

**State of West Virginia  
Division of Environmental Protection  
Section of Oil and Gas  
Well Operator's Report of Well Work**

API #

4704502228

Firm Name W.W. McDonald Land Company  
 Location Elevation \_\_\_\_\_  
 District Unknown  
 Altitude Degree Minutes Seconds \_\_\_\_\_  
 Longitude West Degree Minutes Seconds \_\_\_\_\_  
 Company EQT Plaza  
Suite 1700  
625 Liberty Avenue  
Pittsburgh, Pa 15222

Well Number 512373  
 QUAD Man  
 County Logan, WV  
 WW \_\_\_\_\_

Longitude 37.87187  
 Latitude -81.87187

Agent Cecil Ray  
 Inspector Bill Nehr  
 Permit Issued 3/23/2009  
 Well Work Commenced 6/17/2010  
 Well Work Completed 8/27/2010

<u>Casing &amp; Tubing Size</u>	<u>Used In Drilling</u>	<u>Left in Well</u>	<u>Cement Cubic FT</u>
18	22.00	22.00	
13 3/8	63.00	63.00	
9 5/8	408.00	408.00	206.50
7	2087.00	2,087.00	464.00
4 1/2	8084.00	8,084.00	

Perforation Plugging \_\_\_\_\_

Rotary Rig  Rotary Rig \_\_\_\_\_

Total Depth TVD: 4025' MD: 8,132.00

**RECEIVED  
Office of Oil & Gas**

FEB 21 2013

**WV Department of  
Environmental Protection**

<u>Type</u>	<u>From</u>
Fresh Water	88.00
Fresh Water	130.00
Salt Water	449.00
Salt Water	950.00

<u>Type</u>	<u>From</u>		
coal	88.00 ft. -	89.00	ft.
coal	265.00 ft. -	266.00	ft.

**Producing Formation**

Gas: Initial Open Flow 1163

Final Open Flow 5054

Static Rock Pressure 640

NOTE: On back of this form put the following

- 1) Details of Perforated intervals, fracturing or stimulating, physical change, etc.
- 2) The well log, a systematic detailed geological record of all formations including coal encountered in the well bore

For EQT Production Company

By Mike Butcher

Date 9-14-2010

03/01/2013

45-02228

Formation record

Gas Tests

<u>Formation Name</u>	<u>Top</u>	<u>Bottom</u>	<u>Thickness</u>	<u>Depth</u>	<u>Gas</u>	<u>Comments</u>
OVERBURDEN	0.00	63.00	63.00	2,025.00		0 Trace
SANDSTONE	63.00	88.00	25.00	2,350.00		0 Trace
COAL	88.00	89.00	1.00	2,600.00		0 Trace
SANDSTONE	89.00	125.00	36.00	2,975.00		0 Trace
SANDY SHALE	125.00	265.00	140.00	3,381.00		0 Trace
COAL	285.00	286.00	1.00	4,366.00		60 2/10ths thru 2"
SANDSTONE	286.00	285.00	19.00	6,060.00		407 93/10ths thru 2"
SANDY SHALE	285.00	300.00	15.00	6,347.00		307 53/10ths thru 2"
SANDSTONE	300.00	330.00	30.00	7,676.00		1838
SANDY SHALE	330.00	380.00	50.00	8,132.00		1163 48/10ths on 4"
SANDSTONE	380.00	425.00	45.00			
SANDY SHALE	425.00	764.00	339.00			
SALT SAND	764.70	1,267.00	502.30			
UPPER MAXTON SAND	1,592.00	1,945.00	353.00			
LOWER MAXTON SAND	1,945.00	2,025.00	80.00			
LITTLE LIME	2,025.00	2,066.00	41.00			
BIG LIME	2,082.00	2,317.00	235.00			
WEIR SAND	2,440.73	2,568.00	127.27			
SUNBURY	2,881.00	2,919.00	38.00			
BEREA SAND	2,919.00	2,946.00	27.00			
UPPER DEVONIAN	2,943.69					
UPPER HURON SHALE	2,947.00	3,970.00	1,023.00			
GORDON SAND	3,292.03	3,975.00	682.97			
LOWER HURON SHALE	3,969.00	4,381.00	412.00			
HURON SILTSTONE	3,998.00	4,034.00	36.00			
IAVA SHALE	4,381.00	4,520.00	139.00			
ANGOLA SHALE	4,520.00	4,757.00	237.00			
RHINESTREET SHALE	4,757.00					

RECEIVED  
Office of Oil & Gas

FEB 21 2013

WV Department of  
Environmental Protection

Questions regarding formations can  
be directed to Jonette Speranzo.  
Jsperanzo@eqt.com

