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AUG 10 2015

WV GEOLOGICAL SURVEY  
MORGANTOWN, WV



Antero Resources  
Ten Mile Unit 1H  
Harrison County West Virginia  
Northing: 14235724.83  
Easting: 1784981.20  
As Drilled

**WELL DETAILS:** Ten Mile Unit 1H  
Ground Level: 1274.0  
Easting: 1784981.20  
Northing: 14235724.83  
Longitude: 80° 28' 21.522 W  
Slot

**PROJECT DETAILS:** Harrison County West Virginia  
Geodetic System: Universal Transverse Mercator (US Survey Feet)  
Datum: NAD 1983 (NAD83 CONUS)  
Elevation: Clarke 1866  
Zone: Zone 17N (84 W to 79 W)  
System Datum: Mean Sea Level

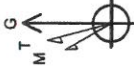
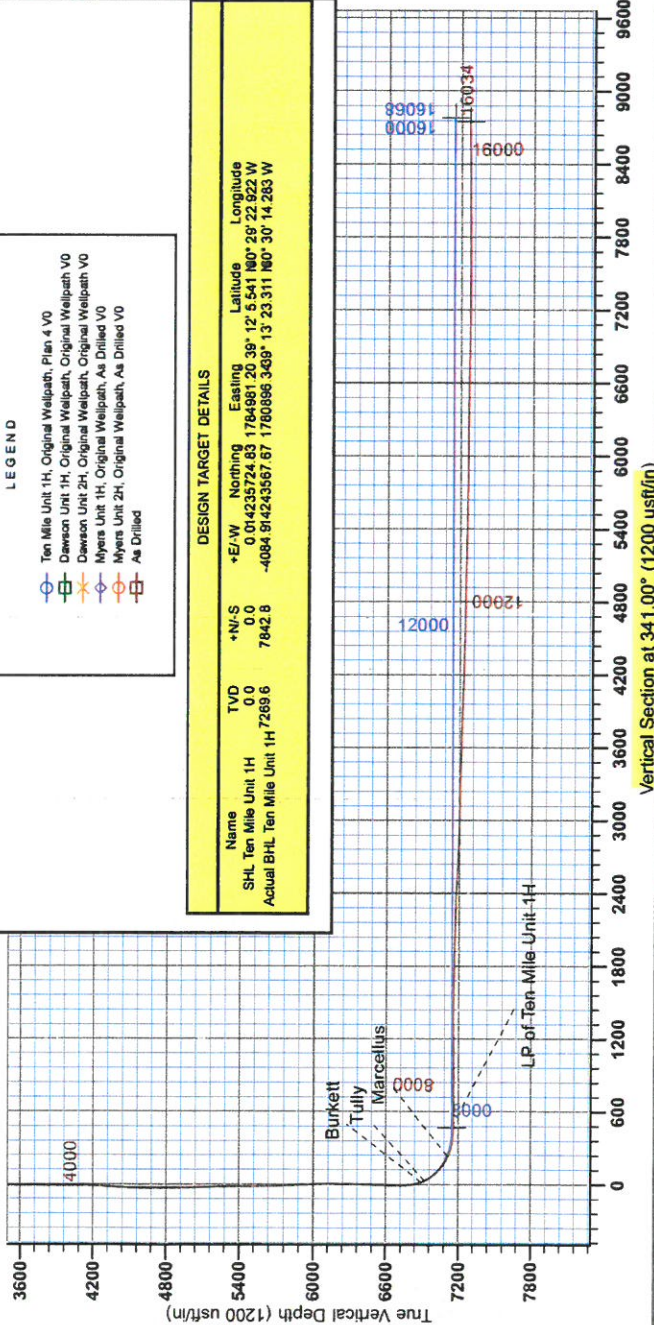
Genie Lightfoot  
13:42, August 02 2013  
Scientific Drilling  
421 South Eagle Lane  
Oklahoma City, OK



