



Where energy meets innovation.

EQT PRODUCTION

Marion County, WV

GLO76 Pad

Well #514746- Marcellus

API #47-04902347

Main Wellbore

Design: 514746 As Drilled Surveys

Standard Survey Report

07 December, 2015



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WV Department of
Environmental Protection

10/28/2016



Professional Directional Survey Report



Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #514746- Marcellus
Project:	Marion County, WV	TVD Reference:	GL 1424 + 23' KB @ 1447.00usft (Pioneer 72)
Site:	GLO76 Pad	MD Reference:	GL 1424 + 23' KB @ 1447.00usft (Pioneer 72)
Well:	Well #514746- Marcellus	North Reference:	Grnd
Wellbore:	Main Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	514746 As Drilled Surveys	Database:	Well_Planner1

Project:	Marion 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:	GLO76 Pad				
Site Position:		Northing:	389,060.60 usft	Latitude:	39° 33' 50.33 N
From:	Map	Easting:	1,721,015.30 usft	Longitude:	80° 29' 22.49 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.63 "

Well:	Well #514746- Marcellus					
Well Position	+N-S	0.00 usft	Northing:	389,063.63 usft	Latitude:	39° 33' 50.36 N
	+E-W	0.00 usft	Easting:	1,721,000.64 usft	Longitude:	80° 29' 22.68 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	1,447.00 usft	Ground Level:	1,424.00 usft

Wellbore:	Main Wellbore					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)	
	HDGM	12/1/2015	-8.65	67.03	52,516	

Design:	514746 As Drilled Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	10.00
Vertical Section:		Depth From (TVD) (usft)	+N-S (usft)	+E-W (usft)	Direction (°)
		10.00	0.00	0.00	133.58

Survey Program	Date 12/7/2015				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
110.00	5,523.00	Gyrodata Gyro (Main Wellbore)	GYD_DP_MS	Gyrodata gyro-compassing and drop	
5,543.00	7,810.00	514746 PHX MWD (Main Wellbore)	PHX+MWD+HDGM	PHX+OWSG MWD + HDGM	
7,859.00	11,396.00	ProDirectional (Main Wellbore)	MWD+IGRF	MWD+IGRF v3:standard declination	

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110.00	0.29	92.24	110.00	-0.01	0.25	0.19	0.29	0.29	0.00
210.00	0.14	118.78	210.00	-0.08	0.61	0.50	0.18	-0.15	26.54
310.00	0.14	118.58	310.00	-0.20	0.83	0.73	0.00	0.00	-0.20
410.00	0.04	45.63	410.00	-0.23	0.96	0.85	0.13	-0.10	-72.95
510.00	0.08	313.05	510.00	-0.16	0.93	0.78	0.09	0.04	82.58
610.00	0.07	323.94	610.00	-0.06	0.85	0.66	0.01	0.01	10.89
710.00	0.07	311.34	710.00	0.03	0.76	0.53	0.02	0.00	-12.60
810.00	0.11	277.00	810.00	0.08	0.62	0.40	0.07	0.00	-34.34

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Well: Well #514746- Marcellus
Wellbore: Main Wellbore
Design: 514746 As Drilled Surveys

Local Co-ordinate Reference: Well Well #514746- Marcellus
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MD Reference: GL 1424 + 23' KB @ 1447.00usft (Pioneer 72)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Well_Planner1

