

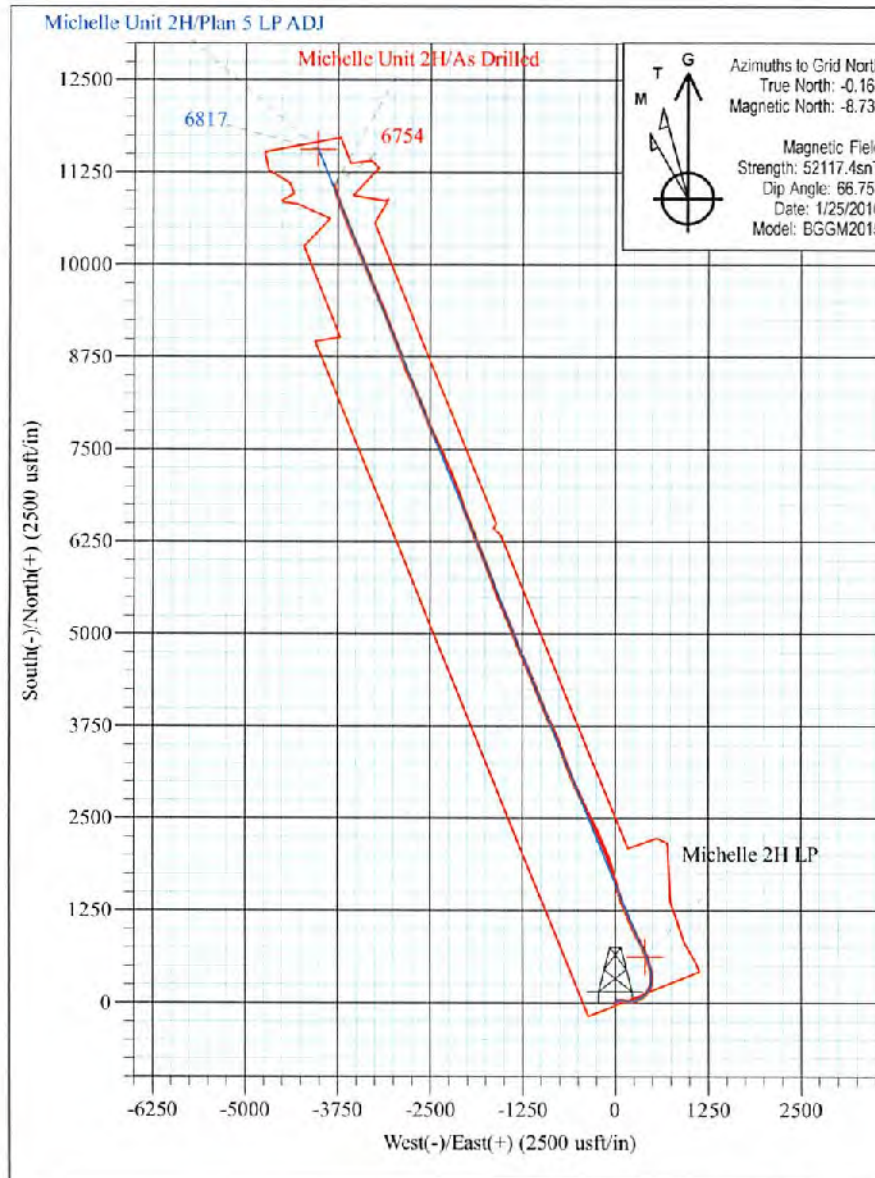
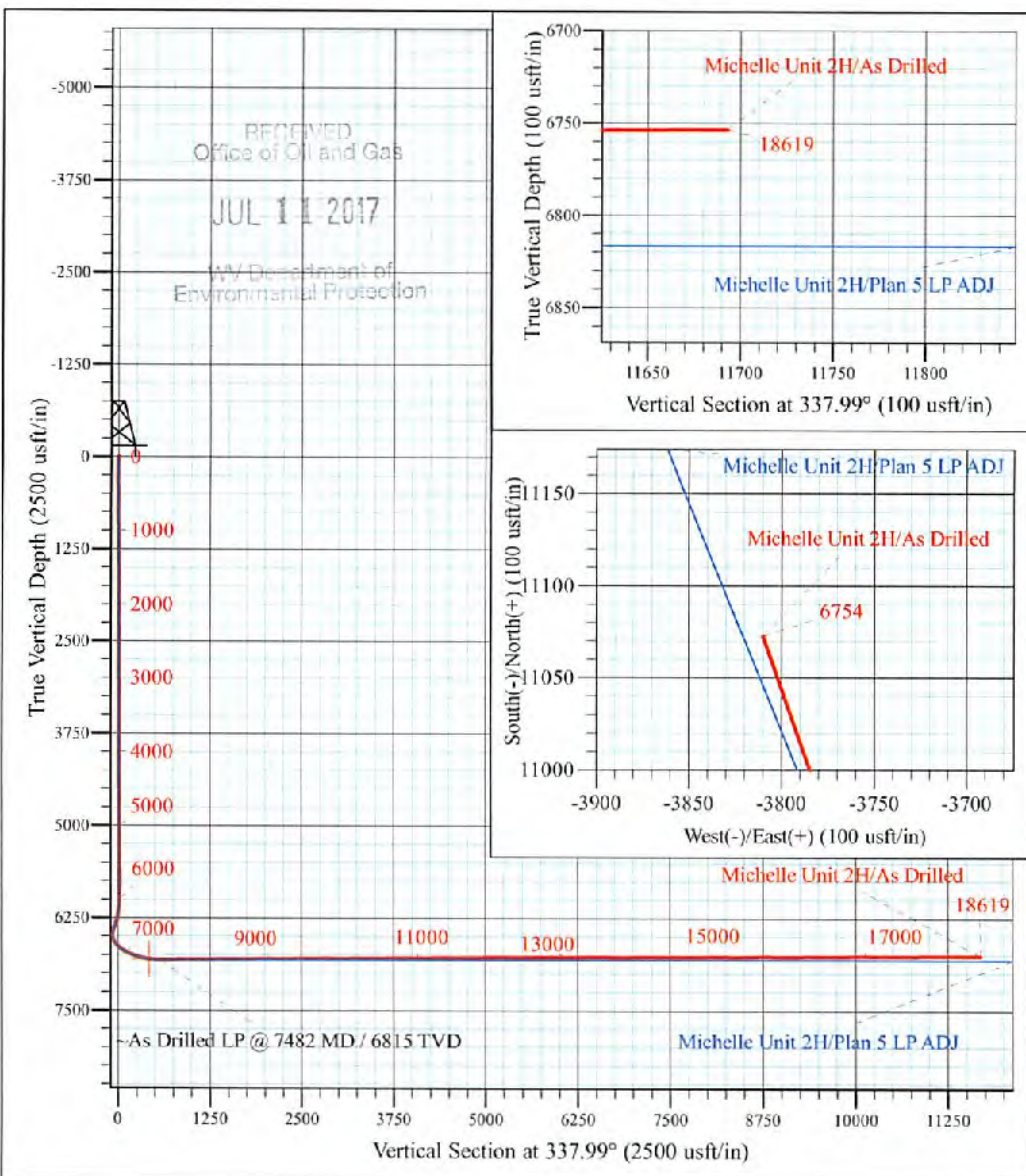


Misery Pad: Anne/Arthur/Deano/Hardin/Michelle/Rexa
 Michelle Unit 2H
 Plan 5 LP ADJ
 Precision 522: 1001' GL + 18' KB @ 1019.0usft
 Doddridge County WV

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



WELL DETAILS: Michelle Unit 2H SHL					
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14293354.71	1711352.17	39° 21' 38.418 N	80° 44' 56.531 W



