

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

API 47 - 017 - 06816 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 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 4352593.142m Easting 516679.464m
Landing Point of Curve Northing 4352597.76m Easting 516157.5m
Bottom Hole Northing 4355050.782m Easting 515098.474m

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 4/11/2017 Date drilling commenced 9/29/2017 Date drilling ceased 4/14/2018
Date completion activities began 7/16/2018 Date completion activities ceased 9/13/2018
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
Dulham 2/27/19

API 47-017 - 06816 Farm name Antero Resources Corporation Well number Caboose 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"	112'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	551'	New	54#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2666'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15798'	New	23#, HCP-110	N/A	Y
Tubing		2-3/8"	6690'		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 ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	204 sx	15.6	1.18	241	0'	8 Hrs.
Surface	Class A	490 sx	15.6	1.21	593	0'	8 Hrs.
Coal							
Intermediate 1	Class A	890 sx	15.6	1.22	1086	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	716 sx (Load) 1435 sx (Tail)	14(Load), 15.2 (Tail)	1.45 (Load), 1.83 (Tail)	3664	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15798' MD, 6406' TVD (BHL), 6408' (Deepest Point Drilled) Loggers TD (ft) 15798' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A RECEIVED
 Plug back procedure N/A Office of Oil and Gas

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Kick off depth (ft) 5622'

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

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

Conductor - 0
 Surface - 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface
 Intermediate - 1 above float joint, 1 above float collar, 1 every 4th joint to surface
 Production - 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

API 47-017-06816 Farm Name Antero Resources Corp Well Number Caboose Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	7/16/2018	15595.6	15695	60	Marcellus
2	8/9/2018	15395.626	15564.271	60	Marcellus
3	8/9/2018	15195.652	15364.297	60	Marcellus
4	8/10/2018	14995.678	15164.323	60	Marcellus
5	8/10/2018	14795.704	14964.349	60	Marcellus
6	8/10/2018	14595.73	14764.375	60	Marcellus
7	8/11/2018	14395.756	14564.401	60	Marcellus
8	8/11/2018	14195.782	14364.427	60	Marcellus
9	8/11/2018	13995.808	14164.453	60	Marcellus
10	8/12/2018	13795.834	13964.479	60	Marcellus
11	8/12/2018	13595.86	13764.505	60	Marcellus
12	8/12/2018	13395.886	13564.531	60	Marcellus
13	8/13/2018	13195.912	13364.557	60	Marcellus
14	8/13/2018	12995.938	13164.583	60	Marcellus
15	8/14/2018	12795.964	12964.609	60	Marcellus
16	8/14/2018	12595.99	12764.635	60	Marcellus
17	8/14/2018	12396.016	12564.661	60	Marcellus
18	8/15/2018	12196.042	12364.687	60	Marcellus
19	8/15/2018	11996.068	12164.713	60	Marcellus
20	8/15/2018	11796.094	11964.739	60	Marcellus
21	8/15/2018	11596.12	11764.765	60	Marcellus
22	8/16/2018	11396.146	11564.791	60	Marcellus
23	8/16/2018	11196.172	11364.817	60	Marcellus
24	8/16/2018	10996.198	11164.843	60	Marcellus
25	8/16/2018	10796.224	10964.869	60	Marcellus
26	8/17/2018	10596.25	10764.895	60	Marcellus
27	8/17/2018	10396.276	10564.921	60	Marcellus
28	8/17/2018	10196.302	10364.947	60	Marcellus
29	8/17/2018	9996.328	10164.973	60	Marcellus
30	8/18/2018	9796.354	9964.999	60	Marcellus
31	8/18/2018	9596.38	9765.025	60	Marcellus
32	8/18/2018	9396.406	9565.051	60	Marcellus
33	8/19/2018	9196.432	9365.077	60	Marcellus
34	8/19/2018	8996.458	9165.103	60	Marcellus
35	8/19/2018	8796.484	8965.129	60	Marcellus
36	8/19/2018	8596.51	8765.155	60	Marcellus
37	8/20/2018	8396.536	8565.181	60	Marcellus
38	8/20/2018	8196.562	8365.207	60	Marcellus
39	8/20/2018	7996.588	8165.233	60	Marcellus
40	8/21/2018	7796.614	7965.259	60	Marcellus
41	8/21/2018	7596.64	7765.285	60	Marcellus
42	8/21/2018	7396.666	7565.311	60	Marcellus
43	8/21/2018	7196.692	7365.337	60	Marcellus
44	8/21/2018	6996.718	7165.363	60	Marcellus
45	8/22/2018	6796.744	6965.389	60	Marcellus

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API 47-017-06816 Farm Name Antero Resources Corp Well Number Caboose Unit 1H

EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	7/16/2018	75.46	7228	0	3518	265500	6207.262	N/A
2	8/9/2018	71.47	7998	5721	3285	404600	8676.762	N/A
3	8/9/2018	74.9	7899	4257	3333	406820	8737.31	N/A
4	8/10/2018	73.4	7949	4204	3473	407580	8620.476	N/A
5	8/10/2018	72.29	7970	6837	3694	413680	8597.69	N/A
6	8/10/2018	71.2	8030	6116	3767	406920	8572.167	N/A
7	8/11/2018	69.2	8002	5936	4540	404360	8392.929	N/A
8	8/11/2018	70.69	8018	5704	3565	406020	8580.119	N/A
9	8/11/2018	70.38	7956	6233	3651	401440	8604.476	N/A
10	8/12/2018	74.6	7987	5718	3942	403100	8285.19	N/A
11	8/12/2018	72.01	7969	5650	3734	404400	8467.071	N/A
12	8/12/2018	70.9	7770	5865	5178	403480	8293.476	N/A
13	8/13/2018	71.6	7915	5762	4608	402280	8240.762	N/A
14	8/13/2018	72.67	8012	5664	3763	405920	8359.286	N/A
15	8/14/2018	72.34	8078	5807	4200	407280	8952.119	N/A
16	8/14/2018	71.76	8075	6298	4924	402180	8549.786	N/A
17	8/14/2018	70	7677	6062	4982	407900	8286.095	N/A
18	8/15/2018	71.2	7904	6475	4293	405320	8302.143	N/A
19	8/15/2018	70.7	7558	6073	4108	402360	8163.81	N/A
20	8/15/2018	71.36	7573	6329	4038	403200	8278.714	N/A
21	8/15/2018	71	7758	6172	3902	407060	8266.81	N/A
22	8/16/2018	67.6	7701	6426	3880	404900	8138.429	N/A
23	8/16/2018	69.67	7667	4565	3844	405060	8249.381	N/A
24	8/16/2018	66.51	7838	6432	3969	403060	8295.071	N/A
25	8/16/2018	69.5	7846	5874	4064	406020	8179.643	N/A
26	8/17/2018	69.3	7746	6003	4017	405780	8188.357	N/A
27	8/17/2018	69.87	7858	6172	4037	406920	8144.738	N/A
28	8/17/2018	64.88	7695	6059	4892	361584	7539.881	N/A
29	8/17/2018	71.7	7741	5851	5163	327460	7253.381	N/A
30	8/18/2018	69.5	7419	5582	4001	403000	7956.143	N/A
31	8/18/2018	70.55	7433	6171	4210	407200	8330.786	N/A
32	8/18/2018	72.3	7684	5654	5220	407180	9680.048	N/A
33	8/19/2018	70.3	7704	5885	4044	401620	8135.857	N/A
34	8/19/2018	72.76	7274	5945	4261	405780	8188.952	N/A
35	8/19/2018	71.34	7735	6231	4457	407900	8094.786	N/A
36	8/19/2018	71	7811	6273	5318	405400	9043.286	N/A
37	8/20/2018	72.19	7355	5748	4524	396460	7949.286	N/A
38	8/20/2018	73.8	7066	6131	4825	401720	7955.238	N/A
39	8/20/2018	75.4	7424	6138	4201	402770	8022.548	N/A
40	8/21/2018	76.53	7110	6176	4358	402440	7912.905	N/A
41	8/21/2018	74.8	7385	6249	4706	404600	7809.857	N/A
42	8/21/2018	73.23	7330	6203	4425	392430	7993.929	N/A
43	8/21/2018	77.92	7052	6487	5344	402300	7841.548	N/A
44	8/21/2018	78.51	7055	6143	4299	407260	8049.048	N/A
45	8/22/2018	76.36	7095	6042	4190	401200	8726.786	N/A
	AVG=	72	7,674	5,807	4,239	17,941,444	371,114	TOTAL

