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WR-35
Rev. 8/23/13

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WV GEOLOGICAL SURVEY
MORGANTOWN, WV

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

API 47-017-06317 County Doddridge District West Union
Quad Smithburg 7.5' Pad Name Nash Pad Field/Pool Name _____
Farm name Haug, Robert M. et al Well Number McConnell 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 4,351,840m Easting 524,803m
Landing Point of Curve Northing 4,351,808.06m Easting 525,299.92m
Bottom Hole Northing 4,349,759m Easting 525,986m

Elevation (ft) 1,381' 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 09/23/2013 Date drilling commenced 12/20/2013 Date drilling ceased 03/12/2014
Date completion activities began 05/02/2014 Date completion activities ceased 08/21/2014
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 206', 222' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1561', 1854' Void(s) encountered (Y/N) depths None
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths None
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	24"	20"	40'	New	94#; J-55	N/A	Yes
Surface	17 1/2"	13 3/8"	426'	New	48#; H-40	N/A	Yes*
Coal							
Intermediate 1	12 1/4"	9 5/8"	2,577'	New	36#; J-55	N/A	Yes
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	14,965'	New	20#; P-110	N/A	No
Tubing						N/A	
Packer type and depth set		N/A					

Comment Details *Initial surface cement (469 sx) dropped back, top job (161 sx) was performed to bring cement back to surface.

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	100 sx	15.6	1.18	38	0'	8 Hrs.
Surface	Class A	629 sx*	15.6	1.18	296	0'	8 Hrs.
Coal							
Intermediate 1	Class A	1,009 sx	15.6	1.18	807	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1,043 sx (Lead); 1,216 sx (Tail)	13.5 (Lead); 15.2 (Tail)	1.44 (Lead); 1.80 (Tail)	2,953	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 14,965' MD, 7,121' TVD (BHL) 7,196' TVD (Deepest Point Drilled) Loggers TD (ft) 14,916'
Deepest formation penetrated Marcellus Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) 6,944'

**This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Olivia Unit 1H, API #47-017-06332). Please reference the wireline logs submitted with Form WR-35 for the Olivia 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 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	7,132' (top)	TVD	7,537' (top) MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3550 psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas 9,547 mcfpd Oil 17 bpd NGL _____ bpd Water 457 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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	0		0		

*** PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Frontier Drilling, LLC
Address 562 spring run road City Pennsboro State WV Zip 26415

Logging Company Cased Hole Solutions
Address 100 Arentzen Blvd. City Charleroi State PA Zip 15022

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

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

Please insert additional pages as applicable.

Completed by Megan Darling Telephone 303-357-7230
Signature Megan C. Darling Title Permitting Agent Date 07/17/2015

