

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

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WV GEOLOGICAL SURVEY
MORGANTOWN, WV

API 47-017-06230 County Doddridge District Greenbrier
Quad Big Isaac Pad Name Marsden Pad Field/Pool Name _____
Farm name Marsden, Wilma J. & Richard E. Well Number Golden Unit 2H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,344,279.080m Easting 534,637.302m
Landing Point of Curve Northing 4,344,327.38m Easting 534,995.94m
Bottom Hole Northing 4,341,681.170m Easting 535,932.547m

Elevation (ft) 971' 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 05/28/2013 Date drilling commenced 7/6/2013 Date drilling ceased 12/16/2013
Date completion activities began 3/10/2014 Date completion activities ceased 4/25/2014
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 191' Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths N
Coal depth(s) ft 680' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: _____

API 47-017 - 06230 Farm name Marsden, Wilma J. & Richard E. Well number Golden Unit 2H

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"	90'	New	94#/H-40	N/A	Y
Surface	17-1/2"	13-3/8"	336'	New	48#/H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2531'	New	36#/J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	16,957'	New	23#/P-110	N/A	
Tubing		2-3/8"	7436'	New	4.7#/N-80	N/A	N/A
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	424 sx	15.6	1.18	86 Cu. Ft.	0'	8 hrs
Surface	Class A	391 sx	15.6	1.18	233 Cu. Ft.	0'	8 hrs
Coal							
Intermediate 1	Class A	936 sx	15.6	1.18	793 Cu. Ft.	0'	8 hrs
Intermediate 2							
Intermediate 3							
Production	Class H	1053 sx (Lead), 1519 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.80 (Tail)	3420 Cu. Ft.	~500' into Intermediate Casing	8 hrs
Tubing							

Drillers TD (ft) 16,957' MD, 7023' TVD (BHL), 7155' TVD (Deepest Point Drilled) Loggers TD (ft) 16,944' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6948'

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Flossie Unit 2H API# 47-017-06144). Please reference the wireline logs submitted with Form WR-35 for the Flossie Unit 2H. A Cement Bond Log has been included with this submittal.

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

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

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

*PLEASE SEE ATTACHED EXHIBIT 1

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)

*PLEASE SEE ATTACHED EXHIBIT 2

Please insert additional pages as applicable.

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>7112' (Top)</u> TVD	<u>7508' (Top)</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

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Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

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

OPEN FLOW Gas 9478 mcfpd Oil --- bpd NGL --- bpd Water --- bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
*PLEASE SEE ATTACHED EXHIBIT 3					

Please insert additional pages as applicable.

Drilling Contractor Patterson - UTI Drilling Company, LLC
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company Rush Wellsite Services
Address 600 Alpha Drive City Canonsburg State PA Zip 15317

Cementing Company Allied Oil & Gas Services, LLC
Address 1036 East Main Street City Bridgeport State WV Zip 26330

Stimulating Company U.S. Well Services
Address 533 Industrial Park Drive City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Natalie Komp Telephone 303-357-6820
Signature _____ Title Permitting Agent Date 1/16/2015

