



Where energy meets innovation.

## **EQT PRODUCTION**

**Ritchie County, WV**

**PEN54**

**Well #514479 - Slot 514479**

**Main Wellbore**

**Design: 514479 As Drilled Surveys**

## **Standard Survey Report**

**10 August, 2016**

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JUN 30 2017

WV Department of  
Environmental Protection



09/15/2017

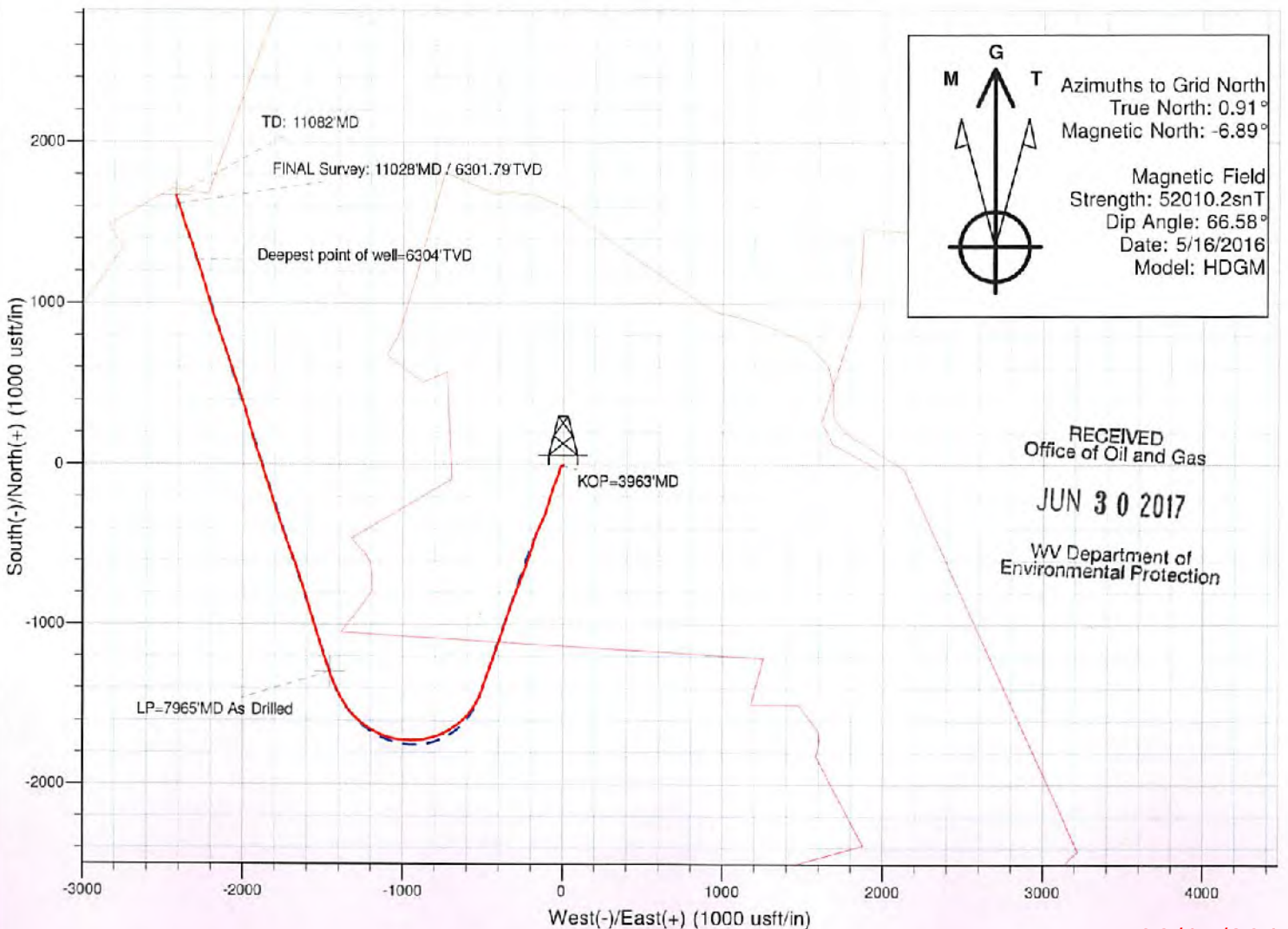
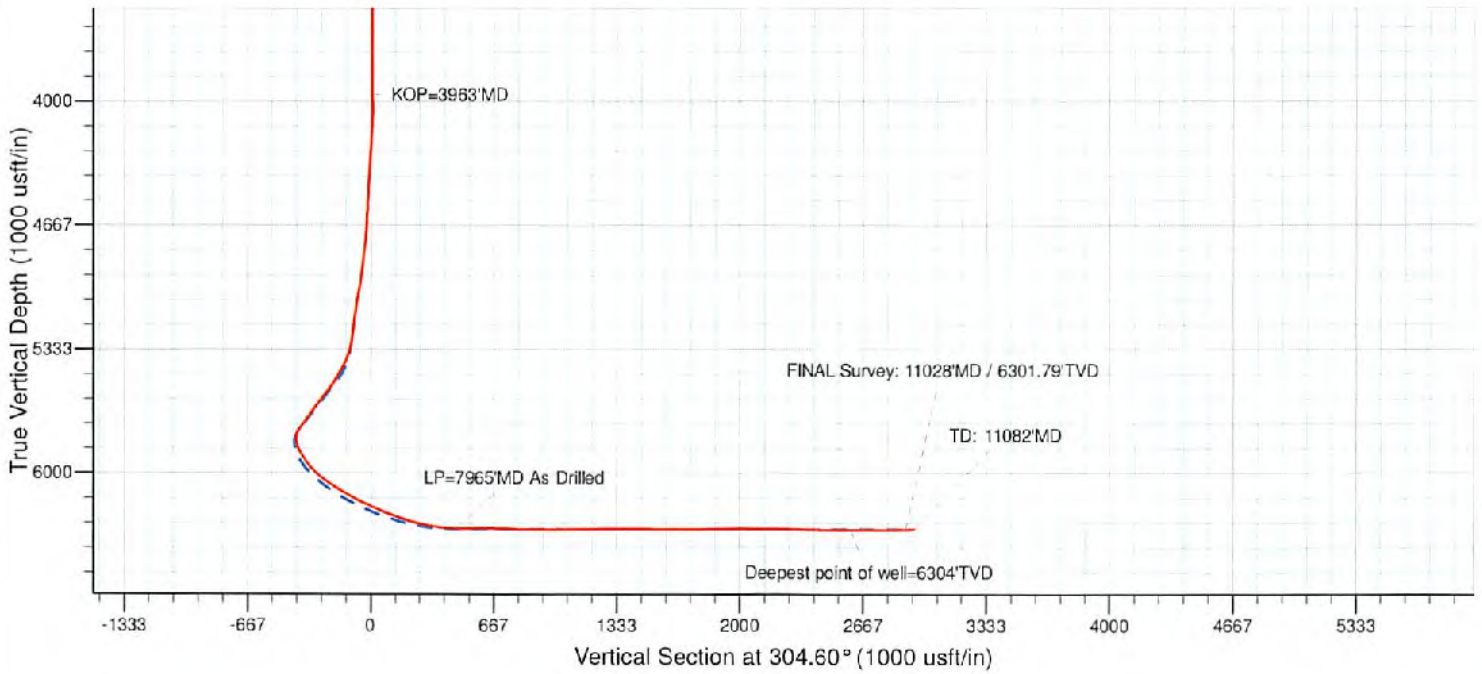