03/01/2013

45-02228

Stage	Formation	Frac Type	
1	LOWER HURON SILT	N <sup>2</sup>	
Date	From / To	# of perfs	BD Press
8/25/2010	7918 - 8084		4,896.00
Avg Rate	Max Press PSI	ISIP	Frac Gradient
104,348.00	6,193.00		
Sand Proppant	Water-bbl	SCF N2	Acid-Gal
	0.00	1,005,046.00	

SIP Detail  
 5 Min:  
 10 Min:  
 15 Min:

Stage	Formation	Frac Type	
2	LOWER HURON SILT	N <sup>2</sup>	
Date	From / To	# of perfs	BD Press
8/25/2010	7685 - 7918		4,123.00
Avg Rate	Max Press PSI	ISIP	Frac Gradient
107,744.00	6,109.00		
Sand Proppant	Water-bbl	SCF N2	Acid-Gal
	7.20	1,001,301.00	

SIP Detail  
 5 Min:  
 10 Min:  
 15 Min:

**RECEIVED**  
 Office of Oil & Gas  
 FEB 21 2013

WV Department of Environmental Protection

Stage	Formation	Frac Type	
3	LOWER HURON SILT	N <sup>2</sup>	
Date	From / To	# of perfs	BD Press
8/25/2010	7452 - 7685		3,721.00
Avg Rate	Max Press PSI	ISIP	Frac Gradient
106,528.00	5,997.00		
Sand Proppant	Water-bbl	SCF N2	Acid-Gal
	6.20	1,001,835.00	

SIP Detail  
 5 Min:  
 10 Min:  
 15 Min:

Stage	Formation	Frac Type	Well Treatment		Summary
4	LOWER HURON SILT	N <sup>2</sup>			
Date	From / To	# of perfs	BD Press	ATP Psi	SIP Detail
8/25/2010	7175 - 7452		3,859.00	5,315.00	5 Min:
Avg Rate	Max Press PSI	ISIP	Frac Gradient		10 Min:
101,812.00	5,529.00		0.943		15 Min:
Sand Proppant	Water-bbl	SCF N2	Acid-Gal		
	6.10	1,007,905.00			

45-02228

Stage	Formation	Frac Type	Well Treatment		Summary
5	LOWER HURON SILT	N <sup>2</sup>			
Date	From / To	# of perfs	BD Press	ATP Psi	SIP Detail
8/25/2010	6943 - 7175		3,645.00	4,955.00	5 Min:
Avg Rate	Max Press PSI	ISIP	Frac Gradient		10 Min:
106,414.00	5,050.00				15 Min:
Sand Proppant	Water-bbl	SCF N2	Acid-Gal		
	6.30	1,003,874.00			

**RECEIVED**  
Office of Oil & Gas  
FEB 21 2013

Stage	Formation	Frac Type	Well Treatment		Summary
6	LOWER HURON SILT	N <sup>2</sup>			
Date	From / To	# of perfs	BD Press	ATP Psi	SIP Detail
8/25/2010	6668 - 6943		3,791.00	4,750.00	5 Min:
Avg Rate	Max Press PSI	ISIP	Frac Gradient		10 Min:
105,570.00	4,829.00				15 Min:
Sand Proppant	Water-bbl	SCF N2	Acid-Gal		
	6.20	1,006,300.00			

WV Department of  
Environmental Protection

ESHA-1123 Completion Attachment Well Treatment Summary

45-02228

Stage	Formation	Frac Type				
7	LOWER HURON SILT	N <sup>2</sup>				
Date	From / To	# of perfs	BD Press	ATP Psi	SIP Detail	
8/25/2010	6435 - 6668		3,187.00	4,690.00	5 Min:	
					10 Min:	
					15 Min:	
Avg Rate	Max Press PSI	ISIP	Frac Gradient			
107,410.00	4,797.00	2,235.00	0.642			
Sand Proppant	Water-bbl	SCF N2	Acid-Gal			
	6.20	1,001,665.00				

Stage	Formation	Frac Type				
8	LOWER HURON SILT	N <sup>2</sup>				
Date	From / To	# of perfs	BD Press	ATP Psi	SIP Detail	
8/25/2010	6162 - 6435		3,066.00	5,152.00	5 Min:	
					10 Min:	
					15 Min:	
Avg Rate	Max Press PSI	ISIP	Frac Gradient			
106,192.00	5,306.00	2,645.00	0.76			
Sand Proppant	Water-bbl	SCF N2	Acid-Gal			
	6.30	1,007,339.00				