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
910.00	0.19	285.70	910.00	0.14	0.37	0.17	0.08	0.08	8.70
1,010.00	0.32	308.98	1,010.00	0.36	-0.01	-0.25	0.16	0.13	23.28
1,110.00	0.46	312.52	1,109.99	0.81	-0.52	-0.93	0.14	0.14	3.54
1,210.00	0.68	320.98	1,209.99	1.54	-1.19	-1.92	0.23	0.22	8.46
1,310.00	0.77	325.31	1,309.98	2.55	-1.95	-3.17	0.11	0.09	4.33
1,410.00	0.92	330.23	1,409.97	3.80	-2.73	-4.60	0.17	0.15	4.92
1,510.00	1.14	333.10	1,509.95	5.38	-3.58	-6.30	0.23	0.22	2.87
1,610.00	1.36	334.33	1,609.93	7.34	-4.54	-8.35	0.22	0.22	1.23
1,710.00	1.37	332.92	1,709.90	9.47	-5.60	-10.59	0.04	0.01	-1.41
1,810.00	1.41	332.71	1,809.87	11.63	-6.71	-12.88	0.04	0.04	-0.21
1,910.00	1.41	333.55	1,909.84	13.83	-7.82	-15.20	0.02	0.00	0.84
2,010.00	1.14	326.43	2,009.82	15.76	-8.92	-17.32	0.31	-0.27	-7.12
2,110.00	1.17	318.30	2,109.80	17.35	-10.15	-19.31	0.17	0.03	-8.13
2,210.00	1.43	305.71	2,209.77	18.84	-11.84	-21.56	0.38	0.26	-12.59
2,310.00	1.45	306.49	2,309.74	20.32	-13.87	-24.06	0.03	0.02	0.78
2,410.00	1.21	305.50	2,409.71	21.69	-15.75	-26.36	0.24	-0.24	-0.99
2,510.00	0.86	306.99	2,509.70	22.75	-17.20	-28.15	0.35	-0.35	1.49
2,610.00	0.80	307.27	2,609.69	23.63	-18.36	-29.59	0.06	-0.06	0.28
2,710.00	0.78	301.06	2,709.68	24.40	-19.50	-30.94	0.09	-0.02	-6.21
2,810.00	0.60	305.42	2,809.67	25.05	-20.51	-32.13	0.19	-0.18	4.36
2,910.00	0.59	304.08	2,909.66	25.65	-21.36	-33.15	0.02	-0.01	-1.34
3,010.00	0.57	308.99	3,009.66	26.25	-22.17	-34.18	0.05	-0.02	4.91
3,110.00	0.48	315.52	3,109.65	26.86	-22.85	-35.07	0.11	-0.09	6.53
3,210.00	0.49	316.49	3,209.65	27.47	-23.44	-35.92	0.01	0.01	0.97
3,310.00	0.55	319.57	3,309.65	28.14	-24.05	-36.82	0.07	0.06	3.08
3,410.00	0.60	318.86	3,409.64	28.90	-24.70	-37.82	0.05	0.05	-0.71
3,510.00	0.84	305.75	3,509.63	29.73	-25.64	-39.07	0.29	0.24	-13.11
3,610.00	0.92	298.61	3,609.62	30.54	-26.94	-40.57	0.14	0.08	-7.14
3,710.00	0.92	296.27	3,709.61	31.28	-28.37	-42.11	0.04	0.00	-2.34
3,810.00	0.80	293.86	3,809.60	31.92	-29.73	-43.54	0.13	-0.12	-2.41
3,910.00	0.85	291.29	3,909.59	32.47	-31.06	-44.88	0.06	0.05	-2.57
4,010.00	0.86	288.82	4,009.58	32.98	-32.46	-46.25	0.04	0.01	-2.47
4,110.00	0.95	294.96	4,109.56	33.57	-33.92	-47.71	0.13	0.09	6.14
4,210.00	1.00	296.44	4,209.55	34.31	-35.45	-49.33	0.06	0.05	1.48
4,310.00	1.06	297.62	4,309.53	35.13	-37.05	-51.06	0.06	0.06	1.18
4,410.00	1.01	302.25	4,409.52	36.03	-38.62	-52.81	0.10	-0.05	4.63
4,510.00	0.89	305.75	4,509.50	36.95	-39.99	-54.44	0.13	-0.12	3.50
4,610.00	0.88	309.41	4,609.49	37.89	-41.22	-55.98	0.06	-0.01	3.66
4,710.00	0.79	341.42	4,709.48	39.03	-42.03	-57.35	0.47	-0.09	32.01
4,810.00	0.65	9.91	4,809.47	40.24	-42.15	-58.28	0.38	0.29	28.49
4,910.00	0.63	27.70	4,909.47	41.29	-41.80	-58.74	0.20	0.09	4.93
5,010.00	0.58	42.26	5,009.46	42.15	-41.20	-58.91	0.16	-0.05	14.56
5,110.00	0.87	47.19	5,109.46	42.92	-40.43	-58.88	0.10	0.09	4.93

