

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

API 47 - 017 - 06817 County Doddridge District West Union  
Quad West Union 7.5' Pad Name Middle Pad Field/Pool Name -----  
Farm name Antero Resources Corporation Well Number Caboose Unit 2H  
Operator (as registered with the OOG) Antero Resources Corporation  
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4352592.047m Easting 516682.326m  
Landing Point of Curve Northing 4352780.14m Easting 516296.52m  
Bottom Hole Northing 4354999.245m Easting 515339.861m

Elevation (ft) 843' 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

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Date permit issued 6/19/2017 Date drilling commenced 9/29/2017 Date drilling ceased 4/5/2018  
Date completion activities began 7/16/2018 Date completion activities ceased 9/18/2018  
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

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

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

Reviewed

*del G. fur* 2/27/19

API 47-017 - 06817 Farm name Antero Resources Corporation Well number Caboose Unit 2H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade w/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	24"	20"	112'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	550'	New	54#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2616'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15294'	New	23#, HCP-110	N/A	Y
Tubing		2-3/8"	6598'		4.7#, P-110		
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	204 sx	15.6	1.18	241	0'	8 Hrs.
Surface	Class A	445 sx	15.6	1.21	538	0'	8 Hrs.
Coal							
Intermediate 1	Class A	860 sx	15.6	1.22	1049	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	725 sx (Lead) 1358 sx (Tail)	14 (Lead), 15.2 (Tail)	1.45 (Lead), 1.83 (Tail)	3536	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15294' MD, 6411' TVD (BHL), 6416' (Deepest Point Drilled) Loggers TD (ft) 15294' MD

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

Plug back procedure N/A

Kick off depth (ft) 5842'

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 WV Department of Environmental Protection

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

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



API 47- 017 - 06817 Farm name Antero Resources Corporation Well number Caboose Unit 2H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6339' (TOP)</u>	<u>TVD</u>	<u>6647' (TOP)</u> <u>MD</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

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

OPEN FLOW Gas 12590.85 mcfpd Oil 105.73 bpd NGL --- bpd Water 598.48 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

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

**\*PLEASE SEE ATTACHED EXHIBIT 3**


Please insert additional pages as applicable.

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

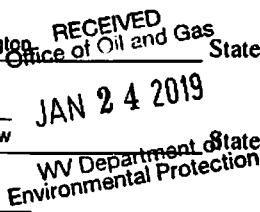
Logging Company Nine Energy Service  
Address 125 Museum Rd City Washington State PA Zip 15301

Cementing Company C&J Energy Services  
Address 1650 Hackers Creek City Lane Jew State WV Zip 26378

Stimulating Company Haliburton  
Address 121 Champion Way City Canonsburg State PA Zip 15317

Please insert additional pages as applicable.

Completed by Karin Cox Telephone 303-357-6820  
Signature \_\_\_\_\_ Title Permitting Agent Date \_\_\_\_\_



API 47-017-06817 Farm Name Antero Resources Corp Well Number Caboose Unit 2H

**EXHIBIT 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	7/16/2018	15092	15191.4	60	Marcellus
2	8/9/2018	14892.158	15060.693	60	Marcellus
3	8/9/2018	14692.316	14860.851	60	Marcellus
4	8/9/2018	14492.474	14661.009	60	Marcellus
5	8/10/2018	14292.632	14461.167	60	Marcellus
6	8/10/2018	14092.79	14261.325	60	Marcellus
7	8/10/2018	13892.948	14061.483	60	Marcellus
8	8/11/2018	13693.106	13861.641	60	Marcellus
9	8/11/2018	13493.264	13661.799	60	Marcellus
10	8/12/2018	13293.422	13461.957	60	Marcellus
11	8/12/2018	13093.58	13262.115	60	Marcellus
12	8/12/2018	12893.738	13062.273	60	Marcellus
13	8/12/2018	12693.896	12862.431	60	Marcellus
14	8/13/2018	12494.054	12662.589	60	Marcellus
15	8/13/2018	12294.212	12462.747	60	Marcellus
16	8/14/2018	12094.37	12262.905	60	Marcellus
17	8/14/2018	11894.528	12063.063	60	Marcellus
18	8/14/2018	11694.686	11863.221	60	Marcellus
19	8/15/2018	11494.844	11663.379	60	Marcellus
20	8/15/2018	11295.002	11463.537	60	Marcellus
21	8/15/2018	11095.16	11263.695	60	Marcellus
22	8/15/2018	10895.318	11063.853	60	Marcellus
23	8/16/2018	10695.476	10864.011	60	Marcellus
24	8/16/2018	10495.634	10664.169	60	Marcellus
25	8/16/2018	10295.792	10464.327	60	Marcellus
26	8/17/2018	10095.95	10264.485	60	Marcellus
27	8/17/2018	9896.108	10064.643	60	Marcellus
28	8/17/2018	9696.266	9864.801	60	Marcellus
29	8/17/2018	9496.424	9664.959	60	Marcellus
30	8/18/2018	9296.582	9465.117	60	Marcellus
31	8/18/2018	9096.74	9265.275	60	Marcellus
32	8/18/2018	8896.898	9065.433	60	Marcellus
33	8/18/2018	8697.056	8865.591	60	Marcellus
34	8/19/2018	8497.214	8665.749	60	Marcellus
35	8/19/2018	8297.372	8465.907	60	Marcellus
36	8/19/2018	8097.53	8266.065	60	Marcellus
37	8/20/2018	7897.688	8066.223	60	Marcellus
38	8/20/2018	7697.846	7866.381	60	Marcellus
39	8/20/2018	7498.004	7666.539	60	Marcellus
40	8/20/2018	7298.162	7466.697	60	Marcellus
41	8/21/2018	7098.32	7266.855	60	Marcellus
42	8/21/2018	6898.478	7067.013	60	Marcellus
43	8/21/2018	6698.636	6867.171	60	Marcellus

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**API 47-017-06817 Farm Name Antero Resources Corp Well Number Caboose Unit 2H**

**EXHIBIT 2**

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbbls)	Amount of Nitrogen/ other (units)
1	7/16/2018	70.7	7452	0	3894	264740	6162.548	N/A
2	8/9/2018	79.89	8331	5877	3720	404700	8637.119	N/A
3	8/9/2018	64.2	8163	5735	3612	410400	9596	N/A
4	8/9/2018	73.7	8001	4466	3528	404520	8374.071	N/A
5	8/10/2018	74.05	7913	4622	3680	407540	8479.214	N/A
6	8/10/2018	73.97	7918	5658	3624	407160	8535.786	N/A
7	8/10/2018	69.7	8001	5851	4512	407700	8299.595	N/A
8	8/11/2018	68.28	8090	5681	3938	407140	8548.381	N/A
9	8/11/2018	57.35	8183	5731	4728	396720	10621.45	N/A
10	8/12/2018	67.6	7973	5588	3862	400400	10603.67	N/A
11	8/12/2018	71.65	7932	5473	4395	404200	8701.5	N/A
12	8/12/2018	67.39	7719	5623	4781	400420	8308.381	N/A
13	8/12/2018	70.8	7759	5669	4195	402040	7906.31	N/A
14	8/13/2018	73.1	7868	6101	4223	399340	8244.952	N/A
15	8/13/2018	57.64	8252	6033	6167	179130	7736.929	N/A
16	8/14/2018	66.02	8306	5821	4038	400600	9772.381	N/A
17	8/14/2018	74.67	8001	6105	5269	407580	8741.976	N/A
18	8/14/2018	73.6	7674	6167	4026	406940	8133.595	N/A
19	8/15/2018	72.7	7657	6132	4093	402580	8110.095	N/A
20	8/15/2018	70.75	7678	6203	4234	406520	8199.095	N/A
21	8/15/2018	71.04	7727	5710	4566	408420	8199.905	N/A
22	8/15/2018	71.4	7685	6102	3793	402140	8097.262	N/A
23	8/16/2018	67.2	7862	5850	5289	405420	8301.929	N/A
24	8/16/2018	67.46	7738	5715	3938	399300	8190.19	N/A
25	8/16/2018	66.58	7932	5692	3841	408200	8252.143	N/A
26	8/17/2018	73.3	7769	6002	4207	402300	8054.119	N/A
27	8/17/2018	68.38	7703	5952	4123	405580	8124.667	N/A
28	8/17/2018	68.8	7636	6081	4690	406220	8185.071	N/A
29	8/17/2018	75.4	7533	5750	4008	412176	8245.143	N/A
30	8/18/2018	68.4	7517	5806	4182	360980	7461.929	N/A
31	8/18/2018	67.93	7057	6232	4611	406300	8180.524	N/A
32	8/18/2018	71.86	7521	5973	4260	411160	8181.452	N/A
33	8/18/2018	79.1	7683	5796	4129	403920	8142.738	N/A
34	8/19/2018	75.4	7642	5925	4945	404940	8205	N/A
35	8/19/2018	75.37	7448	5985	4908	404800	8105.881	N/A
36	8/19/2018	74.19	7580	5960	4541	408900	8052.381	N/A
37	8/20/2018	75.6	7150	5991	5161	401640	8123.048	N/A
38	8/20/2018	71.75	7303	5828	4628	397240	8020.833	N/A
39	8/20/2018	78.58	7258	6299	4794	423970	8141.31	N/A
40	8/20/2018	77.9	7121	6116	5147	403160	8009.929	N/A
41	8/21/2018	79.7	7042	6356	4363	402020	7969.429	N/A
42	8/21/2018	50.04	6705	6349	4814	401380	7981.095	N/A
43	8/21/2018	76.27	6852	6044	4135	417590	8172.929	N/A
	<b>AVG=</b>	<b>71</b>	<b>7,682</b>	<b>5,722</b>	<b>4,363</b>	<b>17,018,126</b>	<b>358,112</b>	<b>TOTAL</b>

## EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Sandstone	0	177	0	177
Sandstone tr coal	est. 177	217	est. 177	217
Sandy shale	est. 217	232	est. 217	232
Calcareous Shale	est. 232	319	est. 232	319
Sandstone	est. 319	373	est. 319	373
Calcareous Shale	est. 373	1,065	est. 373	1,065
Silty Sandstone	est. 1065	1,137	est. 1065	1,137
Silty shale	est. 1137	1,287	est. 1137	1,287
Sandy Shale	est. 1287	1,357	est. 1287	1,357
Shale	est. 1357	1,540	est. 1357	1,546
Big Lime	1,540	2,218	1,546	2,238
Fifty Foot Sandstone	2,218	2,474	2,238	2,497
Gordon	2,474	2,658	2,497	2,683
Fifth Sandstone	2,658	2,723	2,683	2,749
Bayard	2,723	3,510	2,749	3,544
Speechley	3,510	3,827	3,544	3,866
Balltown	3,827	4,309	3,866	4,356
Bradford	4,309	4,736	4,356	4,789
Benson	4,736	4,986	4,789	5,042
Alexander	4,986	5,972	5,042	6,050
Sycamore	5,972	6,145	6,050	6,259
Middlesex	6,145	6,271	6,259	6,483
Burkett	6,271	6,300	6,483	6,553
Tully	6,300	6,339	6,553	6,647
Marcellus	6,339	NA	6,647	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.

