

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 - 033 - 05738 County Harrison District Tenmile  
Quad Salem Pad Name Varner West Pad Field/Pool Name \_\_\_\_\_  
Farm name Varner, James A. Well Number Varner 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 4,345,144.728m Easting 539,090.930m  
Landing Point of Curve Northing 4,345,207.72m Easting 539,363.77m  
Bottom Hole Northing 4,343,229.634m Easting 541,457.778m

Elevation (ft) 1453' 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 4/22/2013 Date drilling commenced 7/26/2013 Date drilling ceased 1/6/2014  
Date completion activities began 1/27/2014 Date completion activities ceased 4/19/2014  
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 196' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 740', 1222', 2300' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft 720', 1420', 2020' Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

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

API 47-033 - 05738

Farm name Varner, James A.

Well number Varner 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"	40'	New	94#/H-40	N/A	Y
Surface	17-1/2"	13-3/8"	419'	New	48#/H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2655'	New	36#/J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	17,501'	New	23#/P-110	N/A	Y
Tubing		2-3/8"	7810'		4.7#/N-80	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 <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	193 sx	15.6	1.18	38 Cu. Ft.	0'	8 hrs
Surface	Class A	495 sx	15.6	1.18	291 Cu. Ft.	0'	8 hrs
Coal							
Intermediate 1	Class A	972 sx	15.6	1.18	832 Cu. Ft.	0'	8 hrs
Intermediate 2							
Intermediate 3							
Production	Class H	825 sx (Lead), 1153 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.8 (Tail)	3516 Cu. Ft.	~500' into Intermediate Casing	8 hrs
Tubing							

Drillers TD (ft) 17,501' MD, 7414' TVD (BHL), 7621' TVD (Deepest Point Drilled)

Loggers TD (ft) 17,199' MD

Deepest formation penetrated Marcellus

Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 7395'

\*\* This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Gideon Unit 1H API# 47-033-05722). Please reference the wireline logs submitted with Form WR-35 for the Gideon Unit 1H. 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

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WAS WELL COMPLETED AS SHOT HOLE  Yes  No

DETAILS \_\_\_\_\_

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WAS WELL COMPLETED OPEN HOLE?  Yes  No

