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WV GEOLOGICAL SURVEY
MORGANTOWN, WV



Antero Resources
Manser Unit 2H
Doddridge County WV
Northing: 14265914.80
Easting: 1732896.41
As Drilled

WELL DETAILS: Manser Unit 2H
Ground Level: 1141.0
Northing: 14265914.80
Easting: 1732896.41
Longitude: 80° 40' 23.401" W
SIC

REFERENCE INFORMATION
Coordinates (NAD 83) Reference: West Manser Unit 2H, Old North
Manser (V0) Reference: S&T 2003.0 USE: 1141° 48' 24" @ 1103.049ft
Measured Depth Reference: Revision 25, OL 1141° 48' 24" @ 1103.049ft
Geographic Method: Instream Coordinates



PROJECT DETAILS: Doddridge County WV
Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: NAD 1983 (NAD83 CONUS)
Eipsoid: Clarke 1866
Zone: Zone 17N (84° W to 78° W)
System Datum: Mean Sea Level

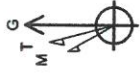
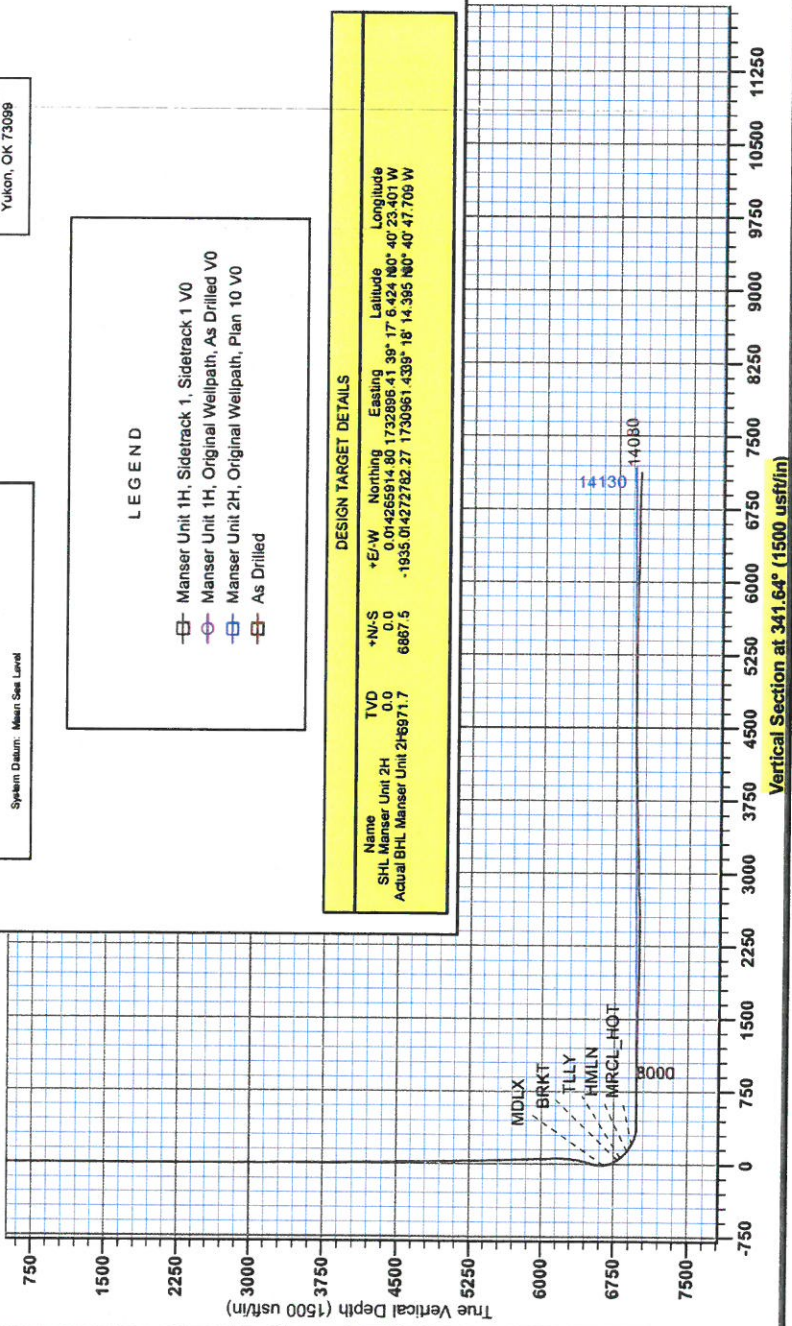
Genie Lightfoot
5:15, November 18, 2014
Scientific Drilling Inter.
11220 NW 10th Street
Tulacoh, OK 73098

LEGEND

- Manser Unit 1H, Sidetrack 1, Sidetrack 1 V0
- Manser Unit 1H, Original Wellpath, As Drilled V0
- Manser Unit 2H, Original Wellpath, Plan 10 V0
- As Drilled

