

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

API 47-085-10057 County Ritchie District Clay
Quad Pennsboro 7.5' Pad Name Eddy Pad Field/Pool Name ----
Farm name Annie B. Haymond, et al Well Number Chandos 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 4,353,846m Easting 506,900m
Landing Point of Curve Northing 4,353,544.76m Easting 506,766.26m
Bottom Hole Northing 4,351,408m Easting 507,625m

Elevation (ft) 971' 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 9/24/2013 Date drilling commenced 3/15/2014 Date drilling ceased 8/10/2014
Date completion activities began 1/13/2015 Date completion activities ceased 4/24/2015
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 126', 307' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 653', 2099' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1056' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by:

10/16/2015

API 47-085 - 10057 Farm name Annie B. Haymond, et al Well number Chandos Unit 2H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wv/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	24"	20"	40'	New	94#/J-55	N/A	Y
Surface	17-1/2"	13-3/8"	360'	New	48#/H-40	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2576'	New	36#/J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	14,485'	New	23#/P-110	N/A	Y
Tubing		2-3/8"	6529'		4.7#/N-80		
Packer type and depth set		N/A					

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	100 sx	15.6	1.18	38 Cu. Ft.	0'	8 Hrs.
Surface	Class A	432 sx	15.6	1.18	250 Cu. Ft.	0'	8 Hrs.
Coal							
Intermediate 1	Class A	1,010 sx	15.6	1.18	807 Cu. Ft.	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	828 sx (Lead), 1297 sx (Tail)	13.5 (Lead), 15.2 (Tail)	1.44 (Lead), 1.80 (Tail)	2843 Cu. Ft.	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 14,485' MD, 6336' TVD (BHL) Loggers TD (ft) 14,441' MD
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6055'

** This is a subsequent well. Antero only runs wireline logs on one well on a multi-well pad (Anna Unit 2H API# 47-085-09963). Please reference the wireline logs submitted with Form WR-35 for the Anna Unit 2H. 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

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

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WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

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WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED N/A

