

33.05741

**Mountaineer
Keystone**
LLC



Mountaineer Keystone, LLC

Harrison County, West Virginia NAD 27

Maxwell PAD

Maxwell #3HM

Curve & Lateral

Design: Wellbore #1

DDC Survey Report

17 December, 2014

Received
Office of Oil & Gas
SEP 25 2015



10/30/2015

Company:	Mountaineer Keystone, LLC	Local Co-ordinate Reference:	Well Maxwell #3HM
Project:	Harrison County, West Virginia NAD 27	TVD Reference:	WELL @ 1482.0usft
Site:	Maxwell PAD	MD Reference:	WELL @ 1482.0usft
Well:	Maxwell #3HM	North Reference:	Grid
Wellbore:	Curve & Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

Project	Harrison County, West Virginia NAD 27		
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	Maxwell PAD				
Site Position:		Northing:	265,036.00 usft	Latitude:	39° 13' 27.934 N
From:	Map	Easting:	1,754,372.00 usft	Longitude:	80° 22' 1.290 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.55 °

Well	Maxwell #3HM					
Well Position	+N/-S	0.0 usft	Northing:	265,036.00 usft	Latitude:	39° 13' 27.934 N
	+E/-W	0.0 usft	Easting:	1,754,372.00 usft	Longitude:	80° 22' 1.290 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	1,462.0 usft

Wellbore	Curve & Lateral				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/6/2014	-8.76	66.68	52,172

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	6,059.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	330.11	

Survey Program	Date	12/17/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.0	2,774.0	GYRO (PILOT HOLE)	Good_gyro	Good Gyro	
3,058.0	6,059.0	Pilot Hole Surveys (PILOT HOLE)	MWD default	MWD - Standard	
6,090.0	13,450.0	MWD (Curve & Lateral)	MWD default	MWD - Standard	

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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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	1.20	194.76	100.0	-1.0	-0.3	-0.7	1.20	1.20	0.00
200.0	0.88	240.86	200.0	-2.4	-1.2	-1.5	0.87	-0.32	46.10
300.0	0.22	214.01	300.0	-2.9	-2.0	-1.6	0.69	-0.66	-26.85
400.0	0.21	175.87	400.0	-3.3	-2.1	-1.8	0.14	-0.01	-38.14
500.0	0.17	266.16	500.0	-3.5	-2.2	-1.9	0.27	-0.04	90.29
600.0	0.10	336.89	600.0	-3.4	-2.4	-1.8	0.17	-0.07	70.73
700.0	0.31	258.42	700.0	-3.4	-2.7	-1.6	0.31	0.21	-78.47
800.0	0.23	257.87	800.0	-3.5	-3.2	-1.4	0.08	-0.08	-0.55

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Design:	Wellbore #1	Database:	Compass