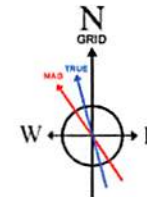
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# ANTERO RESOURCES CORPORATION

Location: Doddridge Co., WV  
 Field: Doddridge  
 Facility: Middle Pad

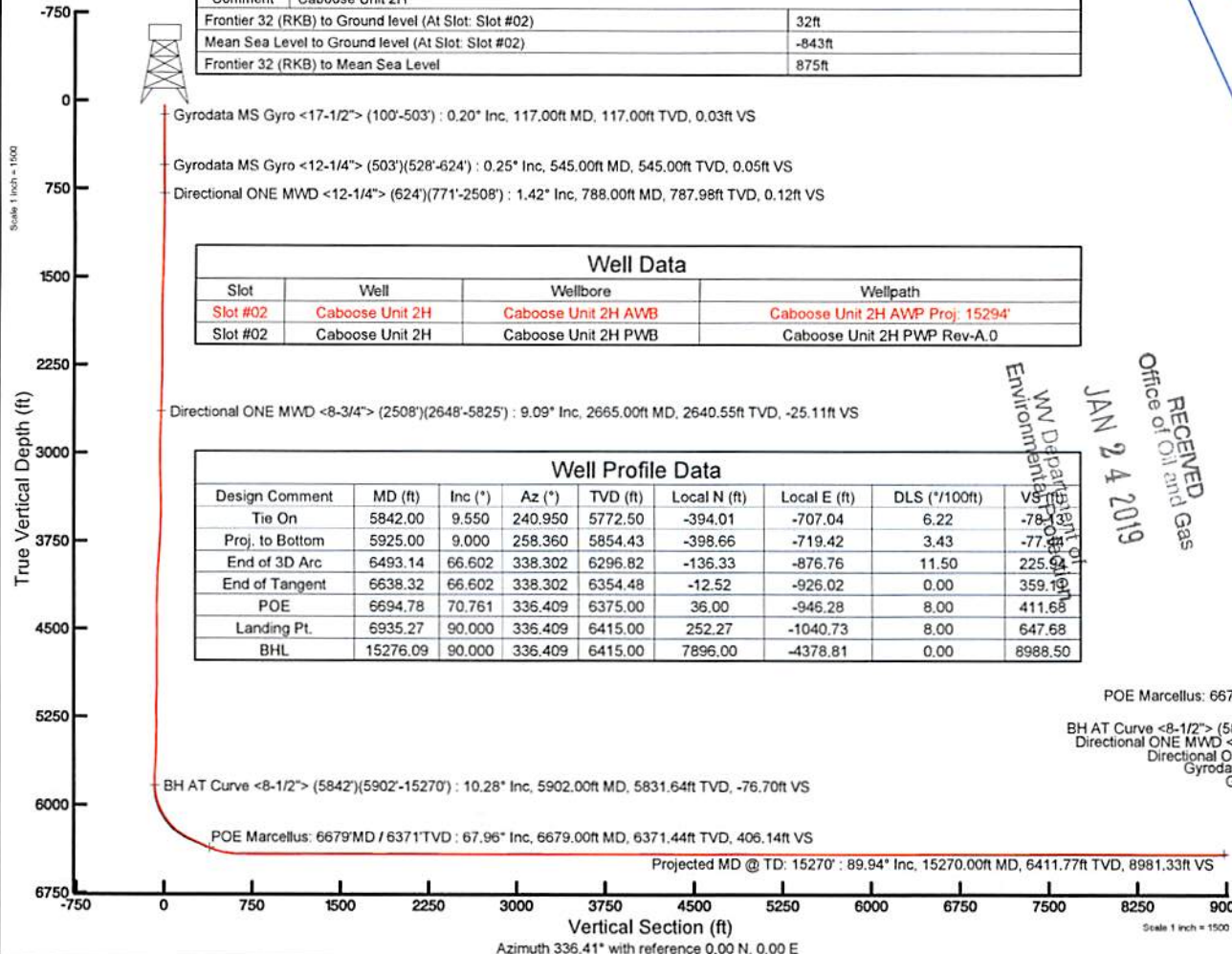
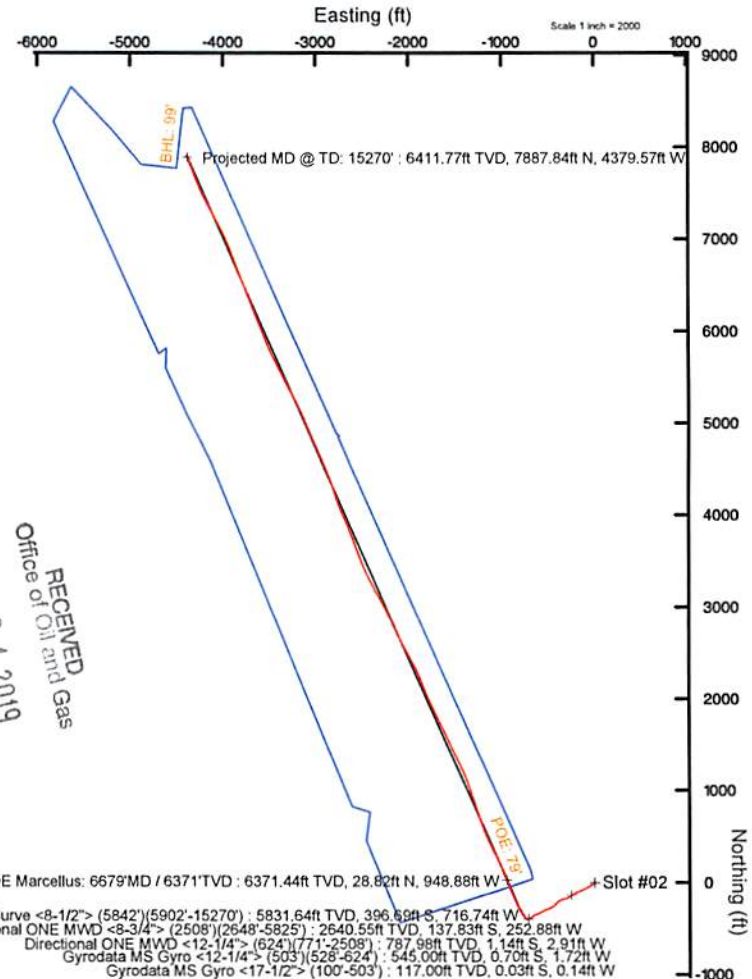
Slot: Slot #02  
 Well: Caboose Unit 2H  
 Wellbore: Caboose Unit 2H PWB



Plot reference wellpath is Caboose Unit 2H PWP Rev-A.0	Grid System: NAD27 / UTM Zone 17 North, US feet
True vertical depths are referenced to Frontier 32 (RKB)	North Reference: Grid north
Measured depths are referenced to Frontier 32 (RKB)	Scale: True distance
Frontier 32 (RKB) to Mean Sea Level: 875 feet	Depths are in feet
Mean Sea Level to Ground level (At Slot: Slot #02): -843 feet	Created by: mccrenb on 2018-05-15
Coordinates are in feet referenced to Slot	Database: WA_MPL_EASTERNUS_Defn

User specified Dip: 66.55° Field: 52022 nT  
 Magnetic North is 7.64 degrees West of True North (at 3/29/2018)  
 Grid North is 0.12 degrees East of True North  
 To correct azimuth from True to Grid subtract 0.12 degrees  
 To correct azimuth from Magnetic to Grid subtract 7.76 degrees

Location Information				
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Middle Pad	1695090.990	14279417.689	39°19'21.010"N	80°48'24.020"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)
Slot #02	-3.02	9.44	1695100.423	14279414.675
Comment	Caboose Unit 2H			
Frontier 32 (RKB) to Ground level (At Slot: Slot #02)	32ft			
Mean Sea Level to Ground level (At Slot: Slot #02)	-843ft			
Frontier 32 (RKB) to Mean Sea Level	875ft			



Well Data			
Slot	Well	Wellbore	Wellpath
Slot #02	Caboose Unit 2H	Caboose Unit 2H AWB	Caboose Unit 2H AWP Proj: 15294'
Slot #02	Caboose Unit 2H	Caboose Unit 2H PWB	Caboose Unit 2H PWP Rev-A.0

Well Profile Data							
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)
Tie On	5842.00	9.550	240.950	5772.50	-394.01	-707.04	6.22
Proj. to Bottom	5925.00	9.000	258.360	5854.43	-398.66	-719.42	3.43
End of 3D Arc	6493.14	66.602	338.302	6296.82	-136.33	-876.76	11.50
End of Tangent	6638.32	66.602	338.302	6354.48	-12.52	-926.02	0.00
POE	6694.78	70.761	336.409	6375.00	36.00	-946.28	8.00
Landing Pt.	6935.27	90.000	336.409	6415.00	252.27	-1040.73	8.00
BHL	15276.09	90.000	336.409	6415.00	7896.00	-4378.81	0.00

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API: 47-017-06817-0000  
 BH Job #: 9084096  
 Rig: Frontier 32  
 Duration: 3/31/18 - 04/03/18





## Actual Wellpath Report

Caboose Unit 2H AWP Proj: 15294'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #02
Area	Doddridge Co., WV	Well	Caboose Unit 2H
Field	Doddridge	Wellbore	Caboose Unit 2H AWB
Facility	Middle Pad		

