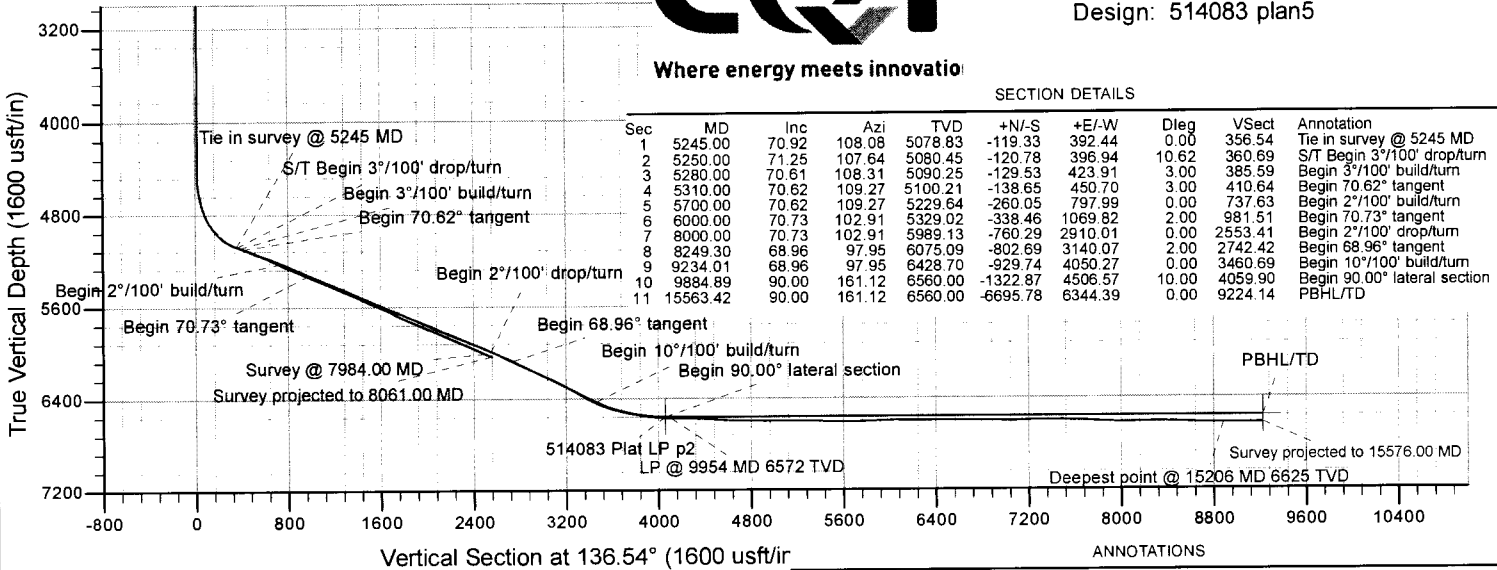




Project: Ritchie County, WV  
 Site: OXF122  
 Well: Well #514083 - Marcellus  
 Wellbore: Sidetrack 01  
 Design: 514083 plan5

Where energy meets innovatio

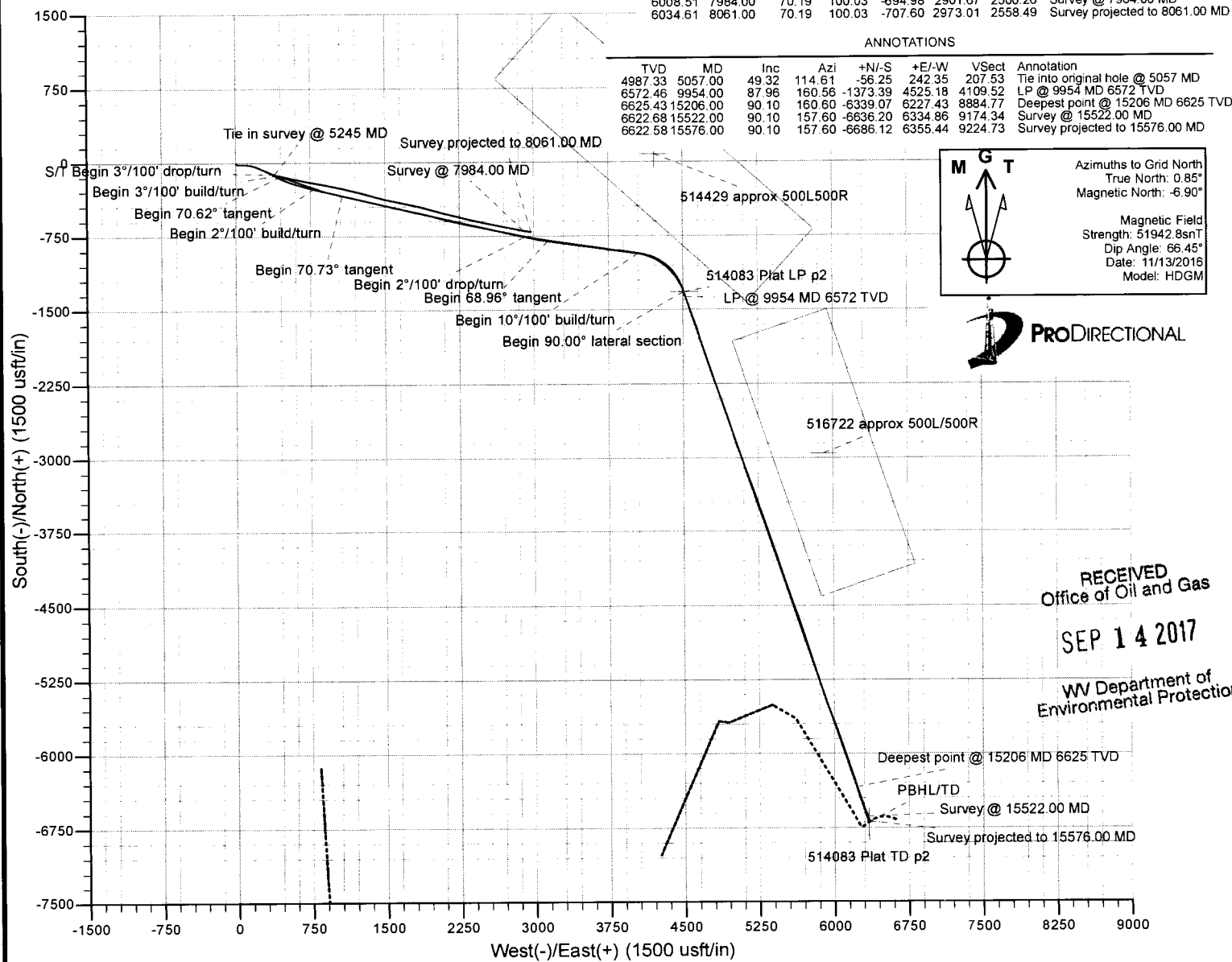


SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect	Annotation
1	5245.00	70.92	108.08	5078.83	-119.33	392.44	0.00	356.54	Tie in survey @ 5245 MD
2	5250.00	71.25	107.64	5080.45	-120.78	396.94	10.62	360.89	S/T Begin 3°/100' drop/turn
3	5280.00	70.61	108.31	5090.25	-129.53	423.91	3.00	385.59	Begin 3°/100' build/turn
4	5310.00	70.62	109.27	5100.21	-138.65	450.70	3.00	410.64	Begin 70.62° tangent
5	5700.00	70.62	109.27	5229.64	-260.05	797.99	0.00	737.63	Begin 2°/100' build/turn
6	6000.00	70.73	102.91	5329.02	-338.46	1069.82	2.00	981.51	Begin 70.73° tangent
7	8249.30	68.96	97.95	6075.09	-802.69	3140.07	2.00	2742.42	Begin 68.96° tangent
8	8249.30	68.96	97.95	6075.09	-802.69	3140.07	2.00	2742.42	Begin 68.96° tangent
9	9234.01	68.96	97.95	6428.70	-929.74	4050.27	0.00	3460.69	Begin 10°/100' build/turn
10	9884.89	90.00	161.12	6560.00	-1322.87	4506.57	10.00	4059.90	Begin 90.00° lateral section
11	15563.42	90.00	161.12	6560.00	-6695.78	6344.39	0.00	9224.14	PBHL/TD

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Annotation
100.00	100.00	0.39	259.44	-0.06	-0.33	-0.18	Gyro
3660.86	3661.00	0.06	100.95	-14.73	13.14	19.73	Survey @ 3661.00 MD
4426.85	4427.00	0.96	307.39	-13.50	10.05	16.71	ProD MWD surveys corrected
6008.51	7984.00	70.19	100.03	-694.98	2901.67	2500.26	Survey @ 7984.00 MD
6034.61	8061.00	70.19	100.03	-707.60	2973.01	2558.49	Survey projected to 8061.00 MD



ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Annotation
4987.33	5057.00	49.32	114.61	-56.25	242.35	207.53	Tie into original hole @ 5057 MD
6572.46	9954.00	87.96	160.56	-1373.39	4525.18	4109.52	LP @ 9954 MD 6572 TVD
6625.43	15206.00	90.10	160.60	-6339.07	6227.43	8884.77	Deepest point @ 15206 MD 6625 TVD
6622.68	15522.00	90.10	157.60	-6636.20	6334.86	9174.34	Survey @ 15522.00 MD
6622.58	15576.00	90.10	157.60	-6686.12	6355.44	9224.73	Survey projected to 15576.00 MD

**M G T**

Azimuths to Grid North  
 True North: 0.85°  
 Magnetic North: -6.90°

Magnetic Field  
 Strength: 51942.8snT  
 Dip Angle: 66.45°  
 Date: 11/13/2016  
 Model: HDGM



RECEIVED  
 Office of Oil and Gas  
 SEP 14 2017  
 WV Department of  
 Environmental Protection



Where energy meets innovation.