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Project: Ritchie County, WV  
Site: PEN54  
Well: Well #514479  
Wellbore: Main Wellbore  
Design: 514479 As Drilled Surveys  
Elevation: GL 1016 + 23' KB @ 1039.00usft



PRO DIRECTIONAL



09/15/2017





# Professional Directional Survey Report



<b>Company:</b>	EQT PRODUCTION	<b>Local Co-ordinate Reference:</b>	Well Well #514479 - Slot 514479
<b>Project:</b>	Ritchie County, WV	<b>TVD Reference:</b>	GL 1016 + 23' KB @ 1039.00usft
<b>Site:</b>	PEN54	<b>MD Reference:</b>	GL 1016 + 23' KB @ 1039.00usft
<b>Well:</b>	Well #514479	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Main Wellbore	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	514479 As Drilled Surveys	<b>Database:</b>	Well_Planner1

<b>Project</b>	Ritchie County, WV			<b>RECEIVED</b> Office of Oil and Gas  <b>JUN 30 2017</b>
<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>	PEN54				WV Department of Environmental Protection	
<b>Site Position:</b>		<b>Northing:</b>	279,215.27 usft	<b>Latitude:</b>		39° 15' 28.054 N
<b>From:</b>	Map	<b>Easting:</b>	1,595,775.03 usft	<b>Longitude:</b>		80° 55' 39.233 W
<b>Position Uncertainty:</b>	0.00 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>		-0.91 °

