



EQT PRODUCTION

Ritchie County, WV

PUL96 Pad

Well #515887- Marcellus - Slot 515887

API#47-08510211

Main Wellbore

Design: 515887 As Drilled Surveys

Standard Survey Report

21 December, 2015



Phoenix Technology Services
Survey Report



Database:	COMP 5000.1 Single Wellbore	Local Co-ordinate Reference:	WGS 1984 UTM Zone 18N
Company:	EQT PRODUCTION	TVD Reference:	ELLIPSOIDAL
Project:	PHX Main Wellbore	MD Reference:	US 27 @ 100' DWT
Site:	PHX Main Wellbore	North Reference:	US 27
Well:	PHX MWD (Main Wellbore)	Survey Calculation Method:	Minimum Curvature
Wellbore:	PHX MWD (Main Wellbore)		
Design:	PHX MWD (Main Wellbore)		

Project:	PHX MWD (Main Wellbore)		
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:	PHX MWD (Main Wellbore)				
Site Position:		Northing:	262,406.23 usft	Latitude:	39.21
From:	Map	Easting:	1,578,892.82 usft	Longitude:	-80.99
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.95 °

Well:	PHX MWD (Main Wellbore)					
Well Position	+N-S	0.0 usft	Northing:	262,419.41 usft	Latitude:	39° 12' 39.358 N
	+E-W	0.0 usft	Easting:	1,578,899.99 usft	Longitude:	80° 59' 10.208 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	1,183.0 usft

Wellbore:	PHX MWD (Main Wellbore)				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	11/19/2015	-7.66	66.55	51,992

Design:	PHX MWD (Main Wellbore)				
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	154.43	

Survey Program	Date:	12/21/2015		
From (°)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	4,582.0	515887 VES Gyro (Main Wellbore)	VES Spec AVG 04-09-15	Triaxial Continuous Gyro Model
0.00	11,497.0	515887 PHX MWD (Main Wellbore)	PHX+MWD+HDGM	PHX+OWSG MWD + HDGM

Survey:	PHX MWD (Main Wellbore)										
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	-1,208.0	0.0	0.0	0.0	0.00	0.00	0.00	
110.0	0.53	129.00	110.0	-1,096.0	-0.3	0.4	0.5	0.48	0.48	0.00	
210.0	0.49	120.93	210.0	-996.0	-0.8	1.1	1.2	0.08	-0.04	-8.07	
310.0	0.48	129.83	310.0	-896.0	-1.3	1.8	2.0	0.07	-0.01	8.70	
410.0	0.36	131.21	410.0	-796.0	-1.8	2.4	2.6	0.12	-0.12	1.58	
510.0	0.35	145.62	510.0	-696.0	-2.3	2.8	3.2	0.09	-0.01	14.41	
610.0	0.34	156.78	610.0	-596.0	-2.8	3.1	3.8	0.07	-0.01	11.16	
710.0	0.25	205.63	710.0	-496.0	-3.2	3.1	4.3	0.26	-0.09	48.85	



