

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

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JAN 27 2015

WV GEOLOGICAL SURVEY
MORGANTOWN, WV

API 47 - 017 - 06183 County Doddridge District Greenbrier
Quad Big Isaac Pad Name Marsden Pad Field/Pool Name _____
Farm name Marsden, Richard E. & Wilma J. Well Number Welling 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 4,344,238.018m Easting 534,633.196m
Landing Point of Curve Northing 4,344,132.68m Easting 534,853.71m
Bottom Hole Northing 4,341,633.428m Easting 535,735.893m

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 3/28/2013 Date drilling commenced 8/19/2013 Date drilling ceased 1/5/2014
Date completion activities began 2/14/2014 Date completion activities ceased 5/3/2014
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 No
Salt water depth(s) ft None Identified Void(s) encountered (Y/N) depths No
Coal depth(s) ft 680' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by: _____

Salem (102) 6-6

API 47-017 - 06183 Farm name Marsden, Richard E. & Wilma J. Well number Welling 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	Yes
Surface	17- 1/2"	13- 3/8"	345'	New	48# J-55	N/A	Yes
Coal							
Intermediate 1	12-1/4"	9-5/8"	2461'	New	36# J-55	N/A	Yes
Intermediate 2							
Intermediate 3							
Production	8-3/4"	5-1/2"	16453'	New	23# P-110	N/A	Yes
Tubing		2-3/8"	7143'		4.7#	N/A	N/A
Packer type and depth set							

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	425 sx	15.6	1.18	86	0	8 Hrs.
Surface	Class A	159 sx	15.6	1.18	240	0	8 Hrs.
Coal							
Intermediate 1	Class A	671 sx	15.6	1.18	771	0	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1020 sx (Lead) 1480 sx (Tail)	13.5 Lead 15.2 Tail	1.44 Lead 1.80 Tail	3320	~500 into intermediate casing	8 Hrs.
Tubing							

Drillers TD (ft) 16453' MD, 7022' TVD (BHL), 7117' (Deepest Point Drilled) Loggers TD (ft) 16441' MD

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

Plug back procedure N/A

Kick off depth (ft) 6522'

** This is a subsequent well. Antero only runs wireline logs on the first 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).

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 _____

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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 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 EXHIBIT 2**

Please insert additional pages as applicable.

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
Marcellus	7086' (TOP)	TVD	7387' (TOP) 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 14040 mcfpd Oil --- bpd NGL --- bpd Water --- 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)
	0		0		

*** PLEASE SEE EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Patterson - UTI Drilling Company LLC
Address 207 Carlton Drive City Eight 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 St. City Bridgeport State WV Zip 26330

Stimulating Company US Well Services
Address 533 Industrial Park Dr. City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Kara Quackenbush Telephone 303-357-7233
Signature *Kara Quackenbush* Title Permit Representative Date 1/15/2014

API 47-033-05738 Farm Name Varner, James A. Well Number Varner Unit 2H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	14-Mar-14	17241'	17433'	60	Marcellus
2	5-Mar-14	17039'	17209'	60	Marcellus
3	5-Mar-14	16837'	17007'	60	Marcellus
4	6-Mar-14	16634'	16805'	60	Marcellus
5	6-Mar-14	16432'	16603'	60	Marcellus
6	7-Mar-14	16230'	16400'	60	Marcellus
7	7-Mar-14	16028'	16198'	60	Marcellus
8	8-Mar-14	15825'	15996'	60	Marcellus
9	8-Mar-14	15623'	15794'	60	Marcellus
10	8-Mar-14	15421'	15591'	60	Marcellus
11	9-Mar-14	15218'	15389'	60	Marcellus
12	9-Mar-14	15016'	15187'	60	Marcellus
13	10-Mar-14	14814'	14984'	60	Marcellus
14	10-Mar-14	14612'	14782'	60	Marcellus
15	10-Mar-14	14409'	14580'	60	Marcellus
16	11-Mar-14	14207'	14378'	60	Marcellus
17	11-Mar-14	14005'	14175'	60	Marcellus
18	12-Mar-14	13803'	13973'	60	Marcellus
19	12-Mar-14	13600'	13771'	60	Marcellus
20	13-Mar-14	13398'	13569'	60	Marcellus
21	13-Mar-14	13196'	13366'	60	Marcellus
22	14-Mar-14	12993'	13164'	60	Marcellus
23	14-Mar-14	12791'	12962'	60	Marcellus
24	15-Mar-14	12589'	12759'	60	Marcellus
25	15-Mar-14	12387'	12557'	60	Marcellus
26	15-Mar-14	12184'	12355'	60	Marcellus
27	16-Mar-14	11982'	12153'	60	Marcellus
28	16-Mar-14	11780'	11950'	60	Marcellus
29	16-Mar-14	11481'	11650'	60	Marcellus
30	17-Mar-14	11280'	11449'	60	Marcellus
31	17-Mar-14	11,080	11249'	60	Marcellus
32	17-Mar-14	10879'	11048'	60	Marcellus
33	18-Mar-14	10678'	10847'	60	Marcellus
34	18-Mar-14	10478'	10647'	60	Marcellus
35	18-Mar-14	10277'	10446'	60	Marcellus
36	19-Mar-14	10076'	10246'	60	Marcellus
37	19-Mar-14	9876'	10045'	60	Marcellus
38	19-Mar-14	9675'	9844'	60	Marcellus
39	19-Mar-14	9474'	9644'	60	Marcellus
40	20-Mar-14	9274'	9443'	60	Marcellus
41	20-Mar-14	9073'	9242'	60	Marcellus
42	20-Mar-14	8872'	9042'	60	Marcellus
43	20-Mar-14	8672'	8841'	60	Marcellus
44	21-Mar-14	8471'	8640'	60	Marcellus
45	21-Mar-14	8271'	8440'	60	Marcellus
46	21-Mar-14	8070'	8239'	60	Marcellus
47	21-Mar-14	7869'	8038'	60	Marcellus

