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WV GEOLOGICAL SURVEY
MORGANTOWN, WV

Antero Resources

Doddridge County WV

Fritz Pad: Hayden/Washington/Sheep/Hileman

Hayden Unit 1H

Sidetrack 1

Design: ST 1 As Drilled

EOW Completion Report

22 August, 2014



Scientific Drilling

JUL 27 2015



EOW Completion Report



Company: Antero Resources	Local Co-ordinate Reference: Well Hayden Unit 1H
Project: Doddridge County WV	TVD Reference: Patterson 325: 1053' GL + 24' KB @ 1077.0usft
Site: Fritz Pad: Hayden/Washington/Sheep/Hileman	MD Reference: Patterson 325: 1053' GL + 24' KB @ 1077.0usft
Well: Hayden Unit 1H	North Reference: Grid
Wellbore: Sidetrack 1	Survey Calculation Method: Minimum Curvature
Design: ST 1 As Drilled	Database: Oklahoma District

Project: Doddridge County WV, McClellan District
Map System: Universal Transverse Mercator (US Survey Fee) System Datum: Mean Sea Level
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: Zone 17N (84 W to 78 W)

Site: Fritz Pad: Hayden/Washington/Sheep/Hileman			
Site Position:	Northing: 14,247,222.50 usft	Latitude:	39° 14' 2.856 N
From: Map	Easting: 1,685,696.44 usft	Longitude:	80° 50' 24.332 W
Position Uncertainty: 2.0 usft	Slot Radius: 13-3/16"	Grid Convergence:	0.10 °

Well: Hayden Unit 1H, Marcellus			
Well Position	+N/-S 0.0 usft	Northing: 14,247,222.50 usft	Latitude: 39° 14' 2.856 N
	+E/-W 0.0 usft	Easting: 1,685,696.44 usft	Longitude: 80° 50' 24.332 W
Position Uncertainty	0.0 usft	Wellhead Elevation: 1,077.0 usft	Ground Level: 1,053.0 usft

Wellbore: Sidetrack 1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	8/9/2014	-8.43	66.82	52,219

Design: ST 1 As Drilled

Audit Notes:			
Version: 1.0	Phase: ACTUAL	Tie On Depth:	7,509.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	334.55

Survey Program		Date			
From (usft)	To (usft)	8/22/2014	Survey (Wellbore)	Tool Name	Description
113.0	5,881.5		Survey #4 Def Gyro Final (Original Wellpa	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
5,881.5	7,509.0		Survey #5 MWD (Original Wellpath)	MWD SDI	MWD - Standard ver 1.0.1
7,606.0	15,327.0		Survey #1 MWD (Sidetrack 1)	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
113.0	0.44	67.46	113.0	0.2	0.4	0.0	0.39
213.0	1.00	91.44	213.0	0.3	1.6	-0.4	0.62
313.0	0.84	101.62	313.0	0.1	3.2	-1.3	0.23
413.0	1.78	355.90	413.0	1.5	3.8	-0.3	2.16
513.0	5.33	352.94	512.8	7.7	3.1	5.6	3.55
613.0	5.54	352.12	612.3	17.1	1.9	14.6	0.22
713.0	5.38	336.38	711.9	26.2	-0.6	23.9	1.50
813.0	0.89	248.64	811.7	30.2	-3.2	28.6	5.42
913.0	0.98	223.84	911.7	29.3	-4.5	28.4	0.41

