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WV GEOLOGICAL SURVEY  
MORGANTOWN, WV

# **Antero Resources**

**Doddridge County WV  
Zimka/Manser Pad  
Manser Unit 3H  
Original Wellpath**

**Design: As Drilled**

## **EOW Completion Report**

**10 December, 2014**





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EOW Completion Report



<b>Company:</b> Antero Resources	<b>Local Co-ordinate Reference:</b> Well Manser Unit 3H
<b>Project:</b> Doddridge County WV	<b>TVD Reference:</b> Patterson 325: GL 1141' + 24' @ 1165.0usft
<b>Site:</b> Zimka/Manser Pad	<b>MD Reference:</b> Patterson 325: GL 1141' + 24' @ 1165.0usft
<b>Well:</b> Manser Unit 3H	<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>	Doddridge County WV, McClellan District		
<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>	Zimka/Manser Pad				
<b>Site Position:</b>		<b>Northing:</b>	14,265,927.56 usft	<b>Latitude:</b>	39° 17' 6.551 N
<b>From:</b>	Map	<b>Easting:</b>	1,732,882.20 usft	<b>Longitude:</b>	80° 40' 23.581 W
<b>Position Uncertainty:</b>	2.0 usft	<b>Slot Radius:</b>	13-3/16"	<b>Grid Convergence:</b>	0.21 °

<b>Well</b>	Manser Unit 3H, Marcellus					
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	14,265,907.94 usft	<b>Latitude:</b>	39° 17' 6.356 N
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	1,732,904.52 usft	<b>Longitude:</b>	80° 40' 23.298 W
<b>Position Uncertainty</b>	2.0 usft		<b>Wellhead Elevation:</b>	1,165.0 usft	<b>Ground Level:</b>	1,141.0 usft

<b>Wellbore</b>	Original Wellpath				
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<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2014	6/20/2014	-8.55	66.85	52,241

<b>Design</b>	As Drilled				
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<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0

<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	341.63

Survey Program		Date			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
36.0	6,599.1	Survey #7 Final Gyro (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper	
6,694.0	14,420.0	Survey #8 SDI MWD (Original Wellpath)	MWD SDI	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
36.0	0.26	263.05	36.0	0.0	-0.1	0.0	0.72
61.0	0.53	263.05	61.0	0.0	-0.3	0.1	1.08
86.0	0.79	263.05	86.0	-0.1	-0.5	0.1	1.04
111.0	1.05	263.05	111.0	-0.1	-0.9	0.2	1.04
136.0	0.98	256.86	136.0	-0.2	-1.4	0.3	0.52
161.0	0.88	255.25	161.0	-0.3	-1.8	0.3	0.41
186.0	0.92	258.28	186.0	-0.4	-2.1	0.3	0.25
211.0	0.81	258.15	211.0	-0.5	-2.5	0.4	0.44
236.0	0.56	256.68	236.0	-0.5	-2.8	0.4	1.00
261.0	0.48	242.14	261.0	-0.6	-3.0	0.4	0.61

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ANTERO RESOURCES  
GEOLOGICAL SURVEY  
MORGANTOWN, WV

## EOW Completion Report



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**Wellbore:** Original Wellpath  
**Design:** As Drilled

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**Survey Calculation Method:** Minimum Curvature  
**Database:** Oklahoma District

