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# **EQT PRODUCTION**

**Wetzel County, WV**

**BIG 192**

**Well #513922- Marcellus**

**API #47-10303110**

**Main Wellbore**

**Design: 513922 As Drilled Surveys**

## **Standard Survey Report**

**29 December, 2015**



10/28/2016



# Professional Directional Survey Report



<b>Company:</b>	EQT PRODUCTION	<b>Local Co-ordinate Reference:</b>	Well Well #513922- Marcellus
<b>Project:</b>	Wetzel County, WV	<b>TVD Reference:</b>	GL 1452 + 23' KB @ 1475.00usft (Pioneer 72)
<b>Site:</b>	BIG 192	<b>MD Reference:</b>	GL 1452 + 23' KB @ 1475 00usft (Pioneer 72)
<b>Well:</b>	Well #513922- Marcellus	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Main Wellbore	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	513922 As Drilled Surveys	<b>Database:</b>	Well_Planner1

<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		

<b>Site</b>	BIG 192				
<b>Site Position:</b>		<b>Northing:</b>	376,113.90 usft	<b>Latitude:</b>	39° 31' 39.36 N
<b>From:</b>	Map	<b>Easting:</b>	1,694,562.00 usft	<b>Longitude:</b>	80° 34' 58.27 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	-0.69 °

<b>Well</b>	Well #513922- Marcellus					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	376,139.37 usft	<b>Latitude:</b>	39° 31' 39.61 N
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,694,589.58 usft	<b>Longitude:</b>	80° 34' 57.92 W
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	1,475.00 usft	<b>Ground Level:</b>	1,452.00 usft

<b>Wellbore</b>	Main Wellbore				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	12/16/2015	-8.30	67.00	52,501

<b>Design</b>	513922 As Drilled Surveys				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	115.79	

<b>Survey Program</b>	<b>Date</b>	12/29/2015			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
110.00	4,110.00	513922 Gyrodata Gyros (Main Wellbore)	GYD_DP_MS	Gyrodata gyro-compassing and drop	
4,135.00	13,816.00	513922 Pro MWD (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	0.27	259.54	110.00	-0.05	-0.25	-0.21	0.25	0.25	0.00
210.00	0.32	232.33	210.00	-0.26	-0.71	-0.52	0.15	0.05	-27.21
310.00	0.26	225.88	310.00	-0.59	-1.09	-0.73	0.07	-0.06	-6.45
410.00	0.25	185.44	410.00	-0.96	-1.28	-0.73	0.18	-0.01	-40.44
510.00	0.21	170.86	510.00	-1.36	-1.27	-0.55	0.07	-0.04	-14.58
610.00	0.23	172.90	609.99	-1.74	-1.21	-0.33	0.02	0.02	2.04
710.00	0.17	154.51	709.99	-2.08	-1.12	-0.11	0.09	-0.06	-18.39
810.00	0.22	121.37	809.99	-2.31	-0.90	0.20	0.12	0.05	-33.14
910.00	0.32	117.62	909.99	-2.54	-0.48	0.67	0.10	0.10	-3.75