Michelle Unit 2H
 Approx. BHL
 39° 23' 27.996 N 80° 45' 44.685 W

Shane Rhodes
 13:48, February 22 2016
 Scientific Drilling International
 124 Vista Drive
 Charleroi, PA 15022



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Michelle Unit 2H
Project:	Doddridge County WW	TVD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Site:	Misery Pad: Anne/Arthur/Deano/Hardin/Michelle/Rexa	MD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Well:	Michelle Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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Environmental Protection

Project	Doddridge County WW, McClellan District		
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	Misery Pad: Anne/Arthur/Deano/Hardin/Michelle/Rexa				
Site Position:	Northing:	14,293,344.77 usft	Latitude:	39° 21' 38.319 N	
From: Map	Easting:	1,711,355.33 usft	Longitude:	80° 44' 56.491 W	
Position Uncertainty:	2.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.16 °

Well	Michelle Unit 2H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,293,354.71 usft	Latitude:	39° 21' 38.418 N
	+E/-W	0.0 usft	Easting:	1,711,352.16 usft	Longitude:	80° 44' 56.531 W
Position Uncertainty		2.0 usft	Wellhead Elevation:	1,019.0 usft	Ground Level:	1,001.0 usft

Wellbore	Original Wellpath				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	3/19/2015	-8.52	66.85	52,194
	BGGM2015	1/25/2016	-8.57	66.75	52,117

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	338.00	

Survey Program	Date	2/24/2016			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
105.0	5,830.0	Survey #7 Def to KOP (Original Wellpath)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
5,869.0	18,619.0	Survey #8 - Surcon Corrected SDI MWD (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	
105.0	0.09	222.50	105.0	-0.1	-0.1	0.0	0.09	0.09	0.00	
First Gyro @ 105										
130.0	0.16	242.87	130.0	-0.1	-0.1	0.0	0.33	0.28	81.46	
155.0	0.12	260.94	155.0	-0.1	-0.2	0.0	0.24	-0.16	72.28	
180.0	0.11	252.26	180.0	-0.1	-0.2	0.0	0.08	-0.04	-34.72	
205.0	0.05	171.91	205.0	-0.1	-0.2	0.0	0.45	-0.24	-321.40	
230.0	0.03	228.62	230.0	-0.2	-0.2	-0.1	0.17	-0.08	226.84	



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Michelle Unit 2H
Project:	Doddridge County WW	TVD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Site:	Misery Pad: Anne/Arthur/Deano/Hardin/Michelle/Rexa	MD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Well:	Michelle Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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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)
255.0	0.07	73.45	255.0	-0.2	-0.2	-0.1	0.39	0.16	-820.68
280.0	0.02	274.71	280.0	-0.2	-0.2	-0.1	0.38	-0.20	-834.86
305.0	0.08	204.38	305.0	-0.2	-0.2	-0.1	0.30	0.24	-281.32
330.0	0.09	290.28	330.0	-0.2	-0.2	-0.1	0.46	0.04	343.60
355.0	0.18	283.25	355.0	-0.2	-0.3	0.0	0.37	0.36	-28.12
380.0	0.24	250.48	380.0	-0.2	-0.4	0.0	0.53	0.24	-131.08
405.0	0.07	187.80	405.0	-0.2	-0.4	0.0	0.87	-0.68	-250.72
430.0	0.14	220.41	430.0	-0.2	-0.5	0.0	0.36	0.28	130.44
455.0	0.24	240.14	455.0	-0.3	-0.5	-0.1	0.47	0.40	78.92
480.0	0.13	201.44	480.0	-0.3	-0.6	-0.1	0.64	-0.44	-154.80
505.0	0.05	156.60	505.0	-0.4	-0.6	-0.1	0.40	-0.32	-178.56
530.0	0.01	164.55	530.0	-0.4	-0.6	-0.1	0.16	-0.16	31.00
555.0	0.17	26.15	555.0	-0.4	-0.6	-0.1	0.71	0.64	-553.60
580.0	0.40	29.64	580.0	-0.2	-0.5	0.0	0.92	0.92	13.96
605.0	0.77	38.22	605.0	0.0	-0.4	0.1	1.52	1.48	34.32
630.0	1.47	47.85	630.0	0.3	0.0	0.3	2.89	2.80	38.52
655.0	1.94	50.26	655.0	0.8	0.5	0.5	1.90	1.88	9.64
680.0	2.15	50.90	680.0	1.4	1.2	0.8	0.84	0.84	2.56
705.0	2.86	57.88	704.9	2.0	2.1	1.0	3.09	2.84	27.92
730.0	2.88	57.19	729.9	2.7	3.2	1.3	0.16	0.08	-2.76
755.0	2.93	58.21	754.9	3.3	4.2	1.5	0.29	0.20	4.08
780.0	3.38	58.29	779.8	4.1	5.4	1.7	1.80	1.80	0.32
805.0	4.46	57.34	804.8	5.0	6.9	2.0	4.33	4.32	-3.80
830.0	4.73	56.72	829.7	6.1	8.5	2.4	1.10	1.08	-2.48
855.0	4.96	58.07	854.6	7.2	10.3	2.8	1.03	0.92	5.40
880.0	5.17	59.10	879.5	8.3	12.2	3.2	0.92	0.84	4.12
905.0	5.23	59.25	904.4	9.5	14.2	3.5	0.25	0.24	0.60
930.0	5.32	59.26	929.3	10.7	16.1	3.9	0.36	0.38	0.04
955.0	5.39	59.71	954.2	11.9	18.1	4.2	0.33	0.28	1.80
980.0	5.37	59.06	979.1	13.1	20.2	4.6	0.26	-0.08	-2.60
1,005.0	5.30	58.90	1,004.0	14.3	22.1	4.9	0.29	-0.28	-0.64
1,030.0	5.19	60.32	1,028.9	15.4	24.1	5.3	0.88	-0.44	5.68
1,055.0	4.64	60.51	1,053.8	16.5	26.0	5.5	1.40	-1.40	0.76
1,080.0	4.50	61.35	1,078.7	17.5	27.8	5.8	1.39	-1.38	3.36
1,105.0	4.12	61.71	1,103.6	18.4	29.4	6.0	1.52	-1.52	1.44
1,130.0	3.79	60.84	1,128.6	19.2	31.0	6.2	1.34	-1.32	-3.48
1,155.0	3.46	62.46	1,153.5	20.0	32.4	6.4	1.38	-1.32	6.48
1,180.0	3.12	61.48	1,178.5	20.6	33.8	6.5	1.38	-1.38	-3.92
1,205.0	2.83	62.13	1,203.4	21.2	34.8	6.7	1.17	-1.18	2.60
1,230.0	2.54	62.30	1,228.4	21.8	35.8	6.8	1.16	-1.18	0.68
1,255.0	2.29	59.77	1,253.4	22.3	36.7	6.9	1.09	-1.00	-10.12
1,280.0	2.10	61.28	1,278.4	22.9	37.6	7.0	0.79	-0.76	6.04
1,305.0	1.92	62.56	1,303.4	23.2	38.3	7.1	0.74	-0.72	5.12

