

State of West Virginia  
Department of Environmental Protection - Office of Oil and Gas  
Well Operator's Report of Well Work

API 47-057-04741 County ROANE District Reedy  
Quad Reedy WV 7.5 Pad Name \_\_\_\_\_ Field/Pool Name \_\_\_\_\_  
Farm name Anna BATES FLINT Well Number HR 505  
Operator (as registered with the OOG) Hard Rock Exploration  
Address 1244 MARTIN'S Branch Rd City CHARLESTON State WV Zip 25312

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey   
Top hole Northing 697,295.8600 Easting 1,876,004.3000  
Landing Point of Curve Northing 697,404.8814 Easting 1,875,297.0691  
Bottom Hole Northing 697,906.3565 Easting 1,872,062.6241

Elevation (ft) 712 GL Type of Well  New  Existing Type of Report  Interim  Final  
Permit Type  Deviated  Horizontal  Horizontal 6A  Vertical Depth Type  Deep  Shallow  
Type of Operation  Convert  Deepen  Drill  Plug Back  Redrilling  Rework  Stimulate  
Well Type  Brine Disposal  CBM  Gas  Oil  Secondary Recovery  Solution Mining  Storage  Other \_\_\_\_\_  
Type of Completion  Single  Multiple Fluids Produced  Brine  Gas  NGL  Oil  Other \_\_\_\_\_  
Drilled with  Cable  Rotary  
Drilling Media Surface hole  Air  Mud  Fresh Water Intermediate hole  Air  Mud  Fresh Water  Brine  
Production hole  Air  Mud  Fresh Water  Brine  
Mud Type(s) and Additive(s)  
\_\_\_\_\_  
\_\_\_\_\_

Date permit issued 7-30-14 Date drilling commenced 8-8-14 Date drilling ceased 1-4-15  
Date completion activities began None to DATE Date completion activities ceased \_\_\_\_\_  
Verbal plugging (Y/N) N Date permission granted \_\_\_\_\_ Granted by \_\_\_\_\_

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Freshwater depth(s) ft 45', 482' Open mine(s) (Y/N) depths \_\_\_\_\_  
Salt water depth(s) ft 1200', 1730' Void(s) encountered (Y/N) depths \_\_\_\_\_  
Coal depth(s) ft \_\_\_\_\_ Cavern(s) encountered (Y/N) depths \_\_\_\_\_  
Is coal being mined in area (Y/N) N

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Reviewed by: \_\_\_\_\_

API 47-087-04741 Farm name Anna BATES FLENT Well number HR 505

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	Ø Drive	20"	10'	New		N/A	N/A
Surface	11 1/4"	13 3/8"	84'	New	37	N/A	Yes CTS
<del>Coat</del> Surface	12 3/8"	9 5/8"	588'	New	26	N/A	Yes CTS
Intermediate 1	8 7/8"	7"	2356'	New	19	N/A	No
Intermediate 2							
Intermediate 3							
Production	6 1/4"	4.5"	7643'	New	11.6	N/A	No
Tubing							
Packer type and depth set <u>2592' Anchor - 14 packers From 4272' - 7538' MD</u>							

Comment Details 7" cmt did not circ to surface But According to Diff Pressure should have reached 9 5/8" casing Approximately.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Surface	Type 1	55	15.8	1.13	62	≈	4
<del>Coat</del> Surface	Type 1	235	15.6	1.18	277	CTS	8
Intermediate 1	Type 1	193 / 24	14.2 / 15.6	1.45 / 1.18	309	≈ 500'	12
Intermediate 2							
Intermediate 3							
Production	Type 1	75	15	≈ 1.3	97	≈ 1810'	(All cement is Above Top Packer)
Tubing							

Drillers TD (ft) 7902' Loggers TD (ft) \_\_\_\_\_  
 Deepest formation penetrated Lower Huron Plug back to (ft) \_\_\_\_\_  
 Plug back procedure \_\_\_\_\_

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Kick off depth (ft) 3530'

Check all wireline logs run  caliper  density  deviated/directional  induction  neutron  resistivity  gamma ray  temperature  sonic

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Well cored  Yes  No Conventional Sidewall Were cuttings collected  Yes  No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING  
9 5/8" → 4 centralizers (#1 then every three)  
7" → 7 centralizers (#1 then every 250')  
4 1/2" → None

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS open Hole Hydraulic Set Packers Utilized

WERE TRACERS USED  Yes  No TYPE OF TRACER(S) USED \_\_\_\_\_





API 47-087-04741 Farm name BATES Flint Well number H2-505

PRODUCING FORMATION(S)	DEPTHS	
	TVD	MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump  
 SHUT-IN PRESSURE Surface \_\_\_\_\_ psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST \_\_\_\_\_ hrs  
 OPEN FLOW Gas \_\_\_\_\_ mcfpd Oil \_\_\_\_\_ bpd NGL \_\_\_\_\_ bpd Water \_\_\_\_\_ bpd  
 GAS MEASURED BY  Estimated  Orifice  Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
Soil/Sand/Silt	0	430	0		Water 45'
SAND	430	475			Water
SAND/Shale	475	1560			
SALT SAND	1560	1790			SALT water
Big Lime	1790	1852			
INJUN SAND	1852	1890			
Coffee Shale	2278	2292			
Devonian SH.	2292	4250			GAS
Li. Huron SH.	4140	4250			

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Please insert additional pages as applicable.

