

# APPROVED

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WR-35  
Rev. 8/23/13NAME: ClaytonDATE: 1/3/18State 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

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

01/05/2018

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 <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	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

Kick off depth (ft) 7167

\*\* 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.

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 \_\_\_\_\_ RECEIVED Office of Oil and Gas

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



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

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>7312' (TOP)</u> TVD	<u>7637' (TOP)</u> 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 14368 mcfpd Oil 7 bpd NGL --- bpd Water 579 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 <sub>2</sub> S, ETC)
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**\*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

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Please insert additional pages as applicable.

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

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

01/05/2018

**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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**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
<b>AVG=</b>		<b>74.8</b>	<b>7816</b>	<b>6,782</b>	<b>5,231</b>	<b>7,989,520</b>	<b>322,983</b>	<b>TOTAL</b>

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## EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Fresh Water	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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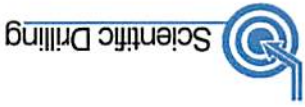
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**Richard Unit 1H**  
 Doddridge County WV  
 Northing: 14242012.02  
 Easting: 1747841.28  
 As Drilled



Genie Lightfoot  
 9:59, January 06 2015  
 Scientific Drilling  
 11220 N.W. 10th Street  
 Yukon, OK 73099

**WELL DETAILS** Richard Unit 1H

+N/-S	0.0
+E/-W	0.0
Northing	14242012.02
Easting	1747841.28
Latitude	39° 13' 9.508 N
Longitude	80° 37' 14.538 W
Ground Level	1331.0

**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:**

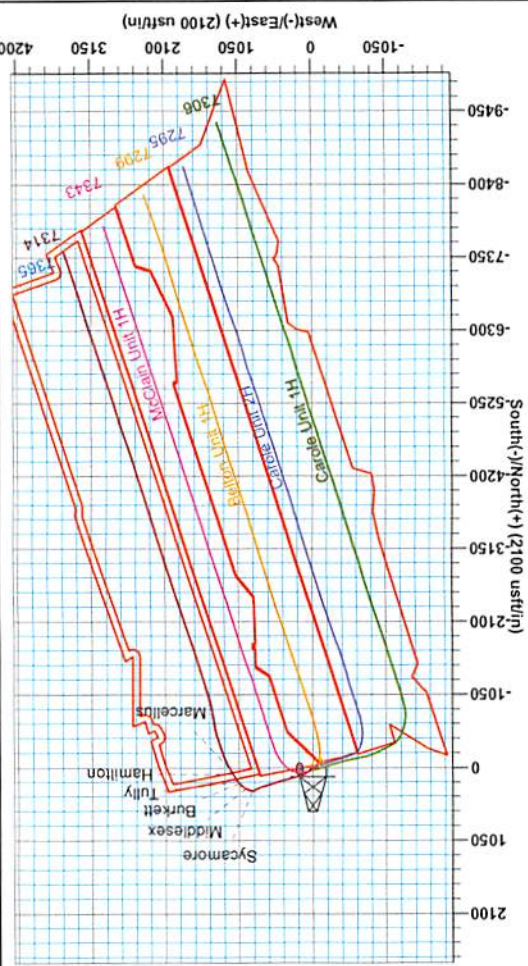
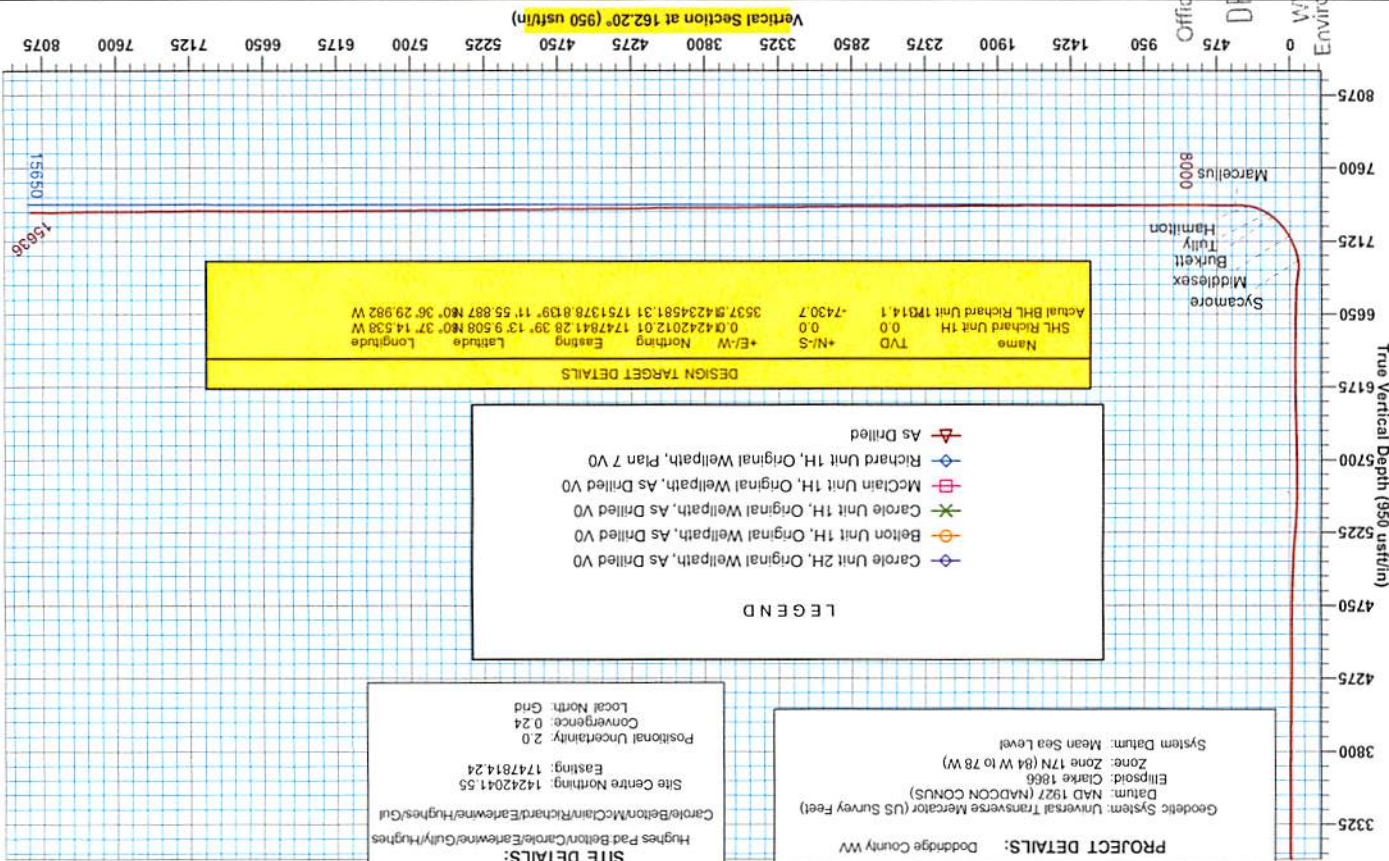
Hughes Pad	Belton/Carole/Earnewine/Hughes/Gul
Carole/Belton/McClain/Richard/Earnewine/Hughes/Gul	
Site Centre Northing:	14242041.55
Site Centre Easting:	1747814.24
Positional Convergence:	0.24
Local North:	Grid

