

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

API 47-095-02603 County Tyler District McElroy
Quad Shirley 7.5' Pad Name Colorado East Pad Field/Pool Name ----
Farm name Antero Resources Corporation Well Number Avalanche 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 4361524m Easting 518250m
Landing Point of Curve Northing 4361455.97m Easting 518288.50m
Bottom Hole Northing 4358293m Easting 519295m

Elevation (ft) 743' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
Air - Foam & 4% KCL
Mud - Polymer

Date permit issued 4/30/2019 Date drilling commenced 11/10/2019 Date drilling ceased 1/10/2020
Date completion activities began 4/9/2020 Date completion activities ceased 5/31/2020
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by [Signature]

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Office of Oil and Gas
JAN 04 2020
WV Department of
Environmental Protection

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug
Freshwater depth(s) ft 175' Open mine(s) (Y/N) depths _____
Salt water depth(s) ft 970' 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:
[Signature]
1/27/2021

API 47- 095 - 02603 Farm name Antero Resources Corporation Well number Avalanche 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"	105'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	429'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2596'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	17890'	New	23#, HCP-110	N/A	Y
Tubing		2-3/8"	6628'		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	372 sx	15.6	1.20	635	0'	8 Hrs.
Coal							
Intermediate 1	Class A	880 sx	15.6	1.19	1082	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	792 sx (Lead) 2778 sx (Tail)	13.5 (Lead), 15.2(Tail)	1.4 (Lead), 1.6 (Tail)	3003	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 17910' MD, 6428' TVD (BHL), 6449' (Deepest Point Drilled) Loggers TD (ft) 17910' MD

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

Plug back procedure N/A

Kick off depth (ft) 5616'

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- 095 - 02603 Farm name Antero Resources Corporation Well number Avalanche Unit 1H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>			
Marcellus	6364' (TOP)	TVD	6667' (TOP)	MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 2800 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 3028 mcfpd Oil 320 bpd NGL --- bpd Water 158 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
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***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Patterson UTI
Address 1660 Wynkoop Street City Denver State CO Zip 80202

Logging Company Nine Energy Services
Address 6500 West Fwy City Fort Worth State TX Zip 76116

Cementing Company Schlumberger Oilfield Services
Address 300 Schlumberger Dr City Sugarland State TX Zip 77478

Stimulating Company Halliburton
Address 3000 W. Sam Houston Pkwy City Houston State TX Zip 76114

Please insert additional pages as applicable.

Completed by Brandi Hankins Telephone 303-357-7223
Signature _____ Title Completions Technician Date _____

API 47-095-02603 Farm Name Antero Resources Corporation Well Number Avalanche Unit 1H

