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WR-35
Rev. 8/23/13

WV GEOLOGICAL SURVEY
MORGANTOWN, WV

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

API 47-85-09996 County Ritchie District Union
Quad Pullman 7.5' Pad Name John Campbell North Pad Field/Pool Name ----
Farm name Campbell, John A. & Linda J. Well Number Snodgrass Unit 2H
Operator (as registered with the OOG) Antero Resources Corportion
Address 1615 Wynkoop St. 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 4336865m Easting 506048m
Landing Point of Curve Northing 4336668.58m Easting 510273.72m
Bottom Hole Northing 4334597m Easting 506636m

Elevation (ft) 1015' 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 10/31/2012 Date drilling commenced 4/19/2014 Date drilling ceased 7/22/2014
Date completion activities began 8/13/2014 Date completion activities ceased 9/7/2014
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 251', 266' 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 1599', 1687', 1761' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:

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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	30"	20"	40'	New	94# H-40	N/A	Y
Surface	17- 1/2"	13- 3/8"	411'	New	48# H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2563'	New	36# J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	13871'	New	20# P-110	N/A	Y
Tubing		2-3/8"	6495'		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 ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	200 sx	15.6	1.18	38	0'	8 Hrs.
Surface	Class A	494 sx	15.6	1.18	286	0'	8 Hrs.
Coal							
Intermediate 1	Class A	997 sx	15.6	1.18	803	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	885 sx (Lead) 1191 sx (Tail)	13.5 Lead 15.2 Tail	1.44 Lead 8.30 Tail	2705'	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 13871' MD, 6384' TVD (BHL) Loggers TD (ft) 13871'

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

Plug back procedure N/A

Kick off depth (ft) 5689'

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Pullman Unit 2H API#47-085-09978). Please reference the wireline logs submitted with Form WR-35 for Pullman 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 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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PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6281' (TOP) TVD	6536' (TOP) MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3000 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 6172 mcfpd Oil 9 bpd NGL --- bpd Water --- bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	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 Precision Drilling Company, LLC
Address 2640 Reach Rd. City Williamsport State PA Zip 17701

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

Cementing Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Kara Quackenbush Telephone 303-357-7233
Signature *[Signature]* Title Permit Representative Date 6/1/2015