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EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	2-May-14	14,712	14,879	60	Marcellus
2	5-Jul-14	14,514	14,681	60	Marcellus
3	5-Jul-14	14,316	14,483	60	Marcellus
4	5-Jul-14	14,118	14,285	60	Marcellus
5	6-Jul-14	13,920	14,087	60	Marcellus
6	6-Jul-14	13,722	13,889	60	Marcellus
7	6-Jul-14	13,523	13,691	60	Marcellus
8	6-Jul-14	13,325	13,492	60	Marcellus
9	7-Jul-14	13,127	13,294	60	Marcellus
10	7-Jul-14	12,929	13,096	60	Marcellus
11	8-Jul-14	12,731	12,898	60	Marcellus
12	8-Jul-14	12,533	12,700	60	Marcellus
13	8-Jul-14	12,335	12,502	60	Marcellus
14	8-Jul-14	12,137	12,304	60	Marcellus
15	9-Jul-14	11,939	12,106	60	Marcellus
16	9-Jul-14	11,740	11,908	60	Marcellus
17	9-Jul-14	11,542	11,709	60	Marcellus
18	10-Jul-14	11,344	11,511	60	Marcellus
19	10-Jul-14	11,146	11,313	60	Marcellus
20	10-Jul-14	10,948	11,115	60	Marcellus
21	10-Jul-14	10,750	10,917	60	Marcellus
22	10-Jul-14	10,552	10,719	60	Marcellus
23	11-Jul-14	10,354	10,521	60	Marcellus
24	11-Jul-14	10,155	10,323	60	Marcellus
25	11-Jul-14	9,957	10,124	60	Marcellus
26	11-Jul-14	9,759	9,926	60	Marcellus
27	12-Jul-14	9,561	9,728	60	Marcellus
28	12-Jul-14	9,363	9,530	60	Marcellus
29	12-Jul-14	9,165	9,332	60	Marcellus
30	12-Jul-14	8,967	9,134	60	Marcellus
31	12-Jul-14	8,769	8,936	60	Marcellus
32	13-Jul-14	8,570	8,738	60	Marcellus
33	13-Jul-14	8,372	8,539	60	Marcellus
34	13-Jul-14	8,174	8,341	60	Marcellus
35	13-Jul-14	7,976	8,143	60	Marcellus
36	14-Jul-14	7,778	7,945	60	Marcellus
37	14-Jul-14	7,580	7,747	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	4-Jul-14	75.0	6,857	5,169	5,315	247,500	6,572	N/A
2	5-Jul-14	77.0	7,053	5,132	5,247	248,800	6,552	N/A
3	5-Jul-14	78.0	7,555	5,236	5,515	251,660	6,551	N/A
4	5-Jul-14	77.0	7,112	5,365	5,711	247,500	6,441	N/A
5	6-Jul-14	76.0	7,065	5,105	5,532	242,950	6,469	N/A
6	6-Jul-14	78.0	7,022	5,061	5,350	255,840	6,404	N/A
7	6-Jul-14	77.0	7,119	5,312	5,046	246,460	6,379	N/A
8	6-Jul-14	76.0	7,093	5,145	5,742	248,980	6,374	N/A
9	7-Jul-14	77.0	7,219	5,163	5,564	247,000	6,379	N/A
10	7-Jul-14	78.0	7,231	5,242	5,758	245,635	8,840	N/A
11	8-Jul-14	78.0	6,965	5,353	5,243	241,750	6,327	N/A
12	8-Jul-14	78.0	7,029	4,969	5,293	244,070	6,326	N/A
13	8-Jul-14	77.0	7,002	5,005	5,318	240,000	6,302	N/A
14	8-Jul-14	73.0	6,919	5,281	5,113	246,500	6,551	N/A
15	9-Jul-14	79.0	7,070	5,201	5,155	243,575	6,287	N/A
16	9-Jul-14	79.0	6,994	5,113	5,518	243,730	6,258	N/A
17	9-Jul-14	80.0	6,796	5,247	5,428	251,850	6,235	N/A
18	10-Jul-14	76.0	6,814	5,408	5,704	251,260	6,267	N/A
19	10-Jul-14	79.0	7,003	5,262	4,381	246,260	6,238	N/A
20	10-Jul-14	79.0	6,840	5,228	5,482	242,980	6,204	N/A
21	10-Jul-14	77.0	6,792	5,085	4,821	251,550	6,188	N/A
22	10-Jul-14	77.0	6,743	5,232	5,304	244,910	6,228	N/A
23	11-Jul-14	77.0	6,866	5,266	5,033	217,650	6,072	N/A
24	11-Jul-14	79.4	6,627	5,014	4,531	250,690	6,190	N/A
25	11-Jul-14	79.6	6,682	5,022	4,639	247,580	6,132	N/A
26	11-Jul-14	78.0	6,460	5,171	5,441	246,440	6,126	N/A
27	12-Jul-14	76.0	6,552	5,447	5,342	211,330	5,778	N/A
28	12-Jul-14	77.9	6,823	5,230	4,279	244,520	6,167	N/A
29	12-Jul-14	79.4	6,819	5,074	4,083	260,710	6,093	N/A
30	12-Jul-14	77.7	6,657	5,342	5,458	239,560	6,094	N/A
31	12-Jul-14	77.0	6,487	5,538	5,664	251,200	6,081	N/A
32	13-Jul-14	79.2	6,674	5,224	4,468	267,140	6,054	N/A
33	13-Jul-14	79.5	6,691	5,205	5,383	253,410	6,035	N/A
34	13-Jul-14	60.0	6,308	5,219	5,271	250,750	6,026	N/A
35	13-Jul-14	78.0	6,557	5,298	5,399	253,250	6,012	N/A
36	14-Jul-14	78.0	6,493	5,531	5,102	247,540	5,994	N/A
37	14-Jul-14	79.0	6,426	6,010	4,391	246,260	5,980	N/A
AVG=		77.2	6,849	5,241	5,190	9,118,790	233,206	TOTAL

