

# **EQT Production- Middlesex**

Wetzel County, WV

Wetzel County 513830

Well #513830

Main Wellbore

Design: 513830 As Drilled Surveys

## **Standard Survey Report**

04 December, 2014

# Phoenix Technologies

## Survey Report

<b>Database:</b> EDM 5000.1 Single User Db <b>Company:</b> EQT Production-Middlesex <b>Project:</b> Wetzel County, WV <b>Site:</b> Wetzel County 513830 <b>Well:</b> Well #513830 <b>Wellbore:</b> Main Wellbore <b>Design:</b> 513830 As Drilled Surveys	<b>Local Co-ordinate Reference:</b> <b>TVD Reference:</b> <b>MD Reference:</b> <b>North Reference:</b> <b>Survey Calculation Method:</b>	<b>Site Wetzel County 513830</b> KB @ 876.0usft KB @ 878.0usft Grid Minimum Curvature
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<b>Project</b> Wetzel County, WV		
<b>Map System:</b>	US State Plane 1927 (Exact solution)	<b>System Datum:</b> Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)	
<b>Map Zone:</b>	West Virginia North 4701	Using geodetic scale factor

<b>Site</b> Wetzel County 513830					
<b>Site Position:</b>		<b>Northing:</b>	388,067.87 usft	<b>Latitude:</b>	39.56
<b>From:</b>	Map	<b>Easting:</b>	1,700,949.58 usft	<b>Longitude:</b>	-80.56
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	-0.68 °

<b>Well</b> Well #513830						
<b>Well Position</b>	+N/-S	0.0 usft	<b>Northing:</b>	388,067.87 usft	<b>Latitude:</b>	39° 33' 38.253 N
	+E/-W	0.0 usft	<b>Easting:</b>	1,700,949.58 usft	<b>Longitude:</b>	80° 33' 38.550 W
<b>Position Uncertainty</b>		0.0 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	860.0 usft

<b>Wellbore</b> Main Wellbore					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	11/17/2014	-8.71	66.95	52,358

<b>Design</b> 513830 As Drilled Surveys					
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**Audit Notes:**

<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0		354.51

<b>Survey Program</b>		<b>Date</b>	12/4/2014
From (')	To (usft)	Survey (Wellbore)	Tool Name
0.00	3,853.0	513830 Gyrodata Gyros (Main Wellbore)	GYD_DP_MS
0.00	12,319.0	513830 PHX MWD (Main Wellbore)	MWD+IGRF
			Description
			Gyrodata gyro-compassing and drop
			MWD+IGRF v3:standard declination

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	-876.0	0.0	0.0	0.0	0.00	0.00	0.00
103.0	0.32	0.36	103.0	-773.0	0.3	0.0	0.3	0.31	0.31	0.00
203.0	0.64	25.94	203.0	-673.0	1.1	0.2	1.0	0.38	0.32	25.58
303.0	0.91	38.72	303.0	-573.0	2.2	1.0	2.1	0.32	0.27	12.78
403.0	0.80	29.06	403.0	-473.0	3.4	1.8	3.2	0.18	-0.11	-9.66
503.0	0.45	32.84	503.0	-373.0	4.4	2.4	4.1	0.35	-0.35	3.78
603.0	0.11	10.77	603.0	-273.0	4.8	2.6	4.5	0.35	-0.34	-22.07
703.0	0.06	11.80	703.0	-173.0	4.9	2.6	4.7	0.05	-0.05	1.03

