



EQT PRODUCTION

Wetzel County, WV

BIG177

Well #511407 -Marcellus - Slot 511407

API #47-10302984

Main Wellbore

Design: 511407 As Drilled Surveys

Standard Survey Report

23 November, 2015



Where energy meets innovation.
WV Department of
Environmental Protection

05/27/2016



Phoenix Technology Services
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Well #511407 -Marcellus - Slot 511407
Company:	EQT PRODUCTION	TVD Reference:	KB 23' @ 834 0usft
Project:	Wetzel County, WV	MD Reference:	KB 23' @ 834 0usft
Site:	BIG177	North Reference:	G/A
Well:	Well #511407 -Marcellus	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	511407 As Drilled Surveys		

Project **Wetzel 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		

Site **BIG177**

Site Position:		Northing:	396,138.10 usft	Latitude:	39.58
From:	Map	Easting:	1,694,445.70 usft	Longitude:	-80.58
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.69 °

Well **Well #511407 -Marcellus - Slot 511407**

Well Position	+N/-S	0.0 usft	Northing:	396,138.09 usft	Latitude:	39° 34' 57.245 N
	+E/-W	0.0 usft	Easting:	1,694,445.70 usft	Longitude:	80° 35' 2.833 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	811.0 usft

Wellbore **Main Wellbore**

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	11/2/2015	-8.33	67.05	52,534

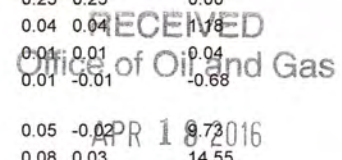
Design **511407 As Drilled Surveys**

Audit Notes:

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	331.87	

Survey Program	Date	11/23/2015		
From (')	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	5,338.0	511407 VES Gyro (Main Wellbore)	VES Spec AVG 04-09-15	Triaxial Continuous Gyro Model
0.00	13,326.0	511407 PHX MWD (Main Wellbore)	PHX+MWD+HDGM	PHX+OWSG MWD + HDGM

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)
0.0	0.00	0.00	0.0	-834.0	0.0	0.0	0.0	0.00	0.00	0.00
110.0	0.27	144.00	110.0	-724.0	-0.2	0.2	-0.3	0.25	0.25	0.00
210.0	0.31	145.18	210.0	-624.0	-0.6	0.4	-0.8	0.04	0.04	1.78
310.0	0.32	145.22	310.0	-524.0	-1.1	0.8	-1.3	0.01	0.01	0.04
410.0	0.31	144.54	410.0	-424.0	-1.5	1.1	-1.9	0.01	-0.01	-0.68
510.0	0.29	154.27	510.0	-324.0	-2.0	1.3	-2.4	0.05	-0.02	8.72
610.0	0.32	168.82	610.0	-224.0	-2.5	1.5	-2.9	0.08	0.03	14.55
710.0	0.19	255.03	710.0	-124.0	-2.8	1.4	-3.1	0.36	-0.13	86.21





Phoenix Technology Services
Survey Report



Database:	EDM 5000 1 Comp. User Dr.	Local Co-ordinate Reference:	Well: Well #2-1407 - Marcellus #310 31407
Company:	EQT PRODUCTIONS	TVD Reference:	KB 3100 3100usft
Project:	WVCOA COAL, WV	MD Reference:	KB 2000 2000usft
Site:	BIGTOP	North Reference:	Grid
Well:	Well #511407 - Marcellus	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	511407 As Drilled Surveys		

