERSHED HEADWATERS MIDDLE ISLAND CREEK
QUADRANGLE WEST UNION 7.5' DISTRICT WEST UNION COUNTY DODDRIDGE
SURFACE OWNER LEWIS P. BEE ACREAGE 70.8 ACRES +/-
OIL & GAS ROYALTY OWNER GEORGE BEE ET AL; INA BEE ET AL; COUNTY COMMISSION OF DODDRIDGE COUNTY; CRAIG ALLEN WRIGHT, II; PERRY CHIPPS ET AL; DENZIL L. LEGGETT ET AL; EDNA R. BRITTON ET VIR; DOLLY KOZLOWSKI ET AL; HUGH HAMMOND ET AL LEASE ACREAGE 356.5 AC±; 30 AC±; 237 AC±; 30.09 ±; 54.82 AC±; 140 AC±; 95 AC±; 30 AC±; 146 AC±
PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___
PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) (X) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,591' TVD 17,017' MD

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

COUNTY NAME PERMIT

FORM WW-6

pm ✓

WR-35
Rev. 8/23/13

Page ___ of ___

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

Received
Office of Oil & Gas
MAY 18 2015

API 47 - 017 - 06231 County Doddridge District Greenbrier
Quad Salem Pad Name Leonard Pad Field/Pool Name
Farm name Walter Davidson & Leonard Davidson Well Number Rikk Unit 2H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street 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 4,346,304.558m Easting 534,819.345m
Landing Point of Curve Northing 4,346,202.78m Easting 535, 142.24m
Bottom Hole Northing 4,343,825.574m Easting 536,789.201m

Elevation (ft) 1320' 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 6/12/2013 Date drilling commenced 12/6/2013 Date drilling ceased 6/3/2014
Date completion activities began 7/24/2014 Date completion activities ceased 3/6/2015
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 113', 212' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1302', 1911' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 517', 1077', 2013' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
A.L. 5/26/15 ✓

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Page ___ of ___

API 47- 017 - 06231 Farm name Walter Davidson & Leonard Davidson Well number Rikk Unit 2H

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	24"	20"	40'	New	94#/K-55	N/A	Y
Surface	17-1/2"	13-3/8"	369'	New	68#/J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2635'	New	36#/J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	17,870'	New	23#/P-110	N/A	Y
Tubing		2-3/8"	7644'	New	4.7#/N-80	N/A	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 ^{3}/sks)	Volume (ft ^{3})	Cement Top (MD)	WOC (hrs)
Conductor	Class A	171 sx	15.6	1.18	38 Cu. Ft.	0'	8 Hrs.
Surface	Class A	467 sx	15.6	1.18	256 Cu. Ft.	0'	8 Hrs.
Coal							
Intermediate 1	Class A	968 sx	15.6	1.18	825 Cu. Ft.	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1106 sx (Lead), 1639 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.30 (Lead), 1.86 (Tail)	3605 Cu. Ft.	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 17,870' MD, 7430' TVD (BHL); 7509' TVD (Deepest Point Drilled) Loggers TD (ft) 17,819' MD

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6725'

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

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Rikk Unit 1H API# 47-017-06228). Please reference the wireline logs submitted with Form WR-35 for the Rikk Unit 1H. A Cement Bond Log has been included with this submittal.

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

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED N/A

Received
Office of Oil & Gas
MAY 18 2015

WR-35
Rev. 8/23/13

API 47- 017 - 06231 Farm name Walter Davidson & Leonard Davidson Well number Rikk Unit 2H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
		SEE ATTACHED EXHIBIT 1			

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)
			SEE ATTACHED EXHIBIT 2					

Please insert additional pages as applicable.

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WR-35
Rev. 8/23/13

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API 47- 017 - 06231 Farm name Walter Davidson & Leonard Davidson Well number Rikk Unit 2H

PRODUCING FORMATION(S)	DEPTHS		
Marcellus	7439' (Top) TVD	7891' (Top) MD	

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Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ☐ Flow ☐ Pump

SHUT-IN PRESSURE Surface 3600 psi Bottom Hole ---- psi DURATION OF TEST ---- hrs

OPEN FLOW Gas 11,480 mcfpd Oil ---- bpd NGL ---- bpd Water ---- bpd GAS MEASURED BY ☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
					SEE ATTACHED EXHIBIT 3

Please insert additional pages as applicable.

Drilling Contractor Patterson - UTI Drilling Company, LLC
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company Rush Wellsite Services
Address 600 Alpha Drive City Canonsburg State PA Zip 15317

Cementing Company Nabors Completion & Production Services, Co. (bought Superior)
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company US Well Services
Address 533 Industrial Park Drive City Jane Lew State WV Zip 26378
Please insert additional pages as applicable.

Completed by Natalie Komp Telephone 303-357-6820
Signature Natalie Komp Title Permitting Agent Date 5/6/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

API 47-017-06231 Farm Name Davidson, Walter & Leonard Well Number Rikk Unit 2H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	24-Jul-14	17609'	17779'	60	Marcellus
2	16-Jan-15	17408'	17578'	60	Marcellus
3	17-Jan-15	17176'	17301'	60	Marcellus
4	18-Jan-15	17029'	17159'	60	Marcellus
5	18-Jan-15	16803'	16973'	60	Marcellus
6	19-Jan-15	16601'	16771'	60	Marcellus
7	19-Jan-15	16400'	16570'	60	Marcellus
8	19-Jan-15	16198'	16368'	60	Marcellus
9	20-Jan-15	15997'	16167'	60	Marcellus
10	20-Jan-15	15795'	15965'	60	Marcellus
11	20-Jan-15	15593'	15763'	60	Marcellus
12	21-Jan-15	15392'	15562'	60	Marcellus
13	21-Jan-15	15190'	15360'	60	Marcellus
14	21-Jan-15	14989'	15174'	60	Marcellus
15	22-Jan-15	14787'	14957'	60	Marcellus
16	22-Jan-15	14586'	14756'	60	Marcellus
17	22-Jan-15	14384'	14554'	60	Marcellus
18	22-Jan-15	14182'	14352'	60	Marcellus
19	23-Jan-15	13981'	14151'	60	Marcellus
20	23-Jan-15	13779'	13949'	60	Marcellus
21	23-Jan-15	13578'	13748'	60	Marcellus
22	24-Jan-15	13376'	13546'	60	Marcellus
23	24-Jan-15	13175'	13345'	60	Marcellus
24	24-Jan-15	12973'	13143'	60	Marcellus
25	25-Jan-15	12771'	12941'	60	Marcellus
26	25-Jan-15	12570'	12740'	60	Marcellus
27	25-Jan-15	12368'	12538'	60	Marcellus
28	25-Jan-15	12167'	12337'	60	Marcellus
29	26-Jan-15	11965'	12135'	60	Marcellus
30	26-Jan-15	11764'	11934'	60	Marcellus
31	26-Jan-15	11562'	11732'	60	Marcellus
32	27-Jan-15	11360'	11530'	60	Marcellus
33	27-Jan-15	11159'	11329'	60	Marcellus
34	27-Jan-15	10957'	11127'	60	Marcellus
35	27-Jan-15	10756'	10926'	60	Marcellus
36	28-Jan-15	10554'	10724'	60	Marcellus
37	28-Jan-15	10353'	10523'	60	Marcellus
38	28-Jan-15	10151'	10321'	60	Marcellus
39	28-Jan-15	9949'	10119'	60	Marcellus
40	29-Jan-15	9748'	9918'	60	Marcellus
41	29-Jan-15	9546'	9716'	60	Marcellus
42	29-Jan-15	9345'	9515'	60	Marcellus
43	30-Jan-15	9143'	9313'	60	Marcellus
44	30-Jan-15	9143'	9313'	60	Marcellus
45	30-Jan-15	8740'	8910'	60	Marcellus
46	30-Jan-15	8538'	8708'	60	Marcellus
47	31-Jan-15	8337'	8507'	60	Marcellus
48	31-Jan-15	8135'	8305'	60	Marcellus
49	31-Jan-15	7934'	8104'	60	Marcellus

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API 47-017-06231 Farm Name Davidson, Walter & Leonard Well Number Rikk Unit 2H

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	16-Jan-15	62.5	7,488	N/A	5,569	240,990	6,865	N/A
2	16-Jan-15	64.4	7,311	6,895	5,151	239,750	6,821	N/A
3	17-Jan-15	62.7	7,275	5,962	4,823	197,610	6,111	N/A
4	18-Jan-15	62.1	7,407	5,944	5,780	147,860	6,048	N/A
5	18-Jan-15	64.7	7,392	5,692	5,224	202,590	7,140	N/A
6	19-Jan-15	65.0	7,510	5,829	5,202	206,050	7,163	N/A
7	19-Jan-15	64.6	7,315	5,829	5,428	245,200	7,246	N/A
8	19-Jan-15	69.6	7,529	5,965	5,443	245,000	6,600	N/A
9	20-Jan-15	63.0	7,151	5,651	5,256	244,600	6,594	N/A
10	20-Jan-15	64.0	7,416	5,877	5,237	244,800	6,547	N/A
11	20-Jan-15	72.6	7,482	5,638	4,814	245,850	6,683	N/A
12	21-Jan-15	69.0	7,424	5,692	5,522	243,850	6,541	N/A
13	21-Jan-15	65.0	7,395	5,825	5,818	246,400	6,552	N/A
14	21-Jan-15	70.8	7,531	5,850	4,929	244,735	6,502	N/A
15	22-Jan-15	69.0	7,738	5,880	5,465	244,820	6,480	N/A
16	22-Jan-15	65.0	7,393	6,060	4,714	243,650	6,477	N/A
17	22-Jan-15	68.1	7,743	6,073	4,593	218,120	7,074	N/A
18	22-Jan-15	67.9	7,896	6,168	4,759	234,260	6,992	N/A
19	23-Jan-15	65.0	7,306	5,827	4,858	245,750	7,030	N/A
20	23-Jan-15	66.2	7,360	5,756	5,192	187,520	6,977	N/A
21	23-Jan-15	67.8	7,808	5,809	5,475	244,900	6,431	N/A
22	24-Jan-15	65.0	7,162	6,047	5,751	166,150	6,925	N/A
23	24-Jan-15	66.5	7,476	5,966	5,382	243,550	6,538	N/A
24	24-Jan-15	67.9	7,720	5,836	4,752	243,860	6,346	N/A
25	25-Jan-15	67.0	7,381	6,088	5,214	244,650	6,388	N/A
26	25-Jan-15	67.0	7,293	5,771	5,665	247,500	6,335	N/A
27	25-Jan-15	65.7	7,352	5,735	5,526	244,720	6,289	N/A
28	25-Jan-15	66.7	7,413	5,852	5,644	243,350	6,287	N/A
29	26-Jan-15	66.0	7,629	5,999	4,939	246,050	6,271	N/A
30	26-Jan-15	65.0	7,736	5,701	5,133	227,450	6,901	N/A
31	26-Jan-15	66.0	7,283	5,760	5,725	248,620	6,206	N/A
32	27-Jan-15	66.2	7,544	5,894	5,909	247,260	6,208	N/A
33	27-Jan-15	64.0	7,314	6,365	4,075	236,200	6,030	N/A
34	27-Jan-15	63.0	7,598	5,750	4,808	247,350	6,726	N/A
35	27-Jan-15	66.6	7,194	5,982	5,200	238,170	6,144	N/A
36	28-Jan-15	67.3	7,425	6,068	5,646	236,660	6,037	N/A
37	28-Jan-15	67.0	7,531	6,189	6,013	245,750	6,142	N/A
38	28-Jan-15	65.3	7,762	6,271	4,840	241,080	6,103	N/A
39	28-Jan-15	65.9	7,669	6,155	5,272	183,510	6,251	N/A
40	29-Jan-15	66.0	7,361	6,020	4,810	247,850	6,051	N/A
41	29-Jan-15	65.0	7,495	6,247	4,703	196,300	5,580	N/A
42	29-Jan-15	67.5	7,518	5,633	5,824	240,640	6,064	N/A
43	30-Jan-15	67.3	6,812	5,676	5,205	235,670	6,011	N/A
44	30-Jan-15	67.0	6,862	5,615	5,587	242,200	5,987	N/A
45	30-Jan-15	68.0	6,790	5,793	5,351	247,400	5,969	N/A
46	30-Jan-15	71.5	6,942	5,527	5,025	247,230	5,958	N/A
47	31-Jan-15	67.5	7,267	6,239	5,050	249,055	6,053	N/A
48	31-Jan-15	66.0	7,223	5,767	5,180	244,350	5,935	N/A
49	31-Jan-15	68.0	7,258	6,129	5,058	246,890	5,920	N/A
	AVG=	66.3	7,406	6,923	6,235	0	314,529	TOTAL

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API 47-017-06231 Farm Name Walter Davidson & Leonard Davidson Well Number Rikk Unit 2H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	**TOP DEPTH (TVD) From Surface**	**BOTTOM DEPTH (TVD) From Surface**	**TOP DEPTH (MD) From Surface**	**BOTTOM DEPTH (MD) From Surface**
Freshwater	113	NA	113	NA
Freshwater	212	NA	212	NA
Siltstone	0	217	0	217
Sand	est 217	457	est 217	457
Siltstone	est 457	497	est 457	497
Sandstone	est 497	517	est 497	517
Coal	est 517	657	est 517	657
Siltstone	est 657	697	est 657	697
Sandstone	est 697	857	est 697	857
Siltstone	est 857	927	est 857	927
Limestone	est 927	1,057	est 927	1,057
Sandstone/Silt	est 1057	1,077	est 1057	1,077
Coal	est 1077	1,477	est 1077	1,477
Limestone/Silt	est 1477	1,577	est 1477	1,577
Siltstone	est 1577	1,737	est 1577	1,737
Sandstone/Limestone	est 1737	2,004	est 1737	2,004
Sandstone/Silt	est 2004	2,013	est 2004	2,013
Coal	est 2013	2,317	est 2013	2,317
Sandstone/Silt	est 2317	2,396	est 2317	2,402
Big Lime	2,396	2,507	2,402	2,513
Big Injun	2,507	2,838	2,513	2,844
Gantz Sand	2,838	2,964	2,844	2,970
Fifty Foot Sandstone	2,964	3,127	2,970	3,133
Gordon	3,127	3,397	3,133	3,404
Fifth Sandstone	3,397	3,471	3,404	3,478
Bayard	3,471	3,744	3,478	3,751
Warren	3,744	3,975	3,751	3,982
Speechley	3,975	4,297	3,982	4,304
Baltown	4,297	4,758	4,304	4,765
Bradford	4,758	5,353	4,765	5,360
Benson	5,353	5,621	5,360	5,628
Alexander	5,621	5,830	5,628	5,837
Elk	5,830	6,396	5,837	6,403
Rhinestreet	6,396	6,857	6,403	6,870
Sycamore	6,857	7,089	6,870	7,159
Middlesex	7,089	7,274	7,159	7,454
Burkett	7,274	7,306	7,454	7,517
Tully	7,306	7,439	7,517	7,891
Marcellus	7,439	NA	7,891	NA

*Please note Antero determines shallow formation tops based on mud and/or wireline logs that are only run on one well on a multi-well pad (Please reference Wireline Logs submitted for the Rikk Unit 1H API# 47-017-06228). The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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Antero Resources

Rikk Unit 2H
Doddridge County WV
Northing: 14258783.90
Easting: 1754604.68
As Drilled

Scientific Drilling

To convert Magnetic North to Grid, Subtract 8.83°
To convert True North to Grid, Subtract 0.26°

Azimuths to Grid North
True North: -0.25°
Magnetic North: -8.83°

Magnetic Field
Strength: 52315.9snT
Dip Angle: 66.81°
Date: 12/27/2013
Model: IGRF2010

WELL DETAILS Rikk Unit 2H
Ground Level: 1318.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14258783.90	1754604.68	39° 15' 55.052 N	80° 35' 47.621 W

SITE DETAILS: Rikk/Pratt/Blackwood/Irons

Site Center Rikk Unit 1H

Site Centre Northing: 14258782.29
Easting: 1754594.81

Positional Uncertainity: 2.0
Convergence: 0.26
Local North: Grid

LEGEND

- Rikk Unit 1H, Original Wellpath, As Drilled V0
- Rikk Unit 2H, Original Wellpath, Plan 6 V0
- As Drilled

PROJECT DETAILS: Doddridge County WV

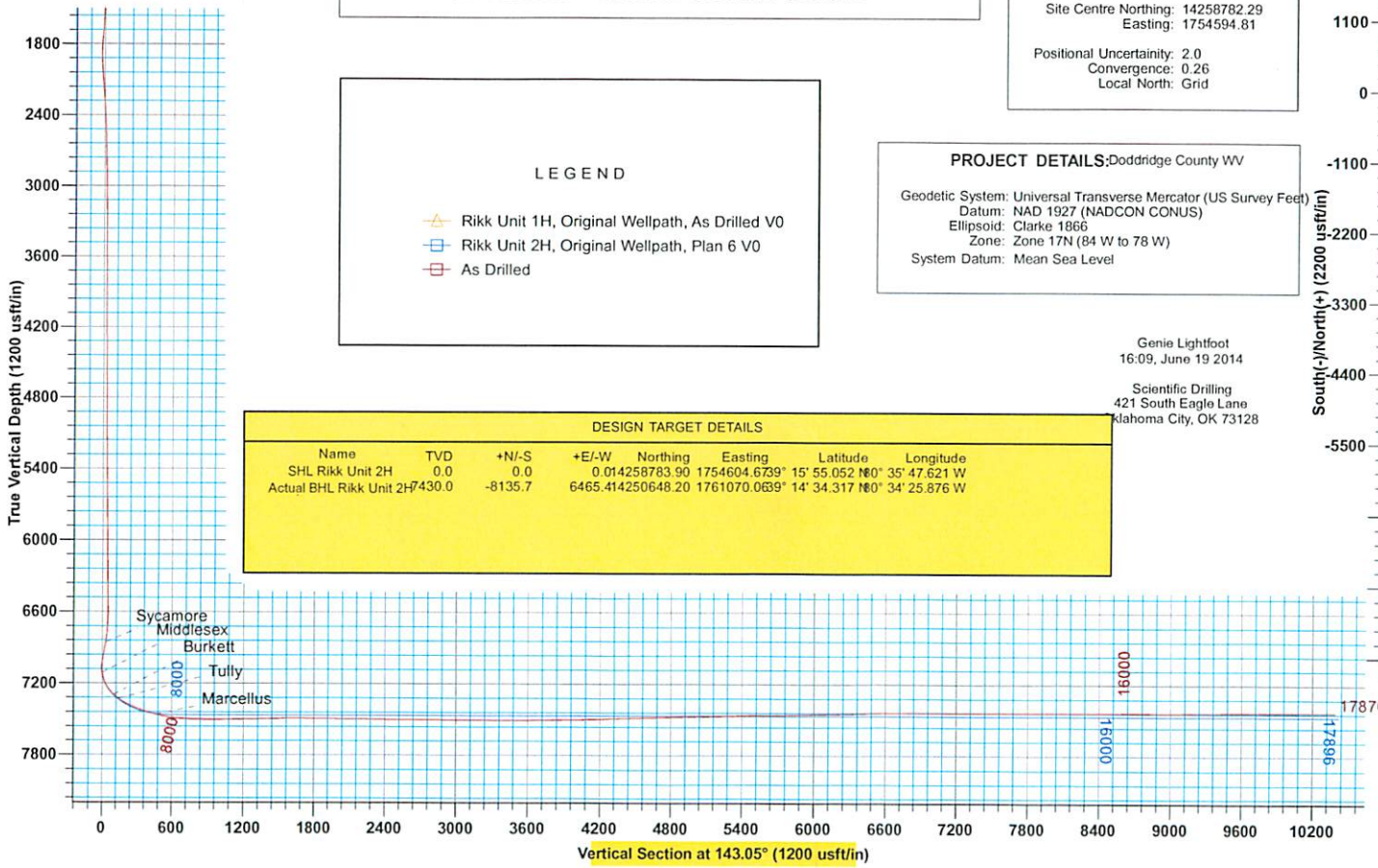
Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: Zone 17N (84 W to 78 W)
System Datum: Mean Sea Level

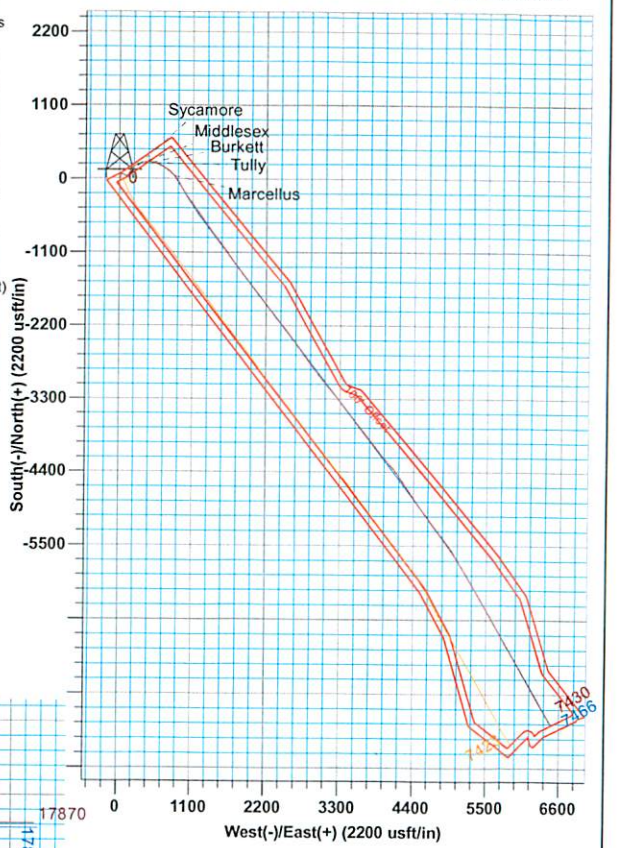
Genie Lightfoot
16:09, June 19 2014

Scientific Drilling
421 South Eagle Lane
Oklahoma City, OK 73128

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Rikk Unit 2H	0.0	0.0	0.0	14258783.90	1754604.67	39° 15' 55.052 N	80° 35' 47.621 W
Actual BHL Rikk Unit 2H	7430.0	-8135.7	6465.4	14250648.20	1761070.06	39° 14' 34.317 N	80° 34' 25.876 W





Antero Resources

Doddridge County WV
Rikk/Pratt/Blackwood/Irons
Rikk Unit 2H
Original Wellpath

Design: As Drilled

EOW Completion Report

19 June, 2014

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Scientific Drilling

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Antero Resources

EOW Completion Report

Scientific Drilling

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Rikk Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	PATT 317: Rikk 2H 1318 GL + 22.5 KB @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	**MD Reference:**	PATT 317: Rikk 2H 1318 GL + 22.5 KB @ 1340.5
Well:	Rikk Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Project Doddridge County WV, McClellan District

Map System:	Universal Transverse Mercator (US Survey Fee	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site Rikk/Pratt/Blackwood/Irons

Site Position:		**Northing:**	14,258,782.29 usft	**Latitude:**	39° 15' 55.036 N
From:	Map	**Easting:**	1,754,594.81 usft	**Longitude:**	80° 35' 47.747 W
Position Uncertainty:	2.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.26 °

Well Rikk Unit 2H

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,258,783.90 usft	**Latitude:**	39° 15' 55.052 N
	+E/-W	0.0 usft	**Easting:**	1,754,604.68 usft	**Longitude:**	80° 35' 47.621 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**	1,340.5 usft	**Ground Level:**	1,318.0 usft

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/27/2013	-8.58	66.81	52,316

Design As Drilled

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	143.05

Survey Program **Date** 6/19/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
109.5	6,634.5	Survey #4 Final Gyro (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
6,694.0	17,870.0	Survey #5 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
109.5	0.52	190.69	109.5	-0.5	-0.1	0.3	0.47
209.5	0.22	172.05	209.5	-1.1	-0.1	0.8	0.32
309.5	0.33	207.12	309.5	-1.6	-0.3	1.1	0.20
409.5	0.22	209.48	409.5	-2.0	-0.5	1.3	0.11
509.5	0.09	260.19	509.5	-2.2	-0.7	1.3	0.18
609.5	0.05	255.25	609.5	-2.2	-0.8	1.3	0.04
709.5	0.13	46.30	709.5	-2.1	-0.7	1.3	0.18
809.5	0.18	152.34	809.5	-2.2	-0.6	1.4	0.25
909.5	0.19	152.54	909.5	-2.5	-0.4	1.7	0.01
1,009.5	0.16	197.61	1,009.5	-2.8	-0.4	2.0	0.14

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Rikk Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	PATT 317: Rikk 2H 1318 GL + 22.5 KB @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	**MD Reference:**	PATT 317: Rikk 2H 1318 GL + 22.5 KB @ 1340.5
Well:	Rikk Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,109.5	0.20	190.56	1,109.5	-3.1	-0.5	2.2	0.05
1,209.5	0.36	202.99	1,209.5	-3.5	-0.6	2.4	0.17
1,309.5	0.64	48.61	1,309.5	-3.4	-0.3	2.6	0.98
1,409.5	3.52	30.21	1,409.4	-0.4	1.6	1.3	2.92
1,509.5	7.18	23.79	1,509.0	8.0	5.7	-2.9	3.70
1,609.5	7.96	21.61	1,608.1	20.1	10.8	-9.6	0.83
1,709.5	8.13	19.98	1,707.1	33.2	15.7	-17.1	0.28
1,809.5	7.46	27.97	1,806.2	45.6	21.2	-23.7	1.27
1,909.5	6.49	52.32	1,905.5	54.8	28.7	-26.5	3.08
2,009.5	6.41	94.62	2,004.9	57.8	38.8	-22.9	4.65
2,109.5	6.12	111.01	2,104.3	55.4	49.3	-14.6	1.81
2,209.5	5.19	111.80	2,203.8	51.8	58.5	-6.3	0.93
2,309.5	4.14	111.35	2,303.5	48.8	66.0	0.7	1.05
2,409.5	3.22	114.76	2,403.3	46.3	72.0	6.2	0.95
2,509.5	2.32	117.42	2,503.2	44.2	76.3	10.5	0.91
2,609.5	1.67	121.37	2,603.1	42.5	79.3	13.7	0.66
2,709.5	1.17	120.71	2,703.1	41.3	81.5	16.0	0.50
2,809.5	1.01	117.71	2,803.0	40.3	83.1	17.7	0.17
2,909.5	0.81	137.73	2,903.0	39.4	84.4	19.2	0.37
3,009.5	0.73	127.54	3,003.0	38.5	85.4	20.6	0.16
3,109.5	0.67	112.28	3,103.0	37.9	86.4	21.7	0.20
3,209.5	0.66	129.96	3,203.0	37.3	87.4	22.7	0.20
3,309.5	0.58	119.10	3,303.0	36.7	88.3	23.8	0.14
3,409.5	0.42	125.85	3,403.0	36.2	89.0	24.6	0.17
3,509.5	0.37	152.42	3,503.0	35.7	89.5	25.2	0.19
3,609.5	0.30	142.93	3,603.0	35.2	89.8	25.8	0.09
3,709.5	0.27	130.04	3,703.0	34.8	90.1	26.3	0.07
3,809.5	0.22	111.02	3,803.0	34.6	90.5	26.7	0.09
3,909.5	0.24	131.20	3,903.0	34.4	90.8	27.1	0.08
4,009.5	0.30	153.93	4,003.0	34.0	91.1	27.5	0.12
4,109.5	0.27	140.22	4,103.0	33.6	91.3	28.0	0.07
4,209.5	0.28	144.46	4,203.0	33.2	91.6	28.5	0.02
4,309.5	0.27	139.89	4,303.0	32.9	91.9	29.0	0.02
4,409.5	0.36	133.82	4,403.0	32.5	92.3	29.5	0.10
4,509.5	0.35	112.91	4,503.0	32.1	92.8	30.1	0.13
4,609.5	0.33	111.00	4,603.0	31.9	93.4	30.6	0.02
4,709.5	0.53	98.33	4,703.0	31.7	94.1	31.2	0.22
4,809.5	0.51	89.40	4,803.0	31.7	95.0	31.8	0.08
4,909.5	0.62	95.51	4,903.0	31.6	96.0	32.4	0.13
5,009.5	0.68	94.23	5,003.0	31.5	97.1	33.2	0.06
5,109.5	0.58	103.88	5,103.0	31.4	98.2	34.0	0.15
5,209.5	0.55	98.79	5,202.9	31.2	99.2	34.7	0.06
5,309.5	0.83	87.14	5,302.9	31.1	100.4	35.4	0.31
5,409.5	0.75	93.09	5,402.9	31.1	101.7	36.3	0.11

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Rikk Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	PATT 317: Rikk 2H 1318 GL + 22.5 KB @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	**MD Reference:**	PATT 317: Rikk 2H 1318 GL + 22.5 KB @ 1340.5
Well:	Rikk Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,509.5	0.80	79.29	5,502.9	31.2	103.1	37.0	0.19
5,609.5	0.77	86.68	5,602.9	31.4	104.4	37.7	0.11
5,709.5	0.84	81.57	5,702.9	31.5	105.8	38.4	0.10
5,809.5	0.89	80.71	5,802.9	31.8	107.3	39.1	0.05
5,909.5	0.91	91.76	5,902.9	31.9	108.9	40.0	0.17
6,009.5	0.78	94.07	6,002.9	31.8	110.3	40.9	0.13
6,109.5	0.70	97.28	6,102.9	31.7	111.6	41.8	0.09
6,209.5	0.73	111.33	6,202.9	31.4	112.8	42.8	0.18
6,309.5	0.86	117.29	6,302.8	30.8	114.1	44.0	0.15
6,409.5	0.78	110.75	6,402.8	30.2	115.4	45.2	0.12
6,509.5	0.95	112.93	6,502.8	29.6	116.8	46.5	0.17
6,609.5	0.82	106.98	6,602.8	29.1	118.2	47.8	0.16
6,634.5	0.81	117.53	6,627.8	29.0	118.6	48.1	0.60
6,694.0	3.30	37.92	6,687.3	30.1	120.0	48.0	5.47
6,725.0	7.47	32.56	6,718.1	32.5	121.6	47.1	13.53
6,756.0	12.05	27.11	6,748.7	37.1	124.2	45.0	15.06
6,788.0	15.74	25.17	6,779.7	44.0	127.6	41.5	11.62
6,819.0	18.91	25.88	6,809.3	52.4	131.5	37.2	10.25
6,850.0	21.28	28.95	6,838.4	61.8	136.5	32.6	8.37
6,870.0	22.86	31.35	6,857.0	68.3	140.2	29.7	9.11
Sycamore							
6,882.0	23.83	32.64	6,868.0	72.3	142.8	28.0	9.11
6,913.0	26.73	33.87	6,896.0	83.4	150.0	23.5	9.51
6,944.0	29.28	34.67	6,923.4	95.4	158.2	18.9	8.31
6,976.0	31.83	34.40	6,950.9	108.8	167.4	13.7	7.98
7,007.0	35.35	33.08	6,976.8	123.1	177.0	8.0	11.60
7,039.0	37.84	36.89	7,002.4	138.7	187.9	2.1	10.53
7,071.0	39.39	42.40	7,027.5	154.0	200.6	-2.5	11.78
7,102.0	39.92	48.82	7,051.3	167.9	214.8	-5.0	13.32
7,134.0	40.71	55.58	7,075.7	180.5	231.1	-5.3	13.88
7,166.0	41.50	60.15	7,099.9	191.7	248.9	-3.6	9.71
7,182.0	42.54	61.35	7,111.7	196.9	258.3	-2.1	8.23
Middlesex							
7,197.0	43.53	62.44	7,122.7	201.8	267.3	-0.6	8.23
7,229.0	46.69	66.13	7,145.3	211.6	287.7	3.9	12.81
7,260.0	48.54	69.56	7,166.2	220.2	308.9	9.7	10.12
7,292.0	50.03	73.25	7,187.1	227.9	331.9	17.4	9.90
7,324.0	51.09	76.68	7,207.4	234.3	355.8	26.6	8.92
7,355.0	52.23	82.13	7,226.6	238.8	379.7	37.4	14.27
7,387.0	52.94	87.40	7,246.1	241.1	405.0	50.8	13.27
7,418.0	54.61	90.65	7,264.4	241.5	430.0	65.4	10.03
7,450.0	56.35	93.56	7,282.6	240.5	456.3	82.1	9.26
7,477.0	58.21	96.68	7,297.2	238.5	478.9	97.3	11.90
Burkett							
7,482.0	58.56	97.24	7,299.8	238.0	483.1	100.2	11.90

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Rikk Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	PATT 317: Rikk 2H 1318 GL + 22.5 KB @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	**MD Reference:**	PATT 317: Rikk 2H 1318 GL + 22.5 KB @ 1340.5
Well:	Rikk Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,513.0	59.92	102.27	7,315.6	233.5	509.4	119.6	14.62
7,540.0	60.54	106.34	7,329.0	227.7	532.1	137.9	13.29
Tully							
7,545.0	60.67	107.09	7,331.5	226.4	536.3	141.4	13.29
7,576.0	61.55	110.60	7,346.5	217.7	561.9	163.8	10.31
7,608.0	63.14	113.86	7,361.3	206.9	588.2	188.2	10.30
7,640.0	65.77	117.20	7,375.1	194.5	614.2	213.8	12.50
7,671.0	67.97	119.04	7,387.3	181.0	639.3	239.6	8.95
7,703.0	69.29	121.06	7,399.0	166.1	665.1	267.1	7.18
7,734.0	70.52	122.82	7,409.6	150.7	689.8	294.2	6.65
7,766.0	71.40	125.02	7,420.1	133.8	714.9	322.8	7.06
7,798.0	71.84	127.74	7,430.2	115.8	739.4	351.9	8.18
7,829.0	73.00	132.27	7,439.5	96.8	762.0	380.7	14.42
7,861.0	74.30	133.37	7,448.5	76.0	784.5	410.9	5.23
7,893.0	75.45	135.12	7,456.9	54.4	806.7	441.4	6.39
7,914.0	75.82	138.19	7,462.1	39.6	820.6	461.6	14.28
Marcellus							
7,924.0	76.01	139.65	7,464.5	32.3	827.0	471.3	14.28
7,956.0	77.03	143.47	7,472.0	7.9	846.3	502.4	12.04
7,987.0	77.91	146.29	7,478.7	-16.8	863.7	532.6	9.32
8,019.0	79.05	148.48	7,485.1	-43.2	880.6	563.9	7.59
8,076.0	84.59	149.98	7,493.2	-91.7	909.5	620.0	10.06
8,171.0	87.67	149.10	7,499.6	-173.4	957.5	714.1	3.37
8,266.0	89.25	148.13	7,502.2	-254.4	1,007.0	808.7	1.95
8,361.0	89.96	143.83	7,502.8	-333.2	1,060.1	903.5	4.59
8,456.0	89.69	143.47	7,503.1	-409.7	1,116.4	998.5	0.47
8,551.0	89.97	141.43	7,503.4	-485.0	1,174.3	1,093.5	2.17
8,646.0	90.75	143.30	7,502.8	-560.2	1,232.3	1,188.5	2.13
8,741.0	92.07	145.94	7,500.5	-637.6	1,287.3	1,283.4	3.11
8,836.0	91.54	144.79	7,497.5	-715.8	1,341.3	1,378.3	1.33
8,930.0	91.19	143.56	7,495.2	-792.0	1,396.3	1,472.2	1.36
9,025.0	90.57	145.32	7,493.8	-869.2	1,451.5	1,567.2	1.96
9,120.0	88.81	142.60	7,494.3	-946.0	1,507.4	1,662.2	3.41
9,215.0	89.16	143.64	7,496.0	-1,022.0	1,564.4	1,757.1	1.15
9,310.0	90.66	146.20	7,496.1	-1,099.7	1,619.0	1,852.1	3.12
9,404.0	89.78	145.58	7,495.8	-1,177.6	1,671.7	1,946.0	1.15
9,499.0	90.48	145.85	7,495.6	-1,256.1	1,725.2	2,040.9	0.79
9,594.0	89.34	144.18	7,495.7	-1,333.9	1,779.7	2,135.8	2.13
9,689.0	89.08	142.51	7,497.0	-1,410.1	1,836.4	2,230.8	1.78
9,784.0	88.11	141.80	7,499.3	-1,485.1	1,894.7	2,325.7	1.27
9,879.0	89.52	143.65	7,501.3	-1,560.7	1,952.2	2,420.7	2.45
9,974.0	88.99	143.47	7,502.5	-1,637.1	2,008.6	2,515.7	0.59
10,068.0	89.78	143.47	7,503.6	-1,712.6	2,064.6	2,609.7	0.84
10,163.0	89.40	144.02	7,504.2	-1,789.2	2,120.7	2,704.7	0.70
10,258.0	90.81	142.35	7,504.1	-1,865.3	2,177.7	2,799.7	2.30

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Rikk Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	PATT 317: Rikk 2H 1318 GL + 22.5 KB @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	**MD Reference:**	PATT 317: Rikk 2H 1318 GL + 22.5 KB @ 1340.5
Well:	Rikk Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
10,353.0	89.87	140.75	7,503.5	-1,939.7	2,236.7	2,894.6	1.95
10,447.0	89.87	140.31	7,503.7	-2,012.2	2,296.5	2,988.5	0.47
10,542.0	89.34	143.12	7,504.4	-2,086.8	2,355.3	3,083.5	3.01
10,638.0	89.16	142.16	7,505.6	-2,163.1	2,413.6	3,179.5	1.02
10,732.0	89.25	142.68	7,506.9	-2,237.6	2,470.9	3,273.5	0.56
10,827.0	89.69	143.74	7,507.8	-2,313.6	2,527.8	3,368.5	1.21
10,922.0	89.60	143.74	7,508.4	-2,390.2	2,584.0	3,463.5	0.09
11,017.0	89.60	143.65	7,509.1	-2,466.8	2,640.2	3,558.5	0.09
11,112.0	91.28	144.70	7,508.3	-2,543.8	2,695.8	3,653.4	2.09
11,207.0	90.92	144.79	7,506.5	-2,621.4	2,750.6	3,748.4	0.39
11,301.0	91.54	146.46	7,504.5	-2,698.9	2,803.7	3,842.3	1.89
11,392.0	90.04	144.27	7,503.2	-2,773.8	2,855.4	3,933.2	2.92
11,484.0	91.28	144.00	7,502.2	-2,848.4	2,909.3	4,025.1	1.38
11,575.0	91.89	142.24	7,499.6	-2,921.1	2,963.9	4,116.1	2.05
11,666.0	91.98	140.93	7,496.6	-2,992.4	3,020.4	4,207.0	1.44
11,758.0	91.80	140.49	7,493.5	-3,063.5	3,078.6	4,298.9	0.52
11,850.0	91.54	141.01	7,490.9	-3,134.8	3,136.8	4,390.8	0.63
11,940.0	92.24	140.84	7,487.9	-3,204.6	3,193.5	4,480.7	0.80
12,032.0	92.07	140.49	7,484.4	-3,275.7	3,251.8	4,572.5	0.42
12,124.0	92.42	145.15	7,480.8	-3,348.9	3,307.3	4,664.4	5.08
12,216.0	90.48	141.37	7,478.5	-3,422.6	3,362.3	4,756.4	4.62
12,306.0	90.75	141.98	7,477.5	-3,493.2	3,418.1	4,846.3	0.74
12,397.0	91.63	143.03	7,475.6	-3,565.4	3,473.5	4,937.3	1.51
12,492.0	92.42	143.47	7,472.3	-3,641.5	3,530.3	5,032.2	0.95
12,587.0	90.57	143.12	7,469.8	-3,717.6	3,587.1	5,127.2	1.98
12,682.0	91.63	143.21	7,468.0	-3,793.6	3,644.0	5,222.2	1.12
12,777.0	91.98	143.74	7,465.0	-3,869.9	3,700.5	5,317.1	0.67
12,871.0	90.66	140.57	7,462.8	-3,944.1	3,758.2	5,411.1	3.65
12,966.0	90.48	142.51	7,461.9	-4,018.5	3,817.3	5,506.0	2.05
13,061.0	90.40	141.72	7,461.2	-4,093.5	3,875.6	5,601.0	0.84
13,156.0	90.31	139.61	7,460.6	-4,166.9	3,935.8	5,695.9	2.22
13,251.0	91.19	138.90	7,459.3	-4,238.9	3,997.8	5,790.7	1.19
13,346.0	91.01	139.70	7,457.5	-4,310.9	4,059.8	5,885.5	0.86
13,441.0	90.92	142.16	7,455.9	-4,384.7	4,119.6	5,980.4	2.59
13,535.0	92.07	146.29	7,453.4	-4,460.9	4,174.5	6,074.3	4.56
13,630.0	92.68	147.43	7,449.5	-4,540.4	4,226.4	6,169.1	1.36
13,725.0	91.31	146.03	7,446.2	-4,619.7	4,278.5	6,263.8	2.06
13,820.0	91.01	145.94	7,444.3	-4,698.5	4,331.6	6,358.6	0.33
13,915.0	91.28	145.76	7,442.4	-4,777.1	4,385.0	6,453.5	0.34
14,010.0	89.87	144.27	7,441.4	-4,854.9	4,439.4	6,548.5	2.16
14,105.0	90.75	144.88	7,440.9	-4,932.3	4,494.5	6,643.4	1.13
14,200.0	91.71	145.41	7,438.9	-5,010.2	4,548.8	6,738.3	1.15
14,295.0	89.87	144.00	7,437.6	-5,087.8	4,603.7	6,833.3	2.44
14,390.0	90.22	144.35	7,437.5	-5,164.8	4,659.3	6,928.3	0.52

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Rikk Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	PATT 317: Rikk 2H 1318 GL + 22.5 KB @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	**MD Reference:**	PATT 317: Rikk 2H 1318 GL + 22.5 KB @ 1340.5
Well:	Rikk Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
14,485.0	89.78	143.03	7,437.5	-5,241.3	4,715.5	7,023.2	1.46
14,580.0	90.04	143.21	7,437.6	-5,317.3	4,772.5	7,118.2	0.33
14,675.0	89.87	142.24	7,437.7	-5,392.9	4,830.1	7,213.2	1.04
14,770.0	90.30	143.30	7,437.6	-5,468.6	4,887.5	7,308.2	1.20
14,865.0	89.78	144.70	7,437.5	-5,545.4	4,943.4	7,403.2	1.57
14,961.0	90.04	148.22	7,437.7	-5,625.4	4,996.4	7,499.0	3.68
15,056.0	90.31	149.01	7,437.4	-5,706.5	5,045.9	7,593.6	0.88
15,151.0	90.13	147.17	7,437.0	-5,787.2	5,096.1	7,688.2	1.95
15,245.0	90.57	146.90	7,436.4	-5,866.0	5,147.2	7,782.0	0.55
15,340.0	89.60	148.57	7,436.3	-5,946.3	5,198.0	7,876.7	2.03
15,435.0	90.13	150.24	7,436.5	-6,028.1	5,246.3	7,971.1	1.84
15,530.0	90.04	149.63	7,436.4	-6,110.3	5,293.9	8,065.4	0.65
15,625.0	89.34	148.40	7,436.9	-6,191.8	5,342.8	8,159.9	1.49
15,720.0	90.66	151.38	7,436.9	-6,273.9	5,390.5	8,254.2	3.43
15,815.0	90.48	150.51	7,435.9	-6,357.0	5,436.6	8,348.3	0.94
15,909.0	89.43	149.10	7,436.0	-6,438.2	5,483.9	8,441.6	1.87
16,004.0	89.93	149.63	7,436.5	-6,520.0	5,532.3	8,536.0	0.77
16,099.0	90.31	149.98	7,436.3	-6,602.1	5,580.0	8,630.4	0.54
16,194.0	90.20	148.88	7,435.9	-6,683.9	5,628.4	8,724.8	1.16
16,289.0	89.90	148.89	7,435.8	-6,765.2	5,677.5	8,819.3	0.32
16,384.0	90.67	151.11	7,435.4	-6,847.5	5,725.0	8,913.6	2.47
16,479.0	89.52	150.42	7,435.2	-6,930.4	5,771.3	9,007.7	1.41
16,573.0	89.25	149.89	7,436.2	-7,011.9	5,818.1	9,101.0	0.63
16,668.0	90.31	151.12	7,436.6	-7,094.6	5,864.9	9,195.2	1.71
16,763.0	90.31	150.95	7,436.1	-7,177.7	5,910.9	9,289.3	0.18
16,858.0	90.48	150.33	7,435.4	-7,260.5	5,957.5	9,383.4	0.68
16,953.0	91.45	151.03	7,433.8	-7,343.3	6,004.0	9,477.6	1.26
17,047.0	90.31	150.07	7,432.4	-7,425.1	6,050.2	9,570.8	1.59
17,142.0	91.01	150.33	7,431.3	-7,507.6	6,097.4	9,665.0	0.79
17,236.0	89.60	150.42	7,430.8	-7,589.3	6,143.9	9,758.3	1.50
17,331.0	89.90	149.89	7,431.2	-7,671.7	6,191.1	9,852.5	0.64
17,426.0	90.22	149.45	7,431.1	-7,753.7	6,239.1	9,946.9	0.57
17,521.0	90.13	149.45	7,430.8	-7,835.5	6,287.4	10,041.3	0.09
17,615.0	90.66	149.36	7,430.1	-7,916.4	6,335.3	10,134.7	0.57
17,710.0	89.87	149.60	7,429.7	-7,998.2	6,383.5	10,229.1	0.87
17,810.0	89.93	149.04	7,429.9	-8,084.2	6,434.5	10,328.5	0.56
17,870.0	89.93	149.04	7,430.0	-8,135.7	6,465.4	10,388.2	0.00