<b>Well</b>	Well #514479 - Slot 514479				
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>	279,147.29 usft	<b>Latitude:</b> 39° 15' 27.386 N
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>	1,595,805.75 usft	<b>Longitude:</b> 80° 55' 38.816 W
<b>Position Uncertainty</b>		0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft	<b>Ground Level:</b> 1,016.00 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	5/16/2016	-7.80	66.58	52,010

<b>Design</b>	514479 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	304.60

<b>Survey Program</b>	Date 8/10/2016			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
100.00	3,916.00	#1 Gyrodata Gyro (Main Wellbore)	Gyrodata_DP_MS	Gyrodata gyro-compassing and drop
3,936.00	5,225.00	#2 ProD MWD (Main Wellbore)	MWD - OWSG	MWD - OWSG
5,282.00	11,082.00	#3 ProD MWD (Main Wellbore)	MWD - OWSG	MWD - OWSG

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	0.20	114.12	100.00	-0.07	0.16	-0.17	0.20	0.20	0.00
200.00	0.19	128.59	200.00	-0.25	0.45	-0.51	0.05	-0.01	14.47
300.00	0.13	171.28	300.00	-0.46	0.59	-0.75	0.13	-0.06	42.69
400.00	0.10	162.81	400.00	-0.66	0.64	-0.90	0.03	-0.03	-8.47
500.00	0.10	191.62	500.00	-0.83	0.65	-1.00	0.05	0.00	28.81
600.00	0.05	213.42	600.00	-0.95	0.60	-1.04	0.06	-0.05	21.80
700.00	0.13	264.30	700.00	-1.00	0.47	-0.95	0.11	0.08	50.88
800.00	0.25	256.06	800.00	-1.06	0.14	-0.72	0.12	0.12	-8.24





Professional Directional  
Survey Report

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Well Well #514479 - Slot 514479  
GL 1016 + 23' KB @ 1039.00usft  
GL 1016 + 23' KB @ 1039.00usft  
Grid  
Minimum Curvature  
Well\_Planner1

Company: EQT PRODUCTION  
Project: Ritchie County, WV  
Site: PEN54  
Well: Well #514479  
Wellbore: Main Wellbore  
Design: 514479 As Drilled Surveys

