

NOTE: NO BUILDING STRUCTURES IDENTIFIED WITHIN 200'

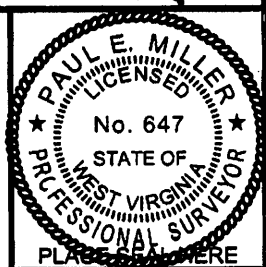
SURFACE HOLE	
STATE PLANE WV NORTH/SOUTH ZONE NAD 1927 N - 699,316.27 : E - 1,890,302.14	
LATITUDE: (N) 38.9198159 LONGITUDE: (W) 81.3855324	
UTM, NAD83 17 - 84W TO 78W, METERS N - 4,307,958.410 : E - 466,592.072	
BOTTOM HOLE	
STATE PLANE WV NORTH/SOUTH ZONE NAD 1927 N - 695,805.28 : E - 1,887,487.37	
LATITUDE: (N) 38.9101435 LONGITUDE: (W) 81.3953721	
UTM, NAD83 17 - 84W TO 78W, METERS N - 4,306,888.748 : E - 465,734.398	

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

FILE NO.	HR-478A.DGN
DRAWING NO.	HR-478
SCALE	1" = 1000'
MINIMUM DEGREE OF ACCURACY	1:200
PROVEN SOURCE OF ELEVATION	MAPPING GRADE GPS

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

(SIGNED) Paul E. Miller
R.P.E. _____ L.L.S. 647



STATE OF WEST VIRGINIA DIVISION OF ENVIRONMENTAL PROTECTION OIL AND GAS DIVISION	DATE <u>OCTOBER 29</u> , 20 <u>2012</u> OPERATOR'S WELL NO. <u>HR-478A</u> API WELL NO. _____
WELL TYPE: OIL <input type="checkbox"/> GAS <input type="checkbox"/> LIQUID INJECTION <input type="checkbox"/> WASTE DISPOSAL <input type="checkbox"/> (IF "GAS,") PRODUCTION <input checked="" type="checkbox"/> STORAGE <input type="checkbox"/> DEEP <input type="checkbox"/> SHALLOW <input checked="" type="checkbox"/>	STATE <u>47</u> COUNTY <u>0105</u> PERMIT <u>01366 H</u>
LOCATION: ELEVATION <u>695'</u> WATER SHED <u>McCUTCHEON RUN OF REEDY CREEK</u> DISTRICT <u>SPRING CREEK</u> COUNTY <u>WIRT</u> QUADRANGLE <u>REEDY, WV 7.5'</u>	COUNTY NAME _____
SURFACE OWNER <u>OLEN ARCHER</u> ACREAGE <u>124.5</u> OIL & GAS ROYALTY OWNER <u>McCUTCHEON, BANGARNET, BUDDELL, Nichols, Bangarnet</u> LEASE ACREAGE <u>236.8</u> LEASE NO. _____	PERMIT _____
PROPOSED WORK: DRILL <input checked="" type="checkbox"/> CONVERT <input type="checkbox"/> DRILL DEEPER <input type="checkbox"/> REDRILL <input type="checkbox"/> FRACTURE OR STIMULATE <input checked="" type="checkbox"/> PLUG OFF OLD FORMATION <input type="checkbox"/> PERFORATE NEW FORMATION <input checked="" type="checkbox"/> OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____	
PLUG AND ABANDON <input type="checkbox"/> CLEAN OUT AND REPLUG <input type="checkbox"/>	
TARGET FORMATION <u>LOWER HURON</u> ESTIMATED DEPTH <u>8575' MD, 4335' TVD</u> WELL OPERATOR <u>HARD ROCK EXPLORATION, INC.</u> DESIGNATED AGENT <u>JAMES L. STEPHENS</u> ADDRESS <u>1244 MARTINS BR. RD., CHARLESTON, WV 25312</u> ADDRESS <u>SAME</u>	