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	1,546	est. 1357	1,564
Big Lime	1,546	2,196	1,564	2,240
Fifty Foot Sandstone	2,196	2,470	2,240	2,523
Gordon	2,470	2,661	2,523	2,721
Fifth Sandstone	2,661	2,722	2,721	2,785
Bayard	2,722	3,511	2,785	3,610
Speechley	3,511	3,813	3,610	3,924
Balltown	3,813	4,304	3,924	4,436
Bradford	4,304	4,733	4,436	4,883
Benson	4,733	4,982	4,883	5,144
Alexander	4,982	5,953	5,144	6,164
Sycamore	5,953	6,139	6,164	6,389
Middlesex	6,139	6,263	6,389	6,586
Burkett	6,263	6,293	6,586	6,647
Tully	6,293	6,333	6,647	6,745
Marcellus	6,333	NA	6,745	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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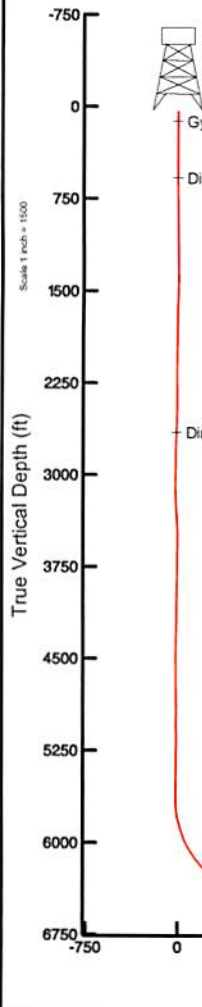
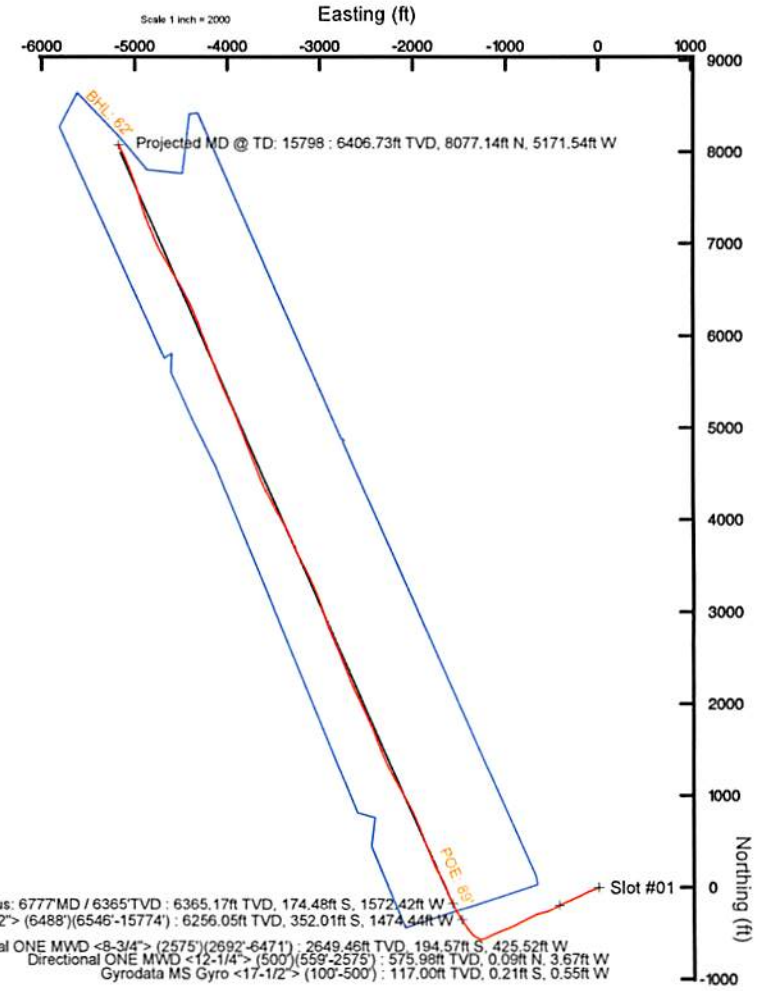
Location: Doddridge Co., WV
 Field: Doddridge
 Facility: Middle Pad

Slot: Slot #01
 Well: Caboose Unit 1H
 Wellbore: Caboose Unit 1H PWB



Plot reference wellpath is Caboose Unit 1H 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 #01): -843 feet	Created by: mccerib on 2018-05-15
Coordinates are in feet referenced to Slot	Database: WA_MPL_EASTERNUS_Defn

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)	Longitude
Slot #01	0.00	0.00	1695090.990	14279417.689	80°48'24.020"W
Comment		Caboose Unit 1H			
Frontier 32 (RKB) to Ground level (At Slot: Slot #01)					32ft
Mean Sea Level to Ground level (At Slot: Slot #01)					-843ft
Frontier 32 (RKB) to Mean Sea Level					875ft



Gyrodatta MS Gyro <17-1/2"> (100'-500') : 0.80° Inc, 117.00ft MD, 117.00ft TVD, 0.03ft VS

Directional ONE MWD <12-1/4"> (500')(559'-2575') : 0.27° Inc, 576.00ft MD, 575.98ft TVD, 1.56ft VS

Well Profile Data								
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	6488.00	47.460	327.880	6219.33	-390.02	-1450.63	10.86	224.66
Proj. to Bottom	6570.00	56.090	327.880	6270.02	-335.51	-1484.85	10.52	288.31
End of 3D Arc	6678.83	62.616	330.314	6325.47	-255.19	-1532.85	6.30	381.14
POE	6779.10	68.464	336.351	6367.00	-173.67	-1573.67	8.00	472.19
Landing Pt.	6994.46	90.000	336.351	6407.00	18.99	-1658.04	10.00	682.52
BHL	15696.93	90.000	336.351	6407.00	7990.61	-5148.92	0.00	9384.99

Directional ONE MWD <8-3/4"> (2575')(2692'-6471') : 16.42° Inc, 2709.00ft MD, 2649.46ft TVD, -7.54ft VS

Well Data			
Slot	Well	Wellbore	Wellpath
Slot #01	Caboose Unit 1H	Caboose Unit 1H AWB	Caboose Unit 1H AWP Proj: 15798'
Slot #01	Caboose Unit 1H	Caboose Unit 1H PWB	Caboose Unit 1H PWP Rev-A.0

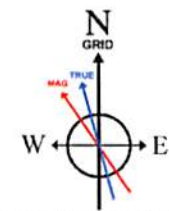
BH AT Curve <8-1/2"> (6488')(6546'-15774') : 53.92° Inc, 6546.00ft MD, 6256.05ft TVD, 269.03ft VS
 POE Marcellus: 6777 MD / 6365 TVD : 70.02° Inc, 6777.00ft MD, 6365.17ft TVD, 470.94ft VS

Projected MD @ TD: 15798 : 90.00° Inc, 15798.00ft MD, 6406.73ft TVD, 9473.32ft VS

API: 47-017-06816-0000
BH Job #: 9091793
Rig: Frontier 32
Duration: 04/05/18 - 04/08/18

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POE Marcellus: 6777 MD / 6365 TVD : 6365.17ft TVD, 174.48ft S, 1572.42ft W
 BH AT Curve <8-1/2"> (6488')(6546'-15774') : 6256.05ft TVD, 352.01ft S, 1474.44ft W
 Directional ONE MWD <8-3/4"> (2575')(2692'-6471') : 2649.46ft TVD, 194.57ft S, 425.52ft W
 Directional ONE MWD <12-1/4"> (500')(559'-2575') : 575.98ft TVD, 0.09ft N, 3.67ft W
 Gyrodatta MS Gyro <17-1/2"> (100'-500') : 117.00ft TVD, 0.21ft S, 0.55ft W



User specified Dip: 66.54° Field: 52020 nT
 Magnetic North is 7.64 degrees West of True North (at 4/4/2018)
 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

Vertical Section (ft)
 Azimuth 336.35° with reference 0.00 N, 0.00 E



Actual Wellpath Report

Caboose Unit 1H AWP Proj: 15798'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #01
Area	Doddridge Co., WV	Well	Caboose Unit 1H
Field	Doddridge	Wellbore	Caboose Unit 1H 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 4:38:32 PM
Convergence at slot	0.12° East	Database/Source file	WA_MPL_EASTERNUS_Defn/Caboose_Unit_1H_AWP_Proj_15798_.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	0.00	0.00	1695090.99	14279417.69	39°19'21.010"N	80°48'24.020"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 #01)	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	336.35°



Actual Wellpath Report

Caboose Unit 1H AWP Proj: 15798'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #01
Area	Doddridge Co., WV	Well	Caboose Unit 1H
Field	Doddridge	Wellbore	Caboose Unit 1H AWB
Facility	Middle Pad		

WELLPATH DATA (192 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	249.210	0.00	0.00	0.00	0.00	1695090.99	14279417.69	39°19'21.010"N	80°48'24.020"W	0.00	0.000	0.00	0.00	0.00	
32.00	0.00	249.210	32.00	0.00	0.00	0.00	1695090.99	14279417.69	39°19'21.010"N	80°48'24.020"W	0.00	0.000	0.00	0.00	0.00	
117.00	0.800	249.210	117.00	0.03	-0.21	-0.55	1695090.44	14279417.48	39°19'21.008"N	80°48'24.027"W	0.59	249.210	0.94	0.94	-130.34	Gyrodata MS Gyro <17-1/2"> (100'-500')
217.00	0.440	270.200	216.99	0.22	-0.46	-1.59	1695089.40	14279417.23	39°19'21.006"N	80°48'24.040"W	1.66	253.975	0.42	-0.36	20.99	
317.00	0.730	279.040	316.99	0.72	-0.36	-2.60	1695088.39	14279417.33	39°19'21.007"N	80°48'24.053"W	2.63	262.224	0.30	0.29	8.84	
417.00	0.050	339.770	416.98	1.11	-0.21	-3.25	1695087.74	14279417.47	39°19'21.008"N	80°48'24.061"W	3.26	266.221	0.71	-0.68	60.73	
517.00	0.270	291.800	516.98	1.32	-0.09	-3.48	1695087.51	14279417.60	39°19'21.009"N	80°48'24.064"W	3.48	268.583	0.24	0.22	-47.97	
576.00	0.270	334.780	575.98	1.56	0.09	-3.67	1695087.32	14279417.78	39°19'21.011"N	80°48'24.067"W	3.67	271.424	0.34	0.00	72.85	Directional ONE MWD <12-1/4"> (500')(559'-2575')
666.00	1.120	266.070	665.98	2.06	0.22	-4.64	1695086.35	14279417.91	39°19'21.012"N	80°48'24.079"W	4.64	272.750	1.17	0.94	-76.34	
757.00	2.720	253.860	756.92	2.65	-0.44	-7.60	1695083.39	14279417.25	39°19'21.006"N	80°48'24.117"W	7.61	266.698	1.80	1.76	-13.42	
847.00	4.790	246.740	846.72	2.95	-2.52	-13.10	1695077.89	14279415.17	39°19'20.985"N	80°48'24.187"W	13.34	259.131	2.35	2.30	-7.91	
937.00	6.970	247.060	936.25	3.05	-6.13	-21.59	1695069.41	14279411.56	39°19'20.950"N	80°48'24.295"W	22.44	254.149	2.42	2.42	0.36	
1025.00	8.940	246.710	1023.39	3.15	-10.91	-32.79	1695058.22	14279406.78	39°19'20.903"N	80°48'24.437"W	34.55	251.588	2.24	2.24	-0.40	
1113.00	10.320	246.210	1110.15	3.18	-16.80	-46.28	1695044.73	14279400.90	39°19'20.845"N	80°48'24.609"W	49.23	250.051	1.57	1.57	-0.57	
1202.00	12.280	248.750	1197.42	3.55	-23.44	-62.40	1695028.62	14279394.25	39°19'20.780"N	80°48'24.815"W	66.66	249.407	2.27	2.20	2.85	
1290.00	14.180	248.470	1283.08	4.35	-30.79	-81.15	1695009.88	14279386.91	39°19'20.707"N	80°48'25.053"W	86.79	249.220	2.16	2.16	-0.32	
1378.00	15.900	247.750	1368.07	5.04	-39.31	-102.33	1694988.70	14279378.39	39°19'20.624"N	80°48'25.323"W	109.62	248.985	1.97	1.95	-0.82	
1466.00	16.470	243.760	1452.58	4.77	-49.39	-124.68	1694966.36	14279368.32	39°19'20.524"N	80°48'25.608"W	134.11	248.388	1.42	0.65	-4.53	
1554.00	17.270	242.420	1536.79	3.31	-60.96	-147.45	1694943.60	14279356.76	39°19'20.411"N	80°48'25.898"W	159.55	247.539	1.01	0.91	-1.52	
1642.00	16.640	242.820	1620.97	1.64	-72.76	-170.23	1694920.82	14279344.96	39°19'20.294"N	80°48'26.188"W	185.13	246.857	0.73	-0.72	0.45	
1730.00	16.340	244.120	1705.35	0.38	-83.92	-192.58	1694898.49	14279333.80	39°19'20.185"N	80°48'26.473"W	210.07	246.454	0.54	-0.34	1.48	
1819.00	17.040	245.840	1790.60	-0.22	-94.72	-215.74	1694875.33	14279323.01	39°19'20.078"N	80°48'26.768"W	235.62	246.296	0.96	0.79	1.93	
1907.00	17.880	246.970	1874.54	-0.19	-105.28	-239.94	1694851.15	14279312.45	39°19'19.974"N	80°48'27.076"W	262.02	246.309	1.03	0.95	1.28	
1995.00	15.610	242.240	1958.81	-0.89	-116.08	-262.85	1694828.24	14279301.65	39°19'19.868"N	80°48'27.368"W	287.34	246.172	3.01	-2.58	-5.37	
2083.00	14.530	242.390	2043.78	-2.50	-126.72	-283.11	1694807.99	14279291.02	39°19'19.764"N	80°48'27.626"W	310.18	245.888	1.23	-1.23	0.17	
2171.00	14.320	244.560	2129.01	-3.61	-136.51	-302.72	1694788.39	14279281.24	39°19'19.667"N	80°48'27.876"W	332.08	245.728	0.66	-0.24	2.47	
2259.00	14.940	248.480	2214.16	-3.52	-145.34	-323.10	1694768.02	14279272.40	39°19'19.580"N	80°48'28.135"W	354.29	245.780	1.33	0.70	4.45	
2348.00	13.420	249.410	2300.44	-2.55	-153.18	-343.44	1694747.68	14279264.57	39°19'19.503"N	80°48'28.394"W	376.06	245.962	1.73	-1.71	1.04	
2436.00	13.680	246.760	2386.00	-1.93	-160.88	-362.57	1694728.57	14279256.87	39°19'19.428"N	80°48'28.638"W	396.66	246.072	0.76	0.30	-3.01	
2524.00	14.680	241.390	2471.32	-2.82	-170.33	-381.92	1694709.22	14279247.43	39°19'19.335"N	80°48'28.884"W	418.18	245.964	1.88	1.14	-6.10	

