

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

Harmon #3

API 47-039-06376 County Kanawha District South Charleston
Quad Charleston West Pad Name Harmon Field/Pool Name N/A
Farm name United Disciples of Christ Church Well Number #3
Operator (as registered with the OOG) Reserve Oil and Gas Inc
Address 929 Charleston Road City Spencer State WV Zip 25276

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 489,241 NAD83 Easting 1,768,242 NAD83
~~Landing Point of Curve~~ Northing 4243937 UTM NAD83 Easting 0438981 UTM NAD83
~~Bottom Hole~~ Northing _____ Easting _____

Elevation (ft) 822 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 11/13/2015 Date drilling commenced 02/23/2016 Date drilling ceased 4/27/2016
Date completion activities began 05/04/2016 Date completion activities ceased 05/05/2016
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 350 Open mine(s) (Y/N) depths N RECEIVED
Salt water depth(s) ft 1260 Void(s) encountered (Y/N) depths Office of Oil and Gas
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths JUL 06 2016

Is coal being mined in area (Y/N) _____
APPROVED

Reviewed by: _____
WV Department of Environmental Protection
07/08/2016

NAME: Jackie Shurt
DATE: 7/6/14

API 47- 039-06376

Farm name United Disciples of Christ Church Well number Harmon #3

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	17 1/2	13 3/8	30	New			Graded
Surface	12 3/8	9 5/8	421	New			yes 10 bbl
Coal							
Intermediate 1	8 7/8	7"	1919	used			yes 1 bbl
Intermediate 2	6 1/4	4 1/2	4720				yes
Intermediate 3							
Production							
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	Type 1	6	15.6	1.18	7.08	Surface	8 hrs
Surface	Type 1	180	15.6	1.18	212.4	Surface	8 hrs
Coal							
Intermediate 1	Type 1	285 sks	Head 14.2 Tail 15.6	Head 1.50 Tail 1.18	Head 315 Tail 88.5	Surface	8 hrs.
Intermediate 2							
Intermediate 3							
Production	Type 1	125 sks	11.8	2.63	59 bbls	1830	
Tubing							

Drillers TD (ft) 4720 Loggers TD (ft) 4720
 Deepest formation penetrated 4720 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 _____

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	05/04/2016	3706	4335	65	Devonian shale
2	05/04/2016	3315	3674	30	Brown shale, Lower Huron

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	05/05/16	55 CFM	1748	1750	1090	N/A	N/A	1,200,000 SCF
2	05/05/16	50 CFM	1906	1630	1560	N/A	N/A	800,000 SCF

RECEIVED
Office of Oil and Gas
JUL 06 2016

Please insert additional pages as applicable.

WV Department of
Environmental Protection
07/08/2016

API 47- 039 - 06376 Farm name United Disciples of Christ Church Well number Harmon#3

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 ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
Shot Rock			0	15	
Grey Sand			15	30	
Sandstone/shale			30	280	
Slate			280	285	
Sand			285	575	
Shale			575	650	
Sand			650	815	
Shale			815	830	
Greysand/shale			830	912	
S. Sand			912	1262	1060' 2" stream
coal			1262	1265	
Max tons			1265	1578	
L. Lime			1578	1600	

Please insert additional pages as applicable.

Drilling Contractor Contractor Services Inc
Address 929 Charleston Road City Spencer State WV Zip 25276

Logging Company KLX Energy Services
Address 6072 W. Veterans Mem. Hwy. City Bridgport State WV Zip 26330

Cementing Company C+J Energy Services
Address 3990 Rogerdale City Houston State TX Zip 77042

Stimulating Company C+J Energy Services
Address 3990 Rogerdale City Houston State TX Zip 77042

Please insert additional pages as applicable.

Completed by Doug Douglass Telephone 304-483-8340
Signature Jay Doyle Title Land Manager Date 6/30/16

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PRODUCING FORMATION(S)	DEPTHS	
	TVD	MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

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	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
B Line			1600	1777	
Injun			1802	1851	
Grey shale			1851	2068	
Sd & sh			2068	2230	
Brown shale Huron			2230	3380	Good odor at 2477'
Huron					
Grey shale			3380	4220	
Brown shale			4220	4450	
Grey shale			4450	4720	

Please insert additional pages as applicable.

Drilling Contractor _____
 Address _____ City _____ State _____ Zip _____

Logging Company _____
 Address _____ City _____ State _____ Zip _____

Cementing Company _____
 Address _____ City _____ State _____ Zip _____

Stimulating Company _____
 Address _____ City _____ State _____ Zip _____

Please insert additional pages as applicable.

Completed by _____ Telephone _____
 Signature _____ Title _____ Date _____

RECEIVED
 Office of Oil and Gas

JUL 06 2013