WR-35
Rev. 8/23/13

APPROVED
NAME: [illegible]
DATE 1/3/18

Page ___ of ___

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

API 47 - 017 - 06379 County Doddridge District Greenbrier
Quad Big Isaac 7.5' Pad Name Hughes Pad Field/Pool Name -----
Farm name Eric E. Nelson, et al Well Number Richard 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 4341192m Easting 532758m
Landing Point of Curve Northing 4341198.088m Easting 533117.914m
Bottom Hole Northing 4338927m Easting 533836m

Elevation (ft) 1332' 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 10/28/2013 Date drilling commenced 10/8/2014 Date drilling ceased 12/28/2014
Date completion activities began 07/07/2017 Date completion activities ceased 08/26/2017
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 36', 109', 112' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1091', 1150' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 390', 964', 1648', 1948' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

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WR-35
Rev. 8/23/13

Page ___ of ___

API 47- 017 - 06379 Farm name Eric E. Nelson, et al Well number Richard 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	106.5#, J-55	N/A	Y
Surface	17-1/2"	13-3/8"	604'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2523'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15634'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	7634'		4.7#, N-80		
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	147 sx	15.6	1.18	173	0'	8 Hrs.
Surface	Class A	717 sx	15.6	1.18	846	0'	8 Hrs.
Coal							
Intermediate 1	Class A	969 sx	15.6	1.18	1143	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1090 sx (Lead) 1400 sx (Tail)	14.5 (Lead), 15.2 (Tail)	1.3 (Lead), 1.86 (Tail)	4021	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15636' MD, 7314' TVD (BHL) & 7360' TVD (Deepest Point Drilled) Loggers TD (ft) 15586' MD

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

Plug back procedure N/A

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (McClain Unit 1H API #47-017-06378). Please reference the wireline logs submitted with Form WR-35 for McClain Unit 1H. A Cement Bond Log has been included with this submittal.

Kick off depth (ft) 7167'

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

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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

WR-35
Rev. 8/23/13

API 47- 017 - 06379 Farm name Eric E. Nelson, et al Well number Richard 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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WR-35
Rev. 8/23/13

Page ___ of ___

API 47- 017 - 06379 Farm name Eric E. Nelson, et al Well number Richard Unit 1H

PRODUCING FORMATION(S)	DEPTHS			
Marcellus	7312' (TOP)	TVD	7637' (TOP)	MD

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 3950 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	14368 mcfpd	7 bpd	--- bpd	579 bpd	□ 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)

*PLEASE SEE ATTACHED EXHIBIT 3

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling Company, LP
Address 562 Spring Run Rd City Pennsboro State WV Zip 26415

Logging Company Allied Horizontal Wireline Services
Address 381 Colonial Manor Rd. City North Huntingdon State PA Zip 15642

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.

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Completed by Samantha Klaas Telephone 303-357-6759
Signature Title Permitting Agent Date 12/14/2017

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

API 47-017-06379 Farm Name Eric E. Nelson, et al Well Number Richard Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	7/7/2017	15339	15509	40	Marcellus
2	7/26/2017	15137	15307	40	Marcellus
3	7/27/2017	14935	15105	40	Marcellus
4	7/27/2017	14733	14903	40	Marcellus
5	7/27/2017	14531	14701	40	Marcellus
6	7/27/2017	14329	14499	40	Marcellus
7	7/28/2017	14127	14298	40	Marcellus
8	7/28/2017	13925	14096	40	Marcellus
9	7/28/2017	13723	13894	40	Marcellus
10	7/28/2017	13522	13692	40	Marcellus
11	7/29/2017	13320	13490	40	Marcellus
12	7/29/2017	13118	13288	40	Marcellus
13	7/29/2017	12916	13086	40	Marcellus
14	7/29/2017	12714	12884	40	Marcellus
15	7/30/2017	12512	12682	40	Marcellus
16	7/30/2017	12310	12480	40	Marcellus
17	7/30/2017	12108	12279	40	Marcellus
18	7/31/2017	11906	12077	40	Marcellus
19	7/31/2017	11704	11875	40	Marcellus
20	7/31/2017	11503	11673	40	Marcellus
21	7/31/2017	11301	11471	40	Marcellus
22	8/1/2017	11099	11269	40	Marcellus
23	8/1/2017	10897	11067	40	Marcellus
24	8/1/2017	10695	10865	40	Marcellus
25	8/1/2017	10493	10663	40	Marcellus
26	8/2/2017	10291	10461	40	Marcellus
27	8/2/2017	10089	10260	40	Marcellus
28	8/2/2017	9887	10058	40	Marcellus
29	8/2/2017	9685	9856	40	Marcellus
30	8/3/2017	9484	9654	40	Marcellus
31	8/3/2017	9282	9452	40	Marcellus
32	8/3/2017	9080	9250	40	Marcellus
33	8/3/2017	8878	9048	40	Marcellus
34	8/3/2017	8676	8846	40	Marcellus
35	8/4/2017	8474	8644	40	Marcellus
36	8/4/2017	8272	8442	40	Marcellus
37	8/4/2017	8070	8241	40	Marcellus
38	8/4/2017	7868	8039	40	Marcellus
39	8/5/2017	7666	7837	40	Marcellus

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API 47-017-06379 Farm Name Eric E. Nelson, et al Well Number Richard 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	7/26/2017	71.8	8209	6527	4860	204750	8174	N/A
2	7/26/2017	66.2	8019	7721	5021	205250	8037	N/A
3	7/27/2017	69.6	8027	7342	5118	205500	8003	N/A
4	7/27/2017	69.7	8249	7735	5347	204300	8220	N/A
5	7/27/2017	79.1	8073	7231	5547	204200	7979	N/A
6	7/27/2017	75.3	8112	7857	4674	205500	7945	N/A
7	7/28/2017	74.0	7988	7217	5758	205400	7832	N/A
8	7/28/2017	78.1	8322	6452	5393	205410	9064	N/A
9	7/28/2017	75.9	8253	6591	5640	204830	7891	N/A
10	7/28/2017	73.7	8094	6716	5604	204750	7879	N/A
11	7/29/2017	74.3	7932	6881	5947	206400	9606	N/A
12	7/29/2017	65.9	8306	6802	5811	203900	9897	N/A
13	7/29/2017	70.1	8015	7088	5815	205250	8555	N/A
14	7/29/2017	71.1	8011	6909	4338	205080	9229	N/A
15	7/30/2017	67.7	8230	6573	4367	204700	10745	N/A
16	7/30/2017	73.9	7917	6934	5636	203900	9053	N/A
17	7/30/2017	78.2	8070	6702	5264	204750	7881	N/A
18	7/31/2017	77.8	7845	6684	5150	205100	7816	N/A
19	7/31/2017	79.7	7938	6788	5339	203600	7794	N/A
20	7/31/2017	79.1	7931	6398	5382	205200	7768	N/A
21	7/31/2017	72.7	7861	6605	4992	204650	7861	N/A
22	8/1/2017	75.6	8080	6695	4957	203600	8554	N/A
23	8/1/2017	77.1	7810	6891	5586	205500	7733	N/A
24	8/1/2017	75.8	7670	6595	5275	205800	7941	N/A
25	8/1/2017	73.5	7815	6977	5443	205900	8715	N/A
26	8/2/2017	78.0	7711	6562	5944	205600	7757	N/A
27	8/2/2017	76.8	7631	6638	5747	204400	7681	N/A
28	8/2/2017	72.4	7376	6634	4513	204800	7735	N/A
29	8/2/2017	72.4	7376	6634	4513	204800	7735	N/A
30	8/3/2017	78.0	7828	7142	4860	205000	7785	N/A
31	8/3/2017	78.1	7716	6502	5397	204900	9217	N/A
32	8/3/2017	74.3	7746	6427	4828	204200	7761	N/A
33	8/3/2017	76.5	7053	7067	5136	204200	7668	N/A
34	8/3/2017	76.4	6964	6423	5153	204850	7644	N/A
35	8/4/2017	76.7	7191	6269	5583	204400	9020	N/A
36	8/4/2017	79.6	7463	6498	5078	205500	7630	N/A
37	8/4/2017	80.1	7171	6065	5200	204000	7555	N/A
38	8/4/2017	79.1	7079	6169	4864	204800	7664	N/A
39	8/5/2017	74.4	7753	6548	4942	204850	9958	N/A
AVG=		**74.8**	**7816**	**6,782**	**5,231**	**7,989,520**	**322,983**	TOTAL