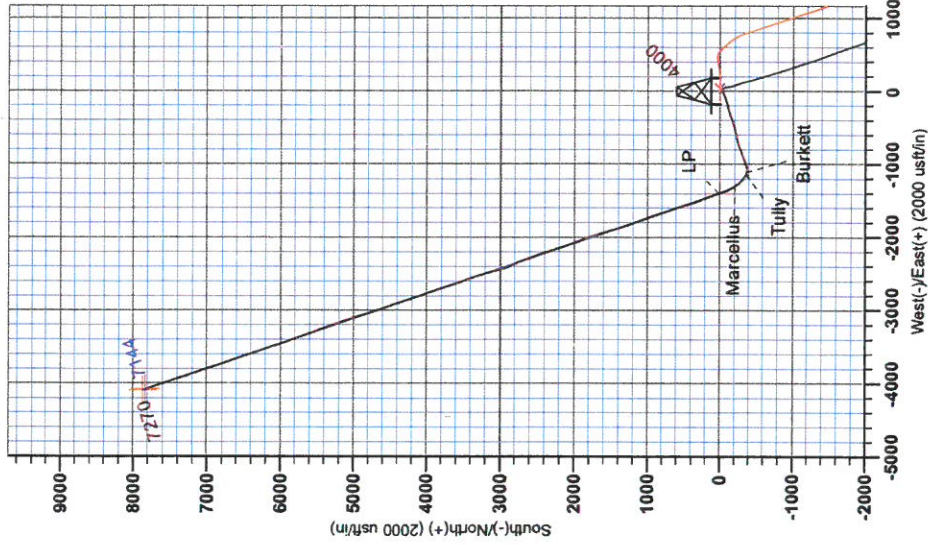
**LEGEND**  
Ten Mile Unit 1H, Original Wellpath, Plan 4 VO  
Dawson Unit 1H, Original Wellpath, Original Wellpath VO  
Meyers Unit 2H, Original Wellpath, Original Wellpath VO  
Meyers Unit 1H, Original Wellpath, As Drilled VO  
Meyers Unit 2H, Original Wellpath, As Drilled VO  
As Drilled

**DESIGN TARGET DETAILS**

Name	TVD	+N/S	+E/W	Northing	Easting	Latitude	Longitude
SHL Ten Mile Unit 1H	0.0	0.0	0.0	0.01423572483	1784981.20	39° 12' 5.541 160° 28' 22.822 W	
Actual BHL Ten Mile Unit 1H / 269.6	7842.6	7842.6	-4084.9142435567	1780896.3469	13° 23' 31.160° 30' 14.283 W		



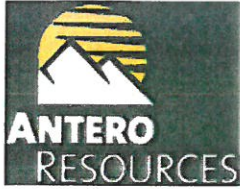
Azimuth to Grid North  
True North: -8.93°  
Magnetic North: -8.93°  
Magnetic Field  
Strength: 52.381.9eNT  
Dip Angle: 66.82°  
Date: 3/31/2013  
Model: IGRF2010



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MORGANTOWN, WV



## **Antero Resources**

**Harrison County West Virginia  
Winnie/Dawson/Tenmile Pad  
Ten Mile Unit 1H  
Original Wellpath**

**Design: As Drilled**

## **EOW Completion Report**

**02 August, 2013**



AUG 10 2015



**WV GEOLOGICAL SURVEY** EOW Completion Report  
**MORGANTOWN, WV**



<b>Company:</b> Antero Resources	<b>Local Co-ordinate Reference:</b> Well Ten Mile Unit 1H
<b>Project:</b> Harrison County West Virginia	<b>TVD Reference:</b> HALL Ten Mile Unit 1H 1278' GL + 13' RKB @ 12
<b>Site:</b> Winnie/Dawson/Tenmile Pad	<b>MD Reference:</b> HALL Ten Mile Unit 1H 1278' GL + 13' RKB @ 12
<b>Well:</b> Ten Mile Unit 1H	<b>North Reference:</b> Grid
<b>Wellbore:</b> Original Wellpath	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> As Drilled	<b>Database:</b> Oklahoma District

<b>Project</b>	Harrison County West Virginia, Harrison County, USA		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Fee	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	Zone 17N (84 W to 78 W)		

<b>Site</b>	Winnie/Dawson/Tenmile Pad				
<b>Site Position:</b>		<b>Northing:</b>	14,235,752.63 usft	<b>Latitude:</b>	39° 12' 5.817 N
<b>From:</b>	Map	<b>Easting:</b>	1,784,952.46 usft	<b>Longitude:</b>	80° 29' 23.285 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16"	<b>Grid Convergence:</b>	0.32 °