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	4/10/2020	17785.2	17741.8	60	Marcellus
2	4/10/2020	17704.38848	17539.3309	60	Marcellus
3	4/10/2020	17503.91939	17338.8618	60	Marcellus
4	4/11/2020	17303.4503	17138.3927	60	Marcellus
5	4/11/2020	17102.98121	16937.9236	60	Marcellus
6	4/11/2020	16902.51212	16737.4545	60	Marcellus
7	4/12/2020	16702.04303	16536.9855	60	Marcellus
8	4/12/2020	16501.57394	16336.5164	60	Marcellus
9	4/12/2020	16301.10485	16136.0473	60	Marcellus
10	4/13/2020	16100.63576	15935.5782	60	Marcellus
11	4/13/2020	15900.16667	15735.1091	60	Marcellus
12	4/13/2020	15699.69758	15534.64	60	Marcellus
13	4/14/2020	15499.22848	15334.1709	60	Marcellus
14	4/14/2020	15298.75939	15133.7018	60	Marcellus
15	4/14/2020	15098.2903	14933.2327	60	Marcellus
16	4/15/2020	14897.82121	14732.7636	60	Marcellus
17	4/15/2020	14697.35212	14532.2945	60	Marcellus
18	4/15/2020	14496.88303	14331.8255	60	Marcellus
19	4/16/2020	14296.41394	14131.3564	60	Marcellus
20	4/16/2020	14095.94485	13930.8873	60	Marcellus
21	4/16/2020	13895.47576	13730.4182	60	Marcellus
22	4/17/2020	13695.00667	13529.9491	60	Marcellus
23	4/17/2020	13494.53758	13329.48	60	Marcellus
24	4/17/2020	13294.06848	13129.0109	60	Marcellus
25	4/17/2020	13093.59939	12928.5418	60	Marcellus
26	4/18/2020	12893.1303	12728.0727	60	Marcellus
27	4/18/2020	12692.66121	12527.6036	60	Marcellus
28	4/18/2020	12492.19212	12327.1345	60	Marcellus
29	4/19/2020	12291.72303	12126.6655	60	Marcellus
30	4/19/2020	12091.25394	11926.1964	60	Marcellus
31	4/19/2020	11890.78485	11725.7273	60	Marcellus
32	4/20/2020	11690.31576	11525.2582	60	Marcellus
33	4/20/2020	11489.84667	11324.7891	60	Marcellus
34	4/20/2020	11289.37758	11124.32	60	Marcellus
35	4/20/2020	11088.90848	10923.8509	60	Marcellus
36	4/21/2020	10888.43939	10723.3818	60	Marcellus
37	4/21/2020	10687.9703	10522.9127	60	Marcellus
38	4/21/2020	10487.50121	10322.4436	60	Marcellus
39	4/21/2020	10287.03212	10121.9745	60	Marcellus
40	4/22/2020	10086.56303	9921.50545	60	Marcellus
41	4/22/2020	9886.093939	9721.03636	60	Marcellus
42	4/22/2020	9685.624848	9520.56727	60	Marcellus
43	4/23/2020	9485.155758	9320.09818	61	Marcellus
44	4/23/2020	9284.686667	9119.62909	62	Marcellus
45	4/23/2020	9084.217576	8919.16	63	Marcellus
46	4/23/2020	8883.748485	8718.69091	64	Marcellus
47	4/24/2020	8683.279394	8518.22182	65	Marcellus
48	4/24/2020	8482.810303	8317.75273	66	Marcellus
49	4/24/2020	8282.341212	8117.28364	67	Marcellus
50	4/24/2020	8081.872121	7916.81455	68	Marcellus
51	4/24/2020	7881.40303	7716.34545	69	Marcellus
52	4/25/2020	7680.933939	7515.87636	70	Marcellus
53	4/25/2020	7480.464848	7315.40727	71	Marcellus
54	4/25/2020	7279.995758	7114.93818	72	Marcellus
55	4/25/2020	7079.526667	6914.46909	73	Marcellus
56	4/25/2020	6879.057576	6714	74	Marcellus