12/28/2012

FORM WW-6

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

Well Operator's Report of Well Work

Farm name: Olen Archer Operator Well No.: HR 478
 LOCATION: Elevation: 695' Quadrangle: Reedy WV 7.5'
 District: Spring Creek County: Wirt
 Latitude: 14002' Feet South of 38 Deg. 57 Min. 30 Sec.
 Longitude 2997' Feet West of 81 Deg. 22 Min. 30 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>				
Agent: <u>Marc Scholl</u>	<u>13 3/8"</u>	<u>40'</u>	<u>40'</u>	<u>N/A</u>
Inspector: <u>Joe Taylor</u>	<u>9 5/8"</u>	<u>546'</u>	<u>546'</u>	<u>294ft3 CTS</u>
Date Permit Issued: <u>12/21/12</u>	<u>7"</u>	<u>2325'</u>	<u>2325'</u>	<u>499ft3 CTS</u>
Date Well Work Commenced: <u>2/18/13</u>	<u>4.5"</u>	<u>7838'</u>	<u>7838'</u>	<u>65 ft3</u>
Date Well Work Completed: <u>4/12/13</u>				
Verbal Plugging:	<u>Gamma Log from (3545' MD, 4235'TVD) KOP-3660'</u>			
Date Permission granted on:	<u>Ran Gyro Log from (3549' - Surface)</u>			
Rotary x Cable Rig	RECEIVED			
Total Depth (feet): <u>8534'TMD, 4242'TVD</u>	Office of Oil & Gas			
Fresh Water Depth (ft.): <u>170'</u>	MAY 20 2013			
Salt Water Depth (ft.): <u>1640'</u>	WV Department of			
Is coal being mined in area (N/Y)? <u>N</u>	Environmental Protection			
Coal Depths (ft.): <u>N/A</u>				

OPEN FLOW DATA

Producing formation Lower Huron Shale Pay zone depth (ft) 3877'MD- 8534'MD
3865'TVD - 4242' TVD

Gas: Initial open flow 200 MCF/d Oil: Initial open flow Bbl/d
 Final open flow >2 MMCF/d Final open flow Bbl/d
 Time of open flow between initial and final tests 24 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: James Taylor
 By: President
 Date: 5/17/2013

unnamed (0) 6-6

105-01366

Formation:	Top:	Bottom:
Soil/Sand/Shale	0	1586
Salt Sand	1586	1775
Big Lime	1775	1838
Big Injun	1838	1902
Dev. Shale	1902	2245
Coffee Shale	2245	2260
Devonian Shale	2260	4242
Lower Huron Section	4020	4242

All depths shown As TVD

2/27/13 Run 17 stg Packers Plus open hole hydraulic set packers and mechanical sleeves and 174 jts of 4.5" 11.6ppf R-3 casing to depth of 7842' KB and string stacked out. Try to move jt pulled 150kbs up and lost 4' on way back down. Call out Weatherford to place slips and cut pipe. Land and cut pipe making total pipe ran 7838' KB. RU and pump 3 bbl water ahead dropped 1.25" balls for shoe. Pump 5 bbl water behind and start pumping N2 at 5k scf/min. Land ball in shoe and pressure up at 7k scf/min with 128k scf N2 to 3000 psi. Packers shut off gas rate at 1800 psi. Hold 3000 psi for packer operation. Bleed pressure off. RU to perform annular squeeze. Pump 50sx type 1 3% CaCl mixed at 15ppg - pumped total of 10.5 bbls (5 bbls then allow air to escape - then additional 5.5 bbl). Follow cmt with 2-3 bbls water.