## **EQT PRODUCTION**

**Ritchie County, WV**

**OXF122**

**Well #514083 - Marcellus - Slot 514083**

**Sidetrack 01**

**Design: Surveys Sidetrack 01**

API# 47-8510285

## **Standard Survey Report**

27 November, 2016

RECEIVED  
Office of Oil and Gas

SEP 14 2017

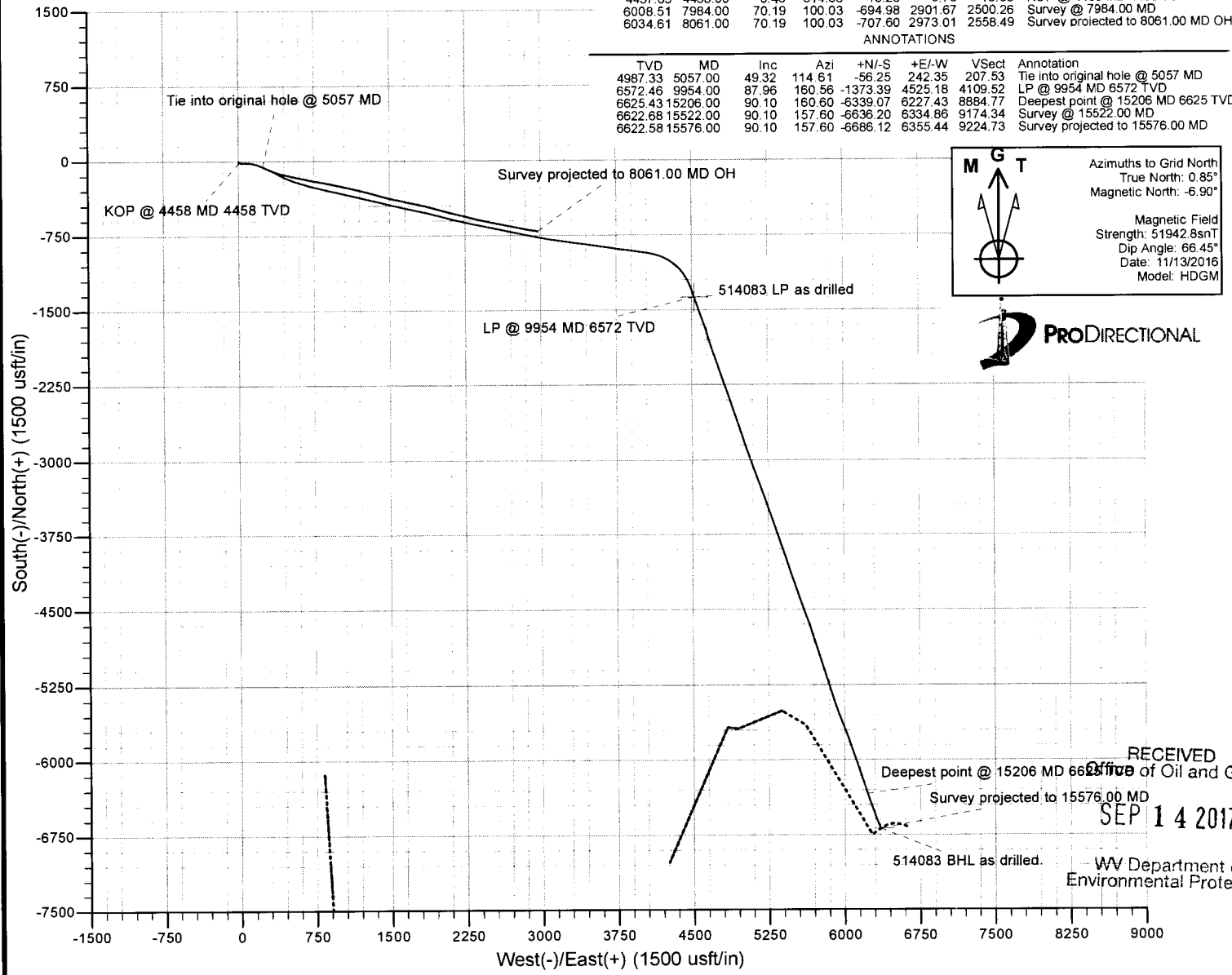
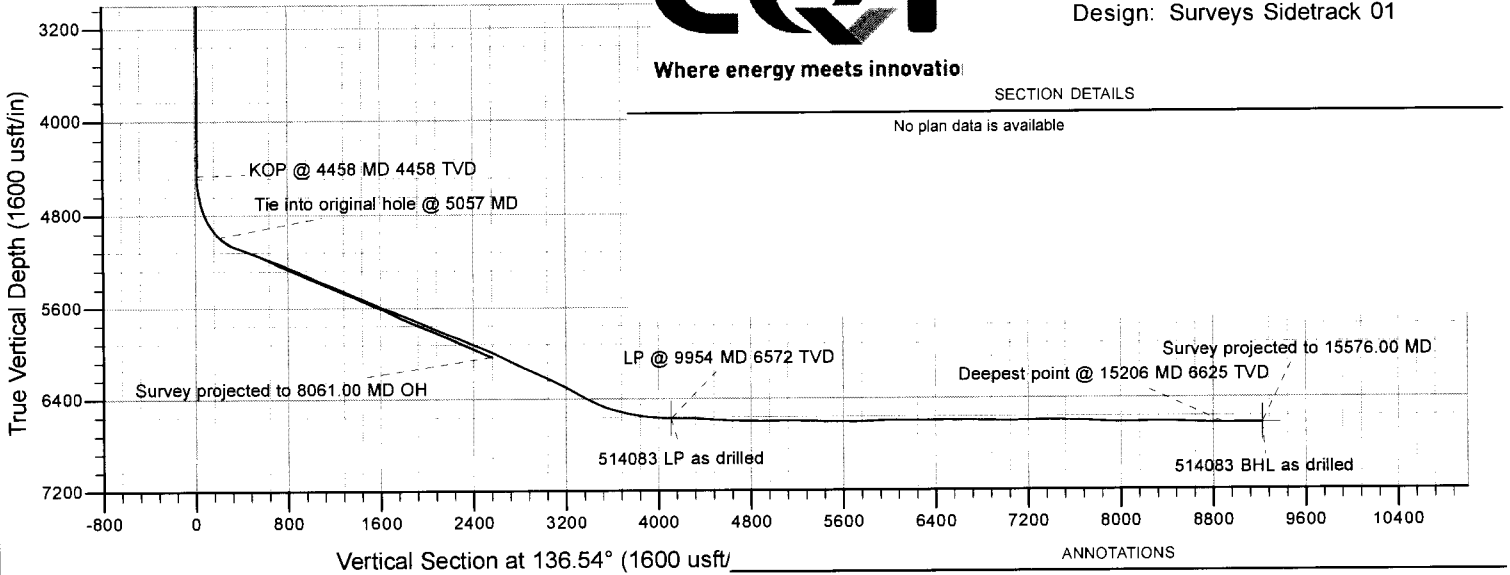


**PRODIRECTIONAL** WV Department of  
Environmental Protection



Where energy meets innovatio

Project: Ritchie County, WV  
Site: OXF122  
Well: Well #514083 - Marcellus  
Wellbore: Sidetrack 01  
Design: Surveys Sidetrack 01



TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Annotation
100.00	100.00	0.39	259.44	-0.06	-0.33	-0.18	Gyro
3660.86	3661.00	0.06	100.95	-14.73	13.14	19.73	Survey @ 3661.00 MD
4426.85	4427.00	0.96	307.39	-13.50	10.05	16.71	ProD MWD surveys corrected
4457.85	4458.00	0.46	314.86	-13.26	9.76	16.33	KOP @ 4458 MD 4458 TVD
6008.51	7984.00	70.19	100.03	-694.98	2901.67	2500.26	Survey @ 7984.00 MD
6034.61	8061.00	70.19	100.03	-707.60	2973.01	2558.49	Survey projected to 8061.00 MD OH

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Annotation
4987.33	5057.00	49.32	114.61	-56.25	242.35	207.53	Tie into original hole @ 5057 MD
6572.46	9954.00	87.96	160.56	-1373.39	4525.18	4109.52	LP @ 9954 MD 6572 TVD
6625.43	15206.00	90.10	160.60	-6339.07	6227.43	8884.77	Deepest point @ 15206 MD 6625 TVD
6622.68	15522.00	90.10	157.60	-6636.20	6334.86	9174.34	Survey @ 15522.00 MD
6622.58	15576.00	90.10	157.60	-6686.12	6355.44	9224.73	Survey projected to 15576.00 MD

**MGT**

Azimuths to Grid North  
True North: 0.85°  
Magnetic North: -6.90°

Magnetic Field  
Strength: 51942.8snT  
Dip Angle: 66.45°  
Date: 11/13/2016  
Model: HDGM



RECEIVED  
Office of Oil and Gas  
SEP 14 2017  
WV Department of  
Environmental Protection



Survey Report



**Company:** EQT PRODUCTION  
**Project:** Ritchie County, WV  
**Site:** OXF122  
**Well:** Well #514083 - Marcellus  
**Wellbore:** Sidetrack 01  
**Design:** Surveys Sidetrack 01

**Local Co-ordinate Reference:** Well Well #514083 - Marcellus - Slot 514083  
**TVD Reference:** KB@23 @ 1134.00usft  
**MD Reference:** KB@23 @ 1134.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** DB Jul2216dt

<b>Project</b>	Ritchie 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>	OXF122		
<b>Site Position:</b>	<b>Northing:</b>	233,060.52 usft	<b>Latitude:</b> 39° 7' 55.9408 N
<b>From:</b> Map	<b>Easting:</b>	1,622,368.52 usft	<b>Longitude:</b> 80° 49' 52.4853 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b> 13-3/16 "	<b>Grid Convergence:</b> -0.85 °

<b>Well</b>	Well #514083 - Marcellus - Slot 514083, Verified by Adam Ryan Sept 2016		
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b> 233,051.20 usft
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b> 1,622,340.00 usft
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft
		<b>Ground Level:</b>	1,111.00 usft

<b>Wellbore</b>	Sidetrack 01				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	11/13/2016	-7.75	66.45	51,943

<b>Design</b>	Surveys Sidetrack 01				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	5,057.00
<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	136.54	

<b>Survey Program</b>	<b>Date</b>	11/27/2016			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
100.00	4,388.00	Gyro (Main Wellbore)	Gyrodata_DP_MS	Gyrodata gyro-compassing and drop	
4,427.00	5,057.00	MWD M-G=-6.90° (Main Wellbore)	MWD - OWSG	MWD - OWSG	
5,176.00	15,576.00	514083 MWD ST1 (Sidetrack 01)	MWD - OWSG	MWD - OWSG	

