Antero Resources

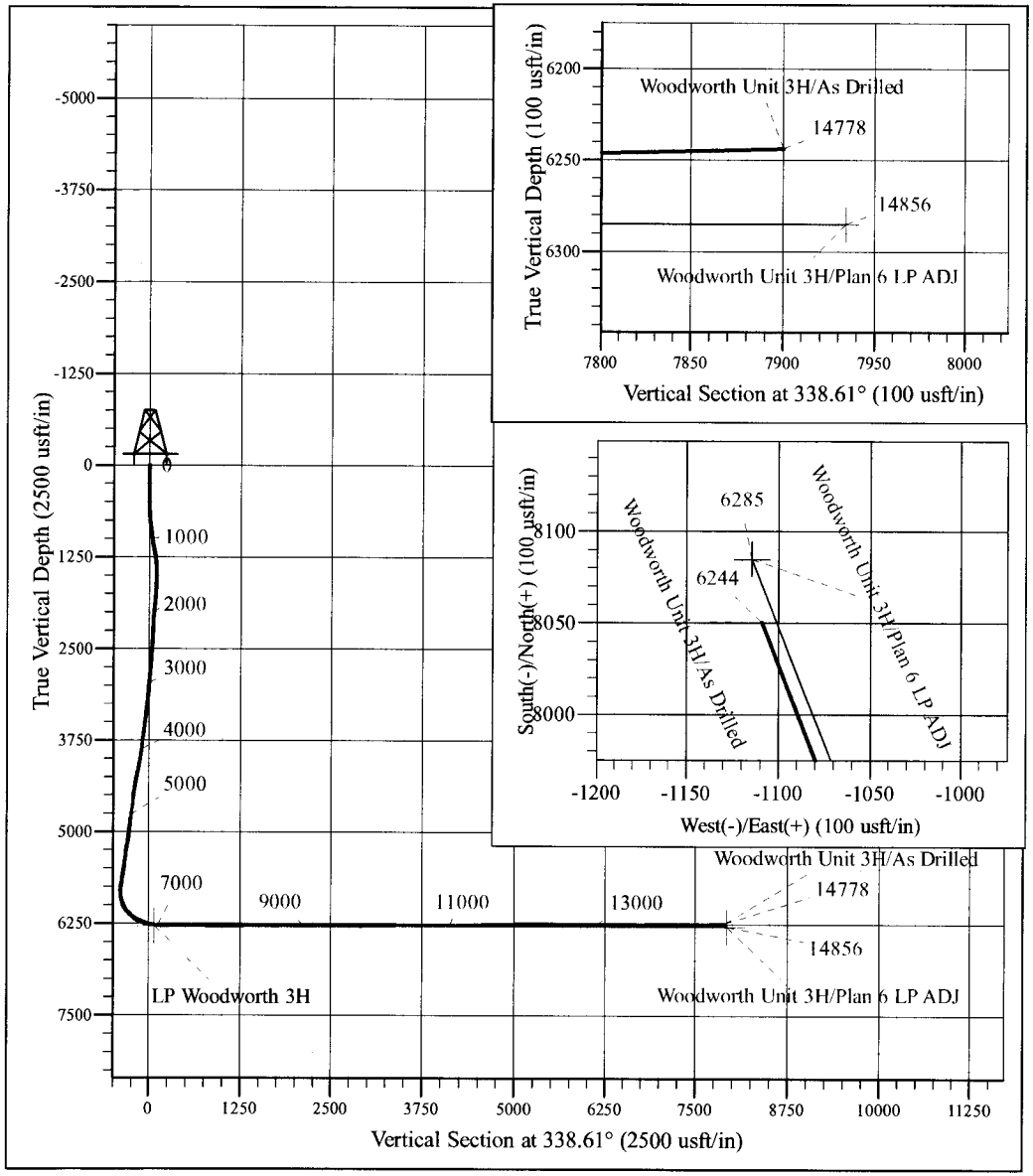
Hartley East Pad:Freeland/Plum Run/Woodworth
Woodworth Unit 3H
Plan 6 LP ADJ
Precision 522: GL 1021' + KB 18' @ 1039.0usft
Tyler County WV

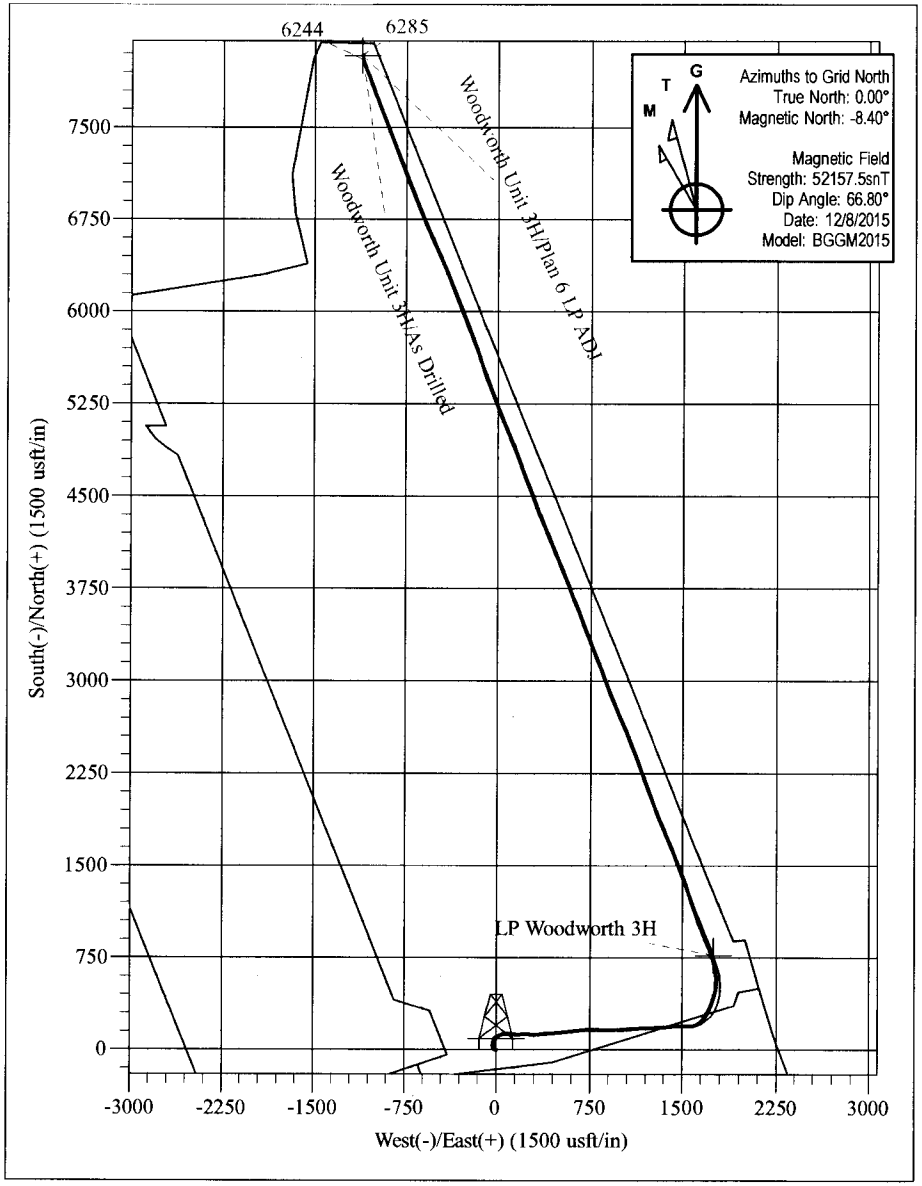
PROJECT DETAILS:
Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: Zone 17N (84 W to 78 W)
System Datum: Mean Sea Level