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Survey

MD (usft)	Inc (")	Azi (azimuth) (")	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg ("/100usft)
1,013.0	0.74	216.10	1,011.7	28.1	-5.5	27.8	0.27
1,113.0	0.76	213.50	1,111.7	27.1	-6.3	27.1	0.04
1,213.0	0.68	215.89	1,211.7	26.0	-7.0	26.5	0.09
1,313.0	0.65	202.34	1,311.7	25.0	-7.5	25.8	0.16
1,413.0	0.75	194.23	1,411.6	23.9	-7.9	24.9	0.14
1,513.0	1.01	183.24	1,511.6	22.3	-8.1	23.7	0.31
1,613.0	1.06	170.39	1,611.6	20.6	-8.0	22.0	0.24
1,713.0	1.14	158.17	1,711.6	18.7	-7.5	20.1	0.25
1,813.0	1.19	157.59	1,811.6	16.8	-6.7	18.1	0.05
1,913.0	1.20	157.59	1,911.6	14.9	-5.9	16.0	0.01
2,013.0	1.15	153.68	2,011.5	13.0	-5.1	14.0	0.09
2,113.0	0.96	142.66	2,111.5	11.5	-4.1	12.1	0.28
2,213.0	0.84	140.12	2,211.5	10.2	-3.2	10.6	0.13
2,313.0	0.76	142.32	2,311.5	9.2	-2.3	9.3	0.09
2,413.0	0.80	141.49	2,411.5	8.1	-1.5	7.9	0.04
2,513.0	0.67	139.23	2,511.5	7.1	-0.6	6.7	0.13
2,613.0	0.63	124.27	2,611.5	6.3	0.2	5.6	0.17
2,713.0	0.70	130.06	2,711.5	5.6	1.1	4.6	0.10
2,813.0	0.88	128.80	2,811.5	4.8	2.2	3.4	0.18
2,913.0	0.77	123.09	2,911.4	3.9	3.3	2.1	0.14
3,013.0	0.76	129.32	3,011.4	3.1	4.4	0.9	0.08
3,113.0	0.91	128.69	3,111.4	2.2	5.6	-0.4	0.15
3,213.0	0.96	127.03	3,211.4	1.2	6.8	-1.8	0.06
3,313.0	1.01	117.85	3,311.4	0.3	8.3	-3.3	0.17
3,413.0	0.85	125.13	3,411.4	-0.5	9.7	-4.7	0.20
3,513.0	0.84	134.44	3,511.4	-1.5	10.8	-6.0	0.14
3,613.0	0.93	129.71	3,611.4	-2.5	12.0	-7.4	0.12
3,713.0	0.96	122.63	3,711.4	-3.5	13.3	-8.9	0.12
3,813.0	1.89	93.83	3,811.3	-4.0	15.6	-10.4	1.15
3,913.0	6.44	69.09	3,911.0	-2.2	22.5	-11.6	4.79
4,013.0	7.89	65.13	4,010.3	2.7	34.0	-12.1	1.53
4,113.0	10.72	78.24	4,108.9	7.5	49.3	-14.4	3.52
4,213.0	13.30	89.18	4,206.8	9.6	69.9	-21.4	3.43
4,313.0	13.53	89.02	4,304.0	9.9	93.1	-31.0	0.23
4,413.0	14.76	89.58	4,401.0	10.2	117.6	-41.3	1.24
4,513.0	17.40	91.19	4,497.1	10.0	145.3	-53.4	2.68
4,613.0	20.04	90.43	4,591.8	9.6	177.4	-67.6	2.65
4,713.0	20.28	91.26	4,685.6	9.1	211.8	-82.8	0.37
4,813.0	21.27	90.86	4,779.1	8.4	247.3	-98.7	1.00
4,913.0	22.49	90.32	4,871.9	8.0	284.5	-115.0	1.24
5,013.0	24.01	87.13	4,963.8	9.0	324.0	-131.1	1.97
5,113.0	26.60	91.02	5,054.2	9.6	366.7	-148.9	3.08
5,213.0	26.49	93.72	5,143.7	7.7	411.3	-169.8	1.21
5,313.0	27.78	91.91	5,232.7	5.5	456.9	-191.4	1.53
5,413.0	27.86	89.06	5,321.1	5.1	503.6	-211.8	1.33

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Well: Hayden Unit 1H
Wellbore: Sidetrack 1
Design: ST 1 As Drilled

