

APPROVED

WR-35
Rev. 8/23/13

Page ___ of ___

NAME: Gregory R. Vogt

DATE: 11/1/17

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

API 47 - 017 - 06668 County Doddridge District Central
Quad West Union 7.5' Pad Name Vogt Pad Field/Pool Name -----
Farm name Gregory R. & Carolyn S. Vogt Well Number Duckbill 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 4347566m Easting 511881m
Landing Point of Curve Northing 4347655.672m Easting 511715.727m
Bottom Hole Northing 4350742m Easting 510686m

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Elevation (ft) 1112' 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 01/26/2015 Date drilling commenced 04/07/2016 Date drilling ceased 06/18/2016
Date completion activities began 02/02/2017 Date completion activities ceased 04/30/2017
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 18', 40', 136' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1628' Void(s) encountered (Y/N) depths No
Coal depth(s) ft None Identified Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by: _____

11/10/2017

API 47- 017 - 06668 Farm name Gregory R. & Carolyn S. Vogt Well number Duckbill Unit 2H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade w/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*	
Conductor	24"	20"	40'	New	94#, K-55	N/A	Y	
Surface	17-1/2"	13-3/8"	375'	New	48#, H-40	N/A	Y	
Coal								
Intermediate 1	12-1/4"	9-5/8"	2526'	New	36#, J-55	N/A	Y	
Intermediate 2								
Intermediate 3								
Production	8-3/4"/8-1/2"	5-1/2"	17720'	New	23#, P-110	N/A	Y	
Tubing		2-3/8"	6716'		4.7#, N-80			
Packer type and depth set		N/A						

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Comment Details _____

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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	16	1.18	236	0'	8 Hrs.
Surface	Class A	460 sx	15.6	1.19	547	0'	8 Hrs.
Coal							
Intermediate 1	Class A	995 sx	15.6	1.18	1174	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	972 sx (Lead) 1730 sx (Tail)	14.5 (Lead), 15.2 (Tail)	1.31 (Lead), 1.83 (Tail)	4439	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 17720' MD, 6569' TVD (BHL), 6562' (Deepest Point Drilled) Loggers TD (ft) 17672' MD

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

Plug back procedure N/A

Kick off depth (ft) 6175'

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 N/A

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API 47- 017 - 06668 Farm name Gregory R. & Carolyn S. Vogt Well number Duckbill Unit 2H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
*PLEASE SEE ATTACHED EXHIBIT 1					

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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 ATTACHED EXHIBIT 2								

Please insert additional pages as applicable.

API 47- 017 - 06668 Farm name Gregory R. & Carolyn S. Vogt Well number Duckbill Unit 2H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>6537' (TOP)</u> TVD	<u>6846' (TOP)</u> 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 9494 mcfpd Oil 77 bpd NGL --- bpd Water 302 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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***PLEASE SEE ATTACHED EXHIBIT 3**

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Please insert additional pages as applicable.

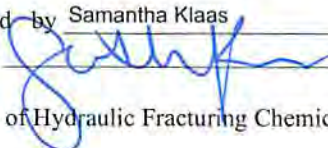
Drilling Contractor Precision Drilling Company, LP
Address 2640 Reach Road City Williamsport State PA Zip 17701

Logging Company Clutch Energy Services LLC
Address 2154 Greensburg Road City New Kensington State PA Zip 15068

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

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

Please insert additional pages as applicable.

Completed by Samantha Klaas Telephone 303-357-6759
Signature  Title Permitting Agent Date 10/02/2017