**LEGEND**

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

**DESIGN TARGET DETAILS**

Name	SHL Richard Unit 1H
TVD	17014.1
+N/-S	-7430.7
+E/-W	3537.842344581, 31
Northing	1747841.28, 39° 13' 9.508 N
Easting	1751378.8, 109° 11' 55.887 W
Latitude	80° 36' 29.982 W
Longitude	



Azimuths to Grid North  
 True North: -0.24°  
 Magnetic North: -8.82°  
 To convert True Magnetic North to Grid, Subtract 8.82°  
 Magnetic Field  
 Strength: 52163.9nT  
 Dip Angle: 66.77°  
 Date: 10/2/2014  
 Model: BGM2014

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<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Richard Unit 1H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Site:</b>	Hughes Pad:Belton/Carole/Earlewine/Gully/Hughes	<b>MD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Well:</b>	Richard Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Oklahoma District

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

<b>Site</b>	Hughes Pad:Belton/Carole/Earlewine/Gully/Hughes				
<b>Site Position:</b>		<b>Northing:</b>	14,242,041.55 usft	<b>Latitude:</b>	39° 13' 9.801 N
<b>From:</b>	Map	<b>Easting:</b>	1,747,814.24 usft	<b>Longitude:</b>	80° 37' 14.880 W
<b>Position Uncertainty:</b>	2.0 usft	<b>Slot Radius:</b>	13-3/16"	<b>Grid Convergence:</b>	0.24 °

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

<b>Wellbore</b>	Original Wellpath				
-----------------	-------------------	--	--	--	--

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

<b>Design</b>	As Drilled				
---------------	------------	--	--	--	--

<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	162.20

<b>Survey Program</b>	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	

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



<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Richard Unit 1H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Site:</b>	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	<b>MD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Well:</b>	Richard Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	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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<b>Company:</b> Antero	<b>Local Co-ordinate Reference:</b> Well Richard Unit 1H
<b>Project:</b> Doddridge County WV	<b>TVD Reference:</b> Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Site:</b> Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	<b>MD Reference:</b> Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Well:</b> Richard Unit 1H	<b>North Reference:</b> Grid
<b>Wellbore:</b> Original Wellpath	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> As Drilled	<b>Database:</b> 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



