

17-06461

EQT Production - Marcellus

Doddridge County, WV Grid

Doddridge County 513147

Well #513147

513147 ST01

Design: 513147 ST01 As Drilled Surveys

Standard Survey Report

19 January, 2015

Received
Office of Oil & Gas
JUL 24 2015

10/23/2015

Phoenix Technologies

Survey Report

17-06461

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513147
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 991.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 991.0usft
Site:	Doddridge County 513147	North Reference:	Grid
Well:	Well #513147	Survey Calculation Method:	Minimum Curvature
Wellbore:	513147 ST01		
Design:	513147 ST01 As Drilled Surveys		

Project Doddridge County, WV Grid

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

Site Doddridge County 513147

Site Position:		Northing:	270,587.59 usft	Latitude:	39.24
From:	Map	Easting:	1,641,288.20 usft	Longitude:	-80.77
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.81 °

Well Well #513147

Well Position	+N/-S	0.0 usft	Northing:	270,587.59 usft	Latitude:	39° 14' 9.531 N
	+E/-W	0.0 usft	Easting:	1,641,288.20 usft	Longitude:	80° 45' 59.123 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	968.0 usft

Wellbore 513147 ST01

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	12/22/2014	-8.50	66.72	52,203

Design 513147 ST01 As Drilled Surveys

Audit Notes:

Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
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Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	346.43

Survey Program Date 1/19/2015

From (')	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	5,130.0	513147 ST01 Gyrodata Gyro (513147 ST01)	GYD_DP_MS	Gyrodata gyro-compassing and drop
0.00	16,019.0	513147 ST01 PHX MWD (513147 ST01)	MWD+IGRF	MWD+IGRF v3:standard declination

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)
0.0	0.00	0.00	0.0	-991.0	0.0	0.0	0.0	0.00	0.00	0.00
110.0	0.95	203.02	110.0	-881.0	-0.8	-0.4	-0.7	0.86	0.86	0.00
210.0	0.52	209.38	210.0	-781.0	-2.0	-0.9	-1.7	0.43	0.43	6.36
310.0	0.23	228.78	310.0	-681.0	-2.5	-1.3	-2.2	0.31	-0.29	0.40
410.0	0.17	258.37	410.0	-581.0	-2.7	-1.6	-2.2	0.12	-0.06	29.59
510.0	0.14	237.28	510.0	-481.0	-2.8	-1.8	-2.3	0.06	-0.03	-21.09
610.0	0.06	311.28	610.0	-381.0	-2.8	-2.0	-2.3	0.14	-0.08	74.00
710.0	0.13	311.68	710.0	-281.0	-2.7	-2.1	-2.1	0.07	0.07	0.40