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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,513.0	26.25	89.14	5,410.2	5.8	549.0	-230.7	1.61
5,613.0	24.59	90.20	5,500.5	6.1	591.9	-248.9	1.72
5,713.0	24.79	89.47	5,591.3	6.2	633.7	-266.7	0.36
5,813.0	24.21	86.90	5,682.3	7.5	675.2	-283.4	1.21
5,881.5	23.53	84.58	5,745.0	9.6	702.8	-293.4	1.69
5,976.0	23.36	82.35	5,831.7	13.8	740.1	-305.6	0.96
6,038.0	22.62	81.35	5,888.8	17.3	764.1	-312.8	1.35
6,132.0	21.22	80.23	5,976.0	22.9	798.8	-322.6	1.55
6,164.0	21.66	77.58	6,005.8	25.1	810.2	-325.5	3.32
6,195.0	22.18	76.04	6,034.5	27.8	821.5	-327.9	2.50
6,227.0	24.35	73.10	6,063.9	31.1	833.7	-330.1	7.69
6,258.0	27.49	70.91	6,091.8	35.3	846.6	-331.9	10.59
6,289.0	30.30	68.58	6,118.9	40.5	860.6	-333.2	9.76
6,321.0	31.88	66.24	6,146.3	46.9	875.8	-334.0	6.22
6,352.0	32.90	59.75	6,172.5	54.4	890.6	-333.6	11.68
6,384.0	33.00	52.01	6,199.4	64.2	905.0	-330.9	13.15
6,415.0	33.87	45.62	6,225.3	75.4	917.8	-326.3	11.69
6,446.0	34.55	39.35	6,250.9	88.3	929.6	-319.8	11.58
6,478.0	35.54	33.20	6,277.1	103.1	940.4	-311.1	11.46
6,509.0	36.17	28.04	6,302.2	118.7	949.7	-300.9	9.96
6,541.0	37.76	21.62	6,327.8	136.1	957.7	-288.6	13.04
6,572.0	39.55	15.96	6,352.0	154.5	963.9	-274.8	12.78
6,604.0	40.93	11.27	6,376.5	174.5	968.8	-258.7	10.40
6,635.0	43.11	5.67	6,399.5	195.0	971.8	-241.5	13.98
6,666.0	44.59	2.71	6,421.9	216.5	973.4	-222.8	8.16
6,698.0	45.71	0.30	6,444.4	239.1	974.0	-202.6	6.38
6,729.0	48.67	357.11	6,465.5	261.9	973.4	-181.9	12.17
6,761.0	52.38	356.68	6,485.8	286.5	972.1	-159.0	11.64
6,792.0	55.78	355.91	6,504.0	311.6	970.5	-135.7	11.15
6,823.0	59.82	354.85	6,520.5	337.7	968.4	-111.2	13.35
6,855.0	63.39	353.08	6,535.8	365.7	965.4	-84.6	12.17
6,886.0	66.60	351.37	6,548.9	393.5	961.6	-57.9	11.50
6,917.0	70.78	349.77	6,560.1	422.0	956.8	-30.1	14.32
6,949.0	74.48	349.45	6,569.7	452.0	951.3	-0.6	11.60
6,980.0	78.48	348.90	6,576.9	481.6	945.7	28.5	13.02
7,012.0	82.53	347.54	6,582.2	512.5	939.2	59.2	13.33
7,043.0	85.53	343.78	6,585.4	542.4	931.6	89.4	15.46
7,074.0	86.88	339.97	6,587.5	571.8	922.0	120.1	13.01
7,106.0	86.95	334.21	6,589.2	601.2	909.5	152.0	17.98
7,132.0	87.95	330.19	6,590.4	624.2	897.4	178.0	15.92
7,227.0	88.39	328.68	6,593.4	705.9	849.1	272.5	1.65
7,321.0	85.06	328.21	6,598.8	785.9	800.0	365.8	3.58
7,415.0	85.87	332.72	6,606.2	867.4	753.9	459.3	4.86
7,509.0	88.59	329.45	6,610.7	949.6	708.5	553.0	4.52

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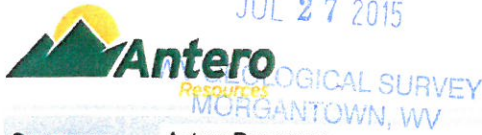


Company:	Antero Resources	Local Co-ordinate Reference:	Well Hayden Unit 1H
Project:	Doddridge County WV	TVD Reference:	Patterson 325: 1053' GL + 24' KB @ 1077.0usft
Site:	Fritz Pad: Hayden/Washington/Sheep/Hileman	MD Reference:	Patterson 325: 1053' GL + 24' KB @ 1077.0usft
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Wellbore:	Sidetrack 1	Survey Calculation Method:	Minimum Curvature
Design:	ST 1 As Drilled	Database:	Oklahoma District