**Phoenix Technologies**  
Survey Report

<b>Database:</b>	EDM 5000.1 Single User Dr	<b>Local Co-ordinate Reference:</b>	Site Wetzel County 513830
<b>Company:</b>	EOI Production- Middlesex	<b>TVD Reference:</b>	KB @ 876.0usft
<b>Project:</b>	Wetzel County, WV	<b>MD Reference:</b>	KB @ 876.0usft
<b>Site:</b>	Wetzel County 513830	<b>North Reference:</b>	Grid
<b>Well:</b>	Well #513830	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Main Wellbore		
<b>Design:</b>	513830 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)
803.0	0.12	121.44	803.0	-73.0	4.9	2.7	4.6	0.15	0.06	109.64
903.0	0.49	112.74	903.0	27.0	4.7	3.2	4.4	0.37	0.37	-8.70
1,003.0	0.65	134.82	1,003.0	127.0	4.1	4.0	3.7	0.27	0.16	22.08
1,103.0	0.73	139.53	1,103.0	227.0	3.3	4.8	2.8	0.10	0.08	4.71
1,203.0	0.74	136.21	1,202.9	326.9	2.3	5.7	1.8	0.04	0.01	-3.32
1,303.0	0.65	135.20	1,302.9	426.9	1.4	6.5	0.8	0.09	-0.09	-1.01
1,403.0	0.75	140.41	1,402.9	526.9	0.5	7.4	-0.2	0.12	0.10	5.21
1,503.0	0.96	143.24	1,502.9	626.9	-0.6	8.3	-1.4	0.21	0.21	2.83
1,603.0	1.09	150.42	1,602.9	726.9	-2.1	9.2	-3.0	0.18	0.13	7.18
1,703.0	1.10	161.14	1,702.9	826.9	-3.9	10.0	-4.8	0.20	0.01	10.72
1,803.0	1.07	169.59	1,802.9	926.9	-5.7	10.5	-6.7	0.16	-0.03	8.45
1,903.0	1.14	175.46	1,902.8	1,026.8	-7.6	10.8	-8.6	0.13	0.07	5.87
2,003.0	1.17	181.95	2,002.8	1,126.8	-9.6	10.8	-10.6	0.13	0.03	6.49
2,103.0	0.99	190.35	2,102.8	1,226.8	-11.5	10.6	-12.5	0.24	-0.18	8.40
2,203.0	0.83	211.82	2,202.8	1,326.8	-13.0	10.1	-13.9	0.37	-0.16	21.47
2,303.0	0.80	254.01	2,302.8	1,426.8	-13.8	9.0	-14.6	0.59	-0.03	42.19
2,403.0	1.04	290.11	2,402.8	1,526.8	-13.6	7.5	-14.3	0.61	0.24	36.10
2,503.0	1.10	293.34	2,502.8	1,626.8	-13.0	5.8	-13.4	0.09	0.06	3.23
2,603.0	1.06	299.23	2,602.7	1,726.7	-12.1	4.1	-12.5	0.12	-0.04	5.89
2,703.0	0.86	304.43	2,702.7	1,826.7	-11.2	2.6	-11.5	0.22	-0.20	5.20
2,803.0	0.64	303.20	2,802.7	1,926.7	-10.5	1.6	-10.6	0.22	-0.22	-1.23
2,903.0	0.52	312.81	2,902.7	2,026.7	-9.9	0.8	-9.9	0.15	-0.12	9.61
3,003.0	0.43	312.57	3,002.7	2,126.7	-9.3	0.1	-9.3	0.09	-0.09	-0.24
3,103.0	0.42	311.93	3,102.7	2,226.7	-8.8	-0.4	-8.8	0.01	-0.01	-0.64
3,203.0	0.41	314.99	3,202.7	2,326.7	-8.3	-0.9	-8.2	0.02	-0.01	3.06
3,303.0	0.41	308.87	3,302.7	2,426.7	-7.9	-1.5	-7.7	0.04	0.00	-6.12
3,403.0	0.49	314.66	3,402.7	2,526.7	-7.3	-2.0	-7.1	0.09	0.08	5.79
3,503.0	0.43	309.82	3,502.7	2,626.7	-6.8	-2.6	-6.5	0.07	-0.06	-4.84
3,603.0	0.41	313.33	3,602.7	2,726.7	-6.3	-3.2	-6.0	0.03	-0.02	3.51
3,703.0	0.36	297.50	3,702.7	2,826.7	-5.9	-3.7	-5.5	0.12	-0.05	-15.83
3,803.0	0.27	311.99	3,802.7	2,926.7	-5.6	-4.2	-5.2	0.12	-0.09	14.49
<b>Gyro Tie in=3853 MD</b>										
3,853.0	0.34	315.42	3,852.7	2,976.7	-5.4	-4.4	-5.0	0.14	0.14	6.66
3,887.0	0.50	319.40	3,886.7	3,010.7	-5.3	-4.5	-4.8	0.48	0.47	11.71
3,919.0	0.40	328.40	3,918.7	3,042.7	-5.1	-4.7	-4.6	0.38	-0.31	28.13
3,951.0	0.50	312.30	3,950.7	3,074.7	-4.9	-4.8	-4.4	0.50	0.31	-50.31
3,982.0	0.60	308.50	3,981.7	3,105.7	-4.7	-5.1	-4.2	0.34	0.32	-12.26
4,014.0	1.50	354.20	4,013.7	3,137.7	-4.2	-5.2	-3.6	3.63	2.81	142.81
4,046.0	4.20	6.90	4,045.6	3,169.6	-2.6	-5.1	-2.1	8.61	8.44	39.69
4,077.0	6.30	11.60	4,076.5	3,200.5	0.2	-4.7	0.7	6.91	6.77	15.16
4,109.0	6.20	8.50	4,108.3	3,232.3	3.7	-4.1	4.0	1.10	-0.31	-9.69
4,141.0	6.20	9.40	4,140.1	3,264.1	7.1	-3.5	7.4	0.30	0.00	2.81
4,172.0	6.20	11.90	4,170.9	3,294.9	10.4	-2.9	10.6	0.87	0.00	8.06