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Project:	Doddridge County, WV Gnd	MD Reference:	KB @ 991.0usft
Site:	Doddridge County 513147	North Reference:	Gnd
Well:	Well #513147	Survey Calculation Method:	Minimum Curvature
Wellbore:	513147 ST01		
Design:	513147 ST01 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	0.11	244.34	810.0	-181.0	-2.7	-2.3	-2.1	0.13	-0.02	-67.34	
910.0	0.14	228.73	910.0	-81.0	-2.8	-2.4	-2.1	0.05	0.03	-15.61	
1,010.0	0.31	244.70	1,010.0	19.0	-3.0	-2.8	-2.3	0.18	0.17	15.97	
1,110.0	0.62	262.05	1,110.0	119.0	-3.2	-3.6	-2.3	0.34	0.31	17.35	
1,210.0	0.75	262.21	1,210.0	219.0	-3.3	-4.7	-2.1	0.13	0.13	0.16	
1,310.0	0.88	267.28	1,310.0	319.0	-3.5	-6.2	-1.9	0.15	0.13	5.07	
1,410.0	0.89	267.82	1,409.9	418.9	-3.5	-7.7	-1.6	0.01	0.01	0.54	
1,510.0	0.84	274.44	1,509.9	518.9	-3.5	-9.2	-1.3	0.11	-0.05	6.62	
1,610.0	0.66	281.57	1,609.9	618.9	-3.3	-10.5	-0.8	0.20	-0.18	7.13	
1,710.0	0.65	286.68	1,709.9	718.9	-3.1	-11.6	-0.2	0.06	-0.01	5.11	
1,810.0	0.47	286.21	1,809.9	818.9	-2.8	-12.5	0.2	0.18	-0.18	-0.47	
1,910.0	0.36	287.46	1,909.9	918.9	-2.6	-13.2	0.6	0.11	-0.11	1.25	
2,010.0	0.29	280.61	2,009.9	1,018.9	-2.4	-13.8	0.9	0.08	-0.07	-6.85	
2,110.0	0.22	265.10	2,109.9	1,118.9	-2.4	-14.2	1.0	0.10	-0.07	-15.51	
2,210.0	0.11	281.48	2,209.9	1,218.9	-2.4	-14.5	1.1	0.12	-0.11	16.38	
2,310.0	0.08	287.37	2,309.9	1,318.9	-2.4	-14.7	1.2	0.03	-0.03	5.89	
2,410.0	0.11	284.80	2,409.9	1,418.9	-2.3	-14.8	1.2	0.03	0.03	-2.57	
2,510.0	0.11	263.19	2,509.9	1,518.9	-2.3	-15.0	1.3	0.04	0.00	-21.61	
2,610.0	0.12	293.76	2,609.9	1,618.9	-2.3	-15.2	1.4	0.06	0.01	30.57	
2,710.0	0.11	295.76	2,709.9	1,718.9	-2.2	-15.4	1.5	0.01	-0.01	2.00	
2,810.0	0.10	284.83	2,809.9	1,818.9	-2.1	-15.6	1.6	0.02	-0.01	-10.93	
2,910.0	0.09	274.39	2,909.9	1,918.9	-2.1	-15.7	1.7	0.02	-0.01	-10.44	
3,010.0	0.13	244.40	3,009.9	2,018.9	-2.1	-15.9	1.7	0.07	0.04	-29.99	
3,110.0	0.14	194.74	3,109.9	2,118.9	-2.3	-16.0	1.5	0.11	0.01	-49.66	
3,210.0	0.06	194.39	3,209.9	2,218.9	-2.5	-16.1	1.4	0.08	-0.08	-0.35	
3,310.0	0.06	201.57	3,309.9	2,318.9	-2.6	-16.1	1.3	0.01	0.00	7.18	
3,410.0	0.03	310.67	3,409.9	2,418.9	-2.6	-16.2	1.3	0.08	-0.03	109.10	
3,510.0	0.11	236.83	3,509.9	2,518.9	-2.6	-16.3	1.3	0.11	0.08	-73.84	
3,610.0	0.26	238.01	3,609.9	2,618.9	-2.8	-16.5	1.1	0.15	0.15	1.18	
3,710.0	0.45	242.83	3,709.9	2,718.9	-3.1	-17.1	1.0	0.19	0.19	4.82	
3,810.0	0.50	264.44	3,809.9	2,818.9	-3.3	-17.9	1.0	0.18	0.05	21.61	
3,910.0	0.68	274.57	3,909.9	2,918.9	-3.3	-18.9	1.2	0.21	0.18	10.13	
4,010.0	0.80	283.23	4,009.9	3,018.9	-3.1	-20.2	1.7	0.16	0.12		
4,110.0	0.96	290.34	4,109.9	3,118.9	-2.7	-21.6	2.5	0.19	0.16		
4,210.0	1.20	295.93	4,209.9	3,218.9	-1.9	-23.3	3.6	0.26	0.24		
4,310.0	1.45	296.42	4,309.8	3,318.8	-0.9	-25.4	5.1	0.25	0.25		
4,410.0	1.60	305.18	4,409.8	3,418.8	0.5	-27.7	7.0	0.28	0.15		
4,510.0	1.66	303.44	4,509.8	3,518.8	2.1	-30.0	9.1	0.08	0.06	-1.74	
4,610.0	0.92	321.58	4,609.7	3,618.7	3.5	-31.7	10.9	0.84	-0.74	18.14	
4,710.0	3.28	90.96	4,709.7	3,718.7	4.1	-29.4	10.9	3.93	2.36	129.38	
4,810.0	7.51	91.59	4,809.2	3,818.2	3.9	-20.0	8.4	4.23	4.23	0.63	
4,910.0	8.97	84.98	4,908.2	3,917.2	4.4	-5.7	5.6	1.74	1.46	-6.61	