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7,606.0	87.79	329.70	6,613.8	1,033.2	659.4	649.6	0.86
7,700.0	88.49	330.80	6,616.9	1,114.7	612.8	743.2	1.39
7,794.0	89.83	330.83	6,618.2	1,196.8	566.9	837.0	1.43
7,888.0	87.18	331.45	6,620.7	1,279.1	521.6	930.8	2.90
7,983.0	90.77	334.90	6,622.4	1,363.8	478.7	1,025.7	5.24
8,077.0	89.90	336.72	6,621.8	1,449.6	440.2	1,119.7	2.15
8,171.0	90.97	335.32	6,621.1	1,535.4	402.0	1,213.7	1.87
8,265.0	89.66	335.96	6,620.6	1,621.1	363.2	1,307.7	1.55
8,360.0	86.44	334.20	6,623.8	1,707.2	323.2	1,402.6	3.86
8,454.0	87.35	334.96	6,628.9	1,791.9	283.0	1,496.4	1.26
8,548.0	88.42	333.99	6,632.4	1,876.7	242.5	1,590.4	1.54
8,642.0	88.02	333.31	6,635.3	1,960.9	200.8	1,684.3	0.84
8,736.0	88.25	336.22	6,638.4	2,045.9	160.7	1,778.3	3.10
8,830.0	89.00	335.89	6,640.6	2,131.7	122.6	1,872.2	0.87
8,925.0	89.97	333.71	6,641.5	2,217.7	82.1	1,967.2	2.51
9,018.0	88.12	334.25	6,643.0	2,301.2	41.4	2,060.2	2.07
9,113.0	88.52	336.38	6,645.8	2,387.5	1.7	2,155.1	2.28
9,207.0	89.60	335.65	6,647.4	2,473.4	-36.5	2,249.1	1.39
9,301.0	89.73	336.78	6,647.9	2,559.4	-74.4	2,343.0	1.21
9,395.0	88.76	337.44	6,649.1	2,646.0	-111.0	2,436.9	1.25
9,489.0	88.89	336.74	6,651.1	2,732.6	-147.6	2,530.8	0.76
9,583.0	87.85	336.32	6,653.8	2,818.8	-185.0	2,624.7	1.19
9,677.0	89.46	336.44	6,656.0	2,904.8	-222.6	2,718.6	1.72
9,772.0	88.89	337.26	6,657.3	2,992.2	-260.0	2,813.5	1.05
9,866.0	90.40	338.18	6,657.9	3,079.2	-295.6	2,907.4	1.88
9,960.0	90.60	335.60	6,657.1	3,165.6	-332.5	3,001.3	2.75
10,055.0	89.60	334.01	6,656.9	3,251.6	-372.9	3,096.3	1.98
10,149.0	89.40	331.74	6,657.7	3,335.2	-415.8	3,190.3	2.42
10,241.0	89.26	331.57	6,658.8	3,416.2	-459.5	3,282.1	0.24
10,333.0	88.93	332.70	6,660.3	3,497.5	-502.5	3,374.0	1.28
10,425.0	88.86	336.50	6,662.0	3,580.6	-541.9	3,466.0	4.13
10,516.0	90.17	336.98	6,662.8	3,664.2	-577.8	3,556.9	1.53
10,607.0	89.83	338.89	6,662.8	3,748.5	-612.0	3,647.8	2.13
10,699.0	89.46	337.36	6,663.4	3,833.9	-646.3	3,739.6	1.71
10,791.0	90.34	336.43	6,663.5	3,918.5	-682.4	3,831.5	1.39
10,882.0	90.60	334.71	6,662.8	4,001.4	-720.0	3,922.5	1.91
10,972.0	90.30	330.99	6,662.1	4,081.4	-761.1	4,012.4	4.15
11,064.0	90.97	329.49	6,661.1	4,161.3	-806.8	4,104.2	1.79
11,155.0	90.54	329.68	6,659.9	4,239.7	-852.8	4,194.8	0.52
11,246.0	90.44	331.00	6,659.1	4,318.8	-897.9	4,285.6	1.45
11,341.0	89.87	333.32	6,658.8	4,402.8	-942.2	4,380.5	2.51
11,436.0	89.30	335.32	6,659.5	4,488.4	-983.4	4,475.5	2.19
11,531.0	89.93	335.17	6,660.2	4,574.7	-1,023.2	4,570.4	0.68
11,624.0	87.31	334.73	6,662.4	4,658.9	-1,062.5	4,663.4	2.86