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 ID	Ball Size	Packer
1	7838.00	P/O Shoe	N/A	7692.24
2	7557.10	1.250	1.500	7460.50
3	7324.96	1.500	1.625	7186.46
4	7053.62	1.625	1.750	6912.92
5	6777.68	1.750	1.875	6681.08
6	6552.74	1.875	2.000	6412.04
7	6276.90	2.000	2.125	6180.90
8	6046.16	2.125	2.250	5949.66
9	5814.72	2.250	2.375	5674.12
10	5538.98	2.375	2.500	5442.48
11	5307.34	2.500	2.625	5166.64
12	5031.50	2.625	2.750	4891.80
13	4756.86	2.750	2.875	4661.06
14	4525.82	2.875	3.000	4429.32
15	4293.98	3.000	3.250	4153.18
16	4017.99	3.250	3.500	3877.29
17	3654.15	3.500	3.750	3513.55
Anchor				2047.80

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Office of Oil & Gas

MAY 20 2013

WV Department of
Environmental Protection

06/21/2013

04/10/13 MIRU Nabors Stim Crew. Start pumping N2 at 33k scf/min. Pressure up to 5351 psi with approx. 220k and open pump out shoe for Stg 1. Continue pumping and increase rate to 90k scf/min (max rate due to truck problems). Shut down. Make repairs 600k scf away. Resume pumping at 1:30pm. Increase rate to 103k scf/min and pump total of 1.5 MM scf N2. Shut down and load 1.5" ball for Stg 2. Drop ball and let fall. Start pumping ball to sleeve with N2 at 22k scf/min. Land ball at 128k, up rate, and open sleeve at 4070 psi. Up rate and pump total of 1 MMscf N2. Shut down. Load 1.625" ball for Stg 3. Drop ball. Start pumping ball to sleeve at 22k scf/min. Land ball at 133k scf. Open sleeve at 4113 psi. Up rate and pump total of 1 MM scf N2. Back rate down and drop 1.75" ball for Stg 4. Repeat process for Stgs 4- Stg 16 (did not pump stg 17 due to its placement in hole).

105-01366

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7	Stage 8
Max P	5016	4868	4648	4739	4430	4490	4413	4445
Avg P	4801	4766	4611	4612	4406	4385	4346	4415
Max R	103.0	103.1	104.2	106.3	103.6	105.5	101.6	101.8
Avg R	101.6	101.3	102.4	104.8	103.0	103.6	101.1	101.5
Shut In	1680-10min	2800-isip	N/A	N/A	1744-5min	N/A	N/A	1793-5min
	Stage 9	Stage 10	Stage 11	Stage 12	Stage 13	Stage 14	Stage 15	Stage 16
Max P	4509	4291	4124	4160	4236	3715	3573	3399
Avg P	4444	4283	4084	4113	4111	3656	3512	3378
Max R	103.3	102.6	102.3	107.0	105.5	105.3	105.0	108.0
Avg R	101.5	102.0	101.8	104.8	102.6	103.7	102.7	106.1
Shut In	N/A	N/A	1787-5min	N/A	N/A	N/A	1758-10min	1796-5min

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Office of Oil & Gas

MAY 20 2013

WV Department of
Environmental Protection

06/21/2013



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

December 21, 2012

WELL WORK PERMIT

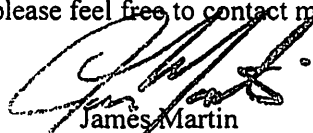
Horizontal Well

This permit, API Well Number: 47-10501366, issued to HARD ROCK EXPLORATION, INC., is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to all conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas inspector.

Please be advised that form WR-35, well operators report of well work, is to be submitted to this office within 90 days of completion of drilling, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

In addition to the applicable requirements of this permit, and the statutes and rules governing oil and gas activity in WV, this permit may contain specific conditions which must be followed. Permit conditions are attached to this cover letter.

Per 35CSR-4-5.2.g this permit will expire in two (2) years from the issue date unless permitted well work is commenced. If there are any questions, please feel free to contact me at (304) 926-0499 ext. 1654.



James Martin
Chief

Operator's Well No: HR-478A
Farm Name: ARCHER, OLEN
API Well Number: 47-10501366
Permit Type: Horizontal Well
Date Issued: 12/21/2012

Promoting a healthy environment.

12/28/2012