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Caboose Unit 1H AWP Proj: 15798'

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REFERENCE WELLPATH IDENTIFICATION				
Operator	ANTERO RESOURCES CORPORATION		Slot	Slot #01
Area	Doddridge Co., WV		Well	Caboose Unit 1H
Field	Doddridge		Wellbore	Caboose Unit 1H AWB
Facility	Middle Pad			

WELLPATH DATA (192 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
2592.00	15.510	240.350	2536.97	-4.51	-178.95	-397.38	1694693.76	14279238.81	39°19'19.250"N	80°48'29.081"W	435.82	245.757	1.28	1.22	-1.53	
2709.00	16.420	241.530	2649.46	-7.54	-194.57	-425.52	1694665.64	14279223.19	39°19'19.096"N	80°48'29.440"W	467.89	245.427	0.83	0.78	1.01	Directional ONE MWD <8-3/4"> (2575')(2692'-6471')
2797.00	16.800	240.720	2733.78	-9.83	-206.72	-447.54	1694643.63	14279211.05	39°19'18.976"N	80°48'29.720"W	492.98	245.208	0.51	0.43	-0.92	
2885.00	17.380	241.900	2817.90	-12.10	-219.13	-470.23	1694620.95	14279198.64	39°19'18.854"N	80°48'30.009"W	518.78	245.014	0.77	0.66	1.34	
2973.00	16.550	245.490	2902.07	-13.30	-230.52	-493.23	1694597.96	14279187.26	39°19'18.742"N	80°48'30.302"W	544.44	244.950	1.52	-0.94	4.08	
3062.00	15.910	241.340	2987.53	-14.56	-241.63	-515.47	1694575.73	14279176.15	39°19'18.633"N	80°48'30.586"W	569.29	244.884	1.49	-0.72	-4.66	
3150.00	18.110	243.360	3071.67	-16.33	-253.55	-538.28	1694552.93	14279164.24	39°19'18.515"N	80°48'30.876"W	595.01	244.778	2.59	2.50	2.30	
3238.00	17.660	252.970	3155.44	-15.50	-263.60	-563.27	1694527.94	14279154.20	39°19'18.417"N	80°48'31.194"W	621.90	244.922	3.39	-0.51	10.92	
3326.00	17.440	257.090	3239.35	-11.50	-270.45	-588.89	1694502.33	14279147.35	39°19'18.349"N	80°48'31.521"W	648.02	245.333	1.43	-0.25	4.68	
3414.00	18.310	257.390	3323.10	-6.40	-276.42	-615.23	1694476.00	14279141.38	39°19'18.291"N	80°48'31.856"W	674.48	245.806	0.99	0.99	0.34	
3503.00	17.410	254.940	3407.81	-1.73	-282.93	-641.74	1694449.51	14279134.87	39°19'18.227"N	80°48'32.193"W	701.34	246.208	1.32	-1.01	-2.75	
3591.00	16.770	247.740	3491.93	0.54	-291.16	-666.20	1694425.05	14279126.65	39°19'18.146"N	80°48'32.505"W	727.05	246.393	2.51	-0.73	-8.18	
3679.00	14.790	241.360	3576.62	-0.13	-301.35	-687.81	1694403.45	14279116.46	39°19'18.046"N	80°48'32.780"W	750.93	246.340	2.99	-2.25	-7.25	
3768.00	15.210	243.920	3662.59	-1.61	-311.93	-708.27	1694383.00	14279105.88	39°19'17.942"N	80°48'33.041"W	773.91	246.231	0.88	0.47	2.88	
3856.00	15.840	244.760	3747.37	-2.43	-322.13	-729.50	1694361.78	14279095.69	39°19'17.842"N	80°48'33.311"W	797.46	246.175	0.76	0.72	0.95	
3944.00	16.870	244.590	3831.81	-3.16	-332.73	-751.90	1694339.39	14279085.09	39°19'17.737"N	80°48'33.596"W	822.23	246.130	1.17	1.17	-0.19	
4032.00	16.540	243.770	3916.10	-4.12	-343.74	-774.67	1694316.63	14279074.08	39°19'17.629"N	80°48'33.886"W	847.51	246.072	0.46	-0.38	-0.93	
4120.00	16.220	241.740	4000.53	-5.67	-355.10	-796.73	1694294.58	14279062.73	39°19'17.517"N	80°48'34.167"W	872.28	245.978	0.75	-0.36	-2.31	
4209.00	15.580	244.700	4086.12	-7.01	-366.09	-818.48	1694272.83	14279051.74	39°19'17.409"N	80°48'34.445"W	896.63	245.902	1.16	-0.72	3.33	
4297.00	15.880	245.150	4170.83	-7.60	-376.20	-840.09	1694251.23	14279041.64	39°19'17.309"N	80°48'34.720"W	920.48	245.877	0.37	0.34	0.51	
4385.00	17.010	239.530	4255.23	-9.38	-387.79	-862.11	1694229.22	14279030.05	39°19'17.195"N	80°48'35.000"W	945.31	245.781	2.22	1.28	-6.39	
4474.00	17.680	240.290	4340.18	-12.36	-401.09	-885.07	1694206.27	14279016.76	39°19'17.064"N	80°48'35.293"W	971.71	245.621	0.79	0.75	0.85	
4562.00	17.020	244.290	4424.18	-14.23	-413.30	-908.28	1694183.07	14279004.55	39°19'16.944"N	80°48'35.588"W	997.90	245.533	1.55	-0.75	4.55	
4650.00	16.150	247.290	4508.52	-14.49	-423.61	-931.18	1694160.18	14278994.25	39°19'16.843"N	80°48'35.880"W	1023.01	245.538	1.39	-0.99	3.41	
4739.00	15.680	246.580	4594.11	-14.24	-433.17	-953.63	1694137.74	14278984.69	39°19'16.749"N	80°48'36.166"W	1047.40	245.571	0.57	-0.53	-0.80	
4827.00	16.020	246.790	4678.76	-14.10	-442.68	-975.70	1694115.67	14278975.18	39°19'16.655"N	80°48'36.447"W	1071.43	245.596	0.39	0.39	0.24	
4915.00	17.770	250.230	4762.97	-13.10	-452.01	-999.50	1694091.88	14278965.86	39°19'16.563"N	80°48'36.750"W	1096.96	245.666	2.29	1.99	3.91	
5003.00	18.180	250.000	4846.67	-11.32	-461.25	-1025.04	1694066.36	14278956.62	39°19'16.473"N	80°48'37.075"W	1124.04	245.773	0.47	0.47	-0.26	
5092.00	16.560	244.420	4931.61	-10.86	-471.48	-1049.53	1694041.88	14278946.40	39°19'16.372"N	80°48'37.387"W	1150.57	245.809	2.61	-1.82	-6.27	
5180.00	18.810	245.570	5015.45	-11.47	-482.76	-1073.76	1694017.65	14278935.12	39°19'16.261"N	80°48'37.696"W	1177.30	245.792	2.59	2.56	1.31	

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #01
Area	Doddridge Co., WV	Well	Caboose Unit 1H
Field	Doddridge	Wellbore	Caboose Unit 1H AWB
Facility	Middle Pad		