<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Richard Unit 1H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Site:</b>	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	<b>MD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Well:</b>	Richard Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Oklahoma District

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





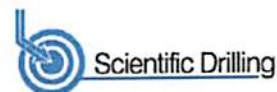
EOW Completion Report



<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Richard Unit 1H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Site:</b>	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh-	<b>MD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Well:</b>	Richard Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	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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<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Richard Unit 1H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Site:</b>	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	<b>MD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Well:</b>	Richard Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	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





<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Richard Unit 1H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Site:</b>	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	<b>MD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Well:</b>	Richard Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	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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<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Richard Unit 1H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Site:</b>	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	<b>MD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Well:</b>	Richard Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	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	
<b>Sycamore</b>								
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	
<b>Middlesex</b>								
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	
<b>Burkett</b>								
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	
<b>Tully</b>								
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	
<b>Hamilton</b>								
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	
<b>Marcellus</b>								
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	



<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Richard Unit 1H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Site:</b>	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	<b>MD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Well:</b>	Richard Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	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	



EOW Completion Report



<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Richard Unit 1H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Site:</b>	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	<b>MD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Well:</b>	Richard Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Oklahoma District

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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<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Richard Unit 1H
<b>Project:</b>	Doddridge County WV	<b>TVD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Site:</b>	Hughes Pad:Belton/Carole/Earlewine/Gully/Hugh	<b>MD Reference:</b>	Precision 523: GL 1331' + KB 19' @ 1350.0usft
<b>Well:</b>	Richard Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Oklahoma District

**Design Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
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	
			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	
			Guar Gum	9000-30-0	50.00000	0.03380	
LGC-15	U.S. Well Services, LLC	Gelling Agents	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	
			Hydrotreated Petroleum Distillates	64742-47-8	30.00000	0.00519	
WFRC-2100	U.S. Well Services, LLC	Friction Reducer	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	29003-06-9	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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LATITUDE 39°15'00"

10,588'

7,084' TO BOTTOM HOLE  
LATITUDE 39°12'30"

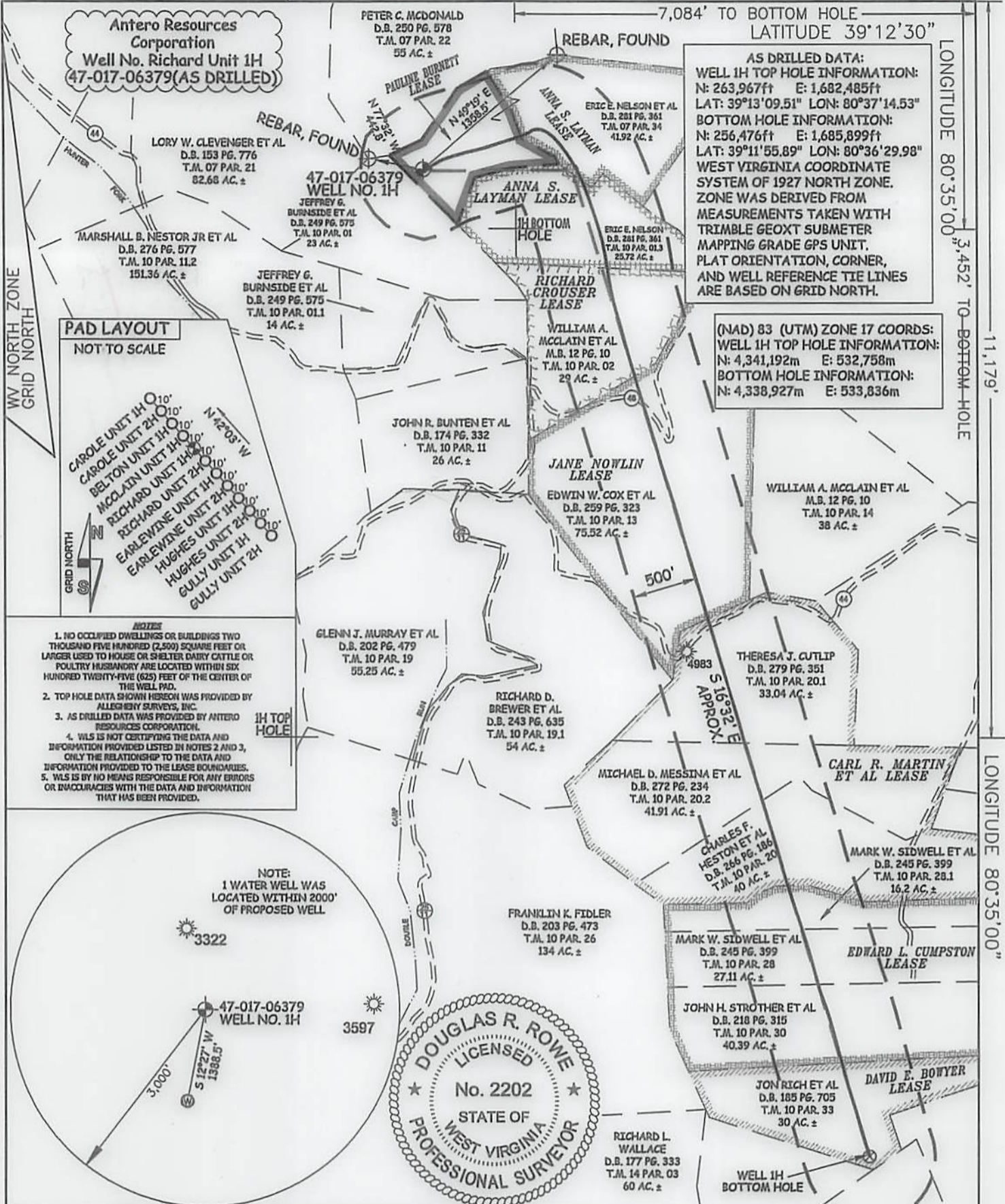
LONGITUDE 80°35'00"  
3,452' TO BOTTOM HOLE  
11,179'