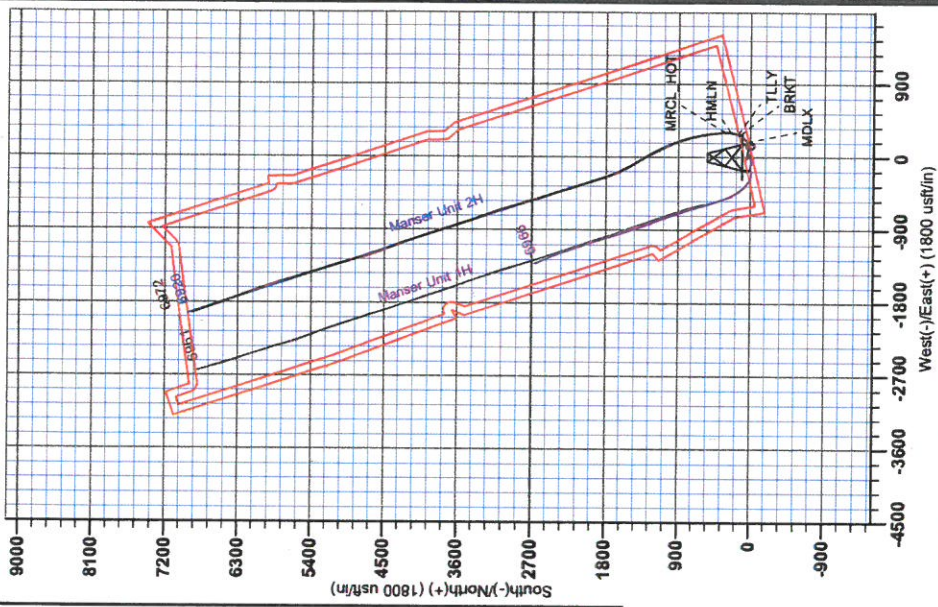
DESIGN TARGET DETAILS

Name	*N/S	TVD	*E/W	Northing	Easting	Latitude	Longitude
SHL Manser Unit 2H	0.0	0.0	0.0	14265914.80	1732896.41	39° 17' 6.42" N	80° 40' 23.401" W
Actual BHL Manser Unit 2H	6887.5	1730961.4389° 16'	-1935.014272782.27	1730961.4389° 16'	-14.385 160° 40' 47.705 W		



To convert Magnetic North to Grid, Subtract 8.76°
To convert True North to Grid, Subtract 0.21°

Magnetic Field
Strength: 52245.5 nT
Dip Angle: 68.85°
Date: 8/2/2014
Model: BGGN2014





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Antero Resources

**Doddridge County WV
Zimka/Manser Pad
Manser Unit 2H
Original Wellpath**

Design: As Drilled

EOW Completion Report

18 November, 2014



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ENVIRONMENTAL SURVEY MORGANTOWN, WV

EOW Completion Report



Company: Antero Resources	Local Co-ordinate Reference: Well Manser Unit 2H
Project: Doddridge County WV	TVD Reference: Patterson 325: GL 1141' + KB 24' @ 1165.0usft
Site: Zimka/Manser Pad	MD Reference: Patterson 325: GL 1141' + KB 24' @ 1165.0usft
Well: Manser Unit 2H	North Reference: Grid
Wellbore: Original Wellpath	Survey Calculation Method: Minimum Curvature
Design: 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	Zimka/Manser Pad				
Site Position:		Northing:	14,265,927.56 usft	Latitude:	39° 17' 6.551 N
From:	Map	Easting:	1,732,882.20 usft	Longitude:	80° 40' 23.581 W
Position Uncertainty:	2.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.21 °

Well	Manser Unit 2H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,265,914.80 usft	Latitude:	39° 17' 6.424 N
	+E/-W	0.0 usft	Easting:	1,732,896.41 usft	Longitude:	80° 40' 23.401 W
Position Uncertainty	2.0 usft		Wellhead Elevation:	1,165.0 usft	Ground Level:	1,141.0 usft

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

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	341.64	

Survey Program	Date 11/18/2014				
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
36.0	5,657.0	Survey #6 Def Gyro KOP (Original Wellpa	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper	
5,751.0	14,080.0	Survey #7 MWD (Original Wellpath)	MWD SDI	MWD - Standard ver 1.0.1	

Survey									
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	0.0	0.00	
36.0	0.13	49.00	36.0	0.0	0.0	0.0	0.0	0.36	
61.0	0.27	49.00	61.0	0.1	0.1	0.0	0.0	0.56	
86.0	0.40	49.00	86.0	0.2	0.2	0.1	0.1	0.52	
111.0	0.53	49.00	111.0	0.3	0.4	0.2	0.2	0.52	
136.0	0.46	57.89	136.0	0.4	0.5	0.3	0.3	0.41	
161.0	0.45	72.27	161.0	0.5	0.7	0.3	0.3	0.46	
186.0	0.37	52.36	186.0	0.6	0.9	0.3	0.3	0.65	
211.0	0.11	94.94	211.0	0.7	1.0	0.3	0.3	1.19	
236.0	0.22	205.36	236.0	0.6	1.0	0.3	0.3	1.11	
261.0	0.23	220.65	261.0	0.5	0.9	0.2	0.2	0.24	