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API 47-017-06379 Farm Name Eric E. Nelson, et al Well Number Richard 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	36'	N/A	36'	N/A
Fresh Water	109'	N/A	109'	N/A
Fresh Water	112'	N/A	112'	N/A
Shale	est. 0	188	est. 0	188
Sandy siltstone	est. 188	390	est. 188	390
Coal	est. 390	408	est. 390	408
Shale	est. 408	488	est. 408	488
Siltstone	est. 488	828	est. 488	828
Shale	est. 828	908	est. 828	908
Sandstone	est. 908	943	est. 908	943
Shale	est. 943	964	est. 943	964
Trace coal	est. 964	986	est. 964	986
Sandy siltstone	est. 986	1348	est. 986	1348
Shale	est. 1348	1588	est. 1348	1588
Sandy shale	est. 1588	1648	est. 1588	1648
Trace coal	est. 1648	1668	est. 1648	1668
Shale	est. 1668	1708	est. 1668	1708
Sandstone	est. 1708	1808	est. 1708	1808
Silty sandstone	est. 1808	1948	est. 1808	1948
Trace coal	est. 1948	1988	est. 1948	1988
Silty sandstone	est. 1988	2248	est. 1988	2248
Shale	est. 2248	2314	est. 2248	2314
Big Lime	2314	2473	2314	2473
Big Injun	2473	2908	2473	2910
Weir	2908	3002	2910	3004
Fifty Foot Sandstone	3002	3169	3004	3172
Gordon	3169	3683	3172	3686
Fifth Sandstone	3683	3988	3686	3991
Bayard	3988	4471	3991	4474
Speechley	4471	4755	4474	4758
Baltown	4755	5553	4758	5579
Bradford	5553	5798	5579	5845
Riley	5798	6236	5845	6337
Benson	6236	6858	6337	7036
Alexander	6858	7009	7036	7207
Sycamore	7009	7153	7207	7380
Middlesex	7153	7183	7380	7419
Burkett	7183	7270	7419	7550
Tully	7270	7312	7550	7637
Marcellus	7312	NA	7637	NA

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

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Antero Resources

Richard Unit 1H
Doddridge County WV
Northing: 14242012.02
Easting: 1747841.28
As Drilled

Scientific Drilling

To convert Magnetic North to Grid, Subtract 8.82°
To convert True North to Grid, Subtract 0.24°

Azimuths to Grid North
True North: -0.24°
Magnetic North: -8.82°

Magnetic Field
Strength: 52163.9snT
Dip Angle: 66.77°
Date: 10/3/2014
Model: BGGM2014

Precision 523: GL 1331' + KB 19' @ 1350.0usft
Gr: 1331.0

WELL DETAILS Richard Unit 1H
Ground Level: 1331.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14242012.02	1747841.28	39° 13' 9.508 N	80° 37' 14.538 W

Genie Lightfoot
9:59, January 06 2015

Scientific Drilling
11220 N.W. 10th Street
Yukon, OK 73099

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:
Hughes Pad:Belton/Carole/Earlewine/Gully/Hughes
Carole/Belton/McClain/Richard/Earlewine/Hughes/Gul

Site Centre Northing: 14242041.55
Easting: 1747814.24

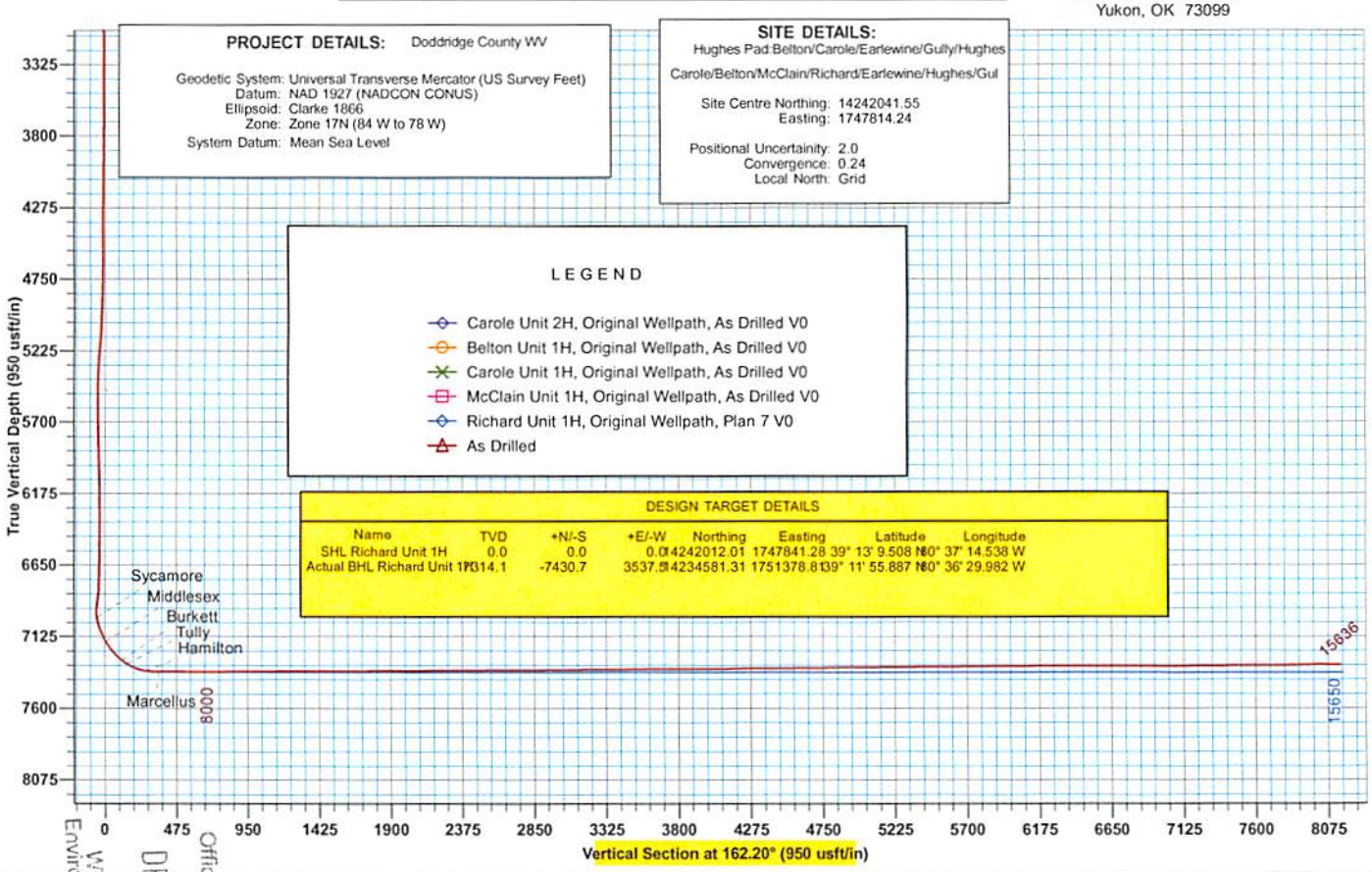
Positional Uncertainty: 2.0
Convergence: 0.24
Local North: Grid

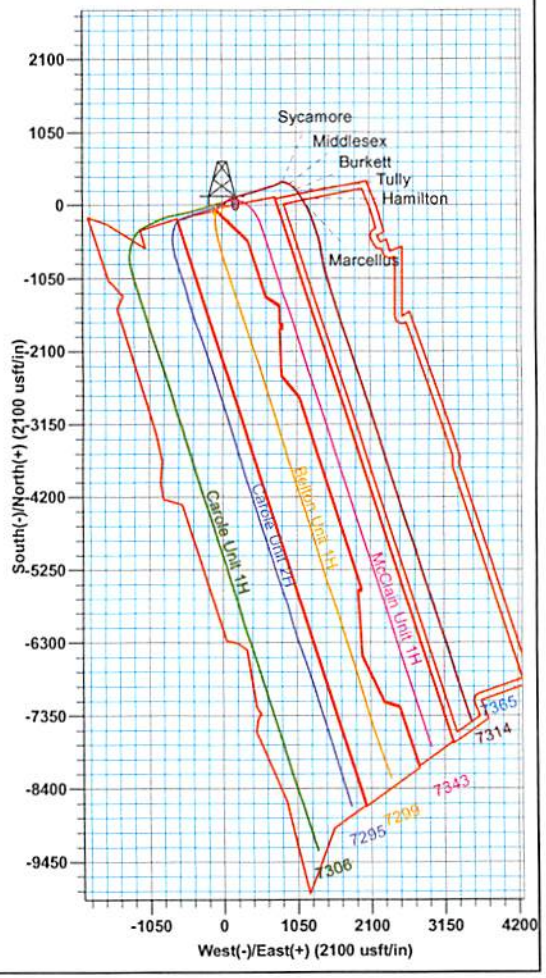
LEGEND

- Carole Unit 2H, Original Wellpath, As Drilled V0
- Belton Unit 1H, Original Wellpath, As Drilled V0
- Carole Unit 1H, Original Wellpath, As Drilled V0
- McClain Unit 1H, Original Wellpath, As Drilled V0
- Richard Unit 1H, Original Wellpath, Plan 7 V0
- As Drilled

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Richard Unit 1H	0.0	0.0	0.0	14242012.01	1747841.28	39° 13' 9.508 N	80° 37' 14.538 W
Actual BHL Richard Unit 1H	7314.1	-7430.7	3537.5	14234581.31	1751378.81	39° 11' 55.887 N	80° 36' 29.982 W





