



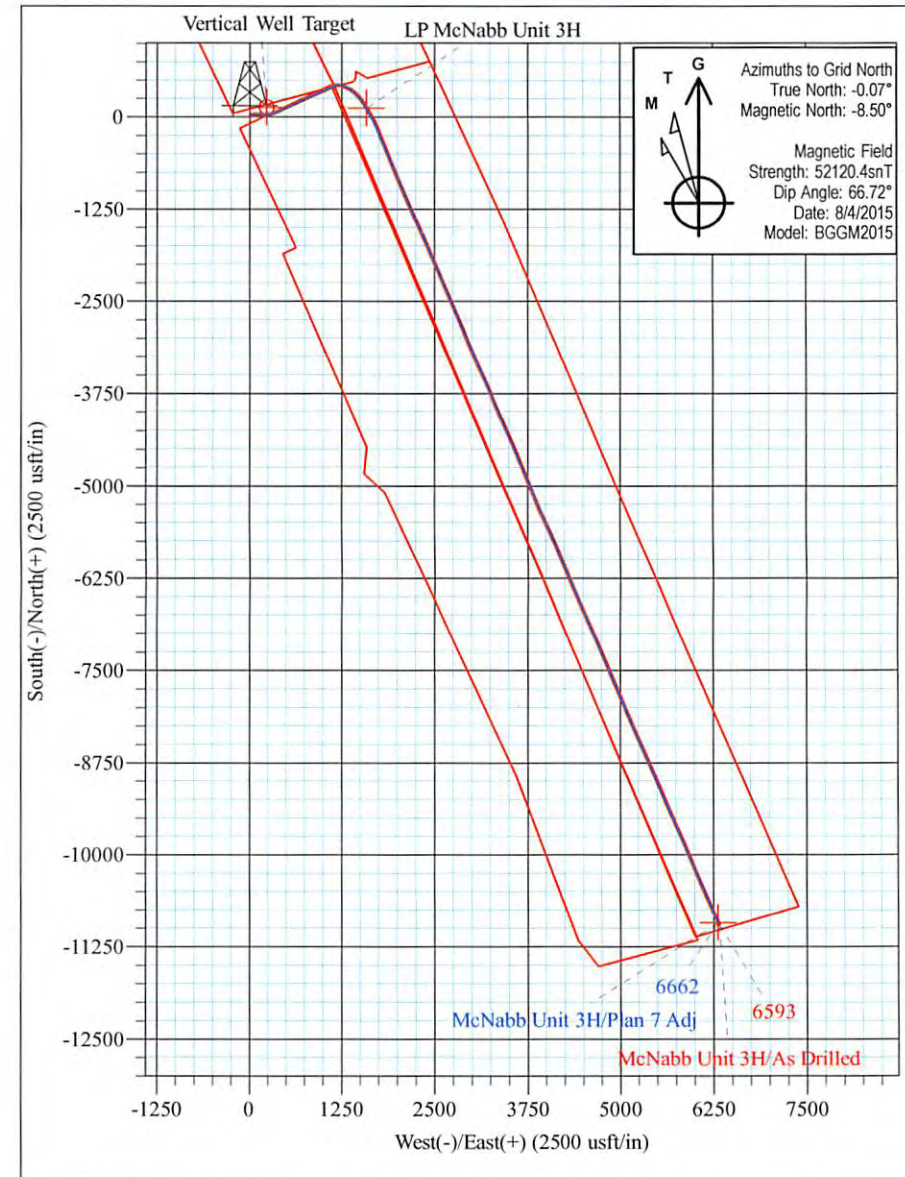
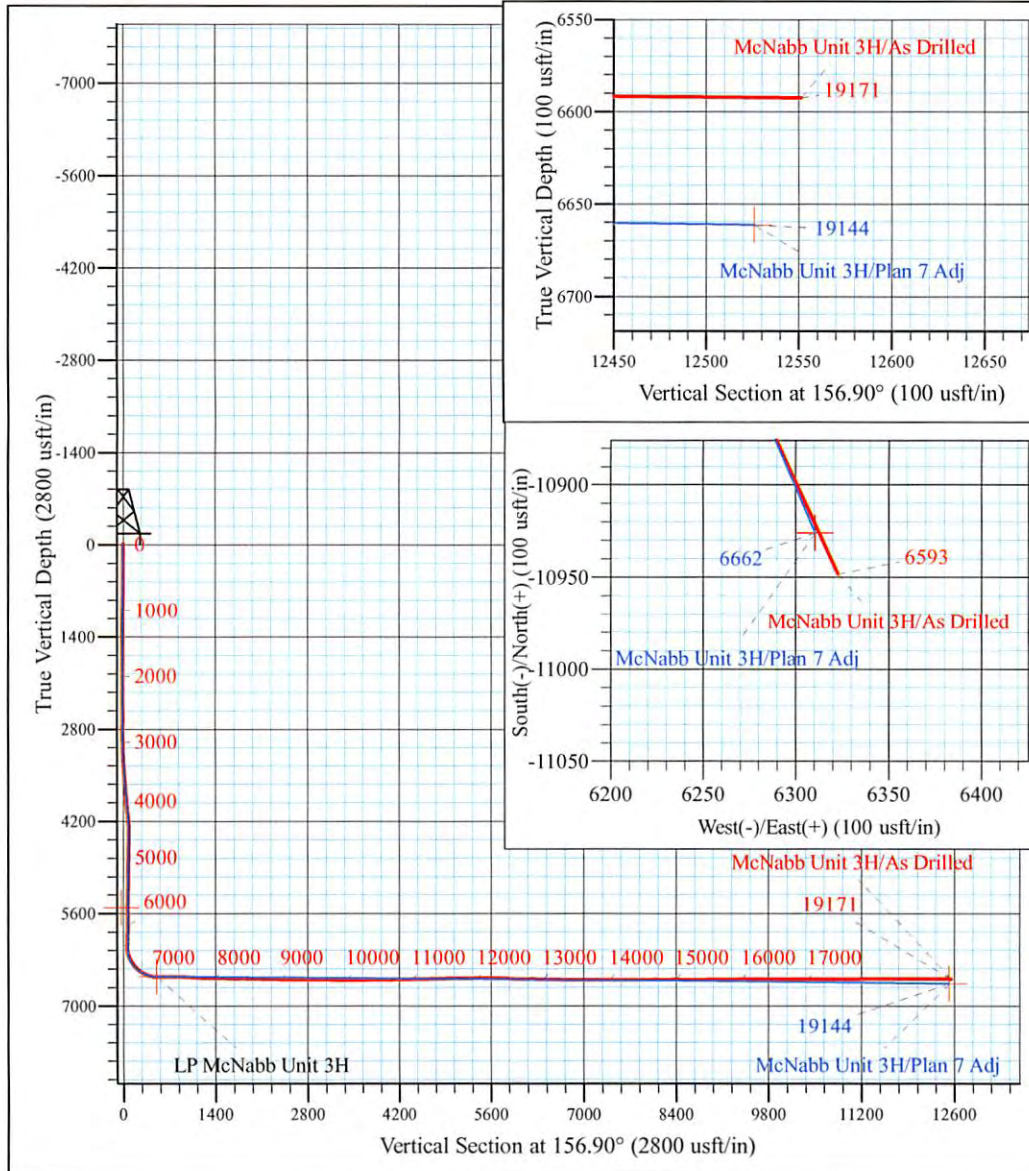
Mackay Pad - Caldwell/Greenback/McNabb
 McNabb Unit 3H
 Plan 7 Adj
 Precision 523: GL 1099' + KB 19' @ 1118.0usft
 Ritchie County WV