API 47-017-06230 Farm Name Marsden, Richard E. & Wilma J. Well Number Golden Unit 2H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	10-Mar-14	16699'	16866'	60	Marcellus
2	10-Mar-14	16501'	16668'	60	Marcellus
3	11-Mar-14	16303'	16470'	60	Marcellus
4	11-Mar-14	16105'	16272'	60	Marcellus
5	11-Mar-14	15907'	16074'	60	Marcellus
6	12-Mar-14	15709'	15876'	60	Marcellus
7	12-Mar-14	15511'	15678'	60	Marcellus
8	12-Mar-14	15313'	15480'	60	Marcellus
9	12-Mar-14	15115'	15282'	60	Marcellus
10	13-Mar-14	14917'	15084'	60	Marcellus
11	13-Mar-14	14720'	14887'	60	Marcellus
12	13-Mar-14	14522'	14689'	60	Marcellus
13	13-Mar-14	14324'	14491'	60	Marcellus
14	14-Mar-14	14126'	14293'	60	Marcellus
15	14-Mar-14	13928'	14095'	60	Marcellus
16	14-Mar-14	13730'	13897'	60	Marcellus
17	14-Mar-14	13532'	13699'	60	Marcellus
18	15-Mar-14	13334'	13501'	60	Marcellus
19	15-Mar-14	13136'	13303'	60	Marcellus
20	15-Mar-14	12938'	13105'	60	Marcellus
21	16-Mar-14	12740'	12907'	60	Marcellus
22	16-Mar-14	12542'	12709'	60	Marcellus
23	16-Mar-14	12344'	12511'	60	Marcellus
24	16-Mar-14	12146'	12313'	60	Marcellus
25	17-Mar-14	11948'	12115'	60	Marcellus
26	17-Mar-14	11750'	11917'	60	Marcellus
27	17-Mar-14	11553'	11719'	60	Marcellus
28	17-Mar-14	11355'	11522'	60	Marcellus
29	18-Mar-14	11157'	11324'	60	Marcellus
30	18-Mar-14	10959'	11126'	60	Marcellus
31	18-Mar-14	10761'	10928'	60	Marcellus
32	18-Mar-14	10563'	10730'	60	Marcellus
33	19-Mar-14	10365'	10532'	60	Marcellus
34	19-Mar-14	10167'	10334'	60	Marcellus
35	19-Mar-14	9969'	10136'	60	Marcellus
36	19-Mar-14	9771'	9938'	60	Marcellus
37	20-Mar-14	9573'	9740'	60	Marcellus
38	20-Mar-14	9375'	9542'	60	Marcellus
39	20-Mar-14	9177'	9344'	60	Marcellus
40	20-Mar-14	8979'	9146'	60	Marcellus
41	20-Mar-14	8540'	8711'	60	Marcellus
42	21-Mar-14	8338'	8509'	60	Marcellus
43	21-Mar-14	8135'	8306'	60	Marcellus
44	21-Mar-14	7933'	8104'	60	Marcellus
45	21-Mar-14	7730'	7901'	60	Marcellus
46	21-Mar-14	7528'	7699'	60	Marcellus

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EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	10-Mar-14	70.1	8,288	NA	4,717	155,895	6,517	N/A
2	10-Mar-14	71.0	8,475	5,852	6,120	200,840	5,930	N/A
3	11-Mar-14	74.0	8,543	6,726	5,792	209,100	6,493	N/A
4	11-Mar-14	76.4	8,234	5,901	5,822	222,710	6,648	N/A
5	11-Mar-14	72.2	8,355	5,746	5,203	236,140	6,753	N/A
6	12-Mar-14	71.0	8,533	6,034	5,746	235,440	6,288	N/A
7	12-Mar-14	74.8	8,314	5,873	5,729	238,420	6,171	N/A
8	12-Mar-14	76.6	8,290	6,147	5,030	242,590	6,159	N/A
9	12-Mar-14	77.0	8,387	6,163	5,473	235,520	6,177	N/A
10	13-Mar-14	74.6	8,332	6,490	5,820	207,669	6,222	N/A
11	13-Mar-14	77.4	7,862	5,985	5,689	234,010	6,140	N/A
12	13-Mar-14	76.0	8,047	6,061	5,968	233,060	6,138	N/A
13	13-Mar-14	75.0	8,332	5,771	5,638	233,940	6,121	N/A
14	14-Mar-14	77.3	8,160	5,939	5,575	240,740	6,102	N/A
15	14-Mar-14	79.5	7,939	5,775	5,613	240,110	6,095	N/A
16	14-Mar-14	73.0	8,220	6,458	5,712	234,120	6,118	N/A
17	14-Mar-14	75.0	8,334	5,852	5,968	239,060	6,056	N/A
18	15-Mar-14	76.0	8,296	6,060	5,229	234,220	6,068	N/A
19	15-Mar-14	78.5	7,972	6,014	5,030	226,170	6,040	N/A
20	15-Mar-14	76.0	8,140	6,095	5,633	237,710	6,025	N/A
21	16-Mar-14	80.0	8,199	6,091	4,979	215,220	6,034	N/A
22	16-Mar-14	77.1	7,936	5,827	5,084	241,720	6,030	N/A
23	16-Mar-14	77.6	8,066	6,026	5,548	232,560	5,993	N/A
24	16-Mar-14	79.0	8,086	6,276	5,953	237,280	6,041	N/A
25	17-Mar-14	75.9	8,011	6,496	5,930	225,210	5,865	N/A
26	17-Mar-14	77.1	7,910	6,195	6,038	236,650	5,975	N/A

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EXHIBIT 2 (CONT.)