WV Department of Environmental Protection



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Michelle Unit 2H
Project:	Doddridge County WV	TVD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Site:	Misery Pad: Anne/Arthur/Deano/Hardin/Michelle/Rexa	MD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Well:	Michelle Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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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)
1,330.0	1.77	58.88	1,328.3	23.6	39.0	7.2	0.76	-0.60	-14.72
1,355.0	1.61	59.57	1,353.3	24.0	39.7	7.4	0.65	-0.64	2.76
1,380.0	1.35	56.92	1,378.3	24.3	40.2	7.5	1.08	-1.04	-10.60
1,405.0	1.26	58.68	1,403.3	24.6	40.7	7.6	0.39	-0.36	7.04
1,430.0	1.15	57.56	1,428.3	24.9	41.1	7.7	0.45	-0.44	-4.48
1,455.0	0.96	46.11	1,453.3	25.2	41.5	7.8	1.13	-0.76	-45.80
1,480.0	1.02	56.34	1,478.3	25.4	41.8	7.9	0.75	0.24	40.92
1,505.0	0.87	53.23	1,503.3	25.7	42.2	8.0	0.63	-0.60	-12.44
1,530.0	0.75	52.61	1,528.3	25.9	42.5	8.1	0.48	-0.48	-2.48
1,555.0	0.66	55.33	1,553.3	26.1	42.7	8.2	0.38	-0.36	10.88
1,580.0	0.62	51.42	1,578.3	26.2	42.9	8.2	0.24	-0.16	-15.64
1,605.0	0.66	47.95	1,603.3	26.4	43.1	8.3	0.22	0.16	-13.88
1,630.0	0.52	58.48	1,628.3	26.6	43.3	8.4	0.71	-0.56	42.12
1,655.0	0.53	66.74	1,653.3	26.7	43.6	8.4	0.31	0.04	33.04
1,680.0	0.48	56.96	1,678.3	26.8	43.7	8.4	0.40	-0.20	-39.12
1,705.0	0.47	65.84	1,703.3	26.9	43.9	8.5	0.30	-0.04	35.52
1,730.0	0.44	70.56	1,728.3	26.9	44.1	8.5	0.19	-0.12	18.96
1,755.0	0.44	59.95	1,753.3	27.0	44.3	8.5	0.33	0.00	-42.52
1,780.0	0.45	70.25	1,778.3	27.1	44.5	8.5	0.32	0.04	41.20
1,805.0	0.40	77.20	1,803.3	27.2	44.6	8.5	0.29	-0.20	27.80
1,830.0	0.23	63.29	1,828.3	27.2	44.8	8.4	0.74	-0.68	-55.64
1,855.0	0.30	80.14	1,853.3	27.2	44.9	8.4	0.42	0.28	67.40
1,880.0	0.12	113.96	1,878.3	27.2	45.0	8.4	0.64	-0.72	135.36
1,905.0	0.05	122.32	1,903.3	27.2	45.0	8.4	0.28	-0.28	33.36
1,930.0	0.05	184.76	1,928.3	27.2	45.0	8.4	0.21	0.00	249.84
1,955.0	0.10	277.22	1,953.3	27.2	45.0	8.4	0.45	0.20	369.76
1,980.0	0.14	137.30	1,978.3	27.2	45.0	8.3	0.90	0.16	-559.68
2,005.0	0.07	166.76	2,003.3	27.1	45.0	8.3	0.34	-0.28	117.84
2,030.0	0.03	247.22	2,028.3	27.1	45.0	8.3	0.29	-0.16	321.84
2,055.0	0.09	210.59	2,053.3	27.1	45.0	8.3	0.27	0.24	-146.52
2,080.0	0.05	97.96	2,078.3	27.1	45.0	8.3	0.47	-0.16	-450.52
2,105.0	0.13	209.02	2,103.3	27.0	45.0	8.2	0.62	0.32	444.24
2,130.0	0.08	234.43	2,128.3	27.0	45.0	8.2	0.27	-0.20	101.64
2,155.0	0.03	220.66	2,153.3	27.0	44.9	8.2	0.21	-0.20	-55.00
2,180.0	0.07	217.81	2,178.3	27.0	44.9	8.2	0.16	0.16	-11.48
2,205.0	0.06	214.55	2,203.3	27.0	44.9	8.2	0.04	-0.04	-13.04
2,230.0	0.11	198.83	2,228.3	26.9	44.9	8.1	0.22	0.20	-62.88
2,255.0	0.05	293.37	2,253.3	26.9	44.9	8.1	0.50	-0.24	378.16
2,280.0	0.06	92.68	2,278.3	26.9	44.9	8.1	0.43	0.04	637.24
2,305.0	0.04	91.91	2,303.3	26.9	44.9	8.1	0.08	-0.08	-3.08
2,330.0	0.10	281.86	2,328.3	26.9	44.9	8.1	0.55	0.24	-880.20
2,355.0	0.15	282.34	2,353.3	26.9	44.8	8.2	0.20	0.20	1.92

WV Department of Environmental Protection



Scientific Drilling International
Survey Report



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Project:	Doddridge County WV	TVD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Site:	Misery Pad: Anne/Arthur/Deano/Hardin/Michelle/Rexa	MD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
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Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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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)
2,380.0	0.08	13.22	2,378.3	26.9	44.8	8.2	0.68	-0.28	363.52
2,405.0	0.24	273.97	2,403.3	27.0	44.8	8.2	1.06	0.64	-397.00
2,430.0	0.31	233.95	2,428.3	26.9	44.7	8.2	0.80	0.28	-160.08
2,455.0	0.24	179.35	2,453.3	26.8	44.6	8.2	1.04	-0.28	-218.40
2,480.0	0.16	277.28	2,478.3	26.8	44.6	8.1	1.23	-0.32	391.72
2,505.0	0.18	271.02	2,503.3	26.8	44.5	8.2	0.11	0.08	-25.04
2,530.0	0.12	276.63	2,528.3	26.8	44.4	8.2	0.25	-0.24	22.44
2,555.0	0.16	275.16	2,553.3	26.8	44.4	8.2	0.16	0.16	-5.68
2,580.0	0.24	262.60	2,578.3	26.8	44.3	8.3	0.36	0.32	-50.24
2,605.0	0.17	281.72	2,603.3	26.8	44.2	8.3	0.28	-0.28	-3.52
2,630.0	0.25	259.65	2,628.3	26.8	44.1	8.3	0.32	0.32	-8.28
2,655.0	0.22	267.46	2,653.3	26.8	44.0	8.3	0.18	-0.12	31.24
2,680.0	0.23	280.59	2,678.3	26.8	43.9	8.4	0.21	0.04	52.52
2,705.0	0.37	269.80	2,703.3	26.8	43.8	8.4	0.60	0.56	-43.16
2,730.0	0.42	274.74	2,728.3	26.8	43.6	8.5	0.24	0.20	19.76
2,755.0	0.42	274.73	2,753.3	26.8	43.4	8.6	0.00	0.00	-0.04
2,780.0	0.48	276.36	2,778.3	26.8	43.2	8.7	0.25	0.24	6.52
2,805.0	0.53	272.40	2,803.3	26.8	43.0	8.8	0.24	0.20	-15.84
2,830.0	0.53	269.15	2,828.3	26.8	42.8	8.9	0.12	0.00	-13.00
2,855.0	0.55	266.44	2,853.3	26.8	42.5	8.9	0.13	0.08	-10.84
2,880.0	0.59	267.99	2,878.3	26.8	42.3	9.0	0.17	0.16	6.20
2,905.0	0.56	264.84	2,903.3	26.8	42.0	9.1	0.17	-0.12	-12.60
2,930.0	0.56	270.73	2,928.3	26.8	41.8	9.2	0.23	0.00	23.56
2,955.0	0.63	265.11	2,953.3	26.8	41.5	9.3	0.36	0.28	-22.48
2,980.0	0.55	269.59	2,978.3	26.8	41.3	9.4	0.37	-0.32	17.92
3,005.0	0.56	271.08	3,003.3	26.8	41.0	9.5	0.07	0.04	5.96
3,030.0	0.57	270.82	3,028.3	26.8	40.8	9.6	0.04	0.04	-1.04
3,055.0	0.55	265.58	3,053.3	26.8	40.5	9.6	0.22	-0.08	-20.96
3,080.0	0.51	271.54	3,078.3	26.8	40.3	9.7	0.27	-0.16	23.84
3,105.0	0.54	271.62	3,103.3	26.8	40.1	9.8	0.12	0.12	0.32
3,130.0	0.50	272.04	3,128.3	26.8	39.9	9.9	0.16	-0.16	1.68
3,155.0	0.48	286.01	3,153.3	26.8	39.6	10.0	0.48	-0.08	55.88
3,180.0	0.57	283.67	3,178.3	26.9	39.4	10.1	0.37	0.36	-9.36
3,205.0	0.61	282.55	3,203.3	26.9	39.2	10.3	0.17	0.16	-4.48
3,230.0	0.59	284.22	3,228.3	27.0	36.9	10.4	0.11	-0.08	6.68
3,255.0	0.61	282.95	3,253.3	27.1	36.7	10.6	0.10	0.08	-5.08
3,280.0	0.52	282.31	3,278.3	27.1	36.4	10.7	0.36	-0.36	-2.56
3,305.0	0.56	292.44	3,303.3	27.2	36.2	10.9	0.41	0.16	40.52
3,330.0	0.54	282.25	3,328.3	27.2	36.0	11.0	0.40	-0.08	-40.76
3,355.0	0.59	278.20	3,353.3	27.3	37.7	11.2	0.26	0.20	-16.20
3,380.0	0.56	281.13	3,378.3	27.3	37.5	11.3	0.17	-0.12	11.72
3,405.0	0.54	281.53	3,403.3	27.4	37.2	11.4	0.08	-0.08	1.60
3,430.0	0.57	280.41	3,428.2	27.4	37.0	11.6	0.13	0.12	-4.48