RECEIVED  
Office of Oil and Gas  
SEP 14 2017

<b>Survey</b>	WV Department of Environmental Protection									
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.39	259.44	100.00	-0.06	-0.33	-0.18	0.39	0.39	0.00	0.00
200.00	0.28	290.37	200.00	-0.04	-0.90	-0.59	0.21	-0.11	30.93	
300.00	0.22	345.93	300.00	0.23	-1.17	-0.98	0.24	-0.06	55.56	
400.00	0.23	346.50	400.00	0.61	-1.27	-1.32	0.01	0.01	0.57	
500.00	0.30	8.64	499.99	1.07	-1.28	-1.65	0.12	0.07	22.14	
600.00	0.35	16.70	599.99	1.62	-1.15	-1.96	0.07	0.05	8.06	
700.00	0.31	53.20	699.99	2.07	-0.84	-2.08	0.21	-0.04	36.50	
800.00	0.32	95.21	799.99	2.21	-0.35	-1.84	0.23	0.01	42.01	



Survey Report



**Company:** EQT PRODUCTION  
**Project:** Ritchie County, WV  
**Site:** OXF122  
**Well:** Well #514083 - Marcellus  
**Wellbore:** Sidetrack 01  
**Design:** Surveys Sidetrack 01

**Local Co-ordinate Reference:** Well Well #514083 - Marcellus - Slot 514083  
**TVD Reference:** KB@23 @ 1134.00usft  
**MD Reference:** KB@23 @ 1134.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** DB Jul2216dt

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)
900.00	0.37	110.75	899.99	2.07	0.23	-1.34	0.11	0.05	15.54
1,000.00	0.42	127.93	999.99	1.73	0.82	-0.69	0.13	0.05	17.18
1,100.00	0.50	140.92	1,099.98	1.17	1.39	0.11	0.13	0.08	12.99
1,200.00	0.66	139.36	1,199.98	0.39	2.04	1.12	0.16	0.16	-1.56
1,300.00	0.71	138.45	1,299.97	-0.51	2.82	2.31	0.05	0.05	-0.91
1,400.00	0.71	141.02	1,399.96	-1.46	3.62	3.55	0.03	0.00	2.57
1,500.00	0.66	133.16	1,499.96	-2.33	4.43	4.74	0.11	-0.05	-7.86
1,600.00	0.74	125.82	1,599.95	-3.10	5.38	5.95	0.12	0.08	-7.34
1,700.00	0.79	123.23	1,699.94	-3.86	6.48	7.26	0.06	0.05	-2.59
1,800.00	0.78	118.60	1,799.93	-4.56	7.65	8.57	0.06	-0.01	-4.63
1,900.00	0.83	125.04	1,899.92	-5.30	8.84	9.93	0.10	0.05	6.44
2,000.00	0.83	136.82	1,999.91	-6.25	9.93	11.37	0.17	0.00	11.78
2,100.00	0.77	138.50	2,099.90	-7.28	10.87	12.76	0.06	-0.06	1.68
2,200.00	0.70	145.71	2,199.89	-8.29	11.66	14.04	0.12	-0.07	7.21
2,300.00	0.75	152.37	2,299.88	-9.37	12.31	15.27	0.10	0.05	6.66
2,400.00	0.66	157.60	2,399.88	-10.48	12.83	16.44	0.11	-0.09	5.23
2,500.00	0.57	166.24	2,499.87	-11.50	13.17	17.41	0.13	-0.09	8.64
2,600.00	0.41	181.83	2,599.87	-12.34	13.28	18.09	0.21	-0.16	15.59
2,700.00	0.32	189.78	2,699.87	-12.97	13.22	18.51	0.10	-0.09	7.95
2,800.00	0.32	201.07	2,799.86	-13.51	13.07	18.80	0.06	0.00	11.29
2,900.00	0.21	192.28	2,899.86	-13.95	12.93	19.02	0.12	-0.11	-8.79
3,000.00	0.18	265.45	2,999.86	-14.14	12.73	19.02	0.23	-0.03	73.17
3,100.00	0.09	330.44	3,099.86	-14.08	12.54	18.85	0.16	-0.09	64.99
3,200.00	0.10	139.90	3,199.86	-14.08	12.56	18.86	0.19	0.01	169.46
3,300.00	0.12	125.98	3,299.86	-14.21	12.70	19.05	0.03	0.02	-13.92
3,400.00	0.10	156.24	3,399.86	-14.35	12.82	19.23	0.06	-0.02	30.26
3,500.00	0.13	130.53	3,499.86	-14.51	12.94	19.43	0.06	0.03	-25.71
3,600.00	0.12	150.08	3,599.86	-14.67	13.08	19.64	0.04	-0.01	19.55
3,700.00	0.08	54.47	3,699.86	-14.72	13.19	19.76	0.15	-0.04	-95.61
3,800.00	0.10	325.67	3,799.86	-14.61	13.19	19.68	0.13	0.02	-88.80
3,900.00	0.14	282.24	3,899.86	-14.51	13.03	19.49	0.10	0.04	-43.43
4,000.00	0.22	269.14	3,999.86	-14.49	12.71	19.26	0.09	0.08	-13.10
4,100.00	0.28	280.41	4,099.86	-14.45	12.28	18.93	0.08	0.06	11.27
4,200.00	0.23	287.56	4,199.86	-14.34	11.85	18.56	0.06	-0.05	7.15
4,300.00	0.46	282.41	4,299.86	-14.19	11.27	18.05	0.23	0.23	-5.15
4,388.00	0.67	304.40	4,387.85	-13.83	10.50	17.26	0.34	0.24	24.99
4,427.00	0.96	307.39	4,426.85	-13.50	10.05	16.71	0.75	0.74	7.67
4,458.00	0.46	314.86	4,457.85	-13.26	9.76	16.33	1.64	-1.61	24.10
4,490.00	1.97	96.13	4,489.84	-13.22	10.21	16.62	7.33	4.72	441.47
4,521.00	4.91	99.64	4,520.78	-13.50	12.05	18.09	9.50	9.48	11.32
4,553.00	7.78	101.56	4,552.58	-14.17	15.52	20.96	8.99	8.97	6.00
4,584.00	10.51	99.48	4,583.18	-15.05	20.37	24.94	8.87	8.81	-6.71
4,616.00	12.67	95.86	4,614.53	-15.89	26.74	29.93	7.12	6.75	-11.31

RECEIVED  
Office of Oil and Gas



Survey Report



Company: EQT PRODUCTION  
 Project: Ritchie County, WV  
 Site: OXF122  
 Well: Well #514083 - Marcellus  
 Wellbore: Sidetrack 01  
 Design: Surveys Sidetrack 01

Local Co-ordinate Reference: Well Well #514083 - Marcellus - Slot 514083  
 TVD Reference: KB@23 @ 1134.00usft  
 MD Reference: KB@23 @ 1134.00usft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: DB Jul2216dt

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)
4,647.00	15.16	92.86	4,644.62	-16.44	34.17	35.44	8.36	8.03	-9.68
4,679.00	17.70	90.97	4,675.31	-16.73	43.21	41.87	8.11	7.94	-5.91
4,710.00	20.85	88.87	4,704.57	-16.70	53.44	48.89	10.40	10.16	-6.77
4,742.00	23.22	88.90	4,734.23	-16.47	65.45	56.97	7.41	7.41	0.09
4,773.00	25.43	89.41	4,762.48	-16.28	78.21	65.62	7.16	7.13	1.65
4,805.00	28.25	92.31	4,791.03	-16.52	92.65	75.72	9.71	8.81	9.06
4,836.00	30.87	95.48	4,817.99	-17.57	107.90	86.98	9.84	8.45	10.23
4,868.00	33.53	97.65	4,845.07	-19.53	124.84	100.05	9.06	8.31	6.78
4,899.00	36.09	101.23	4,870.52	-22.45	142.29	114.17	10.56	8.26	11.55
4,930.00	38.18	104.19	4,895.24	-26.58	160.53	129.72	8.87	6.74	9.55
4,962.00	40.53	107.22	4,919.98	-32.08	180.06	147.14	9.48	7.34	9.47
4,994.00	43.21	109.88	4,943.81	-38.89	200.30	166.00	10.04	8.38	8.31
5,025.00	46.25	112.45	4,965.83	-46.78	220.63	185.71	11.41	9.81	8.29
5,057.00	49.32	114.61	4,987.33	-56.25	242.35	207.53	10.82	9.59	6.75
<b>Tie into original hole @ 5057 MD</b>									
5,176.00	63.80	115.10	5,052.73	-97.91	332.20	299.57	12.17	12.17	0.41
5,208.00	67.80	116.90	5,065.85	-110.70	358.42	326.90	13.51	12.50	5.63
5,239.00	70.70	119.10	5,076.83	-124.32	384.01	354.38	11.47	9.35	7.10
5,271.00	71.10	120.70	5,087.30	-139.39	410.22	383.35	4.89	1.25	5.00
5,365.00	70.50	111.80	5,118.27	-178.61	489.74	466.51	8.96	-0.64	-9.47
5,459.00	71.40	107.40	5,148.97	-208.40	573.42	545.69	4.53	0.96	-4.68
5,554.00	71.90	107.00	5,178.87	-235.07	659.56	624.30	0.66	0.53	-0.42
5,648.00	70.30	104.00	5,209.33	-258.84	745.24	700.49	3.47	-1.70	-3.19
5,742.00	71.50	103.40	5,240.09	-279.87	831.53	775.11	1.41	1.28	-0.64
5,837.00	69.10	103.70	5,272.11	-300.83	918.48	850.13	2.54	-2.53	0.32
5,931.00	69.10	102.30	5,305.64	-320.58	1,004.04	923.32	1.39	0.00	-1.49
6,026.00	70.30	103.10	5,338.60	-340.17	1,090.95	997.32	1.49	1.26	0.84
6,120.00	70.90	103.10	5,369.82	-360.26	1,177.31	1,071.31	0.64	0.64	0.00
6,214.00	72.30	104.00	5,399.50	-381.16	1,264.02	1,146.12	1.74	1.49	0.96
6,309.00	70.30	103.60	5,429.95	-402.63	1,351.40	1,221.81	2.14	-2.11	-0.42
6,403.00	71.20	102.90	5,460.94	-422.97	1,437.78	1,295.99	1.19	0.96	-0.74
6,498.00	69.10	104.30	5,493.20	-443.97	1,524.62	1,370.97	2.61	-2.21	1.47
6,592.00	70.00	101.90	5,526.05	-463.93	1,610.40	1,444.45	2.58	0.96	-2.55
6,686.00	70.90	101.80	5,557.50	-482.11	1,697.09	1,517.29	0.96	0.96	-0.11
6,781.00	71.40	100.50	5,588.20	-499.50	1,785.30	1,590.58	1.40	0.53	-1.37
6,875.00	70.40	105.80	5,618.97	-519.69	1,871.76	1,664.70	5.43	-1.06	5.64
6,970.00	70.90	105.30	5,650.45	-543.71	1,958.11	1,741.54	0.72	0.53	-0.53
7,064.00	71.50	104.20	5,680.75	-566.37	2,044.16	1,817.17	1.28	0.64	-1.17
7,158.00	69.00	102.60	5,712.51	-586.88	2,130.21	1,891.25	3.10	-2.66	-1.70
7,253.00	69.70	103.90	5,746.01	-607.25	2,216.74	1,965.56	1.48	0.74	1.37
7,348.00	70.40	102.30	5,778.43	-627.49	2,303.71	2,040.07	1.75	0.74	-1.68
7,442.00	71.20	101.70	5,809.34	-645.95	2,390.54	2,113.19	1.04	0.85	-0.64
7,537.00	72.00	101.90	5,839.33	-664.38	2,478.78	2,187.27	0.87	0.84	0.21
7,632.00	72.80	102.10	5,868.05	-683.21	2,567.35	2,261.86	0.87	0.84	0.21