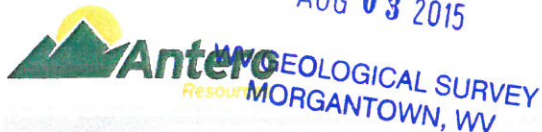
### Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
286.0	0.49	245.65	286.0	-0.7	-3.2	0.4	0.13
311.0	0.54	243.88	311.0	-0.8	-3.4	0.3	0.21
336.0	0.33	248.33	336.0	-0.9	-3.6	0.3	0.85
361.0	0.30	238.00	361.0	-0.9	-3.7	0.3	0.26
386.0	0.25	236.38	386.0	-1.0	-3.8	0.3	0.20
411.0	0.28	217.89	411.0	-1.1	-3.9	0.2	0.36
436.0	0.24	243.19	436.0	-1.1	-4.0	0.2	0.48
461.0	0.28	234.55	461.0	-1.2	-4.1	0.1	0.22
486.0	0.34	230.51	486.0	-1.3	-4.2	0.1	0.26
511.0	0.36	227.16	511.0	-1.4	-4.3	0.0	0.11
536.0	0.27	227.67	536.0	-1.5	-4.4	0.0	0.36
561.0	0.27	223.82	561.0	-1.6	-4.5	-0.1	0.07
586.0	0.23	228.37	586.0	-1.6	-4.6	-0.1	0.18
611.0	0.38	235.39	611.0	-1.7	-4.7	-0.2	0.62
636.0	0.19	213.16	636.0	-1.8	-4.8	-0.2	0.87
661.0	0.13	229.45	661.0	-1.8	-4.8	-0.2	0.30
686.0	0.20	210.96	686.0	-1.9	-4.8	-0.3	0.35
711.0	0.21	207.76	711.0	-2.0	-4.9	-0.3	0.06
736.0	0.19	223.46	736.0	-2.1	-4.9	-0.4	0.23
761.0	0.20	217.94	761.0	-2.1	-5.0	-0.4	0.09
786.0	0.17	192.16	786.0	-2.2	-5.0	-0.5	0.35
811.0	0.19	227.28	811.0	-2.3	-5.1	-0.5	0.44
836.0	0.24	216.56	836.0	-2.3	-5.1	-0.6	0.26
861.0	0.19	225.27	861.0	-2.4	-5.2	-0.6	0.24
886.0	0.14	239.20	886.0	-2.4	-5.2	-0.7	0.26
911.0	0.12	248.51	911.0	-2.5	-5.3	-0.7	0.12
936.0	0.19	262.09	936.0	-2.5	-5.4	-0.7	0.31
961.0	0.08	323.64	961.0	-2.5	-5.4	-0.6	0.67
986.0	0.13	168.91	986.0	-2.5	-5.4	-0.7	0.82
1,011.0	0.08	203.79	1,011.0	-2.5	-5.4	-0.7	0.32
1,036.0	0.11	207.12	1,036.0	-2.6	-5.4	-0.7	0.12
1,061.0	0.13	246.83	1,061.0	-2.6	-5.5	-0.7	0.33
1,086.0	0.19	226.22	1,086.0	-2.6	-5.5	-0.8	0.33
1,111.0	0.14	237.94	1,111.0	-2.7	-5.6	-0.8	0.24
1,136.0	0.26	283.84	1,136.0	-2.7	-5.7	-0.8	0.76
1,161.0	0.25	246.79	1,161.0	-2.7	-5.8	-0.7	0.65
1,186.0	0.01	317.16	1,186.0	-2.7	-5.8	-0.7	0.99
1,211.0	0.12	227.66	1,211.0	-2.7	-5.8	-0.7	0.48
1,236.0	0.24	239.64	1,236.0	-2.8	-5.9	-0.8	0.50
1,261.0	0.30	252.31	1,261.0	-2.8	-6.0	-0.8	0.34
1,286.0	0.21	256.67	1,286.0	-2.9	-6.1	-0.8	0.37
1,311.0	0.24	248.96	1,311.0	-2.9	-6.2	-0.8	0.17
1,336.0	0.16	248.39	1,336.0	-2.9	-6.3	-0.8	0.32
1,361.0	0.27	255.73	1,361.0	-2.9	-6.4	-0.8	0.45



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**Wellbore:** Original Wellpath  
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### Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
1,386.0	0.16	241.14	1,386.0	-3.0	-6.5	-0.8	0.49
1,411.0	0.10	231.25	1,411.0	-3.0	-6.5	-0.8	0.26
1,436.0	0.20	225.47	1,436.0	-3.0	-6.6	-0.8	0.40
1,461.0	0.18	199.17	1,461.0	-3.1	-6.6	-0.9	0.35
1,486.0	0.27	211.78	1,486.0	-3.2	-6.7	-0.9	0.41
1,511.0	0.32	226.62	1,511.0	-3.3	-6.7	-1.0	0.36
1,536.0	0.33	214.04	1,536.0	-3.4	-6.8	-1.1	0.29
1,561.0	0.23	207.11	1,561.0	-3.5	-6.9	-1.2	0.42
1,586.0	0.29	217.31	1,586.0	-3.6	-7.0	-1.2	0.30
1,611.0	0.28	206.59	1,611.0	-3.7	-7.0	-1.3	0.22
1,636.0	0.30	209.29	1,636.0	-3.8	-7.1	-1.4	0.10
1,661.0	0.34	183.04	1,661.0	-4.0	-7.1	-1.5	0.60
1,686.0	0.26	184.54	1,686.0	-4.1	-7.1	-1.6	0.32
1,711.0	0.23	143.13	1,711.0	-4.2	-7.1	-1.7	0.70
1,736.0	0.27	139.23	1,736.0	-4.3	-7.0	-1.8	0.17
1,761.0	0.27	127.69	1,761.0	-4.3	-6.9	-1.9	0.22
1,786.0	0.28	121.83	1,786.0	-4.4	-6.8	-2.0	0.12
1,811.0	0.34	103.24	1,811.0	-4.5	-6.7	-2.1	0.47
1,836.0	0.29	113.77	1,836.0	-4.5	-6.6	-2.2	0.31
1,861.0	0.40	108.28	1,861.0	-4.6	-6.5	-2.3	0.46
1,886.0	0.25	94.52	1,886.0	-4.6	-6.3	-2.4	0.67
1,911.0	0.33	93.82	1,911.0	-4.6	-6.2	-2.4	0.32
1,936.0	0.29	92.59	1,936.0	-4.6	-6.1	-2.5	0.16
1,961.0	0.10	101.88	1,961.0	-4.6	-6.0	-2.5	0.77
1,986.0	0.09	239.15	1,986.0	-4.6	-6.0	-2.5	0.71
2,011.0	0.06	206.89	2,011.0	-4.7	-6.0	-2.5	0.20
2,036.0	0.15	272.01	2,036.0	-4.7	-6.0	-2.5	0.54
2,061.0	0.10	293.33	2,061.0	-4.7	-6.1	-2.5	0.27
2,086.0	0.22	290.96	2,086.0	-4.6	-6.1	-2.5	0.48
2,111.0	0.38	290.71	2,111.0	-4.6	-6.3	-2.4	0.64
2,136.0	0.18	309.98	2,136.0	-4.5	-6.4	-2.3	0.87
2,161.0	0.32	291.07	2,161.0	-4.5	-6.5	-2.2	0.64
2,186.0	0.21	275.68	2,186.0	-4.4	-6.6	-2.1	0.52
2,211.0	0.24	276.34	2,211.0	-4.4	-6.7	-2.1	0.12
2,236.0	0.33	288.48	2,236.0	-4.4	-6.8	-2.0	0.43
2,261.0	0.49	274.72	2,261.0	-4.4	-7.0	-2.0	0.75
2,286.0	0.33	294.17	2,286.0	-4.3	-7.1	-1.9	0.84
2,311.0	0.40	284.03	2,311.0	-4.3	-7.3	-1.8	0.38
2,336.0	0.32	290.17	2,336.0	-4.2	-7.4	-1.7	0.35
2,361.0	0.31	277.26	2,361.0	-4.2	-7.6	-1.6	0.29
2,386.0	0.38	285.56	2,386.0	-4.2	-7.7	-1.5	0.34
2,411.0	0.42	299.21	2,411.0	-4.1	-7.9	-1.4	0.41
2,436.0	0.45	293.10	2,436.0	-4.0	-8.1	-1.3	0.22
2,461.0	0.40	283.96	2,461.0	-4.0	-8.2	-1.2	0.34
2,486.0	0.31	279.94	2,486.0	-3.9	-8.4	-1.1	0.37