WV Department of Environmental Protection



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Michelle Unit 2H
Project:	Doddridge County WV	TVD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Site:	Misery Pad: Anne/Arthur/Deano/Hardin/Michelle/Rexa	MD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Well:	Michelle Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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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)
3,455.0	0.64	272.35	3,453.2	27.5	36.7	11.7	0.44	0.28	-32.24
3,480.0	0.65	271.64	3,478.2	27.5	36.5	11.8	0.05	0.04	-2.84
3,505.0	0.59	274.08	3,503.2	27.5	36.2	11.9	0.26	-0.24	9.76
3,530.0	0.81	286.24	3,528.2	27.5	35.9	12.0	0.34	0.08	-31.36
3,555.0	0.54	267.46	3,553.2	27.5	35.7	12.1	0.28	-0.26	4.88
3,580.0	0.59	267.19	3,578.2	27.5	35.4	12.2	0.20	0.20	-1.08
3,605.0	0.56	263.67	3,603.2	27.4	35.2	12.3	0.19	-0.12	-14.08
3,630.0	0.49	266.03	3,628.2	27.4	35.0	12.3	0.29	-0.26	9.44
3,655.0	0.56	269.39	3,653.2	27.4	34.7	12.4	0.31	0.28	13.44
3,680.0	0.47	275.71	3,678.2	27.4	34.5	12.5	0.43	-0.36	25.28
3,705.0	0.52	280.84	3,703.2	27.4	34.3	12.6	0.27	0.20	20.52
3,730.0	0.56	285.53	3,728.2	27.5	34.1	12.7	0.24	0.16	18.76
3,755.0	0.62	278.49	3,753.2	27.5	33.8	12.9	0.38	0.24	-28.16
3,780.0	0.64	277.89	3,778.2	27.6	33.5	13.0	0.08	0.08	-2.40
3,805.0	0.59	266.55	3,803.2	27.6	33.3	13.1	0.53	-0.20	-45.36
3,830.0	0.49	275.39	3,828.2	27.6	33.0	13.2	0.52	-0.40	35.36
3,855.0	0.56	279.45	3,853.2	27.6	32.8	13.3	0.32	0.28	16.24
3,880.0	0.66	276.57	3,878.2	27.7	32.5	13.5	0.42	0.40	-11.52
3,905.0	0.71	274.75	3,903.2	27.7	32.3	13.6	0.22	0.20	-7.28
3,930.0	0.58	282.66	3,928.2	27.7	32.0	13.7	0.63	-0.52	31.64
3,955.0	0.69	270.73	3,953.2	27.8	31.7	13.9	0.69	0.44	-47.72
3,980.0	0.72	269.97	3,978.2	27.8	31.4	14.0	0.13	0.12	-3.04
4,005.0	0.70	267.61	4,003.2	27.8	31.1	14.1	0.14	-0.08	-9.44
4,030.0	0.68	269.16	4,028.2	27.8	30.8	14.2	0.11	-0.08	6.20
4,055.0	0.67	269.23	4,053.2	27.8	30.5	14.3	0.04	-0.04	0.28
4,080.0	0.58	266.34	4,078.2	27.7	30.2	14.4	0.38	-0.36	-11.56
4,105.0	0.49	269.63	4,103.2	27.7	30.0	14.5	0.38	-0.36	13.16
4,130.0	0.53	267.08	4,128.2	27.7	29.8	14.6	0.18	0.16	-10.20
4,155.0	0.51	270.90	4,153.2	27.7	29.5	14.6	0.16	-0.08	15.28
4,180.0	0.54	278.51	4,178.2	27.7	29.3	14.7	0.30	0.12	30.44
4,205.0	0.54	283.42	4,203.2	27.8	29.1	14.9	0.19	0.00	19.64
4,230.0	0.65	272.00	4,228.2	27.8	28.8	15.0	0.64	0.44	-45.68
4,255.0	0.59	277.55	4,253.2	27.8	28.5	15.1	0.34	-0.24	22.20
4,280.0	0.58	275.84	4,278.2	27.9	28.3	15.2	0.08	-0.04	-6.84
4,305.0	0.59	287.36	4,303.2	27.9	28.0	15.4	0.47	0.04	46.08
4,330.0	0.58	283.02	4,328.2	28.0	27.8	15.5	0.18	-0.04	-17.36
4,355.0	0.61	283.96	4,353.2	28.0	27.5	15.7	0.13	0.12	3.76
4,380.0	0.55	280.86	4,378.2	28.1	27.3	15.8	0.27	-0.24	-12.40
4,405.0	0.56	283.07	4,403.2	28.2	27.1	16.0	0.09	0.04	8.84
4,430.0	0.54	282.08	4,428.2	28.2	26.8	16.1	0.09	-0.08	-3.96
4,455.0	0.52	279.67	4,453.2	28.2	26.6	16.2	0.12	-0.08	-9.64
4,480.0	0.42	282.02	4,478.2	28.3	26.4	16.3	0.41	-0.40	9.40