RECEIVED  
Office of Oil and Gas

COMPASS 5000.1 Build 81B

SEP 14 2017



Survey Report



Company: EQT PRODUCTION  
 Project: Ritchie County, WV  
 Site: OXF122  
 Well: Well #514083 - Marcellus  
 Wellbore: Sidetrack 01  
 Design: Surveys Sidetrack 01

Local Co-ordinate Reference: Well Well #514083 - Marcellus - Slot 514083  
 TVD Reference: KB@23 @ 1134.00usft  
 MD Reference: KB@23 @ 1134.00usft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: DB Jul2216dt

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)
7,726.00	70.90	101.70	5,897.33	-701.63	2,654.75	2,335.34	2.06	-2.02	-0.43
7,821.00	72.00	101.40	5,927.56	-719.66	2,742.99	2,409.13	1.20	1.16	-0.32
7,915.00	69.90	101.50	5,958.23	-737.29	2,830.07	2,481.83	2.24	-2.23	0.11
8,010.00	70.70	100.90	5,990.26	-754.67	2,917.80	2,554.78	1.03	0.84	-0.63
8,105.00	68.70	101.10	6,023.22	-771.66	3,005.26	2,627.28	2.11	-2.11	0.21
8,199.00	68.30	98.60	6,057.67	-786.63	3,091.42	2,697.41	2.51	-0.43	-2.66
8,294.00	69.60	98.30	6,091.79	-799.65	3,179.12	2,767.18	1.40	1.37	-0.32
8,389.00	70.90	97.90	6,123.90	-812.25	3,267.64	2,837.21	1.42	1.37	-0.42
8,483.00	69.50	98.40	6,155.74	-824.79	3,355.18	2,906.53	1.57	-1.49	0.53
8,578.00	71.40	98.20	6,187.52	-837.71	3,443.77	2,976.84	2.01	2.00	-0.21
8,673.00	69.40	98.70	6,219.39	-850.86	3,532.29	3,047.27	2.16	-2.11	0.53
8,767.00	66.70	98.70	6,254.52	-864.04	3,618.46	3,116.12	2.87	-2.87	0.00
8,862.00	68.10	98.50	6,291.03	-877.16	3,705.18	3,185.29	1.49	1.47	-0.21
8,956.00	65.90	98.00	6,327.76	-889.58	3,790.80	3,253.20	2.39	-2.34	-0.53
9,051.00	66.20	97.60	6,366.32	-901.36	3,876.82	3,320.92	0.50	0.32	-0.42
9,145.00	68.30	97.30	6,402.67	-912.60	3,962.77	3,388.20	2.25	2.23	-0.32
9,177.00	68.80	97.10	6,414.37	-916.33	3,992.32	3,411.23	1.67	1.56	-0.63
9,208.00	68.90	96.60	6,425.56	-919.78	4,021.02	3,433.48	1.54	0.32	-1.61
9,240.00	69.20	99.10	6,437.00	-923.86	4,050.63	3,456.80	7.36	0.94	7.81
9,272.00	69.80	102.00	6,448.21	-929.35	4,080.09	3,481.05	8.69	1.88	9.06
9,303.00	70.20	103.70	6,458.81	-935.83	4,108.49	3,505.29	5.31	1.29	5.48
9,334.00	71.60	105.30	6,468.96	-943.16	4,136.85	3,530.12	6.65	4.52	5.16
9,366.00	72.70	108.30	6,478.77	-951.97	4,166.00	3,556.56	9.56	3.44	9.38
9,397.00	73.70	111.80	6,487.73	-962.14	4,193.87	3,583.12	11.28	3.23	11.29
9,429.00	74.80	115.30	6,496.42	-974.45	4,222.10	3,611.47	11.07	3.44	10.94
9,460.00	75.00	118.80	6,504.50	-988.06	4,248.75	3,639.68	10.92	0.65	11.29
9,492.00	75.90	121.80	6,512.54	-1,003.68	4,275.49	3,669.41	9.50	2.81	9.38
9,523.00	76.50	125.00	6,519.93	-1,020.25	4,300.62	3,698.73	10.21	1.94	10.32
9,554.00	78.00	128.40	6,526.78	-1,038.32	4,324.85	3,728.51	11.74	4.84	10.97
9,586.00	78.90	132.10	6,533.19	-1,058.58	4,348.78	3,759.67	11.67	2.81	11.56
9,618.00	80.30	135.70	6,538.97	-1,080.40	4,371.45	3,791.10	11.90	4.38	11.25
9,649.00	81.40	139.40	6,543.90	-1,102.98	4,392.10	3,821.70	12.31	3.55	11.94
9,681.00	82.20	143.50	6,548.46	-1,127.74	4,411.83	3,853.25	12.93	2.50	12.81
9,712.00	82.30	146.80	6,552.64	-1,152.95	4,429.38	3,883.61	10.55	0.32	10.65
9,743.00	82.70	150.40	6,556.69	-1,179.18	4,445.39	3,913.66	11.59	1.29	11.61
9,775.00	84.00	152.90	6,560.40	-1,207.15	4,460.48	3,944.35	8.76	4.06	7.81
9,806.00	85.70	155.50	6,563.18	-1,234.94	4,473.92	3,973.76	9.99	5.48	8.39
9,838.00	85.90	158.10	6,565.53	-1,264.27	4,486.49	4,003.70	8.13	0.63	8.13
9,869.00	86.10	160.70	6,567.69	-1,293.22	4,497.37	4,032.19	8.39	0.65	8.39
9,900.00	86.60	161.20	6,569.66	-1,322.46	4,507.47	4,060.36	2.28	1.61	1.61
9,932.00	86.90	160.70	6,571.48	-1,352.66	4,517.90	4,089.46	1.82	0.94	-1.56
9,954.00	87.96	160.56	6,572.46	-1,373.39	4,525.18	4,109.52	4.88	4.84	-0.65

LP @ 9954 MD 6572 TVD

RECEIVED  
Office of Oil and Gas



Survey Report



**Company:** EQT PRODUCTION  
**Project:** Ritchie County, WV  
**Site:** OXF122  
**Well:** Well #514083 - Marcellus  
**Wellbore:** Sidetrack 01  
**Design:** Surveys Sidetrack 01

**Local Co-ordinate Reference:** Well Well #514083 - Marcellus - Slot 514083  
**TVD Reference:** KB@23 @ 1134.00usft  
**MD Reference:** KB@23 @ 1134.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** DB Jul2216dt

