

JE

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: 8/12/2013  
API #: 47-095-02067

Farm name: Moore, Forest & Brenda Operator Well No.: Sweeney Unit 2H

LOCATION: Elevation: 749' Quadrangle: Center Point 7.5'

District: McElroy County: Tyler  
Latitude: 9.015° Feet South of 39 Deg. 25 Min. 00 Sec.  
Longitude 7.553° 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" 94#	40'	40'	38 Cu. Ft Class A
Agent: CT Corporation System	13 3/8" 48#	378'	378'	252 Cu. Ft Class A
Inspector: <b>Joe Taylor</b>	9 5/8" 36#	2,600'	2,600'	1059 Cu. Ft Class A
Date Permit Issued: 10/31/2012	5 1/2" 20#	13,163'	13,163'	3182 Cu. Ft Class H
Date Well Work Commenced: 11/29/2012				
Date Well Work Completed: 7/19/2013	2 3/8" 4.7#	6,700'		
Verbal Plugging: N/A				
Date Permission granted on: N/A				
Rotary <input checked="" type="checkbox"/> Cable <input type="checkbox"/> Rig <input type="checkbox"/>				
Total Vertical Depth (ft): 6681' TVD (Deepest Point Drilled)				
Total Measured Depth (ft): 13,163' MD, 6677' TVD (BHL)				
Fresh Water Depth (ft.): 275'				
Salt Water Depth (ft.): 1616'				
Is coal being mined in area (N/Y)? No				
Coal Depths (ft.): 672', 747'				
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) 6,574' (TOP)

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

Final open flow 8,034 MCF/d Final open flow --- Bbl/d

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

Static rock Pressure 3,550 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

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.

Karlus Buck  
Signature

12/10/2013  
Date

04/04/2014

95-02067

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,

This is a subsequent well. Antero only runs wireline logs on the first well on a multi-well pad (Ed Arnold Unit 1H API#47-095-02038). Please reference the wireline logs submitted with Form WR-35 for Ed Arnold Unit 1H.

**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: 6,788'- 13,108' (1,944 Holes)

Frac'd w/ 14,104 gals 15% HCL Acid, 164,582 bbls Slick Water carrying 772,195# 100 mesh, 2,890,155# 40/70 sand and 1,706,585# 20/40 sand.

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

Formations Encountered:	Top Depth	/	Bottom Depth
Surface:			
Gantz Sand	est 2678'		2803'
Fifty Foot Sand	est 2804'		2918'
Gordon	est 2919'		3122'
Fifth Sandstone	est 3123'		3153'
Bayard	est 3154'		3526'
Warren	est 3527'		3903'
Speechley	est 3904'		4183'
Balltown	est 4184'		4381'
Bradford	est 4382'		4836'
Benson	est 4837'		5090'
Alexander	est 5091'		5283'
Elk	est 5284'		5901'
Rhinestreet	est 5902'		6178'
Sycamore	6179'		6395'
West River Shale	6396'		5484'
Burkett	5485'		6512'
Tully	6513'		6573'
Marcellus	6574'		6681' TVD

04/04/2014

95-02067



**Antero Resources**  
**Sweeney Unit 2H**  
**Tyler County WV**  
**Northing: 14306200.00**  
**Easting: 1713804.31**  
**Original Wellpath**

**WELL DETAILS:** Sweeney Unit 2H

+N/-S	+E/-W	Northing	Ground Level	Easting	Latitude	Longitude	Slot
0.0	0.0	14306200.00	749.0	1713804.31	39° 23' 45.356 N	80° 44' 24.829 W	

**DESIGN TARGET DETAILS**

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
SHL Sweeney Unit 2H	0.0	0.0	0.0	14306200.00	1713804.31	39° 23' 45.356 N	80° 44' 24.829 W	Point
Actual BHL Sweeney Unit 2H	6676.5	-1562.0	6674.5	14304638.04	1720478.84	39° 23' 29.714 N	80° 42' 59.840 W	Point



To convert Magnetic North to Grid, Subtract 8.63°  
 To convert True North to Grid, Subtract 0.16°