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<b>Project:</b>	Wetzel County, WV	<b>TVD Reference:</b>	GL 1452 + 23' KB @ 1475 00usft (Pioneer 72)
<b>Site:</b>	BIG 192	<b>MD Reference:</b>	GL 1452 + 23' KB @ 1475 00usft (Pioneer 72)
<b>Well:</b>	Well #513922- Marcellus	<b>North Reference:</b>	Gnd
<b>Wellbore:</b>	Main Wellbore	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	513922 As Drilled Surveys	<b>Database:</b>	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)
1,010.00	0.34	117.30	1,009.99	-2.80	0.03	1.24	0.02	0.02	-0.32
1,110.00	0.39	115.77	1,109.99	-3.09	0.60	1.88	0.05	0.05	-1.53
1,210.00	0.40	127.09	1,209.99	-3.45	1.18	2.56	0.08	0.01	-11.32
1,310.00	0.42	130.44	1,309.98	-3.90	1.74	3.26	0.03	0.02	3.35
1,410.00	0.42	137.52	1,409.98	-4.40	2.27	3.96	0.05	0.00	7.08
1,510.00	0.43	140.31	1,509.98	-4.96	2.75	4.64	0.02	0.01	2.79
1,610.00	0.49	131.77	1,609.98	-5.54	3.31	5.39	0.09	0.06	-8.54
1,710.00	0.56	132.29	1,709.97	-6.15	3.99	6.27	0.07	0.07	0.52
1,810.00	0.53	137.61	1,809.97	-6.82	4.66	7.17	0.06	-0.03	5.32
1,910.00	0.48	151.71	1,909.96	-7.53	5.17	7.94	0.13	-0.05	14.10
2,010.00	0.43	163.71	2,009.96	-8.26	5.48	8.53	0.11	-0.05	12.00
2,110.00	0.36	185.83	2,109.96	-8.93	5.55	8.89	0.17	-0.07	22.12
2,210.00	0.37	191.11	2,209.96	-8.56	5.46	9.07	0.04	0.01	5.28
2,310.00	0.29	77.91	2,309.95	-9.83	5.64	9.36	0.55	-0.08	-113.20
2,410.00	5.26	41.51	2,409.81	-6.34	8.93	10.80	5.03	4.97	-36.40
2,510.00	7.71	42.15	2,509.16	2.07	16.47	13.93	2.45	2.45	0.64
2,610.00	4.05	55.59	2,608.62	9.04	23.89	17.58	3.89	-3.66	13.44
2,710.00	0.70	109.90	2,708.53	10.83	27.38	19.94	3.69	-3.35	54.31
2,810.00	0.41	113.49	2,808.52	10.48	28.28	20.90	0.29	-0.29	3.59
2,910.00	0.08	77.51	2,908.52	10.35	28.68	21.32	0.35	-0.33	-35.98
3,010.00	0.17	270.41	3,008.52	10.37	28.60	21.24	0.25	0.09	-167.10
3,110.00	0.23	253.43	3,108.52	10.31	28.26	20.96	0.08	0.06	-16.98
3,210.00	0.41	257.45	3,208.52	10.18	27.71	20.53	0.18	0.18	4.02
3,310.00	0.66	243.68	3,308.51	9.84	26.85	19.89	0.28	0.25	-13.77
3,410.00	0.25	257.97	3,408.51	9.54	26.12	19.37	0.42	-0.41	14.29
3,510.00	0.22	331.49	3,508.51	9.67	25.81	19.04	0.28	-0.03	73.52
3,610.00	0.33	305.29	3,608.51	10.00	25.49	18.60	0.16	0.11	-26.20
3,710.00	0.32	299.23	3,708.51	10.30	25.01	18.03	0.04	-0.01	-8.06
3,810.00	0.36	302.85	3,808.51	10.61	24.50	17.44	0.05	0.04	3.62
3,910.00	0.50	285.56	3,908.50	10.90	23.82	16.70	0.19	0.14	-17.29
4,010.00	0.42	303.90	4,008.50	11.22	23.09	15.91	0.17	-0.08	18.34
4,110.00	0.45	313.59	4,108.50	11.69	22.50	15.17	0.08	0.03	9.69
<b>Tie into Survey's 4110'MD</b>									
4,135.00	0.20	329.70	4,133.50	11.80	22.41	15.04	1.06	-1.00	64.44
<b>First PromWd 4135'MD</b>									
4,166.00	2.00	122.40	4,164.49	11.56	22.84	15.54	7.03	5.81	492.58
4,198.00	4.90	95.80	4,196.43	11.12	24.67	17.38	10.12	9.06	-83.13
4,229.00	8.00	80.30	4,227.23	11.35	28.12	20.38	11.38	10.00	-50.00
4,261.00	11.00	77.40	4,258.79	12.39	33.29	24.59	9.49	9.38	-9.06
4,293.00	14.10	80.10	4,290.02	13.73	40.11	30.15	9.86	9.69	8.44
4,324.00	16.90	81.40	4,319.89	15.05	48.29	36.93	9.10	9.03	4.19
4,356.00	19.90	80.60	4,350.25	16.64	58.26	45.22	9.41	9.38	-2.50
4,387.00	23.30	78.50	4,379.07	18.72	69.48	54.41	11.25	10.97	-6.77



# Professional Directional Survey Report



**Company:** EQT PRODUCTION  
**Project:** Wetzel County, WV  
**Site:** BIG 192  
**Well:** Well #513922- Marcellus  
**Wellbore:** Main Wellbore  
**Design:** 513922 As Drilled Surveys