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Company:	Antero	**Local Co-ordinate Reference:**	Well Richard Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Site:	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	**MD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Well:	Richard 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 Hughes Pad:Belton/Carole/Earlewine/Gully/Hughes

Site Position:		**Northing:**	14,242,041.55 usft	**Latitude:**	39° 13' 9.801 N
From:	Map	**Easting:**	1,747,814.24 usft	**Longitude:**	80° 37' 14.880 W
Position Uncertainty:	2.0 usft	**Slot Radius:**	13-3/16"	**Grid Convergence:**	0.24 °

Well Richard Unit 1H, Marcellus

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,242,012.02 usft	**Latitude:**	39° 13' 9.508 N
	+E/-W	0.0 usft	**Easting:**	1,747,841.28 usft	**Longitude:**	80° 37' 14.538 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**	1,350.0 usft	**Ground Level:**	1,331.0 usft

Wellbore Original Wellpath

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	BGGM2014	10/3/2014	-8.58	66.77	52,164

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	162.20

Survey Program **Date** 1/6/2015

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
31.0	6,841.0	Survey #4 Final Gyro (Original Wellpath)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
6,891.0	15,636.0	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
31.0	0.12	273.33	31.0	0.0	0.0	0.0	0.39
56.0	0.24	273.33	56.0	0.0	-0.1	0.0	0.48
81.0	0.36	273.33	81.0	0.0	-0.2	-0.1	0.48
106.0	0.48	273.33	106.0	0.0	-0.4	-0.2	0.48
131.0	0.53	283.44	131.0	0.1	-0.6	-0.3	0.41
156.0	0.45	279.29	156.0	0.1	-0.9	-0.4	0.35
181.0	0.45	277.78	181.0	0.1	-1.0	-0.4	0.05
206.0	0.35	261.53	206.0	0.1	-1.2	-0.5	0.60
231.0	0.23	266.16	231.0	0.1	-1.3	-0.5	0.49
256.0	0.19	253.75	256.0	0.1	-1.4	-0.5	0.24

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Company:	Antero	**Local Co-ordinate Reference:**	Well Richard Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Site:	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	**MD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Well:	Richard 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)
281.0	0.15	251.62	281.0	0.1	-1.5	-0.5	0.16
306.0	0.13	298.03	306.0	0.1	-1.6	-0.6	0.45
331.0	0.16	251.25	331.0	0.1	-1.6	-0.6	0.47
356.0	0.14	232.28	356.0	0.1	-1.7	-0.6	0.21
381.0	0.16	233.59	381.0	0.0	-1.7	-0.5	0.08
406.0	0.12	231.56	406.0	0.0	-1.8	-0.5	0.16
431.0	0.12	190.30	431.0	-0.1	-1.8	-0.5	0.34
456.0	0.14	184.59	456.0	-0.1	-1.8	-0.4	0.10
481.0	0.12	151.48	481.0	-0.2	-1.8	-0.4	0.31
506.0	0.12	181.59	506.0	-0.2	-1.8	-0.3	0.25
531.0	0.20	148.28	531.0	-0.3	-1.8	-0.3	0.48
556.0	0.15	123.09	556.0	-0.3	-1.7	-0.2	0.36
581.0	0.10	138.32	581.0	-0.4	-1.7	-0.2	0.24
606.0	0.18	129.34	606.0	-0.4	-1.6	-0.1	0.33
631.0	0.25	141.28	631.0	-0.5	-1.6	0.0	0.33
656.0	0.22	140.62	656.0	-0.6	-1.5	0.1	0.12
681.0	0.16	134.04	681.0	-0.6	-1.4	0.2	0.25
706.0	0.22	137.55	706.0	-0.7	-1.4	0.2	0.24
731.0	0.29	143.96	731.0	-0.8	-1.3	0.3	0.30
756.0	0.32	146.68	756.0	-0.9	-1.2	0.5	0.13
781.0	0.28	139.93	781.0	-1.0	-1.2	0.6	0.21
806.0	0.28	155.57	806.0	-1.1	-1.1	0.7	0.30
831.0	0.11	162.52	831.0	-1.2	-1.1	0.8	0.69
856.0	0.13	169.02	856.0	-1.2	-1.1	0.8	0.10
881.0	0.07	212.36	881.0	-1.3	-1.1	0.9	0.37
906.0	0.02	225.50	906.0	-1.3	-1.1	0.9	0.20
931.0	0.04	194.24	931.0	-1.3	-1.1	0.9	0.10
956.0	0.08	27.53	956.0	-1.3	-1.1	0.9	0.48
981.0	0.14	121.64	981.0	-1.3	-1.0	0.9	0.66
1,006.0	0.08	141.95	1,006.0	-1.3	-1.0	0.9	0.28
1,031.0	0.08	123.64	1,031.0	-1.3	-1.0	1.0	0.10
1,056.0	0.09	158.01	1,056.0	-1.4	-0.9	1.0	0.20
1,081.0	0.15	185.46	1,081.0	-1.4	-0.9	1.1	0.33
1,106.0	0.12	245.62	1,106.0	-1.5	-1.0	1.1	0.55
1,131.0	0.13	169.70	1,131.0	-1.5	-1.0	1.1	0.62
1,156.0	0.15	191.39	1,156.0	-1.6	-1.0	1.2	0.22
1,181.0	0.15	202.98	1,181.0	-1.6	-1.0	1.2	0.12
1,206.0	0.14	214.48	1,206.0	-1.7	-1.0	1.3	0.12
1,231.0	0.43	166.29	1,231.0	-1.8	-1.0	1.4	1.41
1,256.0	0.07	170.51	1,256.0	-1.9	-1.0	1.5	1.44
1,281.0	0.14	271.28	1,281.0	-1.9	-1.0	1.5	0.67
1,306.0	0.07	277.72	1,306.0	-1.9	-1.1	1.5	0.28
1,331.0	0.07	322.86	1,331.0	-1.9	-1.1	1.5	0.21
1,356.0	0.06	172.71	1,356.0	-1.9	-1.1	1.5	0.50

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Company:	Antero	**Local Co-ordinate Reference:**	Well Richard Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Site:	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	**MD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Well:	Richard 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)
1,381.0	0.13	248.08	1,381.0	-1.9	-1.1	1.5	0.51
1,406.0	0.07	221.40	1,406.0	-1.9	-1.2	1.5	0.30
1,431.0	0.12	177.26	1,431.0	-2.0	-1.2	1.5	0.34
1,456.0	0.09	197.29	1,456.0	-2.0	-1.2	1.6	0.19
1,481.0	0.13	219.91	1,481.0	-2.1	-1.2	1.6	0.23
1,506.0	0.17	233.93	1,506.0	-2.1	-1.3	1.6	0.22
1,531.0	0.14	214.57	1,531.0	-2.1	-1.3	1.6	0.24
1,556.0	0.09	262.88	1,556.0	-2.2	-1.3	1.7	0.42
1,581.0	0.14	241.06	1,581.0	-2.2	-1.4	1.7	0.26
1,606.0	0.18	258.16	1,606.0	-2.2	-1.5	1.7	0.25
1,631.0	0.08	240.02	1,631.0	-2.2	-1.5	1.7	0.43
1,656.0	0.11	275.79	1,656.0	-2.2	-1.6	1.7	0.26
1,681.0	0.02	27.33	1,681.0	-2.2	-1.6	1.6	0.48
1,706.0	0.06	315.12	1,706.0	-2.2	-1.6	1.6	0.23
1,731.0	0.10	207.73	1,731.0	-2.2	-1.6	1.6	0.52
1,756.0	0.11	265.82	1,756.0	-2.3	-1.6	1.6	0.41
1,781.0	0.16	226.34	1,781.0	-2.3	-1.7	1.7	0.41
1,806.0	0.11	260.46	1,806.0	-2.3	-1.7	1.7	0.37
1,831.0	0.09	254.80	1,831.0	-2.3	-1.8	1.7	0.09
1,856.0	0.09	255.40	1,856.0	-2.3	-1.8	1.7	0.00
1,881.0	0.07	290.97	1,881.0	-2.3	-1.8	1.6	0.21
1,906.0	0.06	296.74	1,906.0	-2.3	-1.9	1.6	0.05
1,931.0	0.05	43.95	1,931.0	-2.3	-1.9	1.6	0.35
1,956.0	0.09	42.99	1,956.0	-2.3	-1.9	1.6	0.16
1,981.0	0.07	31.21	1,981.0	-2.2	-1.8	1.6	0.10
2,006.0	0.07	289.12	2,006.0	-2.2	-1.8	1.6	0.44
2,031.0	0.04	262.41	2,031.0	-2.2	-1.9	1.6	0.15
2,056.0	0.10	305.19	2,056.0	-2.2	-1.9	1.5	0.30
2,081.0	0.14	318.95	2,081.0	-2.2	-1.9	1.5	0.20
2,106.0	0.04	320.83	2,106.0	-2.2	-2.0	1.5	0.40
2,131.0	0.21	321.69	2,131.0	-2.1	-2.0	1.4	0.68
2,156.0	0.07	322.72	2,156.0	-2.1	-2.0	1.3	0.56
2,181.0	0.17	313.61	2,181.0	-2.0	-2.1	1.3	0.41
2,206.0	0.12	323.65	2,206.0	-2.0	-2.1	1.2	0.22
2,231.0	0.20	5.09	2,231.0	-1.9	-2.1	1.2	0.54
2,256.0	0.06	7.21	2,256.0	-1.9	-2.1	1.1	0.56
2,281.0	0.14	345.46	2,281.0	-1.8	-2.1	1.1	0.35
2,306.0	0.27	310.48	2,306.0	-1.7	-2.2	1.0	0.70
2,331.0	0.03	348.25	2,331.0	-1.7	-2.2	0.9	0.99
2,356.0	0.09	333.30	2,356.0	-1.7	-2.2	0.9	0.25
2,381.0	0.15	330.96	2,381.0	-1.6	-2.2	0.9	0.24
2,406.0	0.09	48.11	2,406.0	-1.6	-2.2	0.8	0.63
2,431.0	0.11	256.56	2,431.0	-1.6	-2.3	0.8	0.78
2,456.0	0.03	187.62	2,456.0	-1.6	-2.3	0.8	0.41
2,481.0	0.05	14.62	2,481.0	-1.6	-2.3	0.8	0.32

