

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

API 47-085-10133 County RITCHIE District UNION  
Quad OXFORD 7.5' Pad Name OXF163 Field/Pool Name \_\_\_\_\_  
Farm name HAROLD K. PIERCE Well Number 513757  
Operator (as registered with the OOG) EQT Production Company  
Address 625 Liberty Ave. EQT Plaza, Suite 1700 City Pittsburgh State PA Zip 15222

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4,331,889.2 Easting 513,602.8  
Landing Point of Curve Northing 4,331,687.8 Easting 513,457.2  
Bottom Hole Northing 4,329,581.4 Easting 514,180.7

Elevation (ft) 1159 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)  
Water base Mud 12.5 ppg barium sulfate, sodium chloride, xanthan gum, polyanionic cellulose, modified starch, sodium hydroxide, phosphonates and alkyl phosphates, glutaraldehyde solution, calcium hydroxide, partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, sodium carbonate, ground walnut shells, alcohol and modified fatty acid, ferrochrome lignosulfonate, calcium carbonate, fibrous cellulose

Date permit issued 9/22/2014 Date drilling commenced 12/03/2014 Date drilling ceased 6/13/2015  
Date completion activities began 8/26/2015 Date completion activities ceased 9/10/2015  
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 176', 453', 517' Open mine(s) (Y/N) depths N  
Salt water depth(s) ft 1156' Void(s) encountered (Y/N) depths N  
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths N  
Is coal being mined in area (Y/N) N

**APPROVED**  
NAME: Michael Hoff  
DATE: 6/13/16  
Reviewed by: \_\_\_\_\_  
**108/12/2016**

APPROVED

NAME:  
DATE:

08/12/2016

API 47-085 - 10133 Farm name HAROLD K. PIERCE Well number 513757

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	24"	20"	40'	NEW	A-500 78.7LB/FT	NONE	Y
Surface	17.5"	13.375"	1054'	NEW	J-55 54.5LB/FT	464'	Y
Coal							
Intermediate 1	12.375"	9.625"	3026'	NEW	A-500 40LB/FT	2093'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	14,597'	NEW	P-110 20LB/FT	NONE	N
Tubing							
Packer type and depth set							

Comment Details N/A

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	38	15.6	1.18	44.84	0	8
Surface	CLASS A	890	15.6	1.18	1050.2	0	8
Coal							
Intermediate 1	CLASS A	1120	15.6	1.18	1321.6	0	8
Intermediate 2							
Intermediate 3							
Production	Class A / Class H	600/980	14.2 / 15.2	1.26 / 1.97	2686.6	3,950' MD	72
Tubing							

Drillers TD (ft) 14,606' MD Loggers TD (ft) N/A  
 Deepest formation penetrated Marcellus Plug back to (ft) 2489'  
 Plug back procedure Set cast Weatherford cast iron bridge plug at 2508'. Then set a Weatherford whipstock at 2489' and milled out of casing.

Kick off depth (ft) 5,312' MD

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 \_\_\_\_\_  
 CONDUCTOR- NONE  
 SURFACE- JOINTS: 1,11, 21  
 INTERMEDIATE- RAN AT LEAST EVERY 500' FEET  
 PRODUCTION- 251 Composite Centralizers. One on every joint from TD to 4,000 MD

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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API 47- 085 - 10133 Farm name HAROLD K. PIERCE Well number 513757

Drilling Contractor Savanna Drilling  
Address 2204 Timberloch Place Suite 230 City Woodlands State TX Zip 77380

Logging Company GYRODATA  
Address 601 MAYER ST City BRIDGEVILLE State PA Zip 15017

Logging Company \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Cementing Company C&J Energy Services  
Address 1650 Hackers Creek Rd City Jane Lew State WV Zip 26378

API 47-085-10133

Formation Name	Final Top MD (ftGL) (ft)	Final Top TVD (ft)	Final Btm MD (ftGL) (ft)	Final Btm TVD (ft)
FRESH WATER ZONE	0	0	520	520
SAND/SHALE	520	520	1,774	1,774
MAXTON	1,774	1,774	1,955	1,955
BIG LIME	1,955	1,955	2,244	2,244
WEIR	2,244	2,244	2,472	2,472
GANTZ	2,472	2,472	2,567	2,567
50F	2,567	2,567	2,653	2,652
30F	2,653	2,652	2,715	2,713
GORDON	2,715	2,713	2,803	2,801
4TH	2,803	2,801	2,959	2,955
BAYARD	2,959	2,955	3,299	3,293
WARREN	3,299	3,293	3,352	3,346
SPEECHLEY	3,352	3,346	3,846	3,840
BALLTOWN A	3,846	3,840	4,430	4,424
RILEY	4,430	4,424	4,767	4,761
BENSON	4,767	4,761	5,100	5,093
ALEXANDER	5,100	5,093	6,407	6,216
SONYEA	6,407	6,216	6,587	6,349
MIDDLESEX	6,587	6,349	6,673	6,403
GENESSEE	6,673	6,403	6,790	6,469
GENESE0	6,790	6,469	6,894	6,513
TULLY	6,894	6,513	6,926	6,523
HAMILTON	6,926	6,523	6,961	6,533
MARCELLUS	6,961	6,533	14,606	6,565

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**PHOENIX**  
TECHNOLOGY SERVICES



## **EQT Production - Marcellus**

Ritchie County, WV  
Ritchie County 513757  
Well #513757

513757 ST01

Design: 513757 ST01 As Drilled

## **Standard Survey Report**

17 June, 2015



08/12/2016





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Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Ritchie County 513757
Company:	EQT Production - Marcellus	TVD Reference:	KB@16 @ 1175.0usft
Project:	Ritchie County, WV	MD Reference:	KB@16 @ 1175.0usft
Site:	Ritchie County 513757	North Reference:	Grid
Well:	Well #513757	Survey Calculation Method:	Minimum Curvature
Wellbore:	513757 ST01		
Design:	513757 ST01 As Drilled		

<b>Project</b> Ritchie County, WV			
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		Using geodetic scale factor

<b>Site</b> Ritchie County 513757			
Site Position:		Northing:	234,487.90 usft
From:	Map	Easting:	1,619,117.60 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	39.14
		Longitude:	-80.84
		Grid Convergence:	-0.86 °

<b>Well</b> Well #513757			
Well Position	+N/-S	0.0 usft	Northing: 234,487.90 usft
	+E/-W	0.0 usft	Easting: 1,619,117.60 usft
Position Uncertainty		0.0 usft	Wellhead Elevation: usft
			Latitude: 39° 8' 9.570 N
			Longitude: 80° 50' 34.007 W
			Ground Level: 1,159.0 usft

<b>Wellbore</b> 513757 ST01					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	5/18/2015	-7.72	66.58	52,072

<b>Design</b> 513757 ST01 As Drilled					
<b>Audit Notes:</b>					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	166.90	

<b>Survey Program</b>		Date	6/17/2015		
From (')	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	5,028.0	Gyrodata Gyro KOP (513757 ST01)	GYD_DP_MS	Gyrodata gyro-compassing and drop	
0.00	14,606.0	513757 PHX MWD (513757 ST01)	PHX+MWD+HDGM	PHX+OWSG MWD + HDGM	

<b>Survey</b>										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3.0	0.00	0.00	3.0	-1,172.0	0.0	0.0	0.0	0.00	0.00	0.00
103.0	0.22	73.11	103.0	-1,072.0	0.1	0.2	0.0	0.22	0.22	0.00
203.0	0.30	72.73	203.0	-972.0	0.2	0.6	0.0	0.08	0.08	-0.38
303.0	0.37	75.51	303.0	-872.0	0.3	1.2	-0.1	0.07	0.07	2.78
403.0	0.36	76.77	403.0	-772.0	0.5	1.8	-0.1	0.04	-0.04	2.26
503.0	0.30	97.15	503.0	-672.0	0.5	2.4	0.0	0.13	-0.06	1.35
603.0	0.29	100.32	603.0	-572.0	0.5	2.9	0.2	0.02	-0.01	3.17
703.0	0.18	81.81	703.0	-472.0	0.4	3.3	0.3	0.13	-0.11	-18.51