API 47-095-02603 Farm Name Antero Resources Corporation Well Number Avalanche 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	4/10/2020	78.63	7949	6667	3398	162920	4824	N/A
2	4/10/2020	85.86	8443	6201	4400	406780	7301	N/A
3	4/10/2020	85.45	8358	6385	4306	406940	7285.2	N/A
4	4/11/2020	85.69	8374	5878	4543	409160	7293	N/A
5	4/11/2020	85.1	8311	6176	4597	408040	7264	N/A
6	4/11/2020	85.9	8388	5962	4441	403100	7205.8	N/A
7	4/12/2020	81.78	8650	5851	4050	398260	7101	N/A
8	4/12/2020	83.95	8613	7463	4044	396000	7060.8	N/A
9	4/12/2020	76.5	8197	6205	3947	407680	9557.9	
10	4/13/2020	85.68	8864	5873	4011	405400	7097	N/A
11	4/13/2020	81.09	8646	6247	3487	406220	7195.7	N/A
12	4/13/2020	85.82	8636	4789	4013	406020	7077.7	N/A
13	4/14/2020	85.87	8706	6161	4144	407240	7183.9	N/A
14	4/14/2020	85.08	8747	6241	3882	404100	7047.4	N/A
15	4/14/2020	84.78	8662	5902	3844	407880	6908.4	N/A
16	4/15/2020	83.59	8668	6317	3977	406320	6882	N/A
17	4/15/2020	85.9	8604	6193	3904	401760	6966.2	N/A
18	4/15/2020	85.9	8645	7559	3914	402160	7016	N/A
19	4/16/2020	85.44	8807	5681	3905	401660	6849.8	N/A
20	4/16/2020	94.07	8746	5636	4229	405600	7075	N/A
21	4/16/2020	95.7	8689	5837	4293	408040	7158.6	N/A
22	4/17/2020	85.88	8734	5689	3901	406900	6846	N/A
23	4/17/2020	85.93	8709	5505	3973	409280	6919.8	N/A
24	4/17/2020	95.88	8731	5637	4361	401820	6965.4	N/A
25	4/17/2020	94.85	8744	5616	4080	403120	6817	N/A
26	4/18/2020	94.07	8564	5495	4191	406920	6872.6	N/A
27	4/18/2020	94.78	8740	5623	4309	406920	7007.5	N/A
28	4/18/2020	95.7	8714	5829	4152	407200	6850.8	N/A
29	4/19/2020	95.42	8839	6056	4168	406680	6876.8	N/A
30	4/19/2020	95.88	8799	5775	4049	407860	7085.1	N/A
31	4/19/2020	95.87	8766	5819	4127	406280	6887.3	N/A
32	4/20/2020	92.95	8732	6309	4106	405080	6845.5	N/A
33	4/20/2020	95.9	8580	6055	4228	406100	6896.9	N/A
34	4/20/2020	94.68	8428	6330	3923	400540	6911.2	N/A
35	4/20/2020	95.52	8755	6309	4162	407400	6861.6	N/A
36	4/21/2020	95.61	8651	6020	4195	405920	6810	N/A
37	4/21/2020	95.79	8406	6325	4057	403680	6907.3	N/A
38	4/21/2020	95.85	8522	6500	4292	408340	6866.8	N/A
39	4/21/2020	95.13	8600	6240	4137	408780	6784.8	N/A
40	4/22/2020	95.78	8512	6392	4142	406740	6806.3	N/A
41	4/22/2020	93.65	8189	6225	4050	407940	6815	N/A
42	4/22/2020	95.69	8587	5686	4079	405720	6799.4	N/A
43	4/23/2020	95.36	8521	6775	3996	405400	6805	N/A
44	4/23/2020	95.17	8426	6653	4213	406060	6802	N/A
45	4/23/2020	95.81	8503	6976	4249	407020	6806	N/A
46	4/23/2020	95.76	8357	6170	4179	406580	6660	N/A
47	4/24/2020	95.71	8383	5866	4542	406340	6748	N/A
48	4/24/2020	95.65	8263	5949	4594	405100	6781.5	N/A
49	4/24/2020	92.52	7941	5716	4283	405620	6799.4	N/A
50	4/24/2020	95.89	7994	6339	4336	407900	6763.8	
51	4/24/2020	95.51	7774	6049	4516	405340	6729.6	N/A
52	4/25/2020	95.73	8227	6686	4424	404480	6711.9	N/A
53	4/25/2020	95.27	7854	6234	4579	406180	6808.7	N/A
54	4/25/2020	95.79	7737	5499	4182	408120	6929.9	N/A
55	4/25/2020	94.42	7908	6009	4241	407320	6841.4	N/A
56	4/25/2020	95.87	8146	6904	3930	406160	6770.4	N/A
	AVG=	91	8,483	6,116	4,148	22,478,120	388,741	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
Shale	0	310	0	310
Silty sandstone	310	460	310	460
Shale	460	700	460	700
Silty Shale	700	820	700	820
Shale with interbedded limestone	820	850	820	850
Shale	850	880	850	880
Shale w/ trace coal	880	910	880	910
Shaley Sandstone	910	1,180	910	1,180
Shale	1,180	1,240	1,180	1,240
Sandstone w/ interbedded coals	1,240	1,330	1,240	1,330
Sandstone w/ trace coal	1,330	1,480	1,330	1,480
Sandstone	1,480	1,510	1,480	1,510
Shale	1,510	1,653	1,510	1,654
Big Lime	1,653	2,366	1,654	2,371
Fifty Foot Sandstone	2,366	2,454	2,371	2,459
Gordon	2,454	2,750	2,459	2,758
Fifth Sandstone	2,750	2,797	2,758	2,806
Bayard	2,797	3,564	2,806	3,592
Speechley	3,564	3,784	3,592	3,815
Balltown	3,784	4,303	3,815	4,338
Bradford	4,303	4,747	4,338	4,787
Benson	4,747	5,013	4,787	5,056
Alexander	5,013	6,180	5,056	6,278
Sycamore	5,992	6,155	6,082	6,253
Middlesex	6,155	6,289	6,278	6,466
Burkett	6,289	6,317	6,491	6,525
Tully	6,317	6,364	6,550	6,667
Marcellus	6,364	NA	6,667	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.