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Wellbore: Main Wellbore
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Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,210.00	0.63	57.99	5,209.45	43.61	-39.54	-58.71	0.13	-0.04	10.80
5,310.00	0.67	78.08	5,309.44	44.02	-38.50	-58.24	0.23	0.04	20.09
5,410.00	0.58	98.49	5,409.44	44.07	-37.43	-57.49	0.24	-0.09	20.41
5,510.00	0.38	99.98	5,509.43	43.94	-36.60	-56.80	0.20	-0.20	1.49
5,523.00	0.27	120.74	5,522.43	43.91	-36.53	-56.74	1.23	-0.85	159.69
5,543.00	0.10	92.70	5,542.43	43.89	-36.47	-56.68	0.94	-0.85	-140.20
5,586.00	1.70	27.90	5,585.43	44.45	-36.14	-56.82	3.86	3.72	-150.70
5,629.00	5.40	22.40	5,628.34	46.89	-35.07	-57.73	8.63	8.60	-12.79
5,672.00	8.90	27.90	5,671.00	51.70	-32.74	-59.36	8.28	8.14	12.79
5,716.00	11.20	43.70	5,714.33	57.80	-28.19	-60.27	8.11	5.23	35.91
5,759.00	14.60	54.40	5,756.24	63.97	-20.90	-59.24	9.63	7.91	24.88
5,802.00	18.20	60.20	5,797.49	70.47	-10.66	-56.30	9.19	8.37	13.49
5,845.00	21.50	66.60	5,837.93	76.94	2.40	-51.30	9.18	7.67	14.88
5,888.00	25.10	72.20	5,877.42	82.86	18.33	-43.84	9.82	8.37	13.02
5,931.00	27.70	79.10	5,915.95	87.54	36.83	-33.66	9.34	6.05	16.05
5,974.00	28.80	86.50	5,953.84	90.06	56.99	-20.80	8.53	2.56	17.21
6,017.00	31.50	91.40	5,991.02	90.42	78.57	-5.42	8.49	6.28	11.40
6,060.00	35.10	94.60	6,026.96	89.15	102.13	12.52	9.31	8.37	7.44
6,103.00	39.10	96.60	6,061.25	86.60	127.93	32.98	9.72	9.30	4.65
6,146.00	42.90	96.80	6,093.69	83.31	155.95	55.54	8.84	8.84	0.47
6,189.00	42.60	96.60	6,125.27	79.90	184.93	78.89	0.77	-0.70	-0.47
6,232.00	42.10	96.70	6,157.05	76.55	213.71	102.04	1.17	-1.16	0.23
6,275.00	42.20	97.50	6,188.93	72.98	242.34	125.24	1.27	0.23	1.86
6,318.00	42.90	98.00	6,220.61	69.06	271.15	148.82	1.81	1.63	1.16
6,361.00	42.40	98.70	6,252.23	64.83	299.98	172.62	1.60	-1.16	1.63
6,404.00	41.90	98.10	6,284.11	60.61	328.52	196.20	1.49	-1.16	-1.40
6,447.00	41.80	99.20	6,316.14	56.30	356.89	219.72	1.72	-0.23	2.56
6,490.00	41.40	98.00	6,348.30	52.03	385.11	243.11	2.07	-0.93	-2.79
6,533.00	42.10	98.30	6,380.38	47.97	413.46	266.44	1.69	1.63	0.70
6,577.00	42.80	98.30	6,412.85	43.68	442.84	290.69	1.59	1.59	0.00
6,620.00	43.90	98.50	6,444.11	39.37	472.04	314.81	2.58	2.56	0.47
6,663.00	44.10	98.30	6,475.05	35.01	501.59	339.23	0.57	0.47	-0.47
6,706.00	43.30	97.90	6,506.13	30.82	531.00	363.42	1.97	-1.86	-0.93
6,749.00	42.40	97.10	6,537.66	27.00	560.00	387.05	2.45	-2.09	-1.86
6,792.00	41.70	97.20	6,569.59	23.42	588.57	410.23	1.64	-1.63	0.23
6,835.00	40.80	98.30	6,601.92	19.60	616.66	433.21	2.69	-2.09	2.56
6,878.00	40.50	97.90	6,634.54	15.65	644.40	456.02	0.92	-0.70	-0.93
6,921.00	41.10	100.20	6,667.09	11.23	672.14	479.17	3.76	1.40	5.35
6,964.00	42.60	100.60	6,699.12	6.05	700.35	503.18	3.54	3.49	0.93
7,007.00	42.80	101.30	6,730.72	0.51	728.98	527.74	1.20	0.47	1.63
7,050.00	42.30	101.50	6,762.40	-5.24	757.49	552.35	1.20	0.47	0.47
7,093.00	42.90	98.70	6,794.06	-10.34	786.14	576.62	1.62	0.93	0.47
7,136.00	43.30	95.70	6,825.46	-14.02	815.28	600.26	4.95	0.93	-6.98