# Phoenix Technologies

## Survey Report

<b>Database:</b> <b>Company:</b> <b>Project:</b> <b>Site:</b> <b>Well:</b> <b>Wellbore:</b> <b>Design:</b>	<b>Local Co-ordinate Reference:</b> <b>TVD Reference:</b> <b>MD Reference:</b> <b>North Reference:</b> <b>Survey Calculation Method:</b>	
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**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)
4,204.0	6.50	13.90	4,202.8	3,326.8	13.8	-2.1	13.9	1.16	0.94	6.25
4,235.0	7.00	19.60	4,233.5	3,357.5	17.3	-1.1	17.3	2.69	1.61	18.39
4,267.0	7.60	23.10	4,265.3	3,389.3	21.1	0.4	20.9	2.33	1.88	10.94
4,298.0	7.60	21.50	4,296.0	3,420.0	24.9	2.0	24.6	0.68	0.00	-5.16
4,330.0	7.20	18.20	4,327.7	3,451.7	28.7	3.4	28.3	1.82	-1.25	-10.31
4,361.0	6.90	13.80	4,358.5	3,482.5	32.4	4.4	31.8	1.89	-0.97	-14.19
4,393.0	6.40	13.10	4,390.3	3,514.3	36.0	5.3	35.3	1.58	-1.56	-2.19
4,425.0	5.40	16.30	4,422.1	3,546.1	39.2	6.1	38.4	3.29	-3.13	10.00
4,456.0	4.60	19.00	4,453.0	3,577.0	41.8	6.9	40.9	2.69	-2.58	8.71
4,487.0	4.30	19.00	4,483.9	3,607.9	44.0	7.7	43.1	0.97	-0.97	0.00
4,519.0	4.20	19.70	4,515.8	3,639.8	46.3	8.5	45.2	0.35	-0.31	2.19
4,550.0	3.80	18.90	4,546.7	3,670.7	48.3	9.2	47.2	1.30	-1.29	-2.58
4,582.0	3.20	16.70	4,578.7	3,702.7	50.2	9.8	49.0	1.92	-1.88	-6.88
4,614.0	2.20	8.10	4,610.6	3,734.6	51.6	10.2	50.4	3.36	-3.13	-26.88
4,645.0	1.00	10.10	4,641.6	3,765.6	52.5	10.3	51.3	3.87	-3.87	6.45
4,677.0	0.40	3.70	4,673.6	3,797.6	52.9	10.4	51.6	1.89	-1.88	-20.00
4,708.0	1.10	19.30	4,704.6	3,828.6	53.3	10.5	52.0	2.33	2.26	50.32
4,740.0	2.60	63.00	4,736.6	3,860.6	53.9	11.2	52.6	6.12	4.69	136.56
4,771.0	4.10	69.70	4,767.6	3,891.6	54.6	12.9	53.1	4.99	4.84	21.61
4,803.0	6.40	75.70	4,799.4	3,923.4	55.4	15.7	53.7	7.38	7.19	18.75
4,834.0	9.60	77.80	4,830.1	3,954.1	56.4	19.9	54.2	10.36	10.32	6.77
4,866.0	12.00	80.10	4,861.5	3,985.5	57.5	25.8	54.8	7.62	7.50	7.19
4,897.0	15.50	82.40	4,891.7	4,015.7	58.6	33.0	55.2	11.43	11.29	7.42
4,929.0	19.10	85.10	4,922.2	4,046.2	59.6	42.5	55.3	11.52	11.25	8.44
4,961.0	22.60	87.90	4,952.1	4,076.1	60.3	53.9	54.9	11.37	10.94	8.75
4,992.0	25.50	91.90	4,980.4	4,104.4	60.3	66.5	53.7	10.73	9.35	12.90
5,024.0	28.70	93.80	5,008.9	4,132.9	59.6	81.0	51.5	10.36	10.00	5.94
5,055.0	32.10	93.70	5,035.6	4,159.6	58.5	96.7	49.0	10.97	10.97	-0.32
5,087.0	35.90	94.40	5,062.2	4,186.2	57.3	114.5	46.1	11.94	11.88	2.19
5,118.0	39.20	95.70	5,086.7	4,210.7	55.6	133.4	42.6	10.95	10.65	4.19
5,150.0	42.70	95.90	5,110.9	4,234.9	53.5	154.2	38.5	10.95	10.94	0.63
5,181.0	42.40	95.20	5,133.7	4,257.7	51.5	175.1	34.5	1.81	-0.97	-2.26
5,244.0	40.30	94.20	5,181.0	4,305.0	48.0	216.6	27.1	3.49	-3.33	-1.59
5,308.0	39.40	92.30	5,230.2	4,354.2	45.7	257.5	20.9	2.37	-1.41	-2.97
5,371.0	41.00	90.80	5,278.3	4,402.3	44.6	298.2	15.9	2.97	2.54	-2.38
5,434.0	38.90	88.80	5,326.6	4,450.6	44.7	338.6	12.1	3.91	-3.33	-3.17
5,497.0	39.00	88.50	5,375.6	4,499.6	45.7	378.2	9.3	0.34	0.16	-0.48
5,559.0	41.60	90.80	5,422.9	4,546.9	45.9	418.3	5.6	4.83	4.19	3.71
5,623.0	41.80	90.80	5,470.6	4,594.6	45.3	460.9	1.0	0.31	0.31	0.00
5,686.0	42.00	90.90	5,517.5	4,641.5	44.7	502.9	-3.7	0.33	0.32	0.16
5,749.0	40.00	89.80	5,565.1	4,689.1	44.4	544.2	-7.9	3.37	-3.17	-1.75
5,812.0	39.30	89.30	5,613.6	4,737.6	44.7	584.4	-11.4	1.22	-1.11	-0.79