<b>Well</b>	Ten Mile Unit 1H, Marcellus					
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	14,235,724.83 usft	<b>Latitude:</b>	39° 12' 5.541 N
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	1,784,981.20 usft	<b>Longitude:</b>	80° 29' 22.922 W
<b>Position Uncertainty</b>	2.0 usft	<b>Wellhead Elevation:</b>	1,291.0 usft	<b>Ground Level:</b>	1,278.0 usft	

<b>Wellbore</b>	Original Wellpath				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/31/2013	-8.61	66.82	52,362

<b>Design</b>	As Drilled				
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**Audit Notes:**

<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
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Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	341.00

Survey Program		Date			
From (usft)	To (usft)	8/2/2013	Survey (Wellbore)	Tool Name	Description
100.0	6,849.1		Survey #3 Def Gyro to KOP (Original Well	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
6,849.1	16,034.0		Survey #4 MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00
100.0	0.29	113.75	100.0	-0.1	0.2	-0.2	0.29
200.0	0.37	122.41	200.0	-0.4	0.7	-0.6	0.09
300.0	0.46	129.53	300.0	-0.8	1.3	-1.2	0.10
400.0	0.34	129.69	400.0	-1.3	1.9	-1.8	0.12
500.0	0.25	157.14	500.0	-1.6	2.2	-2.3	0.17
600.0	0.32	140.92	600.0	-2.1	2.4	-2.7	0.11
700.0	0.18	131.13	700.0	-2.4	2.7	-3.1	0.15
800.0	0.32	151.05	800.0	-2.7	3.0	-3.5	0.16
900.0	0.17	145.95	900.0	-3.1	3.2	-4.0	0.15
1,000.0	0.38	146.45	1,000.0	-3.5	3.5	-4.4	0.21

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MORGANTOWN, WV

EOW Completion Report



**Company:** Antero Resources  
**Project:** Harrison County West Virginia  
**Site:** Winnie/Dawson/Tenmile Pad  
**Well:** Ten Mile Unit 1H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Ten Mile Unit 1H  
**TVD Reference:** HALL Ten Mile Unit 1H 1278' GL + 13' RKB @ 12  
**MD Reference:** HALL Ten Mile Unit 1H 1278' GL + 13' RKB @ 12  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Oklahoma District