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

API 47-017-06668 Farm Name Gregory R. & Carolyn S. Vogt Well Number Duckbill Unit 2H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	2/2/2017	17450	17618	60	Marcellus
2	2/27/2017	17250	17419	60	Marcellus
3	2/27/2017	17051	17219	60	Marcellus
4	3/1/2017	16852	17020	60	Marcellus
5	3/1/2017	16652	16821	60	Marcellus
6	3/1/2017	16453	16621	60	Marcellus
7	3/1/2017	16254	16422	60	Marcellus
8	3/2/2017	16054	16223	60	Marcellus
9	3/2/2017	15855	16023	60	Marcellus
10	3/2/2017	15656	15824	60	Marcellus
11	3/2/2017	15456	15625	60	Marcellus
12	3/3/2017	15257	15425	60	Marcellus
13	3/3/2017	15058	15226	60	Marcellus
14	3/3/2017	14858	15027	60	Marcellus
15	3/3/2017	14659	14827	60	Marcellus
16	3/4/2017	14460	14628	60	Marcellus
17	3/4/2017	14260	14429	60	Marcellus
18	3/4/2017	14061	14229	60	Marcellus
19	3/4/2017	13862	14030	60	Marcellus
20	3/4/2017	13662	13831	60	Marcellus
21	3/5/2017	13463	13631	60	Marcellus
22	3/5/2017	13264	13432	60	Marcellus
23	3/5/2017	13064	13233	60	Marcellus
24	3/6/2017	12865	13033	60	Marcellus
25	3/6/2017	12666	12834	60	Marcellus
26	3/6/2017	12466	12635	60	Marcellus
27	3/6/2017	12267	12435	60	Marcellus
28	3/6/2017	12068	12236	60	Marcellus
29	3/7/2017	11868	12037	60	Marcellus
30	3/7/2017	11669	11837	60	Marcellus
31	3/7/2017	11470	11638	60	Marcellus
32	3/7/2017	11270	11438	60	Marcellus
33	3/7/2017	11071	11239	60	Marcellus
34	3/8/2017	10872	11040	60	Marcellus
35	3/8/2017	10672	10840	60	Marcellus
36	3/8/2017	10473	10641	60	Marcellus
37	3/8/2017	10274	10442	60	Marcellus
38	3/9/2017	10074	10242	60	Marcellus
39	3/9/2017	9875	10043	60	Marcellus
40	3/9/2017	9676	9844	60	Marcellus
41	3/9/2017	9476	9644	60	Marcellus
42	3/9/2017	9277	9445	60	Marcellus
43	3/10/2017	9078	9246	60	Marcellus
44	3/10/2017	8878	9046	60	Marcellus
45	3/11/2017	8679	8847	60	Marcellus
46	3/11/2017	8480	8648	60	Marcellus
47	3/11/2017	8280	8448	60	Marcellus
48	3/11/2017	8081	8249	60	Marcellus
49	3/11/2017	7882	8050	60	Marcellus
50	3/11/2017	7682	7850	60	Marcellus
51	3/12/2017	7483	7651	60	Marcellus
52	3/12/2017	7284	7452	60	Marcellus
53	3/12/2017	7084	7252	60	Marcellus
54	3/12/2017	6885	7053	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	2/27/2017	74.5	8109	6459	3451.0	353000	9338	N/A
2	2/27/2017	73.9	7573	6101	4098.0	353050	7403	N/A
3	2/27/2017	74.4	7449	5819	5000.0	353180	7428	N/A
4	3/1/2017	74.6	7464	5561	5000.0	352240	7318	N/A
5	3/1/2017	78.9	7751	5572	4867.0	353660	7347	N/A
6	3/1/2017	80.4	7836	5575	4832.0	352850	7312	N/A
7	3/1/2017	80.9	7918	5701	4907.0	354130	7565	N/A
8	3/2/2017	84.1	7963	5465	5286.0	353500	7269	N/A
9	3/2/2017	76.0	7633	5332	5039.0	353350	7279	N/A
10	3/2/2017	81.7	7880	5554	4849.0	351200	7339	N/A
11	3/2/2017	83.4	7929	5465	4917.0	354200	7267	N/A
12	3/3/2017	75.3	7414	5447	4488.0	352210	7239	N/A
13	3/3/2017	76.4	7619	5815	4492.0	353650	8103	N/A
14	3/3/2017	78.7	7679	5858	4685.0	353810	7404	N/A
15	3/3/2017	84.0	8051	5693	3837.0	352900	7178	N/A
16	3/4/2017	84.7	8086	5382	4420.0	352150	8275	N/A
17	3/4/2017	79.4	7432	5504	4395.0	352750	8020	N/A
18	3/4/2017	79.3	7643	5922	5000.0	353740	7135	N/A
19	3/4/2017	78.9	7436	5565	5157.0	353200	7141	N/A