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	13-Aug-14	13,652	13,780	60	Marcellus
2	13-Aug-14	13,502	13,629	60	Marcellus
3	14-Aug-14	13,351	13,479	60	Marcellus
4	15-Aug-14	13,201	13,328	60	Marcellus
5	15-Aug-14	13,050	13,177	60	Marcellus
6	16-Aug-14	12,899	13,027	60	Marcellus
7	16-Aug-14	12,749	12,876	60	Marcellus
8	16-Aug-14	12,598	12,726	60	Marcellus
9	17-Aug-14	12,448	12,575	60	Marcellus
10	18-Aug-14	12,297	12,421	60	Marcellus
11	18-Aug-14	12,147	12,274	60	Marcellus
12	19-Aug-14	11,996	12,123	60	Marcellus
13	19-Aug-14	11,845	11,973	60	Marcellus
14	19-Aug-14	11,695	11,822	60	Marcellus
15	20-Aug-14	11,544	11,672	60	Marcellus
16	20-Aug-14	11,394	11,521	60	Marcellus
17	20-Aug-14	11,243	11,371	60	Marcellus
18	20-Aug-14	11,093	11,220	60	Marcellus
19	21-Aug-14	10,942	11,069	60	Marcellus
20	21-Aug-14	10,791	10,919	60	Marcellus
21	21-Aug-14	10,641	10,768	60	Marcellus
22	21-Aug-14	10,490	10,618	60	Marcellus
23	22-Aug-14	10,340	10,467	60	Marcellus
24	22-Aug-14	10,189	10,317	60	Marcellus
25	23-Aug-14	10,039	10,166	60	Marcellus
26	23-Aug-14	9,888	10,015	60	Marcellus
27	23-Aug-14	9,737	9,865	60	Marcellus
28	23-Aug-14	9,587	9,714	60	Marcellus
29	24-Aug-14	9,436	9,564	60	Marcellus
30	24-Aug-14	9,286	9,413	60	Marcellus
31	24-Aug-14	9,135	9,263	60	Marcellus
32	24-Aug-14	8,985	9,112	60	Marcellus
33	25-Aug-14	8,834	8,961	60	Marcellus
34	25-Aug-14	8,683	8,811	60	Marcellus
35	25-Aug-14	8,533	8,660	60	Marcellus
36	26-Aug-14	8,382	8,510	60	Marcellus
37	26-Aug-14	8,232	8,359	60	Marcellus
38	26-Aug-14	8,081	8,209	60	Marcellus
39	26-Aug-14	7,931	8,058	60	Marcellus
40	27-Aug-14	7,780	7,907	60	Marcellus
41	27-Aug-14	7,629	7,757	60	Marcellus
42	27-Aug-14	7,479	7,606	60	Marcellus
43	27-Aug-14	7,328	7,456	60	Marcellus
44	27-Aug-14	7,178	7,305	60	Marcellus
45	27-Aug-14	7,027	7,155	60	Marcellus
46	28-Aug-14	6,877	7,004	60	Marcellus
47	28-Aug-14	6,726	6,853	60	Marcellus
48	28-Aug-14	6,575	6,703	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	13-Aug-14	74.3	7,764	5,852	4,662	152,700	6,506	N/A
2	13-Aug-14	65.2	7,798	5,845	7,760	51,900	6,072	N/A
3	14-Aug-14	63.5	7,931	5,837	4,099	66,700	6,457	N/A
4	15-Aug-14	71.3	6,919	5,918	4,016	91,700	6,435	N/A
5	15-Aug-14	68.3	7,173	5,209	4,787	109,800	6,347	N/A
6	16-Aug-14	66.8	7,078	6,017	3,603	111,800	6,533	N/A
7	16-Aug-14	70.2	7,445	6,116	4,519	118,600	6,553	N/A
8	16-Aug-14	63.9	7,071	5,691	2,733	128,000	6,451	N/A
9	17-Aug-14	58.5	7,459	6,086	8,663	84,500	5,964	N/A
10	18-Aug-14	62.7	7,313	5,801	3,783	73,000	5,831	N/A
11	18-Aug-14	63.6	7,572	5,734	6,429	98,400	5,692	N/A
12	19-Aug-14	68.9	6,874	6,120	4,337	151,200	6,438	N/A
13	19-Aug-14	66.2	7,333	5,852	4,377	115,500	6,256	N/A
14	19-Aug-14	67.3	7,294	5,814	3,589	111,900	6,249	N/A
15	20-Aug-14	63.2	7,582	6,489	4,445	74,200	5,685	N/A
16	20-Aug-14	57.6	8,227	6,130	4,337	2,500	5,856	N/A
17	20-Aug-14	68.2	6,841	5,835	3,050	115,800	6,456	N/A
18	20-Aug-14	55.5	7,445	6,290	4,651	43,500	5,869	N/A
19	21-Aug-14	67.6	6,751	5,854	3,523	200,900	6,390	N/A
20	21-Aug-14	68.4	6,639	6,409	3,217	211,400	6,395	N/A
21	21-Aug-14	66.8	7,095	5,986	3,494	117,500	6,358	N/A
22	21-Aug-14	62.1	7,420	5,935	4,629	60,800	5,711	N/A
23	22-Aug-14	61.7	6,689	5,672	7,961	67,400	3,675	N/A
24	22-Aug-14	66.2	6,235	5,280	4,131	157,100	5,832	N/A
25	23-Aug-14	64.7	6,342	5,522	3,533	121,500	6,378	N/A
26	23-Aug-14	65.6	6,430	5,485	4,519	154,000	5,877	N/A
27	23-Aug-14	64.5	6,321	5,496	4,968	141,300	5,468	N/A
28	23-Aug-14	66.5	6,404	5,399	3,830	170,400	5,659	N/A
29	24-Aug-14	65.4	6,569	5,479	4,717	116,100	5,508	N/A
30	24-Aug-14	60.6	6,743	6,798	4,431	122,400	6,243	N/A
31	24-Aug-14	67.5	6,610	5,750	4,841	187,000	5,601	N/A
32	24-Aug-14	65.7	6,327	5,340	4,607	179,900	6,147	N/A
33	25-Aug-14	65.6	6,304	5,853	6,587	175,900	5,795	N/A
34	25-Aug-14	65.8	6,189	5,350	4,995	184,900	5,497	N/A
35	25-Aug-14	65.7	5,995	5,569	4,761	227,700	5,772	N/A
36	26-Aug-14	66.7	6,356	5,996	4,651	177,900	6,091	N/A
37	26-Aug-14	65.8	6,322	5,984	5,348	230,000	5,857	N/A
38	26-Aug-14	65.7	6,418	6,094	4,749	196,300	5,493	N/A
39	26-Aug-14	65.9	6,553	5,255	5,582	177,800	5,871	N/A
40	27-Aug-14	66.5	6,303	6,155	5,302	227,500	5,687	N/A
41	27-Aug-14	65.9	6,313	5,902	5,046	225,900	5,745	N/A
42	27-Aug-14	66.7	6,312	5,663	5,294	225,000	5,678	N/A
43	27-Aug-14	67.1	6,385	5,725	5,592	230,900	5,794	N/A
44	27-Aug-14	70.1	6,374	6,039	4,652	230,500	5,754	N/A
45	27-Aug-14	69.3	6,233	5,723	5,229	229,700	5,587	N/A
46	28-Aug-14	66.8	6,341	5,287	5,220	229,100	5,547	N/A
47	28-Aug-14	66.4	6,255	5,963	4,640	227,800	6,836	N/A
48	28-Aug-14	66.2	6,033	5,811	3,830	198,200	5,219	N/A
	AVG=	65.7	6,800	5,821	4,744	7,104,500	285,115	TOTAL