**Local Co-ordinate Reference:** Well Well #513922- Marcellus  
**TVD Reference:** GL 1452 + 23' KB @ 1475 00usft (Pioneer 72)  
**MD Reference:** GL 1452 + 23' KB @ 1475 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)
4,419.00	26.00	74.70	4,408.16	21.83	82.45	64.74	9.78	8.44	-11.88
4,450.00	28.50	73.80	4,435.71	25.69	96.11	75.36	8.17	8.06	-2.90
4,482.00	31.80	73.40	4,463.38	30.23	111.52	87.26	10.33	10.31	-1.25
4,513.00	35.20	73.20	4,489.23	35.15	127.91	99.88	10.97	10.97	-0.65
4,545.00	37.80	73.40	4,514.95	40.62	146.14	113.91	8.13	8.13	0.63
4,576.00	40.60	74.20	4,538.97	46.08	164.95	128.48	9.18	9.03	2.58
4,639.00	41.50	75.90	4,586.48	56.74	204.92	159.82	2.28	1.43	2.70
4,734.00	40.80	76.00	4,658.01	71.92	265.57	207.82	0.74	-0.74	0.11
4,829.00	39.30	74.80	4,730.73	87.32	324.72	254.39	1.78	-1.58	-1.26
4,823.00	39.80	74.90	4,803.21	102.96	382.49	299.60	0.54	0.53	0.11
5,018.00	38.30	73.20	4,876.99	119.39	440.04	344.26	1.94	-1.58	-1.79
5,113.00	40.00	76.80	4,950.67	134.88	497.96	389.68	2.99	1.79	3.79
5,207.00	37.50	74.90	5,023.98	149.23	555.01	434.80	2.94	-2.66	-2.02
5,302.00	39.00	76.20	5,098.58	163.90	611.96	479.70	1.79	1.58	1.37
5,396.00	40.50	76.90	5,170.85	177.87	670.42	526.25	1.67	1.60	0.74
5,491.00	43.10	75.20	5,241.67	193.16	731.85	574.92	2.89	2.74	-1.79
5,586.00	42.10	72.80	5,311.80	210.87	793.66	622.86	2.01	-1.05	-2.53
5,680.00	40.00	70.40	5,382.49	230.32	852.23	687.14	2.79	-2.23	-2.55
5,775.00	39.50	75.90	5,455.55	247.93	910.32	711.78	3.74	-0.53	5.79
5,870.00	40.20	75.20	5,528.48	263.12	969.26	758.24	0.88	0.74	-0.74
5,964.00	38.20	73.20	5,601.33	279.27	1,026.42	802.68	2.52	-2.13	-2.13
6,059.00	39.90	75.20	5,675.11	295.55	1,084.01	847.45	2.23	1.79	2.11
6,154.00	41.30	75.30	5,747.23	311.29	1,143.79	894.43	1.48	1.47	0.11
6,248.00	40.00	73.90	5,818.55	327.54	1,202.83	940.52	1.69	-1.38	-1.49
6,343.00	40.20	75.00	5,891.22	343.94	1,261.78	986.46	0.77	0.21	1.16
6,437.00	38.10	73.30	5,964.12	360.13	1,318.87	1,030.82	2.51	-2.23	-1.81
6,532.00	39.50	74.60	6,038.15	376.58	1,376.07	1,075.17	1.70	1.47	1.37
6,627.00	41.40	76.20	6,110.44	392.09	1,435.72	1,122.12	2.28	2.00	1.68
6,721.00	39.70	74.90	6,181.87	407.33	1,494.89	1,168.77	2.02	-1.81	-1.38
6,816.00	40.00	74.60	6,254.80	423.34	1,553.62	1,214.69	0.38	0.32	-0.32
6,910.00	39.30	73.70	6,327.18	439.72	1,611.32	1,259.51	0.96	-0.74	-0.96
7,005.00	39.00	73.50	6,400.85	456.65	1,668.86	1,303.95	0.34	-0.32	-0.21
7,100.00	40.00	74.30	6,474.15	473.41	1,726.92	1,348.94	1.18	1.05	0.84
7,195.00	40.60	75.10	6,546.61	489.62	1,786.18	1,395.25	0.83	0.63	0.84
7,289.00	38.10	73.80	6,619.29	505.58	1,843.60	1,440.00	2.80	-2.66	-1.38
7,384.00	39.20	76.60	6,693.49	520.71	1,900.96	1,485.06	2.17	1.16	2.95
7,479.00	41.20	77.90	6,766.05	534.23	1,960.76	1,533.03	2.28	2.11	1.37
7,573.00	39.40	76.30	6,837.74	547.79	2,020.02	1,580.49	2.21	-1.91	-1.70
7,668.00	40.80	76.50	6,910.40	562.17	2,079.49	1,627.78	1.48	1.47	0.21
7,763.00	39.00	74.40	6,983.28	577.46	2,138.47	1,674.23	2.37	-1.89	-2.21
7,857.00	40.30	75.50	7,055.86	593.03	2,196.40	1,719.61	1.57	1.38	1.17
7,952.00	38.20	73.20	7,129.23	609.21	2,254.27	1,764.68	2.69	-2.21	-2.42
8,047.00	40.50	74.80	7,202.69	625.79	2,312.17	1,809.60	2.65	2.42	1.68
8,142.00	41.40	73.70	7,274.44	642.70	2,372.09	1,856.20	1.21	0.95	-1.16