REPORT SETUP INFORMATION			
Projection System	NAD27 / UTM Zone 17 North, US feet	Software System	WellArchitect® 5.1
North Reference	Grid	User	Mccrerib
Scale	0.999603	Report Generated	5/15/2018 at 3:31:35 PM
Convergence at slot	0.12° East	Database/Source file	WA_MPL_EASTERNUS_Defn/Caboose_Unit_2H_AWP_Proj_15294_.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-3.02	9.44	1695100.42	14279414.68	39°19'20.980"N	80°48'23.900"W
Facility Reference Pt			1695090.99	14279417.69	39°19'21.010"N	80°48'24.020"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.301"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Frontier 32 (RKB) to Facility Vertical Datum	875.00ft
Horizontal Reference Pt	Slot	Frontier 32 (RKB) to Mean Sea Level	875.00ft
Vertical Reference Pt	Frontier 32 (RKB)	Frontier 32 (RKB) to Ground Level at Slot (Slot #02)	32.00ft
MD Reference Pt	Frontier 32 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	336.41°

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# Actual Wellpath Report

Caboose Unit 2H AWP Proj: 15294'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #02
Area	Doddridge Co., WV	Well	Caboose Unit 2H
Field	Doddridge	Wellbore	Caboose Unit 2H AWB
Facility	Middle Pad		

WELLPATH DATA (186 stations) † = interpolated/extrapolated station																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
0.00	0.00	257.710	0.00	0.00	0.00	0.00	1695100.42	14279414.68	39°19'20.980"N	80°48'23.900"W	0.00	0.000	0.00	0.00	0.00	
32.00	0.000	257.710	32.00	0.00	0.00	0.00	1695100.42	14279414.68	39°19'20.980"N	80°48'23.900"W	0.00	0.000	0.00	0.00	0.00	
117.00	0.200	257.710	117.00	0.03	-0.03	-0.14	1695100.28	14279414.64	39°19'20.980"N	80°48'23.902"W	0.15	257.710	0.24	0.24	-120.34	Gyrodata MS Gyro <17-1/2"> (100'-503')
217.00	0.320	266.050	217.00	0.16	-0.09	-0.59	1695099.83	14279414.59	39°19'20.979"N	80°48'23.908"W	0.60	261.577	0.13	0.12	8.34	
317.00	0.420	238.740	317.00	0.20	-0.30	-1.19	1695099.24	14279414.38	39°19'20.977"N	80°48'23.915"W	1.22	255.923	0.20	0.10	-27.31	
417.00	0.090	231.160	417.00	0.13	-0.54	-1.56	1695098.86	14279414.14	39°19'20.975"N	80°48'23.920"W	1.65	251.015	0.33	-0.33	-7.58	
517.00	0.180	211.930	517.00	0.02	-0.72	-1.70	1695098.72	14279413.96	39°19'20.973"N	80°48'23.922"W	1.85	247.119	0.10	0.09	-19.23	
520.00	0.140	216.620	520.00	0.02	-0.73	-1.71	1695098.71	14279413.95	39°19'20.973"N	80°48'23.922"W	1.86	246.978	1.40	-1.33	156.33	
545.00	0.250	9.380	545.00	0.05	-0.70	-1.72	1695098.70	14279413.98	39°19'20.973"N	80°48'23.922"W	1.85	247.924	1.52	0.44	611.04	Gyrodata MS Gyro <12-1/4"> (503')(528'-624')
641.00	0.300	5.720	640.99	0.44	-0.24	-1.66	1695098.76	14279414.43	39°19'20.978"N	80°48'23.921"W	1.68	261.759	0.06	0.05	-3.81	
788.00	1.420	225.020	787.98	0.12	-1.14	-2.91	1695097.51	14279413.53	39°19'20.969"N	80°48'23.937"W	3.13	248.520	1.13	0.76	-95.71	Directional ONE MWD <12-1/4"> (624')(771'-2508')
848.00	2.190	228.460	847.95	-0.51	-2.43	-4.29	1695096.13	14279412.25	39°19'20.956"N	80°48'23.955"W	4.93	240.485	1.30	1.28	5.73	
938.00	3.200	236.920	937.85	-1.45	-4.94	-7.69	1695092.74	14279409.73	39°19'20.931"N	80°48'23.998"W	9.14	237.257	1.20	1.12	9.40	
1026.00	4.770	237.220	1025.63	-2.44	-8.26	-12.82	1695087.61	14279406.41	39°19'20.899"N	80°48'24.063"W	15.25	237.194	1.78	1.78	0.34	
1114.00	6.430	235.280	1113.21	-3.98	-13.05	-19.95	1695080.48	14279401.63	39°19'20.851"N	80°48'24.154"W	23.84	236.802	1.90	1.89	-2.20	
1202.00	7.840	237.630	1200.53	-5.85	-19.07	-29.07	1695071.37	14279395.61	39°19'20.792"N	80°48'24.270"W	34.77	236.729	1.64	1.60	2.67	
1290.00	8.420	239.390	1287.64	-7.55	-25.57	-39.68	1695060.76	14279389.12	39°19'20.728"N	80°48'24.406"W	47.20	237.207	0.72	0.66	2.00	
1378.00	9.430	239.960	1374.58	-9.15	-32.46	-51.47	1695048.98	14279382.23	39°19'20.660"N	80°48'24.556"W	60.85	237.764	1.15	1.15	0.65	
1467.00	10.030	240.480	1462.30	-10.77	-39.92	-64.52	1695035.93	14279374.77	39°19'20.587"N	80°48'24.722"W	75.88	238.252	0.68	0.67	0.58	
1555.00	10.880	239.850	1548.83	-12.51	-47.87	-78.37	1695022.08	14279366.82	39°19'20.509"N	80°48'24.899"W	91.84	238.583	0.97	0.97	-0.72	
1643.00	10.990	239.900	1635.24	-14.41	-56.25	-92.81	1695007.65	14279358.45	39°19'20.426"N	80°48'25.083"W	108.53	238.781	0.13	0.12	0.06	
1731.00	12.050	244.880	1721.47	-15.60	-64.36	-108.39	1694992.08	14279350.34	39°19'20.346"N	80°48'25.281"W	126.05	239.300	1.65	1.20	5.66	
1819.00	12.520	246.020	1807.45	-15.91	-72.13	-125.42	1694975.05	14279342.57	39°19'20.270"N	80°48'25.498"W	144.68	240.095	0.60	0.53	1.30	
1907.00	12.950	246.330	1893.28	-15.99	-79.97	-143.16	1694957.32	14279334.74	39°19'20.193"N	80°48'25.724"W	163.98	240.814	0.49	0.49	0.35	
1995.00	12.260	245.930	1979.16	-16.08	-87.74	-160.73	1694939.76	14279326.97	39°19'20.116"N	80°48'25.948"W	183.11	241.371	0.79	-0.78	-0.45	
2083.00	11.250	245.620	2065.32	-16.28	-95.09	-177.08	1694923.42	14279319.62	39°19'20.044"N	80°48'26.156"W	200.99	241.764	1.15	-1.15	-0.35	
2172.00	10.950	248.530	2152.65	-16.09	-101.77	-192.85	1694907.65	14279312.95	39°19'19.978"N	80°48'26.357"W	218.06	242.179	0.71	-0.34	3.27	
2260.00	8.770	244.150	2239.35	-16.04	-107.75	-206.67	1694893.84	14279306.96	39°19'19.919"N	80°48'26.533"W	233.07	242.463	2.62	-2.48	-4.98	
2348.00	7.580	235.990	2326.46	-17.36	-113.93	-217.52	1694882.99	14279300.79	39°19'19.859"N	80°48'26.671"W	245.55	242.356	1.89	-1.35	-9.27	
2436.00	7.350	231.390	2413.71	-19.87	-120.69	-226.73	1694873.79	14279294.04	39°19'19.792"N	80°48'26.788"W	256.85	241.974	0.73	-0.26	-5.23	

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# Actual Wellpath Report

Caboose Unit 2H AWP Proj: 15294'

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REFERENCE WELLPATH IDENTIFICATION				
Operator	ANTERO RESOURCES CORPORATION		Slot	Slot #02
Area	Doddridge Co., WV		Well	Caboose Unit 2H
Field	Doddridge		Wellbore	Caboose Unit 2H AWB
Facility	Middle Pad			

