

APPROVED

NAME: And G

DATE: 10/12/17

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

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API 47-017-06772 County Doddridge District Central
Quad Pennsboro 7.5' Pad Name Alvadore Pad Field/Pool Name -----
Farm name Alvadore McCloy Jr et ux Well Number O'Donnell 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 4347115m Easting 510114m
Landing Point of Curve Northing 4347140.083m Easting 509918.972m
Bottom Hole Northing 4349746m Easting 509076m

Elevation (ft) 1057' 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 05/26/2016 Date drilling commenced 05/27/2016 Date drilling ceased 08/02/2016
Date completion activities began 11/27/2016 Date completion activities ceased 02/05/2017
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 332' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1546', 1567', 1571' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 207', 1187', 1727' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by: _____

01/05/2018

API 47-017 - 06772 Farm name Alvadore McCloy Jr et ux Well number O'Donnell 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"	65'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	455'	New	48#, H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2643'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	15932'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6625'		4.7#, N-80		
Packer type and depth set		N/A					

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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	102 sx	15.6	1.18	120	0'	8 Hrs.
Surface	Class A	549 sx	15.6	1.19	653	0'	8 Hrs.
Coal							
Intermediate 1	Class A	1037 sx	15.6	1.18	1224	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	650 sx (Lead) 1375 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.62 (Lead), 1.83 (Tail)	3569	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 15932' MD, 6433' TVD (BHL) & 6466' TVD (Deepest Point Drilled) Loggers TD (ft) 15918' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6018'

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Hudkins Unit 1H API #47-017-06415). Please reference the wireline logs submitted with Form WR-35 for Hudkins 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 N/A

API 47- 017 - 06772

Farm name Alvadore McCloy Jr et ux

Well number O'Donnell Unit 11

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
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***PLEASE SEE ATTACHED 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)
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***PLEASE SEE ATTACHED EXHIBIT 2**

Please insert additional pages as applicable.

API 47- 017 - 06772 Farm name Alvadore McCloy Jr et ux Well number O'Donnell Unit 1H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6418' (TOP)</u>	<u>TVD</u>	<u>6705' (TOP)</u> <u>MD</u>
_____	_____	_____	_____
_____	_____	_____	_____

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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 9872 mcfpd Oil 89 bpd NGL --- bpd Water 751 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	

***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor Patterson – UTI Drilling Company LLC
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company Allied Horizontal Wireline Services
Address 381 Colonial Manor Rd. City North Huntingdon State PA Zip 15642

Cementing Company C&J Energy Services
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

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 Samantha Klaas Telephone 303-357-6759
Signature *Samantha Klaas* Title Permitting Agent Date 08/18/2017