WELLPATH DATA (192 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
5269.00	18.770	248.360	5099.71	-11.17	-493.97	-1100.14	1693991.29	14278923.91	39°19'16.151"N	80°48'38.032"W	1205.95	245.819	1.01	-0.04	3.13	
5357.00	16.920	245.500	5183.47	-10.86	-504.51	-1124.95	1693966.49	14278913.38	39°19'16.047"N	80°48'38.348"W	1232.90	245.845	2.33	-2.10	-3.25	
5445.00	16.880	244.800	5267.67	-11.40	-515.26	-1148.17	1693943.28	14278902.64	39°19'15.941"N	80°48'38.643"W	1258.48	245.831	0.24	-0.05	-0.80	
5534.00	14.660	243.700	5353.32	-12.27	-525.75	-1169.96	1693921.50	14278892.15	39°19'15.838"N	80°48'38.921"W	1282.66	245.802	2.52	-2.49	-1.24	
5622.00	12.780	241.720	5438.80	-13.57	-535.30	-1188.51	1693902.95	14278882.61	39°19'15.744"N	80°48'39.157"W	1303.50	245.754	2.20	-2.14	-2.25	
5710.00	13.350	244.960	5524.53	-14.60	-544.21	-1206.29	1693885.18	14278873.70	39°19'15.656"N	80°48'39.384"W	1323.36	245.718	1.05	0.65	3.68	
5799.00	14.330	244.390	5610.94	-15.23	-553.32	-1225.53	1693865.95	14278864.59	39°19'15.567"N	80°48'39.629"W	1344.65	245.701	1.11	1.10	-0.64	
5887.00	15.560	253.990	5695.98	-14.03	-561.28	-1246.70	1693844.79	14278856.63	39°19'15.489"N	80°48'39.898"W	1367.22	245.762	3.14	1.40	10.91	
5931.00	16.270	267.790	5738.31	-10.99	-563.15	-1258.54	1693832.96	14278854.77	39°19'15.470"N	80°48'40.049"W	1378.78	245.893	8.73	1.61	31.36	
5975.00	17.430	283.780	5780.44	-4.73	-561.81	-1271.10	1693820.39	14278856.10	39°19'15.484"N	80°48'40.209"W	1389.73	246.155	10.82	2.64	36.34	
6019.00	19.350	293.580	5822.20	4.63	-557.33	-1284.19	1693807.31	14278860.58	39°19'15.528"N	80°48'40.375"W	1399.91	246.540	8.26	4.36	22.27	
6063.00	22.120	294.950	5863.35	16.20	-550.92	-1298.38	1693793.12	14278866.99	39°19'15.592"N	80°48'40.556"W	1410.43	247.008	6.39	6.30	3.11	
6107.00	22.440	295.620	5904.06	28.78	-543.79	-1313.47	1693778.05	14278874.12	39°19'15.663"N	80°48'40.748"W	1421.58	247.510	0.93	0.73	1.52	
6152.00	23.640	299.800	5945.47	42.53	-535.59	-1329.04	1693762.48	14278882.31	39°19'15.744"N	80°48'40.945"W	1432.90	248.051	4.51	2.67	9.29	
6196.00	26.580	308.750	5985.33	58.35	-525.04	-1344.38	1693747.14	14278892.86	39°19'15.849"N	80°48'41.140"W	1443.27	248.667	10.90	6.68	20.34	
6240.00	30.080	316.250	6024.06	77.44	-510.90	-1359.69	1693731.84	14278906.99	39°19'15.989"N	80°48'41.335"W	1452.51	249.406	11.33	7.95	17.05	
6284.00	33.100	320.540	6061.54	99.37	-493.66	-1374.96	1693716.58	14278924.23	39°19'16.160"N	80°48'41.529"W	1460.89	250.250	8.55	6.86	9.75	
6328.00	34.720	322.210	6098.06	123.08	-474.48	-1390.27	1693701.27	14278943.40	39°19'16.349"N	80°48'41.723"W	1469.01	251.156	4.25	3.68	3.80	
6372.00	37.580	321.670	6133.58	148.22	-454.05	-1406.28	1693685.27	14278963.82	39°19'16.552"N	80°48'41.926"W	1477.76	252.106	6.54	6.50	-1.23	
6416.00	41.130	324.670	6167.60	175.38	-431.70	-1422.97	1693668.58	14278986.16	39°19'16.773"N	80°48'42.138"W	1487.02	253.123	9.15	8.07	6.82	
6460.00	44.510	326.860	6199.87	204.77	-406.98	-1439.78	1693651.78	14279010.87	39°19'17.018"N	80°48'42.351"W	1496.19	254.216	8.39	7.68	4.98	
6488.00	47.460	327.880	6219.33	224.66	-390.02	-1450.63	1693640.94	14279027.83	39°19'17.185"N	80°48'42.489"W	1502.15	254.951	10.86	10.54	3.64	
6546.00	53.920	327.990	6256.05	269.03	-352.01	-1474.44	1693617.14	14279065.82	39°19'17.562"N	80°48'42.791"W	1515.88	256.573	11.14	11.14	0.18	BH AT Curve <8-1/2"> (6488')(6546'-15774')
6599.00	58.340	329.020	6285.58	312.61	-314.49	-1497.42	1693594.17	14279103.33	39°19'17.933"N	80°48'43.082"W	1530.08	258.139	8.49	8.34	1.94	
6618.00†	59.381	329.611	6295.41	328.75	-300.50	-1505.71	1693585.87	14279117.31	39°19'18.071"N	80°48'43.187"W	1535.41	258.713	6.09	5.48	3.11	Burket: 6618'MD / 6295'TVD
6646.00	60.920	330.460	6309.34	352.89	-279.46	-1517.84	1693573.75	14279138.34	39°19'18.280"N	80°48'43.341"W	1543.36	259.568	6.09	5.50	3.03	
6679.00†	62.259	331.532	6325.05	381.79	-254.08	-1531.91	1693559.69	14279163.71	39°19'18.531"N	80°48'43.519"W	1552.84	260.583	4.96	4.06	3.25	Tully: 6679'MD / 6325'TVD
6694.00	62.870	332.010	6331.96	395.06	-242.35	-1538.21	1693553.39	14279175.44	39°19'18.647"N	80°48'43.599"W	1557.19	261.046	4.96	4.07	3.19	
6741.00	66.820	333.310	6351.93	437.50	-204.56	-1557.74	1693533.87	14279213.21	39°19'19.021"N	80°48'43.847"W	1571.11	262.519	8.77	8.40	2.77	
6755.00†	68.064	333.841	6357.30	450.41	-192.99	-1563.49	1693528.12	14279224.78	39°19'19.135"N	80°48'43.920"W	1575.36	262.963	9.55	8.88	3.79	Hamilton: 6755'D / 6357'TVD



Actual Wellpath Report

Caboose Unit 1H AWP Proj: 15798

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REFERENCE WELLPATH IDENTIFICATION		Slot #01
Operator	ANTERO RESOURCES CORPORATION	Well
Area	Doddridge Co., WV	Caboose Unit 1H
Field	Doddridge	Caboose Unit 1H AWB
Facility	Middle Pad	

WELLPATH DATA (192 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 (°/100ft)	Comments
6777.00	70.021	334.657	6365.17	470.94	-174.48	-1572.42	16933519.20	14279243.28	39°19'19.318"N	80°48'44.033"W	1582.07	263.668	9.55	8.90	3.71	POE Marcellus: 6777 MD / 6365 TVD
6790.00	71.180	335.130	6369.49	483.20	-163.38	-1577.62	16933514.00	14279254.38	39°19'19.428"N	80°48'44.099"W	1586.06	264.087	9.55	8.91	3.64	
6837.00	76.080	336.870	6382.73	528.28	-122.19	-1595.95	16933495.68	14279295.54	39°19'19.836"N	80°48'44.331"W	1600.62	265.622	11.01	10.43	3.70	
6885.00	79.920	338.150	6392.71	575.21	-78.82	-1613.90	16933477.73	14279338.90	39°19'20.265"N	80°48'44.558"W	1615.82	267.204	8.41	8.00	2.67	
6932.00	81.200	339.100	6400.42	621.54	-35.65	-1630.80	16933460.84	14279382.06	39°19'20.692"N	80°48'44.772"W	1631.18	268.748	3.38	2.72	2.02	
6980.00	85.320	338.430	6406.05	669.15	8.77	-1648.06	16933443.59	14279426.46	39°19'21.131"N	80°48'44.990"W	1648.08	270.305	8.69	8.58	-1.40	
7023.00	90.120	336.480	6407.78	712.10	48.44	-1664.53	16933427.13	14279466.11	39°19'21.523"N	80°48'45.199"W	1665.23	271.667	12.05	11.16	-4.53	
7075.00	89.880	331.830	6407.76	764.04	95.23	-1687.19	16933404.47	14279512.88	39°19'21.986"N	80°48'45.486"W	1689.87	273.230	8.95	-0.46	-8.94	
7170.00	89.480	331.640	6408.29	858.73	178.90	-1732.18	16933359.50	14279596.52	39°19'22.814"N	80°48'46.056"W	1741.39	275.897	0.47	-0.42	-0.20	
7265.00	90.370	337.720	6408.42	953.65	264.73	-1772.79	16933318.91	14279682.32	39°19'23.663"N	80°48'46.571"W	1792.44	278.493	6.47	0.94	6.40	
7361.00	89.970	338.300	6408.13	1049.61	353.75	-1808.73	16933282.98	14279771.29	39°19'24.544"N	80°48'47.026"W	1843.00	281.066	0.73	-0.42	0.60	
7456.00	90.030	338.070	6408.13	1144.56	441.94	-1844.03	16933247.69	14279859.46	39°19'25.416"N	80°48'47.473"W	1896.25	283.477	0.25	0.06	-0.24	
7551.00	90.030	338.700	6408.08	1239.50	530.26	-1879.03	16933212.71	14279947.74	39°19'26.290"N	80°48'47.916"W	1952.42	285.759	0.66	0.00	0.66	
7646.00	90.370	339.320	6407.75	1334.39	618.96	-1913.06	16933178.69	14280036.40	39°19'27.167"N	80°48'48.346"W	2010.70	287.929	0.74	0.36	0.65	
7741.00	90.310	338.150	6407.19	1429.31	707.49	-1947.51	16933144.25	14280124.89	39°19'28.043"N	80°48'48.782"W	2072.04	289.965	1.23	-0.06	-1.23	
7837.00	90.060	335.890	6406.88	1525.29	795.86	-1984.99	16933106.79	14280213.23	39°19'28.917"N	80°48'49.257"W	2138.59	291.848	2.37	-0.26	-2.35	
7932.00	89.940	333.140	6406.88	1620.24	881.61	-2025.86	16933065.94	14280298.95	39°19'29.766"N	80°48'49.775"W	2209.38	293.518	2.90	-0.13	-2.89	
8026.00	89.940	331.880	6406.97	1714.02	964.99	-2069.25	16933022.56	14280382.30	39°19'30.591"N	80°48'50.325"W	2283.20	295.002	1.34	0.00	-1.34	
8122.00	89.910	331.250	6407.10	1809.69	1049.41	-2114.96	1692976.87	14280466.68	39°19'31.425"N	80°48'50.904"W	2361.00	296.390	0.66	-0.03	-0.66	
8217.00	89.940	331.350	6407.22	1904.32	1132.74	-2160.58	1692931.27	14280549.98	39°19'32.250"N	80°48'51.483"W	2439.51	297.667	0.11	0.03	0.11	
8311.00	90.000	331.770	6407.27	1997.99	1215.40	-2205.35	1692896.52	14280632.60	39°19'33.068"N	80°48'52.050"W	2518.08	298.860	0.45	0.06	0.45	
8407.00	89.940	334.190	6407.32	2093.82	1300.91	-2248.96	1692842.93	14280718.08	39°19'33.914"N	80°48'52.603"W	2598.11	300.047	2.52	-0.06	2.52	
8502.00	90.220	336.690	6407.19	2189.80	1387.31	-2288.44	1692803.46	14280804.45	39°19'34.769"N	80°48'53.103"W	2676.12	301.225	2.65	0.29	2.63	
8597.00	90.520	337.690	6406.58	2283.79	1474.88	-2325.27	1692766.65	14280891.98	39°19'35.635"N	80°48'53.569"W	2753.57	302.386	1.10	0.32	1.05	
8691.00	90.000	337.770	6406.15	2377.76	1561.86	-2360.89	1692731.04	14280978.93	39°19'36.496"N	80°48'54.020"W	2830.77	303.487	0.56	-0.55	0.08	
8786.00	90.000	339.330	6406.15	2472.68	1650.28	-2395.63	1692696.31	14281067.31	39°19'37.370"N	80°48'54.460"W	2909.03	304.562	1.64	0.00	1.64	
8881.00	89.940	337.780	6406.20	2567.61	1738.70	-2430.36	1692661.60	14281155.70	39°19'38.245"N	80°48'54.900"W	2988.27	305.580	1.63	-0.06	-1.63	
8976.00	89.820	335.780	6406.40	2662.60	1826.00	-2467.82	1692624.16	14281242.96	39°19'39.109"N	80°48'55.374"W	3069.92	306.499	2.11	-0.13	-2.11	
9071.00	89.940	334.670	6406.60	2757.58	1912.26	-2507.63	1692584.36	14281329.18	39°19'39.962"N	80°48'55.878"W	3153.56	307.328	1.18	0.13	-1.17	
9167.00	89.950	334.390	6406.78	2853.53	1998.93	-2548.91	1692543.10	14281415.82	39°19'40.819"N	80°48'56.402"W	3239.24	308.105	0.31	-0.09	-0.28	