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)
900.0	0.31	253.66	900.0	-3.6	-3.6	-1.3	0.08	0.08	-4.21
1,000.0	0.54	248.76	1,000.0	-3.8	-4.3	-1.2	0.23	0.23	-4.90
1,100.0	0.69	233.36	1,100.0	-4.4	-5.2	-1.2	0.22	0.15	-15.40
1,200.0	1.04	224.97	1,199.9	-5.4	-6.4	-1.5	0.37	0.35	-8.39
1,300.0	1.35	224.92	1,299.9	-6.8	-7.8	-2.0	0.31	0.31	-0.05
1,400.0	1.37	220.81	1,399.9	-8.6	-9.4	-2.7	0.10	0.02	-4.11
1,500.0	4.41	222.83	1,499.8	-12.3	-12.8	-4.3	3.04	3.04	2.02
1,600.0	7.45	228.53	1,599.2	-19.4	-20.3	-6.7	3.09	3.04	5.70
1,700.0	9.54	233.39	1,698.1	-28.7	-31.8	-9.0	2.21	2.09	4.86
1,800.0	9.38	245.89	1,796.8	-36.9	-45.9	-9.1	2.06	-0.16	12.50
1,900.0	9.19	265.10	1,895.5	-40.9	-61.3	-4.9	3.09	-0.19	19.21
2,000.0	7.81	267.69	1,994.4	-41.9	-76.1	1.6	1.43	-1.36	2.59
2,100.0	6.80	270.96	2,093.6	-42.1	-88.8	7.8	1.09	-1.01	3.27
2,200.0	5.68	280.71	2,193.0	-41.1	-99.5	14.0	1.54	-1.12	9.75
2,300.0	5.11	285.02	2,292.5	-39.0	-108.7	20.4	0.70	-0.57	4.31
2,400.0	4.04	286.77	2,392.2	-36.8	-116.4	26.1	1.08	-1.07	1.75
2,500.0	3.86	286.94	2,492.0	-34.8	-123.0	31.1	0.18	-0.18	0.17
2,600.0	3.55	286.27	2,591.8	-33.0	-129.2	35.8	0.31	-0.31	-0.67
2,700.0	3.29	284.98	2,691.6	-31.4	-134.9	40.1	0.27	-0.26	-1.29
2,774.0	2.89	287.52	2,765.5	-30.2	-138.7	42.9	0.57	-0.54	3.43
3,058.0	2.12	277.48	3,049.2	-27.4	-150.8	51.4	0.31	-0.27	-3.54
3,152.0	1.81	267.48	3,143.1	-27.2	-154.0	53.1	0.49	-0.33	-10.64
3,245.0	1.81	265.89	3,236.1	-27.4	-156.9	54.4	0.05	0.00	-1.71
3,371.0	1.59	263.91	3,362.0	-27.7	-160.6	56.0	0.18	-0.17	-1.57
3,433.0	1.68	260.69	3,424.0	-28.0	-162.4	56.7	0.21	0.15	-5.19
3,494.0	1.59	262.19	3,485.0	-28.2	-164.1	57.3	0.16	-0.15	2.46
3,556.0	1.50	257.47	3,547.0	-28.5	-165.8	57.9	0.25	-0.15	-7.61
3,619.0	1.28	256.37	3,610.0	-28.9	-167.2	58.3	0.35	-0.35	-1.75
3,682.0	1.10	256.11	3,672.9	-29.2	-168.5	58.7	0.29	-0.29	-0.41
3,744.0	1.10	253.51	3,734.9	-29.5	-169.7	59.0	0.08	0.00	-4.19
3,807.0	1.02	255.40	3,797.9	-29.8	-170.8	59.3	0.14	-0.13	3.00
3,869.0	1.10	254.48	3,859.9	-30.1	-171.9	59.6	0.13	0.13	-1.48
3,932.0	1.02	255.80	3,922.9	-30.4	-173.0	59.9	0.13	-0.13	2.10
3,995.0	1.02	261.57	3,985.9	-30.6	-174.1	60.2	0.16	0.00	9.16
4,057.0	1.02	268.98	4,047.9	-30.7	-175.2	60.7	0.21	0.00	11.95
4,120.0	1.10	268.09	4,110.9	-30.7	-176.4	61.2	0.13	0.13	-1.41
4,182.0	1.41	274.88	4,172.9	-30.7	-177.7	62.0	0.55	0.50	10.95
4,245.0	1.50	280.79	4,235.8	-30.5	-179.3	62.9	0.28	0.14	9.38
4,307.0	1.81	281.49	4,297.8	-30.1	-181.1	64.1	0.50	0.50	10.13
4,370.0	1.99	287.70	4,360.8	-29.6	-183.1	65.6	0.43	0.29	9.86
4,464.0	2.39	289.38	4,454.7	-28.5	-186.5	68.3	0.43	0.43	9.79
4,557.0	3.31	291.67	4,547.6	-26.8	-190.8	71.8	1.00	0.99	2.46
4,651.0	1.41	258.09	4,641.5	-26.1	-194.5	74.3	2.42	-2.02	-35.72

