



Where energy meets innovation.

EQT PRODUCTION

Ritchie County, WV

OXF122

Well #512428 -Marcellus

API 4708510236

STK 2

Survey: STK 2

Standard Survey Report

26 January, 2016



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WV Department of
Environmental Protection



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Professional Directional Survey Report



Company: EQT PRODUCTION
Project: Ritchie County, WV
Site: OXF122
Well: Well #512428 -Marcellus
Wellbore: STK 2
Design: STK 2

Local Co-ordinate Reference: Well Well #512428 -Marcellus
TVD Reference: KB 23' @ 1134.00usft
MD Reference: KB 23' @ 1134.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Well_Planner1

Project: Ritchie 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: OXF122
Site Position: **Northing:** 233,060.52 usft **Latitude:** 39° 7' 55.94 N
From: Map **Easting:** 1,622,368.52 usft **Longitude:** 80° 49' 52.49 W
Position Uncertainty: 0.00 usft **Slot Radius:** 13-3/16 " **Grid Convergence:** -0.85 °

Well: Well #512428 -Marcellus
Well Position **+N/-S** 0.00 usft **Northing:** 233,074.50 usft **Latitude:** 39° 7' 56.09 N
+E/-W 0.00 usft **Easting:** 1,622,411.30 usft **Longitude:** 80° 49' 51.95 W
Position Uncertainty 0.00 usft **Wellhead Elevation:** usft **Ground Level:** 1,111.00 usft

Wellbore: STK 2

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/16/2015	-7.72	66.53	52,053

Design: STK 2
Audit Notes:
Version: 1.0 **Phase:** ACTUAL **Tie On Depth:** 6,261.00
Vertical Section: **Depth From (TVD) (usft)** **+N/-S (usft)** **+E/-W (usft)** **Direction (°)**
 0.00 0.00 0.00 145.02

Survey Program **Date:** 1/26/2016

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
110.00	3,265.00	512428 VES Gyros (Main Wellbore)	VES Spec AVG 04-09-15	Triaxial Continuous Gyro Model
3,288.00	6,261.00	512428 Pro MWD (Main Wellbore)	MWD - OWSG	MWD - OWSG
6,261.00	15,610.00	#1 Pro MWD (STK 2)	MWD - OWSG	MWD - OWSG

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110.00	0.15	52.68	110.00	0.09	0.11	-0.01	0.14	0.14	0.00
210.00	0.43	92.15	210.00	0.15	0.59	0.22	0.33	0.28	39.47
310.00	0.43	93.87	310.00	0.11	1.34	0.68	0.01	0.00	1.72
410.00	0.26	119.53	409.99	-0.02	1.91	1.12	0.23	-0.17	25.66
510.00	0.26	116.56	509.99	-0.24	2.32	1.52	0.01	0.00	-2.97
610.00	0.35	119.56	609.99	-0.49	2.78	2.00	0.09	0.09	3.00
710.00	0.45	123.59	709.99	-0.86	3.38	2.64	0.19	0.10	4.03
810.00	0.45	144.88	809.99	-1.40	3.93	3.48	0.19	0.00	21.29