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Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	14-Feb-14	16,193	16,362	60	Marcellus
2	22-Mar-14	15,994	16,162	60	Marcellus
3	22-Mar-14	15,794	15,962	60	Marcellus
4	22-Mar-14	15,594	15,763	60	Marcellus
5	23-Mar-14	15,395	15,563	60	Marcellus
6	23-Mar-14	15,195	15,363	60	Marcellus
7	23-Mar-14	14,995	15,164	60	Marcellus
8	24-Mar-14	14,796	14,964	60	Marcellus
9	24-Mar-14	14,596	14,764	60	Marcellus
10	24-Mar-14	14,396	14,565	60	Marcellus
11	25-Mar-14	14,197	14,365	60	Marcellus
12	25-Mar-14	13,997	14,165	60	Marcellus
13	25-Mar-14	13,797	13,966	60	Marcellus
14	25-Mar-14	13,598	13,766	60	Marcellus
15	25-Mar-14	13,398	13,566	60	Marcellus
16	26-Mar-14	13,198	13,367	60	Marcellus
17	26-Mar-14	12,999	13,167	60	Marcellus
18	26-Mar-14	12,799	12,967	60	Marcellus
19	27-Mar-14	12,599	12,768	60	Marcellus
20	27-Mar-14	12,399	12,568	60	Marcellus
21	27-Mar-14	12,200	12,368	60	Marcellus
22	28-Mar-14	12,000	12,169	60	Marcellus
23	28-Mar-14	11,800	11,969	60	Marcellus
24	28-Mar-14	11,601	11,769	60	Marcellus
25	28-Mar-14	11,401	11,569	60	Marcellus
26	28-Mar-14	11,201	11,370	60	Marcellus
27	29-Mar-14	11,002	11,170	60	Marcellus
28	29-Mar-14	10,802	10,970	60	Marcellus
29	29-Mar-14	10,602	10,771	60	Marcellus
30	29-Mar-14	10,403	10,571	60	Marcellus
31	29-Mar-14	10,203	10,371	60	Marcellus
32	30-Mar-14	10,003	10,172	60	Marcellus
33	30-Mar-14	9,804	9,972	60	Marcellus
34	30-Mar-14	9,604	9,772	60	Marcellus
35	31-Mar-14	9,404	9,573	60	Marcellus
36	31-Mar-14	9,205	9,373	60	Marcellus
37	31-Mar-14	9,005	9,173	60	Marcellus
38	31-Mar-14	8,805	8,974	60	Marcellus
39	31-Mar-14	8,606	8,774	60	Marcellus
40	1-Apr-14	8,406	8,574	60	Marcellus
41	1-Apr-14	8,206	8,375	60	Marcellus
42	1-Apr-14	8,007	8,175	60	Marcellus
43	1-Apr-14	7,807	7,975	60	Marcellus
44	1-Apr-14	7,607	7,776	60	Marcellus
45	2-Apr-14	7,407	7,576	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	22-Mar-14	65.9	8,306	6,551	5,835	143,650	6,781	N/A
2	22-Mar-14	74.0	8,222	5,967	5,624	227,158	6,155	N/A
3	22-Mar-14	75.0	8,158	5,984	5,463	228,600	6,133	N/A
4	22-Mar-14	72.0	8,074	6,340	5,309	228,740	6,120	N/A
5	23-Mar-14	73.0	8,133	6,029	5,774	227,726	6,103	N/A
6	23-Mar-14	73.0	8,088	5,912	5,784	164,197	5,921	N/A
7	23-Mar-14	73.0	7,995	5,950	5,860	227,640	6,068	N/A
8	24-Mar-14	73.1	7,995	6,237	5,577	220,800	6,053	N/A
9	24-Mar-14	75.3	8,274	6,389	5,644	233,379	6,037	N/A
10	24-Mar-14	73.5	7,980	6,025	5,645	247,410	6,025	N/A