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Rikk Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	PATT 317: Rikk 2H 1318 GL + 22.5 KB @ 1340.5
Site:	Rikk/Pratt/Blackwood/Irons	**MD Reference:**	PATT 317: Rikk 2H 1318 GL + 22.5 KB @ 1340.5
Well:	Rikk Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
6,870.0	6,857.0	68.3	140.2	Sycamore
7,182.0	7,111.7	196.9	258.3	Middlesex
7,477.0	7,297.2	238.5	478.9	Burkett
7,540.0	7,329.0	227.7	532.1	Tully
7,914.0	7,462.1	39.6	820.6	Marcellus

Checked By: _____ Approved By: _____ Date: _____

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/16/2015
Job End Date:	1/31/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06231-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Rikk Unit 2H
Longitude:	-80.59638300
Latitude:	39.26537800
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	7,509
Total Base Water Volume (gal):	13,210,218
Total Base Non Water Volume:	570,263

FracFocus Chemical Disclosure Registry

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GROUNDWATER PROTECTION COUNCIL

Interstate Oil & Gas Compact Commission

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	90.32711	
Sand	U.S. Well Services, LLC	Proppant					
			Crystalline Silica, quartz	14808-60-7	100.00000	9.38234	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid					
			Water	7732-18-5	87.50000	0.08368	
			Hydrogen Chloride	7641-01-1	18.00000	0.01999	
LGC-15	U.S. Well Services, LLC	Gelling Agents					
			Guar Gum	9000-30-0	50.00000	0.04187	
			Petroleum Distillates	64742-47-8	60.00000	0.03965	
			Suspending agent (solid)	14808-60-7	3.00000	0.00640	
			Surfactant	68439-51-0	3.00000	0.00251	
WFRA-405	U.S. Well Services, LLC	Friction Reducer					
			Water	7732-18-5	40.00000	0.02010	
			Anionic Polyacrylamide	Proprietary		0.02010	
			Petroleum Distillates	64742-47-8	22.00000	0.01618	
			Ethoxylated alcohol blend	Proprietary	5.00000	0.00251	

			Crystalline Salt	12125-02-9	5.00000	0.00251	
SI-1100	U.S. Well Services	Scale Inhibitor					
			Di Water	7732-18-5	80.00000	0.01074	
			Ethylene Glycol	107-21-1	40.00000	0.00607	
			Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8	10.00000	0.00181	
			2-Phosphonobutane 1,2,4 tricarboxylic salt	37971-36-1	10.00000	0.00173	
			hexamethylenediamine tetra (methylene phosphonic acid)	38820-59-6	10.00000	0.00168	
			Copolymer of Maleic and Acrylic acid	26677-99-6	10.00000	0.00158	
			bis (hexamethylene) tramine penta (methylene phosphonic acid) - phosphate acid	40623-75-4	10.00000	0.00154	
			Acrylic polymer	52255-49-9	5.00000	0.00067	
K-BAC 1020	U.S. Well Services, LLC	Anti-Bacterial Agent					
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00460	
			Deionized Water	7732-18-5	28.00000	0.00262	
AP One	U.S. Well Services, LLC	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00166	
AI-301	U.S. Well Services, LLC	Acid Corrosion Inhibitors					
			Diethylene Glycol	111-46-6	30.00000	0.00013	
			Methenamine	100-97-0	20.00000	0.00010	
			Hydrogen Chloride	7647-01-0	10.00000	0.00004	
			Polyethylene polyamine	68603-67-8	10.00000	0.00004	
			Coco amine	61791-14-8	5.00000	0.00002	

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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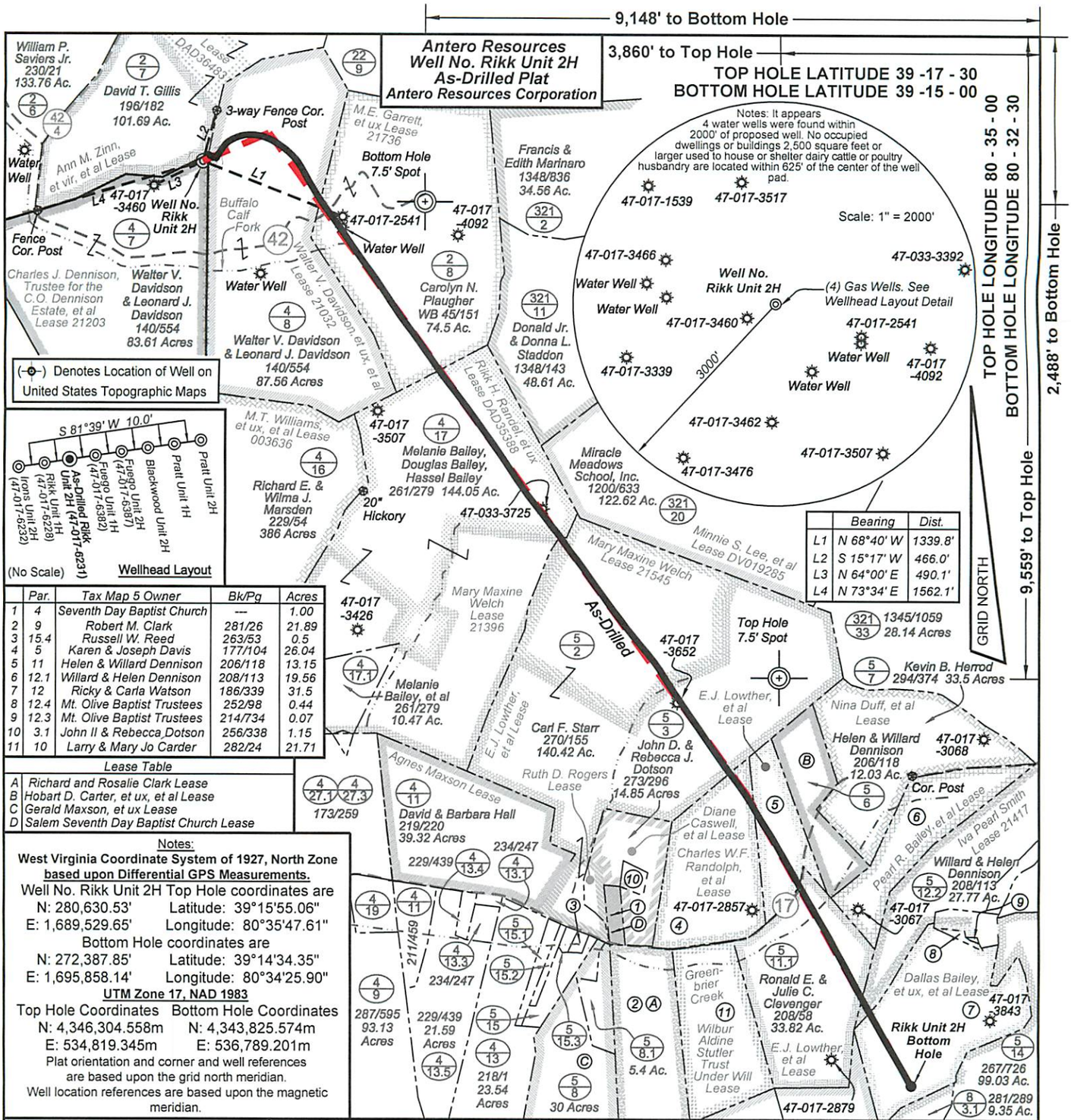

	Par.	Tax Map 5 Owner	Bk/Pg	Acres
1	4	Seventh Day Baptist Church	---	1.00
2	9	Robert M. Clark	281/26	21.89
3	15.4	Russell W. Reed	263/53	0.5
4	5	Karen & Joseph Davis	177/104	26.04
5	11	Helen & Willard Dennison	206/118	13.15
6	12.1	Willard & Helen Dennison	208/113	19.56
7	12	Ricky & Carla Watson	186/339	31.5
8	12.4	Mt. Olive Baptist Trustees	252/98	0.44
9	12.3	Mt. Olive Baptist Trustees	214/734	0.07
10	3.1	John II & Rebecca Dotson	256/338	1.15
11	10	Larry & Mary Jo Carder	282/24	21.71

	Bearing	Dist.
L1	N 68°40' W	1339.8'
L2	S 15°17' W	466.0'
L3	N 64°00' E	490.1'
L4	N 73°34' E	1562.1'

FILE NO: 41-30-GR-13
DRAWING NO: Rikk 2H Well Plat_As-Drilled
SCALE: 1" = 1200'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS DIVISION

DATE: March 3 2015
OPERATOR'S WELL NO. Rikk Unit 2H
API WELL NO
47 - 017 - 06231
STATE COUNTY PERMIT

WELL TYPE: ☐ OIL ☒ GAS ☐ LIQUID INJECTION ☐ WASTE DISPOSAL
(IF GAS) PRODUCTION : ☐ STORAGE ☐ DEEP ☒ SHALLOW
LOCATION: ELEVATION: 1320' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: Salem & Big Isaac
DISTRICT: Greenbrier COUNTY: Doddridge
SURFACE OWNER: Walter V. Davidson & Leonard J. Davidson — Charles W.F. Randolph, et al; E.J. Lowther, et al (3); Mary Maxine Welch (2); Dallas Bailey, et ux, et al; Walter V. Davidson, et ux, et al; Ann M. Zinn, et vir, et al; M.E. Garrett, et ux; Rikk H. Randel, et ux; Iva Pearl Smith — ACREAGE: 83.61 — 35; 47; 47; 27.12; 45.75; 92; 27
ROYALTY OWNER: Charles J. Dennison, Trustee for the C.O. Dennison Estate, et al — LEASE NO: 21736; DAD35388; 21545; 21417; 21203; 21032; 21396 — ACREAGE: 84; 87; 74.5; 65; 90
PROPOSED WORK: ☐ DRILL ☐ CONVERT ☐ DRILL DEEPER ☐ FRACTURE OR STIMULATE ☐ PLUG OFF OLD FORMATION
☐ PERFORATE NEW FORMATION ☒ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled
☐ PLUG AND ABANDON ☐ CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale DEPTH: 7,430' TVD 17,870' MD

WELL OPERATOR: Antero Resources Corporation
ADDRESS: 1615 Wynkoop Street, Denver, CO 80202
DESIGNATED AGENT: Dianna Stamper - CT Corporation System
ADDRESS: 5400 D Big Tyler Road, Charleston, WV 25313

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

API 47 - 017 - 06238 County Doddridge District New Milton
Quad New Milton 7.5' Pad Name Stewart Pad Field/Pool Name ----------
Farm name Stewart, Randall Well Number Cross Unit 1H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street 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 4,337,767m Easting 529,255m
Landing Point of Curve Northing 4,337,916.60m Easting 529,076.69m
Bottom Hole Northing 4,339,970m Easting 528,440m

Elevation (ft) 1,334' 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 05/02/2013 Date drilling commenced 10/23/2013 Date drilling ceased 03/11/2014
Date completion activities began 04/09/2014 Date completion activities ceased 07/12/2014
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 404' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 962', 1217' Void(s) encountered (Y/N) depths None
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths None
Is coal being mined in area (Y/N) No

Reviewed by:
L.L. 5/26/15 ✓
W.S. 06/02/15

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API 47- 017 - 06238 Farm name Stewart, Randall Well number Cross Unit 1H

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	24"	20"	40'	New	94#; J-55	N/A	Yes
Surface	17 1/2"	13 3/8"	480'	New	54.5#; J-55	N/A	Yes
Coal							
Intermediate 1	12 1/4"	9 5/8"	2,574'	New	36#; J-55	N/A	Yes
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	14,948'	New	20#; P-110	N/A	Yes
Tubing		2 3/8"	7,492'	New	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 ^{3}/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	150 sx	15.6	1.18	38	0'	8 Hrs.
Surface	Class A	568 sx	15.6	1.18	333	0'	8 Hrs.
Coal							
Intermediate 1	Class A	738 sx	15.6	1.18	806	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1,172 sx (Lead); 1,160 sx (Tail)	14.2 (Lead); 15.2 (Tail)	1.3 (Lead); 1.86 (Tail)	2,949	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 14,948' MD, 7,347' TVD (BHL) 7,354' TVD (Deepest Point Drilled) Loggers TD (ft) 14,906'

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6,700'

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 _____

WAS WELL COMPLETED OPEN HOLE? □ Yes ■ No DETAILS _____

WERE TRACERS USED □ Yes ■ No TYPE OF TRACER(S) USED _____

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API 47- 017 - 06238 Farm name Stewart, Randall Well number Cross Unit 1H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

*** PLEASE SEE ATTACHED EXHIBIT 1**

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)

*** PLEASE SEE ATTACHED EXHIBIT 2**

Please insert additional pages as applicable.

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API 47- 017 - 06238 Farm name Stewart, Randall Well number Cross Unit 1H

PRODUCING FORMATION(S)	DEPTHS		
Marcellus	7,297' (top) TVD	7,586' (top) MD	

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ☐ Flow ☐ Pump

SHUT-IN PRESSURE Surface 3,950 psi Bottom Hole ---------- psi DURATION OF TEST ---------- hrs

OPEN FLOW Gas 8,870 mcfpd Oil ---------- bpd NGL ---------- bpd Water 401 bpd GAS MEASURED BY ☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITYAND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		

*** PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Patterson - UTI Drilling Company LLC
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company Rush Wellsite Services
Address 600 Alpha Drive City Canonsburg State PA Zip 15317

Cementing Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company GoFrac
Address 62787 Philips Rd. City Cambridge State OH Zip 43725

Please insert additional pages as applicable.

Completed by Megan Darling Telephone 303-357-7230
Signature Megan C. Darling Title Permitting Agent Date 05/15/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

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API 47-017-06238 Farm Name Stewart, Randall Well Number Cross Unit 1H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	9-Apr-14	14,690	14,860	60	Marcellus
2	12-May-14	14,488	14,658	60	Marcellus
3	12-May-14	14,286	14,457	60	Marcellus
4	12-May-14	14,085	14,255	60	Marcellus
5	13-May-14	13,883	14,053	60	Marcellus
6	13-May-14	13,681	13,851	60	Marcellus
7	13-May-14	13,479	13,650	60	Marcellus
8	14-May-14	13,278	13,448	60	Marcellus
9	14-May-14	13,076	13,246	60	Marcellus
10	14-May-14	12,874	13,044	60	Marcellus
11	15-May-14	12,672	12,843	60	Marcellus
12	16-May-14	12,471	12,641	60	Marcellus
13	16-May-14	12,269	12,439	60	Marcellus
14	17-May-14	12,067	12,237	60	Marcellus
15	17-May-14	11,865	12,036	60	Marcellus
16	17-May-14	11,664	11,834	60	Marcellus
17	17-May-14	11,462	11,632	60	Marcellus
18	17-May-14	11,260	11,430	60	Marcellus
19	17-May-14	11,058	11,229	60	Marcellus
20	18-May-14	10,857	11,027	60	Marcellus
21	23-May-14	10,655	10,825	60	Marcellus
22	23-May-14	10,453	10,623	60	Marcellus
23	23-May-14	10,251	10,422	60	Marcellus
24	24-May-14	10,050	10,220	60	Marcellus
25	24-May-14	9,848	10,018	60	Marcellus
26	26-May-14	9,646	9,816	60	Marcellus
27	26-May-14	9,444	9,615	60	Marcellus
28	27-May-14	9,243	9,413	60	Marcellus
29	27-May-14	9,041	9,211	60	Marcellus
30	27-May-14	8,839	9,009	60	Marcellus
31	28-May-14	8,637	8,808	60	Marcellus
32	28-May-14	8,436	8,606	60	Marcellus
33	29-May-14	8,234	8,404	60	Marcellus
34	29-May-14	8,032	8,202	60	Marcellus
35	29-May-14	7,830	8,001	60	Marcellus
36	30-May-14	7,629	7,799	60	Marcellus

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API 47-017-06238 Farm Name Stewart, Randall Well Number Cross Unit 1H								
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	12-May-14	49.7	8,711	6,755	5,181	4,275	6,290	N/A
2	12-May-14	71.1	8,133	6,442	5,059	179,015	6,722	N/A
3	12-May-14	70.6	7,924	6,635	4,258	140,600	6,445	N/A
4	13-May-14	72.9	73	6,606	4,327	235,645	6,334	N/A
5	13-May-14	70.7	7,951	6,771	4,721	145,050	7,036	N/A
6	13-May-14	71.5	7,700	6,080	5,007	238,808	6,242	N/A
7	14-May-14	66.7	7,585	6,137	5,521	108,038	5,939	N/A
8	14-May-14	75.0	7,899	5,779	5,240	235,630	6,078	N/A
9	14-May-14	69.6	7,730	6,568	4,863	237,713	5,997	N/A
10	15-May-14	66.2	7,865	6,069	4,998	180,835	6,484	N/A
11	15-May-14	69.5	7,693	6,388	N/A	139,666	6,054	N/A
12	16-May-14	73.3	7,603	6,348	4,749	237,170	6,022	N/A
13	16-May-14	74.6	7,644	6,246	5,104	234,574	6,004	N/A
14	17-May-14	73.3	7,827	6,474	5,075	183,385	6,389	N/A
15	17-May-14	73.7	7,579	6,403	4,925	235,610	5,988	N/A
16	17-May-14	68.4	7,540	6,549	4,747	235,794	5,971	N/A
17	17-May-14	75.0	7,542	6,446	4,958	235,100	5,933	N/A
18	17-May-14	73.0	7,399	6,445	5,254	236,412	5,942	N/A
19	18-May-14	74.2	7,658	6,367	4,768	235,615	5,938	N/A
20	18-May-14	69.2	7,526	6,667	N/A	167,150	6,047	N/A
21	23-May-14	74.1	7,679	6,259	5,418	232,419	6,259	N/A
22	23-May-14	73.7	7,414	5,944	5,076	159,184	6,393	N/A
23	24-May-14	72.5	7,332	6,466	4,904	231,864	5,900	N/A
24	24-May-14	73.4	7,625	6,380	5,381	235,498	6,370	N/A
25	24-May-14	77.0	7,304	6,222	5,170	232,080	5,842	N/A
26	26-May-14	74.7	6,997	5,890	5,004	231,653	5,912	N/A
27	26-May-14	72.0	7,167	5,712	6,152	130,559	6,089	N/A
28	27-May-14	74.6	7,483	6,023	5,073	233,919	5,848	N/A
29	27-Mar-14	74.6	7,282	5,972	5,819	234,496	5,808	N/A
30	28-May-14	76.3	7,250	5,790	6,142	237,614	5,799	N/A
31	28-May-14	75.0	7,231	5,744	5,682	236,008	5,817	N/A
32	28-May-14	77.3	7,235	5,832	5,969	234,565	5,775	N/A
33	29-May-14	76.3	7,179	5,718	5,863	235,494	5,784	N/A
34	29-May-14	74.4	7,368	5,536	5,263	135,136	5,624	N/A
35	30-May-14	75.3	7,107	5,321	5,120	228,210	5,850	N/A
36	30-May-14	67.2	7,614	6,073	5,662	74,719	6,232	N/A
	AVG=	**72**	**7,357**	**6,196**	**5,190**	**7,149,503**	**219,157**	TOTAL

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API 47-017-06238 Farm Name Stewart, Randall Well Number Cross Unit 1H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	**TOP DEPTH (TVD) From Surface**	**BOTTOM DEPTH (TVD) From Surface**	**TOP DEPTH (MD) From Surface**	**BOTTOM DEPTH (MD) From Surface**
Fresh Water	404'	NA	404'	NA
Shale/Siltstone	0	447	0	447
Sandstone	Est. 447	467	Est. 447	467
Shale/Siltstone	Est. 467	687	Est. 467	687
Sandstone	Est. 687	727	Est. 687	727
Shale	Est. 727	827	Est. 727	827
Sandstone	Est. 827	887	Est. 827	887
Shale	Est. 887	1,127	Est. 887	1,127
Sandstone	Est. 1127	1,207	Est. 1127	1,207
Shale	Est. 1207	1,787	Est. 1207	1,787
Sandstone/Siltstone	Est. 1787	1,907	Est. 1787	1,907
Sandstone/Siltstone with trace coal	Est. 1907	1,967	Est. 1907	1,967
Shale	Est. 1967	2,404	Est. 1967	2,404
Big Lime	2,404	2,490	2,404	2,490
Big Injun	2,490	2,702	2,490	2,702
Gantz Sand	2,702	2,856	2,702	2,856
Fifty Foot Sandstone	2,856	3,060	2,856	3,060
Gordon	3,060	3,412	3,060	3,412
Fifth Sandstone	3,412	3,481	3,412	3,481
Bayard	3,481	3,743	3,481	3,743
Warren	3,743	4,051	3,743	4,051
Speechley	4,051	4,237	4,051	4,237
Baltown	4,237	4,869	4,237	4,869
Bradford	4,869	5,328	4,869	5,328
Benson	5,328	5,581	5,328	5,581
Alexander	5,581	5,804	5,581	5,804
Elk	5,804	6,325	5,804	6,325
Rhinestreet	6,325	6,852	6,325	6,859
Sycamore	6,852	7,018	6,859	7,068
Middlesex	7,018	7,164	7,068	7,289
Burkett	7,164	7,195	7,289	7,346
Tully	7,195	7,297	7,346	7,586
Marcellus	7,297	NA	7,586	NA

*Please note Antero determines shallow formation tops based on mud and/or wireline 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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Antero Resources

Antero
Cross Unit 1H
Doddridge County WV
Northing: 14230768.96
Easting: 1736351.60
ST1 As Drilled

WELL DETAILS: Cross Unit 1H

+N/-S	+E/-W	Northing	Easting	Ground Level:	Latitude	Longitude	Slot
0.0	0.0	14230768.96	1736351.60	1332.0	39° 11' 18.790 N	80° 39' 41.113 W	

PROJECT DETAILS: Doddridge County WV

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

Jameson Shadid
Scientific Drilling
421 South Eagle Lane
Oklahoma City Oklahoma
405-787-3663

Scientific Drilling

LEGEND

- Cross Unit 1H, Original Wellpath, Plan 3 V0
- Cross Unit 1H, Original Wellpath, As Drilled V0
- ST1 As Drilled

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Cross Unit 1H	0.0	0.0	0.0	14230768.96	1736351.60	39° 11' 18.790 N	80° 39' 41.113 W
Act. BHL Cross Unit 1H OH	7347.3	7227.6	-2664.2	14237996.54	1733687.44	39° 12' 30.351 N	80° 40' 14.628 W
Act. BHL Cross Unit 1H ST	7347.3	7266.0	-2685.6	14238034.98	1733665.99	39° 12' 30.732 N	80° 40' 14.899 W

DESIGN TARGET DETAILS

Azimuths to Grid North
True North: -0.21°
Magnetic North: -8.74°

To convert Magnetic North to Grid, Subtract 8.74°
To convert True North to Grid, Subtract 0.21°

Magnetic Field
Strength: 52262.6nT
Dip Angle: 66.74°
Date: 3/1/2014
Model: IGRF2010

True Vertical Depth (950 usft/in)

Vertical Section at 339.70° (950 usft/in)

Middlesex
Burkett
Tully
Marcellus

South(-)/North(+) (1500 usft/in)

West(-)/East(+) (1500 usft/in)

Antero Resources

Doddridge County WV
Stewart Pad
Cross Unit 1H
Sidetrack 1

Design: ST1 As Drilled

EOW Completion Report

12 March, 2014

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Scientific Drilling

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Cross Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Cross Unit 1H GL 1332' + 22.5' RKB @ 1354.5usf
Site:	Stewart Pad	**MD Reference:**	Cross Unit 1H GL 1332' + 22.5' RKB @ 1354.5usf
Well:	Cross Unit 1H	**North Reference:**	Grid
Wellbore:	Sidetrack 1	**Survey Calculation Method:**	Minimum Curvature
Design:	ST1 As Drilled	**Database:**	Oklahoma District

Project	Doddridge County WV, McClellan District		
Map System:	Universal Transverse Mercator (US Survey Fee	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Stewart Pad				
Site Position:		**Northing:**	14,230,768.62 usft	**Latitude:**	39° 11' 18.788 N
From:	Map	**Easting:**	1,736,331.61 usft	**Longitude:**	80° 39' 41.367 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.21 °

Well	Cross Unit 1H					
Well Position	**+N/-S**	0.0 usft	**Northing:**	14,230,768.96 usft	**Latitude:**	39° 11' 18.790 N
	+E/-W	0.0 usft	**Easting:**	1,736,351.60 usft	**Longitude:**	80° 39' 41.113 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**	1,354.5 usft	**Ground Level:**	1,332.0 usft

Wellbore	Sidetrack 1			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	3/1/2014	-8.52	66.74	52,263

Design	ST1 As Drilled				
Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	7,708.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	342.98

Survey Program **Date** 3/12/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
109.0	6,580.3	Survey #2 Def Gyro to KOP (Original Well	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
6,637.0	7,708.0	Survey #3 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1
7,708.0	14,907.9	Survey #1 ST1 MWD (Sidetrack 1)	MWD SDI	MWD - Standard ver 1.0.1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
109.0	0.27	136.67	109.0	-0.2	0.2	-0.2	0.25
209.5	0.25	140.55	209.5	-0.5	0.5	-0.6	0.03
309.6	0.23	117.96	309.6	-0.8	0.8	-1.0	0.10
410.0	0.19	104.83	410.0	-0.9	1.1	-1.2	0.06
508.6	0.23	114.41	508.6	-1.1	1.5	-1.4	0.05
608.8	0.16	160.92	608.8	-1.3	1.7	-1.7	0.17
709.5	0.19	147.99	709.5	-1.5	1.8	-2.0	0.05
808.5	0.18	158.67	808.4	-1.8	2.0	-2.3	0.04
910.2	0.07	198.34	910.2	-2.0	2.0	-2.5	0.13

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Cross Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Cross Unit 1H GL 1332' + 22.5' RKB @ 1354.5usf
Site:	Stewart Pad	**MD Reference:**	Cross Unit 1H GL 1332' + 22.5' RKB @ 1354.5usf
Well:	Cross Unit 1H	**North Reference:**	Grid
Wellbore:	Sidetrack 1	**Survey Calculation Method:**	Minimum Curvature
Design:	ST1 As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,010.1	0.07	194.16	1,010.1	-2.2	2.0	-2.6	0.01
1,110.4	0.04	316.00	1,110.4	-2.2	1.9	-2.7	0.10
1,209.2	0.05	332.39	1,209.2	-2.1	1.9	-2.6	0.02
1,309.8	0.05	71.80	1,309.8	-2.1	1.9	-2.5	0.08
1,409.0	0.04	49.81	1,409.0	-2.0	2.0	-2.5	0.02
1,509.6	0.03	73.03	1,509.6	-2.0	2.0	-2.5	0.02
1,609.3	0.12	97.00	1,609.3	-2.0	2.2	-2.6	0.09
1,710.2	0.13	82.83	1,710.2	-2.0	2.4	-2.6	0.03
1,809.7	0.14	91.46	1,809.7	-2.0	2.6	-2.7	0.02
1,909.4	0.12	108.20	1,909.4	-2.0	2.8	-2.8	0.04
2,009.7	0.13	117.35	2,009.7	-2.1	3.0	-2.9	0.02
2,109.8	0.22	119.13	2,109.8	-2.3	3.3	-3.1	0.09
2,210.0	0.22	103.67	2,210.0	-2.4	3.7	-3.4	0.06
2,308.8	0.15	103.14	2,308.8	-2.5	4.0	-3.5	0.07
2,410.2	0.13	114.41	2,410.2	-2.6	4.2	-3.7	0.03
2,510.2	0.12	94.62	2,510.2	-2.6	4.4	-3.8	0.04
2,609.6	0.07	299.17	2,609.6	-2.6	4.5	-3.8	0.19
2,708.8	0.08	207.27	2,708.8	-2.6	4.4	-3.8	0.11
2,810.1	0.20	282.63	2,810.1	-2.6	4.2	-3.8	0.19
2,910.0	0.27	272.69	2,910.0	-2.6	3.8	-3.6	0.08
3,009.5	0.17	263.97	3,009.5	-2.6	3.4	-3.5	0.11
3,109.5	0.16	285.21	3,109.5	-2.6	3.1	-3.4	0.06
3,209.6	0.16	269.49	3,209.6	-2.5	2.8	-3.3	0.04
3,309.7	0.11	271.51	3,309.7	-2.5	2.6	-3.2	0.05
3,409.3	0.09	281.70	3,409.3	-2.5	2.4	-3.1	0.03
3,509.5	0.09	350.64	3,509.5	-2.4	2.3	-3.0	0.10
3,610.3	0.09	357.39	3,610.2	-2.3	2.3	-2.9	0.01
3,709.2	0.05	61.42	3,709.2	-2.2	2.4	-2.8	0.08
3,810.0	0.04	53.50	3,810.0	-2.1	2.4	-2.7	0.01
3,909.4	0.09	3.51	3,909.4	-2.0	2.5	-2.7	0.07
4,009.7	0.20	18.34	4,009.7	-1.8	2.5	-2.4	0.12
4,109.9	0.11	342.42	4,109.9	-1.5	2.5	-2.2	0.13
4,209.4	0.11	338.16	4,209.4	-1.4	2.5	-2.0	0.01
4,308.6	0.18	345.30	4,308.6	-1.1	2.4	-1.8	0.07
4,410.1	0.26	281.20	4,410.0	-0.9	2.1	-1.5	0.24
4,510.2	0.44	260.21	4,510.2	-0.9	1.5	-1.3	0.22
4,609.3	0.63	254.92	4,609.3	-1.1	0.6	-1.3	0.20
4,709.4	0.59	254.56	4,709.3	-1.4	-0.4	-1.2	0.04
4,809.7	0.63	250.34	4,809.7	-1.7	-1.4	-1.3	0.06
4,909.8	0.58	253.26	4,909.8	-2.1	-2.4	-1.3	0.06
5,009.6	0.56	256.65	5,009.6	-2.3	-3.4	-1.2	0.04
5,109.8	0.39	260.37	5,109.7	-2.5	-4.2	-1.2	0.17
5,209.3	0.32	249.35	5,209.3	-2.7	-4.8	-1.1	0.10
5,308.6	0.30	259.15	5,308.6	-2.8	-5.3	-1.1	0.06
5,410.1	0.33	258.72	5,410.1	-2.9	-5.8	-1.1	0.03

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Cross Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Cross Unit 1H GL 1332' + 22.5' RKB @ 1354.5usf
Site:	Stewart Pad	**MD Reference:**	Cross Unit 1H GL 1332' + 22.5' RKB @ 1354.5usf
Well:	Cross Unit 1H	**North Reference:**	Grid
Wellbore:	Sidetrack 1	**Survey Calculation Method:**	Minimum Curvature
Design:	ST1 As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,509.8	0.36	265.61	5,509.8	-3.0	-6.4	-1.0	0.05
5,609.6	0.34	259.00	5,609.6	-3.1	-7.0	-0.9	0.05
5,709.1	0.35	282.63	5,709.0	-3.1	-7.6	-0.7	0.14
5,809.9	0.33	269.46	5,809.9	-3.0	-8.2	-0.5	0.08
5,909.4	0.27	276.32	5,909.4	-3.0	-8.7	-0.3	0.07
6,008.9	0.22	294.86	6,008.8	-2.9	-9.1	-0.1	0.09
6,109.8	0.18	7.95	6,109.7	-2.6	-9.3	0.2	0.24
6,209.6	0.12	308.49	6,209.5	-2.4	-9.4	0.4	0.16
6,309.6	0.15	6.79	6,309.5	-2.2	-9.4	0.6	0.13
6,409.4	0.14	73.95	6,409.4	-2.1	-9.3	0.8	0.16
6,509.7	0.11	230.39	6,509.7	-2.1	-9.2	0.7	0.24
6,580.3	0.10	349.84	6,580.2	-2.1	-9.3	0.8	0.26
6,637.0	0.00	351.28	6,636.9	-2.0	-9.3	0.8	0.18
6,669.0	0.09	165.30	6,668.9	-2.0	-9.3	0.8	0.28
6,700.0	3.29	262.10	6,699.9	-2.2	-10.2	0.9	10.65
6,731.0	7.68	265.13	6,730.8	-2.5	-13.1	1.5	14.19
6,763.0	12.27	268.97	6,762.3	-2.7	-18.7	2.9	14.49
6,794.0	16.27	268.05	6,792.3	-2.9	-26.3	4.9	12.92
6,825.0	19.86	267.20	6,821.8	-3.3	-35.9	7.3	11.61
6,856.0	22.88	268.26	6,850.7	-3.8	-47.2	10.2	9.82
6,886.0	26.47	266.73	6,877.9	-4.3	-59.7	13.3	12.15
6,916.0	30.41	263.39	6,904.3	-5.6	-73.9	16.3	14.16
6,947.0	34.21	263.13	6,930.5	-7.5	-90.4	19.2	12.27
6,976.0	36.40	264.30	6,954.1	-9.4	-107.0	22.4	7.90
7,007.0	38.78	265.32	6,978.7	-11.1	-125.9	26.3	7.94
7,037.0	40.78	268.02	7,001.8	-12.2	-145.0	30.8	8.81
7,067.0	42.94	273.08	7,024.1	-12.0	-165.0	36.9	13.36
7,098.0	45.41	277.77	7,046.3	-9.9	-186.5	45.1	13.21
7,129.0	47.24	283.34	7,067.8	-5.8	-208.5	55.5	14.27
7,159.0	47.92	289.93	7,088.0	0.6	-229.7	67.8	16.37
7,190.0	48.40	295.79	7,108.7	9.5	-251.0	82.6	14.17
7,220.0	48.68	299.59	7,128.6	20.0	-270.9	98.4	9.54
7,251.0	49.69	301.94	7,148.8	32.0	-291.1	115.8	6.60
7,281.0	51.23	305.00	7,167.9	44.7	-310.3	133.6	9.39
7,311.0	54.10	309.11	7,186.1	59.1	-329.4	152.9	14.49
7,342.0	56.47	313.04	7,203.8	75.9	-348.6	174.6	12.92
7,372.0	58.84	317.92	7,219.8	93.9	-366.3	197.0	15.85
7,403.0	59.97	320.11	7,235.6	114.1	-383.8	221.4	7.09
7,433.0	59.53	320.43	7,250.7	134.0	-400.4	245.3	1.73
7,464.0	60.73	321.92	7,266.2	154.9	-417.2	270.3	5.69
7,494.0	64.54	324.65	7,280.0	176.3	-433.1	295.4	15.05
7,525.0	67.12	326.62	7,292.7	199.6	-449.1	322.4	10.14
7,555.0	69.20	327.90	7,303.8	223.1	-464.1	349.2	7.98
7,586.0	72.72	330.36	7,313.9	248.2	-479.2	377.6	13.61

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Site:	Stewart Pad	**MD Reference:**	Cross Unit 1H GL 1332' + 22.5' RKB @ 1354.5usf
Well:	Cross Unit 1H	**North Reference:**	Grid
Wellbore:	Sidetrack 1	**Survey Calculation Method:**	Minimum Curvature
Design:	ST1 As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,616.0	76.68	332.56	7,321.8	273.6	-493.0	406.0	14.97
7,647.0	80.22	333.85	7,328.1	300.7	-506.7	435.9	12.13
7,678.0	82.23	334.54	7,332.8	328.3	-520.0	466.2	6.85
7,708.0	83.80	335.37	7,336.4	355.3	-532.6	495.6	5.91
7,760.0	86.17	339.24	7,341.0	403.1	-552.6	547.2	8.70
7,799.0	84.21	339.85	7,344.2	439.5	-566.2	586.0	5.26
7,830.0	85.69	339.99	7,347.0	468.5	-576.8	616.8	4.80
7,860.0	89.16	340.38	7,348.3	496.7	-586.9	646.7	11.64
7,890.0	91.58	340.38	7,348.1	525.0	-597.0	676.7	8.07
7,921.0	91.80	340.82	7,347.2	554.2	-607.3	707.7	1.59
7,952.0	91.98	340.94	7,346.2	583.5	-617.5	738.6	0.70
7,983.0	92.18	340.60	7,345.1	612.7	-627.7	769.6	1.27
8,015.0	90.57	342.14	7,344.3	643.0	-637.9	801.6	6.96
8,047.0	90.57	343.28	7,344.0	673.6	-647.4	833.6	3.56
8,078.0	90.22	344.34	7,343.8	703.3	-656.0	864.6	3.60
8,110.0	90.13	344.69	7,343.7	734.2	-664.6	896.5	1.13
8,142.0	90.04	344.51	7,343.6	765.0	-673.1	928.5	0.63
8,173.0	90.22	343.99	7,343.6	794.9	-681.5	959.5	1.78
8,205.0	90.22	343.46	7,343.4	825.6	-690.5	991.5	1.66
8,237.0	90.27	342.70	7,343.3	856.2	-699.8	1,023.5	2.38
8,268.0	90.31	342.75	7,343.1	885.8	-709.0	1,054.5	0.21
8,300.0	90.48	342.14	7,342.9	916.3	-718.6	1,086.5	1.98
8,332.0	89.87	342.05	7,342.8	946.8	-728.5	1,118.5	1.93
8,364.0	89.08	340.21	7,343.1	977.0	-738.8	1,150.5	6.26
8,395.0	89.13	340.23	7,343.6	1,006.2	-749.3	1,181.5	0.17
8,427.0	89.16	339.77	7,344.1	1,036.3	-760.2	1,213.4	1.44
8,458.0	88.96	340.72	7,344.6	1,065.4	-770.7	1,244.4	3.13
8,490.0	89.34	341.26	7,345.1	1,095.7	-781.1	1,276.3	2.06
8,522.0	89.52	342.23	7,345.4	1,126.1	-791.2	1,308.3	3.08
8,616.0	89.69	341.52	7,346.0	1,215.4	-820.4	1,402.3	0.78
8,711.0	90.66	343.46	7,345.7	1,306.0	-849.0	1,497.3	2.28
8,805.0	90.22	344.86	7,345.0	1,396.4	-874.6	1,591.3	1.56
8,900.0	90.22	345.39	7,344.6	1,488.2	-899.0	1,686.2	0.56
8,995.0	90.34	342.34	7,344.2	1,579.5	-925.4	1,781.2	3.21
9,024.0	90.48	342.93	7,344.0	1,607.2	-934.1	1,810.2	2.09
9,115.0	89.25	341.26	7,344.2	1,693.8	-962.1	1,901.2	2.28
9,207.0	89.08	341.96	7,345.5	1,781.0	-991.1	1,993.1	0.78
9,298.0	89.16	342.05	7,346.9	1,867.6	-1,019.2	2,084.1	0.13
9,390.0	89.25	343.37	7,348.2	1,955.4	-1,046.5	2,176.1	1.44
9,481.0	89.87	342.38	7,348.9	2,042.4	-1,073.3	2,267.1	1.28
9,573.0	90.92	341.61	7,348.3	2,129.9	-1,101.1	2,359.1	1.42
9,664.0	91.28	341.79	7,346.5	2,216.3	-1,130.1	2,450.0	0.44
9,755.0	90.92	341.35	7,344.8	2,302.6	-1,159.1	2,541.0	0.62
9,847.0	90.75	343.11	7,343.4	2,390.2	-1187.2	2,633.0	1.92

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Cross Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Cross Unit 1H GL 1332' + 22.5' RKB @ 1354.5usf
Site:	Stewart Pad	**MD Reference:**	Cross Unit 1H GL 1332' + 22.5' RKB @ 1354.5usf
Well:	Cross Unit 1H	**North Reference:**	Grid
Wellbore:	Sidetrack 1	**Survey Calculation Method:**	Minimum Curvature
Design:	ST1 As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
9,899.8	89.29	343.73	7,343.4	2,440.8	-1,202.2	2,685.8	3.01
10,000.0	89.29	343.73	7,344.7	2,536.9	-1,230.3	2,786.0	0.00
10,100.0	89.29	343.73	7,345.9	2,632.9	-1,258.3	2,885.9	0.00
10,184.5	89.29	343.73	7,346.9	2,714.0	-1,282.0	2,970.4	0.00
10,200.0	89.60	343.38	7,347.1	2,728.9	-1,286.4	2,985.9	3.01
10,225.9	90.11	342.80	7,347.2	2,753.7	-1,293.9	3,011.8	2.98
10,300.0	90.11	342.80	7,347.0	2,824.5	-1,315.8	3,085.9	0.00
10,400.0	90.11	342.80	7,346.8	2,920.0	-1,345.4	3,185.9	0.00
10,500.0	90.11	342.80	7,346.6	3,015.5	-1,375.0	3,285.9	0.00
10,600.0	90.11	342.80	7,346.4	3,111.1	-1,404.5	3,385.9	0.00
10,700.0	90.11	342.80	7,346.2	3,206.6	-1,434.1	3,485.9	0.00
10,800.0	90.11	342.80	7,346.1	3,302.1	-1,463.7	3,585.9	0.00
10,900.0	90.11	342.80	7,345.9	3,397.6	-1,493.2	3,685.9	0.00
11,000.0	90.11	342.80	7,345.7	3,493.2	-1,522.8	3,785.9	0.00
11,100.0	90.11	342.80	7,345.5	3,588.7	-1,552.4	3,885.9	0.00
11,200.0	90.11	342.80	7,345.3	3,684.2	-1,582.0	3,985.9	0.00
11,300.0	90.11	342.80	7,345.1	3,779.8	-1,611.5	4,085.9	0.00
11,400.0	90.11	342.80	7,344.9	3,875.3	-1,641.1	4,185.9	0.00
11,500.0	90.11	342.80	7,344.7	3,970.8	-1,670.7	4,285.9	0.00
11,600.0	90.11	342.80	7,344.5	4,066.3	-1,700.2	4,385.9	0.00
11,700.0	90.11	342.80	7,344.3	4,161.9	-1,729.8	4,485.9	0.00
11,800.0	90.11	342.80	7,344.1	4,257.4	-1,759.4	4,585.9	0.00
11,900.0	90.11	342.80	7,343.9	4,352.9	-1,789.0	4,685.9	0.00
12,000.0	90.11	342.80	7,343.8	4,448.4	-1,818.5	4,785.9	0.00
12,100.0	90.11	342.80	7,343.6	4,544.0	-1,848.1	4,885.9	0.00
12,200.0	90.11	342.80	7,343.4	4,639.5	-1,877.7	4,985.9	0.00
12,300.0	90.11	342.80	7,343.2	4,735.0	-1,907.2	5,085.9	0.00
12,407.3	90.11	342.80	7,343.0	4,837.5	-1,938.9	5,193.1	0.00
12,419.2	89.90	342.91	7,343.0	4,848.9	-1,942.5	5,205.1	1.98
12,500.0	89.90	342.91	7,343.1	4,926.1	-1,966.2	5,285.9	0.00
12,600.0	89.90	342.91	7,343.3	5,021.7	-1,995.6	5,385.9	0.00
12,700.0	89.90	342.91	7,343.5	5,117.3	-2,025.0	5,485.9	0.00
12,800.0	89.90	342.91	7,343.6	5,212.9	-2,054.4	5,585.9	0.00
12,900.0	89.90	342.91	7,343.8	5,308.5	-2,083.8	5,685.9	0.00
13,000.0	89.90	342.91	7,344.0	5,404.1	-2,113.2	5,785.9	0.00
13,100.0	89.90	342.91	7,344.2	5,499.7	-2,142.5	5,885.9	0.00
13,200.0	89.90	342.91	7,344.3	5,595.2	-2,171.9	5,985.9	0.00
13,300.0	89.90	342.91	7,344.5	5,690.8	-2,201.3	6,085.9	0.00
13,400.0	89.90	342.91	7,344.7	5,786.4	-2,230.7	6,185.9	0.00
13,500.0	89.90	342.91	7,344.9	5,882.0	-2,260.1	6,285.9	0.00
13,600.0	89.90	342.91	7,345.0	5,977.6	-2,289.5	6,385.9	0.00
13,700.0	89.90	342.91	7,345.2	6,073.2	-2,318.9	6,485.9	0.00
13,800.0	89.90	342.91	7,345.4	6,168.7	-2,348.3	6,585.9	0.00
13,900.0	89.90	342.91	7,345.6	6,264.3	-2,377.6	6,685.9	0.00