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

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	0.31	256.27	900.00	-1.18	-0.33	-0.39	0.06	0.06	0.21
1,000.00	0.48	235.09	999.99	-1.48	-0.94	-0.07	0.22	0.17	-21.16
1,100.00	0.52	218.00	1,099.99	-2.08	-1.56	0.11	0.15	0.04	-17.09
1,200.00	0.55	211.18	1,199.99	-2.85	-2.09	0.10	0.07	0.03	-6.82
1,300.00	0.48	214.13	1,299.98	-3.60	-2.57	0.07	0.07	-0.07	2.95
1,400.00	0.51	210.89	1,399.98	-4.33	-3.04	0.04	0.04	0.03	-3.24
1,500.00	0.52	206.06	1,499.97	-5.12	-3.46	-0.06	0.04	0.01	-4.83
1,600.00	0.56	248.07	1,599.97	-5.71	-4.12	0.14	0.39	0.04	42.01
1,700.00	0.60	254.78	1,699.97	-6.03	-5.07	0.75	0.08	0.04	6.71
1,800.00	0.50	263.42	1,799.96	-6.22	-6.01	1.42	0.13	-0.10	8.64
1,900.00	0.57	279.92	1,899.96	-6.18	-6.94	2.20	0.17	0.07	16.50
2,000.00	0.56	284.30	1,999.95	-5.98	-7.90	3.11	0.04	-0.01	4.38
2,100.00	0.44	300.28	2,099.95	-5.66	-8.71	3.95	0.18	-0.12	15.98
2,200.00	0.33	297.82	2,199.95	-5.33	-9.29	4.62	0.11	-0.11	-2.46
2,300.00	0.22	304.45	2,299.94	-5.09	-9.70	5.10	0.11	-0.11	6.63
2,400.00	0.19	291.27	2,399.94	-4.92	-10.02	5.45	0.06	-0.03	-13.16
2,500.00	0.21	296.92	2,499.94	-4.78	-10.34	5.79	0.03	0.02	5.65
2,600.00	0.20	300.30	2,599.94	-4.61	-10.65	6.15	0.02	-0.01	3.36
2,700.00	0.23	306.81	2,699.94	-4.40	-10.96	6.52	0.04	0.03	6.51
2,800.00	0.19	309.53	2,799.94	-4.17	-11.25	6.89	0.04	-0.04	2.72
2,900.00	0.24	296.68	2,899.94	-3.97	-11.56	7.26	0.07	0.05	-12.85
3,000.00	0.07	227.01	2,999.94	-3.92	-11.80	7.48	0.23	-0.17	-89.67
3,100.00	0.13	122.82	3,099.94	-4.03	-11.75	7.38	0.16	0.06	-104.19
3,200.00	0.14	136.49	3,199.94	-4.18	-11.57	7.15	0.03	0.01	13.67
3,300.00	0.12	126.00	3,299.94	-4.33	-11.40	6.93	0.03	-0.02	-10.49
3,400.00	0.10	113.13	3,399.94	-4.42	-11.23	6.73	0.03	-0.02	-12.87
3,500.00	0.05	111.62	3,499.94	-4.47	-11.11	6.61	0.05	-0.05	-1.51
3,600.00	0.05	38.46	3,599.94	-4.45	-11.04	6.56	0.06	0.00	-73.16
3,700.00	0.08	315.27	3,699.94	-4.37	-11.07	6.63	0.09	0.03	-83.19
3,800.00	0.22	292.67	3,799.94	-4.25	-11.29	6.88	0.15	0.14	-22.60
3,900.00	0.42	314.92	3,899.94	-3.91	-11.73	7.43	0.23	0.20	22.25
3,916.00	0.35	308.22	3,915.94	-3.84	-11.81	7.54	0.52	-0.44	-41.88
3,936.00	0.53	298.76	3,935.94	-3.76	-11.94	7.69	0.97	0.90	-47.30
3,963.00	0.51	266.56	3,962.93	-3.71	-12.17	7.91	1.07	-0.08	-119.27
<b>KOP=3963'MD</b>									
4,030.00	0.96	219.66	4,029.93	-4.16	-12.82	8.19	1.07	0.67	-69.99
4,062.00	2.34	201.56	4,061.92	-4.97	-13.23	8.07	4.56	4.31	-56.56
4,093.00	3.89	197.51	4,092.87	-6.56	-13.78	7.62	5.05	5.00	-13.06
4,125.00	5.61	195.95	4,124.76	-9.10	-14.54	6.80	5.39	5.38	-4.88
4,156.00	7.28	194.66	4,155.56	-12.46	-15.45	5.64	5.41	5.39	-4.16
4,187.00	8.78	195.42	4,186.26	-16.64	-16.58	4.20	4.85	4.84	2.45
4,219.00	9.87	196.42	4,217.83	-21.63	-18.00	2.54	3.44	3.41	3.13
4,250.00	10.69	196.75	4,248.34	-26.93	-19.58	0.83	2.65	2.65	1.06





