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WR-35  
Rev (9-11)

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

DATE: 9/30/2013  
API #: 47-017-06156

Farm name: Robinson, Richard G. Operator Well No.: Johnson Unit 1H

LOCATION: Elevation: 1,154' Quadrangle: New Milton 7.5'

District: New Milton County: Doddridge  
Latitude: 1.736' Feet South of 39 Deg. 12 Min. 30 Sec.  
Longitude 6.871' Feet West of 80 Deg. 42 Min. 30 Sec.

Company: Antero Resources Corporation

Address:	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
1625 17th Street Denver, CO 80202	20" 51#	40'	40'	38 Cu. Ft. Class A
Agent: CT Corporation System	13 3/8" 48#	376'	376'	522 Cu. Ft. Class A
Inspector: Douglas Newlon	9 5/8" 36#	2,533'	2,533'	1031 Cu. Ft. Class A
Date Permit Issued: 12/26/2012	5 1/2" 20#	13,608'	13,608'	3324 Cu. Ft. Class H
Date Well Work Commenced: 4/10/2013				
Date Well Work Completed: 7/20/2013	2 3/8" 4.7#	7045'		
Verbal Plugging: N/A				
Date Permission granted on: N/A				
Rotary <input checked="" type="checkbox"/> Cable <input type="checkbox"/> Rig <input type="checkbox"/>		Top	Bottom	
Total Vertical Depth (ft): 7143' TVD	Cement Plug	600'	1000'	668 Cu. Ft. Class H
Total Measured Depth (ft): 13,608' MD				
Fresh Water Depth (ft.): 210'				
Salt Water Depth (ft.): 1820'				
Is coal being mined in area (N/Y)? No				
Coal Depths (ft.): 879', 1210'				
Void(s) encountered (N/Y) Depth(s) None				

OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)

Producing formation Marcellus Pay zone depth (ft) 7035' (TOP)

Gas: Initial open flow ---- MCF/d Oil: Initial open flow ---- Bbl/d

Final open flow 7,569 MCF/d Final open flow ---- Bbl/d

Time of open flow between initial and final tests ---- Hours

Static rock Pressure 3950 psig (surface pressure) after ---- Hours

Second producing formation \_\_\_\_\_ Pay zone depth (ft) \_\_\_\_\_

Gas: Initial open flow \_\_\_\_\_ MCF/d Oil: Initial open flow \_\_\_\_\_ Bbl/d

Final open flow \_\_\_\_\_ MCF/d Final open flow \_\_\_\_\_ Bbl/d

Time of open flow between initial and final tests \_\_\_\_\_ Hours

Static rock Pressure \_\_\_\_\_ psig (surface pressure) after \_\_\_\_\_ Hours

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I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete.

Kathleen Buck  
Signature

2/14/2014  
Date

05/23/2014

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Were core samples taken? Yes \_\_\_\_\_ No

Were cuttings caught during drilling? Yes  No \_\_\_\_\_

Were Electrical, Mechanical or Geophysical logs recorded on this well? If yes, please list Yes- CBL, Dual Laterolog/ Gamma Ray, Photo Density/ Compensated Neutron.

**NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.**

Perforated Intervals, Fracturing, or Stimulating:

Perforations: 7,291'- 13,554' (2,520 Holes)

Frac'd with 32,500 gals 15% HCL acid, 180,984 bbls Slick Water carrying 383,040# 100 mesh, 3,231,590# 40/70 sand and 1,741,800# 20/40 sand

Plug Back Details Including Plug Type and Depth(s): N/A

<u>Formations Encountered:</u>	<u>Top Depth</u>	<u>/</u>	<u>Bottom Depth</u>
<u>Surface:</u>			
Big Lime	2151'		2245'
Big Injun	2246'		2487'
Gantz Sand	2488'		2664'
Fifty Foot Sandstone	2665'		2872'
Gordon	2873'		3197'
Fifth Sandstone	3198'		3263'
Bayard	3264'		3856'
Speechley	3857'		4055'
Baltown	4056'		4697'
Bradford	4698'		5147'
Benson	5148'		5416'
Alexander	5417'		5615'
Elk	5616'		6134'
Rhinestreet	6135'		6626'
Sycamore	6627'		6785'
Middlesex	6786'		6920'
Burkett	6921'		6959'
Tully	6960'		7026'
Hamilton	7027'		7034'
Marcellus	7035'		7143' TVD