WV Department of
Environmental Protection



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Michelle Unit 2H
Project:	Doddridge County WV	TVD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Site:	Misery Pad: Anna/Arthur/Deano/Hardin/Michelle/Rexa	MD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Well:	Michelle Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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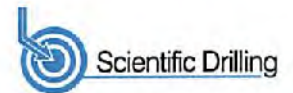
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Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
4,505.0	0.42	281.76	4,503.2	28.3	26.2	16.4	0.01	0.00	-1.04
4,530.0	0.33	298.13	4,528.2	28.4	26.1	16.5	0.56	-0.36	65.48
4,555.0	0.36	298.42	4,553.2	28.4	25.9	16.7	0.12	0.12	1.16
4,580.0	0.38	300.05	4,578.2	28.5	25.8	16.8	0.09	0.03	6.52
4,605.0	0.46	299.13	4,603.2	28.6	25.6	16.9	0.32	0.32	-3.68
4,630.0	0.44	298.64	4,628.2	28.7	25.5	17.1	0.11	-0.03	-9.96
4,655.0	0.47	300.93	4,653.2	28.8	25.3	17.2	0.18	0.12	17.16
4,680.0	0.54	310.59	4,678.2	28.9	25.1	17.4	0.44	0.23	38.64
4,705.0	0.49	295.76	4,703.2	29.1	24.9	17.6	0.57	-0.20	-59.32
4,730.0	0.54	298.29	4,728.2	29.2	24.7	17.8	0.22	0.20	10.12
4,755.0	0.47	302.42	4,753.2	29.3	24.5	17.9	0.32	-0.28	16.52
4,780.0	0.47	298.60	4,778.2	29.4	24.4	18.1	0.13	0.00	-15.28
4,805.0	0.56	299.22	4,803.2	29.5	24.2	18.3	0.36	0.36	2.48
4,830.0	0.48	288.83	4,828.2	29.6	24.0	18.5	0.49	-0.32	-41.56
4,855.0	0.47	298.38	4,853.2	29.7	23.8	18.6	0.32	-0.04	38.20
4,880.0	0.46	295.58	4,878.2	29.8	23.6	18.8	0.10	-0.04	-11.20
4,905.0	0.44	305.43	4,903.2	29.9	23.4	18.9	0.32	-0.08	39.40
4,930.0	0.39	305.37	4,928.2	30.0	23.3	19.1	0.20	-0.20	-0.24
4,955.0	0.39	297.60	4,953.2	30.0	23.1	19.2	0.21	0.00	-31.08
4,980.0	0.36	295.38	4,978.2	30.1	23.0	19.3	0.13	-0.12	-8.88
5,005.0	0.42	308.72	5,003.2	30.2	22.8	19.5	0.43	0.24	53.36
5,030.0	0.41	310.46	5,028.2	30.3	22.7	19.6	0.06	-0.04	7.04
5,055.0	0.41	302.15	5,053.2	30.4	22.6	19.8	0.24	0.00	-33.32
5,080.0	0.41	303.96	5,078.2	30.5	22.4	19.9	0.05	0.00	7.32
5,105.0	0.40	304.36	5,103.2	30.6	22.3	20.1	0.04	-0.04	1.52
5,130.0	0.44	301.75	5,128.2	30.7	22.1	20.2	0.16	0.16	-10.44
5,155.0	0.50	294.99	5,153.2	30.8	21.9	20.4	0.33	0.24	-27.04
5,180.0	0.43	294.16	5,178.2	30.9	21.7	20.5	0.26	-0.26	-3.24
5,205.0	0.42	298.57	5,203.2	31.0	21.6	20.7	0.14	-0.04	17.56
5,230.0	0.46	301.05	5,228.2	31.1	21.4	20.8	0.18	0.16	9.92
5,255.0	0.49	303.77	5,253.2	31.2	21.2	21.0	0.15	0.12	10.68
5,280.0	0.52	295.19	5,278.2	31.3	21.0	21.1	0.33	0.12	-34.32
5,305.0	0.48	302.16	5,303.2	31.4	20.8	21.3	0.29	-0.16	27.96
5,330.0	0.43	298.25	5,328.2	31.5	20.7	21.5	0.24	-0.20	-15.72
5,355.0	0.46	300.32	5,353.2	31.6	20.5	21.6	0.14	0.12	6.28
5,380.0	0.43	294.75	5,378.2	31.7	20.3	21.8	0.21	-0.12	-22.28
5,405.0	0.44	305.51	5,403.2	31.8	20.2	21.9	0.33	0.04	43.04
5,430.0	0.45	302.45	5,428.2	31.9	20.0	22.1	0.10	0.04	-12.24
5,455.0	0.48	297.06	5,453.2	32.0	19.8	22.2	0.21	0.12	-21.56
5,480.0	0.45	302.78	5,478.2	32.1	19.7	22.4	0.22	-0.12	22.88
5,505.0	0.44	302.70	5,503.2	32.2	19.5	22.6	0.04	-0.04	-0.32
5,530.0	0.41	296.00	5,528.2	32.3	19.3	22.7	0.23	-0.12	-26.80
5,555.0	0.43	301.02	5,553.2	32.4	19.2	22.8	0.17	0.08	20.08



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Michelle Unit 2H
Project:	Doddridge County WV	TVD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Site:	Misery Pad: Anne/Arthur/Deano/Hardin/Michelle/Rexa	MD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Well:	Michelle Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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Survey

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Environmental Protection

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)
5,560.0	0.48	309.59	5,578.2	32.5	19.0	23.0	0.34	0.20	34.28
5,605.0	0.46	312.59	5,603.2	32.6	18.9	23.2	0.13	-0.08	12.00
5,630.0	0.50	302.14	5,628.2	32.8	18.7	23.4	0.38	0.16	-41.80
5,655.0	0.35	300.99	5,653.2	32.9	18.5	23.5	0.60	-0.60	-4.60
5,680.0	0.31	287.06	5,678.2	32.9	18.4	23.6	0.36	-0.16	-55.72
5,705.0	0.39	302.38	5,703.2	33.0	18.3	23.7	0.49	0.32	61.28
5,730.0	0.38	299.96	5,728.2	33.1	18.1	23.9	0.06	-0.04	-9.68
5,755.0	0.42	306.85	5,753.2	33.2	18.0	24.0	0.25	0.16	27.56
5,780.0	0.34	293.03	5,778.2	33.2	17.8	24.1	0.48	-0.32	-55.28
5,805.0	0.34	309.37	5,803.2	33.3	17.7	24.3	0.39	0.00	65.36
5,830.0	0.40	304.61	5,828.2	33.4	17.6	24.4	0.27	0.24	-19.04
Last Gyro @ 5830									
5,869.0	0.36	304.81	5,867.2	33.6	17.4	24.6	0.10	-0.10	0.51
First SDI MWD @ 5869									
5,901.0	0.32	297.04	5,899.2	33.7	17.2	24.8	0.19	-0.13	-24.28
5,932.0	0.34	267.26	5,930.2	33.7	17.0	24.9	0.55	0.06	-96.06
5,963.0	0.31	290.56	5,961.2	33.7	16.9	25.0	0.43	-0.10	75.16
5,994.0	0.97	82.12	5,992.2	33.8	17.0	24.9	4.04	2.13	488.90
6,026.0	4.90	96.23	6,024.1	33.7	18.7	24.2	12.39	12.28	44.09
6,058.0	9.04	97.20	6,055.9	33.2	22.5	22.4	12.94	12.94	3.03
6,089.0	12.54	94.01	6,086.3	32.7	28.3	19.7	11.45	11.29	-10.29
6,121.0	16.03	89.24	6,117.3	32.5	36.2	18.6	11.50	10.91	-14.91
6,151.0	18.43	85.90	6,146.0	32.9	45.1	13.6	8.65	8.00	-11.13
6,183.0	20.35	84.17	6,176.1	33.8	55.6	10.5	6.26	6.00	-5.41
6,214.0	22.57	84.87	6,205.0	34.9	66.9	7.3	7.21	7.16	2.26
6,246.0	25.49	91.28	6,234.2	35.3	79.9	2.8	12.23	9.13	20.03
6,278.0	28.97	94.33	6,262.7	34.5	94.6	-3.4	11.71	10.88	9.53
6,310.0	33.51	95.60	6,290.0	33.1	111.1	-10.9	14.34	14.19	3.97
6,341.0	37.30	96.74	6,315.3	31.2	128.9	-19.4	12.41	12.23	3.68
6,372.0	40.45	94.23	6,339.4	29.3	148.3	-28.4	11.36	10.16	-8.10
6,404.0	43.66	89.40	6,363.2	28.7	169.7	-37.0	14.24	10.03	-15.09
6,422.0	46.36	89.23	6,375.9	28.8	182.4	-41.6	15.02	15.00	-0.97
SCMR @ 6422									
6,435.0	48.31	89.11	6,384.7	29.0	192.0	-45.1	15.02	15.00	-0.89
6,466.0	51.37	89.64	6,404.7	29.2	215.7	-53.7	9.96	9.97	1.71
6,497.0	49.75	85.33	6,424.4	30.3	239.6	-61.7	11.94	-5.23	-13.90
6,529.0	48.18	78.93	6,445.4	33.5	263.5	-67.6	15.66	-4.91	-20.00
6,560.0	48.35	73.22	6,466.1	39.1	285.9	-70.8	13.75	0.55	-18.42
6,591.0	50.64	67.50	6,486.2	47.0	308.1	-71.8	15.85	7.39	-18.45
6,623.0	52.48	62.20	6,506.1	57.7	330.8	-70.4	14.19	5.75	-16.56
6,654.0	54.27	57.27	6,524.6	70.2	352.2	-66.8	14.01	5.77	-15.90
6,685.0	52.99	52.49	6,543.0	84.6	372.6	-61.2	13.08	-4.13	-15.42
6,705.0	52.38	49.92	6,555.1	94.5	385.0	-56.6	10.66	-3.05	-12.84