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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)
4,281.00	11.06	197.14	4,278.76	-32.52	-21.29	-0.94	1.22	1.19	1.26
4,313.00	11.76	197.43	4,310.15	-38.57	-23.17	-2.83	2.19	2.19	0.91
4,344.00	12.26	197.44	4,340.47	-44.72	-25.10	-4.73	1.61	1.61	0.03
4,376.00	12.50	196.95	4,371.72	-51.27	-27.13	-6.78	0.82	0.75	-1.53
4,407.00	12.38	197.66	4,402.00	-57.65	-29.12	-8.77	0.83	-0.39	2.29
4,439.00	11.93	199.96	4,433.28	-64.03	-31.29	-10.61	2.07	-1.41	7.19
4,470.00	11.84	200.09	4,463.61	-70.03	-33.47	-12.21	0.30	-0.29	0.42
4,502.00	11.87	201.42	4,494.93	-76.17	-35.80	-13.79	0.86	0.09	4.16
4,533.00	12.55	201.68	4,525.23	-82.27	-38.21	-15.27	2.20	2.19	0.84
4,565.00	13.56	202.38	4,556.40	-88.97	-40.92	-16.84	3.19	3.16	2.19
4,597.00	14.44	202.49	4,587.45	-96.13	-43.88	-18.47	2.75	2.75	0.34
4,628.00	15.52	202.78	4,617.40	-103.52	-46.96	-20.13	3.49	3.48	0.94
4,660.00	16.55	203.23	4,648.15	-111.66	-50.42	-21.90	3.24	3.22	1.41
4,691.00	17.35	202.96	4,677.80	-119.97	-53.96	-23.71	2.59	2.58	-0.87
4,722.00	18.06	201.23	4,707.34	-128.71	-57.50	-25.75	2.85	2.29	-5.58
4,754.00	18.55	198.47	4,737.72	-138.16	-60.91	-28.31	3.11	1.63	-8.63
4,785.00	18.83	196.71	4,767.08	-147.63	-63.91	-31.22	2.03	0.90	-5.68
4,817.00	19.82	196.44	4,797.28	-157.78	-66.93	-34.50	3.11	3.09	-0.84
4,848.00	20.84	197.39	4,826.35	-168.08	-70.07	-37.77	3.46	3.29	3.06
4,880.00	21.74	197.57	4,856.16	-179.16	-73.56	-41.19	2.82	2.81	0.56
4,911.00	22.62	196.92	4,884.87	-190.34	-77.03	-44.68	2.95	2.84	-2.10
4,942.00	23.51	196.41	4,913.39	-201.97	-80.51	-48.42	2.94	2.87	-1.65
4,974.00	24.44	196.43	4,942.63	-214.45	-84.19	-52.47	2.91	2.91	0.06
5,005.00	25.63	196.37	4,970.72	-227.03	-87.89	-56.57	3.84	3.84	-0.19
5,037.00	27.20	196.21	4,999.38	-240.69	-91.88	-61.05	4.91	4.91	-0.50
5,068.00	28.85	196.55	5,026.74	-254.87	-95.99	-65.60	5.35	5.32	1.10
5,100.00	30.51	196.71	5,054.54	-269.85	-100.53	-70.49	5.19	5.19	0.50
5,131.00	31.39	198.11	5,081.13	-285.06	-105.30	-75.19	3.67	2.84	4.52
5,162.00	32.62	199.62	5,107.41	-300.80	-110.61	-79.65	4.73	3.97	4.87
5,193.00	33.09	202.12	5,133.46	-316.31	-116.61	-83.64	4.63	1.52	8.06
5,225.00	33.62	203.86	5,160.19	-332.51	-123.48	-87.17	3.42	1.66	5.44
5,282.00	34.10	204.30	5,207.52	-361.50	-136.44	-92.97	0.95	0.84	0.77
5,314.00	34.30	205.20	5,233.99	-377.84	-143.97	-96.05	1.70	0.53	2.81
5,345.00	36.20	203.90	5,259.30	-394.11	-151.40	-99.17	6.59	6.13	-4.19
5,376.00	39.40	202.90	5,283.79	-411.55	-158.94	-102.87	10.51	10.32	-3.23
5,408.00	42.50	200.90	5,307.96	-431.01	-166.75	-107.49	10.52	9.69	-6.25
5,439.00	44.40	198.50	5,330.47	-451.08	-173.92	-112.98	8.12	6.13	-7.74
5,471.00	47.30	196.60	5,352.75	-472.97	-180.84	-119.72	10.01	9.06	-5.94
5,502.00	51.20	196.70	5,372.99	-495.46	-187.56	-126.95	12.58	12.58	0.32
5,534.00	55.40	196.50	5,392.11	-520.05	-194.89	-134.88	13.13	13.13	-0.63
5,565.00	58.80	197.50	5,408.94	-544.93	-202.50	-142.75	11.30	10.97	3.23
5,597.00	61.70	199.10	5,424.82	-571.30	-211.23	-150.54	10.05	9.06	5.00
5,628.00	64.50	199.60	5,438.84	-597.38	-220.39	-157.81	9.15	9.03	1.61
5,659.00	65.80	199.30	5,451.87	-623.91	-229.76	-165.16	4.28	4.19	-0.97