Scientific Drilling

WELL DETAILS: Woodworth Unit 3H SHL

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14294946.23	1642336.10	39° 21' 55.127 N	80° 59' 35.552 W





Woodworth Unit 3H
Approx. BHL
39° 23' 14.727 N80° 59' 49.676 W

Shane Rhodes
15:00, December 28 2015

Scientific Drilling International
124 Vista Drive
Charleroi, PA 15022

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Woodworth Unit 3H
Project:	Tyler County WV	**TVD Reference:**	Precision 522: GL 1021' + KB 18' @ 1039.0usft
Site:	Hartley East Pad:Freeland/Plum Run/Woodworth	**MD Reference:**	Precision 522: GL 1021' + KB 18' @ 1039.0usft
Well:	Woodworth Unit 3H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Antero NE

Project	Tyler County WV, Tyler Co West Virginia		
Map System:	Universal Transverse Mercator (US Survey Feet)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Zone 17N (84 W to 78 W)		

Site	Hartley East Pad:Freeland/Plum Run/Woodworth				
Site Position:		**Northing:**	14,294,927.15 usft	**Latitude:**	39° 21' 54.939 N
From:	Map	**Easting:**	1,642,331.42 usft	**Longitude:**	80° 59' 35.611 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.00 °

Well	Woodworth Unit 3H, Marcellus						
Well Position	**+N/-S**	0.0 usft	**Northing:**	14,294,946.23 usft	**Latitude:**	39° 21' 55.127 N
	+E/-W	0.0 usft	**Easting:**	1,642,336.09 usft	**Longitude:**	80° 59' 35.552 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**	1,039.0 usft	**Ground Level:**	1,021.0 usft

Wellbore Original Wellpath

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	5/19/2015	-8.36	66.88	52,204
	BGGM2015	12/8/2015	-8.40	66.80	52,157

Design	As Drilled				
Audit Notes:					
Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	338.61

Survey Program **Date** 12/28/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
105.5	5,135.3	Survey #6 Final Gyro (Original Wellpath)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
5,350.0	14,778.0	Survey #7 Def Final MWD (Original Wellpa	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
105.5	0.06	339.90	105.5	0.1	0.0	0.1	0.06	0.06	0.00
128.9	0.02	64.42	128.9	0.1	0.0	0.1	0.26	-0.17	360.58
153.4	0.06	248.00	153.4	0.1	0.0	0.1	0.33	0.16	-721.26
178.2	0.04	153.36	178.2	0.0	0.0	0.1	0.30	-0.08	-381.46
204.5	0.08	226.44	204.5	0.0	0.0	0.0	0.30	0.15	277.66
229.2	0.20	274.70	229.2	0.0	-0.1	0.1	0.64	0.49	195.78
253.8	0.13	290.00	253.8	0.0	-0.2	0.1	0.33	-0.28	62.20

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Well:	Woodworth Unit 3H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Antero NE

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)
278.2	0.07	261.10	278.2	0.0	-0.2	0.1	0.31	-0.25	-118.25
304.8	0.38	301.26	304.8	0.1	-0.3	0.2	1.24	1.16	150.81
329.3	0.36	300.06	329.3	0.2	-0.4	0.3	0.09	-0.08	-4.91
354.7	0.35	296.26	354.7	0.2	-0.6	0.4	0.10	-0.04	-14.93
379.3	0.36	250.93	379.3	0.2	-0.7	0.5	1.11	0.04	-184.49
404.8	0.24	155.89	404.8	0.2	-0.8	0.4	1.76	-0.47	-372.12
429.2	0.41	177.59	429.2	0.0	-0.7	0.3	0.85	0.70	89.23
453.9	0.42	185.18	453.9	-0.1	-0.8	0.1	0.23	0.04	30.70
478.5	0.57	235.85	478.5	-0.3	-0.9	0.0	1.80	0.61	205.47
504.7	1.02	258.47	504.7	-0.4	-1.2	0.0	2.07	1.72	86.57
528.4	1.59	263.93	528.4	-0.5	-1.7	0.2	2.45	2.40	22.97
554.9	2.21	269.39	554.8	-0.5	-2.6	0.4	2.44	2.35	20.67
579.1	2.91	275.75	579.1	-0.5	-3.7	0.9	3.11	2.89	26.22
603.9	3.22	277.63	603.8	-0.3	-5.0	1.5	1.31	1.25	7.58
628.5	3.65	284.72	628.4	0.0	-6.4	2.3	2.46	1.75	28.86
654.3	4.37	294.93	654.1	0.6	-8.1	3.5	3.91	2.79	39.50
679.2	5.00	302.15	678.9	1.6	-9.9	5.1	3.47	2.54	29.08
703.7	5.38	307.56	703.3	2.8	-11.7	6.9	2.53	1.55	22.07
728.5	5.41	308.13	728.0	4.3	-13.6	8.9	0.25	0.12	2.30
754.9	5.42	313.29	754.3	5.9	-15.4	11.1	1.85	0.04	19.57
779.4	5.61	316.39	778.7	7.5	-17.1	13.3	1.44	0.77	12.63
804.1	5.74	327.34	803.2	9.5	-18.6	15.6	4.42	0.53	44.42
828.6	6.17	333.18	827.6	11.7	-19.9	18.1	3.03	1.75	23.81
854.5	6.62	338.55	853.4	14.3	-21.0	21.0	2.88	1.73	20.69
878.5	7.23	342.10	877.2	17.0	-22.0	23.9	3.10	2.54	14.79
904.4	7.16	344.61	902.9	20.1	-22.9	27.1	1.25	-0.27	9.71
928.7	7.44	351.67	927.0	23.1	-23.6	30.1	3.87	1.15	29.07
954.5	7.98	356.41	952.6	26.6	-23.9	33.5	3.23	2.09	18.34
978.5	8.17	356.92	976.3	29.9	-24.1	36.7	0.85	0.79	2.13
1,004.0	8.62	357.51	1,001.6	33.7	-24.3	40.2	1.79	1.76	2.31
1,028.6	9.72	1.74	1,025.8	37.6	-24.3	43.9	5.26	4.49	17.25
1,054.1	10.71	2.61	1,050.9	42.1	-24.1	48.0	3.92	3.88	3.41
1,080.0	11.28	4.97	1,076.3	47.0	-23.8	52.5	2.81	2.20	9.12
1,104.1	11.67	4.62	1,099.9	51.8	-23.4	56.8	1.64	1.62	-1.45
1,129.9	12.39	4.76	1,125.2	57.2	-23.0	61.6	2.79	2.79	0.54
1,154.6	12.77	6.91	1,149.3	62.5	-22.4	66.4	2.44	1.54	8.71
1,179.2	12.06	11.46	1,173.4	67.7	-21.6	71.0	4.91	-2.88	18.47
1,203.7	11.71	13.71	1,197.4	72.7	-20.5	75.1	2.37	-1.43	9.18
1,229.8	11.28	17.31	1,222.8	77.7	-19.1	79.3	3.21	-1.65	13.84
1,253.7	11.42	20.37	1,246.3	82.1	-17.6	82.9	2.58	0.58	12.78
1,279.7	11.44	27.71	1,271.8	86.8	-15.5	86.5	5.59	0.08	28.23
1,304.4	11.50	34.03	1,296.1	91.0	-13.0	89.5	5.08	0.24	25.54