DEC 18 2017

WV Department of Environmental Protection

Company:	Antero	**Local Co-ordinate Reference:**	Well Richard Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Site:	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	**MD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Well:	Richard 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)
2,506.0	0.12	12.96	2,506.0	-1.6	-2.3	0.8	0.28
2,531.0	0.37	54.25	2,531.0	-1.5	-2.2	0.7	1.16
2,556.0	1.16	55.89	2,556.0	-1.3	-1.9	0.6	3.16
2,581.0	2.48	63.70	2,581.0	-0.9	-1.2	0.5	5.36
2,606.0	3.17	56.92	2,605.9	-0.3	-0.2	0.2	3.06
2,631.0	3.71	55.88	2,630.9	0.5	1.1	-0.2	2.17
2,656.0	4.23	53.12	2,655.8	1.5	2.5	-0.7	2.22
2,681.0	5.24	48.93	2,680.8	2.8	4.1	-1.5	4.27
2,706.0	5.08	48.68	2,705.7	4.3	5.8	-2.4	0.65
2,731.0	5.57	51.50	2,730.5	5.8	7.6	-3.2	2.22
2,756.0	6.09	54.95	2,755.4	7.3	9.6	-4.0	2.51
2,781.0	6.30	59.28	2,780.3	8.8	11.9	-4.7	2.05
2,806.0	6.56	63.85	2,805.1	10.1	14.3	-5.3	2.30
2,831.0	6.55	63.73	2,829.9	11.4	16.9	-5.7	0.07
2,856.0	6.58	63.87	2,854.8	12.6	19.4	-6.1	0.14
2,881.0	6.53	62.92	2,879.6	13.9	22.0	-6.5	0.48
2,906.0	6.43	61.97	2,904.5	15.2	24.5	-7.0	0.59
2,931.0	6.38	61.56	2,929.3	16.6	27.0	-7.5	0.27
2,956.0	6.36	61.26	2,954.1	17.9	29.4	-8.0	0.16
2,981.0	6.19	61.13	2,979.0	19.2	31.8	-8.6	0.68
3,006.0	5.99	61.50	3,003.9	20.5	34.1	-9.1	0.82
3,031.0	5.51	63.35	3,028.7	21.6	36.3	-9.5	2.06
3,056.0	4.40	67.90	3,053.6	22.5	38.3	-9.7	4.71
3,081.0	3.47	74.05	3,078.6	23.1	39.9	-9.8	4.08
3,106.0	2.92	83.10	3,103.5	23.4	41.3	-9.6	2.98
3,131.0	2.30	97.55	3,128.5	23.4	42.4	-9.3	3.60
3,156.0	1.81	118.35	3,153.5	23.1	43.2	-8.8	3.54
3,181.0	1.77	119.86	3,178.5	22.8	43.9	-8.2	0.25
3,206.0	1.73	121.28	3,203.5	22.4	44.6	-7.7	0.24
3,231.0	1.16	127.06	3,228.5	22.0	45.1	-7.2	2.35
3,256.0	0.46	182.66	3,253.5	21.8	45.3	-6.9	3.91
3,281.0	0.97	260.56	3,278.5	21.6	45.1	-6.8	3.93
3,306.0	1.55	263.69	3,303.5	21.6	44.5	-6.9	2.34
3,331.0	1.59	263.22	3,328.4	21.5	43.9	-7.0	0.17
3,356.0	1.61	263.70	3,353.4	21.4	43.2	-7.2	0.10
3,381.0	1.68	259.68	3,378.4	21.3	42.5	-7.3	0.54
3,406.0	1.67	259.60	3,403.4	21.2	41.7	-7.4	0.04
3,431.0	1.65	256.46	3,428.4	21.0	41.0	-7.5	0.37
3,456.0	1.52	254.69	3,453.4	20.8	40.4	-7.5	0.56
3,481.0	1.49	252.07	3,478.4	20.7	39.7	-7.5	0.30
3,506.0	1.46	253.27	3,503.4	20.5	39.1	-7.5	0.17
3,531.0	1.35	251.43	3,528.4	20.3	38.5	-7.5	0.48
3,556.0	1.47	251.49	3,553.4	20.1	38.0	-7.5	0.48
3,581.0	1.39	253.17	3,578.4	19.9	37.4	-7.5	0.36

WV Department of Environmental Protection

Company:	Antero	**Local Co-ordinate Reference:**	Well Richard Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Site:	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	**MD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Well:	Richard 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)
3,606.0	1.30	257.47	3,603.4	19.7	36.8	-7.6	0.54
3,631.0	0.86	279.81	3,628.3	19.7	36.3	-7.7	2.40
3,656.0	0.88	278.65	3,653.3	19.8	36.0	-7.8	0.11
3,681.0	0.85	280.11	3,678.3	19.8	35.6	-8.0	0.15
3,706.0	0.69	286.78	3,703.3	19.9	35.3	-8.2	0.73
3,731.0	0.86	278.00	3,728.3	20.0	34.9	-8.4	0.83
3,756.0	1.00	276.25	3,753.3	20.0	34.5	-8.5	0.57
3,781.0	0.71	280.57	3,778.3	20.1	34.2	-8.7	1.19
3,806.0	0.37	293.68	3,803.3	20.1	33.9	-8.8	1.44
3,831.0	0.25	311.95	3,828.3	20.2	33.8	-8.9	0.62
3,856.0	0.23	315.63	3,853.3	20.3	33.7	-9.0	0.10
3,881.0	0.32	314.61	3,878.3	20.4	33.7	-9.1	0.36
3,906.0	0.35	341.61	3,903.3	20.5	33.6	-9.2	0.64
3,931.0	0.38	326.90	3,928.3	20.6	33.5	-9.4	0.39
3,956.0	0.47	327.30	3,953.3	20.8	33.4	-9.6	0.36
3,981.0	0.57	328.31	3,978.3	21.0	33.3	-9.8	0.40
4,006.0	0.66	332.75	4,003.3	21.2	33.2	-10.1	0.41
4,031.0	0.67	327.61	4,028.3	21.5	33.0	-10.4	0.24
4,056.0	0.68	329.64	4,053.3	21.7	32.9	-10.6	0.10
4,081.0	0.65	326.46	4,078.3	22.0	32.7	-10.9	0.19
4,106.0	0.69	326.66	4,103.3	22.2	32.5	-11.2	0.16
4,131.0	0.69	332.43	4,128.3	22.5	32.4	-11.5	0.28
4,156.0	0.70	329.91	4,153.3	22.7	32.2	-11.8	0.13
4,181.0	0.68	329.25	4,178.3	23.0	32.1	-12.1	0.09
4,206.0	0.70	328.47	4,203.3	23.3	31.9	-12.4	0.09
4,231.0	0.65	327.97	4,228.3	23.5	31.8	-12.7	0.20
4,256.0	0.57	330.78	4,253.3	23.7	31.6	-12.9	0.34
4,281.0	0.50	322.74	4,278.3	23.9	31.5	-13.1	0.41
4,306.0	0.55	325.34	4,303.3	24.1	31.4	-13.4	0.22
4,331.0	0.45	320.49	4,328.3	24.3	31.3	-13.6	0.43
4,356.0	0.48	316.42	4,353.3	24.4	31.1	-13.8	0.18
4,381.0	0.56	297.99	4,378.3	24.6	30.9	-13.9	0.74
4,406.0	0.42	307.54	4,403.3	24.7	30.8	-14.1	0.65
4,431.0	0.43	319.60	4,428.3	24.8	30.6	-14.3	0.36
4,456.0	0.47	307.50	4,453.3	24.9	30.5	-14.4	0.41
4,481.0	0.48	303.61	4,478.3	25.1	30.3	-14.6	0.14
4,506.0	0.49	310.91	4,503.3	25.2	30.2	-14.8	0.25
4,531.0	0.49	307.42	4,528.3	25.3	30.0	-15.0	0.12
4,556.0	0.53	299.98	4,553.3	25.5	29.8	-15.1	0.31
4,581.0	0.51	307.06	4,578.3	25.6	29.6	-15.3	0.27
4,606.0	0.56	295.87	4,603.3	25.7	29.4	-15.5	0.46
4,631.0	0.50	312.43	4,628.3	25.8	29.2	-15.7	0.66
4,656.0	0.56	304.03	4,653.3	26.0	29.0	-15.8	0.39
4,681.0	0.52	309.37	4,678.3	26.1	28.9	-16.0	0.26