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## Survey

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8,173.00	40.40	73.20	7,297.87	648.48	2,391.55	1,871.20	3.39	-3.23	-1.61
8,205.00	39.40	75.20	7,322.42	654.07	2,411.29	1,886.55	5.08	-3.13	6.25
8,237.00	38.80	79.10	7,347.26	658.56	2,430.96	1,902.30	7.91	-1.88	12.19
8,268.00	39.80	83.10	7,371.25	661.59	2,450.35	1,918.44	8.78	3.23	12.90
8,300.00	41.90	86.30	7,395.45	663.51	2,471.19	1,936.37	9.26	6.56	10.00
8,331.00	43.10	88.90	7,418.31	664.38	2,492.11	1,954.83	6.86	3.87	8.39
8,363.00	44.20	91.90	7,441.47	664.22	2,514.19	1,974.78	7.33	3.44	9.38
8,395.00	46.60	95.60	7,463.94	662.72	2,536.92	1,995.89	11.13	7.50	11.56
8,426.00	49.30	98.90	7,484.70	659.80	2,559.74	2,017.72	11.76	8.71	10.65
8,458.00	51.20	102.10	7,505.17	655.31	2,583.92	2,041.44	9.71	5.94	10.00
8,489.00	53.20	105.80	7,524.17	649.39	2,607.69	2,065.41	11.42	6.45	11.94
8,521.00	56.40	108.10	7,542.62	641.76	2,632.69	2,091.24	11.60	10.00	7.19
8,552.00	59.00	110.40	7,559.18	633.12	2,657.42	2,117.27	10.47	8.39	7.42
8,584.00	62.20	112.40	7,574.89	622.94	2,683.37	2,145.07	11.39	10.00	6.25
8,616.00	65.40	114.00	7,589.02	611.63	2,709.75	2,173.74	10.96	10.00	5.00
8,647.00	68.30	115.70	7,601.20	599.65	2,735.61	2,202.24	10.63	9.35	5.48
8,679.00	70.80	117.80	7,612.38	586.15	2,762.38	2,232.21	9.94	7.81	6.56
8,710.00	73.30	119.80	7,621.94	571.94	2,788.22	2,261.66	10.13	8.06	6.45
8,742.00	75.50	122.00	7,630.54	556.11	2,814.86	2,292.35	9.54	6.88	6.88
8,773.00	77.40	124.20	7,637.81	539.65	2,839.90	2,322.24	9.23	6.13	7.10
8,805.00	78.80	126.40	7,644.41	521.56	2,865.45	2,353.12	8.02	4.38	6.88
8,837.00	81.80	128.40	7,649.80	502.40	2,890.50	2,384.01	11.22	9.38	6.25
8,868.00	84.00	130.60	7,653.63	482.84	2,914.24	2,413.89	10.00	7.10	7.10
8,900.00	86.80	132.00	7,656.25	461.79	2,938.19	2,444.62	9.22	8.13	4.38
8,931.00	87.00	132.70	7,657.98	440.94	2,961.07	2,474.29	2.60	1.29	2.26
8,963.00	88.30	134.90	7,659.30	418.81	2,984.14	2,504.69	7.98	4.06	6.88
8,994.00	88.90	136.70	7,660.05	396.59	3,005.75	2,533.81	6.12	1.94	5.81
9,089.00	89.80	136.70	7,661.13	327.46	3,070.90	2,622.55	0.95	0.95	0.00
9,184.00	87.00	136.00	7,663.78	258.76	3,136.44	2,711.45	3.04	-2.95	-0.74
9,279.00	87.10	136.40	7,668.67	190.28	3,202.10	2,800.37	0.43	0.11	0.42
9,374.00	89.20	135.60	7,671.74	121.98	3,268.06	2,889.47	2.37	2.21	-0.84
9,468.00	89.40	135.10	7,672.89	55.11	3,334.11	2,978.04	0.57	0.21	-0.53
9,563.00	89.60	134.00	7,673.72	-11.53	3,401.81	3,067.99	1.18	0.21	-1.16
9,658.00	89.90	134.30	7,674.13	-77.70	3,469.97	3,158.15	0.45	0.32	0.32
9,753.00	91.70	134.70	7,672.80	-144.27	3,537.72	3,248.12	1.94	1.89	0.42
9,847.00	90.20	137.20	7,671.25	-211.82	3,603.06	3,336.34	3.10	-1.60	2.66
9,941.00	90.70	136.90	7,670.51	-280.62	3,667.11	3,423.94	0.62	0.53	-0.32
10,036.00	89.00	136.80	7,670.76	-349.93	3,732.08	3,512.59	1.79	-1.79	-0.11
10,131.00	89.90	137.00	7,671.67	-419.29	3,796.99	3,601.21	0.97	0.95	0.21
10,225.00	88.20	137.50	7,673.23	-488.30	3,860.78	3,688.67	1.89	-1.81	0.53
10,320.00	88.90	136.90	7,675.63	-557.98	3,925.31	3,777.09	0.97	0.74	-0.63
10,414.00	89.10	137.20	7,677.27	-626.78	3,989.34	3,864.68	0.38	0.21	0.32
10,509.00	89.80	137.90	7,678.18	-696.87	4,053.46	3,952.90	1.04	0.74	0.74