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Actual Wellpath Report

Caboose Unit 1H AWP Proj: 15798'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #01
Area	Doddridge Co., WV	Well	Caboose Unit 1H
Field	Doddridge	Wellbore	Caboose Unit 1H AWB
Facility	Middle Pad		

WELLPATH DATA (192 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
9262.00	89.940	335.280	6406.95	2948.50	2084.91	-2589.31	1692502.72	14281501.77	39°19'41.670"N	80°48'56.913"W	3324.36	308.841	0.94	0.09	0.94	
9357.00	89.940	335.100	6407.05	3043.48	2171.14	-2629.17	1692462.87	14281587.96	39°19'42.523"N	80°48'57.418"W	3409.75	309.550	0.19	0.00	-0.19	
9451.00	89.660	336.810	6407.38	3137.47	2256.98	-2667.47	1692424.59	14281673.77	39°19'43.372"N	80°48'57.904"W	3494.19	310.235	1.84	-0.30	1.82	
9546.00	89.880	339.830	6407.76	3232.41	2345.25	-2702.56	1692389.51	14281762.00	39°19'44.245"N	80°48'58.348"W	3578.27	310.951	3.19	0.23	3.18	
9641.00	90.000	339.190	6407.86	3327.26	2434.24	-2735.81	1692356.27	14281850.96	39°19'45.126"N	80°48'58.769"W	3661.99	311.662	0.69	0.13	-0.67	
9736.00	90.030	337.980	6407.83	3422.19	2522.68	-2770.50	1692321.60	14281939.36	39°19'46.000"N	80°48'59.208"W	3746.94	312.319	1.27	0.03	-1.27	
9831.00	89.970	337.110	6407.83	3517.17	2610.47	-2806.78	1692285.32	14282027.12	39°19'46.869"N	80°48'59.667"W	3833.09	312.925	0.92	-0.06	-0.92	
9926.00	89.910	336.450	6407.93	3612.16	2697.78	-2844.24	1692247.88	14282114.39	39°19'47.732"N	80°49'00.142"W	3920.17	313.486	0.70	-0.06	-0.69	
10021.00	90.090	338.200	6407.93	3707.14	2785.43	-2880.86	1692211.28	14282202.01	39°19'48.599"N	80°49'00.605"W	4007.24	314.035	1.85	0.19	1.84	
10116.00	90.060	339.790	6407.81	3802.04	2874.12	-2914.91	1692177.24	14282290.66	39°19'49.477"N	80°49'01.037"W	4093.56	314.596	1.67	-0.03	1.67	
10210.00	90.060	339.860	6407.71	3895.87	2962.35	-2947.33	1692144.83	14282378.86	39°19'50.349"N	80°49'01.447"W	4178.79	315.146	0.07	0.00	0.07	
10305.00	90.370	340.580	6407.35	3990.65	3051.74	-2979.48	1692112.70	14282468.21	39°19'51.234"N	80°49'01.854"W	4265.02	315.686	0.83	0.33	0.76	
10398.00	90.370	339.280	6406.75	4083.46	3139.09	-3011.39	1692080.80	14282555.53	39°19'52.098"N	80°49'02.258"W	4349.99	316.189	1.40	0.00	-1.40	
10492.00	89.940	337.040	6406.50	4177.41	3226.34	-3046.36	1692045.84	14282642.74	39°19'52.961"N	80°49'02.700"W	4437.29	316.643	2.43	-0.46	-2.38	
10586.00	90.090	335.930	6406.47	4271.41	3312.53	-3083.86	1692008.35	14282728.90	39°19'53.813"N	80°49'03.175"W	4525.82	317.047	1.19	0.16	-1.18	
10680.00	89.940	334.680	6406.45	4365.39	3397.93	-3123.14	1691969.10	14282814.27	39°19'54.658"N	80°49'03.673"W	4615.18	317.413	1.34	-0.16	-1.33	
10774.00	90.000	333.180	6406.50	4459.30	3482.37	-3164.44	1691927.81	14282898.67	39°19'55.493"N	80°49'04.196"W	4705.38	317.738	1.60	0.06	-1.60	
10867.00	89.970	332.190	6406.52	4552.11	3564.99	-3207.12	1691885.15	14282981.26	39°19'56.311"N	80°49'04.737"W	4795.29	318.025	1.07	-0.03	-1.06	
10961.00	89.910	334.250	6406.62	4645.97	3648.91	-3249.47	1691842.81	14283065.14	39°19'57.141"N	80°49'05.274"W	4886.06	318.314	2.19	-0.06	2.19	
11055.00	90.580	338.900	6406.22	4739.94	3735.14	-3286.83	1691805.47	14283151.34	39°19'57.994"N	80°49'05.747"W	4975.39	318.653	5.00	0.71	4.95	
11148.00	89.910	338.510	6405.82	4832.86	3821.78	-3320.60	1691771.71	14283237.95	39°19'58.851"N	80°49'06.175"W	5062.85	319.014	0.83	-0.72	-0.42	
11242.00	89.940	332.620	6405.94	4926.81	3907.33	-3359.47	1691732.86	14283323.46	39°19'59.697"N	80°49'06.668"W	5152.98	319.311	6.27	0.03	-6.27	
11336.00	90.060	330.190	6405.94	5020.45	3989.86	-3404.46	1691687.89	14283405.95	39°20'00.514"N	80°49'07.238"W	5244.93	319.527	2.59	0.13	-2.59	
11430.00	90.030	330.700	6405.87	5113.95	4071.62	-3450.82	1691641.54	14283487.69	39°20'01.323"N	80°49'07.826"W	5337.26	319.718	0.54	-0.03	0.54	
11524.00	90.000	333.500	6405.85	5207.69	4154.69	-3494.80	1691597.58	14283570.72	39°20'02.145"N	80°49'08.384"W	5429.10	319.930	2.98	-0.03	2.98	
11618.00	89.910	333.400	6405.92	5301.57	4238.78	-3536.82	1691555.58	14283654.78	39°20'02.977"N	80°49'08.916"W	5520.54	320.159	0.14	-0.10	-0.11	
11712.00	89.970	333.710	6406.02	5395.45	4322.94	-3578.68	1691513.73	14283738.91	39°20'03.810"N	80°49'09.447"W	5612.02	320.381	0.34	0.06	0.33	
11805.00	89.970	335.950	6406.07	5488.41	4407.11	-3618.23	1691474.20	14283823.04	39°20'04.642"N	80°49'09.948"W	5702.12	320.614	2.41	0.00	2.41	
11899.00	90.000	338.660	6406.09	5582.39	4493.82	-3654.50	1691437.95	14283909.72	39°20'05.500"N	80°49'10.407"W	5792.22	320.881	2.88	0.03	2.88	
11993.00	89.970	339.000	6406.12	5676.30	4581.47	-3688.44	1691404.02	14283997.34	39°20'06.367"N	80°49'10.837"W	5881.71	321.163	0.36	-0.03	0.36	

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Caboose Unit 1H AWP Proj: 15798'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #01
Area	Doddridge Co., WV	Well	Caboose Unit 1H
Field	Doddridge	Wellbore	Caboose Unit 1H AWB
Facility	Middle Pad		