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Well Well #512428 -Marcellus
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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	0.44	151.84	909.98	-2.06	4.34	4.17	0.05	-0.01	6.96
1,010.00	0.32	175.55	1,009.98	-2.67	4.54	4.79	0.20	-0.12	23.71
1,110.00	0.28	170.22	1,109.98	-3.19	4.60	5.25	0.05	-0.04	-5.33
1,210.00	0.34	173.58	1,209.98	-3.73	4.68	5.74	0.06	0.06	3.36
1,310.00	0.33	175.41	1,309.98	-4.31	4.73	6.24	0.01	-0.01	1.83
1,410.00	0.26	185.99	1,409.98	-4.82	4.73	6.66	0.09	-0.07	10.58
1,510.00	0.13	224.31	1,509.97	-5.13	4.63	6.86	0.18	-0.13	38.32
1,610.00	0.08	44.04	1,609.97	-5.16	4.60	6.86	0.21	-0.05	179.73
1,710.00	0.11	56.72	1,709.97	-5.06	4.73	6.85	0.04	0.03	12.68
1,810.00	0.23	121.27	1,809.97	-5.11	4.98	7.04	0.21	0.12	64.55
1,910.00	0.32	164.33	1,909.97	-5.48	5.23	7.49	0.22	0.09	43.06
2,010.00	0.24	158.78	2,009.97	-5.95	5.38	7.95	0.08	-0.08	-5.55
2,110.00	0.24	151.40	2,109.97	-6.32	5.55	8.37	0.03	0.00	-7.38
2,210.00	0.20	167.31	2,209.97	-6.68	5.69	8.74	0.07	-0.04	15.91
2,310.00	0.18	165.06	2,309.97	-7.00	5.77	9.05	0.02	-0.02	-2.25
2,410.00	0.18	170.77	2,409.97	-7.31	5.84	9.33	0.02	0.00	5.71
2,510.00	0.11	178.46	2,509.97	-7.56	5.87	9.56	0.07	-0.07	7.69
2,610.00	0.04	82.99	2,609.97	-7.65	5.90	9.65	0.12	-0.07	-95.47
2,710.00	0.08	291.81	2,709.97	-7.62	5.87	9.61	0.12	0.04	-151.18
2,810.00	0.04	155.04	2,809.97	-7.63	5.82	9.59	0.11	-0.04	-136.77
2,910.00	0.08	110.19	2,909.97	-7.68	5.90	9.68	0.06	0.04	-44.85
3,010.00	0.54	332.90	3,009.97	-7.29	5.75	9.27	0.60	0.46	-137.29
3,110.00	1.30	165.44	3,109.96	-7.96	5.82	9.86	1.83	0.76	-167.46
3,210.00	0.96	168.85	3,209.94	-9.88	6.27	11.69	0.35	-0.34	3.41
3,265.00	0.99	170.27	3,264.93	-10.80	6.44	12.55	0.07	0.05	2.58
3,288.00	0.70	179.50	3,287.93	-11.14	6.48	12.84	1.39	-1.26	40.13
3,319.00	1.40	276.00	3,318.93	-11.29	6.10	12.75	5.27	2.26	311.29
3,351.00	4.90	303.50	3,350.87	-10.50	4.57	11.22	11.61	10.94	85.94
3,383.00	6.90	307.30	3,382.70	-8.58	1.90	8.12	6.36	6.25	11.88
3,414.00	8.40	309.70	3,413.43	-6.00	-1.32	4.16	4.95	4.84	7.74
3,446.00	8.30	323.60	3,445.09	-2.65	-4.49	-0.40	6.30	-0.31	43.44
3,477.00	9.70	345.30	3,475.72	1.68	-6.48	-5.09	11.76	4.52	70.00
3,509.00	11.60	356.30	3,507.17	7.50	-7.37	-10.37	8.67	5.94	34.38
3,541.00	12.80	3.90	3,538.45	14.25	-7.34	-15.88	6.26	3.75	23.75
3,572.00	13.60	8.00	3,568.63	21.28	-6.60	-21.22	3.97	2.58	13.23
3,604.00	14.50	15.40	3,599.67	28.87	-5.01	-26.53	6.27	2.81	23.13
3,636.00	17.30	23.70	3,630.45	37.09	-2.03	-31.56	11.25	8.75	25.94
3,667.00	19.00	32.50	3,659.91	45.57	2.53	-35.89	10.39	5.48	28.39
3,699.00	21.90	37.20	3,689.89	54.72	8.94	-39.71	10.41	9.06	14.69
3,730.00	24.40	40.20	3,718.40	64.22	16.57	-43.12	8.91	8.06	9.68
3,762.00	27.90	40.70	3,747.12	74.95	25.72	-46.66	10.96	10.94	1.56
3,794.00	31.40	40.20	3,774.92	86.99	35.99	-50.65	10.96	10.94	-1.56
3,825.00	34.70	40.80	3,800.90	99.84	46.97	-54.88	10.70	10.65	1.94



