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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 47-017-06312 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 Heflin 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 4,351,843m Easting 524,802m
Landing Point of Curve Northing 4,352,136.36m Easting 525,193.39m
Bottom Hole Northing 4,354,325m Easting 524,450m

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 01/15/2014 Date drilling ceased 02/12/2014
Date completion activities began 05/03/2014 Date completion activities ceased 08/12/2014
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

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API 47-017 - 06312

Farm name Haug, Robert M. et al

Well number Heflin Unit 1H

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	94.5#; J-55	N/A	Yes
Surface	17 1/2"	13 3/8"	428'	New	48#; JT-55	N/A	Yes*
Coal							
Intermediate 1	12 1/4"	9 5/8"	2,592'	New	36#; J-55	N/A	Yes
Intermediate 2							
Intermediate 3							
Production	8 3/4" & 8 1/2"	5 1/2"	15,815'	New	23#; P-110	N/A	Yes
Tubing		2 3/8"	7,603'		4.7#; N-80	N/A	
Packer type and depth set		N/A					

Comment Details *First attempt to bring surface casing string (470 sx) to surface failed. Top-off job was performed (390 sx) which brought cement 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	105 sx	15.6	1.18	38	0'	8 Hrs.
Surface	Class A	860 sx*	15.6	1.18	297	0'	8 Hrs.
Coal							
Intermediate 1	Class A	894 sx	15.6	1.18	812	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1,049 sx (Lead); 1,342 sx (Tail)	13.5 (Lead); 15.2 (Tail)	1.3 (Lead); 1.86 (Tail)	3,144	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15,817' MD, 7,224' TVD (BHL) 7,292' TVD (Deepest Point Drilled)

Loggers TD (ft) 15,769'

Deepest formation penetrated Marcellus

Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 7,078'

**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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API 47-017-06312 Farm Name Haug, Robert M. et al Well Number Heflin Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	3-May-14	15,581	15,747	60	Marcellus
2	12-Jun-14	15,384	15,550	60	Marcellus
3	13-Jun-14	15,186	15,353	60	Marcellus
4	13-Jun-14	14,989	15,155	60	Marcellus
5	14-Jun-14	14,792	14,958	60	Marcellus
6	15-Jun-14	14,595	14,761	60	Marcellus
7	15-Jun-14	14,397	14,564	60	Marcellus
8	15-Jun-14	14,200	14,367	60	Marcellus
9	16-Jun-14	14,003	14,169	60	Marcellus
10	16-Jun-14	13,806	13,972	60	Marcellus
11	16-Jun-14	13,609	13,775	60	Marcellus
12	16-Jun-14	13,411	13,578	60	Marcellus
13	17-Jun-14	13,214	13,380	60	Marcellus
14	17-Jun-14	12,776	12,947	60	Marcellus
15	17-Jun-14	12,573	12,744	60	Marcellus
16	18-Jun-14	12,370	12,541	60	Marcellus
17	18-Jun-14	12,167	12,338	60	Marcellus
18	18-Jun-14	11,965	12,136	60	Marcellus
19	18-Jun-14	11,762	11,933	60	Marcellus
20	18-Jun-14	11,559	11,730	60	Marcellus
21	19-Jun-14	11,356	11,527	60	Marcellus
22	19-Jun-14	11,153	11,324	60	Marcellus
23	19-Jun-14	10,950	11,121	60	Marcellus
24	20-Jun-14	10,747	10,918	60	Marcellus
25	20-Jun-14	10,544	10,716	60	Marcellus
26	20-Jun-14	10,342	10,513	60	Marcellus
27	20-Jun-14	10,139	10,310	60	Marcellus
28	21-Jun-14	9,936	10,107	60	Marcellus
29	21-Jun-14	9,733	9,904	60	Marcellus
30	21-Jun-14	9,530	9,701	60	Marcellus
31	21-Jun-14	9,327	9,498	60	Marcellus
32	21-Jun-14	9,124	9,296	60	Marcellus
33	22-Jun-14	8,922	9,093	60	Marcellus
34	22-Jun-14	8,719	8,890	60	Marcellus
35	22-Jun-14	8,516	8,687	60	Marcellus
36	23-Jun-14	8,313	8,484	60	Marcellus
37	23-Jun-14	8,110	8,281	60	Marcellus
38	23-Jun-14	7,907	8,078	60	Marcellus
39	23-Jun-14	7,704	7,876	60	Marcellus

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API 47-017-06312 Farm Name Haug, Robert M. et al Well Number Heflin Unit 1H