WELLPATH DATA (192 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
12087.00	89.940	338.650	6406.19	5770.22	4669.13	-3722.40	1691370.08	14284084.96	39°20'07.234"N	80°49'11.267"W	5971.35	321.437	0.37	-0.03	-0.37	
12181.00	89.630	338.490	6406.54	5864.15	4756.63	-3756.74	1691335.74	14284172.42	39°20'08.099"N	80°49'11.702"W	6061.24	321.699	0.37	-0.33	-0.17	
12275.00	89.850	338.610	6406.97	5958.07	4844.12	-3791.12	1691301.38	14284259.88	39°20'08.965"N	80°49'12.137"W	6151.26	321.952	0.27	0.23	0.13	
12368.00	89.880	338.540	6407.19	6051.00	4930.69	-3825.09	1691267.43	14284346.41	39°20'09.821"N	80°49'12.567"W	6240.43	322.197	0.08	0.03	-0.08	
12462.00	89.940	339.050	6407.34	6144.92	5018.33	-3859.09	1691233.44	14284434.01	39°20'10.688"N	80°49'12.998"W	6330.57	322.440	0.55	0.06	0.54	
12556.00	90.090	337.480	6407.31	6238.86	5105.64	-3893.90	1691198.65	14284521.29	39°20'11.552"N	80°49'13.439"W	6421.06	322.668	1.68	0.16	-1.67	
12650.00	90.120	336.220	6407.14	6332.86	5192.07	-3930.85	1691161.71	14284607.69	39°20'12.407"N	80°49'13.907"W	6512.23	322.871	1.34	0.03	-1.34	
12743.00	90.180	334.790	6406.90	6425.84	5276.70	-3969.41	1691123.16	14284692.28	39°20'13.244"N	80°49'14.395"W	6603.01	323.048	1.54	0.06	-1.54	
12836.00	89.880	335.430	6406.85	6518.82	5361.06	-4008.55	1691084.04	14284776.61	39°20'14.078"N	80°49'14.891"W	6693.98	323.214	0.76	-0.32	0.69	
12930.00	90.030	336.540	6406.92	6612.82	5446.92	-4046.80	1691045.80	14284862.44	39°20'14.928"N	80°49'15.376"W	6785.69	323.389	1.19	0.16	1.18	
13024.00	90.030	337.960	6406.87	6706.80	5533.60	-4083.15	1691009.46	14284949.09	39°20'15.785"N	80°49'15.836"W	6876.99	323.577	1.51	0.00	1.51	
13117.00	90.340	339.940	6406.57	6799.70	5620.39	-4116.56	1690976.07	14285035.84	39°20'16.644"N	80°49'16.259"W	6966.70	323.780	2.15	0.33	2.13	
13211.00	90.340	339.840	6406.01	6893.52	5708.66	-4148.88	1690943.77	14285124.07	39°20'17.517"N	80°49'16.668"W	7057.05	323.992	0.11	0.00	-0.11	
13305.00	90.220	339.740	6405.55	6987.35	5796.87	-4181.35	1690911.31	14285212.25	39°20'18.389"N	80°49'17.080"W	7147.55	324.197	0.17	-0.13	-0.11	
13398.00	90.090	338.970	6405.30	7080.22	5883.90	-4214.14	1690878.53	14285299.24	39°20'19.250"N	80°49'17.495"W	7237.35	324.389	0.84	-0.14	-0.83	
13492.00	90.310	338.250	6404.97	7174.15	5971.42	-4248.42	1690844.26	14285386.73	39°20'20.116"N	80°49'17.929"W	7328.50	324.570	0.80	0.23	-0.77	
13586.00	90.120	339.030	6404.62	7268.07	6058.96	-4282.66	1690810.04	14285474.24	39°20'20.982"N	80°49'18.362"W	7419.72	324.746	0.85	-0.20	0.83	
13679.00	90.030	339.600	6404.50	7360.95	6145.97	-4315.51	1690777.20	14285561.21	39°20'21.842"N	80°49'18.778"W	7509.76	324.925	0.62	-0.10	0.61	
13773.00	90.030	337.650	6404.45	7454.87	6233.50	-4349.77	1690742.96	14285648.70	39°20'22.708"N	80°49'19.212"W	7601.12	325.092	2.07	0.00	-2.07	
13867.00	89.910	335.060	6404.50	7548.86	6319.60	-4387.46	1690705.27	14285734.77	39°20'23.560"N	80°49'19.690"W	7693.32	325.229	2.76	-0.13	-2.76	
13960.00	89.910	333.180	6404.65	7641.79	6403.27	-4428.06	1690664.70	14285818.41	39°20'24.387"N	80°49'20.204"W	7785.21	325.335	2.02	0.00	-2.02	
14054.00	89.850	332.370	6404.84	7735.60	6486.86	-4471.06	1690621.71	14285901.96	39°20'25.214"N	80°49'20.750"W	7878.43	325.423	0.86	-0.06	-0.86	
14148.00	89.750	329.790	6405.17	7829.20	6569.13	-4516.51	1690576.28	14285984.20	39°20'26.028"N	80°49'21.326"W	7971.97	325.490	2.75	-0.11	-2.74	
14241.00	89.970	328.840	6405.40	7921.49	6649.10	-4563.97	1690528.84	14286064.14	39°20'26.820"N	80°49'21.928"W	8064.76	325.534	1.05	0.24	-1.02	
14335.00	89.970	329.720	6405.45	8014.78	6729.91	-4611.99	1690480.84	14286144.92	39°20'27.619"N	80°49'22.537"W	8158.56	325.577	0.94	0.00	0.94	
14429.00	89.880	330.590	6405.57	8108.23	6811.44	-4658.77	1690434.08	14286226.42	39°20'28.426"N	80°49'23.131"W	8252.27	325.629	0.93	-0.10	0.93	
14523.00	89.880	329.680	6405.77	8201.68	6892.96	-4705.58	1690387.29	14286307.90	39°20'29.233"N	80°49'23.724"W	8345.98	325.680	0.97	0.00	-0.97	
14616.00	89.910	334.610	6405.94	8294.40	6975.16	-4749.02	1690343.87	14286390.07	39°20'30.046"N	80°49'24.275"W	8438.36	325.751	5.30	0.03	5.30	
14710.00	89.910	338.460	6406.09	8388.38	7061.37	-4786.44	1690306.46	14286476.24	39°20'30.899"N	80°49'24.749"W	8530.70	325.869	4.10	0.00	4.10	
14803.00	89.940	337.400	6406.21	8481.34	7147.55	-4821.38	1690271.53	14286562.39	39°20'31.751"N	80°49'25.192"W	8621.67	325.998	1.14	0.03	-1.14	

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Actual Wellpath Report
Caboose Unit 1H AWP Proj: 15798



REFERENCE WELLPATH IDENTIFICATION	
Operator	ANTERO RESOURCES CORPORATION
Area	Doddridge Co., WV
Field	Doddridge
Facility	Middle Pad
Well	Caboose Unit 1H AWP
Wellbore	
Slot	Slot #01

WELLPATH DATA (192 stations)																
MD (ft)	Inclination (ft)	Azimuth (ft)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (ft)	Grid North (ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (ft)	DLS (ft/100ft)	Build Rate (ft/100ft)	Turn Rate (ft/100ft)	Comments
14897.00	89.940	337.670	6406.31	857.52	7234.42	-4857.30	1690235.63	14286649.22	39°20'32.610"N	80°49'25.647"W	8713.79	326.122	0.29	0.00	0.29	
14990.00	89.750	340.300	6406.56	8668.21	7321.23	-4890.65	1690202.29	14286736.00	39°20'33.469"N	80°49'26.069"W	8804.48	326.257	2.84	-0.20	2.83	
15084.00	90.060	343.130	6406.71	8761.79	7410.47	-4920.14	1690172.81	14286825.21	39°20'34.352"N	80°49'26.442"W	8895.10	326.418	3.03	0.33	3.01	
15178.00	90.030	344.640	6406.64	8854.98	7500.77	-4946.23	1690146.73	14286915.47	39°20'35.245"N	80°49'26.772"W	8984.81	326.598	1.61	-0.03	1.61	
15271.00	90.060	343.210	6406.57	8947.16	7590.14	-4971.98	1690120.99	14287004.80	39°20'36.128"N	80°49'27.098"W	9073.63	326.773	1.54	0.03	-1.54	
15365.00	90.000	340.460	6406.52	9040.72	7679.44	-5001.28	1690091.70	14287094.07	39°20'37.012"N	80°49'27.468"W	9164.42	326.926	2.93	-0.06	-2.93	
15459.00	89.940	338.200	6406.57	9134.59	7767.39	-5034.46	1690058.54	14287181.98	39°20'37.882"N	80°49'27.889"W	9256.24	327.051	2.41	-0.06	-2.40	
15554.00	90.000	338.980	6406.62	9229.52	7855.83	-5069.14	1690023.87	14287270.39	39°20'38.756"N	80°49'28.328"W	9349.34	327.167	0.82	0.06	0.82	
15647.00	89.970	335.720	6406.64	9322.49	7941.64	-5104.95	1689988.08	14287356.17	39°20'39.605"N	80°49'28.782"W	9440.88	327.267	3.51	-0.03	-3.51	
15741.00	89.940	333.140	6406.71	9416.43	8026.43	-5145.51	1689947.53	14287440.92	39°20'40.444"N	80°49'29.296"W	9534.14	327.337	2.74	-0.03	-2.74	
15774.00	90.000	332.700	6406.73	9449.37	8055.81	-5160.54	1689932.51	14287470.29	39°20'40.735"N	80°49'29.486"W	9566.99	327.356	1.35	0.18	-1.33	
15798.00	90.000	332.700	6406.73	9473.32	8077.14	-5171.54	1689921.51	14287491.61	39°20'40.946"N	80°49'29.626"W	9590.88	327.370	0.00	0.00	0.00	Projected MD @ TD: 15798

HOLE & CASING SECTIONS - Ref Wellbore: Caboose Unit 1H AWP Ret Wellpath: Caboose Unit 1H AWP Proj: 15798										
String/Diameter	Start MD (ft)	End MD (ft)	Interval (ft)	Start TVD (ft)	End TVD (ft)	Start N/S (ft)	Start EW (ft)	End N/S (ft)	End EW (ft)	
20in Conductor	32.00	112.00	80.00	32.00	112.00	112.00	0.00	0.00	-0.19	-0.49
17.5in Open Hole	112.00	551.00	439.00	112.00	550.98	550.98	0.00	0.00	0.00	-3.61
13.375in Casing Intermediate	32.00	551.00	519.00	32.00	550.98	550.98	0.00	0.00	0.00	-3.61
12.25in Open Hole	551.00	2666.00	2115.00	550.98	2608.17	2608.17	0.00	0.00	-3.61	-414.96
9.625in Casing Intermediate	32.00	2666.00	2634.00	32.00	2608.17	2608.17	0.00	0.00	0.00	-414.96
8.75in Open Hole	2666.00	6570.00	3904.00	2608.17	6269.84	6269.84	-188.80	-188.80	-414.96	-1484.78
8.5in Open Hole	6570.00	15798.00	9228.00	6269.84	6406.73	6406.73	-335.31	-1484.78	8077.14	-5171.54
5.5in Casing Production	32.00	15798.00	15766.00	32.00	6406.73	6406.73	0.00	0.00	8077.14	-5171.54