Phoenix Technology Services
Survey Report



Database:	10465001 - Eagle Creek 21	Local Co-ordinate Reference:	North: 10465001 - Variable
Company:	OT PRODUCTION	TVD Reference:	70 21 00 1200.000
Project:	Wash County, WV	MD Reference:	10 23 00 1200.000
Site:	7026 Part	North Reference:	000
Well:	Well 40 10465 - Mainline	Survey Calculation Method:	Minimum Curvature
Wellbore:	Mainline		
Design:	START As Defined 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	0.29	189.76	810.0	-396.0	-3.7	3.0	4.6	0.08	0.04	-15.87
910.0	0.39	267.14	910.0	-296.0	-4.0	2.6	4.7	0.43	0.10	77.38
1,010.0	0.34	249.66	1,010.0	-196.0	-4.1	2.0	4.5	0.12	-0.05	-17.48
1,110.0	0.31	279.14	1,110.0	-96.0	-4.1	1.4	4.3	0.17	-0.03	29.48
1,210.0	0.31	247.29	1,210.0	4.0	-4.2	0.9	4.2	0.17	0.00	-31.85
1,310.0	0.31	186.76	1,310.0	104.0	-4.6	0.6	4.4	0.31	0.00	-60.53
1,410.0	0.40	167.96	1,410.0	204.0	-5.2	0.7	5.0	0.15	0.09	-18.80
1,510.0	0.56	162.94	1,510.0	304.0	-6.0	0.9	5.8	0.17	0.16	-5.02
1,610.0	0.73	149.08	1,610.0	404.0	-7.0	1.3	6.9	0.23	0.17	-13.86
1,710.0	0.89	150.11	1,710.0	504.0	-8.2	2.1	8.3	0.16	0.16	1.03
1,810.0	0.88	144.81	1,809.9	603.9	-9.5	2.9	9.8	0.08	-0.01	-5.30
1,910.0	0.92	133.96	1,909.9	703.9	-10.7	3.9	11.3	0.17	0.04	-10.85
2,010.0	0.79	129.78	2,009.9	803.9	-11.7	5.0	12.7	0.14	-0.13	-4.18
2,110.0	0.64	122.24	2,109.9	903.9	-12.4	6.0	13.8	0.18	-0.15	-7.54
2,210.0	0.55	119.88	2,209.9	1,003.9	-13.0	6.9	14.7	0.09	-0.09	-2.36
2,310.0	0.57	129.88	2,309.9	1,103.9	-13.5	7.7	15.5	0.10	0.02	10.00
2,410.0	0.55	128.69	2,409.9	1,203.9	-14.2	8.5	16.4	0.02	-0.02	-1.19
2,510.0	0.34	151.97	2,509.9	1,303.9	-14.7	9.0	17.2	0.27	-0.21	23.28
2,610.0	0.34	148.46	2,609.9	1,403.9	-15.2	9.3	17.7	0.02	0.00	-3.51
2,710.0	0.33	140.23	2,709.9	1,503.9	-15.7	9.6	18.3	0.05	-0.01	-8.23
2,810.0	0.27	157.41	2,809.9	1,603.9	-16.2	9.9	18.8	0.11	-0.06	17.18
2,910.0	0.22	175.07	2,909.9	1,703.9	-16.6	10.0	19.2	0.09	-0.05	17.66
3,010.0	0.34	140.96	3,009.9	1,803.9	-17.0	10.2	19.7	0.20	0.12	-34.11
3,110.0	0.29	168.03	3,109.9	1,903.9	-17.5	10.4	20.3	0.16	-0.05	27.07
3,210.0	0.34	137.42	3,209.9	2,003.9	-17.9	10.7	20.8	0.17	0.05	-30.61
3,310.0	0.29	147.86	3,309.9	2,103.9	-18.4	11.0	21.3	0.08	-0.05	10.46
3,410.0	0.26	144.59	3,409.9	2,203.9	-18.8	11.3	21.8	0.03	-0.03	-3.29
3,510.0	0.29	150.82	3,509.9	2,303.9	-19.2	11.5	22.3	0.04	0.03	6.23
3,610.0	0.32	136.29	3,609.9	2,403.9	-19.6	11.9	22.8	0.08	0.03	-14.53
3,710.0	0.35	156.70	3,709.9	2,503.9	-20.1	12.2	23.4	0.12	0.03	20.41
3,810.0	0.31	172.08	3,809.9	2,603.9	-20.6	12.3	23.9	0.10	-0.04	15.38
3,910.0	0.34	177.61	3,909.9	2,703.9	-21.2	12.4	24.4	0.04	0.03	5.53
4,010.0	0.33	169.90	4,009.9	2,803.9	-21.8	12.4	25.0	0.05	-0.01	-7.71
4,110.0	0.36	167.46	4,109.9	2,903.9	-22.4	12.6	25.6	0.03	0.03	-2.44
4,210.0	0.36	177.58	4,209.9	3,003.9	-23.0	12.6	26.2	0.06	0.00	10.12
4,310.0	0.42	177.48	4,309.9	3,103.9	-23.7	12.7	26.8	0.06	0.06	-0.10
4,410.0	0.37	190.43	4,409.9	3,203.9	-24.3	12.6	27.4	0.10	-0.05	12.95
4,510.0	0.39	212.66	4,509.9	3,303.9	-24.9	12.4	27.8	0.15	0.02	22.23
4,582.0	0.38	203.04	4,581.9	3,375.9	-25.4	12.2	28.1	0.09	-0.01	-13.36
4,636.0	3.50	40.00	4,635.8	3,429.8	-24.3	13.1	27.6	7.16	5.78	-301.93
4,668.0	6.10	33.60	4,667.7	3,461.7	-22.1	14.7	26.3	8.28	8.13	-20.00
4,699.0	8.80	28.20	4,698.4	3,492.4	-18.6	16.7	24.0	8.99	8.71	-17.42



