

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

Well Operator's Report of Well Work

Farm name: Otis Cavender Family Trust Operator Well No.: HR 441A

LOCATION: Elevation: 711' Quadrangle: Peniel, WV 7.5'

District: Curtis County: Roane
Latitude: 15110 Feet South of 38 Deg. 52 Min. 30 Sec.
Longitude 1428 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: <u>2034 Martins Branch Road</u> <u>Charleston WV, 25312</u>				
Agent: <u>Marc Scholl</u>	<u>13 3/8"</u>	<u>32'</u>	<u>32'</u>	<u>N/A</u>
Inspector: <u>Ed Gainer</u>	<u>9 5/8"</u>	<u>675'</u>	<u>675'</u>	<u>502 CuFt</u>
Date Permit Issued: <u>7/1/2011</u>	<u>7"</u>	<u>2127'</u>	<u>2127'</u>	<u>492 CuFt</u>
Date Well Work Commenced: <u>7/5/11</u>	<u>4.5"</u>	<u>7521'</u>	<u>7521'</u>	<u>130 CuFt</u>
Date Well Work Completed: <u>7/26/11</u>				
Verbal Plugging:	<u>Squeeze 9" w/ 190cf after Primary of 312cf</u>			
Date Permission granted on:				
Rotary x Cable Rig	<u>Ran 9" BL, Gyro from surface to 3577'(kop)</u>			
Total Depth (feet): <u>7624'MD, 4184'TVD</u>	<u>Ran Gamma log from KOP to 4500'</u>			
Fresh Water Depth (ft.): <u>200'</u>				
Salt Water Depth (ft.): <u>1174', 1711'</u>				
Is coal being mined in area (N/Y)? <u>N</u>				
Coal Depths (ft.): <u>N/A</u>				

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Office of Oil & Gas
SEP 12 2011

OPEN FLOW DATA

WV Department of
Environmental Protection

Producing formation Lower Huron Shale Pay zone depth (ft) 4157'MD - 7624' MD
4085'TVD - 4184' TVD

Gas: Initial open flow 130 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 1250 psig (surface pressure) after 72 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: President
Date: 9/12/2011

Formation:	Top:	Bottom:
Soil/Sand/Shale	0	200
Sand	200	220 (fresh water)
Shale/sand	220	380
Sand	380	470
Shale/sand	470	570
Sand	570	580
Shale/sand	580	1580 (salt water 1174)
Salt Sand	1580	1740 (Salt water 1711)
Big Lime	1740	1840
Injun Sand/Squaw	1840	1943
Shale	1943	2335
Coffee Shale	2335	2350
Devonian Shale	2350	4184'
Lower Huron Section	4140'	4184' (Gas show)

07/16/11 Ran total of 175 jts of casing to depth of 7521' GL. Land hanger in casing head and ND BOP. RU DSA and 10k psi frac valve. Finish with valve at 12:00pm and MIRU BJ. Start pumping 5 bbl water, drop ball for shoe, and follow with 5 bbls water and N2 at 2500scf/min. Pump until ball landed and pressure up on casing to 3000psi. Hold 3000psi for 30 min and continue to increase pressure to approx 4100-4200psi to open Hydroport sleeve for Stg 1. RU to 4X7 annulus and dump squeeze with 100sx of type 1 3% CaCl mixed at 15ppg.

	Sleeves	Packers	Sleeve Size
Stage 1	7424.66	7332.51	N/A -HP
Stage 2	7203.21	7111.11	2.031
Stage 3	6981.81	6889.71	2.156
Stage 4	6760.46	6668.36	2.281
Stage 5	6539.06	6405.21	2.406
Stage 6	6275.91	6183.76	2.531
Stage 7	6054.51	5962.46	2.656
Stage 8	5833.16	5699.36	2.781
Stage 9	5570.06	5477.96	2.906
Stage 10	5348.66	5256.56	3.031
Stage 11	5127.26	5035.16	3.156
Stage 12	4905.86	4772.11	3.281
Stage 13	4642.81	4550.61	3.406
Stage 14	4421.11	4287.06	3.531
Stage 15	4157.51	4065.31	3.656

2424.11

07/25/11 Start pumping N2 on Stg 1 at 9:00am. Bring trucks in at half rate and step up slowly based on pressure response. Pump total of 1MMscf N2. SD, drop ball for Stg 2, and wait 10 min. Start pumping at 15k scf/min and land ball at 43k scf N2. Increase rate to 30k scf/min and open sleeve at 3222psi. Up rate as pressure allows and pump total of 1MMscf N at design rate of 100kscf/min. Repeat procedure for Stgs 3-12. Shut down for day will resume on 7/26/11.

07/26/11 Load ball droppers and drop ball for Stg 13 at 8:30am. BJ start pumping at 9:15am at 15k scf/min and land ball at 20k scf. Up rate and open sleeve at 3188psi. Continue to increase rate and pump total of 1MMscf N2. Drop ball for Stg 14 and wait 10 min for ball to drop. Start pumping 15k scf/min and land ball after 45k scf. Up rate and open sleeve, continue to increase rate, and pump total of 1MMscf N2. Drop ball for Stg 15 and wait for ball. Start pumping at 15k scf/min. Land ball and open sleeve--pump total of 1MMscf N2

	Stg 1	Stg 2	Stg 3	Stg 4	Stg 5	Stg 6	Stg 7	Stg 8	Stg 9	Stg 10	Stg 11	Stg 12	Stg 13	Stg 14	Stg 15
Max P	5357	5331	5130	5027	5039	4894	4925	4772	4786	4882	4999	4618	4558	4625	4517
Avg P	5216	5188	5065	4903	4904	4794	4841	4720	4712	4806	4825	4285	4324	4496	4394
Max R	108.2	103.7	103.4	102.2	103.7	102.3	105.6	101.5	103.4	106	112.4	104.7	109.1	109.9	110.6
Avg R	104.3	101.9	101.5	101.2	101.9	101	102.9	100.8	102	104.9	99.7	103.5	102	106.6	107.8
5min	1740	1809	1858	N/A	1868	1844	1852	1882	1871	1935	1997	1850	1842	1913	1940

01/27/2012