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7,179.00	42.30	95.20	6,857.01	-16.79	844.36	623.24	2.46	-2.33	-1.16
7,222.00	41.20	94.30	6,889.09	-19.17	872.90	645.55	2.91	-2.56	-2.09
7,285.00	40.30	95.10	6,921.66	-21.46	900.87	667.40	2.42	-2.09	1.86
7,308.00	40.80	96.40	6,954.34	-24.27	928.68	689.48	2.28	1.16	3.02
7,351.00	41.50	97.40	6,986.71	-27.67	956.77	712.17	2.23	1.63	2.33
7,394.00	41.30	96.70	7,018.97	-31.16	984.99	735.02	1.17	-0.47	-1.63
7,437.00	41.80	95.90	7,051.15	-34.29	1,013.34	757.71	1.70	1.16	-1.86
7,480.00	40.60	94.80	7,083.50	-36.93	1,041.54	779.96	3.26	-2.79	-2.56
7,523.00	39.50	95.00	7,116.42	-39.29	1,069.11	801.56	2.58	-2.56	0.47
7,566.00	41.40	94.90	7,149.14	-41.70	1,096.90	823.36	4.42	4.42	-0.23
7,609.00	42.10	96.10	7,181.22	-44.45	1,125.40	845.89	2.47	1.63	2.79
7,652.00	41.60	95.60	7,213.25	-47.37	1,153.94	868.58	1.40	-1.16	-1.16
7,695.00	40.60	96.60	7,245.65	-50.37	1,182.04	891.01	2.78	-2.33	2.33
7,714.00	39.80	95.90	7,260.17	-51.71	1,194.23	900.77	4.84	-4.21	-3.68
7,810.00	39.80	95.90	7,333.90	-58.00	1,255.40	949.41	0.00	0.00	0.00
Tie into Surveys at 7810'MD									
7,859.00	38.30	97.20	7,371.95	-61.52	1,286.07	974.05	3.49	-3.06	2.65
First ProMWD at 7859'MD									
7,890.00	38.30	96.90	7,396.28	-63.87	1,305.13	989.49	0.60	0.00	-0.97
7,922.00	39.30	96.10	7,421.22	-66.14	1,325.06	1,005.48	3.50	3.13	-2.50
7,953.00	40.70	98.30	7,444.97	-68.64	1,344.82	1,021.53	6.42	4.52	7.10
7,985.00	42.50	102.30	7,468.90	-72.45	1,365.71	1,039.29	10.02	5.63	12.50
8,017.00	44.50	106.10	7,492.12	-77.87	1,387.06	1,058.48	10.29	6.25	11.88
8,048.00	46.50	108.60	7,513.84	-84.47	1,408.15	1,078.31	8.64	6.45	8.06
8,080.00	48.60	111.60	7,535.44	-92.59	1,430.32	1,099.97	9.53	6.56	9.38
8,111.00	50.70	114.30	7,555.52	-101.81	1,452.06	1,122.08	9.48	6.77	8.71
8,143.00	52.10	116.60	7,575.48	-112.56	1,474.64	1,145.84	7.12	4.38	7.19
8,174.00	53.80	119.00	7,594.16	-124.10	1,496.52	1,169.65	8.26	5.48	7.74
8,206.00	55.80	122.10	7,612.61	-137.40	1,519.03	1,195.12	10.08	6.25	9.69
8,237.00	58.20	124.80	7,629.49	-151.73	1,540.71	1,220.71	10.64	7.74	8.71
8,269.00	61.10	127.50	7,645.66	-168.02	1,563.00	1,248.09	11.62	9.06	8.44
8,300.00	63.80	130.10	7,660.00	-185.25	1,584.41	1,275.47	11.45	8.71	8.39
8,332.00	65.40	132.80	7,673.73	-204.38	1,606.07	1,304.35	9.12	5.00	8.44
8,363.00	66.70	135.90	7,686.32	-224.19	1,626.32	1,332.68	10.05	4.19	10.00
8,395.00	69.00	138.40	7,698.38	-245.92	1,646.47	1,362.25	10.20	7.19	7.81
8,427.00	71.40	140.50	7,709.22	-268.79	1,666.04	1,392.20	9.71	7.50	6.56
8,458.00	73.60	141.80	7,718.54	-291.82	1,684.58	1,421.50	8.15	7.10	4.19
8,490.00	75.60	143.60	7,727.04	-316.36	1,703.27	1,451.96	8.27	6.25	5.63
8,521.00	77.80	145.50	7,734.17	-340.93	1,720.77	1,481.57	9.27	7.10	6.13
8,553.00	79.60	147.70	7,740.44	-367.13	1,738.04	1,512.14	8.78	5.63	6.88
8,584.00	81.60	149.80	7,745.51	-393.27	1,753.90	1,541.66	9.29	6.45	6.77
8,616.00	84.20	151.10	7,749.46	-420.89	1,769.56	1,572.04	9.07	8.13	4.06
8,648.00	86.60	152.40	7,752.03	-448.99	1,784.65	1,602.35	8.52	7.50	4.06
8,711.00	87.50	154.00	7,755.27	-505.15	1,813.02	1,661.61	3.91	2.53	2.54
8,805.00	86.20	152.00	7,760.44	-588.77	1,855.63	1,750.12	2.53	2.53	2.13
8,900.00	89.40	153.10	7,764.08	-673.00	1,899.38	1,839.88	3.56	3.37	1.16