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4,745.0	1.19	123.99	4,735.5	-26.8	-194.8	73.8	2.55	-0.23	-142.66	
4,839.0	1.28	117.69	4,829.5	-27.9	-193.1	72.0	0.17	0.10	-6.70	
4,933.0	1.50	118.57	4,923.4	-29.0	-191.1	70.1	0.24	0.23	0.94	
5,026.0	1.68	115.49	5,016.4	-30.1	-188.8	67.9	0.21	0.19	-3.31	
5,120.0	1.59	115.80	5,110.4	-31.3	-186.3	65.7	0.10	-0.10	0.33	
5,214.0	1.19	108.57	5,204.3	-32.2	-184.2	63.9	0.46	-0.43	-7.69	
5,308.0	0.88	106.10	5,298.3	-32.7	-182.6	62.7	0.33	-0.33	-2.63	
5,402.0	0.80	105.09	5,392.3	-33.0	-181.3	61.7	0.09	-0.09	-1.07	
5,496.0	0.62	112.18	5,486.3	-33.4	-180.2	60.8	0.21	-0.19	7.54	
5,590.0	0.71	121.31	5,580.3	-33.9	-179.2	59.9	0.15	0.10	9.71	
5,684.0	0.62	121.39	5,674.3	-34.5	-178.3	59.0	0.10	-0.10	0.09	
5,778.0	0.80	124.79	5,768.3	-35.1	-177.3	57.9	0.20	0.19	3.62	
5,872.0	0.80	129.50	5,862.3	-35.9	-176.3	56.7	0.07	0.00	5.01	
5,965.0	0.88	135.41	5,955.3	-36.8	-175.3	55.4	0.13	0.09	6.35	
Pilot Hole Tie In @ 6059' MD / 6049.3' TVD										
6,059.0	0.88	133.78	6,049.3	-37.8	-174.2	54.0	0.03	0.00	-1.73	
6,090.0	0.88	123.91	6,080.3	-38.1	-173.9	53.6	0.49	0.00	-31.84	
6,152.0	0.88	154.49	6,142.3	-38.8	-173.3	52.7	0.75	0.00	49.32	
6,246.0	3.31	312.60	6,236.2	-37.6	-175.0	54.6	4.40	2.59	168.20	
6,277.0	6.41	328.60	6,267.1	-35.6	-176.5	57.1	10.82	10.00	51.61	
6,309.0	7.20	323.97	6,298.9	-32.4	-178.6	60.9	3.00	2.47	-14.47	
6,340.0	8.40	312.29	6,329.6	-29.3	-181.4	65.0	6.39	3.87	-37.68	
6,371.0	10.52	304.01	6,360.2	-26.2	-185.5	69.7	8.11	6.84	-26.71	
6,403.0	13.39	296.21	6,391.5	-22.9	-191.2	75.4	10.27	8.97	-24.38	
6,434.0	13.21	300.88	6,421.6	-19.5	-197.5	81.5	3.51	-0.58	15.06	
6,465.0	14.18	293.70	6,451.8	-16.2	-204.0	87.6	6.31	3.13	-23.16	
6,496.0	15.60	283.30	6,481.7	-13.7	-211.5	93.5	9.74	4.58	-33.55	
6,528.0	16.48	276.29	6,512.5	-12.2	-220.2	99.2	6.64	2.75	-21.91	
6,559.0	17.10	266.11	6,542.2	-12.0	-229.1	103.7	9.68	2.00	-32.84	
6,590.0	17.19	258.00	6,571.8	-13.3	-238.2	107.2	7.71	0.29	-26.16	
6,621.0	17.10	249.89	6,601.4	-15.8	-246.9	109.3	7.71	-0.29	-26.16	
6,653.0	17.50	241.48	6,632.0	-19.7	-255.6	110.2	7.91	1.25	-26.28	
6,677.0	17.50	238.39	6,654.9	-23.4	-261.8	110.2	3.87	0.00	-12.88	
6,708.0	16.79	236.41	6,684.5	-28.3	-269.5	109.8	2.96	-2.29	-6.39	
6,739.0	17.99	236.28	6,714.1	-33.4	-277.2	109.2	3.87	3.87	-0.42	
6,770.0	19.89	236.01	6,743.4	-39.0	-285.6	108.5	6.14	6.13	-0.87	
6,802.0	21.61	234.69	6,773.3	-45.5	-294.9	107.5	5.57	5.38	-4.13	
6,833.0	22.98	236.01	6,802.0	-52.2	-304.6	106.6	4.71	4.42	4.26	
6,864.0	25.19	236.80	6,830.3	-59.1	-315.1	105.8	7.20	5.55	2.22	
6,896.0	27.31	237.51	6,859.0	-66.8	-327.0	105.0	6.70	5.66	2.22	
6,927.0	29.12	238.17	6,886.3	-74.6	-339.4	104.5	5.92	5.84	2.13	
6,958.0	30.71	236.10	6,913.2	-83.0	-352.4	103.6	6.11	6.11	0.88	
6,989.0	32.79	235.09	6,939.5	-92.2	-365.9	102.4	6.93	6.71	-3.26	
7,021.0	35.00	236.80	6,966.1	-102.2	-380.7	101.1	7.52	6.91	5.34	