Phoenix Technology Services

Survey Report



Database:	COMPASS 5000.1 Build 74	Local Co-ordinate Reference:	NAD 83
Company:	QOT INCORPORATION	TVD Reference:	NAVD 83
Project:	WALTON COUNTY, WA	MD Reference:	NAVD 83
Site:	WALTON COUNTY, WA	North Reference:	NAVD 83
Well:	WALTON COUNTY, WA	Survey Calculation Method:	Minimum Curvature
Wellbore:	WALTON COUNTY, WA		
Design:	WALTON COUNTY, WA		

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)
4,762.0	15.60	22.20	4,760.0	3,554.0	-6.5	22.2	15.5	10.97	10.79	-9.52
4,794.0	18.60	23.70	4,790.6	3,584.6	2.1	25.9	9.3	9.48	9.38	4.69
4,825.0	21.50	25.20	4,819.7	3,613.7	11.8	30.3	2.4	9.50	9.35	4.84
4,888.0	28.00	26.70	4,876.9	3,670.9	35.5	41.9	-13.9	10.36	10.32	2.38
4,951.0	34.80	25.40	4,930.8	3,724.6	65.0	56.3	-34.3	10.85	10.79	-2.06
4,982.0	38.30	24.80	4,955.5	3,749.5	81.7	64.1	-46.0	11.35	11.29	-1.94
5,014.0	41.20	23.90	4,980.1	3,774.1	100.3	72.5	-59.2	9.24	9.06	-2.81
5,077.0	40.70	22.70	5,027.7	3,821.7	138.2	88.9	-86.4	1.48	-0.79	-1.90
5,171.0	39.00	20.80	5,099.9	3,893.9	194.2	111.2	-127.2	2.22	-1.81	-2.02
5,265.0	42.40	21.70	5,171.1	3,965.1	251.3	133.4	-169.1	3.67	3.62	0.96
5,360.0	42.30	20.10	5,241.3	4,035.3	311.1	156.2	-213.2	1.14	-0.11	-1.68
5,454.0	42.20	18.30	5,310.9	4,104.9	370.7	177.0	-258.0	1.29	-0.11	-1.91
5,548.0	42.40	16.90	5,380.4	4,174.4	431.0	196.2	-304.2	1.02	0.21	-1.49
5,643.0	41.80	21.30	5,451.1	4,245.1	491.1	216.9	-349.4	3.21	-0.84	4.63
5,737.0	39.70	18.60	5,522.4	4,316.4	548.6	237.8	-392.3	2.75	-2.02	-2.87
5,769.0	39.50	17.90	5,547.0	4,341.0	568.0	244.2	-407.0	1.53	-0.63	-2.19
5,800.0	40.40	20.20	5,570.8	4,364.8	586.8	250.7	-421.1	5.58	2.90	7.42
5,832.0	39.60	25.50	5,595.3	4,389.3	605.8	258.7	-434.8	10.93	-2.50	16.56
5,863.0	37.50	30.90	5,619.8	4,413.6	622.8	267.8	-446.2	12.79	-6.77	17.42
5,895.0	35.40	33.80	5,645.3	4,439.3	638.8	278.0	-456.3	8.49	-6.56	9.06
5,926.0	33.20	37.70	5,670.9	4,464.9	653.0	288.2	-464.7	10.03	-7.10	12.58