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COMPASS 5000.1 Build 74



Professional Directional Survey Report



Company: EQT PRODUCTION
Project: Marion County, WV
Site: GL076 Pad
Well: Well #514746- Marcellus
Wellbore: Main Wellbore
Design: 514746 As Drilled Surveys

Local Co-ordinate Reference: Well Well #514746- Marcellus
TVD Reference: GL 1424 + 23' KB @ 1447.00usft (Pioneer 72)
MD Reference: GL 1424 + 23' KB @ 1447 00usft (Pioneer 72)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Well_Planner1

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,995.00	92.10	153.40	7,762.84	-757.82	1,942.13	1,929.32	2.86	2.84	0.32
9,090.00	91.60	151.90	7,759.77	-842.15	1,985.75	2,019.06	1.66	-0.53	-1.58
9,185.00	90.40	151.70	7,758.11	-925.86	2,030.64	2,109.28	1.28	-1.26	-0.21
9,279.00	89.50	151.70	7,758.20	-1,008.62	2,075.20	2,198.61	0.96	-0.96	0.00
9,374.00	90.20	152.60	7,758.44	-1,092.62	2,119.58	2,288.67	1.20	0.74	0.95
9,469.00	90.50	152.00	7,757.86	-1,176.73	2,163.74	2,378.64	0.71	0.32	-0.63
9,563.00	90.80	151.80	7,756.80	-1,259.64	2,208.01	2,467.87	0.38	0.32	-0.21
9,658.00	89.10	153.10	7,756.88	-1,343.87	2,251.95	2,557.76	2.25	-1.79	1.37
9,752.00	89.30	154.30	7,758.19	-1,428.13	2,293.59	2,646.01	1.29	0.21	1.28
9,847.00	88.10	155.50	7,760.35	-1,514.13	2,333.88	2,734.48	1.79	-1.26	1.26
9,941.00	88.40	155.00	7,763.22	-1,599.45	2,373.22	2,821.80	0.62	0.32	-0.53
10,036.00	88.50	155.50	7,765.79	-1,685.70	2,412.97	2,910.05	0.54	0.11	0.53
10,130.00	88.30	152.10	7,768.41	-1,769.99	2,454.45	2,998.21	3.62	-0.21	-3.62
10,225.00	88.70	152.60	7,770.90	-1,854.12	2,498.52	3,088.13	0.67	0.42	0.53
10,320.00	89.90	152.20	7,772.06	-1,938.30	2,542.53	3,178.04	1.33	1.26	-0.42
10,415.00	89.90	151.90	7,772.23	-2,022.22	2,587.06	3,268.15	0.32	0.00	-0.32
10,509.00	90.40	151.40	7,771.98	-2,104.94	2,631.70	3,357.51	0.75	0.53	-0.53
10,604.00	88.70	152.30	7,772.73	-2,188.70	2,676.51	3,447.71	2.02	-1.79	0.95
10,699.00	88.70	151.30	7,774.88	-2,272.40	2,721.39	3,537.93	1.05	0.00	-1.05
10,794.00	89.00	151.00	7,776.79	-2,355.59	2,767.22	3,628.48	0.45	0.32	-0.32
10,889.00	89.50	151.00	7,778.03	-2,438.67	2,813.27	3,719.11	0.53	0.53	0.00
10,983.00	88.70	153.20	7,779.51	-2,521.73	2,857.25	3,808.22	2.49	-0.85	2.34
11,078.00	89.10	152.70	7,781.33	-2,606.32	2,900.45	3,897.83	0.67	0.42	-0.53
11,172.00	88.30	155.40	7,783.47	-2,690.81	2,941.56	3,985.86	3.00	-0.85	2.87
11,267.00	88.70	154.80	7,785.95	-2,776.95	2,981.55	4,074.21	0.76	0.42	-0.63
11,343.00	89.40	155.50	7,787.21	-2,845.91	3,013.48	4,144.88	1.30	0.92	0.92
Last Survey: 11343'MD / 7787.21'TVD									
11,396.00	89.40	155.50	7,787.77	-2,894.13	3,035.46	4,194.04	0.00	0.00	0.00
PTB: 11396'MD									