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Project:	Doddridge County, WV Grid	MD Reference:	KB @ 991.0usft
Site:	Doddridge County 513147	North Reference:	Grid
Well:	Well #513147	Survey Calculation Method:	Minimum Curvature
Wellbore:	513147 ST01		
Design:	513147 ST01 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)	
5,010.0	3.64	102.09	5,007.6	4,016.6	4.4	5.2	3.0	5.59	-5.33	17.11	
5,110.0	1.71	126.59	5,107.4	4,116.4	2.8	9.5	0.5	2.20	-1.93	24.50	
Gyro Tie In=5130' MD											
5,130.0	1.65	126.42	5,127.4	4,136.4	2.5	10.0	0.1	0.30	-0.30	-0.85	
5,192.0	1.50	130.20	5,189.4	4,198.4	1.4	11.3	-1.3	0.29	-0.24	6.10	
5,223.0	1.70	127.20	5,220.4	4,229.4	0.9	12.0	-2.0	0.70	0.65	-9.68	
5,255.0	1.90	131.00	5,252.4	4,261.4	0.2	12.8	-2.8	0.73	0.63	11.88	
5,286.0	2.60	114.80	5,283.4	4,292.4	-0.4	13.8	-3.6	3.03	2.26	-52.26	
5,318.0	4.40	106.40	5,315.3	4,324.3	-1.0	15.6	-4.7	5.83	5.63	-26.25	
5,349.0	6.20	97.40	5,346.2	4,355.2	-1.6	18.4	-5.9	6.38	5.81	-29.03	
5,381.0	8.20	92.20	5,377.9	4,386.9	-1.9	22.4	-7.1	6.57	6.25	-16.25	
5,413.0	11.40	88.40	5,409.4	4,418.4	-1.9	27.9	-8.4	10.20	10.00	-11.88	
5,444.0	14.50	89.40	5,439.6	4,448.6	-1.8	34.8	-9.9	10.03	10.00	3.23	
5,476.0	17.30	91.70	5,470.4	4,479.4	-1.9	43.6	-12.0	8.97	8.75	7.19	
5,508.0	20.60	95.10	5,500.7	4,509.7	-2.5	53.9	-15.1	10.87	10.31	10.63	
5,539.0	22.90	98.20	5,529.5	4,538.5	-3.9	65.3	-19.1	8.29	7.42	10.00	
5,571.0	26.10	97.50	5,558.6	4,567.6	-5.7	78.5	-23.9	10.04	10.00	-2.19	
5,602.0	29.80	96.60	5,586.0	4,595.0	-7.5	92.9	-29.0	12.01	11.94	-2.90	
5,634.0	33.30	94.20	5,613.2	4,622.2	-9.0	109.6	-34.5	11.62	10.94	-7.50	
5,665.0	36.60	93.30	5,638.6	4,647.6	-10.2	127.3	-39.7	10.77	10.65	-2.90	
5,697.0	39.80	94.60	5,663.8	4,672.8	-11.5	147.0	-45.7	10.31	10.00	4.06	
5,728.0	43.00	95.00	5,687.0	4,696.0	-13.3	167.4	-52.2	10.36	10.32	1.29	
5,760.0	46.10	94.40	5,709.8	4,718.8	-15.1	189.8	-59.2	9.78	9.69	-1.88	
5,792.0	50.70	92.20	5,731.1	4,740.1	-16.4	213.7	-66.1	15.27	14.38	-6.88	
5,823.0	53.80	92.70	5,750.1	4,759.1	-17.5	238.2	-72.9	10.08	10.00	1.61	
5,855.0	57.40	92.90	5,768.1	4,777.1	-18.8	264.6	-80.3	11.26	11.25	0.63	
5,886.0	61.90	92.60	5,783.8	4,792.8	-20.1	291.3	-87.8	14.54	14.52	-0.97	
5,918.0	65.40	93.00	5,798.0	4,807.0	-21.5	319.9	-95.9	10.99	10.94	1.25	
5,949.0	67.50	92.90	5,810.4	4,819.4	-22.9	348.3	-104.0	6.78	6.77	-0.32	
5,981.0	71.40	92.40	5,821.6	4,830.6	-24.3	378.2	-112.4	12.27	12.19	-1.56	
6,044.0	73.10	92.00	5,840.8	4,849.8	-26.6	438.2	-128.7	2.77	2.70	-0.63	
6,139.0	73.30	94.50	5,868.3	4,877.3	-31.8	529.0	-155.0	2.53	0.21	2.63	
6,234.0	74.50	94.30	5,894.6	4,903.6	-38.8	620.0	-183.1	1.28	1.26	-0.21	
6,329.0	71.70	95.10	5,922.2	4,931.2	-46.2	710.5	-211.6	3.06	-2.95	6.88	
6,423.0	69.50	93.40	5,953.5	4,962.5	-52.8	798.9	-238.8	2.90	-2.34	0.11	
6,518.0	68.40	93.50	5,987.6	4,996.6	-58.1	887.4	-264.7	1.16	-1.16	0.11	
6,612.0	69.20	92.90	6,021.6	5,030.6	-63.0	974.9	-290.0	1.04	0.85	-0.64	
6,707.0	68.30	93.10	6,056.0	5,065.0	-67.7	1,063.4	-315.2	0.97	-0.95	0.21	
6,738.0	68.70	93.00	6,067.4	5,076.4	-69.2	1,092.2	-323.5	1.32	1.29	-0.32	
6,770.0	68.90	92.90	6,078.9	5,087.9	-70.7	1,122.0	-332.0	0.69	0.63	-0.31	
6,801.0	68.80	90.80	6,090.1	5,099.1	-71.7	1,150.9	-339.7	6.33	-0.32	-6.77	
6,833.0	68.60	86.50	6,101.8	5,110.8	-71.0	1,180.7	-346.0	12.53	-0.63	-13.44	
6,864.0	68.70	82.70	6,113.0	5,122.0	-68.2	1,209.4	-350.1	11.42	0.32	-12.26	