Drilling Contractor Gasco Drilling  
Address PO Drawer 330 City Coalton Bluff State VA Zip 24609

Logging Company NABORS / C&J Energy  
Address 82 Elkings Rd. City Buckhannon State WV Zip 26201

Cementing Company Universal  
Address 5252 Rt. 1428 City Allen State Ky Zip 41601

Stimulating Company \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Please insert additional pages as applicable.

Completed by Mark Seppell Telephone 304 984 9004  
Signature [Signature] Title Drilling ENG Date 10/9/15

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

[Signature]

Packer Placement

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	7587.83	HP	N/A	7538.86
2	7410.70	2.000	2.125	7319.83
3	7191.57	2.125	2.250	7058.80
4	6930.54	2.250	2.375	6797.97
5	6669.81	2.375	2.500	6578.84
6	6450.58	2.500	2.625	6317.81
7	6189.45	2.625	2.750	6056.88
8	5928.52	2.750	2.875	5795.65
9	5667.19	2.875	3.000	5534.42
10	5406.16	3.000	3.125	5273.29
11	5145.13	3.125	3.250	5012.56
12	4884.40	3.250	3.375	4751.83
13	4623.67	3.375	3.500	4532.90
14	4404.74	3.500	3.625	4272.17
Anchor				2592.60

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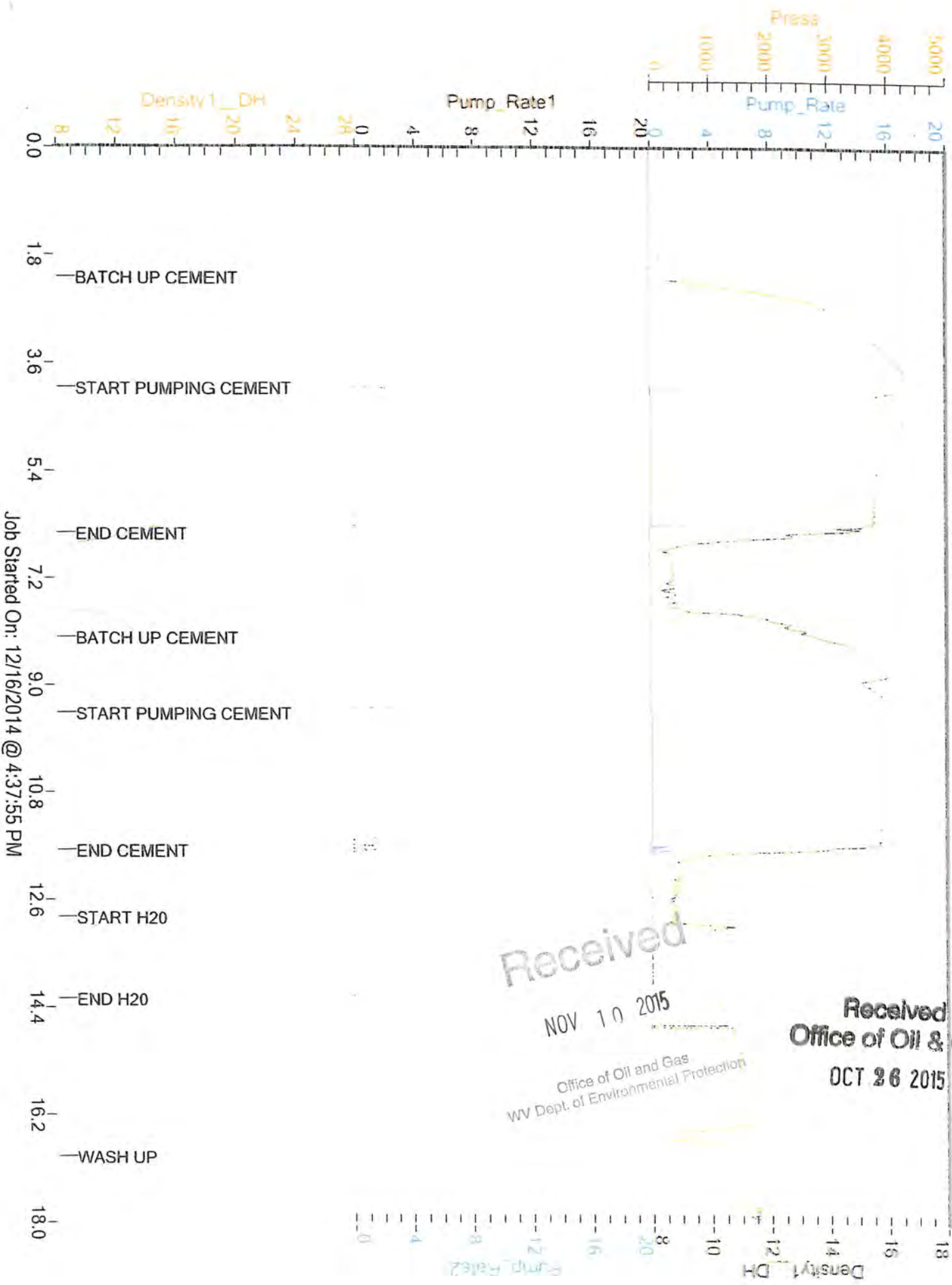
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**HARDROCK**  
 HR 505 - API PERMIT # - CEMENT



