



Project: Wetzel County, WV
 Site: Big 190
 Well: Well #516849
 Wellbore: Main Wellbore
 Design: 516849 plan8
 API: 47-103-03168

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
1316.00	0.80	19.71	1315.99	2.07	3.53	2.72	0.00	Survey @ 1316.00 MD
1353.02	0.80	19.71	1353.00	2.56	3.71	3.23	0.52	KOP Begin 3°/100' build/turn
1666.48	10.00	60.00	1664.77	18.26	28.07	23.37	29.62	Begin 10.00° tangent
1816.48	10.00	60.00	1812.49	31.29	50.63	40.54	55.67	Begin 3°/100' drop
2149.81	0.00	60.00	2144.13	45.79	75.76	59.66	84.68	Begin vertical hold section
2943.68	0.00	60.00	2938.00	45.79	75.76	59.66	84.68	Begin 10°/100' build
3353.68	41.00	100.39	3313.89	20.44	213.99	61.69	225.22	Begin 41.00° tangent
8230.37	41.00	100.39	6994.38	-556.69	3360.89	107.90	3424.61	Begin 10°/100' build/turn
9312.60	90.00	341.92	7592.00	102.36	3626.18	805.98	4272.69	Begin 90.00° lateral section
16541.41	90.00	341.92	7592.00	6974.43	1383.34	7110.30	11501.50	PBHL/TD

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Annotation
100.00	0.10	347.48	100.00	0.09	-0.02	0.08	Gyro
100.00	0.10	347.48	100.00	0.09	-0.02	0.08	Surf loc Lat=39.552503° Long=-80.605754°
1326.00	1.39	54.87	1325.99	2.21	3.66	2.88	ProD MWD surveys
9319.00	87.90	345.30	7595.95	109.75	3615.05	811.06	LP as drilled 9319 MD 7596 TVD
9319.00	87.90	345.30	7595.95	109.75	3615.05	811.06	Marcellus target
9660.00	89.80	343.10	7599.15	435.59	3517.96	1112.76	LP as drilled Lat=39.552926° Long=-80.592940°
16470.00	92.30	341.40	7542.47	6908.35	1402.97	7049.30	Deepest point @ 9660 MD 7599 TVD
16540.00	92.30	341.40	7539.66	6974.64	1380.66	7109.98	Survey @ 16470.00 MD 7542.47 TVD
16540.00	92.30	341.40	7539.66	6974.64	1380.66	7109.98	BHL Lat=39.571698° Long=-80.601161°
16540.00	92.30	341.40	7539.66	6974.64	1380.66	7109.98	Survey projected to 16540.00 MD 7539.66 TVD

Geodetic System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: West Virginia North 4701

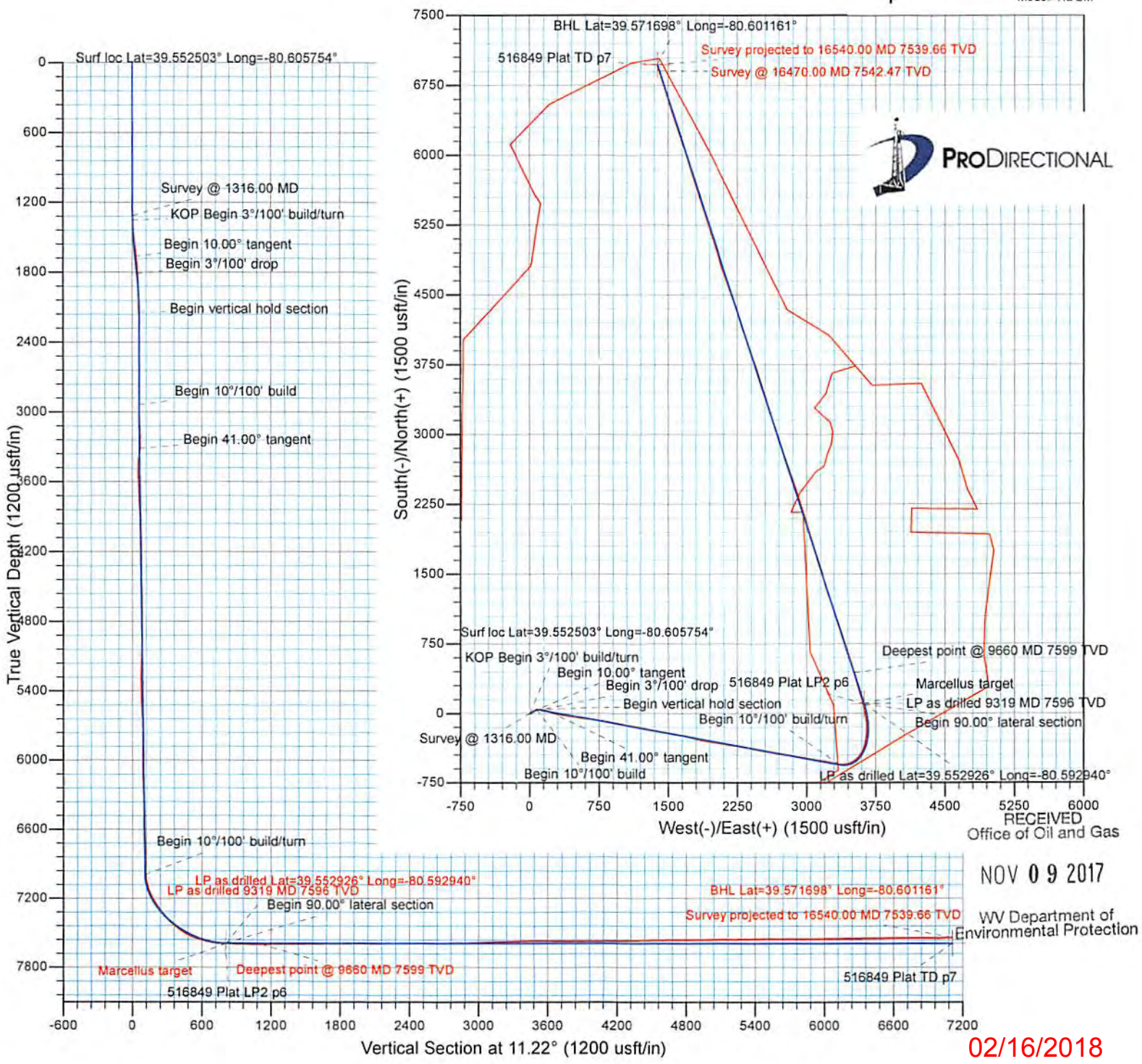
System Datum: Mean Sea Level
 Depth Reference: RKB=1474+16 @ 1490.00usft (Savanna 654)
 Surface location:
 Northing 385262.74 Easting 1688213.84 39° 33' 9.0119 N 80° 36' 20.7149 W