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6,896.0	69.10	79.50	6,124.6	5,133.6	-63.6	1,238.9	-352.5	9.41	1.25	-10.00	
6,928.0	68.90	75.70	6,136.0	5,145.0	-57.2	1,268.0	-353.1	11.10	-0.63	-11.88	
6,960.0	68.50	71.80	6,147.7	5,156.7	-48.9	1,296.7	-351.7	11.42	-1.25	-12.19	
6,991.0	67.90	67.90	6,159.2	5,168.2	-39.0	1,323.7	-348.4	11.84	-1.94	-12.58	
7,023.0	67.50	64.20	6,171.3	5,180.3	-26.9	1,350.7	-343.1	10.77	-1.25	-11.56	
7,055.0	68.50	60.90	6,183.3	5,192.3	-13.3	1,377.1	-336.0	10.06	3.13	-10.31	
7,086.0	69.10	57.40	6,194.5	5,203.5	1.5	1,401.9	-327.4	10.70	1.94	-11.29	
7,118.0	68.60	54.30	6,206.1	5,215.1	18.3	1,426.6	-316.9	9.17	-1.56	-9.69	
7,150.0	67.40	51.40	6,218.1	5,227.1	36.2	1,450.2	-305.0	9.20	-3.75	-9.06	
7,181.0	68.10	48.10	6,229.8	5,238.8	54.7	1,472.1	-292.2	10.11	2.26	-10.65	
7,213.0	68.70	45.90	6,241.6	5,250.6	75.0	1,493.9	-277.5	6.66	1.88	-6.88	
7,245.0	68.80	43.40	6,253.2	5,262.2	96.3	1,514.8	-261.8	7.29	0.31	-7.81	
7,276.0	68.70	40.20	6,264.4	5,273.4	117.8	1,534.1	-245.4	9.63	-0.32	-10.32	
7,308.0	69.40	36.30	6,275.9	5,284.9	141.3	1,552.6	-226.9	11.59	2.19	-12.19	
7,340.0	71.00	32.00	6,286.7	5,295.7	166.2	1,569.5	-206.7	13.60	5.00	-13.44	
7,371.0	72.30	29.10	6,296.5	5,305.5	191.5	1,584.4	-185.6	9.82	4.19	-9.35	
7,403.0	73.80	25.20	6,305.8	5,314.8	218.7	1,598.4	-162.4	12.56	4.69	-12.19	
7,435.0	74.10	21.30	6,314.7	5,323.7	247.0	1,610.5	-137.8	11.75	0.94	-12.19	
613149 LP 1093' VS OA											
7,452.7	74.15	19.47	6,319.5	5,328.5	263.0	1,616.4	-123.6	9.94	0.29	-10.32	
7,466.0	74.20	18.10	6,323.1	5,332.1	275.1	1,620.6	-112.8	9.94	0.37	-10.32	
7,498.0	74.80	14.60	6,331.7	5,340.7	304.6	1,629.2	-86.1	10.71	1.88	-10.94	
613149 Plat LP 2											
7,500.3	74.84	14.34	6,332.3	5,341.3	306.8	1,629.8	-84.1	11.08	1.86	-11.32	
7,529.0	75.40	11.10	6,339.7	5,348.7	333.8	1,635.9	-59.3	11.08	1.94	-11.29	
7,561.0	75.70	8.40	6,347.6	5,356.6	364.4	1,641.1	-30.8	8.22	0.94	-8.44	
7,593.0	75.80	4.80	6,355.5	5,364.5	395.2	1,644.7	-1.7	10.91	0.31	-11.25	
7,624.0	75.80	2.30	6,363.1	5,372.1	425.2	1,646.6	27.0	7.82	0.00	-8.06	
7,656.0	75.90	359.90	6,371.0	5,380.0	456.2	1,647.2	57.0	7.28	0.31	-7.50	
7,688.0	76.10	357.00	6,378.7	5,387.7	487.2	1,646.3	87.4	8.82	0.63	-9.06	
7,719.0	75.90	354.20	6,386.2	5,395.2	517.2	1,644.0	117.1	8.79	-0.65	-9.03	
7,751.0	76.60	352.00	6,393.8	5,402.8	548.1	1,640.3	147.9	7.03	2.19	-6.88	
7,782.0	78.50	349.90	6,400.5	5,409.5	578.0	1,635.5	178.1	9.02	6.13	-6.77	
7,814.0	80.20	346.70	6,406.4	5,415.4	608.8	1,629.1	209.5	11.17	5.31	-10.00	
7,845.0	81.90	344.50	6,411.2	5,420.2	638.4	1,621.5	240.2	8.90	5.48	-7.10	
7,877.0	84.00	342.00	6,415.2	5,424.2	668.8	1,612.4	271.9	10.16	6.56	-9.75	
7,909.0	85.40	340.10	6,418.1	5,427.1	699.0	1,602.0	303.6	7.35	5.98	-9.75	
513147 LP 322' VS OA Plan 2											
7,933.5	86.32	339.18	6,419.9	5,428.9	721.8	1,593.5	327.8	5.30	3.75	-3.75	
513147 LP											
7,940.2	86.57	338.93	6,420.3	5,429.3	728.1	1,591.1	334.4	5.30	3.75	-3.75	
7,941.0	86.60	338.90	6,420.3	5,429.3	728.8	1,590.8	335.3	5.30	3.75	-3.74	
513147 LP 334' VS											

Received
 Office of Oil & Gas
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Phoenix Technologies