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GL 1016 + 23' KB @ 1039.00usft  
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Survey Calculation Method:  
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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)
5,691.00	65.80	199.40	5,464.99	-651.45	-239.43	-172.84	0.29	0.00	0.31
5,722.00	66.10	199.60	5,477.62	-678.13	-248.88	-180.21	1.13	0.97	0.65
5,754.00	68.10	200.40	5,490.07	-705.83	-258.96	-187.64	6.66	6.25	2.50
5,785.00	69.60	200.90	5,501.26	-732.88	-269.16	-194.61	5.07	4.84	1.61
5,848.00	70.20	201.00	5,522.91	-788.13	-290.31	-208.57	0.96	0.95	0.16
5,942.00	70.30	198.70	5,554.68	-871.34	-320.35	-231.09	2.31	0.11	-2.45
6,037.00	71.30	198.30	5,585.92	-956.42	-348.82	-255.97	1.13	1.05	-0.42
6,131.00	89.50	198.70	5,617.45	-1,040.40	-376.91	-280.53	1.96	-1.91	0.43
6,226.00	70.10	199.00	5,650.25	-1,124.77	-405.72	-304.73	0.70	0.63	0.32
6,320.00	68.90	199.40	5,683.17	-1,207.92	-434.87	-328.11	1.34	-1.28	0.43
6,414.00	68.80	198.90	5,717.09	-1,290.73	-463.43	-351.47	0.51	-0.11	-0.53
6,508.00	70.10	198.70	5,750.08	-1,374.06	-491.79	-375.43	1.40	1.38	-0.21
6,571.00	69.30	201.10	5,771.94	-1,429.61	-511.90	-390.43	3.79	-1.27	3.81
6,603.00	68.10	205.00	5,783.57	-1,457.04	-523.57	-396.40	11.96	-3.75	12.19
6,634.00	67.60	208.50	5,795.26	-1,482.67	-536.49	-400.32	10.58	-1.61	11.29
6,665.00	66.60	211.80	5,807.33	-1,507.36	-550.83	-402.54	10.32	-3.23	10.65
6,697.00	66.10	215.40	5,820.17	-1,531.77	-567.04	-403.06	10.42	-1.56	11.25
6,728.00	65.40	220.30	5,832.91	-1,554.08	-584.37	-401.46	14.59	-2.26	15.81
6,759.00	63.40	223.60	5,846.30	-1,574.88	-603.05	-397.89	11.57	-6.45	10.65
6,791.00	62.50	227.30	5,860.66	-1,594.67	-623.36	-392.53	10.67	-2.81	11.56
6,822.00	61.50	231.70	5,875.42	-1,612.64	-644.16	-385.50	12.94	-3.23	14.19
6,854.00	60.20	233.90	5,891.01	-1,629.54	-666.41	-376.77	7.25	-4.06	6.88
6,885.00	58.50	235.70	5,906.81	-1,644.91	-688.20	-367.57	7.42	-5.48	5.81
6,917.00	57.90	237.80	5,923.70	-1,659.82	-710.93	-357.32	5.99	-2.19	6.56
6,948.00	57.50	242.20	5,940.29	-1,672.91	-733.60	-346.10	12.03	-0.97	14.19
6,980.00	57.00	245.80	5,957.61	-1,684.70	-757.78	-332.89	9.59	-1.56	11.25
7,011.00	58.00	250.30	5,974.27	-1,694.47	-782.03	-318.48	12.66	3.23	14.52
7,043.00	58.60	253.90	5,991.09	-1,702.83	-807.93	-301.91	9.75	1.88	11.25
7,074.00	59.60	256.50	6,007.01	-1,709.62	-833.64	-284.60	7.89	3.23	8.39
7,106.00	60.60	259.70	6,022.97	-1,715.34	-860.78	-265.50	9.21	3.13	10.00
7,137.00	61.70	264.70	6,037.93	-1,719.01	-887.67	-245.46	14.56	3.55	16.13
7,169.00	61.90	266.60	6,053.05	-1,721.15	-915.79	-223.53	5.27	0.63	5.94
7,200.00	61.90	269.20	6,067.66	-1,722.15	-943.11	-201.60	7.40	0.00	8.39
7,232.00	62.00	272.20	6,082.71	-1,721.81	-971.35	-178.17	8.28	0.31	9.38
7,263.00	62.40	273.80	6,097.17	-1,720.37	-998.73	-154.81	4.74	1.29	5.16
7,295.00	63.00	277.40	6,111.85	-1,717.60	-1,027.02	-129.95	10.17	1.88	11.25
7,326.00	63.50	281.10	6,125.80	-1,713.15	-1,054.34	-104.93	10.78	1.61	11.94
7,357.00	64.50	285.50	6,139.40	-1,706.73	-1,081.44	-78.98	13.16	3.23	14.19
7,389.00	65.00	289.60	6,153.05	-1,698.01	-1,109.03	-51.32	11.69	1.56	12.81
7,421.00	65.50	293.30	6,166.45	-1,687.38	-1,136.07	-23.03	10.62	1.56	11.56
7,452.00	65.80	296.00	6,179.24	-1,675.60	-1,161.74	4.79	7.99	0.97	8.71
7,483.00	66.30	299.80	6,191.83	-1,662.35	-1,186.77	32.92	11.32	1.61	12.28
7,515.00	67.20	303.80	6,204.46	-1,646.86	-1,211.75	62.28	11.82	2.81	12.50