# Phoenix Technologies

## Survey Report

<b>Database:</b> EDM 5000 - Single User Do	<b>Local Co-ordinate Reference:</b> Site Wetzel County 513830
<b>Company:</b> EOT Production - Middlesex	<b>TVD Reference:</b> KB @ 876.0usft
<b>Project:</b> Wetzel County, WV	<b>MD Reference:</b> KB @ 876.0usft
<b>Site:</b> Wetzel County 513830	<b>North Reference:</b> Grid
<b>Well:</b> Well #513830	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Wellbore:</b> Main Wellbore	
<b>Design:</b> 513830 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)
5,876.0	40.80	88.80	5,662.6	4,786.6	45.4	625.6	-14.7	2.40	2.34	-0.78
5,939.0	39.90	87.70	5,710.6	4,834.6	46.7	666.4	-17.3	1.82	-1.43	-1.75
6,002.0	41.00	87.40	5,758.5	4,882.5	48.4	707.2	-19.5	1.77	1.75	-0.48
6,065.0	40.50	86.30	5,806.3	4,930.3	50.7	748.3	-21.2	1.39	-0.79	-1.75
6,128.0	40.90	87.30	5,854.0	4,978.0	53.0	789.3	-22.8	1.21	0.63	1.59
6,191.0	39.40	87.30	5,902.2	5,026.2	54.9	829.9	-24.8	2.38	-2.38	0.00
6,254.0	39.90	89.90	5,950.7	5,074.7	55.9	870.1	-27.7	2.75	0.79	4.13
6,317.0	37.70	88.60	5,999.8	5,123.8	56.4	909.5	-31.0	3.72	-3.49	-2.06
6,380.0	41.40	91.80	6,048.3	5,172.3	56.2	949.6	-35.0	6.70	5.87	5.08
6,443.0	42.20	92.90	6,095.3	5,219.3	54.5	991.6	-40.7	1.72	1.27	1.75
6,506.0	41.10	90.90	6,142.4	5,266.4	53.1	1,033.4	-46.1	2.74	-1.75	-3.17
6,569.0	42.40	90.40	6,189.4	5,313.4	52.6	1,075.4	-50.6	2.13	2.06	-0.79
6,600.0	41.40	89.60	6,212.5	5,336.5	52.6	1,096.1	-52.6	3.66	-3.23	-2.58
6,632.0	41.00	86.40	6,236.5	5,360.5	53.3	1,117.1	-53.9	6.70	-1.25	-10.00
6,664.0	41.50	82.00	6,260.6	5,384.6	55.5	1,138.1	-53.8	9.20	1.56	-13.75
6,695.0	42.20	77.70	6,283.7	5,407.7	59.1	1,158.5	-52.1	9.52	2.26	-13.87
6,727.0	42.70	74.00	6,307.3	5,431.3	64.4	1,179.4	-48.8	7.96	1.56	-11.56
6,758.0	42.50	70.00	6,330.1	5,454.1	70.9	1,199.3	-44.3	8.76	-0.65	-12.90
6,790.0	42.50	65.40	6,353.7	5,477.7	79.1	1,219.3	-38.0	9.71	0.00	-14.38
6,821.0	42.90	60.10	6,376.5	5,500.5	88.7	1,238.0	-30.2	11.66	1.29	-17.10
6,853.0	42.10	54.90	6,400.1	5,524.1	100.3	1,256.2	-20.4	11.26	-2.50	-16.25
6,884.0	41.50	50.50	6,423.2	5,547.2	112.8	1,272.7	-9.6	9.65	-1.94	-14.19
6,916.0	41.70	46.70	6,447.2	5,571.2	126.8	1,288.6	2.9	7.91	0.63	-11.88
6,947.0	42.70	42.90	6,470.1	5,594.1	141.6	1,303.2	16.2	8.84	3.23	-12.26
6,979.0	43.80	39.60	6,493.5	5,617.5	158.1	1,317.7	31.2	7.86	3.44	-10.31
7,011.0	45.70	36.20	6,516.2	5,640.2	175.9	1,331.5	47.6	9.55	5.94	-10.63
7,042.0	46.80	33.30	6,537.6	5,661.6	194.3	1,344.3	64.7	7.63	3.55	-9.35
7,074.0	49.30	28.60	6,559.0	5,683.0	214.7	1,356.5	83.8	13.43	7.81	-14.69
7,106.0	52.00	23.20	6,579.3	5,703.3	236.9	1,367.3	104.9	15.53	8.44	-16.88
7,137.0	54.50	18.20	6,597.9	5,721.9	260.2	1,376.0	127.2	15.23	8.06	-16.13
7,169.0	57.70	14.00	6,615.7	5,739.7	285.7	1,383.4	151.9	14.78	10.00	-13.13
7,200.0	59.90	11.70	6,631.8	5,755.8	311.5	1,389.3	177.1	9.52	7.10	-7.42
7,232.0	61.60	8.80	6,647.4	5,771.4	339.0	1,394.2	204.0	9.53	5.31	-9.06
7,263.0	63.60	6.70	6,661.7	5,785.7	366.3	1,397.9	230.7	8.82	6.45	-6.77
7,295.0	64.80	4.30	6,675.6	5,799.6	394.9	1,400.7	259.0	7.72	3.75	-7.50
7,326.0	66.30	1.60	6,688.4	5,812.4	423.1	1,402.1	286.9	9.29	4.84	-8.71
7,358.0	66.70	358.70	6,701.2	5,825.2	452.5	1,402.2	316.1	8.40	1.25	-9.06
7,389.0	67.80	356.50	6,713.2	5,837.2	481.0	1,401.0	344.7	7.44	3.55	-7.10
7,421.0	69.20	355.10	6,724.9	5,848.9	510.7	1,398.8	374.4	5.98	4.38	-4.38
7,453.0	70.90	353.30	6,735.8	5,859.8	540.6	1,395.8	404.5	7.50	5.31	-5.63
7,484.0	73.70	349.80	6,745.3	5,869.3	569.8	1,391.4	434.0	14.04	9.03	-11.29
7,516.0	76.30	345.80	6,753.6	5,877.6	600.0	1,384.9	464.7	14.55	8.13	-12.50
7,547.0	77.70	343.10	6,760.5	5,884.5	629.1	1,376.8	494.4	9.61	4.52	-8.71