Survey Report

17-06461

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513147
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 991.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 991.0usft
Site:	Doddridge County 513147	North Reference:	Grid
Well:	Well #513147	Survey Calculation Method:	Minimum Curvature
Wellbore:	513147 ST01		
Design:	513147 ST01 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)
7,954.3	86.85	338.90	6,421.1	5,430.1	741.3	1,586.0	348.5	1.88	1.88	0.00
513147 LP 322' VS OA										
7,957.6	86.91	338.90	6,421.3	5,430.3	744.4	1,584.9	351.7	1.88	1.88	0.00
7,973.0	87.20	338.90	6,422.1	5,431.1	758.7	1,579.3	367.0	1.88	1.88	0.00
8,036.0	87.40	337.50	6,425.0	5,434.0	817.1	1,556.0	429.2	2.24	0.32	-2.22
8,130.0	88.30	336.90	6,428.6	5,437.6	903.7	1,519.6	521.9	1.15	0.96	-0.64
LP= 8225' MD/6431' TVD										
8,225.0	89.00	336.00	6,430.8	5,439.8	990.7	1,481.6	615.5	1.20	0.74	-0.95
8,320.0	90.80	334.80	6,431.0	5,440.0	1,077.1	1,442.1	708.7	2.28	1.89	-1.26
8,414.0	88.90	334.20	6,431.2	5,440.2	1,162.0	1,401.6	800.7	2.12	-2.02	-0.64
8,509.0	89.40	334.00	6,432.6	5,441.6	1,247.4	1,360.1	893.5	0.57	0.53	-0.21
8,603.0	90.60	333.90	6,432.6	5,441.6	1,331.9	1,318.8	985.3	1.28	1.28	-0.11
8,698.0	90.20	334.10	6,432.0	5,441.0	1,417.2	1,277.2	1,078.0	0.47	-0.42	0.21
8,792.0	92.30	335.30	6,429.9	5,438.9	1,502.2	1,237.0	1,170.0	2.57	2.23	1.28
8,887.0	90.70	334.40	6,427.4	5,436.4	1,588.2	1,196.7	1,263.1	1.93	-1.68	-0.95
8,981.0	91.40	332.80	6,425.7	5,434.7	1,672.3	1,154.9	1,354.7	1.86	0.74	-1.70
9,076.0	89.00	331.10	6,425.4	5,434.4	1,756.2	1,110.2	1,446.7	3.10	-2.53	-1.79
9,170.0	90.90	333.80	6,425.5	5,434.5	1,839.5	1,066.7	1,537.9	3.51	2.02	2.87
9,265.0	92.60	334.60	6,422.6	5,431.6	1,925.0	1,025.4	1,630.7	1.98	1.79	0.84
9,359.0	91.00	332.60	6,419.6	5,428.6	2,009.1	983.7	1,722.3	2.72	-1.70	-2.13
9,454.0	91.60	330.50	6,417.4	5,426.4	2,092.6	938.4	1,814.1	2.30	0.63	-2.21
9,548.0	87.40	329.50	6,418.3	5,427.3	2,174.0	891.4	1,904.2	4.59	-4.47	-1.06
9,642.0	87.40	332.70	6,422.5	5,431.5	2,256.2	846.0	1,994.7	3.40	0.00	3.40
9,736.0	88.30	333.50	6,426.1	5,435.1	2,340.0	803.5	2,086.1	1.28	0.96	0.85
9,831.0	89.90	334.70	6,427.5	5,436.5	2,425.4	762.1	2,178.9	2.11	1.68	1.26
9,925.0	90.70	333.20	6,427.1	5,436.1	2,509.9	720.8	2,270.7	1.81	0.85	-1.60
10,020.0	90.50	334.40	6,426.1	5,435.1	2,595.1	678.8	2,363.4	1.28	-0.21	1.26
10,114.0	89.50	336.50	6,426.1	5,435.1	2,680.6	639.8	2,455.7	2.47	-1.06	2.23
10,209.0	91.70	338.60	6,425.1	5,434.1	2,768.4	603.5	2,549.5	3.20	2.32	2.21
10,303.0	89.20	334.80	6,424.3	5,433.3	2,854.7	566.3	2,642.1	4.84	-2.66	-4.04
10,397.0	88.90	332.80	6,425.9	5,434.9	2,939.0	524.9	2,733.8	2.15	-0.32	-2.13
10,491.0	90.30	333.20	6,426.5	5,435.5	3,022.8	482.2	2,825.3	1.55	1.49	0.43
10,586.0	87.10	330.30	6,428.7	5,437.7	3,106.4	437.2	2,917.1	4.55	-3.37	-3.05
10,680.0	87.90	333.70	6,432.8	5,441.8	3,189.3	393.2	3,008.1	3.71	0.85	3.62
10,774.0	88.80	332.90	6,435.5	5,444.5	3,273.3	350.9	3,099.6	1.28	0.96	-0.85
10,869.0	89.20	330.30	6,437.2	5,446.2	3,356.8	305.8	3,191.4	2.77	0.42	-2.74
10,962.0	87.90	331.40	6,439.5	5,448.5	3,438.0	260.5	3,280.9	1.83	-1.40	1.18
11,057.0	87.00	333.70	6,443.7	5,452.7	3,522.2	216.7	3,373.1	2.60	-0.95	2.42
11,151.0	91.40	336.80	6,445.1	5,454.1	3,607.5	177.4	3,465.2	5.73	4.68	3.30
11,246.0	90.20	336.80	6,443.7	5,452.7	3,694.8	140.0	3,558.9	1.26	-1.26	0.00
11,340.0	90.50	335.80	6,443.2	5,452.2	3,780.9	102.2	3,651.4	1.11	0.32	-1.06
11,435.0	89.00	336.00	6,443.6	5,452.6	3,867.6	63.4	3,744.8	1.59	-1.58	0.21
11,529.0	88.70	333.20	6,445.5	5,454.5	3,952.5	23.1	3,836.8	3.00	-0.32	-2.98