LONGITUDE 80°35'00"

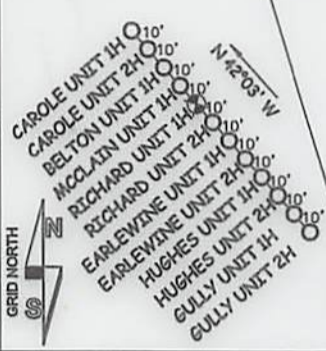
Antero Resources Corporation  
Well No. Richard Unit 1H  
47-017-06379 (AS DRILLED)

AS DRILLED DATA:  
WELL 1H TOP HOLE INFORMATION:  
N: 263,967ft E: 1,682,485ft  
LAT: 39°13'09.51" LON: 80°37'14.53"  
BOTTOM HOLE INFORMATION:  
N: 256,476ft E: 1,685,899ft  
LAT: 39°11'55.89" LON: 80°36'29.98"  
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: 4,341,192m E: 532,758m  
BOTTOM HOLE INFORMATION:  
N: 4,338,927m E: 533,836m

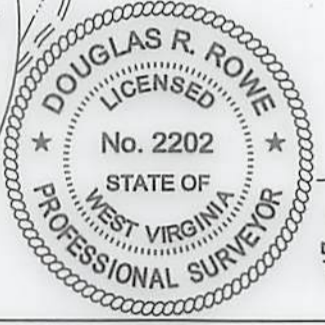
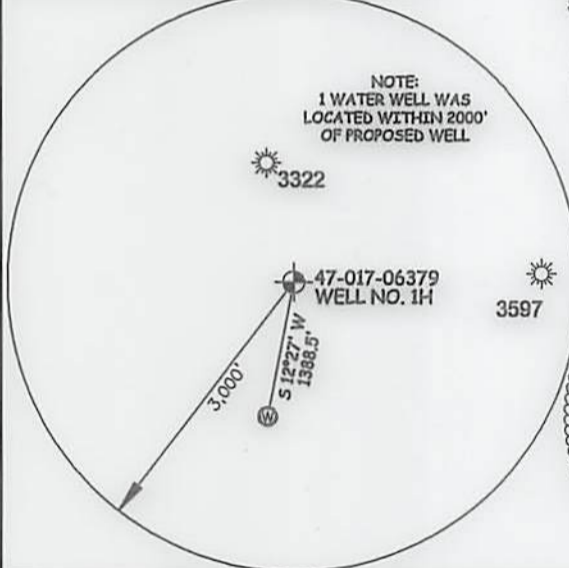


PAD LAYOUT  
NOT TO SCALE



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.

NOTE:  
1 WATER WELL WAS LOCATED WITHIN 2000' OF PROPOSED WELL



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 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

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 OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

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

LOCATION: ELEVATION 1,332' AS-DRILLED WATERSHED HEADWATERS OF MIDDLE ISLAND CREEK DISTRICT GREENBRIER COUNTY DODDING

SURFACE OWNER ERIC E. NELSON, ET AL ACREAGE 41.92 ACRES +/-  
OIL & GAS ROYALTY OWNER PAULINE BURNETT; ANNA S. LAYMAN; ANNA S. LAYMAN LEASE ACREAGE 14.29 ACRES +/-; 25.16 ACRES +/-; 23.9625 ACRES +/-  
RICHARD CROUSER; JANE NOWLIN; CARL R. MARTIN ET AL; EDWARD L. CUMPTON; DAVID E. BOWYER 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)  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 5400 D BIG TYLER ROAD  
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

06/05/2018

COUNTY NAME PERMIT