Azimuths to Grid North
 True North: 0.70°
 Magnetic North: -7.53°

Magnetic Field
 Strength: 52356.1snT
 Dip Angle: 66.92°
 Date: 5/1/2017
 Model: HDGM

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
516849 Plat LP2 p6	7592.00	102.36	3626.18	385365.10	1691840.02	39° 33' 10.4621 N	80° 35' 34.4382 W
516849 Plat TD p7	7592.00	6974.43	1383.34	392237.17	1689597.18	39° 34' 18.1089 N	80° 36' 4.1463 W



RECEIVED
 Office of Oil and Gas

NOV 09 2017

WV Department of Environmental Protection

02/16/2018

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #516849 - Slot 516849
Project:	Wetzel County, WV	TVD Reference:	RKB=1474+16 @ 1490.00usft (Savanna 654)
Site:	Big 190	MD Reference:	RKB=1474+16 @ 1490.00usft (Savanna 654)
Well:	Well #516849	North Reference:	Grid
Wellbore:	Main Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Main Wellbore	Database:	DB_Jul2216dt_v14

Project	Wetzel 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	Big 190				
Site Position:		Northing:	385,255.46 usft	Latitude:	39° 33' 8.9435 N
From:	Map	Easting:	1,688,243.35 usft	Longitude:	80° 36' 20.3370 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.71 °

Well	Well #516849 - Slot 516849					
Well Position	+N/-S	0.00 usft	Northing:	385,262.74 usft	Latitude:	39° 33' 9.0119 N
	+E/-W	0.00 usft	Easting:	1,688,213.84 usft	Longitude:	80° 36' 20.7149 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	1,474.00 usft

Wellbore	Main Wellbore				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	5/1/2017	-8.23	66.92	52,356.10000000

Design	Surveys Main Wellbore				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	11.22	

Survey Program	Date 6/20/2017				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	1,316.00	Gyro (Main Wellbore)	Gyrodata_DP_MS	Gyrodata gyro-compassing and drop	
1,326.00	2,651.00	MWD (Main Wellbore)	MWD - OWSG	MWD - OWSG	
2,817.00	16,540.00	MWD ProD TIP=2651 MD (Main Wellbore)	MWD - OWSG	MWD - OWSG	

RECEIVED
Office of Oil and Gas
NOV 09 2017
WV Department of
Environmental Protection

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	
100.00	0.10	347.48	100.00	0.09	-0.02	0.08	0.10	0.10	0.00	
Gyro - Surf loc Lat=39.552503° Long=-80.605754°										
200.00	0.11	340.36	200.00	0.26	-0.07	0.24	0.02	0.01	-7.12	
300.00	0.09	16.45	300.00	0.43	-0.08	0.40	0.06	-0.02	36.09	
400.00	0.22	66.19	400.00	0.58	0.12	0.59	0.18	0.13	49.74	
500.00	0.21	73.16	500.00	0.71	0.47	0.79	0.03	-0.01	6.97	
600.00	0.14	77.78	600.00	0.79	0.76	0.92	0.07	-0.07	4.62	
700.00	0.23	97.38	700.00	0.79	1.08	0.98	0.11	0.09	19.60	

Company: EQT PRODUCTION	Local Co-ordinate Reference: Well Well #516849 - Slot 516849
Project: Wetzel County, WV	TVD Reference: RKB=1474+16 @ 1490.00usft (Savanna #54)
Site: Big 190	MD Reference: RKB=1474+16 @ 1490.00usft (Savanna #50)
Well: Well #516849	North Reference: Grid
Wellbore: Main Wellbore	Survey Calculation Method: Minimum Curvature
Design: Surveys Main Wellbore	Database: DB_Jul2216dt_v14

RECEIVED
Office of Oil and Gas
NOV 09 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)
800.00	0.22	88.34	800.00	0.77	1.47	1.04	0.04	-0.01	-9.04
900.00	0.32	75.05	900.00	0.85	1.93	1.21	0.12	0.10	-13.29
1,000.00	0.26	85.49	999.99	0.94	2.43	1.39	0.08	-0.06	10.44
1,100.00	0.19	58.07	1,099.99	1.04	2.80	1.57	0.13	-0.07	-27.42
1,200.00	0.17	45.92	1,199.99	1.23	3.04	1.80	0.04	-0.02	-12.15
1,300.00	0.71	28.58	1,299.99	1.88	3.45	2.51	0.55	0.54	-17.34
1,316.00	0.80	19.71	1,315.99	2.07	3.53	2.72	0.92	0.56	-55.44
1,326.00	1.39	54.87	1,325.99	2.21	3.66	2.88	8.68	5.90	351.60
ProD MWD surveys									
1,358.00	2.58	63.54	1,357.97	2.75	4.62	3.60	3.82	3.72	27.09
1,389.00	4.77	67.07	1,388.90	3.57	6.43	4.75	7.10	7.06	11.39
1,421.00	6.16	64.69	1,420.76	4.82	9.21	6.52	4.40	4.34	-7.44
1,484.00	7.37	54.65	1,483.32	8.60	15.56	11.46	2.68	1.92	-15.94
1,515.00	7.49	51.00	1,514.06	11.02	18.75	14.46	1.57	0.39	-11.77
1,547.00	8.44	45.67	1,545.75	13.98	22.05	18.00	3.76	2.97	-16.66
1,578.00	9.00	46.55	1,576.39	17.23	25.44	21.85	1.86	1.81	2.84
1,610.00	9.30	51.35	1,607.98	20.57	29.28	25.87	2.56	0.94	15.00
1,642.00	9.57	57.12	1,639.55	23.63	33.53	29.70	3.07	0.84	18.03
1,674.00	9.83	63.95	1,671.10	26.27	38.22	33.21	3.68	0.81	21.34
1,706.00	9.67	66.41	1,702.63	28.55	43.13	36.40	1.39	-0.50	7.69
1,737.00	9.22	67.94	1,733.21	30.52	47.82	39.24	1.66	-1.45	4.94
1,769.00	8.20	71.07	1,764.84	32.23	52.36	41.80	3.51	-3.19	9.78
1,801.00	6.94	71.56	1,796.56	33.58	56.35	43.90	3.94	-3.94	1.53
1,832.00	5.87	72.21	1,827.37	34.65	59.64	45.60	3.46	-3.45	2.10
1,864.00	4.87	63.53	1,859.23	35.76	62.41	47.22	4.02	-3.13	-27.13
1,895.00	4.52	55.32	1,890.13	37.04	64.59	48.90	2.44	-1.13	-26.48
1,927.00	4.33	50.59	1,922.03	38.53	66.56	50.74	1.29	-0.59	-14.78
1,958.00	3.99	46.32	1,952.95	40.01	68.25	52.53	1.48	-1.10	-13.77
1,990.00	3.20	42.19	1,984.89	41.44	69.65	54.20	2.60	-2.47	-12.91
2,021.00	2.25	41.95	2,015.85	42.54	70.64	55.47	3.06	-3.06	-0.77
2,053.00	1.24	29.67	2,047.84	43.31	71.23	56.34	3.35	-3.16	-38.38
2,084.00	0.68	20.31	2,078.83	43.77	71.46	56.84	1.87	-1.81	-30.19
2,116.00	0.64	6.60	2,110.83	44.13	71.55	57.20	0.51	-0.13	-42.84
2,147.00	0.75	356.35	2,141.83	44.50	71.55	57.57	0.53	0.35	-33.06
2,179.00	0.71	356.56	2,173.82	44.91	71.53	57.97	0.13	-0.13	0.66
2,211.00	0.58	358.40	2,205.82	45.27	71.51	58.32	0.41	-0.41	5.75
2,242.00	0.42	59.29	2,236.82	45.48	71.61	58.55	1.69	-0.52	196.42
2,274.00	0.90	82.63	2,268.82	45.57	71.96	58.70	1.69	1.50	72.94
2,305.00	0.76	100.70	2,299.82	45.57	72.40	58.78	0.95	-0.45	58.29
2,337.00	0.87	90.86	2,331.81	45.52	72.85	58.83	0.56	0.34	-30.75
2,369.00	0.92	107.71	2,363.81	45.44	73.34	58.84	0.83	0.16	52.66
2,400.00	0.95	109.97	2,394.80	45.28	73.82	58.78	0.15	0.10	7.29
2,432.00	0.87	112.52	2,426.80	45.09	74.29	58.69	0.28	-0.25	7.97