Phoenix Technologies

Survey Report

17-06461

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513147
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 991.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 991.0usft
Site:	Doddridge County 513147	North Reference:	Grid
Well:	Well #513147	Survey Calculation Method:	Minimum Curvature
Wellbore:	513147 ST01		
Design:	513147 ST01 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)
11,623.0	88.80	334.50	6,447.5	5,456.5	4,036.9	-18.3	3,928.5	1.39	0.11	1.38
11,717.0	90.60	332.80	6,448.0	5,457.0	4,121.1	-60.0	4,020.2	2.63	1.91	-1.81
11,811.0	89.90	334.00	6,447.6	5,456.6	4,205.1	-102.1	4,111.7	1.48	-0.74	1.28
11,905.0	90.60	336.20	6,447.2	5,456.2	4,290.4	-141.7	4,203.9	2.46	0.74	2.34
12,000.0	90.40	338.20	6,446.4	5,455.4	4,378.0	-178.5	4,297.7	2.12	-0.21	2.11
12,094.0	89.60	333.70	6,446.4	5,455.4	4,463.8	-216.8	4,390.1	4.86	-0.85	-4.79
12,188.0	87.10	332.50	6,449.1	5,458.1	4,547.6	-259.3	4,481.5	2.95	-2.66	-1.28
12,282.0	88.00	331.80	6,453.1	5,462.1	4,630.6	-303.2	4,572.5	1.21	0.96	-0.74
12,377.0	89.40	332.10	6,455.2	5,464.2	4,714.4	-347.8	4,664.5	1.51	1.47	0.32
12,471.0	91.80	334.30	6,454.2	5,463.2	4,798.3	-390.2	4,755.9	3.46	2.55	2.34
12,565.0	89.80	333.00	6,452.9	5,461.9	4,882.5	-431.9	4,847.6	2.54	-2.13	-1.38
12,660.0	88.70	334.40	6,454.2	5,463.2	4,967.7	-474.0	4,940.2	1.87	-1.16	1.47
12,754.0	87.50	334.40	6,457.3	5,466.3	5,052.4	-514.6	5,032.1	1.28	-1.28	0.00
12,848.0	88.00	333.30	6,461.0	5,470.0	5,136.7	-556.0	5,123.8	1.28	0.53	-1.17
12,942.0	87.90	335.80	6,464.3	5,473.3	5,221.5	-596.4	5,215.7	2.66	-0.11	2.66
13,036.0	88.20	333.10	6,467.5	5,476.5	5,306.3	-636.9	5,307.6	2.89	0.32	-2.87
13,131.0	88.00	336.10	6,470.7	5,479.7	5,392.1	-677.6	5,400.5	3.16	-0.21	3.16
13,225.0	89.30	336.80	6,472.9	5,481.9	5,478.2	-715.2	5,493.1	1.57	1.38	0.74
13,320.0	88.80	338.40	6,474.5	5,483.5	5,566.0	-751.4	5,586.9	1.76	-0.53	1.68
13,414.0	90.40	339.20	6,475.1	5,484.1	5,653.6	-785.3	5,680.1	1.90	1.70	0.85
13,508.0	87.30	335.80	6,477.0	5,486.0	5,740.5	-821.3	5,772.9	4.89	-3.30	-3.62
13,602.0	87.50	335.70	6,481.3	5,490.3	5,826.1	-859.9	5,865.2	0.24	0.21	-0.11
13,696.0	90.40	334.70	6,483.0	5,492.0	5,911.4	-899.3	5,957.4	3.26	3.09	-1.06
13,791.0	91.20	333.90	6,481.7	5,490.7	5,997.0	-940.5	6,050.2	1.19	0.84	-0.84
13,886.0	90.60	333.40	6,480.2	5,489.2	6,082.1	-982.6	6,142.9	0.82	-0.63	-0.53
13,980.0	88.70	332.40	6,480.8	5,489.8	6,165.8	-1,025.5	6,234.3	2.28	-2.02	-1.06
14,075.0	89.20	329.70	6,482.5	5,491.5	6,248.9	-1,071.4	6,325.8	2.89	0.53	-2.84
14,169.0	87.90	331.20	6,484.9	5,493.9	6,330.6	-1,117.8	6,416.2	2.11	-1.38	1.60
14,264.0	90.00	331.30	6,486.6	5,495.6	6,413.9	-1,163.5	6,507.8	2.21	2.21	0.11
14,358.0	88.20	330.50	6,488.1	5,497.1	6,496.0	-1,209.2	6,598.4	2.10	-1.91	-0.85
14,453.0	90.00	330.10	6,489.6	5,498.6	6,578.5	-1,256.2	6,689.6	1.94	1.89	-0.42
14,548.0	89.40	333.10	6,490.1	5,499.1	6,662.1	-1,301.4	6,781.4	3.22	-0.63	3.16
14,642.0	91.10	334.70	6,489.7	5,498.7	6,746.5	-1,342.8	6,873.2	2.48	1.81	1.70
14,737.0	89.10	336.70	6,489.5	5,498.5	6,833.0	-1,381.8	6,966.5	2.98	-2.11	2.11
14,831.0	87.00	336.30	6,492.7	5,501.7	6,919.2	-1,419.3	7,059.1	2.27	-2.23	-0.43
14,926.0	88.40	336.00	6,496.5	5,505.5	7,006.0	-1,457.7	7,152.5	1.51	1.47	-0.32
15,020.0	87.60	337.10	6,499.8	5,508.8	7,092.2	-1,495.1	7,245.0	1.45	-0.85	1.17
Deepest Point of Well= 15114' MD/ 6502' TVD										
15,114.0	89.70	337.40	6,502.0	5,511.0	7,178.8	-1,531.4	7,337.8	2.26	2.23	0.32
15,209.0	92.20	335.60	6,500.5	5,509.5	7,265.9	-1,569.3	7,431.3	3.24	2.63	-1.89
15,303.0	90.30	335.90	6,498.4	5,507.4	7,351.6	-1,607.9	7,523.7	2.05	-2.02	0.32
15,397.0	88.40	335.40	6,499.5	5,508.5	7,437.3	-1,646.6	7,616.0	2.09	-2.02	-0.53
15,492.0	90.40	336.10	6,500.5	5,509.5	7,523.9	-1,685.6	7,709.3	2.23	2.11	0.74