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

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	11/27/2016	15659	15830	60	Marcellus
2	12/15/2016	15456	15627	60	Marcellus
3	12/16/2016	15254	15425	60	Marcellus
4	12/16/2016	15051	15222	60	Marcellus
5	12/17/2016	14849	15020	60	Marcellus
6	12/17/2016	14646	14817	60	Marcellus
7	12/18/2016	14444	14615	60	Marcellus
8	12/18/2016	14241	14412	60	Marcellus
9	12/18/2016	14039	14210	60	Marcellus
10	12/19/2016	13837	14007	60	Marcellus
11	12/19/2016	13634	13805	60	Marcellus
12	12/19/2016	13432	13602	60	Marcellus
13	12/20/2016	13229	13400	60	Marcellus
14	12/20/2016	13027	13197	60	Marcellus
15	12/20/2016	12824	12995	60	Marcellus
16	12/21/2016	12622	12792	60	Marcellus
17	12/22/2016	12419	12590	60	Marcellus
18	12/22/2016	12217	12388	60	Marcellus
19	12/22/2016	12014	12185	60	Marcellus
20	12/23/2016	11812	11983	60	Marcellus
21	12/23/2016	11609	11780	60	Marcellus
22	12/23/2016	11407	11578	60	Marcellus
23	12/26/2016	11204	11375	60	Marcellus
24	12/26/2016	11002	11173	60	Marcellus
25	12/27/2016	10799	10970	60	Marcellus
26	12/27/2016	10597	10768	60	Marcellus
27	12/27/2016	10395	10565	60	Marcellus
28	12/28/2016	10192	10363	60	Marcellus
29	12/28/2016	9990	10160	60	Marcellus
30	12/28/2016	9787	9958	60	Marcellus
31	12/29/2016	9585	9755	60	Marcellus
32	12/30/2016	9382	9553	60	Marcellus
33	12/31/2016	9180	9350	60	Marcellus
34	12/31/2016	8977	9148	60	Marcellus
35	12/31/2016	8775	8946	60	Marcellus
36	1/1/2017	8572	8743	60	Marcellus
37	1/1/2017	8370	8541	60	Marcellus
38	1/1/2017	8167	8338	60	Marcellus
39	1/1/2017	7965	8136	60	Marcellus
40	1/2/2017	7762	7933	60	Marcellus
41	1/2/2017	7560	7731	60	Marcellus
42	1/3/2017	7358	7528	60	Marcellus
43	1/3/2017	7155	7326	60	Marcellus
44	1/3/2017	6953	7123	60	Marcellus
45	1/4/2017	6750	6921	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	12/14/2016	76.9	7816	0	4921	409400	9338	N/A
2	12/15/2016	77.7	7823	5409	4764	408920	8909	N/A
3	12/16/2016	78.9	7848	5075	4724	405680	9517	N/A
4	12/16/2016	77.3	7756	5450	4753	409000	9654	N/A
5	12/17/2016	75.9	7444	5286	4874	409585	8881	N/A
6	12/17/2016	76.4	7426	5175	4528	407900	8853	N/A
7	12/18/2016	78.0	7511	5025	4374	409200	8842	N/A
8	12/18/2016	75.8	7452	5113	4152	408470	8826	N/A
9	12/18/2016	76.8	7454	5162	4624	410280	8825	N/A
10	12/19/2016	78.6	7533	4985	4917	410200	8837	N/A
11	12/19/2016	75.2	7249	5211	4531	409765	8802	N/A
12	12/19/2016	78.3	7333	5021	4689	410000	8814	N/A
13	12/20/2016	77.9	7271	5028	4935	409900	8840	N/A
14	12/20/2016	76.6	7199	5102	4789	408020	8671	N/A
15	12/20/2016	76.4	7178	5175	4907	409200	8701	N/A
16	12/21/2016	75.9	7308	5018	4478	407010	8357	N/A
17	12/22/2016	77.1	7156	4914	3934	409300	8673	N/A
18	12/22/2016	76.9	7020	5087	4774	407910	8646	N/A
19	12/22/2016	73.8	6980	4987	4681	409600	9517	N/A
20	12/23/2016	75.9	7094	5007	4570	412000	8717	N/A
21	12/23/2016	75.5	6934	4889	4538	409585	8631	N/A
22	12/23/2016	77.2	7039	4967	4696	409900	8680	N/A
23	12/26/2016	77.7	7027	4860	4545	409900	8594	N/A
24	12/26/2016	76.8	6907	4967	4481	409800	8640	N/A
25	12/27/2016	77.4	6883	4985	4449	409700	8581	N/A
26	12/27/2016	76.9	6899	4992	4286	408600	8572	N/A
27	12/27/2016	77.0	6967	4996	3684	411900	8640	N/A
28	12/28/2016	78.1	6921	5075	4778	409100	8609	N/A
29	12/28/2016	77.6	6740	4982	4292	411500	8692	N/A
30	12/28/2016	68.7	7488	4914	4567	410060	10526	N/A
31	12/29/2016	76.1	6772	4799	5268	410200	8553	N/A
32	12/30/2016	76.1	6660	4731	5482	408960	8658	N/A
33	12/31/2016	76.5	6775	5032	5372	408570	8538	N/A
34	12/31/2016	77.7	7038	5325	4824	409700	9627	N/A
35	12/31/2016	77.4	7096	5221	4710	410100	8498	N/A
36	1/1/2017	74.2	6844	5425	5300	408700	9110	N/A
37	1/1/2017	77.6	6867	5085	4721	407800	8477	N/A
38	1/1/2017	79.1	6884	5261	4524	409000	8466	N/A
39	1/1/2017	78.9	6866	4889	5347	409900	8533	N/A
40	1/2/2017	77.3	6704	5043	5254	410100	8473	N/A
41	1/2/2017	75.0	6565	4989	5618	409900	8462	N/A
42	1/3/2017	78.7	6627	5035	5100	409200	8432	N/A
43	1/3/2017	79.3	6359	5128	5175	409400	8447	N/A
44	1/3/2017	77.6	6159	5183	4899	407385	8432	N/A
45	1/4/2017	77.6	6402	5264	4120	409200	8430	N/A
AVG=		76.9	7073	4,961	4,732	18,419,500	395,523	TOTAL