# Phoenix Technologies

## Survey Report

<b>Database:</b>	EDM 5000 1 Single User Db	<b>Local Co-ordinate Reference:</b>	Site Weizel County 513830
<b>Company:</b>	EOI Production - Middlesex	<b>TVD Reference:</b>	KB @ 876.0usft
<b>Project:</b>	Weizel County, WV	<b>MD Reference:</b>	KB @ 878.0usft
<b>Site:</b>	Weizel County 513830	<b>North Reference:</b>	Grid
<b>Well:</b>	Well #513830	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Main Wellbore		
<b>Design:</b>	513830 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)
7,579.0	80.60	341.20	6,766.6	5,890.6	659.0	1,367.2	525.1	10.78	9.06	-5.94
7,611.0	83.70	340.60	6,770.9	5,894.9	689.0	1,356.8	555.9	9.86	9.69	-1.88
7,642.0	88.50	339.90	6,773.0	5,897.0	718.1	1,346.4	585.9	15.65	15.48	-2.26
7,701.0	92.00	339.10	6,772.8	5,896.8	773.3	1,325.7	642.9	6.09	5.93	-1.36
7,764.0	91.40	338.60	6,770.9	5,894.9	832.1	1,303.0	703.5	1.24	-0.95	-0.79
7,828.0	91.10	338.60	6,769.5	5,893.5	891.6	1,279.6	765.0	0.47	-0.47	0.00
7,891.0	90.70	339.80	6,768.5	5,892.5	950.5	1,257.3	825.8	2.01	-0.63	1.90
7,954.0	91.40	339.80	6,767.4	5,891.4	1,009.6	1,235.5	886.7	1.11	1.11	0.00
8,017.0	92.00	338.20	6,765.5	5,889.5	1,068.4	1,212.9	947.4	2.71	0.95	-2.54
8,081.0	90.70	336.00	6,764.0	5,888.0	1,127.4	1,188.1	1,008.5	3.99	-2.03	-3.44
8,144.0	90.30	334.90	6,763.4	5,887.4	1,184.7	1,161.9	1,068.0	1.86	-0.63	-1.75
8,207.0	90.10	334.90	6,763.2	5,887.2	1,241.7	1,135.2	1,127.3	0.32	-0.32	0.00
8,270.0	89.80	334.80	6,763.3	5,887.3	1,298.7	1,108.4	1,186.7	0.50	-0.48	-0.16
8,333.0	89.40	334.20	6,763.7	5,887.7	1,355.6	1,081.3	1,245.9	1.14	-0.63	-0.95
8,396.0	91.50	335.30	6,763.2	5,887.2	1,412.6	1,054.4	1,305.2	3.76	3.33	1.75
8,460.0	90.50	335.20	6,762.1	5,886.1	1,470.7	1,027.6	1,365.6	1.57	-1.56	-0.16
8,523.0	91.10	335.80	6,761.2	5,885.2	1,528.0	1,001.5	1,425.1	1.35	0.95	0.95
8,587.0	91.10	335.80	6,760.0	5,884.0	1,586.4	975.2	1,485.7	0.00	0.00	0.00
8,650.0	92.00	335.80	6,758.3	5,882.3	1,643.8	949.4	1,545.4	1.43	1.43	0.00
8,713.0	93.00	336.10	6,755.5	5,879.5	1,701.3	923.8	1,605.0	1.66	1.59	0.48
8,776.0	92.70	336.10	6,752.4	5,876.4	1,758.8	898.3	1,664.7	0.48	-0.48	0.00
8,839.0	92.30	336.00	6,749.7	5,873.7	1,816.3	872.7	1,724.5	0.65	-0.63	-0.16
8,902.0	91.70	336.30	6,747.5	5,871.5	1,873.9	847.3	1,784.2	1.06	-0.95	0.48
8,965.0	91.40	335.80	6,745.8	5,869.8	1,931.5	821.7	1,843.9	0.93	-0.48	-0.79
9,028.0	90.30	335.60	6,744.8	5,868.8	1,988.9	795.8	1,903.6	1.77	-1.75	-0.32
9,091.0	90.00	335.10	6,744.7	5,868.7	2,046.2	769.5	1,963.1	0.93	-0.48	-0.79
9,155.0	90.80	336.50	6,744.2	5,868.2	2,104.5	743.3	2,023.7	2.52	1.25	2.19
9,218.0	91.20	336.80	6,743.1	5,867.1	2,162.4	718.3	2,083.7	0.79	0.63	0.48
9,281.0	90.60	336.90	6,742.1	5,866.1	2,220.3	693.6	2,143.7	0.97	-0.95	0.16
9,344.0	90.50	336.30	6,741.5	5,865.5	2,278.1	668.5	2,203.6	0.97	-0.16	-0.95
9,408.0	90.30	337.10	6,741.1	5,865.1	2,336.9	643.2	2,264.6	1.29	-0.31	1.25
9,471.0	89.90	337.00	6,741.0	5,865.0	2,394.9	618.7	2,324.7	0.65	-0.63	-0.16
9,534.0	90.90	337.40	6,740.5	5,864.5	2,453.0	594.2	2,384.8	1.71	1.59	0.63
9,598.0	92.50	337.70	6,738.6	5,862.6	2,512.1	569.8	2,446.0	2.54	2.50	0.47
9,661.0	92.00	337.60	6,736.2	5,860.2	2,570.3	545.9	2,506.2	0.81	-0.79	-0.16
9,724.0	91.50	338.00	6,734.2	5,858.2	2,628.6	522.1	2,566.6	1.02	-0.79	0.63
9,788.0	90.90	337.90	6,732.9	5,856.9	2,687.9	498.1	2,627.9	0.95	-0.94	-0.16
9,850.0	90.60	338.20	6,732.1	5,856.1	2,745.4	474.9	2,687.3	0.68	-0.48	0.48
9,914.0	90.50	339.10	6,731.5	5,855.5	2,803.0	451.6	2,748.9	1.41	-0.16	1.41
9,977.0	90.20	338.60	6,731.1	5,855.1	2,863.8	428.9	2,809.6	0.93	-0.48	-0.79
10,040.0	89.40	338.50	6,731.3	5,855.3	2,922.4	405.8	2,870.1	1.28	-1.27	-0.16
10,104.0	89.20	339.00	6,732.1	5,856.1	2,982.1	382.6	2,931.7	0.84	-0.31	0.78