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Company:	Antero	**Local Co-ordinate Reference:**	Well Richard Unit 1H
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Site:	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	**MD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Well:	Richard 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)
4,706.0	0.50	311.73	4,703.3	26.3	28.7	-16.2	0.12
4,731.0	0.61	306.00	4,728.3	26.4	28.5	-16.4	0.49
4,756.0	0.80	33.56	4,753.3	26.6	28.5	-16.6	3.94
4,781.0	1.59	49.39	4,778.3	27.0	28.8	-16.9	3.40
4,806.0	2.63	55.78	4,803.3	27.5	29.6	-17.2	4.26
4,831.0	3.56	54.65	4,828.2	28.3	30.7	-17.6	3.73
4,856.0	4.24	54.15	4,853.2	29.3	32.1	-18.1	2.72
4,881.0	5.06	55.05	4,878.1	30.5	33.7	-18.7	3.29
4,906.0	5.81	55.73	4,903.0	31.8	35.7	-19.4	3.01
4,931.0	6.70	56.73	4,927.8	33.3	37.9	-20.1	3.59
4,956.0	7.59	57.57	4,952.6	35.0	40.5	-21.0	3.58
4,981.0	8.30	57.79	4,977.4	36.9	43.5	-21.8	2.84
5,006.0	9.15	58.33	5,002.1	38.9	46.7	-22.7	3.42
5,031.0	9.89	58.32	5,026.8	41.0	50.2	-23.7	2.96
5,056.0	10.79	58.88	5,051.3	43.4	54.0	-24.8	3.62
5,081.0	11.40	59.66	5,075.9	45.8	58.2	-25.9	2.51
5,106.0	12.32	59.70	5,100.3	48.4	62.6	-27.0	3.68
5,131.0	12.54	59.62	5,124.8	51.2	67.3	-28.1	0.88
5,156.0	12.67	59.63	5,149.2	53.9	72.0	-29.3	0.52
5,181.0	13.40	59.53	5,173.5	56.8	76.8	-30.6	2.92
5,206.0	13.78	59.54	5,197.8	59.7	81.9	-31.9	1.52
5,231.0	14.42	59.28	5,222.1	62.8	87.1	-33.2	2.57
5,256.0	14.81	59.15	5,246.3	66.1	92.5	-34.6	1.57
5,281.0	15.66	59.21	5,270.4	69.4	98.2	-36.1	3.40
5,306.0	15.65	59.49	5,294.4	72.9	104.0	-37.6	0.30
5,331.0	16.87	59.64	5,318.4	76.4	110.0	-39.1	4.88
5,356.0	16.89	60.87	5,342.4	80.0	116.3	-40.6	1.43
5,381.0	17.64	62.37	5,366.2	83.6	122.9	-42.0	3.49
5,406.0	17.95	64.33	5,390.0	87.0	129.7	-43.2	2.70
5,431.0	18.64	66.09	5,413.8	90.3	136.8	-44.1	3.54
5,456.0	19.15	68.21	5,437.4	93.4	144.3	-44.8	3.42
5,481.0	19.51	69.62	5,461.0	96.4	152.0	-45.3	2.36
5,506.0	20.26	70.98	5,484.5	99.2	160.0	-45.6	3.52
5,531.0	20.90	71.55	5,507.9	102.1	168.3	-45.7	2.68
5,556.0	21.06	71.87	5,531.3	104.9	176.8	-45.8	0.79
5,581.0	21.61	72.01	5,554.6	107.7	185.5	-45.8	2.21
5,606.0	21.62	72.20	5,577.8	110.5	194.2	-45.9	0.28
5,631.0	22.17	72.29	5,601.0	113.4	203.1	-45.9	2.20
5,656.0	22.54	72.56	5,624.1	116.2	212.2	-45.8	1.54
5,681.0	22.02	73.36	5,647.3	119.0	221.2	-45.7	2.41
5,706.0	22.85	73.45	5,670.4	121.7	230.4	-45.5	3.32
5,731.0	23.40	73.45	5,693.4	124.5	239.8	-45.3	2.20
5,756.0	23.27	73.58	5,716.3	127.4	249.3	-45.0	0.56
5,781.0	24.04	73.89	5,739.2	130.2	258.9	-44.8	3.12

Company:	Antero	**Local Co-ordinate Reference:**	Well Richard Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Site:	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	**MD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Well:	Richard 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)
5,806.0	24.64	73.61	5,762.0	133.0	268.8	-44.5	2.44
5,831.0	24.50	73.75	5,784.7	136.0	278.8	-44.2	0.61
5,856.0	25.20	73.58	5,807.4	138.9	288.9	-44.0	2.81
5,881.0	25.76	73.51	5,830.0	142.0	299.2	-43.7	2.24
5,906.0	25.83	74.11	5,852.5	145.0	309.6	-43.4	1.08
5,931.0	25.75	74.80	5,875.0	147.9	320.1	-43.0	1.24
5,956.0	26.31	75.45	5,897.5	150.7	330.7	-42.4	2.51
5,981.0	26.23	76.06	5,919.9	153.5	341.4	-41.7	1.13
6,006.0	27.15	76.49	5,942.2	156.1	352.3	-40.9	3.76
6,031.0	26.82	76.56	5,964.5	158.8	363.4	-40.1	1.33
6,056.0	27.40	76.73	5,986.8	161.4	374.5	-39.2	2.34
6,081.0	27.87	76.60	6,008.9	164.1	385.7	-38.3	1.90
6,106.0	27.83	76.07	6,031.0	166.8	397.1	-37.5	1.00
6,131.0	27.21	75.71	6,053.2	169.6	408.3	-36.7	2.57
6,156.0	26.50	74.87	6,075.5	172.5	419.2	-36.1	3.22
6,181.0	26.21	74.45	6,097.9	175.4	429.9	-35.6	1.38
6,206.0	26.37	73.75	6,120.3	178.5	440.6	-35.3	1.40
6,231.0	26.92	73.42	6,142.6	181.6	451.3	-35.0	2.28
6,256.0	27.66	73.20	6,164.9	184.9	462.3	-34.8	2.99
6,281.0	28.14	72.98	6,187.0	188.3	473.5	-34.6	1.96
6,306.0	28.63	73.10	6,208.9	191.8	484.9	-34.4	1.97
6,331.0	28.72	72.93	6,230.9	195.3	496.3	-34.2	0.49
6,356.0	28.33	72.63	6,252.8	198.8	507.7	-34.1	1.66
6,381.0	27.52	72.19	6,274.9	202.4	518.9	-34.1	3.34
6,406.0	26.52	71.08	6,297.2	206.0	529.7	-34.2	4.48
6,431.0	26.40	71.07	6,319.6	209.6	540.2	-34.4	0.48
6,456.0	26.82	71.01	6,341.9	213.2	550.8	-34.6	1.68
6,481.0	27.34	71.20	6,364.2	216.9	561.6	-34.8	2.11
6,506.0	27.76	71.66	6,386.4	220.6	572.5	-35.0	1.88
6,531.0	27.51	71.94	6,408.5	224.2	583.5	-35.1	1.13
6,556.0	27.54	72.49	6,430.7	227.7	594.6	-35.1	1.02
6,581.0	27.52	72.30	6,452.9	231.2	605.6	-35.0	0.36
6,606.0	27.30	71.91	6,475.0	234.8	616.5	-35.1	1.14
6,631.0	27.20	71.74	6,497.3	238.3	627.4	-35.1	0.51
6,656.0	27.28	71.83	6,519.5	241.9	638.3	-35.2	0.36
6,681.0	27.42	72.15	6,541.7	245.5	649.2	-35.3	0.81
6,706.0	27.54	71.68	6,563.9	249.0	660.2	-35.3	0.99
6,731.0	27.58	71.47	6,586.0	252.7	671.1	-35.4	0.42
6,756.0	27.45	71.04	6,608.2	256.4	682.1	-35.6	0.95
6,781.0	27.30	70.73	6,630.4	260.2	692.9	-35.9	0.83
6,806.0	27.19	70.38	6,652.6	264.0	703.7	-36.2	0.78
6,831.0	26.73	70.00	6,674.9	267.8	714.4	-36.6	1.96
6,841.0	26.64	69.86	6,683.9	269.4	718.6	-36.8	1.10
6,928.0	26.44	69.20	6,761.7	283.0	755.0	-38.6	0.41

