

WR-35  
Rev (5-01)

DATE: 5/7/14  
API #: 47-105-01368

JA

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

Well Operator's Report of Well Work

Farm name: Kennith and Elika McClung Operator Well No.: HR 495  
LOCATION: Elevation: 1029' Quadrangle: Burning Springs WV 7.5'  
District: Spring Creek County: Wirt  
Latitude: 2296' Feet South of 38 Deg. 55 Min. 00 Sec.  
Longitude 10800' Feet West of 81 Deg. 20 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>				
Agent: <u>Marc Scholl</u>	<u>13 3/8"</u>	<u>39'</u>	<u>39'</u>	<u>N/A</u>
Inspector: <u>Joe Taylor</u>	<u>9 5/8"</u>	<u>966'</u>	<u>966'</u>	<u>456ft3 CTS</u>
Date Permit Issued: <u>8/20/13</u>	<u>7"</u>	<u>2319'</u>	<u>2319'</u>	<u>539ft3 CTS</u>
Date Well Work Commenced: <u>2/28/14</u>	<u>4.5"</u>	<u>7950'</u>	<u>7950'</u>	<u>84 ft3</u>
Date Well Work Completed: <u>4/10/14</u>				
Verbal Plugging:	<u>Gamma Log from (3860' MD , 4557'TVD) KOP- 3900'</u>			
Date Permission granted on:	<u>Single shot surveys from (3867' - Surface)</u>			
Rotary x Cable Rig				
Total Depth (feet): <u>8203'TMD, 4557'TVD</u>				
Fresh Water Depth (ft.): <u>701'</u>				
Salt Water Depth (ft.): <u>1928'</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  
MAY 21 2014

WV Department of  
Environmental Protection

OPEN FLOW DATA

Producing formation Lower Huron Shale Pay zone depth (ft) 4277'MD- 8203'MD  
4252'TVD - 4557' TVD

Gas: Initial open flow Trace MCF/d Oil: Initial open flow        Bbl/d  
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 1350 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: James Taylor  
By: President  
Date: 5/21/2014

06/13/2014

<b>Formation:</b>	<b>Top:</b>	<b>Bottom:</b>
Soil/Sand/Shale	0	1802
Salt Sand	1802	2168
Big Injun	2168	2232
shale	2232	4557
Lower Huron Section	4380	4557

**All depths shown As TVD**

03/11/14. Total pipe ran 7950' KB – 177 jts R-3 N-80 with Peak Completions 14 stage openhole packer system.

03/12/14 Universal well services Pressure test to 5000 psi. Bleed off and pump 5 bbl water down casing and drop ball for pump out shoe. Follow ball with N2 at 7000 scf/min. Land ball and pressure casing up to 3000 psi with approx. 150k scf N2 (packers shut off flow at 2100 psi). Hold 3000 psi for 20 min. Bleed pressure back down to 850 psi. RU to dump squeeze cmt on to top packer. Pump total of 15 bbls Type 1 2% CaCl cmt mixed at 15ppg .

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	7950.15	P/O Shoe	P/O Shoe	7770.25
2	7637.00	1.156	1.250	7497.15
3	7361.30	1.281	1.375	7221.45
4	7085.50	1.406	1.500	6990.00
5	6854.00	1.531	1.625	5714.10
6	6578.30	1.656	1.750	6438.45
7	6302.50	1.781	2.000	6162.85
8	6026.80	2.031	2.250	5887.30
9	5751.40	2.281	2.500	5611.80
10	5475.95	2.531	2.750	5336.25
11	5200.20	2.781	3.000	5104.75
12	4968.85	3.031	3.250	4829.20
13	4693.05	3.281	3.500	4553.25
14	4417.25	3.531	3.750	4277.65
Anchor				2504.75

04/09/14 – 4/10/14 MIRU Universal well services. Pressure test lines at 7:00pm. Start pumping on Stg 1 at 46k scf/min. Pressure up to 4738 psi and open shoe. Continue pumping and increase rate as pressure allows. Couldn't get much more than 52k scf/min rate. Pump total of 1MM scf N2 – drop 1.25" ball for Stg 2 and pump ball to sleeve with N2 at approx. 20k scf/min, and land ball with 160k scf N2. Didn't see clear operation of sleeve. Increase rate as pressure allows; couldn't reach max rate. Pump total of 1MM scf N2. Drop 1.375" ball for Stg 3. Shut down and let ball drop. Wait 10 mins pressure fell to 2430 psi. Start pumping ball to sleeve, and open sleeve at 4755 psi. Continue to increase rate as pressure allows. Pump total of 1MM scf N2. **Repeat Process for Stgs 4 – 14.**