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Survey

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2,511.0	0.28	279.00	2,511.0	-3.9	-8.5	-1.0	0.12
2,536.0	0.25	284.26	2,536.0	-3.9	-8.6	-1.0	0.15
2,561.0	0.42	279.75	2,561.0	-3.9	-8.8	-0.9	0.69
2,586.0	0.45	284.65	2,586.0	-3.8	-8.9	-0.8	0.19
2,611.0	0.43	289.10	2,611.0	-3.8	-9.1	-0.7	0.16
2,636.0	0.38	284.67	2,636.0	-3.7	-9.3	-0.6	0.24
2,661.0	0.40	292.56	2,661.0	-3.7	-9.5	-0.5	0.23
2,686.0	0.38	292.26	2,685.9	-3.6	-9.6	-0.4	0.08
2,711.0	0.46	282.43	2,710.9	-3.5	-9.8	-0.3	0.43
2,736.0	0.47	286.01	2,735.9	-3.5	-10.0	-0.2	0.12
2,761.0	0.51	288.22	2,760.9	-3.4	-10.2	0.0	0.18
2,786.0	0.53	287.52	2,785.9	-3.4	-10.4	0.1	0.08
2,811.0	0.57	290.30	2,810.9	-3.3	-10.6	0.2	0.19
2,836.0	0.54	291.81	2,835.9	-3.2	-10.9	0.4	0.13
2,861.0	0.55	282.89	2,860.9	-3.1	-11.1	0.5	0.34
2,886.0	0.59	290.21	2,885.9	-3.1	-11.3	0.7	0.33
2,911.0	0.56	286.45	2,910.9	-3.0	-11.6	0.8	0.19
2,936.0	0.62	291.89	2,935.9	-2.9	-11.8	1.0	0.33
2,961.0	0.60	289.34	2,960.9	-2.8	-12.1	1.1	0.13
2,986.0	0.58	284.93	2,985.9	-2.7	-12.3	1.3	0.20
3,011.0	0.55	287.81	3,010.9	-2.6	-12.5	1.4	0.17
3,036.0	0.64	286.15	3,035.9	-2.6	-12.8	1.6	0.37
3,061.0	0.63	286.26	3,060.9	-2.5	-13.1	1.7	0.04
3,086.0	0.63	285.63	3,085.9	-2.4	-13.3	1.9	0.03
3,111.0	0.70	287.60	3,110.9	-2.3	-13.6	2.1	0.29
3,136.0	0.70	289.31	3,135.9	-2.2	-13.9	2.3	0.08
3,161.0	0.80	287.18	3,160.9	-2.1	-14.2	2.4	0.42
3,186.0	0.70	284.68	3,185.9	-2.0	-14.5	2.6	0.42
3,211.0	0.71	285.59	3,210.9	-2.0	-14.8	2.8	0.06
3,236.0	0.75	280.20	3,235.9	-1.9	-15.1	3.0	0.32
3,261.0	0.72	279.55	3,260.9	-1.8	-15.4	3.1	0.12
3,286.0	0.70	276.05	3,285.9	-1.8	-15.7	3.3	0.19
3,311.0	0.78	279.85	3,310.9	-1.8	-16.1	3.4	0.38
3,336.0	0.80	280.80	3,335.9	-1.7	-16.4	3.6	0.10
3,361.0	0.81	279.52	3,360.9	-1.6	-16.7	3.7	0.08
3,386.0	0.85	276.87	3,385.9	-1.6	-17.1	3.9	0.22
3,411.0	0.75	278.70	3,410.9	-1.5	-17.5	4.0	0.41
3,436.0	0.87	282.12	3,435.9	-1.5	-17.8	4.2	0.52
3,461.0	0.86	280.69	3,460.9	-1.4	-18.2	4.4	0.10
3,486.0	0.84	280.35	3,485.9	-1.3	-18.5	4.6	0.08
3,511.0	0.80	278.23	3,510.9	-1.3	-18.9	4.7	0.20
3,536.0	0.80	277.98	3,535.9	-1.2	-19.2	4.9	0.01
3,561.0	0.94	278.50	3,560.9	-1.2	-19.6	5.1	0.56
3,586.0	0.82	279.65	3,585.9	-1.1	-20.0	5.3	0.49