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Survey

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7,052.0	37.69	239.27	6,991.1	-111.9	-396.2	100.4	9.88	8.68	7.97
7,083.0	39.11	241.70	7,015.4	-121.4	-413.0	100.6	6.68	4.58	7.84
7,115.0	40.61	243.19	7,039.9	-130.9	-431.2	101.4	5.56	4.69	4.66
7,146.0	41.10	246.10	7,063.4	-139.6	-449.5	103.0	6.34	1.58	9.39
7,177.0	43.48	248.00	7,086.3	-147.7	-468.7	105.5	8.71	7.68	6.13
7,208.0	46.09	248.70	7,108.3	-155.8	-489.0	108.7	8.57	8.42	2.26
7,240.0	46.80	250.69	7,130.4	-163.8	-510.8	112.5	5.02	2.22	6.22
7,271.0	48.08	253.37	7,151.3	-170.8	-532.5	117.2	7.59	4.13	8.65
7,302.0	49.49	257.08	7,171.8	-176.8	-555.0	123.3	10.09	4.55	11.97
7,334.0	50.92	260.29	7,192.2	-181.6	-579.1	131.2	8.91	4.47	10.03
7,365.0	53.38	263.38	7,211.3	-185.1	-603.3	140.2	11.18	7.94	9.97
7,396.0	55.19	267.70	7,229.4	-187.0	-628.4	151.0	12.73	5.84	13.94
7,428.0	55.81	271.57	7,247.5	-187.2	-654.8	164.0	10.15	1.94	12.09
7,459.0	55.81	275.89	7,264.9	-185.5	-680.4	178.2	11.53	0.00	13.94
7,490.0	54.71	280.21	7,282.6	-181.9	-705.6	193.9	11.99	-3.55	13.94
7,522.0	54.88	284.40	7,301.0	-176.4	-731.1	211.4	10.71	0.53	13.09
7,553.0	55.99	287.70	7,318.6	-169.3	-755.6	229.8	9.47	3.58	10.65
7,584.0	56.78	290.30	7,335.8	-160.9	-780.1	249.2	7.43	2.55	8.39
7,615.0	55.28	294.71	7,353.1	-151.1	-803.8	269.6	12.75	-4.84	14.23
7,647.0	55.10	298.68	7,371.4	-139.3	-827.3	291.5	10.20	-0.56	12.41
7,678.0	53.21	302.51	7,388.9	-126.2	-849.3	313.8	10.81	3.58	12.35
7,709.0	53.51	306.21	7,405.6	-111.5	-870.8	337.3	12.49	7.42	11.94
7,740.0	61.29	309.47	7,421.2	-95.0	-892.0	362.1	12.77	8.97	10.52
7,772.0	62.62	311.90	7,436.2	-76.6	-913.4	388.7	7.89	4.16	7.59
7,803.0	64.12	315.29	7,450.1	-57.5	-933.5	415.3	10.91	4.84	10.94
7,834.0	65.40	318.20	7,463.3	-37.1	-952.7	442.6	9.44	4.13	9.39
7,865.0	65.80	320.18	7,476.1	-15.7	-971.1	470.3	5.96	1.29	6.39
7,897.0	65.31	320.80	7,489.4	6.7	-989.6	499.0	2.34	-1.53	1.94
7,928.0	66.51	323.57	7,502.0	29.1	-1,007.0	527.0	9.03	3.87	8.94
7,959.0	67.39	324.81	7,514.2	52.2	-1,023.7	555.4	4.65	2.84	4.00
7,991.0	69.51	326.00	7,525.9	76.7	-1,040.6	585.1	7.47	6.63	3.72
8,022.0	72.12	327.27	7,536.1	101.2	-1,056.7	614.3	9.27	8.42	4.10
8,053.0	74.28	327.67	7,545.1	126.2	-1,072.6	643.9	7.08	6.97	1.29
8,084.0	77.69	328.60	7,552.6	151.7	-1,088.5	674.0	11.38	11.00	3.00
8,116.0	81.49	328.69	7,558.4	178.6	-1,104.9	705.5	11.88	11.88	0.28
8,147.0	84.40	329.39	7,562.2	205.0	-1,120.7	736.2	9.65	9.39	2.26
8,178.0	88.11	329.46	7,564.2	231.6	-1,136.4	767.1	11.97	11.97	0.29
8,209.0	91.38	329.08	7,564.3	258.3	-1,152.3	798.1	10.63	10.55	-1.29
8,241.0	92.49	328.99	7,563.2	285.7	-1,168.7	830.1	3.48	3.47	-0.28
8,272.0	93.02	328.99	7,561.8	312.2	-1,184.7	861.1	1.71	1.71	0.00
8,303.0	95.10	329.87	7,559.6	338.8	-1,200.4	892.0	7.28	7.28	0.00
8,334.0	96.60	330.01	7,556.4	365.5	-1,215.8	922.8	4.86	4.86	0.45
8,364.0	95.89	331.99	7,553.1	391.6	-1,230.3	952.6	6.97	6.97	0.60

