

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

Well Operator's Report of Well Work

Farm name: Orland Greenleaf Operator Well No.: HR 453

LOCATION: Elevation: 705' Quadrangle: Peniel WV 7.5'

District: Reedy County: Roane
Latitude: 1201 Feet South of 38 Deg. 52 Min. 30 Sec.
Longitude 7409' 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: <u>1244 Martins Branch Road</u>				
<u>Charleston WV, 25312</u>	<u>20"</u>	<u>18</u>	<u>18</u>	<u>N/A</u>
Agent: <u>Marc Scholl</u>	<u>13 3/8"</u>	<u>84</u>	<u>84</u>	<u>56ft3 CTS</u>
Inspector: <u>Ed Gainer</u>	<u>9 5/8"</u>	<u>633</u>	<u>633</u>	<u>306 ft3 CTS</u>
Date Permit Issued: <u>9/21/11</u>	<u>7"</u>	<u>2332</u>	<u>2332</u>	<u>537 ft3 CTS</u>
Date Well Work Commenced: <u>1/28/12</u>	<u>4.5"</u>	<u>7632</u>	<u>7632</u>	<u>130 ft3</u>
Date Well Work Completed: <u>2/16/12</u>				
Verbal Plugging:	<u>Ran Gamma Log from KOP(3560' - 4122'TVD)</u>			
Date Permission granted on:				
Rotary x Cable Rig				
Total Depth (feet): <u>7713'TMD, 4159'TVD</u>				
Fresh Water Depth (ft.): <u>50'</u>				
Salt Water Depth (ft.): <u>1660'</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) 4200'MD- 7713 'MD
4080'TVD - 4159' TVD

Gas: Initial open flow 120 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

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: [Signature]
By: [Signature]
Date: 3/20/2012

RECEIVED
Office of Oil & Gas

APR 02 2012

WV Department of
Environmental Protection

<u>Formation:</u>	<u>Top:</u>	<u>Bottom:</u>
Soil, Sand, Shale	0	1524
Salt Sand	1524	1784
Lime	1784	1824
Injun	1824	1844
Shale	1844	2229
Coffee Shale	2279	2294
Devonian Shale	2294	4172
Lower Huron Section	4095	4159

All depths shown As TVD

02/06/12 Run total of 176 jts of 4.5" 11.6ppf N-80 casing to depth of 7632' set at 7637' KB. Run 16 stage packers plus system. Pick up and assemble 10k wellhead. Start pumping N2 to pressure up and set packers. Pump N2 and pressure up to 3000psi and hold for 20min. Continue to pump N2 for total of 154k scf to open pump out shoe at 3816psi. RU and perform annular squeeze with 100sx mixed at 15ppg (21 bbl). Follow cmt with 3 bbl water.

	Sleeve	Sleeve Size	Packers
Stage 1	7638	P/O Shoe	7501
Stage 2	7367	1.375	7278
Stage 3	7144	1.625	7055
Stage 4	6963	1.750	6832
Stage 5	6740	1.875	6609
Stage 6	6517	2.000	6387
Stage 7	6253	2.125	6164
Stage 8	6030	2.250	5941
Stage 9	5849	2.375	5718
Stage 10	5584	2.500	5495
Stage 11	5361	2.750	5272
Stage 12	5138	2.875	5049
Stage 13	4915	3.000	4826
Stage 14	4734	3.125	4603
Stage 15	4511	3.250	4423
Stage 16	4330	3.500	4200
Anchor			2642

RECEIVED
Office of Oil & Gas

APR 02 2012

WV Department of
Environmental Protection

02/15/12 Start pumping on Stg 1 and bring trucks to rate. Pump total of 1 MMscf N2. SD and drop ball for Stg 2. Wait for ball. Start pumping ball down at 20k scf/min and land on seat. Up rate and open sleeve at 4486psi. Bring trucks to rate and pump total of 1 MM scf. Drop ball for Stg 3. Wait for ball to drop. Pump N2 to open sleeve - Repeat stim process for Stg 3- Stg 16.

	Stg 1	Stg 2	Stg 3	Stg 4	Stg 5	Stg 6	Stg 7	Stg 8
Max P	5968	5976	5742	5694	5439	5446	5086	5210
Avg P	4245	5945	5602	5543	5301	5371	5036	5036
Max R	105.0	100.0	105.0	106.0	107.0	107.0	105.0	111.0
Avg R	80.0	98.7	103.0	105.0	105.0	106.8	104.0	105.0
5 min	1924	2099	2042	2092	1985	2006	1965	2015
2 min	2305	2499	2238	2246	2255	2241	2188	2211
	Stg 9	Stg 10	Stg 11	Stg 12	Stg 13	Stg 14	Stg 15	Stg 16
Max P	5099	5256	5219	5018	5037	4628	4538	4398
Avg P	5020	5210	5146	4998	4865	4567	4494	4099
Max R	110.0	106.0	109.0	103.0	103.0	105.4	104.0	103.0
Avg R	106.0	105.0	106	102.0	102.0	4567.0	102.0	89.0
5 min	2044	2293	2163	2268	2040	2084	2214	2120
2 min	2149	2500	2360	2426	2174	2173	2320	2230

09/14/2012