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #516849 - Slot 516849
Project:	Wetzel County, WV	TVD Reference:	RKB=1474+16 @ 1490.00usft (Savanna 654)
Site:	Big 190	MD Reference:	RKB=1474+16 @ 1490.00usft (Savanna 654)
Well:	Well #516849	North Reference:	Grid
Wellbore:	Main Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Main Wellbore	Database:	DB_Jul2216dt_v14

RECEIVED
Office of Oil and Gas
NOV 09 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)
2,464.00	0.94	124.11	2,458.80	44.85	74.73	58.54	0.61	0.22	36.22
2,495.00	0.82	112.60	2,489.79	44.63	75.15	58.40	0.69	-0.39	-37.13
2,527.00	0.50	102.85	2,521.79	44.51	75.50	58.35	1.06	-1.00	-30.47
2,558.00	0.50	97.08	2,552.79	44.46	75.76	58.35	0.16	0.00	-18.61
2,589.00	0.14	97.05	2,583.79	44.44	75.93	58.37	1.16	-1.16	-0.10
2,620.00	0.29	85.54	2,614.79	44.44	76.05	58.39	0.50	0.48	-37.13
2,651.00	0.24	54.36	2,645.79	44.49	76.18	58.46	0.49	-0.16	-100.58
2,817.00	0.56	349.60	2,811.78	45.49	76.32	59.47	0.31	0.19	-39.01
2,832.00	0.75	12.13	2,826.78	45.65	76.32	59.63	2.11	1.27	150.20
2,864.00	0.61	344.75	2,858.78	46.02	76.32	59.99	1.09	-0.44	-85.56
2,895.00	0.46	352.10	2,889.78	46.31	76.26	60.26	0.53	-0.48	23.71
2,927.00	0.57	65.78	2,921.78	46.50	76.39	60.47	1.95	0.34	230.25
2,958.00	2.62	102.80	2,952.77	46.40	77.22	60.54	7.07	6.61	119.42
2,990.00	5.29	106.98	2,984.69	45.81	79.35	60.37	8.39	8.34	13.06
3,021.00	8.16	103.24	3,015.47	44.89	82.86	60.15	9.36	9.26	-12.06
3,053.00	10.41	100.24	3,047.05	43.86	87.91	60.12	7.19	7.03	-9.38
3,085.00	12.73	96.96	3,078.40	42.91	94.26	60.43	7.53	7.25	-10.25
3,116.00	15.47	94.07	3,108.46	42.21	101.77	61.20	9.12	8.84	-9.32
3,148.00	18.04	92.89	3,139.10	41.65	110.98	62.45	8.10	8.03	-3.69
3,180.00	21.10	92.31	3,169.25	41.17	121.69	64.06	9.58	9.56	-1.81
3,211.00	22.05	95.94	3,198.08	40.34	133.05	65.46	5.28	3.06	11.71
3,243.00	21.45	98.84	3,227.80	38.82	144.81	66.26	3.85	-1.88	9.06
3,274.00	23.88	102.02	3,256.40	36.65	156.55	66.41	8.78	7.84	10.26
3,306.00	26.74	104.45	3,285.33	33.50	169.86	65.91	9.51	8.94	7.59
3,337.00	29.51	106.55	3,312.67	29.58	183.93	64.81	9.49	8.94	6.77
3,369.00	31.81	108.62	3,340.19	24.65	199.48	62.99	7.91	7.19	6.47
3,400.00	34.55	108.27	3,366.14	19.28	215.57	60.86	8.86	8.84	-1.13
3,432.00	37.23	107.21	3,392.06	13.57	233.44	58.73	8.60	8.38	-3.31
3,464.00	39.68	106.20	3,417.12	7.85	252.50	56.84	7.90	7.66	-3.16
3,495.00	42.48	105.03	3,440.48	2.38	272.12	55.28	9.37	9.03	-3.77
3,527.00	44.04	104.15	3,463.79	-3.14	293.34	53.99	5.23	4.88	-2.75
3,590.00	42.39	102.36	3,509.70	-13.04	335.32	52.45	3.26	-2.62	-2.84
3,653.00	42.76	97.49	3,556.11	-20.38	377.28	53.42	5.26	0.59	-7.73
3,716.00	43.29	97.40	3,602.16	-25.95	419.91	56.25	0.85	0.84	-0.14
3,779.00	43.36	99.02	3,647.99	-32.12	462.69	58.52	1.77	0.11	2.57
3,842.00	44.05	100.06	3,693.54	-39.34	505.61	59.79	1.58	1.10	1.65
3,905.00	44.75	99.71	3,738.55	-46.90	549.04	60.82	1.18	1.11	-0.56
3,969.00	44.50	98.25	3,784.10	-53.92	593.44	62.58	1.65	-0.39	-2.28
4,032.00	43.92	96.24	3,829.26	-59.47	637.01	65.62	2.41	-0.92	-3.19
4,095.00	42.83	97.63	3,875.05	-64.68	679.96	68.86	2.30	-1.73	2.21
4,158.00	41.44	99.84	3,921.77	-71.09	721.73	70.70	3.23	-2.21	3.51
4,222.00	40.86	99.53	3,969.96	-78.18	763.25	71.83	0.96	-0.91	-0.48
4,285.00	41.83	100.01	4,017.26	-85.24	804.26	72.88	1.62	1.54	0.76
4,348.00	41.41	97.98	4,064.36	-91.79	845.58	74.50	2.24	-0.67	-3.22