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3,611.0	0.91	281.68	3,610.9	-1.0	-20.4	5.4	0.38
3,636.0	0.92	279.19	3,635.9	-1.0	-20.7	5.6	0.16
3,661.0	0.92	285.16	3,660.9	-0.9	-21.1	5.8	0.38
3,686.0	0.97	279.90	3,685.9	-0.8	-21.5	6.0	0.40
3,711.0	0.84	284.29	3,710.9	-0.7	-21.9	6.2	0.59
3,736.0	0.93	287.40	3,735.9	-0.6	-22.3	6.5	0.41
3,761.0	0.88	289.90	3,760.9	-0.5	-22.7	6.7	0.25
3,786.0	0.92	290.93	3,785.9	-0.3	-23.0	6.9	0.17
3,811.0	0.94	290.44	3,810.9	-0.2	-23.4	7.2	0.09
3,836.0	0.87	295.71	3,835.9	0.0	-23.8	7.5	0.43
3,861.0	0.91	293.98	3,860.8	0.1	-24.1	7.7	0.19
3,886.0	0.95	298.09	3,885.8	0.3	-24.5	8.0	0.31
3,911.0	0.97	297.75	3,910.8	0.5	-24.9	8.3	0.08
3,936.0	0.89	293.86	3,935.8	0.7	-25.2	8.6	0.41
3,961.0	0.94	297.05	3,960.8	0.8	-25.6	8.9	0.29
3,986.0	1.05	294.00	3,985.8	1.0	-26.0	9.2	0.49
4,011.0	1.11	299.78	4,010.8	1.2	-26.4	9.5	0.50
4,036.0	1.01	306.70	4,035.8	1.5	-26.8	9.9	0.65
4,061.0	1.07	300.32	4,060.8	1.7	-27.2	10.2	0.52
4,086.0	1.13	303.10	4,085.8	2.0	-27.6	10.6	0.32
4,111.0	1.17	305.36	4,110.8	2.3	-28.0	11.0	0.24
4,136.0	1.01	300.61	4,135.8	2.5	-28.4	11.4	0.73
4,161.0	1.15	300.43	4,160.8	2.8	-28.8	11.7	0.56
4,186.0	0.94	302.83	4,185.8	3.0	-29.2	12.1	0.86
4,211.0	0.86	319.09	4,210.8	3.3	-29.5	12.4	1.07
4,236.0	0.80	12.76	4,235.8	3.6	-29.6	12.7	3.01
4,261.0	1.38	57.93	4,260.8	3.9	-29.3	12.9	3.98
4,286.0	2.02	68.95	4,285.8	4.2	-28.6	13.0	2.86
4,311.0	2.84	74.78	4,310.8	4.6	-27.6	13.0	3.42
4,336.0	3.52	77.83	4,335.7	4.9	-26.3	12.9	2.80
4,361.0	4.46	79.12	4,360.7	5.2	-24.5	12.7	3.78
4,386.0	5.49	82.63	4,385.6	5.6	-22.4	12.3	4.29
4,411.0	6.34	83.74	4,410.4	5.9	-19.8	11.8	3.43
4,436.0	7.18	85.40	4,435.3	6.1	-16.9	11.2	3.45
4,461.0	8.31	84.92	4,460.0	6.4	-13.6	10.4	4.53
4,486.0	8.94	85.05	4,484.7	6.8	-9.8	9.5	2.52
4,511.0	9.67	87.11	4,509.4	7.0	-5.8	8.5	3.21
4,536.0	9.93	88.14	4,534.0	7.2	-1.5	7.3	1.25
4,561.0	10.29	88.85	4,558.7	7.3	2.8	6.0	1.52
4,586.0	10.55	88.55	4,583.2	7.4	7.4	4.7	1.06
4,611.0	10.97	85.68	4,607.8	7.7	12.0	3.5	2.72
4,636.0	11.29	84.43	4,632.3	8.1	16.8	2.4	1.60
4,661.0	11.36	83.82	4,656.9	8.6	21.7	1.3	0.55
4,686.0	11.43	84.42	4,681.4	9.1	26.6	0.2	0.55

