

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

Well Operator's Report of Well Work

Farm name: Alan and Karla Harris Operator Well No.: HR 466

LOCATION: Elevation: 635' Quadrangle: Gay WV 7.5'

District: Washinton County: Jackson
Latitude: 6549' Feet South of 38 Deg. 50 Min. Sec.
Longitude 193' Feet West of 81 Deg. 35 Min. 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>	20"	GL	15'	NA
Agent: <u>Marc Scholl</u>	13 3/8"	80'	80'	CTS 61cuft
Inspector: <u>Jamie Stevens</u>	9 5/8"	586'	586'	CTS 324cuft
Date Permit Issued: <u>7-30-14</u>	7"	2073'	2073'	CTS 462cuft
Date Well Work Commenced: <u>8-8-14</u>	4.5"	7525'	7525'	130cuft
Date Well Work Completed: <u>1-15-15</u>				
Verbal Plugging:				
Date Permission granted on:	Gamma Log from (3500' - 7600' MD)			
Rotary x Cable Rig	Ran Gyro Log from (3490' - Surface)			
Total Depth (feet): <u>7631'TMD, 4198'TVD</u>				
Fresh Water Depth (ft.): <u>10-15', 40-60', 390'</u>				
Salt Water Depth (ft.): <u>1238', 1700'</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) 4105'MD- 7631'MD
4050'TVD - 4198' TVD

Gas: Initial open flow 100-150 MCF/d Oil: Initial open flow Bbl/d
Final open flow no test MMCF/d Final open flow Bbl/d
Time of open flow between initial and final tests Hours
Static rock Pressure no test psig (surface pressure) after Hours

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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: [Signature]
By: President
Date: 4/24/2015

[Signature] 10/23/2015

35-03022

<u>Formation:</u>	<u>Top:</u>	<u>Bottom:</u>
<u>Soil/Sand/Shale</u>	0	1573
<u>Salt Sand</u>	1573	1758
<u>Big Lime</u>	1758	1838
<u>Injun Sand</u>	1838	1950
<u>Berea Sand</u>	2284	2286
<u>Devonian Shale</u>	2286	4188
<u>L Huron Section</u>	4030	4196

All formation depths shown As TVD

11/07/14 Run 171 jts R-3 11.6ppf 4.5" casing with 13 stage hydraulic set open hole packer system to depth of 7532' KB.. MIRU Universal at 7:45pm. start pumping 5 bbl water with .75" ball for shoe followed by 3 bbl water and N2 at 5000-7000 scf/min to land ball and set packers. Pressure casing to 3200 psi with 115k scf N2 . Hold pressure for approx. 20 min. Bleed casing pressure off. RU to perform dump squeeze. (total approx. 100sx).

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 Size	Ball Size	Packer
1	7487.38	N/A	N/A	7351.95
2	7221.27	1.906	2.000	7085.84
3	6955.16	2.031	2.125	6819.73
4	6689.05	2.156	2.250	6555.62
5	6424.94	2.281	2.375	6285.51
6	6150.83	2.406	2.500	6017.30
7	5888.62	2.531	2.625	5755.19
8	5626.31	2.656	2.750	5492.88
9	5362.20	2.781	2.875	5226.87
10	5054.89	2.906	3.000	4919.56
11	4784.88	3.031	3.250	4645.45
12	4510.77	3.281	3.500	4375.34
13	4240.66	3.531	3.750	4105.23
Anchor				2454.20

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On 1-15-15 MIRU Universal Well Services. Start pumping at 30kscf/min to open shoe for Stg 1 at approx 5250psi Continue pumping and increasing gas rate to 100kscf/min and pump total of 1MMscf N2. Back rate down to 20kscf/min and drop 2" ball for Stg 2. Pump ball to sleeve with N2 at 20kscf/min. Land ball at 106k and open sleeve at 4350psi. Continue to increase rate and pump total of 1MMscf N2. Back Rate down to 20kscf/min and drop 2.125" ball for Stg 3. Pump ball to sleeve with N2 at 20kscf/min. land ball at 90kscf and open sleeve at approx 3800psi. Up rate and pump total of 1MMscf N2. Shut down and drop 2.25" ball for Stg 4. Repeat stimulation process for Stgs 4-13.