RECEIVED  
Office of Oil & Gas

FEB 21 2013

Stage	Formation	Frac Type				
9	LOWER HURON SILT	N <sup>2</sup>				
Date	From / To	# of perfs	BD Press	ATP Psi	SIP Detail	
8/25/2010	5928 - 6162		3,320.00	4,656.00	5 Min:	
					10 Min:	
					15 Min:	
Avg Rate	Max Press PSI	ISIP	Frac Gradient			
108,533.00	4,753.00					
Sand Proppant	Water-bbl	SCF N2	Acid-Gal			
	6.20	1,005,057.00				

WV Department of  
Environmental Protection

Stage	Formation	Frac Type			Summary
10	LOWER HURON SILT	N <sup>2</sup>			
Date	From / To	# of perfs	BD Press	ATP Psi	SIP Detail
8/25/2010	5695 - 5928		3,479.00	4,894.00	5 Min:
Avg Rate	Max Press PSI	ISIP	Frac Gradient		10 Min:
107,783.00	5,101.00	2,531.00	0.728		15 Min:
Sand Proppant	Water-bbl	SCF N2	Acid-Gal		
	5.90	1,005,519.00			

45-02228

Stage	Formation	Frac Type			Summary
11	LOWER HURON SILT	N <sup>2</sup>			
Date	From / To	# of perfs	BD Press	ATP Psi	SIP Detail
8/25/2010	5419 - 5695		3,386.00	4,550.00	5 Min:
Avg Rate	Max Press PSI	ISIP	Frac Gradient		10 Min:
107,764.00	4,551.00				15 Min:
Sand Proppant	Water-bbl	SCF N2	Acid-Gal		
	6.00	1,006,729.00			

RECEIVED  
Office of Oil & Gas

FEB 21 2013

Stage	Formation	Frac Type			Summary
12	LOWER HURON SILT	N <sup>2</sup>			
Date	From / To	# of perfs	BD Press	ATP Psi	SIP Detail
8/25/2010	5190 - 5419		3,465.00	4,463.00	5 Min:
Avg Rate	Max Press PSI	ISIP	Frac Gradient		10 Min:
106,334.00	4,526.00				15 Min:
Sand Proppant	Water-bbl	SCF N2	Acid-Gal		
	6.20	1,004,263.00			

WV Department of  
Environmental Protection

Completion Attachment Well Treatment Summary

45.02228

Stage	Formation	Frac Type				SIP Detail
13	LOWER HURON SILT	N <sup>2</sup>				
Date	From / To	# of perfs	BD Press	ATP Psi		5 Min:
8/25/2010	4914 - 5190		3,273.00	4,497.00		10 Min:
Avg Rate	Max Press PSI	ISIP	Frac Gradient			15 Min:
107,529.00	4,559.00	2,400.00	0.688			
Sand Proppant	Water-bbl	SCF N2	Acid-Gal			
	6.00	1,004,579.00				

Stage	Formation	Frac Type				SIP Detail
14	LOWER HURON SILT	N <sup>2</sup>				
Date	From / To	# of perfs	BD Press	ATP Psi		5 Min:
8/26/2010	4680 - 4914		3,235.00	4,335.00		10 Min:
Avg Rate	Max Press PSI	ISIP	Frac Gradient			15 Min:
108,079.00	4,390.00					
Sand Proppant	Water-bbl	SCF N2	Acid-Gal			
	6.00	1,005,695.00				

RECEIVED  
Office of Oil & Gas  
FEB 21 2013

Stage	Formation	Frac Type				SIP Detail
15	LOWER HURON SILT	N <sup>2</sup>				
Date	From / To	# of perfs	BD Press	ATP Psi		5 Min:
8/26/2010	4407 - 4680		3,462.00			10 Min:
Avg Rate	Max Press PSI	ISIP	Frac Gradient			15 Min:
105,743.00	4,200.00					
Sand Proppant	Water-bbl	SCF N2	Acid-Gal			
	6.20	1,003,686.00				

WV Department of  
Environmental Protection

Stage	Formation	Frac Type				Summary
16	LOWER HURON SILT	N <sup>2</sup>				
<b>Date</b>	<b>From / To</b>	<b># of perfs</b>	<b>BD Press</b>	<b>ATP Psi</b>	<b>SIP Detail</b>	
8/26/2010	4173 - 4407		3,329.00		5 Min:	
<b>Avg Rate</b>	<b>Max Press PSI</b>	<b>ISIP</b>	<b>Frac Gradient</b>		10 Min:	
106,660.00	4,224.00	2,150.00	0.619		15 Min:	
<b>Sand Proppant</b>	<b>Water-bbl</b>	<b>SCF N2</b>	<b>Acid-Gal</b>			
	6.10	1,005,977.00				

45.02228

RECEIVED  
Office of Oil & Gas  
FEB 21 2013  
WV Department of  
Environmental Protection