Professional Directional Survey Report



Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #514746- Marcellus
Project:	Marion County, WV	TVD Reference:	GL 1424 + 23' KB @ 1447 00usft (Pioneer 72)
Site:	GLO76 Pad	MD Reference:	GL 1424 + 23' KB @ 1447 00usft (Pioneer 72)
Well:	Well #514746- Marcellus	North Reference:	Grid
Wellbore:	Main Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	514746 As Drilled Surveys	Database:	Well_Planner1

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Interp @ 6895.3 (Well #: - actual wellpath misses target center by 20.29usft at 7241.48usft MD (6903.79 TVD, -20.16 N, 885.63 E) - Point	0.00	0.00	6,905.25	0.08	885.59	389,063.70	1,721,886.23	39° 33' 50.45 N	80° 29' 11.37 W
514476 7200' MD - actual wellpath misses target center by 20.29usft at 7241.48usft MD (6903.79 TVD, -20.16 N, 885.63 E) - Point	0.00	0.00	6,905.25	0.08	885.59	389,063.70	1,721,886.23	39° 33' 50.45 N	80° 29' 11.37 W
514746 Plat LP - actual wellpath misses target center by 2545.06usft at 6060.00usft MD (6026.96 TVD, 89.15 N, 102.13 E) - Point	0.00	360.00	7,525.00	-251.53	-1,926.94	388,812.10	1,719,073.70	39° 33' 47.66 N	80° 29' 47.25 W
514746 Plat TD - actual wellpath misses target center by 2909.39usft at 6679.71usft MD (6487.08 TVD, 33.35 N, 513.07 E) - Point	0.00	360.00	7,525.00	-2,280.23	-913.34	386,783.40	1,720,087.30	39° 33' 27.72 N	80° 29' 34.02 W
514746 Plat TD 2 - actual wellpath misses target center by 117.84usft at 11393.67usft MD (7787.76 TVD, -2892.04 N, 3034.45 E) - Point	0.00	0.00	7,670.00	-2,891.53	3,038.54	386,172.10	1,724,039.18	39° 33' 22.11 N	80° 28' 43.48 W
514746 LP @1553' VS - actual wellpath misses target center by 81.77usft at 8574.40usft MD (7744.07 TVD, -385.12 N, 1749.04 E) - Point	0.00	0.00	7,670.00	-378.80	1,783.10	388,684.83	1,722,783.74	39° 33' 46.81 N	80° 28' 59.86 W
514746 Plat LP2 - actual wellpath misses target center by 58.44usft at 8523.64usft MD (7734.75 TVD, -343.08 N, 1722.18 E) - Point	0.00	360.00	7,691.00	-329.60	1,758.52	388,734.03	1,722,759.15	39° 33' 47.29 N	80° 29' 0.18 W
514746 LP 1572' VS p5 - actual wellpath misses target center by 30.94usft at 8613.67usft MD (7749.24 TVD, -418.89 N, 1768.40 E) - Point	0.00	0.00	7,720.00	-426.70	1,762.00	388,636.93	1,722,762.64	39° 33' 46.33 N	80° 29' 0.12 W
514746 Plat TD2 p4 - actual wellpath misses target center by 67.89usft at 11394.20usft MD (7787.77 TVD, -2892.51 N, 3034.67 E) - Point	0.00	360.00	7,720.00	-2,891.53	3,038.54	386,172.10	1,724,039.18	39° 33' 22.11 N	80° 28' 43.48 W
514746 Plat LP2 p4 - actual wellpath misses target center by 41.03usft at 8529.32usft MD (7735.92 TVD, -347.69 N, 1725.30 E) - Point	0.00	360.00	7,720.00	-329.60	1,758.52	388,734.03	1,722,759.15	39° 33' 47.29 N	80° 29' 0.18 W
514746 LP 1553' VS p4 - actual wellpath misses target center by 41.40usft at 8582.56usft MD (7745.32 TVD, -392.07 N, 1753.14 E) - Point	0.00	360.00	7,720.00	-378.80	1,783.10	388,684.83	1,722,783.74	39° 33' 46.81 N	80° 28' 59.86 W
514746 LP 1572' VS p6 - actual wellpath misses target center by 31.24usft at 8614.79usft MD (7749.36 TVD, -419.86 N, 1768.94 E) - Point	0.00	0.00	7,720.00	-428.00	1,762.00	388,635.63	1,722,762.64	39° 33' 46.32 N	80° 29' 0.12 W
BHL 514746 Plat - actual wellpath misses target center by 30.03usft at 11394.60usft MD (7787.77 TVD, -2892.88 N, 3034.84 E) - Point	0.00	360.00	7,758.00	-2,891.53	3,038.54	386,172.10	1,724,039.18	39° 33' 22.11 N	80° 28' 43.48 W
LP 514746 - actual wellpath misses target center by 34.72usft at 8587.34usft MD (7746.01 TVD, -396.15 N, 1755.52 E) - Point	0.00	360.00	7,758.00	-378.80	1,783.10	388,684.83	1,722,783.74	39° 33' 46.81 N	80° 28' 59.86 W