Job Started On: 12/16/2014 @ 4:37:55 PM

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505 95/8

API Permit #:

Customer: Hard Rock

Lease and Well Name: hr 505

A.F.E #:



Job Type: 9 5/8 surface

Cement Operator: Shannon Bailey

Date Cemented: 12/17/2014

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
235	type 1 3%cal 1/4 flake			1.20	5.20	15.6	29.1	282.0	50.2
Totals							29.1	282.0	50.2

Wellbore Information									
	New/Used	Diameter (in)	Weight (lb/ft)	Top (ft)	Bottom (ft)	Collapse/Burst Pressures (psi)		Requested TOC (ft)	surface
Casing	new	9.625	29.0	0	588			TVD (ft)	638
Previous Casing								Displacement Depth (ft)	553
Tubing or Drill pipe								Displacement (bbl)	44.0
Open Hole		12.375		588	638				
Open Hole									

Pumping Returns		Cement Slurry Temperature Record (°F)					Fluid Information	
Spacer or Gel Sweep Return Seen at Surface	Yes	Cement Blend	Reading 1	Reading 2	Reading 3	Average	Mix Water Temp (°F)	40
Cement Returns Seen at Surface	Yes	Blend 1					Displacement Fluid Type	Water
Amount of Cement Returns (bbl)	4	Blend 2					Displacement Fluid Temp (°F)	40
		Blend 3					Displacement Fluid Density (lb/gal)	8.3

Time	Rate (bpm)	Volume (bbl)	Pressure (psi)	Event or Stage Description
6:40				Arrive on loc. / safety meeting / spot trucks
6:48				Hook up
7:14	2-4	30	0	H2O
7:24	2-4	15	0	Gel + flake
7:29	2-4	10	0	H2O
7:32	2-4	51	0-200	cement
7:48				shut head / drop plug
7:49	4-2	41	0-250	start disp
8:02			250	stop plug per cust request
8:08				shut head release press
8:15				wash up
8:30				rack up
8:50				leave loc.
				cement reading 15.4-15.7

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Thank you for your business.

UWS Cement Operator Signature:

Customer Representative Signature:

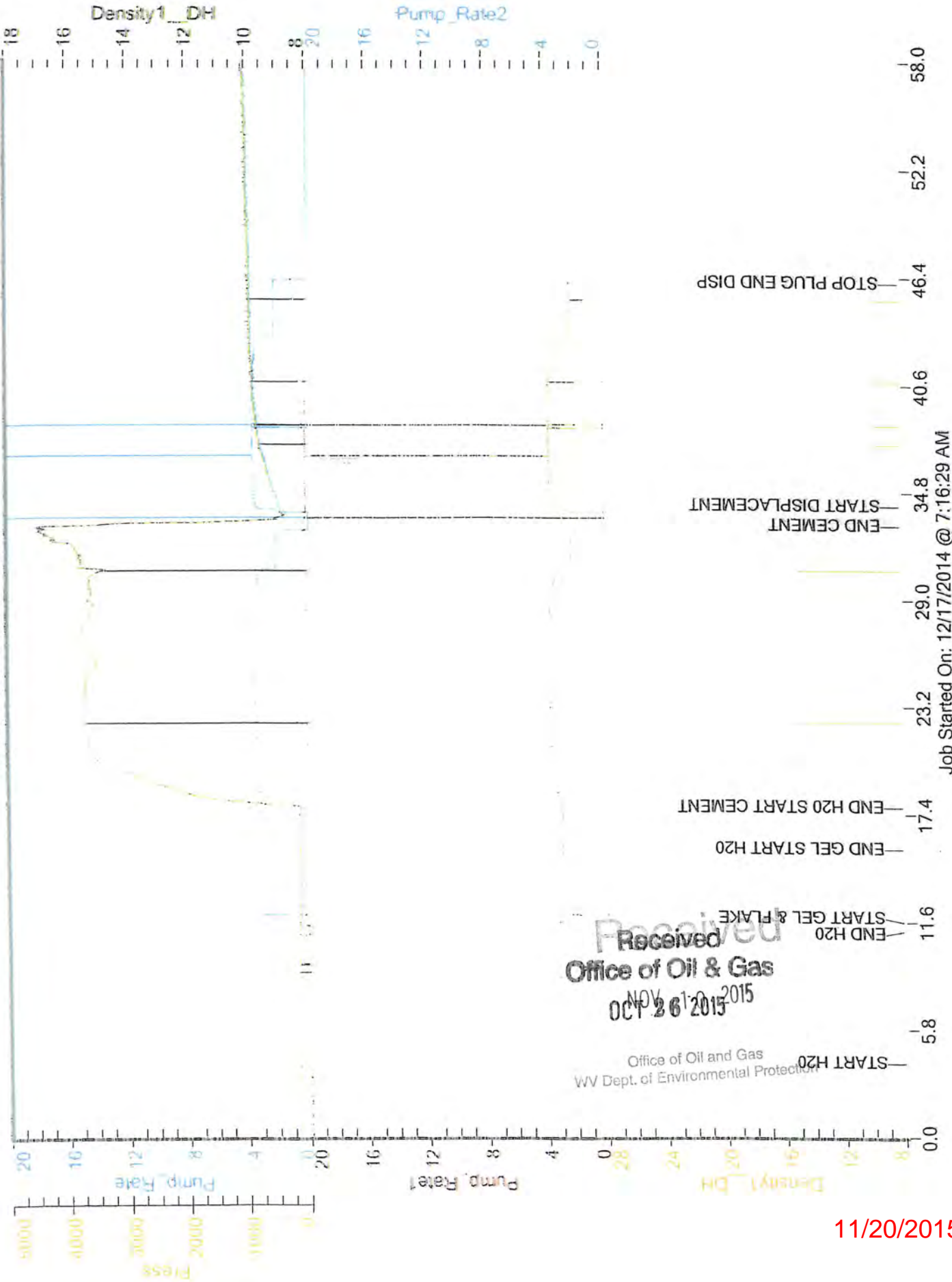
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Comments:



# HARD ROCK

HR 505 - API PERMIT # - CEMENT



Job Started On: 12/17/2014 @ 7:16:29 AM

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505 7''

API Permit #: 47-870-4741

Customer: Hard Rock

Lease and Well Name: HR 505

A.F.E #:



Job Type: 7"

Cement Operator: Matthew Faix

Date Cemented: 12/19/2014

Drilling Contractor:

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	
250	Type 1, 3% Calc, 1/4 Flake			1.20	5.20	15.6	31.0	300.0	53.4	
							Totals	31.0	300.0	53.4

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	19.0	RF	2,363			TVD (ft)	2,396
Previous Casing								Displacement Depth (ft)	2,356
Tubing or Drill pipe								Displacement (bbl)	96.0
Open Hole		8.625							
Open Hole									

Pumping Returns		Cement Slurry Temperature Record (°F)					Fluid Information	
Spacer or Gel Sweep Return Seen at Surface	No	Cement	Reading 1	Reading 2	Reading 3	Average	Mix Water Temp (°F)	
Cement Returns Seen at Surface	No	Blend 1					Displacement Fluid Type	Water
Amount of Cement Returns (bbl)		Blend 2					Displacement Fluid Temp (°F)	
		Blend 3					Displacement Fluid Density (lb/gal)	8.4

Time	Rate (bpm)	Volume (bbl)	Pressure (psi)	Event or Stage Description
8:30				ARRIVE ON LOCATION
8:35				SPOT TRUCKS
8:45				SAFETY MEETING
8:55				RIG UP
10:10				START JOB
10:11	3 - 6	76	80 - 200	H2O AHEAD
10:26	2 - 5	15	100	GEL SPACER
10:37	3	5	100	H2O SPACER
10:40	2 - 5	55	150	START CEMENT
11:01				END CEMENT
11:02				DROP PLUG
11:02	2 - 5	96	30 - 500	START DISPLACEMENT
11:30				END DISPLACEMENT
11:30			900	BUMP PLUG / SHUT IN
11:30				END JOB
11:35				SAFETY MEETING
11:45				RIG DOWN
13:00				DEPART LOCATION

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Comments:

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Thank you for your business.

UWS Cement Operator Signature:

Customer Representative Signature:

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