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Company:	Antero	**Local Co-ordinate Reference:**	Well Richard Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Site:	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	**MD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Well:	Richard 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)
6,958.0	26.97	68.52	6,788.5	287.8	767.6	-39.4	2.04
6,988.0	27.33	66.83	6,815.2	293.0	780.3	-40.5	2.84
7,018.0	27.23	62.40	6,841.9	298.9	792.7	-42.3	6.78
7,048.0	26.54	56.02	6,868.6	305.8	804.3	-45.3	9.88
7,078.0	26.26	53.04	6,895.5	313.6	815.2	-49.4	4.51
7,107.0	25.58	58.89	6,921.6	320.7	825.7	-52.9	9.12
7,137.0	25.31	68.72	6,948.7	326.3	837.2	-54.8	14.09
7,167.0	26.35	77.93	6,975.7	330.1	849.7	-54.5	13.80
7,189.0	27.61	84.93	6,995.3	331.5	859.5	-52.9	15.52
Sycamore							
7,197.0	28.15	87.32	7,002.4	331.8	863.3	-52.0	15.52
7,227.0	29.59	94.77	7,028.7	331.5	877.7	-47.3	12.91
7,257.0	31.33	101.11	7,054.5	329.4	892.8	-40.7	12.18
7,286.0	32.93	107.00	7,079.1	325.6	907.7	-32.6	12.12
7,316.0	34.29	113.08	7,104.1	319.9	923.3	-22.4	12.09
7,346.0	35.42	118.00	7,128.7	312.5	938.7	-10.6	10.10
7,376.0	35.62	122.62	7,153.1	303.7	953.8	2.4	8.97
7,382.0	35.86	123.51	7,158.0	301.8	956.7	5.1	9.59
Middlesex							
7,406.0	36.90	126.98	7,177.3	293.6	968.3	16.5	9.59
7,436.0	40.14	130.19	7,200.8	281.9	982.9	32.0	12.69
7,465.0	44.00	132.02	7,222.3	269.2	997.5	48.7	13.96
7,495.0	47.53	134.57	7,243.2	254.4	1,013.2	67.5	13.25
7,525.0	50.56	137.23	7,262.9	238.1	1,028.9	87.8	12.12
7,554.0	53.43	140.28	7,280.8	221.0	1,044.0	108.8	12.91
7,557.0	53.81	140.42	7,282.5	219.1	1,045.5	111.0	13.24
Burkett							
7,584.0	57.24	141.65	7,297.8	201.8	1,059.5	131.7	13.24
7,598.0	59.27	141.99	7,305.2	192.4	1,066.9	142.9	14.68
Tully							
7,614.0	61.60	142.37	7,313.1	181.4	1,075.4	156.0	14.68
7,643.0	65.93	142.89	7,325.9	160.8	1,091.2	180.5	15.02
7,673.0	70.00	144.11	7,337.1	138.4	1,107.7	206.8	14.08
7,703.0	73.79	145.82	7,346.5	115.1	1,124.1	234.1	13.75
7,733.0	80.09	148.10	7,353.2	90.6	1,140.0	262.2	22.27
7,738.0	80.88	148.24	7,354.1	86.4	1,142.6	267.0	16.10
Hamilton							
7,758.0	84.06	148.77	7,356.7	69.5	1,153.0	286.3	16.10
7,816.0	91.18	151.10	7,359.1	19.4	1,182.0	342.9	12.91
7,830.0	90.64	151.82	7,358.9	7.1	1,188.6	356.6	6.44
Marcellus							
7,856.0	89.63	153.16	7,358.8	-16.0	1,200.7	382.2	6.44
7,945.0	90.40	158.17	7,358.8	-97.0	1,237.3	470.6	5.70
8,035.0	88.93	159.53	7,359.3	-181.0	1,269.8	560.5	2.23
8,124.0	90.71	161.05	7,359.6	-264.8	1,299.8	649.4	2.63

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Company:	Antero	**Local Co-ordinate Reference:**	Well Richard Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Site:	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	**MD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Well:	Richard 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)
8,214.0	90.44	160.97	7,358.7	-349.9	1,329.1	739.4	0.31
8,303.0	89.63	161.81	7,358.6	-434.2	1,357.5	828.4	1.31
8,393.0	91.01	166.84	7,358.1	-520.8	1,381.8	918.3	5.80
8,483.0	90.10	168.61	7,357.3	-608.8	1,400.9	1,007.9	2.21
8,572.0	90.03	171.01	7,357.2	-696.3	1,416.7	1,096.1	2.70
8,662.0	91.11	171.32	7,356.3	-785.3	1,430.5	1,185.0	1.25
8,751.0	90.47	167.91	7,355.0	-872.8	1,446.5	1,273.2	3.90
8,845.0	89.87	164.27	7,354.8	-964.0	1,469.1	1,367.0	3.92
8,939.0	89.50	162.71	7,355.3	-1,054.1	1,495.8	1,460.9	1.71
9,033.0	89.66	162.94	7,356.0	-1,143.9	1,523.6	1,554.9	0.30
9,127.0	91.65	164.47	7,354.9	-1,234.2	1,550.0	1,648.9	2.67
9,220.0	90.87	163.16	7,352.8	-1,323.4	1,575.9	1,741.8	1.64
9,314.0	89.83	162.84	7,352.3	-1,413.3	1,603.4	1,835.8	1.16
9,409.0	90.10	162.01	7,352.3	-1,503.9	1,632.1	1,930.8	0.92
9,503.0	89.53	161.73	7,352.6	-1,593.2	1,661.3	2,024.8	0.68
9,597.0	89.97	160.78	7,353.0	-1,682.2	1,691.5	2,118.8	1.11
9,691.0	90.47	162.32	7,352.7	-1,771.4	1,721.3	2,212.8	1.72
9,785.0	90.37	162.25	7,352.0	-1,860.9	1,749.9	2,306.8	0.13
9,875.0	90.44	161.98	7,351.4	-1,946.6	1,777.5	2,396.8	0.31
9,964.0	90.20	162.17	7,350.9	-2,031.3	1,804.9	2,485.8	0.34
10,054.0	90.94	163.53	7,350.0	-2,117.3	1,831.4	2,575.8	1.72
10,143.0	90.30	161.90	7,349.0	-2,202.2	1,857.9	2,664.8	1.97
10,233.0	90.50	161.40	7,348.4	-2,287.7	1,886.2	2,754.8	0.60
10,323.0	89.70	161.21	7,348.2	-2,372.9	1,915.0	2,844.7	0.91
10,412.0	90.67	161.87	7,347.9	-2,457.3	1,943.2	2,933.7	1.32
10,502.0	90.13	161.86	7,347.3	-2,542.9	1,971.2	3,023.7	0.60
10,591.0	90.87	163.71	7,346.5	-2,627.9	1,997.6	3,112.7	2.24
10,681.0	90.10	163.13	7,345.8	-2,714.1	2,023.3	3,202.7	1.07
10,770.0	90.67	162.50	7,345.2	-2,799.1	2,049.6	3,291.7	0.95
10,860.0	90.77	161.16	7,344.0	-2,884.6	2,077.6	3,381.7	1.49
10,949.0	90.34	162.06	7,343.2	-2,969.1	2,105.7	3,470.7	1.12
11,039.0	90.37	162.20	7,342.6	-3,054.7	2,133.3	3,560.7	0.16
11,129.0	90.44	162.62	7,342.0	-3,140.5	2,160.5	3,650.7	0.47
11,218.0	89.87	161.61	7,341.7	-3,225.2	2,187.8	3,739.7	1.30
11,308.0	89.56	162.94	7,342.2	-3,311.0	2,215.2	3,829.7	1.52
11,397.0	90.17	161.98	7,342.4	-3,395.8	2,242.1	3,918.6	1.28
11,487.0	90.37	163.43	7,342.0	-3,481.7	2,268.8	4,008.6	1.63
11,576.0	91.11	162.43	7,340.8	-3,566.8	2,294.9	4,097.6	1.40
11,665.0	91.04	162.22	7,339.2	-3,651.6	2,322.0	4,186.6	0.25
11,755.0	90.60	162.15	7,337.9	-3,737.3	2,349.5	4,276.6	0.50
11,845.0	89.80	162.38	7,337.5	-3,823.0	2,376.9	4,366.6	0.92
11,934.0	91.34	161.56	7,336.7	-3,907.6	2,404.4	4,455.6	1.96
12,024.0	90.40	161.74	7,335.3	-3,993.0	2,432.8	4,545.6	1.06
12,113.0	90.13	162.46	7,334.9	-4,077.7	2,460.1	4,634.6	0.86
12,203.0	91.28	163.55	7,333.8	-4,163.8	2,486.4	4,724.6	1.76

