

State of West Virginia  
Department of Environmental Protection  
Office of Oil and Gas

Well Operator's Report of Well Work

Farm name: John and Tammy Huddleston Operator Well No.: HR 481

LOCATION: Elevation: 1025' Quadrangle: Reedy WV 7.5'

District: Reedy County: Roane

Latitude: 9071' Feet South of 38 Deg. 55 Min. 30 Sec.

Longitude 3900' Feet West of 81 Deg. 22 Min. 30 Sec.

Company: Hard Rock Exploration

	Casing & Tubing	ed in drilling	Left in well	Cement fill up Cu. Ft.
Address: <u>1244 Martins Branch Road</u> <u>Charleston WV, 25312</u>				
Agent: <u>Marc Scholl</u>	<u>13 3/8"</u>	<u>30'</u>	<u>30'</u>	<u>N/A</u>
Inspector: <u>Ed Gainer</u>	<u>9 5/8"</u>	<u>932'</u>	<u>932'</u>	<u>480 ft3 CTS</u>
Date Permit Issued: <u>2/8/13</u>	<u>7"</u>	<u>2662'</u>	<u>2662'</u>	<u>564ft3 CTS</u>
Date Well Work Commenced: <u>3/1/13</u>	<u>4.5"</u>	<u>7611'</u>	<u>7611'</u>	<u>130 ft3</u>
Date Well Work Completed: <u>8/2/13</u>				
Verbal Plugging:	<u>Gamma Log from (1200' - 2700' MD) KOP- 3920'</u>			
Date Permission granted on:	<u>Gamma Log from (3850' - 4520' MD)</u>			
Rotary x Cable Rig	<u>Ran Gyro Log from (3800' - Surface)</u>			
Total Depth (feet): <u>7795'TMD, 4571'TVD</u>				
Fresh Water Depth (ft.): <u>None</u>				
Salt Water Depth (ft.): <u>1968', 2 150'</u>				
Is coal being mined in area (N/Y)? <u>N</u>				
Coal Depths (ft.): <u>N/A</u>				

OPEN FLOW DATA

Producing formation Lower Huron Shale Pay zone depth (ft) 4364'MD- 7795'MD  
4323'TVD - 4571' TVD

Gas: Initial open flow      Odor      MCF/d Oil: Initial open flow      Bbl/d  
Final open flow 1.2 MMCF/d Final open flow      Bbl/d  
Time of open flow between initial and final tests 72 Hours  
Static rock Pressure      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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NOTE: ON BACK OF THIS FORM 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 ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

Signed:

By: James [Signature]  
Date: 8/12/2013

87.04728

<b>Formation:</b>	<b>Top:</b>	<b>Bottom:</b>
Soil/Sand/Shale	0	1885
Salt Sand	1885	2110
Big Lime	2110	2165
Big Injun	2165	2200
Dev. Shale	2200	2585
Coffee Shale	2585	2600
Devonian Shale	2600	4571
Lower Huron Section	4413	4571

**All depths shown As TVD**

3/11/13 – 3/12/13 Run 169 jts of R-3 4.5" 11.6ppf M-80 casing to depth of 7611' KB. Pressure test lines. Pump 5 bbls water and drop 1.125" ball for P/O shoe. Follow with 3 bbls water and nitrogen at 7k scf/min. Pump total of 122k scf N2 at 7k scf/min and pressure up to 3300 psi. Hold pressure for packer operation for 20 min. Bleed casing pressure off to approx. 700 psi. RU to perform cmt grout. Pump 5 bbls at 15ppg, allow air to escape, and pump 10 bbls cmt at 15ppg. Shut down for air, then pump 7 bbls cmt at 15ppg and 3 bbls water. End job

NOTE: THERE ARE NO PERFORATED INTERVALS IN THIS STYLE OF COMPLETION. THE PACKERS WILL SERVE AS STAGE ISOLATION AND THE BALL ACTIVATED MECHANICAL SLEEVES SERVE AS THE MEANS OF COMMUNICATION FROM WELLBORE TO FORMATION. ALL DEPTHS ARE INDICATED BELOW.

Stage	Sleeve	Sleeve ID	Ball Size	Packer
1	7611.00	P/O Shoe	N/A	7425.54
2	7289.26	1.15	1.250	7193.01
3	7056.63	1.28	1.375	6960.48
4	6824.50	1.40	1.500	6728.55
5	6636.77	1.53	1.625	6496.62
6	6360.74	1.65	1.750	6264.79
7	6128.71	1.78	1.875	6032.76
8	5896.68	1.90	2.125	5800.63
9	5664.65	2.15	2.375	5568.60
10	5432.62	2.40	2.625	5336.57
11	5200.59	2.65	2.875	5104.44
12	4968.36	2.90	3.125	4872.41
13	4736.63	3.15	3.375	4640.68
14	4504.80	3.40	3.625	4364.75
<b>Anchor</b>				<b>2857.00</b>

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08/01/13 MIRU Nabors – wellhead pressure 1240 psi. Start pumping N2 on Stg 1 at 30k scf/min and open shoe at 4537 psi. Up rate and pump total of 1MM scf N2. Shut down and drop 1.25” ball for Stg 2. Start pumping ball to sleeve at 23k scf/min. Land ball (had to up rate from 23k to 30k seat) and open sleeve at 4158 psi. Up rate and pump total of 1MM scf N2. Shut down and drop 1.375” ball for Stg 3. Start pumping ball to sleeve at 33k scf/min and land ball at 160k scf. Open sleeve at 3984 psi. Up rate and pump total of 1MM scf N2. Shut down and drop 1.5” ball for Stg 4. Repeat process for Stgs 4 through Stg 14.

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7
Max P	5786	5128	4833	4277	3994	3874	4117
Avg P	5582	4911	4691	4176	3962	3771	4007
Max R	97.0	106.0	104.0	106.0	103.0	102.0	105.0
Avg R	90.0	103.0	102.0	104.0	102.0	97.0	102.0
Shut In	2406-5min	N/A	N/A	1986-5min	N/A	1961-5min	N/A
	Stage 8	Stage 9	Stage 10	Stage 11	Stage 12	Stage 13	Stage 14
Max P	3972	3863	3911	3784	3721	3796	5063
Avg P	3915	3852	3900	3678	3694	3767	4682
Max R	104.0	101.0	104.0	100.0	105.0	107.0	87.0
Avg R	101.0	100.0	103.0	95.0	103.0	106.0	69.0
Shut In	N/A	2084-5min	N/A	2106-5min	N/A	N/A	2226

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