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3,857.00	38.20	42.10	3,826.64	114.09	59.56	-59.33	11.20	10.94	4.06
3,888.00	41.70	43.10	3,850.40	128.73	73.03	-63.61	11.48	11.29	3.23
3,984.00	41.60	41.80	3,922.14	175.80	116.09	-77.49	0.91	-0.10	-1.35
4,079.00	40.80	40.40	3,993.62	222.95	157.23	-92.54	1.29	-0.84	-1.47
4,174.00	39.90	38.50	4,066.02	270.44	196.32	-109.04	1.60	-0.95	-2.00
4,269.00	40.70	41.00	4,138.48	317.66	235.61	-125.21	1.90	0.84	2.63
4,364.00	40.80	42.60	4,210.45	363.89	276.94	-139.39	1.10	0.11	1.68
4,459.00	43.40	42.10	4,280.93	410.96	319.84	-153.36	2.76	2.74	-0.53
4,554.00	42.60	40.20	4,350.41	459.73	362.47	-168.88	1.60	-0.84	-2.00
4,649.00	40.90	38.00	4,421.29	508.80	402.38	-186.21	2.36	-1.79	-2.32
4,744.00	40.80	42.50	4,493.16	556.20	442.50	-202.05	3.10	-0.11	4.74
4,838.00	42.90	44.20	4,563.18	601.79	485.56	-214.71	2.54	2.23	1.81
4,933.00	44.80	42.50	4,631.69	649.65	530.72	-228.04	2.35	2.00	-1.79
5,028.00	43.50	41.90	4,699.85	698.67	575.17	-242.72	1.44	-1.37	-0.63
5,123.00	41.10	40.70	4,770.11	746.69	617.37	-257.86	2.67	-2.53	-1.26
5,218.00	43.50	41.40	4,840.37	794.89	659.37	-273.29	2.57	2.53	0.74
5,312.00	42.10	40.10	4,909.34	843.27	701.06	-289.02	1.76	-1.49	-1.38
5,407.00	40.40	39.10	4,980.77	891.52	740.99	-305.67	1.92	-1.79	-1.05
5,502.00	44.10	40.50	5,051.08	940.57	781.89	-322.41	4.02	3.89	1.47
5,597.00	42.70	39.20	5,120.10	990.67	823.72	-339.48	1.75	-1.47	-1.37
5,692.00	41.00	38.00	5,190.86	1,040.19	863.27	-357.38	1.98	-1.79	-1.26
5,786.00	39.50	37.50	5,262.61	1,088.21	900.45	-375.41	1.63	-1.60	-0.53
5,881.00	39.80	43.60	5,335.78	1,134.22	939.83	-390.53	4.11	0.32	6.42
5,976.00	39.60	43.60	5,408.87	1,178.16	981.68	-402.54	0.21	-0.21	0.00
6,071.00	43.50	42.50	5,479.96	1,224.22	1,024.67	-415.63	4.18	4.11	-1.16
6,166.00	41.60	41.10	5,549.94	1,272.09	1,067.49	-430.31	2.23	-2.00	-1.47
6,261.00	42.40	42.50	5,620.51	1,319.48	1,109.82	-444.84	1.30	0.84	1.47
Tie into OH at 6261'MD									
6,336.00	43.30	42.70	5,675.52	1,357.02	1,144.39	-455.81	1.21	1.20	0.27
6,368.00	42.50	46.60	5,698.97	1,372.51	1,159.69	-459.73	8.66	-2.50	12.19
6,400.00	40.70	48.60	5,722.90	1,386.84	1,175.37	-462.48	6.99	-5.63	6.25
6,431.00	40.80	48.20	5,746.38	1,400.28	1,190.50	-464.82	0.90	0.32	-1.29
6,463.00	41.70	47.50	5,770.44	1,414.44	1,206.14	-467.45	3.16	2.81	-2.19
6,495.00	41.80	43.70	5,794.32	1,429.34	1,221.36	-470.94	7.91	0.31	-11.88
6,526.00	41.50	41.50	5,817.49	1,444.50	1,235.30	-475.37	4.81	-0.97	-7.10
6,558.00	41.60	40.10	5,841.43	1,460.57	1,249.17	-480.58	2.92	0.31	-4.38
6,589.00	40.10	41.40	5,864.88	1,475.93	1,262.40	-485.58	5.56	-4.84	4.19
6,621.00	38.40	45.00	5,889.67	1,490.69	1,276.25	-489.74	8.88	-5.31	11.25
6,653.00	36.70	51.20	5,915.04	1,503.71	1,290.74	-492.11	12.94	-5.31	19.38
6,684.00	35.70	57.00	5,940.07	1,514.45	1,305.55	-492.41	11.51	-3.23	18.71
6,716.00	36.40	62.80	5,965.95	1,523.88	1,321.83	-490.80	10.89	2.19	18.13
6,747.00	36.30	66.30	5,990.92	1,531.77	1,338.41	-487.76	6.70	-0.32	11.29
6,779.00	37.40	71.30	6,016.53	1,538.70	1,356.29	-483.18	9.98	3.44	15.63
6,810.00	37.70	77.90	6,041.12	1,543.70	1,374.49	-476.86	13.01	0.97	21.29