WELLPATH DATA (186 stations)																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
2525.00	7.310	236.130	2501.98	-22.35	-127.39	-235.88	1694864.64	14279287.33	39°19'19.726"N	80°48'26.905"W	268.08	241.627	0.68	-0.04	5.33	
2665.00	9.090	240.330	2640.55	-25.11	-137.83	-252.88	1694847.64	14279276.90	39°19'19.623"N	80°48'27.122"W	288.01	241.408	1.34	1.27	3.00	Directional ONE MWD <8-3/4"> (2508')(2648'-5825')
2753.00	9.260	233.030	2727.43	-27.49	-145.53	-264.58	1694835.95	14279269.20	39°19'19.547"N	80°48'27.271"W	301.96	241.187	1.34	0.19	-8.30	
2841.00	8.920	233.690	2814.32	-30.63	-153.83	-275.73	1694824.80	14279260.91	39°19'19.465"N	80°48'27.413"W	315.74	240.843	0.40	-0.39	0.75	
2929.00	8.480	238.010	2901.31	-33.08	-161.31	-286.74	1694813.80	14279253.43	39°19'19.392"N	80°48'27.553"W	328.99	240.639	0.89	-0.50	4.91	
3018.00	7.700	245.390	2989.42	-34.14	-167.27	-297.72	1694802.82	14279247.48	39°19'19.333"N	80°48'27.693"W	341.49	240.672	1.46	-0.88	8.29	
3106.00	7.710	253.880	3076.63	-33.48	-171.36	-308.75	1694791.79	14279243.38	39°19'19.293"N	80°48'27.833"W	353.12	240.969	1.29	0.01	9.65	
3194.00	9.200	257.220	3163.67	-31.39	-174.56	-321.29	1694779.27	14279240.19	39°19'19.262"N	80°48'27.993"W	365.64	241.485	1.78	1.69	3.80	
3282.00	9.200	256.440	3250.54	-28.85	-177.76	-334.98	1694765.57	14279236.98	39°19'19.230"N	80°48'28.167"W	379.23	242.047	0.14	0.00	-0.89	
3370.00	8.700	254.250	3337.47	-26.72	-181.22	-348.23	1694752.33	14279233.53	39°19'19.196"N	80°48'28.336"W	392.56	242.508	0.69	-0.57	-2.49	
3459.00	8.270	253.090	3425.50	-25.05	-184.91	-360.83	1694739.74	14279229.84	39°19'19.160"N	80°48'28.496"W	405.45	242.867	0.52	-0.48	-1.30	
3547.00	8.990	237.050	3512.51	-25.44	-190.49	-372.66	1694727.91	14279224.26	39°19'19.105"N	80°48'28.647"W	418.52	242.926	2.84	0.82	-18.23	
3635.00	8.550	233.420	3599.48	-28.02	-198.13	-383.68	1694716.89	14279216.63	39°19'19.030"N	80°48'28.787"W	431.82	242.689	0.80	-0.50	-4.13	
3723.00	8.060	230.760	3686.56	-31.16	-205.93	-393.71	1694706.87	14279208.83	39°19'18.953"N	80°48'28.915"W	444.31	242.389	0.71	-0.56	-3.02	
3812.00	10.890	230.090	3774.34	-35.21	-215.27	-405.00	1694695.59	14279199.49	39°19'18.861"N	80°48'29.059"W	458.65	242.008	3.18	3.18	-0.75	
3900.00	11.460	223.410	3860.67	-40.96	-226.95	-417.38	1694683.21	14279187.81	39°19'18.746"N	80°48'29.217"W	475.09	241.464	1.61	0.65	-7.59	
3988.00	11.410	222.750	3946.93	-47.87	-239.70	-429.30	1694671.30	14279175.07	39°19'18.620"N	80°48'29.369"W	491.68	240.823	0.16	-0.06	-0.75	
4077.00	9.920	232.360	4034.39	-53.26	-250.84	-441.34	1694659.25	14279163.93	39°19'18.510"N	80°48'29.523"W	507.65	240.388	2.60	-1.67	10.80	
4165.00	9.140	237.720	4121.18	-56.16	-259.21	-453.26	1694647.35	14279155.57	39°19'18.428"N	80°48'29.674"W	522.14	240.236	1.34	-0.89	6.09	
4253.00	9.220	232.820	4208.05	-58.87	-267.20	-464.78	1694635.83	14279147.58	39°19'18.349"N	80°48'29.821"W	536.11	240.106	0.89	0.09	-5.57	
4342.00	10.120	242.930	4295.80	-61.02	-275.07	-477.43	1694623.19	14279139.72	39°19'18.271"N	80°48'29.982"W	551.00	240.052	2.16	1.01	11.36	
4430.00	11.630	252.910	4382.22	-60.49	-281.19	-492.79	1694607.83	14279133.59	39°19'18.211"N	80°48'30.178"W	567.37	240.290	2.74	1.72	11.34	
4518.00	11.780	249.390	4468.39	-59.01	-286.96	-509.68	1694590.95	14279127.83	39°19'18.154"N	80°48'30.393"W	584.91	240.619	0.83	0.17	-4.00	
4607.00	9.850	244.870	4555.81	-58.75	-293.39	-525.08	1694575.56	14279121.40	39°19'18.091"N	80°48'30.589"W	601.48	240.805	2.37	-2.17	-5.08	
4695.00	8.440	245.780	4642.69	-59.02	-299.24	-537.78	1694562.86	14279115.55	39°19'18.034"N	80°48'30.751"W	615.43	240.907	1.61	-1.60	1.03	
4783.00	8.300	247.480	4729.75	-58.97	-304.32	-549.54	1694551.10	14279110.47	39°19'17.984"N	80°48'30.901"W	628.17	241.023	0.32	-0.16	1.93	
4871.00	8.420	245.830	4816.81	-58.92	-309.39	-561.28	1694539.36	14279105.41	39°19'17.934"N	80°48'31.050"W	640.91	241.135	0.30	0.14	-1.87	
4960.00	7.900	243.500	4904.91	-59.29	-314.79	-572.70	1694527.95	14279100.01	39°19'17.881"N	80°48'31.196"W	653.51	241.204	0.69	-0.58	-2.62	
5048.00	8.110	237.670	4992.06	-60.55	-320.61	-583.36	1694517.30	14279093.99	39°19'17.822"N	80°48'31.332"W	665.75	241.192	0.95	0.24	-6.62	
5136.00	7.960	234.210	5079.19	-62.78	-327.69	-593.54	1694507.11	14279087.11	39°19'17.754"N	80°48'31.461"W	678.00	241.097	0.58	-0.17	-3.93	

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# Actual Wellpath Report

Caboose Unit 2H AWP Proj: 15294'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION		Slot #02
Area	Doddridge Co., WV		Well: Caboose Unit 2H
Field	Doddridge		Wellbore: Caboose Unit 2H AWB
Facility	Middle Pad		

WELLPATH DATA (186 stations) † = interpolated/extrapolated station																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
5224.00	8.660	246.310	5166.28	-64.08	-333.92	-604.56	1694496.11	14279080.89	39°19'17.692"N	80°48'31.602"W	690.64	241.087	2.14	0.80	13.75	
5313.00	10.140	250.780	5254.08	-63.49	-339.19	-618.09	1694482.58	14279075.62	39°19'17.641"N	80°48'31.774"W	705.04	241.243	1.85	1.66	5.02	
5401.00	11.270	243.920	5340.55	-63.27	-345.52	-633.13	1694467.55	14279069.29	39°19'17.578"N	80°48'31.966"W	721.27	241.377	1.93	1.28	-7.80	
5489.00	10.790	242.210	5426.93	-64.25	-353.14	-648.14	1694452.54	14279061.68	39°19'17.503"N	80°48'32.157"W	738.10	241.416	0.66	-0.55	-1.94	
5578.00	12.080	239.150	5514.16	-66.04	-361.80	-663.51	1694437.18	14279053.02	39°19'17.418"N	80°48'32.352"W	755.74	241.397	1.60	1.45	-3.44	
5666.00	11.360	233.460	5600.33	-69.14	-371.68	-678.38	1694422.32	14279043.14	39°19'17.321"N	80°48'32.542"W	773.53	241.282	1.55	-0.82	-6.47	
5754.00	13.270	229.390	5686.30	-74.04	-383.42	-693.01	1694407.69	14279031.41	39°19'17.205"N	80°48'32.728"W	792.00	241.046	2.38	2.17	-4.62	
5798.00	11.700	231.720	5729.26	-76.65	-389.47	-700.34	1694400.36	14279025.36	39°19'17.145"N	80°48'32.822"W	801.35	240.921	3.75	-3.57	5.30	
5842.00	9.550	240.950	5772.50	-78.13	-394.01	-707.04	1694393.67	14279020.83	39°19'17.101"N	80°48'32.907"W	809.41	240.871	6.22	-4.89	20.98	
5902.00	10.280	267.190	5831.64	-76.70	-396.69	-716.74	1694383.97	14279018.15	39°19'17.074"N	80°48'33.031"W	819.19	241.037	7.56	1.22	43.73	BH AT Curve <8-1/2"> (5842')(5902'-15270')
5935.00	11.730	276.290	5864.03	-73.99	-396.46	-723.02	1694377.69	14279018.37	39°19'17.077"N	80°48'33.111"W	824.58	241.262	6.84	4.39	27.58	
5982.00	14.370	293.210	5909.83	-67.35	-393.64	-733.13	1694367.58	14279021.19	39°19'17.105"N	80°48'33.239"W	832.13	241.767	9.82	5.62	36.00	
6030.00	18.000	307.210	5955.94	-56.53	-386.80	-744.52	1694356.20	14279028.03	39°19'17.173"N	80°48'33.384"W	839.01	242.547	11.05	7.56	29.17	
6077.00	22.220	315.690	6000.07	-41.87	-376.05	-756.52	1694344.20	14279038.78	39°19'17.279"N	80°48'33.536"W	844.83	243.569	10.89	8.98	18.04	
6125.00	27.060	322.400	6043.70	-22.77	-360.89	-769.53	1694331.20	14279053.93	39°19'17.429"N	80°48'33.702"W	849.95	244.875	11.63	10.08	13.98	
6172.00	32.280	327.910	6084.53	0.03	-341.77	-782.74	1694318.00	14279073.04	39°19'17.619"N	80°48'33.869"W	854.10	246.412	12.52	11.11	11.72	
6221.00	37.180	331.110	6124.79	27.74	-317.70	-796.85	1694303.89	14279097.10	39°19'17.857"N	80°48'34.048"W	857.85	248.263	10.67	10.00	6.53	
6268.00	42.160	332.720	6160.96	57.64	-291.23	-810.95	1694289.80	14279123.56	39°19'18.119"N	80°48'34.227"W	861.66	250.245	10.82	10.60	3.43	
6291.00†	44.283	333.051	6177.72	73.36	-277.21	-818.13	1694282.62	14279137.57	39°19'18.257"N	80°48'34.318"W	863.82	251.282	9.28	9.23	1.44	Middlesex: 6291'MD / 6178'TVD
6315.00	46.500	333.370	6194.57	90.42	-261.96	-825.83	1694274.93	14279152.82	39°19'18.408"N	80°48'34.415"W	866.38	252.400	9.28	9.24	1.33	
6362.00	51.640	334.420	6225.35	125.88	-230.08	-841.43	1694259.32	14279184.69	39°19'18.724"N	80°48'34.613"W	872.32	254.707	11.07	10.94	2.23	
6411.00	56.810	335.460	6253.99	165.61	-194.08	-858.26	1694242.51	14279220.68	39°19'19.080"N	80°48'34.826"W	879.93	257.258	10.69	10.55	2.12	
6458.00	62.580	336.680	6277.69	206.16	-157.00	-874.70	1694226.08	14279257.74	39°19'19.447"N	80°48'35.034"W	888.67	259.824	12.48	12.28	2.60	
6506.00	64.810	337.670	6298.96	249.19	-117.34	-891.38	1694209.39	14279297.38	39°19'19.839"N	80°48'35.245"W	899.07	262.501	5.00	4.65	2.06	
6515.00†	64.824	338.007	6302.79	257.33	-109.80	-894.46	1694206.32	14279304.92	39°19'19.914"N	80°48'35.284"W	901.17	263.002	3.39	0.15	3.75	Burket: 6515'MD / 6303'TVD
6553.00	64.890	339.430	6318.94	291.70	-77.75	-906.94	1694193.84	14279336.96	39°19'20.231"N	80°48'35.442"W	910.27	265.100	3.39	0.17	3.74	
6585.00†	64.943	339.257	6332.51	320.64	-50.63	-917.16	1694183.62	14279364.07	39°19'20.499"N	80°48'35.572"W	918.56	266.841	0.52	0.17	-0.54	Tully: 6585'MD / 6333'TVD
6601.00	64.970	339.170	6339.28	335.12	-37.07	-922.31	1694178.48	14279377.62	39°19'20.633"N	80°48'35.637"W	923.05	267.698	0.52	0.17	-0.54	
6648.00	65.130	337.700	6359.11	377.71	2.56	-937.97	1694162.83	14279417.23	39°19'21.025"N	80°48'35.835"W	937.97	270.156	2.86	0.34	-3.13	
6659.00†	66.136	337.521	6363.64	387.73	11.82	-941.79	1694159.01	14279426.49	39°19'21.117"N	80°48'35.883"W	941.86	270.719	9.26	9.14	-1.62	Hamilton: 6659'MD / 6364'TVD

