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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 - 06213 County Doddridge District Central
Quad West Union 7.5' Pad Name McGill Pad Field/Pool Name ---
Farm name Brown, Mary F. Well Number Vonda Unit 1H
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 4347275m Easting 513048m
Landing Point of Curve Northing 4347314.51m Easting 513615.98m
Bottom Hole Northing 4344407m Easting 514956m

Elevation (ft) 1165' 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 6/11/2013 Date drilling ceased 7/13/2014
Date completion activities began 7/21/2014 Date completion activities ceased 10/1/2014
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 200' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1835' Void(s) encountered (Y/N) depths No
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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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	26"	20"	40'	New	94# H-40	N/A	Y
Surface	17- 1/2"	13- 3/8"	400'	New	48# H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2616'	New	36# J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	18079'	New	23# P-110	N/A	Y
Tubing		2-3/8"	7138'		5.95# N-80	N/A	
Packer type and depth set		N/A					

Comment Details Sidetrack @ 14690'

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	148 sx	15.6	1.18	38	0'	8 Hrs.
Surface	Class A	460 sx	15.6	1.18	278	0'	8 Hrs.
Coal							
Intermediate 1	Class A	957 sx	15.6	1.18	819	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	1055 sx (Lead) 1697 sx (Tail)	14.5 Lead 15.2 Tail	1.30 Lead 1.86 Tail	3657	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 18079' MD, 6741' TVD (BHL); 6835' TVD (Deepest point drilled) Loggers TD (ft) 18079'

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

Plug back procedure N/A

Kick off depth (ft) 6642'

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Nero Unit 1H API #47-017-06211). Please reference the wireline logs submitted with Form WR-35 for Nero 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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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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API 47- 017 - 06213 Farm name Brown, Mary F. Well number Vonda Unit 1H

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6711' (TOP) TVD	7233' (TOP) MD

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 --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 8561 mcfpd Oil 30 bpd NGL --- bpd Water 316 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 Frontier Drilling LLC
Address 562 Spring Run Rd. City Pennsboro State WV Zip 26415

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 Halliburton
Address 121 Champion Way, Suite 200 City Canonsburg State PA Zip 15317

Please insert additional pages as applicable.

Completed by Kara Quackenbush Telephone 303-357-7233
Signature [Signature] Title Permit Representative Date 5/26/2015

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	21-Jul-14	17,824	17,992	60	Marcellus
2	17-Aug-14	17,624	17,793	60	Marcellus
3	17-Aug-14	17,425	17,593	60	Marcellus
4	17-Aug-14	17,225	17,394	60	Marcellus
5	18-Aug-14	17,026	17,194	60	Marcellus
6	18-Aug-14	16,827	16,995	60	Marcellus
7	18-Aug-14	16,627	16,795	60	Marcellus
8	19-Aug-14	16,428	16,596	60	Marcellus
9	19-Aug-14	16,228	16,396	60	Marcellus
10	19-Aug-14	16,029	16,197	60	Marcellus
11	19-Aug-14	15,829	15,998	60	Marcellus
12	20-Aug-14	15,630	15,798	60	Marcellus
13	21-Aug-14	15,431	15,599	60	Marcellus
14	21-Aug-14	15,231	15,399	60	Marcellus
15	21-Aug-14	15,032	15,200	60	Marcellus
16	21-Aug-14	14,832	15,000	60	Marcellus
17	21-Aug-14	14,633	14,801	60	Marcellus
18	22-Aug-14	14,433	14,602	60	Marcellus
19	22-Aug-14	14,234	14,402	60	Marcellus
20	22-Aug-14	14,034	14,203	60	Marcellus
21	23-Aug-14	13,835	14,003	60	Marcellus
22	23-Aug-14	13,636	13,804	60	Marcellus
23	23-Aug-14	13,436	13,604	60	Marcellus
24	23-Aug-14	13,237	13,405	60	Marcellus
25	23-Aug-14	13,037	13,205	60	Marcellus
26	24-Aug-14	12,838	13,006	60	Marcellus
27	24-Aug-14	12,638	12,807	60	Marcellus
28	24-Aug-14	12,439	12,607	60	Marcellus
29	25-Aug-14	12,239	12,408	60	Marcellus
30	25-Aug-14	12,040	12,208	60	Marcellus
31	25-Aug-14	11,841	12,009	60	Marcellus
32	25-Aug-14	11,641	11,809	60	Marcellus
33	26-Aug-14	11,442	11,610	60	Marcellus
34	26-Aug-14	11,242	11,410	60	Marcellus
35	26-Aug-14	11,043	11,211	60	Marcellus
36	27-Aug-14	10,843	10,978	60	Marcellus
37	27-Aug-14	10,644	10,812	60	Marcellus
38	27-Aug-14	10,445	10,613	60	Marcellus
39	27-Aug-14	10,245	10,413	60	Marcellus
40	28-Aug-14	10,046	10,214	60	Marcellus
41	28-Aug-14	9,846	10,014	60	Marcellus
42	28-Aug-14	9,647	9,815	60	Marcellus
43	28-Aug-14	9,447	9,616	60	Marcellus
44	29-Aug-14	9,248	9,416	60	Marcellus
45	29-Aug-14	9,048	9,217	60	Marcellus
46	29-Aug-14	8,849	9,017	60	Marcellus
47	29-Aug-14	8,650	8,818	60	Marcellus
48	29-Aug-14	8,450	8,618	60	Marcellus
49	30-Aug-14	8,251	8,419	60	Marcellus
50	30-Aug-14	8,051	8,219	60	Marcellus
51	30-Aug-14	7,852	8,020	60	Marcellus
52	30-Aug-14	7,652	7,821	60	Marcellus
53	30-Aug-14	7,453	7,621	60	Marcellus
54	31-Aug-14	7,253	7,422	60	Marcellus