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6,842.00	38.00	83.20	6,066.39	1,546.92	1,393.84	-468.40	10.20	0.94	16.56
6,874.00	38.30	90.70	6,091.57	1,547.97	1,413.55	-457.96	14.50	0.94	23.44
6,905.00	39.40	95.70	6,115.72	1,546.87	1,432.95	-445.94	10.72	3.55	16.13
6,937.00	39.70	99.60	6,140.40	1,544.16	1,453.13	-432.14	7.82	0.94	12.19
6,969.00	40.10	102.50	6,164.95	1,540.22	1,473.28	-417.37	5.95	1.25	9.06
7,000.00	41.00	106.00	6,188.51	1,535.26	1,492.80	-402.11	7.89	2.90	11.29
7,032.00	42.30	110.10	6,212.42	1,528.66	1,513.01	-385.12	9.43	4.06	12.81
7,063.00	44.80	114.00	6,234.89	1,520.63	1,532.79	-367.20	11.84	8.06	12.58
7,095.00	47.30	117.20	6,257.10	1,510.67	1,553.55	-347.13	10.62	7.81	10.00
7,126.00	49.50	120.10	6,277.68	1,499.55	1,573.89	-326.37	9.96	7.10	9.35
7,158.00	51.90	123.80	6,297.95	1,486.44	1,594.88	-303.59	11.67	7.50	11.56
7,190.00	54.70	127.60	6,317.08	1,471.46	1,615.70	-279.38	12.93	8.75	11.88
7,221.00	56.80	130.70	6,334.53	1,455.28	1,635.56	-254.74	10.69	6.77	10.00
7,253.00	59.10	133.80	6,351.51	1,437.04	1,655.63	-228.29	10.91	7.19	9.69
7,285.00	61.50	135.90	6,367.37	1,417.44	1,675.33	-200.93	9.42	7.50	6.56
7,316.00	63.90	138.70	6,381.59	1,397.19	1,694.00	-173.64	11.15	7.74	9.03
7,348.00	66.10	141.60	6,395.11	1,374.93	1,712.57	-144.75	10.71	6.88	9.06
7,380.00	68.50	145.20	6,407.46	1,351.23	1,730.16	-115.25	12.80	7.50	11.25
7,411.00	70.20	147.30	6,418.40	1,327.11	1,746.27	-86.25	8.38	5.48	6.77
7,443.00	73.40	149.80	6,428.39	1,301.18	1,762.13	-55.91	12.45	10.00	7.81
7,474.00	76.00	152.40	6,436.57	1,275.00	1,776.57	-26.19	11.65	8.39	8.39
7,506.00	76.60	152.90	6,444.15	1,247.39	1,790.85	4.63	2.41	1.88	1.56
7,538.00	77.20	154.50	6,451.40	1,219.45	1,804.66	35.44	5.22	1.88	5.00
7,569.00	78.60	157.30	6,457.90	1,191.78	1,817.04	65.20	9.92	4.52	9.03
7,601.00	81.50	158.90	6,463.43	1,162.54	1,828.79	95.89	10.31	9.06	5.00
7,633.00	84.50	159.00	6,467.33	1,132.90	1,840.19	126.72	9.38	9.38	0.31
7,664.00	87.50	160.80	6,469.49	1,103.87	1,850.82	156.60	11.28	9.68	5.81
7,696.00	88.30	161.00	6,470.67	1,073.65	1,861.28	187.36	2.58	2.50	0.63
7,791.00	87.70	160.60	6,473.98	983.99	1,892.51	278.72	0.76	-0.63	-0.42
7,886.00	89.50	163.30	6,476.30	893.70	1,921.93	369.57	3.41	1.89	2.84
7,981.00	89.00	162.90	6,477.55	802.81	1,949.54	459.87	0.67	-0.53	-0.42
8,076.00	92.40	162.40	6,476.39	712.16	1,977.87	550.38	3.62	3.58	-0.53
8,171.00	92.20	162.60	6,472.57	621.63	2,006.41	640.92	0.30	-0.21	0.21
8,265.00	91.70	162.50	6,469.38	532.00	2,034.58	730.51	0.54	-0.53	-0.11
8,360.00	91.50	163.80	6,466.72	441.12	2,062.11	820.75	1.38	-0.21	1.37
8,455.00	89.90	160.40	6,465.56	350.74	2,091.30	911.54	3.96	-1.68	-3.58
8,550.00	89.70	159.40	6,465.89	261.53	2,123.95	1,003.35	1.07	-0.21	-1.05
8,645.00	89.60	160.30	6,466.47	172.35	2,156.67	1,095.19	0.95	-0.11	0.95
8,740.00	89.90	161.80	6,466.89	82.50	2,187.52	1,186.49	1.61	0.32	1.58
8,835.00	89.80	162.20	6,467.14	-7.85	2,216.88	1,277.35	0.43	-0.11	0.42
8,929.00	89.40	160.80	6,467.79	-96.99	2,246.70	1,367.48	1.55	-0.43	-1.49
9,024.00	88.80	161.10	6,469.29	-186.77	2,277.71	1,458.82	0.71	-0.63	0.32
9,119.00	90.80	162.10	6,469.62	-276.91	2,307.69	1,549.86	2.35	2.11	1.05