5,957.0	31.00	42.70	5,697.2	4,491.2	665.6	298.8	-471.5	11.12	-7.10	16.13
5,989.0	29.30	47.40	5,724.9	4,518.9	677.0	310.1	-476.8	9.09	-5.31	14.69
6,020.0	29.10	51.10	5,751.9	4,545.9	686.8	321.6	-480.8	5.86	-0.65	11.94
6,052.0	28.60	55.10	5,780.0	4,574.0	696.1	333.9	-483.8	6.23	-1.56	12.50
6,083.0	28.10	62.10	5,807.2	4,601.2	703.8	346.4	-485.3	10.84	-1.61	22.58
6,114.0	28.40	70.40	5,834.6	4,628.6	709.7	359.8	-484.9	12.70	0.97	26.77
6,146.0	28.80	77.20	5,862.7	4,656.7	713.9	374.5	-482.4	10.24	1.25	21.25
6,177.0	28.90	83.10	5,889.8	4,683.8	716.5	389.3	-478.3	9.19	0.32	19.03
6,209.0	28.50	88.40	5,917.9	4,711.9	717.6	404.6	-472.7	8.05	-1.25	16.56
6,240.0	29.20	93.20	5,945.1	4,739.1	717.4	419.5	-466.1	7.80	2.26	15.48
6,271.0	29.80	101.20	5,972.0	4,766.0	715.5	434.6	-457.8	12.85	1.94	25.81
6,303.0	31.40	107.20	5,999.6	4,793.6	711.5	450.4	-447.4	10.77	5.00	18.75
6,334.0	33.20	112.70	6,025.8	4,819.8	705.8	465.9	-435.6	11.11	5.81	17.74
6,366.0	35.20	115.50	6,052.3	4,846.3	698.4	482.4	-421.9	7.95	6.25	8.75
6,397.0	37.00	120.30	6,077.3	4,871.3	689.9	498.5	-407.2	10.81	5.81	15.48
6,429.0	39.20	124.80	6,102.5	4,896.5	679.3	515.1	-390.4	11.07	6.88	14.06
6,460.0	41.50	129.50	6,126.1	4,920.1	667.1	531.1	-372.6	12.30	7.42	15.16
6,492.0	44.00	134.30	6,149.6	4,943.6	652.6	547.2	-352.6	12.83	7.81	15.00
6,523.0	45.80	138.40	6,171.6	4,965.6	636.8	562.3	-331.8	10.99	5.81	13.23
6,554.0	47.90	141.30	6,192.8	4,986.8	619.5	576.9	-309.9	9.61	6.77	9.35
6,586.0	50.20	142.80	6,213.8	5,007.8	600.4	591.7	-286.3	8.01	7.19	4.69



Phoenix Technology Services Survey Report



Database:	COM 5000 - 7.5116311111111111	Local Co-ordinate Reference:	Well Well #212291 - Standard - Old Standard
Company:	321 PRODUCTION	TVD Reference:	75.27 @ 1000 Depth
Project:	Mobile County, VA	MD Reference:	48.22 @ 1000 Depth
Site:	112.95 feet	North Reference:	Old
Well:	Well #212291 - Standard	Survey Calculation Method:	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	IMCT As Drilled Bottom		