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GEOLOGICAL SURVEY MORGANTOWN, WV

EOW Completion Report



Company: Antero Resources
Project: Doddridge County WV
Site: Zimka/Manser Pad
Well: Manser Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Manser Unit 2H
TVD Reference: Patterson 325: GL 1141' + KB 24' @ 1165.0usft
MD Reference: Patterson 325: GL 1141' + KB 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)
286.0	0.28	211.27	286.0	0.4	0.8	0.1	0.26
311.0	0.27	220.14	311.0	0.3	0.8	0.1	0.17
336.0	0.21	221.99	336.0	0.3	0.7	0.0	0.24
361.0	0.26	223.99	361.0	0.2	0.6	0.0	0.20
386.0	0.21	222.99	386.0	0.1	0.6	-0.1	0.20
411.0	0.22	213.23	411.0	0.0	0.5	-0.1	0.15
436.0	0.18	226.46	436.0	0.0	0.5	-0.2	0.24
461.0	0.18	241.13	461.0	-0.1	0.4	-0.2	0.18
486.0	0.24	226.05	486.0	-0.1	0.3	-0.2	0.32
511.0	0.14	222.13	511.0	-0.2	0.3	-0.3	0.40
536.0	0.17	218.12	536.0	-0.2	0.2	-0.3	0.13
561.0	0.17	210.32	561.0	-0.3	0.2	-0.3	0.09
586.0	0.15	243.32	586.0	-0.4	0.1	-0.4	0.37
611.0	0.28	198.03	611.0	-0.4	0.1	-0.4	0.82
636.0	0.27	214.62	636.0	-0.5	0.0	-0.5	0.32
661.0	0.22	192.83	661.0	-0.6	0.0	-0.6	0.42
686.0	0.37	235.87	686.0	-0.7	-0.1	-0.7	1.03
711.0	0.34	229.16	711.0	-0.8	-0.2	-0.7	0.20
736.0	0.26	225.76	736.0	-0.9	-0.3	-0.8	0.33
761.0	0.27	240.01	761.0	-1.0	-0.4	-0.8	0.27
786.0	0.34	252.37	786.0	-1.0	-0.5	-0.8	0.38
811.0	0.19	247.08	811.0	-1.1	-0.6	-0.8	0.61
836.0	0.27	270.43	836.0	-1.1	-0.7	-0.8	0.49
861.0	0.32	277.62	861.0	-1.1	-0.9	-0.7	0.25
886.0	0.24	257.20	886.0	-1.1	-1.0	-0.7	0.51
911.0	0.39	257.72	911.0	-1.1	-1.1	-0.7	0.60
936.0	0.31	250.01	936.0	-1.1	-1.3	-0.7	0.37
961.0	0.26	255.62	961.0	-1.2	-1.4	-0.7	0.23
986.0	0.28	254.99	986.0	-1.2	-1.5	-0.7	0.08
1,011.0	0.30	257.88	1,011.0	-1.2	-1.6	-0.7	0.10
1,036.0	0.31	273.03	1,036.0	-1.2	-1.8	-0.6	0.32
1,061.0	0.38	250.72	1,061.0	-1.3	-1.9	-0.6	0.60
1,086.0	0.35	292.22	1,086.0	-1.3	-2.0	-0.6	1.04
1,111.0	0.31	285.93	1,111.0	-1.2	-2.2	-0.5	0.22
1,136.0	0.30	258.42	1,136.0	-1.2	-2.3	-0.4	0.58
1,161.0	0.32	267.56	1,161.0	-1.2	-2.4	-0.4	0.21
1,186.0	0.24	262.56	1,186.0	-1.2	-2.6	-0.4	0.33
1,211.0	0.22	275.31	1,211.0	-1.2	-2.7	-0.3	0.22
1,236.0	0.42	285.89	1,236.0	-1.2	-2.8	-0.3	0.83
1,261.0	0.58	241.44	1,261.0	-1.2	-3.0	-0.2	1.62
1,286.0	0.48	241.86	1,286.0	-1.4	-3.2	-0.3	0.40
1,311.0	0.54	254.32	1,311.0	-1.4	-3.4	-0.3	0.50
1,336.0	0.32	266.34	1,336.0	-1.5	-3.6	-0.3	0.95
1,361.0	0.15	314.37	1,361.0	-1.5	-3.7	-0.2	0.99