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Michelle Unit 2H
Project:	Doddridge County WV	TVD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Site:	Misery Pad: Anne/Arthur/Deano/Hardin/Michelle/Rexa	MD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Well:	Michelle Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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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)
MDLX @ 6705									
6,717.0	52.04	46.36	6,562.5	100.8	392.2	-53.5	10.66	-2.83	-13.01
6,748.0	51.91	43.00	6,581.6	117.8	409.7	-44.2	13.62	-0.42	-17.29
6,779.0	54.76	38.39	6,600.1	136.7	425.9	-32.8	15.06	9.19	-14.87
6,811.0	57.00	33.82	6,618.1	158.1	441.4	-18.8	13.74	7.00	-14.28
6,843.0	58.42	28.76	6,635.2	181.2	455.5	-2.7	14.08	4.44	-15.81
6,874.0	58.86	22.58	6,651.3	205.0	466.9	15.2	17.08	1.42	-19.94
6,905.0	59.73	17.17	6,667.2	230.1	476.0	35.0	15.26	2.81	-17.45
6,937.0	58.98	11.78	6,683.5	256.7	482.9	57.1	14.68	-2.34	-16.84
6,959.0	60.11	7.67	6,694.6	275.4	486.1	73.3	16.89	5.14	-18.67
BRKT @ 6959									
6,968.0	60.61	6.02	6,699.1	283.2	487.0	80.1	16.89	5.54	-18.36
7,000.0	64.14	2.49	6,713.9	311.4	489.1	105.5	14.74	11.03	-11.03
7,022.0	66.90	359.92	6,723.0	331.4	489.5	123.9	16.44	12.54	-11.68
TLLY @ 7022									
7,031.0	68.04	358.80	6,726.5	339.7	488.4	131.7	16.44	12.67	-11.34
7,062.0	69.71	355.36	6,737.7	368.6	488.0	159.0	11.94	5.39	-11.42
7,094.0	69.47	351.20	6,748.8	398.4	484.5	187.9	12.21	-0.75	-13.00
7,125.0	70.01	347.73	6,759.6	427.0	479.1	216.4	10.64	1.74	-11.19
7,146.0	71.22	346.49	6,766.5	446.3	474.7	236.0	7.99	5.74	-5.90
HMLN @ 7146									
7,157.0	71.85	345.85	6,770.0	456.4	472.2	246.3	7.99	5.77	-5.83
7,177.0	72.99	345.24	6,776.1	474.9	467.5	255.2	6.42	5.72	-3.07
MRCL_HOT @ 7177									
7,189.0	73.68	344.87	6,779.5	486.0	464.5	276.6	6.42	5.72	-3.04
7,221.0	75.41	344.23	6,788.0	515.7	456.3	307.2	5.74	5.41	-2.00
7,252.0	77.45	343.60	6,795.3	544.7	447.9	337.2	6.87	6.58	-2.03
7,282.0	80.21	342.29	6,801.1	572.8	439.3	366.5	10.15	9.20	-4.37
7,313.0	83.47	341.06	6,805.5	601.9	429.7	397.1	11.23	10.52	-3.97
7,344.0	84.21	339.65	6,808.8	631.0	419.3	427.9	5.11	2.39	-4.55
7,375.0	84.95	337.03	6,811.8	659.6	407.9	458.8	8.75	2.39	-8.45
7,406.0	86.36	335.49	6,814.1	687.9	395.5	489.7	6.72	4.55	-4.97
7,420.0	87.99	334.82	6,814.8	700.6	389.6	503.7	12.59	11.64	-4.79
7,451.0	89.74	332.98	6,815.4	728.4	376.0	534.6	8.19	5.65	-5.94
7,482.0	90.28	332.23	6,815.4	756.0	361.7	555.4	2.98	1.74	-2.42
~As Drilled LP @ 7482 MD / 6815 TVD									
7,543.0	89.77	331.85	6,815.4	809.9	333.1	626.1	1.04	-0.84	-0.62
7,636.0	91.01	334.48	6,814.7	892.8	291.1	718.8	3.13	1.33	2.83
7,729.0	90.34	335.30	6,813.7	977.0	251.6	811.6	1.14	-0.72	0.88
7,821.0	90.52	337.01	6,813.0	1,061.2	214.5	903.6	1.87	0.20	1.86
7,914.0	90.30	337.44	6,812.3	1,146.9	178.5	996.6	0.52	-0.24	0.46
8,006.0	90.13	337.60	6,812.0	1,231.9	143.3	1,088.5	0.25	-0.18	0.17
8,099.0	90.70	339.73	6,811.3	1,318.5	109.4	1,181.5	2.37	0.61	2.29

