



Where energy meets innovation.

EQT PRODUCTION

Wetzel County, WV

Big 190

Well #516850 - Slot 516850

Main Wellbore

API #47-103-03169

Design: Surveys Main Wellbore

Standard Survey Report

30 May, 2017

RECEIVED
Office of Oil and Gas
NOV - 3 2017
WV Department of
Environmental Protection



02/16/2018



Where energy meets innovation.

Project: Wetzel County, WV
 Site: Big 190
 Well: Well #516850
 Wellbore: Main Wellbore
 Design: Surveys Main Wellbore

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
100.00	0.28	212.03	100.00	-0.21	-0.13	-0.24	0.24	Surf loc: Lat=39.552531° Long=-80.605752°
5380.00	0.32	62.64	5374.62	111.84	-11.04	80.99	121.78	KOP as drilled 5380 MD 5375 TVD
5380.00	0.32	62.64	5374.62	111.84	-11.04	80.99	121.78	ProD MWD surveys
10983.00	89.50	342.60	7590.60	505.52	4299.14	3058.57	5047.16	LP as drilled 10983 MD7591 TVD
10983.00	89.50	342.60	7590.60	505.52	4299.14	3058.57	5047.16	LP as drilled Lat=39.554063° Long=-80.590528°
10983.00	89.50	342.60	7590.60	505.52	4299.14	3058.57	5047.16	Marcellus target
11235.00	90.01	342.80	7595.27	746.34	4225.05	3201.82	5299.11	Deepest point 11235 MD 7595 TVD
14630.00	91.20	340.20	7558.44	3977.98	3189.33	5098.47	8693.41	Survey @ 14630.00 MD 7558.44 TVD
14692.00	91.20	340.20	7557.15	4036.30	3168.33	5131.27	8755.40	Survey projected to 14692.00 MD 7557.15 TVD
14692.00	91.20	340.20	7557.15	4036.30	3168.33	5131.27	8755.40	BHL as drilled Lat=39.563718° Long=-80.594691°

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
516850 BHL as drilled	7557.15	4036.30	3168.33	389309.00	1691383.00	39° 33' 49.3852 N	80° 35' 40.8862 W
516850 LP as drilled	7590.60	505.52	4299.14	385778.22	1692513.81	39° 33' 14.6260 N	80° 35' 25.9005 W