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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	EW (usft)	V. Sec (usft)	DLeg (°/100usft)
1,386.0	0.59	57.98	1,386.0	-1.4	-3.6	-0.2	2.57
1,411.0	2.00	66.37	1,411.0	-1.1	-3.1	-0.1	5.68
1,436.0	2.90	73.24	1,436.0	-0.8	-2.1	-0.1	3.78
1,461.0	3.58	75.57	1,460.9	-0.4	-0.7	-0.1	2.77
1,486.0	3.75	74.41	1,485.9	0.0	0.8	-0.2	0.74
1,511.0	4.42	79.71	1,510.8	0.4	2.6	-0.4	3.07
1,536.0	4.52	78.86	1,535.7	0.8	4.5	-0.7	0.48
1,561.0	4.60	78.16	1,560.6	1.2	6.4	-0.9	0.39
1,586.0	4.65	77.96	1,585.6	1.6	8.4	-1.1	0.21
1,611.0	5.04	75.43	1,610.5	2.1	10.4	-1.3	1.78
1,636.0	5.22	76.25	1,635.4	2.6	12.6	-1.5	0.78
1,661.0	5.24	75.78	1,660.3	3.2	14.8	-1.7	0.19
1,686.0	5.35	75.98	1,685.2	3.7	17.1	-1.8	0.45
1,711.0	5.37	76.74	1,710.0	4.3	19.3	-2.0	0.30
1,736.0	5.47	75.89	1,734.9	4.8	21.6	-2.2	0.51
1,761.0	5.26	76.06	1,759.8	5.4	23.9	-2.4	0.84
1,786.0	4.01	73.80	1,784.7	5.9	25.8	-2.5	5.05
1,811.0	2.98	73.95	1,809.7	6.4	27.3	-2.6	4.12
1,836.0	2.89	72.97	1,834.7	6.7	28.5	-2.6	0.41
1,861.0	2.58	71.26	1,859.6	7.1	29.7	-2.6	1.28
1,886.0	2.30	73.27	1,884.6	7.4	30.7	-2.6	1.17
1,911.0	2.12	70.61	1,909.6	7.7	31.6	-2.6	0.83
1,936.0	2.04	72.82	1,934.6	8.0	32.5	-2.6	0.45
1,961.0	1.97	76.69	1,959.6	8.2	33.3	-2.7	0.61
1,986.0	1.59	76.27	1,984.6	8.4	34.1	-2.7	1.52
2,011.0	1.46	64.64	2,009.5	8.6	34.7	-2.7	1.34
2,036.0	1.35	70.53	2,034.5	8.9	35.2	-2.7	0.73
2,061.0	1.12	67.76	2,059.5	9.1	35.7	-2.7	0.95
2,086.0	1.11	68.62	2,084.5	9.2	36.2	-2.6	0.08
2,111.0	0.84	65.98	2,109.5	9.4	36.6	-2.6	1.09
2,136.0	0.75	71.87	2,134.5	9.5	36.9	-2.6	0.49
2,161.0	0.51	58.92	2,159.5	9.6	37.2	-2.6	1.11
2,186.0	0.54	51.63	2,184.5	9.8	37.4	-2.5	0.29
2,211.0	0.60	52.51	2,209.5	9.9	37.6	-2.4	0.24
2,236.0	0.47	39.11	2,234.5	10.1	37.7	-2.3	0.72
2,261.0	0.46	41.49	2,259.5	10.2	37.9	-2.2	0.09
2,286.0	0.43	54.61	2,284.5	10.4	38.0	-2.1	0.42
2,311.0	0.36	33.75	2,309.5	10.5	38.1	-2.1	0.63
2,336.0	0.35	53.55	2,334.5	10.6	38.2	-2.0	0.49
2,361.0	0.18	55.41	2,359.5	10.7	38.3	-2.0	0.68
2,386.0	0.30	19.53	2,384.5	10.7	38.4	-1.9	0.75
2,411.0	0.18	12.36	2,409.5	10.8	38.4	-1.8	0.49
2,436.0	0.22	342.39	2,434.5	10.9	38.4	-1.7	0.44
2,461.0	0.07	3.56	2,459.5	11.0	38.4	-1.7	0.63
2,486.0	0.27	4.35	2,484.5	11.1	38.4	-1.6	0.80

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Site: Zimka/Manser Pad
Well: Manser Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Manser Unit 2H
TVD Reference: Patterson 325: GL 1141' + KB 24' @ 1165.0usft
MD Reference: Patterson 325: GL 1141' + KB 24' @ 1165.0usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Oklahoma District

Survey

Table with 8 columns: MD (usft), Inc (°), Azi (azimuth) (°), TVD (usft), N/S (usft), E/W (usft), V. Sec (usft), DLeg (°/100usft). Contains 40 rows of survey data.