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# Actual Wellpath Report

Caboose Unit 2H AWP Proj: 15294'

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REFERENCE WELLPATH IDENTIFICATION				
Operator	ANTERO RESOURCES CORPORATION		Slot	Slot #02
Area	Doddridge Co., WV		Well	Caboose Unit 2H
Field	Doddridge		Wellbore	Caboose Unit 2H AWB
Facility	Middle Pad			

WELLPATH DATA (186 stations) † = interpolated/extrapolated station																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (ft/100ft)	Build Rate (ft/100ft)	Turn Rate (ft/100ft)	Comments
6679.00†	67.965	337.204	6371.44	406.14	28.82	-948.88	1694151.92	14279443.48	39°19'21.285"N	80°48'35.973"W	949.31	271.740	9.26	9.15	-1.59	POE Marcellus: 6679MD / 6371'TVD
6696.00	69.520	336.940	6377.61	421.98	43.41	-955.05	1694145.75	14279458.07	39°19'21.429"N	80°48'36.051"W	956.03	272.602	9.26	9.15	-1.55	
6743.00	74.770	338.030	6392.01	466.69	84.72	-972.17	1694128.64	14279499.36	39°19'21.838"N	80°48'36.268"W	975.85	274.981	11.39	11.17	2.32	
6791.00	78.820	339.040	6402.97	513.38	128.20	-989.26	1694111.56	14279542.83	39°19'22.268"N	80°48'36.484"W	997.53	277.384	8.68	8.44	2.10	
6838.00	82.100	338.430	6410.76	559.69	171.39	-1006.07	1694094.75	14279586.00	39°19'22.695"N	80°48'36.697"W	1020.56	279.668	7.10	6.98	-1.30	
6887.00	88.310	335.490	6414.86	608.48	216.29	-1025.17	1694075.66	14279630.88	39°19'23.139"N	80°48'36.939"W	1047.74	281.914	14.01	12.67	-6.00	
6982.00	89.780	333.290	6416.44	703.40	301.94	-1066.23	1694034.62	14279716.50	39°19'23.987"N	80°48'37.459"W	1108.16	285.811	2.78	1.55	-2.32	
7077.00	89.850	333.550	6416.75	798.27	386.90	-1108.74	1693992.13	14279801.42	39°19'24.827"N	80°48'37.998"W	1174.30	289.237	0.28	0.07	0.27	
7172.00	89.970	336.160	6416.90	893.23	472.89	-1149.10	1693951.78	14279887.38	39°19'25.678"N	80°48'38.509"W	1242.60	292.369	2.75	0.13	2.75	
7267.00	89.970	338.970	6416.95	988.20	560.69	-1185.35	1693915.55	14279975.14	39°19'26.546"N	80°48'38.968"W	1311.27	295.315	2.96	0.00	2.96	
7362.00	90.310	341.270	6416.71	1082.99	650.02	-1217.65	1693883.26	14280064.44	39°19'27.430"N	80°48'39.377"W	1380.29	298.095	2.45	0.36	2.42	
7458.00	90.000	341.160	6416.46	1178.66	740.91	-1248.57	1693852.35	14280155.29	39°19'28.329"N	80°48'39.768"W	1451.85	300.685	0.34	-0.32	-0.11	
7553.00	90.030	342.020	6416.43	1273.27	831.05	-1278.57	1693822.36	14280245.39	39°19'29.220"N	80°48'40.147"W	1524.92	303.023	0.91	0.03	0.91	
7648.00	90.120	342.030	6416.31	1367.81	921.41	-1307.89	1693793.06	14280335.72	39°19'30.114"N	80°48'40.518"W	1599.86	305.165	0.10	0.09	0.01	
7743.00	90.150	341.480	6416.08	1462.40	1011.63	-1337.63	1693763.33	14280425.91	39°19'31.007"N	80°48'40.894"W	1677.10	307.100	0.58	0.03	-0.58	
7838.00	90.060	339.420	6415.91	1557.16	1101.15	-1369.42	1693731.55	14280515.39	39°19'31.892"N	80°48'41.296"W	1757.22	308.803	2.17	-0.09	-2.17	
7933.00	89.970	337.090	6415.88	1652.10	1189.39	-1404.61	1693696.37	14280603.59	39°19'32.765"N	80°48'41.741"W	1840.53	310.257	2.45	-0.09	-2.45	
8028.00	90.060	334.720	6415.86	1747.09	1276.10	-1443.39	1693657.61	14280690.27	39°19'33.623"N	80°48'42.232"W	1926.61	311.480	2.50	0.09	-2.49	
8123.00	90.000	334.670	6415.81	1842.05	1361.99	-1484.00	1693617.02	14280776.12	39°19'34.472"N	80°48'42.747"W	2014.26	312.545	0.08	-0.06	-0.05	
8218.00	89.910	335.540	6415.88	1937.02	1448.16	-1523.99	1693577.04	14280862.26	39°19'35.325"N	80°48'43.254"W	2102.31	313.539	0.92	-0.09	0.92	
8313.00	90.000	335.640	6415.96	2032.01	1534.67	-1563.25	1693537.80	14280948.73	39°19'36.181"N	80°48'43.751"W	2190.65	314.471	1.14	0.09	0.11	
8408.00	89.970	334.540	6415.98	2126.99	1620.83	-1603.26	1693497.80	14281034.86	39°19'37.033"N	80°48'44.258"W	2279.81	315.312	1.16	-0.03	-1.16	
8503.00	90.060	333.950	6415.96	2221.92	1706.39	-1644.54	1693456.54	14281120.38	39°19'37.880"N	80°48'44.781"W	2369.87	316.057	0.63	0.09	-0.62	
8598.00	90.060	334.750	6415.86	2316.86	1792.03	-1685.66	1693415.43	14281205.99	39°19'38.727"N	80°48'45.302"W	2460.25	316.752	0.84	0.00	0.84	
8692.00	90.000	333.900	6415.81	2410.79	1876.75	-1726.39	1693374.72	14281290.67	39°19'39.565"N	80°48'45.818"W	2550.02	317.390	0.91	-0.06	-0.90	
8787.00	90.090	335.730	6415.73	2505.75	1962.71	-1766.81	1693334.31	14281376.60	39°19'40.415"N	80°48'46.330"W	2640.81	318.007	1.93	0.09	1.93	
8883.00	89.970	337.990	6415.68	2601.74	2050.98	-1804.54	1693296.61	14281464.84	39°19'41.289"N	80°48'46.808"W	2731.83	318.657	2.36	-0.13	2.35	
8978.00	89.940	338.130	6415.76	2696.70	2139.10	-1840.03	1693261.12	14281552.92	39°19'42.160"N	80°48'47.257"W	2821.61	319.298	0.15	-0.03	0.15	
9073.00	90.030	337.920	6415.78	2791.67	2227.20	-1875.58	1693225.59	14281640.99	39°19'43.032"N	80°48'47.707"W	2911.74	319.898	0.24	0.09	-0.22	
9168.00	89.940	335.520	6415.81	2886.66	2314.46	-1913.12	1693188.06	14281728.21	39°19'43.895"N	80°48'48.183"W	3002.79	320.423	2.53	-0.09	-2.53	





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## Actual Wellpath Report

Caboose Unit 2H AWP Proj: 15294'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #02
Area	Doddridge Co., WV	Well	Caboose Unit 2H
Field	Doddridge	Wellbore	Caboose Unit 2H AWB
Facility	Middle Pad		