WV Department of Environmental Protection



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Michelle Unit 2H
Project:	Doddridge County WV	TVD Reference:	Precision 522: 1001' GL + 16' KB @ 1019.0usft
Site:	Misery Pad: Anne/Arthur/Deano/Hardin/Michelle/Rexa	MD Reference:	Precision 522: 1001' GL + 16' KB @ 1019.0usft
Well:	Michelle Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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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)
8,191.0	90.03	337.50	6,810.7	1,404.2	75.9	1,273.5	2.53	-0.73	-2.42
8,284.0	90.61	343.96	6,810.2	1,491.9	45.2	1,366.4	6.97	0.62	6.95
8,378.0	90.21	345.16	6,809.5	1,580.6	20.7	1,457.8	1.37	-0.43	1.30
8,469.0	91.09	345.90	6,808.5	1,670.7	-2.5	1,549.9	1.24	0.95	0.80
8,562.0	89.88	342.88	6,807.7	1,760.2	-27.5	1,642.4	3.50	-1.30	-3.25
8,654.0	90.52	341.82	6,807.4	1,847.9	-55.4	1,734.1	1.35	0.70	-1.15
8,747.0	89.44	339.95	6,807.4	1,935.8	-85.9	1,827.0	2.32	-1.16	-2.01
8,839.0	91.72	339.85	6,806.5	2,022.1	-117.8	1,918.9	2.50	2.48	-0.33
8,931.0	91.05	338.97	6,804.2	2,107.5	-151.8	2,010.9	3.00	-0.73	-2.91
9,024.0	90.41	337.14	6,803.0	2,193.2	-187.9	2,103.8	0.71	-0.89	0.18
9,118.0	90.98	339.69	6,801.9	2,278.7	-221.7	2,195.8	2.84	0.62	2.77
9,209.0	89.81	332.33	6,801.3	2,363.6	-259.5	2,288.7	8.01	-1.26	-7.91
9,301.0	90.11	333.91	6,801.3	2,445.7	-301.1	2,380.4	1.75	0.33	1.72
9,394.0	89.81	332.96	6,801.4	2,528.8	-342.7	2,473.1	1.07	-0.32	-1.02
9,486.0	89.78	332.48	6,801.7	2,610.6	-384.8	2,564.7	0.52	-0.03	-0.52
9,579.0	91.32	335.45	6,800.9	2,694.5	-424.9	2,657.5	4.58	1.86	4.27
9,671.0	91.86	335.66	6,799.3	2,778.6	-462.2	2,749.4	1.04	0.59	-0.86
9,764.0	89.54	333.37	6,797.2	2,862.5	-502.3	2,842.2	3.50	-2.49	-2.48
9,856.0	89.91	335.91	6,797.6	2,945.6	-541.7	2,934.0	2.79	0.40	2.76
9,949.0	90.68	339.93	6,797.1	3,031.8	-576.6	3,027.0	4.40	0.83	4.32
10,042.0	90.51	339.71	6,795.2	3,119.1	-608.7	3,120.0	0.30	-0.18	-0.24
10,134.0	90.31	339.35	6,795.5	3,205.2	-640.9	3,211.9	0.45	-0.22	-0.39
10,227.0	90.45	338.71	6,794.9	3,292.1	-674.1	3,304.9	0.70	0.15	-0.69
10,319.0	90.34	338.99	6,794.2	3,377.9	-707.3	3,396.9	0.33	-0.12	0.30
10,412.0	90.51	340.00	6,793.6	3,465.0	-739.9	3,489.9	1.10	0.18	1.09
10,504.0	90.64	339.36	6,792.6	3,551.3	-771.9	3,581.8	0.71	0.14	-0.70
10,597.0	90.75	336.58	6,791.5	3,637.5	-806.7	3,674.8	2.99	0.12	-2.99
10,690.0	90.44	336.21	6,790.5	3,722.7	-844.0	3,767.8	0.52	-0.33	-0.40
10,782.0	90.17	334.60	6,790.1	3,806.3	-882.3	3,859.7	1.77	-0.29	-1.75
10,875.0	89.64	335.53	6,790.2	3,890.6	-921.5	3,952.5	1.15	-0.57	1.00
10,968.0	89.50	336.90	6,790.9	3,975.7	-959.0	4,045.5	1.48	-0.15	1.47
11,060.0	90.68	339.46	6,790.8	4,061.1	-993.2	4,137.5	3.06	1.28	2.78
11,153.0	90.61	339.43	6,789.7	4,148.2	-1,025.8	4,230.4	0.08	-0.08	-0.03
11,246.0	90.88	337.76	6,788.5	4,234.8	-1,059.8	4,323.4	1.82	0.29	-1.60
11,338.0	89.87	337.51	6,787.9	4,319.9	-1,094.8	4,415.4	1.13	-1.10	-0.27
11,430.0	90.34	338.58	6,787.7	4,405.2	-1,129.2	4,507.4	1.27	0.51	1.16
11,523.0	90.64	337.00	6,786.9	4,491.3	-1,164.3	4,600.4	1.73	0.32	-1.70
11,616.0	89.90	336.23	6,786.5	4,576.6	-1,201.2	4,693.4	1.15	-0.80	-0.83
11,708.0	90.51	337.83	6,786.2	4,661.4	-1,237.1	4,785.4	1.86	0.66	1.74
11,801.0	90.64	336.67	6,785.2	4,747.1	-1,273.1	4,878.3	1.26	0.14	-1.25
11,893.0	90.84	337.44	6,784.0	4,831.8	-1,306.9	4,970.3	0.86	0.22	0.84
11,986.0	91.08	339.65	6,782.5	4,918.4	-1,343.0	5,063.3	2.39	0.26	2.38
12,078.0	90.37	338.93	6,781.3	5,004.4	-1,375.5	5,155.3	1.10	-0.77	-0.78

WV Department of Environmental Protection



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Michelle Unit 2H
Project:	Doddridge County WV	TVD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Site:	Misery Pad Anne/Arthur/Deano/Hardin/Michelle/Rexa	MD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Well:	Michelle Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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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)
12,171.0	90.07	338.45	6,781.0	5,091.1	-1,409.3	5,248.3	0.60	-0.32	-0.51
12,263.0	90.64	337.48	6,780.4	5,176.3	-1,443.8	5,340.3	1.23	0.62	-1.07
12,356.0	90.14	337.80	6,779.8	5,262.3	-1,479.2	5,433.3	0.64	-0.54	0.34
12,448.0	91.21	338.08	6,778.7	5,347.6	-1,513.7	5,525.2	1.20	1.16	0.30
12,541.0	89.27	333.95	6,778.3	5,432.5	-1,551.5	5,618.2	4.91	-2.09	-4.44
12,635.0	89.33	336.26	6,779.4	5,517.8	-1,591.1	5,712.0	2.46	0.05	2.46
12,727.0	91.04	340.28	6,779.1	5,603.2	-1,625.1	5,804.0	4.75	1.85	4.37
12,820.0	91.28	340.37	6,777.3	5,690.8	-1,656.4	5,896.9	0.28	0.26	0.10
12,912.0	90.47	339.94	6,775.9	5,777.3	-1,687.7	5,988.8	1.00	-0.68	-0.47
13,005.0	89.57	338.89	6,775.6	5,864.4	-1,720.4	6,081.8	1.49	-0.97	-1.13
13,097.0	89.90	340.31	6,776.2	5,950.6	-1,752.4	6,173.8	1.58	0.36	1.54
13,190.0	89.57	337.49	6,776.7	6,037.4	-1,785.9	6,266.7	3.05	-0.35	-3.03
13,282.0	90.44	337.38	6,776.7	6,122.3	-1,821.2	6,358.7	0.95	0.85	-0.12
13,375.0	90.51	338.73	6,775.9	6,208.6	-1,856.0	6,451.7	1.45	0.08	1.45
13,467.0	90.61	339.08	6,775.0	6,294.4	-1,889.1	6,543.7	0.40	0.11	0.36
13,560.0	89.70	337.81	6,774.7	6,380.9	-1,923.2	6,636.7	1.68	-0.98	-1.37
13,653.0	89.47	339.44	6,775.4	6,467.5	-1,957.1	6,729.7	1.77	-0.25	1.75
13,745.0	89.77	337.82	6,776.0	6,553.2	-1,990.6	6,821.7	1.79	0.33	-1.76
13,838.0	90.81	339.90	6,775.6	6,639.9	-2,024.2	6,914.7	2.50	1.12	2.24
13,930.0	90.78	340.13	6,774.3	6,726.3	-2,055.6	7,006.6	0.25	-0.03	0.25
14,023.0	90.21	342.76	6,773.5	6,814.5	-2,085.2	7,099.4	2.89	-0.81	2.83
14,115.0	90.51	341.04	6,772.9	6,901.9	-2,113.8	7,191.2	1.90	0.33	-1.87
14,208.0	89.40	338.44	6,773.0	6,989.2	-2,146.0	7,284.2	3.04	-1.19	-2.80
14,300.0	89.36	338.23	6,774.0	7,074.7	-2,180.0	7,376.1	0.23	-0.04	-0.23
14,393.0	91.01	337.42	6,773.7	7,160.8	-2,215.1	7,469.1	1.98	1.77	-0.87
14,486.0	91.01	336.91	6,772.0	7,246.5	-2,251.1	7,562.1	0.55	0.00	-0.55
14,578.0	89.77	336.64	6,771.4	7,331.0	-2,287.4	7,654.1	1.38	-1.35	-0.29
14,671.0	90.17	337.47	6,771.5	7,416.7	-2,323.7	7,747.1	0.99	0.43	0.89
14,763.0	90.14	335.49	6,771.2	7,501.0	-2,360.4	7,839.0	2.15	-0.03	-2.15
14,856.0	90.41	336.20	6,770.8	7,585.9	-2,398.4	7,932.0	0.82	0.29	0.76
14,948.0	90.57	335.81	6,770.0	7,669.9	-2,435.9	8,023.9	0.46	0.17	-0.42
15,041.0	89.97	334.99	6,769.5	7,754.5	-2,474.6	8,115.8	1.09	-0.65	-0.88
15,134.0	89.90	336.05	6,769.6	7,839.1	-2,513.1	8,209.7	1.14	-0.08	1.14
15,226.0	89.26	337.81	6,770.3	7,923.8	-2,549.2	8,301.7	2.04	-0.70	1.91
15,319.0	90.27	339.27	6,770.7	8,010.3	-2,583.2	8,394.7	1.91	1.09	1.57
15,410.0	91.21	338.86	6,769.5	8,095.3	-2,615.7	8,485.7	1.13	1.03	-0.45
15,503.0	90.14	337.91	6,768.4	8,181.7	-2,649.9	8,578.7	1.54	-1.15	-1.02
15,595.0	90.47	336.98	6,767.9	8,266.7	-2,685.2	8,670.7	1.07	0.36	-1.01
15,688.0	91.04	336.12	6,766.7	8,352.0	-2,722.2	8,763.6	1.11	0.61	-0.92
15,780.0	89.23	334.97	6,766.5	8,435.8	-2,760.3	8,855.5	2.33	-1.97	-1.25
15,873.0	88.93	335.68	6,768.0	8,520.2	-2,799.1	8,948.4	0.83	-0.32	0.76
15,965.0	90.00	337.44	6,768.8	8,604.6	-2,835.7	9,040.4	2.24	1.16	1.91