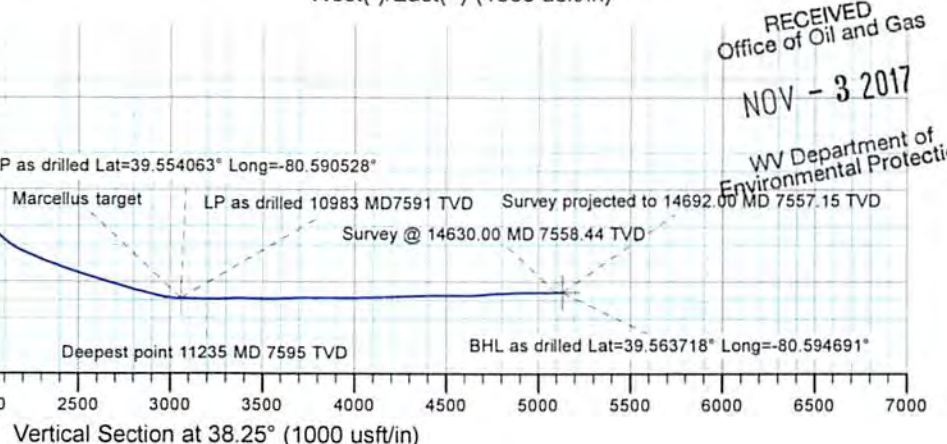
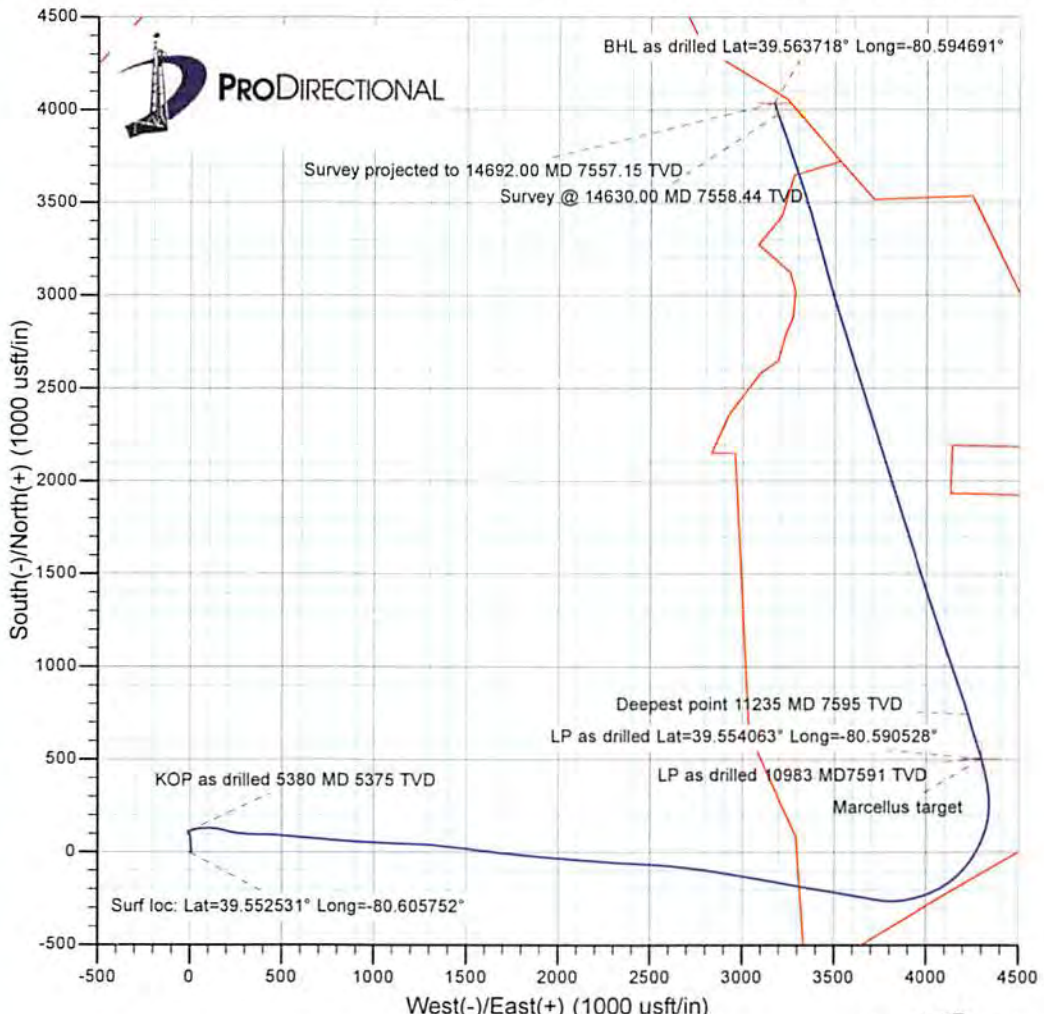
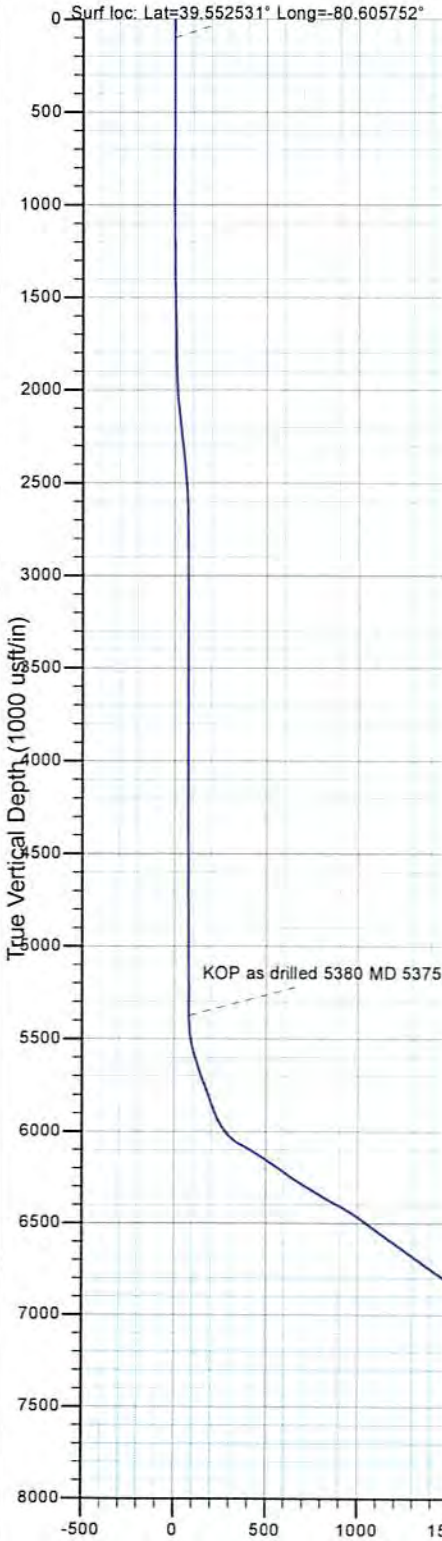


Azimuths to Grid North
 True North: 0.70°
 Magnetic North: -7.54°
 Magnetic Field
 Strength: 52352.7snT
 Dip Angle: 66.90°
 Date: 5/12/2017
 Model: HDGM

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: 385272.70 Easting: 1688214.68 Latitude: 39° 33' 9.1105 N Longitude: 80° 36' 20.7058 W



RECEIVED
 Office of Oil and Gas
 NOV - 3 2017
 WV Department of
 Environmental Protection

02/16/2018

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #516850 - Slot 516850
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 #516850	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 #516850 - Slot 516850					
Well Position	+N/-S	0.00 usft	Northing:	385,272.70 usft	Latitude:	39° 33' 9.1105 N
	+E/-W	0.00 usft	Easting:	1,688,214.67 usft	Longitude:	80° 36' 20.7058 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	5/12/2017	-8.25	66.90	52,352.70000000

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	38.25	

Survey Program	Date	5/30/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	5,351.00	Gyro 0-5351 MD (Main Wellbore)	GYD_DP_MS	Gyrodata gyro-compassing and	
5,380.00	7,050.00	MWD TIP=5351 MD gyro (Main Wellbore)	MWD - OWSG	MWD - OWSG	
7,087.00	14,692.00	MWD TIP=7050 MD (Main Wellbore)	MWD - OWSG	MWD - OWSG	