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Well:	Woodworth Unit 3H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Antero NE

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)
1,328.9	11.76	40.11	1,320.0	95.0	-10.0	92.1	5.12	1.06	24.88
1,354.7	12.06	46.67	1,345.3	98.8	-6.3	94.3	5.36	1.16	25.39
1,378.9	12.40	51.50	1,369.0	102.2	-2.5	96.0	4.45	1.40	19.94
1,403.7	12.71	57.13	1,393.1	105.3	1.9	97.4	5.09	1.25	22.72
1,428.6	12.99	59.27	1,417.4	108.2	6.6	98.4	2.22	1.13	8.61
1,454.9	13.50	62.14	1,443.0	111.2	11.9	99.2	3.16	1.94	10.90
1,478.2	14.04	63.21	1,465.7	113.7	16.8	99.8	2.56	2.31	4.58
1,504.8	14.17	62.85	1,491.4	116.7	22.6	100.4	0.59	0.49	-1.36
1,529.8	14.78	65.24	1,515.7	119.4	28.2	100.9	3.41	2.43	9.54
1,553.7	14.88	69.66	1,538.8	121.7	33.8	101.0	4.75	0.42	18.49
1,578.5	14.95	71.64	1,562.7	123.9	39.8	100.8	2.08	0.28	8.00
1,604.1	15.08	72.77	1,587.5	125.9	46.2	100.4	1.25	0.51	4.41
1,629.8	14.62	78.66	1,612.3	127.5	52.5	99.6	6.14	-1.79	22.95
1,654.1	14.51	81.30	1,635.8	128.6	58.6	98.4	2.77	-0.45	10.86
1,678.9	14.67	82.86	1,659.8	129.4	64.8	96.9	1.71	0.64	6.29
1,703.7	14.38	85.97	1,683.8	130.0	70.9	95.2	3.35	-1.17	12.54
1,729.4	14.04	90.39	1,708.7	130.2	77.2	93.1	4.43	-1.33	17.23
1,753.9	13.80	90.68	1,732.5	130.2	83.1	90.9	1.02	-0.98	1.18
1,778.4	13.57	90.94	1,756.3	130.1	88.9	88.7	0.97	-0.94	1.06
1,804.7	13.34	91.19	1,781.9	130.0	95.0	86.4	0.90	-0.87	0.95
1,830.0	13.18	91.51	1,806.5	129.9	100.8	84.1	0.70	-0.63	1.27
1,854.5	12.92	91.19	1,830.4	129.7	106.4	82.0	1.10	-1.06	-1.30
1,879.1	12.70	91.15	1,854.4	129.6	111.8	79.9	0.90	-0.90	-0.16
1,904.4	12.66	90.98	1,879.0	129.5	117.4	77.8	0.22	-0.16	-0.67
1,929.0	11.85	91.35	1,903.1	129.4	122.6	75.8	3.31	-3.30	1.51
1,954.6	11.18	88.33	1,928.2	129.4	127.7	73.9	3.52	-2.62	-11.79
1,979.8	11.38	94.17	1,952.9	129.3	132.6	72.0	4.60	0.79	23.16
2,004.4	11.11	94.74	1,977.0	128.9	137.4	69.9	1.19	-1.10	2.32
2,028.6	10.84	94.31	2,000.8	128.6	142.0	67.9	1.16	-1.11	-1.77
2,053.5	10.67	94.68	2,025.2	128.2	146.6	65.9	0.74	-0.68	1.49
2,079.8	10.42	94.35	2,051.0	127.8	151.4	63.8	0.98	-0.95	-1.26
2,104.3	10.25	94.60	2,075.2	127.5	155.8	61.9	0.72	-0.69	1.02
2,128.9	10.20	93.70	2,099.4	127.2	160.2	60.0	0.68	-0.20	-3.66
2,154.1	9.97	93.11	2,124.2	126.9	164.6	58.1	1.00	-0.91	-2.34
2,178.7	9.69	93.47	2,148.4	126.7	168.8	56.4	1.17	-1.14	1.47
2,204.9	9.39	91.90	2,174.3	126.5	173.1	54.6	1.51	-1.14	-5.97
2,229.7	9.32	90.94	2,198.8	126.4	177.1	53.1	0.69	-0.28	-3.87
2,254.0	9.05	90.31	2,222.7	126.3	181.0	51.6	1.19	-1.11	-2.60
2,278.2	8.91	88.39	2,246.7	126.4	184.8	50.3	1.37	-0.58	-7.93
2,302.6	8.86	87.45	2,270.8	126.5	188.6	49.0	0.63	-0.20	-3.85
2,329.7	8.70	87.20	2,297.5	126.7	192.7	47.7	0.61	-0.59	-0.93
2,353.0	8.63	85.73	2,320.5	126.9	196.2	46.6	1.00	-0.30	-6.30
2,379.1	8.71	86.43	2,346.4	127.2	200.1	45.4	0.51	0.31	2.67