**Survey**

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,100.0	0.34	134.62	1,100.0	-4.0	3.9	-5.0	0.08
1,200.0	0.32	128.06	1,200.0	-4.4	4.3	-5.5	0.04
1,300.0	0.22	146.93	1,300.0	-4.7	4.6	-5.9	0.13
1,400.0	0.07	150.52	1,400.0	-4.9	4.7	-6.2	0.15
1,500.0	0.26	120.60	1,500.0	-5.1	5.0	-6.4	0.20
1,600.0	0.08	134.94	1,600.0	-5.2	5.2	-6.7	0.18
1,700.0	0.21	83.40	1,700.0	-5.3	5.4	-6.8	0.17
1,800.0	0.21	109.36	1,800.0	-5.3	5.8	-6.9	0.09
1,900.0	0.23	61.62	1,900.0	-5.3	6.2	-7.0	0.18
2,000.0	0.25	93.75	2,000.0	-5.2	6.5	-7.0	0.13
2,100.0	0.28	67.44	2,100.0	-5.1	7.0	-7.1	0.12
2,200.0	0.23	64.60	2,200.0	-4.9	7.4	-7.1	0.05
2,300.0	0.21	103.34	2,300.0	-4.9	7.8	-7.1	0.15
2,400.0	0.30	87.25	2,400.0	-4.9	8.2	-7.3	0.11
2,500.0	0.67	75.32	2,500.0	-4.8	9.0	-7.4	0.38
2,600.0	0.32	92.85	2,600.0	-4.6	9.9	-7.6	0.38
2,700.0	0.26	88.43	2,700.0	-4.6	10.4	-7.8	0.06
2,800.0	0.37	78.50	2,800.0	-4.6	10.9	-7.9	0.12
2,900.0	0.43	81.20	2,900.0	-4.4	11.6	-8.0	0.06
3,000.0	0.40	103.31	3,000.0	-4.5	12.3	-8.2	0.16
3,100.0	0.42	82.69	3,100.0	-4.5	13.0	-8.5	0.15
3,200.0	0.50	100.00	3,200.0	-4.5	13.8	-8.8	0.16
3,300.0	0.41	92.26	3,299.9	-4.6	14.6	-9.1	0.11
3,400.0	0.49	92.96	3,399.9	-4.6	15.4	-9.4	0.08
3,500.0	0.47	101.22	3,499.9	-4.8	16.2	-9.8	0.07
3,600.0	0.38	103.75	3,599.9	-4.9	16.9	-10.2	0.09
3,700.0	0.35	79.55	3,699.9	-4.9	17.6	-10.4	0.16
3,800.0	0.30	88.01	3,799.9	-4.9	18.1	-10.5	0.07
3,900.0	0.21	87.70	3,899.9	-4.9	18.6	-10.6	0.09
4,000.0	0.23	132.97	3,999.9	-5.0	18.9	-10.9	0.17
4,100.0	2.34	240.45	4,099.9	-6.1	17.3	-11.4	2.42
4,200.0	5.77	218.93	4,199.6	-11.0	12.3	-14.5	3.69
4,300.0	8.19	231.39	4,298.9	-19.4	3.6	-19.5	2.84
4,400.0	10.63	230.61	4,397.6	-29.7	-9.1	-25.1	2.44
4,500.0	10.89	243.07	4,495.8	-39.8	-24.6	-29.6	2.34
4,600.0	11.57	250.89	4,593.9	-47.4	-42.5	-31.0	1.67
4,700.0	13.94	250.55	4,691.4	-54.7	-63.4	-31.1	2.37
4,800.0	17.71	250.85	4,787.6	-63.7	-89.1	-31.2	3.77
4,900.0	20.21	251.65	4,882.2	-74.1	-119.9	-31.1	2.51
5,000.0	22.83	253.23	4,975.2	-85.2	-154.9	-30.1	2.68
5,100.0	25.03	255.43	5,066.6	-96.1	-193.9	-27.7	2.37
5,200.0	26.83	254.82	5,156.5	-107.3	-236.2	-24.6	1.82
5,300.0	27.70	254.26	5,245.4	-119.5	-280.3	-21.8	0.91
5,400.0	29.38	253.05	5,333.3	-133.0	-326.2	-19.6	1.78