RECEIVED
Office of Oil and Gas
NOV - 3 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	0.00
100.00	0.28	212.03	100.00	-0.21	-0.13	-0.24	0.28	0.28	0.00	0.00
Surf loc: Lat=39.552531° Long=-80.605752°										
200.00	0.25	204.42	200.00	-0.61	-0.35	-0.70	0.05	-0.03	-7.61	
300.00	0.07	272.35	300.00	-0.81	-0.50	-0.95	0.23	-0.18	67.93	
400.00	0.05	45.71	400.00	-0.78	-0.53	-0.94	0.11	-0.02	133.36	
500.00	0.06	257.37	500.00	-0.76	-0.55	-0.94	0.11	0.01	-148.34	
600.00	0.05	288.52	600.00	-0.75	-0.64	-0.99	0.03	-0.01	31.15	
700.00	0.06	125.14	700.00	-0.77	-0.64	-1.00	0.11	0.01	-163.38	

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #516850 - Slot 516850
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 #516850	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)	Buld Rate (°/100usft)	Turn Rate (°/100usft)
800.00	0.06	104.21	800.00	-0.81	-0.55	-0.98	0.02	0.00	-20.93
900.00	0.10	79.60	900.00	-0.81	-0.41	-0.89	0.05	0.04	-24.61
1,000.00	0.16	82.49	1,000.00	-0.78	-0.19	-0.73	0.06	0.06	2.89
1,100.00	0.07	92.20	1,100.00	-0.76	0.01	-0.59	0.09	-0.09	9.71
1,200.00	0.09	125.47	1,200.00	-0.81	0.14	-0.55	0.05	0.02	33.27
1,300.00	0.76	33.11	1,299.99	-0.30	0.56	0.11	0.77	0.67	-92.36
1,400.00	1.00	31.95	1,399.98	1.00	1.39	1.64	0.24	0.24	-1.16
1,500.00	1.11	28.38	1,499.97	2.59	2.31	3.46	0.13	0.11	-3.57
1,600.00	1.20	27.71	1,599.95	4.37	3.26	5.45	0.09	0.09	-0.67
1,700.00	1.13	25.61	1,699.92	6.18	4.17	7.44	0.08	-0.07	-2.10
1,800.00	1.08	28.37	1,799.91	7.90	5.04	9.33	0.07	-0.05	2.76
1,900.00	1.07	29.18	1,899.89	9.55	5.95	11.18	0.02	-0.01	0.81
2,000.00	4.54	358.10	1,999.76	14.32	6.27	15.13	3.67	3.47	-31.08
2,100.00	8.76	355.74	2,099.06	25.87	5.57	23.77	4.23	4.22	-2.36
2,200.00	8.15	355.38	2,197.97	40.53	4.44	34.58	0.61	-0.61	-0.36
2,300.00	8.59	356.22	2,296.91	55.05	3.37	45.32	0.46	0.44	0.84
2,400.00	8.26	357.18	2,395.83	69.68	2.53	56.28	0.36	-0.33	0.96
2,500.00	5.58	356.93	2,495.09	81.71	1.91	65.35	2.68	-2.68	-0.25
2,600.00	3.03	346.82	2,594.80	89.14	1.05	70.65	2.65	-2.55	-10.11
2,700.00	1.08	340.55	2,694.73	92.60	0.14	72.80	1.96	-1.95	-6.27
2,800.00	0.49	343.22	2,794.72	93.90	-0.30	73.55	0.59	-0.59	2.67
2,900.00	0.34	335.13	2,894.72	94.58	-0.55	73.93	0.16	-0.15	-8.09
3,000.00	0.39	320.22	2,994.72	95.11	-0.89	74.14	0.11	0.05	-14.91
3,100.00	0.35	328.02	3,094.72	95.63	-1.27	74.31	0.06	-0.04	7.80
3,200.00	0.39	320.85	3,194.72	96.15	-1.65	74.49	0.06	0.04	-7.17
3,300.00	0.52	322.26	3,294.71	96.77	-2.14	74.67	0.13	0.13	1.41
3,400.00	0.51	316.40	3,394.71	97.46	-2.73	74.85	0.05	-0.01	-5.86
3,500.00	0.58	316.50	3,494.70	98.15	-3.38	74.98	0.07	0.07	0.10
3,600.00	0.57	307.49	3,594.70	98.82	-4.12	75.05	0.09	-0.01	-9.01
3,700.00	0.44	314.59	3,694.70	99.39	-4.79	75.08	0.14	-0.13	7.10
3,800.00	0.49	314.82	3,794.69	99.96	-5.37	75.17	0.05	0.05	0.23
3,900.00	0.51	316.00	3,894.69	100.58	-5.98	75.28	0.02	0.02	1.18
4,000.00	0.54	313.83	3,994.68	101.23	-6.63	75.39	0.04	0.03	-2.17
4,100.00	0.61	321.63	4,094.68	101.97	-7.30	75.56	0.10	0.07	7.80
4,200.00	0.67	315.76	4,194.67	102.81	-8.04	75.76	0.09	0.06	-5.87
4,300.00	0.76	315.68	4,294.66	103.70	-8.91	75.92	0.09	0.09	-0.08
4,400.00	0.78	319.76	4,394.66	104.69	-9.81	76.14	0.06	0.02	4.08
4,500.00	0.69	317.78	4,494.65	105.66	-10.66	76.38	0.09	-0.09	-1.98
4,600.00	0.67	325.60	4,594.64	106.59	-11.39	76.65	0.09	-0.02	7.82
4,700.00	0.54	343.95	4,694.63	107.52	-11.85	77.10	0.23	-0.13	18.35
4,800.00	0.49	343.58	4,794.63	108.39	-12.11	77.62	0.05	-0.05	-0.37
4,900.00	0.42	2.03	4,894.63	109.16	-12.21	78.17	0.16	-0.07	18.45
5,000.00	0.34	13.77	4,994.63	109.82	-12.13	78.73	0.11	-0.08	11.74