## Phoenix Technologies Survey Report

<b>Database:</b>	EPT 500 1 Single Well Dr	<b>Local Co-ordinate Reference:</b>	Site West County 513830
<b>Company:</b>	EPT Production-Midwest	<b>TVD Reference:</b>	KB @ 876.0usft
<b>Project:</b>	West County, WV	<b>MD Reference:</b>	KB @ 876.0usft
<b>Site:</b>	West County 513830	<b>North Reference:</b>	KB
<b>Well:</b>	Well 513830	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	West Wellbore		
<b>Design:</b>	5000 Ac 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)
10,167.0	88.80	338.50	6,733.2	5,857.2	3,040.8	359.8	2,992.3	1.02	-0.63	-0.79
10,230.0	88.40	338.70	6,734.7	5,858.7	3,099.4	336.8	3,052.9	0.71	-0.63	0.32
10,293.0	89.00	338.00	6,736.1	5,860.1	3,157.9	313.6	3,113.4	1.46	0.95	-1.11
10,356.0	90.90	336.90	6,736.2	5,860.2	3,216.1	289.4	3,173.6	3.48	3.02	-1.75
10,420.0	90.00	334.80	6,735.7	5,859.7	3,274.5	263.2	3,234.3	3.57	-1.41	-3.28
10,483.0	91.10	334.40	6,735.1	5,859.1	3,331.4	236.2	3,293.5	1.86	1.75	-0.63
10,546.0	92.50	334.30	6,733.1	5,857.1	3,388.2	209.0	3,352.6	2.23	2.22	-0.16
10,609.0	91.70	334.50	6,730.8	5,854.8	3,445.0	181.8	3,411.7	1.31	-1.27	0.32
10,672.0	91.60	334.60	6,729.0	5,853.0	3,501.8	154.7	3,470.9	0.22	-0.16	0.16
10,735.0	90.90	335.80	6,727.6	5,851.6	3,559.0	128.3	3,530.4	2.20	-1.11	1.90
10,799.0	90.40	337.70	6,726.9	5,850.9	3,617.8	103.0	3,591.3	3.07	-0.78	2.97
10,862.0	90.10	337.60	6,726.6	5,850.6	3,676.1	79.1	3,651.6	0.50	-0.48	-0.16
10,925.0	89.70	337.50	6,726.7	5,850.7	3,734.3	55.0	3,711.9	0.65	-0.63	-0.16
10,988.0	89.00	337.10	6,727.4	5,851.4	3,792.4	30.7	3,772.0	1.28	-1.11	-0.63
11,051.0	90.00	337.30	6,728.0	5,852.0	3,850.5	6.3	3,832.2	1.62	1.59	0.32
11,114.0	91.00	337.90	6,727.4	5,851.4	3,908.7	-17.7	3,892.5	1.85	1.59	0.95
11,177.0	90.50	337.10	6,726.6	5,850.6	3,966.9	-41.8	3,952.7	1.50	-0.79	-1.27
11,240.0	89.90	336.20	6,726.4	5,850.4	4,024.8	-66.8	4,012.7	1.72	-0.95	-1.43
11,304.0	89.40	337.30	6,726.8	5,850.8	4,083.6	-92.1	4,073.6	1.89	-0.78	1.72
11,367.0	89.10	337.40	6,727.6	5,851.6	4,141.7	-116.3	4,133.8	0.50	-0.48	0.16
11,430.0	88.50	337.40	6,728.9	5,852.9	4,199.8	-140.5	4,194.0	0.95	-0.95	0.00
11,493.0	89.90	338.90	6,729.8	5,853.8	4,258.3	-164.0	4,254.4	3.26	2.22	2.38
11,556.0	91.70	339.90	6,728.9	5,852.9	4,317.3	-186.1	4,315.3	3.27	2.86	1.59
11,619.0	91.20	339.90	6,727.3	5,851.3	4,376.4	-207.8	4,376.2	0.79	-0.79	0.00
11,682.0	90.70	339.90	6,726.3	5,850.3	4,435.6	-229.4	4,437.2	0.79	-0.79	0.00
11,745.0	90.10	340.50	6,725.9	5,849.9	4,494.8	-250.8	4,498.2	1.35	-0.95	0.95
11,809.0	89.50	339.90	6,726.1	5,850.1	4,555.1	-272.4	4,560.2	1.33	-0.94	-0.94
11,872.0	89.10	340.20	6,726.8	5,850.8	4,614.3	-293.9	4,621.2	0.79	-0.63	0.48
11,935.0	89.90	339.80	6,727.4	5,851.4	4,673.5	-315.5	4,682.2	1.42	1.27	-0.63
11,998.0	90.20	339.70	6,727.3	5,851.3	4,732.6	-337.3	4,743.1	0.50	0.48	-0.15
12,061.0	90.00	341.20	6,727.2	5,851.2	4,791.9	-358.4	4,804.2	2.40	-0.32	2.38
12,125.0	89.60	341.00	6,727.5	5,851.5	4,852.5	-379.1	4,866.5	0.70	-0.63	-0.31
12,188.0	88.90	341.10	6,728.3	5,852.3	4,912.1	-399.6	4,927.8	1.12	-1.11	0.16
12,251.0	88.50	341.30	6,729.7	5,853.7	4,971.7	-419.9	4,989.1	0.71	-0.63	0.32
Final Survey= 12258' MD/67.10' TVD										
12,258.0	88.60	341.40	6,729.9	5,853.9	4,978.3	-422.1	4,995.9	2.02	1.43	1.43
Projection to TD=12319' MD/67.31' TVD										
12,319.0	88.60	341.40	6,731.4	5,855.4	5,036.1	-441.5	5,055.3	0.00	0.00	0.00