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**Survey**

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,500.0	29.47	252.02	5,420.4	-147.7	-373.0	-18.2	0.51
5,600.0	28.60	250.87	5,507.8	-163.2	-419.0	-17.9	1.03
5,700.0	27.60	249.55	5,596.0	-179.1	-463.4	-18.5	1.18
5,800.0	27.20	254.89	5,684.8	-193.2	-507.1	-17.5	2.49
5,900.0	26.73	257.89	5,773.9	-203.8	-551.2	-13.3	1.44
6,000.0	27.98	257.19	5,862.8	-213.8	-596.1	-8.1	1.29
6,100.0	27.79	257.08	5,951.1	-224.2	-641.6	-3.1	0.20
6,200.0	29.26	255.63	6,039.0	-235.4	-688.0	1.4	1.62
6,300.0	28.21	251.09	6,126.7	-249.2	-734.1	3.4	2.42
6,400.0	27.36	246.57	6,215.2	-266.0	-777.5	1.7	2.27
6,500.0	26.80	247.59	6,304.2	-283.7	-819.5	-1.5	0.73
6,600.0	26.39	248.04	6,393.6	-300.6	-860.9	-3.9	0.46
6,700.0	28.34	248.16	6,482.4	-317.8	-903.6	-6.3	1.95
6,800.0	27.98	247.45	6,570.6	-335.6	-947.3	-8.9	0.49
6,849.1	27.95	247.26	6,614.0	-344.4	-968.5	-10.4	0.19
6,908.0	27.60	249.85	6,666.1	-354.5	-994.0	-11.5	2.13
6,940.0	27.16	253.61	6,694.5	-359.1	-1,008.0	-11.4	5.58
6,969.0	26.77	253.90	6,720.4	-362.8	-1,020.6	-10.7	1.42
7,003.0	25.85	254.51	6,750.8	-366.9	-1,035.1	-9.9	2.82
7,034.0	26.46	260.32	6,778.7	-369.8	-1,048.5	-8.3	8.49
7,064.0	27.52	264.75	6,805.4	-371.6	-1,062.0	-5.6	7.57
7,097.0	29.39	274.42	6,834.4	-371.7	-1,077.6	-0.6	15.05
7,128.0	31.86	276.94	6,861.1	-370.1	-1,093.3	6.0	8.98
7,158.0	33.72	283.19	6,886.3	-367.2	-1,109.3	13.9	12.87
7,170.0	34.30	285.49	6,896.3	-365.6	-1,115.8	17.6	11.76
<b>Burkett</b>							
7,190.0	35.36	289.17	6,912.7	-362.2	-1,126.7	24.4	11.76
7,204.0	36.40	291.81	6,924.0	-359.3	-1,134.4	29.6	13.31
<b>Tully</b>							
7,222.0	37.81	295.02	6,938.4	-355.0	-1,144.4	36.9	13.31
7,252.0	41.07	299.25	6,961.6	-346.3	-1,161.3	50.7	14.08
7,284.0	44.41	303.32	6,985.1	-335.0	-1,179.8	67.4	13.54
7,315.0	46.82	307.33	7,006.8	-322.2	-1,197.9	85.4	12.08
7,346.0	49.50	311.82	7,027.4	-307.4	-1,215.7	105.1	13.82
7,378.0	52.33	316.58	7,047.6	-290.1	-1,233.4	127.3	14.54
7,409.0	55.22	320.84	7,065.9	-271.3	-1,249.9	150.4	14.48
7,439.0	58.07	324.06	7,082.4	-251.5	-1,265.2	174.1	13.06
7,472.0	61.73	326.90	7,099.0	-227.9	-1,281.3	201.6	13.36
7,503.0	65.25	329.19	7,112.8	-204.4	-1,296.0	228.7	13.14
7,505.0	65.42	329.11	7,113.7	-202.8	-1,297.0	230.5	9.16
<b>Marcellus</b>							
7,532.0	67.72	328.12	7,124.4	-181.7	-1,309.9	254.6	9.16
7,566.0	73.00	332.41	7,135.8	-153.9	-1,325.7	286.1	19.55
7,597.0	77.03	332.88	7,143.8	-127.3	-1,339.5	315.7	13.08
7,628.0	80.72	334.46	7,149.8	-100.0	-1,353.0	345.9	12.91