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	11-Jun-14	77.0	7,643	N/A	5,158	259,080	6,669	N/A
2	12-Jun-14	76.0	7,964	5,722	5,657	243,544	7,358	N/A
3	13-Jun-14	73.0	7,019	5,484	4,903	265,000	6,777	N/A
4	13-Jun-14	77.0	7,300	5,442	5,706	183,000	7,384	N/A
5	14-Jun-14	78.5	7,527	5,588	4,698	212,290	6,702	N/A
6	15-Jun-14	74.0	7,100	5,326	4,281	251,000	6,726	N/A
7	15-Jun-14	73.0	7,196	4,799	5,220	266,000	6,687	N/A
8	15-Jun-14	76.0	7,468	5,487	4,163	258,020	6,673	N/A
9	16-Jun-14	81.0	7,559	5,624	4,922	270,340	6,353	N/A
10	16-Jun-14	74.0	7,156	5,422	5,180	265,000	6,669	N/A
11	16-Jun-14	74.0	7,211	5,096	4,806	256,000	6,657	N/A
12	16-Jun-14	79.8	7,507	5,301	4,645	210,300	6,874	N/A
13	17-Jun-14	78.0	7,503	5,477	5,574	266,800	6,742	N/A
14	17-Jun-14	78.0	7,413	5,289	5,223	265,000	6,673	N/A
15	17-Jun-14	80.7	7,341	5,459	4,523	257,010	6,572	N/A
16	18-Jun-14	79.2	7,288	5,347	4,793	273,800	6,540	N/A
17	18-Jun-14	78.0	7,335	5,456	5,277	263,700	6,757	N/A
18	18-Jun-14	79.0	7,426	5,460	4,985	268,375	6,622	N/A
19	18-Jun-14	80.4	7,185	5,337	5,099	241,610	7,105	N/A
20	18-Jun-14	79.7	7,208	5,392	4,845	258,210	6,482	N/A
21	19-Jun-14	78.0	7,655	5,469	4,402	242,000	6,183	N/A
22	19-Jun-14	79.0	7,140	2,534	4,654	240,550	6,471	N/A
23	19-Jun-14	79.4	7,219	5,298	5,082	270,780	6,445	N/A
24	20-Jun-14	79.0	7,114	5,433	5,075	266,000	6,614	N/A
25	20-Jun-14	79.0	7,041	5,467	5,441	261,700	6,518	N/A
26	20-Jun-14	80.0	6,917	5,339	4,676	270,500	6,517	N/A
27	20-Jun-14	78.9	6,782	5,242	5,132	264,240	6,401	N/A
28	21-Jun-14	79.2	6,922	5,223	4,984	269,450	6,397	N/A
29	21-Jun-14	79.0	6,769	5,359	4,975	258,950	6,452	N/A
30	21-Jun-14	78.0	6,861	5,172	4,228	265,050	6,461	N/A
31	21-Jun-14	79.0	7,137	5,341	4,122	264,200	6,443	N/A
32	21-Jun-14	79.0	7,121	5,430	4,634	263,780	6,338	N/A
33	22-Jun-14	79.0	7,131	5,152	4,263	266,600	6,317	N/A
34	22-Jun-14	78.0	6,770	5,161	5,492	267,150	6,330	N/A
35	22-Jun-14	79.0	6,710	5,517	5,170	263,600	6,306	N/A
36	23-Jun-14	79.0	6,762	5,568	4,135	266,900	6,295	N/A
37	23-Jun-14	78.0	6,670	5,321	4,798	266,860	6,272	N/A
38	23-Jun-14	80.0	6,497	5,415	49,330	268,640	6,057	N/A
39	23-Jun-14	79.0	6,509	5,323	4,350	267,860	6,242	N/A
AVG=		78.1	7,156	5,297	6,015	10,038,889	256,081	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	2,120	Est. 1717	2,120
Big Lime	2,120	2,279	2,120	2,279
Big Injun	2,279	2,706	2,279	2,706
Gantz Sand	2,706	2,845	2,706	2,845
Fifty Foot Sandstone	2,845	2,919	2,845	2,919
Gordon	2,919	3,219	2,919	3,219
Fifth Sandstone	3,219	3,502	3,219	3,502
Bayard	3,502	3,610	3,502	3,610
Warren	3,610	4,078	3,610	4,083
Speechley	4,078	4,430	4,083	4,452
Baltown	4,430	4,870	4,452	4,944
Bradford	4,870	5,258	4,944	5,380
Benson	5,258	5,512	5,380	5,667
Alexander	5,512	5,717	5,667	5,897
Elk	5,717	6,425	5,897	6,691
Rhinestreet	6,425	6,645	6,691	6,940
Sycamore	6,645	6,866	6,940	7,198
Middlesex	6,866	7,028	7,198	7,422
Burkett	7,028	7,055	7,422	7,469
Tully	7,055	7,135	7,469	7,661
Marcellus	7,135	NA	7,661	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 (please reference wireline logs from Olivia Unit 1H, API #47-017-06332). 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:	6/11/2014
Job End Date:	6/23/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06312-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Heflin Unit 1H
Longitude:	-80.71228100
Latitude:	39.31563300
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	7,240
Total Base Water Volume (gal):	10,755,402
Total Base Non Water Volume:	496,410

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	Base Fluid	Water	7732-18-5	100.00000	89.68661	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	10.03739	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.50000	0.08382	
LGC-15	U.S. Well Services, LLC	Gelling Agents	Hydrogen Chloride	7641-01-1	18.00000	0.02002	
			Guar Gum	9000-30-0	50.00000	0.03700	
			Petroleum Distillates	64742-47-8	60.00000	0.03504	
			Suspending agent (solid)	14808-60-7	3.00000	0.00566	
			Surfactant	68439-51-0	3.00000	0.00222	
WFRA-405	U.S. Well Services, LLC	Friction Reducer	Anionic Polyacrylamide	Proprietary		0.02324	
			Water	7732-18-5	40.00000	0.02324	
			Petroleum Distillates	64742-47-8	22.00000	0.01871	
			Crystalline Salt	12125-02-9	5.00000	0.00290	

SI-1000	J.S. Well Services, LLC	Scale Inhibitor	Ethoxylated alcohol blend	Proprietary	5.00000	0.00290
			Anionic Copolymer	Proprietary		0.00407
			Ethylene Glycol	107-21-1	20.00000	0.00368
			Water	7732-18-5	30.00000	0.00307
X-BAC 1020	J.S. Well Services, LLC	Anti-Bacterial Agent				
			2,2-dibromo-3-nitropropionamide	10222-01-2	20.00000	0.00542
			Deionized Water	7732-18-5	28.00000	0.00310
AP One	J.S. Well Services, LLC	Gel Breakers				
			Ammonium Persulfate	7727-54-0	100.00000	0.00139
AI-300	J.S. Well Services, LLC	Acid Corrosion Inhibitors				
			Ethylene Glycol	107-21-1	31.00000	0.00022
			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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