Azimuths to Grid North  
 True North: -0.17°  
 Magnetic North: -8.63°

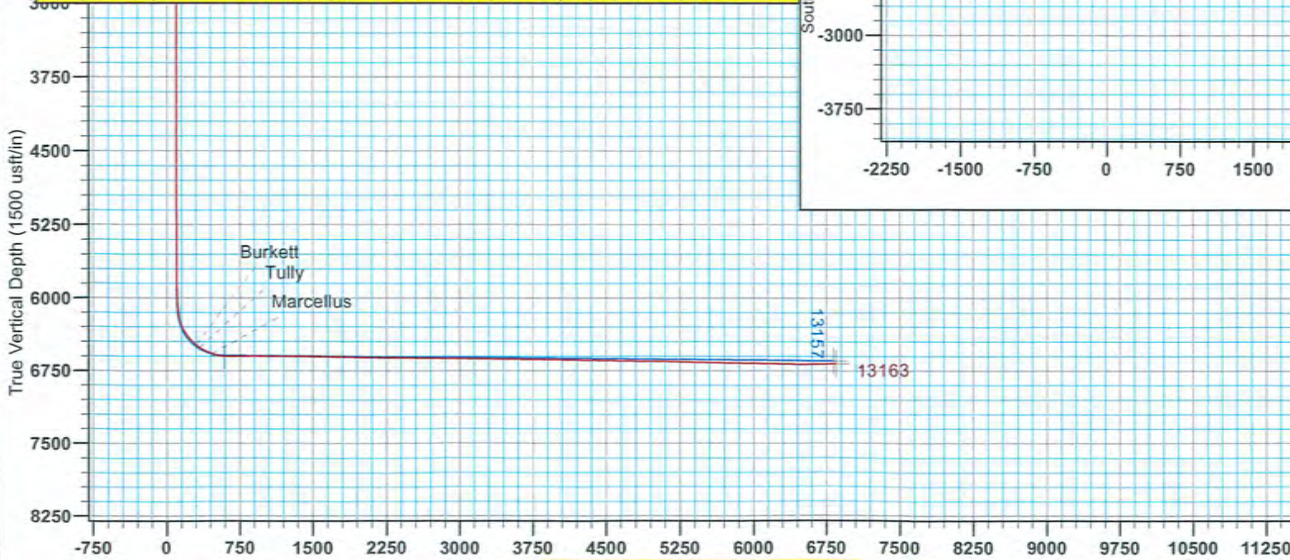
Magnetic Field  
 Strength: 52522.0 nT  
 Dip Angle: 67.03°  
 Date: 1/9/2013  
 Model: IGRF2010

**LEGEND**

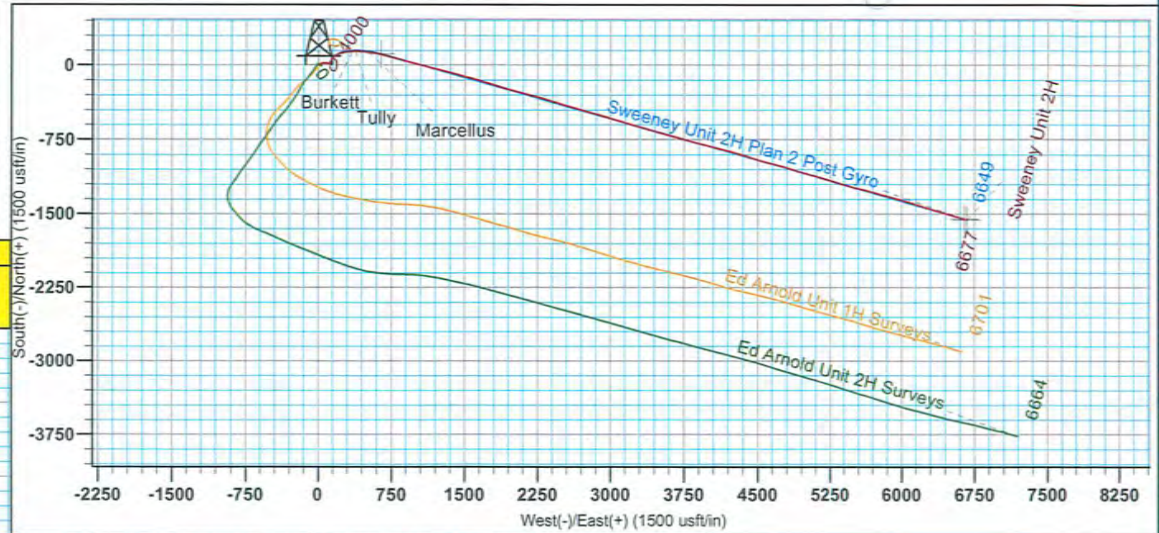
- Ed Arnold Unit 1H, Original Wellpath, Original Wellpath V0
- Sweeney Unit 2H, Original Wellpath, Plan 2 Post Gyro V0
- Ed Arnold Unit 2H, Original Wellpath, Original Wellpath V0
- Original Wellpath