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Company:	Mountaineer Keystone, LLC	Local Co-ordinate Reference:	Well Maxwell #3HM
Project:	Harrison County, West Virginia NAD 27	TVD Reference:	WELL @ 1482.0usft
Site:	Maxwell PAD	MD Reference:	WELL @ 1482.0usft
Well:	Maxwell #3HM	North Reference:	Grid
Wellbore:	Curve & Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

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)
8,396.0	94.92	335.47	7,550.1	420.2	-1,244.4	984.4	11.24	-3.03	10.88
8,427.0	93.42	338.29	7,547.9	448.6	-1,256.5	1,015.1	10.28	-4.84	9.10
8,459.0	91.12	340.67	7,546.6	478.6	-1,267.7	1,046.7	10.34	-7.19	7.44
8,490.0	91.38	341.91	7,545.9	507.9	-1,277.7	1,077.1	4.09	0.84	4.00
8,521.0	90.81	341.20	7,545.3	537.3	-1,287.5	1,107.4	2.94	-1.84	-2.29
8,590.0	88.29	339.42	7,545.9	602.3	-1,310.7	1,175.3	4.47	-3.65	-2.58
8,684.0	89.16	340.05	7,548.0	690.4	-1,343.3	1,268.0	1.14	0.93	0.67
8,778.0	90.84	341.09	7,548.0	779.1	-1,374.6	1,360.4	2.10	1.79	1.11
8,872.0	91.45	342.20	7,546.1	868.3	-1,404.2	1,452.5	1.35	0.65	1.18
8,966.0	90.84	340.23	7,544.2	957.2	-1,434.4	1,544.7	2.19	-0.65	-2.10
9,060.0	92.07	340.94	7,541.8	1,045.9	-1,465.6	1,637.1	1.51	1.31	0.76
9,154.0	92.24	340.99	7,538.3	1,134.7	-1,496.3	1,729.4	0.19	0.18	0.05
9,217.0	92.59	340.84	7,535.6	1,194.1	-1,516.9	1,791.2	0.60	0.56	-0.24
9,432.0	91.89	339.52	7,527.2	1,396.2	-1,589.7	2,002.7	0.69	-0.33	-0.61
9,529.0	90.92	338.34	7,524.8	1,486.7	-1,624.6	2,098.6	1.57	-1.00	-1.22
9,623.0	89.87	336.69	7,524.2	1,573.6	-1,660.5	2,191.8	2.08	-1.12	-1.76
9,717.0	88.90	335.43	7,525.2	1,659.5	-1,698.7	2,285.2	1.69	-1.03	-1.34
9,811.0	89.52	334.75	7,526.5	1,744.7	-1,738.2	2,378.9	0.98	0.66	-0.72
9,905.0	89.52	334.91	7,527.3	1,829.8	-1,778.2	2,472.6	0.17	0.00	0.17
9,999.0	90.57	335.36	7,527.2	1,915.1	-1,817.7	2,566.2	1.22	1.12	0.48
10,093.0	90.48	335.08	7,526.4	2,000.4	-1,857.1	2,659.8	0.31	-0.10	-0.30
10,187.0	90.04	334.64	7,525.9	2,085.5	-1,897.1	2,753.5	0.66	-0.47	-0.47
10,281.0	89.87	333.33	7,526.0	2,170.0	-1,938.3	2,847.3	1.41	-0.18	-1.39
10,375.0	89.87	334.03	7,526.2	2,254.2	-1,980.0	2,941.1	0.74	0.00	0.74
10,469.0	90.48	335.55	7,525.9	2,339.3	-2,020.0	3,034.8	1.74	0.65	1.62
10,563.0	90.48	337.21	7,525.1	2,425.4	-2,057.7	3,128.2	1.77	0.00	1.77
10,657.0	90.04	337.82	7,524.7	2,512.3	-2,093.6	3,221.4	0.80	-0.47	0.65
10,751.0	89.08	337.09	7,525.4	2,599.1	-2,129.7	3,314.6	1.28	-1.02	-0.78
10,845.0	88.02	336.87	7,527.8	2,685.6	-2,166.4	3,407.9	1.15	-1.13	-0.23
10,938.0	88.02	337.00	7,531.0	2,771.1	-2,202.8	3,500.2	0.14	0.00	0.14
11,032.0	89.87	339.77	7,532.8	2,858.4	-2,237.4	3,593.2	3.54	1.97	2.95
11,126.0	89.60	340.37	7,533.2	2,946.8	-2,269.5	3,685.8	0.70	-0.29	0.64
11,220.0	89.60	340.43	7,533.9	3,035.4	-2,301.0	3,778.3	0.06	0.00	0.06
11,314.0	90.22	341.50	7,534.0	3,124.2	-2,331.7	3,870.6	1.32	0.66	1.14
11,408.0	91.45	343.28	7,532.6	3,213.8	-2,360.1	3,962.4	2.30	1.31	1.89
11,502.0	91.89	343.69	7,529.9	3,303.9	-2,386.8	4,053.8	0.64	0.47	0.44
11,596.0	91.98	343.40	7,526.7	3,394.0	-2,413.4	4,145.2	0.32	0.10	-0.31
11,689.0	92.15	342.53	7,523.4	3,482.8	-2,440.7	4,235.8	0.95	0.18	-0.94
11,783.0	92.33	342.63	7,519.7	3,572.5	-2,468.8	4,327.5	0.22	0.19	0.11
11,877.0	92.77	342.60	7,515.5	3,662.1	-2,496.8	4,419.2	0.47	0.47	-0.03
11,970.0	92.24	341.61	7,511.4	3,750.5	-2,525.4	4,510.1	1.21	-0.57	0.99
12,064.0	91.36	340.68	7,508.5	3,839.4	-2,555.7	4,602.3	1.36	0.99	0.99
12,158.0	91.71	339.86	7,506.0	3,927.9	-2,587.5	4,694.8	0.95	0.97	0.87