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)
810.0	0.22	254.83	810.0	-24.0	-2.9	1.1	-3.0	0.03	0.03	-0.20
910.0	0.28	233.79	910.0	76.0	-3.1	0.7	-3.0	0.11	0.06	-21.04
1,010.0	0.25	253.00	1,010.0	176.0	-3.3	0.3	-3.0	0.09	-0.03	19.21
1,110.0	0.17	167.95	1,110.0	276.0	-3.5	0.1	-3.1	0.29	-0.08	-85.05
1,210.0	0.22	181.67	1,210.0	376.0	-3.8	0.1	-3.4	0.07	0.05	13.72
1,310.0	0.18	154.60	1,310.0	476.0	-4.2	0.2	-3.8	0.10	-0.04	-27.07
1,410.0	0.30	151.61	1,410.0	576.0	-4.5	0.4	-4.2	0.12	0.12	-2.99
1,510.0	0.43	150.65	1,510.0	676.0	-5.1	0.7	-4.8	0.13	0.13	-0.96
1,610.0	0.47	136.91	1,610.0	776.0	-5.7	1.1	-5.6	0.11	0.04	-13.74
1,710.0	0.48	137.39	1,710.0	876.0	-6.3	1.7	-6.4	0.01	0.01	0.48
1,810.0	0.48	140.70	1,810.0	976.0	-7.0	2.3	-7.2	0.03	0.00	3.31
1,910.0	0.48	137.36	1,910.0	1,076.0	-7.6	2.8	-8.0	0.03	0.00	-3.34
2,010.0	0.48	136.03	2,010.0	1,176.0	-8.2	3.4	-8.8	0.01	0.00	-1.33
2,110.0	0.37	133.31	2,110.0	1,276.0	-8.7	3.9	-9.5	0.11	-0.11	-2.72
2,210.0	0.39	121.33	2,210.0	1,376.0	-9.1	4.4	-10.1	0.08	0.02	-11.98
2,310.0	0.38	126.98	2,310.0	1,476.0	-9.5	5.0	-10.7	0.04	-0.01	5.65
2,410.0	0.37	121.99	2,410.0	1,576.0	-9.9	5.5	-11.3	0.03	-0.01	-4.99
2,510.0	0.37	120.64	2,510.0	1,676.0	-10.2	6.1	-11.9	0.01	0.00	-1.35
2,610.0	0.45	90.19	2,610.0	1,776.0	-10.4	6.7	-12.3	0.23	0.08	-30.45
2,710.0	0.48	83.86	2,710.0	1,876.0	-10.3	7.6	-12.7	0.06	0.03	-6.33
2,810.0	0.42	88.63	2,809.9	1,975.9	-10.3	8.3	-13.0	0.07	-0.06	4.77
2,910.0	0.20	47.86	2,909.9	2,075.9	-10.2	8.8	-13.1	0.30	-0.22	-40.77
3,010.0	0.26	310.86	3,009.9	2,175.9	-9.9	8.8	-12.9	0.35	0.06	-97.00
3,110.0	0.24	311.59	3,109.9	2,275.9	-9.6	8.5	-12.5	0.02	-0.02	0.73
3,210.0	0.24	330.32	3,209.9	2,375.9	-9.3	8.2	-12.0	0.08	0.00	18.73
3,310.0	0.24	315.40	3,309.9	2,475.9	-8.9	8.0	-11.6	0.06	0.00	-14.92
3,410.0	0.26	289.67	3,409.9	2,575.9	-8.7	7.6	-11.3	0.11	0.02	-25.73
3,510.0	0.25	286.87	3,509.9	2,675.9	-8.6	7.2	-10.9	0.02	-0.01	-2.80
3,610.0	0.25	296.98	3,609.9	2,775.9	-8.4	6.8	-10.6	0.04	0.00	10.11
3,710.0	0.25	289.51	3,709.9	2,875.9	-8.2	6.4	-10.3	0.03	0.00	-7.47
3,810.0	0.25	298.90	3,809.9	2,975.9	-8.1	6.0	-9.9	0.04	0.00	9.39
3,910.0	0.25	323.17	3,909.9	3,075.9	-7.8	5.6	-9.5	0.11	0.00	24.27
4,010.0	0.19	338.16	4,009.9	3,175.9	-7.5	5.5	-9.2	0.08	-0.06	14.99
4,110.0	0.24	19.60	4,109.9	3,275.9	-7.1	5.5	-8.8	0.16	0.05	41.44
4,210.0	0.27	54.78	4,209.9	3,375.9	-6.8	5.7	-8.7	0.16	0.03	35.18
4,310.0	0.31	68.38	4,309.9	3,475.9	-6.5	6.2	-8.7	0.08	0.04	13.60
4,410.0	0.33	80.48	4,409.9	3,575.9	-6.4	6.7	-8.8	0.07	0.02	12.10
4,510.0	0.34	81.70	4,509.9	3,675.9	-6.3	7.3	-9.0	0.01	0.01	1.22
4,610.0	0.34	107.88	4,609.9	3,775.9	-6.4	7.9	-9.3	0.15	0.00	26.18
4,710.0	0.35	98.54	4,709.9	3,875.9	-6.5	8.4	-9.7	0.06	0.01	-9.34
4,810.0	0.45	107.33	4,809.9	3,975.9	-6.6	9.1	-10.2	0.12	0.10	1.79
4,910.0	0.41	120.53	4,909.9	4,075.9	-6.9	9.8	-10.7	0.11	-0.04	13.20