**DESIGN TARGET DETAILS**

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL Sweeney Unit 2H	0.0	0.0	0.0	14306200.00	1713804.31	39° 23' 45.356 N	80° 44' 24.829 W
Actual BHL Sweeney Unit 2H	6676.5	-1562.0	6674.5	14304638.04	1720478.84	39° 23' 29.714 N	80° 42' 59.840 W
SHL (UTM meters)				N: 4,360,756m E: 522,383m	BHL (UTM meters)	N: 4,360,290 E: 524,385m	



Vertical Section at 105.50° (1500 usft/in)



**SITE DETAILS:** Ed Arnold Pad

Ed Arnold Pad McElroy District  
 Site Centre Northing: 14306188.32  
 Easting: 1713823.50  
 Positional Uncertainty: 2.0  
 Convergence: 0.16  
 Local North: Grid

**PROJECT DETAILS:** Tyler County WV

Geodetic System: Universal Transverse Mercator (US Survey Feet)  
 Datum: NAD 1927 (NADCON CONUS)  
 Ellipsoid: Clarke 1866  
 Zone: Zone 17N (84 W to 78 W)  
 System Datum: Mean Sea Level

**FORMATION TOP DETAILS**  
 No formation data is available

Genie Lightfoot 15:40, September 09 2013  
 Scientific Drilling  
 421 South Eagle Lane  
 Oklahoma City, OK



95-02067

# Hydraulic Fracturing Fluid Product Component Information Disclosure



Job Start Date:	6/26/2013
Job End Date:	7/19/2013
State:	West Virginia
County:	Tyler
API Number:	47-095-02067-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Sweeney Unit 2H
Longitude:	-80.74023060
Latitude:	39.39593060
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,681
Total Base Water Volume (gal):	6,415,668
Total Base Non Water Volume:	259,548

## 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	90.84997	
Sand	U.S. Well Services, LLC	Proppant					
			Crystalline Silica, quartz	14808-60-7	100.00000	8.89976	
HCL Acid (12.6%-18.0%)	U.S. Well Services, LLC	Bulk Acid					
			Water	7732-18-5	87.50000	0.08056	
			Hydrogen Chloride	7641-01-1	18.00000	0.01924	
WFRA-405	U.S. Well Services, LLC	Friction Reducer					
			Anionic Polyacrylamide	Proprietary	40.00000	0.02223	
			Water	7732-18-5	40.00000	0.02223	
			Petroleum Distillates	64742-47-8	40.00000	0.01790	
			Crystalline Salt	12125-02-9	5.00000	0.00278	
			Ethoxylated alcohol blend	Proprietary	5.00000	0.00278	
LGC-15	U.S. Well Services, LLC	Gelling Agents					
			Guar Gum	9000-30-0	50.00000	0.02795	
			Petroleum Distillates	64742-47-8	60.00000	0.02647	
			Suspending agent (solid)	14808-60-7	3.00000	0.00427	

95-02067

			Surfactant	68439-51-0	3.00000	0.00168
SI-1000	U.S. Well Services, LLC	Scale Inhibitor				
			Anionic Copolymer	Proprietary		0.00461
			Ethylene Glycol	107-21-1	20.00000	0.00417
			Water	7732-18-5	30.00000	0.00348
K-BAC 1020	U.S. Well Services, LLC	Anti-Bacterial Agent				
			2,2-dibromo-3-nitripropionamide	10222-01-2	20.00000	0.00542
			Deionized Water	7732-18-5	28.00000	0.00310
AP One	U.S. Well Services, LLC	Gel Breakers				
			Ammonium Persulfate	7727-54-0	100.00000	0.00091
AI-300	U.S. Well Services, LLC	Acid Corrosion Inhibitor				
			Ethylene Glycol	107-21-1	40.00000	0.00021
			N,N-Dimethylformamide	68-12-2	20.00000	0.00007
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	15.00000	0.00006
			Cinnamaldehyde	104-55-2	15.00000	0.00006
			2-Butoxyethanol	111-76-2	15.00000	0.00005
			Poly(oxy-1,2-ethanediyl), alpha-(4-nolylphenyl)-omega-hydroxy, branched	127087-87-0	5.00000	0.00002
			1-Decanol	112-30-1	5.00000	0.00002
			Isopropyl Alcohol	67-63-0	2.50000	0.00001
			1-Octanol	111-87-5	3.00000	0.00001

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)