Company:	Antero	**Local Co-ordinate Reference:**	Well Richard Unit 1H
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Well:	Richard Unit 1H	**North Reference:**	Grid
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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
12,292.0	90.67	163.64	7,332.3	-4,249.1	2,511.6	4,813.5	0.69
12,382.0	90.64	162.53	7,331.2	-4,335.2	2,537.8	4,903.5	1.23
12,471.0	90.07	162.17	7,330.7	-4,420.1	2,564.7	4,992.5	0.76
12,561.0	90.97	161.64	7,329.9	-4,505.6	2,592.7	5,082.5	1.16
12,651.0	90.60	161.23	7,328.6	-4,590.9	2,621.3	5,172.5	0.61
12,740.0	90.20	162.18	7,328.0	-4,675.4	2,649.3	5,261.5	1.16
12,830.0	89.93	161.73	7,327.9	-4,761.0	2,677.2	5,351.5	0.58
12,920.0	90.87	161.18	7,327.3	-4,846.3	2,705.8	5,441.5	1.21
13,009.0	90.54	162.09	7,326.2	-4,930.8	2,733.8	5,530.4	1.09
13,099.0	90.10	161.70	7,325.7	-5,016.3	2,761.8	5,620.4	0.65
13,188.0	90.10	163.54	7,325.5	-5,101.2	2,788.4	5,709.4	2.07
13,278.0	90.97	163.06	7,324.7	-5,187.4	2,814.2	5,799.4	1.10
13,368.0	90.67	163.49	7,323.4	-5,273.6	2,840.1	5,889.4	0.58
13,457.0	90.23	161.42	7,322.7	-5,358.5	2,867.0	5,978.4	2.38
13,547.0	91.08	161.58	7,321.7	-5,443.8	2,895.5	6,068.4	0.96
13,637.0	90.67	161.27	7,320.3	-5,529.1	2,924.2	6,158.3	0.57
13,726.0	89.46	159.12	7,320.2	-5,612.8	2,954.3	6,247.3	2.77
13,816.0	90.03	161.23	7,320.6	-5,697.5	2,984.8	6,337.2	2.43
13,905.0	90.54	163.31	7,320.2	-5,782.3	3,011.9	6,426.2	2.41
13,995.0	89.36	161.07	7,320.2	-5,868.0	3,039.5	6,516.2	2.81
14,085.0	90.57	163.65	7,320.3	-5,953.7	3,066.7	6,606.2	3.17
14,174.0	89.76	163.45	7,320.0	-6,039.1	3,091.9	6,695.2	0.94
14,264.0	90.81	162.47	7,319.6	-6,125.1	3,118.3	6,785.2	1.60
14,353.0	88.35	158.14	7,320.2	-6,208.9	3,148.3	6,874.1	5.60
14,443.0	89.50	159.98	7,321.9	-6,292.9	3,180.5	6,963.9	2.41
14,532.0	90.17	161.72	7,322.2	-6,377.0	3,209.7	7,052.9	2.09
14,622.0	90.30	163.30	7,321.8	-6,462.8	3,236.7	7,142.9	1.76
14,711.0	91.35	165.07	7,320.5	-6,548.4	3,261.0	7,231.8	2.31
14,800.0	90.07	162.19	7,319.4	-6,633.8	3,286.0	7,320.8	3.54
14,890.0	89.80	163.52	7,319.5	-6,719.8	3,312.6	7,410.8	1.51
14,979.0	91.71	164.78	7,318.4	-6,805.4	3,336.9	7,499.7	2.57
15,068.0	90.37	162.33	7,316.7	-6,890.8	3,362.1	7,588.7	3.14
15,158.0	89.03	161.05	7,317.2	-6,976.2	3,390.3	7,678.6	2.06
15,247.0	89.90	162.47	7,318.0	-7,060.7	3,418.2	7,767.6	1.87
15,337.0	91.92	163.95	7,316.6	-7,146.9	3,444.2	7,857.6	2.78
15,427.0	91.85	163.82	7,313.7	-7,233.3	3,469.1	7,947.5	0.16
15,516.0	89.29	159.85	7,312.8	-7,317.8	3,496.9	8,036.5	5.31
15,578.0	89.40	160.32	7,313.5	-7,376.1	3,518.0	8,098.4	0.78
15,636.0	89.40	160.32	7,314.1	-7,430.7	3,537.5	8,156.4	0.00

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Company:	Antero	**Local Co-ordinate Reference:**	Well Richard Unit 1H
Project:	Doddridge County WV	**TVD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Site:	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	**MD Reference:**	Precision 523: GL 1331' + KB 19' @ 1350.0usft
Well:	Richard Unit 1H	**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
7,189.0	6,995.3	331.5	859.5	Sycamore
7,382.0	7,158.0	301.8	956.7	Middlesex
7,557.0	7,282.5	219.1	1,045.5	Burkett
7,598.0	7,305.2	192.4	1,066.9	Tully
7,738.0	7,354.1	86.4	1,142.6	Hamilton
7,830.0	7,358.9	7.1	1,188.6	Marcellus

Checked By: _____ Approved By: _____ Date: _____

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	7/26/2017
Job End Date:	8/5/2017
State:	West Virginia
County:	Doddridge
API Number:	47-017-06379-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Richard 1H
Latitude:	39.21930833
Longitude:	-80.62070278
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,360
Total Base Water Volume (gal):	13,968,217
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	Carrier/Base Fluid					
			Water	7732-18-5	100.00000	87.41377	
Sand	U.S. Well Services, LLC	Proppant					
			Crystalline Silica, quartz	14808-60-7	100.00000	12.19440	
HCL Acid (12.6%-17.5%)	U.S. Well Services, LLC	Bulk Acid					
			Water	7732-18-5	87.40000	0.24588	
			Hydrogen Chloride	7647-01-0	17.50000	0.05717	
LGC-15	U.S. Well Services, LLC	Gelling Agents					
			Guar Gum	9000-30-0	50.00000	0.03380	
			Petroleum Distillates	64742-47-8	60.00000	0.03201	
			Suspending agent (solid)	14808-60-7	3.00000	0.00517	
			Surfactant	68439-51-0	3.00000	0.00203	
WFRC-2100	U.S. Well Services, LLC	Friction Reducer					
			Hydrotreated Petroleum Distillates	64742-47-8	30.00000	0.00519	
			Alcohol Ethoxylate	68551-12-2	5.00000	0.00107	

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			Cationic copolymer of acrylamide	69418-26-4	30.00000	0.00077	
Bioclear 2000	U.S. Well Services, LLC	Anti-Bacterial Agent					
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00418	
			Deionized Water	7732-18-5	28.00000	0.00239	
AP One	U.S. Well Services, LLC	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00095	
SI-1200s	U.S. Well Services, LLC	Scale Inhibitor					
			Alkyl Phosphonic Acid	Proprietary	5.00000	0.00063	
			Ammonia	7664-41-7	0.50000	0.00010	
WFRA-405	U.S. Well Services, LLC	Friction Reducer					
			2-Propenoic acid, polymer with 2 propenamide	9003-06-9	30.00000	0.00018	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.00015	
AI-303	U.S. Well Services, LLC	Acid Corrosion Inhibitors					
			Ethylene glycol	107-21-1	40.00000	0.00008	
			Cinnamaldehyde	104-55-2	20.00000	0.00003	
			Formic acid	64-18-6	20.00000	0.00003	
			Butyl cellosolve	111-76-2	20.00000	0.00003	
			Polyether	60828-78-6	10.00000	0.00001	
			Acetophenone,thiourea,formaldehyde polymer	68527-49-1	5.00000	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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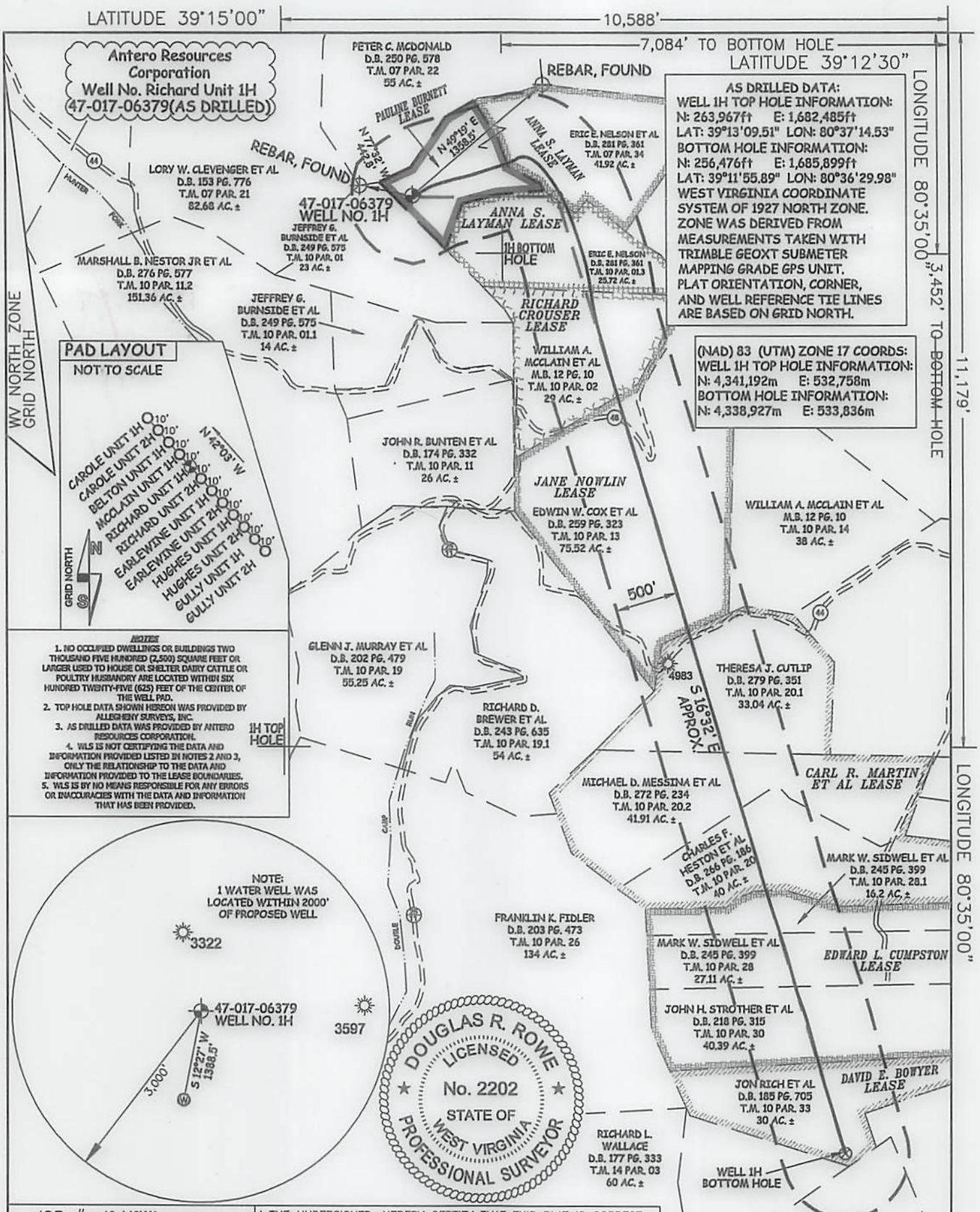

