

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

Well Operator's Report of Well Work

Farm name: Russel Moore Operator Well No.: HR 449

LOCATION: Elevation: 670' Quadrangle: Reedy WV 7.5'

District: Reedy County: Roane
Latitude: 8043 Feet South of 38 Deg. 55 Min. 00 Sec.
Longitude 6842 Feet West of 81 Deg. 25 Min. 00 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"	25	25	N/A
Agent: Marc Scholl	13 3/8"	84	84	56ft3 CTS
Inspector: Ed Gainer	9 5/8"	595	595	300 ft3 CTS
Date Permit Issued: 7/12/11	7"	2334	2334	528 ft3 CTS
Date Well Work Commenced: 1/20/12	4.5"	7268	7268	130 ft3
Date Well Work Completed: 2/15/12				
Verbal Plugging:	Ran Gamma Log from KOP(3515' - 4152'TVD)			
Date Permission granted on:	Ran Gyro log from 3515' - Surface			
Rotary x Cable Rig				
Total Depth (feet): 7329'TMD, 4152'TVD				
Fresh Water Depth (ft.): 60', 200'				
Salt Water Depth (ft.): 1100', 1620'				
Is coal being mined in area (N/Y)? N				
Coal Depths (ft.): N/A				

OPEN FLOW DATA

Producing formation Lower Huron Shale Pay zone depth (ft) 4245'MD- 7329 'MD
4098'TVD - 4152' TVD

Gas: Initial open flow 375 MCF/d Oil: Initial open flow Bbl/d
Final open flow 1500+ 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

RECEIVED
Office of Oil & Gas

APR 02 2012

WV Department of
Environmental Protection

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: James Fitzgerald
By: President
Date: 3/30/12

09/14/2012

<u>Formation:</u>	<u>Top:</u>	<u>Bottom:</u>
Soil, Sand, Shale	0	1488
Salt Sand	1488	1748
Lime	1748	1788
Injun	1788	1808
Shale	1808	2193
Coffee Shale	2243	2258
Devonian Shale	2258	4152
Lower Huron Section	4066	4152

All depths shown As TVD

01/27/12 Run total of 169 jts of R-3 4.5" 11.6 ppf N-80 casing to depth of 7268' set at 7276' KB). Run 14 stage Packers Plus mechanical packer system. Finish running casing at approx. 2:30am--could not get landing joint out of hanger. Pull hanger back up through table and break out with tongs. Go to second rig and pick up another hanger. Land casing in head and RU flanged 10k valve. MIRU Baker and start pumping N2 at 5:20am. Pressure up to 2700psi and shut down for 20 min--packers set. Resume pumping on casing and pressure up to 4093psi to open shoe. RU to cmt 4x7 annulus. Dump squeeze with 100sx type 1 3% CaCl mixed at 15ppg followed with 3bbl water.

	Sleeve	Sleeve Size	Packers
Stage 1	7275.0	Shoe	7138
Stage 2	7004	1.375	6916
Stage 3	6782	1.625	6693
Stage 4	6559	1.750	6471
Stage 5	6337	1.875	6248
Stage 6	6114	2.125	6026
Stage 7	5892	2.250	5803
Stage 8	5669	2.500	5581
Stage 9	5447	2.625	5358
Stage 10	5224	2.875	5136
Stage 11	5002	3.000	4913
Stage 12	4779	3.250	4690
Stage 13	4557	3.375	4468
Stage 14	4334	3.625	4245
Anchor			2648

RECEIVED
Office of Oil & Gas

APR 02 2012

WV Department of
Environmental Protection

02/14/12 MIRU Baker. Pressure test and start pumping at 9:20am. Bring rate up slowly on **Stg 1** and pump total of 1 MMscf N2. Shut down and drop ball for **Stg 2**. Wait 10min for ball and start pumping at 20k scf/min. Land ball and open sleeve at 4597 psi. Up rate and pump total of 1 MMscf N2. Drop ball for **Stg 3**. Repeat for **Stg3-Stg14**.

	Stg 1	Stg 2	Stg 3	Stg 4	Stg 5	Stg 6	Stg 7
Max P	5962	5955	5819	5760	5623	5211	5911
Avg P	4929	5408	5647	5678	5506	4936	5830
Max R	94.8	99.0	107.0	106.0	109.0	103.8	103.7
Avg R	83.0	90.5	104.2	105.8	106.9	101.6	102.8
5 min	1918	2120	N/A	N/A	2109	N/A	2050
2 min	2350	2446	2280	2420	2299	2318	2485
	Stg 8	Stg 9	Stg 10	Stg 11	Stg 12	Stg 13	Stg 14
Max P	5795	5687	5816	5979	5811	5529	5333
Avg P	5662	5595	5705	5874	5673	5441	5290
Max R	104.5	106.7	106.9	99.8	105.4	108.0	105.0
Avg R	102.0	102.4	105.5	96.9	104.0	105.0	102.0
5 min	N/A	2189	2198	2248	2137	N/A	2230
2 min	2501	2540	2443	2534	2354	2458	2515

09/14/2012