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EOW Completion Report



**Company:** Antero Resources  
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**Site:** Zimka/Manser Pad  
**Well:** Manser Unit 3H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

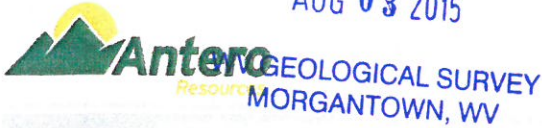
**Local Co-ordinate Reference:** Well Manser Unit 3H  
**TVD Reference:** Patterson 325: GL 1141' + 24' @ 1165.0usft  
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**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Oklahoma District

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
4,711.0	11.62	83.87	4,705.9	9.6	31.6	-0.9	0.88
4,736.0	12.09	85.62	4,730.3	10.1	36.7	-2.0	2.37
4,761.0	12.27	86.79	4,754.8	10.4	42.0	-3.3	1.22
4,786.0	12.53	87.90	4,779.2	10.7	47.3	-4.8	1.41
4,811.0	12.56	88.40	4,803.6	10.8	52.8	-6.3	0.45
4,836.0	12.97	90.95	4,828.0	10.9	58.3	-8.1	2.79
4,861.0	13.14	90.53	4,852.3	10.8	63.9	-9.9	0.78
4,886.0	13.65	89.33	4,876.6	10.8	69.7	-11.7	2.32
4,911.0	14.16	88.13	4,900.9	10.9	75.7	-13.5	2.34
4,936.0	14.78	86.46	4,925.1	11.2	82.0	-15.2	2.99
4,961.0	15.42	84.62	4,949.2	11.7	88.5	-16.7	3.20
4,986.0	16.02	84.58	4,973.3	12.4	95.2	-18.3	2.40
5,011.0	16.72	86.45	4,997.3	12.9	102.2	-20.0	3.50
5,036.0	17.36	88.54	5,021.2	13.2	109.5	-22.0	3.54
5,061.0	17.93	90.26	5,045.0	13.3	117.1	-24.3	3.09
5,086.0	18.64	91.86	5,068.8	13.2	125.0	-26.9	3.48
5,111.0	19.67	92.69	5,092.4	12.8	133.2	-29.8	4.26
5,136.0	20.42	92.46	5,115.9	12.5	141.7	-32.8	3.02
5,161.0	21.32	92.57	5,139.2	12.1	150.6	-36.0	3.60
5,186.0	22.47	92.74	5,162.4	11.6	159.9	-39.4	4.61
5,211.0	23.44	92.57	5,185.4	11.2	169.7	-42.9	3.89
5,236.0	24.33	92.99	5,208.3	10.7	179.8	-46.5	3.62
5,261.0	25.07	93.12	5,231.0	10.1	190.2	-50.3	2.97
5,286.0	26.02	93.26	5,253.6	9.5	201.0	-54.3	3.81
5,311.0	27.06	92.94	5,275.9	8.9	212.1	-58.4	4.20
5,336.0	27.96	92.27	5,298.1	8.4	223.7	-62.5	3.81
5,361.0	28.69	92.05	5,320.1	8.0	235.5	-66.7	2.95
5,386.0	29.19	91.97	5,342.0	7.5	247.6	-70.9	2.01
5,411.0	29.46	91.86	5,363.8	7.1	259.8	-75.1	1.10
5,436.0	29.60	91.02	5,385.5	6.8	272.2	-79.3	1.75
5,461.0	29.71	90.31	5,407.3	6.7	284.5	-83.3	1.47
5,486.0	29.51	89.27	5,429.0	6.7	296.9	-87.2	2.21
5,511.0	29.77	88.75	5,450.7	6.9	309.2	-90.9	1.46
5,536.0	29.86	88.80	5,472.4	7.2	321.7	-94.5	0.37
5,561.0	29.61	89.89	5,494.1	7.3	334.1	-98.3	2.38
5,586.0	29.57	90.31	5,515.9	7.3	346.4	-102.2	0.84
5,611.0	29.51	91.25	5,537.6	7.2	358.7	-106.3	1.87
5,636.0	29.56	92.20	5,559.4	6.8	371.1	-110.5	1.88
5,661.0	29.46	92.22	5,581.1	6.3	383.4	-114.8	0.40
5,686.0	29.45	91.33	5,602.9	5.9	395.7	-119.1	1.75
5,711.0	29.02	90.90	5,624.7	5.7	407.9	-123.1	1.91
5,736.0	29.03	90.68	5,646.6	5.5	420.0	-127.1	0.43
5,761.0	29.03	91.02	5,668.4	5.3	432.1	-131.1	0.66
5,786.0	28.79	92.49	5,690.3	5.0	444.2	-135.3	3.00