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LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Fresh Water	332'	N/A	332'	N/A
Shale/ Sandstone	0	207	0	207
Shale/ Trace Coal	est. 207	247	est. 207	247
Sandstone	est. 247	467	est. 247	467
Shale/ Limestone	est. 467	567	est. 467	567
Sandstone	est. 567	627	est. 567	627
Shale/ Trace Limestone	est. 627	787	est. 627	787
Siltstone	est. 787	812	est. 787	812
Shale/ Limestone	est. 812	967	est. 812	967
Sandstone	est. 967	1047	est. 967	1047
Shale/ Limestone	est. 1047	1147	est. 1047	1147
Shale/ Trace Coal	est. 1147	1187	est. 1147	1187
Sandstone/ Trace Coal	est. 1187	1247	est. 1187	1247
Shale/ Trace Limestone	est. 1247	1327	est. 1247	1327
Sandstone/ Shale	est. 1327	1427	est. 1327	1427
Sanstone/ Coal	est. 1427	1567	est. 1427	1567
Shale/ Trace Coal	est. 1567	1727	est. 1567	1727
Siltstone/ Trace Coal	est. 1727	1933	est. 1727	1933
Big Lime	1933	2887	1933	2887
Fifth Sandstone	2887	3120	2887	3120
Bayard	3120	3812	3120	3812
Speechley	3812	4106	3812	4108
Baltown	4106	4518	4108	4535
Bradford	4518	4924	4535	4963
Benson	4924	5195	4963	5246
Alexander	5195	5349	5246	5408
Elk	5349	5811	5408	5892
Rhinestreet	5811	6091	5892	6190
Sycamore	6091	6247	6190	6379
Middlesex	6247	6358	6379	6555
Burkett	6358	6390	6555	6626
Tully	6390	6418	6626	6705
Marcellus	6418	NA	6705	NA

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*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.

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/14/2016
Job End Date:	1/4/2017
State:	West Virginia
County:	Doddridge
API Number:	47-017-06772-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	O'Donnell 1H
Latitude:	39.27323889
Longitude:	-80.88291944
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,482
Total Base Water Volume (gal):	17,134,816
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	88.35272	
Sand	U.S. Well Services, LLC	Proppant	Crystalline Silica, quartz	14808-60-7	100.00000	11.38813	
HCL Acid (12.6%-17.5%)	U.S. Well Services, LLC	Bulk Acid	Water	7732-18-5	87.40000	0.11931	
			Hydrogen Chloride	7647-01-0	17.50000	0.02774	
LGC-15	U.S. Well Services, LLC	Gelling Agents	Guar Gum	9000-30-0	50.00000	0.03010	
			Petroleum Distillates	64742-47-8	60.00000	0.02851	
			Suspending agent (solid)	14808-60-7	3.00000	0.00460	
			Surfactant	68439-51-0	3.00000	0.00181	
WFRA-405	U.S. Well Services, LLC	Friction Reducer	2-Propenoic acid, polymer with 29 propenamide	9003-06-9	30.00000	0.01642	
			Hydrated light distillate (petroleum)	64742-47-8	30.00000	0.01322	

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SI-1100	U.S. Well Services, LLC	Scale Inhibitor					
			Ethylene Glycol	107-21-1	40.00000	0.00705	
			Copolymer of Maleic and Acrylic acid	52255-49-9	10.00000	0.00145	
			Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8	3.00000	0.00050	
			Phosphino carboxylic acid polymer	71050-62-9	3.00000	0.00048	
			Hexamethylene tramine penta (methylene phosphonic acid)	34690-00-1	3.00000	0.00048	
Bioclear 2000	U.S. Well Services, LLC	Anti-Bacterial Agent					
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00401	
			Deionized Water	7732-18-5	28.00000	0.00229	
AP One	U.S. Well Services, LLC	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00107	
AI-303	U.S. Well Services, LLC	Acid Corrosion Inhibitors					
			Ethylene glycol	107-21-1	40.00000	0.00004	
			Formic acid	64-18-6	20.00000	0.00001	
			Butyl cellosolve	111-76-2	20.00000	0.00001	
			Polyether	Proprietary	10.00000	0.00001	
			Cinnamaldehyde	104-55-2	20.00000	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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