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Cross Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Cross Unit 1H GL 1332' + 22.5' RKB @ 1354.5usf
Site:	Stewart Pad	**MD Reference:**	Cross Unit 1H GL 1332' + 22.5' RKB @ 1354.5usf
Well:	Cross Unit 1H	**North Reference:**	Grid
Wellbore:	Sidetrack 1	**Survey Calculation Method:**	Minimum Curvature
Design:	ST1 As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
14,000.0	89.90	342.91	7,345.7	6,359.9	-2,407.0	6,785.9	0.00
14,100.0	89.90	342.91	7,345.9	6,455.5	-2,436.4	6,885.9	0.00
14,200.0	89.90	342.91	7,346.1	6,551.1	-2,465.8	6,985.9	0.00
14,300.0	89.90	342.91	7,346.3	6,646.7	-2,495.2	7,085.9	0.00
14,400.0	89.90	342.91	7,346.4	6,742.2	-2,524.6	7,185.9	0.00
14,500.0	89.90	342.91	7,346.6	6,837.8	-2,554.0	7,285.9	0.00
14,600.0	89.90	342.91	7,346.8	6,933.4	-2,583.4	7,385.9	0.00
14,700.0	89.90	342.91	7,347.0	7,029.0	-2,612.7	7,485.9	0.00
14,800.0	89.90	342.91	7,347.1	7,124.6	-2,642.1	7,585.9	0.00
14,907.9	89.90	342.91	7,347.3	7,227.7	-2,673.8	7,693.8	0.00

Checked By: _____ Approved By: _____ Date: _____

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/11/2014
Job End Date:	5/30/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06238-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Cross Unit 1H
Longitude:	-80.66141900
Latitude:	39.18855300
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	7,347
Total Base Water Volume (gal):	9,204,510
Total Base Non Water Volume:	0

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

Interstate Oil & Gas Compact Commission

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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
Freshwater	Republic Energy	Frac Base					
			Water	7732-18-5	100.00000	91.07651	None
40/70 White Sand	US Silica	Proppant					
			Sand	14808-60-7	100.00000	5.01513	None
20/40 White Sand	US Silica	Proppant					
			Sand	14808-60-7	100.00000	2.86755	None
100 Mesh	US Silica	Proppant					
			Sand	14808-60-7	100.00000	0.59483	None
SOS 1545	Ultrablend	Guar Gel					
			Hydrocarbons	64741-85-1	70.00000	0.07701	None
Plexslick 953	Chemplex	Friction Reducer					
			Water	7732-18-5	35.00000	0.02112	None
			Polyacrylamide-co-acrylic acid	Proprietary	32.00000	0.01931	None
			Hydrotreated Petroleum Distillate	64742-47-8	30.00000	0.01810	None
			Alcohol Ethoxylate Surfactants	Proprietary	8.00000	0.00483	None
HCl Acid 10-15%	GoFrac	Acid					
			Hydrochloric Acid	7647-01-0	15.00000	0.03414	None
Plexcide 15G	Chemplex	Biocide					
			Water	7732-18-5	90.00000	0.01735	None

			Glutaraldehyde	111-30-8	14.00000	0.00270	None
			Alkyl Dimethyl Benzyl Ammonium Chloride	68424-85-1	3.00000	0.00058	None
			Didecyl Dimethyl Ammonium Chloride	7173-51-5	3.00000	0.00058	None
			Ethanol	64-17-5	3.00000	0.00058	None
Plexaid 673	Chemplex	Scale Inhibitor					
			Water	7732-18-5	85.00000	0.01334	None
			Methyl Alcohol	67-56-1	25.00000	0.00392	None
			Sodium Salt of Phosphonodimethylated Diamine	Proprietary	5.00000	0.00078	None
Sodium Persulfate	Chemplex	Active Breaker					
			Sodium Persulfate	7775-27-1	100.00000	0.00162	None
Greenflush	Chemplex	Cleaner					
			Alcohol Ethoxylate Surfactants	Proprietary	10.00000	0.00101	None
Ferriplex 66	Chemplex	Iron Control					
			Acetic Acid	64-19-7	50.00000	0.00025	None
			Water	7732-18-5	35.00000	0.00018	None
			Citric Acid	77-92-9	30.00000	0.00015	None
Plexhib 256	Chemplex	Corrosion Inhibitor					
			Methyl Alcohol	67-56-1	70.00000	0.00026	None
			Alcohol Ethoxylate Surfactants	Proprietary	30.00000	0.00011	None
			Thiourea-formaldhyde copolymer	68527-49-1	30.00000	0.00011	None
			n-olefins	Proprietary	10.00000	0.00004	None
			Propargyl Alcohol	107-19-7	8.00000	0.00003	None
Plexbreak 145	Chemplex	Non-Emulsifier					
			Water	7732-18-5	66.00000	0.00027	None
			Methyl Alcohol	67-56-1	15.00000	0.00006	None
			Ethylene Glycol Monobutyl Ether	111-76-2	15.00000	0.00006	None
			Cocamide Diethanolamine Salt	68603-42-9	10.00000	0.00004	None
			Diethanolamine	111-42-2	5.00000	0.00002	None

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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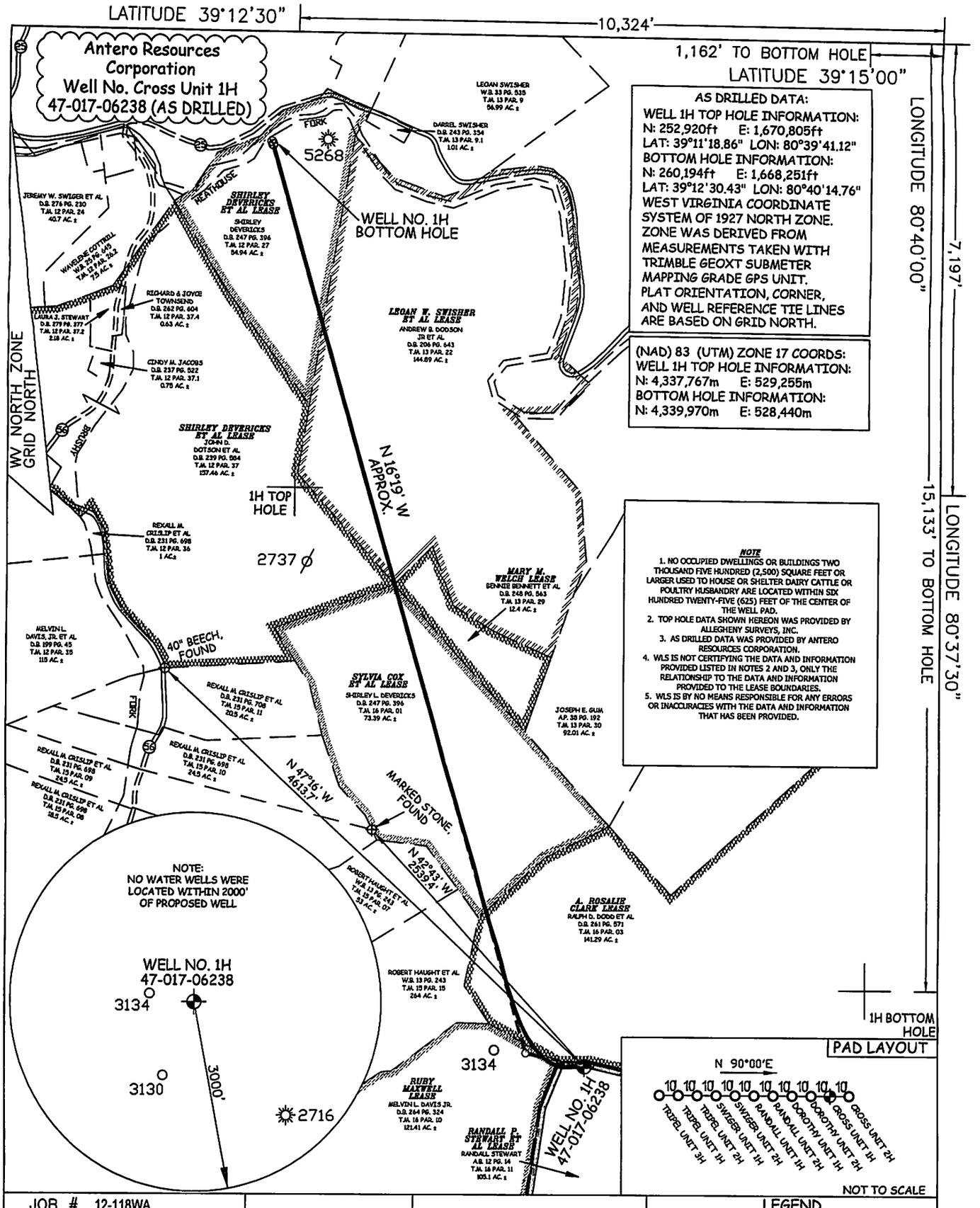

JOB #	12-118WA
DRAWING #	CROSS1HAD
SCALE	1" = 1000'
MINIMUM DEGREE OF ACCURACY	SUBMETER
PROVEN SOURCE OF ELEV.	SUBMETER MAPPING GRADE GPS

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

WILLOW LAND SURVEYING PLLC
P.O. BOX 17
PENNSBORO, WV 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

DATE 04/22/15
OPERATOR'S WELL# CROSS UNIT #1H

API WELL # 47 – 017 – 06238
STATE COUNTY PERMIT

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

LOCATION: ELEVATION 1,361' ORIGINAL - 1,334' AS-DRILLED WATERSHED HEADWATERS MIDDLE ISLAND CREEK
QUADRANGLE NEW MILTON 7.5' DISTRICT NEW MILTON COUNTY DODDRIDGE

SURFACE OWNER RANDALL STEWART ACREAGE 105.1 ACRES +/-

OIL & GAS ROYALTY OWNER RANDALL P. STEWART, ET AL; A. ROSALIE CLARK; RUBY MAXWELL; SYLVIA COX ET AL; SHIRLEY DEVERICKS ET AL; MARY M. WELCH; LEOAN W. SWISHER ET AL; SHIRLEY DEVERICKS ET AL LEASE ACREAGE 195 ACRES±; 141.46 ACRES±; 121 ACRES±; 73 ACRES±; 157 ACRES±; 12.4 ACRES±; 178.14 ACRES±; 89.475 ACRES±

PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___
PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL
(SPECIFY) (X) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG

TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,347' TVD 14,907' 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

COUNTY NAME PERMIT

FORM WW-6

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WR-35
Rev. 8/23/13

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

Received
Office of Oil & Gas
MAY 18 2015

API 47 - 017 - 06245 County Doddridge District Greenbrier
Quad Salem & Big Isaac Pad Name Plaugher North Pad Field/Pool Name
Farm name Plaugher, Carolyn Well Number Irons Unit 1H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street 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 4,346,899.010m Easting 533,742.220m
Landing Point of Curve Northing 4,346,731.02m Easting 533,984.50m
Bottom Hole Northing 4,344,373.193m Easting 535,759.591m

Elevation (ft) 1364' 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 6/13/2013 Date drilling commenced 1/12/2014 Date drilling ceased 2/15/2014
Date completion activities began 3/21/2014 Date completion activities ceased 6/13/2014
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 144' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1887', 2308' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 2315' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
A.L. 5/26/15 ✓
W.S. 6/2/15

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Rev. 8/23/13

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API 47- 017 - 06245 Farm name Plaugher, Carolyn Well number Irons Unit 1H

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	24"	20"	40'	New	94#/H-40	N/A	Y
Surface	17-1/2"	13-3/8"	396'	New	54.5#/J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2543'	New	36#/J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	17,634'	New	23#/P-110	N/A	Y
Tubing		2-3/8"	7612'	New	4.7#/N-80	N/A	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 ^{3}/sks)	Volume (ft ^{3})	Cement Top (MD)	WOC (hrs)
Conductor	Class A	200 sx	15.6	1.18	38 Cu. Ft.	0'	8 hrs
Surface	Class A	430 sx	15.6	1.18	275 Cu. Ft.	0'	8 hrs
Coal							
Intermediate 1	Class A	957 sx	15.6	1.18	796 Cu. Ft.	0'	8 hrs
Intermediate 2							
Intermediate 3							
Production	Class H	1197 sx (Lead), 1541 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.80 (Tail)	3572 Cu. Ft.	~500' into Intermediate Casing	8 hrs
Tubing							

Drillers TD (ft) 17,634' MD, 7466' TVD (BHL), 7541' TVD (Deepest Point Drilled) Loggers TD (ft) 17,586' MD

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 7266'

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

WAS WELL COMPLETED OPEN HOLE? □ Yes ■ No DETAILS

WERE TRACERS USED □ Yes ■ No TYPE OF TRACER(S) USED N/A

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API 47- 017 - 06245 Farm name Plaugher, Carolyn Well number Irons Unit 1H

PERFORATION RECORD

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

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)
			*PLEASE SEE ATTACHED EXHIBIT 2					

Please insert additional pages as applicable.

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API 47- 017 - 06245 Farm name Plaugher, Carolyn Well number Irons Unit 1H

PRODUCING FORMATION(S)	DEPTHS		
Marcellus	7456' (Top) TVD	7677' (Top) MD	

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Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST □ Flow □ Pump

SHUT-IN PRESSURE Surface 3600 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 8124 mcfpd Oil ---- bpd NGL ---- bpd Water 853 bpd GAS MEASURED BY □ Estimated ■ Orifice □ Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITYAND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		

*PLEASE SEE ATTACHED EXHIBIT 3

Please insert additional pages as applicable.

Drilling Contractor Frontier Drilling LLC
Address 562 Spring Run Road City Pennsboro State WV Zip 26415

Logging Company Rush Wellsite Services
Address 600 Alpha Drive City Canonsburg State PA Zip 15317

Cementing Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company U.S. Well Services
Address 533 Industrial Park Drive City Jane Lew State WV Zip 26378
Please insert additional pages as applicable.

Completed by Natalie Komp Telephone 303-357-6820
Signature Natalie Komp Title Permitting Agent Date 3/26/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

API 47-017-06245 Farm Name Plaugher, Carolyn Well Number Irons Unit 1H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	21-Mar-14	17373'	17542'	60	Marcellus
2	30-Apr-14	17171'	17341'	60	Marcellus
3	1-May-14	16970'	17140'	60	Marcellus
4	1-May-14	16769'	16939'	60	Marcellus
5	1-May-14	16568'	16738'	60	Marcellus
6	1-May-14	16367'	16537'	60	Marcellus
7	2-May-14	16166'	16336'	60	Marcellus
8	2-May-14	15965'	16135'	60	Marcellus
9	2-May-14	15764'	15934'	60	Marcellus
10	2-May-14	15563'	15733'	60	Marcellus
11	3-May-14	15362'	15532'	60	Marcellus
12	3-May-14	15161'	15330'	60	Marcellus
13	3-May-14	14960'	15129'	60	Marcellus
14	3-May-14	14759'	14928'	60	Marcellus
15	4-May-14	14558'	14727'	60	Marcellus
16	4-May-14	14357'	14526'	60	Marcellus
17	4-May-14	14156'	14325'	60	Marcellus
18	4-May-14	13955'	14124'	60	Marcellus
19	4-May-14	13753'	13923'	60	Marcellus
20	5-May-14	13552'	13722'	60	Marcellus
21	5-May-14	13351'	13521'	60	Marcellus
22	11-May-14	13150'	13320'	60	Marcellus
23	11-May-14	12949'	13119'	60	Marcellus
24	11-May-14	12748'	12918'	60	Marcellus
25	11-May-14	12547'	12717'	60	Marcellus
26	12-May-14	12346'	12516'	60	Marcellus
27	12-May-14	12145'	12315'	60	Marcellus
28	12-May-14	11944'	12113'	60	Marcellus
29	12-May-14	11743'	11912'	60	Marcellus
30	13-May-14	11542'	11711'	60	Marcellus
31	13-May-14	11341'	11510'	60	Marcellus
32	13-May-14	11140'	11309'	60	Marcellus
33	13-May-14	10939'	11108'	60	Marcellus
34	14-May-14	10738'	10907'	60	Marcellus
35	14-May-14	10537'	10706'	60	Marcellus
36	18-May-14	10335'	10505'	60	Marcellus
37	18-May-14	10134'	10304'	60	Marcellus
38	18-May-14	9933'	10103'	60	Marcellus
39	19-May-14	9732'	9902'	60	Marcellus
40	19-May-14	9531'	9701'	60	Marcellus
41	19-May-14	9330'	9500'	60	Marcellus
42	19-May-14	9129'	9299'	60	Marcellus
43	19-May-14	8928'	9098'	60	Marcellus
44	20-May-14	8727'	8897'	60	Marcellus
45	20-May-14	8526'	8695'	60	Marcellus
46	20-May-14	8325'	8494'	60	Marcellus
47	20-May-14	8124'	8293'	60	Marcellus
48	20-May-14	7923'	8092'	60	Marcellus
49	21-May-14	7722'	7891'	60	Marcellus

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API 47-017-06245 Farm Name Plaugher, Carolyn Well Number Irons Unit 1H

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	30-Apr-14	69.0	8,423	7,407	4,846	232,460	6,760	N/A
2	30-Apr-14	71.0	8,067	6,483	4,286	227,426	6,185	N/A
3	1-May-14	70.0	8,061	6,424	5,085	229,900	6,161	N/A
4	1-May-14	72.0	7,901	5,667	5,061	230,800	6,185	N/A
5	1-May-14	73.0	7,835	5,661	4,393	228,920	6,116	N/A
6	1-May-14	72.0	8,025	5,856	4,848	230,440	6,135	N/A
7	2-May-14	72.0	8,062	5,794	4,709	227,500	5,977	N/A
8	2-May-14	70.0	7,722	5,810	5,589	177,800	5,231	N/A
9	2-May-14	74.0	7,786	5,886	5,603	230,060	6,177	N/A
10	2-May-14	73.0	8,038	5,792	5,492	229,480	6,066	N/A
11	3-May-14	75.0	8,053	5,811	5,864	230,920	6,031	N/A
12	3-May-14	72.0	7,722	5,822	5,371	227,400	6,008	N/A
13	3-May-14	72.0	7,890	5,968	4,822	227,400	6,122	N/A
14	3-May-14	69.0	7,998	5,796	5,555	175,050	6,499	N/A
15	4-May-14	69.0	8,009	5,895	5,062	177,730	6,458	N/A
16	4-May-14	71.0	7,432	5,711	5,033	227,300	5,981	N/A
17	4-May-14	71.0	7,528	5,754	5,876	227,000	5,972	N/A
18	4-May-14	73.0	7,841	5,885	5,040	230,480	5,950	N/A
19	4-May-14	75.0	7,820	5,805	5,394	229,800	5,941	N/A
20	5-May-14	73.0	7,715	5,934	5,436	227,100	5,979	N/A
21	5-May-14	74.0	7,780	5,710	5,382	225,800	5,933	N/A
22	11-May-14	76.8	7,792	5,685	5,268	230,600	5,888	N/A
23	11-May-14	75.0	7,841	5,765	5,033	225,740	5,912	N/A
24	11-May-14	73.0	7,727	5,952	5,283	225,000	5,886	N/A
25	11-May-14	72.9	8,085	6,357	5,152	228,120	5,846	N/A
26	12-May-14	72.1	8,037	6,249	5,086	225,130	5,855	N/A
27	12-May-14	71.0	7,952	6,447	5,527	229,280	5,848	N/A
28	12-May-14	76.0	7,838	5,806	5,011	229,300	5,828	N/A
29	12-May-14	75.4	7,989	5,887	5,157	228,360	5,883	N/A
30	13-May-14	74.0	7,768	5,790	4,715	230,470	5,810	N/A
31	13-May-14	75.0	7,700	5,810	5,378	229,820	5,797	N/A
32	13-May-14	76.9	7,872	5,878	4,781	223,790	5,488	N/A
33	13-May-14	76.5	7,876	5,715	4,765	195,450	5,911	N/A
34	14-May-14	73.0	7,747	5,994	5,203	228,060	5,772	N/A
35	14-May-14	74.0	7,764	6,001	4,808	230,420	5,743	N/A
36	18-May-14	75.0	7,705	5,643	5,208	230,600	5,739	N/A
37	18-May-14	75.0	7,686	5,926	5,078	230,460	5,732	N/A
38	18-May-14	78.3	7,754	5,721	4,851	221,360	5,772	N/A
39	19-May-14	79.5	7,790	5,709	4,892	227,460	5,812	N/A
40	19-May-14	76.0	7,696	5,826	5,339	229,420	5,683	N/A
41	19-May-14	72.0	7,756	5,703	4,973	185,584	6,120	N/A
42	19-May-14	76.0	7,606	5,743	5,209	230,210	5,676	N/A
43	19-May-14	80.0	7,660	5,982	5,311	226,000	5,662	N/A
44	20-May-14	78.0	7,772	5,941	5,292	222,500	5,648	N/A
45	20-May-14	80.0	7,663	6,190	5,289	223,500	5,633	N/A
46	20-May-14	75.0	7,778	5,989	5,008	228,200	5,605	N/A
47	20-May-14	76.0	7,736	5,846	5,233	226,120	5,601	N/A
48	20-May-14	79.0	7,347	5,818	5,154	225,500	5,578	N/A
49	21-May-14	78.0	7,401	6,735	5,239	226,500	5,636	N/A
	AVG=	74.1	7,817	6,938	6,143	10,943,720	,289,231	TOTAL

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API 47-017-06245 Farm Name Plaugher, Carolyn Well Number Irons Unit 1H

EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD) From Surface	BOTTOM DEPTH (TVD) From Surface	TOP DEPTH (MD) From Surface	BOTTOM DEPTH (MD) From Surface
Freshwater	144	NA	144	NA
Shale	0	65	0	65
Shale w/ Trace Coal	65	95	65	95
Sand/Siltstone/Shale	95	215	95	215
Sand/Siltstone w/ Trace Coal	215	695	215	695
Shale	695	725	695	725
Sand/Siltstone/Shale	725	845	725	845
Sand/Siltstone w/ Trace Coal	845	875	845	875
Sand/Siltstone/Shale	875	1,445	875	1,445
Sand/Silt/Limestone w/Trace Coal	1,445	1,475	1,445	1,475
Sand/Silt/Limestone	1,475	1,655	1,475	1,655
Sand/Siltstone w/ Trace Coal	1,655	1,745	1,655	1,745
Shale/Siltstone	1,745	1,775	1,745	1,775
Sandstone	1,775	1,925	1,775	1,925
Sand/Siltstone/Shale	1,925	2,315	1,925	2,315
Coal	2,315	2,345	2,315	2,345
Sand/Siltstone/Shale	2,345	2,414	2,345	2,416
Big Lime	2,414	2,525	2,416	2,526
Big Injun	2,525	2,871	2,526	2,873
Gantz Sand	2,871	2,979	2,873	2,981
Fifty Foot Sandstone	2,979	3,173	2,981	3,175
Gordon	3,173	3,443	3,175	3,445
Fifth Sandstone	3,443	3,513	3,445	3,515
Bayard	3,513	3,782	3,515	3,784
Warren	3,782	4,017	3,784	4,019
Speechley	4,017	4,355	4,019	4,356
Baltown	4,355	4,882	4,356	4,884
Bradford	4,882	5,387	4,884	5,389
Benson	5,387	5,663	5,389	5,665
Alexander	5,663	5,885	5,665	5,887
Elk	5,885	6,435	5,887	6,444
Rhinestreet	6,435	6,915	6,444	6,960
Sycamore	6,915	7,160	6,960	7,226
Middlesex	7,160	7,300	7,226	7,394
Burkett	7,300	7,333	7,394	7,437
Tully	7,333	7,456	7,437	7,677
Marcellus	7,456	NA	7,677	NA

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Antero Resources

Irons Unit 1H
Doddridge County WV
Northing: 14260734.77
Easting: 1751070.53
As Drilled

Scientific Drilling

To convert Magnetic North to Grid, Subtract 8.82°
To convert True North to Grid, Subtract 0.25°

Azimuths to Grid North
True North: -0.25°
Magnetic North: -8.82°

Magnetic Field
Strength: 52315.7snT
Dip Angle: 66.82°
Date: 1/8/2014
Model: IGRF2010

WELL DETAILS Irons Unit 1H
Ground Level: 1364.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14260734.77	1751070.53	39° 16' 14.494 N	80° 36' 32.465 W

PROJECT DETAILS: Doddridge County WV

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

SITE DETAILS: Gainer/Irons Pad
Site Centre Northing: 14260748.87
Easting: 1751056.36
Positional Uncertainty: 0.0
Convergence: 0.25
Local North: Grid

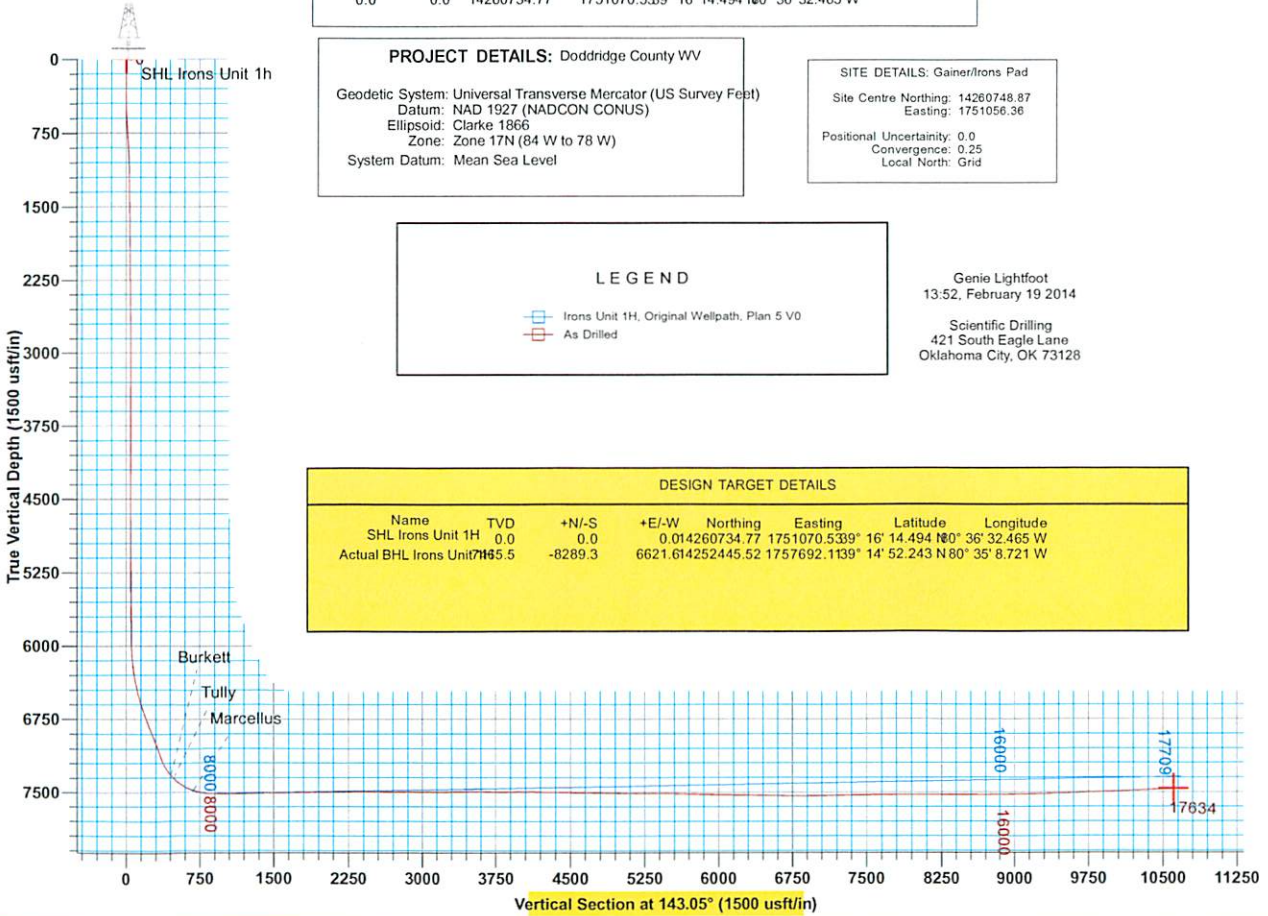
LEGEND
Irons Unit 1H, Original Wellpath, Plan 5 V0
As Drilled

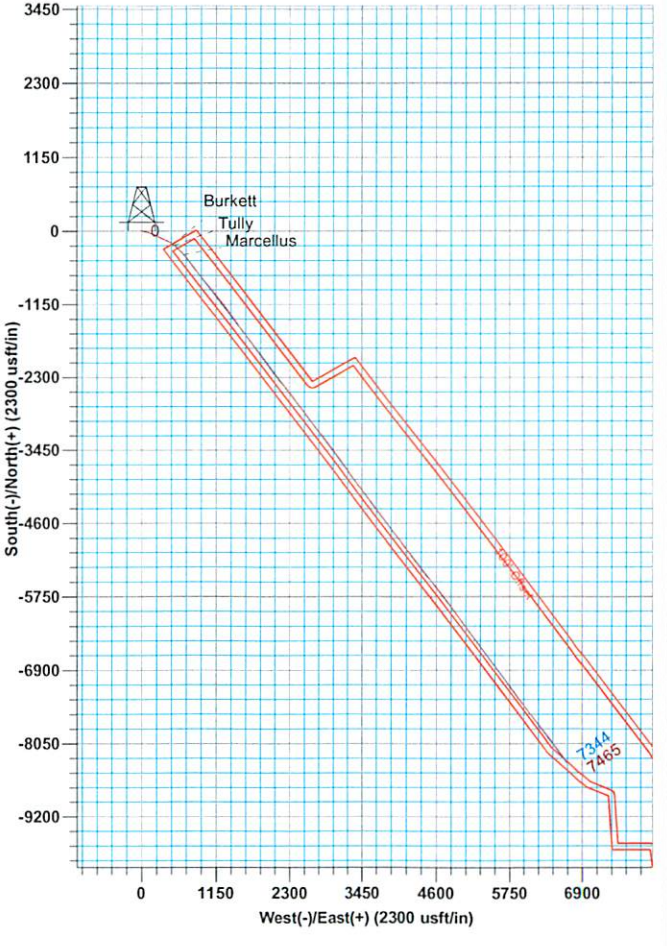
Genie Lightfoot
13:52, February 19 2014

Scientific Drilling
421 South Eagle Lane
Oklahoma City, OK 73128

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Irons Unit 1H	0.0	0.0	0.0	14260734.77	1751070.53	39° 16' 14.494 N	80° 36' 32.465 W
Actual BHL Irons Unit	7465.5	-8289.3	6621.61	14252445.52	1757692.11	39° 14' 52.243 N	80° 35' 8.721 W





Antero Resources

Doddridge County WV
Gainer/Irons Pad
Irons Unit 1H
Original Wellpath

Design: As Drilled

EOW Completion Report

19 February, 2014

Received
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Scientific Drilling

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MAY 18 2015

Antero Resources

EOW Completion Report

Scientific Drilling

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Irons Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Irons 1H 1364 GL + 25 KB @ 1389.0usft
Site:	Gainer/Irons Pad	**MD Reference:**	Irons 1H 1364 GL + 25 KB @ 1389.0usft
Well:	Irons Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Project Doddridge County WV, McClellan District

Map System:	Universal Transverse Mercator (US Survey Fee	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site Gainer/Irons Pad

Site Position:		**Northing:**	14,260,748.87 usft	**Latitude:**	39° 16' 14.634 N
From:	Map	**Easting:**	1,751,056.36 usft	**Longitude:**	80° 36' 32.644 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.25 °

Well Irons Unit 1H, Marcellus

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,260,734.77 usft	**Latitude:**	39° 16' 14.494 N
	+E/-W	0.0 usft	**Easting:**	1,751,070.53 usft	**Longitude:**	80° 36' 32.465 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**	1,389.0 usft	**Ground Level:**	1,364.0 usft

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/8/2014	-8.57	66.82	52,316

Design As Drilled

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	143.05

Survey Program **Date** 2/19/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	7,081.6	Survey #4 Def Gyro to KOP (Original Well	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
7,173.0	17,634.0	Survey #5 MWD (Original Wellpath)	MWD SDI	MWD - Standard ver 1.0.1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
100.0	0.25	272.33	100.0	0.0	-0.2	-0.1	0.25
200.0	0.29	269.64	200.0	0.0	-0.7	-0.4	0.04
300.0	0.22	281.02	300.0	0.1	-1.1	-0.7	0.09
400.0	0.54	64.64	400.0	0.3	-0.9	-0.8	0.73
500.0	1.96	89.33	500.0	0.5	1.2	0.3	1.49
600.0	3.92	100.84	599.8	-0.1	6.3	3.9	2.04
700.0	5.32	106.24	699.5	-2.1	14.1	10.1	1.46
800.0	5.65	107.25	799.0	-4.8	23.3	17.8	0.34
900.0	4.30	106.85	898.7	-7.4	31.6	24.8	1.35
1,000.0	2.04	102.64	998.5	-8.8	36.9	29.2	2.27

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MAY 18 2015

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Irons Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Irons 1H 1364 GL + 25 KB @ 1389.0usft
Site:	Gainer/Irons Pad	**MD Reference:**	Irons 1H 1364 GL + 25 KB @ 1389.0usft
Well:	Irons Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,100.0	1.55	103.12	1,098.5	-9.5	39.9	31.6	0.49
1,200.0	1.21	99.19	1,198.4	-10.0	42.3	33.4	0.35
1,300.0	1.00	104.88	1,298.4	-10.4	44.2	34.9	0.24
1,400.0	0.73	104.31	1,398.4	-10.8	45.6	36.1	0.27
1,500.0	0.81	113.63	1,498.4	-11.2	46.9	37.2	0.15
1,600.0	0.92	123.58	1,598.4	-11.9	48.2	38.5	0.19
1,700.0	0.76	119.26	1,698.4	-12.7	49.5	39.9	0.17
1,800.0	0.72	117.12	1,798.4	-13.3	50.6	41.1	0.05
1,900.0	0.70	115.14	1,898.4	-13.9	51.7	42.2	0.03
2,000.0	0.61	110.53	1,998.3	-14.3	52.8	43.2	0.10
2,100.0	0.71	105.35	2,098.3	-14.7	53.9	44.1	0.12
2,200.0	0.42	118.81	2,198.3	-15.0	54.8	44.9	0.32
2,300.0	0.60	128.96	2,298.3	-15.5	55.5	45.8	0.20
2,400.0	0.53	112.10	2,398.3	-16.0	56.4	46.7	0.18
2,500.0	0.32	118.66	2,498.3	-16.3	57.0	47.3	0.22
2,600.0	0.29	90.85	2,598.3	-16.5	57.5	47.7	0.15
2,700.0	0.15	129.19	2,698.3	-16.5	57.9	48.0	0.20
2,800.0	0.24	164.22	2,798.3	-16.8	58.0	48.3	0.15
2,900.0	0.12	61.65	2,898.3	-17.0	58.2	48.6	0.29
3,000.0	0.15	267.19	2,998.3	-16.9	58.1	48.5	0.26
3,100.0	0.25	251.93	3,098.3	-17.0	57.8	48.3	0.11
3,200.0	0.09	255.46	3,198.3	-17.1	57.5	48.2	0.16
3,300.0	0.45	295.32	3,298.3	-17.0	57.1	47.9	0.39
3,400.0	0.56	288.79	3,398.3	-16.6	56.3	47.1	0.12
3,500.0	0.51	288.37	3,498.3	-16.3	55.4	46.3	0.05
3,600.0	0.08	290.52	3,598.3	-16.2	54.9	45.9	0.43
3,700.0	0.07	353.20	3,698.3	-16.1	54.8	45.8	0.08
3,800.0	0.20	110.39	3,798.3	-16.1	55.0	45.9	0.24
3,900.0	0.20	61.68	3,898.3	-16.1	55.3	46.1	0.16
4,000.0	0.15	243.61	3,998.3	-16.0	55.3	46.1	0.35
4,100.0	0.13	61.09	4,098.3	-16.0	55.3	46.1	0.28
4,200.0	0.15	260.11	4,198.3	-16.0	55.3	46.0	0.28
4,300.0	0.24	241.87	4,298.3	-16.1	55.0	45.9	0.11
4,400.0	0.18	287.29	4,398.3	-16.2	54.6	45.8	0.17
4,500.0	0.12	329.01	4,498.3	-16.0	54.4	45.5	0.12
4,600.0	0.09	122.34	4,598.3	-16.0	54.5	45.5	0.20
4,700.0	0.35	60.34	4,698.3	-15.9	54.8	45.6	0.32
4,800.0	0.41	47.84	4,798.3	-15.5	55.3	45.6	0.10
4,900.0	0.56	71.98	4,898.3	-15.1	56.0	45.8	0.25
5,000.0	0.44	46.36	4,998.3	-14.7	56.8	45.9	0.25
5,100.0	0.47	73.46	5,098.3	-14.3	57.5	46.0	0.22
5,200.0	0.73	87.81	5,198.3	-14.2	58.5	46.5	0.30
5,300.0	0.94	89.73	5,298.3	-14.1	59.9	47.3	0.21
5,400.0	0.77	106.25	5,398.3	-14.3	61.4	48.4	0.30

Received
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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Irons Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Irons 1H 1364 GL + 25 KB @ 1389.0usft
Site:	Gainer/Irons Pad	**MD Reference:**	Irons 1H 1364 GL + 25 KB @ 1389.0usft
Well:	Irons Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,500.0	0.68	113.87	5,498.3	-14.7	62.6	49.4	0.13
5,600.0	0.69	117.11	5,598.3	-15.3	63.7	50.5	0.04
5,700.0	0.75	123.30	5,698.2	-15.9	64.8	51.6	0.10
5,800.0	0.17	138.57	5,798.2	-16.4	65.4	52.4	0.59
5,900.0	0.20	45.41	5,898.2	-16.4	65.6	52.5	0.27
6,000.0	2.52	110.38	5,998.2	-17.0	67.8	54.4	2.44
6,100.0	5.19	98.71	6,098.0	-18.4	74.3	59.4	2.77
6,200.0	7.82	100.04	6,197.3	-20.3	85.5	67.6	2.63
6,300.0	10.81	109.15	6,296.0	-24.6	101.1	80.4	3.32
6,400.0	13.42	113.25	6,393.8	-32.2	120.6	98.3	2.75
6,500.0	16.48	109.66	6,490.4	-41.6	144.6	120.2	3.20
6,600.0	19.18	111.86	6,585.6	-52.5	173.2	146.1	2.78
6,700.0	22.00	113.74	6,679.2	-66.1	205.6	176.5	2.90
6,800.0	23.34	115.88	6,771.4	-82.3	240.6	210.4	1.57
6,900.0	23.61	117.32	6,863.2	-100.2	276.2	246.1	0.63
7,000.0	24.30	117.04	6,954.5	-118.7	312.3	282.6	0.70
7,081.6	23.66	114.63	7,029.1	-133.2	342.2	312.1	1.43
7,173.0	22.27	110.64	7,113.3	-146.9	375.1	342.9	2.28
7,202.0	21.66	111.37	7,140.2	-150.8	385.2	352.1	2.30
7,234.0	22.84	113.78	7,169.8	-155.5	396.4	362.5	4.66
7,266.0	26.53	117.26	7,198.8	-161.2	408.4	374.4	12.39
7,298.0	30.59	121.11	7,226.9	-168.7	421.7	388.4	13.92
7,330.0	34.00	122.62	7,254.0	-177.8	436.3	404.3	10.95
7,362.0	35.79	123.40	7,280.2	-187.7	451.6	421.5	5.76
7,394.0	37.29	125.00	7,306.0	-198.5	467.4	439.5	5.55
7,419.0	39.89	126.80	7,325.5	-207.6	480.0	454.4	11.34
Burkett							
7,427.0	40.73	127.34	7,331.6	-210.7	484.1	459.4	11.34
7,459.0	44.81	128.99	7,355.1	-224.2	501.2	480.4	13.22
7,462.0	45.25	129.11	7,357.2	-225.5	502.8	482.5	15.03
Tully							
7,491.0	49.54	130.19	7,376.8	-239.1	519.3	503.2	15.03
7,523.0	53.08	131.96	7,396.8	-255.5	538.1	527.7	11.87
7,555.0	55.70	133.19	7,415.5	-273.1	557.2	553.2	8.76
7,587.0	58.14	133.37	7,432.9	-291.5	576.8	579.7	7.64
7,619.0	62.50	134.03	7,448.8	-310.7	596.8	607.1	13.74
7,651.0	66.49	135.48	7,462.5	-331.1	617.3	635.7	13.12
7,683.0	69.42	137.03	7,474.5	-352.5	637.8	665.1	10.20
7,702.0	71.04	137.54	7,481.0	-365.6	650.0	682.9	8.90
Marcellus							
7,715.0	72.15	137.89	7,485.1	-374.7	658.3	695.2	8.90
7,747.0	75.55	139.25	7,494.0	-397.8	678.6	725.8	11.38
7,779.0	77.62	140.86	7,501.4	-421.6	698.6	756.9	8.11
7,812.0	79.10	141.95	7,508.1	-446.9	718.7	789.2	5.53
7,844.0	82.60	142.60	7,513.1	-471.9	738.1	820.8	11.12

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Irons Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Irons 1H 1364 GL + 25 KB @ 1389.0usft
Site:	Gainer/Irons Pad	**MD Reference:**	Irons 1H 1364 GL + 25 KB @ 1389.0usft
Well:	Irons Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,901.0	89.60	144.11	7,517.0	-517.5	772.0	877.6	12.56
7,942.0	90.57	144.37	7,517.0	-550.8	796.0	918.6	2.45
7,975.0	91.51	144.50	7,516.4	-577.6	815.1	951.6	2.88
8,071.0	90.00	142.03	7,515.1	-654.5	872.6	1,047.6	3.02
8,168.0	90.87	141.55	7,514.4	-730.7	932.5	1,144.5	1.02
8,264.0	91.98	142.76	7,512.0	-806.5	991.4	1,240.5	1.71
8,361.0	89.69	140.42	7,510.6	-882.5	1,051.7	1,337.4	3.38
8,457.0	91.01	143.44	7,510.0	-958.1	1,110.9	1,433.4	3.43
8,553.0	90.81	141.47	7,508.5	-1,034.2	1,169.4	1,529.4	2.06
8,650.0	91.27	143.47	7,506.7	-1,111.1	1,228.4	1,626.4	2.12
8,746.0	90.94	143.19	7,504.8	-1,188.1	1,285.8	1,722.3	0.45
8,842.0	90.60	143.71	7,503.5	-1,265.2	1,342.9	1,818.3	0.65
8,939.0	90.13	142.21	7,502.9	-1,342.6	1,401.3	1,915.3	1.62
9,035.0	93.29	147.87	7,500.1	-1,421.2	1,456.3	2,011.2	6.75
9,132.0	88.62	144.62	7,498.4	-1,501.8	1,510.2	2,108.0	5.86
9,228.0	90.44	144.28	7,499.2	-1,579.9	1,566.0	2,203.9	1.93
9,325.0	91.34	144.46	7,497.7	-1,658.7	1,622.5	2,300.9	0.95
9,421.0	89.63	142.56	7,496.9	-1,735.9	1,679.6	2,396.9	2.66
9,517.0	88.39	142.64	7,498.6	-1,812.2	1,737.9	2,492.9	1.29
9,614.0	89.87	143.53	7,500.0	-1,889.7	1,796.1	2,589.9	1.78
9,710.0	91.04	146.31	7,499.3	-1,968.3	1,851.3	2,685.8	3.14
9,807.0	89.40	143.66	7,498.9	-2,047.7	1,906.9	2,782.7	3.21
9,903.0	90.47	144.89	7,499.0	-2,125.6	1,963.0	2,878.7	1.70
10,000.0	90.10	144.71	7,498.5	-2,204.9	2,018.9	2,975.6	0.42
10,096.0	89.53	138.88	7,498.8	-2,280.3	2,078.2	3,071.6	6.10
10,193.0	90.30	140.00	7,499.0	-2,354.0	2,141.3	3,168.4	1.40
10,289.0	90.03	138.85	7,498.7	-2,426.9	2,203.8	3,264.2	1.23
10,384.0	90.84	142.39	7,498.0	-2,500.3	2,264.0	3,359.1	3.82
10,480.0	90.70	142.76	7,496.7	-2,576.5	2,322.4	3,455.1	0.41
10,570.0	91.11	144.42	7,495.3	-2,649.0	2,375.8	3,545.1	1.90
10,661.0	88.96	143.34	7,495.2	-2,722.5	2,429.4	3,636.0	2.64
10,752.0	88.29	141.88	7,497.4	-2,794.7	2,484.6	3,727.0	1.76
10,842.0	89.80	143.00	7,498.9	-2,866.1	2,539.5	3,817.0	2.09
10,933.0	90.44	141.96	7,498.7	-2,938.2	2,594.9	3,908.0	1.34
11,024.0	92.02	145.74	7,496.8	-3,011.7	2,648.6	3,998.9	4.50
11,115.0	89.43	143.51	7,495.6	-3,085.9	2,701.2	4,089.9	3.76
11,205.0	86.64	140.30	7,498.7	-3,156.6	2,756.7	4,179.8	4.72
11,297.0	89.29	142.13	7,502.0	-3,228.3	2,814.3	4,271.7	3.50
11,387.0	89.78	144.29	7,502.7	-3,300.4	2,868.2	4,361.7	2.46
11,478.0	87.82	139.97	7,504.6	-3,372.2	2,924.0	4,452.6	5.21
11,569.0	88.55	143.03	7,507.5	-3,443.3	2,980.7	4,543.5	3.46
11,666.0	89.06	145.47	7,509.5	-3,522.0	3,037.3	4,640.5	2.57
11,762.0	88.45	144.18	7,511.6	-3,600.5	3,092.6	4,736.4	1.49
11,858.0	89.53	145.80	7,513.3	-3,679.1	3,147.7	4,832.3	2.03