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EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD) From
	From Surface	From Surface	From Surface	Surface
Fresh Water	206'	N/A	206'	N/A
Fresh Water	222'	N/A	222'	N/A
Shale	0	37	0	37
Siltstone	est. 37	317	est. 37	317
Sandstone	est. 317	332	est. 317	332
Siltstone/ Trace Coal	est. 332	397	est. 332	397
Sandstone	est. 397	557	est. 397	557
Silty Limestone	est. 557	677	est. 557	677
Sandstone	est. 677	717	est. 677	717
Siltstone	est. 717	797	est. 717	797
Limestone/Shale	est. 797	837	est. 797	837
Siltstone/ Sandstone	est. 837	897	est. 837	897
Limestone	est. 897	917	est. 897	917
Sandstone/ Siltstone	est. 917	977	est. 917	977
Limestone	est. 977	997	est. 977	997
Siltstone/ Limestone	est. 997	1,357	est. 997	1,357
Shale	est. 1357	1,397	est. 1357	1,397
Sandstone	est. 1397	1,437	est. 1397	1,437
Shale/ Sandstone	est. 1437	1,617	est. 1437	1,617
Sandstone	est. 1617	1,677	est. 1617	1,677
Sandstone/ Trace Coal	est. 1677	1,717	est. 1677	1,717
Sandstone / Siltstone	est. 1717	2,142	est. 1717	2,146
Big Lime	2,142	2,279	2,146	2,283
Big Injun	2,302	2,708	2,306	2,712
Gantz Sand	2,731	2,818	2,735	2,822
Fifty Foot Sandstone	2,841	2,915	2,845	2,919
Gordon	2,938	3,211	2,942	3,215
Fifth Sandstone	3,234	3,488	3,238	3,492
Bayard	3,511	3,610	3,515	3,614
Warren	3,633	3,992	3,637	3,998
Speechley	4,015	4,435	4,021	4,451
Baltown	4,458	4,868	4,474	4,907
Bradford	4,891	5,252	4,930	5,326
Benson	5,275	5,531	5,349	5,634
Alexander	5,554	5,788	5,657	5,917
Elk	5,811	6,300	5,940	6,479
Rhinestreet	6,323	6,647	6,502	6,859
Sycamore	6,647	6,883	6,859	7,126
Middlesex	6,883	7,030	7,126	7,321
Burkett	7,030	7,057	7,321	7,365
Tully	7,057	7,132	7,365	7,537
Marcellus	7,132	NA	7,537	NA

*Please note Antero determines shallow formation tops based on mud and/or 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



Frac Focus
Chemical Disclosure Registry



Job Start Date:	7/14/2014
Job End Date:	7/14/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06317-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	McConnell Unit 1H
Longitude:	-80.71228100
Latitude:	39.31560600
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	7,197
Total Base Water Volume (gal):	9,794,652
Total Base Non Water Volume:	451,268

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
Water	Antero Resources	Base Fluid	Water	7732-18-5	100.00000	89.70665	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	10.01398	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.50000	0.08806	
WFRA-405	U.S. Well Services, LLC	Friction Reducer	Hydrogen Chloride	7641-01-1	18.00000	0.02104	
			Anionic Polyacrylamide	Proprietary		0.02466	
			Water	7732-18-5	40.00000	0.02466	
			Petroleum Distillates	64742-47-8	22.00000	0.01985	
			Crystalline Salt	12125-02-9	5.00000	0.00308	
			Ethoxylated alcohol blend	Proprietary	5.00000	0.00308	
LGC-15	U.S. Well Services, LLC	Gelling Agents	Guar Gum	9000-30-0	50.00000	0.03356	
			Petroleum Distillates	64742-47-8	60.00000	0.03178	
			Suspending agent (solid)	14808-60-7	3.00000	0.00513	

SI-1000	J.S. Well Services, LLC	Scale Inhibitor	Surfactant	68439-51-0	3.00000	0.00201
			Anionic Copolymer	Proprietary		0.00402
			Ethylene Glycol	107-21-1	20.00000	0.00364
			Water	7732-18-5	30.00000	0.00303
K-BAC 1020	J.S. Well Services, LLC	Anti-Bacterial Agent				
			2,2-dibromo-3-nitropropionamide	10222-01-2	20.00000	0.00630
			Deionized Water	7732-18-5	28.00000	0.00360
AP One	J.S. Well Services, LLC	Gel Breakers				
			Ammonium Persulfate	7727-54-0	100.00000	0.00133
AI-300	J.S. Well Services, LLC	Acid Corrosion Inhibitors				
			Ethylene Glycol	107-21-1	31.00000	0.00023
			N,N-Dimethylformamide	68-12-2	15.00000	0.00007
			Cinnamaldehyde	104-55-2	5.00000	0.00006
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	13.00000	0.00006
			2-Butoxyethanol	111-76-2	7.00000	0.00005
			Water	7732-18-5	20.00000	0.00002
			Ethoxylated Nonylphenol	68412-54-4	5.00000	0.00002
			Triethyl Phosphate	78-40-0	3.00000	0.00001
			isopropyl Alcohol	67-63-0	3.00000	0.00001

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS

* 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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