Professional Directional Survey Report



Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #514746- Marcellus
Project:	Manon County, WV	TVD Reference:	GL 1424 + 23' KB @ 1447 00usft (Pioneer 72)
Site:	GLO76 Pad	MD Reference:	GL 1424 + 23' KB @ 1447 00usft (Pioneer 72)
Well:	Well #514746- Marcellus	North Reference:	Grid
Wellbore:	Main Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	514746 As Drilled Surveys	Database:	Well_Planner1

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N-S (usft)	+E-W (usft)	
7,714.00	7,260.17	-51.71	1,194.23	Final Survey=7704' MD/7250' TVD
7,810.00	7,333.92	-58.02	1,255.36	PROJ to Bit=7800' MD/7324' TVD
7,859.00	7,371.95	-61.52	1,286.07	First ProMWD at 7859'MD
11,343.00	7,787.21	-2,845.91	3,013.48	Last Survey: 11343'MD / 7787.21'TVD
11,396.00	7,787.77	-2,894.13	3,035.46	PTB: 11396'MD

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WV Department of
Environmental Protection



EQT PRODUCTION
 GLO76 Pad
 Marion County, WV
 Well #514746 - Marcellus
 514746 Plan 7 - AVP FINAL (Grid)
 Pioneer 72
 GL 1424 + 23' KB @ 1447.0duist (Pioneer 72)

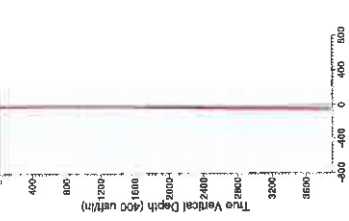


Azimuth Corrections
 To convert a magnetic direction to a Grid Direction, subtract 9.02°

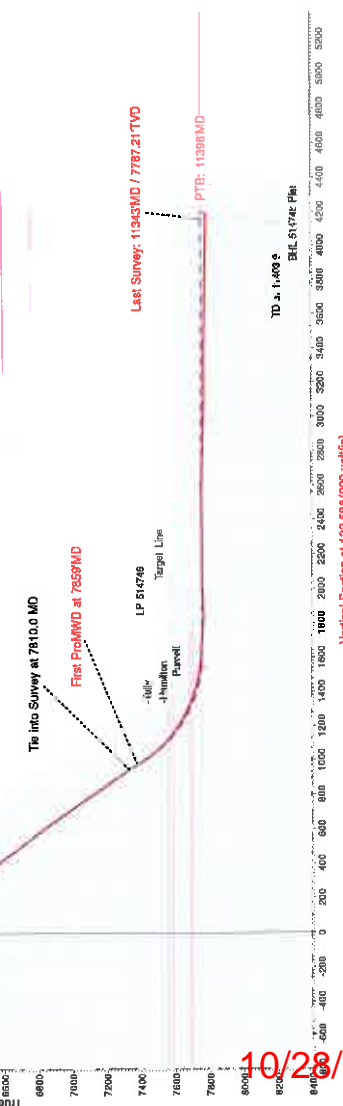
Geoidetic System: US State Plane (1983 (East Addition))
 NAD 83 / NAD 83 (CONUS)
 Ellipsoid: Clarke 1886
 Zone: West Virginia North 4791
 System Datum: Mean Sea Level