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #516849 - Slot 516849
Project:	Wetzel County, WV	TVD Reference:	RKB=1474+16 @ 1490.00usft (Savanna 654)
Site:	Big 190	MD Reference:	RKB=1474+16 @ 1490.00usft (Savanna 654)
Well:	Well #516849	North Reference:	Grid
Wellbore:	Main Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Main Wellbore	Database:	DB_Jul2216dt_v14

RECEIVED
Office of Oil and Gas
NOV 09 2017
WV Department of
Environmental Protection

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)
4,411.00	41.82	100.51	4,111.46	-98.51	886.87	75.94	2.75	0.65	4.02
4,474.00	41.39	102.36	4,158.57	-106.80	927.87	75.78	2.07	-0.68	2.94
4,537.00	40.97	100.98	4,205.99	-115.19	968.49	75.46	1.59	-0.67	-2.19
4,600.00	41.38	101.59	4,253.41	-123.31	1,009.16	75.41	0.91	0.65	0.97
4,663.00	41.19	101.09	4,300.75	-131.48	1,049.92	75.32	0.60	-0.30	-0.79
4,726.00	41.81	101.61	4,347.94	-139.70	1,090.85	75.22	1.13	0.98	0.83
4,789.00	40.76	100.05	4,395.28	-147.51	1,131.67	75.50	2.33	-1.67	-2.48
4,852.00	40.79	99.73	4,442.99	-154.58	1,172.20	76.46	0.34	0.05	-0.51
4,915.00	39.41	98.10	4,491.18	-160.88	1,212.29	78.08	2.75	-2.19	-2.59
4,978.00	39.32	98.65	4,539.88	-166.70	1,251.82	80.06	0.57	-0.14	0.87
5,041.00	39.69	99.87	4,588.49	-173.15	1,291.37	81.43	1.36	0.59	1.94
5,104.00	40.88	100.85	4,636.55	-180.48	1,331.44	82.04	2.14	1.89	1.56
5,167.00	42.04	102.19	4,683.76	-188.81	1,372.31	81.82	2.32	1.84	2.13
5,230.00	42.94	102.51	4,730.22	-197.92	1,413.88	80.98	1.47	1.43	0.51
5,293.00	43.09	101.35	4,776.28	-206.80	1,455.93	80.44	1.28	0.24	-1.84
5,356.00	41.80	99.74	4,822.77	-214.59	1,497.72	80.94	2.68	-2.05	-2.56
5,420.00	41.40	100.20	4,870.63	-221.94	1,539.57	81.86	0.79	-0.63	0.72
5,483.00	41.60	100.00	4,917.82	-229.26	1,580.67	82.68	0.38	0.32	-0.32
5,546.00	42.30	98.80	4,964.67	-236.14	1,622.22	84.02	1.69	1.11	-1.90
5,609.00	42.30	100.20	5,011.27	-243.14	1,664.03	85.29	1.50	0.00	2.22
5,672.00	42.50	104.80	5,057.80	-252.33	1,705.48	84.34	4.93	0.32	7.30
5,735.00	42.60	105.30	5,104.22	-263.39	1,746.62	81.50	0.56	0.16	0.79
5,798.00	42.50	105.00	5,150.63	-274.52	1,787.75	78.58	0.36	-0.16	-0.48
5,861.00	41.20	102.90	5,197.56	-284.67	1,828.53	76.56	3.03	-2.06	-3.33
5,924.00	41.00	101.00	5,245.03	-293.24	1,869.04	76.04	2.01	-0.32	-3.02
5,987.00	40.90	100.50	5,292.62	-300.94	1,909.61	76.37	0.54	-0.16	-0.79
6,050.00	41.00	99.40	5,340.20	-308.08	1,950.28	77.29	1.16	0.16	-1.75
6,113.00	40.10	100.00	5,388.07	-314.98	1,990.65	78.38	1.56	-1.43	0.95
6,176.00	39.70	99.30	5,436.40	-321.75	2,030.49	79.48	0.95	-0.63	-1.11
6,238.00	40.60	98.70	5,483.79	-328.00	2,069.97	81.03	1.58	1.45	-0.97
6,302.00	40.90	98.50	5,532.27	-334.25	2,111.28	82.94	0.51	0.47	-0.31
6,365.00	40.80	97.50	5,579.93	-339.98	2,152.08	85.26	1.05	-0.16	-1.59
6,428.00	40.90	97.90	5,627.58	-345.51	2,192.92	87.79	0.44	0.16	0.63
6,491.00	41.00	99.00	5,675.17	-351.57	2,233.76	89.78	1.16	0.16	1.75
6,554.00	41.50	99.20	5,722.53	-358.14	2,274.77	91.32	0.82	0.79	0.32
6,617.00	41.30	101.20	5,769.79	-365.52	2,315.77	92.06	2.12	-0.32	3.17
6,681.00	41.60	101.60	5,817.76	-373.89	2,357.30	91.93	0.63	0.47	0.63
6,743.00	42.50	101.30	5,863.80	-382.14	2,398.00	91.76	1.49	1.45	-0.48
6,806.00	43.50	101.50	5,909.88	-390.63	2,440.12	91.63	1.60	1.59	0.32
6,869.00	43.10	102.00	5,955.73	-399.43	2,482.42	91.23	0.84	-0.63	0.79
6,933.00	41.30	101.50	6,003.14	-408.18	2,524.51	90.83	2.86	-2.81	-0.78
6,995.00	40.60	100.30	6,049.96	-415.87	2,564.41	91.05	1.70	-1.13	-1.94
7,059.00	40.30	99.90	6,098.67	-423.15	2,605.29	91.86	0.62	-0.47	-0.63