# Professional Directional Survey Report



<b>Company:</b>	EQT PRODUCTION	<b>Local Co-ordinate Reference:</b>	Well Well #513922- Marcellus
<b>Project:</b>	Wetzel County, WV	<b>TVD Reference:</b>	GL 1452 + 23' KB @ 1475 00usft (Pioneer 72)
<b>Site:</b>	BIG 192	<b>MD Reference:</b>	GL 1452 + 23' KB @ 1475 00usft (Pioneer 72)
<b>Well:</b>	Well #513922- Marcellus	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Main Wellbore	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	513922 As Drilled Surveys	<b>Database:</b>	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)	
10,604.00	89.30	136.20	7,678.93	-766.40	4,118.19	4,041.43	1.87	-0.53	-1.79	
10,698.00	90.20	136.10	7,679.34	-834.19	4,183.31	4,129.56	0.96	0.96	-0.11	
10,793.00	90.90	137.30	7,678.43	-903.32	4,248.45	4,218.30	1.46	0.74	1.26	
10,887.00	89.80	134.30	7,677.85	-970.70	4,313.98	4,306.61	3.40	-1.17	-3.19	
10,982.00	90.40	134.90	7,677.69	-1,037.40	4,381.62	4,396.53	0.89	0.63	0.63	
11,076.00	89.20	135.00	7,678.01	-1,103.81	4,448.14	4,485.32	1.28	-1.28	0.11	
11,171.00	90.00	135.00	7,678.68	-1,170.98	4,515.32	4,575.03	0.84	0.84	0.00	
11,265.00	88.00	137.10	7,680.32	-1,238.64	4,580.54	4,663.19	3.08	-2.13	2.23	
11,360.00	88.40	136.30	7,683.30	-1,307.75	4,645.66	4,751.89	0.94	0.42	-0.84	
11,455.00	89.00	136.30	7,685.46	-1,376.41	4,711.28	4,840.85	0.63	0.63	0.00	
11,549.00	91.10	138.90	7,685.38	-1,445.81	4,774.65	4,928.11	3.56	2.23	2.77	
11,643.00	90.50	134.60	7,684.06	-1,514.26	4,839.04	5,015.86	4.62	-0.64	-4.57	
11,738.00	91.00	134.60	7,682.82	-1,580.96	4,906.67	5,105.78	0.53	0.53	0.00	
11,833.00	92.10	134.90	7,680.25	-1,647.81	4,974.11	5,195.59	1.20	1.16	0.32	
11,927.00	89.50	134.40	7,678.94	-1,713.86	5,040.98	5,284.52	2.82	-2.77	-0.53	
12,022.00	89.90	134.60	7,679.43	-1,780.45	5,108.73	5,374.50	0.47	0.42	0.21	
12,116.00	90.40	133.60	7,679.19	-1,845.86	5,176.24	5,463.74	1.19	0.53	-1.06	
12,211.00	89.10	136.50	7,679.60	-1,913.08	5,243.34	5,553.41	3.35	-1.37	3.05	
12,306.00	89.50	136.60	7,680.76	-1,982.05	5,308.67	5,642.24	0.43	0.42	0.11	
12,400.00	90.50	136.90	7,680.76	-2,050.51	5,373.08	5,730.02	1.11	1.06	0.32	