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Phoenix Technology Services
Survey Report



Database:	CDM 10001 Single User.Db	Local Co-ordinate Reference:	WV Well #511407 - Marshall - 361.511407
Company:	EQT PRODUCTION	TVD Reference:	#523 to #94.000
Project:	Wells - 0001 - W1	MD Reference:	#94 to #094.000
Site:	BIGBY	North Reference:	000
Well:	Well #011111A - Marshall	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	511407_Ae_01150_2015.rvt		

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)
5,010.0	0.48	130.88	5,009.9	4,175.9	-7.4	10.4	-11.4	0.11	0.07	10.35
5,110.0	0.29	137.72	5,109.9	4,275.9	-7.9	10.9	-12.1	0.20	-0.19	6.84
5,210.0	0.06	281.10	5,209.9	4,375.9	-8.0	11.0	-12.3	0.34	-0.23	143.38
5,310.0	0.49	123.09	5,309.9	4,475.9	-8.3	11.3	-12.6	0.55	0.43	-158.01
Gyral Top On-ESR MO										
5,338.0	0.39	115.33	5,337.9	4,503.9	-8.4	11.5	-12.8	0.41	-0.36	-27.71
5,393.0	2.10	139.60	5,392.9	4,558.9	-9.2	12.3	-14.0	3.19	3.11	44.13
5,424.0	4.90	136.40	5,423.8	4,589.8	-10.6	13.6	-15.8	9.05	9.03	-10.32
5,456.0	7.80	136.10	5,455.6	4,621.6	-13.2	16.1	-19.2	9.06	9.06	-0.94
5,487.0	11.20	140.60	5,486.2	4,652.2	-17.0	19.4	-24.2	11.22	10.97	14.52
5,518.0	14.80	147.60	5,516.4	4,682.4	-22.7	23.5	-31.1	12.65	11.61	22.58
5,550.0	17.40	152.90	5,547.2	4,713.2	-30.4	27.9	-39.9	9.33	8.13	16.56
5,581.0	20.90	155.40	5,576.4	4,742.4	-39.5	32.3	-50.1	11.59	11.29	8.06
5,613.0	23.60	156.10	5,606.1	4,772.1	-50.6	37.2	-62.2	8.48	8.44	2.19
5,644.0	26.80	155.60	5,634.1	4,800.1	-62.6	42.6	-75.3	10.35	10.32	-1.61
5,675.0	30.70	156.70	5,661.3	4,827.3	-76.3	48.7	-90.2	12.70	12.58	3.55
5,707.0	34.00	156.30	5,688.3	4,854.3	-92.0	55.5	-107.3	10.33	10.31	-1.25
5,738.0	37.60	157.20	5,713.4	4,879.4	-108.6	62.6	-125.3	11.74	11.61	2.90
5,770.0	40.30	157.40	5,738.3	4,904.3	-127.2	70.4	-145.4	8.45	8.44	0.63
5,832.0	42.50	155.40	5,784.8	4,950.8	-164.8	86.8	-186.2	4.14	3.55	-3.23
5,864.0	42.70	154.30	5,808.4	4,974.4	-184.4	96.0	-207.9	2.41	0.63	-3.44
5,895.0	42.70	153.50	5,831.2	4,997.2	-203.2	105.3	-228.9	1.75	0.00	-2.58