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Survey Report



Database:	EDM 5000.1 Single User DC	Local Co-ordinate Reference:	Site Ritchie County 513757
Company:	EQT Production - Marcellus	TVD Reference:	K&G#6 @ 1175 East
Project:	Ritchie County, WV	MD Reference:	K&G#6 @ 1175 East
Site:	Ritchie County 513757	North Reference:	Co 3
Well:	Well #5) 3757	Survey Calculation Method:	Minimum Curvature
Wellbore:	513757_BTD		
Design:	513757_BTD As Drawn		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
803.0	0.16	71.41	803.0	-372.0	0.5	3.6	0.3	0.04	-0.02	-10.40
903.0	0.17	68.11	903.0	-272.0	0.6	3.8	0.3	0.01	0.01	-3.30
1,003.0	0.18	70.14	1,003.0	-172.0	0.7	4.1	0.2	0.01	0.01	2.03
1,103.0	0.29	112.48	1,103.0	-72.0	0.7	4.5	0.4	0.20	0.11	42.34
1,203.0	0.44	134.40	1,203.0	28.0	0.3	5.0	0.8	0.20	0.15	21.92
1,303.0	0.48	130.85	1,303.0	128.0	-0.2	5.6	1.5	0.05	0.04	-3.55
1,403.0	0.46	133.16	1,403.0	228.0	-0.8	6.2	2.2	0.03	-0.02	2.31
1,503.0	0.47	132.61	1,503.0	328.0	-1.3	6.8	2.8	0.01	0.01	-0.55
1,603.0	0.49	132.13	1,603.0	428.0	-1.9	7.4	3.5	0.02	0.02	-0.48
1,703.0	0.83	129.11	1,703.0	528.0	-2.6	8.3	4.5	0.34	0.34	-3.02
1,803.0	0.88	130.39	1,803.0	628.0	-3.6	9.5	5.6	0.05	0.05	1.28
1,903.0	0.92	130.42	1,902.9	727.9	-4.6	10.6	6.9	0.04	0.04	0.03
2,003.0	0.75	138.17	2,002.9	827.9	-5.6	11.7	8.1	0.20	-0.17	7.75
2,103.0	0.64	142.61	2,102.9	927.9	-6.6	12.5	9.2	0.12	-0.11	4.44
2,203.0	0.63	147.51	2,202.9	1,027.9	-7.5	13.1	10.2	0.06	-0.01	4.90
2,303.0	0.54	156.93	2,302.9	1,127.9	-8.4	13.6	11.2	0.13	-0.09	9.42
2,403.0	0.55	157.38	2,402.9	1,227.9	-9.2	14.0	12.2	0.01	0.01	0.45
2,503.0	2.98	129.99	2,502.9	1,327.9	-11.4	16.1	14.7	2.50	2.43	-27.39
2,603.0	7.74	126.58	2,602.4	1,427.4	-17.0	23.5	21.9	4.77	4.76	-3.41
2,703.0	7.87	101.08	2,701.5	1,526.5	-22.4	35.7	29.9	3.44	0.13	-25.50
2,803.0	7.89	88.72	2,800.6	1,625.6	-23.5	49.2	34.1	1.69	0.02	-12.36
2,903.0	7.39	98.02	2,899.7	1,724.7	-24.3	62.5	37.8	1.33	-0.50	9.30
3,003.0	6.81	102.58	2,998.9	1,823.9	-26.5	74.6	42.7	0.81	-0.58	4.56
3,103.0	6.68	92.71	3,098.2	1,923.2	-28.0	86.2	46.8	1.17	-0.13	-9.87
3,203.0	7.46	95.69	3,197.5	2,022.5	-29.0	98.5	50.5	0.86	0.78	2.98
3,303.0	5.00	104.54	3,296.9	2,121.9	-30.7	109.2	54.6	2.63	-2.46	8.85
3,403.0	2.54	121.54	3,396.6	2,221.6	-32.9	115.3	58.2	2.68	-2.46	17.00
3,503.0	0.05	36.93	3,496.6	2,321.6	-34.1	117.2	59.7	2.54	-2.49	-84.61
3,603.0	0.07	54.18	3,596.6	2,421.6	-34.0	117.3	59.7	0.03	0.02	17.25
3,703.0	0.06	49.31	3,696.6	2,521.6	-33.9	117.4	59.6	0.01	-0.01	-4.87
3,803.0	0.07	95.96	3,796.6	2,621.6	-33.9	117.5	59.6	0.05	0.01	46.65
3,903.0	0.09	293.43	3,896.6	2,721.6	-33.9	117.5	59.6	0.16	0.02	-162.53
4,003.0	0.21	311.79	3,996.6	2,821.6	-33.7	117.2	59.4	0.13	0.12	18.36
4,103.0	0.38	316.50	4,096.6	2,921.6	-33.4	116.9	59.0	0.17	0.17	4.71
4,203.0	0.54	327.37	4,196.6	3,021.6	-32.7	116.4	58.3	0.18	0.16	10.87
4,303.0	0.58	329.27	4,296.6	3,121.6	-31.9	115.9	57.3	0.04	0.04	10.50
4,403.0	0.70	324.15	4,396.6	3,221.6	-31.0	115.3	56.3	0.13	0.12	10.50
4,503.0	0.85	323.61	4,496.6	3,321.6	-29.9	114.5	55.0	0.15	0.15	-0.54
4,603.0	1.13	324.74	4,596.6	3,421.6	-28.5	113.5	53.4	0.28	0.28	3.30
4,703.0	1.42	325.23	4,696.5	3,521.5	-26.6	112.2	51.4	0.29	0.29	0.49
4,803.0	1.57	324.73	4,796.5	3,621.5	-24.5	110.7	49.0	0.15	0.15	-0.50
4,903.0	1.76	325.43	4,896.5	3,721.5	-22.1	109.0	46.3	0.19	0.19	0.76

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Survey Report



Database:	EDM 5000.1 Single User 01	Local Co-ordinate Reference:	Site: Ritchie County 519757
Company:	EQT Production - Marcellus	TVD Reference:	±BGN 1175.0usft
Project:	Ritchie County WV	MD Reference:	±BGN 1175.0usft
Site:	Ritchie County 519757	North Reference:	Grid
Well:	Well 1613797	Survey Calculation Method:	Minimum Curvature
Wellbore:	513757 ST01		
Design:	513757 ST01 As Drilled		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,003.0	1.54	330.29	4,996.4	3,821.4	-19.7	107.5	43.5	0.26	-0.22	4.86
Gyro Tie In=5028' MD										
5,028.0	1.67	328.50	5,021.4	3,846.4	-19.1	107.1	42.9	0.56	0.52	-7.16
5,061.0	1.70	333.00	5,054.4	3,879.4	-18.2	106.7	41.9	0.41	0.09	13.64
5,123.0	1.80	328.10	5,116.4	3,941.4	-16.6	105.7	40.1	0.29	0.16	-7.90
5,186.0	1.60	327.50	5,179.3	4,004.3	-15.0	104.7	38.4	0.32	-0.32	-0.95
5,249.0	1.80	326.90	5,242.3	4,067.3	-13.4	103.7	36.6	0.32	0.32	-0.95
5,280.0	1.50	328.30	5,273.3	4,098.3	-12.7	103.2	35.8	0.98	-0.97	4.52
KOP=5312' MD										
5,312.0	1.80	318.50	5,305.3	4,130.3	-12.0	102.7	34.9	1.28	0.94	-30.63
5,343.0	4.20	297.00	5,336.2	4,161.2	-11.1	101.4	33.8	8.42	7.74	-69.35
5,375.0	7.40	292.70	5,368.1	4,193.1	-9.7	98.4	31.8	10.08	10.00	-13.44
5,407.0	10.50	290.40	5,399.7	4,224.7	-7.9	93.8	29.0	9.75	9.69	-7.19
5,438.0	12.70	288.70	5,430.0	4,255.0	-5.9	87.9	25.6	7.18	7.10	-5.48
5,469.0	14.10	288.20	5,460.2	4,285.2	-3.6	81.1	21.9	4.53	4.52	-1.61
5,501.0	16.50	285.50	5,491.1	4,316.1	-1.2	73.0	17.7	7.82	7.50	-8.44
5,532.0	19.20	284.30	5,520.6	4,345.6	1.3	63.8	13.2	8.79	8.71	-3.87
5,564.0	22.00	283.60	5,550.5	4,375.5	4.0	52.9	8.1	8.78	8.75	-2.19
5,595.0	24.80	283.90	5,579.0	4,404.0	6.9	40.9	2.5	9.04	9.03	0.97
5,626.0	27.70	283.80	5,606.8	4,431.8	10.2	27.6	-3.7	9.36	9.35	-0.32
5,658.0	30.70	284.30	5,634.7	4,459.7	14.0	12.5	-10.8	9.41	9.38	1.56
5,690.0	33.50	284.80	5,661.8	4,486.8	18.3	-4.0	-18.7	8.79	8.75	1.56
5,721.0	36.50	285.60	5,687.2	4,512.2	22.9	-21.1	-27.1	9.79	9.68	2.58
5,753.0	39.40	285.40	5,712.4	4,537.4	28.2	-40.1	-36.5	9.07	9.06	-0.63
5,784.0	42.60	285.30	5,735.8	4,560.8	33.6	-59.7	-46.2	10.32	10.32	-0.32
5,816.0	43.60	285.30	5,759.2	4,584.2	39.3	-80.8	-56.6	3.13	3.13	0.00
5,878.0	43.50	287.00	5,804.1	4,629.1	51.2	-121.8	-77.5	1.90	-0.16	2.74
5,941.0	43.30	287.10	5,849.9	4,674.9	63.9	-163.2	-99.2	0.34	-0.32	0.16
6,004.0	43.40	286.00	5,895.7	4,720.7	76.2	-204.7	-120.6	1.21	0.16	-1.75
6,067.0	42.10	283.40	5,942.0	4,767.0	87.1	-246.0	-140.6	3.48	-2.06	-4.13
6,099.0	40.00	278.30	5,966.1	4,791.1	91.1	-266.6	-149.1	12.35	-6.56	-15.94
6,130.0	38.10	272.50	5,990.2	4,815.2	92.9	-286.1	-155.4	13.28	-6.13	-18.71
6,161.0	36.20	267.10	6,014.9	4,839.9	92.9	-304.8	-159.5	12.17	-6.13	-17.42
6,193.0	34.90	262.70	6,040.9	4,865.9	91.2	-323.3	-162.1	8.97	-4.06	-13.75
6,224.0	33.90	259.00	6,066.5	4,891.5	88.5	-340.6	-163.4	7.47	-3.23	-11.94
6,256.0	33.70	253.50	6,093.1	4,918.1	84.2	-357.8	-163.2	9.58	-0.63	-17.19
6,287.0	35.00	249.30	6,118.7	4,943.7	78.6	-374.4	-161.5	8.72	4.19	-13.55
6,319.0	35.90	245.50	6,144.8	4,969.8	71.5	-391.5	-158.4	7.44	2.81	-11.88
6,350.0	36.00	240.00	6,169.9	4,994.9	63.2	-407.7	-154.0	10.42	0.32	-17.74
6,381.0	36.30	235.00	6,194.9	5,019.9	53.4	-423.1	-147.9	9.56	0.97	-16.13
6,413.0	37.60	230.40	6,220.5	5,045.5	41.7	-438.4	-140.0	9.55	4.06	-14.38
6,444.0	39.10	227.50	6,244.8	5,069.8	29.1	-452.9	-131.0	7.56	1.94	-9.35
6,476.0	40.90	223.80	6,269.3	5,094.3	14.7	-467.6	-120.3	9.32	6.63	-5.55