ANTERO RESOURCES CORPORATION

Location: Tyler County, WV
Field: Tyler

Slot: Slot #03
Well: Avalanche Unit 1H

Facility: Colorado East Pad Wellbore: Avalanche Unit 1H PWB

Plot reference wellpath is Avalanche Unit 1H PWP Rev-B.0	Grid System: NAD27 / UTM Zone 17 North, US feet
True vertical depths are referenced to Patterson 342 (RKB)	North Reference: Grid north
Reference wellpath measured depths are referenced to Patterson 342 (RKB)	Scale: True distance
Patterson 342 (RKB) to Mean Sea Level: 788 feet	Coordinates are in feet referenced to Slot
Mean Sea Level to Ground level (At Slot: Slot #03): -743 feet	Depths are in feet
Offset wellpath MDs are referenced to each path's default MD datum	Created by: dclauson on 2020-01-16; Database: WA_MPL_EasternUS_Defn

Location Information				
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Colorado East Pad	1700256.680	14308700.560	39°24'10.4304"N	80°47'17.3894"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)
Slot #03	18.08	-10.68	1700246.000	14308717.510
Patterson 342 (RKB) to Ground level (At Slot: Slot #03)			25ft	
Mean Sea Level to Ground level (At Slot: Slot #03)			-743ft	
Patterson 342 (RKB) to Mean Sea Level			788ft	

Well Data			
Slot	Well	Wellbore	Wellpath
Slot #03	Avalanche Unit 1H	Avalanche Unit 1H AWB	Avalanche Unit 1H AWP Proj: 17910'
Slot #03	Avalanche Unit 1H	Avalanche Unit 1H PWB	Avalanche Unit 1H PWP Rev-B.0

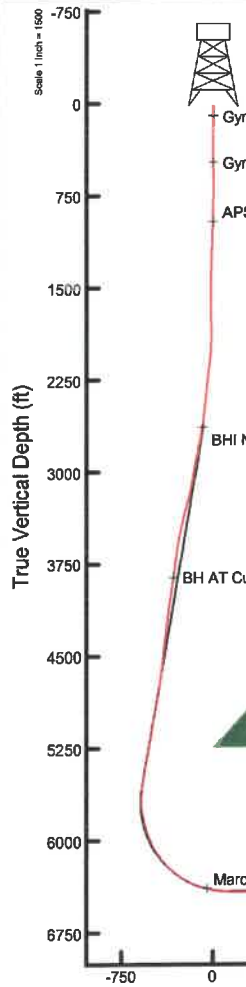
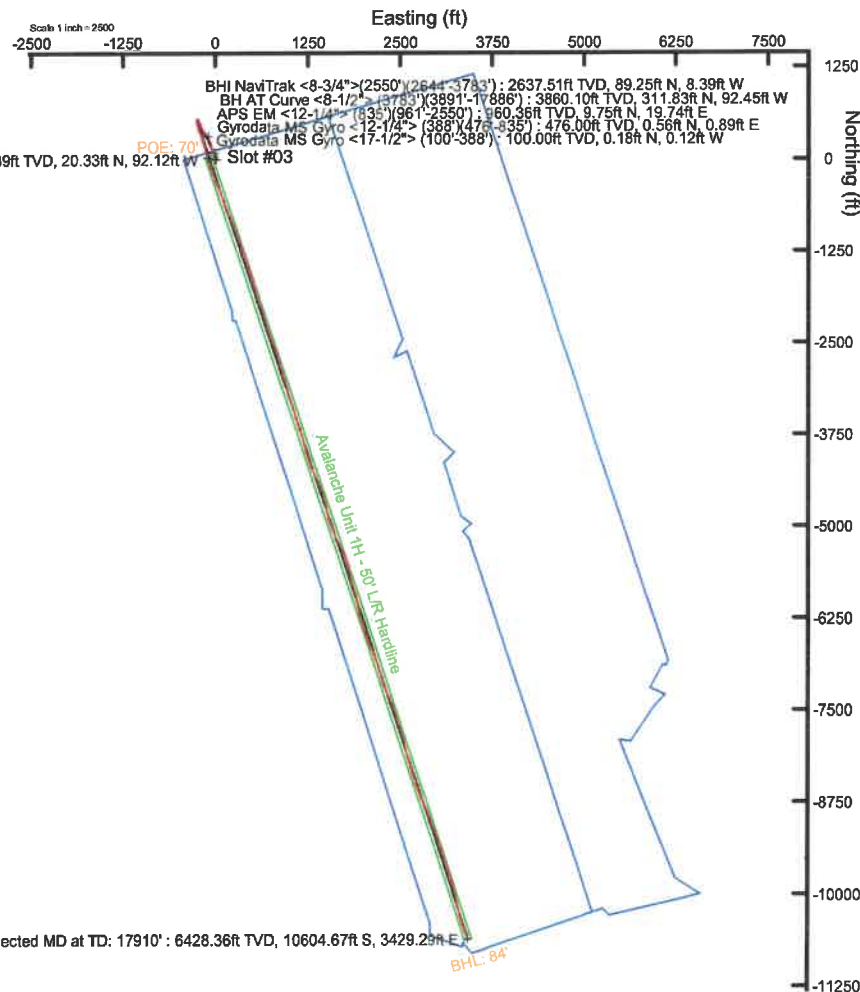
- Gyrodata MS Gyro <17-1/2"> (100'-388') : 0.33° Inc, 100.00ft MD, 100.00ft TVD, -0.21ft VS
- Gyrodata MS Gyro <12-1/4"> (388')(476'-835') : 0.42° Inc, 476.00ft MD, 476.00ft TVD, -0.25ft VS
- APS EM <12-1/4"> (835')(961'-2550') : 4.21° Inc, 961.00ft MD, 960.36ft TVD, -3.08ft VS