20	3/4/2017	80.1	7486	5332	5093.0	355600	7087	N/A
21	3/5/2017	79.9	7373	5890	4706.0	355900	7069	N/A
22	3/5/2017	81.6	7529	5379	4703.0	350720	7094	N/A
23	3/5/2017	78.8	7901	5314	4320.0	343500	8086	N/A
24	3/6/2017	84.5	7722	5296	4671.0	353600	7912	N/A
25	3/6/2017	84.6	7698	5801	5178.0	356150	7078	N/A
26	3/6/2017	84.5	7478	5908	4742.0	354750	7223	N/A
27	3/6/2017	86.3	7538	5715	5114.0	354150	7065	N/A
28	3/6/2017	84.9	7592	5919	5143.0	351800	7045	N/A
29	3/7/2017	82.8	7404	5424	5193.0	352000	7025	N/A
30	3/7/2017	84.3	7254	5486	5375.0	353200	7062	N/A
31	3/7/2017	85.3	7487	5976	5089.0	352500	6999	N/A
32	3/7/2017	85.1	7590	6019	4692.0	352800	7058	N/A
33	3/7/2017	85.0	7408	5357	4689.0	355900	7910	N/A
34	3/8/2017	84.8	7410	5672	5139.0	358150	6987	N/A
35	3/8/2017	85.3	7259	5447	4388.0	354450	7013	N/A
36	3/8/2017	85.7	7351	6516	4996.0	355800	9028	N/A
37	3/8/2017	85.1	7336	5486	5003.0	353500	6890	N/A
38	3/9/2017	85.0	7179	5808	5229.0	354600	6931	N/A
39	3/9/2017	86.2	7155	5636	4917.0	356900	6913	N/A
40	3/9/2017	84.3	6952	5990	4839.0	354450	6923	N/A
41	3/9/2017	84.1	7075	6158	4545.0	352950	7810	N/A
42	3/9/2017	85.4	7197	6355	4892.0	354500	6912	N/A
43	3/10/2017	85.1	7382	6287	5314.0	355800	6906	N/A
44	3/10/2017	79.3	7032	5468	5021.0	355760	6880	N/A
45	3/11/2017	84.8	7294	5625	5014.0	355200	6854	N/A
46	3/11/2017	84.6	7045	5500	5322.0	353200	7285	N/A
47	3/11/2017	85.4	6941	5919	5060.0	353900	6876	N/A
48	3/11/2017	83.5	7256	6098	5289.0	352350	6994	N/A
49	3/11/2017	85.5	7234	5915	5229.0	353890	6841	N/A
50	3/11/2017	85.1	7063	5672	5039.0	354300	6833	N/A
51	3/12/2017	85.9	7258	5808	5250.0	350800	6806	N/A
52	3/12/2017	83.5	7176	5600	5189.0	354350	8749	N/A
53	3/12/2017	85.4	7047	6430	5579.0	352750	6836	N/A
54	3/12/2017	85.7	7099	6824	4717.0	295800	6400	N/A
AVG=		82.4	7,464	5,756	4,878	19,034,740	394,740	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	18'	N/A	18'	N/A
Fresh Water	40'	N/A	40'	N/A
Fresh Water	136'	N/A	136'	N/A
Sandy Shale	est. 0	230	est. 0	230
Sandstone	est. 230	780	est. 230	780
Limestone	est. 780	910	est. 780	910
Sandstone/Limestone	est. 910	940	est. 910	940
Silty Dolostone	est. 940	1020	est. 940	1020
Silty Sandstone	est. 1020	1140	est. 1020	1140
Sandstone	est. 1140	1170	est. 1140	1170
Silty Sandstone	est. 1170	1200	est. 1170	1200
Silty Limestone	est. 1200	1230	est. 1200	1230
Siltstone	est. 1230	1380	est. 1230	1380
Silty Sandstone	est. 1380	1500	est. 1380	1500
Siltstone	est. 1500	1650	est. 1500	1650
Silty Dolostone	est. 1650	1950	est. 1650	1950
Silty Sandstone	est. 1950	2015	est. 1950	2015
Calcareous Sandstone	est. 2015	2059	est. 2015	2063
Big Lime	2059	2561	2063	2565
Gantz	2561	2691	2565	2695
Fifty Foot Sandstone	2691	2793	2695	2797
Gordon	2793	2970	2797	2974
Fifth Sandstone	2970	3122	2974	3126
Bayard	3122	3873	3126	3877
Speechley	3873	4173	3877	4177
Balltown	4173	4598	4177	4602
Bradford	4598	5016	4602	5021
Benson	5016	5273	5021	5280
Alexander	5273	5395	5280	5405
Elk	5395	5724	5405	5748
Rhinestreet	5724	6207	5748	6271
Sycamore	6207	6365	6271	6472
Middlesex	6365	6481	6472	6677
Burkett	6481	6508	6677	6745
Tully	6508	6537	6745	6846
Marcellus	6537	NA	6846	NA