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)	
6,617.0	53.40	144.20	6,232.9	5,026.9	580.9	606.2	-262.3	10.92	10.32	4.52	
6,649.0	56.10	146.00	6,251.4	5,045.4	559.4	621.2	-236.6	9.61	8.44	5.63	
6,680.0	59.10	148.00	6,268.0	5,062.0	537.5	635.4	-210.6	11.10	9.68	6.45	
6,712.0	61.80	148.90	6,283.8	5,077.8	513.7	650.0	-182.9	8.78	8.44	2.81	
6,743.0	63.80	151.10	6,298.0	5,092.0	489.9	663.7	-155.4	9.03	6.45	7.10	
6,774.0	66.40	152.20	6,311.0	5,105.0	465.1	677.1	-127.4	8.98	8.39	3.55	
6,806.0	69.20	154.00	6,323.1	5,117.1	438.7	690.5	-97.7	10.18	8.75	5.63	
6,837.0	71.80	156.10	6,333.5	5,127.5	412.2	702.8	-68.5	10.54	8.39	6.77	
6,869.0	74.30	156.60	6,342.8	5,136.8	384.2	715.1	-37.9	7.95	7.81	1.56	
6,900.0	76.70	157.50	6,350.5	5,144.5	356.5	726.8	-8.0	8.24	7.74	2.90	
6,932.0	78.80	159.10	6,357.3	5,151.3	327.5	738.4	23.2	8.18	6.56	5.00	
6,963.0	81.10	159.90	6,362.7	5,156.7	298.9	749.0	53.6	7.84	7.42	2.58	
6,995.0	84.00	160.60	6,366.9	5,160.9	269.0	759.8	85.2	9.32	9.06	2.19	
7,026.0	86.10	162.00	6,369.6	5,163.6	239.8	769.7	115.9	8.13	6.77	4.52	
Survey Point 1											
7,035.1	86.55	162.71	6,370.2	5,164.2	231.1	772.4	124.8	9.27	4.99	7.82	
Survey Point 2											
7,038.0	86.70	162.94	6,370.3	5,164.3	228.3	773.3	127.7	9.27	5.00	7.82	
7,058.0	87.70	164.50	6,371.3	5,165.3	209.2	778.9	147.4	9.27	5.00	7.81	
7,152.0	89.30	167.10	6,373.8	5,167.8	118.1	801.9	239.5	3.25	1.70	2.77	
7,246.0	89.30	168.00	6,374.9	5,168.9	26.3	822.2	331.1	0.96	0.00	0.96	
Survey Point 3											
7,254.9	89.28	168.01	6,375.0	5,169.0	17.6	824.0	339.7	0.24	-0.21	0.11	
Survey Point 4											
7,255.7	89.28	168.01	6,375.0	5,169.0	16.9	824.2	340.5	0.24	-0.21	0.11	
Survey Point 5											
7,340.0	89.10	168.10	6,376.2	5,170.2	-65.6	841.6	422.4	0.24	-0.21	0.11	
7,434.0	90.70	165.30	6,378.4	5,170.4	-157.1	863.3	514.3	3.43	1.70	-2.98	
7,528.0	90.70	163.60	6,375.2	5,169.2	-247.6	888.5	606.8	1.81	0.00	-1.81	
7,623.0	87.80	163.90	6,376.5	5,170.5	-338.8	915.0	700.6	3.07	-3.05	0.32	
7,717.0	87.80	163.90	6,380.1	5,174.1	-429.1	941.1	793.2	0.00	0.00	0.00	
7,812.0	88.60	163.60	6,382.2	5,176.2	-520.3	967.7	886.9	1.92	1.89	-0.32	
Survey Point 6											
7,906.0	89.40	163.20	6,383.1	5,177.1	-610.3	994.5	979.8	0.48	-0.21	-0.43	
8,001.0	91.30	163.20	6,382.5	5,176.5	-701.3	1,022.0	1,073.7	2.00	2.00	0.00	
8,095.0	91.10	163.10	6,380.5	5,174.5	-791.2	1,049.2	1,166.6	0.24	-0.21	-0.11	
8,189.0	91.10	162.70	6,378.7	5,172.7	-881.0	1,076.9	1,259.5	0.43	0.00	-0.43	
8,284.0	90.80	162.90	6,377.1	5,171.1	-971.8	1,104.9	1,353.5	0.38	-0.32	0.21	
8,378.0	90.30	163.30	6,376.2	5,170.2	-1,061.7	1,132.3	1,446.4	0.68	-0.53	0.43	
8,472.0	90.00	163.20	6,376.0	5,170.0	-1,151.7	1,159.4	1,539.3	0.34	-0.32	-0.11	
8,567.0	89.90	163.20	6,376.1	5,170.1	-1,242.7	1,186.8	1,633.2	0.11	-0.11	0.00	
8,661.0	89.80	163.30	6,376.3	5,170.3	-1,332.7	1,213.9	1,728.1	0.15	-0.11	0.11	
8,755.0	89.60	162.90	6,376.8	5,170.8	-1,422.6	1,241.2	1,819.0	0.48	-0.21	-0.43	
8,850.0	89.30	163.10	6,377.7	5,171.7	-1,513.5	1,269.0	1,912.9	0.38	-0.32	0.21	