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Irons Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Irons 1H 1364 GL + 25 KB @ 1389.0usft
Site:	Gainer/Irons Pad	**MD Reference:**	Irons 1H 1364 GL + 25 KB @ 1389.0usft
Well:	Irons Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
11,954.0	89.33	143.58	7,514.2	-3,757.4	3,203.1	4,928.3	2.32
12,051.0	88.29	143.72	7,516.3	-3,835.5	3,260.6	5,025.2	1.08
12,147.0	88.89	142.27	7,518.6	-3,912.2	3,318.4	5,121.2	1.63
12,243.0	89.93	143.61	7,519.6	-3,988.8	3,376.2	5,217.2	1.77
12,340.0	90.30	142.78	7,519.4	-4,066.5	3,434.3	5,314.2	0.94
12,436.0	89.97	140.75	7,519.2	-4,141.9	3,493.8	5,410.2	2.14
12,533.0	90.30	142.49	7,519.0	-4,217.9	3,554.0	5,507.1	1.83
12,629.0	88.59	143.88	7,519.9	-4,294.7	3,611.5	5,603.1	2.30
12,726.0	88.46	143.70	7,522.4	-4,373.0	3,668.8	5,700.1	0.23
12,822.0	87.97	142.53	7,525.4	-4,449.7	3,726.4	5,796.0	1.32
12,918.0	87.48	142.39	7,529.2	-4,525.8	3,784.8	5,892.0	0.53
13,015.0	89.16	142.19	7,532.0	-4,602.5	3,844.1	5,988.9	1.74
13,111.0	89.63	142.32	7,533.0	-4,678.4	3,902.9	6,084.9	0.51
13,207.0	89.80	145.52	7,533.5	-4,756.0	3,959.4	6,180.9	3.34
13,304.0	89.66	145.58	7,534.0	-4,836.0	4,014.3	6,277.8	0.16
13,400.0	89.50	144.05	7,534.7	-4,914.4	4,069.6	6,373.7	1.60
13,497.0	89.30	144.69	7,535.7	-4,993.2	4,126.1	6,470.7	0.69
13,593.0	88.46	143.58	7,537.6	-5,071.0	4,182.3	6,566.6	1.45
13,690.0	89.13	142.79	7,539.6	-5,148.7	4,240.4	6,663.6	1.07
13,785.0	89.33	142.76	7,540.9	-5,224.3	4,297.9	6,758.6	0.21
13,882.0	90.74	145.30	7,540.8	-5,302.8	4,354.9	6,855.6	2.99
13,978.0	89.87	141.63	7,540.3	-5,379.9	4,412.0	6,951.6	3.93
14,075.0	90.34	140.88	7,540.1	-5,455.6	4,472.7	7,048.5	0.91
14,171.0	91.41	138.82	7,538.7	-5,528.9	4,534.6	7,144.4	2.42
14,268.0	91.36	141.65	7,536.3	-5,603.5	4,596.6	7,241.2	2.92
14,364.0	92.18	142.94	7,533.4	-5,679.4	4,655.3	7,337.1	1.59
14,460.0	90.64	143.45	7,531.0	-5,756.2	4,712.8	7,433.1	1.69
14,557.0	91.01	143.55	7,529.6	-5,834.2	4,770.5	7,530.1	0.40
14,653.0	90.30	144.02	7,528.5	-5,911.6	4,827.2	7,626.1	0.89
14,846.0	91.04	143.35	7,526.3	-6,067.1	4,941.5	7,819.0	0.52
14,942.0	89.80	142.70	7,525.6	-6,143.8	4,999.2	7,915.0	1.46
15,039.0	88.89	144.30	7,526.7	-6,221.8	5,056.9	8,012.0	1.90
15,135.0	89.35	143.67	7,528.1	-6,299.4	5,113.4	8,108.0	0.81
15,231.0	89.63	144.81	7,529.0	-6,377.3	5,169.5	8,204.0	1.22
15,328.0	89.60	144.24	7,529.6	-6,456.3	5,225.8	8,300.9	0.59
15,424.0	90.84	145.69	7,529.3	-6,534.9	5,280.9	8,396.9	1.99
15,521.0	90.10	143.92	7,528.5	-6,614.2	5,336.8	8,493.8	1.98
15,617.0	88.15	142.87	7,529.9	-6,691.2	5,394.0	8,589.8	2.31
15,713.0	89.16	142.59	7,532.2	-6,767.6	5,452.1	8,685.8	1.09
15,810.0	91.01	142.46	7,532.1	-6,844.6	5,511.1	8,782.8	1.91
15,906.0	91.44	142.84	7,530.0	-6,920.9	5,569.4	8,878.8	0.60
16,003.0	91.28	142.22	7,527.7	-6,997.9	5,628.4	8,975.7	0.66
16,099.0	91.44	143.40	7,525.4	-7,074.3	5,686.4	9,071.7	1.24
16,196.0	91.75	143.78	7,522.7	-7,152.3	5,743.9	9,168.6	0.51

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Irons Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Irons 1H 1364 GL + 25 KB @ 1389.0usft
Site:	Gainer/Irons Pad	**MD Reference:**	Irons 1H 1364 GL + 25 KB @ 1389.0usft
Well:	Irons Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
16,292.0	89.80	141.85	7,521.4	-7,228.8	5,801.9	9,264.6	2.86
16,388.0	90.27	140.00	7,521.4	-7,303.3	5,862.5	9,360.6	1.99
16,485.0	93.50	144.01	7,518.2	-7,379.7	5,922.1	9,457.5	5.31
16,581.0	91.71	142.89	7,513.8	-7,456.7	5,979.2	9,553.4	2.20
16,677.0	91.44	142.75	7,511.2	-7,533.2	6,037.2	9,649.3	0.32
16,774.0	91.75	141.61	7,508.5	-7,609.8	6,096.7	9,746.3	1.22
16,870.0	91.65	138.81	7,505.6	-7,683.5	6,158.1	9,842.1	2.92
16,966.0	93.63	140.50	7,501.2	-7,756.6	6,220.2	9,937.8	2.71
17,061.0	92.82	143.16	7,495.9	-7,831.2	6,278.8	10,032.6	2.92
17,157.0	92.89	143.18	7,491.1	-7,907.9	6,336.2	10,128.5	0.08
17,254.0	93.16	141.88	7,486.0	-7,984.8	6,395.2	10,225.4	1.37
17,349.0	92.86	142.99	7,481.0	-8,060.0	6,453.0	10,320.2	1.21
17,445.0	92.92	143.30	7,476.1	-8,136.7	6,510.5	10,416.1	0.33
17,578.0	93.39	144.29	7,468.8	-8,243.9	6,588.9	10,548.9	0.82
17,634.0	93.39	144.29	7,465.5	-8,289.2	6,621.6	10,604.8	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
7,419.0	7,325.5	-207.6	480.0	Burkett
7,462.0	7,357.2	-225.5	502.8	Tully
7,702.0	7,481.0	-365.6	650.0	Marcellus

Checked By: _____ Approved By: _____ Date: _____

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/30/2014
Job End Date:	5/21/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06245-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Irons Unit 1H
Longitude:	-80.60883900
Latitude:	39.27078100
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	7,540
Total Base Water Volume (gal):	12,147,702
Total Base Non Water Volume:	542,573

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	90.00037	
Sand	U.S. Well Services, LLC	Proppant					
			Crystalline Silica, quartz	14808-60-7	100.00000	9.72185	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid					
			Water	7732-18-5	87.50000	0.09067	
			Hydrogen Chloride	7647-01-0	18.00000	0.02166	
WFRA-405	U.S. Well Services, LLC	Friction Reducer					
			Water	7732-18-5	40.00000	0.02457	
			Anionic Polyacrylamide	Proprietary		0.02457	
			Petroleum Distillates	64742-47-8	22.00000	0.01978	
			Crystalline Salt	12125-02-9	5.00000	0.00307	
			Ethoxylated alcohol blend	Proprietary	5.00000	0.00307	
LGC-15	U.S. Well Services, LLC	Gelling Agents					
			Guar Gum	9000-30-0	50.00000	0.03255	
			Petroleum Distillates	64742-47-8	60.00000	0.03083	
			Suspending agent (solid)	14808-60-7	3.00000	0.00498	

			Surfactant	68439-51-0	3.00000	0.00195	
SI-1000	U.S. Well Services, LLC	Scale Inhibitor					
			Anionic Copolymer	Proprietary		0.00407	
			Ethylene Glycol	107-21-1	20.00000	0.00368	
			Water	7732-18-5	30.00000	0.00307	
K-BAC 1020	U.S. Well Services, LLC	Anti-Bacterial Agent					
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00464	
			Deionized Water	7732-18-5	28.00000	0.00265	
AP One	U.S. Well Services, LLC	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00142	
AI-300	U.S. Well Services, LLC	Acid Corrosion Inhibitors					
			Ethylene Glycol	107-21-1	31.00000	0.00024	
			N,N-Dimethylformamide	68-12-2	15.00000	0.00007	
			2-Butoxyethanol	111-76-2	7.00000	0.00006	
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	13.00000	0.00006	
			Cinnamaldehyde	104-55-2	5.00000	0.00006	
			Ethoxylated Nonylphenol	68412-54-4	5.00000	0.00002	
			Water	7732-18-5	20.00000	0.00002	
			Isopropyl Alcohol	67-63-0	3.00000	0.00001	
			Triethyl Phosphate	78-40-0	3.00000	0.00001	

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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Antero Resources Well No. Irons Unit 1H As-Drilled Plat

Antero Resources Corporation

697' to Bottom Hole

7,362' to Top Hole

TOP HOLE LATITUDE 39 - 17 - 30

BOTTOM HOLE LATITUDE 39 - 15 - 00

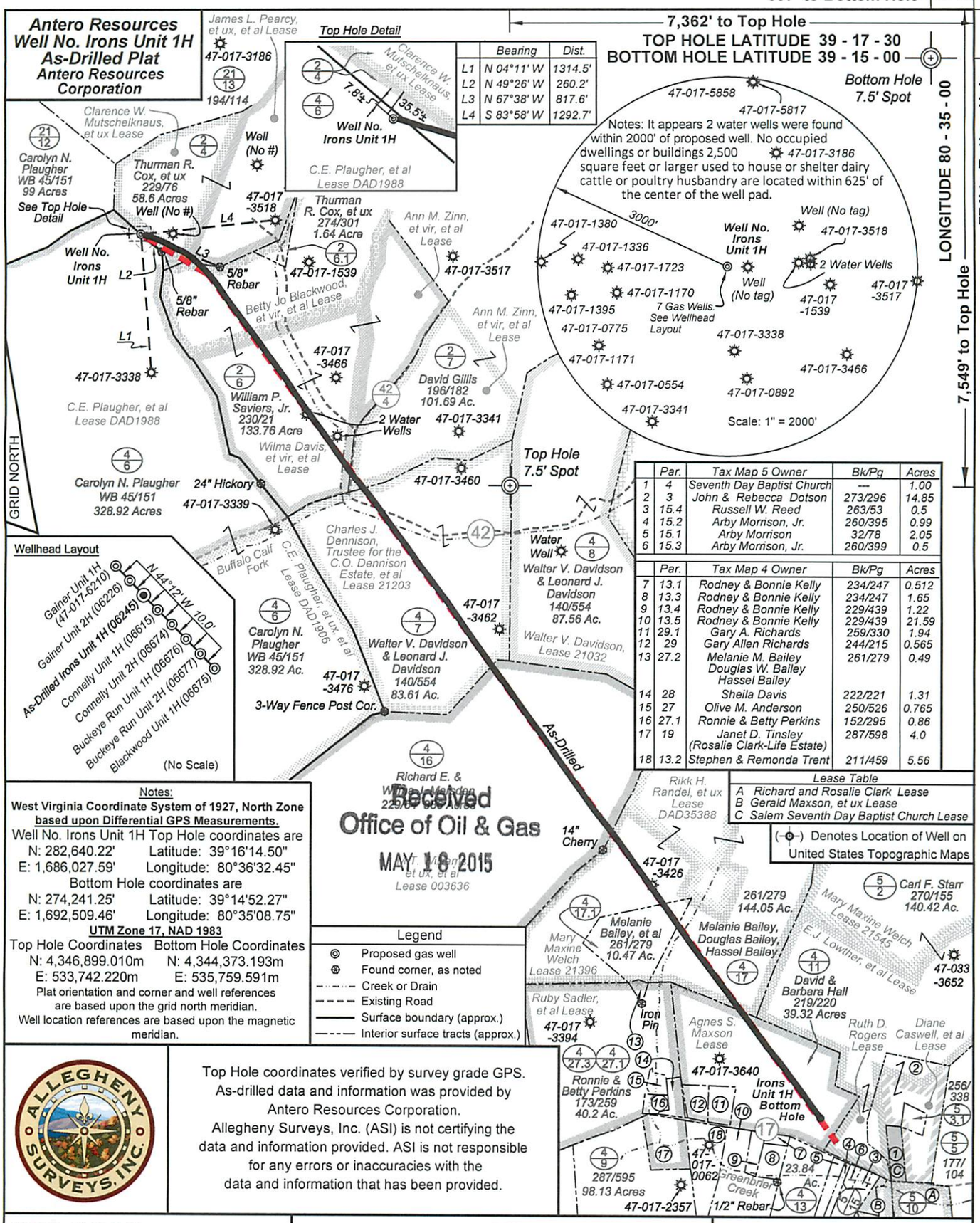
LONGITUDE 80 - 35 - 00

774' to Bottom Hole

7,549' to Top Hole

Bottom Hole 7.5' Spot

GRID NORTH



	Par.	Tax Map 5 Owner	Bk/Pg	Acres
1	4	Seventh Day Baptist Church	---	1.00
2	3	John & Rebecca Dotson	273/296	14.85
3	15.4	Russell W. Reed	263/53	0.5
4	15.2	Arby Morrison, Jr.	260/395	0.99
5	15.1	Arby Morrison	32/78	2.05
6	15.3	Arby Morrison, Jr.	260/399	0.5

	Par.	Tax Map 4 Owner	Bk/Pg	Acres
7	13.1	Rodney & Bonnie Kelly	234/247	0.512
8	13.3	Rodney & Bonnie Kelly	234/247	1.65
9	13.4	Rodney & Bonnie Kelly	229/439	1.22
10	13.5	Rodney & Bonnie Kelly	229/439	21.59
11	29.1	Gary A. Richards	259/330	1.94
12	29	Gary Allen Richards	244/215	0.565
13	27.2	Melanie M. Bailey Douglas W. Bailey Hassel Bailey	261/279	0.49
14	28	Sheila Davis	222/221	1.31
15	27	Olive M. Anderson	250/526	0.765
16	27.1	Ronnie & Betty Perkins	152/295	0.86
17	19	Janet D. Tinsley (Rosalie Clark-Life Estate)	287/598	4.0
18	13.2	Stephen & Remonda Trent	211/459	5.56

Wellhead Layout

Lease Table

A Richard and Rosalie Clark Lease
B Gerald Maxson, et ux Lease
C Salem Seventh Day Baptist Church Lease

(⊕) Denotes Location of Well on United States Topographic Maps

Legend

- ◎ Proposed gas well
- ⊛ Found corner, as noted
- Creek or Drain
- Existing Road
- Surface boundary (approx.)
- Interior surface tracts (approx.)

Notes:

West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.

Well No. Irons Unit 1H Top Hole coordinates are
N: 282,640.22' Latitude: 39°16'14.50"
E: 1,686,027.59' Longitude: 80°36'32.45"
Bottom Hole coordinates are
N: 274,241.25' Latitude: 39°14'52.27"
E: 1,692,509.46' Longitude: 80°35'08.75"

UTM Zone 17, NAD 1983

Top Hole Coordinates	Bottom Hole Coordinates
N: 4,346,899.010m	N: 4,344,373.193m
E: 533,742.220m	E: 535,759.591m

Plat orientation and corner and well references are based upon the grid north meridian. Well location references are based upon the magnetic meridian.

Top Hole coordinates verified by survey grade GPS. As-drilled data and information was provided by Antero Resources Corporation. Allegheny Surveys, Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.

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FILE NO: 44-30-G-13
DRAWING NO: Irons 1H Well Plat_As-Drilled
SCALE: 1" = 1200'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: WVDOT, Bridgeport, WV

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS DIVISION

DATE: February 19 2015
OPERATOR'S WELL NO. Irons Unit 1H

API WELL NO
47 - 017 - 06245
STATE COUNTY PERMIT

WELL TYPE: ☐ OIL ☒ GAS ☐ LIQUID INJECTION ☐ WASTE DISPOSAL
(IF GAS) PRODUCTION : ☐ STORAGE ☐ DEEP ☒ SHALLOW
LOCATION: ELEVATION: 1364' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: Salem & Big Isaac
DISTRICT: Greenbrier COUNTY: Doddridge
SURFACE OWNER: Carolyn N. Plaugher Betty Jo Blackwood, et vir, et al; James L. Pearcy, et ux, et al; Wilma Davis, et vir, et al; Ann M. Zinn, et vir, et al; M.T. Williams, et ux, et al; Agnes S. Maxson ACREAGE: 328.92
ROYALTY OWNER: Charles J. Dennison, Trustee for the C.O. Dennison Estate, et al; C.E. Plaugher, et al; Mary Maxine Welch; Clarence W. Mutschelknaus, et ux LEASE NO: 003636; 21396 DAD1988; 21203; 1227 ACREAGE: 66 39.51; 7; 35 21.79; 55.47 165; 350; 49.5; 90; 84
PROPOSED WORK: ☐ DRILL ☐ CONVERT ☐ DRILL DEEPER ☐ FRACTURE OR STIMULATE ☐ PLUG OFF OLD FORMATION
☐ PERFORATE NEW FORMATION ☒ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled
☐ PLUG AND ABANDON ☐ CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale DEPTH: 7,466' TVD 17,634' MD

WELL OPERATOR: Antero Resources Corporation
ADDRESS: 1615 Wynkoop Street
Denver, CO 80202

DESIGNATED AGENT: Dianna Stamper - CT Corporation System
ADDRESS: 5400 D Big Tyler Road
Charleston, WV 25313

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

API 47 - 017 - 06246 County Doddridge District Grant
Quad Smithburg 7.5' Pad Name RJ Smith Pad Field/Pool Name ----------
Farm name Smith, Robert J. Well Number Duff Unit 1H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street 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 4,357,414m Easting 523,018m
Landing Point of Curve Northing 4,357,156m Easting 522,902.33m
Bottom Hole Northing 4,354,294m Easting 524,064m

Elevation (ft) 998' 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 06/19/2013 Date drilling commenced 09/15/2013 Date drilling ceased 12/27/2013
Date completion activities began 05/21/2014 Date completion activities ceased 08/24/2014
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 231' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1,425' Void(s) encountered (Y/N) depths None
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths None
Is coal being mined in area (Y/N) No

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W.S. 6/02/15

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API 47- 017 - 06246 Farm name Smith, Robert J. Well number Duff Unit 1H

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	24"	20"	40'	New	94#; H-40	N/A	Yes
Surface	17 1/2"	13 3/8"	450'	New	48#; J-55	N/A	Yes*
Coal							
Intermediate 1	12 1/4"	9 5/8"	2,608'	New	36#; J-55	N/A	Yes
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	17,739'	New	23#; P-110	N/A	Yes
Tubing		2 3/8"	7,034'	New	4.7#; N-80	N/A	
Packer type and depth set		N/A					

Comment Details *Surface cement (338 sacks) fell out and was grouted (112 sacks) to bring returns back to surface.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ^{3}/sks)	Volume (ft ^{3})	Cement Top (MD)	WOC (hrs)
Conductor	Class A	112 sx	15.6	1.19	38	0'	8 Hrs.
Surface	Class A	450 sx*	15.6	1.18	313	0'	8 Hrs.
Coal							
Intermediate 1	Class A	956 sx	15.6	1.18	817	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1,164 sx (Lead); 1,572 sx (Tail)	14.5 (Lead); 15.2 (Tail)	1.3 (Lead); 1.86 (Tail)	3,581	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 17,739' MD, 6,850' TVD (BHL); 6,888' TVD (Deepest Point Drilled) Loggers TD (ft) 17,683'

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6,161'

**This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Duff Unit 2H, API #47-017-06247). Please reference the wireline logs submitted with Form WR-35 for the Duff Unit 2H. 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

WAS WELL COMPLETED OPEN HOLE? □ Yes ■ No DETAILS

WERE TRACERS USED □ Yes ■ No TYPE OF TRACER(S) USED

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API 47- 017 - 06246 Farm name Smith, Robert J. Well number Duff Unit 1H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

*** PLEASE SEE ATTACHED EXHIBIT 1**

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)

*** PLEASE SEE ATTACHED EXHIBIT 2**

Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS		
Marcellus	6,816' (top) TVD	7,204' (top) MD	

Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST ■ Flow □ Pump

SHUT-IN PRESSURE Surface 3,550 psi Bottom Hole ---------- psi DURATION OF TEST ---------- hrs

OPEN FLOW Gas 9,267 mcfpd Oil 1 bpd NGL ---------- bpd Water 0 bpd GAS MEASURED BY □ Estimated ■ Orifice □ Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		

*** PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling Company, LP
Address 2640 Reach Road City Williamsport State PA Zip 17701

Logging Company Cased Hole Solutions
Address 100 Arentzen Blvd. City Charleroi State PA Zip 15022

Cementing Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company Baker Hughes
Address 837 Philippi Pike City Clarksburg State WV Zip 26301

Please insert additional pages as applicable.

Completed by Megan Darling Telephone 303-357-7230
Signature Megan C. Darling Title Permitting Agent Date 05/22/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

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API 47-017-06246 Farm Name Smith, Robert J. Well Number Duff Unit 1H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	21-May-14	17,483	17,653	60	Marcellus
2	1-Jul-14	17,282	17,452	60	Marcellus
3	1-Jul-14	17,082	17,251	60	Marcellus
4	1-Jul-14	16,881	17,050	60	Marcellus
5	1-Jul-14	16,680	16,849	60	Marcellus
6	2-Jul-14	16,479	16,649	60	Marcellus
7	2-Jul-14	16,278	16,448	60	Marcellus
8	2-Jul-14	16,078	16,247	60	Marcellus
9	2-Jul-14	15,877	16,046	60	Marcellus
10	3-Jul-14	15,676	15,845	60	Marcellus
11	3-Jul-14	15,475	15,645	60	Marcellus
12	3-Jul-14	15,274	15,444	60	Marcellus
13	4-Jul-14	15,074	15,243	60	Marcellus
14	4-Jul-14	14,873	15,042	60	Marcellus
15	4-Jul-15	14,672	14,841	60	Marcellus
16	5-Jul-14	14,471	14,641	60	Marcellus
17	5-Jul-14	14,271	14,440	60	Marcellus
18	5-Jul-14	14,070	14,239	60	Marcellus
19	5-Jul-14	13,869	14,038	60	Marcellus
20	6-Jul-14	13,668	13,837	60	Marcellus
21	6-Jul-14	13,467	13,637	60	Marcellus
22	6-Jul-14	13,267	13,436	60	Marcellus
23	6-Jul-14	13,066	13,235	60	Marcellus
24	7-Jul-14	12,865	13,034	60	Marcellus
25	8-Jul-14	12,664	12,834	60	Marcellus
26	8-Jul-14	12,463	12,633	60	Marcellus
27	8-Jul-14	12,263	12,432	60	Marcellus
28	8-Jul-14	12,062	12,231	60	Marcellus
29	9-Jul-14	11,861	12,030	60	Marcellus
30	9-Jul-14	11,660	11,830	60	Marcellus
31	10-Jul-14	11,459	11,629	60	Marcellus
32	10-Jul-14	11,259	11,428	60	Marcellus
33	10-Jul-14	11,058	11,227	60	Marcellus
34	10-Jul-14	10,857	11,026	60	Marcellus
35	11-Jul-14	10,656	10,826	60	Marcellus
36	11-Jul-14	10,456	10,625	60	Marcellus
37	11-Jul-14	10,255	10,424	60	Marcellus
38	12-Jul-14	10,054	10,223	60	Marcellus
39	12-Jul-14	9,853	10,022	60	Marcellus
40	13-Jul-14	9,652	9,822	60	Marcellus
41	13-Jul-14	9,452	9,621	60	Marcellus
42	13-Jul-14	9,251	9,420	60	Marcellus
43	13-Jul-14	9,050	9,219	60	Marcellus
44	14-Jul-14	8,849	9,019	60	Marcellus
45	14-Jul-14	8,648	8,818	60	Marcellus
46	14-Jul-14	8,448	8,617	60	Marcellus
47	14-Jul-14	8,247	8,416	60	Marcellus
48	15-Jul-14	8,046	8,215	60	Marcellus
49	15-Jul-14	7,845	8,015	60	Marcellus
50	15-Jul-14	7,644	7,814	60	Marcellus
51	15-Jul-14	7,444	7,613	60	Marcellus
52	15-Jul-14	7,243	7,412	60	Marcellus

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API 47-017-06246 Farm Name Smith, Robert J. Well Number Duff Unit 1H

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	30-Jun-14	77.0	7,585	5,998	5,280	255,716	6,807	N/A
2	1-Jul-14	78.1	8,005	5,892	5,526	242,198	7,331	N/A
3	1-Jul-14	74.0	7,844	5,655	4,832	255,802	6,753	N/A
4	1-Jul-14	73.0	7,822	5,820	4,501	237,681	7,277	N/A
5	2-Jul-14	76.9	7,910	5,967	5,110	256,794	6,655	N/A
6	2-Jul-14	77.0	7,966	6,002	4,750	257,475	6,655	N/A
7	2-Jul-14	75.0	7,860	5,838	4,493	253,547	6,639	N/A
8	2-Jul-14	79.6	7,879	5,719	5,214	255,549	6,598	N/A
9	3-Jul-14	79.1	8,088	6,295	5,400	256,600	6,619	N/A
10	3-Jul-14	79.2	8,114	6,184	5,082	243,381	6,549	N/A
11	3-Jul-14	79.1	7,831	5,700	4,869	254,715	6,661	N/A
12	3-Jul-14	81.8	7,794	6,076	4,381	256,546	6,605	N/A
13	5-Jul-14	81.8	7,794	5,617	5,293	260,418	6,715	N/A
14	4-Jul-14	78.9	7,598	5,648	5,098	263,928	6,857	N/A
15	4-Jul-14	72.9	7,278	5,798	5,222	258,977	6,581	N/A
16	5-Jul-14	79.5	8,041	5,863	4,523	258,038	6,527	N/A
17	5-Jul-14	77.0	7,634	5,886	4,619	258,978	6,587	N/A
18	5-Jul-14	79.6	7,565	5,826	5,172	254,822	6,566	N/A
19	5-Jul-14	79.5	7,809	5,964	4,290	256,444	6,471	N/A
20	6-Jul-14	79.1	7,707	5,881	4,544	257,808	6,472	N/A
21	6-Jul-14	78.0	7,934	5,754	5,111	255,774	6,430	N/A
22	6-Jul-14	79.9	7,846	5,678	4,751	255,265	6,466	N/A
23	7-Jul-14	81.1	7,761	5,741	4,191	254,605	6,329	N/A
24	7-Jul-14	72.6	7,465	5,462	5,710	149,243	6,433	N/A
25	8-Jul-14	75.4	7,823	5,728	5,820	234,188	6,814	N/A
26	8-Jul-14	79.4	7,424	5,631	4,263	249,140	6,308	N/A
27	8-Jul-14	81.0	7,686	5,729	4,953	252,080	6,365	N/A
28	9-Jul-14	79.9	7,433	5,385	4,559	252,217	6,371	N/A
29	9-Jul-14	84.5	7,527	5,620	3,967	255,396	6,494	N/A
30	10-Jul-14	81.0	7,525	5,742	4,650	255,677	6,374	N/A
31	10-Jul-14	78.6	7,210	5,745	4,170	255,219	6,347	N/A
32	10-Jul-14	77.8	7,072	5,791	4,528	249,577	6,164	N/A
33	10-Jul-14	81.3	7,448	5,886	4,035	255,670	6,295	N/A
34	10-Jul-14	79.9	7,644	6,007	4,456	254,457	6,324	N/A
35	17-Jul-14	77.4	7,513	5,881	5,099	258,334	6,252	N/A
36	17-Jul-14	78.0	5,651	5,615	5,126	255,416	6,249	N/A
37	17-Jul-14	79.6	7,653	6,118	5,998	208,489	6,562	N/A
38	17-Jul-14	75.2	7,221	5,696	3,858	254,224	6,207	N/A
39	13-Jul-14	72.4	7,129	5,846	4,286	252,719	6,217	N/A
40	17-Jul-14	80.7	7,108	5,586	4,240	260,635	6,210	N/A
41	17-Jul-14	80.2	7,170	5,936	4,833	257,417	6,139	N/A
42	13-Jul-14	77.4	7,218	5,856	2,109	254,523	6,144	N/A
43	14-Jul-14	77.6	6,947	5,671	5,681	254,759	6,135	N/A
44	17-Jul-14	83.1	6,949	5,772	5,296	258,836	6,143	N/A
45	17-Jul-14	80.3	6,978	5,899	4,443	248,585	6,132	N/A
46	17-Jul-14	79.1	6,889	5,682	4,658	256,176	6,108	N/A
47	14-Jul-14	77.6	6,761	5,583	5,454	255,840	6,076	N/A
48	15-Jul-14	77.5	6,787	5,752	5,166	270,819	6,034	N/A
49	17-Jul-14	79.3	6,882	6,130	5,669	255,043	6,053	N/A
50	17-Jul-14	79.3	6,605	5,311	4,243	256,178	6,113	N/A
51	15-Jul-14	77.6	6,635	5,883	5,320	253,622	5,987	N/A
52	15-Jul-14	77.2	6,472	6,212	4,069	256,154	6,002	N/A
	AVG=	**78.4**	**7,433**	**5,807**	**4,787**	**13,091,694**	**334,202**	TOTAL

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API 47-017-06246 Farm Name Smith, Robert J. Well Number Duff Unit 1H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	**TOP DEPTH (TVD) From Surface**	**BOTTOM DEPTH (TVD) From Surface**	**TOP DEPTH (MD) From Surface**	**BOTTOM DEPTH (MD) From Surface**
Fresh Water	231'	N/A	231'	N/A
Sandstone/ Siltstone	0	591	0	591
Sandy Shale/ Dolostone	Est. 591	691	Est. 591	691
Sandstone/ Siltstone	Est. 691	871	Est. 691	871
Sitly Shale	Est. 871	1,021	Est. 871	1,021
Sandstone/ Siltstone	Est. 1021	1,101	Est. 1021	1,101
Sandstone/ Trace Coal	Est. 1101	1,191	Est. 1101	1,191
Sandstone/ Siltstone	Est. 1191	1,641	Est. 1191	1,641
Limestone/ Sandstone	Est. 1641	1,701	Est. 1641	1,701
Sandstone/ Trace Coal	Est. 1701	1,731	Est. 1701	1,731
Sandy Shale	Est. 1731	1,861	Est. 1731	1,861
Sandstone/ Siltstone	Est. 1861	1,941	Est. 1861	1,941
Limestone/ Sandstone	Est. 1941	1,964	Est. 1941	1,964
Big Lime	1,964	2,076	1,964	2,076
Big Injun	2,076	2,523	2,076	2,523
Gantz Sand	2,523	2,657	2,523	2,657
Fifty Foot Sandstone	2,657	2,722	2,657	2,722
Gordon	2,722	3,075	2,722	3,075
Fifth Sandstone	3,075	3,092	3,075	3,092
Bayard	3,092	3,461	3,092	3,461
Warren	3,461	3,841	3,461	3,841
Speechley	3,841	4,094	3,841	4,094
Baltown	4,094	4,564	4,094	4,564
Bradford	4,564	5,072	4,564	5,072
Benson	5,072	5,330	5,072	5,330
Alexander	5,330	5,524	5,330	5,524
Elk	5,524	6,053	5,524	6,054
Rhinestreet	6,053	6,412	6,054	6,436
Sycamore	6,412	6,595	6,436	6,717
Middlesex	6,595	6,729	6,717	6,967
Burkett	6,729	6,757	6,967	7,033
Tully	6,757	6,816	7,033	7,204
Marcellus	6,816	NA	7,204	NA

*Please note Antero determines shallow formation tops based on mud and/or wireline logs that are only run on one well on a multi-well pad (Please reference Wireline Logs submitted for the Duff Unit 2H API# 47-017-06247). The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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Duff Unit 1H
Doddridge County WV
Northing: 14295233.02
Easting: 1715888.89
As Drilled

Antero Resources

Scientific Drilling

Azimuths to Grid North
True North: -0.17°
Magnetic North: -8.67°
To convert Magnetic North to Grid, Subtract 8.67°
To convert True North to Grid, Subtract 0.17°

Magnetic Field
Strength: 52402.3snT
Dip Angle: 66.92°
Date: 11/8/2013
Model: IGRF2010

WELL DETAILS Duff Unit 1H
Ground Level: 996.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14295233.02	1715888.89	39° 21' 56.861 N	80° 43' 58.679 W

FORMATION TOP DETAILS
No formation data is available

LEGEND
- Costlow Unit 2H, Original Wellpath, As Drilled V0
- Duff Unit 1H, Original Wellpath, Plan 3 V0
- As Drilled

SITE DETAILS: Costlow/Duff/Mishka
Site Centre Northing: 14295223.06
Easting: 1715891.05
Positional Uncertainity: 0.0
Convergence: 0.17
Local North: Grid

Duff 1H 996 GL + 19 KB @ 1015.0usft
Gr: 996.0

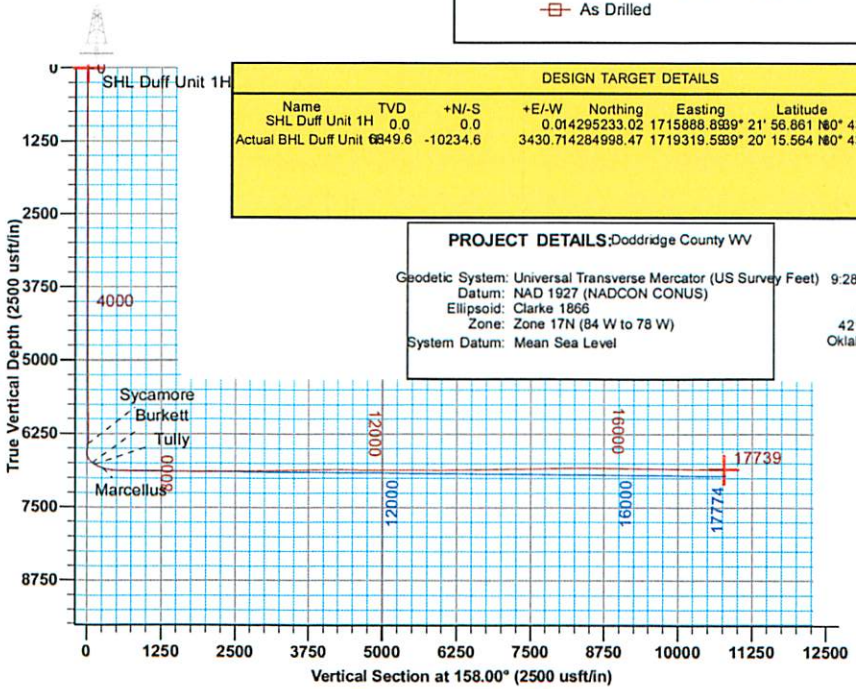
DESIGN TARGET DETAILS

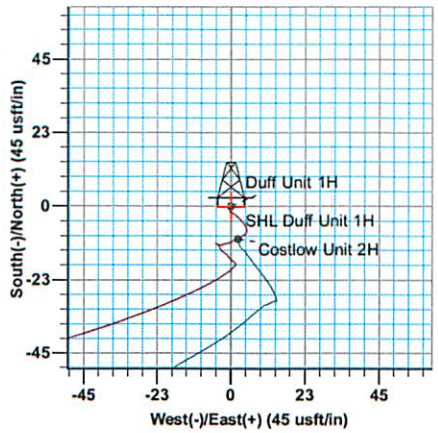
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Duff Unit 1H	0.0	0.0	0.0	14295233.02	1715888.89	39° 21' 56.861 N	80° 43' 58.679 W
Actual BHL Duff Unit 6	6849.6	-10234.6	3430.7	14284998.47	1719319.59	39° 20' 15.564 N	80° 43' 15.384 W

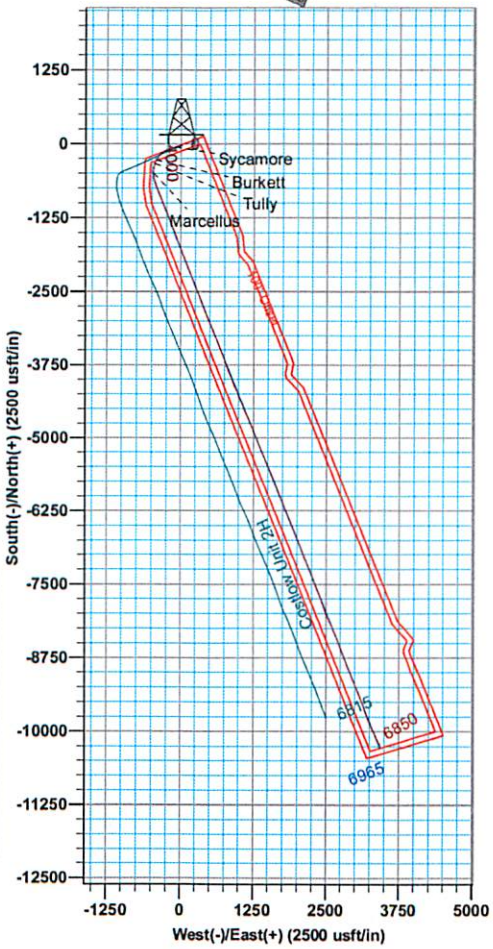
PROJECT DETAILS: Doddridge County WV
Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: Zone 17N (84 W to 78 W)
System Datum: Mean Sea Level

Genie Lightfoot
9:28, December 30 2013

Scientific Drilling
421 South Eagle Lane
Oklahoma City, OK 73128







Antero Resources

Doddridge County WV
Costlow/Duff/Mishka
Duff Unit 1H
Original Wellpath

Design: As Drilled

EOW Completion Report

30 December, 2013

Scientific Drilling

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Duff Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Duff 1H 996 GL + 19 KB @ 1015.0usft
Site:	Costlow/Duff/Mishka	**MD Reference:**	Duff 1H 996 GL + 19 KB @ 1015.0usft
Well:	Duff Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Project Doddridge County WV, McClellan District

Map System:	Universal Transverse Mercator (US Survey Fee	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site Costlow/Duff/Mishka

Site Position:		**Northing:**	14,295,223.06 usft	**Latitude:**	39° 21' 56.762 N
From:	Map	**Easting:**	1,715,891.05 usft	**Longitude:**	80° 43' 58.652 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.17 °

Well Duff Unit 1H

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,295,233.02 usft	**Latitude:**	39° 21' 56.861 N
	+E/-W	0.0 usft	**Easting:**	1,715,888.89 usft	**Longitude:**	80° 43' 58.679 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**	1,015.0 usft	**Ground Level:**	996.0 usft

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/8/2013	-8.50	66.92	52,402

Design As Drilled

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	158.00

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Survey Program **Date** 12/30/2013

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	6,122.0	Survey #2 Def Gyro to KOP (Original Well	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
6,122.0	17,739.0	Survey #4 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
100.0	0.13	168.80	100.0	-0.1	0.0	0.1	0.13
200.0	0.11	214.36	200.0	-0.3	0.0	0.3	0.09
300.0	0.02	205.20	300.0	-0.4	-0.1	0.3	0.09
400.0	0.14	208.93	400.0	-0.5	-0.1	0.4	0.12
500.0	0.19	205.46	500.0	-0.8	-0.3	0.6	0.05
600.0	0.10	194.54	600.0	-1.0	-0.4	0.8	0.09
700.0	0.09	151.64	700.0	-1.2	-0.3	0.9	0.07
800.0	0.19	175.30	800.0	-1.4	-0.3	1.2	0.11
900.0	0.11	216.17	900.0	-1.6	-0.3	1.4	0.13
1,000.0	0.03	152.07	1,000.0	-1.7	-0.4	1.5	0.10

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Duff Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Duff 1H 996 GL + 19 KB @ 1015.0usft
Site:	Costlow/Duff/Mishka	**MD Reference:**	Duff 1H 996 GL + 19 KB @ 1015.0usft
Well:	Duff Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,100.0	0.04	115.80	1,100.0	-1.8	-0.3	1.5	0.02
1,200.0	0.04	70.93	1,200.0	-1.8	-0.3	1.6	0.03
1,300.0	0.11	27.65	1,300.0	-1.7	-0.2	1.5	0.09
1,400.0	0.19	117.53	1,400.0	-1.7	0.0	1.6	0.22
1,500.0	0.13	86.31	1,500.0	-1.7	0.3	1.7	0.10
1,600.0	0.32	135.63	1,600.0	-1.9	0.6	2.0	0.26
1,700.0	0.37	126.90	1,700.0	-2.3	1.0	2.5	0.07
1,800.0	0.51	127.85	1,800.0	-2.8	1.6	3.2	0.14
1,900.0	0.59	137.81	1,900.0	-3.5	2.3	4.1	0.12
2,000.0	0.50	133.12	2,000.0	-4.1	3.0	5.0	0.10
2,100.0	0.51	145.85	2,100.0	-4.8	3.6	5.8	0.11
2,200.0	0.41	145.00	2,200.0	-5.5	4.0	6.6	0.10
2,300.0	0.33	131.11	2,300.0	-5.9	4.4	7.2	0.12
2,400.0	0.23	171.60	2,400.0	-6.3	4.7	7.6	0.22
2,500.0	0.41	175.79	2,500.0	-6.9	4.7	8.2	0.18
2,600.0	0.20	158.00	2,600.0	-7.4	4.8	8.7	0.23
2,700.0	0.34	209.32	2,700.0	-7.8	4.7	9.0	0.27
2,708.0	0.40	209.48	2,708.0	-7.9	4.7	9.1	0.75
2,800.0	0.35	224.46	2,800.0	-8.4	4.4	9.4	0.12
2,900.0	0.56	240.61	2,900.0	-8.8	3.7	9.6	0.24
3,000.0	0.47	237.11	3,000.0	-9.3	3.0	9.7	0.10
3,100.0	0.47	248.31	3,100.0	-9.6	2.2	9.8	0.09
3,200.0	0.42	248.07	3,200.0	-9.9	1.5	9.8	0.05
3,300.0	0.38	231.41	3,300.0	-10.3	0.9	9.9	0.12
3,400.0	0.41	241.32	3,399.9	-10.7	0.3	10.0	0.07
3,500.0	0.41	244.46	3,499.9	-11.0	-0.3	10.1	0.02
3,600.0	0.40	254.69	3,599.9	-11.2	-1.0	10.1	0.07
3,700.0	0.36	266.41	3,699.9	-11.3	-1.6	9.9	0.09
3,800.0	0.36	250.36	3,799.9	-11.5	-2.2	9.8	0.10
3,900.0	0.32	249.44	3,899.9	-11.7	-2.8	9.8	0.04
4,000.0	0.28	267.28	3,999.9	-11.8	-3.3	9.7	0.10
4,100.0	0.17	307.38	4,099.9	-11.7	-3.6	9.5	0.19
4,200.0	0.08	305.54	4,199.9	-11.6	-3.8	9.3	0.09
4,300.0	0.13	302.39	4,299.9	-11.5	-4.0	9.1	0.05
4,400.0	0.38	272.14	4,399.9	-11.4	-4.4	8.9	0.28
4,500.0	0.08	333.59	4,499.9	-11.3	-4.8	8.7	0.35
4,600.0	0.08	24.79	4,599.9	-11.2	-4.8	8.6	0.07
4,700.0	0.11	54.59	4,699.9	-11.1	-4.7	8.5	0.06
4,800.0	0.19	138.93	4,799.9	-11.1	-4.5	8.7	0.21
4,900.0	0.31	134.74	4,899.9	-11.5	-4.2	9.1	0.12
5,000.0	0.40	145.88	4,999.9	-11.9	-3.8	9.7	0.11
5,100.0	0.38	145.35	5,099.9	-12.5	-3.4	10.3	0.02
5,200.0	0.34	161.57	5,199.9	-13.1	-3.1	10.9	0.11
5,300.0	0.34	132.21	5,299.9	-13.5	-2.8	11.5	0.17