WELLPATH DATA (186 stations)																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
9263.00	89.970	330.730	6415.88	2981.47	2399.17	-1956.06	1693145.15	14281812.89	39°19'44.733"N	80°48'48.727"W	3095.51	320.809	5.04	0.03	-5.04	
9358.00	90.000	331.850	6415.91	3076.09	2482.49	-2001.69	1693099.53	14281896.18	39°19'45.558"N	80°48'49.305"W	3188.97	321.120	1.18	0.03	1.18	
9452.00	90.030	331.990	6415.88	3169.80	2565.43	-2045.94	1693055.30	14281979.08	39°19'46.378"N	80°48'49.866"W	3281.35	321.428	0.15	0.03	0.15	
9547.00	90.180	333.680	6415.71	3264.62	2649.95	-2089.31	1693011.95	14282063.56	39°19'47.214"N	80°48'50.416"W	3374.53	321.747	1.79	0.16	1.78	
9642.00	90.090	335.550	6415.49	3359.56	2735.77	-2130.03	1692971.24	14282149.35	39°19'48.064"N	80°48'50.932"W	3467.20	322.096	1.97	-0.09	1.97	
9737.00	90.060	335.920	6415.36	3454.56	2822.38	-2169.07	1692932.21	14282235.93	39°19'48.920"N	80°48'51.426"W	3559.59	322.457	0.39	-0.03	0.39	
9832.00	90.060	334.300	6415.26	3549.53	2908.55	-2209.06	1692892.25	14282322.07	39°19'49.773"N	80°48'51.933"W	3652.34	322.783	1.71	0.00	-1.71	
9927.00	89.910	332.100	6415.29	3644.37	2993.34	-2251.89	1692849.43	14282406.82	39°19'50.612"N	80°48'52.476"W	3745.81	323.046	2.32	-0.16	-2.32	
10022.00	89.850	330.970	6415.49	3739.03	3076.85	-2297.16	1692804.17	14282490.30	39°19'51.438"N	80°48'53.050"W	3839.79	323.255	1.19	-0.06	-1.19	
10117.00	89.940	330.780	6415.66	3833.59	3159.84	-2343.40	1692757.95	14282573.26	39°19'52.259"N	80°48'53.636"W	3933.97	323.439	0.22	0.09	-0.20	
10211.00	89.940	332.320	6415.76	3927.25	3242.49	-2388.18	1692713.19	14282655.87	39°19'53.077"N	80°48'54.204"W	4027.05	323.627	1.64	0.00	1.64	
10305.00	89.970	333.750	6415.83	4021.08	3326.27	-2430.81	1692670.59	14282739.61	39°19'53.906"N	80°48'54.744"W	4119.81	323.841	1.52	0.03	1.52	
10399.00	89.970	336.980	6415.88	4115.05	3411.70	-2469.98	1692631.42	14282825.01	39°19'54.751"N	80°48'55.240"W	4211.95	324.096	3.44	0.00	3.44	
10493.00	89.940	338.790	6415.95	4209.02	3498.78	-2505.37	1692596.05	14282912.06	39°19'55.612"N	80°48'55.688"W	4303.29	324.395	1.93	-0.03	1.93	
10586.00	90.150	339.190	6415.88	4301.92	3585.60	-2538.71	1692562.72	14282998.84	39°19'56.471"N	80°48'56.111"W	4393.35	324.700	0.49	0.23	0.43	
10680.00	90.220	340.570	6415.58	4395.75	3673.86	-2571.05	1692530.40	14283087.07	39°19'57.344"N	80°48'56.520"W	4484.14	325.015	1.47	0.07	1.47	
10774.00	89.940	338.830	6415.45	4489.59	3762.02	-2603.66	1692497.80	14283175.19	39°19'58.216"N	80°48'56.932"W	4575.13	325.313	1.87	-0.30	-1.85	
10867.00	89.850	338.360	6415.62	4582.52	3848.60	-2637.60	1692463.88	14283261.74	39°19'59.073"N	80°48'57.362"W	4665.69	325.576	0.51	-0.10	-0.51	
10961.00	89.910	336.840	6415.81	4676.50	3935.50	-2673.42	1692428.07	14283348.61	39°19'59.932"N	80°48'57.816"W	4757.66	325.811	1.62	0.06	-1.62	
11055.00	89.940	336.760	6415.94	4770.49	4021.90	-2710.45	1692391.06	14283434.98	39°20'00.787"N	80°48'58.285"W	4849.97	326.023	0.09	0.03	-0.09	
11150.00	90.000	340.070	6415.99	4865.42	4110.23	-2745.39	1692356.13	14283523.27	39°20'01.661"N	80°48'58.727"W	4942.79	326.259	3.48	0.06	3.48	
11244.00	90.120	342.010	6415.89	4959.11	4199.12	-2775.93	1692325.60	14283612.13	39°20'02.540"N	80°48'59.114"W	5033.73	326.532	2.07	0.13	2.06	
11338.00	90.400	341.220	6415.46	5052.72	4288.33	-2805.58	1692295.96	14283701.29	39°20'03.422"N	80°48'59.489"W	5124.55	326.806	0.89	0.30	-0.84	
11431.00	90.120	339.520	6415.04	5145.50	4375.92	-2836.82	1692264.73	14283788.85	39°20'04.288"N	80°48'59.884"W	5215.00	327.045	1.85	-0.30	-1.83	
11525.00	90.030	338.070	6414.92	5239.41	4463.55	-2870.82	1692230.75	14283876.44	39°20'05.155"N	80°49'00.314"W	5307.06	327.252	1.55	-0.10	-1.54	
11619.00	89.910	336.830	6414.97	5333.39	4550.36	-2906.87	1692194.71	14283963.22	39°20'06.014"N	80°49'00.771"W	5399.60	327.429	1.33	-0.13	-1.32	
11713.00	90.000	335.970	6415.04	5427.39	4636.50	-2944.50	1692157.10	14284049.32	39°20'06.866"N	80°49'01.248"W	5492.47	327.582	0.92	0.10	-0.91	
11806.00	90.150	335.380	6414.92	5520.39	4721.24	-2982.81	1692118.81	14284134.03	39°20'07.704"N	80°49'01.733"W	5584.55	327.716	0.65	0.16	-0.63	
11900.00	90.250	336.110	6414.59	5614.38	4806.94	-3021.42	1692080.21	14284219.70	39°20'08.552"N	80°49'02.222"W	5677.65	327.848	0.78	0.11	0.78	
11994.00	90.310	336.410	6414.13	5708.38	4892.99	-3059.26	1692042.38	14284305.71	39°20'09.403"N	80°49'02.702"W	5770.65	327.985	0.33	0.06	0.32	





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# Actual Wellpath Report

Caboose Unit 2H AWP Proj: 15294'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #02
Area	Doddridge Co., WV	Well	Caboose Unit 2H
Field	Doddridge	Wellbore	Caboose Unit 2H AWB
Facility	Middle Pad		

WELLPATH DATA (186 stations)																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
12088.00	89.970	337.670	6413.90	5802.37	4979.54	-3095.93	1692005.73	14284392.23	39°20'10.260"N	80°49'03.166"W	5863.50	328.130	1.39	-0.36	1.34	
12181.00	89.820	336.370	6414.07	5895.36	5065.16	-3132.24	1691969.43	14284477.81	39°20'11.106"N	80°49'03.626"W	5955.39	328.268	1.41	-0.16	-1.40	
12275.00	89.850	335.000	6414.34	5989.35	5150.81	-3170.94	1691930.74	14284563.44	39°20'11.954"N	80°49'04.116"W	6048.62	328.383	1.46	0.03	-1.46	
12368.00	89.750	333.690	6414.67	6082.29	5234.64	-3211.21	1691890.50	14284647.23	39°20'12.783"N	80°49'04.627"W	6141.12	328.473	1.41	-0.11	-1.41	
12462.00	90.030	332.980	6414.85	6176.15	5318.65	-3253.39	1691848.33	14284731.20	39°20'13.614"N	80°49'05.161"W	6234.78	328.546	0.81	0.30	-0.76	
12556.00	90.150	331.590	6414.70	6269.91	5401.86	-3297.11	1691804.63	14284814.38	39°20'14.438"N	80°49'05.716"W	6328.59	328.602	1.48	0.13	-1.48	
12650.00	90.950	333.930	6413.80	6363.70	5485.42	-3340.13	1691761.63	14284897.91	39°20'15.264"N	80°49'06.261"W	6422.33	328.662	2.63	0.85	2.49	
12743.00	90.220	333.240	6412.85	6456.58	5568.71	-3381.50	1691720.27	14284981.16	39°20'16.088"N	80°49'06.785"W	6514.99	328.733	1.08	-0.78	-0.74	
12836.00	90.650	334.740	6412.14	6549.50	5652.29	-3422.28	1691679.51	14285064.71	39°20'16.915"N	80°49'07.302"W	6607.59	328.806	1.68	0.46	1.61	
12930.00	90.120	333.840	6411.51	6643.43	5736.98	-3463.05	1691638.75	14285149.36	39°20'17.753"N	80°49'07.819"W	6701.17	328.883	1.11	-0.56	-0.96	
13024.00	90.120	336.940	6411.31	6737.40	5822.43	-3502.19	1691599.62	14285234.78	39°20'18.598"N	80°49'08.315"W	6794.56	328.973	3.30	0.00	3.30	
13117.00	90.000	339.160	6411.22	6830.36	5908.68	-3536.96	1691564.88	14285321.00	39°20'19.452"N	80°49'08.755"W	6886.40	329.095	2.39	-0.13	2.39	
13211.00	89.970	339.250	6411.24	6924.25	5996.56	-3570.33	1691531.52	14285408.84	39°20'20.321"N	80°49'09.178"W	6978.96	329.231	0.10	-0.03	0.10	
13305.00	89.880	337.450	6411.36	7018.19	6083.92	-3605.01	1691496.85	14285496.17	39°20'21.185"N	80°49'09.617"W	7071.79	329.351	1.92	-0.10	-1.91	
13398.00	89.970	337.930	6411.49	7111.16	6169.96	-3640.31	1691461.56	14285582.18	39°20'22.036"N	80°49'10.064"W	7163.82	329.459	0.53	0.10	0.52	
13492.00	90.060	339.230	6411.46	7205.10	6257.46	-3674.64	1691427.25	14285669.65	39°20'22.902"N	80°49'10.499"W	7256.64	329.577	1.39	0.10	1.38	
13586.00	90.460	339.040	6411.03	7298.99	6345.30	-3708.12	1691393.78	14285757.45	39°20'23.770"N	80°49'10.923"W	7349.35	329.698	0.47	0.43	-0.20	
13679.00	90.030	338.080	6410.64	7391.92	6431.86	-3742.11	1691359.80	14285843.97	39°20'24.627"N	80°49'11.353"W	7441.25	329.809	1.13	-0.46	-1.03	
13773.00	90.000	337.970	6410.61	7485.88	6519.03	-3777.29	1691324.64	14285931.11	39°20'25.489"N	80°49'11.799"W	7534.30	329.911	0.12	-0.03	-0.12	
13866.00	90.000	337.960	6410.61	7578.85	6605.24	-3812.18	1691289.76	14286017.28	39°20'26.342"N	80°49'12.240"W	7626.39	330.009	0.01	0.00	-0.01	
13960.00	90.180	339.580	6410.46	7672.77	6692.86	-3846.21	1691255.74	14286104.86	39°20'27.208"N	80°49'12.671"W	7719.31	330.115	1.73	0.19	1.72	
14053.00	90.090	339.570	6410.24	7765.62	6780.01	-3878.67	1691223.30	14286191.98	39°20'28.070"N	80°49'13.082"W	7811.06	330.227	0.10	-0.10	-0.01	
14147.00	90.060	338.340	6410.12	7859.53	6867.74	-3912.42	1691189.56	14286279.68	39°20'28.938"N	80°49'13.510"W	7903.98	330.331	1.31	-0.03	-1.31	
14241.00	90.000	337.030	6410.07	7953.50	6954.70	-3948.12	1691153.88	14286366.60	39°20'29.798"N	80°49'13.962"W	7997.21	330.417	1.40	-0.06	-1.39	
14334.00	89.720	334.280	6410.30	8046.49	7039.42	-3986.45	1691115.56	14286451.29	39°20'30.636"N	80°49'14.448"W	8089.82	330.477	2.97	-0.30	-2.96	
14428.00	89.850	332.470	6410.65	8140.35	7123.45	-4028.57	1691073.46	14286535.28	39°20'31.468"N	80°49'14.982"W	8183.70	330.510	1.93	0.14	-1.93	
14522.00	89.820	332.210	6410.92	8234.11	7206.70	-4072.21	1691029.84	14286618.51	39°20'32.291"N	80°49'15.535"W	8277.65	330.531	0.28	-0.03	-0.28	
14615.00	89.940	332.670	6411.12	8326.89	7289.15	-4115.24	1690986.82	14286700.92	39°20'33.107"N	80°49'16.081"W	8370.60	330.552	0.51	0.13	0.49	
14709.00	89.720	332.970	6411.40	8420.70	7372.77	-4158.18	1690943.90	14286784.51	39°20'33.934"N	80°49'16.625"W	8464.52	330.577	0.40	-0.23	0.32	
14803.00	89.880	333.140	6411.73	8514.54	7456.56	-4200.77	1690901.33	14286868.27	39°20'34.763"N	80°49'17.165"W	8558.44	330.605	0.25	0.17	0.18	