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)
9,963.00	88.40	160.50	6,572.75	-1,381.87	4,528.18	4,117.74	4.88	4.84	-0.64
9,994.00	89.90	160.40	6,573.21	-1,411.08	4,538.56	4,146.08	4.85	4.84	-0.32
10,026.00	90.80	161.20	6,573.01	-1,441.30	4,549.08	4,175.25	3.76	2.81	2.50
10,057.00	91.50	161.30	6,572.39	-1,470.65	4,559.04	4,203.40	2.28	2.26	0.32
10,089.00	90.20	161.00	6,571.91	-1,500.93	4,569.38	4,232.49	4.17	-4.06	-0.94
10,120.00	87.70	160.00	6,572.48	-1,530.14	4,579.72	4,260.81	8.69	-8.06	-3.23
10,152.00	87.60	159.50	6,573.79	-1,560.14	4,590.79	4,290.20	1.59	-0.31	-1.56
10,183.00	87.60	159.60	6,575.09	-1,589.16	4,601.61	4,318.71	0.32	0.00	0.32
10,215.00	88.30	160.70	6,576.24	-1,619.24	4,612.47	4,348.01	4.07	2.19	3.44
10,246.00	88.80	161.10	6,577.02	-1,648.52	4,622.61	4,376.24	2.07	1.61	1.29
10,277.00	88.10	161.60	6,577.86	-1,677.88	4,632.52	4,404.37	2.77	-2.26	1.61
10,301.00	86.90	162.40	6,578.91	-1,700.69	4,639.93	4,426.02	6.01	-5.00	3.33
10,333.00	86.20	163.10	6,580.83	-1,731.19	4,649.40	4,454.67	3.09	-2.19	2.19
10,364.00	85.40	162.90	6,583.10	-1,760.76	4,658.44	4,482.35	2.66	-2.58	-0.65
10,396.00	85.50	162.90	6,585.64	-1,791.25	4,667.82	4,510.94	0.31	0.31	0.00
10,427.00	85.50	162.90	6,588.07	-1,820.78	4,676.91	4,538.63	0.00	0.00	0.00
10,459.00	87.00	162.60	6,590.17	-1,851.28	4,686.38	4,567.27	4.78	4.69	-0.94
10,490.00	87.30	162.40	6,591.71	-1,880.81	4,695.69	4,595.11	1.16	0.97	-0.65
10,584.00	89.40	161.60	6,594.41	-1,970.16	4,724.72	4,679.94	2.39	2.23	-0.85
10,679.00	89.40	160.90	6,595.41	-2,060.12	4,755.26	4,766.24	0.74	0.00	-0.74
10,773.00	89.40	160.30	6,596.39	-2,148.77	4,786.48	4,852.07	0.64	0.00	-0.64
10,867.00	89.30	159.10	6,597.46	-2,236.93	4,819.09	4,938.48	1.28	-0.11	-1.28
10,961.00	90.50	161.00	6,597.62	-2,325.28	4,851.16	5,024.68	2.39	1.28	2.02
11,056.00	90.60	160.80	6,596.71	-2,415.05	4,882.24	5,111.21	0.24	0.11	-0.21
11,150.00	90.00	161.20	6,596.22	-2,503.92	4,912.84	5,196.78	0.77	-0.64	0.43
11,244.00	89.00	161.90	6,597.04	-2,593.09	4,942.59	5,281.96	1.30	-1.06	0.74
11,339.00	87.90	162.30	6,599.61	-2,683.45	4,971.78	5,367.63	1.23	-1.16	0.42
11,433.00	87.70	162.30	6,603.22	-2,772.94	5,000.34	5,452.22	0.21	-0.21	0.00
11,528.00	88.50	160.20	6,606.37	-2,862.84	5,030.86	5,538.47	2.36	0.84	-2.21
11,622.00	90.50	159.30	6,607.19	-2,951.02	5,063.39	5,624.85	2.33	2.13	-0.96
11,716.00	90.70	158.90	6,606.20	-3,038.83	5,096.92	5,711.66	0.48	0.21	-0.43
11,810.00	92.40	160.90	6,603.66	-3,127.07	5,129.21	5,797.91	2.79	1.81	2.13
11,905.00	93.10	160.50	6,599.10	-3,216.62	5,160.57	5,884.49	0.85	0.74	-0.42
11,999.00	90.70	160.40	6,595.99	-3,305.15	5,192.01	5,970.37	2.56	-2.55	-0.11
12,093.00	90.30	159.90	6,595.17	-3,393.56	5,223.92	6,056.50	0.68	-0.43	-0.53
12,188.00	89.40	161.60	6,595.42	-3,483.25	5,255.24	6,143.14	2.02	-0.95	1.79
12,282.00	89.10	160.90	6,596.65	-3,572.25	5,285.46	6,228.52	0.81	-0.32	-0.74
12,376.00	91.00	161.90	6,596.56	-3,661.33	5,315.44	6,313.81	2.28	2.02	1.06
12,471.00	90.50	161.00	6,595.32	-3,751.39	5,345.66	6,399.96	1.08	-0.53	-0.95
12,565.00	90.00	162.30	6,594.91	-3,840.61	5,375.25	6,485.08	1.48	-0.53	1.38
12,659.00	89.50	160.40	6,595.32	-3,929.66	5,405.31	6,570.39	2.09	-0.53	-2.02
12,754.00	89.70	161.60	6,595.98	-4,019.49	5,436.23	6,656.86	1.28	0.21	1.26
12,848.00	89.90	161.70	6,596.31	-4,108.70	5,465.83	6,741.98	0.24	0.21	0.11

RECEIVED  
Office of Oil and Gas

SEP 14 2017

WV Department of  
Environmental Protection





Survey Report



Company: EQT PRODUCTION  
 Project: Ritchie County, WV  
 Site: OXF122  
 Well: Well #514083 - Marcellus  
 Wellbore: Sidetrack 01  
 Design: Surveys Sidetrack 01

Local Co-ordinate Reference: Well Well #514083 - Marcellus - Slot 514083  
 TVD Reference: KB@23 @ 1134.00usft  
 MD Reference: KB@23 @ 1134.00usft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: DB Jul2216dt

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)
12,943.00	89.30	161.10	6,596.98	-4,198.74	5,496.13	6,828.17	0.89	-0.63	-0.63
13,037.00	89.00	161.00	6,598.37	-4,287.64	5,526.65	6,913.69	0.34	-0.32	-0.11
13,131.00	88.50	160.40	6,600.42	-4,376.33	5,557.71	6,999.44	0.83	-0.53	-0.64
13,226.00	91.20	160.20	6,600.67	-4,465.76	5,589.73	7,086.38	2.85	2.84	-0.21
13,320.00	91.70	159.10	6,598.29	-4,553.87	5,622.41	7,172.81	1.29	0.53	-1.17
13,414.00	90.70	161.90	6,596.32	-4,642.44	5,653.78	7,258.68	3.16	-1.06	2.98
13,509.00	90.50	161.90	6,595.33	-4,732.74	5,683.29	7,344.52	0.21	-0.21	0.00
13,603.00	90.10	162.10	6,594.83	-4,822.14	5,712.33	7,429.39	0.48	-0.43	0.21
13,697.00	88.80	162.10	6,595.74	-4,911.58	5,741.22	7,514.18	1.38	-1.38	0.00
13,792.00	88.80	161.80	6,597.73	-5,001.88	5,770.65	7,599.97	0.32	0.00	-0.32
13,886.00	87.20	162.30	6,601.01	-5,091.25	5,799.60	7,684.76	1.78	-1.70	0.53
13,980.00	87.40	162.00	6,605.43	-5,180.63	5,828.39	7,769.43	0.38	0.21	-0.32
14,074.00	87.50	162.20	6,609.62	-5,269.99	5,857.25	7,854.14	0.24	0.11	0.21
14,168.00	88.00	162.40	6,613.31	-5,359.47	5,885.81	7,938.74	0.57	0.53	0.21
14,263.00	89.10	161.60	6,615.71	-5,449.79	5,915.15	8,024.48	1.43	1.16	-0.84
14,357.00	91.60	159.80	6,615.14	-5,538.49	5,946.22	8,110.23	3.28	2.66	-1.91
14,451.00	91.50	158.90	6,612.59	-5,626.42	5,979.35	8,196.85	0.96	-0.11	-0.96
14,546.00	91.40	159.30	6,610.19	-5,715.14	6,013.23	8,284.55	0.43	-0.11	0.42
14,640.00	88.40	160.00	6,610.35	-5,803.26	6,045.92	8,371.00	3.28	-3.19	0.74
14,734.00	89.00	159.80	6,612.49	-5,891.52	6,078.21	8,457.27	0.67	0.64	-0.21
14,828.00	87.80	161.90	6,615.11	-5,980.27	6,109.04	8,542.90	2.57	-1.28	2.23
14,923.00	87.90	162.00	6,618.68	-6,070.53	6,138.45	8,628.65	0.15	0.11	0.11
15,017.00	88.40	161.90	6,621.71	-6,159.86	6,167.56	8,713.51	0.54	0.53	-0.11
15,112.00	88.50	161.80	6,624.28	-6,250.10	6,197.14	8,799.36	0.15	0.11	-0.11
15,206.00	90.10	160.60	6,625.43	-6,339.07	6,227.43	8,884.77	2.13	1.70	-1.28
<b>Deepest point @ 15206 MD 6625 TVD</b>									
15,300.00	90.60	160.60	6,624.85	-6,427.74	6,258.65	8,970.61	0.53	0.53	0.00
15,395.00	91.00	160.80	6,623.53	-6,517.39	6,290.05	9,057.28	0.47	0.42	0.21
15,489.00	90.00	158.70	6,622.71	-6,605.57	6,322.58	9,143.66	2.47	-1.06	-2.23
15,522.00	90.10	157.60	6,622.68	-6,636.20	6,334.86	9,174.34	3.35	0.30	-3.33
<b>Survey @ 15522.00 MD</b>									
15,576.00	90.10	157.60	6,622.58	-6,686.12	6,355.44	9,224.73	0.00	0.00	0.00
<b>Survey projected to 15576.00 MD</b>									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
514083 LP as drilled	0.00	360.00	6,572.46	-1,373.39	4,525.18	231,677.81	1,626,865.18	39° 7' 42.9299 N	80° 48' 55.1698 W
- actual wellpath hits target center									
- Point									
514083 BHL as drilled	0.00	360.00	6,622.58	-6,686.12	6,355.44	226,365.08	1,626,865.18	39° 6' 50.6874 N	80° 48' 30.9647 W
- actual wellpath hits target center									
- Point									

RECEIVED  
 Office of Oil and Gas  
 SEP 14 2017

**Company:** EQT PRODUCTION  
**Project:** Ritchie County, WV  
**Site:** OXF122  
**Well:** Well #514083 - Marcellus  
**Wellbore:** Sidetrack 01  
**Design:** Surveys Sidetrack 01

**Local Co-ordinate Reference:** Well Well #514083 - Marcellus - Slot 514083  
**TVD Reference:** KB@23 @ 1134.00usft  
**MD Reference:** KB@23 @ 1134.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** DB Jul2216dt

**Design Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,057.00	4,987.33	-56.25	242.35	Tie into original hole @ 5057 MD
9,954.00	6,572.46	-1,373.39	4,525.18	LP @ 9954 MD 6572 TVD
15,206.00	6,625.43	-6,339.07	6,227.43	Deepest point @ 15206 MD 6625 TVD
15,522.00	6,622.68	-6,636.20	6,334.86	Survey @ 15522.00 MD
15,576.00	6,622.58	-6,686.12	6,355.44	Survey projected to 15576.00 MD

RECEIVED  
Office of Oil and Gas

SEP 14 2017

WV Department of  
Environmental Protection



Survey Report



**Company:** EQT PRODUCTION  
**Project:** Ritchie County, WV  
**Site:** OXF122  
**Well:** Well #514083 - Marcellus  
**Wellbore:** Sidetrack 01  
**Design:** Surveys Sidetrack 01

**Local Co-ordinate Reference:** Well Well #514083 - Marcellus - Slot 514083  
**TVD Reference:** KB@23 @ 1134.00usft  
**MD Reference:** KB@23 @ 1134.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** DB Jul2216dt

<b>Project</b>	Ritchie 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>	OXF122				
<b>Site Position:</b>		<b>Northing:</b>	233,060.52 usft	<b>Latitude:</b>	39° 7' 55.9408 N
<b>From:</b>	Map	<b>Easting:</b>	1,622,368.52 usft	<b>Longitude:</b>	80° 49' 52.4853 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	-0.85 °

<b>Well</b>	Well #514083 - Marcellus - Slot 514083, Verified by Adam Ryan Sept 2016					
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	233,051.20 usft	<b>Latitude:</b>	39° 7' 55.8445 N
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,622,340.00 usft	<b>Longitude:</b>	80° 49' 52.8454 W
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft	<b>Ground Level:</b>	1,111.00 usft