Well Profile Data							
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	VS (ft)
Tie On	2550.00	7.070	336.520	2544.29	78.00	-4.03	1.98
Proj. To Bottom	2620.00	7.070	336.520	2613.76	85.91	-7.46	0.00
Drill Out Csg	2720.00	7.070	336.520	2713.00	97.20	-12.37	0.00
Hold Tangent	2858.65	9.815	333.825	2850.13	115.63	-20.98	2.00
Curve KOP	5823.99	9.815	333.825	5574.99	538.70	-228.93	0.00
POE	6676.98	74.514	161.740	6386.00	45.13	-82.08	8.00
Landing Pt.	6870.55	90.000	161.740	6412.00	-136.48	-22.16	8.00
BHL	17905.00	90.000	161.740	6412.00	-10815.26	3435.28	0.00

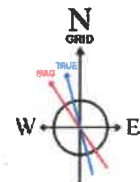
- BHI NaviTrak <8-3/4">(2550')(2644'-3783') : 7.68° Inc, 2644.00ft MD, 2637.51ft TVD, -87.38ft VS
- BH AT Curve <8-1/2"> (3783')(3891'-17886') : 7.96° Inc, 3891.00ft MD, 3860.10ft TVD, -325.10ft VS

Marcellus POE: 6692' MD : 75.96° Inc, 6692.00ft MD, 6389.39ft TVD, -48.17ft VS

Projected MD at TD: 17910' : 89.88° Inc, 17910.00ft MD, 6428.36ft TVD, 11145.16ft VS



API: 47-095-02603-0000
BHI Job #: 110091996B
Rig: Patterson 342
Duration: 11/11/2019-01/07/2019



User specified (HDGM) Dip: 66.46° Field: 51901 nT
Magnetic North is 7.64 degrees West of True North (at 12/30/2019)
Grid North is 0.13 degrees East of True North
To correct azimuth from True to Grid subtract 0.13 degrees
To correct azimuth from Magnetic to Grid subtract 7.77 degrees

Vertical Section (ft)
Azimuth 161.74° with reference 0.00 N, 0.00 E

Scale 1 inch = 1000

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/9/2020
Job End Date:	4/25/2020
State:	West Virginia
County:	Tyler
API Number:	47-095-02603-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Avalanche 1H
Latitude:	39.40294000
Longitude:	-80.78820000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,448
Total Base Water Volume (gal):	16,979,683
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
Produced Mixture	Halliburton	Base Fluid					
			Water	7732-18-5	100.00000	86.39124	Density = 8.50
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.14511	

Legend LD-2990	MultiChem	Friction Reducer					
				Listed Below			
HYDROCHLORIC ACID, 22 BAUME	Halliburton	Solvent					
				Listed Below			
LD-2950	MultiChem	Friction Reducer					
				Listed Below			
Excelerate LX-15	Halliburton	Friction Reducer					
				Listed Below			
OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
HAI-501	Halliburton	Acid Corrosion Inhibitor					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			

