DATE: 1/15/13

API#: 47-035-03007

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

Well Operator's Report of Well Work

Farm name:Todd and Christopher Van Fosson	Oper	ator Well No.:_	HR 470					
LOCATION: Elevation:669'	Quad	rangle:	_Liverpool WV 7.5'					
District: Ravenswood	Coun	itv:	Jackson					
District:Ravenswood	. 57 Mi	in. 30 Sec.						
Longitude 3102' Feet West of 81 I	Deg. 35 Min	L 00 Sec.						
20.3	<u> </u>							
Company: Hard Rock Exploration								
	Casing &	Used in	Left in well	Cement fill				
	Tubing	drilling		up Cu. Ft.				
Address: 1244 Martins Branch Road								
Charleston WV, 25312	20"	19'	19'	N/A				
Agent: Marc Scholl	13 3/8"	83'	83'	73cuft CTS				
Inspector: Jamie Stevens	9 5/8"	633'	633'	300 ft3 CTS				
Date Permit Issued:	7"	2414'	2414	517 ft3 CTS				
Date Well Work Commenced: 10/10/12	4.5"	7905'	7905	115 ft3				
Date Well Work Completed: 12/11/12	·-							
Verbal Plugging:	Gamma Log f	rom (3470'MD	(kop) - 4460'M	D, 4103(Land)				
Date Permission granted on:		from (3450' –						
Rotary x Cable Rig	Addit Cylo 20p	3 110111 (0 100						
Total Depth (feet): 7964'TMD, 4103'TVD								
Fresh Water Depth (ft.): 30', 140'			REC	EIVED				
G. 14 W. 4 Daniel (64) 12902 (mint/ormido) 1650?			Ossion of	Oll & Gas				
Salt Water Depth (ft.): 1280' (wat/crude), 1650',			Ollica Cu					
1700'			550.0	0 2012				
TARRANA MARANA				0 2013				
Is coal being mined in area (N/Y)? N				_				
Coal Depths (ft.): N/A	i	ı	' MA/ Den	artment of				
OPEN FLOW DATA		, == -	AAA DOD	ntal Protection				
OPEN PLOW DATA			UAILOUME	ilai i Totobiis				
Producing formation Lower Huron_Sha	ale Pay zone	depth (ft) 44	32'MD- 7964	'MD				
Floducing formation	1101 uy 20110		072'TVD - 41					
Gas: Initial open flow 200 MCF/d Oil: Initial open flow Bbl/d								
Gas: Initial open How_200 MCF/d Oil. In	uuai open nov Final anan f	low	BP1/4					
Final open flow >1.5 MMCF/d Final open flow Bbl/d								
Time of open flow between initial and final tests 72 Hours								
Static rock Pressure 1240 psig (s	surface pressu	re) anter	Hours					
	_							
	Pay zoi	ne depth (ft)_	N 1/1					
	Initial open f		3bl/d					
Final open flow MCF/d F	inal open flov		bl/d					
Time of open flow between initial and	final tests	Hou						
Static rock Pressurepsig (surface	ce pressure) af	terHo	urs					
								
NOTE: ON BACK OF THIS FORM PUT THE	FOLLOWING:	1). DETAILS	OF PERFORAT	ED				
TATTED VALOE ED ACTIDING OR STIMILIATI	NG PHYSICA	L CHANGE, 1	(1C, 2), THE W	ELL				
TOC MITTICE IS A SYSTEMATIC DETAILED AFOLOGICAL RECORD OF ALL FORMATIONS,								
INCLUDING COAL ENCOUNTERED BY THE	WELLBORE.							
Signed:	~ <i>//</i> /							
By President	//							
Date:/2/20/2013	<u> </u>							

Top:	Bottom:	35-03007		
0	1633	•		
1685	1890			
1890	1932			
1932	2000			
2000	2330			
2330	2350			
2350	4103			
4030	4103			
	0 1685 1890 1932 2000 2330 2350	0 1633 1685 1890 1890 1932 1932 2000 2000 2330 2330 2350 2350 4103		