JUN 30 2017



PRO DIRECTIONAL

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Environmental Protection



Professional Directional  
Survey Report

<b>Company:</b>	EQT PRODUCTION	<b>Local Co-ordinate Reference:</b>	Well Well #514479 - Slot 514479
<b>Project:</b>	Ritchie County, WV	<b>TVD Reference:</b>	GL 1016 + 23' KB @ 1039.00usft
<b>Site:</b>	PEN54	<b>MD Reference:</b>	GL 1016 + 23' KB @ 1039.00usft
<b>Well:</b>	Well #514479	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Main Wellbore	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	514479 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)
7,546.00	68.40	306.90	6,216.18	-1,630.25	-1,235.15	90.97	10.03	3.87	10.00
7,578.00	69.90	310.20	6,227.57	-1,611.61	-1,258.53	120.80	10.72	4.69	10.31
7,609.00	71.50	312.60	6,237.82	-1,592.27	-1,280.47	149.85	8.95	5.16	7.74
7,641.00	73.20	315.20	6,247.52	-1,571.12	-1,302.44	179.93	9.39	5.31	8.13
7,672.00	74.60	319.00	6,256.12	-1,549.31	-1,322.71	209.00	12.61	4.52	12.28
7,704.00	76.00	322.30	6,264.24	-1,525.37	-1,342.33	238.74	10.89	4.38	10.31
7,735.00	77.70	325.80	6,271.30	-1,500.94	-1,360.04	267.20	12.29	5.48	11.29
7,767.00	78.90	328.90	6,277.79	-1,474.56	-1,376.95	296.09	10.20	3.75	9.69
7,796.00	80.70	331.50	6,283.28	-1,448.09	-1,392.10	323.60	10.09	5.81	8.39
7,830.00	82.60	333.60	6,287.92	-1,419.99	-1,406.70	351.57	8.80	5.94	6.55
7,861.00	84.90	335.50	6,291.30	-1,392.17	-1,419.94	378.27	9.60	7.42	6.13
7,893.00	87.00	337.80	6,293.56	-1,362.87	-1,432.58	405.32	9.72	6.56	7.19
7,924.00	87.40	338.20	6,295.07	-1,334.16	-1,444.18	431.17	1.82	1.29	1.29
7,965.00	88.69	340.06	6,296.47	-1,295.87	-1,458.78	464.92	5.52	3.16	4.53
<b>LP=7965'MD As Drilled</b>									
8,019.00	90.40	342.50	6,296.90	-1,244.74	-1,476.11	508.22	5.52	3.18	4.52
8,113.00	90.70	342.20	6,296.00	-1,155.17	-1,504.61	562.55	0.45	0.32	-0.32
8,207.00	89.40	343.00	6,295.91	-1,065.47	-1,532.72	656.62	1.82	-1.38	0.85
8,302.00	88.20	343.40	6,297.90	-974.55	-1,560.17	730.84	1.33	-1.26	0.42
8,396.00	88.00	343.20	6,301.02	-884.56	-1,587.17	804.16	0.30	-0.21	-0.21
8,490.00	90.30	342.50	6,302.41	-794.76	-1,614.88	877.97	2.56	2.45	-0.74
8,585.00	90.40	342.00	6,301.83	-704.28	-1,643.84	953.18	0.54	0.11	-0.53
8,679.00	90.30	340.90	6,301.26	-615.17	-1,673.75	1,028.40	1.18	-0.11	-1.17
8,773.00	90.40	339.40	6,300.68	-526.76	-1,705.66	1,104.86	1.60	0.11	-1.60
8,868.00	90.20	341.00	6,300.19	-437.38	-1,737.64	1,182.12	1.70	-0.21	1.68
8,962.00	90.30	340.50	6,299.78	-348.64	-1,768.83	1,258.02	0.54	0.11	-0.53
9,056.00	90.00	343.00	6,299.53	-259.37	-1,798.27	1,332.94	2.66	-0.32	2.66
9,151.00	90.00	342.50	6,299.53	-168.64	-1,826.44	1,407.64	0.53	0.00	-0.53
9,245.00	89.80	342.00	6,299.70	-79.12	-1,855.10	1,482.07	0.57	-0.21	-0.53
9,339.00	89.80	342.40	6,300.02	10.38	-1,883.63	1,556.54	0.43	0.00	0.43
9,433.00	89.70	341.50	6,300.43	99.75	-1,912.96	1,631.27	0.96	-0.11	-0.96
9,528.00	89.80	343.80	6,300.85	190.42	-1,941.29	1,706.07	2.42	0.11	2.42
9,622.00	90.20	344.80	6,300.85	280.91	-1,966.72	1,778.39	1.15	0.43	1.06
9,716.00	90.90	342.50	6,299.95	371.10	-1,993.18	1,851.38	2.56	0.74	-2.45
9,810.00	91.30	342.00	6,298.14	460.61	-2,021.83	1,925.80	0.68	0.43	-0.53
9,904.00	89.50	341.20	6,297.48	549.80	-2,051.50	2,000.66	2.10	-1.91	-0.85
9,998.00	89.40	339.90	6,298.39	638.43	-2,082.80	2,076.95	1.39	-0.11	-1.38
10,093.00	89.70	340.60	6,299.13	727.84	-2,114.90	2,154.15	0.80	0.32	0.74
10,187.00	89.80	340.80	6,299.54	816.55	-2,145.97	2,230.10	0.24	0.11	0.21
10,281.00	89.10	341.10	6,300.45	905.40	-2,176.64	2,305.80	0.81	-0.74	0.32
10,376.00	89.10	344.20	6,301.94	996.05	-2,204.97	2,380.59	3.26	0.00	3.26
10,470.00	89.20	343.60	6,303.33	1,086.36	-2,231.03	2,453.33	0.65	0.11	-0.64
10,564.00	89.80	343.70	6,304.15	1,176.55	-2,257.49	2,526.32	0.65	0.64	0.11