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Professional Directional Survey Report



Company: EQT PRODUCTION
Project: Ritchie County, WV
Site: OXF122
Well: Well #512428 -Marcellus
Wellbore: STK 2
Design: STK 2

Local Co-ordinate Reference: Well Well #512428 -Marcellus
TVD Reference: KB 23' @ 1134.00usft
MD Reference: KB 23' @ 1134.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Well_Planner1

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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)
9,214.00	90.40	162.00	6,468.62	-367.28	2,336.97	1,640.69	0.43	-0.42	-0.11
9,309.00	90.30	162.90	6,468.04	-457.86	2,365.61	1,731.33	0.95	-0.11	0.95
9,404.00	89.70	164.00	6,468.04	-548.92	2,392.67	1,821.45	1.32	-0.63	1.16
9,499.00	90.30	161.50	6,468.04	-639.64	2,420.84	1,911.93	2.71	0.63	-2.63
9,593.00	89.70	161.40	6,468.04	-728.75	2,450.74	2,002.10	0.65	-0.64	-0.11
9,688.00	89.10	160.50	6,469.04	-818.55	2,481.75	2,093.44	1.14	-0.63	-0.95
9,783.00	88.70	160.60	6,470.86	-908.11	2,513.38	2,184.96	0.43	-0.42	0.11
9,878.00	90.50	161.20	6,471.52	-997.87	2,544.46	2,276.32	2.00	1.89	0.63
9,973.00	90.30	161.50	6,470.86	-1,087.88	2,574.84	2,367.49	0.38	-0.21	0.32
10,067.00	89.90	161.30	6,470.70	-1,176.97	2,604.82	2,457.67	0.48	-0.43	-0.21
10,162.00	89.80	161.20	6,470.95	-1,266.93	2,635.36	2,548.89	0.15	-0.11	-0.11
10,257.00	88.90	159.70	6,472.02	-1,356.44	2,667.15	2,640.45	1.84	-0.95	-1.58
10,352.00	89.30	162.90	6,473.52	-1,446.40	2,697.60	2,731.62	3.39	0.42	3.37
10,447.00	89.00	163.90	6,474.93	-1,537.43	2,724.73	2,821.76	1.10	-0.32	1.05
10,542.00	89.20	164.60	6,476.42	-1,628.86	2,750.52	2,911.45	0.77	0.21	0.74
10,637.00	88.80	163.20	6,478.08	-1,720.11	2,776.86	3,001.32	1.53	-0.42	-1.47
10,732.00	88.60	165.00	6,480.23	-1,811.45	2,802.87	3,091.08	1.91	-0.21	1.89
10,827.00	88.30	163.70	6,482.80	-1,902.89	2,828.49	3,180.69	1.40	-0.32	-1.37
10,922.00	88.20	163.30	6,485.70	-1,993.94	2,855.46	3,270.75	0.43	-0.11	-0.42
11,017.00	88.00	163.10	6,488.85	-2,084.83	2,882.90	3,360.95	0.30	-0.21	-0.21
11,111.00	88.60	162.20	6,491.64	-2,174.52	2,910.92	3,450.50	1.15	0.64	-0.96
11,206.00	88.50	162.60	6,494.04	-2,265.04	2,939.64	3,541.13	0.43	-0.11	0.42
11,301.00	89.40	160.20	6,495.79	-2,355.06	2,969.93	3,632.25	2.70	0.95	-2.53
11,396.00	89.40	160.50	6,496.78	-2,444.52	3,001.88	3,723.87	0.32	0.00	0.32
11,491.00	89.20	161.40	6,497.94	-2,534.31	3,032.88	3,815.21	0.97	-0.21	0.95
11,586.00	89.20	161.40	6,499.27	-2,624.34	3,063.18	3,906.35	0.00	0.00	0.00
11,681.00	89.10	159.90	6,500.68	-2,713.96	3,094.65	3,997.82	1.58	-0.11	-1.58
11,776.00	89.00	159.60	6,501.21	-2,743.98	3,105.73	4,028.77	0.99	-0.31	-0.94
11,871.00	89.10	161.40	6,502.25	-2,803.35	3,126.75	4,089.47	2.86	0.16	2.86
11,966.00	88.80	162.10	6,503.99	-2,893.56	3,156.50	4,180.43	0.80	-0.32	0.74
12,061.00	86.50	162.10	6,507.89	-2,983.88	3,185.67	4,271.16	2.42	-2.42	0.00
12,156.00	86.10	162.40	6,514.02	-3,074.17	3,214.57	4,361.71	0.53	-0.42	0.32
12,251.00	85.90	162.90	6,520.65	-3,164.62	3,242.83	4,452.02	0.57	-0.21	0.53
12,346.00	87.10	163.70	6,526.38	-3,254.49	3,269.79	4,541.11	1.53	1.28	0.85
12,441.00	86.90	163.60	6,531.36	-3,345.52	3,296.50	4,631.01	0.24	-0.21	-0.11
12,536.00	87.90	163.30	6,535.67	-3,436.49	3,323.53	4,721.04	1.10	1.05	-0.32
12,631.00	87.60	164.00	6,539.40	-3,527.58	3,350.25	4,811.00	0.80	-0.32	0.74
12,726.00	88.60	162.20	6,542.55	-3,618.42	3,377.85	4,901.25	2.17	1.05	-1.89
12,821.00	88.80	161.80	6,544.68	-3,707.80	3,406.89	4,991.13	0.48	0.21	-0.43
12,916.00	88.60	162.50	6,546.83	-3,798.20	3,436.01	5,081.89	0.77	-0.21	0.74
13,011.00	90.10	161.20	6,547.91	-3,888.46	3,465.60	5,172.81	2.09	1.58	-1.37
13,106.00	90.30	160.60	6,547.58	-3,978.23	3,496.68	5,264.19	0.67	0.21	-0.63
13,201.00	89.60	161.70	6,547.63	-4,068.13	3,527.33	5,355.41	1.37	-0.74	1.16