<b>Wellbore</b>	Sidetrack 01				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	11/13/2016	-7.75	66.45	51,943

<b>Design</b>	Surveys Sidetrack 01				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	5,057.00
<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	136.54	

<b>Survey Program</b>	<b>Date</b>	11/27/2016			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
100.00	4,388.00	Gyro (Main Wellbore)	Gyrodata_DP_MS	Gyrodata gyro-compassing and drop	
4,427.00	5,057.00	MWD M-G=-6.90° (Main Wellbore)	MWD - OWSG	MWD - OWSG	
5,176.00	15,576.00	514083 MWD ST1 (Sidetrack 01)	MWD - OWSG	MWD - OWSG	

RECEIVED  
Office of Oil and Gas  
SEP 14 2017  
WV Department of Environmental Protection

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
100.00	0.39	259.44	100.00	-0.06	-0.33	-0.18	0.39	0.39	0.00
200.00	0.28	290.37	200.00	-0.04	-0.90	-0.59	0.21	-0.11	30.93
300.00	0.22	345.93	300.00	0.23	-1.17	-0.98	0.24	-0.06	55.56
400.00	0.23	346.50	400.00	0.61	-1.27	-1.32	0.01	0.01	0.57
500.00	0.30	8.64	499.99	1.07	-1.28	-1.65	0.12	0.07	22.14
600.00	0.35	16.70	599.99	1.62	-1.15	-1.96	0.07	0.05	8.06
700.00	0.31	53.20	699.99	2.07	-0.84	-2.08	0.21	-0.04	36.50
800.00	0.32	95.21	799.99	2.21	-0.35	-1.84	0.23	0.01	42.01



Survey Report



**Company:** EQT PRODUCTION  
**Project:** Ritchie County, WV  
**Site:** OXF122  
**Well:** Well #514083 - Marcellus  
**Wellbore:** Sidetrack 01  
**Design:** Surveys Sidetrack 01

**Local Co-ordinate Reference:** Well Well #514083 - Marcellus - Slot 514083  
**TVD Reference:** KB@23 @ 1134.00usft  
**MD Reference:** KB@23 @ 1134.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** DB Jul2216dt

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)
900.00	0.37	110.75	899.99	2.07	0.23	-1.34	0.11	0.05	15.54
1,000.00	0.42	127.93	999.99	1.73	0.82	-0.69	0.13	0.05	17.18
1,100.00	0.50	140.92	1,099.98	1.17	1.39	0.11	0.13	0.08	12.99
1,200.00	0.66	139.36	1,199.98	0.39	2.04	1.12	0.16	0.16	-1.56
1,300.00	0.71	138.45	1,299.97	-0.51	2.82	2.31	0.05	0.05	-0.91
1,400.00	0.71	141.02	1,399.96	-1.46	3.62	3.55	0.03	0.00	2.57
1,500.00	0.66	133.16	1,499.96	-2.33	4.43	4.74	0.11	-0.05	-7.86
1,600.00	0.74	125.82	1,599.95	-3.10	5.38	5.95	0.12	0.08	-7.34
1,700.00	0.79	123.23	1,699.94	-3.86	6.48	7.26	0.06	0.05	-2.59
1,800.00	0.78	118.60	1,799.93	-4.56	7.65	8.57	0.06	-0.01	-4.63
1,900.00	0.83	125.04	1,899.92	-5.30	8.84	9.93	0.10	0.05	6.44
2,000.00	0.83	136.82	1,999.91	-6.25	9.93	11.37	0.17	0.00	11.78
2,100.00	0.77	138.50	2,099.90	-7.28	10.87	12.76	0.06	-0.06	1.68
2,200.00	0.70	145.71	2,199.89	-8.29	11.66	14.04	0.12	-0.07	7.21
2,300.00	0.75	152.37	2,299.88	-9.37	12.31	15.27	0.10	0.05	6.66
2,400.00	0.66	157.60	2,399.88	-10.48	12.83	16.44	0.11	-0.09	5.23
2,500.00	0.57	166.24	2,499.87	-11.50	13.17	17.41	0.13	-0.09	8.64
2,600.00	0.41	181.83	2,599.87	-12.34	13.28	18.09	0.21	-0.16	15.59
2,700.00	0.32	189.78	2,699.87	-12.97	13.22	18.51	0.10	-0.09	7.95
2,800.00	0.32	201.07	2,799.86	-13.51	13.07	18.80	0.06	0.00	11.29
2,900.00	0.21	192.28	2,899.86	-13.95	12.93	19.02	0.12	-0.11	-8.79
3,000.00	0.18	265.45	2,999.86	-14.14	12.73	19.02	0.23	-0.03	73.17
3,100.00	0.09	330.44	3,099.86	-14.08	12.54	18.85	0.16	-0.09	64.99
3,200.00	0.10	139.90	3,199.86	-14.08	12.56	18.86	0.19	0.01	169.46
3,300.00	0.12	125.98	3,299.86	-14.21	12.70	19.05	0.03	0.02	-13.92
3,400.00	0.10	156.24	3,399.86	-14.35	12.82	19.23	0.06	-0.02	30.26
3,500.00	0.13	130.53	3,499.86	-14.51	12.94	19.43	0.06	0.03	-25.71
3,600.00	0.12	150.08	3,599.86	-14.67	13.08	19.64	0.04	-0.01	19.66
3,700.00	0.08	54.47	3,699.86	-14.72	13.19	19.76	0.15	-0.04	-95.61
3,800.00	0.10	325.67	3,799.86	-14.61	13.19	19.68	0.13	0.02	-88.80
3,900.00	0.14	282.24	3,899.86	-14.51	13.03	19.49	0.10	0.04	-43.43
4,000.00	0.22	269.14	3,999.86	-14.49	12.71	19.26	0.09	0.08	-13.10
4,100.00	0.28	280.41	4,099.86	-14.45	12.28	18.93	0.08	0.06	11.27
4,200.00	0.23	287.56	4,199.86	-14.34	11.85	18.56	0.06	-0.05	7.15
4,300.00	0.46	282.41	4,299.86	-14.19	11.27	18.05	0.23	0.23	-5.15
4,388.00	0.67	304.40	4,387.85	-13.83	10.50	17.26	0.34	0.24	24.99
4,427.00	0.96	307.39	4,426.85	-13.50	10.05	16.71	0.75	0.74	7.67
4,458.00	0.46	314.86	4,457.85	-13.26	9.76	16.33	1.64	-1.61	24.10
4,490.00	1.97	96.13	4,489.84	-13.22	10.21	16.62	7.33	4.72	441.47
4,521.00	4.91	99.64	4,520.78	-13.50	12.05	18.09	9.50	9.48	11.32
4,553.00	7.78	101.56	4,552.58	-14.17	15.52	20.96	8.99	8.97	6.00
4,584.00	10.51	99.48	4,583.18	-15.05	20.37	24.94	8.87	8.81	-6.71
4,616.00	12.67	95.86	4,614.53	-15.89	26.74	29.93	7.12	6.75	-11.31

RECEIVED  
 Office of Oil and Gas  
 SEP 14 2017  
 WV Department of Environmental Protection



Survey Report



**Company:** EQT PRODUCTION  
**Project:** Ritchie County, WV  
**Site:** OXF122  
**Well:** Well #514083 - Marcellus  
**Wellbore:** Sidetrack 01  
**Design:** Surveys Sidetrack 01

**Local Co-ordinate Reference:** Well Well #514083 - Marcellus - Slot 514083  
**TVD Reference:** KB@23 @ 1134.00usft  
**MD Reference:** KB@23 @ 1134.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** DB Jul2216dt

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)
4,647.00	15.16	92.86	4,644.62	-16.44	34.17	35.44	8.36	8.03	-9.68
4,679.00	17.70	90.97	4,675.31	-16.73	43.21	41.87	8.11	7.94	-5.91
4,710.00	20.85	88.87	4,704.57	-16.70	53.44	48.89	10.40	10.16	-6.77
4,742.00	23.22	88.90	4,734.23	-16.47	65.45	56.97	7.41	7.41	0.09
4,773.00	25.43	89.41	4,762.48	-16.28	78.21	65.62	7.16	7.13	1.65
4,805.00	28.25	92.31	4,791.03	-16.52	92.65	75.72	9.71	8.81	9.06
4,836.00	30.87	95.48	4,817.99	-17.57	107.90	86.98	9.84	8.45	10.23
4,868.00	33.53	97.65	4,845.07	-19.53	124.84	100.05	9.06	8.31	6.78
4,899.00	36.09	101.23	4,870.52	-22.45	142.29	114.17	10.56	8.26	11.55
4,930.00	38.18	104.19	4,895.24	-26.58	160.53	129.72	8.87	6.74	9.55
4,962.00	40.53	107.22	4,919.98	-32.08	180.06	147.14	9.48	7.34	9.47
4,994.00	43.21	109.88	4,943.81	-38.89	200.30	166.00	10.04	8.38	8.31
5,025.00	46.25	112.45	4,965.83	-46.78	220.63	185.71	11.41	9.81	8.29
5,057.00	49.32	114.61	4,987.33	-56.25	242.35	207.53	10.82	9.59	6.75
<b>Tie into original hole @ 5057 MD</b>									
5,176.00	63.80	115.10	5,052.73	-97.91	332.20	299.57	12.17	12.17	0.41
5,208.00	67.80	116.90	5,065.85	-110.70	358.42	326.90	13.51	12.50	5.63
5,239.00	70.70	119.10	5,076.83	-124.32	384.01	354.38	11.47	9.35	7.10
5,271.00	71.10	120.70	5,087.30	-139.39	410.22	383.35	4.89	1.25	5.00
5,365.00	70.50	111.80	5,118.27	-178.61	489.74	466.51	8.96	-0.64	-9.47
5,459.00	71.40	107.40	5,148.97	-208.40	573.42	545.69	4.53	0.96	-4.68
5,554.00	71.90	107.00	5,178.87	-235.07	659.56	624.30	0.66	0.53	-0.42
5,648.00	70.30	104.00	5,209.33	-258.84	745.24	700.49	3.47	-1.70	-3.19
5,742.00	71.50	103.40	5,240.09	-279.87	831.53	775.11	1.41	1.28	-0.64
5,837.00	69.10	103.70	5,272.11	-300.83	918.48	850.13	2.54	-2.53	0.32
5,931.00	69.10	102.30	5,305.64	-320.58	1,004.04	923.32	1.39	0.00	-1.49
6,026.00	70.30	103.10	5,338.60	-340.17	1,090.95	997.32	1.49	1.26	0.84
6,120.00	70.90	103.10	5,369.82	-360.26	1,177.31	1,071.31	0.64	0.64	0.00
6,214.00	72.30	104.00	5,399.50	-381.16	1,264.02	1,146.12	1.74	1.49	0.96
6,309.00	70.30	103.60	5,429.95	-402.63	1,351.40	1,221.81	2.14	-2.11	-0.42
6,403.00	71.20	102.90	5,460.94	-422.97	1,437.78	1,295.99	1.19	0.96	-0.74
6,498.00	69.10	104.30	5,493.20	-443.97	1,524.62	1,370.97	2.61	-2.21	1.47
6,592.00	70.00	101.90	5,526.05	-463.93	1,610.40	1,444.45	2.58	0.96	-2.55
6,686.00	70.90	101.80	5,557.50	-482.11	1,697.09	1,517.29	0.96	0.96	-0.11
6,781.00	71.40	100.50	5,588.20	-499.50	1,785.30	1,590.58	1.40	0.53	-1.37
6,875.00	70.40	105.80	5,618.97	-519.69	1,871.76	1,664.70	5.43	-1.06	5.64
6,970.00	70.90	105.30	5,650.45	-543.71	1,958.11	1,741.54	0.72	0.53	-0.53
7,064.00	71.50	104.20	5,680.75	-566.37	2,044.16	1,817.17	1.28	0.64	-1.17
7,158.00	69.00	102.60	5,712.51	-586.88	2,130.21	1,891.25	3.10	-2.66	-1.70
7,253.00	69.70	103.90	5,746.01	-607.25	2,216.74	1,965.56	1.48	0.74	1.37
7,348.00	70.40	102.30	5,778.43	-627.49	2,303.71	2,040.07	1.75	0.74	-1.68
7,442.00	71.20	101.70	5,809.34	-645.95	2,390.54	2,113.19	1.04	0.85	-0.64
7,537.00	72.00	101.90	5,839.33	-664.38	2,478.78	2,187.27	0.97	0.84	0.21
7,632.00	72.80	102.10	5,868.05	-683.21	2,567.35	2,261.80	0.82	0.84	0.21