# Phoenix Technologies

## Survey Report

<b>Database:</b> EDM/5000.1 Single User Db <b>Company:</b> EOT Production- Middlesex <b>Project:</b> Wetzel County, WV <b>Site:</b> Wetzel County 613830 <b>Well:</b> Well #513830 <b>Wellbore:</b> Main Wellbore <b>Design:</b> 513830 As Drilled Surveys	<b>Local Co-ordinate Reference:</b> TVD Reference: MD Reference: North Reference: Survey Calculation Method:	Site Wetzel County, 513830 KB @ 876.0usft KB @ 876.0usft Grid Minimum Curvature
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**Design Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,853.0	3,852.7	-5.4	-4.4	Gyro Tie In=3853' MD
12,258.0	6,729.9	4,978.3	-422.1	Final Survey= 12258' MD/6730' TVD
12,319.0	6,731.4	5,036.1	-441.5	Projection to TD=12319' MD/6731' TVD

Checked By: _____	Approved By: _____	Date: _____
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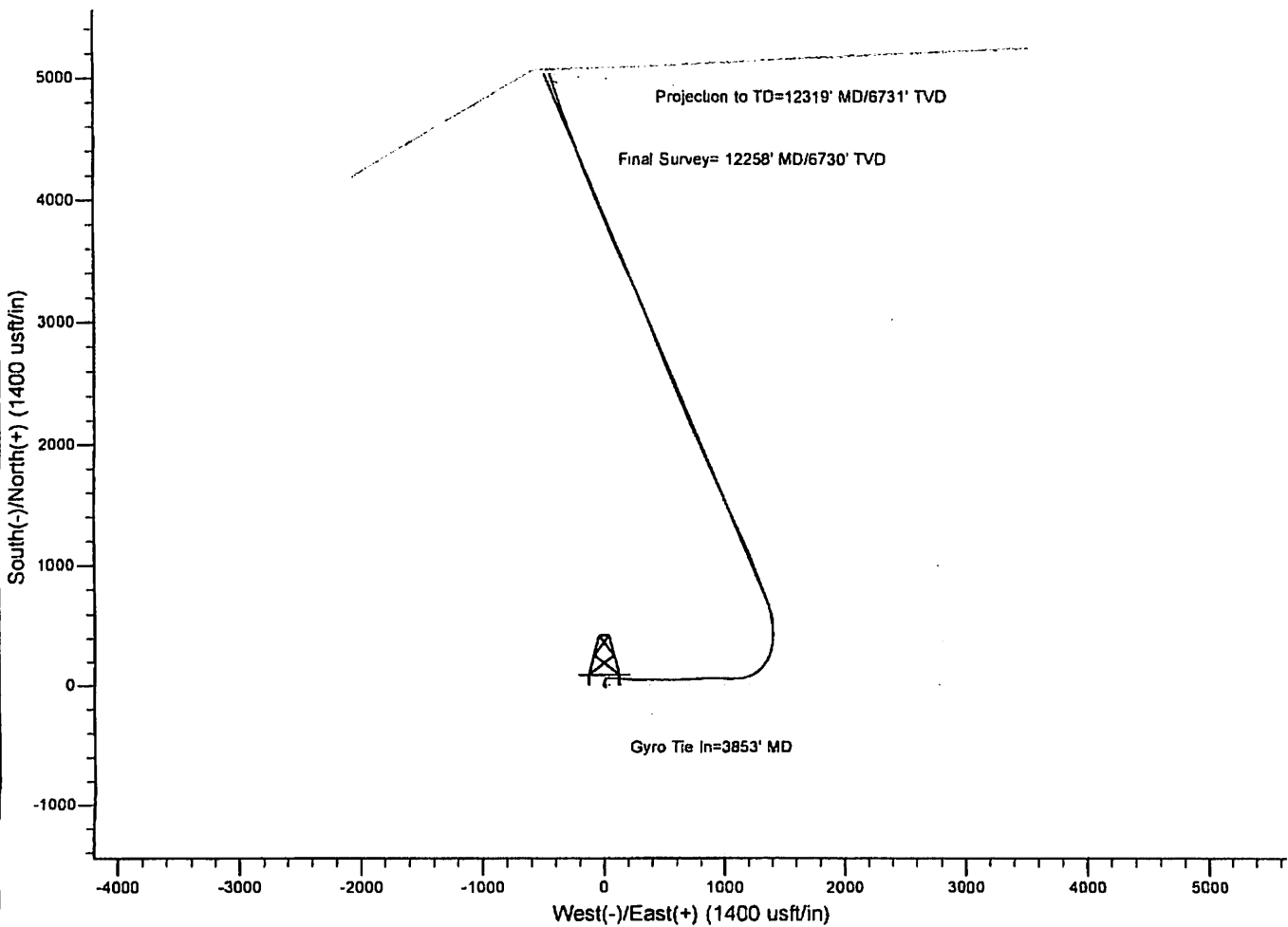
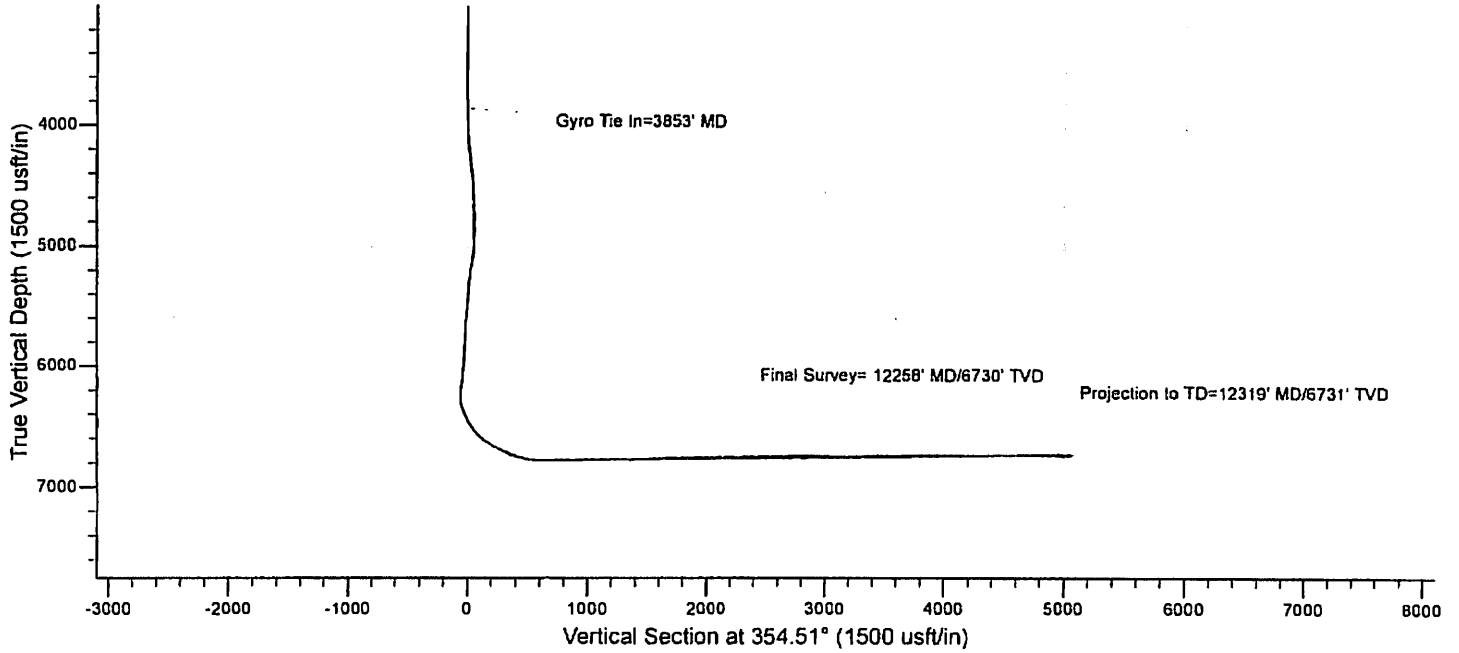




**PHOENIX**  
TECHNOLOGY SERVICES USA INC.

# EQT Production- Middlesex

Project: Wetzel County, WV  
Site: Wetzel County 513830  
Well: Well #513830  
Wellbore: Main Wellbore  
Design: 513830 As Drilled Surveys



04/01/2016