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Duff Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Duff 1H 996 GL + 19 KB @ 1015.0usft
Site:	Costlow/Duff/Mishka	**MD Reference:**	Duff 1H 996 GL + 19 KB @ 1015.0usft
Well:	Duff Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,400.0	0.40	121.36	5,399.9	-13.9	-2.3	12.1	0.09
5,500.0	0.27	138.52	5,499.9	-14.3	-1.8	12.6	0.16
5,600.0	0.36	118.18	5,599.9	-14.6	-1.4	13.0	0.14
5,700.0	0.33	151.67	5,699.9	-15.0	-1.0	13.5	0.20
5,800.0	0.49	144.41	5,799.9	-15.6	-0.6	14.2	0.17
5,900.0	0.54	117.95	5,899.9	-16.2	0.1	15.0	0.24
6,000.0	0.50	135.18	5,999.9	-16.7	0.8	15.8	0.16
6,100.0	0.62	147.32	6,099.9	-17.5	1.4	16.7	0.17
6,122.0	0.53	137.31	6,121.9	-17.6	1.5	16.9	0.61
6,161.0	2.97	224.23	6,160.9	-18.5	0.9	17.5	7.66
6,205.0	9.12	236.01	6,204.6	-21.3	-2.7	18.7	14.19
6,250.0	15.13	244.11	6,248.6	-25.8	-11.0	19.8	13.85
6,294.0	19.93	248.02	6,290.5	-31.2	-23.1	20.2	11.23
6,340.0	24.97	251.92	6,333.0	-37.1	-39.6	19.6	11.42
6,384.0	29.50	252.59	6,372.2	-43.2	-58.8	18.1	10.32
6,430.0	34.58	254.18	6,411.1	-50.2	-82.2	15.7	11.19
6,455.0	37.56	254.40	6,431.3	-54.2	-96.4	14.1	11.94
Sycamore							
6,474.0	39.83	254.54	6,446.2	-57.3	-107.8	12.8	11.94
6,519.0	43.97	255.35	6,479.7	-65.1	-136.8	9.1	9.28
6,563.0	48.32	255.94	6,510.1	-73.0	-167.6	4.9	9.93
6,609.0	53.47	255.70	6,539.1	-81.7	-202.1	0.1	11.20
6,653.0	54.79	252.62	6,564.9	-91.5	-236.4	-3.7	6.42
6,699.0	53.32	244.93	6,592.0	-104.9	-271.1	-4.3	13.90
6,742.0	53.11	237.13	6,617.7	-121.6	-301.2	-0.1	14.53
6,788.0	54.98	230.62	6,644.8	-143.5	-331.2	9.0	12.15
6,832.0	57.70	225.83	6,669.1	-167.9	-358.5	21.4	10.97
6,878.0	58.21	219.84	6,693.6	-196.5	-385.0	38.0	11.09
6,922.0	59.10	214.11	6,716.5	-226.5	-407.6	57.3	11.30
6,968.0	61.29	208.15	6,739.4	-260.7	-428.2	81.3	12.21
6,986.0	62.77	206.21	6,747.8	-274.8	-435.4	91.7	12.60
Burkett							
7,011.0	64.87	203.59	6,758.8	-295.2	-444.9	107.0	12.60
7,052.0	66.09	198.65	6,775.8	-329.9	-458.3	134.2	11.37
Tully							
7,057.0	66.25	198.05	6,777.9	-334.3	-459.8	137.7	11.37
7,101.0	67.74	193.20	6,795.1	-373.3	-470.6	169.8	10.70
7,147.0	69.91	188.03	6,811.7	-415.4	-478.5	205.9	11.49
7,191.0	73.03	183.76	6,825.7	-456.9	-482.8	242.8	11.62
7,223.0	74.33	179.61	6,834.7	-487.6	-483.7	270.9	13.10
Marcellus							
7,243.0	75.19	177.04	6,839.9	-506.9	-483.1	289.0	13.10
7,289.0	78.08	170.18	6,850.6	-551.3	-478.1	332.1	15.81
7,332.0	80.76	164.16	6,858.5	-592.5	-468.7	373.8	15.11
7,378.0	82.29	161.50	6,865.3	-636.0	-455.3	419.1	6.62

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Duff Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Duff 1H 996 GL + 19 KB @ 1015.0usft
Site:	Costlow/Duff/Mishka	**MD Reference:**	Duff 1H 996 GL + 19 KB @ 1015.0usft
Well:	Duff Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,422.0	83.64	161.34	6,870.7	-677.4	-441.4	462.7	3.09
7,465.0	87.75	160.83	6,873.9	-717.9	-427.5	505.5	9.63
7,512.0	89.56	160.59	6,875.0	-762.3	-412.0	552.4	3.88
7,601.0	90.50	158.40	6,874.9	-845.6	-380.8	641.4	2.68
7,691.0	89.46	157.47	6,875.0	-929.0	-347.0	731.4	1.55
7,781.0	90.13	155.66	6,875.3	-1,011.6	-311.2	821.4	2.14
7,870.0	90.10	156.54	6,875.1	-1,093.0	-275.2	910.3	0.99
7,960.0	88.76	157.99	6,876.0	-1,176.0	-240.4	1,000.3	2.19
8,049.0	89.40	158.69	6,877.4	-1,258.7	-207.5	1,089.3	1.07
8,139.0	88.72	158.51	6,878.9	-1,342.5	-174.7	1,179.3	0.78
8,229.0	89.40	157.80	6,880.4	-1,426.0	-141.2	1,269.2	1.09
8,318.0	89.53	157.41	6,881.2	-1,508.3	-107.3	1,358.2	0.46
8,408.0	88.49	157.25	6,882.8	-1,591.3	-72.6	1,448.2	1.17
8,497.0	88.66	158.92	6,885.0	-1,673.8	-39.4	1,537.2	1.89
8,587.0	89.36	160.54	6,886.5	-1,758.2	-8.2	1,627.1	1.96
8,677.0	90.27	159.44	6,886.8	-1,842.8	22.6	1,717.1	1.59
8,766.0	89.40	157.12	6,887.1	-1,925.5	55.5	1,806.1	2.78
8,856.0	89.87	157.35	6,887.7	-2,008.5	90.3	1,896.1	0.58
8,946.0	91.04	157.95	6,886.9	-2,091.7	124.5	1,986.0	1.46
9,035.0	90.54	158.00	6,885.7	-2,174.2	157.9	2,075.0	0.56
9,125.0	91.18	157.10	6,884.4	-2,257.4	192.3	2,165.0	1.23
9,214.0	90.47	158.50	6,883.1	-2,339.8	225.9	2,254.0	1.76
9,304.0	89.90	157.84	6,882.8	-2,423.3	259.4	2,344.0	0.97
9,394.0	90.10	159.48	6,882.8	-2,507.1	292.1	2,434.0	1.84
9,483.0	91.21	160.52	6,881.8	-2,590.8	322.5	2,522.9	1.71
9,573.0	90.84	160.09	6,880.2	-2,675.5	352.9	2,612.9	0.63
9,663.0	91.24	159.02	6,878.5	-2,759.8	384.3	2,702.8	1.27
9,752.0	90.70	157.52	6,877.0	-2,842.5	417.2	2,791.8	1.79
9,842.0	91.28	156.66	6,875.5	-2,925.3	452.3	2,881.8	1.15
9,931.0	89.90	157.23	6,874.6	-3,007.2	487.1	2,970.7	1.68
10,021.0	90.00	156.13	6,874.6	-3,089.9	522.8	3,060.7	1.23
10,111.0	90.70	157.83	6,874.1	-3,172.7	558.0	3,150.7	2.04
10,200.0	91.18	158.16	6,872.6	-3,255.2	591.3	3,239.7	0.65
10,290.0	92.45	157.45	6,869.8	-3,338.5	625.3	3,329.6	1.62
10,379.0	92.02	158.22	6,866.3	-3,420.9	658.8	3,418.6	0.99
10,469.0	91.14	159.97	6,863.8	-3,504.9	690.9	3,508.5	2.18
10,559.0	91.28	159.23	6,861.9	-3,589.2	722.3	3,598.5	0.84
10,649.0	90.94	160.54	6,860.2	-3,673.7	753.2	3,688.4	1.50
10,738.0	89.90	158.78	6,859.5	-3,757.2	784.2	3,777.3	2.30
10,828.0	90.50	157.97	6,859.2	-3,840.8	817.3	3,867.3	1.12
10,917.0	91.48	157.89	6,857.7	-3,923.3	850.8	3,956.3	1.10
11,007.0	91.24	158.44	6,855.5	-4,006.8	884.2	4,046.3	0.67
11,097.0	90.71	157.79	6,854.0	-4,090.3	917.8	4,136.3	0.93
11,186.0	90.07	158.04	6,853.4	-4,172.8	951.2	4,225.3	0.77

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Duff Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Duff 1H 996 GL + 19 KB @ 1015.0usft
Site:	Costlow/Duff/Mishka	**MD Reference:**	Duff 1H 996 GL + 19 KB @ 1015.0usft
Well:	Duff Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
11,276.0	88.73	157.72	6,854.3	-4,256.2	985.1	4,315.3	1.53
11,366.0	88.69	158.24	6,856.4	-4,339.6	1,018.9	4,405.2	0.58
11,455.0	88.12	157.75	6,858.8	-4,422.1	1,052.2	4,494.2	0.84
11,545.0	87.99	156.46	6,861.9	-4,504.9	1,087.2	4,584.1	1.44
11,635.0	89.23	156.62	6,864.1	-4,587.4	1,123.0	4,674.1	1.39
11,724.0	90.34	157.12	6,864.4	-4,669.3	1,158.0	4,763.1	1.37
11,819.0	90.57	156.95	6,863.7	-4,756.8	1,195.0	4,858.1	0.30
11,914.0	89.80	156.12	6,863.4	-4,843.9	1,232.9	4,953.0	1.19
11,977.0	90.24	156.32	6,863.3	-4,901.5	1,258.3	5,016.0	0.77
12,072.0	90.30	157.71	6,862.9	-4,989.0	1,295.4	5,111.0	1.46
12,167.0	90.97	159.18	6,861.8	-5,077.4	1,330.3	5,206.0	1.70
12,261.0	90.71	158.28	6,860.5	-5,164.9	1,364.3	5,299.9	1.00
12,356.0	89.50	157.78	6,860.3	-5,253.0	1,399.9	5,394.9	1.38
12,451.0	89.63	157.49	6,861.0	-5,340.9	1,436.0	5,489.9	0.33
12,546.0	89.30	157.38	6,861.9	-5,428.6	1,472.5	5,584.9	0.37
12,641.0	89.56	156.57	6,862.8	-5,516.0	1,509.6	5,679.9	0.90
12,672.0	90.00	157.57	6,863.0	-5,544.6	1,521.7	5,710.9	3.52
12,767.0	89.56	156.64	6,863.3	-5,632.1	1,558.7	5,805.9	1.08
12,857.0	89.50	158.85	6,864.1	-5,715.4	1,592.8	5,895.9	2.46
12,946.0	90.60	159.02	6,864.0	-5,798.4	1,624.8	5,984.9	1.25
13,036.0	92.15	158.64	6,861.8	-5,882.3	1,657.2	6,074.8	1.77
13,126.0	90.70	157.47	6,859.6	-5,965.8	1,690.9	6,164.8	2.07
13,215.0	90.44	157.12	6,858.7	-6,047.9	1,725.2	6,253.8	0.49
13,305.0	91.65	158.58	6,857.1	-6,131.2	1,759.1	6,343.8	2.11
13,394.0	90.34	157.98	6,855.5	-6,213.9	1,792.1	6,432.7	1.62
13,484.0	90.17	157.65	6,855.1	-6,297.2	1,826.1	6,522.7	0.41
13,574.0	91.38	157.24	6,853.9	-6,380.3	1,860.6	6,612.7	1.42
13,663.0	91.78	158.54	6,851.4	-6,462.8	1,894.1	6,701.7	1.53
13,753.0	90.67	158.69	6,849.5	-6,546.5	1,926.9	6,791.7	1.24
13,843.0	90.67	155.44	6,848.5	-6,629.4	1,961.9	6,881.6	3.61
13,932.0	90.34	157.35	6,847.7	-6,711.0	1,997.6	6,970.6	2.18
14,022.0	91.41	160.00	6,846.3	-6,794.8	2,030.3	7,060.6	3.18
14,112.0	90.97	160.23	6,844.4	-6,879.4	2,060.9	7,150.5	0.55
14,201.0	91.17	160.45	6,842.8	-6,963.2	2,090.8	7,239.4	0.33
14,291.0	90.37	157.82	6,841.6	-7,047.3	2,122.9	7,329.4	3.05
14,381.0	90.77	155.09	6,840.7	-7,129.8	2,158.8	7,419.3	3.07
14,470.0	90.60	156.47	6,839.6	-7,210.9	2,195.3	7,508.2	1.56
14,560.0	90.40	158.45	6,838.8	-7,294.0	2,229.8	7,598.2	2.21
14,650.0	91.34	158.06	6,837.5	-7,377.6	2,263.2	7,688.2	1.13
14,739.0	91.91	159.78	6,834.9	-7,460.6	2,295.2	7,777.2	2.04
14,829.0	91.61	160.26	6,832.2	-7,545.2	2,325.6	7,867.1	0.63
14,919.0	90.97	159.48	6,830.1	-7,629.7	2,356.9	7,957.0	1.12
15,008.0	90.40	159.76	6,829.1	-7,713.1	2,387.9	8,046.0	0.71
15,098.0	89.90	160.14	6,828.8	-7,797.6	2,418.7	8,135.9	0.70
15,188.0	90.60	159.39	6,828.4	-7,882.1	2,449.8	8,225.9	1.14

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Duff Unit 1H
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Site:	Costlow/Duff/Mishka	**MD Reference:**	Duff 1H 996 GL + 19 KB @ 1015.0usft
Well:	Duff Unit 1H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
15,277.0	90.23	158.06	6,827.8	-7,965.0	2,482.1	8,314.8	1.55
15,367.0	89.03	155.63	6,828.4	-8,047.7	2,517.5	8,404.8	3.01
15,456.0	89.70	156.17	6,829.4	-8,129.0	2,553.9	8,493.7	0.97
15,546.0	90.97	154.96	6,828.8	-8,210.9	2,591.1	8,583.7	1.95
15,636.0	90.50	156.01	6,827.7	-8,292.8	2,628.4	8,673.6	1.28
15,725.0	89.90	156.13	6,827.4	-8,374.1	2,664.5	8,762.5	0.69
15,815.0	89.36	158.62	6,828.0	-8,457.2	2,699.1	8,852.5	2.83
15,905.0	90.64	162.27	6,828.0	-8,542.0	2,729.3	8,942.4	4.30
15,994.0	89.63	160.01	6,827.7	-8,626.2	2,758.0	9,031.3	2.78
16,084.0	88.46	158.80	6,829.2	-8,710.4	2,789.7	9,121.2	1.87
16,174.0	88.93	157.98	6,831.3	-8,794.1	2,822.8	9,211.2	1.05
16,263.0	88.37	157.70	6,833.4	-8,876.5	2,856.4	9,300.2	0.70
16,353.0	89.16	158.14	6,835.3	-8,959.9	2,890.2	9,390.1	1.00
16,443.0	88.89	157.02	6,836.9	-9,043.1	2,924.5	9,480.1	1.28
16,532.0	88.82	157.31	6,838.6	-9,125.1	2,959.1	9,569.1	0.34
16,622.0	89.30	156.47	6,840.1	-9,207.8	2,994.4	9,659.1	1.07
16,712.0	89.19	157.12	6,841.3	-9,290.5	3,029.8	9,749.0	0.73
16,801.0	89.63	158.82	6,842.2	-9,373.0	3,063.2	9,838.0	1.97
16,891.0	89.63	160.50	6,842.8	-9,457.4	3,094.5	9,928.0	1.87
16,981.0	89.19	160.07	6,843.7	-9,542.1	3,124.9	10,017.9	0.68
17,070.0	89.30	160.58	6,844.9	-9,625.9	3,154.8	10,106.8	0.59
17,160.0	88.36	157.92	6,846.7	-9,710.1	3,186.7	10,196.8	3.13
17,249.0	89.06	157.31	6,848.7	-9,792.3	3,220.6	10,285.8	1.04
17,339.0	90.13	157.35	6,849.4	-9,875.4	3,255.3	10,375.7	1.19
17,429.0	89.87	156.01	6,849.4	-9,958.0	3,290.9	10,465.7	1.52
17,519.0	90.07	154.38	6,849.4	-10,039.7	3,328.7	10,555.6	1.82
17,608.0	89.78	153.22	6,849.5	-10,119.6	3,367.9	10,644.4	1.34
17,680.0	90.04	150.67	6,849.7	-10,183.1	3,401.8	10,716.0	3.56
17,739.0	90.04	150.67	6,849.6	-10,234.6	3,430.7	10,774.5	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
6,455.0	6,431.3	-54.2	-96.4	Sycamore
6,986.0	6,747.8	-274.8	-435.4	Burkett
7,052.0	6,775.8	-329.9	-458.3	Tully
7,223.0	6,834.7	-487.6	-483.7	Marcellus

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Checked By: _____ Approved By: _____ Date: _____

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/30/2014
Job End Date:	7/15/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06246-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Duff Unit 1H
Longitude:	-80.73279700
Latitude:	39.36588100
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,888
Total Base Water Volume (gal):	14,497,770
Total Base Non Water Volume:	0

FracFocus Chemical Disclosure Registry

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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	Operator	Carrier					
			Water	7732-18-5	100.00000	89.86138	
Sand, White, 40/70	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		5.69317	
Sand, White, 20/40	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		3.45815	
Sand, White, 100 mesh	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.57541	
HCl, 10.1 - 15%	Baker Hughes	Acidizing					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.20120	SmartCare Product
FRW-18	Baker Hughes	Friction Reducer					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.06050	SmartCare Product
GW-3LDF	Baker Hughes	Gelling Agent					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.04947	SmartCare Product
Scaletrol 720	Baker Hughes	Scale Inhibitor					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.01500	SmartCare Product

GW-3	Baker Hughes	Gelling Agent					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.01387	
Alpha 1427	Baker Hughes	Biocide					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.01351	SmartCare Product
Enzyme G-NE	Baker Hughes	Breaker					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.01169	SmartCare Product
Ferrotrol 300L	Baker Hughes	Iron Control					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00139	SmartCare Product
CI-14	Baker Hughes	Corrosion Inhibitor					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00032	SmartCare Product
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.							
Ingredients in Additive (s) (MSDS and non-MSDS)	Baker Hughes	See Trade Name(s) List					
			Crystalline Silica (Quartz)	14808-60-7	100.00000	9.72188	
			Water	7732-18-5	95.00000	0.22252	
			Guar Gum	9000-30-0	100.00000	0.04353	
			Mineral Oil	8042-47-5	70.00000	0.03461	
			Hydrochloric Acid	7647-01-0	15.00000	0.03017	
			Poly (acrylamide-co-acrylic acid) partial sodium salt	62649-23-4	30.00000	0.01814	
			Hydrotreated Light Distillate	64742-47-8	30.00000	0.01814	
			Paraffinic Petroleum Distillate	64742-55-8	30.00000	0.01483	
			Ethylene Glycol	107-21-1	45.00000	0.00675	
			Glutaraldehyde	111-30-8	30.00000	0.00405	
			Sodium Chloride	7647-14-5	5.00000	0.00317	
			2-Propenoic, Polymer with Sodium Phosphinate, Sodium Salt	71050-62-9	20.00000	0.00300	
			1-butoxy-2-propanol	5131-66-8	5.00000	0.00247	
			Crystalline Silica: Quartz	14808-60-7	5.00000	0.00247	
			Isotridecanol, ethoxylated	9043-30-5	5.00000	0.00247	
			Ammonium Chloride	12125-02-9	3.00000	0.00181	
			Didecyl Dimethyl Ammonium Chloride	7173-51-5	10.00000	0.00135	
			Oleamide DEA	93-83-4	2.00000	0.00121	
			Alcohols, C12-16, ethoxylated	68551-12-2	2.00000	0.00121	
			Citric Acid	77-92-9	60.00000	0.00083	
			Calcium Chloride	10043-52-4	5.00000	0.00075	
			Quaternary Ammonium Compound	68424-85-1	5.00000	0.00068	
			Ethanol	64-17-5	5.00000	0.00068	
			Hemicellulase Enzyme Concentrate	9025-56-3	5.00000	0.00058	
			Methanol	67-56-1	100.00000	0.00032	
			Sorbitan Monooleate	1338-43-8	0.50000	0.00030	

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			Polyoxythylene Sorbitan Monooleate	9005-65-6	0.50000	0.00030	
			Potassium Chloride	7447-40-7	1.00000	0.00015	
			Polyoxyalkylenes	68951-67-7	30.00000	0.00010	
			2-butoxy-1-propanol	15821-83-7	0.10000	0.00005	
			Fatty Acids	61790-12-3	10.00000	0.00003	
			Modified Thiourea Polymer	68527-49-1	7.00000	0.00002	
			Propargyl Alcohol	107-19-7	5.00000	0.00002	
			Olefin	64743-02-8	5.00000	0.00002	
			Formaldehyde	50-00-0	1.00000	0.00000	

* 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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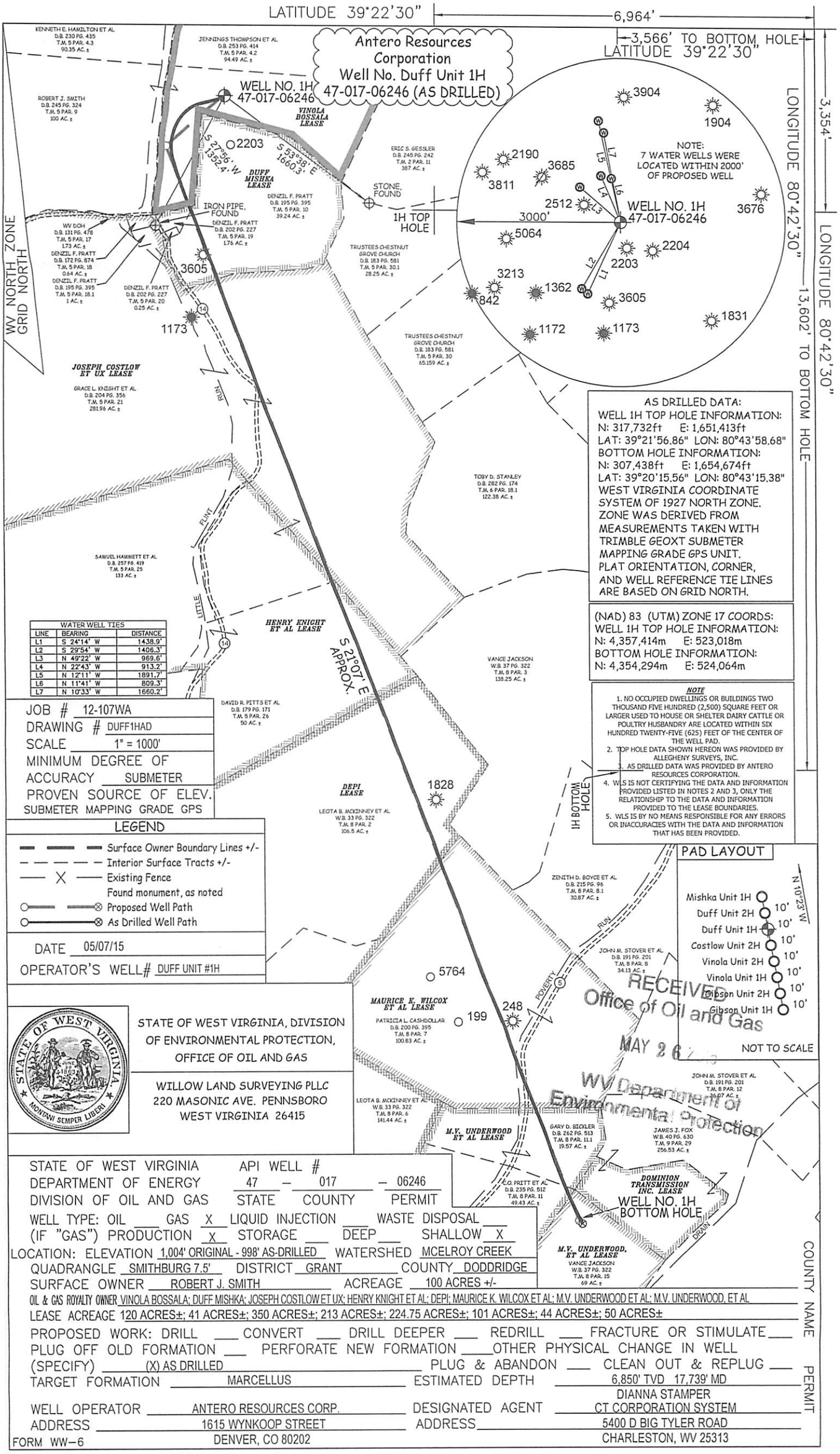
LATITUDE 39°22'30"
6,964'
3,566' TO BOTTOM HOLE
LATITUDE 39°22'30"
3,354'
LONGITUDE 80°42'30"
13,602' TO BOTTOM HOLE
LONGITUDE 80°42'30"
Antero Resources Corporation
Well No. Duff Unit 1H
47-017-06246 (AS DRILLED)
WELL NO. 1H
47-017-06246
VINOLA BOSSALA LEASE
DUFF MISHKA LEASE
S 27°56' W 1352.4'
S 53°38' E 1660.3'
IRON PIPE, FOUND
STONE, FOUND
1H TOP HOLE
WV NORTH ZONE GRID NORTH
KENNETH E. HAMILTON ET AL D.B. 230 PG. 435 T.M. 5 PAR. 4.3 90.35 AC. ±
JENNINGS THOMPSON ET AL D.B. 253 PG. 414 T.M. 5 PAR. 4.2 94.49 AC. ±
ROBERT J. SMITH D.B. 245 PG. 324 T.M. 5 PAR. 9 100 AC. ±
ERIC S. GESSLER D.B. 245 PG. 242 T.M. 2 PAR. 11 387 AC. ±
DENZIL F. PRATT D.B. 195 PG. 395 T.M. 5 PAR. 10 39.24 AC. ±
DENZIL F. PRATT D.B. 202 PG. 227 T.M. 5 PAR. 19 176 AC. ±
WV DOH D.B. 131 PG. 478 T.M. 5 PAR. 17 1.73 AC. ±
DENZIL F. PRATT D.B. 172 PG. 874 T.M. 5 PAR. 18 0.64 AC. ±
DENZIL F. PRATT D.B. 195 PG. 395 T.M. 5 PAR. 18.1 1 AC. ±
DENZIL F. PRATT D.B. 202 PG. 227 T.M. 5 PAR. 20 0.25 AC. ±
TRUSTEES CHESTNUT GROVE CHURCH D.B. 183 PG. 581 T.M. 5 PAR. 30.1 28.25 AC. ±
TRUSTEES CHESTNUT GROVE CHURCH D.B. 183 PG. 581 T.M. 5 PAR. 30 65.159 AC. ±
JOSEPH COSTLOW ET UX LEASE
GRACE L. KNIGHT ET AL D.B. 204 PG. 356 T.M. 5 PAR. 21 281.96 AC. ±
RUN
TOBY D. STANLEY D.B. 282 PG. 174 T.M. 6 PAR. 18.1 122.38 AC. ±
SAMUEL HAMMETT ET AL D.B. 257 PG. 419 T.M. 5 PAR. 25 133 AC. ±
FLINT
LITTLE
HENRY KNIGHT ET AL LEASE
S 21°07' E APPROX.
VANCE JACKSON W.B. 37 PG. 322 T.M. 8 PAR. 3 138.25 AC. ±
DAVID R. PITTS ET AL D.B. 179 PG. 171 T.M. 5 PAR. 26 50 AC. ±
DEPI LEASE
LEOTA B. MCKINNEY ET AL W.B. 33 PG. 322 T.M. 8 PAR. 2 106.5 AC. ±
1828
1H BOTTOM HOLE
ZENITH D. BOYCE ET AL D.B. 215 PG. 96 T.M. 8 PAR. 8.1 30.87 AC. ±
JOHN M. STOVER ET AL D.B. 191 PG. 201 T.M. 8 PAR. 8 34.13 AC. ±
POVERTY
5764
MAURICE K. WILCOX ET AL LEASE
PATRICIA L. CASHDOLLAR D.B. 200 PG. 395 T.M. 8 PAR. 7 100.83 AC. ±
199
248
LEOTA B. MCKINNEY ET AL W.B. 33 PG. 322 T.M. 8 PAR. 6 141.44 AC. ±
M.V. UNDERWOOD ET AL LEASE
JOHN M. STOVER ET AL D.B. 191 PG. 201 T.M. 8 PAR. 12 16.07 AC. ±
GARY D. BICKLER D.B. 262 PG. 513 T.M. 8 PAR. 11.1 19.57 AC. ±
JAMES J. FOX W.B. 40 PG. 630 T.M. 9 PAR. 29 256.53 AC. ±
E.O. PRITT ET AL D.B. 235 PG. 512 T.M. 8 PAR. 11 49.43 AC. ±
DOMINION TRANSMISSION INC. LEASE
WELL NO. 1H BOTTOM HOLE
M.V. UNDERWOOD, ET AL LEASE
VANCE JACKSON W.B. 37 PG. 322 T.M. 8 PAR. 15 69 AC. ±
DRAIN
COUNTY NAME PERMIT
NOTE: 7 WATER WELLS WERE LOCATED WITHIN 2000' OF PROPOSED WELL
3000'
3904
1904
2190
3685
3811
2512
3676
5064
2204
2203
3213
1362
842
3605
1831
1172
1173
3605
2203
1173
AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
N: 317,732ft E: 1,651,413ft
LAT: 39°21'56.86" LON: 80°43'58.68"
BOTTOM HOLE INFORMATION:
N: 307,438ft E: 1,654,674ft
LAT: 39°20'15.56" LON: 80°43'15.38"
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 1H TOP HOLE INFORMATION:
N: 4,357,414m E: 523,018m
BOTTOM HOLE INFORMATION:
N: 4,354,294m E: 524,064m
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.
WATER WELL TIES
LINE | BEARING | DISTANCE
L1 | S 24°14' W | 1438.9'
L2 | S 29°54' W | 1406.3'
L3 | N 49°22' W | 969.6'
L4 | N 22°43' W | 913.2'
L5 | N 12°11' W | 1891.7'
L6 | N 11°41' W | 809.3'
L7 | N 10°33' W | 1660.2'
JOB # 12-107WA
DRAWING # DUFF1HAD
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
LEGEND
Surface Owner Boundary Lines +/-
Interior Surface Tracts +/-
Existing Fence
Found monument, as noted
Proposed Well Path
As Drilled Well Path
DATE 05/07/15
OPERATOR'S WELL# DUFF UNIT #1H
PAD LAYOUT
Mishka Unit 1H
Duff Unit 2H
Duff Unit 1H
Costlow Unit 2H
Vinola Unit 2H
Vinola Unit 1H
Gibson Unit 2H
Gibson Unit 1H
10'
N 10°23' W
NOT TO SCALE
RECEIVED
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MAY 26
WV Department of Environmental Protection
STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WILLOW LAND SURVEYING PLLC
220 MASONIC AVE. PENNSBORO
WEST VIRGINIA 26415
STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY
DIVISION OF OIL AND GAS
API WELL # 47 – 017 – 06246
STATE COUNTY PERMIT
WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,004' ORIGINAL - 998' AS-DRILLED WATERSHED MCELROY CREEK
QUADRANGLE SMITHBURG 7.5' DISTRICT GRANT COUNTY DODDRIDGE
SURFACE OWNER ROBERT J. SMITH ACREAGE 100 ACRES +/-
OIL & GAS ROYALTY OWNER VINOLA BOSSALA; DUFF MISHKA; JOSEPH COSTLOW ET UX; HENRY KNIGHT ET AL; DEPI; MAURICE K. WILCOX ET AL; M.V. UNDERWOOD ET AL; M.V. UNDERWOOD, ET AL
LEASE ACREAGE 120 ACRES±; 41 ACRES±; 350 ACRES±; 213 ACRES±; 224.75 ACRES±; 101 ACRES±; 44 ACRES±; 50 ACRES±
PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___
PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL
(SPECIFY) (X) AS DRILLED PLUG & ABANDON ___ CLEAN OUT & REPLUG ___
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,850' TVD 17,739' 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
FORM WW-6

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

API 47 - 017 - 06258 County Doddridge District West Union
Quad West Union 7.5' Pad Name Bee Lewis Pad Field/Pool Name ----
Farm name Bee, Lewis P. Well Number Squirrel Unit 1H
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 4345083m Easting 515288m
Landing Point of Curve Northing 4345153.50m Easting 515371.17m
Bottom Hole Northing 4347222m Easting 514572m

Elevation (ft) 1003' 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 6/25/2013 Date drilling commenced 9/2/2013 Date drilling ceased 10/6/2013
Date completion activities began 3/6/2014 Date completion activities ceased 6/28/2014
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 56', 136' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 466', 996' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 101', 590' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

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Reviewed by:
AL 5/27/15 ✓
W.S. 6/2/15

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API 47- 017 - 06258 Farm name Bee, Lewis P. Well number Squirrel Unit 1H

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	24"	20"	59'	New	94# H-40	N/A	Y
Surface	17- 1/2"	13- 3/8"	360'	New	48# H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2598'	New	36# J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	14150'	New	20# P-110	N/A	Y
Tubing		2-3/8"	6633'		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^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	120 sx	15.6	1.18	57	0'	8 Hrs.
Surface	Class A	423 sx	15.6	1.18	250	0'	8 Hrs.
Coal							
Intermediate 1	Class A	956 sx	15.6	1.18	814	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	999 sx (Lead), 1150 sx (Tail)	14.5 Lead 15.2 Tail	1.30 Lead 1.86 Tail	2761	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 14150' MD, 6615' TVD (BHL); 6649' TVD (Deepest point drilled) Loggers TD (ft) 14100'

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6212'

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 aboce 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

WAS WELL COMPLETED OPEN HOLE? □ Yes ■ No DETAILS

WERE TRACERS USED □ Yes ■ No TYPE OF TRACER(S) USED

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API 47- 017 - 06258 Farm name Bee, Lewis P. Well number Squirrel Unit 1H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

*PLEASE SEE ATTACHED EXHIBIT 1

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)

*PLEASE SEE ATTACHED EXHIBIT 2

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API 47- 017 - 06258 Farm name Bee, Lewis P. Well number Squirrel Unit 1H

PRODUCING FORMATION(S)	DEPTHS		
Marcellus	6506' (TOP) TVD	6566' (TOP) MD	

Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST ■ Flow □ Pump

SHUT-IN PRESSURE Surface 3600 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 5402 mcfpd Oil --- bpd NGL --- bpd Water --- bpd GAS MEASURED BY □ Estimated ■ Orifice □ Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		

*PLEASE SEE ATTACHED EXHIBIT 3

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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 600 Alpha Drive City Canonsburg State PA Zip 15317

Cementing Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek 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 5/22/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

API 47-017-06258 Farm Name Bee, Lewis P. Well Number Squirrel Unit 1H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	6-Mar-14	13,926	14,095	60	Marcellus
2	18-Apr-14	13,726	13,895	60	Marcellus
3	19-Apr-14	13,526	13,695	60	Marcellus
4	19-Apr-14	13,327	13,495	60	Marcellus
5	19-Apr-14	13,127	13,296	60	Marcellus
6	20-Apr-14	12,927	13,095	60	Marcellus
7	20-Apr-14	12,727	12,895	60	Marcellus
8	20-Apr-14	12,527	12,696	60	Marcellus
9	21-Apr-14	12,327	12,496	60	Marcellus
10	21-Apr-14	12,127	12,296	60	Marcellus
11	21-Apr-14	11,927	12,096	60	Marcellus
12	22-Apr-14	11,727	11,896	60	Marcellus
13	26-Apr-14	11,528	11,696	60	Marcellus
14	26-Apr-14	11,328	11,496	60	Marcellus
15	27-Apr-14	11,128	11,296	60	Marcellus
16	27-May-14	10,928	11,096	60	Marcellus
17	28-May-14	10,728	10,897	60	Marcellus
18	28-May-14	10,528	10,697	60	Marcellus
19	28-May-14	10,328	10,497	60	Marcellus
20	28-May-14	10,128	10,297	60	Marcellus
21	28-May-14	9,928	10,097	60	Marcellus
22	29-May-14	9,729	9,897	60	Marcellus
23	29-May-14	9,529	9,697	60	Marcellus
24	29-May-14	9,329	9,497	60	Marcellus
25	29-May-14	9,129	9,297	60	Marcellus
26	29-May-14	8,929	9,098	60	Marcellus
27	30-May-14	8,729	8,898	60	Marcellus
28	30-May-14	8,529	8,698	60	Marcellus
29	30-May-14	8,329	8,498	60	Marcellus
30	30-May-14	8,129	8,298	60	Marcellus
31	31-May-14	7,930	8,098	60	Marcellus
32	31-May-14	7,730	7,898	60	Marcellus
33	31-May-14	7,530	7,698	60	Marcellus
34	1-Jun-14	7,330	7,498	60	Marcellus
35	2-Jun-14	7,130	7,299	60	Marcellus
36	2-Jun-14	6,930	7,099	60	Marcellus
37	2-Jun-14	6,605	6,690	60	Marcellus

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API 47-017-06258 Farm Name Bee, Lewis P. Well Number Squirrel Unit 1H

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	18-Apr-14	76.9	7,410	5,947	4,620	239,000	6,443	N/A
2	19-Apr-14	77.7	7,617	5,618	5,380	233,800	6,148	N/A
3	19-Apr-14	77.5	7,272	5,449	4,975	234,400	6,369	N/A
4	19-Apr-14	76.6	7,404	5,823	5,286	232,400	6,099	N/A
5	20-Apr-14	73.7	7,223	5,686	5,192	240,700	6,378	N/A
6	20-Apr-14	76.7	6,949	5,564	3,625	230,000	6,532	N/A
7	20-Apr-14	72.7	7,290	5,434	5,773	118,000	6,690	N/A
8	20-Apr-14	77.5	7,538	5,962	5,865	199,700	6,564	N/A
9	21-Apr-14	78.8	7,139	5,618	4,714	244,900	6,342	N/A
10	21-Apr-14	76.0	7,677	5,353	4,870	103,100	6,302	N/A
11	21-Apr-14	74.3	6,753	5,494	5,567	149,700	6,533	N/A
12	22-Apr-14	73.6	7,370	5,336	9,326	232,600	6,865	N/A
13	26-Apr-14	78.1	7,008	5,714	9,189	241,700	5,874	N/A
14	26-Apr-14	76.9	7,108	5,566	5,250	200,400	10,539	N/A
15	27-Apr-14	74.6	7,261	5,303	5,118	164,700	6,487	N/A
16	27-May-14	75.9	7,054	5,420	4,601	233,700	6,012	N/A
17	28-May-14	76.4	7,325	5,521	4,366	213,300	5,702	N/A
18	28-May-14	73.2	7,610	5,984	4,966	170,100	6,404	N/A
19	28-May-14	72.9	7,159	5,789	3,958	239,300	6,281	N/A
20	28-May-14	76.1	6,609	6,150	3,725	235,800	5,975	N/A
21	28-May-14	75.8	6,937	6,614	3,437	237,900	6,063	N/A
22	29-May-14	76.3	7,030	6,409	3,485	239,600	5,943	N/A
23	29-May-14	55.4	7,334	6,346	4,434	96,100	5,650	N/A
24	29-May-14	74.4	6,866	7,620	3,633	241,800	6,030	N/A
25	29-May-14	72.2	7,043	6,094	4,675	78,900	5,864	N/A
26	29-May-14	74.4	7,199	5,784	3,057	238,100	6,102	N/A
27	30-May-14	79.7	6,795	5,961	3,253	239,600	5,914	N/A
28	30-May-14	78.8	6,381	6,327	3,620	232,600	5,880	N/A
29	30-May-14	78.2	6,636	6,004	3,634	225,600	6,345	N/A
30	30-May-14	76.4	7,546	5,617	3,469	195,100	6,334	N/A
31	31-May-14	77.9	6,581	5,808	3,735	240,700	5,858	N/A
32	31-May-14	76.5	6,788	5,806	4,969	128,500	6,336	N/A
33	31-May-14	71.0	7,081	5,741	4,830	103,000	5,595	N/A
34	1-Jun-14	74.2	6,847	5,479	3,949	235,800	5,851	N/A
35	2-Jun-14	77.2	6,423	5,474	3,846	179,606	5,768	N/A
36	2-Jun-14	78.3	6,679	5,618	4,161	230,900	5,681	N/A
37	2-Jun-14	79.8	5,052	4,219	2,898	230,800	5,684	N/A
AVG=		**75.5**	**7,027**	**5,774**	**4,634**	**7,531,906**	**231,437**	TOTAL

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API 47-017-06258 Farm Name Bee, Lewis P. Well Number Squirrel Unit 1H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	**TOP DEPTH (TVD) From Surface**	**BOTTOM DEPTH (TVD) From Surface**	**TOP DEPTH (MD) From Surface**	**BOTTOM DEPTH (MD) From Surface**
Fresh Water	56'	N/A	56'	N/A
Fresh Water	136'	N/A	136'	N/A
Shale	0	101	0	101
Coal	101	141	101	141
Shale	141	301	141	301
Sandstone	301	341	301	341
Shale/Sandstone/Siltstone	341	590	341	590
Coal	590	341	590	341
Shale/Siltstone	341	1,486	341	1,486
Siltstone w/Coal	1,486	1,541	1,486	1,541
Siltstone/Sandstone	1,541	1,859	1,541	1,859
Big Lime	1,859	1,966	1,859	1,966
Big Injun	1,966	2,409	1,966	2,409
Gantz Sand	2,409	2,517	2,409	2,517
Fifty Foot Sandstone	2,517	2,604	2,517	2,604
Gordon	2,604	2,924	2,604	2,924
Fifth Sandstone	2,924	2,948	2,924	2,948
Bayard	2,948	3,325	2,948	3,325
Warren	3,325	3,664	3,325	3,664
Speechley	3,664	3,984	3,664	3,984
Baltown	3,984	4,439	3,984	4,439
Bradford	4,439	4,869	4,439	4,869
Benson	4,869	5,127	4,869	5,127
Alexander	5,127	5,318	5,127	5,318
Elk	5,318	5,815	5,318	5,815
Rhinestreet	5,815	6,140	5,815	6,140
Sycamore	6,140	6,313	6,140	6,319
Middlesex	6,313	6,437	6,319	6,462
Burkett	6,437	6,466	6,462	6,501
Tully	6,466	6,506	6,501	6,566
Marcellus	6,506	N/A	6,566	14,131

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ANTERO RESOURCES

Antero Resources
Squirrel Unit 1H
Doddridge County WV
Northing: 14254779.42
Easting: 1690526.27
As Drilled

WELL DETAILS: Squirrel Unit 1H
Ground Level: 1003.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	14254779.42	1690526.27	39° 15' 17.488 N	80° 49' 22.740 W	

REFERENCE INFORMATION
Co-ordinate (N/E) Reference: Well Squirrel Unit 1H, Grid North
Vertical (TVD) Reference: Squirrel Unit 1H 1003' GL + 19' RKB @ 1022.0usft
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: Squirrel Unit 1H 1003' GL + 19' RKB @ 1022.0usft
Calculation Method: Minimum Curvature

PROJECT DETAILS: Doddridge County WV
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