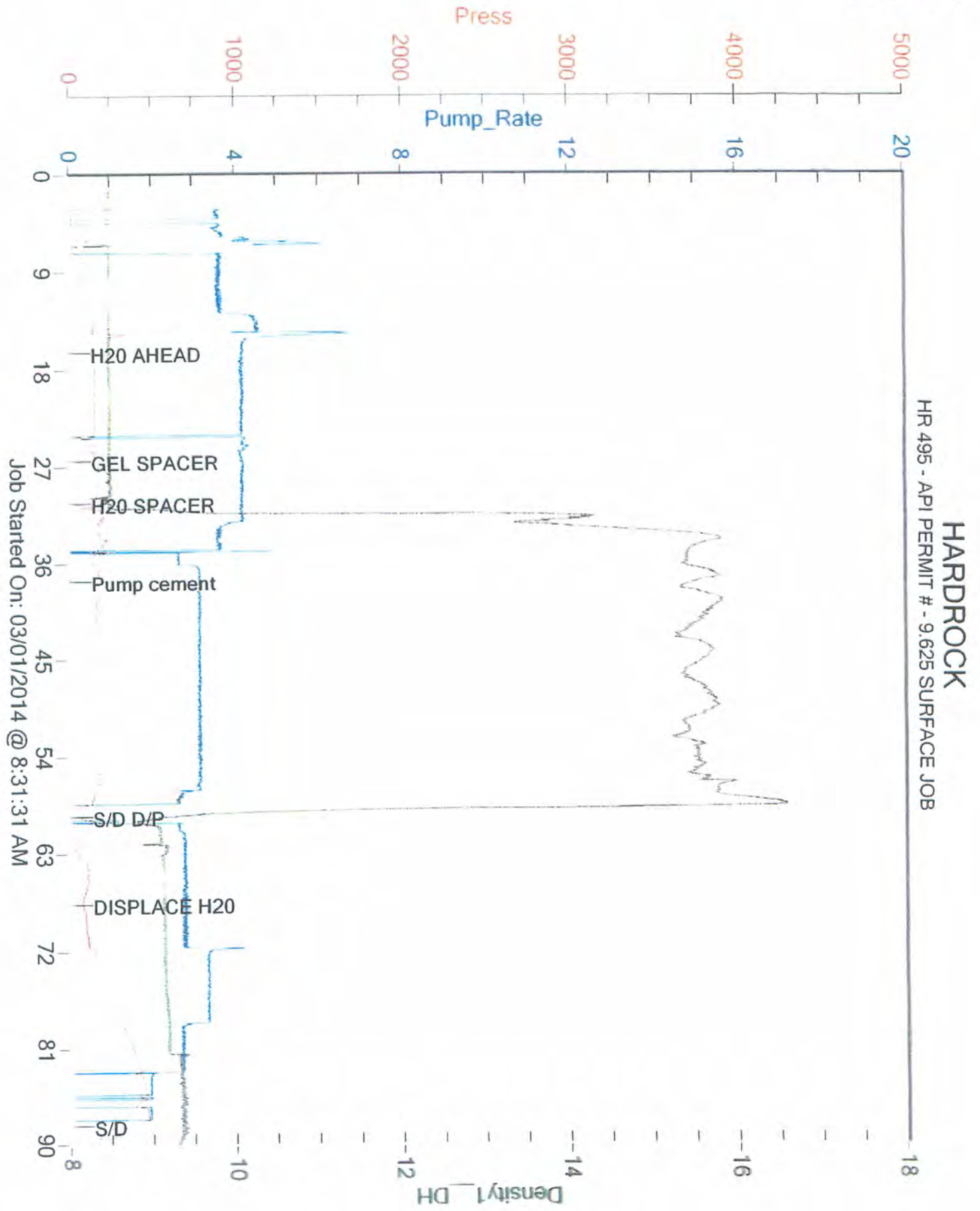
105-01368

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6	Stage 7
Max P	5929	5905	5834	5859	5846	5920	5887
Avg P	5495	5576	5529	5582	5760	5795	5749
Max R	52.9	53.0	52.4	61.7	62.9	68.6	71.5
Avg R	46.3	45.8	49.6	53.4	61.5	64.4	67.1
Shut In	N/A	N/A	2903-5min	N/A	N/A	N/A	2951-5min
	Stage 8	Stage 9	Stage 10	Stage 11	Stage 12	Stage 13	Stage 14
Max P	5975	5964	5838	5909	5929	5822	5159
Avg P	5890	5840	5627	5518	5402	5793	4269
Max R	53.2	59.5	71.9	50.0	32.8	40.2	105.5
Avg R	49.3	46.1	67.8	40.0	29.6	37.2	102.1
Shut In	N/A	N/A	N/A	N/A	N/A	N/A	1811-5min

06/13/2014



105-01368



HARDROCK  
HR 495 - API PERMIT # - 9.625 SURFACE JOB

Job Started On: 03/01/2014 @ 8:31:31 AM

06/13/2014

105-01368

API Permit #:

Customer: HARD ROCK

Lease and Well Name: HR 496

A.F.E #:



Job Type: 7" INTERMEDIATE

Cement Operator: MICHAEL BROWNING

Date Cemented: 3/2/2014

Drilling Contractor: GASCO

Cement Slurry Information											
No. of Sacks	Cement Blend Composition				Yield (ft <sup>3</sup> /sk)	Mix Water (gal/sk)	Density (lb/gal)	(bbl) Mix Water	(ft <sup>3</sup> ) of Slurry	(bbl) of Slurry	
390	TYPE 1 2% C.C. 1/4 FLAKE				1.18	5.20	15.6	48.3	460.2	82.0	
								Totals	48.3	460.2	82.0

Wellbore Information									
	New/Used	Diameter (in)	Weight (lb/ft)	Top (ft)	Bottom (ft)	Collapse/Burst Pressures (psi)		Requested TOC (ft)	SURFACE
Casing	New	7.000		0	2,319	1450/2310			
Previous Casing	NEW	9.625		0	966	860/1280		TVD (ft)	2,370
Tubing or Drill pipe								Displacement Depth (ft)	2,319
Open Hole		8.875		966	2,370			Displacement (bbl)	95.0

Pumping Returns		Cement Slurry Temperature Record (°F)					Fluid Information	
Spacer or Gel Sweep Return Seen at Surface		Cement	Reading 1	Reading 2	Reading 3	Average	Mix Water Temp (°F)	31
Cement Returns Seen at Surface		Blend 1					Displacement Fluid Type	Water
Amount of Cement Returns (bbl)		Blend 2					Displacement Fluid Temp (°F)	31
		Blend 3					Displacement Fluid Density (lb/gal)	8.3

Time	Rate (bpm)	Volume (bbl)	Pressure (psi)	Event or Stage Description
14:00				ARRIVE ON LOC
14:02				WAITING ON RIG
18:30				RIG READY
18:35				SPOT TRUCKS/SAFTY MEETING
19:10				RIG UP
19:15				PRE SAFTY MEETING
19:20			1500	PRESSURE TEST
19:24	4	85	114	START WATER
19:44	4	10	150	START GEL & FLAKE
19:48	4	5	198	START SPACER
19:50	4	70	194	START CEMENT
20:05	4	28	128	START CEMENT
20:12				SD/DP/DISPLACEMENT
20:38	4/2	95	1342	LAND PLUG
21:30				WASH UP
22:00				RACK UP
22:10				LEAVING LOCATION

Comments:  
 TOP PSI= 1500 / LIFT PSI= 1147 / DIFF PSI= 875

Thank you for your business.

UWS Cement Operator Signature: \_\_\_\_\_  
 MICHAEL BROWNING

Customer Representative Signature: \_\_\_\_\_

06/13/2014

105-01368

API Permit #:  
 Customer: HARD ROCK  
 Lease and Well Name: HR 495  
 A.F.E #:  
 Job Type: 7" INTERMEDIATE  
 Cement Operator: MICHAEL BROWNING  
 Date Cemented: 3/2/2014  
 Drilling Contractor: GASCO



**PUMP SCHEDULE**

Universal Well Services Proposed  
**Pump Schedule**

Company Representative Proposed  
**Pump Schedule**

Pick up Pump			Pick up Pump		
Pressure Test	1,500	psi	Pressure Test	1,500	psi
Release Pressure			Release Pressure		
GEL	10.0	bbbl	WATER	85.0	bbbl
WATER	90.0	bbbl	GEL	10.0	bbbl
		bbbl	WATER	5.0	bbbl
CEMENT 15.6	82.0	bbbl	CEMENT 14.2	70.0	bbbl
SD/DP		bbbl	CEMENT 15.6	28.0	bbbl
		bbbl	SD/DP		bbbl
		bbbl			bbbl
		bbbl			bbbl
		bbbl			bbbl
		bbbl			bbbl
		bbbl			bbbl
		bbbl			bbbl
Pump Displacement	95.0	bbbl	Pump Displacement	95.0	bbbl
Land plug at	2.0	bbbl/min	Land plug at	2.0	bbbl/min
Bump plug	200	psi over	Bump plug	200	psi over
Release Pressure/Check Floats			Release Pressure/Check Floats		

Parameter	Water Testing Results					
Sample Location						
pH	7	7	7	7		[5-9 Recommended]
Temperature (°F)	31	31	31	31		[<80 °F Recommended]
Specific Gravity						[<1.005 Recommended]
Tannin and Lignin (mg/l)						[<25 mg/l Recommended]
Hardness (mg/l)						[<500 mg/l Recommended]
Iron (mg/l)						[<20 mg/l Recommended]
Sulfates (mg/l)						[<200 mg/l Recommended]

**Universal Well Services Water Requirements**

This job will require 288 bbls to properly complete the job

There is a minimum of 540 bbls of useable water that meets UWS testing recommendations for mixing the cement slurry(s) and (or) any spacers or flushes that were designed to be used for the job

There is a minimum of 540 bbls of fluid that can be used for the displacement of the top plug to the casing shoe

UWS Cement Operator Signature: Michael Browning

Date: 3-2-14

Customer Representative Signature: \_\_\_\_\_

Date: \_\_\_\_\_