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Professional Directional Survey Report



Company: EQT PRODUCTION
Project: Ritchie County, WV
Site: OXF122
Well: Well #512428 -Marcellus
Wellbore: STK 2
Design: STK 2

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well Well #512428 -Marcellus
 KB 23' @ 1134.00usft
 KB 23' @ 1134.00usft
 Grid
 Minimum Curvature
 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)
13,199.00	90.20	162.90	6,547.80	-4,158.63	3,556.21	5,446.12	1.41	0.63	1.26
13,294.00	89.10	161.20	6,548.38	-4,249.00	3,585.49	5,536.95	2.13	-1.16	-1.79
13,389.00	88.30	161.40	6,550.53	-4,338.96	3,615.94	5,628.12	0.87	-0.84	0.21
13,483.00	88.30	161.10	6,553.32	-4,427.93	3,646.14	5,718.33	0.32	0.00	-0.32
13,578.00	88.20	162.50	6,556.22	-4,518.13	3,675.80	5,809.24	1.48	-0.11	1.47
13,673.00	88.00	162.40	6,559.37	-4,608.66	3,704.43	5,899.83	0.24	-0.21	-0.11
13,768.00	87.60	162.10	6,563.02	-4,699.07	3,733.37	5,990.50	0.53	-0.42	-0.32
13,863.00	89.70	162.10	6,565.26	-4,789.44	3,762.56	6,081.28	2.21	2.21	0.00
13,958.00	89.50	162.70	6,565.92	-4,879.99	3,791.28	6,171.94	0.67	-0.21	0.63
14,053.00	90.50	159.20	6,565.92	-4,969.78	3,822.29	6,263.28	3.83	1.05	-3.68
14,147.00	89.30	156.90	6,566.09	-5,056.95	3,857.42	6,354.85	2.76	-1.28	-2.45
14,242.00	89.30	156.40	6,567.25	-5,144.17	3,895.07	6,447.89	0.53	0.00	-0.53
14,337.00	88.10	157.00	6,569.40	-5,231.39	3,932.64	6,540.90	1.41	-1.26	0.63
14,432.00	88.30	156.80	6,572.39	-5,318.73	3,969.89	6,633.82	0.30	0.21	-0.21
14,527.00	88.30	157.20	6,575.20	-5,406.14	4,006.99	6,726.71	0.42	0.00	0.42
14,622.00	89.90	156.90	6,576.70	-5,493.61	4,044.03	6,819.61	1.71	1.68	-0.32
14,717.00	89.80	155.60	6,576.95	-5,580.56	4,082.29	6,912.78	1.37	-0.11	-1.37
14,812.00	88.50	153.80	6,578.35	-5,666.44	4,122.88	7,006.42	2.34	-1.37	-1.89
14,907.00	88.80	153.40	6,580.59	-5,751.50	4,165.11	7,100.33	0.53	0.32	-0.42
15,002.00	89.50	153.30	6,582.00	-5,836.40	4,207.72	7,194.31	0.74	0.74	-0.11
15,097.00	89.40	154.90	6,582.91	-5,921.85	4,249.21	7,288.11	1.69	-0.11	1.68
15,192.00	89.20	154.20	6,584.07	-6,007.63	4,290.03	7,381.80	0.77	-0.21	-0.74
15,287.00	87.50	155.70	6,586.81	-6,093.65	4,330.23	7,475.33	2.39	-1.79	1.58
15,381.00	87.80	155.50	6,590.66	-6,179.18	4,369.03	7,567.65	0.38	0.32	-0.21
15,476.00	87.70	155.50	6,594.39	-6,265.56	4,408.40	7,661.00	0.11	-0.11	0.00
15,539.00	86.40	155.10	6,597.64	-6,322.72	4,434.69	7,722.90	2.16	-2.06	-0.63
Last Survey: 15539'MD / 6597.64'TVD									
15,610.00	86.40	155.10	6,602.09	-6,386.99	4,464.52	7,792.67	0.00	0.00	0.00
PTB: 15610'MD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,261.00	5,620.51	1,319.48	1,109.82	Tie into OH at 6261'MD
15,539.00	6,597.64	-6,322.72	4,434.69	Last Survey: 15539'MD / 6597.64'TVD
15,610.00	6,602.09	-6,386.99	4,464.52	PTB: 15610'MD

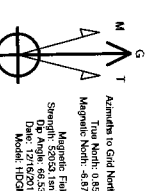
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Assemble to Grid North
True North: 0.85°
Magnetic North: -0.67°
Magnetic Field Strength: 520.33 μT
Date: 12/16/2015
Model: HD00A

Azimuth Corrections
To convert a Magnetic Direction to a Grid Direction, Subtract 0.85°

Coordinate System: US State Plane 1927 (East solution)
Datum: NAD 1927 (NADCON CONUS)
Elevation: Mean Sea Level
System Datum: Mean Sea Level