API 47-017-06213 Farm Name Brown, Mary F. Well Number Vonda 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	17-Aug-14	68.3	8,141	5,557	4,754	30,605	6,351	N/A
2	17-Aug-14	75.2	7,845	5,490	3,848	236,717	7,479	N/A
3	17-Aug-14	74.8	7,974	5,716	3,834	185,923	6,863	N/A
4	17-Aug-14	75.1	8,011	6,294	5,246	182,223	7,066	N/A
5	18-Aug-14	74.1	7,985	5,651	4,906	250,205	7,019	N/A
6	18-Aug-14	77.9	7,662	5,380	5,155	219,053	7,171	N/A
7	18-Aug-14	73.6	8,023	5,522	5,094	191,811	7,377	N/A
8	19-Aug-14	71.3	7,684	5,355	5,311	237,142	7,114	N/A
9	19-Aug-14	75.2	8,239	5,628	5,120	72,156	6,229	N/A
10	19-Aug-14	67.6	8,135	5,888	5,409	154,538	7,183	N/A
11	19-Aug-14	73.2	7,959	5,735	4,864	168,932	7,077	N/A
12	20-Aug-14	71.5	7,782	5,801	3,994	150,726	6,737	N/A
13	21-Aug-14	76.3	8,014	5,627	4,757	168,372	7,001	N/A
14	21-Aug-14	75.8	8,130	5,579	5,199	184,550	7,082	N/A
15	21-Aug-14	79.6	7,478	5,261	5,034	252,430	6,589	N/A
16	21-Aug-14	77.4	7,603	5,301	5,217	248,719	6,612	N/A
17	21-Aug-14	75.2	7,760	5,589	4,872	167,964	7,144	N/A
18	22-Aug-14	76.6	7,588	5,229	4,812	229,304	6,970	N/A
19	22-Aug-14	70.7	7,645	5,042	4,541	141,953	6,417	N/A
20	22-Aug-14	71.8	7,779	5,021	4,623	122,616	6,393	N/A
21	23-Aug-14	74.3	7,115	5,080	4,394	253,993	6,561	N/A
22	23-Aug-14	73.7	7,081	5,409	4,847	253,944	6,534	N/A
23	23-Aug-14	74.0	6,925	5,237	4,796	250,071	6,609	N/A
24	23-Aug-14	77.7	7,327	5,431	4,833	252,517	6,555	N/A
25	23-Aug-14	77.5	7,183	5,298	4,561	254,831	6,494	N/A
26	24-Aug-14	75.9	7,202	5,436	4,085	252,503	6,428	N/A
27	24-Aug-14	75.2	7,749	5,251	4,251	106,853	6,949	N/A
28	24-Aug-14	78.4	7,329	5,417	4,694	253,208	6,531	N/A
29	25-Aug-14	76.8	7,248	5,414	5,083	252,018	6,329	N/A
30	25-Aug-14	77.4	6,864	5,498	4,797	252,995	6,335	N/A
31	25-Aug-14	78.8	7,221	5,419	4,959	248,593	6,722	N/A
32	25-Aug-14	80.6	7,254	5,268	5,045	254,624	6,520	N/A
33	26-Aug-14	78.9	6,871	5,258	5,066	250,394	6,469	N/A
34	26-Aug-14	79.4	6,901	5,269	5,094	256,621	6,415	N/A
35	26-Aug-14	84.6	7,306	5,442	4,420	253,964	6,456	N/A
36	27-Aug-14	84.9	7,120	5,197	5,004	254,847	6,346	N/A
37	27-Aug-14	79.3	6,582	5,021	4,938	250,021	6,275	N/A
38	27-Aug-14	78.7	6,584	5,111	5,007	244,462	6,141	N/A
39	27-Aug-14	79.7	7,521	5,288	4,960	244,286	6,289	N/A
40	28-Aug-14	81.1	7,356	5,243	4,665	183,172	6,516	N/A
41	28-Aug-14	79.9	6,938	5,199	5,024	250,542	6,189	N/A
42	28-Aug-14	80.3	6,608	5,169	4,944	252,216	6,229	N/A
43	28-Aug-14	81.4	6,976	5,201	4,262	249,380	6,205	N/A