5,927.0	40.20	153.10	5,855.2	5,021.2	-222.2	114.8	-250.0	7.86	-7.81	-1.25
5,958.0	39.70	153.50	5,878.9	5,044.9	-239.9	123.7	-269.9	1.81	-1.61	1.29
5,989.0	39.00	156.60	5,902.9	5,068.9	-257.8	132.0	-289.6	6.73	-2.26	10.00
6,021.0	36.20	158.70	5,928.2	5,094.2	-275.8	139.5	-309.0	9.62	-8.75	6.56
6,052.0	32.80	158.40	5,953.8	5,119.8	-292.1	145.9	-326.4	10.98	-10.97	-0.97
6,084.0	29.80	154.30	5,981.1	5,147.1	-307.4	152.5	-343.0	11.49	-9.38	-12.81
6,115.0	27.10	151.30	6,008.4	5,174.4	-320.5	159.3	-357.7	9.85	-8.71	-9.68
6,147.0	24.60	149.60	6,037.2	5,203.2	-332.7	166.1	-371.7	8.15	-7.81	-5.31
6,178.0	22.10	151.00	6,065.6	5,231.6	-343.3	172.2	-384.0	8.26	-8.06	4.52
6,209.0	18.10	153.20	6,094.7	5,260.7	-352.7	177.2	-394.6	13.13	-12.90	7.10
6,241.0	14.20	153.40	6,125.5	5,291.5	-360.7	181.2	-403.5	12.19	-12.19	0.63
6,272.0	11.70	155.70	6,155.7	5,321.7	-366.9	184.2	-410.5	8.23	-8.06	7.42
6,303.0	8.70	157.20	6,186.2	5,352.2	-372.0	186.4	-415.9	9.71	-9.68	4.84
6,335.0	5.60	158.90	6,217.9	5,383.9	-375.7	187.9	-419.9	9.71	-9.69	5.31
6,366.0	2.50	145.20	6,248.9	5,414.9	-377.6	188.9	-422.1	10.41	-10.00	-44.19
6,397.0	0.80	66.40	6,279.8	5,445.8	-378.1	189.4	-422.7	7.98	-5.48	-254.19
6,429.0	0.80	349.90	6,311.8	5,477.8	-377.8	189.6	-422.6	3.10	0.00	-239.06
6,460.0	2.60	296.20	6,342.8	5,508.8	-377.3	188.9	-421.8	7.77	5.81	-173.23
6,492.0	5.10	303.90	6,374.8	5,540.8	-376.1	187.1	-419.9	7.96	7.81	24.06
6,523.0	7.90	318.00	6,405.6	5,571.6	-373.8	184.5	-416.6	10.33	9.03	45.48
6,555.0	10.90	319.40	6,437.1	5,603.1	-369.9	181.1	-411.6	9.40	9.38	4.38

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Phoenix Technology Services
Survey Report



Database:	EDM 2000 1 Single User DC	Local Co-ordinate Reference:	Well/Well #511407-Marcollus - Slot 511407
Company:	EQT PRODUCTION	TVD Reference:	KR 23 23 23 23
Project:	Wetzel County, WV	MD Reference:	MD 23 23 23 23
Site:	BIGTT	North Reference:	Geo
Well:	Well #511407-Marcollus	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	511407 AS Drilled Surveys		