Legend LD-2555	MultiChem	Additive				
				Listed Below		
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant				
				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	13.45676
			Hydrochloric acid	7647-01-0	30.00000	0.03918
			Complex Amine Compound	Proprietary	60.00000	0.00322
			Guar gum	9000-30-0	100.00000	0.00310
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.00257
			Glutaraldehyde	111-30-8	30.00000	0.00250
			Complex Amine Compound	Proprietary	60.00000	0.00111
			Complex Amine Compound	Proprietary	60.00000	0.00081
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00042
			Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8	5.00000	0.00036
			Methanol	67-56-1	100.00000	0.00033
			Polyethoxylated fatty amine salt	61791-26-2	30.00000	0.00031
			Surfactant	Proprietary	5.00000	0.00027
			Ammonium persulfate	7727-54-0	100.00000	0.00013
			Surfactant	Proprietary	5.00000	0.00009
			Ethanol	64-17-5	1.00000	0.00008
			Modified thiourea polymer	Proprietary	30.00000	0.00007

			Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00007	
			Ethoxylated alcohols	Proprietary	5.00000	0.00007	
			Alkoxyated polyhydric alcohol	Proprietary	1.00000	0.00005	
			Organic chloride compound	Proprietary	1.00000	0.00005	
			Ethoxylated alcohols	Proprietary	1.00000	0.00005	
			Oxylated phenolic resin	Proprietary	30.00000	0.00004	
			Ethoxylated alcohols	Proprietary	5.00000	0.00003	
			Alkoxyated polyhydric alcohol	Proprietary	1.00000	0.00002	
			Organic chloride compound	Proprietary	1.00000	0.00002	
			Poly(oxy-1,2-ethanediyl), alpha-tridecyl-omega-hydroxy-, branched	69011-36-5	1.00000	0.00001	
			Adipic acid	124-04-9	1.00000	0.00001	
			Hexadecene	629-73-2	5.00000	0.00001	
			Propargyl alcohol	107-19-7	5.00000	0.00001	
			Phosphoric acid	7664-38-2	0.10000	0.00001	
			Acrylamide	79-06-1	0.10000	0.00001	
			Organic salt #1	Proprietary	0.10000	0.00001	
			C.I. pigment Orange 5	3468-63-1	1.00000	0.00000	
			Formaldehyde	50-00-0	0.01000	0.00000	
			Sodium hydroxide	1310-73-2	0.01000	0.00000	
			Nitrated acetate salt	Proprietary	0.01000	0.00000	
			Organic salt #3	Proprietary	0.01000	0.00000	
			Organic salt #2	Proprietary	0.01000	0.00000	
			Sodium glycollate	2836-32-0	0.01000	0.00000	
			Sodium glycolate	2836-32-0	0.01000	0.00000	
			Organic salt #2	Proprietary	0.01000	0.00000	
			Organic salt #1	Proprietary	0.01000	0.00000	

			Nitrated acetate salt	Proprietary	0.01000	0.00000	
			Ethylene oxide	75-21-8	0.01000	0.00000	

* 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)

LATITUDE 39°25'00"

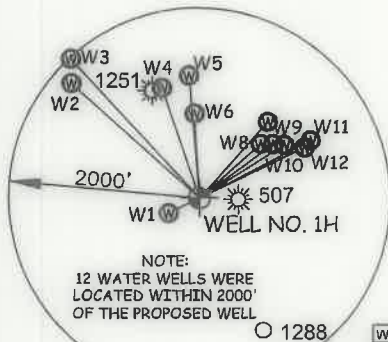
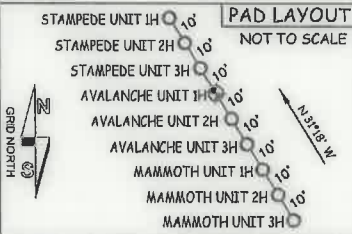
10,795'

LATITUDE 39°22'30" 7,396' TO BOTTOM HOLE

Antero Resources Corporation
Well No. Avalanche Unit 1H

AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
N: 331,480ft E: 1,635,992ft
LAT: 39°24'10.60" LON: 80°47'17.52"
BOTTOM HOLE INFORMATION:
N: 320,820ft E: 1,639,243ft
LAT: 39°22'25.70" LON: 80°46'34.18"
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 1H TOP HOLE INFORMATION:
N: 4,361,524m E: 518,250m
BOTTOM HOLE INFORMATION:
N: 4,358,293m E: 519,295m