Scientific Drilling

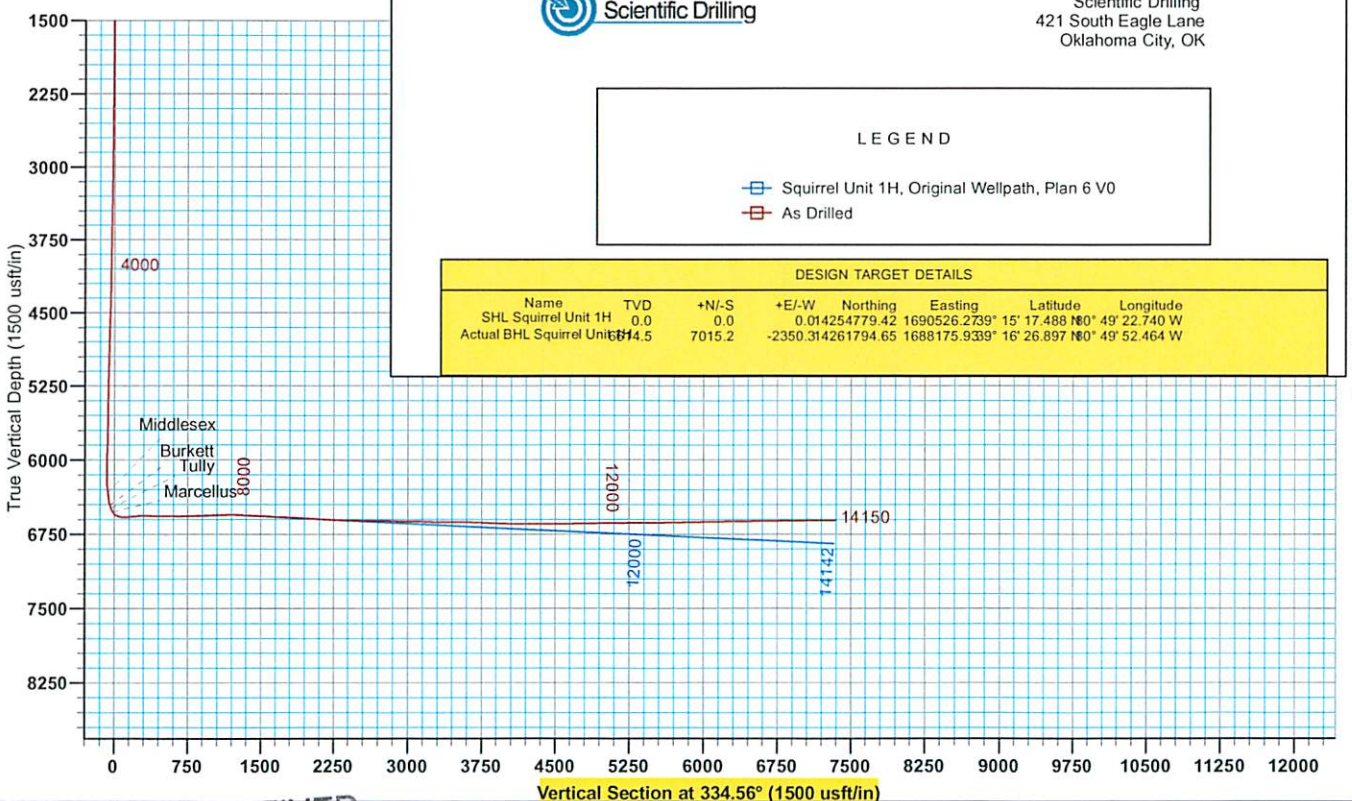
Genie Lightfoot
8:59, October 24 2013

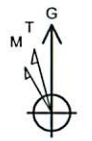
Scientific Drilling
421 South Eagle Lane
Oklahoma City, OK

LEGEND
Squirrel Unit 1H, Original Wellpath, Plan 6 V0
As Drilled

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Squirrel Unit 1H	0.0	0.0	0.0	14254779.42	1690526.27	39° 15' 17.488 N	80° 49' 22.740 W
Actual BHL Squirrel Unit 1H	6814.5	7015.2	-2350.31	14261794.65	1688175.93	39° 16' 26.897 N	80° 49' 52.464 W

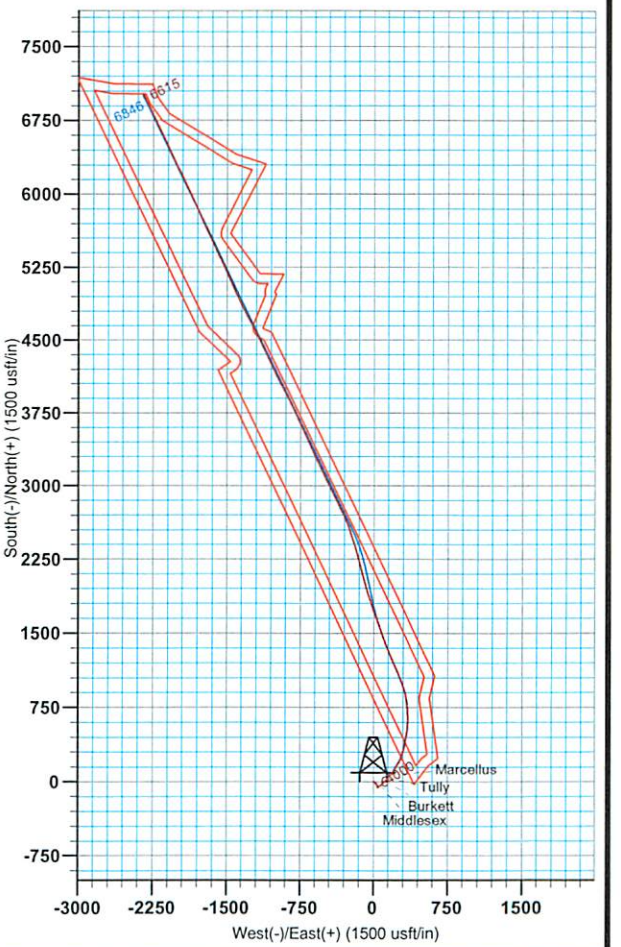




To convert Magnetic North to Grid, Subtract 8.52°
To convert True North to Grid, Subtract 0.11°

Azimuths to Grid North
True North: -0.11°
Magnetic North: -8.52°

Magnetic Field
Strength: 52378.0snT
Dip Angle: 66.86°
Date: 9/3/2013
Model: IGRF2010



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Doddridge County WV
Squirrel/Livingston/Vonda Pad
Squirrel Unit 1H
Sidetrack

Design: Sidetrack

EOW Completion Report

27 February, 2015

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Scientific Drilling

Company:	Antero	**Local Co-ordinate Reference:**	Well Squirrel Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Squirrel Unit 1H 1003' GL + 19' RKB @ 1022.0usf
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Squirrel Unit 1H 1003' GL + 19' RKB @ 1022.0usf
Well:	Squirrel Unit 1H	**North Reference:**	Grid
Wellbore:	Sidetrack	**Survey Calculation Method:**	Minimum Curvature
Design:	Sidetrack	**Database:**	Oklahoma District

Project	Doddridge County WV, McClellan District		
Map System:	Universal Transverse Mercator (US Survey Fee	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Squirrel/Livingston/Vonda Pad				
Site Position:		**Northing:**	14,254,779.42 usft	**Latitude:**	39° 15' 17.488 N
From:	Map	**Easting:**	1,690,526.27 usft	**Longitude:**	80° 49' 22.740 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.11 °

Well	Squirrel Unit 1H, Marcellus					
Well Position	**+N/-S**	0.0 usft	**Northing:**	14,254,779.42 usft	**Latitude:**	39° 15' 17.488 N
	+E/-W	0.0 usft	**Easting:**	1,690,526.27 usft	**Longitude:**	80° 49' 22.740 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**	1,022.0 usft	**Ground Level:**	1,003.0 usft

Wellbore	Sidetrack

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	BGGM2014	2/27/2015	-8.45	66.79	52,157

Design	Sidetrack				
Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	7,929.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	341.48

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Survey Program **Date** 2/27/2015

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
100.0	5,972.0	Survey #1 Def Gyro to KOP (Original Well	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
6,033.0	7,929.0	Survey #2 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1
7,929.0	14,150.0	Survey #1 (Sidetrack)	MWD SDI	MWD - Standard ver 1.0.1

Survey

MD (usft)	**Inc (°)**	**Azi (azimuth) (°)**	**TVD (usft)**	**N/S (usft)**	**E/W (usft)**	**V. Sec (usft)**	**DLeg (°/100usft)**
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
100.0	0.15	97.58	100.0	0.0	0.1	-0.1	0.15
200.0	0.45	115.18	200.0	-0.2	0.6	-0.4	0.31
300.0	0.51	114.61	300.0	-0.6	1.4	-1.0	0.06
400.0	0.58	110.03	400.0	-0.9	2.3	-1.6	0.08
500.0	0.55	104.45	500.0	-1.2	3.2	-2.2	0.06
600.0	0.44	105.32	600.0	-1.4	4.0	-2.6	0.11
700.0	0.47	108.43	700.0	-1.7	4.8	-3.1	0.04
800.0	0.46	113.76	800.0	-1.9	5.5	-3.6	0.04
900.0	0.45	118.32	900.0	-2.3	6.3	-4.2	0.04

Company:	Antero	**Local Co-ordinate Reference:**	Well Squirrel Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Squirrel Unit 1H 1003' GL + 19' RKB @ 1022.0usf
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Squirrel Unit 1H 1003' GL + 19' RKB @ 1022.0usf
Well:	Squirrel Unit 1H	**North Reference:**	Grid
Wellbore:	Sidetrack	**Survey Calculation Method:**	Minimum Curvature
Design:	Sidetrack	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,000.0	0.49	108.35	1,000.0	-2.6	7.0	-4.7	0.09
1,100.0	0.46	107.49	1,100.0	-2.9	7.8	-5.2	0.03
1,200.0	0.50	117.57	1,200.0	-3.2	8.6	-5.8	0.09
1,300.0	0.41	122.52	1,300.0	-3.6	9.3	-6.3	0.10
1,400.0	0.35	133.21	1,400.0	-4.0	9.8	-6.9	0.09
1,500.0	0.37	138.56	1,500.0	-4.4	10.2	-7.5	0.04
1,600.0	0.32	139.31	1,600.0	-4.9	10.6	-8.0	0.05
1,700.0	0.51	126.73	1,700.0	-5.4	11.2	-8.6	0.21
1,800.0	0.53	118.02	1,799.9	-5.9	11.9	-9.3	0.08
1,900.0	0.53	121.29	1,899.9	-6.3	12.7	-10.0	0.03
2,000.0	0.22	120.87	1,999.9	-6.7	13.3	-10.5	0.31
2,100.0	0.43	129.11	2,099.9	-7.0	13.7	-11.0	0.21
2,200.0	0.59	124.45	2,199.9	-7.5	14.5	-11.7	0.17
2,300.0	0.62	115.99	2,299.9	-8.0	15.4	-12.5	0.09
2,400.0	0.47	118.83	2,399.9	-8.5	16.2	-13.2	0.15
2,500.0	0.35	141.40	2,499.9	-8.9	16.8	-13.8	0.20
2,600.0	0.62	131.35	2,599.9	-9.5	17.4	-14.5	0.28
2,700.0	0.40	132.97	2,699.9	-10.1	18.0	-15.3	0.22
2,800.0	0.49	129.68	2,799.9	-10.6	18.6	-16.0	0.09
2,900.0	0.63	131.30	2,899.9	-11.3	19.3	-16.8	0.14
3,000.0	0.58	131.38	2,999.9	-12.0	20.1	-17.7	0.05
3,100.0	0.72	119.36	3,099.9	-12.6	21.1	-18.6	0.19
3,200.0	0.78	130.99	3,199.9	-13.4	22.1	-19.7	0.16
3,300.0	0.90	118.51	3,299.9	-14.2	23.3	-20.8	0.22
3,400.0	0.84	121.44	3,399.9	-14.9	24.6	-22.0	0.07
3,500.0	0.81	125.65	3,499.9	-15.7	25.8	-23.1	0.07
3,600.0	0.77	125.80	3,599.8	-16.5	27.0	-24.2	0.04
3,700.0	0.93	127.27	3,699.8	-17.4	28.2	-25.5	0.16
3,800.0	0.86	137.92	3,799.8	-18.5	29.3	-26.8	0.18
3,900.0	0.95	139.59	3,899.8	-19.6	30.3	-28.3	0.09
4,000.0	0.99	148.79	3,999.8	-21.0	31.3	-29.9	0.16
4,100.0	1.06	147.00	4,099.8	-22.5	32.3	-31.6	0.08
4,200.0	1.01	154.29	4,199.8	-24.1	33.2	-33.4	0.14
4,300.0	1.30	154.95	4,299.7	-25.9	34.0	-35.4	0.29
4,400.0	1.20	157.89	4,399.7	-27.9	34.9	-37.6	0.12
4,500.0	1.24	158.36	4,499.7	-29.9	35.7	-39.7	0.04
4,600.0	1.27	163.26	4,599.7	-32.0	36.4	-41.9	0.11
4,700.0	1.40	163.65	4,699.6	-34.2	37.1	-44.2	0.13
4,800.0	1.32	162.66	4,799.6	-36.5	37.8	-46.6	0.08
4,900.0	1.45	165.93	4,899.6	-38.8	38.4	-49.0	0.15
5,000.0	1.62	169.21	4,999.5	-41.4	39.0	-51.7	0.19
5,100.0	1.39	163.95	5,099.5	-44.0	39.6	-54.3	0.27
5,200.0	1.29	164.43	5,199.5	-46.2	40.2	-56.6	0.10
5,300.0	1.29	157.34	5,299.5	-48.3	41.0	-58.8	0.16
5,400.0	1.23	155.70	5,399.4	-50.4	41.8	-61.0	0.07

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Company:	Antero	**Local Co-ordinate Reference:**	Well Squirrel Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Squirrel Unit 1H 1003' GL + 19' RKB @ 1022.0usf
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Squirrel Unit 1H 1003' GL + 19' RKB @ 1022.0usf
Well:	Squirrel Unit 1H	**North Reference:**	Grid
Wellbore:	Sidetrack	**Survey Calculation Method:**	Minimum Curvature
Design:	Sidetrack	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,500.0	0.98	152.33	5,499.4	-52.1	42.7	-63.0	0.26
5,600.0	0.96	145.40	5,599.4	-53.5	43.5	-64.6	0.12
5,700.0	0.91	150.33	5,699.4	-54.9	44.4	-66.2	0.09
5,800.0	0.84	153.75	5,799.4	-56.3	45.1	-67.7	0.09
5,900.0	0.81	144.04	5,899.4	-57.5	45.9	-69.1	0.14
5,972.0	0.94	152.71	5,971.4	-58.4	46.4	-70.2	0.26
6,033.0	0.73	149.11	6,032.4	-59.2	46.9	-71.0	0.35
6,123.0	0.74	148.31	6,122.3	-60.2	47.5	-72.2	0.02
6,167.0	0.69	127.10	6,166.3	-60.6	47.8	-72.7	0.61
6,212.0	6.19	56.89	6,211.3	-59.4	50.1	-72.3	13.31
6,257.0	12.90	49.04	6,255.6	-54.8	55.9	-69.7	15.15
6,302.0	18.23	46.81	6,298.9	-46.7	64.8	-64.9	11.92
6,347.0	22.95	46.77	6,341.1	-35.9	76.4	-58.3	10.49
6,392.0	27.79	47.65	6,381.7	-22.8	90.5	-50.4	10.79
6,437.0	32.89	47.34	6,420.5	-7.4	107.3	-41.1	11.34
6,481.0	38.96	45.60	6,456.1	10.4	126.0	-30.2	13.99
6,526.0	46.92	42.09	6,489.1	32.5	147.1	-15.9	18.46
6,571.0	54.69	38.76	6,517.5	59.1	169.7	2.1	18.19
6,616.0	63.02	35.56	6,540.7	89.7	192.9	23.8	19.48
6,661.0	70.87	32.33	6,558.4	124.1	215.9	49.1	18.65
6,706.0	78.60	29.11	6,570.2	161.4	238.1	77.4	18.51
6,751.0	86.51	27.05	6,576.0	200.7	259.1	108.0	18.15
6,784.0	90.17	23.95	6,577.0	230.5	273.3	131.7	14.53
6,808.0	90.22	20.14	6,576.9	252.7	282.3	150.0	15.88
6,853.0	91.91	13.44	6,576.1	295.8	295.3	186.7	15.35
6,898.0	94.26	12.14	6,573.6	339.6	305.2	225.0	5.97
6,943.0	94.88	12.05	6,570.1	383.4	314.6	263.6	1.39
6,988.0	93.12	11.08	6,566.9	427.4	323.6	302.5	4.46
7,032.0	92.42	10.82	6,564.8	470.6	331.9	340.7	1.70
7,077.0	89.52	7.22	6,564.0	515.0	339.0	380.6	10.27
7,122.0	87.88	3.54	6,565.0	559.8	343.2	421.7	8.95
7,167.0	87.76	1.33	6,566.8	604.7	345.1	463.7	4.91
7,211.0	89.77	359.37	6,567.7	648.7	345.4	505.4	6.38
7,256.0	90.40	357.02	6,567.6	693.7	344.0	548.5	5.41
7,301.0	89.08	354.65	6,567.8	738.5	340.7	592.0	6.03
7,346.0	88.81	353.33	6,568.7	783.3	336.0	636.0	2.99
7,391.0	88.99	352.10	6,569.5	827.9	330.3	680.1	2.76
7,436.0	89.43	348.06	6,570.2	872.2	322.5	724.6	9.03
7,480.0	91.71	344.45	6,569.7	915.0	312.1	768.4	9.70
7,525.0	91.28	342.25	6,568.5	958.0	299.2	813.4	4.98
7,615.0	89.96	337.33	6,567.6	1,042.5	268.1	903.3	5.66
7,705.0	92.95	336.89	6,565.3	1,125.4	233.1	993.0	3.36
7,795.0	92.86	336.72	6,560.7	1,208.0	197.7	1,082.6	0.21
7,884.0	92.42	335.66	6,556.6	1,289.3	161.8	1,171.1	1.29

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Company:	Antero	**Local Co-ordinate Reference:**	Well Squirrel Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Squirrel Unit 4H 1003' GL + 19' RKB @ 1022.0usf
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Squirrel Unit 1H 1003' GL + 19' RKB @ 1022.0usf
Well:	Squirrel Unit 1H	**North Reference:**	Grid
Wellbore:	Sidetrack	**Survey Calculation Method:**	Minimum Curvature
Design:	Sidetrack	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,929.0	90.31	339.09	6,555.6	1,330.8	144.5	1,216.0	8.95
7,974.0	89.87	339.71	6,555.5	1,372.9	128.7	1,260.9	1.69
8,019.0	88.64	340.50	6,556.1	1,415.3	113.4	1,305.9	3.25
8,063.0	87.49	340.50	6,557.6	1,456.7	98.7	1,349.9	2.61
8,095.0	87.05	340.32	6,559.1	1,486.8	88.0	1,381.8	1.49
8,127.0	86.88	339.88	6,560.8	1,516.9	77.1	1,413.8	1.47
8,158.0	86.79	339.53	6,562.5	1,545.9	66.4	1,444.7	1.16
8,190.0	87.67	339.71	6,564.0	1,575.9	55.3	1,476.7	2.81
8,220.0	88.05	340.35	6,565.2	1,604.0	45.0	1,506.6	2.48
8,252.0	88.11	340.15	6,566.2	1,634.1	34.2	1,538.6	0.65
8,283.0	87.15	340.30	6,567.5	1,663.3	23.7	1,569.6	3.13
8,315.0	86.97	339.88	6,569.1	1,693.3	12.8	1,601.5	1.43
8,346.0	86.97	340.15	6,570.8	1,722.4	2.3	1,632.5	0.87
8,378.0	86.61	339.44	6,572.6	1,752.4	-8.8	1,664.4	2.48
8,410.0	86.71	338.96	6,574.4	1,782.3	-20.1	1,696.3	1.53
8,441.0	87.49	340.58	6,576.0	1,811.3	-30.8	1,727.3	5.79
8,473.0	87.58	341.38	6,577.4	1,841.5	-41.2	1,759.2	2.51
8,504.0	87.42	341.75	6,578.7	1,870.9	-51.0	1,790.2	1.30
8,536.0	86.88	342.78	6,580.3	1,901.4	-60.8	1,822.2	3.63
8,568.0	86.88	342.96	6,582.1	1,931.9	-70.2	1,854.1	0.56
8,599.0	87.21	343.92	6,583.7	1,961.6	-79.0	1,885.1	3.27
8,631.0	87.14	344.89	6,585.2	1,992.4	-87.6	1,917.0	3.04
8,662.0	87.41	345.24	6,586.7	2,022.3	-95.6	1,947.9	1.42
8,694.0	87.31	345.59	6,588.2	2,053.2	-103.6	1,979.8	1.14
8,725.0	86.70	345.24	6,589.8	2,083.2	-111.4	2,010.7	2.27
8,757.0	86.67	344.93	6,591.7	2,114.0	-119.6	2,042.5	0.97
8,789.0	86.88	345.51	6,593.5	2,144.9	-127.8	2,074.4	1.92
8,820.0	86.70	345.42	6,595.2	2,174.9	-135.6	2,105.3	0.65
8,883.0	86.95	345.32	6,598.7	2,235.8	-151.4	2,168.1	0.43
8,915.0	86.97	344.98	6,600.4	2,266.6	-159.6	2,199.9	1.06
8,978.0	87.32	344.80	6,603.5	2,327.4	-176.0	2,262.8	0.62
9,009.0	86.79	343.57	6,605.1	2,357.2	-184.5	2,293.7	4.32
9,072.0	86.70	342.25	6,608.7	2,417.3	-203.0	2,356.6	2.10
9,104.0	87.41	341.38	6,610.3	2,447.7	-212.9	2,388.5	3.51
9,167.0	88.90	341.55	6,612.4	2,507.4	-232.9	2,451.5	2.38
9,198.0	88.99	341.29	6,612.9	2,536.7	-242.8	2,482.5	0.89
9,243.0	88.72	339.62	6,613.8	2,579.1	-257.9	2,527.5	3.76
9,288.0	88.72	338.83	6,614.8	2,621.2	-273.8	2,572.4	1.76
9,333.0	88.99	336.45	6,615.7	2,662.8	-290.9	2,617.3	5.32
9,378.0	89.25	335.40	6,616.4	2,703.9	-309.3	2,662.1	2.40
9,423.0	89.43	334.78	6,617.0	2,744.7	-328.3	2,706.8	1.43
9,468.0	89.69	334.43	6,617.3	2,785.3	-347.6	2,751.5	0.97
9,512.0	89.43	333.45	6,617.6	2,824.9	-366.9	2,795.1	2.30
9,557.0	88.55	333.38	6,618.4	2,865.1	-387.0	2,839.6	1.96

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Company:	Antero	**Local Co-ordinate Reference:**	Well Squirrel Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Squirrel Unit 1H 1003' GL + 19' RKB @ 1022.0usf
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Squirrel Unit 1H 1003' GL + 19' RKB @ 1022.0usf
Well:	Squirrel Unit 1H	**North Reference:**	Grid
Wellbore:	Sidetrack	**Survey Calculation Method:**	Minimum Curvature
Design:	Sidetrack	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
9,602.0	88.79	333.63	6,619.5	2,905.4	-407.1	2,884.2	0.77
9,647.0	88.81	333.11	6,620.4	2,945.6	-427.2	2,928.7	1.16
9,692.0	88.37	333.38	6,621.5	2,985.8	-447.5	2,973.3	1.15
9,737.0	88.81	333.20	6,622.6	3,025.9	-467.7	3,017.8	1.06
9,782.0	89.73	333.95	6,623.2	3,066.2	-487.7	3,062.4	2.64
9,827.0	89.96	335.93	6,623.3	3,107.0	-506.8	3,107.1	4.43
9,871.0	89.69	335.93	6,623.5	3,147.2	-524.8	3,150.8	0.61
9,916.0	88.64	335.66	6,624.1	3,188.2	-543.2	3,195.6	2.41
9,961.0	87.93	334.96	6,625.5	3,229.1	-562.0	3,240.3	2.22
10,006.0	88.37	334.61	6,626.9	3,269.8	-581.1	3,285.0	1.25
10,051.0	88.81	334.52	6,628.0	3,310.4	-600.5	3,329.7	1.00
10,096.0	89.08	335.14	6,628.8	3,351.1	-619.6	3,374.4	1.50
10,141.0	89.16	334.96	6,629.5	3,391.9	-638.6	3,419.1	0.44
10,185.0	88.90	334.26	6,630.3	3,431.7	-657.4	3,462.7	1.70
10,230.0	89.16	334.78	6,631.0	3,472.3	-676.8	3,507.4	1.29
10,275.0	89.78	335.93	6,631.5	3,513.2	-695.6	3,552.2	2.90
10,320.0	89.69	335.84	6,631.7	3,554.2	-714.0	3,596.9	0.28
10,365.0	89.60	335.75	6,632.0	3,595.3	-732.4	3,641.7	0.28
10,410.0	89.69	336.01	6,632.2	3,636.4	-750.8	3,686.5	0.61
10,455.0	89.87	336.45	6,632.4	3,677.5	-768.9	3,731.3	1.06
10,499.0	88.72	335.93	6,632.9	3,717.8	-786.7	3,775.1	2.87
10,544.0	88.20	335.22	6,634.2	3,758.8	-805.3	3,819.9	1.96
10,589.0	87.05	333.47	6,636.0	3,799.3	-824.8	3,864.5	4.65
10,634.0	87.41	333.29	6,638.2	3,839.5	-844.9	3,909.0	0.89
10,679.0	88.11	333.82	6,640.0	3,879.7	-864.9	3,953.5	1.95
10,724.0	87.93	333.29	6,641.5	3,920.0	-884.9	3,998.1	1.24
10,769.0	87.92	333.03	6,643.1	3,960.1	-905.3	4,042.6	0.58
10,814.0	87.93	333.11	6,644.8	4,000.2	-925.6	4,087.0	0.18
10,858.0	87.93	333.11	6,646.4	4,039.4	-945.5	4,130.5	0.00
10,903.0	88.29	334.96	6,647.8	4,079.9	-965.2	4,175.1	4.19
10,948.0	88.99	334.26	6,648.9	4,120.5	-984.5	4,219.8	2.20
10,993.0	89.96	333.55	6,649.3	4,160.9	-1,004.3	4,264.4	2.67
11,038.0	89.69	332.41	6,649.5	4,201.0	-1,024.7	4,308.9	2.60
11,083.0	91.19	334.87	6,649.1	4,241.3	-1,044.7	4,353.5	6.40
11,128.0	92.55	336.39	6,647.6	4,282.3	-1,063.3	4,398.2	4.53
11,173.0	90.75	334.96	6,646.3	4,323.3	-1,081.8	4,443.0	5.11
11,217.0	89.78	335.05	6,646.1	4,363.1	-1,100.4	4,486.7	2.21
11,262.0	89.60	335.05	6,646.4	4,403.9	-1,119.4	4,531.4	0.40
11,307.0	89.78	333.73	6,646.6	4,444.5	-1,138.8	4,576.1	2.96
11,352.0	91.19	336.01	6,646.2	4,485.3	-1,157.9	4,620.8	5.96
11,397.0	91.01	335.31	6,645.4	4,526.2	-1,176.5	4,665.5	1.61
11,442.0	90.48	334.96	6,644.8	4,567.1	-1,195.4	4,710.2	1.41
11,487.0	90.13	333.55	6,644.6	4,607.6	-1,214.9	4,754.9	3.23
11,532.0	90.31	331.88	6,644.4	4,647.6	-1,235.6	4,799.4	3.73

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Company:	Antero	**Local Co-ordinate Reference:**	Well Squirrel Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Squirrel Unit 1H 1003' GL + 19' RKB @ 1022.0usf
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Squirrel Unit 1H 1003' GL + 19' RKB @ 1022.0usf
Well:	Squirrel Unit 1H	**North Reference:**	Grid
Wellbore:	Sidetrack	**Survey Calculation Method:**	Minimum Curvature
Design:	Sidetrack	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
11,576.0	90.84	331.80	6,643.9	4,686.4	-1,256.3	4,842.7	1.22
11,621.0	90.75	331.97	6,643.3	4,726.1	-1,277.5	4,887.1	0.43
11,666.0	90.84	330.83	6,642.7	4,765.6	-1,299.1	4,931.4	2.54
11,711.0	90.31	332.06	6,642.2	4,805.1	-1,320.6	4,975.7	2.98
11,756.0	90.75	334.70	6,641.8	4,845.3	-1,340.7	5,020.2	5.95
11,801.0	91.36	334.70	6,641.0	4,886.0	-1,360.0	5,064.9	1.36
11,846.0	90.66	333.20	6,640.2	4,926.4	-1,379.7	5,109.5	3.68
11,891.0	90.04	333.64	6,639.9	4,966.7	-1,399.8	5,154.1	1.69
11,935.0	90.57	336.89	6,639.7	5,006.6	-1,418.3	5,197.8	7.48
11,980.0	90.48	337.68	6,639.3	5,048.1	-1,435.6	5,242.7	1.77
12,025.0	90.84	336.72	6,638.8	5,089.6	-1,453.1	5,287.6	2.28
12,070.0	90.92	336.10	6,638.1	5,130.8	-1,471.1	5,332.4	1.39
12,115.0	90.50	335.34	6,637.5	5,171.9	-1,489.6	5,377.2	1.93
12,160.0	90.04	335.14	6,637.3	5,212.7	-1,508.4	5,421.9	1.11
12,204.0	91.01	334.26	6,636.9	5,252.5	-1,527.2	5,465.6	2.98
12,249.0	90.75	334.87	6,636.2	5,293.1	-1,546.6	5,510.2	1.47
12,294.0	91.10	334.17	6,635.5	5,333.8	-1,565.9	5,554.9	1.74
12,339.0	90.40	335.22	6,634.9	5,374.4	-1,585.1	5,599.6	2.80
12,384.0	90.48	334.78	6,634.6	5,415.2	-1,604.2	5,644.3	0.99
12,429.0	91.01	334.08	6,634.0	5,455.8	-1,623.6	5,689.0	1.95
12,473.0	91.36	333.90	6,633.1	5,495.3	-1,642.9	5,732.6	0.89
12,518.0	89.87	335.31	6,632.6	5,536.0	-1,662.2	5,777.2	4.56
12,563.0	91.01	335.22	6,632.2	5,576.9	-1,681.0	5,822.0	2.54
12,608.0	91.10	334.08	6,631.4	5,617.5	-1,700.3	5,866.6	2.54
12,653.0	90.13	334.17	6,630.9	5,658.0	-1,719.9	5,911.3	2.16
12,698.0	91.36	338.65	6,630.3	5,699.2	-1,737.9	5,956.1	10.32
12,743.0	90.75	337.77	6,629.5	5,741.0	-1,754.6	6,001.0	2.38
12,788.0	90.04	337.07	6,629.2	5,782.5	-1,771.9	6,045.9	2.22
12,832.0	91.21	336.71	6,628.7	5,823.0	-1,789.1	6,089.7	2.78
12,877.0	90.84	335.49	6,627.9	5,864.1	-1,807.4	6,134.5	2.83
12,922.0	89.83	335.89	6,627.6	5,905.2	-1,825.9	6,179.3	2.41
12,967.0	90.22	335.29	6,627.6	5,946.1	-1,844.5	6,224.1	1.59
13,012.0	91.28	336.19	6,627.0	5,987.2	-1,863.0	6,268.8	3.09
13,057.0	91.28	336.01	6,626.0	6,028.3	-1,881.2	6,313.6	0.40
13,102.0	90.40	334.78	6,625.4	6,069.2	-1,899.9	6,358.4	3.36
13,146.0	89.87	333.72	6,625.3	6,108.8	-1,919.1	6,402.0	2.69
13,191.0	91.01	334.85	6,624.9	6,149.4	-1,938.6	6,446.7	3.57
13,236.0	90.84	334.17	6,624.2	6,190.0	-1,957.9	6,491.3	1.56
13,281.0	90.57	332.59	6,623.6	6,230.2	-1,978.1	6,535.9	3.56
13,326.0	89.96	333.64	6,623.4	6,270.3	-1,998.5	6,580.4	2.70
13,371.0	91.01	334.47	6,623.1	6,310.8	-2,018.1	6,625.0	2.97
13,416.0	91.54	335.49	6,622.1	6,351.6	-2,037.2	6,669.7	2.55
13,460.0	91.74	334.56	6,620.8	6,391.4	-2,055.7	6,713.4	2.16
13,505.0	91.98	335.05	6,619.3	6,432.1	-2,074.9	6,758.1	1.21

Company:	Antero	**Local Co-ordinate Reference:**	Well Squirrel Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Squirrel Unit 1H 1003' GL + 19' RKB @ 1022.0usf
Site:	Squirrel/Livingston/Vonda Pad	**MD Reference:**	Squirrel Unit 1H 1003' GL + 19' RKB @ 1022.0usf
Well:	Squirrel Unit 1H	**North Reference:**	Grid
Wellbore:	Sidetrack	**Survey Calculation Method:**	Minimum Curvature
Design:	Sidetrack	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
13,550.0	90.47	335.39	6,618.4	6,473.0	-2,093.7	6,802.8	3.44
13,595.0	89.52	335.40	6,618.4	6,513.9	-2,112.5	6,847.6	2.11
13,640.0	89.60	335.14	6,618.7	6,554.8	-2,131.3	6,892.3	0.60
13,685.0	89.99	334.52	6,618.9	6,595.5	-2,150.4	6,937.0	1.63
13,730.0	90.37	333.90	6,618.7	6,636.0	-2,170.0	6,981.6	1.62
13,774.0	90.31	332.94	6,618.5	6,675.4	-2,189.7	7,025.2	2.19
13,819.0	90.22	333.20	6,618.3	6,715.5	-2,210.1	7,069.7	0.61
13,864.0	91.01	335.84	6,617.8	6,756.1	-2,229.4	7,114.4	6.12
13,909.0	91.45	335.84	6,616.8	6,797.1	-2,247.9	7,159.1	0.98
13,954.0	91.36	335.49	6,615.7	6,838.1	-2,266.4	7,203.9	0.80
13,999.0	90.40	334.87	6,615.0	6,879.0	-2,285.3	7,248.6	2.54
14,044.0	90.22	334.52	6,614.8	6,919.7	-2,304.5	7,293.3	0.87
14,095.0	90.13	334.34	6,614.6	6,965.7	-2,326.5	7,343.9	0.39
14,150.0	90.13	334.34	6,614.5	7,015.2	-2,350.3	7,398.5	0.00

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/18/2014
Job End Date:	6/2/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06258-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Squirrel Unit 1H ST
Longitude:	-80.82298100
Latitude:	39.25485800
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,614
Total Base Water Volume (gal):	9,720,354
Total Base Non Water Volume:	

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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	Water					
			Water	7732-18-5	100.00000	91.27432	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	5.02122	
			Aluminum Oxide	1344-28-1	1.10000	0.05529	
			Iron Oxide	1309-37-1	0.10000	0.00503	
			Titanium Oxide	13463-67-7	0.10000	0.00503	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	2.58204	
			Aluminum Oxide	1344-28-1	1.10000	0.02843	
			Iron Oxide	1309-37-1	0.10000	0.00259	
			Titanium Oxide	13463-67-7	0.10000	0.00259	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	0.59692	
			Aluminum Oxide	1344-28-1	1.10000	0.00657	

			Iron Oxide	1309-37-1	0.10000	0.00060	
			Titanium Oxide	13463-67-7	0.10000	0.00060	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	0.33901	
			Aluminum Oxide	1344-28-1	1.10000	0.00373	
			Iron Oxide	1309-37-1	0.10000	0.00034	
			Titanium Oxide	13463-67-7	0.10000	0.00034	
LSG-100L	Nabors Completion and Production Services	Gelling Agents					
			Petroleum Distillates	64742-47-8	70.00000	0.03634	
WFR-3B	Nabors Completion and Production Services	Friction Reducer					
			Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8	30.00000	0.01937	
			Ethoxylated alcohols	68002-97-1	15.00000	0.00968	
			Ethoxylated oleylamine	26635-93-8	5.00000	0.00323	
HCl Acid (12.5%-18.0%)	Nabors Completion and Production Services	Bulk Acid					
			20° Baume Hydrochloric Acid	7647-01-0	100.00000	0.01328	
HCl Acid (12.5%-18.0%)	Nabors Completion and Production Services	Bulk Acid					
			Water	7732-18-5	100.00000	0.01302	
KR-153SL	Nabors Completion and Production Services	Biocides					
			Polyethlyene-Glycol	25322-68-3	50.00000	0.00614	
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00246	
Super GREEN SOLV-M	Nabors Completion and Production Services	Paraffin & Scale Additives					
			Aliphatic Hydrocarbons	Proprietary	95.00000	0.00443	
			Dodecane	Proprietary	14.00000	0.00065	
			tetradecane	Proprietary	11.00000	0.00051	
			Tridecane	Proprietary	9.00000	0.00042	
			Undecane	Proprietary	8.00000	0.00037	
Super TSC-LT	Nabors Completion and Production Services	Paraffin & Scale Additives					
			Water	7732-18-5	60.00000	0.00400	
Super TSC 2 LT	Nabors Completion and Production Services	Paraffin & Scale Additives					
			Bis(hexamethylene)triamine Penta (methylene phosphonic acid), Sodium Salt	35657-77-3	15.00000	0.00153	

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Acid Inhibitor 2 (AI-2)	Nabors Completion and Production Services	Acid Corrosion Inhibitors					
			Isopropyl Alcohol	67-63-0	40.00000	0.00016	
			Glycol Ethers	111-46-6	40.00000	0.00016	
			Propargyl Alcohol	107-19-7	40.00000	0.00016	
			Ethoxylated Nonylphenol	68412-54-4	13.00000	0.00005	
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	10.00000	0.00004	
OB-2 LT	Nabors Completion and Production Services	Gel Breakers					
			Ammonium Persulfate	7727-54-0	85.00000	0.00045	
			Crystalline Silica (in the form of quartz)	14808-60-7	10.00000	0.00005	
EB-4L	Nabors Completion and Production Services	Gel Breakers					
			Ethylene Glycol	107-21-1	40.00000	0.00017	
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.							
Other Ingredients	Nabors Completion and Production Services	Other Ingredients					
			guar gum	9000-30-0	50.00000	0.02595	
			Anionic Polyacrylamide	910644-97-2	40.00000	0.02582	
			Water	7732-18-5	40.00000	0.02582	
			Water	7732-18-5	80.00000	0.00982	
			Propylene glycol	57-55-6	15.00000	0.00968	
			Water	7732-18-5	90.00000	0.00918	
			Proprietary	Proprietary	50.00000	0.00334	
			Proprietary	Proprietary	2.00000	0.00129	
			Crystalline Silica (in the form of quartz)	14808-60-7	2.00000	0.00104	
			Surfactant	68439-51-0	2.00000	0.00104	
			Proprietary	Proprietary	15.00000	0.00100	
			Proprietary	Proprietary	15.00000	0.00100	
			Proprietary	Proprietary	15.00000	0.00100	
			Proprietary	Proprietary	100.00000	0.00044	
			Sugar	57-50-1	100.00000	0.00044	
			Water	7732-18-5	100.00000	0.00022	
			Water	7732-18-5	48.00000	0.00020	
			Alkali Chloride salt	Proprietary	15.00000	0.00008	
			2-Butoxyethanol	111-76-2	13.00000	0.00005	
			Proprietary	Proprietary	1.00000	0.00000	
			Proprietary	Proprietary	1.00000	0.00000	
			Dioxane	123-91-1	1.00000	0.00000	
			Proprietary	Proprietary	1.00000	0.00000	
			Proprietary	Proprietary	1.00000	0.00000	
			Organophylic Clay	68953-58-2			

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* 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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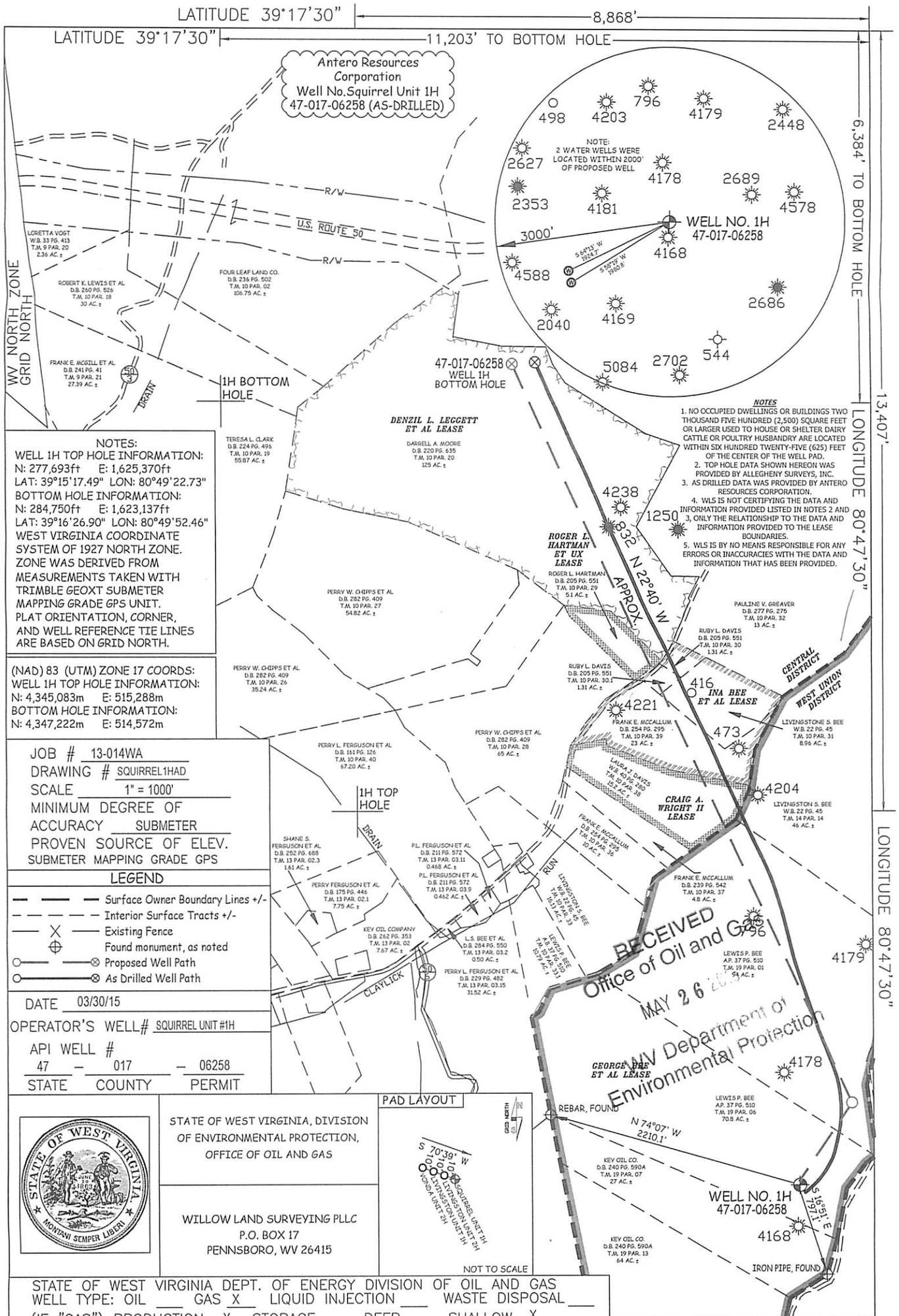

NOTES:
WELL 1H TOP HOLE INFORMATION:
N: 277,693ft E: 1,625,370ft
LAT: 39°15'17.49" LON: 80°49'22.73"
BOTTOM HOLE INFORMATION:
N: 284,750ft E: 1,623,137ft
LAT: 39°16'26.90" LON: 80°49'52.46"
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE.
ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT 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 1H TOP HOLE INFORMATION:
N: 4,345,083m E: 515,288m
BOTTOM HOLE INFORMATION:
N: 4,347,222m E: 514,572m

NOTES
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 MEAN'S RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.