44	29-Aug-14	77.7	7,086	5,302	4,531	252,220	6,231	N/A
45	29-Aug-14	73.9	6,765	5,125	4,791	225,601	6,074	N/A
46	29-Aug-14	76.6	6,404	5,013	5,273	251,157	6,143	N/A
47	29-Aug-14	80.7	6,809	5,163	5,097	250,344	6,106	N/A
48	29-Aug-14	78.7	7,179	5,172	4,749	203,942	6,540	N/A
49	30-Aug-14	77.5	7,244	5,634	4,731	198,250	6,496	N/A
50	30-Aug-14	76.8	6,515	5,169	5,120	252,746	6,123	N/A
51	30-Aug-14	77.1	6,427	5,457	5,014	256,761	6,178	N/A
52	30-Aug-14	81.5	6,596	5,599	5,377	254,679	6,042	N/A
53	30-Aug-14	80.6	6,612	5,375	5,284	251,854	6,040	N/A
54	31-Aug-14	80.5	6,476	5,411	5,213	215,326	6,178	N/A
AVG=		76.9	7,311	5,382	4,843	11,784,874	354,122	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	200'	N/A	200'	N/A
Shale/ Sandstone	0	205	0	205
Sandstone	est. 205	655	est. 205	655
Siltstone	est. 655	715	est. 655	715
Sandstone	est. 715	835	est. 715	835
Sandstone/ Limestone	est. 835	875	est. 835	875
Sandstone	est. 875	1,035	est. 875	1,035
Siltstone/ Limestone	est. 1035	1145	est. 1035	1145
Sandstone	est. 1145	1195	est. 1145	1195
Sandstone/ Trace Coal	est. 1195	1235	est. 1195	1235
Siltstone/ Limestone	est. 1235	1318	est. 1235	1318
Shale/Siltstone	est. 1318	1325	est. 1318	1325
Sandstone	est. 1325	1355	est. 1325	1355
Sandstone/ Trace Coal	est. 1355	1435	est. 1355	1435
Sandstone/ Siltstone	est. 1435	2085	est. 1435	2087
Big Lime	2085	2208	2087	2210
Big Injun	2208	2634	2210	2636
Gantz Sand	2634	2751	2636	2753
Fifty Foot Sandstone	2751	2835	2753	2837
Gordon	2835	3154	2837	3157
Fifth Sandstone	3154	3185	3157	3188
Bayard	3185	3568	3188	3578
Warren	3568	3938	3578	3981
Speechley	3938	4217	3981	4299
Baltown	4217	4674	4299	4817
Bradford	4674	5087	4817	5278
Benson	5087	5366	5278	5591
Alexander	5366	5532	5591	5773
Elk	5532	5962	5773	6210
Rhinestreet	5962	6351	6210	6671
Sycamore	6351	6521	6671	6875
Middlesex	6521	6641	6875	7053
Burkett	6641	6677	7053	7128
Tully	6677	6711	7128	7233
Marcellus	6711	NA	7233	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 submitted for the Nero Unit 1H API# 47-017-06211). 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:	8/17/2014
Job End Date:	8/31/2014
State:	West Virginia
County:	Doddridge
API Number:	47-017-06213-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Vonda Unit 1HST
Longitude:	-80.84890600
Latitude:	39.27464200
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,835
Total Base Water Volume (gal):	14,899,896
Total Base Non Water Volume:	0