12,495.00	88.80	136.50	7,681.34	-2,119.65	5,438.23	5,818.75	1.84	-1.79	-0.42	
12,590.00	89.20	136.40	7,683.00	-2,188.49	5,503.67	5,907.63	0.43	0.42	-0.11	
12,684.00	89.80	137.00	7,683.82	-2,256.90	5,568.13	5,995.44	0.90	0.64	0.64	
12,779.00	90.50	136.50	7,683.57	-2,326.09	5,633.23	6,084.15	0.91	0.74	-0.53	
12,873.00	88.30	135.40	7,684.56	-2,393.64	5,698.57	6,172.38	2.62	-2.34	-1.17	
12,968.00	89.10	135.80	7,686.71	-2,461.50	5,765.02	6,261.73	0.94	0.84	0.42	
13,062.00	89.40	135.80	7,687.94	-2,528.88	5,830.55	6,350.05	0.32	0.32	0.00	
13,157.00	90.70	137.10	7,687.86	-2,597.73	5,896.00	6,438.94	1.94	1.37	1.37	
13,251.00	91.60	137.40	7,685.97	-2,666.75	5,959.80	6,526.40	1.01	0.96	0.32	
13,346.00	90.60	135.30	7,684.15	-2,735.47	6,025.35	6,615.33	2.45	-1.05	-2.21	
13,440.00	91.40	135.30	7,682.51	-2,802.27	6,091.46	6,703.92	0.85	0.85	0.00	
13,535.00	89.40	135.20	7,681.85	-2,869.74	6,158.34	6,793.48	2.11	-2.11	-0.11	
13,629.00	89.40	134.80	7,682.83	-2,936.20	6,224.80	6,882.24	0.43	0.00	-0.43	
13,724.00	90.00	134.90	7,683.33	-3,003.20	6,292.15	6,972.03	0.64	0.63	0.11	
13,761.00	90.30	134.90	7,683.23	-3,029.31	6,318.36	7,006.99	0.81	0.81	0.00	
<b>Last Survey 13761°MD / 7683 23°TVD</b>										
13,816.00	90.30	134.90	7,682.94	-3,068.14	6,357.32	7,058.96	0.00	0.00	0.00	
<b>PTB: 13816°MD</b>										



# Professional Directional Survey Report



<b>Company:</b>	EQT PRODUCTION	<b>Local Co-ordinate Reference:</b>	Well Well #513922- Marcellus
<b>Project:</b>	Wetzel County, WV	<b>TVD Reference:</b>	GL 1452 + 23' KB @ 1475 00usft (Pioneer 72)
<b>Site:</b>	BIG 192	<b>MD Reference:</b>	GL 1452 + 23' KB @ 1475 00usft (Pioneer 72)
<b>Well:</b>	Well #513922- Marcellus	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Main Wellbore	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	513922 As Drilled Surveys	<b>Database:</b>	Well_Planner1

### Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,110.00	4,108.50	11.69	22.50	Tie into Survey's 4110'MD
4,135.00	4,133.50	11.80	22.41	First ProMWD 4135'MD
13,761.00	7,683.23	-3,029.31	6,318.36	Last Survey 13761'MD / 7683.23'TVD
13,816.00	7,682.94	-3,068.14	6,357.32	PTB: 13816'MD



Where energy meets innovation.