# Actual Wellpath Report

Caboose Unit 2H AWP Proj: 15294'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION		Slot #02
Area	Doddridge Co., WV		Well Caboose Unit 2H
Field	Doddridge		Wellbore Caboose Unit 2H AWB
Facility	Middle Pad		

WELLPATH DATA (186 stations)																	
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments	
14896.00	90.000	337.200	6411.82	8607.50	7540.95	-4239.82	1690862.30	14286952.62	39°20'35.598"N	80°49'17.660"W	8651.13	330.654	4.37	0.13	4.37		
14989.00	90.030	338.500	6411.80	8700.47	7627.08	-4274.88	1690827.25	14287038.72	39°20'36.450"N	80°49'18.104"W	8743.40	330.730	1.40	0.03	1.40		
15083.00	90.000	338.610	6411.77	8794.40	7714.58	-4309.25	1690792.89	14287126.18	39°20'37.316"N	80°49'18.539"W	8836.53	330.813	0.12	-0.03	0.12		
15177.00	90.030	338.130	6411.75	8888.35	7801.96	-4343.90	1690758.26	14287213.52	39°20'38.180"N	80°49'18.978"W	8929.72	330.892	0.51	0.03	-0.51		
15270.00	89.940	336.750	6411.77	8981.33	7887.84	-4379.57	1690722.59	14287299.37	39°20'39.029"N	80°49'19.430"W	9022.12	330.960	1.49	-0.10	-1.48	Projected MD @ TD: 15270'	
15294.00	89.940	336.750	6411.80	9005.33	7909.89	-4389.05	1690713.12	14287321.41	39°20'39.248"N	80°49'19.550"W	9046.00	330.975	0.00	0.00	0.00		

HOLE & CASING SECTIONS - Ref Wellbore: Caboose Unit 2H AWB Ref Wellpath: Caboose Unit 2H AWP Proj: 15294'									
String/Diameter	Start MD (ft)	End MD (ft)	Interval (ft)	Start TVD (ft)	End TVD (ft)	Start N/S (ft)	Start E/W (ft)	End N/S (ft)	End E/W (ft)
20in Conductor	32.00	112.00	80.00	32.00	112.00	0.00	0.00	-0.03	-0.13
17.5in Open Hole	112.00	550.30	438.30	112.00	550.30	-0.03	-0.13	-0.67	-1.71
13.375in Casing Surface	32.00	550.30	518.30	32.00	550.30	0.00	0.00	-0.67	-1.71
12.25in Open Hole	550.30	2615.60	2065.30	550.30	2591.73	-0.67	-1.71	-134.03	-246.38
9.625in Casing Intermediate	32.00	2615.60	2583.60	32.00	2591.73	0.00	0.00	-134.03	-246.38
8.75in Open Hole	2615.60	5925.00	3309.40	2591.73	5854.23	-134.03	-246.38	-396.64	-721.03
8.5in Open Hole	5925.00	15294.00	9369.00	5854.23	6411.80	-396.64	-721.03	7909.89	-4389.05
5.5in Casing Production	32.00	15294.00	15262.00	32.00	6411.80	0.00	0.00	7909.89	-4389.05

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# Actual Wellpath Report

Caboose Unit 2H AWP Proj: 15294'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #02
Area	Doddridge Co., WV	Well	Caboose Unit 2H
Field	Doddridge	Wellbore	Caboose Unit 2H AWB
Facility	Middle Pad		

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Caboose Unit 2H POE Plat	6375.00	36.00	-946.28	1694154.52	14279450.66	39°19'21.356"N	80°48'35.940"W	point
Caboose Unit 2H BHL Plat	6415.00	7896.00	-4378.81	1690723.36	14287307.53	39°20'39.110"N	80°49'19.420"W	point
Caboose Unit 2H LP Rev-1	6415.00	252.28	-1040.73	1694060.11	14279666.85	39°19'23.495"N	80°48'37.136"W	point

WELLPATH COMPOSITION - Ref Wellbore: Caboose Unit 2H AWB Ref Wellpath: Caboose Unit 2H AWP Proj: 15294'				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
32.00	520.00	Gyrodata standard - Drop gyro or Multi-shot	01 Gyrodata MS Gyro <17-1/2"> (100'-503')	Caboose Unit 2H AWB
520.00	641.00	Gyrodata standard - Drop gyro or Multi-shot	02 Gyrodata MS Gyro <12-1/4"> (503')(528'-624')	Caboose Unit 2H AWB
641.00	2525.00	ISCWSA MWD, Rev. 4 (Standard)	03 Directional ONE MWD <12-1/4"> (624')(771'-2508')	Caboose Unit 2H AWB
2525.00	5842.00	ISCWSA MWD, Rev. 4 (Standard)	04 Directional ONE MWD <8-3/4"> (2508')(2648'-5825')	Caboose Unit 2H AWB
5842.00	15270.00	BHI AutoTrak Curve (Short)	05 BH AT Curve <8-1/2"> (5842')(5902'-15270')	Caboose Unit 2H AWB
15270.00	15294.00	Blind Drilling (std)	Projection to bit	Caboose Unit 2H AWB

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## Actual Wellpath Report

Caboose Unit 2H AWP Proj: 15294'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #02
Area	Doddridge Co., WV	Well	Caboose Unit 2H
Field	Doddridge	Wellbore	Caboose Unit 2H AWB
Facility	Middle Pad		

COMMENTS
<p><b>Wellpath general comments</b>            API: 47-017-06817-0000            BH Job #: 9084096            Rig: Frontier 32            Duration: 3/31/18 - 04/03/18            Gyrodata MS Gyro &lt;17-1/2"&gt; (100'-503')            Gyrodata MS Gyro &lt;12-1/4"&gt; (503')(528'-624')            Directional ONE MWD &lt;12-1/4"&gt; (624')(771'-2508')            Directional ONE MWD &lt;8-3/4"&gt; (2508')(2648'-5825')            BH AT Curve &lt;8-1/2"&gt; (5842')(5902'-15270')            Middlesex: 6291'MD / 6178'TVD            Burket: 6515'MD / 6303'TVD            Tully: 6585'MD / 6333'TVD            Hamilton: 6659'MD / 6364'TVD            POE Marcellus: 6679'MD / 6371'TVD            Projected MD @ TD: 15270'</p>

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## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/8/2018
Job End Date:	8/21/2018
State:	West Virginia
County:	Doddridge
API Number:	47-017-06817-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Caboose 2H
Latitude:	39.32249400
Longitude:	-80.80663900
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,417
Total Base Water Volume (gal):	15,329,989
Total Base Non Water Volume:	0

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### Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	88.08935	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.12363	

SAND-PREMIUM WHITE-40/70, BULK	Halliburton	Proppant					
				Listed Below			
SAND-COMMON WHITE - 100 MESH, 3307 LB BAG	Halliburton	Proppant					
				Listed Below			
EXCELERATE PS-2	Halliburton	Friction Reducer					
				Listed Below			
SP BREAKER	Halliburton	Breaker					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
HYDROCHLORIC ACID	Halliburton	Solvent					
				Listed Below			
SCALECHEK LP-70	Halliburton	Scale Inhibitor					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			

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Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Crystalline silica, quartz	14808-60-7	100.00000	11.73955	
			Acrylamide acrylate polymer	Proprietary	30.00000	0.01720	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Inorganic salt	Proprietary	30.00000	0.01720	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01720	
			Guar gum	9000-30-0	100.00000	0.01679	
			Hydrochloric acid	7647-01-0	15.00000	0.01100	
			Ethylene glycol	107-21-1	60.00000	0.00852	
			Glutaraldehyde	111-30-8	30.00000	0.00268	
			Telmer	Proprietary	10.00000	0.00142	
			Sodium persulfate	7775-27-1	100.00000	0.00055	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00045	
			Sodium polyacrylate	9003-04-7	1.00000	0.00014	
			Ethanol	64-17-5	1.00000	0.00009	
			Methanol	67-56-1	0.14000	0.00001	
			Phosphoric acid	7664-38-2	0.10000	0.00001	
			Acrylic acid	79-10-7	0.01000	0.00000	
			Sodium sulfate	7757-82-6	0.10000	0.00000	

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\* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