Company: EQT PRODUCTION
 Project: Wetzel County, WV
 Site: Big 190
 Well: Well #516849
 Wellbore: Main Wellbore
 Design: Surveys Main Wellbore

Local Co-ordinate Reference: Well Well #516849 - Slot 516849
 TVD Reference: RKB=1474+16 @ 1490.00usft (Savanna 654)
 MD Reference: RKB=1474+16 @ 1490.00usft (Savanna 654)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: DB_Jul2216dt_v14

RECEIVED
 Office of Oil and Gas
 NOV 09 2017

Survey

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)
7,122.00	40.40	99.30	6,146.68	-429.95	2,645.50	93.02	0.64	0.16	-0.95
7,185.00	40.70	99.00	6,194.55	-436.47	2,685.94	94.50	0.57	0.48	-0.48
7,248.00	41.20	98.90	6,242.13	-442.89	2,726.73	96.13	0.80	0.79	-0.16
7,311.00	41.70	98.80	6,289.35	-449.31	2,767.93	97.86	0.80	0.79	-0.16
7,374.00	39.70	98.30	6,337.11	-455.42	2,808.56	99.77	3.22	-3.17	-0.79
7,437.00	38.30	98.00	6,386.07	-461.04	2,847.80	101.89	2.24	-2.22	-0.48
7,500.00	38.10	99.60	6,435.58	-467.00	2,886.30	103.53	1.60	-0.32	2.54
7,563.00	38.70	101.40	6,484.95	-474.13	2,924.77	104.02	2.01	0.95	2.86
7,626.00	39.80	100.80	6,533.74	-481.80	2,963.89	104.11	1.85	1.75	-0.95
7,689.00	41.30	99.00	6,581.61	-488.84	3,004.23	105.06	3.02	2.38	-2.86
7,752.00	40.90	98.10	6,629.09	-494.99	3,045.18	106.99	1.13	-0.63	-1.43
7,815.00	41.00	99.40	6,676.67	-501.27	3,085.99	108.77	1.36	0.16	2.06
7,877.00	41.00	100.70	6,723.46	-508.37	3,126.04	109.60	1.38	0.00	2.10
7,940.00	41.00	100.20	6,771.01	-515.87	3,166.69	110.15	0.52	0.00	-0.79
8,002.00	40.10	99.10	6,818.12	-522.63	3,206.42	111.25	1.85	-1.45	-1.77
8,064.00	40.30	100.30	6,865.48	-529.37	3,245.87	112.32	1.29	0.32	1.94
8,127.00	41.50	102.90	6,913.10	-537.68	3,286.26	112.03	3.31	1.90	4.13
8,158.00	41.50	102.60	6,936.31	-542.21	3,306.30	111.48	0.64	0.00	-0.97
8,189.00	41.10	102.30	6,959.60	-546.62	3,326.28	111.04	1.44	-1.29	-0.97
8,220.00	39.90	99.50	6,983.18	-550.43	3,346.04	111.15	7.03	-3.87	-9.03
8,251.00	39.60	95.00	7,007.02	-552.94	3,365.69	112.52	9.33	-0.97	-14.52
8,283.00	39.00	90.70	7,031.78	-553.95	3,385.93	115.46	8.71	-1.88	-13.44
8,314.00	39.70	87.10	7,055.76	-553.57	3,405.57	119.66	7.70	2.26	-11.61
8,345.00	39.30	81.90	7,079.69	-551.68	3,425.18	125.32	10.75	-1.29	-16.77
8,376.00	38.40	76.80	7,103.83	-548.10	3,444.28	132.55	10.72	-2.90	-16.45
8,407.00	37.40	72.20	7,128.30	-543.02	3,462.62	141.10	9.67	-3.23	-14.84
8,438.00	37.30	67.80	7,152.95	-536.59	3,480.29	150.85	8.62	-0.32	-14.19
8,469.00	37.60	62.70	7,177.56	-528.70	3,497.39	161.91	10.05	0.97	-16.45
8,500.00	38.00	58.00	7,202.06	-519.31	3,513.89	174.34	9.38	1.29	-15.16
8,531.00	38.20	52.80	7,226.47	-508.45	3,529.62	188.05	10.37	0.65	-16.77
8,562.00	38.40	47.80	7,250.80	-496.19	3,544.39	202.95	10.02	0.65	-16.13
8,594.00	38.50	42.80	7,275.87	-482.20	3,558.53	219.42	9.72	0.31	-15.63
8,625.00	39.60	39.00	7,299.94	-467.44	3,571.30	236.39	8.50	3.55	-12.26
8,657.00	41.10	35.70	7,324.33	-450.97	3,583.86	254.99	8.16	4.69	-10.31
8,688.00	42.50	31.90	7,347.45	-433.80	3,595.34	274.06	9.33	4.52	-12.26
8,720.00	45.00	28.30	7,370.56	-414.66	3,606.42	295.00	11.02	7.81	-11.25
8,751.00	45.90	24.20	7,392.32	-394.85	3,616.18	316.32	9.86	2.90	-13.23
8,783.00	47.10	20.30	7,414.35	-373.37	3,624.96	339.10	9.60	3.75	-12.19
8,815.00	49.00	16.60	7,435.74	-350.80	3,632.48	362.70	10.45	5.94	-11.56
8,846.00	51.10	13.80	7,455.65	-327.87	3,638.70	386.40	9.69	6.77	-9.03
8,878.00	54.30	10.80	7,475.04	-303.00	3,644.11	411.85	12.47	10.00	-9.38
8,909.00	57.60	8.60	7,492.40	-277.69	3,648.43	437.52	12.16	10.65	-7.10
8,941.00	60.40	6.10	7,508.88	-250.49	3,651.92	464.88	11.02	8.75	-7.81

Company: EQT PRODUCTION
 Project: Wetzel County, WV
 Site: Big 190
 Well: Well #516849
 Wellbore: Main Wellbore
 Design: Surveys Main Wellbore

Local Co-ordinate Reference: Well Well #516849 - Slot 516849
 TVD Reference: RKB=1474+16 @ 1490.00usft (Savanna 654)
 MD Reference: RKB=1474+16 @ 1490.00usft (Savanna 654)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: DB_Jul2216dt_v14