RECEIVED  
Office of Oil and Gas



Survey Report



**Company:** EQT PRODUCTION  
**Project:** Ritchie County, WV  
**Site:** OXF122  
**Well:** Well #514083 - Marcellus  
**Wellbore:** Sidetrack 01  
**Design:** Surveys Sidetrack 01

**Local Co-ordinate Reference:** Well Well #514083 - Marcellus - Slot 514083  
**TVD Reference:** KB@23 @ 1134.00usft  
**MD Reference:** KB@23 @ 1134.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** DB Jul2216dt

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)
7,726.00	70.90	101.70	5,897.33	-701.63	2,654.75	2,335.34	2.06	-2.02	-0.43
7,821.00	72.00	101.40	5,927.56	-719.66	2,742.99	2,409.13	1.20	1.16	-0.32
7,915.00	69.90	101.50	5,958.23	-737.29	2,830.07	2,481.83	2.24	-2.23	0.11
8,010.00	70.70	100.90	5,990.26	-754.67	2,917.80	2,554.78	1.03	0.84	-0.63
8,105.00	68.70	101.10	6,023.22	-771.66	3,005.26	2,627.28	2.11	-2.11	0.21
8,199.00	68.30	98.60	6,057.67	-786.63	3,091.42	2,697.41	2.51	-0.43	-2.66
8,294.00	69.60	98.30	6,091.79	-799.65	3,179.12	2,767.18	1.40	1.37	-0.32
8,389.00	70.90	97.90	6,123.90	-812.25	3,267.64	2,837.21	1.42	1.37	-0.42
8,483.00	69.50	98.40	6,155.74	-824.79	3,355.18	2,906.53	1.57	-1.49	0.53
8,578.00	71.40	98.20	6,187.52	-837.71	3,443.77	2,976.84	2.01	2.00	-0.21
8,673.00	69.40	98.70	6,219.39	-850.86	3,532.29	3,047.27	2.16	-2.11	0.53
8,767.00	66.70	98.70	6,254.52	-864.04	3,618.46	3,116.12	2.87	-2.87	0.00
8,862.00	68.10	98.50	6,291.03	-877.16	3,705.18	3,185.29	1.49	1.47	-0.21
8,956.00	65.90	98.00	6,327.76	-889.58	3,790.80	3,253.20	2.39	-2.34	-0.53
9,051.00	66.20	97.60	6,366.32	-901.36	3,876.82	3,320.92	0.50	0.32	-0.42
9,145.00	68.30	97.30	6,402.67	-912.60	3,962.77	3,388.20	2.25	2.23	-0.32
9,177.00	68.80	97.10	6,414.37	-916.33	3,992.32	3,411.23	1.67	1.56	-0.63
9,208.00	68.90	96.60	6,425.56	-919.78	4,021.02	3,433.48	1.54	0.32	-1.61
9,240.00	69.20	99.10	6,437.00	-923.86	4,050.63	3,456.80	7.36	0.94	7.81
9,272.00	69.80	102.00	6,448.21	-929.35	4,080.09	3,481.05	8.69	1.88	9.06
9,303.00	70.20	103.70	6,458.81	-935.83	4,108.49	3,505.29	5.31	1.29	5.48
9,334.00	71.60	105.30	6,468.96	-943.16	4,136.85	3,530.12	6.65	4.52	5.16
9,366.00	72.70	108.30	6,478.77	-951.97	4,166.00	3,556.56	9.56	3.44	9.38
9,397.00	73.70	111.80	6,487.73	-962.14	4,193.87	3,583.12	11.28	3.23	11.29
9,429.00	74.80	115.30	6,496.42	-974.45	4,222.10	3,611.47	11.07	3.44	10.94
9,460.00	75.00	118.80	6,504.50	-988.06	4,248.75	3,639.68	10.92	0.65	11.29
9,492.00	75.90	121.80	6,512.54	-1,003.68	4,275.49	3,669.41	9.50	2.81	9.38
9,523.00	76.50	125.00	6,519.93	-1,020.25	4,300.62	3,698.73	10.21	1.94	10.32
9,554.00	78.00	128.40	6,526.78	-1,038.32	4,324.85	3,728.51	11.74	4.84	10.97
9,586.00	78.90	132.10	6,533.19	-1,058.58	4,348.78	3,759.67	11.67	2.81	11.56
9,618.00	80.30	135.70	6,538.97	-1,080.40	4,371.45	3,791.10	11.90	4.38	11.25
9,649.00	81.40	139.40	6,543.90	-1,102.98	4,392.10	3,821.70	12.31	3.55	11.94
9,681.00	82.20	143.50	6,548.46	-1,127.74	4,411.83	3,853.25	12.93	2.50	12.81
9,712.00	82.30	146.80	6,552.64	-1,152.95	4,429.38	3,883.61	10.55	0.32	10.65
9,743.00	82.70	150.40	6,556.69	-1,179.18	4,445.39	3,913.66	11.59	1.29	11.61
9,775.00	84.00	152.90	6,560.40	-1,207.15	4,460.48	3,944.35	8.76	4.06	7.81
9,806.00	85.70	155.50	6,563.18	-1,234.94	4,473.92	3,973.76	9.99	5.48	8.39
9,838.00	85.90	158.10	6,565.53	-1,264.27	4,486.49	4,003.70	8.13	0.63	8.13
9,869.00	86.10	160.70	6,567.69	-1,293.22	4,497.37	4,032.19	8.39	0.65	8.39
9,900.00	86.60	161.20	6,569.66	-1,322.46	4,507.47	4,060.36	2.28	1.61	1.61
9,932.00	86.90	160.70	6,571.48	-1,352.66	4,517.90	4,089.46	1.82	0.94	-1.56
9,954.00	87.96	160.56	6,572.46	-1,373.39	4,525.18	4,109.52	4.88	4.84	-0.65

LP @ 9954 MD 6572 TVD

RECEIVED  
Office of Oil and Gas



Survey Report



**Company:** EQT PRODUCTION  
**Project:** Ritchie County, WV  
**Site:** OXF122  
**Well:** Well #514083 - Marcellus  
**Wellbore:** Sidetrack 01  
**Design:** Surveys Sidetrack 01

**Local Co-ordinate Reference:** Well Well #514083 - Marcellus - Slot 514083  
**TVD Reference:** KB@23 @ 1134.00usft  
**MD Reference:** KB@23 @ 1134.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** DB Jul2216dt