All depths shown As TVD

10/20/12 Run casing with 17 stg Peak mechanical packer system

10/21/12 Finish running casing at 12:00pm to depth of 7905'set at 7911'kb. MIRU Nabors Packer Set Crew. Drop balls for circ shoe and pump N2 to pressure up to 3000 psi. Gas rate on 7" shut off while pumping. Shut down at 3000 psi and hold pressure for 20-30 min to ensure packer operation. Continue pumping and bring pressure up to 4020 psi to open shoe.

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	<u>Packer</u>	Sleeve	Sleeve ID	<u>Ball</u>	
1	7735.78	7911.33	P/O Shoe	N/A	
2	7515.95	7607.1	1.156	1.25	
3	7296.12	7387.27	1.281	1.375	•
4	7117.89	7209.14	1.406	1.5	
5	6898.06	6989.21	1.531	1.625	
6	6678.23	6769.38	1.656	1.75	RECEIVED
7	6458.4	6549.55	1.781	1.875	HECEIAED
8	6238.57	6329.72	1.906	2	Office of Oil & Gas
9	6018.74	6109.89	2.031	2.125	
10	5798.91	5890.06	2.156	2.25	FEB 2 0 2013
11	5537.38	5670.23	2.281	2.375	
12	5317.45	5408.7	2.406	2.5	WW Donartment Of
13	5095.02	5188.77	2.531	2.75	WW Department
14	4872.59	4963.74	2.781	3	WV Department of Environmental Protection
15	4652.66	4743.91	3.031	3.25	
16	4432.63	4523.78	3.281	3.5	
17	4213	4304.15	3.531	3.75 `	
	2714.85				

12/10/12. MIRU Nabors Cmt Crew. Blow down 7" casing (75psi). RU and dump squeeze with 20 bbls type 1 3% CaCl mixed at 15.2ppg. Follow with 2 bbl water. RDMO Nabors – finish at 6:30-7:00pm.

12/11/12 MIRU Nabors. Pressure test iron. Start pumping at 7:10am at half rate on Stg 1. Pump 430 Mcf at 42k scf/min at 5500 psi. Shut down and change isolation valve. Resume pumping on Stg 1. Open wellhead at 2500 psi. Pump total of 1MM scf N2. Shut down and drop 1.25" ball for Stg 2. Start pumping ball to sleeve at 20k scf/min and land ball at 170k scf at 3500 psi. Up rate and open sleeve at 4292 psi. Up rate to 53k scf/min and pump total of 1MM scf N2. Shut down and drop 1.375" ball for Stg 3. Pump ball to seat- open sleeve and and pump total of 1MMscf N2 at rate dictated by pressure. Repeat process for Stg 4 – Stg 16. Did not Frac stage 17.

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8	
Max P	5530	5588	5755	5758	5618	5901	5947	6033	1 2
Avg P	4992	5295	5595	5657	5548	5451	5816	5883	35-03007
Max R	57.6	53.6	52.4	46.7	44.7	45.3	48.4	41.0	
Avg R	51.4	45.1	46.1	43.2	43.7	45.0	42.3	34.6	
5 Min		2855	3299	N/A	N/A	3132	2794	2813	
	J								_
	Stage 9	Stage 10	Stage 11	Stage 12	Stage 13	Stage 14	Stage 15	Stage 16	
Max P	5867	5604	5806	5961	5950	4986	5585	5960	
Avg P	5606	5014	5498	5835	5796	4923	5489	5862	
Max R	54.0	103.0	103.3	102.6	106.0	103.0	103.0	91.2	
Avg R	44.6	90.6	99.5	92.8	102.0	101.0	101.0	83.3	
5 Min	2553	N/A	N/A	2034	N/A	N/A	2412	2200]

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