RECEIVED
 Office of Oil and Gas
 NOV 09 2017
 WV Department of
 Environmental Protection

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,972.00	64.10	3.80	7,523.31	-223.16	3,654.28	492.14	13.62	11.94	-7.42
9,003.00	67.50	1.30	7,536.02	-194.92	3,655.53	520.08	13.21	10.97	-8.06
9,035.00	71.10	359.40	7,547.33	-165.00	3,655.71	549.47	12.55	11.25	-5.94
9,067.00	73.50	358.50	7,557.06	-134.52	3,655.15	579.26	7.96	7.50	-2.81
9,098.00	75.80	356.90	7,565.26	-104.65	3,653.95	608.32	8.93	7.42	-5.16
9,130.00	77.50	354.60	7,572.65	-73.61	3,651.64	638.32	8.78	5.31	-7.19
9,161.00	79.30	352.70	7,578.89	-43.43	3,648.28	667.27	8.35	5.81	-6.13
9,193.00	80.70	350.70	7,584.44	-12.25	3,643.73	696.97	7.55	4.38	-6.25
9,224.00	82.50	347.80	7,588.97	17.88	3,638.01	725.41	10.92	5.81	-9.35
9,255.00	85.00	346.10	7,592.35	47.89	3,631.05	753.49	9.73	8.06	-5.48
9,287.00	87.10	345.30	7,594.55	78.83	3,623.16	782.30	7.02	6.56	-2.50
9,319.00	87.90	345.30	7,595.95	109.75	3,615.05	811.06	2.50	2.50	0.00
LP as drilled 9319 MD 7596 TVD - Marcellus target - LP as drilled Lat=39.552926° Long=-80.592940°									
9,350.00	89.60	343.80	7,596.63	139.62	3,606.79	838.75	7.31	5.48	-4.84
9,382.00	90.60	343.10	7,596.57	170.29	3,597.68	867.06	3.81	3.13	-2.19
9,409.00	90.30	343.30	7,596.36	196.14	3,589.88	890.90	1.34	-1.11	0.74
9,471.00	88.80	343.60	7,596.84	255.57	3,572.22	945.75	2.47	-2.42	0.48
9,534.00	89.00	343.30	7,598.05	315.95	3,554.27	1,001.49	0.57	0.32	-0.48
9,597.00	89.60	343.30	7,598.82	376.28	3,536.17	1,057.15	0.95	0.95	0.00
9,660.00	89.80	343.10	7,599.15	436.59	3,517.96	1,112.76	0.45	0.32	-0.32
Deepest point @ 9660 MD 7599 TVD									
9,723.00	90.30	342.10	7,599.10	496.71	3,499.12	1,168.07	1.77	0.79	-1.59
9,786.00	90.90	342.60	7,598.44	556.74	3,480.02	1,223.23	1.24	0.95	0.79
9,849.00	90.10	341.90	7,597.89	616.74	3,460.82	1,278.35	1.69	-1.27	-1.11
9,912.00	91.00	341.50	7,597.28	676.55	3,441.04	1,333.16	1.56	1.43	-0.63
9,975.00	89.30	341.50	7,597.12	736.29	3,421.05	1,387.88	2.70	-2.70	0.00
10,039.00	90.60	342.20	7,597.18	797.11	3,401.11	1,443.65	2.31	2.03	1.09
10,102.00	91.40	341.80	7,596.08	857.01	3,381.65	1,498.62	1.42	1.27	-0.63
10,165.00	90.00	341.90	7,595.31	916.87	3,362.02	1,553.52	2.23	-2.22	0.16
10,228.00	90.60	341.70	7,594.98	976.72	3,342.35	1,608.39	1.00	0.95	-0.32
10,291.00	91.20	341.40	7,593.99	1,036.47	3,322.41	1,663.13	1.06	0.95	-0.48
10,354.00	89.40	340.90	7,593.66	1,096.09	3,302.06	1,717.64	2.97	-2.86	-0.79
10,417.00	90.10	340.90	7,593.93	1,155.62	3,281.44	1,772.03	1.11	1.11	0.00
10,480.00	89.20	341.70	7,594.32	1,215.29	3,261.25	1,826.63	1.91	-1.43	1.27
10,543.00	90.10	341.80	7,594.70	1,275.12	3,241.52	1,881.48	1.44	1.43	0.16
10,606.00	90.80	341.10	7,594.21	1,334.85	3,221.48	1,936.16	1.57	1.11	-1.11
10,670.00	89.60	342.00	7,593.98	1,395.56	3,201.22	1,991.77	2.34	-1.88	1.41
10,732.00	90.20	342.50	7,594.09	1,454.60	3,182.32	2,046.01	1.26	0.97	0.81
10,795.00	90.90	341.90	7,593.49	1,514.58	3,163.06	2,101.09	1.46	1.11	-0.95
10,858.00	91.40	341.90	7,592.22	1,574.45	3,143.49	2,156.01	0.79	0.79	0.00
10,921.00	90.00	342.60	7,591.45	1,634.45	3,124.29	2,211.12	2.48	-2.22	1.11
10,985.00	90.70	343.50	7,591.06	1,695.67	3,105.63	2,267.54	1.78	1.09	1.41
11,047.00	90.10	343.50	7,590.63	1,755.11	3,088.02	2,322.42	0.97	-0.97	0.00
11,110.00	90.80	343.80	7,590.13	1,815.56	3,070.29	2,378.27	1.21	1.11	0.48

Company: EQT PRODUCTION
 Project: Wetzel County, WV
 Site: Big 190
 Well: Well #516849
 Wellbore: Main Wellbore
 Design: Surveys Main Wellbore

Local Co-ordinate Reference: Well Well #516849 - Slot 516849
 TVD Reference: RKB=1474+16 @ 1490.00usft (Savanna 654)
 MD Reference: RKB=1474+16 @ 1490.00usft (Savanna 674)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: DB_Jul2216dt_v14

RECEIVED
 Office of Oil and Gas
 NOV 09 2017
 WV Department of
 Environmental Protection