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)
6,586.0	14.20	322.50	6,467.4	5,633.4	-364.6	176.9	-404.9	10.86	10.65	10.00
6,617.0	16.70	326.00	6,497.3	5,663.3	-357.9	172.1	-396.8	8.60	8.06	11.29
6,649.0	19.30	330.90	6,527.7	5,693.7	-349.5	166.9	-386.9	9.40	8.13	15.31
6,680.0	22.10	334.40	6,556.7	5,722.7	-339.7	161.9	-375.9	9.87	9.03	11.29
6,712.0	24.30	336.80	6,586.1	5,752.1	-328.3	156.7	-363.4	7.48	6.88	7.50
6,743.0	23.80	332.20	6,614.4	5,780.4	-316.9	151.3	-350.8	6.26	-1.61	-14.84
6,778.0	24.40	325.30	6,646.4	5,812.4	-304.7	143.9	-336.5	8.23	1.71	-19.71
6,810.0	28.10	324.90	6,675.1	5,841.1	-293.1	135.8	-322.5	11.58	11.56	-1.25
6,851.0	35.00	328.70	6,710.0	5,876.0	-275.1	124.1	-301.1	17.51	16.83	9.27
6,882.0	39.00	330.10	6,734.7	5,900.7	-259.0	114.6	-282.5	13.19	12.90	4.52
6,914.0	45.00	330.10	6,758.5	5,924.5	-240.5	103.9	-261.1	18.75	18.75	0.00
6,945.0	50.30	330.50	6,779.4	5,945.4	-220.6	92.6	-238.2	17.12	17.10	1.29
6,977.0	54.40	330.30	6,798.9	5,964.9	-198.6	80.1	-212.9	12.82	12.81	-0.63
7,008.0	58.90	331.00	6,816.0	5,982.0	-176.0	67.4	-187.0	14.64	14.52	2.26
7,040.0	63.50	331.10	6,831.4	5,997.4	-151.5	53.8	-158.9	14.38	14.38	0.31
7,071.0	67.70	330.90	6,844.2	6,010.2	-126.8	40.1	-130.7	13.56	13.55	-0.65
7,103.0	72.50	330.60	6,855.1	6,021.1	-100.5	25.4	-100.6	15.03	15.00	-0.94
511407 LP 135 VS										
7,134.0	77.10	329.90	6,863.2	6,029.2	-74.6	10.6	-70.8	15.00	14.84	-2.26
7,165.0	81.30	330.40	6,869.0	6,035.0	-48.2	-4.5	-40.3	13.64	13.55	1.61
7,196.0	85.20	331.10	6,872.6	6,038.6	-21.3	-19.6	-9.6	12.78	12.58	2.26
LP/Deepal Polaris 7228 MD#474 TVD										
7,228.0	88.80	332.20	6,874.3	6,040.3	6.8	-34.8	22.4	11.76	11.25	3.44
7,259.0	91.90	333.70	6,874.1	6,040.1	34.4	-48.9	53.4	11.11	10.00	4.84
511407 LP 125 VS pE										
7,326.9	92.33	333.63	6,871.6	6,037.6	95.2	-78.9	121.2	0.65	0.64	-0.11
7,353.0	92.50	333.60	6,870.5	6,036.5	118.6	-90.5	147.3	0.65	0.64	-0.11
511407 LP 162 VS pE										
7,357.2	92.48	333.59	6,870.3	6,036.3	122.3	-92.4	151.5	0.62	-0.53	-0.32
7,447.0	92.00	333.30	6,866.8	6,032.8	202.6	-132.5	241.2	0.62	-0.53	-0.32
7,541.0	90.50	331.40	6,864.8	6,030.8	285.9	-176.1	335.1	2.57	-1.60	-2.02
511407 LP 40E VS										
7,609.8	91.22	331.76	6,863.7	6,029.7	346.4	-208.9	403.9	1.18	1.05	0.53
7,636.0	91.50	331.90	6,863.1	6,029.1	369.4	-221.2	430.1	1.18	1.05	0.53
7,730.0	90.40	331.10	6,861.6	6,027.6	452.0	-266.1	524.1	1.45	-1.17	-0.85
511407 LP										
7,759.6	90.53	331.23	6,861.3	6,027.3	478.0	-280.4	553.7	0.60	0.43	0.43
7,824.0	90.80	331.50	6,860.6	6,026.6	534.5	-311.2	618.1	0.60	0.43	0.43
7,919.0	90.00	332.60	6,859.9	6,025.9	618.4	-355.7	713.1	1.43	-0.84	-1.16
8,013.0	88.60	332.50	6,861.1	6,027.1	701.8	-399.1	807.1	1.49	-1.49	-0.11
8,107.0	89.20	331.50	6,862.9	6,028.9	784.8	-443.2	901.0	1.24	0.64	-1.06
8,202.0	89.90	330.70	6,863.6	6,029.6	868.0	-489.1	996.0	1.12	0.74	-0.84
8,296.0	90.30	329.30	6,863.4	6,029.4	949.4	-536.1	1,090.0	1.55	0.43	-1.49
8,391.0	90.30	330.20	6,863.0	6,029.0	1,031.4	-584.0	1,184.9	0.95	0.00	0.95