JOB # 13-014WA
DRAWING # SQUIRREL1HAD
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

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

DATE 03/30/15
OPERATOR'S WELL# SQUIRREL UNIT #1H
API WELL # 47 – 017 – 06258
STATE COUNTY PERMIT

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

WILLOW LAND SURVEYING PLLC
P.O. BOX 17
PENNSBORO, WV 26415

PAD LAYOUT

NOT TO SCALE

STATE OF WEST VIRGINIA DEPT. OF ENERGY DIVISION OF OIL AND GAS
WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,011' ORIGINAL - 1,003' AS DRILLED WATERSHED HEADWATERS MIDDLE ISLAND CREEK
QUADRANGLE WEST UNION 7.5' DISTRICT WEST UNION COUNTY DODDRIDGE
SURFACE OWNER LEWIS P. BEE ACREAGE 70.8 ACRES +/-
OIL & GAS ROYALTY OWNER GEORGE BEE ET AL; CRAIG A. WRIGHT II; INA BEE ET AL; DENZIL LEGGETT ET UX LEASE ACREAGE 356.5 AC±; 15 AC±; 27 ±; 140 AC±
PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___
PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) (X) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,615' TVD 14,150' MD

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

COUNTY NAME PERMIT

FORM WW-6

WR-35
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State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 017 - 06263 County Doddridge District Grant

Quad Smithburg 7.5' Pad Name Delbert Leatherman Pad Field/Pool Name _____

Farm name Leatherman, Delbert E., et al Well Number McConnell Unit 2H

Operator (as registered with the OOG) Antero Resources Corporation

Address 1615 Wynkoop Street 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	4,349,924m	Easting	526,473m
Landing Point of Curve	Northing	4,349,917.37m	Easting	526,147.36m
Bottom Hole	Northing	4,351,939m	Easting	525,474m

Elevation (ft) 1,181' 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 06/25/2013 Date drilling commenced 02/01/2014 Date drilling ceased 04/19/2014

Date completion activities began 04/26/2014 Date completion activities ceased 07/11/2014

Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 95', 215' Open mine(s) (Y/N) depths No

Salt water depth(s) ft 1136', 1600' Void(s) encountered (Y/N) depths None

Coal depth(s) ft 327', 1517' Cavern(s) encountered (Y/N) depths None

Is coal being mined in area (Y/N) No

Reviewed by:

A.L. 5/26/15

W.S. 6/02/15

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API 47- 017 - 06263 Farm name Leatherman, Delbert E., et al Well number McConnell Unit 2H

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#; K-55	N/A	Yes
Surface	17 1/2"	13 3/8"	395'	New	48#; H-40	N/A	Yes
Coal							
Intermediate 1	12 1/4"	9 5/8"	2,581'	New	40#; J-55	N/A	Yes
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	14,425'	New	20#; P-110	N/A	Yes
Tubing		2 3/8"	7,198'	New	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^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	200 sx	15.6	1.18	109	0'	8 Hrs.
Surface	Class A	503 sx	15.6	1.18	274	0'	8 Hrs.
Coal							
Intermediate 1	Class A	1,001 sx	15.6	1.18	808	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1,170 sx (Lead); 1,083 sx (Tail)	14.5 (Lead); 15.2 (Tail)	1.3 (Lead); 1.86 (Tail)	2,828	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 14,428' MD, 7,014' TVD (BHL & Deepest Point Drilled) Loggers TD (ft) 14,428'

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6,564'

**This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Langfitt Unit 2H, API #47-017-06204). Please reference the wireline logs submitted with Form WR-35 for the Langfitt Unit 2H. 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 _____

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS _____

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED _____

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API 47- 017 - 06263 Farm name Leatherman, Delbert E., et al Well number McConnell Unit 2H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

*** PLEASE SEE ATTACHED EXHIBIT 1**

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)

*** PLEASE SEE ATTACHED EXHIBIT 2**

Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS		
Marcellus	6,886' (top) TVD	7,194' (top) MD	

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Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ■ Flow ☐ Pump

SHUT-IN PRESSURE Surface 3,550 psi Bottom Hole ---------- psi DURATION OF TEST ---------- hrs

OPEN FLOW Gas 11,507 mcfpd Oil 1 bpd NGL ---------- bpd Water ---------- bpd GAS MEASURED BY ☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		

*** PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Frontier Drilling, LLC
Address 562 Spring Run Road City Pennsboro State WV Zip 26415

Logging Company Cased Hole Solutions
Address 100 Arentzen Blvd. City Charleroi State PA Zip 15022

Cementing Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company US Well Services
Address 533 Industrial Park Drive City Jane Lew State WV Zip 26378
Please insert additional pages as applicable.

Completed by Megan Darling Telephone 303-357-7230
Signature Megan C. Darling Title Permitting Agent Date 05/15/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

API 47-017-06263 Farm Name Leatherman, Delbert E., et al Well Number McConnell Unit 2H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	26-Apr-14	14,173	14,340	60	Marcellus
2	3-Jun-14	13,975	14,142	60	Marcellus
3	3-Jun-14	13,776	13,944	60	Marcellus
4	4-Jun-14	13,578	13,745	60	Marcellus
5	4-Jun-14	13,380	13,547	60	Marcellus
6	4-Jun-14	13,182	13,349	60	Marcellus
7	4-Jun-14	12,984	13,151	60	Marcellus
8	5-Jun-14	12,786	12,953	60	Marcellus
9	5-Jun-14	12,587	12,755	60	Marcellus
10	5-Jun-14	12,389	12,556	60	Marcellus
11	6-Jun-14	12,191	12,358	60	Marcellus
12	6-Jun-14	11,993	12,160	60	Marcellus
13	6-Jun-14	11,795	11,962	60	Marcellus
14	6-Jun-14	11,597	11,764	60	Marcellus
15	7-Jun-14	11,398	11,566	60	Marcellus
16	7-Jun-14	11,200	11,367	60	Marcellus
17	7-Jun-14	11,002	11,169	60	Marcellus
18	7-Jun-14	10,804	10,971	60	Marcellus
19	8-Jun-14	10,606	10,773	60	Marcellus
20	8-Jun-14	10,408	10,575	60	Marcellus
21	8-Jun-14	10,209	10,377	60	Marcellus
22	8-Jun-14	10,011	10,178	60	Marcellus
23	8-Jun-14	9,813	9,980	60	Marcellus
24	9-Jun-14	9,615	9,782	60	Marcellus
25	9-Jun-14	9,417	9,584	60	Marcellus
26	9-Jun-14	9,219	9,386	60	Marcellus
27	9-Jun-14	9,020	9,188	60	Marcellus
28	9-Jun-14	8,822	8,989	60	Marcellus
29	10-Jun-14	8,624	8,791	60	Marcellus
30	10-Jun-14	8,426	8,593	60	Marcellus
31	10-Jun-14	8,228	8,395	60	Marcellus
32	10-Jun-14	8,030	8,197	60	Marcellus
33	10-Jun-14	7,831	7,999	60	Marcellus
34	11-Jun-14	7,633	7,800	60	Marcellus
35	11-Jun-14	7,435	7,602	60	Marcellus
36	11-Jun-14	7,237	7,404	60	Marcellus

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API 47-017-06263 Farm Name Leatherman, Delbert E., et al Well Number McConnell Unit 2H

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	3-Jun-14	80.0	7,305	5,708	4,410	252,200	6,507	N/A
2	3-Jun-14	79.0	7,247	6,062	4,896	251,100	6,457	N/A
3	3-Jun-14	81.0	7,275	5,654	4,771	209,600	7,049	N/A
4	4-Jun-14	79.0	7,551	5,472	4,925	237,400	6,696	N/A
5	4-Jun-14	77.0	7,354	5,540	4,678	253,500	6,400	N/A
6	4-Jun-14	80.0	7,251	5,440	5,375	252,300	6,384	N/A
7	4-Jun-14	80.0	7,053	5,482	5,525	231,100	6,633	N/A
8	5-Jun-14	79.0	7,218	5,357	5,364	243,300	6,850	N/A
9	5-Jun-14	78.0	7,163	5,432	5,318	252,600	7,181	N/A
10	5-Jun-14	80.0	7,081	5,454	5,640	252,400	6,328	N/A
11	5-Jun-14	80.0	6,960	5,311	5,229	252,800	6,315	N/A
12	6-Jun-14	80.0	6,727	5,193	5,071	250,100	6,363	N/A
13	6-Jun-14	80.0	7,310	5,672	4,942	246,100	6,825	N/A
14	6-Jun-14	77.0	7,668	5,457	5,157	170,700	6,868	N/A
15	7-Jun-14	79.0	6,983	5,497	5,239	217,300	6,867	N/A
16	7-Jun-14	80.0	7,036	5,547	5,500	226,200	6,749	N/A
17	7-Jun-14	80.5	6,998	5,615	5,482	252,000	6,234	N/A
18	7-Jun-14	80.0	7,194	5,250	6,201	252,200	6,223	N/A
19	8-Jun-14	80.0	6,854	5,379	6,037	253,000	6,209	N/A
20	8-Jun-14	80.0	6,852	5,475	5,504	252,950	6,189	N/A
21	8-Jun-14	80.0	6,435	5,307	5,282	252,650	6,197	N/A
22	8-Jun-14	80.0	6,521	5,379	5,758	252,600	6,170	N/A
23	8-Jun-14	80.0	6,839	5,372	5,736	252,600	6,160	N/A
24	9-Jun-14	80.0	6,612	5,447	5,919	252,200	6,143	N/A
25	9-Jun-14	78.0	6,697	5,762	5,153	252,000	6,158	N/A
26	9-Jun-14	80.0	6,512	5,443	5,325	252,200	6,125	N/A
27	9-Jun-14	73.0	6,550	6,058	5,522	251,900	6,631	N/A
28	9-Jun-14	80.0	6,787	5,397	6,169	252,500	6,095	N/A
29	10-Jun-14	80.0	6,785	5,611	5,965	250,400	6,078	N/A
30	10-Jun-14	81.0	6,606	5,651	5,311	252,900	6,070	N/A
31	10-Jun-14	79.8	6,286	5,218	5,257	255,240	6,052	N/A
32	10-Jun-14	80.0	6,566	5,922	5,887	252,600	6,018	N/A
33	10-Jun-14	80.0	6,635	5,958	5,722	250,800	6,025	N/A
34	11-Jun-14	82.0	6,481	5,268	6,069	248,400	6,019	N/A
35	11-Jun-14	79.7	6,305	5,372	5,865	252,890	6,003	N/A
36	11-Jun-14	81.0	6,335	4,367	4,810	253,080	5,990	N/A
	AVG=	**80**	**6,890**	**5,487**	**5,417**	**8,843,810**	**229,261**	TOTAL

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API 47-017-06263 Farm Name Leatherman, Delbert E., et al Well Number McConnell Unit 2H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	**TOP DEPTH (TVD) From Surface**	**BOTTOM DEPTH (TVD) From Surface**	**TOP DEPTH (MD) From Surface**	**BOTTOM DEPTH (MD) From Surface**
Fresh Water	95'	N/A	95'	N/A
Fresh Water	215'	N/A	215'	N/A
Sandstone/Siltstone w/ trace coal	0	147	0	147
Shale	Est. 147	327	Est. 147	327
Coal	Est. 327	347	Est. 327	347
Siltstone	Est. 347	637	Est. 347	637
Siltstone/Sandstone	Est. 637	1,237	Est. 637	1,237
Sandstone	Est. 1237	1,297	Est. 1237	1,297
Shale w/ trace coal	Est. 1297	1,317	Est. 1297	1,317
Shale w/ trace coal	Est. 1317	1,337	Est. 1317	1,337
Sandstone	Est. 1337	1,517	Est. 1337	1,517
Coal	Est. 1517	1,557	Est. 1517	1,557
Siltstone	Est. 1557	1,797	Est. 1557	1,797
Sandstone	Est. 1797	1,921	Est. 1797	1,921
Big Lime	1,921	2,023	1,921	2,023
Big Injun	2,023	2,461	2,023	2,461
Gantz Sand	2,461	2,580	2,461	2,580
Fifty Foot Sandstone	2,580	2,655	2,580	2,655
Gordon	2,655	2,963	2,655	2,963
Fifth Sandstone	2,963	2,985	2,963	2,985
Bayard	2,985	3,385	2,985	3,385
Warren	3,385	3,727	3,385	3,727
Speechley	3,727	4,042	3,727	4,045
Baltown	4,042	4,512	4,045	4,529
Bradford	4,512	5,015	4,529	5,061
Benson	5,015	5,283	5,061	5,348
Alexander	5,283	5,501	5,348	5,581
Elk	5,501	6,053	5,581	6,169
Rhinestreet	6,053	6,399	6,169	6,541
Sycamore	6,399	6,637	6,541	6,806
Middlesex	6,637	6,778	6,806	6,988
Burkett	6,778	6,806	6,988	7,030
Tully	6,806	6,886	7,030	7,194
Marcellus	6,886	NA	7,194	NA

*Please note Antero determines shallow formation tops based on mud and/or wireline logs that are only run on one well on a multi-well pad (Please reference Wireline Logs submitted for the Langfitt Unit 2H API# 47-017-06204). The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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Antero Resources

McConnell Unit 2H
Doddridge County WV
Northing: 14270661.20
Easting: 1727223.45
As Drilled

WELL DETAILS: McConnell Unit 2H
Ground Level: 1180.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14270661.20	1727223.45	39° 17' 53.551 N	80° 41' 35.371 W

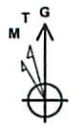
SITE DETAILS:
Holden/Langfitt/Vanscoy/McConnell Pad
Site Center: Holden 2H

Site Centre Northing: 14270672.18
Easting: 1727282.25

Positional Uncertainity: 2.8
Convergence: 0.19
Local North: Grid

PROJECT DETAILS: Doddridge County WV

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



To convert Magnetic North to Grid, Subtract 8.72°
To convert True North to Grid, Subtract 0.19°

Azimuths to Grid North
True North: -0.19°
Magnetic North: -8.72°

Magnetic Field
Strength: 52318.1snT
Dip Angle: 66.83°
Date: 3/18/2014
Model: IGRF2010

FRONTIER 23: McConnell 2H 1180 GL + 22 KB @ 1202.0usft
1180.0

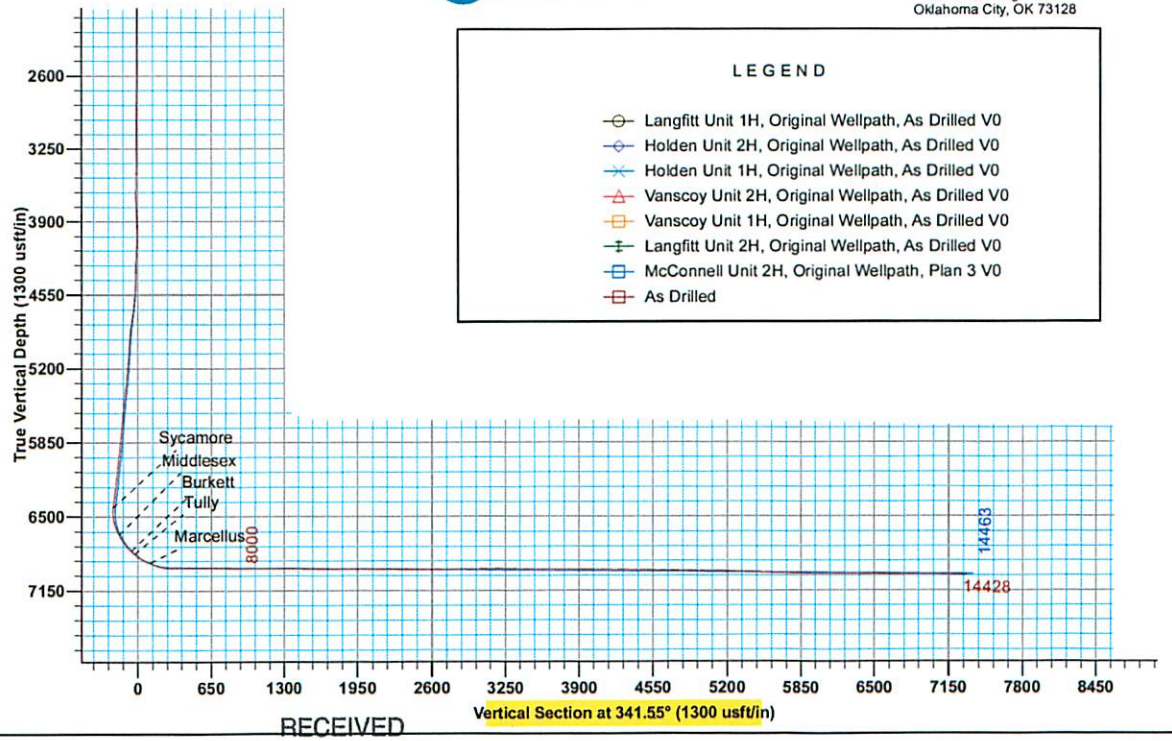
Scientific Drilling

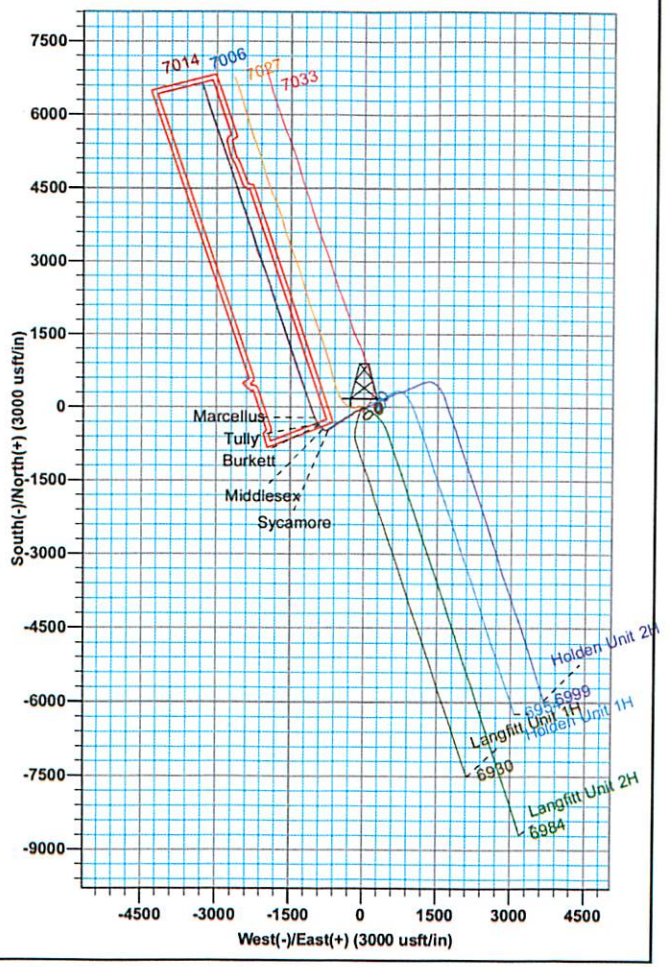
Genie Lightfoot
16:16, April 16 2014

Scientific Drilling
421 South Eagle Lane
Oklahoma City, OK 73128

LEGEND

- Langfitt Unit 1H, Original Wellpath, As Drilled V0
- Holden Unit 2H, Original Wellpath, As Drilled V0
- Holden Unit 1H, Original Wellpath, As Drilled V0
- Vanscoy Unit 2H, Original Wellpath, As Drilled V0
- Vanscoy Unit 1H, Original Wellpath, As Drilled V0
- Langfitt Unit 2H, Original Wellpath, As Drilled V0
- McConnell Unit 2H, Original Wellpath, Plan 3 V0
- As Drilled





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Antero Resources

Doddridge County WV
Holden/Langfitt/Vanscoy/McConnell Pad
McConnell Unit 2H
Original Wellpath

Design: As Drilled

EOW Completion Report

16 April, 2014

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Environmental Protection

Scientific Drilling

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well McConnell Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	FRONTIER 23: McConnell 2H 1180 GL + 22 KB @
Site:	Holden/Langfitt/Vanscoy/McConnell Pad	**MD Reference:**	FRONTIER 23: McConnell 2H 1180 GL + 22 KB @
Well:	McConnell Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Project	Doddridge County WV, McClellan District		
Map System:	Universal Transverse Mercator (US Survey Fee	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Holden/Langfitt/Vanscoy/McConnell Pad				
Site Position:		**Northing:**	14,270,672.18 usft	**Latitude:**	39° 17' 53.658 N
From:	Map	**Easting:**	1,727,282.25 usft	**Longitude:**	80° 41' 34.622 W
Position Uncertainty:	2.8 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.19 °

Well	McConnell Unit 2H					
Well Position	**+N/-S**	0.0 usft	**Northing:**	14,270,661.20 usft	**Latitude:**	39° 17' 53.551 N
	+E/-W	0.0 usft	**Easting:**	1,727,223.45 usft	**Longitude:**	80° 41' 35.371 W
Position Uncertainty		2.8 usft	**Wellhead Elevation:**	1,202.0 usft	**Ground Level:**	1,180.0 usft

Wellbore	Original Wellpath			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	3/18/2014	-8.53	66.83	52,318

Design	As Drilled				
Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	341.55

Survey Program **Date** 4/16/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	3,688.4	Survey #4 Final Gyro (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
3,688.4	6,350.6	Survey #6 Gyro SS (Original Wellpath)	MWD SDI	MWD - Standard ver 1.0.1
6,350.7	14,428.0	Survey #8 SDI MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
100.0	0.72	199.35	100.0	-0.6	-0.2	-0.5	0.72
200.0	0.77	209.33	200.0	-1.8	-0.7	-1.4	0.14
300.0	0.49	201.06	300.0	-2.8	-1.2	-2.2	0.29
400.0	0.46	199.72	400.0	-3.5	-1.5	-2.9	0.03
500.0	0.39	192.10	500.0	-4.2	-1.7	-3.5	0.09
600.0	0.48	193.41	600.0	-5.0	-1.9	-4.1	0.09
700.0	0.36	192.71	700.0	-5.7	-2.1	-4.8	0.12
800.0	0.43	194.29	800.0	-6.4	-2.2	-5.3	0.07
900.0	0.27	175.91	900.0	-7.0	-2.3	-5.9	0.19

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well McConnell Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	FRONTIER 23: McConnell 2H 1180 GL + 22 KB @
Site:	Holden/Langfitt/Vanscoy/McConnell Pad	**MD Reference:**	FRONTIER 23: McConnell 2H 1180 GL + 22 KB @
Well:	McConnell Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,000.0	0.32	182.31	1,000.0	-7.5	-2.3	-6.4	0.06
1,100.0	0.37	183.25	1,100.0	-8.1	-2.3	-6.9	0.05
1,200.0	0.30	180.67	1,200.0	-8.7	-2.3	-7.5	0.07
1,300.0	0.35	211.32	1,300.0	-9.2	-2.5	-7.9	0.18
1,400.0	0.34	221.44	1,400.0	-9.7	-2.9	-8.3	0.06
1,500.0	0.27	200.60	1,500.0	-10.1	-3.1	-8.6	0.13
1,600.0	0.18	239.25	1,600.0	-10.4	-3.4	-8.8	0.17
1,700.0	0.14	230.71	1,700.0	-10.6	-3.6	-8.9	0.05
1,800.0	0.15	288.52	1,800.0	-10.6	-3.8	-8.9	0.14
1,900.0	0.16	232.40	1,900.0	-10.7	-4.0	-8.8	0.15
2,000.0	0.17	269.18	2,000.0	-10.7	-4.3	-8.8	0.10
2,100.0	0.15	184.32	2,100.0	-10.9	-4.5	-8.9	0.22
2,200.0	0.19	239.67	2,200.0	-11.1	-4.6	-9.1	0.16
2,300.0	0.14	171.69	2,300.0	-11.3	-4.7	-9.2	0.19
2,400.0	0.17	158.64	2,400.0	-11.6	-4.7	-9.5	0.05
2,500.0	0.34	221.70	2,500.0	-11.9	-4.8	-9.8	0.30
2,600.0	0.40	201.63	2,600.0	-12.5	-5.1	-10.2	0.14
2,700.0	0.46	203.02	2,699.9	-13.2	-5.4	-10.8	0.06
2,800.0	0.70	214.85	2,799.9	-14.0	-5.9	-11.4	0.27
2,900.0	0.60	210.21	2,899.9	-15.0	-6.5	-12.1	0.11
3,000.0	0.55	213.80	2,999.9	-15.8	-7.1	-12.8	0.06
3,100.0	0.75	206.71	3,099.9	-16.8	-7.6	-13.5	0.22
3,200.0	0.54	207.54	3,199.9	-17.8	-8.1	-14.3	0.21
3,300.0	0.78	209.56	3,299.9	-18.8	-8.7	-15.1	0.24
3,400.0	0.66	208.09	3,399.9	-19.9	-9.3	-16.0	0.12
3,500.0	0.71	216.82	3,499.9	-20.9	-9.9	-16.7	0.12
3,600.0	0.55	196.97	3,599.9	-21.9	-10.5	-17.4	0.27
3,688.4	0.76	210.12	3,688.3	-22.8	-10.9	-18.2	0.29
3,770.0	5.21	286.92	3,769.8	-22.2	-14.7	-16.4	6.24
3,866.0	6.85	274.72	3,865.2	-20.4	-24.6	-11.6	2.16
3,962.0	8.90	256.16	3,960.3	-21.8	-37.5	-8.8	3.38
4,059.0	9.60	243.66	4,056.1	-27.1	-52.0	-9.3	2.19
4,155.0	11.52	238.98	4,150.5	-35.6	-67.4	-12.5	2.19
4,252.0	13.81	237.67	4,245.1	-46.8	-85.5	-17.3	2.38
4,348.0	13.96	246.83	4,338.3	-57.5	-105.8	-21.0	2.29
4,445.0	15.95	243.49	4,432.0	-68.1	-128.5	-23.9	2.23
4,540.0	18.88	244.45	4,522.6	-80.5	-154.1	-27.6	3.10
4,637.0	20.52	237.05	4,614.0	-96.5	-182.5	-33.8	3.07
4,733.0	20.27	227.38	4,704.0	-116.9	-208.9	-44.8	3.52
4,829.0	18.02	222.99	4,794.7	-139.1	-231.2	-58.7	2.78
4,926.0	17.36	235.14	4,887.1	-158.3	-253.3	-70.0	3.86
5,022.0	18.60	241.09	4,978.4	-173.9	-278.5	-76.8	2.31
5,119.0	19.76	241.22	5,070.1	-189.3	-306.4	-82.6	1.20
5,215.0	22.66	241.53	5,159.5	-205.9	-336.9	-88.7	3.02
5,311.0	21.99	236.74	5,248.4	-224.6	-368.2	-96.5	2.02

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well McConnell Unit 2H
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Site:	Holden/Langfitt/Vanscoy/McConnell Pad	**MD Reference:**	FRONTIER 23: McConnell 2H 1180 GL + 22 KB @
Well:	McConnell Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,407.0	22.02	234.91	5,337.4	-244.8	-397.9	-106.3	0.71
5,503.0	19.94	234.85	5,427.0	-264.6	-426.1	-116.1	2.17
5,600.0	18.79	233.86	5,518.5	-283.3	-452.2	-125.6	1.23
5,695.0	19.40	236.85	5,608.3	-301.0	-477.8	-134.3	1.21
5,791.0	21.16	239.49	5,698.3	-318.5	-506.0	-142.0	2.07
5,888.0	18.75	236.38	5,789.5	-336.0	-534.1	-149.7	2.71
5,983.0	19.65	234.21	5,879.2	-353.8	-559.8	-158.4	1.21
6,080.0	20.83	234.27	5,970.2	-373.4	-587.0	-168.4	1.22
6,176.0	21.49	233.91	6,059.7	-393.7	-615.1	-178.8	0.70
6,272.0	21.99	236.90	6,148.9	-413.9	-644.3	-188.7	1.27
6,521.0	20.05	230.43	6,381.4	-466.6	-716.3	-215.9	1.21
6,553.0	19.32	231.78	6,411.5	-473.3	-724.7	-219.7	2.69
6,564.0	19.20	236.45	6,421.9	-475.5	-727.6	-220.7	14.05
Sycamore							
6,585.0	19.29	245.41	6,441.7	-478.8	-733.7	-222.0	14.05
6,618.0	20.28	258.02	6,472.8	-482.3	-744.2	-221.9	13.25
6,650.0	22.83	268.11	6,502.6	-483.6	-755.9	-219.6	14.03
6,682.0	24.97	276.93	6,531.8	-483.0	-768.8	-214.9	13.00
6,714.0	26.90	283.52	6,560.6	-480.5	-782.5	-208.2	10.83
6,746.0	29.13	290.36	6,588.9	-476.1	-796.9	-199.4	12.21
6,778.0	30.26	298.53	6,616.7	-469.5	-811.3	-188.7	13.12
6,810.0	31.10	305.92	6,644.2	-460.8	-825.1	-176.0	12.07
6,829.0	31.99	309.12	6,660.4	-454.8	-832.9	-167.8	9.98
Middlesex							
6,842.0	32.65	311.21	6,671.4	-450.3	-838.2	-161.9	9.98
6,874.0	34.63	314.35	6,698.0	-438.3	-851.2	-146.3	8.23
6,906.0	36.96	318.87	6,724.0	-424.6	-864.1	-129.4	11.01
6,938.0	40.38	322.03	6,749.0	-409.2	-876.8	-110.7	12.34
6,970.0	44.49	324.56	6,772.6	-391.9	-889.7	-90.2	13.91
7,002.0	46.86	325.91	6,794.9	-373.1	-902.7	-68.2	8.00
7,011.0	47.55	326.25	6,801.0	-367.6	-906.4	-61.9	8.14
Burkett							
7,035.0	49.39	327.12	6,817.0	-352.6	-916.3	-44.5	8.14
7,053.0	51.59	327.37	6,828.4	-340.9	-923.8	-31.0	12.27
Tully							
7,067.0	53.30	327.56	6,836.9	-331.6	-929.7	-20.3	12.27
7,099.0	57.79	328.17	6,855.0	-309.2	-943.8	5.3	14.12
7,131.0	61.17	328.15	6,871.3	-285.8	-958.3	32.2	10.56
7,163.0	63.56	329.65	6,886.1	-261.5	-973.0	59.8	8.55
7,195.0	65.72	332.89	6,899.8	-236.2	-986.8	88.3	11.37
7,217.0	67.64	334.19	6,908.6	-218.1	-995.8	108.3	10.26
Marcellus							
7,228.0	68.60	334.82	6,912.6	-208.9	-1,000.2	118.4	10.26
7,260.0	70.82	337.12	6,923.7	-181.5	-1,012.5	148.3	9.67
7,292.0	73.02	338.21	6,933.7	-153.3	-1,024.00	178.6	7.60

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Project:	Doddridge County WV	**TVD Reference:**	FRONTIER 23: McConnell 2H 1180 GL + 22 KB @
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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,324.0	77.61	340.57	6,941.8	-124.4	-1,034.9	209.5	16.02
7,356.0	81.36	341.27	6,947.6	-94.6	-1,045.2	241.0	11.91
7,371.0	84.00	341.35	6,949.5	-80.6	-1,049.9	255.9	17.61
7,432.0	91.01	341.96	6,952.2	-22.7	-1,069.1	316.8	11.54
7,475.0	91.89	341.44	6,951.1	18.1	-1,082.6	359.8	2.38
7,572.0	90.31	339.50	6,949.2	109.5	-1,115.0	456.7	2.58
7,667.0	89.60	339.41	6,949.3	198.4	-1,148.4	551.7	0.75
7,763.0	88.90	339.41	6,950.6	288.3	-1,182.1	647.6	0.73
7,859.0	88.81	339.85	6,952.5	378.3	-1,215.5	743.5	0.47
7,955.0	88.90	339.24	6,954.4	468.2	-1,249.1	839.4	0.64
8,051.0	90.04	342.58	6,955.3	558.9	-1,280.5	935.4	3.68
8,147.0	90.22	342.05	6,955.1	650.3	-1,309.6	1,031.4	0.58
8,243.0	88.72	339.77	6,956.0	741.1	-1,341.0	1,127.4	2.84
8,338.0	89.60	340.29	6,957.4	830.3	-1,373.5	1,222.3	1.08
8,434.0	90.04	340.38	6,957.7	920.7	-1,405.8	1,318.3	0.47
8,530.0	90.57	341.70	6,957.2	1,011.5	-1,437.0	1,414.3	1.48
8,625.0	90.22	342.31	6,956.5	1,101.9	-1,466.3	1,509.3	0.74
8,720.0	88.72	341.79	6,957.4	1,192.2	-1,495.6	1,604.3	1.67
8,817.0	88.90	341.35	6,959.4	1,284.2	-1,526.2	1,701.3	0.49
8,913.0	89.16	342.58	6,961.0	1,375.5	-1,556.0	1,797.2	1.31
9,009.0	88.99	341.61	6,962.6	1,466.9	-1,585.5	1,893.2	1.03
9,099.0	89.52	340.73	6,963.7	1,552.0	-1,614.5	1,983.2	1.14
9,190.0	90.13	341.26	6,964.0	1,638.1	-1,644.2	2,074.2	0.89
9,281.0	90.48	340.21	6,963.5	1,724.0	-1,674.2	2,165.2	1.22
9,372.0	90.04	341.88	6,963.1	1,810.0	-1,703.7	2,256.2	1.90
9,462.0	89.34	339.85	6,963.6	1,895.1	-1,733.2	2,346.2	2.39
9,552.0	90.22	342.31	6,963.9	1,980.2	-1,762.4	2,436.2	2.90
9,643.0	90.40	342.23	6,963.5	2,066.9	-1,790.1	2,527.2	0.22
9,735.0	89.25	339.94	6,963.7	2,153.9	-1,819.9	2,619.1	2.79
9,825.0	90.92	343.63	6,963.6	2,239.4	-1,848.1	2,709.1	4.50
9,916.0	90.92	343.46	6,962.1	2,326.6	-1,873.8	2,800.1	0.19
10,008.0	91.10	343.37	6,960.5	2,414.8	-1,900.1	2,892.0	0.22
10,099.0	90.57	343.11	6,959.2	2,501.9	-1,926.3	2,982.9	0.65
10,195.0	91.28	343.46	6,957.6	2,593.8	-1,953.9	3,078.9	0.82
10,291.0	90.48	341.70	6,956.2	2,685.4	-1,982.7	3,174.9	2.01
10,388.0	89.25	338.62	6,956.4	2,776.6	-2,015.6	3,271.8	3.42
10,481.0	89.78	338.54	6,957.2	2,863.2	-2,049.6	3,364.7	0.58
10,579.0	89.52	337.83	6,957.8	2,954.2	-2,086.0	3,462.5	0.77
10,675.0	88.81	337.83	6,959.2	3,043.1	-2,122.2	3,558.3	0.74
10,771.0	88.46	338.54	6,961.5	3,132.2	-2,157.9	3,654.1	0.82
10,868.0	90.40	342.58	6,962.4	3,223.6	-2,190.0	3,751.1	4.62
10,964.0	90.04	344.42	6,962.1	3,315.7	-2,217.4	3,847.0	1.95
11,059.0	89.16	344.42	6,962.7	3,407.2	-2,242.9	3,941.9	0.93
11,156.0	88.90	342.58	6,964.4	3,500.2	-2,270.5	4,038.8	1.92
11,252.0	89.78	343.72	6,965.5	3,592.0	-2,298.3	4,134.8	1.50

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well McConnell Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	FRONTIER 23: McConnell 2H 1180 GL + 22 KB @
Site:	Holden/Langfitt/Vanscoy/McConnell Pad	**MD Reference:**	FRONTIER 23: McConnell 2H 1180 GL + 22 KB @
Well:	McConnell Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
11,348.0	89.96	343.37	6,965.7	3,684.1	-2,325.5	4,230.7	0.41
11,444.0	89.52	340.82	6,966.1	3,775.4	-2,355.0	4,326.7	2.70
11,540.0	88.37	339.15	6,967.9	3,865.6	-2,387.8	4,422.6	2.11
11,637.0	89.16	341.17	6,970.0	3,956.8	-2,420.8	4,519.6	2.24
11,733.0	90.13	341.17	6,970.6	4,047.7	-2,451.7	4,615.6	1.01
11,829.0	88.81	343.11	6,971.5	4,139.1	-2,481.2	4,711.6	2.44
11,925.0	88.55	341.96	6,973.7	4,230.6	-2,510.0	4,807.5	1.23
12,020.0	88.29	341.79	6,976.3	4,320.9	-2,539.5	4,902.5	0.33
12,116.0	88.90	343.28	6,978.7	4,412.4	-2,568.3	4,998.4	1.68
12,213.0	89.52	343.55	6,980.0	4,505.4	-2,596.0	5,095.4	0.70
12,308.0	88.90	342.93	6,981.3	4,596.3	-2,623.4	5,190.3	0.92
12,404.0	89.25	342.84	6,982.9	4,688.1	-2,651.6	5,286.3	0.38
12,501.0	87.76	342.40	6,985.4	4,780.6	-2,680.6	5,383.2	1.60
12,597.0	87.58	342.31	6,989.3	4,872.0	-2,709.7	5,479.1	0.21
12,693.0	88.02	342.31	6,993.0	4,963.4	-2,738.8	5,575.1	0.46
12,789.0	87.41	341.35	6,996.8	5,054.5	-2,768.7	5,671.0	1.18
12,885.0	89.16	341.26	6,999.7	5,145.4	-2,799.5	5,766.9	1.83
12,981.0	88.81	338.45	7,001.4	5,235.5	-2,832.6	5,862.9	2.95
13,077.0	90.40	340.82	7,002.0	5,325.5	-2,866.0	5,958.8	2.97
13,173.0	90.75	340.12	7,001.1	5,416.0	-2,898.1	6,054.8	0.82
13,269.0	89.52	340.47	7,000.8	5,506.4	-2,930.4	6,150.7	1.33
13,365.0	89.52	341.61	7,001.7	5,597.1	-2,961.6	6,246.7	1.19
13,462.0	89.43	338.45	7,002.5	5,688.3	-2,994.7	6,343.7	3.26
13,558.0	88.99	342.40	7,003.9	5,778.7	-3,026.9	6,439.6	4.14
13,655.0	88.81	340.29	7,005.7	5,870.6	-3,057.9	6,536.6	2.18
13,751.0	90.66	342.58	7,006.2	5,961.6	-3,088.5	6,632.6	3.07
13,847.0	89.96	343.72	7,005.7	6,053.5	-3,116.3	6,728.6	1.39
13,944.0	89.78	340.91	7,005.9	6,145.9	-3,145.8	6,825.5	2.90
14,040.0	89.25	342.67	7,006.7	6,237.1	-3,175.8	6,921.5	1.91
14,137.0	88.46	344.69	7,008.6	6,330.1	-3,203.0	7,018.4	2.24
14,233.0	88.81	345.04	7,010.9	6,422.8	-3,228.1	7,114.3	0.52
14,329.0	89.60	345.57	7,012.2	6,515.6	-3,252.4	7,210.0	0.99
14,428.0	88.50	343.90	7,013.9	6,611.1	-3,278.5	7,308.9	2.02

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well McConnell Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	FRONTIER 23: McConnell 2H 1180 GL + 22 KB @
Site:	Holden/Langfitt/Vanscoy/McConnell Pad	**MD Reference:**	FRONTIER 23: McConnell 2H 1180 GL + 22 KB @
Well:	McConnell Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
6,564.0	6,421.9	-475.5	-727.6	Sycamore
6,829.0	6,660.4	-454.8	-832.9	Middlesex
7,011.0	6,801.0	-367.6	-906.4	Burkett
7,053.0	6,828.4	-340.9	-923.8	Tully
7,217.0	6,908.6	-218.1	-995.8	Marcellus

Checked By: _____ Approved By: _____ Date: _____

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/3/2014
Job End Date:	6/11/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06263-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	McConnell Unit 2H
Longitude:	-80.69298600
Latitude:	39.29829200
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	7,014
Total Base Water Volume (gal):	9,628,970
Total Base Non Water Volume:	440,067

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

Interstate Oil & Gas Compact Commission

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	89.81184	
Sand	U.S. Well Services, LLC	Proppant					
			Crystalline Silica, quartz	14808-60-7	100.00000	9.89070	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid					
			Water	7732-18-5	87.50000	0.09784	
			Hydrogen Chloride	7641-01-1	18.00000	0.02337	
GC-15	U.S. Well Services, LLC	Gelling Agents					
			Guar Gum	9000-30-0	50.00000	0.04040	
			Petroleum Distillates	64742-47-8	60.00000	0.03826	
			Suspending agent (solid)	14808-60-7	3.00000	0.00618	
			Surfactant	68439-51-0	3.00000	0.00242	
WFRA-405	U.S. Well Services, LLC	Friction Reducer					
			Water	7732-18-5	40.00000	0.02248	
			Anionic Polyacrylamide	Proprietary		0.02248	
			Petroleum Distillates	64742-47-8	22.00000	0.01810	
			Crystalline Salt	12125-02-9	5.00000	0.00281	

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			Ethoxylated alcohol blend	Proprietary	5.00000	0.00281	
SI-1000	U.S. Well Services, LLC	Scale Inhibitor					
			Anionic Copolymer	Proprietary		0.00409	
			Ethylene Glycol	107-21-1	20.00000	0.00369	
			Water	7732-18-5	30.00000	0.00308	
K-BAC 1020	U.S. Well Services, LLC	Anti-Bacterial Agent					
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00461	
			Deionized Water	7732-18-5	28.00000	0.00264	
AP One	U.S. Well Services, LLC	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00165	
AI-300	U.S. Well Services, LLC	Acid Corrosion Inhibitor					
			Ethylene Glycol	107-21-1	31.00000	0.00023	
			N,N-Dimethylformamide	68-12-2	15.00000	0.00007	
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	13.00000	0.00006	
			2-Butoxyethanol	111-76-2	7.00000	0.00006	
			Cinnamaldehyde	104-55-2	5.00000	0.00006	
			Water	7732-18-5	20.00000	0.00002	
			Ethoxylated Nonylphenol	68412-54-4	5.00000	0.00002	
			Isopropyl Alcohol	67-63-0	3.00000	0.00001	
			Triethyl Phosphate	78-40-0	3.00000	0.00001	

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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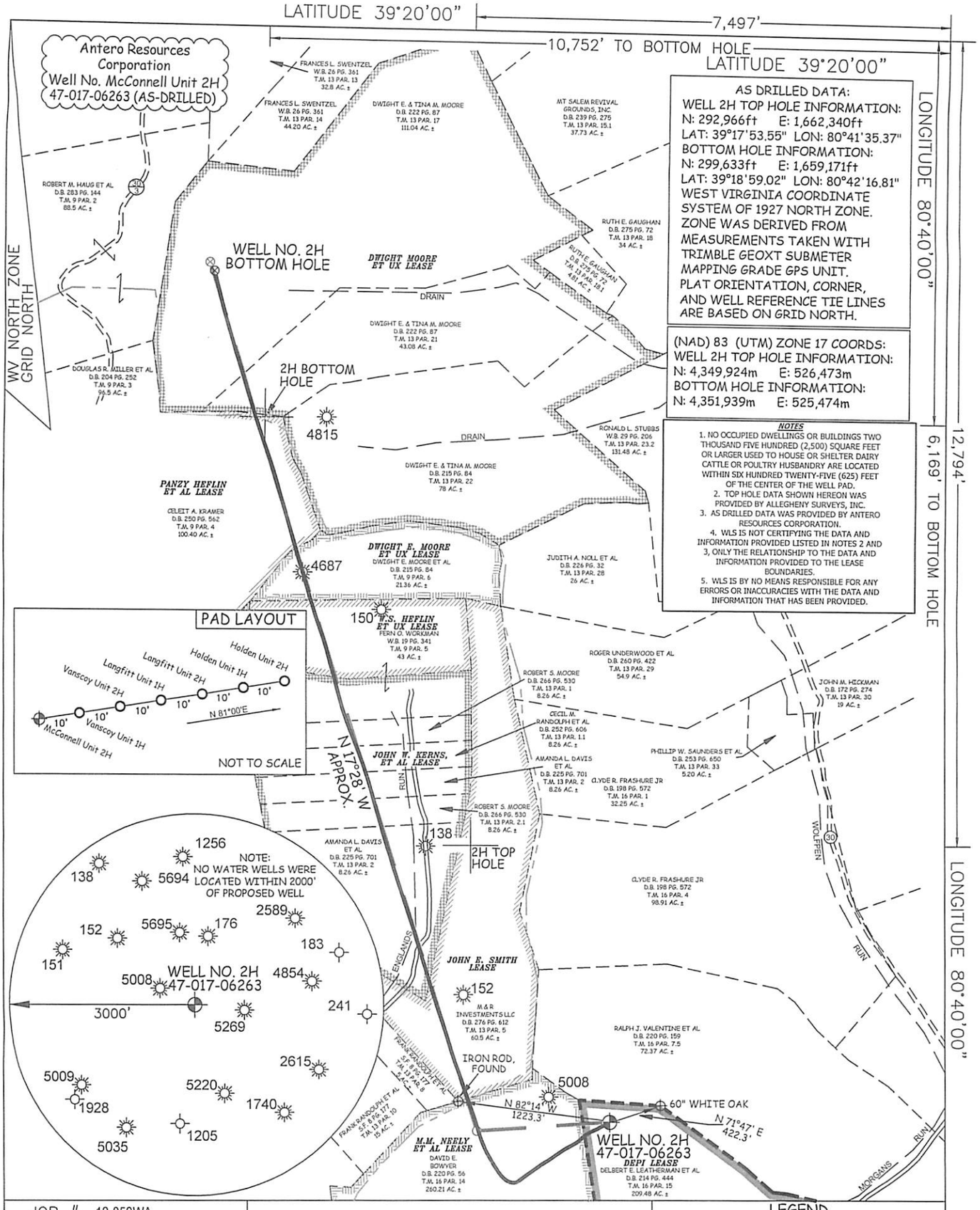

JOB #	12-059WA
DRAWING #	MCCONNELLUNITP2HAD
SCALE	1" = 1000'
MINIMUM DEGREE OF ACCURACY	SUBMETER
PROVEN SOURCE OF ELEV.	SUBMETER MAPPING GRADE GPS

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

DATE 04/17/15
OPERATOR'S WELL# MCCONNELL UNIT #2H

API WELL # 47 – 017 – 06263
STATE COUNTY PERMIT

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

LOCATION: ELEVATION 1,190' ORIGINAL - 1,181' AS DRILLED WATERSHED HEADWATERS MIDDLE ISLAND CREEK
QUADRANGLE SMITHBURG 7.5' DISTRICT GRANT COUNTY DODDRIDGE
COUNTY NAME PERMIT

SURFACE OWNER DELBERT E. LEATHERMAN ET AL ACREAGE 209.48 ACRES ±
OIL & GAS ROYALTY OWNER DEPI; M.M. NEELY ET AL; JOHN E. SMITH; JOHN W. KERNS ET AL; W.S. HEFLIN ET UX; DWIGHT E. MOORE ET UX; PANZY HEFLIN ET AL; DWIGHT MOORE ET UX
LEASE ACREAGE 71 ACRES±; 300 ACRES±; 60.5 ACRES±; 46 ACRES±; 21.36 ACRES±; 126 ACRES ±; 238 ACRES± 46 ACRES±

PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___
PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) (X) AS DRILLED PLUG & ABANDON ___ CLEAN OUT & REPLUG ___
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,013' TVD 14,428' MD

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

FORM WW-6

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

API 47 - 017 - 06267 County Doddridge District Grant

Quad Smithburg 7.5' Pad Name Revival Pad Field/Pool Name ----------

Farm name Williams, Larry et al Well Number Koch Unit 2H

Operator (as registered with the OOG) Antero Resources Corporation

Address 1615 Wynkoop Street 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 4,352,812m Easting 526,709m

Landing Point of Curve Northing 4,352,879.76m Easting 526,426.44m

Bottom Hole Northing 4,354,443m Easting 525,907m

Elevation (ft) 1,376' 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 06/26/2013 Date drilling commenced 09/26/2013 Date drilling ceased 03/12/2014

Date completion activities began 04/19/2014 Date completion activities ceased 07/06/2014

Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 437' Open mine(s) (Y/N) depths No

Salt water depth(s) ft 1,677' Void(s) encountered (Y/N) depths None

Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths None

Is coal being mined in area (Y/N) No

Reviewed by:

A.L. 5/26/15

W.S. 6/2/15

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API 47- 017 - 06267 Farm name Williams, Larry et al Well number Koch Unit 2H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	59'	New	51#; J-55	N/A	Yes
Surface	17 1/2"	13 3/8"	493'	New	48#; H-40	N/A	Yes*
Coal							
Intermediate 1	12 1/4"	9 5/8"	2,651'	New	36#; J-55	N/A	Yes
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	13,350'	New	20#; P-110	N/A	No
Tubing		2 3/8"	7,289'	New	4.7#; N-80	N/A	
Packer type and depth set		N/A					

Comment Details *Surface cement fell out 40', grouted back to surface with 100 sacks.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ^{3}/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	225 sx	15.6	1.18	57	0'	8 Hrs.
Surface	Class A	679 sx*	15.6	1.18	342	0'	8 Hrs.
Coal							
Intermediate 1	Class A	1,027 sx	15.6	1.18	830	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1,154 sx (Lead); 925 sx (Tail)	14.5 (Lead); 15.2 (Tail)	1.3 (Lead); 1.86 (Tail)	2,567	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 13,350' MD, 7,275' TVD (BHL & Deepest Point Drilled) Loggers TD (ft) 13,301'

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 6,608'

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

**This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Mt. Salem Revival Unit 1H, API #47-017-06269). Please reference the wireline logs submitted with Form WR-35 for the Mt. Salem Revival Unit 1H. A Cement Bond Log has been included with this submittal.