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)
27	17-Mar-14	79.0	8,115	6,439	5,823	236,620	5,947	N/A
28	17-Mar-14	78.0	7,911	6,207	5,832	237,120	5,950	N/A
29	18-Mar-14	74.7	7,885	5,994	5,574	235,850	5,921	N/A
30	18-Mar-14	76.2	7,859	6,199	5,605	235,850	5,927	N/A
31	18-Mar-14	78.0	7,734	5,864	5,361	236,320	5,895	N/A
32	18-Mar-14	73.0	6,938	5,804	5,592	182,540	6,403	N/A
33	19-Mar-14	77.1	7,676	5,733	5,567	235,750	5,847	N/A
34	19-Mar-14	77.2	7,627	5,803	5,319	233,450	5,866	N/A
35	19-Mar-14	74.2	7,881	5,526	5,346	203,100	5,443	N/A
36	19-Mar-14	77.0	7,800	6,061	5,859	237,240	5,766	N/A
37	20-Mar-14	76.0	7,662	6,248	5,733	237,660	5,769	N/A
38	20-Mar-14	75.7	8,092	5,944	5,327	219,900	5,590	N/A
39	20-Mar-14	76.4	7,734	6,092	5,880	235,240	5,745	N/A
40	20-Mar-14	76.5	7,623	6,218	6,164	236,050	5,762	N/A
41	20-Mar-14	55.0	8,008	7,967	4,530	31,000	4,206	N/A
42	21-Mar-14	78.0	7,672	6,051	5,169	236,140	5,724	N/A
43	21-Mar-14	75.9	7,630	6,174	5,755	235,150	5,700	N/A
44	21-Mar-14	77.0	7,409	5,611	5,684	235,832	5,687	N/A
45	21-Mar-14	77.0	7,403	5,817	6,034	235,044	5,688	N/A
46	21-Mar-14	77.0	7,605	6,119	5,248	236,820	5,673	N/A
		76.9	7,990	6,083	5,575			

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EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)	ROCK TYPE	FLUID PRODUCED
Undifferentiated Pennsylvanian Sedimentary Sequence	0'	1970'	0'	1970'	Sandstone/ Shale/ Siltstone	
Big Lime	est. 1971'	2093'	est. 1971'	2093'	Limestone	
Big Injun	est. 2094'	2457'	est. 2094'	2457'	Sandstone	
Gantz Sand	est. 2458'	2584'	est. 2458'	2584'	Sandstone	
Fifty Foot Sandstone	est. 2585'	2674'	est. 2585'	2674'	Sandstone	
Gordon	est. 2675'	2840'	est. 2675'	2840'	Sandstone	
Fifth Sandstone	est. 2841'	2881'	est. 2841'	2881'	Sandstone	
Bayard	est. 2882'	3587'	est. 2882'	3587'	Sandstone	
Speechley	est. 3588'	3879'	est. 3588'	3879'	Sandstone	
Baltown	est. 3880'	4361'	est. 3880'	4361'	Sandstone	
Bradford	est. 4362'	4960'	est. 4362'	4984'	Sandstone	
Benson	est. 4961'	5246'	est. 4985'	5285'	Sandstone	
Alexander	est. 5247'	5436'	est. 5286'	5489'	Sandstone	
Elk	est. 5437'	6014'	est. 5490'	6124'	Sandstone	
Rhinestreet	est. 6015'	6532'	est. 6125'	6734'	Sandstone	
Sycamore	6533'	6764'	6735'	6985'	Sandstone	
Middlesex	6765'	6939'	6986'	7192'	Shale	
Burkett	6940'	6973'	7193'	7239'	Shale	Gas
Tully	6974'	7066'	7240'	7395'	Limestone	N/A
Hamilton	7067'	7111'	7396'	7507'	Shale	N/A
Marcellus	7112'	7155'	7508'	8405'	Shale	Gas

*Please note Antero determines formation tops based on wireline logs that are only run on the initial well (Please referenece Flossie Unit 2H API# 47-017-06144). The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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