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EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Fresh Water	251'	N/A	251'	N/A
Fresh Water	266'	N/A	266'	N/A
Silty Sandstone	0	81	0	81
Silty Shale	est. 81	421	est. 81	421
Sandstone	est. 421	661	est. 421	661
Shale	est. 661	701	est. 661	701
Sandstone	est. 701	746	est. 701	746
Shale	est. 746	821	est. 746	821
Silty Shale	est. 821	921	est. 821	921
Limestone	est. 921	926	est. 921	926
Shale	est. 926	1321	est. 926	1321
Sandstone	est. 1321	1361	est. 1321	1361
Shale	est. 1361	1491	est. 1361	1491
Silty Sandstone	est. 1491	1599	est. 1491	1599
Coal	est. 1599	1607	est. 1599	1607
Silty Shale	est. 1607	1687	est. 1607	1687
Coal	est. 1687	1689	est. 1687	1689
Sandstone	est. 1689	1761	est. 1689	1761
Coal	est. 1761	1763	est. 1761	1763
Sandstone	est. 1763	1821	est. 1763	1821
Shale	est. 1821	1901	est. 1821	1905
Big Lime	1901	1962	1905	1967
Big Injun	1962	2215	1967	2221
Gantz Sand	2215	2377	2221	2383
Fifty Foot Sandstone	2377	2585	2383	2592
Gordon	2585	2863	2592	2870
Fifth Sandstone	2863	2957	2870	2964
Bayard	2957	3359	2964	3366
Warren	3359	3738	3366	3745
Speechley	3738	3905	3745	3912
Baltown	3905	4435	3912	4442
Bradford	4435	4795	4442	4802
Benson	4795	5045	4802	5052
Alexander	5045	5259	5052	5266
Elk	5259	5646	5266	5653
Rhinestreet	5646	5964	5653	6004
Sycamore	5964	6129	6004	6229
Middlesex	6129	6233	6229	6412
Burkett	6233	6263	6412	6481
Tully	6263	6281	6481	6536
Marcellus	6281	NA	6536	NA

*Please note Antero determines formation tops based on wireline 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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Hydraulic Fracturing Fluid Product Component Information Disclosure



Job Start Date:	8/13/2014
Job End Date:	8/28/2014
State:	West Virginia
County:	Richie
API Number:	47-085-09996-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Snodgrass Unit 2H
Longitude:	-80.93015300
Latitude:	39.18091700
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,384
Total Base Water Volume (gal):	11,974,830
Total Base Non Water Volume:	0

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Service Abstract Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	ANTERO RESOURCES	Water		7732-18-5	100.00000	93.05942	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	4.22132	
			Aluminum Oxide	1344-28-1	1.10000	0.04648	
			Titanium Oxide	13463-67-7	0.10000	0.00423	
			Iron Oxide	1309-37-1	0.10000	0.00423	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	1.84555	
			Aluminum Oxide	1344-28-1	1.10000	0.02032	
			Iron Oxide	1309-37-1	0.10000	0.00185	
			Titanium Oxide	13463-67-7	0.10000	0.00185	
Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	0.54652	
			Aluminum Oxide	1344-28-1	1.10000	0.00602	

	Proprietary	Proprietary	1.00000	0.00001
	Proprietary	Proprietary	1.00000	0.00001
	Proprietary	Proprietary	1.00000	0.00001
	Proprietary	Proprietary	1.00000	0.00001
	Organophylic Clay	68953-58-2		

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

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)

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