

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

Received

AUG - 3 2015

Office of Oil and Gas
WV Dept. of Environmental Protection

API 47 - 15 - 02885 County Clay District Union
Quad Elkhurst 7.5 Pad Name _____ Field/Pool Name _____
Farm name THOMAS RICKMERS Well Number HARSHBARGER 4A
Operator (as registered with the OOG) Raven Ridge Energy, LLC
Address 3230 Pennsylvania Avenue City Charleston State WV Zip 25302

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing N/A Easting N/A
Landing Point of Curve Northing N/A Easting N/A
Bottom Hole Northing N/A Easting N/A



Elevation (ft) 1,232' 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)
Soap

Date permit issued 10/16/2012 Date drilling commenced 12/18/2012 Date drilling ceased 12/27/2012
Date completion activities began 3/12/2013 Date completion activities ceased 3/27/2013
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 250' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,100' - 1,600' Void(s) encountered (Y/N) depths N
Coal depth(s) ft None of Record Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
 
10/30/2015

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CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade w/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	14 1/4"	13 3/8"	30	New	LS	None	Yes - Cemented by Rig
Surface	12 1/4"	9 5/8"	350	New	LS	90'	Yes
Coal							
Intermediate 1	8 3/4"	7"	1610'	New	LS	350'	Yes
Intermediate 2							
Intermediate 3							
Production	6 1/4"	4 1/2"	2360'	New	J-55	1000'	Yes
Tubing							
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class I	10 - Cemented by Hand				Ground Level	8
Surface	Class I	150	15.6	1.36	204	Ground Level	8
Coal							
Intermediate 1	Class I	175	15.6	1.36	238	Ground Level	8
Intermediate 2							
Intermediate 3							
Production	Class I	210	15.6	1.42	298.2	Ground Level	8
Tubing							

Drillers TD (ft) 2361' Loggers TD (ft) 2260'
 Deepest formation penetrated BIG INJUN Plug back to (ft) _____
 Plug back procedure _____

Kick off depth (ft) N/A

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

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING 4 1/2" Every 4 Joints - 3 Total

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	3/12/13	2162	2195	16	BIG INJUN

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	3/13/13	16.2	1178	3060	1870	27,700	730	0

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>
Big Injun	2162' - 2195' TVD _____ MD _____
_____	_____
_____	_____
_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 18 psi Bottom Hole _____ psi DURATION OF TEST 12 hrs

OPEN FLOW Gas 30 mcfpd Oil 3 bpd NGL _____ bpd Water 3 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	0		0		
Sand/Shale	0	416'			
Sand	416'	611'			
Sand/Shale	611'	1,336'			
Salt	1,336'	1821'			
Shale	1821'	1,986'			
Sand/Shale	1,986'	2,011'			
Little Lime	2,011'	2,208'			
Big Lime	2,208'	2,056'			
Big Injun	2,056'	2,195'			
Squaw	2,195'	2,221'			
Sand/Shale	2,221'	2361'			

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Please insert additional pages as applicable.

Drilling Contractor R & R Well Service
Address Ambler Ridge City Walton State WV Zip 25286

Logging Company Nabors Well Service
Address 1650 Hackers Creek Road City Jane Lew State WV Zip 26378

Cementing Company Universal Well Services
Address 5 Hall Run Road City Buckhannon State WV Zip 25201

Stimulating Company Halliburton
Address 1628 Jackson Mill Rd City Weston State WV Zip 26378

Please insert additional pages as applicable.

Completed by Danielle N. Boggs Telephone 304-344-9291
Signature Danielle N. Boggs Title Operations Manager Date 5/21/2015

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

10/30/2015