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## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	7/9/2013
Job End Date:	7/20/2013
State:	West Virginia
County:	Doddridge
API Number:	47-017-06156-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Johnson Unit 1H
Longitude:	-80.71445830
Latitude:	39.18946940
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	7,143
Total Base Water Volume (gal):	7,701,036
Total Base Non Water Volume:	53,300



### 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
Freshwater	Antero Resources	Water	Water	7732-18-5	100.00000	90.70898	
40/70 White	US Silica	Proppant	Sand	14808-60-7	100.00000	4.91440	
20/40 White	US Silica	Proppant	Sand	14808-60-7	100.00000	2.92370	
100 Mesh	US Silica	Proppant	Sand	14808-60-7	100.00000	1.26770	
Beta M-4.0	PIP	Guar Gel	Petroleum Distillate	64742-47-8	55.00000	0.04677	
			Guar Gum	9000-30-0	50.00000	0.04252	
			Clay	1302-78-9	5.00000	0.00425	
			Surfactant	154518-36-2	1.00000	0.00085	
Plexslick 953	Chemplex	Friction Reducer	Water	7732-18-5	35.00000	0.02152	
			Polyacrylamide-co-acrylic acid	9003-06-9	32.00000	0.01967	
			Hydrotreated Petroleum Distillate	64742-47-8	30.00000	0.01844	
			Alcohol Ethoxylate Surfactants	Proprietary	8.00000	0.00492	

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Hydrochloric Acid 10-15%	Reagent	Acid				
			Hydrchloric Acid	7647-01-0	15.00000	0.03424
Plexicide 15G	Chemplex	Biocide				
			Water	7732-18-5	90.00000	0.02285
			Glutaraldehyde	111-30-8	14.00000	0.00355
			Didecyl Dimethyl Ammonium Chloride	7173-51-5	3.00000	0.00076
			Alkyl Dimethyl Benzyl Ammonium Chloride	68424-85-1	3.00000	0.00076
			Ethanol	64-17-5	3.00000	0.00076
Plexaid 673	Chemplex	Scale Inhibitor				
			Water	7732-18-5	85.00000	0.01335
			Methyl Alcohol	67-56-1	25.00000	0.00393
			Sodium Salt of Phosphonodimethylated Diamine	Proprietary	5.00000	0.00079
Sodium Persulfate	Chemplex	Breaker				
			Sodium Persulfate	7775-27-1	100.00000	0.00123
Plexhib 256	Chemplex	Corrosion				
			Methyl Alcohol	67-56-1	70.00000	0.00049
			thiourea-formaldehyde copolymer	68527-49-1	30.00000	0.00021
			Alcohol Ethoxylate Surfactants	Proprietary	30.00000	0.00021
			n-olefins	Proprietary	10.00000	0.00007
			Propargyl Alcohol	107-19-7	8.00000	0.00006
Plexbreak 145	Chemplex	Non-emulsifier				
			Water	732-18-5	66.00000	0.00052
			Methyl Alcohol	67-56-1	15.00000	0.00012
			Ethylene Glycol Monobutyl Ether	111-76-2	15.00000	0.00012
			Cocamide Diethanolamine Salt	68603-42-9	10.00000	0.00008
			Diethanolamine	111-42-2	5.00000	0.00004
Ferriplex 66	Chemplex	Iron Control				
			Acetic Acid	64-19-7	50.00000	0.00022
			Water	7732-18-5	35.00000	0.00016
			Citric Acid	77-92-9	30.00000	0.00013

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)