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Design:	As Drilled	**Database:**	Antero NE

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)
2,403.1	8.71	87.58	2,370.1	127.4	203.7	44.3	0.73	0.00	4.80
2,428.9	9.04	89.38	2,395.6	127.5	207.7	42.9	1.67	1.28	6.98
2,454.7	9.14	89.79	2,421.0	127.5	211.8	41.5	0.46	0.39	1.59
2,502.1	8.77	88.19	2,467.9	127.6	219.2	38.9	0.94	-0.78	-3.37
2,529.7	8.90	87.93	2,495.1	127.8	223.4	37.5	0.49	0.47	-0.94
2,554.7	8.67	87.27	2,519.9	127.9	227.2	36.2	1.00	-0.92	-2.63
2,578.8	8.31	85.55	2,543.7	128.2	230.8	35.2	1.83	-1.50	-7.16
2,603.8	7.97	85.11	2,568.5	128.4	234.3	34.1	1.38	-1.36	-1.75
2,627.9	7.95	84.62	2,592.3	128.7	237.6	33.2	0.29	-0.08	-2.04
2,653.0	7.72	83.95	2,617.1	129.1	241.0	32.3	0.99	-0.92	-2.67
2,680.1	7.70	84.39	2,644.0	129.4	244.6	31.3	0.23	-0.07	1.62
2,704.7	7.77	84.94	2,668.4	129.8	247.9	30.4	0.41	0.28	2.23
2,729.3	8.22	90.94	2,692.8	129.9	251.4	29.3	3.84	1.82	24.32
2,753.8	8.89	97.39	2,717.0	129.6	255.0	27.7	4.78	2.74	26.39
2,778.4	9.32	100.33	2,741.3	129.0	258.8	25.7	2.57	1.75	11.94
2,802.8	9.71	101.16	2,765.4	128.2	262.8	23.6	1.69	1.60	3.40
2,827.6	10.37	100.19	2,789.8	127.4	267.1	21.3	2.74	2.66	-3.91
2,854.9	11.00	99.53	2,816.6	126.6	272.0	18.7	2.35	2.31	-2.42
2,879.6	11.81	98.30	2,840.8	125.8	276.9	16.2	3.43	3.28	-4.98
2,904.2	12.36	96.84	2,864.8	125.2	282.0	13.7	2.56	2.24	-5.94
2,929.3	13.30	95.43	2,889.4	124.6	287.5	11.1	3.94	3.73	-5.60
2,954.3	13.82	93.85	2,913.6	124.1	293.3	8.6	2.56	2.09	-6.34
2,980.0	14.59	91.34	2,938.6	123.8	299.6	6.0	3.83	2.99	-9.76
3,005.1	14.83	89.39	2,962.8	123.8	306.0	3.6	2.19	0.96	-7.78
3,029.1	15.32	88.83	2,986.0	123.9	312.3	1.4	2.13	2.04	-2.33
3,053.3	15.41	87.78	3,009.4	124.1	318.7	-0.7	1.21	0.37	-4.33
3,077.9	15.84	87.39	3,033.0	124.3	325.3	-2.9	1.80	1.75	-1.59
3,105.1	16.88	86.86	3,059.1	124.7	332.9	-5.3	3.87	3.83	-1.95
3,129.9	17.50	87.03	3,082.8	125.1	340.3	-7.6	2.51	2.50	0.69
3,154.4	18.11	86.62	3,106.2	125.5	347.8	-10.0	2.53	2.48	-1.67
3,179.2	18.65	85.78	3,129.7	126.0	355.5	-12.3	2.43	2.18	-3.40
3,203.6	19.21	84.82	3,152.8	126.7	363.4	-14.6	2.62	2.29	-3.92
3,228.3	19.55	84.30	3,176.1	127.5	371.6	-16.8	1.55	1.38	-2.11
3,252.8	19.97	83.79	3,199.1	128.3	379.8	-19.0	1.86	1.72	-2.08
3,280.1	20.24	83.73	3,224.8	129.3	389.2	-21.5	0.99	0.99	-0.22
3,304.6	20.63	83.87	3,247.7	130.3	397.7	-23.7	1.61	1.59	0.57
3,329.3	20.82	83.78	3,270.8	131.2	406.4	-26.0	0.78	0.77	-0.36
3,353.9	20.88	83.85	3,293.8	132.2	415.0	-28.3	0.26	0.24	0.29
3,378.4	21.14	83.87	3,316.7	133.1	423.8	-30.6	1.06	1.06	0.08
3,403.0	21.43	83.80	3,339.6	134.1	432.7	-33.0	1.18	1.18	-0.28
3,427.5	22.04	83.84	3,362.3	135.0	441.7	-35.4	2.49	2.49	0.16
3,452.7	22.71	84.07	3,385.6	136.0	451.2	-37.9	2.68	2.66	0.91

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Woodworth Unit 3H
Project:	Tyler County WV	**TVD Reference:**	Precision 522: GL 1021' + KB 18' @ 1039.0usft
Site:	Hartley East Pad:Freeland/Plum Run/Woodworth	**MD Reference:**	Precision 522: GL 1021' + KB 18' @ 1039.0usft
Well:	Woodworth Unit 3H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Antero NE