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7,660.0	84.33	336.39	7,154.0	-71.2	-1,366.1	377.5	12.77
7,717.0	89.25	339.12	7,157.2	-18.5	-1,387.7	434.2	9.87
7,785.0	90.27	339.36	7,157.5	45.0	-1,411.8	502.2	1.54
7,879.0	90.03	341.90	7,157.2	133.7	-1,443.0	596.2	2.71
7,974.0	89.16	337.84	7,157.9	222.9	-1,475.6	691.2	4.37
8,067.0	89.02	340.57	7,159.4	309.8	-1,508.6	784.1	2.94
8,161.0	89.30	343.41	7,160.7	399.2	-1,537.7	878.1	3.04
8,255.0	91.51	341.80	7,160.1	488.9	-1,565.8	972.0	2.91
8,349.0	90.81	341.06	7,158.2	578.0	-1,595.7	1,066.0	1.08
8,444.0	91.01	342.97	7,156.7	668.3	-1,625.1	1,161.0	2.02
8,537.0	90.54	341.60	7,155.4	756.9	-1,653.4	1,253.9	1.56
8,631.0	90.20	344.16	7,154.8	846.7	-1,681.0	1,347.9	2.75
8,725.0	88.83	340.95	7,155.6	936.4	-1,709.2	1,441.8	3.71
8,819.0	89.87	338.61	7,156.7	1,024.6	-1,741.7	1,535.8	2.72
8,913.0	88.59	337.49	7,157.9	1,111.7	-1,776.8	1,629.6	1.81
9,007.0	88.55	341.89	7,160.3	1,199.8	-1,809.4	1,723.6	4.68
9,101.0	89.66	339.37	7,161.7	1,288.5	-1,840.6	1,817.5	2.93
9,192.0	89.19	341.31	7,162.6	1,374.2	-1,871.2	1,908.5	2.19
9,283.0	88.52	345.65	7,164.5	1,461.4	-1,897.1	1,999.4	4.82
9,375.0	87.91	343.26	7,167.3	1,550.0	-1,921.7	2,091.2	2.68
9,466.0	88.99	344.46	7,169.8	1,637.4	-1,947.0	2,182.0	1.77
9,557.0	88.39	344.31	7,171.9	1,725.0	-1,971.5	2,272.8	0.68
9,648.0	87.81	340.82	7,174.9	1,811.7	-1,998.7	2,363.8	3.89
9,739.0	87.05	337.18	7,179.0	1,896.6	-2,031.3	2,454.6	4.08
9,830.0	87.01	337.45	7,183.7	1,980.4	-2,066.4	2,545.3	0.30
9,922.0	87.85	341.78	7,187.8	2,066.6	-2,098.4	2,637.1	4.79
10,013.0	87.31	342.48	7,191.7	2,153.1	-2,126.3	2,728.0	0.97
10,104.0	87.95	341.07	7,195.4	2,239.5	-2,154.7	2,818.9	1.70
10,195.0	89.16	342.75	7,197.7	2,325.9	-2,182.9	2,909.9	2.27
10,289.0	88.52	338.53	7,199.6	2,414.6	-2,214.1	3,003.9	4.54
10,383.0	89.56	342.34	7,201.2	2,503.1	-2,245.6	3,097.8	4.20
10,477.0	87.68	337.14	7,203.5	2,591.2	-2,278.1	3,191.7	5.88
10,571.0	89.23	337.80	7,206.0	2,678.0	-2,314.1	3,285.5	1.79
10,665.0	88.59	335.45	7,207.8	2,764.3	-2,351.4	3,379.2	2.59
10,761.0	88.55	337.89	7,210.2	2,852.4	-2,389.4	3,474.9	2.54
10,854.0	87.25	338.58	7,213.6	2,938.7	-2,423.8	3,567.7	1.58
10,949.0	88.89	346.18	7,216.8	3,029.1	-2,452.5	3,662.6	8.18
11,043.0	89.09	344.81	7,218.4	3,120.1	-2,476.1	3,756.3	1.47
11,138.0	87.85	343.21	7,221.0	3,211.4	-2,502.2	3,851.1	2.13
11,231.0	87.92	342.17	7,224.4	3,300.1	-2,529.9	3,944.0	1.12
11,325.0	88.05	340.50	7,227.7	3,389.1	-2,560.0	4,037.9	1.78
11,419.0	88.22	341.03	7,230.8	3,477.8	-2,590.9	4,131.9	0.59
11,514.0	87.79	339.97	7,234.1	3,567.3	-2,622.6	4,226.8	1.20
11,608.0	88.42	341.21	7,237.2	3,655.9	-2,653.8	4,320.8	1.48

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**WV GEOLOGICAL SURVEY  
MORGANTOWN, WV**

EOW Completion Report



**Company:** Antero Resources  
**Project:** Harrison County West Virginia  
**Site:** Winnie/Dawson/Tenmile Pad  
**Well:** Ten Mile Unit 1H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Ten Mile Unit 1H  
**TVD Reference:** HALL Ten Mile Unit 1H 1278' GL + 13' RKB @ 12  
**MD Reference:** HALL Ten Mile Unit 1H 1278' GL + 13' RKB @ 12  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Oklahoma District