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Survey Report



Database:	EUM 2001 (Single Meridian)	Local Co-ordinate Reference:	WVA Well #511407 - Mariposa - Srt 511407
Company:	EQT Production	TVD Reference:	KB 1.0 = 4.94000
Project:	Wetland Cont. (WV)	MD Reference:	KB 2.0 = 234.0000
Site:	BIG 177	North Reference:	KB 3.0 = 234.0000
Well:	Well #511407 - Mariposa	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	EUM 2001 AS Units & Surveys		

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)
8,485.0	91.20	331.30	6,861.7	6,027.7	1,113.4	-629.9	1,278.9	1.51	0.96	1.17
8,580.0	90.00	332.30	6,860.7	6,026.7	1,197.1	-674.8	1,373.9	1.64	-1.26	1.05
8,674.0	88.90	333.70	6,861.6	6,027.6	1,280.9	-717.4	1,467.9	1.89	-1.17	1.49
8,768.0	90.80	334.80	6,861.9	6,027.9	1,365.6	-758.3	1,561.8	2.34	2.02	1.17
8,863.0	91.70	335.00	6,859.8	6,025.8	1,451.6	-798.6	1,656.6	0.97	0.95	0.21
8,957.0	89.40	332.20	6,858.9	6,024.9	1,535.7	-840.4	1,750.5	3.85	-2.45	-2.98
9,052.0	88.00	331.70	6,861.1	6,027.1	1,619.6	-885.0	1,845.5	1.56	-1.47	-0.53
9,146.0	87.90	330.60	6,864.4	6,030.4	1,701.8	-930.3	1,939.4	1.17	-0.11	-1.17
9,240.0	88.50	330.70	6,867.4	6,033.4	1,783.7	-976.4	2,033.4	0.65	0.64	0.11
9,335.0	91.20	338.50	6,867.6	6,033.6	1,869.5	-1,017.1	2,128.2	8.69	2.84	8.21
9,429.0	91.90	337.60	6,865.1	6,031.1	1,956.6	-1,052.2	2,221.6	1.21	0.74	-0.96
9,523.0	92.80	338.10	6,861.2	6,027.2	2,043.6	-1,087.6	2,315.0	1.10	0.96	0.53
9,618.0	92.50	336.50	6,856.8	6,022.8	2,131.2	-1,124.3	2,409.5	1.71	-0.32	-1.68
9,712.0	90.70	335.00	6,854.2	6,020.2	2,216.8	-1,162.9	2,503.2	2.49	-1.91	-1.60
9,806.0	88.50	331.90	6,854.9	6,020.9	2,300.9	-1,204.9	2,597.2	4.04	-2.34	-3.30
9,901.0	89.40	332.10	6,856.6	6,022.6	2,384.8	-1,249.5	2,692.2	0.97	0.95	0.21
9,995.0	91.40	332.90	6,855.9	6,021.9	2,468.1	-1,292.9	2,786.1	2.29	2.13	0.85
10,089.0	89.90	332.00	6,854.9	6,020.9	2,551.5	-1,336.3	2,880.1	1.86	-1.60	-0.96