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)
11,173.00	89.10	343.20	7,590.19	1,875.96	3,052.40	2,434.04	2.86	-2.70	-0.95
11,236.00	89.50	342.50	7,590.96	1,936.16	3,033.82	2,489.46	1.28	0.63	-1.11
11,299.00	90.00	342.40	7,591.23	1,996.23	3,014.82	2,544.69	0.81	0.79	-0.16
11,362.00	90.70	342.00	7,590.85	2,056.21	2,995.57	2,599.78	1.28	1.11	-0.63
11,425.00	89.00	342.40	7,591.01	2,116.19	2,976.31	2,654.86	2.77	-2.70	0.63
11,488.00	89.30	342.60	7,591.95	2,176.27	2,957.37	2,710.11	0.57	0.48	0.32
11,551.00	90.40	342.50	7,592.11	2,236.37	2,938.47	2,765.38	1.75	1.75	-0.16
11,614.00	91.10	342.10	7,591.29	2,296.38	2,919.32	2,820.52	1.28	1.11	-0.63
11,677.00	91.90	342.20	7,589.64	2,356.32	2,900.02	2,875.57	1.28	1.27	0.16
11,740.00	90.40	340.40	7,588.37	2,415.98	2,879.82	2,930.15	3.72	-2.38	-2.86
11,803.00	91.60	341.50	7,587.28	2,475.52	2,859.27	2,984.55	2.58	1.90	1.75
11,866.00	91.30	341.30	7,585.68	2,535.21	2,839.18	3,039.19	0.57	-0.48	-0.32
11,929.00	92.30	341.30	7,583.70	2,594.86	2,818.99	3,093.77	1.59	1.59	0.00
11,992.00	91.30	340.70	7,581.72	2,654.39	2,798.49	3,148.18	1.85	-1.59	-0.95
12,055.00	92.20	340.40	7,579.80	2,713.77	2,777.52	3,202.34	1.51	1.43	-0.48
12,118.00	91.30	341.40	7,577.88	2,773.27	2,756.92	3,256.70	2.13	-1.43	1.59
12,182.00	92.00	341.10	7,576.03	2,833.85	2,736.35	3,312.12	1.19	1.09	-0.47
12,245.00	91.30	341.70	7,574.22	2,893.53	2,716.27	3,366.75	1.46	-1.11	0.95
12,308.00	91.80	341.70	7,572.51	2,953.33	2,696.49	3,421.55	0.79	0.79	0.00
12,371.00	89.90	342.20	7,571.58	3,013.22	2,676.98	3,476.50	3.12	-3.02	0.79
12,434.00	90.10	341.90	7,571.58	3,073.15	2,657.56	3,531.51	0.57	0.32	-0.48
12,497.00	88.80	342.00	7,572.18	3,133.04	2,638.04	3,586.47	2.07	-2.06	0.16
12,560.00	89.50	342.50	7,573.12	3,193.04	2,618.84	3,641.58	1.37	1.11	0.79
12,623.00	90.40	342.20	7,573.17	3,253.07	2,599.74	3,696.75	1.51	1.43	-0.48
12,686.00	89.20	342.50	7,573.39	3,313.10	2,580.63	3,751.91	1.96	-1.90	0.48
12,748.00	89.60	342.30	7,574.04	3,372.20	2,561.89	3,806.23	0.72	0.65	-0.32
12,811.00	90.50	342.50	7,573.99	3,432.25	2,542.84	3,861.43	1.46	1.43	0.32
12,874.00	89.40	342.70	7,574.04	3,492.37	2,524.00	3,916.73	1.77	-1.75	0.32
12,937.00	90.10	343.00	7,574.32	3,552.56	2,505.42	3,972.16	1.21	1.11	0.48
13,000.00	90.70	341.10	7,573.88	3,612.49	2,486.01	4,027.17	3.16	0.95	-3.02
13,063.00	91.40	341.50	7,572.72	3,672.16	2,465.81	4,081.76	1.28	1.11	0.63
13,126.00	90.20	340.40	7,571.84	3,731.70	2,445.25	4,136.16	2.58	-1.90	-1.75
13,189.00	90.60	340.70	7,571.40	3,791.10	2,424.28	4,190.35	0.79	0.63	0.48
13,251.00	91.20	341.50	7,570.43	3,849.75	2,404.20	4,243.97	1.61	0.97	1.29
13,314.00	92.00	341.60	7,568.67	3,909.49	2,384.27	4,298.69	1.28	1.27	0.16
13,377.00	90.50	342.00	7,567.30	3,969.32	2,364.59	4,353.55	2.46	-2.38	0.63
13,440.00	91.20	342.20	7,566.36	4,029.26	2,345.23	4,408.58	1.16	1.11	0.32
13,503.00	92.10	341.90	7,564.55	4,089.17	2,325.83	4,463.57	1.51	1.43	-0.48
13,566.00	89.80	341.90	7,563.50	4,149.04	2,306.26	4,518.49	3.65	-3.65	0.00
13,629.00	90.00	342.20	7,563.61	4,208.98	2,286.84	4,573.50	0.57	0.32	0.48
13,692.00	90.50	342.00	7,563.34	4,268.93	2,267.48	4,628.53	0.85	0.79	-0.32
13,754.00	91.10	341.80	7,562.47	4,327.85	2,248.22	4,682.59	1.02	0.97	-0.32
13,818.00	90.00	341.30	7,561.86	4,388.56	2,227.96	4,738.19	1.89	-1.72	-0.78

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #516849 - Slot 516849
Project:	Wetzel County, WV	TVD Reference:	RKB=1474+16 @ 1490.00usft (Savanna 654)
Site:	Big 190	MD Reference:	RKB=1474+16 @ 1490.00usft (Savanna 654)
Well:	Well #516849	North Reference:	Grid
Wellbore:	Main Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Main Wellbore	Database:	DB_Jul2216dt_v14