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Company:	Mountaineer Keystone, LLC	Local Co-ordinate Reference:	Well Maxwell #3HM
Project:	Harrison County, West Virginia NAD 27	TVD Reference:	WELL @ 1482.0usft
Site:	Maxwell PAD	MD Reference:	WELL @ 1482.0usft
Well:	Maxwell #3HM	North Reference:	Grid
Wellbore:	Curve & Lateral	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Compass

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,252.0	90.66	338.99	7,504.0	4,015.8	-2,620.5	4,787.6	1.45	-1.12	-0.93
12,345.0	90.31	338.99	7,503.2	4,102.6	-2,653.8	4,879.4	0.38	-0.38	0.00
12,439.0	90.13	339.66	7,502.9	4,190.6	-2,687.0	4,972.2	0.74	-0.19	0.71
12,533.0	91.63	341.59	7,501.4	4,279.3	-2,718.2	5,064.6	2.60	1.60	2.05
12,627.0	92.42	342.87	7,498.1	4,368.7	-2,746.9	5,156.5	1.60	0.84	1.36
12,721.0	91.54	341.41	7,494.9	4,458.1	-2,775.7	5,248.3	1.81	-0.94	-1.55
12,814.0	91.89	340.89	7,492.1	4,546.1	-2,805.7	5,339.6	0.67	0.38	-0.56
12,909.0	91.98	338.98	7,488.9	4,635.3	-2,838.3	5,433.1	2.01	0.09	-2.01
13,003.0	91.98	338.97	7,485.6	4,723.0	-2,872.0	5,526.0	0.01	0.00	-0.01
13,097.0	91.10	337.81	7,483.1	4,810.3	-2,906.6	5,618.9	1.55	-0.94	-1.23
13,191.0	90.66	336.88	7,481.7	4,897.1	-2,942.8	5,712.2	1.09	-0.47	-0.99
13,285.0	91.45	338.84	7,479.9	4,984.1	-2,978.2	5,805.3	2.25	0.84	2.09
13,362.0	91.19	339.06	7,478.2	5,056.0	-3,005.9	5,881.4	0.44	-0.34	0.29
TD @ 13450' MD / 7477' TVD									
13,450.0	90.90	338.84	7,476.6	5,138.1	-3,037.5	5,968.3	0.41	-0.33	-0.25