Phoenix Technologies

Survey Report

17-06461

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Doddridge County 513147
Company:	EQT Production - Marcellus	TVD Reference:	KB @ 991.0usft
Project:	Doddridge County, WV Grid	MD Reference:	KB @ 991.0usft
Site:	Doddridge County 513147	North Reference:	Grid
Well:	Well #513147	Survey Calculation Method:	Minimum Curvature
Wellbore:	513147 ST01		
Design:	513147 ST01 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)
15,587.0	89.40	333.80	6,500.6	5,509.6	7,609.9	-1,725.9	7,802.4	2.64	-1.05	-2.42
15,682.0	89.80	331.40	6,501.3	5,510.3	7,694.3	-1,769.6	7,894.7	2.56	0.42	-2.53
15,776.0	89.40	327.80	6,502.0	5,511.0	7,775.3	-1,817.1	7,984.6	3.85	-0.43	-3.83
15,871.0	90.80	326.70	6,501.8	5,510.8	7,855.2	-1,868.5	8,074.3	1.87	1.47	-1.16
Final Survey= 15965' MD/ 6499' TVD										
15,965.0	92.20	326.00	6,499.3	5,508.3	7,933.4	-1,920.6	8,162.6	1.67	1.49	-0.74
513147 Plat TD 2										
16,001.2	92.20	326.00	6,497.9	5,506.9	7,963.5	-1,940.8	8,196.5	0.00	0.00	0.00
Projection to TD= 16019' MD/6497' TVD										
16,019.0	92.20	326.00	6,497.3	5,506.3	7,978.2	-1,950.8	8,213.2	0.00	0.00	0.00

