

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

API 47-011-00999 County Cabell District Grant
Quad Milton 7.5' Pad Name n/a Field/Pool Name n/a
Farm name Childers Well Number 1
Operator (as registered with the OOG) Keyrock Energy LLC
Address PO Box 2223 City Johnson City State TN Zip 37605

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

Elevation (ft) 689' 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)
Produced water with KCL

Date permit issued 1/9/2018 Date drilling commenced 4/10/2018 Date drilling ceased 4/21/2018
Date completion activities began 8/2/2018 Date completion activities ceased _____
Verbal plugging (Y/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 200', 250' 710' Open mine(s) (Y/N) depths None
Salt water depth(s) ft 1,220', 1,250' Void(s) encountered (Y/N) depths None
Coal depth(s) ft 765 Cavern(s) encountered (Y/N) depths None
Is coal being mined in area (Y/N) No

Reviewed

Reviewed by:

11-26-18

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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							
Surface	12 1/4"	9 5/8"	346'	New	34 lbs/ft	40'	Yes
Coal	8 3/4"	7"	1,796'	New	17 lbs/ft	40'	Yes
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	6 1/4"	4 1/2"	2,509'	New	10.5 lbs/ft	n/a	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							
Surface	Class A	136 sks	15.6	1.18	160.4	0	8 hours
Coal	Class A	240 sks	17	1.36	326.4	0	8 hours
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	Class A	80 sks	15.2	1.26	100.8	1,602'	8 hours
Tubing							

Drillers TD (ft) 2,543' Loggers TD (ft) 2,553'

Deepest formation penetrated Devonian Shale Plug back to (ft) _____

Plug back procedure _____

Kick off depth (ft) _____

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
 2,514', 2,471', 2,416', 2,382', 2,340' on 4 1/2" only

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS 1 shot @ 2,403', 1 shot @ 2,409', 12 shots spaced evenly over 2,410' - 2,425', 10 shots spaced evenly from 2,357'-2,367', 5 shots @ 2,369', 2,371', 2,373', 2,375', 2,377'.

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>
<u>Berea</u>	<u>2,377-2,425</u> 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 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)
Fill	0	40	0	40	Samples not collected to TD. Refer to log.
Shale	40	104	40	104	
Sand & Shale	104	346	104	346	
Sand	346	384	346	384	
Shale	384	407	384	407	
Sand & Shale	407	765	407	765	Fresh Water at 710'
Coal	765	770	765	770	
Sand & Shale	765	1025	765	1025	
Shale	1025	1250	1025	1250	
Salt sand	1250	1425	1250	1425	
Shale	1425	1530	1425	1530	
Little Lime	1530	1554	1530	1554	
Shale	1554	1562	1554	1562	
Big Lime	1562	1770	1562	1770	

Please insert additional pages as applicable.

Drilling Contractor Mitchell Drilling
 Address 2529 Sycamore Rd City Clarksburg State WV Zip 26301

Logging Company Keystone Wireline
 Address 344 High Street City Bradford State PA Zip _____

Cementing Company Formation Cementing
 Address P. O. Box 2667 City Zanesville State OH Zip 43702

Stimulating Company Reliance Well Services
 Address 1250 Tower Lane City Erie State PA Zip 16505

Please insert additional pages as applicable.

Completed by Morgan Pate Telephone 423-276-1116
 Signature _____ Title Geologist Date _____