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3,611.0	0.69	293.99	3,609.5	15.6	30.2	5.3	0.24
3,636.0	0.67	288.56	3,634.5	15.7	30.0	5.5	0.27
3,661.0	0.71	295.68	3,659.5	15.9	29.7	5.7	0.38
3,686.0	0.62	295.45	3,684.5	16.0	29.4	5.9	0.36
3,711.0	0.65	302.62	3,709.5	16.1	29.2	6.1	0.34
3,736.0	0.64	305.53	3,734.5	16.3	29.0	6.3	0.14
3,761.0	0.59	303.74	3,759.5	16.4	28.7	6.5	0.21
3,786.0	0.61	297.94	3,784.5	16.6	28.5	6.7	0.26
3,811.0	0.63	286.25	3,809.5	16.7	28.3	6.9	0.51
3,836.0	0.68	288.19	3,834.5	16.7	28.0	7.1	0.22
3,861.0	0.67	291.11	3,859.5	16.8	27.7	7.3	0.14
3,886.0	0.62	288.91	3,884.4	16.9	27.4	7.4	0.22
3,911.0	0.69	293.76	3,909.4	17.0	27.2	7.6	0.36
3,936.0	0.67	294.72	3,934.4	17.2	26.9	7.8	0.09
3,961.0	0.71	300.98	3,959.4	17.3	26.6	8.0	0.34
3,986.0	0.67	301.70	3,984.4	17.5	26.4	8.3	0.16
4,011.0	0.69	301.53	4,009.4	17.6	26.1	8.5	0.08
4,036.0	0.75	306.51	4,034.4	17.8	25.9	8.7	0.35
4,061.0	0.78	300.75	4,059.4	18.0	25.6	9.0	0.33
4,086.0	0.80	306.29	4,084.4	18.2	25.3	9.3	0.32
4,111.0	0.69	299.18	4,109.4	18.3	25.0	9.5	0.57
4,136.0	0.81	301.88	4,134.4	18.5	24.8	9.8	0.50
4,161.0	0.76	297.58	4,159.4	18.7	24.5	10.0	0.31
4,186.0	0.77	298.60	4,184.4	18.8	24.2	10.3	0.07
4,211.0	0.80	306.31	4,209.4	19.0	23.9	10.5	0.44
4,236.0	0.87	299.87	4,234.4	19.2	23.6	10.8	0.47
4,261.0	0.87	300.53	4,259.4	19.4	23.2	11.1	0.04
4,286.0	0.91	304.91	4,284.4	19.6	22.9	11.4	0.32
4,311.0	0.97	303.79	4,309.4	19.9	22.6	11.7	0.25
4,336.0	0.96	302.50	4,334.4	20.1	22.2	12.1	0.10
4,361.0	0.93	304.34	4,359.4	20.3	21.9	12.4	0.17
4,386.0	1.08	310.71	4,384.4	20.6	21.5	12.8	0.75
4,411.0	1.04	307.68	4,409.4	20.9	21.2	13.1	0.28
4,436.0	0.99	309.89	4,434.4	21.2	20.8	13.5	0.25
4,461.0	0.92	312.18	4,459.4	21.4	20.5	13.9	0.32
4,486.0	1.03	308.31	4,484.4	21.7	20.2	14.2	0.51
4,511.0	0.96	311.04	4,509.4	22.0	19.9	14.6	0.34
4,536.0	1.02	312.48	4,534.4	22.3	19.5	15.0	0.26
4,561.0	1.06	304.51	4,559.4	22.5	19.2	15.4	0.60
4,586.0	1.01	307.15	4,584.4	22.8	18.8	15.7	0.28
4,611.0	1.09	309.06	4,609.4	23.1	18.5	16.1	0.35
4,636.0	1.13	311.97	4,634.4	23.4	18.1	16.5	0.28
4,661.0	1.16	314.31	4,659.4	23.7	17.7	17.0	0.22
4,686.0	1.19	312.49	4,684.3	24.1	17.4	17.4	0.19

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GEOLOGICAL SURVEY
MORGANTOWN, WV

EOW Completion Report



Company: Antero Resources
Project: Doddridge County WV
Site: Zimka/Manser Pad
Well: Manser Unit 2H
Wellbore: Original Wellpath
Design: As Drilled