*Please note Antero determines formation tops based on mud 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:	3/4/2017
Job End Date:	3/24/2017
State:	West Virginia
County:	Doddridge
API Number:	47-017-06640-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Alder 1H
Latitude:	39.27327500
Longitude:	-80.87297778
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,443
Total Base Water Volume (gal):	13,903,618
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
Water	Antero Resources	Carrier/Base Fluid	Water	7732-18-5	100.00000	86.80460	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	11.39172	
HCL Acid (12.6%-17.5%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.40000	1.41731	
			Hydrogen Chloride	7647-01-0	17.50000	0.32952	
WFRA-500	U.S. Well Services, LLC	Friction Reducer	2-Propenoic acid, polymer with 2-propenamide	29003-06-9	30.00000	0.01593	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01282	
LGC-16	U.S. Well Services, LLC	Gelling Agents	Guar Gum	9000-30-0	50.00000	0.00847	
			Petroleum Distillates	64742-47-8	60.00000	0.00802	
			Suspending agent (solid)	14808-60-7	3.00000	0.00130	
			Surfactant	68439-51-0	3.00000	0.00051	

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Bioclear 2000	U.S. Well Services, LLC	Anti-Bacterial Agent					
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00409	
			Deionized Water	7732-18-5	28.00000	0.00233	
SI-1100s	U.S. Well Services, LLC	Scale Inhibitor					
			Copolymer of Maleic and Acrylic acid	52255-49-9	10.00000	0.00151	
			Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8	3.00000	0.00052	
			Phosphino carboxylic acid polymer	71050-62-9	3.00000	0.00050	
			Hexamethylene triamine penta (methylene phosphonic acid)	34690-00-1	3.00000	0.00050	
AP One	U.S. Well Services, LLC	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00025	
AI-303	U.S. Well Services, LLC	Acid Corrosion Inhibitors					
			Ethylene glycol	107-21-1	40.00000	0.00004	
			Cinnamaldehyde	104-55-2	20.00000	0.00002	
			Formic acid	64-18-6	20.00000	0.00002	
			Butyl cellosolve	111-76-2	20.00000	0.00001	
			Polyether	60828-78-6	10.00000	0.00001	
			Acetophenone, thiourea, formaldehyde polymer	68527-49-1	5.00000	0.00000	

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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Antero Resources
1615 Wynkoop Street
Denver, CO 80202
Office 303.357.7310
Fax 303.357.7315

October 2, 2017

West Virginia Department of Environmental Protection
Office of Oil and Gas
Attn: John Kearney
601 57th Street
Charleston, WV 25304

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Mr. Kearney:

Please find enclosed the Well Operator's Report of Well Work, Form WR-35 (including As-Drilled Survey Plat, Directional Survey and FracFocus report), Discharge Monitoring Report Form WR-34 and corresponding logs for the following wells:

- Duckbill Unit 1H (API#47-017-06667) – Vogt Pad *RBDMS Received*
- Duckbill Unit 2H (API#47-017-06668) – Vogt Pad " "
- McGill Unit 1H (API#47-017-06665) – Vogt Pad " "
- McGill Unit 2H (API#47-017-06666) – Vogt Pad " "

If you have any questions please feel free to contact me at (303) 357-6759.

Sincerely,

Samantha Klaas
Permitting Agent
Antero Resources Corporation

Enclosures

11/10/2017