RECEIVED
Office of Oil and Gas
NOV - 3 2017
WV Department of Environmental Protection

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #516850 - Slot 516850
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 #516850	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)
5,100.00	0.30	30.92	5,094.62	110.33	-11.92	79.26	0.10	-0.04	17.15
5,200.00	0.34	17.26	5,194.62	110.84	-11.70	79.80	0.09	0.04	-13.66
5,300.00	0.37	42.52	5,294.62	111.36	-11.40	80.40	0.16	0.03	25.26
5,351.00	0.52	28.37	5,345.62	111.68	-11.17	80.79	0.36	0.29	-27.75
5,380.00	0.32	62.64	5,374.62	111.84	-11.04	80.99	1.08	-0.69	118.17
KOP as drilled 5380 MD 5375 TVD - ProD MWD surveys									
5,411.00	1.57	80.47	5,405.61	111.95	-10.54	81.39	4.09	4.03	57.52
5,442.00	4.84	65.71	5,436.56	112.56	-8.93	82.86	10.79	10.55	-47.61
5,474.00	8.21	76.75	5,468.35	113.63	-5.48	85.85	11.19	10.53	34.50
5,506.00	11.45	74.67	5,499.88	115.00	-0.19	90.19	10.18	10.13	-6.50
5,537.00	14.84	72.45	5,530.06	117.01	6.57	95.95	11.05	10.94	-7.16
5,569.00	17.32	71.86	5,560.81	119.73	15.00	103.31	7.77	7.75	-1.84
5,600.00	19.11	74.74	5,590.25	122.50	24.28	111.24	6.46	5.77	9.29
5,632.00	21.38	76.23	5,620.27	125.27	35.00	120.05	7.27	7.09	4.66
5,663.00	23.78	79.25	5,648.90	127.78	46.63	129.22	8.60	7.74	9.74
5,695.00	26.60	83.43	5,677.85	129.80	60.09	139.14	10.41	8.81	13.06
5,726.00	28.91	85.96	5,705.28	131.13	74.46	149.08	8.36	7.45	8.16
5,757.00	31.37	88.62	5,732.09	131.85	90.01	159.27	9.03	7.94	8.58
5,789.00	33.32	91.52	5,759.13	131.82	107.12	169.84	7.79	6.09	9.06
5,821.00	35.27	95.18	5,785.57	130.75	125.11	180.14	8.87	6.09	11.44
5,852.00	36.08	99.77	5,810.75	128.39	143.03	189.37	9.02	2.61	14.81
5,884.00	37.84	102.12	5,836.32	124.73	161.91	198.19	7.05	5.50	7.34
5,915.00	39.85	103.33	5,860.47	120.44	180.88	206.57	6.93	6.48	3.90
5,947.00	41.97	103.81	5,884.65	115.52	201.25	215.31	6.70	6.63	1.50
5,978.00	43.62	101.87	5,907.40	110.85	221.78	224.35	6.81	5.32	-6.26
6,010.00	45.45	100.22	5,930.21	108.56	243.80	234.62	6.77	5.72	-5.16
6,042.00	46.98	97.43	5,952.35	103.02	266.63	245.97	7.90	4.78	-8.72
6,073.00	49.46	95.16	5,973.00	100.49	289.60	258.21	9.69	8.00	-7.32
6,105.00	51.91	92.91	5,993.28	98.76	314.29	272.14	9.39	7.66	-7.03
6,136.00	55.76	91.93	6,011.57	97.71	339.29	286.79	12.68	12.42	-3.16
6,168.00	59.16	92.05	6,028.78	96.77	366.25	302.74	10.63	10.63	0.38
6,199.00	63.14	91.58	6,043.73	95.92	393.38	318.87	12.91	12.84	-1.52
6,230.00	66.87	91.51	6,056.83	95.16	421.46	335.66	12.03	12.03	2.16
6,262.00	70.88	92.20	6,068.36	94.19	451.29	353.36	12.69	12.53	7.10
6,293.00	73.46	94.40	6,077.85	92.49	480.75	370.26	10.72	8.32	2.79
6,356.00	73.38	96.16	6,095.83	86.93	540.87	403.12	2.68	-0.13	2.79
6,419.00	71.60	94.89	6,114.79	81.14	600.67	435.59	3.42	-2.83	1.30
6,482.00	70.28	94.07	6,135.36	76.49	660.03	488.69	2.43	-2.10	1.73
6,545.00	71.14	95.16	6,156.17	71.71	719.30	501.63	2.13	1.37	1.73
6,608.00	70.13	94.01	6,177.06	66.95	778.54	534.57	2.35	-1.60	-1.83
6,671.00	68.08	93.61	6,199.53	63.04	837.27	567.85	3.31	-3.25	-0.63
6,734.00	65.66	92.71	6,224.28	59.84	895.11	601.15	4.06	-3.84	-1.43
6,797.00	68.96	92.37	6,248.58	57.27	953.17	635.08	5.26	5.24	-0.54
6,860.00	70.58	92.53	6,270.36	54.74	1,012.23	669.65	2.58	2.57	0.25

RECEIVED
Office of Oil and Gas
NOV - 3 2017
WV Department of Environmental Protection