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Survey Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Site Filchle County 513751
<b>Company:</b>	EQT Production - Marcellus	<b>TVD Reference:</b>	MB@15 @ 1175 Bunk
<b>Project:</b>	Filchle County WV	<b>MD Reference:</b>	MB@16 @ 1175 Bunk
<b>Site:</b>	Filchle County 513751	<b>North Reference:</b>	Geo
<b>Well:</b>	Well #513751	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	513751 STD1		
<b>Design:</b>	513751 STD1 A&B Orind		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,507.0	42.70	220.10	6,292.5	5,117.5	-0.7	-481.4	-108.5	9.85	5.81	-11.94
6,539.0	44.70	216.50	6,315.6	5,140.6	-18.0	-495.1	-94.7	9.97	6.25	-11.25
6,570.0	46.40	212.30	6,337.3	5,162.3	-36.3	-507.6	-79.7	11.12	5.48	-13.55
6,602.0	48.60	209.20	6,358.9	5,183.9	-56.6	-519.6	-62.7	9.91	6.88	-9.69
6,634.0	51.30	207.20	6,379.5	5,204.5	-78.2	-531.2	-44.3	9.70	8.44	-6.25
6,665.0	52.90	204.20	6,398.6	5,223.6	-100.2	-541.8	-25.2	9.22	5.16	-9.68
6,697.0	53.50	200.20	6,417.7	5,242.7	-123.9	-551.4	-4.3	10.18	1.88	-12.50
6,728.0	55.30	197.40	6,435.8	5,260.8	-147.8	-559.6	17.1	9.36	5.81	-9.03
6,760.0	57.50	195.10	6,453.5	5,278.5	-173.4	-567.0	40.3	9.12	6.88	-7.19
6,791.0	60.10	192.40	6,469.5	5,294.5	-199.1	-573.3	64.0	11.22	8.39	-8.71
6,822.0	63.10	191.20	6,484.3	5,309.3	-225.8	-578.9	88.7	10.26	9.68	-3.87
6,854.0	66.20	190.70	6,498.0	5,323.0	-254.2	-584.4	115.1	9.79	9.69	-1.56
6,886.0	69.50	191.10	6,510.1	5,335.1	-283.3	-590.0	142.2	10.38	10.31	1.25
6,917.0	72.20	188.90	6,520.2	5,345.2	-312.1	-595.1	169.1	10.99	8.71	-7.10
6,949.0	74.10	187.00	6,529.5	5,354.5	-342.4	-599.3	197.7	8.22	5.94	-5.94
6,980.0	75.30	184.40	6,537.7	5,362.7	-372.2	-602.3	226.0	8.97	3.87	-8.39
7,012.0	77.00	181.80	6,545.3	5,370.3	-403.2	-603.9	255.8	9.51	5.31	-8.13
7,043.0	79.60	180.20	6,551.6	5,376.6	-433.6	-604.5	285.3	9.79	8.39	-5.16
7,075.0	82.00	178.50	6,556.7	5,381.7	-465.2	-604.1	316.1	9.15	7.50	-5.31
7,106.0	84.40	176.30	6,560.4	5,385.4	-495.9	-602.7	346.4	10.47	7.74	-7.10
7,138.0	86.50	174.60	6,563.0	5,388.0	-527.7	-600.2	377.9	8.43	6.56	-5.31
7,169.0	88.90	172.80	6,564.2	5,389.2	-558.5	-596.8	408.7	9.67	7.74	-5.81
<b>513751 LP 430' V5</b>										
7,184.7	89.34	171.43	6,564.4	5,389.4	-574.0	-594.6	424.3	9.19	2.81	-8.75
<b>LP/Deepest Point of Well=7281' MD/ 8550' TVD</b>										
7,201.0	89.80	170.00	6,564.6	5,389.6	-590.1	-592.0	440.5	9.19	2.81	-8.75
7,232.0	90.00	166.40	6,564.6	5,389.6	-620.5	-585.6	471.5	11.63	0.65	-11.61
7,264.0	90.50	163.10	6,564.5	5,389.5	-651.3	-577.2	503.5	10.43	1.56	-10.31
<b>513751 PIST LP</b>										
7,293.5	90.97	161.55	6,564.1	5,389.1	-679.5	-568.3	532.9	5.47	1.59	-5.24
7,327.0	91.50	159.80	6,563.4	5,388.4	-711.0	-557.2	566.2	5.47	1.59	-5.24
7,390.0	91.80	159.20	6,561.6	5,386.6	-770.0	-535.1	628.7	1.06	0.48	-0.95
7,453.0	92.00	159.20	6,559.5	5,384.5	-828.9	-512.8	691.1	0.32	0.32	0.00
7,516.0	90.20	159.20	6,558.3	5,383.3	-887.8	-490.4	753.5	2.86	-2.86	0.00
7,580.0	90.70	159.10	6,557.8	5,382.8	-947.6	-467.6	816.9	0.80	0.78	-0.16
7,643.0	90.70	158.50	6,557.0	5,382.0	-1,006.3	-444.9	879.2	0.95	0.00	-0.95
7,706.0	90.40	158.20	6,556.4	5,381.4	-1,064.8	-421.6	941.5	0.67	-0.48	-0.48
7,769.0	89.10	158.60	6,556.7	5,381.7	-1,123.4	-398.4	1,003.9	2.16	-2.06	0.63
7,833.0	89.10	158.50	6,557.7	5,382.7	-1,183.0	-375.0	1,067.2	0.16	0.00	-0.16
7,896.0	89.30	157.90	6,558.5	5,383.5	-1,241.5	-351.6	1,129.4	1.00	0.32	-0.95
7,958.0	89.80	158.40	6,559.0	5,384.0	-1,299.0	-328.6	1,190.7	1.14	0.81	0.81
8,021.0	89.70	161.00	6,559.3	5,384.3	-1,358.1	-306.7	1,253.2	4.13	0.16	4.13
8,084.0	90.00	161.10	6,559.5	5,384.5	-1,417.7	-286.2	1,315.9	0.50	0.48	0.16

