

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

Well Operator's Report of Well Work

Farm name: Clair and Charlotte Allen Operator Well No.: HR 413

LOCATION: Elevation: 713' Quadrangle: Reedy WV 7.5'

District: Reedy County: Roane

Latitude: 4728' Feet South of 38 Deg. 55 Min. 00 Sec.

Longitude 4258' Feet West of 81 Deg. 27 Min. 30 Sec.

Company: Hard Rock Exploration

	Casing & Tubing	Used in drilling	Left in well	Cement fill up Cu. Ft.
Address: 1244 Martins Branch Road Charleston WV, 25312	20"	19'	19'	NA
Agent: Marc Scholl	13 3/8"	84	84	51ft3 CTS
Inspector: Ed Gainer	9 5/8"	674	674	318 ft3 CTS
Date Permit Issued: 10/28/11	7"	2366	2366	603 ft3 CTS
Date Well Work Commenced: 2/17/12	4.5"	7823	7823	130 ft3
Date Well Work Completed: 3/13/12				
Verbal Plugging:	Ran Gamma Log from KOP(3560' - 4730''TVD)			
Date Permission granted on:	Ran Gyro Log from (3500' - Surface)			
Rotary x Cable Rig	Ran Open hole Log from (2408' - Surface)			
Total Depth (feet): 7933'TMD, 4196'TVD				Office of Oil & Gas
Fresh Water Depth (ft.): 55-60'				
Salt Water Depth (ft.): 1240', 1900'				JUN 06 2012
Is coal being mined in area (N/Y)? N				WV DEPARTMENT OF ENVIRONMENTAL PROTECTION
Coal Depths (ft.): <u>N/A</u>				

OPEN FLOW DATA

Producing formation Lower Huron Shale Pay zone depth (ft) 4287'MD- 7933 'MD
4130'TVD - 4196' TVD

Gas: Initial open flow oder MCF/d Oil: Initial open flow Bbl/d
Final open flow 2000+ MCF/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

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: President

Date: 6/6/12

<u>Formation:</u>	<u>Top:</u>	<u>Bottom:</u>
Soil/Sand/Shale	0	1668
Salt Sand	1668	1963
Shale	1963	2295
Coffee Shale	2295	2307
Berea Sand	2307	2309
Devonian Shale	2309	4196
Lower Huron Section	4140	4196

All depths shown As TVD

02/26/12 Run total of 181 jts of 4.5" 11.6ppf R-3 casing to depth of 7823'. Run 17 stg Packers Plus mechanical packer system. Finish running casing at 8:00pm. Land hanger in wellhead and ND BOP. RU DSA and 10k frac valve at 10:15pm. MIRU Baker cmt crew. Drop ball for P/O shoe, and start pumping N2 to land balls. Pressure up on casing to set packers and open shoe at 3763psi. SWI. RD N2 equipment. RU to perform annular squeeze. Dump with 100sx type 1 3% CaCl. SWI.

	Sleeve	Sleeve Size	Packers
Stage 1	7821	Pump Out	7727
Stage 2	7593	1.250	7504
Stage 3	7370	1.500	7282
Stage 4	7148	1.625	7059
Stage 5	6967	1.750	6878
Stage 6	6744	1.875	6655
Stage 7	6521	2.000	6432
Stage 8	6298	2.125	6209
Stage 9	6117	2.250	6028
Stage 10	5894	2.375	5805
Stage 11	5671	2.500	5583
Stage 12	5448	2.625	5360
Stage 13	5225	2.750	5137
Stage 14	5044	2.875	4955
Stage 15	4822	3.000	4733
Stage 16	4599	3.250	4510
Stage 17	4376	3.500	4287
Anchor			2688

REC'D
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03/12/12 Well head pressure 1310psi. Pressure test lines and start pumping at 7:40am at half rate. Work trucks to 100k scf/min and pump total of 1MM scf N2. Shut down and drop 1.5" ball for Stg 2. Wait 10 min and start pumping ball down at 18k scf/min. Land ball and open sleeve at 4329psi. Increase rate and pump total of 1MM scf N2. Shut down, drop 1.625" ball for Stg 3 Repeat Stimulation process for Stgs 3 - 17.

	Stg 1	Stg 2	Stg 3	Stg 4	Stg 5	Stg 6	Stg 7	Stg 8	Stg 9
Max P	5909	5338	5198	5052	5128	4892	4957	4741	4651
Avg P	5514	5304	5099	4980	5005	4803	4899	4641	4609
Max R	101.0	102.0	103.0	104.0	109.0	106.0	109.0	106.0	105.0
Avg R	100.0	100.0	102.0	103.0	107.0	15.0	108.0	104.0	104.0
5 min	1790	1820	1874	1915	1904	1934	1945	1920	1980

	Stg 10	Stg 11	Stg 12	Stg 13	Stg 14	Stg 15	Stg 16	Stg 17
Max P	4586	4372	4396	4189	4398	4198	4169	4119
Avg P	4543	4331	4332	4159	4337	4165	4149	4098
Max R	105.0	104.0	105.0	101.0	109.0	106.0	105.0	105.0
Avg R	104.0	103.0	103	101.0	107.0	105.0	104.0	103.0
5 min	1959	1912	1964	1960	1941	1949	1904	1920

10/19/2012