Scientific Drilling International
Survey Report



Company:	Antero Resources	Local Co-ordinate Reference:	Well Michelle Unit 2H
Project:	Doddridge County WV	TVD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Site:	Misery Pad: Anne/Arthur/Deano/Hardin/Michelle/Rexa	MD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Well:	Michelle Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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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)	
16,058.0	90.37	339.93	6,768.5	8,691.3	-2,869.5	9,133.4	2.71	0.40	2.68	
16,150.0	91.04	339.24	6,767.4	8,777.5	-2,901.6	9,225.3	1.05	0.73	-0.75	
16,243.0	91.31	339.99	6,765.5	8,864.7	-2,934.0	9,318.3	0.86	0.29	0.81	
16,335.0	91.01	340.30	6,763.6	8,951.2	-2,965.3	9,410.2	0.47	-0.33	0.34	
16,428.0	89.53	339.48	6,763.2	9,038.5	-2,997.2	9,503.1	1.82	-1.59	-0.68	
16,520.0	90.04	340.20	6,763.6	9,124.9	-3,028.9	9,595.1	0.96	0.55	0.78	
16,613.0	90.98	339.83	6,762.7	9,212.2	-3,060.7	9,688.0	1.09	1.01	-0.40	
16,705.0	90.14	338.82	6,761.8	9,298.3	-3,093.2	9,780.0	1.43	-0.91	-1.10	
16,798.0	90.44	336.91	6,761.4	9,384.5	-3,128.2	9,873.0	2.08	0.32	-2.05	
16,890.0	89.53	335.52	6,761.4	9,468.6	-3,165.3	9,964.9	1.81	-0.99	-1.51	
16,983.0	90.37	336.73	6,761.5	9,553.7	-3,203.0	10,057.9	1.58	0.90	1.30	
17,076.0	90.67	339.00	6,760.6	9,639.8	-3,238.0	10,150.9	2.46	0.32	2.44	
17,168.0	90.61	336.21	6,759.6	9,724.9	-3,273.1	10,242.8	3.03	-0.07	-3.03	
17,261.0	91.21	338.36	6,758.1	9,810.6	-3,309.0	10,335.8	2.40	0.65	2.31	
17,354.0	90.47	337.66	6,756.7	9,896.9	-3,343.8	10,428.8	1.10	-0.80	-0.75	
17,446.0	90.74	337.42	6,755.8	9,981.9	-3,378.9	10,520.8	0.39	0.29	-0.26	
17,539.0	90.04	337.26	6,755.1	10,067.7	-3,414.8	10,613.8	0.77	-0.75	-0.17	
17,635.0	90.47	336.35	6,754.5	10,201.9	-3,472.3	10,759.8	0.69	0.29	-0.62	
17,778.0	90.10	336.14	6,754.0	10,287.0	-3,509.7	10,852.7	0.45	-0.40	-0.23	
17,871.0	89.26	336.52	6,754.5	10,372.2	-3,547.1	10,945.7	0.99	-0.90	0.41	
17,963.0	89.29	337.30	6,755.7	10,456.8	-3,583.1	11,037.6	0.85	0.03	0.85	
18,056.0	89.12	339.77	6,757.0	10,543.3	-3,617.2	11,130.6	2.66	-0.16	2.66	
18,148.0	89.66	339.46	6,758.0	10,629.6	-3,649.2	11,222.6	0.68	0.59	-0.34	
18,241.0	90.33	339.57	6,758.0	10,716.7	-3,681.8	11,315.6	0.73	0.72	0.12	
18,333.0	91.58	339.43	6,756.5	10,802.9	-3,714.0	11,407.5	1.37	1.36	-0.15	
18,426.0	90.34	340.09	6,754.9	10,890.1	-3,746.1	11,500.4	1.51	-1.33	0.71	
18,518.0	90.51	340.99	6,754.2	10,976.6	-3,776.8	11,592.4	1.00	0.16	0.98	
18,555.0	90.20	340.81	6,754.0	11,011.8	-3,786.9	11,629.3	0.97	-0.94	-0.49	
Last SDI MWD @ 18656										
18,619.0	90.20	340.81	6,753.8	11,072.2	-3,809.9	11,693.2	0.00	0.00	0.00	
Projection To Bit @ 18619 MD / 6753 TVD										

WV Department of Environmental Protection

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
-As Drilled LP Michelle ;	0.00	0.00	6,815.4	756.0	361.7	14,294,110.68	1,711,713.85	39° 21' 45.882 N	80° 44' 51.898 W
- actual wellpath hits target center									
- Point									



Company:	Antero Resources	Local Co-ordinate Reference:	Well Michelle Unit 2H
Project:	Doddridge County WV	TVD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Site:	Misery Pad: Anne/Arthur/Deano/Hardin/Michelle/Rexa	MD Reference:	Precision 522: 1001' GL + 18' KB @ 1019.0usft
Well:	Michelle Unit 2H	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 (°)	
6,422.0	6,375.9	SCMR @ 6422		0.00		
6,705.0	6,555.1	MDLX @ 6705		0.00		
6,959.0	6,694.6	BRKT @ 6959		0.00		
7,022.0	6,723.0	TLLY @ 7022		0.00		
7,146.0	6,766.5	HMLN @ 7146		0.00		
7,177.0	6,776.1	MRCL_HOT @ 7177		0.00		

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
105.0	105.0	-0.1	-0.1	First Gyro @ 105	
5,830.0	5,828.2	33.4	17.6	Last Gyro @ 5830	
5,669.0	5,667.2	33.6	17.4	First SDI MWD @ 5669	
7,482.0	6,815.4	756.0	361.7	~As Drilled LP @ 7482 MD / 6815 TVD	
18,555.0	6,754.0	11,011.8	-3,788.9	Last SDI MWD @ 18555	
18,619.0	6,753.8	11,072.2	-3,809.9	Projection To Bit @ 18619 MD / 6753 TVD	

Checked By: _____ Approved By: _____ Date: _____

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