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Survey Report



<b>Database:</b>	EDM 5000.1 Single User Dr	<b>Local Co-ordinate Reference:</b>	Site Ritchie County 513757
<b>Company:</b>	EQT Production - Marcellus	<b>TVD Reference:</b>	KBOR16 @ 1175 Quat
<b>Project:</b>	Ritchie County WV	<b>MD Reference:</b>	KBOR16 @ 1175 Quat
<b>Site:</b>	Ritchie County 513757	<b>North Reference:</b>	Grid
<b>Well:</b>	Well #513757	<b>Survey Calculation Method:</b>	Minimum Curved
<b>Wellbore:</b>	513757 5101		
<b>Design:</b>	513757 5101 A&B Drilled		

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,147.0	90.20	160.80	6,559.4	5,384.4	-1,477.2	-265.7	1,378.5	0.57	0.32	-0.48
8,210.0	90.30	161.00	6,559.1	5,384.1	-1,536.8	-245.1	1,441.2	0.35	0.16	0.32
8,273.0	90.20	160.40	6,558.8	5,383.8	-1,596.2	-224.2	1,503.8	0.97	-0.16	-0.95
8,335.0	90.70	159.50	6,558.3	5,383.3	-1,654.5	-203.0	1,565.4	1.66	0.81	-1.45
8,398.0	90.70	160.50	6,557.6	5,382.6	-1,713.7	-181.4	1,627.9	1.59	0.00	1.59
8,465.0	90.90	161.00	6,556.6	5,381.6	-1,776.9	-159.4	1,694.5	0.80	0.30	0.75
8,528.0	91.90	160.00	6,555.1	5,380.1	-1,836.3	-138.3	1,757.1	2.24	1.59	-1.59
8,591.0	92.70	160.20	6,552.6	5,377.6	-1,895.5	-116.9	1,819.6	1.31	1.27	0.32
8,654.0	89.80	158.60	6,551.2	5,376.2	-1,954.4	-94.7	1,882.0	5.26	-4.60	-2.54
8,717.0	89.30	158.10	6,551.7	5,376.7	-2,013.0	-71.5	1,944.3	1.12	-0.79	-0.79
8,779.0	89.90	158.30	6,552.1	5,377.1	-2,070.5	-48.5	2,005.6	1.02	0.97	0.32
8,842.0	90.70	158.50	6,551.8	5,376.8	-2,129.1	-25.3	2,067.9	1.31	1.27	0.32
8,905.0	91.30	158.60	6,550.7	5,375.7	-2,187.7	-2.3	2,130.3	0.97	0.95	0.16
8,968.0	90.70	159.10	6,549.6	5,374.6	-2,246.5	20.5	2,192.6	1.24	-0.95	0.79
9,031.0	90.50	159.20	6,548.9	5,373.9	-2,305.3	42.9	2,255.1	0.35	-0.32	0.16
9,094.0	90.50	159.90	6,548.4	5,373.4	-2,364.4	64.9	2,317.5	1.11	0.00	1.11
9,157.0	91.20	159.50	6,547.4	5,372.4	-2,423.5	86.8	2,380.0	1.28	1.11	-0.63
9,219.0	91.60	160.00	6,545.9	5,370.9	-2,481.6	108.2	2,441.5	1.03	0.65	0.81
9,282.0	90.40	160.10	6,544.8	5,369.8	-2,540.8	129.7	2,504.1	1.91	-1.90	0.16
9,345.0	90.50	159.60	6,544.3	5,369.3	-2,600.0	151.4	2,566.6	0.81	0.16	-0.79
9,408.0	89.00	160.30	6,544.6	5,369.6	-2,659.1	173.0	2,629.1	2.63	-2.38	1.11
9,471.0	89.80	160.70	6,545.3	5,370.3	-2,718.5	194.0	2,691.7	1.42	1.27	0.63
9,534.0	90.10	162.20	6,545.3	5,370.3	-2,778.2	214.1	2,754.4	2.43	0.48	2.38
9,597.0	90.70	163.60	6,544.9	5,369.9	-2,838.5	232.6	2,817.3	2.42	0.95	2.22
9,660.0	90.70	164.40	6,544.1	5,369.1	-2,899.0	250.0	2,880.2	1.27	0.00	1.27
9,723.0	91.40	164.50	6,543.0	5,368.0	-2,959.7	266.8	2,943.1	1.12	1.11	0.16
9,786.0	91.90	164.50	6,541.1	5,366.1	-3,020.4	283.7	3,006.1	0.79	0.79	0.00
9,849.0	90.90	163.60	6,539.6	5,364.6	-3,080.9	301.0	3,069.0	2.14	-1.59	-1.43
9,912.0	91.30	163.60	6,538.4	5,363.4	-3,141.4	318.8	3,131.8	0.63	0.63	0.00
9,975.0	90.90	162.20	6,537.2	5,362.2	-3,201.6	337.3	3,194.7	2.31	-0.63	-2.22
10,038.0	91.20	161.60	6,536.0	5,361.0	-3,261.4	356.9	3,257.4	1.06	0.48	-0.95
10,101.0	89.30	161.10	6,535.7	5,360.7	-3,321.1	377.0	3,320.1	3.12	-3.02	-0.79
10,164.0	89.90	161.30	6,536.2	5,361.2	-3,380.8	397.3	3,382.8	1.00	0.95	0.32
10,226.0	90.40	161.40	6,536.0	5,361.0	-3,439.5	417.1	3,444.5	0.82	0.81	0.16
10,289.0	91.10	161.70	6,535.2	5,360.2	-3,499.3	437.1	3,507.2	1.21	1.11	0.48
10,352.0	90.40	162.60	6,534.4	5,359.4	-3,559.2	456.4	3,570.0	1.81	-1.11	1.43
10,415.0	90.00	162.40	6,534.2	5,359.2	-3,619.3	475.3	3,632.8	0.71	-0.63	-0.32
10,478.0	90.30	162.00	6,534.0	5,359.0	-3,679.3	494.6	3,695.6	0.79	0.48	-0.63
10,541.0	89.10	161.50	6,534.3	5,359.3	-3,739.1	514.3	3,758.4	2.06	-1.90	-0.79
10,604.0	88.20	162.00	6,535.8	5,360.8	-3,798.9	534.0	3,821.1	1.63	-1.44	0.79
10,667.0	88.50	161.70	6,537.6	5,362.6	-3,858.8	553.6	3,883.8	0.67	0.48	-0.48
10,731.0	89.30	161.60	6,538.8	5,363.8	-3,919.5	573.8	3,947.5	1.26	1.25	-0.16
10,793.0	91.00	162.60	6,538.7	5,363.7	-3,978.5	592.8	4,009.3	3.18	2.74	0.61

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Survey Report



<b>Database:</b>	EDM 5000.1 Single User File	<b>Local Co-ordinate Reference:</b>	Richie Monroe County 513757
<b>Company:</b>	EQT Production - Marcellus	<b>TVD Reference:</b>	KB@18 @ 1177.0000
<b>Project:</b>	Richie County WV	<b>MD Reference:</b>	KB@16 @ 1173.0000
<b>Site:</b>	Richie County 513757	<b>North Reference:</b>	Geo
<b>Well:</b>	Well #813757	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	513757 ST01		
<b>Design:</b>	513757 ST01 Log Drilled		