W1	S 63°23' W	359.2'
W2	N 47°45' W	1801.9'
W3	N 42°23' W	1983.8'
W4	N 18°18' W	1224.0'
W5	N 04°30' W	1295.6'
W6	N 02°57' W	893.2'
W7	N 41°39' E	1085.6'
W8	N 48°02' E	856.0'
W9	N 53°22' E	966.3'
W10	N 57°24' E	1057.5'
W11	N 62°09' E	1320.5'
W12	N 63°56' E	1226.5'

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



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

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

JOB # 17-038WA
DRAWING # AVALANCHE1HAD
SCALE 1" = 2000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS

LEGEND

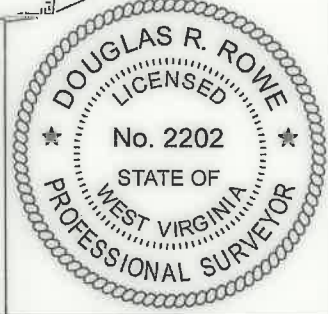
- Surface Owner Boundary Lines +/-
- Interior Surface Tracts +/-
- Proposed Well Path
- As Drilled Well Path

DOUGLAS R. ROWE P.S. 2202

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

DATE 09/03/20 OPERATOR'S WELL# AVALANCHE UNIT #1H

- NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
- TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
- AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
- WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.
- WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.



WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 - 095 - 02603
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT

LOCATION: ELEVATION 743' - AS BUILT WATERSHED McELROY CREEK
QUADRANGLE TH - SHIRLEY 7.5' BH - WEST UNION 7.5' DISTRICT McELROY COUNTY TYLER

SURFACE OWNER ANTERO RESOURCES CORPORATION ACREAGE 127.86 ACRES +/-
OIL & GAS ROYALTY OWNER B.F. REED ET UX; MARK A. BURNETT; VICTOR I. KESTER ET AL; LEASE ACREAGE 130 AC.±; 256 AC.±; 50 AC.±;
R.E. SMITH ET UX; GLENN D. SMITH; FANNY D. DAVIS ET AL; UNION NATIONAL BANK OF W.V.; 50.5 AC.±; 32 AC.±; 74 AC.±; 25.5 AC.±;
ENID McCULLOUGH ET VIR; LINDA J. DESCHER; W.S. WRIGHT ET AL 103 AC.±; 76 AC.±; 48.75 AC.±

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

TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,428' TVD 17,910' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - GT CORPORATION SYSTEM
ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

TM-Par	Surface Owner
16-08	June Griffin
16-8.1	Roger Griffin
16-8.2	Roger Griffin
16-16	Harry Vannoy
16-17	Charles Straight
16-17.3	Charles Kimball
16-18	Albert Bebee
16-19	Todd Orr
19-02	Antero Resources Corp.
19-03	Larry Stevens
19-04	John Owens
19-05	Paul Weekley
19-06	Paul Weekley
19-07	Patricia Montgomery
19-08	John Lewis Jr.
19-09	Robert Walsh
19-10	Judith Malloy
19-27	Harvey Burns
19-42	Anna Barola
19-45	Terrence Fraser
19-46	Terrence Fraser
19-47	Ronnie Wilson Jr.
19-48	Lloyd Talkington
19-50	Ronald Cumberland
19-51	Randall Anderson
19-52	Harold Yost
19-53.1	Larry Marable
19-61	Kenneth Mason
19-63	Jacqueline Wichman Trust
19-64	Kenneth Mason
19-64.1	Michael Kimball
19-65	Bobby Griffin
19-66	Matthew March
19-67	Smith Morris Trust
19-68	Randall Cluston
19-69	Randall Cluston
19-70	Randall Cumberland
19-73	Dena Pratt
19-74	Randall Cluston
22-04	Jacqueline Wichman Trust
22-05	William Middleton
22-06	Thomas Allen
22-07	Thomas Allen
22-08	George Kithau
22-10	Thomas Allen
22-12	Terry Dotson
22-12.1	Margaret Dotson
22-13	Warren Putnam
22-13.1	Jacqueline Wichman
Grant District - Doddridge County	
01-01	Steven Read
04-01	Warren Putnam

435' TO BOTTOM HOLE

LONGITUDE 80°45'00"

LONGITUDE 80°45'00"

COUNTY NAME

PERMIT

LATITUDE 39°25'00"