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## EOW Completion Report



**Company:** Antero Resources  
**Project:** Doddridge County WV  
**Site:** Zimka/Manser Pad  
**Well:** Manser Unit 3H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Manser Unit 3H  
**TVD Reference:** Patterson 325: GL 1141' + 24' @ 1165.0usft  
**MD Reference:** Patterson 325: GL 1141' + 24' @ 1165.0usft  
**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)
5,811.0	28.77	92.58	5,712.2	4.4	456.2	-139.6	0.19
5,836.0	28.34	92.52	5,734.2	3.9	468.2	-143.8	1.72
5,861.0	28.04	92.23	5,756.2	3.4	480.0	-148.0	1.32
5,886.0	27.72	92.04	5,778.3	3.0	491.6	-152.1	1.33
5,911.0	27.43	92.04	5,800.5	2.6	503.2	-156.1	1.16
5,936.0	27.20	91.96	5,822.7	2.2	514.7	-160.1	0.93
5,961.0	27.11	92.03	5,844.9	1.8	526.1	-164.1	0.38
5,986.0	27.16	92.05	5,867.2	1.4	537.5	-168.1	0.20
6,011.0	27.10	92.02	5,889.4	1.0	548.9	-172.1	0.25
6,036.0	26.83	91.78	5,911.7	0.6	560.2	-176.0	1.16
6,061.0	26.81	91.61	5,934.0	0.3	571.5	-179.9	0.32
6,086.0	26.70	91.13	5,956.3	0.0	582.7	-183.7	0.97
6,111.0	26.37	90.31	5,978.7	-0.2	593.9	-187.3	1.97
6,136.0	26.30	89.82	6,001.1	-0.2	605.0	-190.8	0.91
6,161.0	26.27	89.61	6,023.5	-0.1	616.0	-194.3	0.39
6,186.0	26.23	90.74	6,046.0	-0.1	627.1	-197.8	2.01
6,211.0	26.32	91.25	6,068.4	-0.3	638.2	-201.4	0.97
6,236.0	26.41	90.92	6,090.8	-0.6	649.3	-205.1	0.69
6,261.0	26.31	91.49	6,113.2	-0.8	660.4	-208.9	1.09
6,286.0	26.24	92.94	6,135.6	-1.2	671.4	-212.8	2.58
6,311.0	26.07	93.47	6,158.0	-1.8	682.4	-216.8	1.16
6,336.0	25.83	93.14	6,180.5	-2.5	693.3	-220.8	1.12
6,361.0	25.66	92.68	6,203.0	-3.0	704.2	-224.8	1.05
6,386.0	25.92	92.68	6,225.5	-3.5	715.1	-228.7	1.04
6,411.0	26.41	92.81	6,248.0	-4.0	726.1	-232.7	1.97
6,436.0	26.43	92.48	6,270.4	-4.6	737.2	-236.7	0.59
6,461.0	26.21	92.41	6,292.8	-5.0	748.3	-240.6	0.89
6,486.0	26.06	92.34	6,315.2	-5.5	759.3	-244.5	0.61
6,511.0	25.94	91.87	6,337.7	-5.9	770.2	-248.3	0.95
6,536.0	25.81	91.61	6,360.2	-6.2	781.1	-252.1	0.69
6,561.0	25.56	91.33	6,382.7	-6.5	791.9	-255.8	1.11
6,586.0	25.88	91.39	6,405.2	-6.8	802.8	-259.4	1.28
6,599.1	26.15	91.67	6,417.0	-6.9	808.5	-261.4	2.27
6,694.0	25.88	91.10	6,502.3	-7.9	850.1	-275.4	0.39
6,726.0	25.69	89.97	6,531.1	-8.0	864.1	-280.0	1.65
6,757.0	25.46	83.08	6,559.1	-7.2	877.4	-283.4	9.62
6,788.0	26.19	74.59	6,587.0	-4.6	890.6	-285.1	12.15
6,820.0	27.49	64.77	6,615.6	0.4	904.1	-284.5	14.42
6,851.0	29.20	57.05	6,642.8	7.6	916.9	-281.8	13.04
6,873.0	30.44	52.35	6,661.9	13.9	925.9	-278.6	12.02
<b>MDLX</b>							
6,882.0	30.99	50.53	6,669.7	16.8	929.4	-277.0	12.02
6,914.0	33.94	45.32	6,696.7	28.3	942.2	-270.1	12.70
6,945.0	37.42	42.51	6,721.9	41.3	954.7	-261.7	12.41