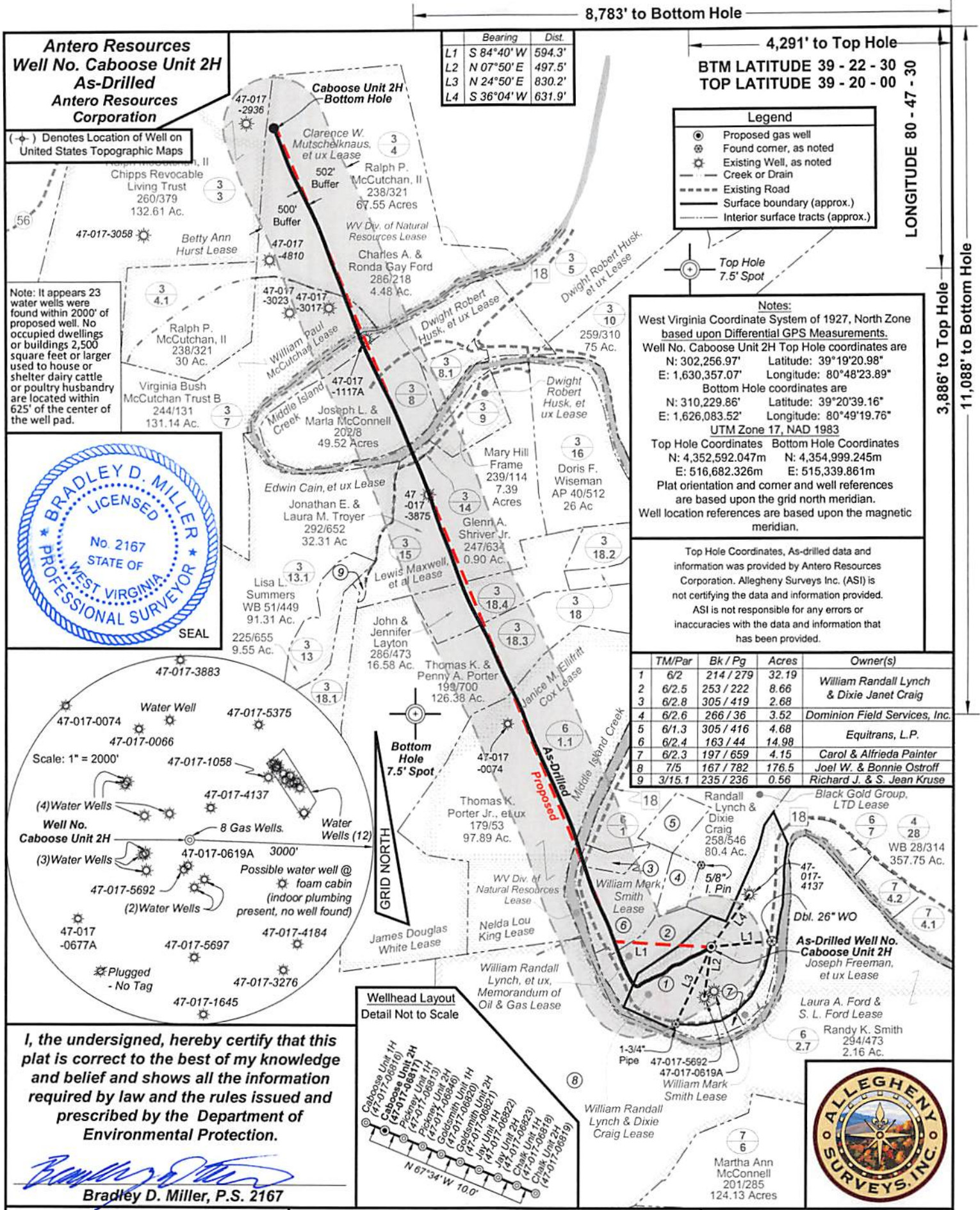
\*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

\*\*\* If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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)





	Bearing	Dist.
L1	S 84°40' W	594.3'
L2	N 07°50' E	497.5'
L3	N 24°50' E	830.2'
L4	S 36°04' W	631.9'

8,783' to Bottom Hole  
4,291' to Top Hole  
BTM LATITUDE 39 - 22 - 30  
TOP LATITUDE 39 - 20 - 00

**Legend**

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

**Notes:**  
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.  
Well No. Caboose Unit 2H Top Hole coordinates are N: 302,256.97' Latitude: 39°19'20.98" E: 1,630,357.07' Longitude: 80°48'23.89"  
Bottom Hole coordinates are N: 310,229.86' Latitude: 39°20'39.16" E: 1,626,083.52' Longitude: 80°49'19.76"  
UTM Zone 17, NAD 1983  
Top Hole Coordinates Bottom Hole Coordinates  
N: 4,352,592.047m N: 4,354,999.245m  
E: 516,682.326m E: 515,339.861m  
Plat orientation and corner and well references are based upon the grid north meridian.  
Well location references are based upon the magnetic meridian.

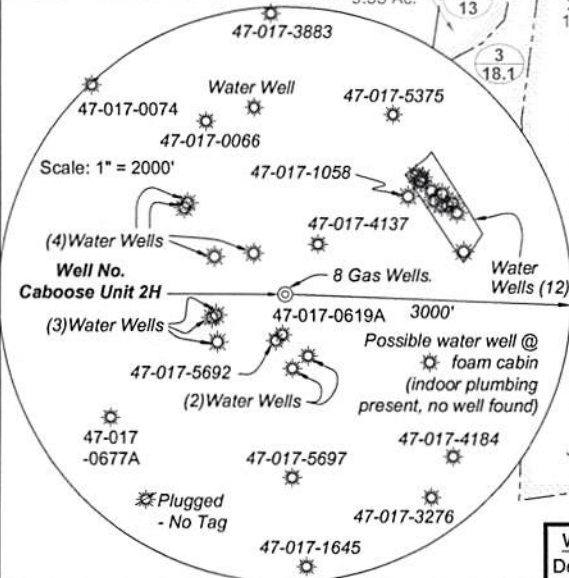
Top Hole Coordinates, As-drilled data and information was provided by Antero Resources Corporation. Allegheny Surveys Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.

TM/Par	Bk / Pg	Acres	Owner(s)
1	6/2	214 / 279	32.19
2	6/2.5	253 / 222	8.66
3	6/2.8	305 / 419	2.68
4	6/2.6	266 / 36	3.52
5	6/1.3	305 / 416	4.68
6	6/2.4	163 / 44	14.98
7	6/2.3	197 / 659	4.15
8	7/5	167 / 782	176.5
9	3/15.1	235 / 236	0.56

**Antero Resources**  
Well No. Caboose Unit 2H  
As-Drilled  
Antero Resources Corporation

(-o-) Denotes Location of Well on United States Topographic Maps

Note: It appears 23 water wells were found within 2000' of proposed well. No occupied dwellings or buildings 2,500 square feet or larger used to house or shelter dairy cattle or poultry husbandry are located within 625' of the center of the well pad.



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.

*Bradley D. Miller*  
Bradley D. Miller, P.S. 2167

FILE NO: 236-30-WU-14  
DRAWING NO: Caboose 2H As-Drilled Well Plat  
SCALE: 1" = 1200'  
MINIMUM DEGREE OF ACCURACY: Submeter  
PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

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

DATE: January 16 2019  
OPERATOR'S WELL NO. Caboose Unit 2H  
API WELL NO  
47 - 017 - 06817  
STATE COUNTY PERMIT

WELL TYPE:  OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  
(IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
LOCATION ELEVATION: As-Drilled Grade - 843' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union  
DISTRICT: West Union WV Division of Natural Resources; COUNTY: Doddridge  
SURFACE OWNER: William Randall Lynch & Dixie Craig; William Paul McCutchan; Lewis Maxwell, et al; 78.75; 56.07;  
ROYALTY OWNER: William Randall Lynch, et ux, Memorandum of Oil & Gas Lease; William Mark Smith; 32.75; 20.49;  
PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled 6,411' TVD  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 15,294' MD

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



8,783' to Bottom Hole

4,291' to Top Hole

BTM LATITUDE 39 - 22 - 30  
TOP LATITUDE 39 - 20 - 00

LONGITUDE 80 - 47 - 30  
3,886' to Top Hole  
11,088' to Bottom Hole

### Antero Resources Well No. Caboose Unit 2H As-Drilled Antero Resources Corporation

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

Note: It appears 23  
water wells were  
found within 2000'  
of proposed well. No  
occupied dwellings  
or buildings 2,500  
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	Bearing	Dist.
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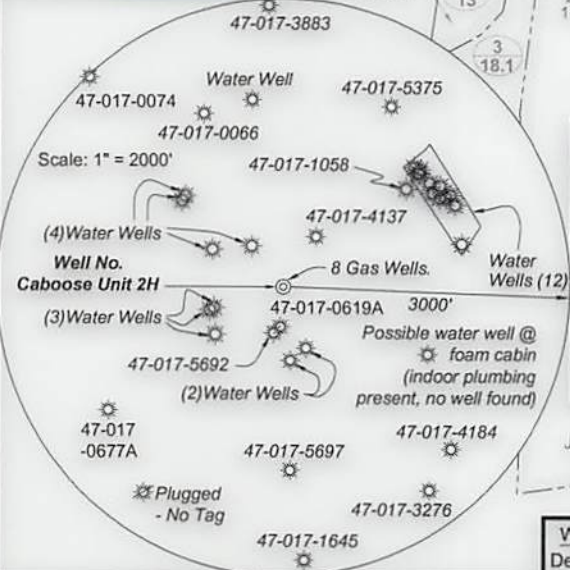
**Legend**

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3	6/2.8	305 / 419	2.68	
4	6/2.6	266 / 36	3.52	Dominion Field Services, Inc.
5	6/1.3	305 / 416	4.68	Equitrans, L.P.
6	6/2.4	163 / 44	14.98	
7	6/2.3	197 / 659	4.15	Carol & Alfreda Painter
8	7/5	167 / 782	176.5	Joel W. & Bonnie Ostroff
9	3/15.1	235 / 236	0.56	Richard J. & S. Jean Kruse



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.

*Bradley D. Miller*  
**Bradley D. Miller, P.S. 2167**

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PROVEN SOURCE OF ELEVATION: WVDOT, Harrisville, WV

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

DATE: January 16 2019  
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API WELL NO  
47 - 017 - 06817  
STATE COUNTY PERMIT

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(IF GAS) PRODUCTION:  STORAGE  DEEP  SHALLOW  
LOCATION ELEVATION: As-Drilled Grade - 843' WATERSHED: Headwaters Middle Island Creek QUADRANGLE: West Union  
DISTRICT: West Union WV Division of Natural Resources; COUNTY: Doddridge 78.75; 56.07;  
SURFACE OWNER: William Randall Lynch & Dixie Craig; William Paul McCutchan; Lewis Maxwell, et al; William Randall Lynch, et ux, Memorandum of Oil & Gas Lease; William Mark Smith; Dwight Robert Husk, et ux; Clarence W. Mutschelknaus, et ux; ACREAGE: 32.19 32.75; 20.49;  
ROYALTY OWNER: William Randall Lynch & Dixie Craig; Janice M. Ellifrit Cox; James Douglas White LEASE NO: ACREAGE: 168; 61.361; 105; 8.66; 32.15; 150;  
PROPOSED WORK:  DRILL  CONVERT  DRILL DEEPER  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  
 PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled 6,411' TVD  
 PLUG AND ABANDON  CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 15,294' MD

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