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Actual Wellpath Report

Caboose Unit 1H AWP Proj: 15798'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #01
Area	Doddridge Co., WV	Well	Caboose Unit 1H
Field	Doddridge	Wellbore	Caboose Unit 1H 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 1H POE Rev-1	6367.00	-173.67	-1573.67	1693517.95	14279244.09	39°19'19.326"N	80°48'44.049"W	point
Caboose Unit 1H BHL Rev-1	6407.00	7990.61	-5148.92	1689944.12	14287405.12	39°20'40.090"N	80°49'29.340"W	point
Caboose Unit 1H LP Rev-1	6407.00	18.99	-1658.04	1693433.61	14279436.67	39°19'21.232"N	80°48'45.117"W	point

WELLPATH COMPOSITION - Ref Wellbore: Caboose Unit 1H AWB Ref Wellpath: Caboose Unit 1H AWP Proj: 15798'				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
32.00	517.00	Gyrodatta standard - Drop gyro or Multi-shot	01 Gyrodatta MS Gyro <17-1/2"> (100'-500')	Caboose Unit 1H AWB
517.00	2592.00	ISCWSA MWD, Rev. 4 (Standard)	02 Directional ONE MWD <12-1/4"> (500')(559'-2575')	Caboose Unit 1H AWB
2592.00	6488.00	ISCWSA MWD, Rev. 4 (Standard)	03 Directional ONE MWD <8-3/4"> (2575')(2692'-6471')	Caboose Unit 1H AWB
6488.00	15774.00	BHI AutoTrak Curve (Short)	04 BH AT Curve <8-1/2"> (6488')(6546'-15774')	Caboose Unit 1H AWB
15774.00	15798.00	Blind Drilling (std)	Projection to bit	Caboose Unit 1H AWB

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Actual Wellpath Report

Caboose Unit 1H AWP Proj: 15798'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #01
Area	Doddridge Co., WV	Well	Caboose Unit 1H
Field	Doddridge	Wellbore	Caboose Unit 1H AWB
Facility	Middle Pad		

COMMENTS
<p>Wellpath general comments API: 47-017-06816-0000 BH Job #: 9091793 Rig: Frontier 32 Duration: 04/05/18 - 04/08/18 Gyrodata MS Gyro <17-1/2"> (100'-500') Directional ONE MWD <12-1/4"> (500')(559'-2575') Directional ONE MWD <8-3/4"> (2575')(2692'-6471') BH AT Curve <8-1/2"> (6488')(6546'-15774') Burket: 6618'MD / 6295'TVD Tully: 6679'MD / 6325'TVD Hamilton: 6755'D / 6357'TVD POE Marcellus: 6777'MD / 6365'TVD Projected MD @ TD: 15798</p>

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/9/2018
Job End Date:	8/22/2018
State:	West Virginia
County:	Doddridge
API Number:	47-017-06816-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Caboose 1H
Latitude:	39.32232300
Longitude:	-80.80458100
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,408
Total Base Water Volume (gal):	15,913,452
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
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	87.94246	Density = 8.330
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.11948	

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

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	11.90294
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01654
			Inorganic salt	Proprietary	30.00000	0.01654
			Acrylamide acrylate polymer	Proprietary	30.00000	0.01654
						Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Hydrochloric acid	7647-01-0	15.00000	0.01058
			Ethylene glycol	107-21-1	60.00000	0.00851
			Guar gum	9000-30-0	100.00000	0.00532
			Glutaraldehyde	111-30-8	30.00000	0.00267
			Telmer	Proprietary	10.00000	0.00142
			Sodium persulfate	7775-27-1	100.00000	0.00056
			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)

9,572' to Bottom Hole

4,301' to Top Hole
BTM LATITUDE 39 - 22 - 30
TOP LATITUDE 39 - 20 - 00

LONGITUDE 80 - 47 - 30

3,883' to Top Hole

10,905' to Bottom Hole

Bearing	Dist.
L1 S 85°06' W	603.3'
L2 N 06°43' E	500.0'
L3 N 24°08' E	829.7'
L4 S 36°57' W	634.5'

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

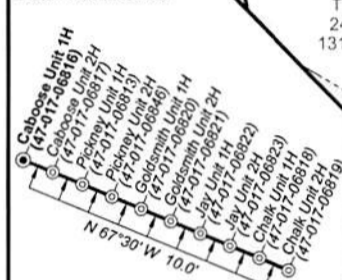
Antero Resources
Well No. Caboose Unit 1H
As-Drilled
Antero Resources Corporation

Legend

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

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.

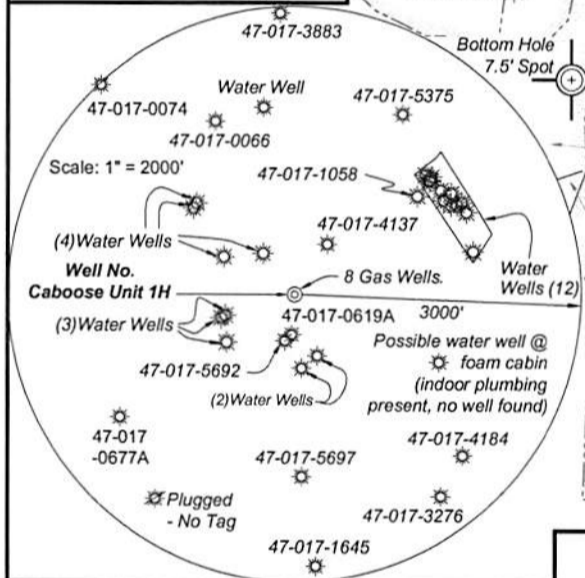
Wellhead Layout
Detail Not to Scale



Notes:
West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
Well No. Caboose Unit 1H Top Hole coordinates are N: 302,260.72' Latitude: 39°19'21.01" E: 1,630,347.74' Longitude: 80°48'24.01"
Bottom Hole coordinates are N: 310,412.22' Latitude: 39°20'40.84" E: 1,625,294.22' Longitude: 80°49'29.84"
UTM Zone 17, NAD 1983
Top Hole Coordinates Bottom Hole Coordinates
N: 4,352,593.142m N: 4,355,050.782m
E: 516,679.464m E: 515,098.474m
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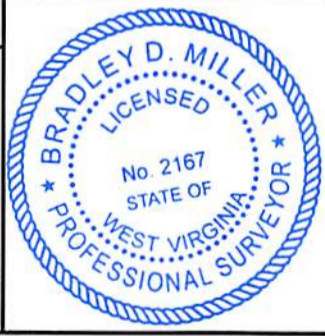
Top Hole Coordinates, As-drilled data and information was provided by Antero Resources Corporation. Allegheny Surveys Inc. (ASI) is not certifying the data and information provided. ASI is not responsible for any errors or inaccuracies with the data and information that has been provided.

TM/Par	Bk / Pg	Acres	Owner(s)
1	6/2	214 / 279	32.19
2	6/2.5	253 / 222	8.66 William Randall Lynch & Dixie Janet Craig
3	6/2.8	305 / 419	2.68 Dominion Field Services, Inc.
4	6/2.6	266 / 36	3.52 Equitrans, L.P.
5	6/1.3	305 / 416	4.68 Carol & Alfreda Painter
6	6/2.4	163 / 44	14.98 John Paul Strickling, et al
7	6/2.3	197 / 659	4.15 Richard J. & S. Jean Kruse
8	4/28	WB 28/314	357.75
9	3/15.1	235 / 236	0.56



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 1H 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 1H
API WELL NO
47 - 017 - 06816
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 Clarence W. Mutschelknaus, et ux; WV Div. of Natural Resources; William Randall Lynch, et ux, Memorandum of Oil & Gas Lease; COUNTY: Doddridge 56.07; 86.5;
SURFACE OWNER: William Randall Lynch & Dixie Craig Laura A. Ford & S. L. Ford; Nelda Lou King; James Douglas White; Betty Ann Hurst; LEASE NO: ACREAGE: 97; 8.66; 32.15; 168; 180; 20.25; 78.75; 32.75; 150; 105; 61.361;
ROYALTY OWNER: Lewis Maxwell, et al; Dwight Robert Husk, et ux; Edwin Cain, et ux; William Paul McCutchan; LEASE NO: ACREAGE:
PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled 6,406' TVD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 15,798' 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

9,572' to Bottom Hole

	Bearing	Dist.
L1	S 85°06' W	603.3'
L2	N 06°43' E	500.0'
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Antero Resources
Well No. Caboose Unit 1H
As-Drilled
Antero Resources Corporation

4,301' to Top Hole
BTM LATITUDE 39 - 22 - 30
TOP LATITUDE 39 - 20 - 00

Legend	
	Proposed gas well
	Found corner, as noted
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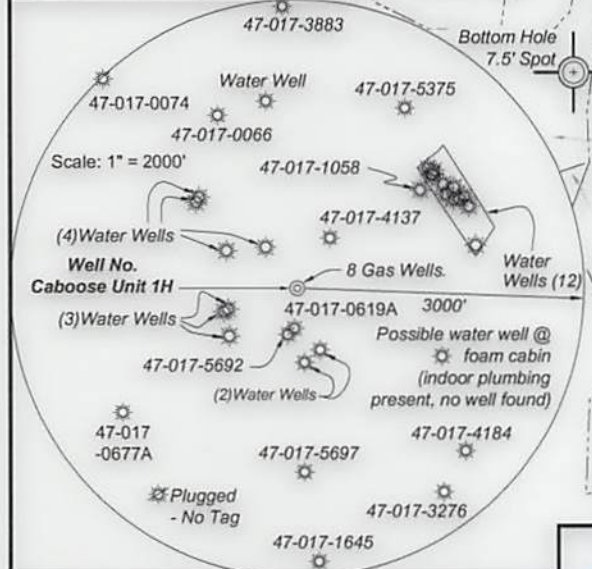
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Bradley D. Miller
Bradley D. Miller, P.S. 2167

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

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API WELL NO
47 - 017 - 06816
STATE COUNTY PERMIT