Survey Report



Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #516850 - Slot 516850
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 #516850	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)
6,923.00	70.92	93.45	6,291.13	51.64	1,071.62	703.99	1.48	0.54	1.46
6,986.00	69.11	91.73	6,312.66	48.96	1,130.76	738.50	3.85	-2.87	-2.73
7,050.00	71.32	92.52	6,334.33	46.72	1,190.94	773.99	3.64	3.45	1.23
7,087.00	70.50	92.00	6,346.43	45.34	1,225.88	794.54	2.58	-2.22	-1.41
7,119.00	69.50	91.30	6,357.37	44.48	1,255.93	812.47	3.74	-3.13	-2.19
7,181.00	72.80	95.30	6,377.41	41.08	1,314.49	846.05	8.10	5.32	6.45
7,244.00	74.20	96.60	6,395.30	34.82	1,374.56	878.33	2.98	2.22	2.06
7,307.00	75.20	97.10	6,411.92	27.57	1,434.90	909.99	1.76	1.59	0.79
7,370.00	73.00	97.00	6,429.18	20.13	1,495.02	941.37	3.50	-3.49	-0.16
7,433.00	71.20	96.50	6,448.55	13.09	1,554.56	972.69	2.96	-2.86	-0.79
7,496.00	69.40	97.10	6,469.78	6.06	1,613.45	1,003.64	2.99	-2.86	0.95
7,559.00	69.50	96.70	6,491.90	-1.02	1,672.01	1,034.33	0.62	0.16	-0.63
7,623.00	68.00	95.70	6,515.09	-7.47	1,731.31	1,065.98	2.76	-2.34	-1.56
7,686.00	68.00	95.20	6,538.69	-13.01	1,789.46	1,097.62	0.74	0.00	-0.79
7,749.00	68.80	95.20	6,561.88	-18.32	1,847.79	1,129.57	1.27	1.27	0.00
7,812.00	68.50	94.60	6,584.82	-23.34	1,906.25	1,161.82	1.01	-0.48	-0.95
7,875.00	69.10	94.90	6,607.60	-28.20	1,964.79	1,194.24	1.05	0.95	0.48
7,938.00	70.40	95.60	6,629.41	-33.61	2,023.64	1,226.43	2.31	2.06	1.11
8,000.00	68.70	94.30	6,651.07	-38.63	2,081.52	1,258.32	3.37	-2.74	-2.10
8,063.00	67.90	93.70	6,674.36	-42.71	2,139.91	1,291.26	1.55	-1.27	-0.95
8,126.00	68.60	93.60	6,697.71	-46.43	2,198.30	1,324.49	1.12	1.11	-0.16
8,189.00	67.60	94.40	6,721.21	-50.51	2,256.61	1,357.39	1.98	-1.59	1.27
8,252.00	68.00	94.80	6,745.01	-55.19	2,314.76	1,389.71	0.87	0.63	0.63
8,315.00	68.20	92.60	6,768.51	-58.96	2,373.08	1,422.86	3.26	0.32	-3.49
8,379.00	69.00	92.50	6,791.86	-61.61	2,432.61	1,457.63	1.26	1.25	-0.16
8,442.00	69.30	92.90	6,814.29	-64.38	2,491.42	1,491.86	0.76	0.48	0.63
8,505.00	70.50	94.80	6,835.94	-68.36	2,550.44	1,525.28	3.41	1.90	3.02
8,567.00	71.10	95.90	6,856.33	-73.82	2,608.74	1,557.08	1.93	0.97	1.77
8,630.00	72.20	95.60	6,876.16	-79.81	2,668.23	1,589.21	1.80	1.75	-0.48
8,693.00	70.20	97.40	6,896.47	-86.56	2,727.48	1,620.60	4.17	-3.17	2.86
8,756.00	69.10	97.30	6,918.37	-94.11	2,786.07	1,650.93	1.75	-1.75	-0.16
8,820.00	67.90	99.00	6,941.83	-102.55	2,845.01	1,680.79	3.10	-1.88	2.66
8,882.00	68.30	99.20	6,964.96	-111.65	2,901.81	1,708.81	0.71	0.65	0.32
8,945.00	68.80	99.30	6,988.00	-121.07	2,959.68	1,737.24	0.81	0.79	0.16
9,008.00	69.80	99.30	7,010.26	-130.60	3,017.84	1,765.77	1.59	1.59	0.00
9,071.00	70.80	99.90	7,031.50	-140.49	3,076.32	1,794.20	1.82	1.59	0.95
9,134.00	71.50	100.40	7,051.86	-151.00	3,135.01	1,822.28	1.34	1.11	0.79
9,196.00	72.70	100.70	7,070.91	-161.80	3,193.01	1,849.71	1.99	1.94	0.48
9,259.00	71.10	100.10	7,090.48	-172.61	3,251.91	1,877.68	2.70	-2.54	-0.95
9,322.00	69.90	99.60	7,111.51	-182.77	3,310.41	1,905.93	2.05	-1.90	-0.79
9,385.00	70.90	99.90	7,132.65	-192.82	3,368.91	1,934.24	1.65	1.59	0.48
9,448.00	68.70	99.20	7,154.40	-202.63	3,427.21	1,962.63	3.64	-3.49	-1.11
9,511.00	66.80	99.30	7,178.25	-212.00	3,484.76	1,990.90	3.02	-3.02	0.16