10,184.0	90.00	331.10	6,855.0	6,021.0	2,635.0	-1,381.6	2,975.1	0.95	0.11	-0.95
10,278.0	91.00	331.40	6,854.1	6,020.1	2,717.4	-1,426.8	3,069.1	1.11	1.06	0.32
10,372.0	91.40	330.90	6,852.2	6,018.2	2,799.7	-1,472.1	3,163.1	0.68	0.43	-0.53
10,466.0	90.40	327.10	6,850.7	6,016.7	2,880.3	-1,520.5	3,256.9	4.18	-1.06	-4.04
10,561.0	90.40	326.60	6,850.0	6,016.0	2,959.8	-1,572.5	3,351.6	0.53	0.00	-0.53
10,655.0	90.80	327.80	6,849.0	6,015.0	3,038.8	-1,623.4	3,445.3	1.35	0.43	1.28
10,750.0	89.30	329.00	6,849.0	6,015.0	3,119.7	-1,673.2	3,540.1	2.02	-1.58	1.26
10,844.0	89.10	329.20	6,850.3	6,016.3	3,200.4	-1,721.4	3,634.0	0.30	-0.21	0.21
10,939.0	89.10	328.70	6,851.8	6,017.8	3,281.7	-1,770.4	3,728.8	0.53	0.00	-0.53
11,033.0	90.10	329.80	6,852.4	6,018.4	3,362.5	-1,818.5	3,822.7	1.58	1.06	1.17
11,127.0	90.70	331.40	6,851.8	6,017.8	3,444.4	-1,864.6	3,916.7	1.82	0.64	1.70
11,222.0	90.20	331.40	6,851.0	6,017.0	3,527.8	-1,910.1	4,011.7	0.53	-0.53	0.00
11,316.0	88.70	333.70	6,851.9	6,017.9	3,611.2	-1,953.4	4,105.7	2.92	-1.60	2.45
11,411.0	89.30	333.80	6,853.6	6,019.6	3,696.4	-1,995.5	4,200.6	0.64	0.63	0.11
11,505.0	89.90	333.60	6,854.2	6,020.2	3,780.7	-2,037.1	4,294.5	0.67	0.64	-0.21
11,599.0	90.60	333.40	6,853.8	6,019.8	3,864.8	-2,079.0	4,388.5	0.77	0.74	-0.21
11,694.0	90.90	332.40	6,852.6	6,018.6	3,949.4	-2,122.3	4,483.5	1.10	0.32	-1.05
11,788.0	91.80	331.60	6,850.4	6,016.4	4,032.3	-2,166.4	4,577.5	1.28	0.96	-0.85
11,883.0	89.70	331.40	6,849.1	6,015.1	4,115.8	-2,211.8	4,672.4	2.22	-2.21	-0.21
11,977.0	88.80	328.40	6,850.4	6,016.4	4,197.1	-2,258.9	4,766.4	3.33	-0.96	-3.19
12,071.0	89.70	330.40	6,851.6	6,017.6	4,278.0	-2,306.7	4,860.3	2.33	0.96	2.13
12,165.0	90.90	330.50	6,851.1	6,017.1	4,359.8	-2,353.1	4,954.2	0.28	1.28	0.11
12,260.0	90.30	331.60	6,850.1	6,016.1	4,442.9	-2,399.1	5,049.2	1.32	-0.63	1.16
12,354.0	90.00	330.20	6,849.9	6,015.9	4,525.0	-2,444.8	5,143.2	1.52	-0.32	-1.49