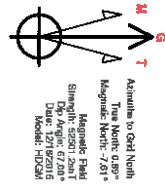
**EQT PRODUCTION**  
**BIG 192**  
 Wetzel County, WV  
 Well #513922- Marcellus  
**513922 Plan 9 - AVP FINAL (Grid)**  
 Pioneer 72  
 GL 1452 + 23 KB @ 1475.00usft (Pioneer 72)



West(Prod) (500 usft/in)

10/28/2016

True Vertical Depth (500 usft/in)



**Azimuth Corrections**

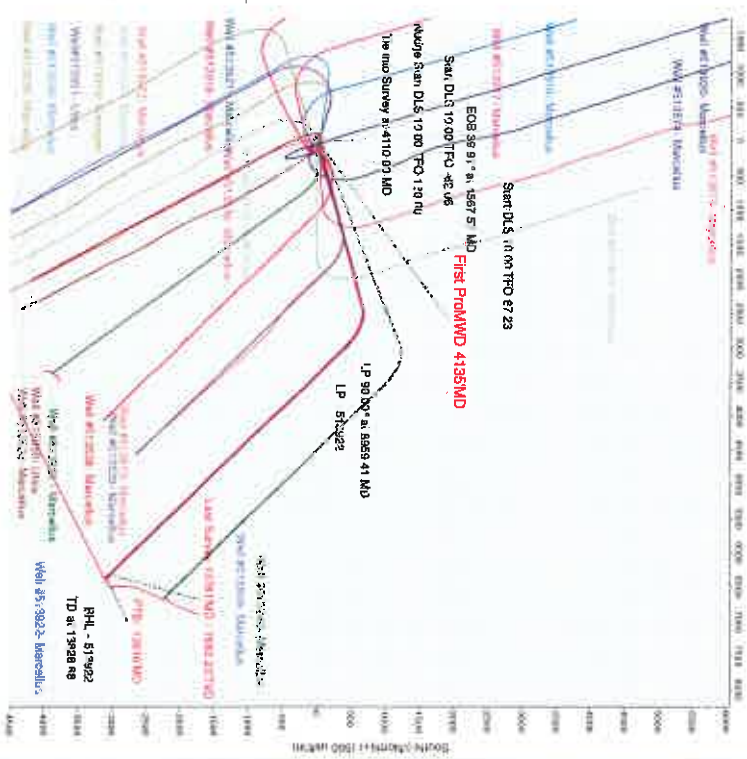
To convert a Magnetic Decline to a Grid Decline, Subtract 7.81°  
 RNS Elevation: DL 1452 + 23 KB @ 1475.00usft (Pioneer 72)  
 +NS +E/W Kneeling Bearing Latitude Longitude  
 0.00 0.00 378153.31 149.050323 99° 31' 58.31" N 80° 34' 57.32" W

**DESIGN TARGET DETAILS**

Name	TVD	+NS	+E/W	Bearing	Latitude	Longitude	Grid
BHL - 513922	7570.00	-3071.46	6805.83	872987.93	1700946.49		
LP - 513922	7570.00	431.19	2973.14	378570.56	1897582.72		

**SECTION DETAILS**

Surf	MD	Mag	SDI	TD	NES	AE/W	Deg	TPO	Vsect	Target
1	4110.00	0.46	313.89	4100.54	11.91	22.82	0.00	14.58		
2	4148.00	2.95	132.59	4187.05	11.39	22.82	0.00	15.58		
3	4183.00	4.44	74.88	4258.44	8.00	24.22	0.00	15.58		
4	4215.00	5.93	38.91	4329.93	4.61	24.22	0.00	15.58		
5	4245.00	7.42	22.82	4391.42	1.22	24.22	0.00	15.58		
6	4283.73	88.91	74.88	4500.61	0.00	24.22	0.00	15.58		
7	4328.70	136.00	136.00	4571.46	0.00	24.22	0.00	15.58		



Vertical Section at 115.78° (500 usft/in)

Scale: 1 inch = 1000 feet