RECEIVED
Office of Oil and Gas

NOV - 3 2017

WV Department of
Environmental Protection

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #516850 - Slot 516850
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 #516850	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)
9,574.00	68.00	99.70	7,202.46	-221.60	3,542.12	2,018.87	1.99	1.90	0.63
9,637.00	67.20	99.90	7,226.47	-231.52	3,599.51	2,046.62	1.30	-1.27	0.32
9,700.00	67.30	100.10	7,250.83	-241.61	3,656.73	2,074.12	0.33	0.16	0.32
9,731.00	67.70	100.50	7,262.70	-246.73	3,684.91	2,087.55	1.76	1.29	1.29
9,763.00	68.30	100.60	7,274.68	-252.16	3,714.08	2,101.34	1.90	1.88	0.31
9,794.00	68.00	97.80	7,286.22	-256.76	3,742.48	2,115.31	8.44	-0.97	-9.03
9,826.00	68.20	95.00	7,298.16	-260.07	3,771.98	2,130.97	8.14	0.63	-8.75
9,857.00	69.20	91.30	7,309.43	-261.65	3,800.81	2,147.58	11.58	3.23	-11.94
9,888.00	70.30	88.00	7,320.16	-261.47	3,829.89	2,165.72	10.60	3.55	-10.65
9,920.00	70.60	83.30	7,330.87	-259.18	3,859.95	2,186.13	13.87	0.94	-14.69
9,951.00	71.70	80.40	7,340.89	-255.02	3,888.98	2,207.37	9.54	3.55	-9.35
9,983.00	71.90	77.40	7,350.89	-249.17	3,918.81	2,230.43	8.93	0.63	-9.38
10,014.00	72.00	75.90	7,360.49	-242.37	3,947.49	2,253.53	4.61	0.32	-4.84
10,038.00	71.60	73.80	7,367.99	-236.41	3,969.49	2,271.83	8.48	-1.67	-8.75
10,070.00	71.30	70.40	7,378.17	-227.09	3,998.36	2,297.02	10.12	-0.94	-10.63
10,101.00	70.80	67.60	7,388.24	-216.58	4,025.73	2,322.22	8.69	-1.61	-9.03
10,133.00	70.50	64.20	7,398.84	-204.26	4,053.28	2,348.96	10.07	-0.94	-10.63
10,164.00	70.50	60.60	7,409.20	-190.72	4,079.17	2,375.62	10.95	0.00	-11.61
10,196.00	71.10	56.90	7,419.72	-175.05	4,105.00	2,403.92	11.08	1.88	-11.56
10,227.00	71.70	53.50	7,429.61	-158.28	4,129.12	2,432.02	10.57	1.94	-10.97
10,259.00	72.80	49.80	7,439.37	-139.37	4,153.02	2,461.66	11.54	3.44	-11.56
10,290.00	72.90	46.50	7,448.52	-119.61	4,175.08	2,490.83	10.18	0.32	-10.65
10,322.00	72.60	42.70	7,458.01	-97.86	4,196.53	2,521.20	11.38	-0.94	-11.88
10,353.00	73.00	39.30	7,467.18	-75.51	4,215.96	2,550.77	10.56	1.29	-10.97
10,385.00	72.90	36.00	7,476.56	-51.29	4,234.64	2,581.36	9.86	-0.31	-10.31
10,416.00	72.90	32.80	7,485.68	-26.85	4,251.38	2,610.92	9.87	0.00	-10.32
10,448.00	73.60	30.30	7,494.90	-0.74	4,267.41	2,641.35	7.79	2.19	-7.81
10,479.00	73.70	27.70	7,503.63	25.28	4,281.83	2,670.71	8.05	0.32	-8.39
10,511.00	74.20	24.50	7,512.48	52.89	4,295.35	2,700.76	9.74	1.56	-10.00
10,542.00	74.80	21.10	7,520.77	80.42	4,306.93	2,729.55	10.74	1.94	-10.97
10,574.00	75.20	17.60	7,529.05	109.58	4,317.17	2,758.79	10.64	1.25	-10.94
10,605.00	75.70	14.20	7,536.84	138.44	4,325.38	2,786.54	10.74	1.61	-10.97
10,636.00	76.30	10.70	7,544.34	167.80	4,331.87	2,813.61	11.12	1.94	-11.29
10,668.00	77.10	7.20	7,551.71	198.56	4,336.71	2,840.76	10.93	2.50	-10.94
10,699.00	77.80	4.10	7,558.44	228.67	4,339.69	2,866.25	10.02	2.26	-10.00
10,731.00	79.00	1.00	7,564.88	259.98	4,341.08	2,891.70	10.20	3.75	-9.69
10,763.00	80.00	358.00	7,570.71	291.44	4,340.80	2,916.24	9.73	3.13	-9.38
10,794.00	81.10	355.20	7,575.80	321.96	4,338.99	2,939.08	9.59	3.55	-9.03
10,826.00	82.40	352.10	7,580.40	353.43	4,335.49	2,961.63	10.41	4.06	-9.69
10,857.00	83.80	349.30	7,584.12	383.80	4,330.51	2,982.40	10.04	4.52	-9.03
10,889.00	85.10	346.70	7,587.22	414.95	4,323.89	3,002.76	9.05	4.06	-8.13
10,920.00	87.80	345.50	7,589.14	444.98	4,316.46	3,021.74	9.53	8.71	-3.87
10,952.00	88.70	344.00	7,590.11	475.84	4,308.04	3,040.77	5.46	2.81	-4.69