RKS Elevation: GL 1424 + 23' KB @ 1447.0duist (Pioneer 72)
 NGS - E/W Nothing Easting Longitude
 0.00 0.00 386328.85 1721580.84 39°53'50.38 N 80°29'22.58 W

Survey	Start	End	Length	Bearing	Area	Volume
1	0.00	100.00	100.00	0.00	0.00	0.00
2	100.00	200.00	100.00	90.00	100.00	100.00
3	200.00	300.00	100.00	180.00	0.00	0.00
4	300.00	400.00	100.00	270.00	-100.00	-100.00
5	400.00	500.00	100.00	360.00	0.00	0.00
6	500.00	600.00	100.00	0.00	100.00	100.00
7	600.00	700.00	100.00	90.00	100.00	100.00
8	700.00	800.00	100.00	180.00	0.00	0.00
9	800.00	900.00	100.00	270.00	-100.00	-100.00
10	900.00	1000.00	100.00	360.00	0.00	0.00

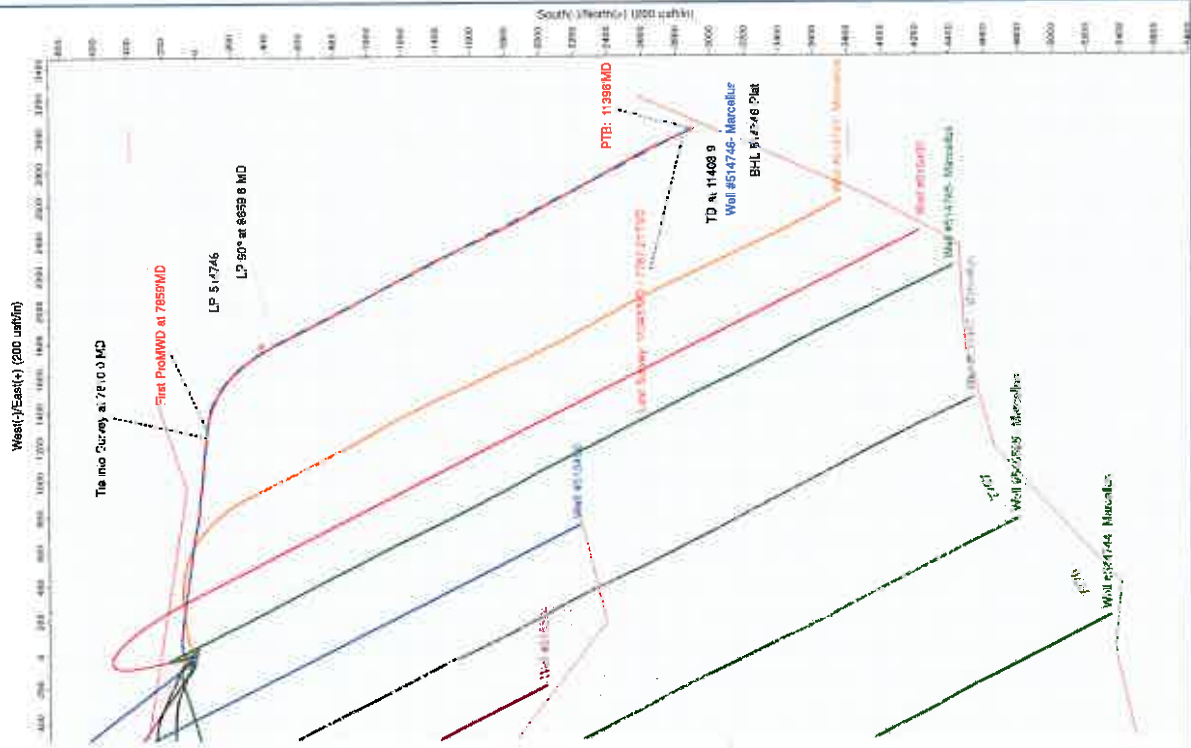


Vertical Section at 133.58° (400 usft/m)



TD at 11400 ± BHL 514746 PM

Vertical Section at 133.58° (200 usft/m)



10/28/2016