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11,719.0	87.34	333.60	6,666.8	4,744.3	-1,103.9	4,758.3	1.19
11,814.0	88.35	332.92	6,670.4	4,829.1	-1,146.6	4,853.2	1.28
11,909.0	88.55	329.70	6,673.0	4,912.4	-1,192.2	4,948.0	3.39
12,003.0	87.78	331.13	6,676.0	4,994.1	-1,238.6	5,041.7	1.73
12,097.0	89.97	335.70	6,677.8	5,078.1	-1,280.6	5,135.6	5.39
12,193.0	91.35	336.27	6,676.7	5,165.8	-1,319.7	5,231.6	1.56
12,287.0	90.33	335.83	6,675.4	5,251.7	-1,357.8	5,325.6	1.18
12,381.0	87.61	334.17	6,677.0	5,336.9	-1,397.5	5,419.5	3.39
12,476.0	87.75	333.17	6,680.9	5,421.9	-1,439.6	5,514.4	1.06
12,570.0	87.81	334.31	6,684.5	5,506.2	-1,481.2	5,608.4	1.21
12,664.0	89.56	335.65	6,686.7	5,591.3	-1,520.9	5,702.3	2.34
12,758.0	89.66	333.61	6,687.3	5,676.3	-1,561.2	5,796.3	2.17
12,852.0	89.23	334.29	6,688.2	5,760.7	-1,602.5	5,890.3	0.86
12,946.0	89.60	335.93	6,689.2	5,846.0	-1,642.0	5,984.3	1.79
13,040.0	89.87	335.93	6,689.6	5,931.8	-1,680.4	6,078.3	0.29
13,134.0	90.47	333.98	6,689.4	6,016.9	-1,720.2	6,172.3	2.17
13,228.0	89.83	334.33	6,689.1	6,101.5	-1,761.2	6,266.3	0.78
13,322.0	89.09	335.92	6,690.0	6,186.8	-1,800.7	6,360.2	1.87
13,416.0	90.71	334.17	6,690.2	6,272.0	-1,840.3	6,454.2	2.54
13,510.0	89.70	335.60	6,689.8	6,357.1	-1,880.2	6,548.2	1.86
13,605.0	90.61	333.92	6,689.6	6,443.1	-1,920.8	6,643.2	2.01
13,699.0	89.43	333.72	6,689.5	6,527.4	-1,962.2	6,737.2	1.27
13,793.0	90.64	334.17	6,689.5	6,611.9	-2,003.5	6,831.2	1.37
13,887.0	90.64	335.61	6,688.4	6,697.0	-2,043.4	6,925.2	1.53
13,981.0	90.57	335.94	6,687.4	6,782.7	-2,082.0	7,019.2	0.36
14,075.0	88.92	336.32	6,687.8	6,868.6	-2,120.0	7,113.1	1.80
14,169.0	90.10	335.63	6,688.7	6,954.5	-2,158.3	7,207.1	1.45
14,263.0	89.09	336.98	6,689.3	7,040.6	-2,196.0	7,301.0	1.79
14,357.0	89.43	336.93	6,690.5	7,127.1	-2,232.8	7,395.0	0.37
14,451.0	89.80	336.79	6,691.2	7,213.5	-2,269.8	7,488.9	0.42
14,545.0	91.53	335.53	6,690.1	7,299.5	-2,307.8	7,582.8	2.28
14,599.0	90.26	334.81	6,689.2	7,385.5	-2,330.4	7,636.8	2.70
14,640.0	89.83	336.66	6,689.2	7,385.8	-2,347.3	7,677.8	4.63
14,734.0	91.48	338.27	6,688.1	7,472.7	-2,383.3	7,771.7	2.45
14,828.0	91.07	336.02	6,686.0	7,559.2	-2,419.8	7,865.5	2.43
14,923.0	92.35	336.33	6,683.2	7,646.1	-2,458.2	7,960.5	1.39
15,017.0	90.54	334.98	6,680.8	7,731.7	-2,496.9	8,054.4	2.40
15,111.0	91.11	332.39	6,679.5	7,816.0	-2,538.6	8,148.4	2.82
15,205.0	91.85	330.84	6,677.0	7,898.6	-2,583.2	8,242.2	1.83
15,273.0	92.49	330.62	6,674.5	7,957.9	-2,616.5	8,310.0	1.00
15,327.0	91.55	331.52	6,672.6	8,005.1	-2,642.6	8,363.9	2.41

Checked By: _____ Approved By: _____ Date: _____