JOB # 12-148WA
DRAWING # RICHARD1HAD
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PERSCRIBED BY THE DEPTARTMENT 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

LEGEND
- Surface Owner Boundary Lines +/-
- Interior Surface Tracts +/-
- Proposed Well Path
- As Drilled Well Path

DOUGLAS R. ROWE P.S. 2202

DATE 11/28/17
OPERATOR'S WELL# RICHARD UNIT #1H
API WELL # 47 – 017 – 06379
STATE COUNTY PERMIT

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

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 1,332' AS-DRILLED WATERSHED HEADWATERS OF MIDDLE ISLAND CREEK
QUADRANGLE BIG ISSAC 7.5' DISTRICT GREENBRIER COUNTY DODDRIDGE
SURFACE OWNER ERIC E. NELSON, ET AL ACREAGE 41.92 ACRES +/-
OIL & GAS ROYALTY OWNER PAULINE BURNETT; ANNA S. LAYMAN; ANNA S. LAYMAN; RICHARD CROUSER; JANE NOWLIN; CARL R. MARTIN ET AL; EDWARD L. CUMPSTON; DAVID E. BOWYER
LEASE ACREAGE 14.29 ACRES±; 25.16 ACRES±; 23.9625 ACRES±; 29.93 ACRES±; 76 ACRES±; 115 ACRES±; 86 ACRES±; 30 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 7,314' TVD 15,636' 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

COUNTY NAME
PERMIT
WELL OPERATOR AMERO RESOURCES CORP.
ADDRESS 1612 WYNKOOP STREET
DENVER, CO 80202
DESIGNATED AGENT CT CORPORATION SYSTEM
DIANNA STAMPER
ADDRESS 2400 D BIG TATER ROAD
CHARLESTON, WV 25313
TARGET FORMATION MARCELLUS
ESTIMATED DEPTH 7,316' TVD 12,836' MD
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 & RESTIMULATE
OIL & GAS ROYALTY OWNER LANDINE BURNETT; ANNA S. TAYLANN; ANNA S. TAYLANN
LEASE ACREAGE 14.38 ACRES±; 52.18 ACRES±; 53.862 ACRES±; 58.83 ACRES±; 18 ACRES±; 112 ACRES±; 88 ACRES±; 30 ACRES±
RICHARD CROUSER; JANE HOWLIN; CARL R. MARTIN ET AL; EDWARD L. CONRSTON; DAVID E. BOWYER
SURFACE OWNER ERIC E. NELSON ET AL
ACREAGE 14.95 ACRES +/-
QUADRANGLE BIG ISSAC 7.5'
DISTRICT GREENBRIER COUNTY DODDRIDGE
LOCATION: ELEVATION 1,335.25-DRILLED
WATERSHED HEADWATERS OF MIDDLE ISLAND CREEK
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X
WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL
API WELL # 47 - 017 - 6836
STATE COUNTY PERMIT
OPERATOR'S WELL # RICHARD UNIT #1H
DATE 11/18/14
DOUGLAS R. ROME P.S. 2202
WILLOW LAND SURVEYING LLC
550 MASONIC AVE. PENNSBORO
WEST VIRGINIA 26415
STATE OF WEST VIRGINIA, DIVISION
OF ENVIRONMENTAL PROTECTION,
OFFICE OF OIL AND GAS
I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
LEGEND
Surface Owner Boundary Lines +/-
Interior Surface Tracts +/-
Proposed Well Path
As Drilled Well Path
JOB # 15-14WAV
DRAWING # RICHARDIHD
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY
DIVISION OF OIL AND GAS
Amero Resources Corporation
Well No. Richard Unit 1H
47-017-06836(AS DRILLED)
ZONE WV3 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.
AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
LAT: 39°13'39.20"N LON: 80°37'14.23"W
N: 623,739.1 E: 1,583,471.1
BOTTOM HOLE INFORMATION:
LAT: 39°13'09.12"N LON: 80°37'05.89"W
N: 620,473.1 E: 1,583,199.1
WELL 1H TOP HOLE INFORMATION:
N: 4,141,951.1m E: 525,577.8m
BOTTOM HOLE INFORMATION:
N: 4,140,866.4m E: 525,553.6m
(NAD) 83 (UTM) ZONE 17 COORDS:
LATITUDE 39°12'00" 7,480' TO BOTTOM HOLE
LONGITUDE 80°32'00" 3,425' TO BOTTOM HOLE
1,113'
1,000'
200'
APPROX. 2 TR.35, E
RERAR, LONG
RERAR, LONG
ANNA S. TAYLANN LEASE
LANDINE BURNETT LEASE
ERIC E. NELSON ET AL
ANNA S. TAYLANN
RICHARD CROUSER LEASE
JANE HOWLIN LEASE
CARL R. MARTIN ET AL LEASE
DAVID E. BOWYER LEASE
EDWARD L. CONRSTON LEASE
MARK W. ZIDWELL ET AL
FRANKLIN K. LIDDER
THERESA T. CURTIS
MICHAEL D. WESSLING ET AL
CHARLES E. HESTON ET AL
MARK W. ZIDWELL ET AL
RICHARD L. MULLAGE
WILLIAM A. MCCLAIN ET AL
EDWIN W. COX ET AL
JOHN R. BOWLEN ET AL
MILLIAM A. MCCLAIN ET AL
RICHARD D. BREWER ET AL
GLENN T. MURRAY ET AL
PETER C. MCDONALD
LORA W. CLEVENGER ET AL
MARSHALL B. WESTOR JR ET AL
TERRYA B. BURNSIDE ET AL
TERRYA B. BURNSIDE ET AL
ERIC E. NELSON ET AL
BOTTOM HOLE
WELL NO. 1H
47-017-06836
WELL NO. 1H
47-017-06836(AS DRILLED)
NOTE:
1 WATER WELL WAS LOCATED WITHIN 5000' TO PROPOSED WELL
PROFESSIONAL SURVEYOR
DOUGLAS R. ROME
LICENSED
NO. 2202
STATE OF
WEST VIRGINIA
PLAT VIEW
GRID NORTH
NAD 83 UTM ZONE 17
NOTE:
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO HUNDRED FORTY-FIVE (245) SQUARE FEET OR TWENTY-FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR HUNDRED TWENTY-FIVE (125) FEET TO THE CENTER OF THE WELL PAD.
2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY MILLENNIA ENERGIES CORPORATION.
3. AS DRILLED DATA WAS PROVIDED BY AMERO RESOURCES CORPORATION.
4. WVS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES ONLY THE MEASUREMENTS OF THE DATA AND INFORMATION PROVIDED FELLED IN NOTES 3 AND 4.
5. WVS IS IN NO MANNER RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.
PAD LAYOUT
NOT TO SCALE
CARDIE UNIT 1H
CARDIE UNIT 5H
BERTON UNIT 1H
BERTON UNIT 5H
MCCLAIN UNIT 1H
MCCLAIN UNIT 5H
RICHARD UNIT 1H
RICHARD UNIT 5H
EVERTEMIE UNIT 1H
EVERTEMIE UNIT 5H
HUGHES UNIT 1H
HUGHES UNIT 5H
GULY UNIT 1H
GULY UNIT 5H
N 15°03' W
GRID NORTH