Local Co-ordinate Reference: Well Manser Unit 2H
TVD Reference: Patterson 325: GL 1141' + KB 24' @ 1165.0usft
MD Reference: Patterson 325: GL 1141' + KB 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)
4,711.0	1.16	315.31	4,709.3	24.5	17.0	17.9	0.26
4,736.0	1.16	310.30	4,734.3	24.8	16.6	18.3	0.41
4,761.0	1.22	309.33	4,759.3	25.1	16.2	18.7	0.25
4,786.0	1.15	308.24	4,784.3	25.5	15.8	19.2	0.29
4,811.0	1.24	312.49	4,809.3	25.8	15.4	19.6	0.51
4,836.0	1.24	313.72	4,834.3	26.2	15.0	20.1	0.11
4,861.0	1.34	318.68	4,859.3	26.6	14.6	20.6	0.60
4,886.0	1.34	317.46	4,884.3	27.0	14.2	21.1	0.11
4,911.0	1.43	317.83	4,909.3	27.5	13.8	21.7	0.36
4,936.0	1.38	317.34	4,934.3	27.9	13.4	22.3	0.21
4,961.0	1.38	317.73	4,959.3	28.3	13.0	22.8	0.04
4,986.0	1.41	321.14	4,984.3	28.8	12.6	23.4	0.35
5,011.0	1.48	317.03	5,009.3	29.3	12.2	24.0	0.50
5,036.0	1.45	312.07	5,034.3	29.7	11.7	24.5	0.52
5,061.0	1.34	315.96	5,059.3	30.2	11.3	25.1	0.58
5,086.0	1.45	314.00	5,084.2	30.6	10.9	25.6	0.48
5,111.0	1.33	313.99	5,109.2	31.0	10.4	26.1	0.48
5,136.0	1.43	313.52	5,134.2	31.4	10.0	26.7	0.40
5,161.0	1.47	316.87	5,159.2	31.9	9.6	27.2	0.37
5,186.0	1.48	314.51	5,184.2	32.3	9.1	27.8	0.25
5,211.0	1.49	314.76	5,209.2	32.8	8.7	28.4	0.05
5,236.0	1.49	313.84	5,234.2	33.2	8.2	29.0	0.10
5,261.0	1.58	311.73	5,259.2	33.7	7.7	29.6	0.43
5,286.0	1.63	308.88	5,284.2	34.1	7.2	30.2	0.38
5,311.0	1.69	314.38	5,309.2	34.6	6.6	30.8	0.68
5,336.0	1.67	313.77	5,334.2	35.1	6.1	31.4	0.11
5,361.0	1.63	316.43	5,359.1	35.6	5.6	32.1	0.35
5,386.0	1.63	314.95	5,384.1	36.2	5.1	32.7	0.17
5,411.0	1.64	317.42	5,409.1	36.7	4.6	33.4	0.28
5,436.0	1.83	314.80	5,434.1	37.2	4.1	34.0	0.82
5,461.0	1.81	320.07	5,459.1	37.8	3.5	34.8	0.67
5,486.0	1.82	312.28	5,484.1	38.4	3.0	35.5	0.99
5,511.0	1.88	317.18	5,509.1	38.9	2.4	36.2	0.68
5,536.0	1.87	320.63	5,534.1	39.6	1.9	37.0	0.45
5,561.0	1.85	312.83	5,559.0	40.1	1.3	37.7	1.02
5,586.0	2.05	315.26	5,584.0	40.7	0.7	38.4	0.87
5,611.0	2.11	319.82	5,609.0	41.4	0.1	39.3	0.70
5,636.0	2.05	319.49	5,634.0	42.1	-0.5	40.1	0.24
5,639.9	2.07	320.76	5,637.9	42.2	-0.6	40.2	1.28
5,657.0	2.25	322.32	5,655.0	42.7	-1.0	40.8	1.11
5,751.0	1.95	313.06	5,748.9	45.3	-3.3	44.0	0.48
5,845.0	1.56	310.54	5,842.9	47.2	-5.4	46.5	0.42
5,939.0	1.97	317.65	5,936.8	49.2	-7.5	49.1	0.49
6,034.0	1.99	299.55	6,031.8	51.2	-10.0	51.8	0.66

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6,128.0	2.16	290.14	6,125.7	52.6	-13.1	54.1	0.40
6,161.0	1.86	296.85	6,158.7	53.1	-14.2	54.9	1.15
6,192.0	0.56	63.57	6,189.7	53.4	-14.5	55.2	7.23
6,223.0	4.07	99.70	6,220.7	53.3	-13.2	54.7	11.72
6,255.0	7.97	101.41	6,252.5	52.6	-10.0	53.1	12.20
6,286.0	10.96	99.79	6,283.1	51.7	-4.9	50.6	9.68
6,317.0	13.24	100.76	6,313.4	50.6	1.5	47.5	7.38
6,349.0	15.08	102.35	6,344.4	49.0	9.1	43.6	5.88
6,380.0	17.53	103.80	6,374.1	47.0	17.6	39.1	8.01
6,411.0	20.53	103.44	6,403.4	44.6	27.4	33.7	9.68
6,443.0	24.21	101.74	6,433.0	42.0	39.3	27.5	11.68
6,474.0	27.45	101.93	6,460.9	39.2	52.5	20.7	10.46
6,505.0	30.80	100.86	6,488.0	36.2	67.3	13.2	10.94
6,537.0	34.50	98.30	6,514.9	33.4	84.3	5.1	12.34
6,568.0	36.38	92.54	6,540.2	31.7	102.2	-2.1	12.36
6,600.0	37.65	86.85	6,565.8	31.8	121.5	-8.0	11.41
6,631.0	38.95	79.86	6,590.1	34.1	140.5	-11.9	14.58
6,662.0	38.52	73.25	6,614.3	38.6	159.4	-13.6	13.41
6,694.0	38.45	67.26	6,639.4	45.3	178.1	-13.1	11.65
6,709.0	38.32	63.64	6,651.1	49.2	186.5	-12.1	15.00
MDLX							
6,725.0	38.31	59.77	6,663.7	53.9	195.3	-10.4	15.00
6,756.0	38.37	52.88	6,688.0	64.5	211.3	-5.3	13.78
6,787.0	38.51	46.44	6,712.3	77.0	225.9	1.9	12.92
6,819.0	40.09	39.37	6,737.1	91.8	239.7	11.6	14.83
6,850.0	42.73	34.40	6,760.3	108.2	252.0	23.3	13.60
6,882.0	45.12	29.94	6,783.4	127.0	263.8	37.5	12.21
6,897.0	46.13	27.37	6,793.9	136.4	268.9	44.8	13.97
BRKT							
6,913.0	47.27	24.73	6,804.8	146.9	274.0	53.1	13.97
6,936.0	48.69	20.78	6,820.2	162.6	280.6	66.0	14.16
TLLY							
6,944.0	49.21	19.45	6,825.5	168.3	282.7	70.7	14.16
6,976.0	51.33	15.46	6,845.9	191.8	290.1	90.6	11.65
7,007.0	53.63	11.14	6,864.8	215.7	295.7	111.6	13.31
7,038.0	55.68	7.09	6,882.8	240.6	299.7	134.0	12.55
HMLN							
7,039.0	55.75	6.96	6,883.3	241.5	299.8	134.7	12.55
7,070.0	57.62	6.19	6,900.4	267.2	302.8	158.2	6.38
7,101.0	59.12	1.73	6,916.6	293.5	304.6	182.6	13.17
7,128.0	61.77	358.79	6,929.9	317.0	304.7	204.9	13.64
MRCL_HOT							
7,132.0	62.17	358.37	6,931.8	320.5	304.6	208.3	13.64
7,164.0	65.35	357.29	6,946.0	349.2	303.5	235.8	10.39
7,195.0	69.68	355.47	6,957.8	377.8	301.7	263.5	14.98

