

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

API 47 - 590 - 2250 County MINGO District MAGNOLIA  
Quad MAJESTIC Pad Name \_\_\_\_\_ Field/Pool Name \_\_\_\_\_  
Farm name LOGAN COAL & TIMBER CORP Well Number 2357  
Operator (as registered with the OOG) QUALITY NATURAL GAS, LLC  
Address P.O. BOX 480 City ALLEN State KY Zip 41601

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) 876.3 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)  
N/A

Date permit issued 9/23/2014 Date drilling commenced 11/17/2014 Date drilling ceased 11/21/2014  
Date completion activities began 12/16/2014 Date completion activities ceased 12/16/2014  
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 NONE Open mine(s) (Y/N) depths NONE  
Salt water depth(s) ft NONE Void(s) encountered (Y/N) depths NONE  
Coal depth(s) ft NONE Cavern(s) encountered (Y/N) depths NONE  
Is coal being mined in area (Y/N) NO

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Reviewed by:  
02/06/2015

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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	17 1/2"	13 3/8"	42'	New	LS		
Surface	12 1/4"	9 5/8"	507'	New	LS	419', 44'	YES
Coal							
Intermediate 1	8 7/8"	7"	2162'	New	LS		YES
Intermediate 2							
Intermediate 3							
Production	6 3/8"	4 1/2"	4399'	New	L-65		500' up in 7"
Tubing							
Packer type and depth set							

Comment Details \_\_\_\_\_

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	Class A						
Surface	Class A	175	15.5	1.18	206.5	Surface	8
Coal							
Intermediate 1	Class A	100, 175	15.6, 12.3	1.18, 1.84	118, 322	Surface	8
Intermediate 2							
Intermediate 3							
Production	Class A	170	13.6	1.90	323	500' up in 7"	8
Tubing							

Drillers TD (ft) 4400' Loggers TD (ft) 4418'

Deepest formation penetrated HARRELL SHALE Plug back to (ft) N/A

Plug back procedure N/A

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  
For drilling purposes only.

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING 4 01/2" - 4399', 4222.2', 4045.4', 3868.6', 3691.8',  
3505', 3328.2', 3151.4', 2974.6' and 2797.80'

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	12/11/14	4280	4011	50	SHALE

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	12-16-14	104,461cfm	3,545	3,624	1,617	NONE	NONE	1,504,515

Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS
DEVONIAN/BROWN SHALE	4006-4280' TVD MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 780 psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST 72 hrs

OPEN FLOW Gas 207 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	
	0		0		
SEE ATTACHED					

Please insert additional pages as applicable.

Drilling Contractor MOUNTAIN RIDGE  
Address 72 OLD 25 E City BARBOURVILLE State KY Zip 40906

Logging Company WEATHERFORD  
Address \_\_\_\_\_ City LONDON State KY Zip 40741

Cementing Company NABORS COMPLETION & PRODUCTION SERVICES  
Address 580 HAWTHORN DR City NORTON State VA Zip 24273

Stimulating Company UNIVERSAL WELL SERVICES INC  
Address PO BOX 686 City ALLEN State KY Zip 41601

Please insert additional pages as applicable.

Completed by Darrell Fluharty Telephone 606-874-8041  
Signature [Signature] Title Field Supervisor Date 1-16-2015

WELL # 2357

API#47-5902250

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, H2S, ETC)
SAND	0	30			
SAND/SHALE	30	455			
SAND	455	510			
SAND/SHALE	510	750			
SAND	750	842			
SAND/SHALE	842	992			
SAND	992	1115			
SAND/SHALE	1115	1385			
SAND	1385	1480			
RED ROCK	1480	1500			
SAND/SHALE	1500	1580			
RED ROCK	1580	1680			
RED ROCK/SAND/SLATE	1680	1740			
SAND/SLATE	1740	1860			
SAND	1860	1929			
SAND/SHALE	1929	1980			
SAND/SHALE/LIME	1980	2060			
LITTLE LIME	2060	2115			
BIG LIME	2115	2410			
INJUN	2410	2485			
WEIR	2485	2972			
COFFEE SHALE	2972	3035			
BEREA	3035	3140			
BROWN SHALE	3140	4080			
GRAY/BROWN	4080	4280			
HARRELL SHALE	4280	4400			

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