<b>Company:</b>	EQT PRODUCTION	<b>Local Co-ordinate Reference:</b>	Well Well #514479 - Slot 514479
<b>Project:</b>	Ritchie County, WV	<b>TVD Reference:</b>	GL 1016 + 23' KB @ 1039.00usft
<b>Site:</b>	PEN54	<b>MD Reference:</b>	GL 1016 + 23' KB @ 1039.00usft
<b>Well:</b>	Well #514479	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Main Wellbore	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	514479 As Drilled Surveys	<b>Database:</b>	Well_Planner1

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)	
10,659.00	89.80	340.90	6,304.48	1,267.05	-2,286.37	2,601.48	2.95	0.00	-2.95	
<b>Deepest point of well=6304'TVD</b>										
10,753.00	90.80	342.50	6,303.99	1,356.29	-2,315.89	2,676.45	2.01	1.06	1.70	
10,847.00	90.00	339.60	6,303.34	1,445.18	-2,346.41	2,752.05	3.20	-0.85	-3.09	
10,941.00	90.40	342.70	6,303.01	1,534.13	-2,376.77	2,827.55	3.33	0.43	3.30	
11,028.00	91.20	341.90	6,301.79	1,617.00	-2,403.22	2,896.38	1.30	0.92	-0.92	
<b>FINAL Survey: 11028'MD / 6301.79'TVD</b>										
11,082.00	91.20	341.90	6,300.66	1,668.32	-2,420.00	2,939.33	0.00	0.00	0.00	
<b>TD: 11082'MD</b>										

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
LP=7965'MD As Drilled - hit/miss target - Shape - Point	0.00	360.00	0.00	-1,295.87	-1,458.78	277,851.41	1,594,347.96	39° 15' 14.351 N	80° 55' 57.097 W
- actual wellpath misses target center by 1951.24usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
TD: 11082'MD - actual wellpath misses target center by 2939.33usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Point	0.00	0.00	0.00	1,668.32	-2,420.00	280,815.60	1,593,386.75	39° 15' 43.494 N	80° 58' 9.917 W

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,963.00	3,962.93	-3.71	-12.17	KOP=3963'MD
7,965.00	6,296.47	-1,295.87	-1,458.78	LP=7965'MD As Drilled
10,659.00	6,304.48	1,267.05	-2,286.37	Deepest point of well=6304'TVD
11,028.00	6,301.79	1,617.00	-2,403.22	FINAL Survey: 11028'MD / 6301.79'TVD
11,082.00	6,300.66	1,668.32	-2,420.00	TD: 11082'MD

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