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

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

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API 47- 017 - 06267 Farm name Williams, Larry et al Well number Koch Unit 2H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

*** PLEASE SEE ATTACHED EXHIBIT 1**

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)

*** PLEASE SEE ATTACHED EXHIBIT 2**

Please insert additional pages as applicable.

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API 47- 017 - 06267 Farm name Williams, Larry et al Well number Koch Unit 2H

PRODUCING FORMATION(S)	DEPTHS		
Marcellus	7,184' (top) TVD	7,636' (top) MD	

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Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST ■ Flow □ Pump

SHUT-IN PRESSURE Surface 3,550 psi Bottom Hole ---------- psi DURATION OF TEST ---------- hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	10,871 mcfpd	2 bpd	---------- bpd	---------- bpd	□ Estimated ■ Orifice □ Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		

*** PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling Company, LP
Address 2640 Reach Road City Williamsport State PA Zip 17701

Logging Company Cased Hole Solution
Address 100 Arentzen Blvd City Charleroi State PA Zip 15022

Cementing Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company Halliburton
Address 121 Champion Way, Suite 200 City Canonsburg State PA Zip 15317

Please insert additional pages as applicable.

Completed by Megan Darling Telephone 303-357-7230
Signature Megan C. Darling Title Permitting Agent Date 05/15/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

API 47-017-06267 Farm Name Williams, Larry et al Well Number Koch Unit 2H					
EXHIBIT 1					
Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	19-Apr-14	13,131	13,266	60	Marcellus
2	14-May-14	12,929	13,100	60	Marcellus
3	14-May-14	12,727	12,898	60	Marcellus
4	14-May-14	12,525	12,696	60	Marcellus
5	15-May-14	12,323	12,493	60	Marcellus
6	15-May-14	12,121	12,291	60	Marcellus
7	15-May-14	11,919	12,089	60	Marcellus
8	15-May-14	11,717	11,887	60	Marcellus
9	15-May-14	11,515	11,685	60	Marcellus
10	16-May-14	11,313	11,483	60	Marcellus
11	16-May-14	11,111	11,281	60	Marcellus
12	17-May-14	10,909	11,079	60	Marcellus
13	17-May-14	10,706	10,877	60	Marcellus
14	18-May-14	10,504	10,675	60	Marcellus
15	18-May-14	10,302	10,473	60	Marcellus
16	18-May-14	10,100	10,271	60	Marcellus
17	18-May-14	9,898	10,069	60	Marcellus
18	19-May-14	9,696	9,866	60	Marcellus
19	19-May-14	9,494	9,664	60	Marcellus
20	19-May-14	9,292	9,462	60	Marcellus
21	19-May-14	9,090	9,260	60	Marcellus
22	20-May-14	8,888	9,058	60	Marcellus
23	20-May-14	8,686	8,856	60	Marcellus
24	20-May-14	8,484	8,654	60	Marcellus
25	20-May-14	8,281	8,452	60	Marcellus
26	20-May-14	8,079	8,250	60	Marcellus
27	21-May-14	7,877	8,048	60	Marcellus
28	21-May-14	7,675	7,846	60	Marcellus

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API 47-017-06267 Farm Name Williams, Larry et al Well Number Koch Unit 2H								
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	12-May-14	75.0	7,787	NA	4,178	259,280	6,578	N/A
2	13-May-14	73.0	7,743	5,755	5,205	233,180	7,796	N/A
3	14-May-14	67.3	8,156	6,029	5,168	230,911	6,549	N/A
4	14-May-14	70.3	7,864	5,658	5,348	157,091	6,346	N/A
5	15-May-14	73.9	8,093	5,396	4,278	259,880	7,297	N/A
6	15-May-14	71.8	8,340	5,848	5,166	179,230	6,128	N/A
7	15-May-14	76.5	8,207	5,635	4,666	258,132	6,413	N/A
8	15-May-14	78.1	7,720	5,404	5,433	255,434	6,419	N/A
9	15-May-14	77.0	7,529	5,334	5,279	259,930	6,581	N/A
10	16-May-14	57.3	8,371	5,477	5,327	254,180	5,930	N/A
11	16-May-14	78.5	7,850	5,349	4,910	254,808	6,411	N/A
12	17-May-14	76.5	7,566	5,377	4,358	260,370	6,423	N/A
13	17-May-14	77.9	7,734	5,407	5,462	259,649	6,361	N/A
14	18-May-14	72.0	8,143	5,615	5,444	256,770	6,441	N/A
15	18-May-14	78.8	7,877	5,584	4,329	259,110	6,417	N/A
16	18-May-14	82.1	7,980	5,699	5,363	260,620	6,308	N/A
17	18-May-14	79.3	7,154	5,353	4,944	260,996	6,793	N/A
18	19-May-14	78.2	7,962	5,607	3,931	199,200	5,401	N/A
19	19-May-14	81.5	7,606	5,527	4,227	237,190	5,963	N/A
20	19-May-14	80.4	7,890	5,322	5,223	260,398	6,521	N/A
21	19-May-14	81.3	7,935	5,482	5,350	260,930	6,314	N/A
22	20-May-14	86.0	8,201	5,682	4,978	262,440	6,227	N/A
23	20-May-14	81.2	7,726	5,775	4,054	259,710	6,378	N/A
24	20-May-14	77.0	7,845	5,601	4,860	227,480	6,643	N/A
25	20-May-14	81.0	7,473	5,566	5,574	254,710	6,371	N/A
26	20-May-14	81.1	7,851	5,310	4,439	259,590	6,365	N/A
27	21-May-14	82.4	7,355	5,796	5,070	261,330	6,330	N/A
28	21-May-14	66.8	8,060	6,022	4,410	260,000	6,272	N/A
	AVG=	**76.5**	**7,858**	**5,578**	**4,892**	**6,902,549**	**179,975**	TOTAL

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API 47-017-06267 Farm Name Williams, Larry et al Well Number Koch Unit 2H				
EXHIBIT 3				
LITHOLOGY/ FORMATION	**TOP DEPTH (TVD) From Surface**	**BOTTOM DEPTH (TVD) From Surface**	**TOP DEPTH (MD) From Surface**	**BOTTOM DEPTH (MD) From Surface**
Fresh Water	437'	N/A	437'	N/A
Shale	0	337	0	337
Siltstone/ Sandstone	Est. 337	597	Est. 337	597
Shale	Est. 597	707	Est. 597	707
Sandstone	Est. 707	837	Est. 707	837
Siltstone/ Shale	Est. 837	917	Est. 837	917
Shale	Est. 917	1,727	Est. 917	1,727
Sandstone	Est. 1727	1,787	Est. 1727	1,787
Shale	Est. 1787	1,907	Est. 1787	1,907
Sandstone/ Trace Coal	Est. 1907	1,987	Est. 1907	1,987
Sandstone	Est. 1987	2,127	Est. 1987	2,127
Sandstone/ Trace Coal	Est. 2127	2,147	Est. 2127	2,147
Shale/ Sandstone	Est. 2147	2,181	Est. 2147	2,181
Big Lime	2,181	2,283	2,181	2,283
Big Injun	2,283	2,747	2,283	2,747
Gantz Sand	2,747	2,902	2,747	2,902
Fifty Foot Sandstone	2,902	2,977	2,902	2,977
Gordon	2,977	3,297	2,977	3,297
Fifth Sandstone	3,297	3,301	3,297	3,301
Bayard	3,301	3,683	3,301	3,683
Warren	3,683	4,053	3,683	4,053
Speechley	4,053	4,303	4,053	4,303
Baltown	4,303	4,795	4,303	4,795
Bradford	4,795	5,325	4,795	5,325
Benson	5,325	5,597	5,325	5,597
Alexander	5,597	5,763	5,597	5,763
Elk	5,763	6,351	5,763	6,351
Rhinestreet	6,351	6,702	6,351	6,708
Sycamore	6,702	6,930	6,708	6,998
Middlesex	6,930	7,077	6,998	7,310
Burkett	7,077	7,105	7,310	7,382
Tully	7,105	7,184	7,382	7,636
Marcellus	7,184	NA	7,636	NA

*Please note Antero determines shallow formation tops based on mud and/or wireline logs that are only run on one well on a multi-well pad (Please reference Wireline Logs submitted for the Mt. Salem Revival Unit 1H API# 47-017-06269). The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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Antero Resources

Antero Resources
Koch Unit 2H
Doddridge County WV
Northing: 14280137.12
Easting: 1727996.24
As Drilled

WELL DETAILS: Koch Unit 2H

Ground Level: 1377.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	14280137.12	1727996.24	39° 19' 27.218 N	80° 41' 25.124 W	

PROJECT DETAILS: Doddridge County WV

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

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Koch Unit 2H, Grid North
Vertical (TVD) Reference: Koch 2H: 1377 GL + 19 KB @ 1396.0usft
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: Koch 2H: 1377 GL + 19 KB @ 1396.0usft
Calculation Method: Minimum Curvature

Genie Lightfoot
Scientific Drilling
421 South Eagle Lane
Oklahoma City Oklahoma
405-787-3663

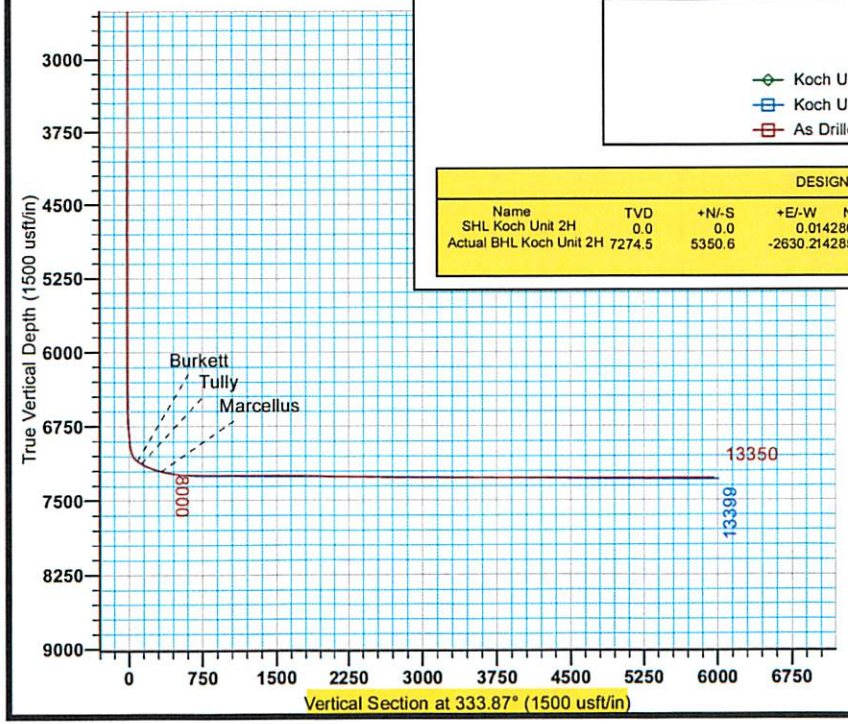
Scientific Drilling

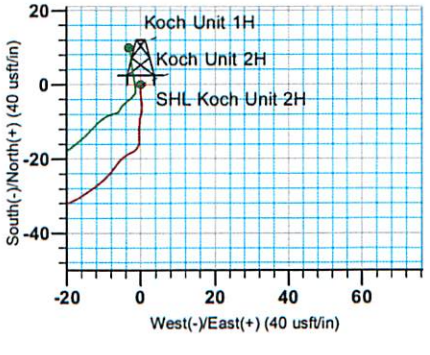
LEGEND

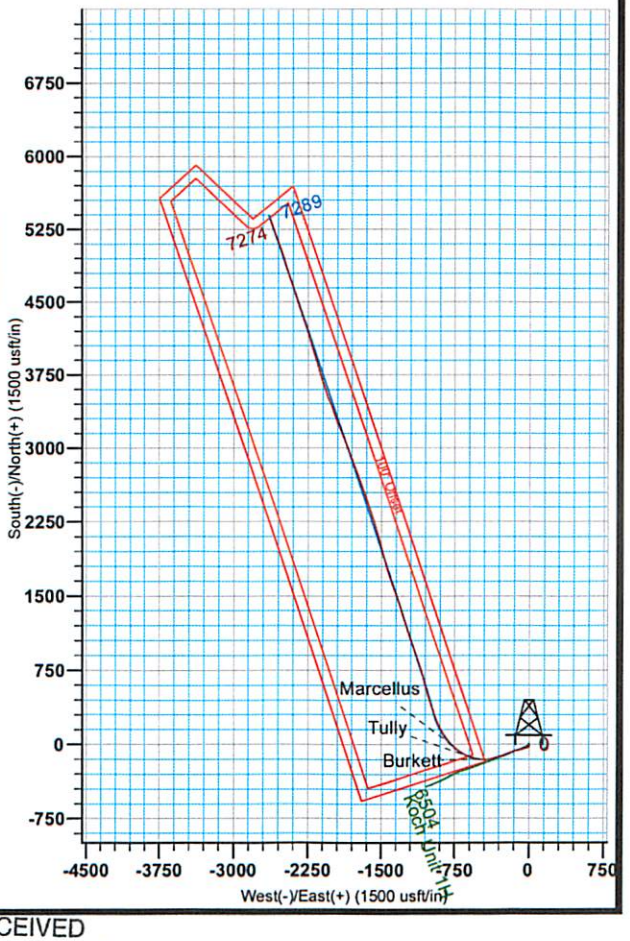
- Koch Unit 1H, Original Wellpath, As Drilled V0
- Koch Unit 2H, Original Wellpath, Plan 4 V0
- As Drilled

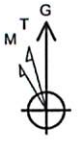
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Koch Unit 2H	0.0	0.0	0.01	4280137.12	1727996.23	39° 19' 27.218 N	80° 41' 25.124 W
Actual BHL Koch Unit 2H	7274.5	5350.6	-2630.21	4285487.68	1725366.04	39° 20' 20.210 N	80° 41' 58.379 W









To convert Magnetic North to Grid, Subtract 8.72°
To convert True North to Grid, Subtract 0.20°

Azimuths to Grid North
True North: -0.20°
Magnetic North: -8.72°

Magnetic Field
Strength: 52378.7snT
Dip Angle: 66.89°
Date: 10/22/2013
Model: IGRF2010

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Antero Resources

Doddridge County WV
Koch/Gains/McCue/Mt Salem Revival
Koch Unit 2H
Original Wellpath

Design: As Drilled

EOW Completion Report

17 March, 2014

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Scientific Drilling

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Koch Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Koch 2H 1377 GL + 19 KB @ 1396.0usft
Site:	Koch/Gains/McCue/Mt Salem Revival	**MD Reference:**	Koch 2H 1377 GL + 19 KB @ 1396.0usft
Well:	Koch Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Project Doddridge County WV, McClellan District

Map System:	Universal Transverse Mercator (US Survey Fee	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site Koch/Gains/McCue/Mt Salem Revival

Site Position:		**Northing:**	14,280,147.06 usft	**Latitude:**	39° 19' 27.317 N
From:	Map	**Easting:**	1,727,993.07 usft	**Longitude:**	80° 41' 25.164 W
Position Uncertainty:	2.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.20 °

Well Koch Unit 2H, Marcellus

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,280,137.12 usft	**Latitude:**	39° 19' 27.218 N
	+E/-W	0.0 usft	**Easting:**	1,727,996.24 usft	**Longitude:**	80° 41' 25.124 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**	1,388.0 usft	**Ground Level:**	1,377.0 usft

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/22/2013	-8.52	66.89	52,379

Design As Drilled

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	333.87

Survey Program **Date** 3/17/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
108.0	6,308.0	Survey #2 Def Gyro to KOP (Original Well	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
6,308.0	13,350.0	Survey #3 SDI MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
108.0	0.31	185.95	108.0	-0.3	0.0	-0.2	0.29
208.0	0.40	182.98	208.0	-0.9	-0.1	-0.8	0.09
308.0	0.42	177.28	308.0	-1.6	-0.1	-1.4	0.05
408.0	0.53	172.87	408.0	-2.4	0.0	-2.2	0.12
508.0	0.37	175.18	508.0	-3.2	0.1	-2.9	0.16
608.0	0.37	177.97	608.0	-3.9	0.1	-3.5	0.02
708.0	0.45	173.34	708.0	-4.6	0.2	-4.2	0.09
808.0	0.41	175.33	808.0	-5.3	0.3	-4.9	0.04
908.0	0.33	171.43	908.0	-6.0	0.3	-5.5	0.08
1,008.0	0.41	174.13	1,008.0	-6.6	0.3	-6.1	0.08

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Koch Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Koch 2H 1377 GL + 19 KB @ 1396.0usft
Site:	Koch/Gains/McCue/Mt Salem Revival	**MD Reference:**	Koch 2H 1377 GL + 19 KB @ 1396.0usft
Well:	Koch Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,108.0	0.33	196.47	1,108.0	-7.2	0.4	-6.7	0.16
1,208.0	0.35	196.06	1,208.0	-7.8	0.2	-7.1	0.02
1,308.0	0.38	193.40	1,308.0	-8.4	0.0	-7.6	0.03
1,408.0	0.39	200.20	1,408.0	-9.1	-0.2	-8.1	0.05
1,508.0	0.41	178.56	1,508.0	-9.8	-0.3	-8.6	0.15
1,608.0	0.41	187.92	1,608.0	-10.5	-0.3	-9.3	0.07
1,708.0	0.46	180.82	1,708.0	-11.2	-0.4	-9.9	0.07
1,808.0	0.50	184.50	1,808.0	-12.1	-0.4	-10.6	0.05
1,908.0	0.43	181.56	1,908.0	-12.9	-0.5	-11.4	0.07
2,008.0	0.46	181.00	2,008.0	-13.6	-0.5	-12.0	0.03
2,108.0	0.49	177.86	2,107.9	-14.5	-0.5	-12.8	0.04
2,208.0	0.40	180.22	2,207.9	-15.2	-0.4	-13.5	0.09
2,308.0	0.34	179.60	2,307.9	-15.9	-0.4	-14.1	0.06
2,408.0	0.33	211.33	2,407.9	-16.4	-0.6	-14.5	0.18
2,508.0	0.30	212.44	2,507.9	-16.9	-0.9	-14.8	0.03
2,608.0	0.26	208.50	2,607.9	-17.3	-1.1	-15.1	0.04
2,708.0	0.40	236.36	2,707.9	-17.7	-1.5	-15.2	0.21
2,808.0	0.41	240.59	2,807.9	-18.1	-2.1	-15.3	0.03
2,908.0	0.31	245.12	2,907.9	-18.4	-2.7	-15.3	0.10
3,008.0	0.26	244.55	3,007.9	-18.6	-3.1	-15.3	0.05
3,108.0	0.31	236.72	3,107.9	-18.8	-3.6	-15.3	0.06
3,208.0	0.28	231.48	3,207.9	-19.1	-4.0	-15.4	0.04
3,308.0	0.20	235.06	3,307.9	-19.4	-4.3	-15.5	0.08
3,408.0	0.35	235.10	3,407.9	-19.7	-4.7	-15.6	0.15
3,508.0	0.30	226.13	3,507.9	-20.0	-5.2	-15.7	0.07
3,608.0	0.38	221.21	3,607.9	-20.4	-5.6	-15.9	0.09
3,708.0	0.36	221.89	3,707.9	-20.9	-6.0	-16.2	0.02
3,808.0	0.50	217.36	3,807.9	-21.5	-6.5	-16.5	0.14
3,908.0	0.63	216.46	3,907.9	-22.3	-7.1	-16.9	0.13
4,008.0	0.72	217.41	4,007.9	-23.2	-7.8	-17.4	0.09
4,108.0	0.66	219.75	4,107.9	-24.2	-8.5	-18.0	0.07
4,208.0	0.69	227.95	4,207.9	-25.0	-9.3	-18.4	0.10
4,308.0	0.70	234.50	4,307.9	-25.8	-10.3	-18.6	0.08
4,408.0	0.67	226.90	4,407.9	-26.5	-11.2	-18.9	0.10
4,508.0	0.78	232.14	4,507.9	-27.4	-12.2	-19.2	0.13
4,608.0	0.81	232.16	4,607.9	-28.2	-13.3	-19.5	0.03
4,708.0	0.84	238.44	4,707.8	-29.0	-14.4	-19.7	0.10
4,808.0	0.82	233.32	4,807.8	-29.8	-15.6	-19.9	0.08
4,908.0	0.77	243.30	4,907.8	-30.6	-16.8	-20.0	0.15
5,008.0	0.88	244.65	5,007.8	-31.2	-18.1	-20.0	0.11
5,108.0	0.70	243.73	5,107.8	-31.8	-19.3	-20.0	0.18
5,208.0	0.69	253.46	5,207.8	-32.2	-20.5	-19.9	0.12
5,308.0	0.74	242.11	5,307.8	-32.7	-21.6	-19.8	0.15
5,408.0	0.76	257.75	5,407.8	-33.2	-22.8	-19.7	0.21

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Koch Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Koch 2H 1377 GL + 19 KB @ 1396.0usft
Site:	Koch/Gains/McCue/Mt Salem Revival	**MD Reference:**	Koch 2H 1377 GL + 19 KB @ 1396.0usft
Well:	Koch Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,508.0	0.75	242.86	5,507.8	-33.6	-24.1	-19.6	0.20
5,608.0	0.85	260.22	5,607.8	-34.0	-25.4	-19.4	0.26
5,708.0	0.68	262.00	5,707.8	-34.2	-26.7	-19.0	0.17
5,808.0	0.53	262.99	5,807.8	-34.4	-27.8	-18.6	0.15
5,908.0	0.56	259.38	5,907.7	-34.5	-28.7	-18.3	0.05
6,008.0	0.68	270.19	6,007.7	-34.6	-29.8	-18.0	0.17
6,108.0	0.61	267.76	6,107.7	-34.6	-30.9	-17.5	0.08
6,208.0	0.35	263.80	6,207.7	-34.7	-31.7	-17.2	0.26
6,308.0	0.16	257.39	6,307.7	-34.7	-32.2	-17.0	0.19
6,383.0	0.47	300.78	6,382.7	-34.6	-32.5	-16.7	0.49
6,474.0	0.30	199.64	6,473.7	-34.6	-32.9	-16.6	0.66
6,519.0	0.17	186.33	6,518.7	-34.8	-33.0	-16.7	0.31
6,563.0	2.06	246.45	6,562.7	-35.2	-33.7	-16.8	4.50
6,608.0	8.53	250.02	6,607.5	-36.7	-37.6	-16.4	14.39
6,653.0	14.25	253.03	6,651.6	-39.4	-46.0	-15.1	12.78
6,698.0	19.49	254.21	6,694.7	-43.1	-58.6	-12.9	11.67
6,743.0	25.09	255.51	6,736.3	-47.5	-75.0	-9.6	12.49
6,788.0	29.72	254.78	6,776.2	-52.8	-95.0	-5.6	10.32
6,833.0	33.56	252.97	6,814.5	-59.4	-117.7	-1.5	8.79
6,878.0	38.05	251.06	6,851.0	-67.6	-142.7	2.2	10.28
6,923.0	42.17	249.13	6,885.4	-77.4	-170.0	5.3	9.56
6,968.0	46.99	249.49	6,917.5	-88.6	-199.5	8.3	10.73
7,013.0	51.66	250.29	6,946.8	-100.3	-231.6	11.9	10.46
7,058.0	56.25	251.26	6,973.3	-112.3	-265.9	16.3	10.35
7,103.0	61.13	251.86	6,996.6	-124.4	-302.4	21.4	10.91
7,148.0	62.25	252.63	7,018.0	-136.5	-340.1	27.2	2.91
7,193.0	63.39	258.02	7,038.5	-146.6	-378.8	35.2	10.95
7,238.0	64.63	265.14	7,058.3	-152.5	-418.8	47.5	14.48
7,283.0	65.96	271.28	7,077.1	-153.8	-459.6	64.3	12.74
7,328.0	66.73	276.08	7,095.2	-151.2	-500.7	84.8	9.92
7,329.0	66.73	276.22	7,095.6	-151.1	-501.6	85.3	12.61
Burkett							
7,373.0	66.88	282.25	7,112.9	-144.6	-541.5	108.7	12.61
7,401.0	68.04	286.52	7,123.6	-138.1	-566.6	125.5	14.66
Tully							
7,418.0	68.79	289.07	7,129.9	-133.3	-581.6	136.5	14.66
7,463.0	70.40	294.57	7,145.6	-117.6	-620.8	167.8	12.00
7,508.0	71.07	299.59	7,160.5	-98.3	-658.6	201.8	10.64
7,552.0	72.15	304.02	7,174.3	-76.3	-694.0	237.2	9.86
7,597.0	73.68	309.08	7,187.6	-50.7	-728.6	275.4	11.27
7,642.0	75.21	312.49	7,199.6	-22.4	-761.4	315.2	8.05
7,655.0	75.81	313.86	7,202.9	-13.8	-770.8	327.0	11.20
Marcellus							
7,687.0	77.32	317.20	7,210.3	8.4	-791.6	356.5	11.20
7,732.0	80.17	322.33	7,219.1	42.1	-820.9	399.3	12.85

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Koch Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Koch 2H 1377 GL + 19 KB @ 1396.0usft
Site:	Koch/Gains/McCue/Mt Salem Revival	**MD Reference:**	Koch 2H 1377 GL + 19 KB @ 1396.0usft
Well:	Koch Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
7,776.0	82.27	325.99	7,225.8	77.4	-846.3	442.2	9.51
7,821.0	83.24	328.68	7,231.5	114.9	-870.4	486.5	6.31
7,847.0	83.36	329.38	7,234.5	137.1	-883.7	512.3	2.71
7,878.0	84.33	331.58	7,237.9	163.9	-898.9	543.0	7.72
7,910.0	86.35	334.04	7,240.5	192.3	-913.4	574.9	9.93
7,941.0	88.55	337.03	7,241.8	220.5	-926.3	605.9	11.97
7,986.0	90.13	340.07	7,242.4	262.3	-942.7	650.7	7.61
8,031.0	90.22	341.60	7,242.2	304.8	-957.5	695.4	3.41
8,121.0	88.64	340.10	7,243.1	389.8	-987.0	784.7	2.42
8,210.0	89.16	341.95	7,244.8	474.0	-1,015.9	873.0	2.16
8,300.0	89.60	345.29	7,245.8	560.3	-1,041.3	961.7	3.74
8,390.0	90.66	345.64	7,245.6	647.4	-1,063.9	1,049.8	1.24
8,480.0	90.13	343.53	7,245.0	734.2	-1,087.8	1,138.2	2.42
8,570.0	88.37	340.28	7,246.2	819.7	-1,115.8	1,227.3	4.11
8,659.0	89.16	341.33	7,248.1	903.8	-1,145.0	1,315.7	1.48
8,749.0	89.87	340.72	7,248.8	988.9	-1,174.3	1,405.0	1.04
8,839.0	90.92	341.16	7,248.2	1,073.9	-1,203.7	1,494.3	1.26
8,929.0	89.60	340.02	7,247.8	1,158.8	-1,233.6	1,583.7	1.94
9,019.0	89.52	343.09	7,248.5	1,244.2	-1,262.1	1,672.8	3.41
9,108.0	89.87	342.65	7,249.0	1,329.2	-1,288.3	1,760.7	0.63
9,198.0	89.52	340.81	7,249.5	1,414.7	-1,316.5	1,849.9	2.08
9,288.0	88.55	340.02	7,251.0	1,499.5	-1,346.6	1,939.3	1.39
9,378.0	87.85	338.52	7,253.8	1,583.6	-1,378.5	2,028.8	1.84
9,468.0	89.16	342.13	7,256.1	1,668.3	-1,408.8	2,118.2	4.27
9,558.0	89.96	342.21	7,256.8	1,754.0	-1,436.3	2,207.3	0.89
9,648.0	89.69	344.59	7,257.1	1,840.2	-1,462.0	2,296.0	2.66
9,737.0	88.20	345.20	7,258.7	1,926.1	-1,485.2	2,383.4	1.81
9,827.0	88.29	345.90	7,261.5	2,013.2	-1,507.7	2,471.5	0.78
9,917.0	87.23	342.83	7,265.0	2,099.8	-1,531.9	2,559.9	3.61
10,007.0	89.34	343.18	7,267.7	2,185.8	-1,558.2	2,648.7	2.38
10,096.0	89.87	344.32	7,268.3	2,271.3	-1,583.1	2,736.4	1.41
10,186.0	89.43	340.37	7,268.9	2,357.0	-1,610.4	2,825.4	4.42
10,276.0	90.31	341.07	7,269.1	2,442.0	-1,640.1	2,914.7	1.25
10,366.0	89.52	339.66	7,269.2	2,526.7	-1,670.3	3,004.1	1.80
10,455.0	89.70	340.54	7,269.8	2,610.4	-1,700.6	3,092.6	1.01
10,545.0	90.31	339.05	7,269.8	2,694.9	-1,731.7	3,182.1	1.79
10,635.0	89.25	339.66	7,270.2	2,779.1	-1,763.5	3,271.7	1.36
10,725.0	89.52	339.93	7,271.1	2,863.6	-1,794.5	3,361.2	0.42
10,814.0	90.48	340.02	7,271.1	2,947.2	-1,825.0	3,449.7	1.08
10,904.0	90.04	339.22	7,270.7	3,031.5	-1,856.4	3,539.3	1.01
10,994.0	89.78	337.56	7,270.9	3,115.2	-1,889.5	3,629.0	1.87
11,084.0	88.99	337.38	7,271.8	3,198.3	-1,924.0	3,718.8	0.90
11,173.0	90.22	339.05	7,272.4	3,281.0	-1,957.0	3,807.5	2.33
11,263.0	90.75	341.60	7,271.7	3,365.7	-1,988.2	3,896.9	2.89

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Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Koch Unit 2H
Project:	Doddridge County WV	**TVD Reference:**	Koch 2H 1377 GL + 19 KB @ 1396.0usft
Site:	Koch/Gains/McCue/Mt Salem Revival	**MD Reference:**	Koch 2H 1377 GL + 19 KB @ 1396.0usft
Well:	Koch Unit 2H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
11,353.0	89.52	337.82	7,271.5	3,450.1	-2,018.5	3,986.5	4.42
11,443.0	89.78	340.81	7,272.0	3,534.3	-2,050.3	4,076.0	3.33
11,532.0	90.48	341.69	7,271.8	3,618.6	-2,078.9	4,164.3	1.26
11,622.0	90.66	342.74	7,270.9	3,704.3	-2,106.4	4,253.3	1.18
11,712.0	89.52	343.09	7,270.8	3,790.3	-2,132.8	4,342.2	1.33
11,802.0	89.69	342.83	7,271.4	3,876.3	-2,159.2	4,431.1	0.35
11,891.0	89.78	344.94	7,271.8	3,961.8	-2,183.9	4,518.7	2.37
11,981.0	89.34	342.39	7,272.5	4,048.2	-2,209.2	4,607.4	2.88
12,071.0	89.16	343.09	7,273.7	4,134.1	-2,235.9	4,696.3	0.80
12,161.0	90.57	343.27	7,273.9	4,220.3	-2,262.0	4,785.1	1.58
12,250.0	90.48	341.77	7,273.1	4,305.2	-2,288.7	4,873.1	1.69
12,340.0	89.78	342.21	7,272.9	4,390.7	-2,316.5	4,962.2	0.92
12,430.0	89.78	343.62	7,273.2	4,476.8	-2,343.0	5,051.1	1.57
12,520.0	89.08	341.42	7,274.1	4,562.6	-2,370.0	5,140.1	2.57
12,609.0	89.96	342.21	7,274.9	4,647.2	-2,397.8	5,228.2	1.33
12,699.0	90.40	342.30	7,274.6	4,732.9	-2,425.2	5,317.2	0.50
12,789.0	90.48	340.37	7,273.9	4,818.1	-2,454.0	5,406.5	2.15
12,879.0	90.66	344.94	7,273.0	4,904.0	-2,480.8	5,495.4	5.08
12,968.0	89.34	342.39	7,273.0	4,989.4	-2,505.8	5,583.1	3.23
13,058.0	89.96	340.19	7,273.5	5,074.6	-2,534.7	5,672.3	2.54
13,148.0	90.40	339.84	7,273.3	5,159.2	-2,565.5	5,761.8	0.62
13,238.0	89.34	341.69	7,273.5	5,244.2	-2,595.1	5,851.1	2.37
13,296.0	89.52	341.77	7,274.0	5,299.3	-2,613.3	5,908.6	0.34
13,350.0	89.52	341.77	7,274.5	5,350.6	-2,630.2	5,962.1	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
7,329.0	7,095.6	-151.1	-501.6	Burkett
7,401.0	7,123.6	-138.1	-566.6	Tully
7,655.0	7,202.9	-13.8	-770.6	Marcellus

Checked By: _____ Approved By: _____ Date: _____

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/13/2014
Job End Date:	5/21/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06267-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Koch Unit 2H
Longitude:	-80.69013300
Latitude:	39.32431700
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	7,275
Total Base Water Volume (gal):	7,850,493
Total Base Non Water Volume:	0

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

Interstate Oil & Gas Compact Commission

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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
Fresh Water	Operator	Base Fluid					
			Fresh Water	7732-18-5	100.00000	90.16675	Density = 8.330
40/70 - COMMON BROWN	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	5.67104	
20/40 - COMMON WHITE	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	3.15351	
100 MESH - COMMON WHITE	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	0.61305	
HCl > 10%	Halliburton	Solvent					
			Hydrochloric Acid	7647-01-0	30.00000	0.22188	
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
			Guar gum	9000-30-0	100.00000	0.06523	
PermVis VFR-10	Halliburton	Friction Reducer					
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02137	
			Ammonium chloride	12125-02-9	10.00000	0.00712	
			Alcohols, C12-16, ethoxylated	68551-12-2	10.00000	0.00712	

			9-Octadecenamide, n,n-bis-2 (hydroxy-ethyl)-,(Z)	93-83-4	5.00000	0.00356	
SP BREAKER	Halliburton	Breaker					
			Sodium persulfate	7775-27-1	100.00000	0.00319	
LP-65	Halliburton	Scale Inhibitor					
			Ammonium chloride	12125-02-9	10.00000	0.00199	
OptiKleen-WF(TM)	Halliburton	Concentrate					
			Sodium perborate tetrahydrate	10486-00-7	100.00000	0.00166	
BE-9	Halliburton	Biocide					
			Tributyl tetradecyl phosphonium chloride	81741-28-8	10.00000	0.00124	
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
			Methanol	67-56-1	60.00000	0.00006	
			Propargyl alcohol	107-19-7	10.00000	0.00001	
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.							
		Other Ingredient(s)					
			Polyacrylate	Confidential		0.04631	
		Other Ingredient(s)					
			Water	7732-18-5		0.02439	
		Other Ingredient(s)					
			Water	7732-18-5		0.02137	
		Other Ingredient(s)					
			Organic phosphonate	Confidential		0.01196	
		Other Ingredient(s)					
			Bentonite, benzyl(hydrogenated tallow alkyl) dimethylammonium stearate complex	121888-68-4		0.00326	
		Other Ingredient(s)					
			Silica gel	112926-00-8		0.00065	
		Other Ingredient(s)					
			Surfactant mixture	Confidential		0.00065	
		Other Ingredient(s)					
			Surfactant mixture	Confidential		0.00065	
		Other Ingredient(s)					
			Formaldehyde	50-00-0		0.00020	
		Other Ingredient(s)					
			Crystalline Silica, Quartz	14808-60-7		0.00007	
		Other Ingredient(s)					
			Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1		0.00003	
		Other Ingredient(s)					

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			Fatty acids, tall oil	Confidential		0.00003	Denise Tuck, Halliburton 3000 N. Sam Houston Pkwy E., Houston, TX 77032 281-871-6226
		Other Ingredient(s)					
			Alcohols, C14-C15, ethoxylated	68951-67-7		0.00003	
		Other Ingredient(s)					
			Olefins	Confidential		0.00000	
		Other Ingredient(s)					
			Olefins	Confidential		0.00000	
		Other Ingredient(s)					
			Sodium sulfate	7757-82-6		0.00000	
		Other Ingredient(s)					
			Olefins	Confidential		0.00000	
		Other Ingredient(s)					
			Olefins	Confidential		0.00000	

* 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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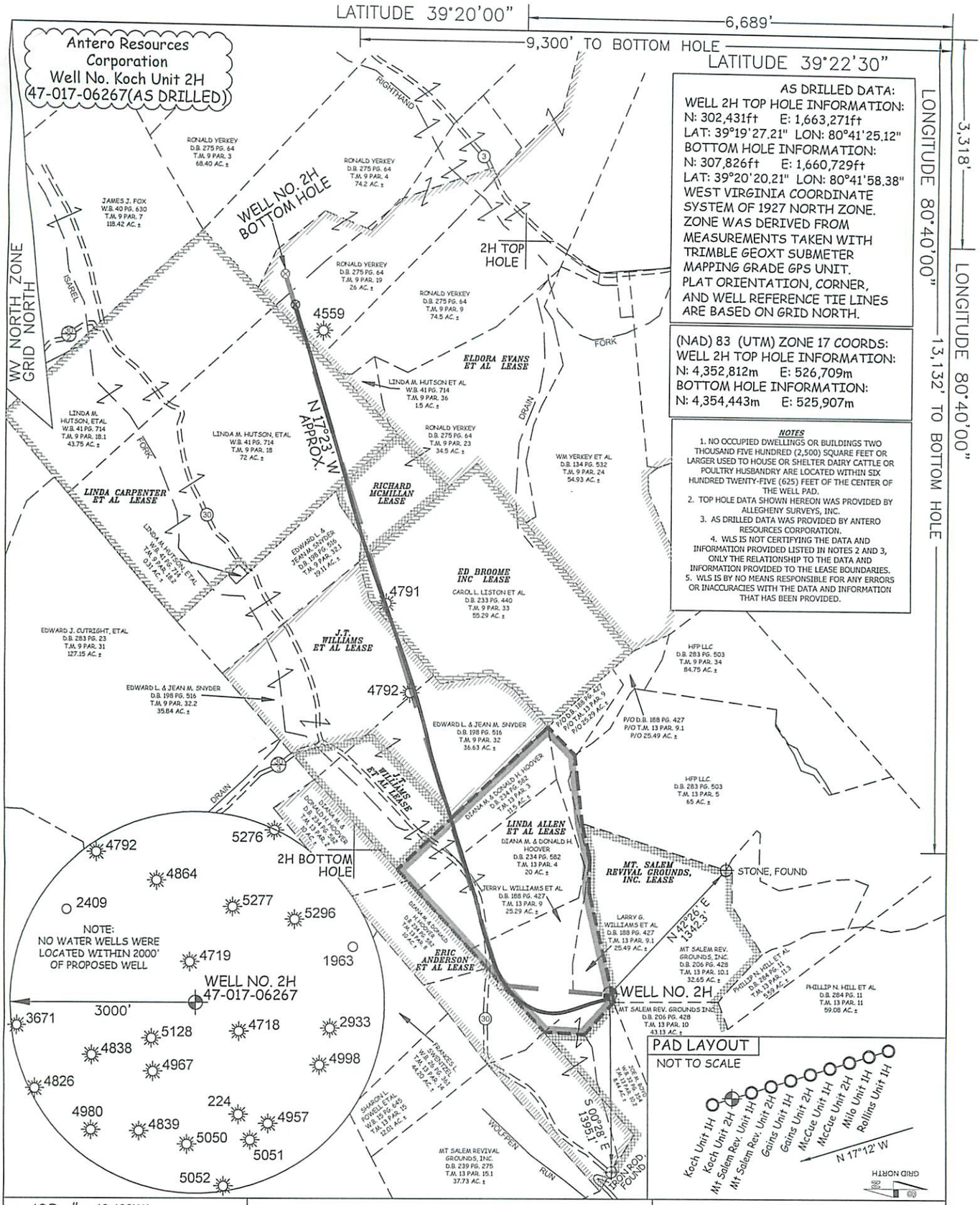

JOB # 12-132WA
DRAWING # KOCH2HAD
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

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

DATE 04/20/15
OPERATOR'S WELL# KOCH UNIT #2H

API WELL # 47 – 017 – 06267
STATE COUNTY PERMIT

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,402' ORIGINAL - 1,376' AS-DRILLED WATERSHED HEADWATERS MIDDLE ISLAND CREEK
QUADRANGLE SMITHBURG 7.5' DISTRICT GRANT COUNTY DODDRIDGE
SURFACE OWNER LARRY WILLIAMS ET AL ACREAGE 25.49 ACRES +/-
OIL & GAS ROYALTY OWNER LINDA ALLEN ET AL; ERIC ANDERSON ET AL; J.T. WILLIAMS ET AL; J.T. WILLIAMS ET AL; ED BROOME INC.; RICHARD MCMILLAN; LINDA CARPENTER ET AL; ELDORA EVANS ET AL LEASE ACREAGE 35.11 ACRES±; 40 ACRES±; 216 ACRES±; 59 ACRES ±; 55.29 ACRES±; 10.87 ACRES±; 84 ACRES±; 214 ACRES±
PROPOSED WORK: DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___
PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL ___
(SPECIFY) (X) AS DRILLED PLUG & ABANDON ___ CLEAN OUT & REPLUG ___
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 7,274' TVD 13,350' MD

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

COUNTY NAME PERMIT

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