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
Fresh Water	Operator	Base Fluid	Fresh Water	7732-18-5	100.00000	91.06915	Density = 8.330
SAND - PREMIUM WHITE	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	100.00000	8.05900	
100 MESH	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	100.00000	0.61285	
WG-36 GELLING AGENT	Halliburton	Gelling Agent	Guar gum	9000-30-0	100.00000	0.06091	
MURIATIC ACID	Halliburton	Solvent	Hydrochloric acid	7647-01-0	60.00000	0.05745	
FR-66	Halliburton	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02192	
LCA-1	Halliburton	Solvent	Paraffinic solvent	Confidential	100.00000	0.00213	Denise Tuck, Halliburton 3000 N. Sam Houston Pkwy E., Houston, TX 77032 281-871-6226

SP BREAKER	Haliburton	Breaker											
Scalechek(R) LP-65 Scale Inhibitor	Haliburton	Scale Inhibitor	Sodium persulfate	7775-27-1		100.00000			0.00199				
BE-9	Haliburton	Biocide	Ammonium chloride	12125-02-9		10.00000			0.00167				
HAI-OS ACID INHIBITOR	Haliburton	Corrosion Inhibitor	Tributyl tetradecyl phosphonium chloride	81741-28-8		10.00000			0.00089				
			Methanol	67-56-1		60.00000			0.00010				
			Propargyl alcohol	107-19-7		10.00000			0.00002				
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.													
		Other Ingredient(s)	Water	7732-18-5					0.15812				
		Other Ingredient(s)	Polyacrylamide copolymer	Confidential					0.02192				
		Other Ingredient(s)	Organic phosphonate	Confidential					0.00967				
		Other Ingredient(s)	Alcohols ethoxylated	Confidential					0.00365				
		Other Ingredient(s)	Ammonium chloride	12125-02-9					0.00365				
		Other Ingredient(s)	Amide	Confidential					0.00365				
		Other Ingredient(s)	Sodium chloride	7647-14-5					0.00365				
			Bentonite, benzyl(hydrogenated tallow alkyl) dimethylammonium stearate complex	121888-68-4					0.00305				
		Other Ingredient(s)	Sorbitan monooleate polyoxyethylene derivative	9005-65-6					0.00073				
		Other Ingredient(s)	Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8					0.00073				
		Other Ingredient(s)	Surfactant mixture	Confidential					0.00061				
		Other Ingredient(s)	Silica gel	112926-00-8					0.00061				
		Other Ingredient(s)	Surfactant mixture	Confidential					0.00061				
		Other Ingredient(s)	Formaldehyde	50-00-0					0.00016				
		Other Ingredient(s)	Crystalline Silica, Quartz	14808-60-7					0.00006				

			Alcohols, C14-C15, ethoxylated	68951-67-7		0.00005
	Other Ingredient(s)		Fatty acids, tall oil	Confidential		0.00005
	Other Ingredient(s)		Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1		0.00005
	Other Ingredient(s)		Olefins	Confidential		0.00001
	Other Ingredient(s)		Olefins	Confidential		0.00001
	Other Ingredient(s)		Sodium sulfate	7757-82-6		0.00000
	Other Ingredient(s)		Olefins	Confidential		0.00000
	Other Ingredient(s)		Olefins	Confidential		0.00000

* 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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JUN 08 2015

WV GEOLOGICAL SURVEY
MORGANTOWN, WV

LATITUDE 39°17'30"

4,408'

9,961' TO BOTTOM HOLE

LATITUDE 39°15'00"

450' TO BOTTOM HOLE

6,200'

LONGITUDE 80°47'30"

LONGITUDE 80°50'00"