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Submeter
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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 William Randall Lynch, et ux; WV Div. of Natural Resources; William Randall Lynch, et ux; Memorandum of Oil & Gas Lease; William Randall Lynch & Dixie Craig; Janice M. Ellifritt Cox; Laura A. Ford & S. L. Ford; Nelda Lou King; James Douglas White; Betty Ann Hurst; COUNTY: Doddridge 56.07; 86.5; 97; 8.66; 32.15; 168; 180; 20.25; 78.75; 32.75; 150; 105; 61.361;
SURFACE OWNER: Lewis Maxwell, et al; Dwight Robert Husk, et ux; Edwin Cain, et ux; William Paul McCutchan; LEASE NO: ACREAGE: 32.19
ROYALTY OWNER: Lewis Maxwell, et al; Dwight Robert Husk, et ux; Edwin Cain, et ux; William Paul McCutchan; LEASE NO: ACREAGE: 105; 61.361;
PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled 6,406' TVD
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 15,798' 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

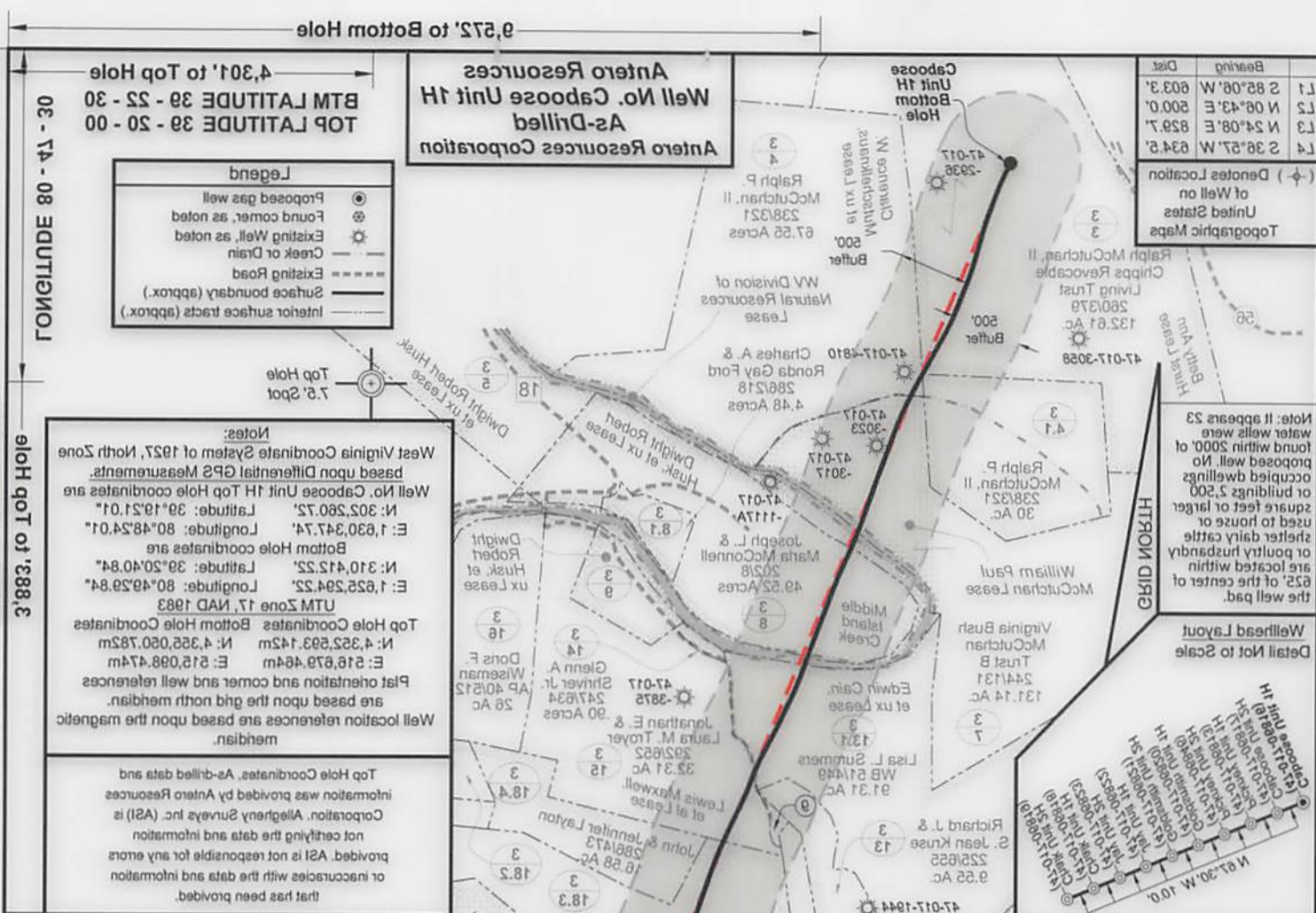
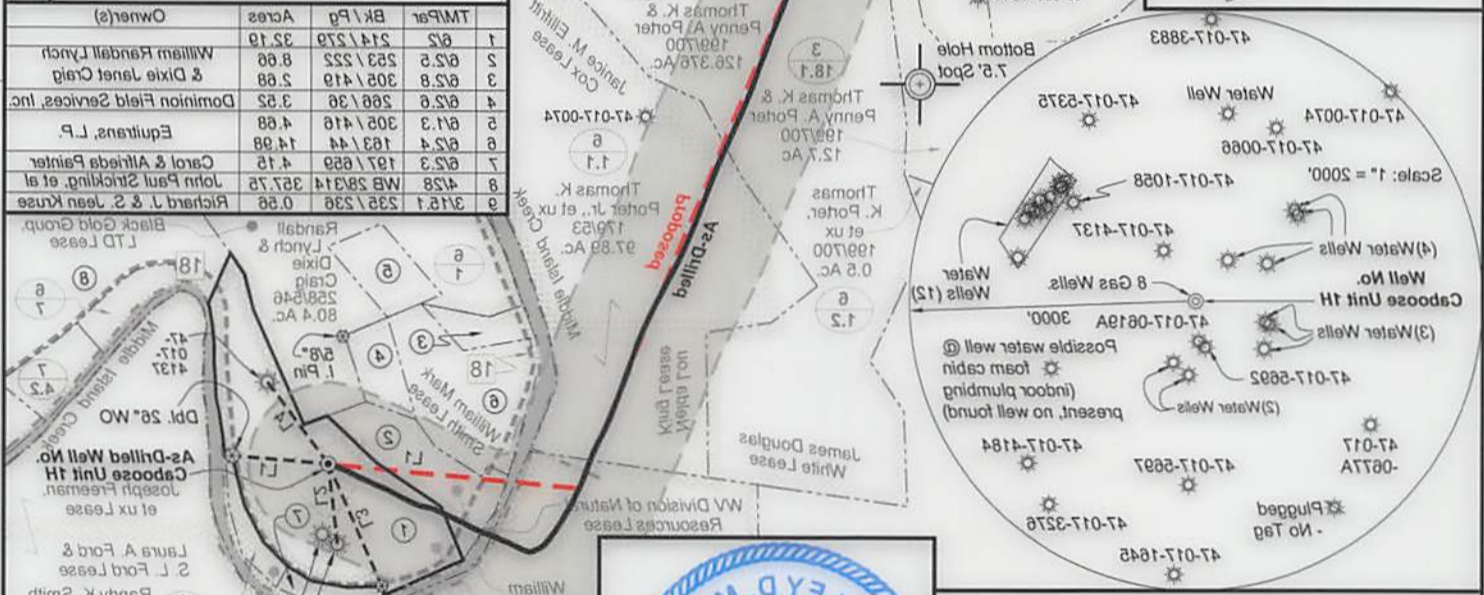


DENVER, CO 80202
 ADDRESS: 1615 WYNKOOP STREET
 WELL OPERATOR: Antero Resources Corporation
 DESIGNATED AGENT: Danna Stamber - CT Corporation System
 CHARLESTON, WV 25313
 ADDRESS: 5400 D Big Tyler Road
 STATE: WV COUNTY: Putnam PERMIT: 07-08816
 DATE: January 16, 2019

□ PLUG AND ABANDON □ CLEAN OUT AND REPLUG □ TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 12,298' MD
 □ PERFORATE NEW FORMATION □ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) As-Drilled
 □ DRILL DEEPER □ CONVERT □ DRILL □ PLUG OFF OLD FORMATION
 PROPOSED WORK: □ DRILL □ CONVERT □ DRILL DEEPER □ FRACTURE OR STIMULATE □ PLUG OFF OLD FORMATION
 ROYALTY OWNER: Lewis Maxwell, et al; Dwight Robert Husk, et ux; Edwin Cain, et ux; William Paul McCutchan, et ux; James Douglas Wilkie; Betty Ann Husk; Laura A. Ford & J. L. Ford; Nelda Lou King; William Randall Lynch & Dixie Craig; William Randall Lynch, et ux; Memorandum of Oil & Gas Lease; Clarence W. Mutschknauer, et ux; WV Div. of Natural Resources; AS-Drilled Grade - 823'
 LOCATION ELEVATION: AS-Drilled Grade - 823'
 WATERSHED: Headwaters Middle Island Creek
 QUADRANGLE: West Union
 COUNTY: Doddridge
 ACRES: 32.19
 ACREAGE: 32.19
 SURFACE OWNER: William Randall Lynch & Dixie Craig
 DISTRICT: West Union
 FILE NO: 238-30-WU-14
 DRAWING NO: Capoose 1H As-Drilled Well Plat
 SCALE: 1" = 1200'
 MINIMUM DEGREE OF ACCURACY: Submeter
 PROVEN SOURCE OF ELEVATION: WVDOT, Hamsville, WV

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OIL AND GAS DIVISION
 DATE: January 16, 2019
 OPERATOR'S WELL NO. Capoose Unit 1H
 API WELL NO. 07-08816

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, P.S. 2167
 LICENSED PROFESSIONAL SURVEYOR
 STATE OF WEST VIRGINIA
 No. 2167
 BRADLEY D. MILLER



Notes:
 West Virginia Coordinate System of 1927, North Zone based upon Differential GPS Measurements.
 Well No. Capoose Unit 1H Top Hole coordinates are N: 3025.26072', L: 1819.10101', E: 1630.34727', UTM Zone 17, NAD 1983
 Bottom Hole coordinates are N: 3104.41232', L: 1819.20484', E: 1625.29422', UTM Zone 17, NAD 1983
 Top Hole Coordinates Bottom Hole Coordinates
 N: 4,325,893.142m N: 4,325,050.782m
 E: 516,879.464m E: 515,098.474m
 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.