DETAILS \_\_\_\_\_

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WERE TRACERS USED  Yes  No

TYPE OF TRACER(S) USED Radioactive & Chemical





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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## 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	14-Mar-14	73.0	7,598	5,480	4,172	190,020	7,072	N/A
2	5-Mar-14	65.0	8,202	6,722	3,672	107,160	7,090	N/A
3	5-Mar-14	73.0	8,438	6,019	4,327	259,250	7,167	N/A
4	6-Mar-14	74.0	8,271	6,448	3,147	219,500	6,735	N/A
5	6-Mar-14	74.0	8,111	6,609	3,730	258,770	6,985	N/A
6	7-Mar-14	73.0	8,474	6,491	3,358	187,850	6,716	N/A
7	7-Mar-14	72.0	8,299	6,233	4,091	263,000	7,149	N/A
8	8-Mar-14	76.0	8,380	5,482	4,041	259,860	6,650	N/A
9	8-Mar-14	74.0	8,123	5,486	4,545	231,300	7,170	N/A
10	8-Mar-14	76.0	2,265	5,683	4,002	240,200	7,207	N/A
11	9-Mar-14	68.0	7,488	5,186	4,885	175,390	7,123	N/A
12	9-Mar-14	77.0	8,192	5,486	4,120	259,800	6,601	N/A
13	10-Mar-14	78.0	8,246	5,511	4,338	258,700	6,580	N/A
14	10-Mar-14	76.0	8,285	5,200	4,292	258,780	6,856	N/A
15	10-Mar-14	76.0	7,857	6,105	4,191	258,800	6,494	N/A
16	11-Mar-14	78.0	8,202	5,515	4,170	259,250	6,582	N/A
17	11-Mar-14	79.0	7,551	5,590	4,781	259,200	6,465	N/A
18	12-Mar-14	78.0	8,300	5,633	4,363	258,800	6,553	N/A
19	12-Mar-14	79.0	8,212	5,890	5,071	259,550	6,551	N/A
20	13-Mar-14	76.0	7,940	5,686	5,869	258,800	6,454	N/A
21	13-Mar-14	75.0	8,205	6,291	5,404	201,500	6,988	N/A
22	14-Mar-14	74.0	8,120	5,987	5,482	258,000	6,565	N/A
23	14-Mar-14	45.0	8,362	6,655	6,269	22,080	6,193	N/A
24	15-Mar-14	74.0	8,080	5,937	4,946	181,715	6,238	N/A
25	15-Mar-14	78.0	8,186	5,962	4,352	258,900	6,468	N/A
26	15-Mar-14	76.0	7,895	5,833	4,513	257,800	6,377	N/A
27	16-Mar-14	79.0	8,014	5,808	5,229	255,400	6,361	N/A
28	16-Mar-14	75.0	7,864	5,683	4,478	243,820	6,833	N/A
29	16-Mar-14	75.0	6,898	6,484	3,669	249,400	6,399	N/A
30	17-Mar-14	80.0	7,597	5,211	3,977	199,500	6,910	N/A
31	17-Mar-14	79.0	7,949	6,548	4,145	258,400	6,398	N/A
32	17-Mar-14	76.0	7,865	6,144	4,636	258,400	6,992	N/A
33	18-Mar-14	81.0	7,701	5,708	4,241	258,800	6,338	N/A
34	18-Mar-14	80.0	7,819	5,922	4,649	260,700	6,004	N/A
35	18-Mar-14	80.0	7,839	4,427	5,164	259,500	6,222	N/A
36	19-Mar-14	70.0	7,843	6,133	4,531	257,300	6,238	N/A
37	19-Mar-14	80.0	7,564	6,022	4,799	260,800	6,322	N/A
38	19-Mar-14	78.0	7,992	7,095	4,510	261,500	6,302	N/A
39	19-Mar-14	80.0	7,919	6,552	5,407	258,300	6,184	N/A
40	20-Mar-14	80.0	7,937	6,359	5,536	258,700	6,174	N/A
41	20-Mar-14	80.0	7,747	6,226	4,370	261,300	6,237	N/A
42	20-Mar-14	79.0	7,774	5,604	4,585	257,600	6,266	N/A
43	20-Mar-14	80.0	7,327	5,894	4,942	259,300	6,132	N/A
44	21-Mar-14	80.0	7,439	5,969	5,257	259,200	5,944	N/A
45	21-Mar-14	80.0	7,387	6,223	4,706	259,200	6,065	N/A
46	21-Mar-14	79.0	7,270	5,457	4,113	259,100	6,175	N/A
47	21-Mar-14	80.0	7,091	4,592	4,070	259,500	6,099	N/A
		75.9	7,790	5,897	4,535			

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

**EXHIBIT 3**

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)	ROCK TYPE	FLUID PRODUCED
Undifferentiated	0'	2334'	0'	2334'	Sandstone	
Big Lime	est. 2335'	2385'	est. 2335'	2385'	Limestone	
Big Injun	est. 2386'	2814'	est. 2386'	2814'	Sandstone	
Gantz Sand	est. 2815'	2903'	est. 2815'	2903'	Sandstone	
Fifty Foot Sandstone	est. 2904'	3020'	est. 2904'	3020'	Sandstone	
Gordon	est. 3021'	3340'	est. 3021'	3340'	Sandstone	
Fifth Sandstone	est. 3341'	3374'	est. 3341'	3374'	Sandstone	
Bayard	est. 3375'	4147'	est. 3375'	4147'	Sandstone	
Speechley	est. 4148'	4456'	est. 4148'	4456'	Sandstone	
Baltown	est. 4457'	4791'	est. 4457'	4791'	Sandstone	
Bradford	est. 4792'	5315'	est. 4792'	5316'	Sandstone	
Benson	est. 5316'	5605'	est. 5317'	5612'	Sandstone	
Alexander	est. 5606'	5833'	est. 5613'	5852'	Sandstone	
Elk	est. 5834'	6295'	est. 5853'	6356'	Sandstone	
Rhinestreet	est. 6296'	6971'	est. 6357'	6972'	Sandstone	
Sycamore	6986'	7199'	7114'	7350'	Sandstone	
Middlesex	7200'	7350'	7351'	7531'	Shale	
Burkett	7351'	7377'	7532'	7568'	Shale	Gas
Tully	7378'	7476'	7569'	7728'	Limestone	N/A
Hamilton	7477'	7528'	7729'	7848'	Shale	N/A
Marcellus	7529'	7563'	7849'	8034'	Shale	Gas

\*Please note Antero determines formation tops based on wireline logs that are only run on the initial well (Please reference Gideon Unit 1H API# 47-033-05722). The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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