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 Site: Zimka/Manser Pad  
 Well: Manser Unit 3H  
 Wellbore: Original Wellpath  
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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
6,977.0	40.88	39.30	6,746.7	56.6	967.9	-251.3	12.53
7,008.0	43.94	35.38	6,769.6	73.2	980.6	-239.5	13.04
7,039.0	45.14	29.94	6,791.7	91.5	992.3	-225.9	12.90
7,051.0	45.62	28.10	6,800.1	99.0	996.4	-220.1	11.60
<b>BRKT</b>							
7,071.0	46.48	25.11	6,814.0	111.9	1,002.9	-209.9	11.60
7,089.0	47.91	21.74	6,826.2	124.0	1,008.1	-200.0	15.86
<b>TLLY</b>							
7,102.0	49.01	19.41	6,834.8	133.1	1,011.5	-192.5	15.86
7,133.0	51.28	15.21	6,854.7	155.8	1,018.6	-173.2	12.72
7,165.0	54.20	11.99	6,874.1	180.5	1,024.6	-151.5	12.14
7,196.0	58.37	9.01	6,891.3	205.9	1,029.2	-129.0	15.65
7,200.0	58.91	8.80	6,893.4	209.3	1,029.8	-125.9	14.26
<b>HMLN</b>							
7,227.0	62.57	7.43	6,906.6	232.6	1,033.1	-104.8	14.26
7,253.0	65.83	6.80	6,917.9	255.8	1,036.0	-83.7	12.74
<b>MRCL_HOT</b>							
7,258.0	66.46	6.68	6,919.9	260.3	1,036.5	-79.6	12.74
7,290.0	71.38	4.37	6,931.4	290.1	1,039.4	-52.3	16.78
7,321.0	75.66	2.50	6,940.2	319.7	1,041.2	-24.7	14.97
7,353.0	79.78	2.01	6,947.0	351.0	1,042.4	4.6	12.96
7,384.0	83.07	1.47	6,951.6	381.6	1,043.3	33.3	10.75
7,415.0	86.44	359.94	6,954.4	412.5	1,043.7	62.5	11.93
7,512.0	91.14	354.24	6,956.5	509.2	1,038.8	155.9	7.61
7,607.0	88.86	351.87	6,956.5	603.5	1,027.3	249.0	3.46
7,701.0	87.85	345.94	6,959.2	695.7	1,009.2	342.2	6.40
7,795.0	89.76	340.62	6,961.2	785.7	982.2	436.1	6.01
7,889.0	89.83	339.81	6,961.5	874.1	950.4	530.1	0.86
7,984.0	89.87	340.09	6,961.7	963.4	917.8	625.0	0.30
8,078.0	89.63	335.95	6,962.2	1,050.5	882.6	718.8	4.41
8,172.0	87.98	330.63	6,964.1	1,134.4	840.4	811.8	5.92
8,266.0	89.29	327.95	6,966.4	1,215.2	792.4	903.6	3.17
8,360.0	90.27	331.22	6,966.7	1,296.3	744.8	995.5	3.63
8,454.0	90.24	330.76	6,966.3	1,378.5	699.2	1,087.9	0.49
8,548.0	88.22	328.43	6,967.6	1,459.5	651.7	1,179.8	3.28
8,642.0	89.03	333.29	6,969.8	1,541.6	605.9	1,272.1	5.24
8,736.0	91.11	338.82	6,969.7	1,627.4	567.8	1,365.6	6.29
8,831.0	90.71	341.55	6,968.2	1,716.8	535.6	1,460.5	2.90
8,925.0	88.92	342.83	6,968.5	1,806.3	506.9	1,554.5	2.34
9,019.0	89.56	343.63	6,969.7	1,896.3	479.7	1,648.5	1.09
9,113.0	89.16	343.85	6,970.8	1,986.5	453.4	1,742.4	0.49
9,208.0	89.16	340.91	6,972.2	2,077.0	424.7	1,837.4	3.09
9,302.0	90.34	343.14	6,972.6	2,166.4	395.7	1,931.4	2.68
9,396.0	89.26	342.45	6,972.9	2,256.2	367.9	2,025.3	1.36
9,490.0	88.72	342.32	6,974.6	2,345.8	339.4	2,119.3	0.59