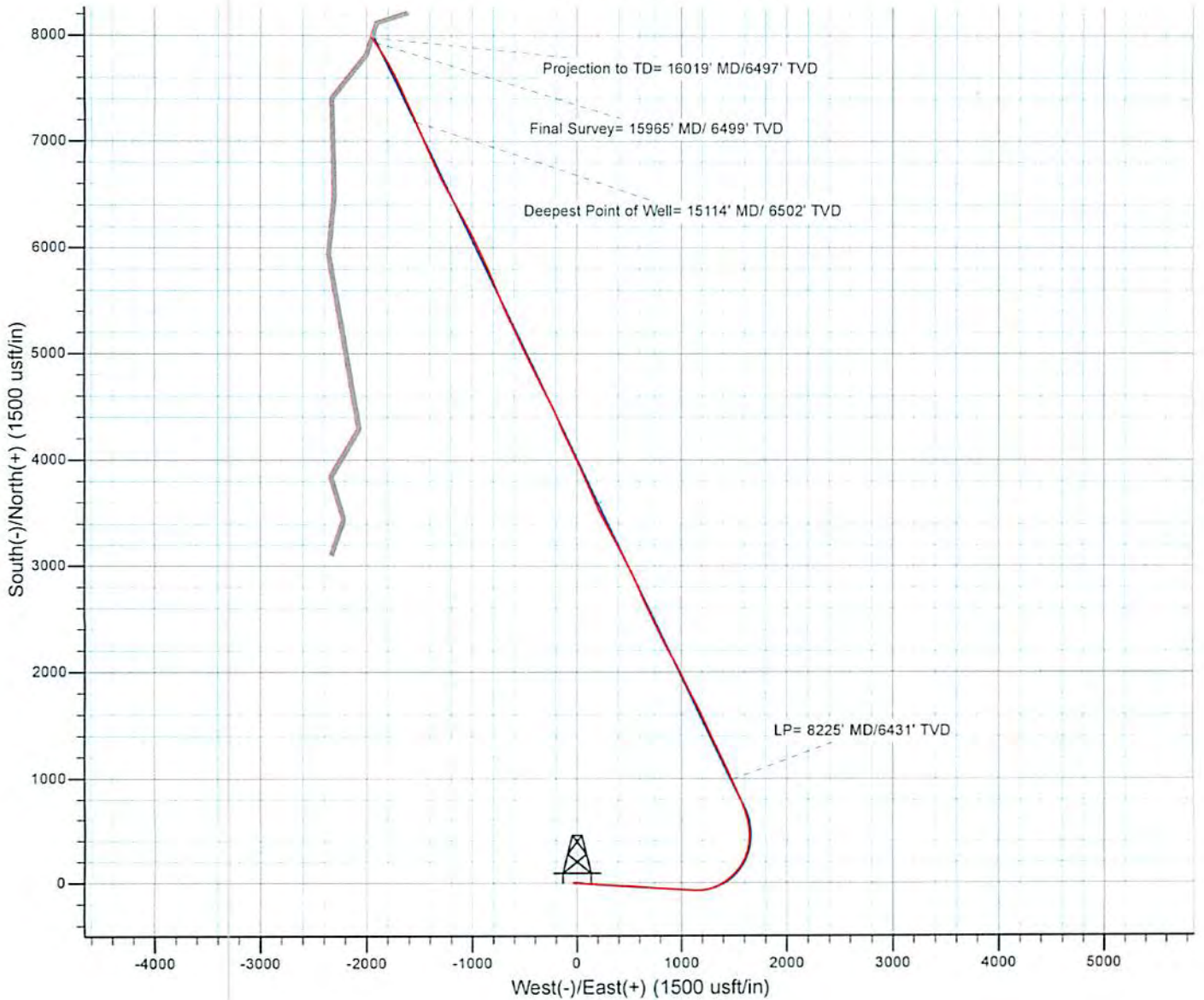
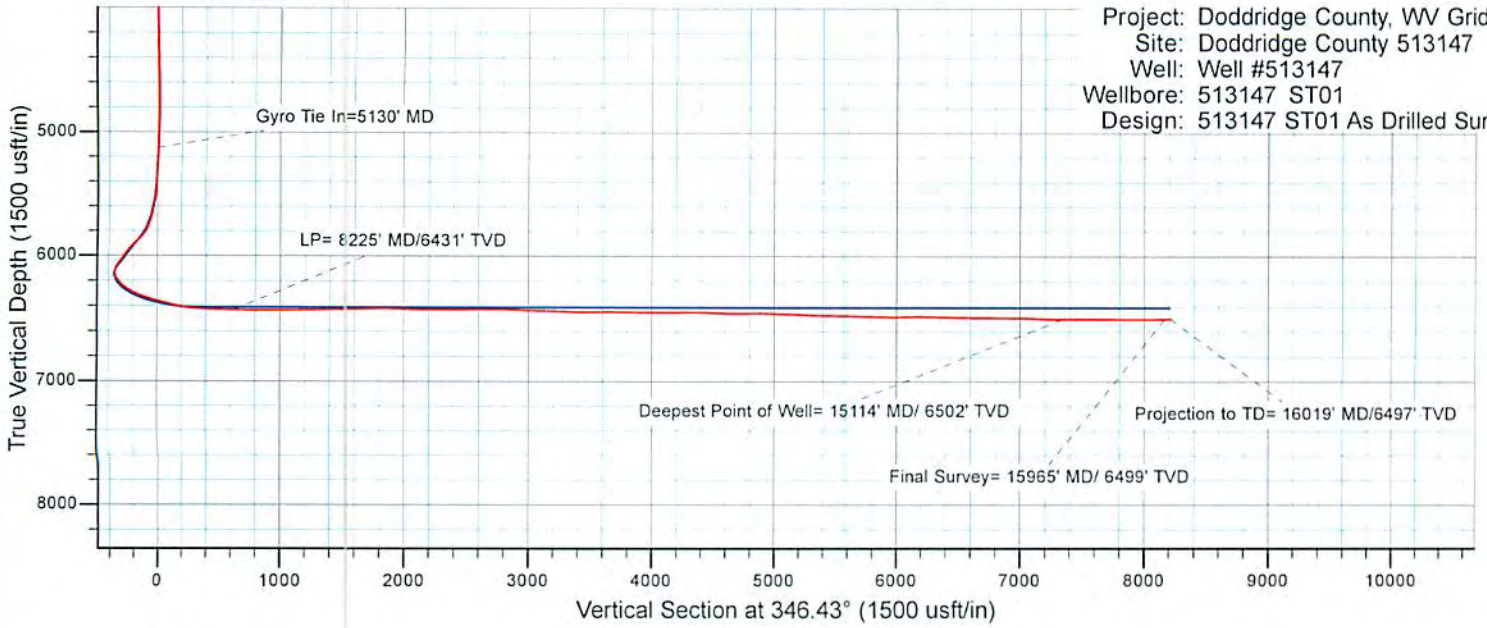
Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,130.0	5,127.4	2.5	10.0	Gyro Tie In=5130' MD
8,225.0	6,430.8	990.7	1,481.6	LP= 8225' MD/6431' TVD
15,114.0	6,502.0	7,178.8	-1,531.4	Deepest Point of Well= 15114' MD/ 6502' TVD
15,965.0	6,499.3	7,933.4	-1,920.6	Final Survey= 15965' MD/ 6499' TVD
16,019.0	6,497.3	7,978.2	-1,950.8	Projection to TD= 16019' MD/6497' TVD

Checked By: _____ Approved By: _____ Date: _____

17-06461

EQT Production - Marcellus

Project: Doddridge County, WV Grid
Site: Doddridge County 513147
Well: Well #513147
Wellbore: 513147 ST01
Design: 513147 ST01 As Drilled Surveys



10/23/2015