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)
3,479.9	23.47	84.35	3,410.7	137.1	461.8	-40.8	2.82	2.79	1.03
3,505.0	23.89	84.63	3,433.7	138.1	471.9	-43.5	1.73	1.67	1.12
3,528.9	24.18	84.83	3,455.5	139.0	481.6	-46.2	1.26	1.21	0.84
3,554.2	24.45	85.39	3,478.5	139.9	491.9	-49.2	1.41	1.07	2.22
3,579.6	24.99	85.92	3,501.7	140.7	502.6	-52.3	2.29	2.12	2.08
3,604.2	25.94	86.29	3,523.8	141.4	513.1	-55.5	3.93	3.87	1.51
3,629.6	27.08	86.34	3,546.6	142.1	524.4	-58.9	4.48	4.48	0.20
3,654.3	28.47	85.39	3,568.4	142.9	535.9	-62.3	5.92	5.64	-3.86
3,678.8	29.15	85.32	3,589.9	143.9	547.7	-65.7	2.77	2.77	-0.28
3,703.4	29.45	84.63	3,611.3	145.0	559.6	-69.1	1.84	1.22	-2.81
3,728.0	29.21	84.15	3,632.7	146.1	571.6	-72.4	1.37	-0.98	-1.95
3,752.6	28.76	82.92	3,654.3	147.5	583.5	-75.5	3.03	-1.83	-5.00
3,777.8	27.80	82.51	3,676.5	149.0	595.3	-78.4	3.88	-3.80	-1.62
3,803.9	27.35	82.63	3,699.6	150.6	607.3	-81.3	1.74	-1.73	0.46
3,829.6	27.52	82.74	3,722.4	152.1	619.0	-84.2	0.69	0.66	0.43
3,852.8	27.64	82.87	3,743.0	153.4	629.7	-86.8	0.58	0.52	0.56
3,878.1	27.58	82.93	3,765.5	154.9	641.4	-89.7	0.26	-0.24	0.24
3,903.4	27.47	82.88	3,787.9	156.3	652.9	-92.6	0.45	-0.44	-0.20
3,928.4	26.89	82.94	3,810.1	157.7	664.3	-95.4	2.32	-2.32	0.24
3,953.6	26.97	83.62	3,832.6	159.0	675.6	-98.3	1.26	0.32	2.70
3,979.5	26.66	84.57	3,855.6	160.2	687.2	-101.4	2.04	-1.20	3.67
4,004.3	26.51	84.87	3,877.8	161.3	698.3	-104.5	0.81	-0.60	1.21
4,029.8	26.90	85.49	3,900.7	162.2	709.7	-107.8	1.87	1.53	2.42
4,055.2	25.99	86.53	3,923.3	163.0	721.0	-111.2	4.03	-3.59	4.11
4,079.6	25.16	87.99	3,945.4	163.5	731.5	-114.5	4.26	-3.39	5.96
4,105.1	25.26	89.22	3,968.4	163.8	742.4	-118.2	2.10	0.39	4.83
4,129.7	25.23	89.73	3,990.7	163.9	752.8	-122.0	0.89	-0.12	2.07
4,153.2	25.82	89.68	4,011.9	163.9	763.0	-125.6	2.51	2.51	-0.21
4,177.7	25.89	90.04	4,034.0	164.0	773.7	-129.5	0.70	0.29	1.47
4,204.4	25.65	90.50	4,058.0	163.9	785.3	-133.8	1.17	-0.90	1.73
4,228.4	26.88	90.94	4,079.5	163.8	795.9	-137.8	5.19	5.12	1.83
4,255.0	27.04	91.92	4,103.3	163.5	808.0	-142.5	1.77	0.60	3.67
4,279.0	28.89	93.01	4,124.5	163.0	819.2	-147.0	8.00	7.71	4.54
4,303.1	28.32	93.25	4,145.6	162.4	830.7	-151.8	2.42	-2.37	1.00
4,327.5	28.31	93.39	4,167.0	161.7	842.2	-156.6	0.28	-0.04	0.57
4,354.1	29.92	93.17	4,190.3	160.9	855.2	-162.0	6.05	6.04	-0.83
4,378.1	29.12	91.52	4,211.2	160.5	867.0	-166.8	4.75	-3.33	-6.87
4,404.7	29.75	89.99	4,234.4	160.3	880.1	-171.7	3.69	2.37	-5.76
4,428.7	28.84	89.02	4,255.3	160.4	891.8	-175.9	4.29	-3.80	-4.05
4,452.7	29.15	88.67	4,276.3	160.6	903.5	-179.9	1.47	1.29	-1.46
4,479.3	28.27	88.57	4,299.6	160.9	916.2	-184.3	3.32	-3.31	-0.38
4,503.4	27.55	88.53	4,320.9	161.2	927.5	-188.2	2.99	-2.99	-0.17
4,529.9	28.32	88.38	4,344.3	161.6	939.9	-192.4	2.92	2.91	-0.57

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Woodworth Unit 3H
Project:	Tyler County WV	**TVD Reference:**	Precision 522: GL 1021' + KB 18' @ 1039.0usft
Site:	Hartley East Pad:Freeland/Plum Run/Woodworth	**MD Reference:**	Precision 522: GL 1021' + KB 18' @ 1039.0usft
Well:	Woodworth Unit 3H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Antero NE