Phoenix Technology Services

Survey Report



Database: COMPASS 5000.1 Sample User: JTB Company: EQT PRODUCTION Project: Sabine County, WV Site: TULSA Field Well: Well #11399 - Mariner Wellbore: Main Wellbore Design: 11399T-14-01 Well Survey	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:	Well Wellbore Depth: 11399T-14-01 Wellbore MD Reference: 11399T-14-01 Wellbore North Reference: 11399T-14-01 Wellbore Survey Calculation Method:
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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)	
8,944.0	88.70	163.00	6,379.4	5,173.4	-1,603.4	1,296.4	2,005.9	0.65	-0.64	-0.11	
9,039.0	90.50	163.80	6,380.0	5,174.0	-1,694.4	1,323.5	2,099.7	2.07	1.89	0.84	
9,133.0	91.70	164.20	6,378.2	5,172.2	-1,784.7	1,349.4	2,192.4	1.35	1.28	0.43	
9,227.0	91.50	163.80	6,375.6	5,169.6	-1,875.1	1,375.3	2,285.0	0.48	-0.21	-0.43	
9,322.0	92.20	165.60	6,372.5	5,166.5	-1,966.7	1,400.4	2,378.4	2.03	0.74	1.89	
9,416.0	90.70	167.20	6,370.2	5,164.2	-2,058.0	1,422.5	2,470.4	2.33	-1.60	1.70	
9,510.0	89.80	167.80	6,369.7	5,163.7	-2,149.8	1,442.8	2,561.9	1.15	-0.96	0.64	
9,605.0	90.00	168.30	6,369.9	5,163.9	-2,242.7	1,462.5	2,654.3	0.57	0.21	0.53	
9,699.0	90.20	169.10	6,369.7	5,163.7	-2,334.9	1,480.9	2,745.4	0.88	0.21	0.85	
9,794.0	90.10	169.80	6,369.5	5,163.5	-2,428.3	1,498.3	2,837.1	0.74	-0.11	0.74	
9,888.0	89.30	168.70	6,370.0	5,164.0	-2,520.6	1,515.9	2,928.0	1.45	-0.85	-1.17	
9,983.0	89.70	169.30	6,370.8	5,164.8	-2,613.9	1,534.0	3,019.9	0.76	0.42	0.63	
10,077.0	88.50	167.00	6,372.3	5,166.3	-2,705.8	1,553.3	3,111.2	2.76	-1.28	-2.45	
10,171.0	89.30	164.80	6,374.1	5,168.1	-2,797.0	1,576.2	3,203.3	2.49	0.85	-2.34	
10,266.0	89.20	164.70	6,375.3	5,169.3	-2,888.6	1,601.2	3,296.8	0.15	-0.11	-0.11	
10,360.0	89.10	165.00	6,376.7	5,170.7	-2,979.4	1,625.7	3,389.2	0.34	-0.11	0.32	
10,455.0	90.00	164.30	6,377.5	5,171.5	-3,071.0	1,650.9	3,482.7	1.20	0.95	-0.74	
10,549.0	89.90	163.80	6,377.6	5,171.6	-3,161.3	1,676.7	3,575.4	0.54	-0.11	-0.53	
10,644.0	91.20	163.60	6,376.7	5,170.7	-3,252.5	1,703.4	3,669.1	1.38	1.37	-0.21	
10,738.0	91.00	162.50	6,374.8	5,168.8	-3,342.4	1,730.8	3,762.1	1.19	-0.21	-1.17	
10,832.0	91.50	162.40	6,372.8	5,166.8	-3,432.0	1,759.1	3,855.1	0.54	0.53	-0.11	
10,926.0	91.10	162.50	6,370.7	5,164.7	-3,521.6	1,787.4	3,948.2	0.44	-0.43	0.11	
11,021.0	91.00	162.50	6,368.9	5,162.9	-3,612.2	1,816.0	4,042.2	0.11	-0.11	0.00	
11,115.0	90.10	165.00	6,368.0	5,162.0	-3,702.4	1,842.3	4,135.0	2.83	-0.96	2.66	
11,209.0	90.50	165.80	6,367.5	5,161.5	-3,793.4	1,868.0	4,227.3	0.95	0.43	0.85	
11,304.0	89.30	164.80	6,367.7	5,161.7	-3,885.3	1,890.1	4,320.5	1.64	-1.26	-1.05	
11,398.0	89.00	165.10	6,369.1	5,163.1	-3,976.1	1,914.5	4,413.0	0.45	-0.32	0.32	
Start Survey with MC PC-3111-120											
11,446.0	89.20	164.90	6,369.8	5,163.8	-4,022.4	1,928.9	4,460.1	0.59	0.42	-0.42	
Start Post Tilt											
11,496.3	89.20	164.90	6,370.5	5,164.5	-4,071.0	1,940.0	4,509.6	0.00	0.00	0.00	
End of Survey with MC PC-3111-120											
11,497.0	89.20	164.90	6,370.6	5,164.6	-4,071.6	1,940.2	4,510.3	0.00	0.00	0.00	