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,856.0	91.60	162.60	6,537.3	5,362.3	-4,038.6	611.7	4,072.1	0.95	0.95	0.00
10,919.0	90.30	162.20	6,536.2	5,361.2	-4,098.6	630.7	4,134.9	2.16	-2.06	-0.63
10,982.0	90.70	161.80	6,535.7	5,360.7	-4,158.6	650.2	4,197.7	0.90	0.63	-0.63
11,045.0	91.00	161.30	6,534.7	5,359.7	-4,218.3	670.1	4,260.4	0.93	0.48	-0.79
11,108.0	91.70	161.30	6,533.2	5,358.2	-4,278.0	690.3	4,323.1	1.11	1.11	0.00
11,171.0	91.10	161.90	6,531.7	5,356.7	-4,337.7	710.2	4,385.8	1.35	-0.95	0.95
11,234.0	91.30	161.50	6,530.4	5,355.4	-4,397.5	730.0	4,448.5	0.71	0.32	-0.63
11,297.0	90.70	161.90	6,529.3	5,354.3	-4,457.3	749.8	4,511.3	1.14	-0.95	0.63
11,359.0	90.70	160.80	6,528.5	5,353.5	-4,516.1	769.6	4,573.0	1.77	0.00	-1.77
11,423.0	88.90	159.70	6,528.8	5,353.8	-4,576.3	791.2	4,636.5	3.30	-2.81	-1.72
11,486.0	89.80	160.70	6,529.5	5,354.5	-4,635.6	812.5	4,699.1	2.14	1.43	1.59
11,549.0	90.40	161.50	6,529.4	5,354.4	-4,695.2	833.0	4,761.8	1.59	0.95	1.27
11,612.0	90.90	162.10	6,528.6	5,353.6	-4,755.0	852.6	4,824.5	1.24	0.79	0.95
11,675.0	89.60	161.50	6,528.4	5,353.4	-4,814.9	872.3	4,887.3	2.27	-2.06	-0.95
11,738.0	90.20	161.10	6,528.5	5,353.5	-4,874.5	892.5	4,950.0	1.14	0.95	-0.63
11,801.0	89.70	160.00	6,528.5	5,353.5	-4,933.9	913.5	5,012.6	1.92	-0.79	-1.75
11,864.0	89.20	160.90	6,529.1	5,354.1	-4,993.3	934.6	5,075.2	1.63	-0.79	1.43
11,927.0	90.30	162.80	6,529.4	5,354.4	-5,053.2	954.2	5,137.9	3.48	1.75	3.02
11,990.0	90.60	164.40	6,528.9	5,353.9	-5,113.6	972.0	5,200.8	2.58	0.48	2.54
12,053.0	89.20	162.90	6,529.0	5,354.0	-5,174.1	989.7	5,263.7	3.26	-2.22	-2.38
12,116.0	87.80	162.30	6,530.7	5,355.7	-5,234.1	1,008.5	5,326.5	2.42	-2.22	-0.95
12,178.0	88.40	162.50	6,532.7	5,357.7	-5,293.2	1,027.3	5,388.3	1.02	0.97	0.32
12,241.0	88.80	162.70	6,534.3	5,359.3	-5,353.3	1,046.1	5,451.1	0.71	0.63	0.32
12,305.0	89.20	162.30	6,535.4	5,360.4	-5,414.3	1,065.4	5,514.9	0.88	0.63	-0.63
12,368.0	90.00	162.00	6,535.8	5,360.8	-5,474.3	1,084.7	5,577.7	1.36	1.27	-0.48
12,431.0	90.40	161.50	6,535.6	5,360.6	-5,534.1	1,104.4	5,640.4	1.02	0.63	-0.79
12,493.0	90.90	161.80	6,534.9	5,359.9	-5,593.0	1,123.9	5,702.2	0.94	0.81	0.48
12,557.0	90.10	162.30	6,534.3	5,359.3	-5,653.9	1,143.6	5,765.9	1.47	-1.25	0.78
12,620.0	90.60	161.60	6,534.0	5,359.0	-5,713.8	1,163.2	5,828.7	1.37	0.79	-1.11
12,683.0	90.10	161.60	6,533.6	5,358.6	-5,773.5	1,183.0	5,891.4	0.79	-0.79	0.00
12,746.0	90.10	162.30	6,533.5	5,358.5	-5,833.4	1,202.6	5,954.2	1.11	0.00	1.11
12,809.0	90.70	162.50	6,533.0	5,358.0	-5,893.5	1,221.6	6,017.0	1.00	0.95	0.32
12,872.0	89.40	162.70	6,533.0	5,358.0	-5,953.6	1,240.4	6,079.8	2.09	-2.06	0.32
12,935.0	90.10	162.60	6,533.2	5,358.2	-6,013.7	1,259.2	6,142.6	1.12	1.11	-0.16
12,998.0	90.50	162.60	6,532.9	5,357.9	-6,073.8	1,278.1	6,205.5	0.63	0.63	0.00
13,061.0	89.40	162.20	6,533.0	5,358.0	-6,133.9	1,297.1	6,268.3	1.86	-1.75	-0.63
13,124.0	90.00	162.80	6,533.3	5,358.3	-6,194.0	1,316.1	6,331.1	1.35	0.95	0.95
13,187.0	89.10	162.40	6,533.8	5,358.8	-6,254.1	1,334.9	6,393.9	1.56	-1.43	-0.63
13,250.0	89.50	162.10	6,534.6	5,359.6	-6,314.1	1,354.1	6,456.7	0.79	0.63	-0.48
13,313.0	90.00	161.60	6,534.8	5,359.8	-6,374.0	1,373.7	6,519.4	1.12	0.79	-0.79
13,376.0	90.40	161.50	6,534.6	5,359.6	-6,433.7	1,393.7	6,582.2	0.65	0.63	-0.16
13,439.0	89.10	161.60	6,534.9	5,359.9	-6,493.5	1,413.6	6,644.9	2.07	-2.06	0.16





PHX  
Survey Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Site Ritchie County 513757
<b>Company:</b>	EQT Production - Marcelline	<b>TVD Reference:</b>	KB@18 @ 1175 Quasi
<b>Project:</b>	Ritchie County, WV	<b>MD Reference:</b>	KB@18 @ 1175 Quasi
<b>Site:</b>	Ritchie County 513757	<b>North Reference:</b>	Grid
<b>Well:</b>	Well #513757	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	513757 STD1		
<b>Design:</b>	513757 STD1 As Drilled		

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,502.0	89.90	161.50	6,535.4	5,360.4	-6,553.2	1,433.5	6,707.6	1.28	1.27	-0.16
13,565.0	90.60	161.80	6,535.2	5,360.2	-6,613.0	1,453.4	6,770.3	1.21	1.11	0.48
13,628.0	89.90	162.50	6,534.9	5,359.9	-6,673.0	1,472.7	6,833.1	1.57	-1.11	1.11
13,691.0	90.20	162.50	6,534.8	5,359.8	-6,733.1	1,491.6	6,895.9	0.48	0.48	0.00
13,754.0	89.00	162.40	6,535.3	5,360.3	-6,793.1	1,510.6	6,958.7	1.91	-1.90	-0.16
13,818.0	89.50	161.50	6,536.1	5,361.1	-6,854.0	1,530.5	7,022.5	1.61	0.78	-1.41
13,880.0	90.20	161.10	6,536.3	5,361.3	-6,912.7	1,550.3	7,084.2	1.30	1.13	-0.65
13,944.0	90.60	161.40	6,535.8	5,360.8	-6,973.3	1,570.9	7,147.9	0.78	0.63	0.47
14,006.0	89.70	161.40	6,535.7	5,360.7	-7,032.1	1,590.7	7,209.6	1.45	-1.45	0.00
14,069.0	90.30	161.70	6,535.7	5,360.7	-7,091.8	1,610.6	7,272.3	1.06	0.95	0.48
14,132.0	88.70	161.80	6,536.2	5,361.2	-7,151.7	1,630.3	7,335.1	2.54	-2.54	0.16
14,195.0	89.30	161.90	6,537.3	5,362.3	-7,211.5	1,650.0	7,397.8	0.97	0.95	0.16
14,258.0	89.80	161.70	6,537.8	5,362.8	-7,271.4	1,669.6	7,460.6	0.85	0.79	-0.32
14,320.0	90.60	161.20	6,537.6	5,362.6	-7,330.1	1,689.4	7,522.3	1.52	1.29	-0.81
14,383.0	91.40	161.20	6,536.5	5,361.5	-7,389.8	1,709.7	7,585.0	1.27	1.27	0.00
14,446.0	92.00	160.60	6,534.6	5,359.6	-7,449.3	1,730.3	7,647.6	1.35	0.95	-0.95
14,508.0	92.80	160.50	6,532.0	5,357.0	-7,507.7	1,750.9	7,709.2	1.30	1.29	-0.16
Final Survey=14549' MD/ 6530' TVD										
14,549.0	93.10	160.00	6,529.9	5,354.9	-7,546.2	1,764.7	7,749.8	1.42	0.73	-1.22
513757 Plat TD										
14,604.3	93.10	160.00	6,526.9	5,351.9	-7,598.1	1,783.6	7,804.6	0.00	0.00	0.00
Projection to TD=14606' MD/ 6527' TVD										
14,606.0	93.10	160.00	6,526.8	5,351.8	-7,599.7	1,784.2	7,806.3	0.00	0.00	0.00

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,028.0	5,021.4	-19.1	107.1	Gyro Tie In=5028' MD
5,312.0	5,305.3	-12.0	102.7	KOP=5312' MD
7,201.0	6,564.6	-590.1	-592.0	LP/Deepest Point of Well=7201' MD/ 6565' TVD
14,549.0	6,529.9	-7,546.2	1,764.7	Final Survey=14549' MD/ 6530' TVD
14,606.0	6,526.8	-7,599.7	1,784.2	Projection to TD=14606' MD/ 6527' TVD