Phoenix Technology Services
Survey Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Well #511407 -Marcellus - Slot 511407
Company:	EQT PRODUCTION	TVD Reference:	KB 23 @ 834 0usft
Project:	Wetzel County, WV	MD Reference:	KB 23 @ 834 0usft
Site:	BIG177	North Reference:	Grid
Well:	Well #511407 -Marcellus	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	511407 As Drilled Surveys		

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)
12,449.0	90.40	331.80	6,849.5	6,015.5	4,608.1	-2,490.8	5,238.2	1.74	0.42	1.68
12,543.0	89.70	330.70	6,849.4	6,015.4	4,690.5	-2,536.0	5,332.2	1.39	-0.74	-1.17
12,637.0	89.30	334.00	6,850.3	6,016.3	4,773.8	-2,579.7	5,426.2	3.54	-0.43	3.51
12,731.0	90.00	333.10	6,850.8	6,016.8	4,857.9	-2,621.5	5,520.1	1.21	0.74	-0.96
12,826.0	90.60	332.20	6,850.3	6,016.3	4,942.3	-2,665.2	5,615.1	1.14	0.63	-0.95
12,920.0	90.40	334.20	6,849.5	6,015.5	5,026.2	-2,707.6	5,709.1	2.14	-0.21	2.13
13,015.0	90.70	334.30	6,848.6	6,014.6	5,111.8	-2,748.8	5,804.0	0.33	0.32	0.11
13,109.0	90.90	335.00	6,847.3	6,013.3	5,196.7	-2,789.1	5,897.9	0.77	0.21	0.74
13,203.0	90.30	335.50	6,846.3	6,012.3	5,282.1	-2,828.4	5,991.7	0.83	-0.64	0.53
Final Survey=13275' MD/6846' TVD										
13,275.0	90.70	335.80	6,845.7	6,011.7	5,347.7	-2,858.1	6,063.5	0.69	0.56	0.42
511407 TD - 511407 TD p6 - 511407 TD p3										
13,324.7	90.70	335.80	6,845.1	6,011.1	5,393.0	-2,878.5	6,113.1	0.00	0.00	0.00
PROJ to Bit=13326' MD/6845' TVD										
13,326.0	90.70	335.80	6,845.1	6,011.1	5,394.2	-2,879.0	6,114.4	0.00	0.00	0.00

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (127.6)	+E/-W (-83.6)	Northing (usft)	Easting (usft)	Latitude	Longitude
511407 LP 152' VS p6	0.00	0.00	6,890.0	127.6	-83.6	396,265.67	1,694,362.05	39° 34' 58.496 N	80° 35' 3.921 W
- hit/miss target									
- Shape									
- actual wellpath misses target center by 22.2usft at 7357.1usft MD (6870.3 TVD, 122.3 N, -92.4 E)									
- Point									
511407 TD p6	0.00	360.00	6,910.0	5,391.9	-2,883.2	401,530.00	1,691,562.50	39° 35' 50.188 N	80° 35' 40.496 W
- actual wellpath misses target center by 65.1usft at 13324.7usft MD (6845.1 TVD, 5393.0 N, -2878.5 E)									
- Point									

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,338.0	5,337.9	-8.4	11.5	Gyro Tie On=5338' MD
7,228.0	6,874.3	6.8	-34.8	LP/Deepest Point=7228' MD/6874' TVD
13,275.0	6,845.7	5,347.7	-2,858.1	Final Survey=13275' MD/6846' TVD
13,326.0	6,845.1	5,394.2	-2,879.0	PROJ to Bit=13326' MD/6845' TVD

Checked By: _____ Approved By: _____ Date: _____

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Project: Wetzel County, WV
 Site: BIG177
 Well: Well #511407 -Marcellus
 Wellbore: Main Wellbore
 Design: 511407 As Drilled Surveys