11	25-Mar-14	73.2	7,885	6,586	5,211	236,850	6,018	N/A
12	25-Mar-14	73.0	8,087	3,246	5,734	197,600	6,213	N/A
13	25-Mar-14	75.0	8,212	6,100	5,643	227,913	6,005	N/A
14	25-Mar-14	71.3	7,907	6,095	5,346	242,530	5,983	N/A
15	25-Mar-14	70.7	7,932	5,799	5,531	226,930	5,977	N/A
16	26-Mar-14	73.5	7,782	5,832	5,521	184,900	6,545	N/A
17	27-Mar-14	65.9	8,149	5,765	5,544	203,396	6,460	N/A
18	27-Mar-14	71.0	8,164	5,147	5,022	199,850	6,506	N/A
19	27-Mar-14	74.3	7,895	6,238	5,228	227,530	5,957	N/A
20	27-Mar-14	75.0	8,058	6,254	5,587	241,400	5,909	N/A
21	28-Mar-14	74.3	8,003	6,207	5,966	239,570	5,904	N/A
22	28-Mar-14	75.9	7,915	6,162	5,910	228,240	5,847	N/A
23	28-Mar-14	76.0	7,402	5,929	6,016	228,919	5,908	N/A
24	28-Mar-14	72.0	7,665	6,299	5,887	227,735	5,871	N/A
25	28-Mar-14	76.1	7,644	5,639	6,000	228,800	5,890	N/A
26	28-Mar-14	77.0	7,734	5,611	6,034	229,750	5,862	N/A
27	29-Mar-14	76.0	7,630	6,506	4,687	228,971	5,872	N/A
28	29-Mar-14	75.0	7,550	5,723	5,668	228,701	5,820	N/A
29	29-Mar-14	75.0	7,597	6,121	5,540	227,177	5,793	N/A
30	29-Mar-14	78.6	7,658	5,670	5,379	239,740	5,845	N/A
31	30-Mar-14	76.8	7,440	5,688	4,619	229,300	5,834	N/A
32	30-Mar-14	76.0	7,594	6,177	6,085	228,336	5,277	N/A
33	30-Mar-14	78.2	7,830	6,205	4,515	232,710	5,898	N/A
34	30-Mar-14	77.0	7,983	6,006	5,714	233,480	5,820	N/A
35	31-Mar-14	74.2	7,924	5,878	5,741	232,810	5,734	N/A
36	31-Mar-14	78.0	7,918	6,806	5,175	216,160	5,590	N/A
37	31-Mar-14	78.0	7,556	6,182	6,043	227,940	5,693	N/A
38	31-Mar-14	77.5	7,803	6,524	5,964	232,900	5,708	N/A
39	31-Mar-14	78.9	7,611	6,135	5,771	230,910	5,677	N/A
40	1-Apr-14	78.0	7,503	5,911	5,752	227,940	5,650	N/A
41	1-Apr-14	79.0	7,209	5,774	7,905	227,980	5,648	N/A
42	1-Apr-14	80.0	7,338	6,153	5,485	228,240	5,414	N/A
43	1-Apr-14	78.5	7,246	5,887	5,639	225,190	5,657	N/A
44	1-Apr-14	78.2	7,211	5,958	5,696	233,490	5,614	N/A
45	2-Apr-14	78.2	7,193	5,973	5,215	222,190	5,562	N/A
AVG=		75	7,810	5,990	5,629	10,075,378	266,357	TOTAL

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'	6541'	est. 6125'	6541'	Sandstone	
Sycamore	6542'	6768'	6542'	6779'	Sandstone	
Middlesex	6769'	6914'	6780'	6961'	Shale	
Burkett	6915'	6941'	6962'	7005'	Shale	Gas
Tully	6942'	7038'	7006'	7224'	Limestone	N/A
Hamilton	7039'	7085'	7225'	7386'	Shale	N/A
Marcellus	7086'	7117'	7387'	7745'	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 #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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