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9,584.0	89.50	341.88	6,976.0	2,435.3	310.5	2,213.3	0.95
9,678.0	89.19	341.30	6,977.1	2,524.4	280.8	2,307.3	0.70
9,772.0	88.86	340.96	6,978.7	2,613.4	250.5	2,401.3	0.50
9,866.0	91.55	342.72	6,978.4	2,702.7	221.2	2,495.3	3.42
9,960.0	90.24	344.45	6,976.9	2,792.8	194.6	2,589.2	2.31
10,052.0	90.37	344.52	6,976.4	2,881.5	170.0	2,681.1	0.16
10,143.0	88.72	340.41	6,977.1	2,968.2	142.6	2,772.0	4.87
10,234.0	90.40	342.06	6,977.8	3,054.4	113.3	2,863.0	2.59
10,325.0	90.47	341.13	6,977.2	3,140.7	84.6	2,954.0	1.02
10,416.0	89.76	341.53	6,977.0	3,226.9	55.5	3,045.0	0.90
10,506.0	91.24	341.39	6,976.2	3,312.3	26.8	3,135.0	1.65
10,597.0	91.21	340.52	6,974.2	3,398.3	-2.9	3,226.0	0.96
10,687.0	90.81	339.61	6,972.7	3,482.8	-33.5	3,315.9	1.10
10,778.0	91.14	341.05	6,971.1	3,568.5	-64.2	3,406.9	1.62
10,871.0	91.28	341.30	6,969.1	3,656.5	-94.2	3,499.9	0.31
10,962.0	89.83	343.03	6,968.3	3,743.1	-122.0	3,590.9	2.48
11,052.0	91.58	343.23	6,967.2	3,829.3	-148.1	3,680.8	1.96
11,146.0	89.19	341.02	6,966.5	3,918.7	-177.0	3,774.8	3.46
11,240.0	88.22	340.32	6,968.6	4,007.4	-208.1	3,868.8	1.27
11,334.0	91.44	342.41	6,968.9	4,096.4	-238.1	3,962.7	4.08
11,428.0	91.41	341.58	6,966.6	4,185.8	-267.2	4,056.7	0.88
11,522.0	91.31	342.39	6,964.4	4,275.2	-296.2	4,150.7	0.87
11,616.0	89.90	341.04	6,963.4	4,364.4	-325.7	4,244.7	2.08
11,710.0	89.33	342.17	6,964.0	4,453.6	-355.4	4,338.7	1.35
11,804.0	91.24	343.26	6,963.5	4,543.4	-383.3	4,432.6	2.34
11,898.0	91.65	342.71	6,961.2	4,633.2	-410.8	4,526.6	0.73
11,992.0	89.83	341.49	6,959.9	4,722.7	-439.7	4,620.6	2.33
12,086.0	89.93	339.73	6,960.1	4,811.3	-470.9	4,714.5	1.88
12,180.0	91.31	342.38	6,959.1	4,900.2	-501.4	4,808.5	3.18
12,274.0	90.27	339.68	6,957.8	4,989.1	-532.0	4,902.5	3.08
12,369.0	91.01	339.49	6,956.8	5,078.1	-565.1	4,997.4	0.80
12,463.0	92.05	342.31	6,954.3	5,166.9	-595.9	5,091.4	3.20
12,557.0	88.29	341.22	6,954.0	5,256.2	-625.3	5,185.4	4.16
12,651.0	88.19	340.15	6,956.9	5,344.8	-656.3	5,279.3	1.14
12,745.0	89.39	339.36	6,958.8	5,433.0	-688.9	5,373.2	1.53
12,839.0	89.70	339.77	6,959.6	5,521.1	-721.7	5,467.2	0.55
12,935.0	90.60	341.32	6,959.3	5,611.6	-753.6	5,563.1	1.87
13,027.0	90.87	339.70	6,958.2	5,698.3	-784.3	5,655.1	1.79
13,122.0	90.24	339.45	6,957.2	5,787.3	-817.5	5,750.1	0.71
13,216.0	90.54	341.29	6,956.6	5,875.9	-849.1	5,844.0	1.98
13,310.0	90.91	341.23	6,955.4	5,964.9	-879.3	5,938.0	0.40
13,405.0	89.16	344.32	6,955.4	6,055.6	-907.4	6,033.0	3.74
13,500.0	89.23	345.23	6,956.7	6,147.3	-932.3	6,127.8	0.96
13,594.0	88.99	342.86	6,958.2	6,237.6	-958.2	6,221.7	2.53



**Company:** Antero Resources  
**Project:** Doddridge County WV  
**Site:** Zimka/Manser Pad  
**Well:** Manser Unit 3H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Manser Unit 3H  
**TVD Reference:** Patterson 325: GL 1141' + 24' @ 1165.0usft  
**MD Reference:** Patterson 325: GL 1141' + 24' @ 1165.0usft  
**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)
13,688.0	88.62	341.59	6,960.1	6,327.1	-986.9	6,315.7	1.41
13,782.0	90.07	343.42	6,961.2	6,416.7	-1,015.1	6,409.7	2.48
13,876.0	90.07	343.61	6,961.1	6,506.9	-1,041.8	6,503.6	0.20
13,970.0	90.50	343.76	6,960.6	6,597.1	-1,068.2	6,597.6	0.48
14,065.0	89.46	340.59	6,960.6	6,687.5	-1,097.3	6,692.5	3.51
14,159.0	88.99	339.46	6,961.9	6,775.9	-1,129.4	6,786.5	1.30
14,253.0	89.56	337.48	6,963.1	6,863.3	-1,163.9	6,880.3	2.19
14,347.0	88.92	336.58	6,964.3	6,949.8	-1,200.6	6,974.0	1.17
14,365.0	88.82	336.94	6,964.7	6,966.4	-1,207.7	6,992.0	2.08
14,420.0	89.00	336.94	6,965.7	7,017.0	-1,229.2	7,046.8	0.33

**Design Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,873.0	6,661.9	13.9	925.9	MDLX
7,051.0	6,800.1	99.0	996.4	BRKT
7,089.0	6,826.2	124.0	1,008.1	TLLY
7,200.0	6,893.4	209.3	1,029.8	HMLN
7,253.0	6,917.9	255.8	1,036.0	MRCL_HOT

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

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 MORGANTOWN, WV