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)	
9,963.00	88.40	160.50	6,572.75	-1,381.87	4,528.18	4,117.74	4.88	4.84	-0.64	
9,994.00	89.90	160.40	6,573.21	-1,411.08	4,538.56	4,146.08	4.85	4.84	-0.32	
10,026.00	90.80	161.20	6,573.01	-1,441.30	4,549.08	4,175.25	3.76	2.81	2.50	
10,057.00	91.50	161.30	6,572.39	-1,470.65	4,559.04	4,203.40	2.28	2.26	0.32	
10,089.00	90.20	161.00	6,571.91	-1,500.93	4,569.38	4,232.49	4.17	-4.06	-0.94	
10,120.00	87.70	160.00	6,572.48	-1,530.14	4,579.72	4,260.81	8.69	-8.06	-3.23	
10,152.00	87.60	159.50	6,573.79	-1,560.14	4,590.79	4,290.20	1.59	-0.31	-1.56	
10,183.00	87.60	159.60	6,575.09	-1,589.16	4,601.61	4,318.71	0.32	0.00	0.32	
10,215.00	88.30	160.70	6,576.24	-1,619.24	4,612.47	4,348.01	4.07	2.19	3.44	
10,246.00	88.80	161.10	6,577.02	-1,648.52	4,622.61	4,376.24	2.07	1.61	1.29	
10,277.00	88.10	161.60	6,577.86	-1,677.88	4,632.52	4,404.37	2.77	-2.26	1.61	
10,301.00	86.90	162.40	6,578.91	-1,700.69	4,639.93	4,426.02	6.01	-5.00	3.33	
10,333.00	86.20	163.10	6,580.83	-1,731.19	4,649.40	4,454.67	3.09	-2.19	2.19	
10,364.00	85.40	162.90	6,583.10	-1,760.76	4,658.44	4,482.35	2.66	-2.58	-0.65	
10,396.00	85.50	162.90	6,585.64	-1,791.25	4,667.82	4,510.94	0.31	0.31	0.00	
10,427.00	85.50	162.90	6,588.07	-1,820.78	4,676.91	4,538.63	0.00	0.00	0.00	
10,459.00	87.00	162.60	6,590.17	-1,851.28	4,686.38	4,567.27	4.78	4.69	-0.94	
10,490.00	87.30	162.40	6,591.71	-1,880.81	4,695.69	4,595.11	1.16	0.97	-0.65	
10,584.00	89.40	161.60	6,594.41	-1,970.16	4,724.72	4,679.94	2.39	2.23	-0.85	
10,679.00	89.40	160.90	6,595.41	-2,060.12	4,755.26	4,766.24	0.74	0.00	-0.74	
10,773.00	89.40	160.30	6,596.39	-2,148.77	4,786.48	4,852.07	0.64	0.00	-0.64	
10,867.00	89.30	159.10	6,597.46	-2,236.93	4,819.09	4,938.48	1.28	-0.11	-1.28	
10,961.00	90.50	161.00	6,597.62	-2,325.28	4,851.16	5,024.68	2.39	1.28	2.02	
11,056.00	90.60	160.80	6,596.71	-2,415.05	4,882.24	5,111.21	0.24	0.11	-0.21	
11,150.00	90.00	161.20	6,596.22	-2,503.92	4,912.84	5,196.78	0.77	-0.64	0.43	
11,244.00	89.00	161.90	6,597.04	-2,593.09	4,942.59	5,281.96	1.30	-1.06	0.74	
11,339.00	87.90	162.30	6,599.61	-2,683.45	4,971.78	5,367.63	1.23	-1.16	0.42	
11,433.00	87.70	162.30	6,603.22	-2,772.94	5,000.34	5,452.22	0.21	-0.21	0.00	
11,528.00	88.50	160.20	6,606.37	-2,862.84	5,030.86	5,538.47	2.36	0.84	-2.21	
11,622.00	90.50	159.30	6,607.19	-2,951.02	5,063.39	5,624.85	2.33	2.13	-0.96	
11,716.00	90.70	158.90	6,606.20	-3,038.83	5,096.92	5,711.66	0.48	0.21	-0.43	
11,810.00	92.40	160.90	6,603.66	-3,127.07	5,129.21	5,797.91	2.79	1.81	2.13	
11,905.00	93.10	160.50	6,599.10	-3,216.62	5,160.57	5,884.49	0.85	0.74	-0.42	
11,999.00	90.70	160.40	6,595.99	-3,305.15	5,192.01	5,970.37	2.56	-2.55	-0.11	
12,093.00	90.30	159.90	6,595.17	-3,393.56	5,223.92	6,056.50	0.68	-0.43	-0.53	
12,188.00	89.40	161.60	6,595.42	-3,483.25	5,255.24	6,143.14	2.02	-0.95	1.79	
12,282.00	89.10	160.90	6,596.65	-3,572.25	5,285.46	6,228.52	0.81	-0.32	-0.74	
12,376.00	91.00	161.90	6,596.56	-3,661.33	5,315.44	6,313.81	2.28	2.02	1.06	
12,471.00	90.50	161.00	6,595.32	-3,751.39	5,345.66	6,399.96	1.08	-0.53	-0.95	
12,565.00	90.00	162.30	6,594.91	-3,840.61	5,375.25	6,485.08	1.48	-0.53	1.38	
12,659.00	89.50	160.40	6,595.32	-3,929.66	5,405.31	6,570.39	2.09	-0.53	-2.02	
12,754.00	89.70	161.60	6,595.98	-4,019.49	5,436.23	6,656.86	1.28	0.21	1.26	
12,848.00	89.90	161.70	6,596.31	-4,108.70	5,465.83	6,741.98	0.24	0.21	0.11	

RECEIVED  
Office of Oil and Gas



Survey Report



Company: EQT PRODUCTION  
 Project: Ritchie County, WV  
 Site: OXF122  
 Well: Well #514083 - Marcellus  
 Wellbore: Sidetrack 01  
 Design: Surveys Sidetrack 01

Local Co-ordinate Reference: Well Well #514083 - Marcellus - Slot 514083  
 TVD Reference: KB@23 @ 1134.00usft  
 MD Reference: KB@23 @ 1134.00usft  
 North Reference: Grid  
 Survey Calculation Method: Minimum Curvature  
 Database: DB Jul2216dt

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)
12,943.00	89.30	161.10	6,596.98	-4,198.74	5,496.13	6,828.17	0.89	-0.63	-0.63
13,037.00	89.00	161.00	6,598.37	-4,287.64	5,526.65	6,913.69	0.34	-0.32	-0.11
13,131.00	88.50	160.40	6,600.42	-4,376.33	5,557.71	6,999.44	0.83	-0.53	-0.64
13,226.00	91.20	160.20	6,600.67	-4,465.76	5,589.73	7,086.38	2.85	2.84	-0.21
13,320.00	91.70	159.10	6,598.29	-4,553.87	5,622.41	7,172.81	1.29	0.53	-1.17
13,414.00	90.70	161.90	6,596.32	-4,642.44	5,653.78	7,258.68	3.16	-1.06	2.98
13,509.00	90.50	161.90	6,595.33	-4,732.74	5,683.29	7,344.52	0.21	-0.21	0.00
13,603.00	90.10	162.10	6,594.83	-4,822.14	5,712.33	7,429.39	0.48	-0.43	0.21
13,697.00	88.80	162.10	6,595.74	-4,911.58	5,741.22	7,514.18	1.38	-1.38	0.00
13,792.00	88.80	161.80	6,597.73	-5,001.88	5,770.65	7,599.97	0.32	0.00	-0.32
13,886.00	87.20	162.30	6,601.01	-5,091.25	5,799.60	7,684.76	1.78	-1.70	0.53
13,980.00	87.40	162.00	6,605.43	-5,180.63	5,828.39	7,769.43	0.38	0.21	-0.32
14,074.00	87.50	162.20	6,609.62	-5,269.99	5,857.25	7,854.14	0.24	0.11	0.21
14,168.00	88.00	162.40	6,613.31	-5,359.47	5,885.81	7,938.74	0.57	0.53	0.21
14,263.00	89.10	161.60	6,615.71	-5,449.79	5,915.15	8,024.48	1.43	1.16	-0.84
14,357.00	91.60	159.80	6,615.14	-5,538.49	5,946.22	8,110.23	3.28	2.66	-1.91
14,451.00	91.50	158.90	6,612.59	-5,626.42	5,979.35	8,196.85	0.96	-0.11	-0.96
14,546.00	91.40	159.30	6,610.19	-5,715.14	6,013.23	8,284.55	0.43	-0.11	0.42
14,640.00	88.40	160.00	6,610.35	-5,803.26	6,045.92	8,371.00	3.28	-3.19	0.74
14,734.00	89.00	159.80	6,612.49	-5,891.52	6,078.21	8,457.27	0.67	0.64	-0.21
14,828.00	87.80	161.90	6,615.11	-5,980.27	6,109.04	8,542.90	2.57	-1.28	2.23
14,923.00	87.90	162.00	6,618.68	-6,070.53	6,138.45	8,628.65	0.15	0.11	0.11
15,017.00	88.40	161.90	6,621.71	-6,159.86	6,167.56	8,713.51	0.54	0.53	-0.11
15,112.00	88.50	161.80	6,624.28	-6,250.10	6,197.14	8,799.36	0.15	0.11	-0.11
15,206.00	90.10	160.60	6,625.43	-6,339.07	6,227.43	8,884.77	2.13	1.70	-1.28
<b>Deepest point @ 15206 MD 6625 TVD</b>									
15,300.00	90.60	160.60	6,624.85	-6,427.74	6,258.65	8,970.61	0.53	0.53	0.00
15,395.00	91.00	160.80	6,623.53	-6,517.39	6,290.05	9,057.28	0.47	0.42	0.21
15,489.00	90.00	158.70	6,622.71	-6,605.57	6,322.58	9,143.66	2.47	-1.06	-2.23
15,522.00	90.10	157.60	6,622.68	-6,636.20	6,334.86	9,174.34	3.35	0.30	-3.33
<b>Survey @ 15522.00 MD</b>									
15,576.00	90.10	157.60	6,622.58	-6,686.12	6,355.44	9,224.73	0.00	0.00	0.00
<b>Survey projected to 15576.00 MD</b>									

RECEIVED  
Office of Oil and Gas

SEP 14 2017

WV Department of Environmental Protection

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
514083 LP as drilled	0.00	360.00	6,572.46	-1,373.39	4,525.18	231,677.81	1,626,865.18	39° 7' 42.9299 N	80° 48' 55.1698 W
- actual wellpath hits target center									
- Point									
514083 BHL as drilled	0.00	360.00	6,622.58	-6,686.12	6,355.44	226,365.08	1,628,695.44	39° 6' 50.6874 N	80° 48' 30.9647 W
- actual wellpath hits target center									
- Point									



**Company:** EQT PRODUCTION  
**Project:** Ritchie County, WV  
**Site:** OXF122  
**Well:** Well #514083 - Marcellus  
**Wellbore:** Sidetrack 01  
**Design:** Surveys Sidetrack 01

**Local Co-ordinate Reference:** Well Well #514083 - Marcellus - Slot 514083  
**TVD Reference:** KB@23 @ 1134.00usft  
**MD Reference:** KB@23 @ 1134.00usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** DB Jul2216dt

**Design Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,057.00	4,987.33	-56.25	242.35	Tie into original hole @ 5057 MD
9,954.00	6,572.46	-1,373.39	4,525.18	LP @ 9954 MD 6572 TVD
15,206.00	6,625.43	-6,339.07	6,227.43	Deepest point @ 15206 MD 6625 TVD
15,522.00	6,622.68	-6,636.20	6,334.86	Survey @ 15522.00 MD
15,576.00	6,622.58	-6,686.12	6,355.44	Survey projected to 15576.00 MD

RECEIVED  
Office of Oil and Gas

SEP 14 2017

WV Department of  
Environmental Protection