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MORGANTOWN, WV

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7,226.0	75.00	354.73	6,967.2	407.2	299.2	292.2	17.31
7,258.0	80.92	355.04	6,973.9	438.4	296.4	322.7	18.52
7,274.0	84.13	354.53	6,976.0	454.2	294.9	338.1	20.31
7,323.0	90.94	350.64	6,978.1	502.7	288.6	386.2	16.00
7,418.0	90.40	348.19	6,977.0	596.0	271.2	480.3	2.64
7,512.0	89.46	346.20	6,977.1	687.7	250.3	573.8	2.34
7,606.0	89.60	345.53	6,977.9	778.8	227.4	667.6	0.73
7,701.0	88.82	341.30	6,979.2	869.9	200.3	762.5	4.53
7,795.0	90.71	338.33	6,979.5	958.1	167.8	856.4	3.74
7,889.0	88.66	335.38	6,980.1	1,044.5	130.9	950.1	3.82
7,983.0	90.44	335.64	6,980.8	1,130.0	91.9	1,043.5	1.91
8,078.0	90.50	334.42	6,980.0	1,216.1	51.8	1,137.9	1.29
8,172.0	88.22	330.32	6,981.1	1,299.4	8.3	1,230.6	4.99
8,266.0	88.32	330.39	6,983.9	1,381.0	-38.2	1,322.8	0.13
8,360.0	91.04	330.40	6,984.4	1,462.8	-84.7	1,415.0	2.89
8,454.0	90.07	330.69	6,983.5	1,544.6	-130.9	1,507.2	1.08
8,549.0	86.87	332.57	6,986.1	1,628.2	-176.0	1,600.7	3.91
8,642.0	89.03	337.60	6,989.4	1,712.4	-215.1	1,693.0	5.88
8,736.0	88.56	341.80	6,991.4	1,800.5	-247.7	1,786.9	4.49
8,831.0	88.35	341.00	6,993.9	1,890.5	-278.0	1,881.9	0.87
8,925.0	90.17	342.37	6,995.1	1,979.8	-307.6	1,975.9	2.42
9,019.0	89.60	343.99	6,995.3	2,069.7	-334.8	2,069.8	1.83
9,113.0	88.99	342.26	6,996.5	2,159.7	-362.0	2,163.8	1.95
9,207.0	89.16	341.63	6,998.0	2,249.0	-391.2	2,257.8	0.69
9,301.0	91.91	342.36	6,997.1	2,338.4	-420.2	2,351.8	3.03
9,396.0	89.60	341.20	6,995.9	2,428.6	-449.9	2,446.7	2.72
9,490.0	89.36	340.95	6,996.7	2,517.6	-480.4	2,540.7	0.37
9,584.0	92.83	345.94	6,994.9	2,607.6	-507.2	2,634.6	6.46
9,678.0	92.49	344.16	6,990.6	2,698.3	-531.4	2,728.4	1.93
9,772.0	91.95	342.38	6,986.9	2,788.3	-558.4	2,822.2	1.98
9,866.0	90.07	341.69	6,985.3	2,877.7	-587.4	2,916.2	2.13
9,960.0	92.28	343.43	6,983.3	2,967.3	-615.6	3,010.2	2.99
10,051.0	92.25	342.78	6,979.8	3,054.3	-642.0	3,101.1	0.71
10,142.0	91.21	340.56	6,977.0	3,140.7	-670.6	3,192.0	2.69
10,234.0	90.71	338.38	6,975.5	3,226.8	-702.9	3,283.9	2.43
10,325.0	92.49	340.28	6,972.9	3,311.9	-735.0	3,374.8	2.86
10,416.0	91.85	339.18	6,969.5	3,397.2	-766.5	3,465.7	1.40
10,508.0	90.87	342.45	6,967.3	3,484.1	-796.7	3,557.7	3.71
10,598.0	92.38	342.38	6,964.7	3,569.8	-823.9	3,647.6	1.68
10,689.0	91.68	340.29	6,961.5	3,656.0	-853.0	3,738.5	2.42
10,780.0	92.08	342.52	6,958.5	3,742.2	-882.0	3,829.5	2.49
10,871.0	92.69	343.20	6,954.7	3,829.1	-908.8	3,920.4	1.00
10,961.0	90.10	341.24	6,952.6	3,914.7	-936.2	4,010.3	3.61
11,053.0	89.90	341.09	6,952.6	4,001.8	-965.9	4,102.3	0.27