RECEIVED
Office of Oil and Gas
NOV - 3 2017
WV Department of

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #516850 - Slot 516850
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 #516850	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)
10,983.00	89.50	342.60	7,590.60	505.52	4,299.14	3,058.57	5.20	2.58	-4.52
LP as drilled 10983 MD7591 TVD - LP as drilled Lat=39.554063° Long=-80.590528° - Marcellus target									
11,046.00	88.90	342.70	7,591.48	565.65	4,280.35	3,094.16	0.97	-0.95	0.16
11,109.00	88.50	343.00	7,592.91	625.83	4,261.78	3,129.92	0.79	-0.63	0.48
11,172.00	88.60	343.20	7,594.50	686.09	4,243.47	3,165.91	0.35	0.16	0.32
11,235.00	90.01	342.80	7,595.27	746.34	4,225.05	3,201.82	2.33	2.24	-0.63
Deepest point 11235 MD 7595 TVD									
11,298.00	91.10	342.50	7,594.66	806.47	4,206.27	3,237.41	1.79	1.73	-0.48
11,361.00	91.70	341.60	7,593.12	866.38	4,186.86	3,272.44	1.72	0.95	-1.43
11,424.00	91.70	339.70	7,591.25	925.79	4,165.99	3,306.18	3.01	0.00	-3.02
11,487.00	90.20	341.00	7,590.20	985.11	4,144.81	3,339.65	3.15	-2.38	2.06
11,550.00	90.50	341.40	7,589.82	1,044.75	4,124.51	3,373.92	0.79	0.48	0.63
11,613.00	88.70	340.40	7,590.26	1,104.28	4,103.90	3,407.91	3.27	-2.86	-1.59
11,676.00	88.80	339.30	7,591.63	1,163.41	4,082.20	3,440.91	1.75	0.16	-1.75
11,739.00	89.60	341.20	7,592.51	1,222.69	4,060.92	3,474.29	3.27	1.27	3.02
11,802.00	90.30	341.60	7,592.57	1,282.40	4,040.82	3,508.74	1.28	1.11	0.63
11,865.00	91.00	342.00	7,591.85	1,342.24	4,021.15	3,543.55	1.28	1.11	0.63
11,928.00	91.80	342.10	7,590.31	1,402.16	4,001.74	3,578.59	1.28	1.27	0.16
11,991.00	90.40	342.10	7,589.11	1,462.10	3,982.38	3,613.67	2.22	-2.22	0.00
12,054.00	90.80	342.00	7,588.45	1,522.03	3,962.96	3,648.72	0.65	0.63	-0.16
12,117.00	91.50	342.40	7,587.18	1,582.00	3,943.71	3,683.90	1.28	1.11	0.63
12,180.00	89.70	341.60	7,586.52	1,641.91	3,924.24	3,718.89	3.13	-2.86	-1.27
12,243.00	89.60	341.40	7,586.91	1,701.65	3,904.25	3,753.43	0.35	-0.16	-0.32
12,306.00	90.10	342.00	7,587.07	1,761.47	3,884.47	3,788.16	1.24	0.79	0.95
12,369.00	90.70	341.60	7,586.63	1,821.31	3,864.79	3,822.98	1.14	0.95	-0.63
12,432.00	89.40	342.80	7,586.58	1,881.29	3,845.54	3,858.16	2.81	-2.06	1.90
12,495.00	89.70	343.00	7,587.07	1,941.51	3,827.01	3,893.98	0.57	0.48	0.32
12,558.00	90.20	342.70	7,587.13	2,001.71	3,808.43	3,929.75	0.93	0.79	-0.48
12,621.00	88.80	342.40	7,587.68	2,061.80	3,789.54	3,965.25	2.27	-2.22	-0.48
12,685.00	90.30	342.00	7,588.18	2,122.73	3,769.98	4,000.99	2.43	2.34	-0.63
12,748.00	91.00	342.30	7,587.46	2,182.70	3,750.67	4,036.13	1.21	1.11	0.48
12,811.00	91.40	342.50	7,586.14	2,242.74	3,731.63	4,071.48	0.71	0.63	0.32
12,874.00	91.40	341.90	7,584.61	2,302.70	3,712.37	4,106.66	0.95	0.00	-0.95
12,937.00	90.70	342.30	7,583.45	2,362.64	3,693.01	4,141.74	1.28	-1.11	0.63
13,000.00	91.30	342.00	7,582.35	2,422.60	3,673.70	4,176.88	1.06	0.95	-0.48
13,063.00	90.20	342.40	7,581.53	2,482.58	3,654.45	4,212.06	1.86	-1.75	0.63
13,126.00	90.90	342.60	7,580.92	2,542.66	3,635.50	4,247.51	1.16	1.11	0.32
13,189.00	91.40	342.60	7,579.66	2,602.76	3,616.67	4,283.05	0.79	0.79	0.00
13,252.00	92.10	343.30	7,577.73	2,662.97	3,598.21	4,318.90	1.57	1.11	1.11
13,315.00	90.60	342.10	7,576.25	2,723.10	3,579.48	4,354.53	3.05	-2.38	-1.90
13,378.00	90.20	342.30	7,575.81	2,783.08	3,560.22	4,389.71	0.71	-0.63	0.32
13,441.00	90.70	342.60	7,575.31	2,843.14	3,541.22	4,425.12	0.93	0.79	0.48
13,504.00	91.50	342.60	7,574.11	2,903.25	3,522.39	4,460.66	1.27	1.27	0.00
13,567.00	89.40	343.00	7,573.61	2,963.43	3,503.76	4,496.38	3.39	-3.33	0.63