Phoenix Technology Services
Survey Report



Database:	DDM 2007 - Sabine Field DE	Local Co-ordinate Reference:	Well Well #63371' MD/6371' TVD
Company:	QT PRODUCTION	TVD Reference:	7922' @ 799.0'gs
Project:	Waffle County, WV	MD Reference:	6333' @ 406.0'gs
Site:	712, 63, 632	North Reference:	0'gs
Well:	Well #63371' - Mariner	Survey Calculation Method:	Minimum Curvature
Wellbore:	Multi Wellbore		
Design:	41383' to Orient Surface		

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/S (usft)	+E/W (usft)	
4,582.0	4,581.9	-25.4	12.2	Gyro Tie On=4582' MD
7,340.0	6,376.2	-65.6	841.8	LP=7340' MD/6376' TVD
7,906.0	6,383.1	-610.3	994.5	Deepest Point=7906' MD/6383' TVD
11,446.0	6,369.8	-4,022.4	1,926.9	Final Survey=11446' MD/6370' TVD
11,497.0	6,370.6	-4,071.6	1,940.2	PROJ to TD=11497' MD/6371' TVD

Checked By: _____ Approved By: _____ Date: _____

Project: Ritchie County, WV
 Site: PUL96 Pad
 Well: Well #515887- Marcellus
 Wellbore: Main Wellbore
 Design: 515887 As Drilled Surveys