API 47-085-10057 Farm Name Annie B. Haymond, et al Well Number Chandos Unit 2H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	13-Jan-15	14,225	14,394	60	Marcellus
2	22-Mar-15	14,025	14,194	60	Marcellus
3	23-Mar-15	13,825	13,994	60	Marcellus
4	23-Mar-15	13,625	13,794	60	Marcellus
5	23-Mar-15	13,425	13,594	60	Marcellus
6	24-Mar-15	13,225	13,394	60	Marcellus
7	24-Mar-15	13,026	13,194	60	Marcellus
8	24-Mar-15	12,826	12,994	60	Marcellus
9	24-Mar-15	12,626	12,794	60	Marcellus
10	25-Mar-15	12,426	12,594	60	Marcellus
11	25-Mar-15	12,226	12,395	60	Marcellus
12	25-Mar-15	12,026	12,195	60	Marcellus
13	27-Mar-15	11,826	11,995	60	Marcellus
14	28-Mar-15	11,626	11,795	60	Marcellus
15	28-Mar-15	11,426	11,595	60	Marcellus
16	29-Mar-15	11,227	11,395	60	Marcellus
17	29-Mar-15	11,027	11,195	60	Marcellus
18	29-Mar-15	10,827	10,995	60	Marcellus
19	30-Mar-15	10,627	10,795	60	Marcellus
20	30-Mar-15	10,427	10,596	60	Marcellus
21	30-Mar-15	10,227	10,396	60	Marcellus
22	30-Mar-15	10,027	10,196	60	Marcellus
23	31-Mar-15	9,827	9,996	60	Marcellus
24	31-Mar-15	9,627	9,796	60	Marcellus
25	31-Mar-15	9,428	9,596	60	Marcellus
26	1-Apr-15	9,228	9,396	60	Marcellus
27	1-Apr-15	9,028	9,196	60	Marcellus
28	1-Apr-15	8,828	8,996	60	Marcellus
29	1-Apr-15	8,626	8,797	60	Marcellus
30	2-Apr-15	8,428	9,597	60	Marcellus
31	2-Apr-15	8,228	8,397	60	Marcellus
32	2-Apr-15	8,028	8,197	60	Marcellus
33	2-Apr-15	7,828	7,997	60	Marcellus
34	3-Apr-15	7,629	7,797	60	Marcellus
35	3-Apr-15	7,429	7,597	60	Marcellus
36	3-Apr-15	7,229	7,397	60	Marcellus
37	3-Apr-15	7,029	7,197	60	Marcellus
38	3-Apr-15	6,829	6,998	60	Marcellus
39	4-Apr-15	6,629	6,798	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	22-Mar-15	63.9	7,440	N/A	4,827	202,200	6,912	N/A
2	22-Mar-15	64.3	7,595	6,140	3,456	202,100	6,871	N/A
3	23-Mar-15	64.6	7,763	5,325	4,072	186,140	6,829	N/A
4	23-Mar-15	65.5	7,566	5,384	3,878	220,120	7,369	N/A
5	23-Mar-15	66.1	7,321	5,489	3,274	247,200	6,826	N/A
6	24-Mar-15	66.1	7,482	5,598	4,016	243,980	6,846	N/A
7	24-Mar-15	64.2	7,400	5,343	3,584	250,740	6,896	N/A
8	24-Mar-15	65.2	7,290	5,540	3,660	248,360	6,843	N/A
9	24-Mar-15	66.0	7,210	5,298	3,863	247,500	6,715	N/A
10	25-Mar-15	65.4	7,210	5,350	3,624	248,820	6,609	N/A
11	25-Mar-15	64.0	6,881	5,479	3,364	249,180	6,605	N/A
12	25-Mar-15	63.9	6,972	5,429	3,046	164,330	4,965	N/A
13	27-Mar-15	59.4	7,882	5,351	4,260	84,680	6,997	N/A
14	28-Mar-15	64.0	6,968	5,529	3,644	248,920	6,551	N/A
15	28-Mar-15	63.0	7,250	5,361	3,665	151,500	7,095	N/A
16	29-Mar-15	63.7	6,805	5,148	3,149	247,920	6,496	N/A
17	29-Mar-15	64.1	6,780	5,454	3,291	250,380	6,518	N/A
18	29-Mar-15	66.1	7,179	5,591	3,264	185,860	6,894	N/A
19	30-Mar-15	63.4	7,244	5,335	3,913	138,840	6,715	N/A
20	30-Mar-15	64.0	7,002	5,111	3,588	247,980	6,424	N/A
21	30-Mar-15	64.1	6,942	5,402	4,491	248,400	6,408	N/A
22	30-Mar-15	63.8	6,918	5,577	3,616	249,100	6,435	N/A
23	31-Mar-15	61.1	6,808	5,124	4,384	188,840	6,314	N/A
24	31-Mar-15	35.7	8,573	5,427	4,217	3,104	5,969	N/A
25	31-Mar-15	65.3	6,566	5,617	3,889	248,200	6,334	N/A
26	1-Apr-15	63.6	6,473	5,117	3,723	248,300	6,327	N/A
27	1-Apr-15	64.3	6,744	5,172	3,883	247,900	6,308	N/A
28	1-Apr-15	63.9	6,652	5,375	3,763	248,600	6,739	N/A
29	1-Apr-15	64.0	6,867	5,093	4,565	209,100	6,205	N/A
30	2-Apr-15	63.5	7,264	5,289	4,284	196,900	6,469	N/A
31	2-Apr-15	64.3	6,610	4,934	3,229	245,380	6,218	N/A
32	2-Apr-15	64.9	6,548	5,095	3,477	246,000	6,263	N/A
33	2-Apr-15	63.7	7,019	5,032	5,128	181,990	6,596	N/A
34	3-Apr-15	63.1	6,345	5,300	3,163	245,800	6,275	N/A
35	3-Apr-15	65.9	6,507	5,081	3,467	248,120	6,202	N/A
36	3-Apr-15	67.9	6,403	5,185	3,383	247,300	6,164	N/A
37	3-Apr-15	64.5	6,647	5,611	4,465	192,300	6,136	N/A
38	3-Apr-15	63.8	7,200	5,307	4,331	135,740	6,272	N/A
39	4-Apr-15	65.6	6,643	6,899	3,375	247,020	6,321	N/A
	AVG=	63.6	7,050	5,392	3,802	8,344,844	253,931	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	126	N/A	126	N/A
Fresh Water	307	N/A	307	N/A
Sandstone	0	256	0	256
Sandstone/Trace Coal	est. 256	316	est. 256	316
Sandstone/Siltstone	est. 316	596	est. 316	596
Limestone	est. 596	636	est. 596	636
Siltstone/Sandstone	est. 636	736	est. 636	736
Limestone/Siltstone	est. 736	796	est. 736	796
Siltstone	est. 796	896	est. 796	896
Limestone/Sandstone	est. 896	1,056	est. 896	1,056
Coal	est. 1056	1,076	est. 1056	1,076
Sandstone	est. 1076	1,136	est. 1076	1,136
Siltstone	est. 1136	1,196	est. 1136	1,196
Shale	est. 1196	1,256	est. 1196	1,256
Sandstone	est. 1256	1,316	est. 1256	1,316
Sandstone/Trace Coal	est. 1316	1,336	est. 1316	1,336
Sandstone	est. 1336	1,376	est. 1336	1,376
Siltstone	est. 1376	1,396	est. 1376	1,396
Sandstone/Trace Coal	est. 1396	1,696	est. 1396	1,696
Siltstone	est. 1696	1,813	est. 1696	1,813
Big Lime	1,813	1,990	1,813	1,990
Big Injun	1,990	2,362	1,990	2,362
Gantz Sand	2,362	2,756	2,362	2,756
Fifty Foot Sandstone	2,756	2,828	2,756	2,828
Gordon	2,828	3,186	2,828	3,186
Fifth Sandstone	3,186	3,255	3,186	3,255
Bayard	3,255	3,404	3,255	3,405
Warren	3,404	3,747	3,405	3,748
Speechley	3,747	3,993	3,748	3,994
Baltown	3,993	4,466	3,994	4,469
Bradford	4,466	4,850	4,469	4,864
Benson	4,850	5,067	4,864	5,095
Alexander	5,067	5,359	5,095	5,416
Elk	5,359	5,655	5,416	5,738
Rhinestreet	5,655	5,993	5,738	6,122
Sycamore	5,993	6,107	6,122	6,271
Middlesex	6,107	6,213	6,271	6,446
Burkett	6,213	6,242	6,446	6,511
Tully	6,242	6,266	6,511	6,580
Marcellus	6,266	NA	6,580	NA