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_

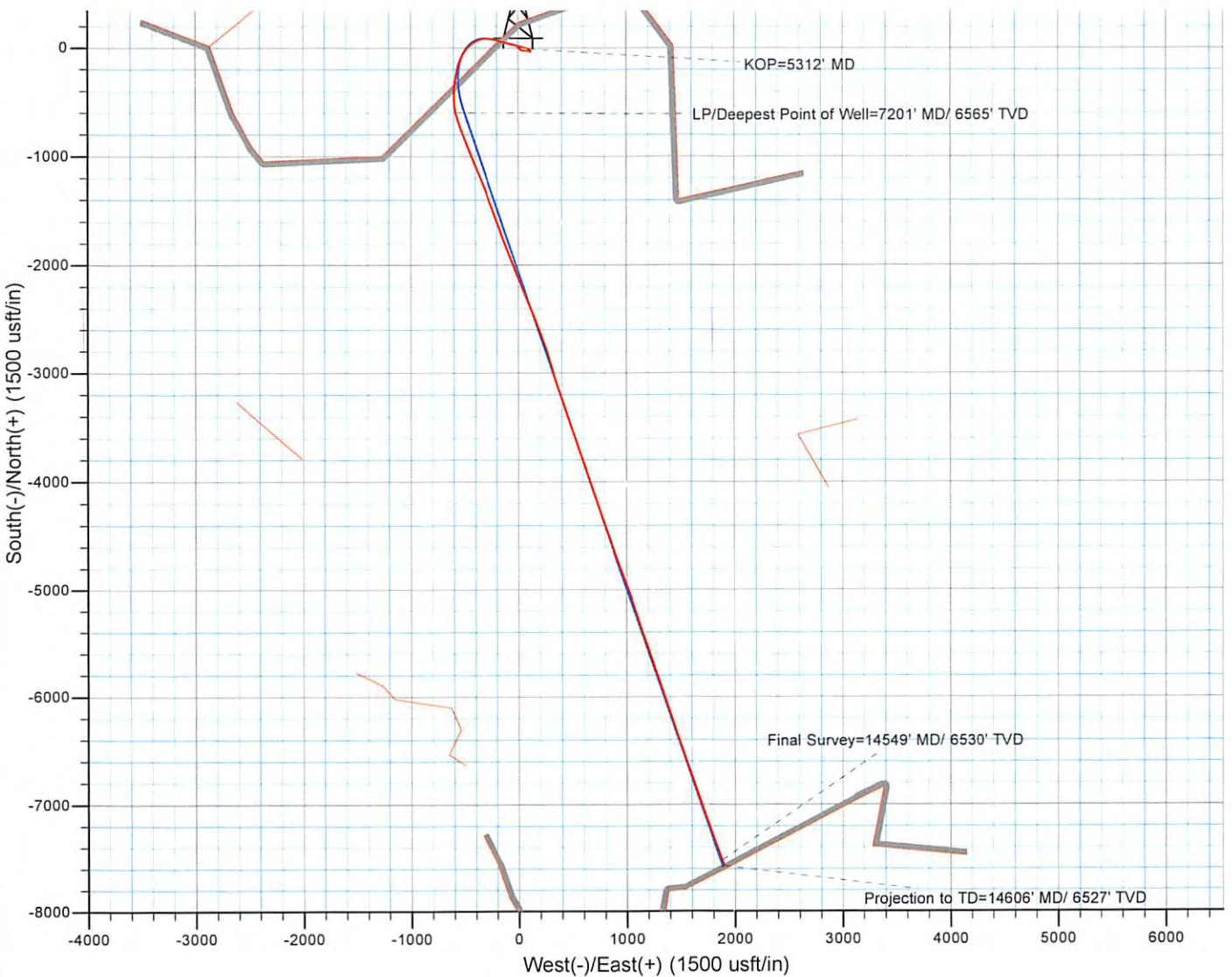
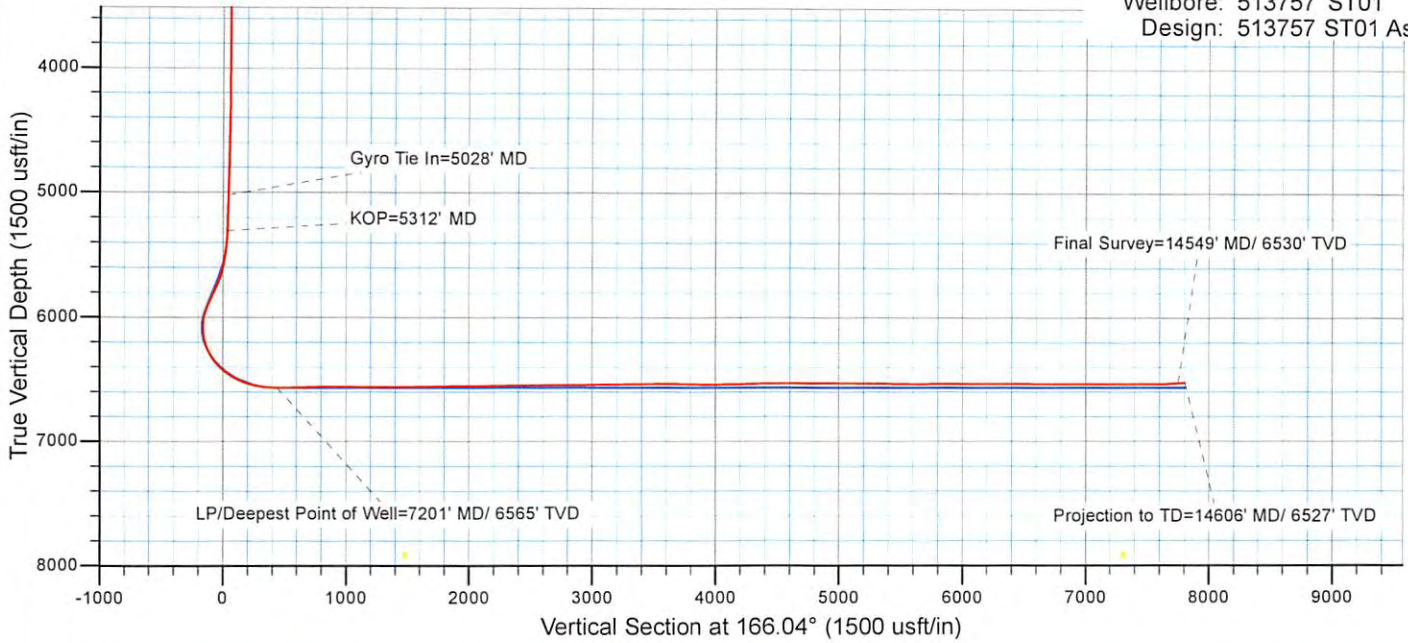
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# EQT Production - Marcellus

Project: Ritchie County, WV  
 Site: Ritchie County 513757  
 Well: Well #513757  
 Wellbore: 513757 ST01  
 Design: 513757 ST01 As Drilled





**513757- 47-085-10133-0000 - Perforations**

<b>Stage Number</b>	<b>Perforation Date</b>	<b>Top Perf Depth (ftKB)</b>	<b>Bottom Perf Depth (ftKB)</b>	<b>Number of Shots</b>	<b>Formation</b>
<b>Initiation Sleeve</b>	8/26/2015	14,555	14,557	10	MARCELLUS
1	8/26/2015	14,410	14,531	32	MARCELLUS
2	8/27/2015	14,260	14,382	40	MARCELLUS
3	8/27/2015	14,110	14,232	40	MARCELLUS
4	8/27/2015	13,960	14,082	40	MARCELLUS
5	8/28/2015	13,810	13,932	40	MARCELLUS
6	8/28/2015	13,660	13,779	40	MARCELLUS
7	8/30/2015	13,510	13,632	40	MARCELLUS
8	8/30/2015	13,360	13,482	40	MARCELLUS
9	8/31/2015	13,208	13,332	40	MARCELLUS
10	9/1/2015	13,060	13,182	40	MARCELLUS
11	9/1/2015	12,910	13,030	40	MARCELLUS
12	9/1/2015	12,760	12,878	40	MARCELLUS
13	9/1/2015	12,610	12,730	40	MARCELLUS
14	9/2/2015	12,460	12,582	40	MARCELLUS
15	9/2/2015	12,310	12,432	40	MARCELLUS
16	9/2/2015	12,158	12,282	40	MARCELLUS
17	9/2/2015	12,010	12,132	40	MARCELLUS
18	9/3/2015	11,861	11,982	40	MARCELLUS
19	9/3/2015	11,710	11,832	40	MARCELLUS
20	9/3/2015	11,560	11,682	40	MARCELLUS
21	9/3/2015	11,410	11,532	40	MARCELLUS
22	9/4/2015	11,260	11,378	40	MARCELLUS
23	9/4/2015	11,110	11,230	40	MARCELLUS
24	9/4/2015	10,960	11,082	40	MARCELLUS
25	9/4/2015	10,810	10,929	40	MARCELLUS
26	9/4/2015	10,660	10,780	40	MARCELLUS
27	9/5/2015	10,510	10,632	40	MARCELLUS
28	9/5/2015	10,360	10,482	40	MARCELLUS
29	9/5/2015	10,210	10,332	40	MARCELLUS
30	9/5/2015	10,060	10,182	40	MARCELLUS
31	9/6/2015	9,910	10,032	40	MARCELLUS
32	9/6/2015	9,760	9,877	40	MARCELLUS
33	9/6/2015	9,610	9,732	40	MARCELLUS
34	9/6/2015	9,460	9,582	40	MARCELLUS
35	9/6/2015	9,310	9,432	40	MARCELLUS
36	9/7/2015	9,160	9,280	40	MARCELLUS
37	9/7/2015	9,010	9,132	40	MARCELLUS
38	9/7/2015	8,860	8,982	40	MARCELLUS
39	9/8/2015	8,710	8,832	40	MARCELLUS
40	9/8/2015	8,560	8,682	40	MARCELLUS
41	9/8/2015	8,414	8,532	40	MARCELLUS
42	9/8/2015	8,260	8,382	40	MARCELLUS
43	9/8/2015	8,110	8,232	40	MARCELLUS
44	9/9/2015	7,960	8,082	40	MARCELLUS
45	9/9/2015	7,810	7,932	40	MARCELLUS
46	9/9/2015	7,660	7,782	40	MARCELLUS
47	9/9/2015	7,510	7,632	40	MARCELLUS
48	9/10/2015	7,360	7,482	40	MARCELLUS
49	9/10/2015	7,210	7,332	40	MARCELLUS
50	9/10/2015	7,060	7,182	40	MARCELLUS