	Stg1	Stg2	Stg3	Stg4	Stg5	Stg6	Stg7	Stg8	Stg9	Stg10	Stg11	Stg12	Stg 13
Max p	5771	5741	5375	5285	4907	5158	5010	4952	4741	4575	4368	4305	4151
Avg p	4847	5376	5030	5050	4633	5012	97.5	4687	4452	4474	4252	4193	3945
Max R	101.2	101.4	103.6	107.5	102.5	108.8	110.3	110	110.2	108.5	104.7	110.9	109.6
Avg R	75	99.2	101.6	97	92.7	108.1	97.5	106.2	102.8	106.5	102.1	102.9	103.2
SIP	NA	NA	1440psi 1hr	NA	NA	1725 5min	NA	NA	NA	1779 5min	NA	NA	1543 5min

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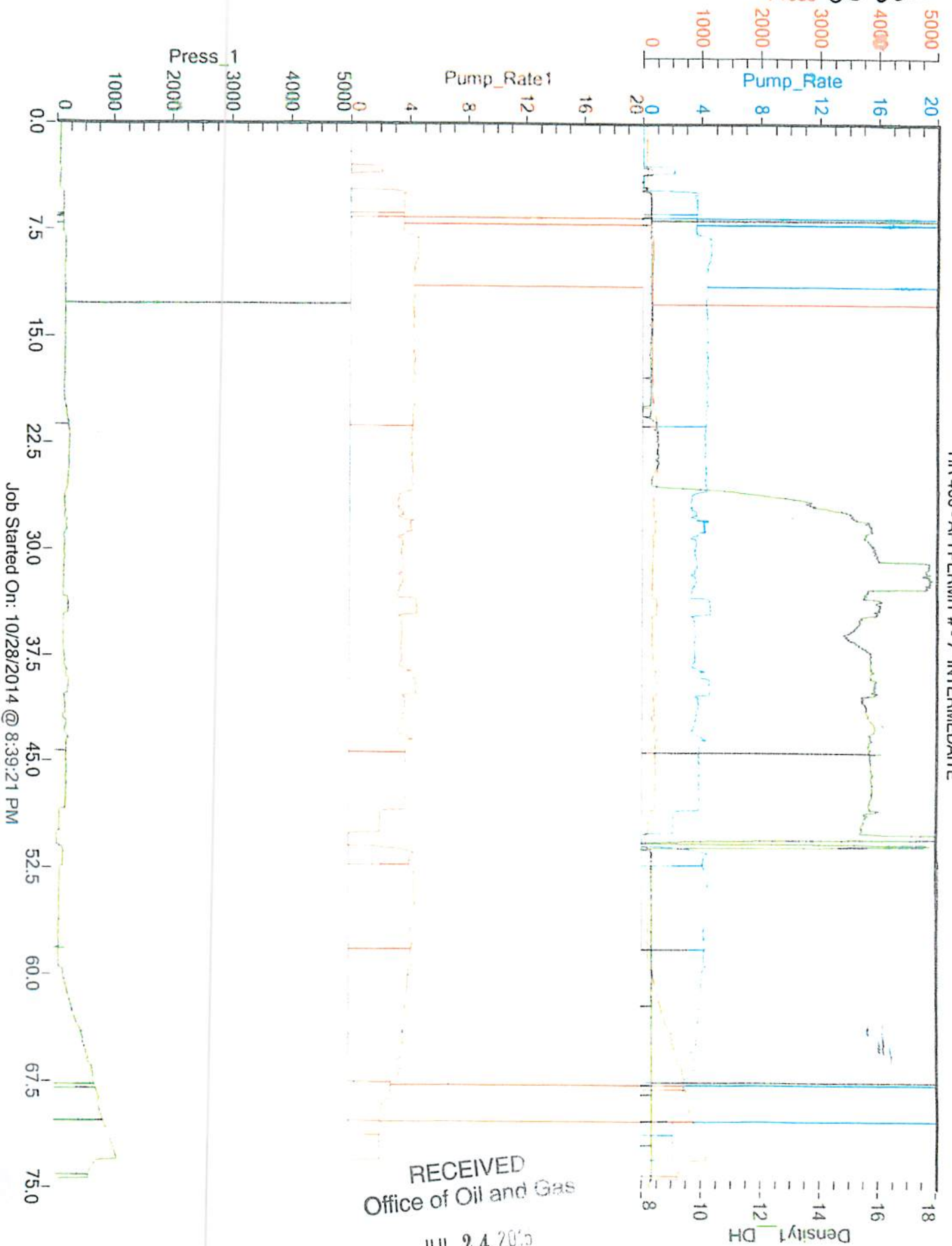
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Intermediate 7"

Press 35-03022



HARD ROCK
HR 466 - API PERMIT # - 7" INTERMEDIATE

Job Started On: 10/28/2014 @ 8:39:21 PM

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