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,059.0	6,049.3	-37.8	-174.2	Pilot Hole Tie In @ 6059' MD / 6049.3' TVD
13,450.0	7,476.6	5,138.1	-3,037.5	TD @ 13450' MD / 7477' TVD

Checked By: _____ Approved By: _____ Date: _____

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SEP 25 2015

33-05741

Company Name: Mountaineer Keystone, LLC
 Maxwell #3HM
 Harrison County, West Virginia NAD 27
 Rig: Sidewinder #64
 Created By: Kaleigh DeCordova
 Date: 12/17/2014

Maxwell #3HM
 Harrison County, West Virginia NAD 27
 Q141178 & AM-141142
 Design #5 Target Change #1

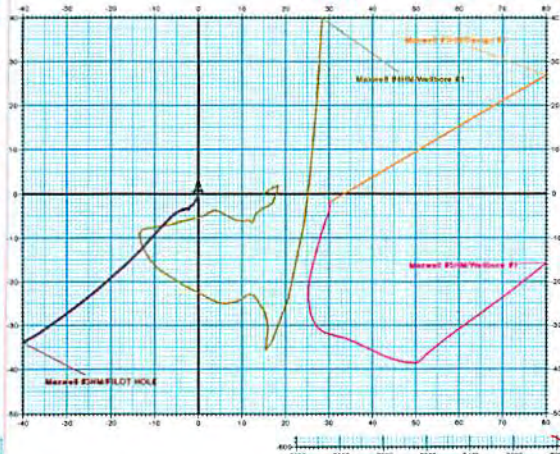
Mountaineer Keystone, LLC



M G T Azimuths to Grid North
 Correction: -8.21°
 Magnetic Field Strength: 52172.0snT
 Dip Angle: 66.68°
 Date: 10/6/2014
 Model: IGRF2010

WELL DETAILS: Maxwell #3HM

Ground Level:		1422.0
+N-S	+E-W	Northing
0.0	0.0	265038.00
Longitude		80° 22' 1.290 W
Easting		1754372.00
Latitude		39° 12' 27.834 N



PROJECT DETAILS: Harrison County, West Virginia NAD 27

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

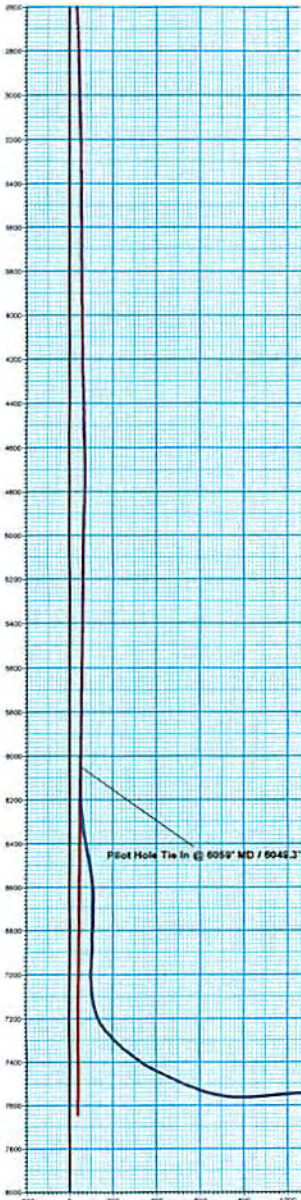
ANNOTATIONS

MD	Inc	Azi	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
8049.3	6050.0	0.88	135.78	-37.8	-174.2	54.0	238.8	Pilot Hole Tie In @ 8059' MD / 8048.3' TVD	
13450.0	60.90	338.84	7476.8	5138.1	-3037.5	5068.3	6713.8	TD @ 13450' MD / 7477' TVD	

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
PEHL Maxwell #3HM D84 TCF#533.0	5171.0	-2972.0	270207.00	1751400.00	30° 14' 18.757 N	80° 22' 39.696 W	
- plan hole target center							
LP Maxwell #3HM	7582.0	158.8	-1158.3	265225.80	1753212.70	30° 13' 28.899 N	80° 22' 16.044 W
- plan misses target center by 45.2mft @ 8154.5mft MD (7582.8 TVD, 2117.7 N, -1124.7 E)							

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Vertical Section at 330.11' (200 usf/in)

10/30/2015