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)
4,553.9	27.78	87.91	4,365.5	161.9	951.2	-196.1	2.43	-2.25	-1.96
4,577.8	26.63	87.57	4,386.8	162.3	962.1	-199.7	4.84	-4.80	-1.42
4,604.4	26.03	87.09	4,410.6	162.9	973.9	-203.5	2.40	-2.26	-1.81
4,628.9	26.44	86.51	4,432.6	163.5	984.7	-206.9	1.97	1.67	-2.36
4,652.4	25.09	86.27	4,453.7	164.1	994.9	-210.0	5.77	-5.75	-1.02
4,679.4	25.38	86.04	4,478.2	164.9	1,006.4	-213.5	1.13	1.07	-0.85
4,703.2	25.89	85.95	4,499.6	165.6	1,016.7	-216.6	2.15	2.14	-0.38
4,729.3	25.60	85.33	4,523.1	166.5	1,028.0	-219.9	1.52	-1.11	-2.38
4,754.8	24.66	84.53	4,546.2	167.5	1,038.7	-222.9	3.92	-3.69	-3.14
4,779.1	24.13	84.13	4,568.4	168.4	1,048.8	-225.7	2.28	-2.18	-1.64
4,803.5	24.46	84.14	4,590.6	169.5	1,058.7	-228.3	1.36	1.36	0.04
4,827.8	24.78	84.57	4,612.7	170.5	1,068.8	-231.1	1.51	1.32	1.77
4,854.3	24.11	85.95	4,636.8	171.4	1,079.7	-234.2	3.32	-2.52	5.20
4,878.7	24.59	86.32	4,659.1	172.1	1,089.8	-237.3	2.06	1.97	1.52
4,903.5	24.89	86.32	4,681.5	172.7	1,100.1	-240.4	1.21	1.21	0.00
4,929.6	24.70	86.18	4,705.2	173.4	1,111.0	-243.7	0.76	-0.73	-0.54
4,954.4	24.99	85.86	4,727.8	174.2	1,121.4	-246.8	1.29	1.17	-1.29
4,979.2	25.42	86.01	4,750.2	174.9	1,132.0	-250.0	1.75	1.73	0.60
5,004.0	26.04	85.98	4,772.5	175.7	1,142.7	-253.2	2.51	2.51	-0.12
5,029.3	25.54	86.96	4,795.3	176.3	1,153.7	-256.6	2.59	-1.97	3.87
5,054.3	25.01	88.34	4,817.9	176.8	1,164.4	-260.1	3.17	-2.12	5.52
5,078.9	24.40	87.96	4,840.2	177.1	1,174.6	-263.5	2.57	-2.48	-1.55
5,104.6	24.07	87.49	4,863.7	177.5	1,185.2	-267.0	1.49	-1.28	-1.83
5,129.3	24.59	87.37	4,886.2	178.0	1,195.3	-270.2	2.11	2.10	-0.49
5,135.0	24.60	87.30	4,891.4	178.1	1,197.7	-271.0	0.51	0.17	-1.17
Last Gyro @ 5135									
5,135.3	24.60	87.30	4,891.7	178.1	1,197.8	-271.0	0.51	0.17	-1.17
5,350.0	22.47	87.49	5,088.5	182.0	1,283.5	-298.6	0.99	-0.99	0.09
First SDI MWD @ 5350									
5,442.0	23.47	88.36	5,173.2	183.3	1,319.3	-310.5	1.15	1.09	0.95
5,535.0	25.96	84.30	5,257.7	185.8	1,358.1	-322.3	3.24	2.68	-4.37
5,627.0	23.98	84.08	5,341.1	189.8	1,396.8	-332.7	2.15	-2.15	-0.24
5,720.0	23.39	85.95	5,426.2	193.0	1,434.0	-343.3	1.03	-0.63	2.01
5,812.0	23.36	90.56	5,510.7	194.1	1,470.4	-355.5	1.99	-0.03	5.01
5,905.0	23.49	89.23	5,596.0	194.2	1,507.4	-368.9	0.59	0.14	-1.43
5,998.0	24.64	88.55	5,681.0	194.9	1,545.3	-382.1	1.27	1.24	-0.73
6,029.0	24.22	88.98	5,709.2	195.2	1,558.1	-386.5	1.47	-1.35	1.39
6,059.0	23.89	87.41	5,736.6	195.6	1,570.4	-390.6	2.40	-1.10	-5.23
6,090.0	25.13	84.35	5,764.8	196.5	1,583.2	-394.4	5.72	4.00	-9.87
6,121.0	27.53	79.04	5,792.6	198.6	1,596.8	-397.5	10.84	7.74	-17.13
6,152.0	27.36	70.75	5,820.1	202.3	1,610.5	-399.1	12.33	-0.55	-26.74
6,183.0	27.11	63.26	5,847.7	207.8	1,623.6	-398.7	11.08	-0.81	-24.16
6,214.0	28.36	54.45	5,875.1	215.3	1,635.9	-396.2	13.81	4.03	-28.42

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Woodworth Unit 3H
Project:	Tyler County WV	**TVD Reference:**	Precision 522: GL 1021' + KB 18' @ 1039.0usft
Site:	Hartley East Pad:Freeland/Plum Run/Woodworth	**MD Reference:**	Precision 522: GL 1021' + KB 18' @ 1039.0usft
Well:	Woodworth Unit 3H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Antero NE

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)
6,245.0	29.97	49.67	5,902.2	224.5	1,647.8	-391.9	9.13	5.19	-15.42
6,275.0	31.08	43.98	5,928.0	235.0	1,658.9	-386.2	10.32	3.70	-18.97
6,306.0	32.79	39.09	5,954.3	247.2	1,669.7	-378.7	10.00	5.52	-15.77
6,337.0	34.89	35.15	5,980.1	261.0	1,680.1	-369.7	9.79	6.77	-12.71
6,368.0	37.39	31.52	6,005.1	276.3	1,690.1	-359.2	10.61	8.06	-11.71
6,399.0	40.82	28.36	6,029.2	293.2	1,699.9	-346.9	12.79	11.06	-10.19
6,430.0	44.12	25.91	6,052.0	311.9	1,709.4	-333.1	11.91	10.65	-7.90
6,460.0	47.32	23.02	6,073.0	331.4	1,718.3	-318.1	12.70	10.67	-9.63
6,491.0	50.91	20.77	6,093.3	353.2	1,727.0	-301.0	12.81	11.58	-7.26
6,522.0	54.61	20.05	6,112.0	376.3	1,735.6	-282.6	12.08	11.94	-2.32
6,553.0	58.54	19.57	6,129.1	400.6	1,744.4	-263.2	12.74	12.68	-1.55
6,555.0	58.72	19.49	6,130.1	402.2	1,744.9	-261.9	9.50	8.85	-4.04
Middlesex @ 6555									
6,584.0	61.29	18.35	6,144.6	426.0	1,753.1	-242.7	9.50	8.87	-3.93
6,614.0	62.63	14.66	6,158.8	451.4	1,760.6	-221.8	11.74	4.47	-12.30
6,645.0	64.42	10.70	6,172.6	478.4	1,766.7	-198.8	12.81	5.77	-12.77
6,676.0	65.33	5.37	6,185.7	506.2	1,770.6	-174.4	15.84	2.94	-17.19
6,707.0	67.09	2.80	6,198.3	534.5	1,772.6	-148.8	9.47	5.68	-8.29
6,737.0	67.60	359.47	6,209.8	562.2	1,773.2	-123.2	10.38	1.70	-11.10
6,762.0	68.72	356.62	6,219.1	585.4	1,772.4	-101.4	11.50	4.49	-11.41
Burket @ 6762									
6,768.0	69.00	355.94	6,221.3	591.0	1,772.0	-96.0	11.50	4.61	-11.30
6,789.0	70.55	354.33	6,228.5	610.6	1,770.3	-77.1	10.31	7.40	-7.65
Tully @ 6789									
6,799.0	71.30	353.58	6,231.8	620.0	1,769.3	-68.0	10.31	7.45	-7.54
6,830.0	72.88	351.03	6,241.3	649.2	1,765.4	-39.4	9.34	5.10	-8.23
6,835.0	73.09	350.76	6,242.8	653.9	1,764.6	-34.7	6.67	4.24	-5.39
Marcellus @ 6835									
6,861.0	74.20	349.37	6,250.1	678.5	1,760.3	-10.2	6.67	4.26	-5.35
6,891.0	76.70	346.87	6,257.7	706.9	1,754.3	18.4	11.60	8.33	-8.33
6,922.0	78.64	344.78	6,264.3	736.3	1,746.9	48.4	9.09	6.26	-6.74
6,953.0	80.34	341.56	6,269.9	765.4	1,738.1	78.8	11.59	5.48	-10.39
6,984.0	81.74	340.26	6,274.8	794.4	1,728.1	109.4	6.13	4.52	-4.19
7,015.0	84.44	337.50	6,278.5	823.1	1,717.0	140.2	12.41	8.71	-8.90
7,040.0	86.47	337.82	6,280.5	846.1	1,707.5	165.1	8.22	8.12	1.28
7,071.0	88.42	338.08	6,281.9	874.8	1,695.9	196.1	6.35	6.29	0.84
7,102.0	89.63	337.92	6,282.4	903.6	1,684.3	227.1	3.94	3.90	-0.52
7,133.0	90.64	337.46	6,282.3	932.3	1,672.5	258.0	3.58	3.26	-1.48
7,226.0	91.03	338.26	6,281.0	1,018.4	1,637.5	351.0	0.96	0.42	0.86
7,318.0	91.63	340.70	6,278.8	1,104.5	1,605.2	443.0	2.73	0.65	2.65
7,411.0	91.43	341.45	6,276.3	1,192.5	1,575.1	535.9	0.83	-0.22	0.81
7,503.0	88.41	342.43	6,276.5	1,279.9	1,546.6	627.7	3.45	-3.28	1.07
7,596.0	87.59	340.37	6,279.7	1,368.0	1,516.9	720.5	2.38	-0.88	-2.22