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11,147.0	92.35	341.51	6,950.7	4,090.8	-996.1	4,196.3	2.64
11,240.0	90.77	341.20	6,948.2	4,178.9	-1,025.8	4,289.3	1.73
11,335.0	90.20	338.18	6,947.4	4,268.0	-1,058.8	4,384.2	3.23
11,429.0	90.94	338.62	6,946.4	4,355.4	-1,093.4	4,478.1	0.92
11,523.0	90.84	339.54	6,945.0	4,443.2	-1,126.9	4,571.9	0.98
11,617.0	90.40	340.54	6,944.0	4,531.5	-1,159.0	4,665.9	1.16
11,711.0	89.66	340.79	6,943.9	4,620.2	-1,190.1	4,759.9	0.83
11,805.0	88.89	341.03	6,945.1	4,709.0	-1,220.9	4,853.9	0.86
11,899.0	91.35	346.11	6,944.9	4,799.1	-1,247.5	4,947.8	6.00
11,993.0	90.24	344.17	6,943.6	4,890.0	-1,271.6	5,041.6	2.38
12,087.0	88.96	342.48	6,944.3	4,980.0	-1,298.5	5,135.5	2.26
12,181.0	89.97	343.15	6,945.1	5,069.8	-1,326.3	5,229.5	1.29
12,275.0	90.67	343.38	6,944.6	5,159.8	-1,353.4	5,323.5	0.78
12,370.0	87.95	341.83	6,945.7	5,250.5	-1,381.8	5,418.4	3.30
12,464.0	89.80	343.61	6,947.6	5,340.2	-1,409.7	5,512.4	2.73
12,558.0	89.60	343.61	6,948.1	5,430.4	-1,436.2	5,606.3	0.21
12,652.0	88.96	341.70	6,949.3	5,520.1	-1,464.2	5,700.3	2.14
12,746.0	89.29	342.81	6,950.7	5,609.6	-1,492.9	5,794.3	1.23
12,840.0	89.66	344.75	6,951.6	5,699.9	-1,519.1	5,888.2	2.10
12,934.0	89.26	342.25	6,952.5	5,790.0	-1,545.8	5,982.2	2.69
13,028.0	87.85	340.08	6,954.8	5,878.9	-1,576.1	6,076.1	2.75
13,123.0	87.92	340.63	6,958.3	5,968.3	-1,608.1	6,171.0	0.58
13,217.0	89.46	340.39	6,960.5	6,056.9	-1,639.4	6,265.0	1.66
13,311.0	90.10	340.54	6,960.8	6,145.5	-1,670.9	6,359.0	0.70
13,406.0	89.77	340.32	6,960.9	6,235.0	-1,702.7	6,453.9	0.42
13,501.0	89.19	338.84	6,961.8	6,324.0	-1,735.8	6,548.9	1.67
13,595.0	89.16	339.06	6,963.2	6,411.8	-1,769.6	6,642.8	0.24
13,689.0	89.80	339.24	6,964.0	6,499.6	-1,803.0	6,736.7	0.71
13,783.0	89.50	338.45	6,964.6	6,587.3	-1,837.0	6,830.6	0.90
13,877.0	89.40	341.82	6,965.5	6,675.6	-1,868.9	6,924.5	3.59
13,971.0	88.02	339.84	6,967.6	6,764.4	-1,899.7	7,018.5	2.57
14,029.0	87.82	341.59	6,969.7	6,819.1	-1,918.9	7,076.4	3.03
14,080.0	87.82	341.59	6,971.7	6,867.5	-1,935.0	7,127.4	0.00



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Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,709.0	6,651.1	49.2	186.5	MDLX
6,897.0	6,793.9	136.4	268.9	BRKT
6,936.0	6,820.2	162.6	280.6	TLLY
7,038.0	6,882.8	240.6	299.7	HMLN
7,128.0	6,929.9	317.0	304.7	MRCL_HOT

Checked By: _____ Approved By: _____ Date: _____

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