Xerox WC 7535 513757 Perf and Stim.xlsx Thu Mar 17 16:27:02 2016 Media Type: Default Color: Automatic Office: Display-sRGB Press: SWOP-Coated Print Quality: Standard Color Adjustments: Customized Automatic Setup

08/12/2016

**513757- 47-085-10133-0000 - Stimulated Stages**

Stage Number	Stimulation 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)
Initiation Sleeve	8/26/2015	24.9	6,970	7,640	4,605	0	1,268	0
1	8/27/2015	90.2	8,934	9,189	2,947	250,117.00	6,226	0
2	8/27/2015	94.9	8,730	9,156	4,065	249,220.00	6,637	0
3	8/27/2015	101.5	8,734	9,043	3,958	250,036.00	6,613	0
4	8/28/2015	101.2	8,688	9,085	3,769	250,076.00	6,644	0
5	8/30/2015	97.3	8,561	8,857	4,113	250,045.00	6,782	0
6	8/30/2015	96.5	8,597	10,276	9,408	251,866.00	6,233	0
7.01	8/30/2015	9.9	6,456	8,043	5,176	0.00	1,625	0
7	8/31/2015	87.3	8,664	9,070	4,446	225,154.00	8,249	0
8	8/31/2015	88.3	8,817	9,169	4,243	250,652.00	7,272	0
9	9/1/2015	100.5	8,686	8,968	5,180	249,560.00	6,534	0
10	9/1/2015	96.6	8,078	8,351	4,548	225,453.00	6,896	0
11	9/1/2015	99.6	7,975	8,174	3,812	251,770.00	6,528	0
12	9/1/2015	101	7,920	8,103	4,365	250,760.00	6,471	0
13	9/1/2015	100.7	7,956	8,175	3,760	249,160.00	6,411	0
14	9/2/2015	100.3	8,324	9,028	5,571	251,320.00	6,895	0
15	9/2/2015	100.3	7,827	8,375	5,260	250,680.00	6,645	0
16	9/2/2015	101.3	7,903	8,331	4,108	250,740.00	6,586	0
17	9/3/2015	100	8,311	8,977	3,794	248,260.00	6,378	0
18	9/3/2015	99.7	7,765	7,969	4,469	249,340.00	6,482	0
19	9/3/2015	98.9	7,882	8,175	4,491	250,550.00	6,514	0
20	9/3/2015	96.8	8,206	8,653	3,497	250,800.00	6,577	0
21	9/3/2015	97	8,180	8,968	3,480	250,860.00	6,352	0
22	9/4/2015	97.2	8,200	8,747	3,387	249,840.00	6,184	0
23	9/4/2015	99.2	7,839	8,992	4,368	248,840.00	6,360	0
24	9/4/2015	100.9	7,841	8,195	4,207	255,850.00	6,438	0
25	9/4/2015	100.9	7,731	8,142	3,906	249,190.00	4,115	0
26	9/5/2015	100.6	7,987	8,232	3,602	249,120.00	6,182	0
27	9/5/2015	100.5	7,465	7,718	4,187	250,100.00	6,261	0
28	9/5/2015	101	7,819	9,168	4,703	251,300.00	6,095	0
29	9/5/2015	101.7	7,631	8,039	3,699	252,170.00	5,898	0
30	9/6/2015	101.3	7,741	8,214	3,802	249,900.00	6,027	0
31	9/6/2015	84.1	7,939	8,655	3,797	248,120.00	8,258	0
32	9/6/2015	100.3	7,503	7,716	4,133	251,110.00	6,131	0
33	9/6/2015	101.1	7,554	8,230	4,312	250,630.00	6,074	0
34	9/6/2015	101.4	7,843	8,144	3,225	251,020.00	6,094	0
35	9/7/2015	99.7	7,937	9,216	3,240	250,800.00	6,164	0
36	9/7/2015	94.1	8,001	9,046	3,182	248,518.00	6,717	0
37	9/7/2015	100.1	7,534	8,734	3,078	250,640.00	6,060	0
38	9/7/2015	101.6	7,280	8,306	3,091	251,730.00	6,096	0
39	9/8/2015	102.8	7,325	8,692	3,173	249,720.00	5,937	0
40	9/8/2015	102.6	7,326	7,853	3,356	255,324.00	6,121	0
41	9/8/2015	101.9	7,185	7,322	3,555	249,938.00	5,955	0
42	9/8/2015	100.8	7,188	7,645	3,017	249,964.00	6,227	0
43	9/9/2015	100	7,330	8,480	3,095	249,700.00	5,961	0
44	9/9/2015	101.6	7,234	7,886	3,124	250,111.00	6,104	0
45	9/9/2015	98.2	7,383	8,756	3,332	249,645.00	6,382	0
46	9/9/2015	89.4	7,717	9,355	3,484	252,704.00	8,742	0
47	9/10/2015	97	7,351	8,493	3,394	251,880.00	6,177	0
48	9/10/2015	99.5	7,021	7,331	3,999	250,710.00	5,793	0
49	9/10/2015	101.1	7,104	7,480	4,193	249,828.00	5,743	0
50	9/10/2015	101.4	6,979	7,135	4,402	253,459.00	5,681	0

Xerox WC 7535 513757 Perf and Stim.xlsx Thu Mar 17 16:27:10 2016 Media Type: Default Color: Automatic Office: Display-sRGB Press: SWOP-Coated Print Quality: Standard

08/12/2016

Color Adjustments: Customized Automatic Setup

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/26/2015
Job End Date:	9/10/2015
State:	West Virginia
County:	Ritchie
API Number:	47-085-10133-00-00
Operator Name:	EQT Production
Well Name and Number:	513757
Longitude:	-80.84278000
Latitude:	39.13599200
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,533
Total Base Water Volume (gal):	13,557,352
Total Base Non Water Volume:	0



## Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Keane Group	Carrier/Base Fluid					
			Water	7732-18-5	100.00000	89.69580	None
Sand (Proppant)	Keane Group	Proppant					
			Silica Substrate	14808-60-7	100.00000	9.89294	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution					
			Calcium nitrate	10124-37-5	60.00000	0.05765	None
Hydrochloric Acid (15%)	Keane Group	Acidizing					
			Hydrochloric Acid	7647-01-0	15.00000	0.03278	None
FFR760	Keane Group	Friction Reducer					
			Hydrotreated Light Distillate	64742-47-8	30.00000	0.02121	None
			Alkyl Alcohol	Proprietary	10.00000	0.00707	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00354	None
EC6330A	Keane Group	Scale Inhibitor					
			Ethylene Glycol	107-21-1	5.00000	0.00127	None
			Sodium Phosphate, Tribasic	7601-54-9	5.00000	0.00127	None
AI 600	Keane Group	Corrosion Inhibitor					
			Ethylene Glycol	107-21-1	40.00000	0.00021	None
			Dimethylformamide	68-12-2	20.00000	0.00011	None

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		Pyridine, alkyl derives, quaternized with benzyl chloride	68909-18-2	15.00000	0.00008	None
		Cinnamialdehyde	104-55-2	15.00000	0.00008	None
		Nonyl Phenol Ethoxylate, Branched	127087-87-0	5.00000	0.00003	None
		2-Butoxyethanol	111-76-2	5.00000	0.00003	None
		1-Octanol	111-87-5	5.00000	0.00003	None
		1-Decanol	112-30-1	5.00000	0.00003	None
		Methanol	67-56-1	2.50000	0.00001	None
		Triethyl Phosphate	78-40-0	2.50000	0.00001	None
		Alkyl Pyridine	68391-11-7	1.00000	0.00001	None

Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

\* Total Water Volume sources may include fresh water, produced water, and/or recycled water

\*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)



ROYALTY OWNERS		
B.M. PIERCE ET UX	84.50 AC.±	LEASE NO. 118210
CRAIG H. WILLIAMS	243.83 AC.±	LEASE NO. 987447
J.P. SMITH ET UX	130 AC.±	LEASE NO. 107857
SHIRLEY & RUTH RIDDLE HEIRS AND/OR ASSIGNS	272 AC.±	LEASE NO. 986161

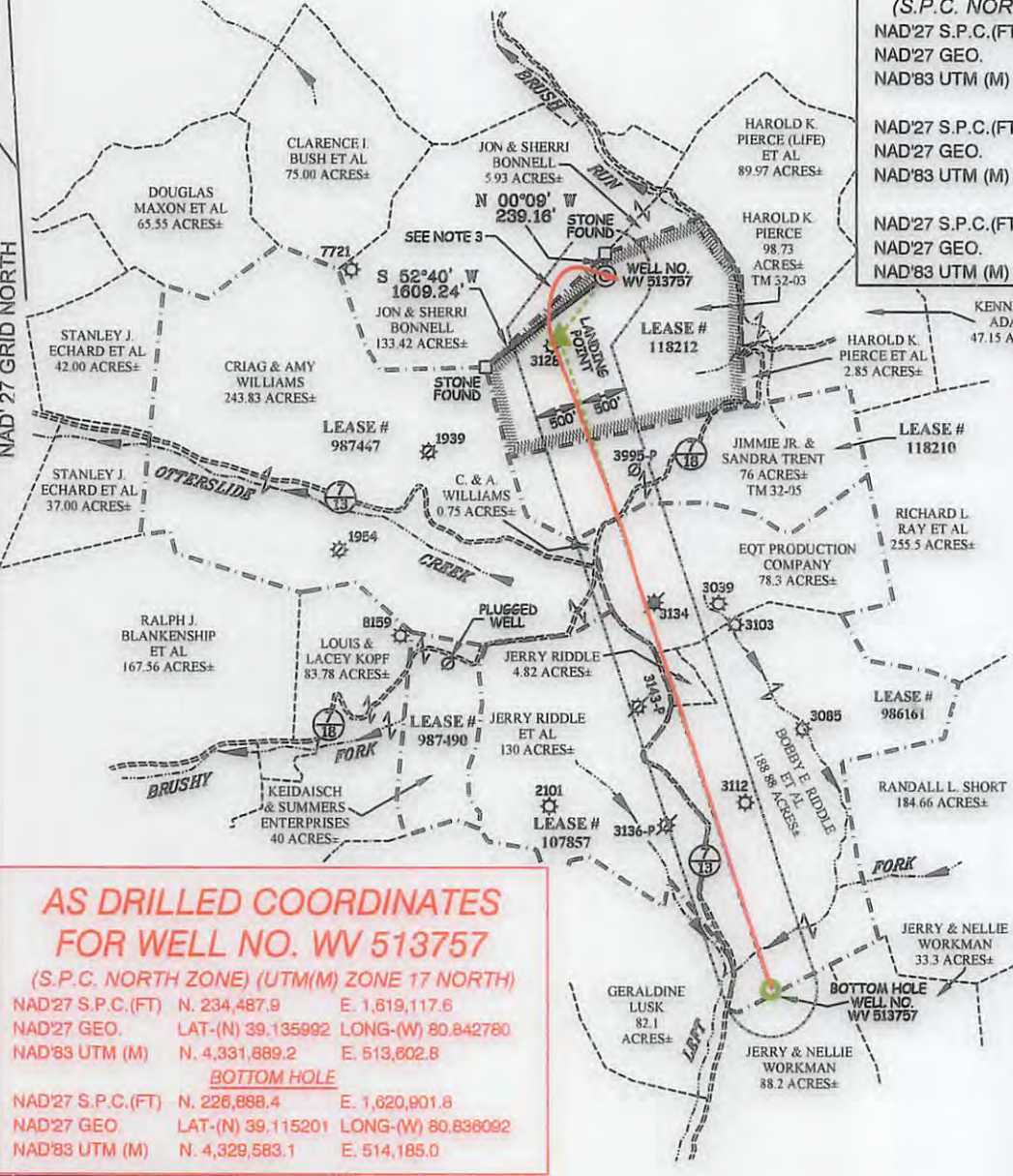
NOTES ON SURVEY

1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
2. AS DRILLED INFORMATION PROVIDED BY EQT.
3. NONPRODUCTIVE SUBSURFACE RIGHT OF WAY

**EQT PRODUCTION COMPANY  
J.E. PIERCE ET AL LEASE  
108 (98.73±) ACRES±  
WELL NO. WV 513757  
(OXF163 H2)**

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT)	N. 234,487.9	E. 1,619,117.6
NAD'27 GEO.	LAT-(N) 39.135992	LONG-(W) 80.842780
NAD'83 UTM (M)	N. 4,331,889.2	E. 513,602.8
<b>LANDING POINT</b>		
NAD'27 S.P.C.(FT)	N. 233,835.1	E. 1,618,628.8
NAD'27 GEO.	LAT-(N) 39.134179	LONG-(W) 80.844468
NAD'83 UTM (M)	N. 4,331,687.8	E. 513,457.2
<b>BOTTOM HOLE</b>		
NAD'27 S.P.C.(FT)	N. 226,882.9	E. 1,620,887.7
NAD'27 GEO.	LAT-(N) 39.115186	LONG-(W) 80.836142
NAD'83 UTM (M)	N. 4,329,581.4	E. 514,180.7



**AS DRILLED COORDINATES  
FOR WELL NO. WV 513757**  
(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT)	N. 234,487.9	E. 1,619,117.6
NAD'27 GEO.	LAT-(N) 39.135992	LONG-(W) 80.842780
NAD'83 UTM (M)	N. 4,331,889.2	E. 513,602.8
<b>BOTTOM HOLE</b>		
NAD'27 S.P.C.(FT)	N. 226,882.9	E. 1,620,887.7
NAD'27 GEO.	LAT-(N) 39.115201	LONG-(W) 80.836092
NAD'83 UTM (M)	N. 4,329,583.1	E. 514,185.0

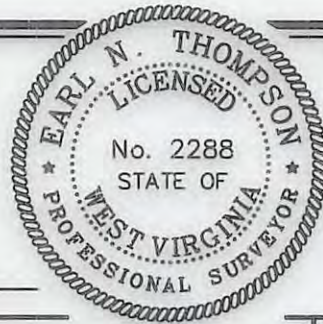
**LEGEND:**

LEASE LINE	---
SURFACE LINE	----
PROPOSED PATH	---
AS DRILLED PATH	---
OFFSET LINE	---
TIE LINE	---
CREEK	---
ROAD	---
FENCE LINE	---
COUNTY ROUTE	---
PROPOSED WELL	⊙
EXISTING WELL	⊙
PLUGGED WELL	⊙
TAX MAP-PARCEL	00-00

**Professional Energy Consultants**  
A DIVISION OF SMITH LAND SURVEYING, INC.

**SLS**  
SURVEYORS  
ENGINEERS  
ENVIRONMENTAL  
PROJECT MGMT.

(204) 462-5934 WWW.SLSURVEYS.COM



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S.  
2288 *Earl N. Thompson*

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.  
DATE MAY 27, 20 14  
REVISED 08/22/14, 10/27/14 & 12/03/15  
OPERATORS WELL NO. WV 513757  
API WELL NO. 47 - 085 - 10133H  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 7698AD513757  
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK) SCALE 1" = 2000'

STATE OF WEST VIRGINIA  
DIVISION OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS

WELL TYPE: OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  IF "GAS" PRODUCTION  STORAGE  DEEP  SHALLOW

LOCATION: ELEVATION 1,175(GROUND) 1,158.5(PROPOSED) WATERSHED BRUSH RUN OF MIDDLE FORK  
DISTRICT UNION COUNTY RITCHIE QUADRANGLE OXFORD 7.5'

SURFACE OWNER HAROLD K. PIERCE ACREAGE 98.73±  
ROYALTY OWNER J.E. PIERCE ET AL ACREAGE 108± (98.73±)

PROPOSED WORK: DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  PLUG AND ABANDON  CLEAN OUT AND REPLUG  OTHER

PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_ TARGET FORMATION MARCELLUS  
ESTIMATED DEPTH TVD 6495'

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY  
ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 BRIDGEPORT, WV 26330

08/12/2016