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Woodworth Unit 3H
Project:	Tyler County WV	**TVD Reference:**	Precision 522: GL 1021' + KB 18' @ 1039.0usft
Site:	Hartley East Pad:Freeland/Plum Run/Woodworth	**MD Reference:**	Precision 522: GL 1021' + KB 18' @ 1039.0usft
Well:	Woodworth Unit 3H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Antero NE

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)
7,688.0	89.30	337.81	6,282.2	1,453.9	1,484.1	812.5	3.35	1.86	-2.78
7,781.0	90.91	338.47	6,282.0	1,540.2	1,449.5	905.5	1.87	1.73	0.71
7,874.0	90.11	338.59	6,281.2	1,626.8	1,415.4	998.5	0.87	-0.86	0.13
7,966.0	89.64	336.61	6,281.4	1,711.8	1,380.4	1,090.4	2.21	-0.51	-2.15
8,059.0	91.05	337.33	6,280.8	1,797.4	1,344.0	1,183.4	1.70	1.52	0.77
8,151.0	91.01	337.44	6,279.2	1,882.3	1,308.6	1,275.4	0.13	-0.04	0.12
8,244.0	90.17	339.08	6,278.2	1,968.7	1,274.2	1,368.4	1.98	-0.90	1.76
8,337.0	89.64	339.37	6,278.4	2,055.6	1,241.2	1,461.4	0.65	-0.57	0.31
8,429.0	89.57	340.08	6,279.0	2,141.9	1,209.3	1,553.3	0.78	-0.08	0.77
8,522.0	90.28	339.09	6,279.1	2,229.1	1,176.9	1,646.3	1.31	0.76	-1.06
8,614.0	90.58	339.32	6,278.5	2,315.1	1,144.2	1,738.3	0.41	0.33	0.25
8,707.0	89.61	338.60	6,278.3	2,401.9	1,110.8	1,831.3	1.30	-1.04	-0.77
8,799.0	89.40	339.01	6,279.1	2,487.7	1,077.6	1,923.3	0.50	-0.23	0.45
8,892.0	89.40	337.96	6,280.1	2,574.2	1,043.5	2,016.3	1.13	0.00	-1.13
8,984.0	90.48	336.63	6,280.2	2,659.0	1,008.0	2,108.3	1.86	1.17	-1.45
9,077.0	90.95	337.25	6,279.0	2,744.6	971.5	2,201.2	0.84	0.51	0.67
9,170.0	90.14	338.81	6,278.1	2,830.8	936.7	2,294.2	1.89	-0.87	1.68
9,262.0	90.37	338.51	6,277.7	2,916.5	903.3	2,386.2	0.41	0.25	-0.33
9,355.0	89.90	338.87	6,277.5	3,003.2	869.5	2,479.2	0.64	-0.51	0.39
9,447.0	89.77	339.19	6,277.8	3,089.1	836.5	2,571.2	0.38	-0.14	0.35
9,540.0	89.74	339.24	6,278.2	3,176.0	803.5	2,664.2	0.06	-0.03	0.05
9,632.0	89.50	338.99	6,278.8	3,262.0	770.7	2,756.2	0.38	-0.26	-0.27
9,725.0	89.27	337.95	6,279.8	3,348.5	736.6	2,849.2	1.15	-0.25	-1.12
9,818.0	90.17	337.74	6,280.2	3,434.6	701.5	2,942.2	0.99	0.97	-0.23
9,910.0	91.99	340.19	6,278.5	3,520.5	668.5	3,034.1	3.32	1.98	2.66
10,003.0	90.51	338.90	6,276.5	3,607.6	636.0	3,127.1	2.11	-1.59	-1.39
10,095.0	89.17	338.72	6,276.7	3,693.3	602.8	3,219.1	1.47	-1.46	-0.20
10,188.0	90.38	338.38	6,277.1	3,779.9	568.8	3,312.1	1.35	1.30	-0.37
10,280.0	90.34	338.79	6,276.5	3,865.5	535.2	3,404.1	0.45	-0.04	0.45
10,373.0	89.94	338.40	6,276.3	3,952.1	501.2	3,497.1	0.60	-0.43	-0.42
10,465.0	90.07	337.34	6,276.3	4,037.4	466.6	3,589.1	1.16	0.14	-1.15
10,558.0	90.44	336.80	6,275.9	4,123.0	430.4	3,682.1	0.70	0.40	-0.58
10,650.0	91.11	337.78	6,274.6	4,207.9	394.8	3,774.0	1.29	0.73	1.07
10,743.0	91.11	339.52	6,272.8	4,294.5	361.0	3,867.0	1.87	0.00	1.87
10,836.0	89.13	339.08	6,272.6	4,381.5	328.1	3,960.0	2.18	-2.13	-0.47
10,928.0	89.23	338.66	6,273.9	4,467.3	295.0	4,052.0	0.47	0.11	-0.46
11,021.0	92.32	339.96	6,272.7	4,554.2	262.1	4,144.9	3.60	3.32	1.40
11,113.0	90.34	339.78	6,270.5	4,640.6	230.5	4,236.9	2.16	-2.15	-0.20
11,206.0	90.71	339.85	6,269.7	4,727.9	198.4	4,329.9	0.40	0.40	0.08
11,298.0	91.18	339.15	6,268.2	4,814.0	166.2	4,421.8	0.92	0.51	-0.76
11,391.0	90.10	338.44	6,267.1	4,900.7	132.5	4,514.8	1.39	-1.16	-0.76
11,484.0	91.08	338.23	6,266.2	4,987.2	98.2	4,607.8	1.08	1.05	-0.23