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)
13,880.00	90.60	341.00	7,561.53	4,447.23	2,207.93	4,791.85	1.08	0.97	-0.48
13,944.00	91.50	340.90	7,560.36	4,507.72	2,187.05	4,847.11	1.41	1.41	-0.16
14,007.00	89.60	340.10	7,559.76	4,567.10	2,166.02	4,901.26	3.27	-3.02	-1.27
14,070.00	90.00	339.90	7,559.98	4,626.30	2,144.47	4,955.14	0.71	0.63	-0.32
14,133.00	90.90	340.00	7,559.48	4,685.48	2,122.87	5,008.99	1.44	1.43	0.16
14,196.00	90.00	341.00	7,558.99	4,744.86	2,101.85	5,063.14	2.14	-1.43	1.59
14,259.00	88.90	342.00	7,559.59	4,804.60	2,081.86	5,117.85	2.36	-1.75	1.59
14,322.00	89.80	342.30	7,560.31	4,864.56	2,062.55	5,172.91	1.51	1.43	0.48
14,385.00	90.60	342.20	7,560.09	4,924.56	2,043.34	5,228.03	1.28	1.27	-0.16
14,448.00	91.40	342.40	7,558.99	4,984.57	2,024.19	5,283.16	1.31	1.27	0.32
14,511.00	91.10	342.40	7,557.61	5,044.61	2,005.15	5,338.35	0.48	-0.48	0.00
14,573.00	92.00	342.30	7,555.94	5,103.67	1,986.35	5,392.62	1.46	1.45	-0.16
14,637.00	91.30	342.40	7,554.09	5,164.63	1,966.96	5,448.64	1.10	-1.09	0.16
14,702.00	89.00	342.50	7,553.92	5,226.60	1,947.36	5,505.61	3.54	-3.54	0.15
14,765.00	89.30	342.30	7,554.86	5,286.64	1,928.31	5,560.80	0.57	0.48	-0.32
14,828.00	90.30	341.90	7,555.08	5,346.59	1,908.95	5,615.84	1.71	1.59	-0.63
14,891.00	91.30	341.80	7,554.20	5,406.45	1,889.33	5,670.74	1.60	1.59	-0.16
14,954.00	90.10	342.00	7,553.43	5,466.33	1,869.76	5,725.66	1.93	-1.90	0.32
15,018.00	90.90	342.10	7,552.87	5,527.21	1,850.03	5,781.54	1.26	1.25	0.16
15,081.00	89.50	341.90	7,552.65	5,587.12	1,830.56	5,836.52	2.24	-2.22	-0.32
15,144.00	89.80	341.50	7,553.03	5,646.94	1,810.78	5,891.34	0.79	0.48	-0.63
15,207.00	90.70	341.50	7,552.76	5,706.68	1,790.79	5,946.06	1.43	1.43	0.00
15,268.00	89.30	342.30	7,552.76	5,764.66	1,771.84	5,999.24	2.64	-2.30	1.31
15,331.00	90.20	342.60	7,553.03	5,824.73	1,752.85	6,054.46	1.51	1.43	0.48
15,394.00	91.50	343.30	7,552.10	5,884.95	1,734.38	6,109.94	2.34	2.06	1.11
15,458.00	90.20	342.80	7,551.15	5,946.16	1,715.72	6,166.35	2.18	-2.03	-0.78
15,521.00	91.00	342.60	7,550.49	6,006.31	1,696.99	6,221.70	1.31	1.27	-0.32
15,584.00	92.30	342.60	7,548.68	6,066.40	1,678.16	6,276.98	2.06	2.06	0.00
15,648.00	90.50	341.90	7,547.11	6,127.33	1,658.65	6,332.95	3.02	-2.81	-1.09
15,711.00	91.10	341.60	7,546.23	6,187.15	1,638.92	6,387.80	1.06	0.95	-0.48
15,774.00	89.60	341.30	7,545.85	6,246.88	1,618.88	6,442.48	2.43	-2.38	-0.48
15,838.00	89.60	340.10	7,546.30	6,307.28	1,597.73	6,497.61	1.87	0.00	-1.88
15,901.00	90.40	339.90	7,546.30	6,366.48	1,576.18	6,551.49	1.31	1.27	-0.32
15,964.00	90.60	341.60	7,545.75	6,425.95	1,555.42	6,605.78	2.72	0.32	2.70
16,028.00	90.90	342.50	7,544.91	6,486.83	1,535.69	6,661.66	1.48	0.47	1.41
16,091.00	89.20	343.30	7,544.85	6,547.04	1,517.17	6,717.12	2.98	-2.70	1.27
16,154.00	89.70	343.30	7,545.46	6,607.38	1,499.07	6,772.78	0.79	0.79	0.00
16,218.00	90.70	343.00	7,545.23	6,668.63	1,480.52	6,829.25	1.63	1.56	-0.47
16,281.00	89.50	342.50	7,545.12	6,728.80	1,461.83	6,884.63	2.06	-1.90	-0.79
16,344.00	90.20	341.90	7,545.29	6,788.78	1,442.58	6,939.72	1.46	1.11	-0.95
16,406.00	91.30	341.70	7,544.48	6,847.67	1,423.21	6,993.72	1.80	1.77	-0.32
16,470.00	92.30	341.40	7,542.47	6,908.35	1,402.97	7,049.30	1.63	1.63	-0.47
Survey @ 16470.00 MD 7542.47 TVD									
16,540.00	92.30	341.40	7,539.66	6,974.64	1,380.66	7,109.98	0.00	0.00	0.00

RECEIVED
Office of Oil and Gas
NOV 09 2017

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #516849 - Slot 516849
Project:	Wetzel County, WV	TVD Reference:	RKB=1474+16 @ 1490.00usft (Savanna 654)
Site:	Big 190	MD Reference:	RKB=1474+16 @ 1490.00usft (Savanna 654)
Well:	Well #516849	North Reference:	Grid
Wellbore:	Main Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Main Wellbore	Database:	DB_Jul2216dt_v14

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)
BHL Lat=39.571698° Long=-80.601161° - Survey projected to 16540.00 MD 7539.66 TVD									

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
516849 BHL as drilled - hit/miss target - Shape - Point	0.00	360.00	7,539.66	6,974.64	1,380.66	392,237.38	1,689,594.50	39° 34' 18.1106 N	80° 36' 4.1806 W
516849 LP as drilled - actual wellpath hits target center - Point	0.00	360.00	7,595.95	109.75	3,615.05	385,372.49	1,691,828.89	39° 33' 10.5338 N	80° 35' 34.5815 W

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
100.00	100.00	0.09	-0.02	Gyro
100.00	100.00	0.09	-0.02	Surf loc Lat=39.552503° Long=-80.605754°
1,326.00	1,325.99	2.21	3.66	ProD MWD surveys
9,319.00	7,595.95	109.75	3,615.05	LP as drilled 9319 MD 7596 TVD
9,319.00	7,595.95	109.75	3,615.05	Marcellus target
9,319.00	7,595.95	109.75	3,615.05	LP as drilled Lat=39.552926° Long=-80.592940°
9,660.00	7,599.15	436.59	3,517.96	Deepest point @ 9660 MD 7599 TVD
16,470.00	7,542.47	6,908.35	1,402.97	Survey @ 16470.00 MD 7542.47 TVD
16,540.00	7,539.66	6,974.64	1,380.66	BHL Lat=39.571698° Long=-80.601161°
16,540.00	7,539.66	6,974.64	1,380.66	Survey projected to 16540.00 MD 7539.66 TVD

RECEIVED
Office of Oil and Gas
NOV 09 2017
WV Department of Environmental Protection