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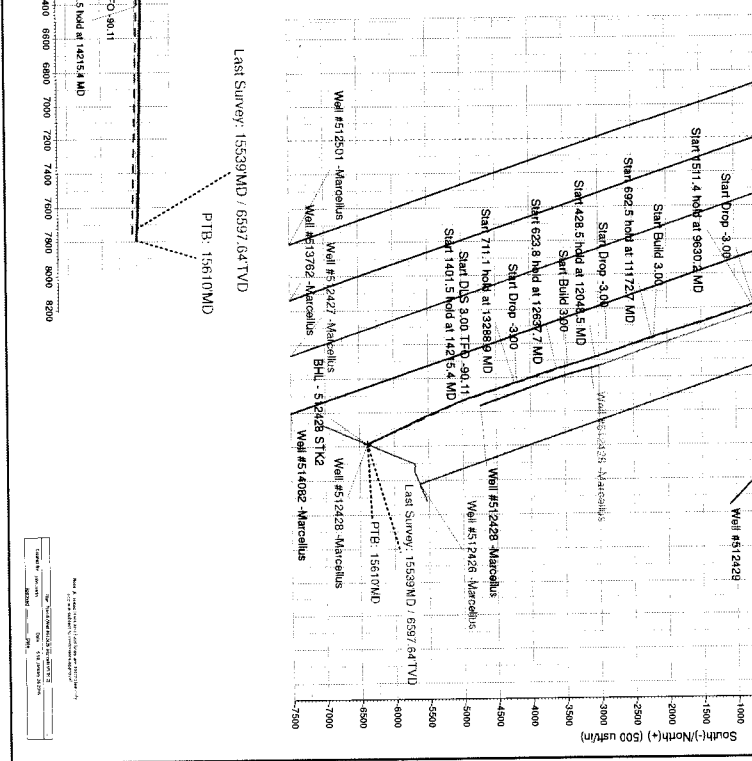
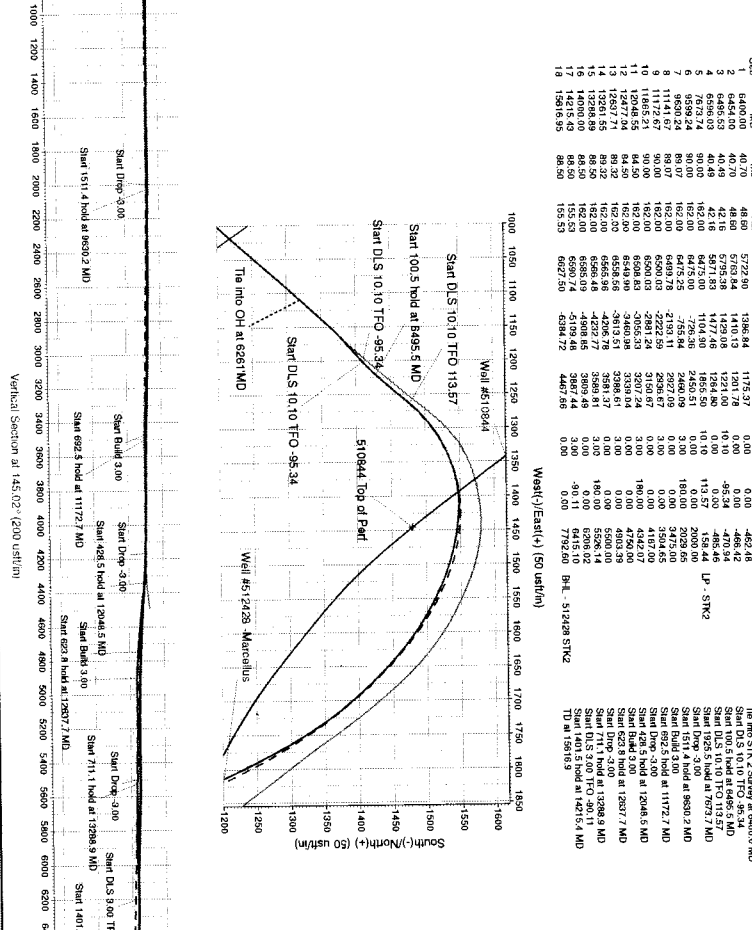
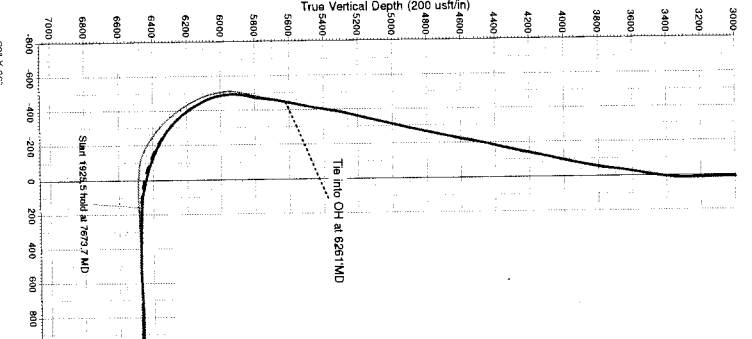
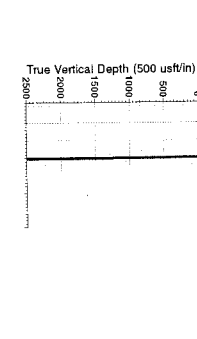
OXF122
Richie County, WV
Well #512428 - Marcellus
Plan 8 STK2 - AVP FINAL (Grid)
KB 23 @ 1134.00uH

Name: 510844 Top of Part LP - STK2
BHL - 512428 STK2
Name: 510844 Top of Part LP - STK2
BHL - 512428 STK2

N/S: +E/W
Easting: 228774.50
Northing: 1822411.30
Easting: 228774.50
Northing: 1822411.30

Design Target Details
Name: 510844 Top of Part LP - STK2
BHL - 512428 STK2

SECTION DETAILS
Name: 510844 Top of Part LP - STK2
BHL - 512428 STK2



Vertical Section at 1451.02 (+200 usft/in)
Vertical Section at 1451.02 (+200 usft/in)