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Woodworth Unit 3H
Project:	Tyler County WV	**TVD Reference:**	Precision 522: GL 1021' + KB 18' @ 1039.0usft
Site:	Hartley East Pad:Freeland/Plum Run/Woodworth	**MD Reference:**	Precision 522: GL 1021' + KB 18' @ 1039.0usft
Well:	Woodworth Unit 3H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Antero NE

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)
11,576.0	92.39	337.45	6,263.4	5,072.3	63.5	4,699.8	1.66	1.42	-0.85
11,669.0	93.26	337.89	6,258.8	5,158.2	28.2	4,792.7	1.05	0.94	0.47
11,762.0	93.42	338.89	6,253.4	5,244.6	-6.0	4,885.5	1.09	0.17	1.08
11,855.0	90.86	338.81	6,249.9	5,331.2	-39.5	4,978.4	2.75	-2.75	-0.09
11,947.0	90.19	340.28	6,249.1	5,417.4	-71.7	5,070.4	1.76	-0.73	1.60
12,040.0	89.42	341.19	6,249.4	5,505.2	-102.3	5,163.3	1.28	-0.83	0.98
12,132.0	89.24	340.95	6,250.5	5,592.2	-132.2	5,255.2	0.33	-0.20	-0.26
12,225.0	88.64	340.36	6,252.2	5,680.0	-163.0	5,348.2	0.90	-0.65	-0.63
12,318.0	88.94	339.58	6,254.1	5,767.3	-194.8	5,441.1	0.90	0.32	-0.84
12,410.0	89.25	338.34	6,255.6	5,853.2	-227.9	5,533.1	1.39	0.34	-1.35
12,503.0	90.36	338.74	6,255.9	5,939.7	-261.9	5,626.1	1.27	1.19	0.43
12,595.0	89.42	338.42	6,256.1	6,025.4	-295.5	5,718.1	1.08	-1.02	-0.35
12,688.0	89.08	338.41	6,257.3	6,111.8	-329.7	5,811.1	0.37	-0.37	-0.01
12,780.0	89.02	338.22	6,258.8	6,197.3	-363.7	5,903.1	0.22	-0.07	-0.21
12,873.0	89.69	337.13	6,259.9	6,283.3	-399.0	5,996.1	1.38	0.72	-1.17
12,965.0	90.06	337.05	6,260.1	6,368.1	-434.8	6,088.0	0.41	0.40	-0.09
13,058.0	90.09	335.31	6,260.0	6,453.1	-472.4	6,180.9	1.87	0.03	-1.87
13,151.0	90.97	336.07	6,259.1	6,537.9	-510.7	6,273.8	1.25	0.95	0.82
13,243.0	90.29	335.86	6,258.1	6,621.9	-548.1	6,365.7	0.77	-0.74	-0.23
13,336.0	90.87	337.34	6,257.1	6,707.3	-585.1	6,458.6	1.71	0.62	1.59
13,428.0	91.07	338.67	6,255.6	6,792.5	-619.5	6,550.6	1.46	0.22	1.45
13,521.0	90.46	337.61	6,254.3	6,878.9	-654.1	6,643.6	1.31	-0.66	-1.14
13,614.0	90.20	338.45	6,253.8	6,965.1	-688.9	6,736.6	0.95	-0.28	0.90
13,706.0	90.77	339.44	6,253.0	7,051.0	-722.0	6,828.6	1.24	0.62	1.08
13,799.0	90.53	338.95	6,252.0	7,137.9	-755.0	6,921.6	0.59	-0.26	-0.53
13,891.0	89.63	337.88	6,251.8	7,223.4	-788.9	7,013.6	1.52	-0.98	-1.16
13,984.0	90.03	338.70	6,252.1	7,309.8	-823.3	7,106.6	0.98	0.43	0.88
14,077.0	90.10	339.78	6,252.0	7,396.8	-856.2	7,199.6	1.16	0.08	1.16
14,169.0	90.30	338.62	6,251.7	7,482.8	-888.9	7,291.6	1.28	0.22	-1.26
14,262.0	90.47	338.98	6,251.1	7,569.5	-922.5	7,384.6	0.43	0.18	0.39
14,354.0	90.57	337.55	6,250.2	7,654.9	-956.6	7,476.6	1.56	0.11	-1.55
14,447.0	90.50	338.49	6,249.4	7,741.2	-991.4	7,569.5	1.01	-0.08	1.01
14,540.0	90.57	339.75	6,248.5	7,828.1	-1,024.5	7,662.5	1.36	0.08	1.35
14,632.0	91.07	339.28	6,247.2	7,914.2	-1,056.7	7,754.5	0.75	0.54	-0.51
14,714.0	91.37	338.83	6,245.4	7,990.8	-1,086.0	7,836.5	0.66	0.37	-0.55
Last SDI MWD @ 14714									
14,778.0	91.37	338.83	6,243.9	8,050.5	-1,109.1	7,900.5	0.00	0.00	0.00
Projection To Bit @ 14778 MD / 6243 TVD									

Company:	Antero Resources	**Local Co-ordinate Reference:**	Well Woodworth Unit 3H
Project:	Tyler County WV	**TVD Reference:**	Precision 522: GL 1021' + KB 18' @ 1039.0usft
Site:	Hartley East Pad:Freeland/Plum Run/Woodworth	**MD Reference:**	Precision 522: GL 1021' + KB 18' @ 1039.0usft
Well:	Woodworth Unit 3H	**North Reference:**	Grid
Wellbore:	Original Wellpath	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Antero NE

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,555.0	6,130.1	Middlesex @ 6555		0.00	
6,762.0	6,219.1	Burket @ 6762		0.00	
6,789.0	6,228.5	Tully @ 6789		0.00	
6,835.0	6,242.8	Marcellus @ 6835		0.00	

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
5,135.0	4,891.4	178.1	1,197.7	Last Gyro @ 5135
5,350.0	5,088.5	182.0	1,283.5	First SDI MWD @ 5350
14,714.0	6,245.4	7,990.8	-1,086.0	Last SDI MWD @ 14714
14,778.0	6,243.9	8,050.5	-1,109.1	Projection To Bit @ 14778 MD / 6243 TVD

Checked By: _____ Approved By: _____ Date: _____