RECEIVED
Office of Oil and Gas

NOV - 3 2017

WV Department of
Environmental Protection

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #516850 - Slot 516850
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 #516850	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)
13,630.00	88.80	343.60	7,574.60	3,023.76	3,485.66	4,532.56	1.35	-0.95	0.95
13,693.00	89.40	344.00	7,575.59	3,084.25	3,468.08	4,569.18	1.14	0.95	0.63
13,757.00	89.80	343.40	7,576.04	3,145.68	3,450.12	4,606.30	1.13	0.63	-0.94
13,819.00	91.00	345.20	7,575.60	3,205.36	3,433.34	4,642.79	3.49	1.94	2.90
13,882.00	93.60	346.10	7,573.08	3,266.34	3,417.74	4,681.02	4.37	4.13	1.43
13,913.00	94.30	346.30	7,570.94	3,296.37	3,410.37	4,700.03	2.35	2.26	0.65
13,944.00	93.10	345.00	7,568.94	3,326.34	3,402.70	4,718.82	5.70	-3.87	-4.19
13,976.00	91.70	343.80	7,567.60	3,357.13	3,394.10	4,737.68	5.76	-4.38	-3.75
14,007.00	91.90	343.90	7,566.63	3,386.90	3,385.48	4,755.72	0.72	0.65	0.32
14,038.00	92.30	343.90	7,565.49	3,416.66	3,376.89	4,773.77	1.29	1.29	0.00
14,069.00	91.40	343.00	7,564.49	3,446.36	3,368.07	4,791.63	4.10	-2.90	-2.90
14,100.00	91.20	342.70	7,563.79	3,475.97	3,358.93	4,809.23	1.16	-0.65	-0.97
14,131.00	91.30	342.60	7,563.11	3,505.56	3,349.69	4,826.74	0.46	0.32	-0.32
14,162.00	91.40	342.40	7,562.38	3,535.11	3,340.37	4,844.18	0.72	0.32	-0.65
14,194.00	91.70	342.20	7,561.51	3,565.59	3,330.64	4,862.10	1.13	0.94	-0.63
14,225.00	92.10	341.60	7,560.49	3,595.04	3,321.02	4,879.26	2.33	1.29	-1.94
14,256.00	90.20	341.60	7,559.86	3,624.44	3,311.23	4,896.30	6.13	-6.13	0.00
14,288.00	90.10	341.40	7,559.78	3,654.79	3,301.08	4,913.85	0.70	-0.31	-0.63
14,319.00	90.10	341.20	7,559.73	3,684.15	3,291.14	4,930.75	0.65	0.00	-0.65
14,350.00	90.30	340.90	7,559.62	3,713.47	3,281.07	4,947.55	1.16	0.65	-0.97
14,381.00	90.90	340.90	7,559.29	3,742.77	3,270.93	4,964.27	1.94	1.94	0.00
14,412.00	91.50	341.10	7,558.64	3,772.07	3,260.84	4,981.04	2.04	1.94	0.65
14,443.00	89.40	341.90	7,558.40	3,801.46	3,251.00	4,998.03	7.25	-6.77	2.58
14,474.00	89.10	341.30	7,558.81	3,830.88	3,241.22	5,015.07	2.16	-0.97	-1.94
14,505.00	89.50	340.70	7,559.18	3,860.19	3,231.13	5,031.84	2.33	1.29	-1.94
14,536.00	89.90	340.80	7,559.35	3,889.45	3,220.91	5,048.50	1.33	1.29	0.32
14,567.00	90.40	340.50	7,559.27	3,918.70	3,210.64	5,065.11	1.88	1.61	-0.97
14,599.00	90.70	340.10	7,558.96	3,948.83	3,199.85	5,082.09	1.56	0.94	-1.25
14,630.00	91.20	340.20	7,558.44	3,977.98	3,189.33	5,098.47	1.64	1.61	0.32
Survey @ 14630.00 MD 7558.44 TVD									
14,692.00	91.20	340.20	7,557.15	4,036.30	3,168.33	5,131.27	0.00	0.00	0.00
Survey projected to 14692.00 MD 7557.15 TVD - BHL as drilled Lat=39.563718° Long=-80.594691°									

RECEIVED
Office of Oil and Gas

NOV - 3 2017

WV Department of

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
516850 BHL as drilled - hit/miss target - Shape - Point	0.00	0.00	7,557.15	4,036.30	3,168.33	389,309.00	1,691,383.00	39° 33' 49.3852 N	80° 35' 40.8862 W
516850 LP as drilled - actual wellpath hits target center - Point	0.00	0.00	7,590.60	505.52	4,299.14	385,778.22	1,692,513.81	39° 33' 14.6260 N	80° 35' 25.9005 W

Company:	EQT PRODUCTION	Local Co-ordinate Reference:	Well Well #516850 - Slot 516850
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 #516850	North Reference:	Grid
Wellbore:	Main Wellbore	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Main Wellbore	Database:	DB_Jul2216dt_v14

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
100.00	100.00	-0.21	-0.13	Surf loc: Lat=39.552531° Long=-80.605752°
5,380.00	5,374.62	111.84	-11.04	KOP as drilled 5380 MD 5375 TVD
5,380.00	5,374.62	111.84	-11.04	ProD MWD surveys
10,983.00	7,590.60	505.52	4,299.14	LP as drilled 10983 MD7591 TVD
10,983.00	7,590.60	505.52	4,299.14	LP as drilled Lat=39.554063° Long=-80.590528°
10,983.00	7,590.60	505.52	4,299.14	Marcellus target
11,235.00	7,595.27	746.34	4,225.05	Deepest point 11235 MD 7595 TVD
14,630.00	7,558.44	3,977.98	3,189.33	Survey @ 14630.00 MD 7558.44 TVD
14,692.00	7,557.15	4,036.30	3,168.33	Survey projected to 14692.00 MD 7557.15 TVD
14,692.00	7,557.15	4,036.30	3,168.33	BHL as drilled Lat=39.563718° Long=-80.594691°

RECEIVED
 Office of Oil and Gas
 NOV - 3 2017
 WV Department of
 Environmental Protection