*Please note Antero determines shallow 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:	3/22/2015
Job End Date:	4/2/2015
State:	West Virginia
County:	Ritchie
API Number:	47-085-10057-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Chandos Unit 2H
Longitude:	-80.91993900
Latitude:	39.33400800
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,336
Total Base Water Volume (gal):	11,308,730
Total Base Non Water Volume:	438,094



85-10057

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	91.47336	
Sand	U.S. Well Services, LLC	Proppant					
			Crystalline Silica, quartz	14808-60-7	100.00000	8.09344	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid					
			Water	7732-18-5	87.50000	0.16616	
			Hydrogen Chloride	7647-01-0	18.00000	0.03969	
LGC-15	U.S. Well Services	Gelling Agents					
			Guar Gum	9000-30-0	50.00000	0.04615	
			Petroleum Distillates	64742-47-8	60.00000	0.04371	
			Suspending agent (solid)	14808-60-7	3.00000	0.00706	
			Surfactant	68439-51-0	3.00000	0.00277	
WFRA-405	U.S. Well Services	Friction Reducer					
			Water	7732-18-5	40.00000	0.03129	
			Anionic Polyacrylamide	Proprietary	40.00000	0.03129	
			Sodium Chloride	7647-14-5	20.00000	0.01565	
			Petroleum Distillates	64742-47-8	20.00000	0.01260	
			Ethoxylated alcohol blend	Proprietary	5.00000	0.00391	

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SI-1100	U.S. Well Services	Scale Inhibitor				
			Di Water	7732-18-5	80.00000	0.01024
			Ethylene Glycol	107-21-1	40.00000	0.00579
			Potassium salt of diethylene triamine penta (methylene phosphonic acid)	15827-60-8	10.00000	0.00173
			2-Phosphonobutane 1,2,4 tricarboxylic salt	37971-36-1	10.00000	0.00165
			hexamethylenediamine tetra (methylene phosphonic acid)	38820-59-6	10.00000	0.00160
			Copolymer of Maleic and Acrylic acid	26677-99-6	10.00000	0.00151
			bis (hexamethylene) tramine penta (methylene phosphonic acid) - phosphate acid	40623-75-4	10.00000	0.00147
			Acrylic polymer	52255-49-9	5.00000	0.00064
K-BAC 1020	U.S. Well Services	Anti-Bacterial Agent				
			2,2-dibromo-3-nitropropionamide	10222-01-2	20.00000	0.00404
			Deionized Water	7732-18-5	28.00000	0.00231
AP One	U.S. Well Services	Gel Breakers				
			Ammonium Persulfate	7727-54-0	100.00000	0.00161
AI-301	U.S. Well Services	Acid Corrosion Inhibitors				
			Diethylene Glycol	111-46-6	30.00000	0.00013
			Methenamine	100-97-0	20.00000	0.00010
			Polyethylene polyamine	68603-67-8	10.00000	0.00004
			Hydrogen Chloride	7647-01-0	10.00000	0.00004
			Coco amine	61791-14-8	5.00000	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.

* 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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