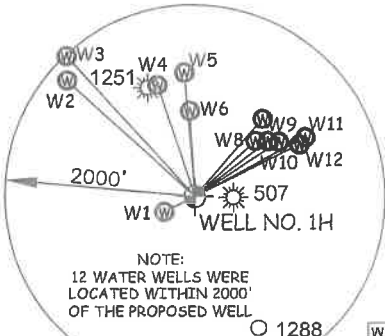
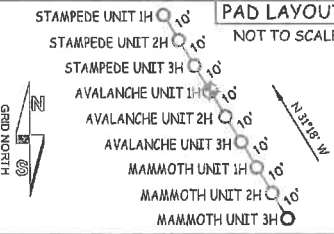
10,795'

LATITUDE 39°22'30" 7,396' TO BOTTOM HOLE

Antero Resources Corporation Well No. Avalanche Unit 1H

AS DRILLED DATA: WELL 1H TOP HOLE INFORMATION: N: 331,480ft E: 1,635,992ft LAT: 39°24'10.60" LON: 80°47'17.52" BOTTOM HOLE INFORMATION: N: 320,820ft E: 1,639,243ft LAT: 39°22'25.70" LON: 80°46'34.18" WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS: WELL 1H TOP HOLE INFORMATION: N: 4,361,524m E: 518,250m BOTTOM HOLE INFORMATION: N: 4,358,293m E: 519,295m



NOTE: 12 WATER WELLS WERE LOCATED WITHIN 2000' OF THE PROPOSED WELL

W1	S 03°23' W	359.2'
W2	N 47°45' W	1801.9'
W3	N 42°23' W	1983.8'
W4	N 18°18' W	1224.0'
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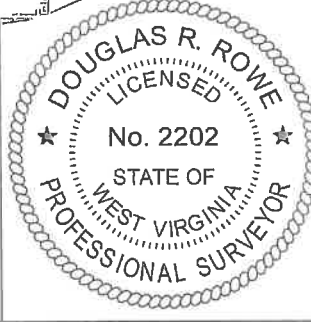
STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

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

JOB # 17-038WA DRAWING # AVALANCHE1HAD SCALE 1" = 2000' MINIMUM DEGREE OF ACCURACY SUBMETER PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

LEGEND: Surface Owner Boundary Lines +/- Interior Surface Tracts +/- Proposed Well Path As Drilled Well Path DOUGLAS R. ROWE P.S. 2202 DATE 09/03/20 OPERATOR'S WELL# AVALANCHE UNIT #1H

NOTE: 1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD. 2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ANTERO RESOURCES CORPORATION. 3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION. 4. WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES. 5. WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.



WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 - 095 - 02603 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT LOCATION: ELEVATION 743' - AS BUILT WATERSHED McELROY CREEK QUADRANGLE TH - SHIRLEY 7.5' BH - WEST UNION 7.5' DISTRICT McELROY COUNTY TYLER SURFACE OWNER ANTERO RESOURCES CORPORATION ACREAGE 127.86 ACRES +/- OIL & GAS ROYALTY OWNER B.F. REED ET UX; MARK A. BURNETT; VICTOR I. KESTER ET AL; R.E. SMITH ET UX; GLENN D. SMITH; FANNY D. DAVIS ET AL; UNION NATIONAL BANK OF W.V.; ENID McCULLOUGH ET VIR; LINDA J. DESCHER; W.S. WRIGHT ET AL LEASE ACREAGE 130 AC.±; 256 AC.±; 50 AC.±; 50.5 AC.±; 32 AC.±; 74 AC.±; 25.5 AC.±; 103 AC.±; 76 AC.±; 48.75 AC.± PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,428' TVD 17,910' MD WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM ADDRESS 1615 WYNKOOP ST. ADDRESS 5400 D BIG TYLER ROAD DENVER, CO 80202 CHARLESTON, WV 25313 FORM WW-6

McElroy District - Tyler County

7M-Par	Surface Owner
16-08	June Griffin
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16-8.2	Roger Griffin
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16-17	Charles Straight
16-17.3	Charles Kimball
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Grant District - Doddridge County	
01-01	Steven Reed
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435' TO BOTTOM HOLE LONGITUDE 80°45'00" 4,998' LONGITUDE 80°45'00"

WV NORTH ZONE GRID NORTH

1H BOTTOM HOLE

1H TOP HOLE

TYLER COUNTY DODDRIDGE COUNTY

COUNTY NAME PERMIT