**Survey**

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
11,702.0	89.63	341.55	7,238.8	3,745.0	-2,683.8	4,414.8	1.34
11,797.0	89.33	340.51	7,239.7	3,834.9	-2,714.7	4,509.7	1.14
11,891.0	87.98	340.80	7,241.9	3,923.5	-2,745.8	4,603.7	1.47
11,985.0	88.66	341.61	7,244.6	4,012.5	-2,776.1	4,697.7	1.12
12,079.0	89.56	340.80	7,246.1	4,101.4	-2,806.4	4,791.7	1.29
12,172.0	89.56	341.59	7,246.8	4,189.5	-2,836.4	4,884.7	0.85
12,267.0	88.39	340.87	7,248.5	4,279.4	-2,866.9	4,979.6	1.45
12,361.0	89.43	341.66	7,250.3	4,368.4	-2,897.1	5,073.6	1.39
12,454.0	89.33	341.70	7,251.3	4,456.7	-2,926.3	5,166.6	0.12
12,548.0	87.55	338.79	7,253.8	4,545.1	-2,958.1	5,260.5	3.63
12,642.0	88.72	341.79	7,256.9	4,633.5	-2,989.8	5,354.5	3.42
12,737.0	89.73	343.16	7,258.2	4,724.1	-3,018.4	5,449.4	1.79
12,831.0	89.77	343.65	7,258.6	4,814.2	-3,045.2	5,543.4	0.52
12,925.0	89.09	344.15	7,259.5	4,904.5	-3,071.3	5,637.2	0.90
13,019.0	88.69	343.62	7,261.4	4,994.8	-3,097.4	5,731.1	0.71
13,113.0	89.70	340.36	7,262.7	5,084.2	-3,126.4	5,825.1	3.63
13,207.0	89.97	340.27	7,263.0	5,172.7	-3,158.1	5,919.0	0.30
13,302.0	89.50	339.00	7,263.4	5,261.7	-3,191.2	6,014.0	1.43
13,396.0	89.93	341.13	7,263.9	5,350.1	-3,223.2	6,108.0	2.31
13,490.0	89.36	340.09	7,264.4	5,438.8	-3,254.4	6,202.0	1.26
13,584.0	89.60	339.71	7,265.3	5,527.0	-3,286.7	6,296.0	0.48
13,679.0	89.87	339.91	7,265.7	5,616.2	-3,319.5	6,390.9	0.35
13,773.0	88.99	337.94	7,266.7	5,703.9	-3,353.3	6,484.9	2.30
13,867.0	89.87	340.02	7,267.6	5,791.6	-3,387.0	6,578.8	2.40
13,961.0	88.79	340.51	7,268.7	5,880.1	-3,418.8	6,672.8	1.26
14,055.0	88.66	340.04	7,270.8	5,968.6	-3,450.5	6,766.8	0.52
14,149.0	89.43	342.79	7,272.4	6,057.6	-3,480.4	6,860.7	3.04
14,242.0	89.36	343.66	7,273.3	6,146.7	-3,507.3	6,953.7	0.94
14,336.0	89.09	341.33	7,274.6	6,236.3	-3,535.5	7,047.6	2.50
14,430.0	89.30	340.54	7,275.9	6,325.1	-3,566.2	7,141.6	0.87
14,524.0	89.76	341.30	7,276.7	6,414.0	-3,597.0	7,235.6	0.95
14,618.0	89.40	339.82	7,277.4	6,502.6	-3,628.2	7,329.6	1.62
14,712.0	89.56	340.90	7,278.2	6,591.1	-3,659.8	7,423.6	1.16
14,806.0	90.77	341.67	7,278.0	6,680.2	-3,690.0	7,517.6	1.53
14,901.0	90.17	341.43	7,277.2	6,770.3	-3,720.1	7,612.6	0.68
14,995.0	90.44	341.73	7,276.7	6,859.5	-3,749.8	7,706.6	0.43
15,089.0	89.80	340.32	7,276.5	6,948.4	-3,780.3	7,800.6	1.65
15,182.0	91.04	341.95	7,275.8	7,036.4	-3,810.4	7,893.5	2.20
15,277.0	90.57	340.94	7,274.5	7,126.4	-3,840.6	7,988.5	1.17
15,372.0	90.20	340.59	7,273.8	7,216.1	-3,871.9	8,083.5	0.54
15,466.0	89.60	340.13	7,274.0	7,304.6	-3,903.5	8,177.5	0.80
15,560.0	90.97	341.04	7,273.5	7,393.3	-3,934.8	8,271.5	1.75
15,654.0	90.20	340.53	7,272.6	7,482.0	-3,965.7	8,365.5	0.98
15,747.0	90.67	342.90	7,271.9	7,570.3	-3,994.9	8,458.5	2.60

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## WV GEOLOGICAL SURVEY MORGANTOWN, WV

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**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Oklahoma District

#### Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
15,841.0	90.07	341.07	7,271.3	7,659.7	-4,023.9	8,552.5	2.05
15,935.0	90.87	341.80	7,270.5	7,748.8	-4,053.9	8,646.5	1.15
15,983.0	90.40	341.75	7,270.0	7,794.4	-4,068.9	8,694.5	0.98
16,034.0	90.40	341.70	7,269.6	7,842.8	-4,084.9	8,745.5	0.10

#### Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,170.0	6,896.3	-365.6	-1,115.8	Burkett
7,204.0	6,924.0	-359.3	-1,134.4	Tully
7,505.0	7,113.7	-202.8	-1,297.0	Marcellus

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_