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: **McNabb Unit 3H SHL**

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14248728.76	1669554.90	39° 14' 17.981 N	80° 53' 49.527 W



Azimuths to Grid North
 True North: -0.07°
 Magnetic North: -8.50°

Magnetic Field
 Strength: 52120.4snT
 Dip Angle: 66.72°
 Date: 8/4/2015
 Model: BGGM2015

McNabb Unit 3H
 Approx. BHL
39° 12' 29.647 N 80° 52' 29.328 W

Shane Rhodes
 14:34, September 08 2015
 Scientific Drilling International
 124 Vista Drive
 Charleroi, PA 15022



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 3H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Well:	McNabb Unit 3H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Project	Ritchie County WV, Ritchie County WV, WV North		
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	Mackay Pad - Caldwell/Greenback/McNabb				
Site Position:		Northing:	14,248,714.78 usft	Latitude:	39° 14' 17.843 N
From:	Map	Easting:	1,669,496.15 usft	Longitude:	80° 53' 50.274 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.06 °

Well	McNabb Unit 3H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,248,728.76 usft	Latitude:	39° 14' 17.981 N
	+E/-W	0.0 usft	Easting:	1,669,554.90 usft	Longitude:	80° 53' 49.527 W
Position Uncertainty		2.0 usft	Wellhead Elevation:	1,118.0 usft	Ground Level:	1,099.0 usft

Wellbore	Original Wellpath				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2015	8/4/2015	-8.44	66.72	52,120

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	156.90	

Survey Program	Date	9/8/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
31.0	6,124.1	Survey #8 Final Gyro (Original Wellpath)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
6,154.0	19,171.0	Survey #9 SDI MWD Lateral (Original Wel	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	
31.0	0.08	99.55	31.0	0.0	0.0	0.0	0.26	0.26	0.00	
First Gyro @ 31 MD										
56.0	0.15	99.55	56.0	0.0	0.1	0.0	0.28	0.28	0.00	
81.0	0.23	99.55	81.0	0.0	0.2	0.1	0.32	0.32	0.00	
106.0	0.31	99.55	106.0	0.0	0.3	0.1	0.32	0.32	0.00	
131.0	0.19	142.96	131.0	-0.1	0.4	0.2	0.86	-0.48	173.64	
156.0	0.22	142.23	156.0	-0.2	0.4	0.3	0.12	0.12	-2.92	
181.0	0.04	182.65	181.0	-0.2	0.4	0.4	0.77	-0.72	161.68	
206.0	0.06	262.88	206.0	-0.2	0.4	0.4	0.26	0.08	320.92	



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 3H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Well:	McNabb 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)	
231.0	0.08	234.89	231.0	-0.2	0.4	0.4	0.16	0.08	-111.96	
256.0	0.21	81.25	256.0	-0.2	0.4	0.4	1.14	0.52	-614.56	
281.0	0.08	123.57	281.0	-0.2	0.5	0.4	0.64	-0.52	169.28	
306.0	0.05	75.94	306.0	-0.2	0.5	0.4	0.24	-0.12	-190.52	
331.0	0.16	124.49	331.0	-0.3	0.6	0.5	0.53	0.44	194.20	
356.0	0.03	232.92	356.0	-0.3	0.6	0.5	0.69	-0.52	433.72	
381.0	0.08	170.03	381.0	-0.3	0.6	0.5	0.29	0.20	-251.56	
406.0	0.13	191.36	406.0	-0.3	0.6	0.5	0.25	0.20	85.32	
431.0	0.14	180.83	431.0	-0.4	0.6	0.6	0.11	0.04	-42.12	
456.0	0.15	196.90	456.0	-0.5	0.6	0.7	0.17	0.04	64.28	
481.0	0.12	232.02	481.0	-0.5	0.5	0.7	0.35	-0.12	140.48	
506.0	0.05	331.51	506.0	-0.5	0.5	0.7	0.55	-0.28	397.96	
531.0	0.10	359.13	531.0	-0.5	0.5	0.6	0.24	0.20	110.48	
556.0	0.10	53.39	556.0	-0.5	0.5	0.6	0.36	0.00	217.04	
581.0	0.42	29.42	581.0	-0.4	0.6	0.6	1.32	1.28	-95.88	
606.0	0.87	35.71	606.0	-0.1	0.7	0.4	1.82	1.80	25.16	
631.0	1.31	40.05	631.0	0.2	1.0	0.2	1.79	1.76	17.36	
656.0	1.74	38.37	656.0	0.8	1.4	-0.1	1.73	1.72	-6.72	
681.0	2.08	41.40	681.0	1.4	2.0	-0.5	1.42	1.36	12.12	
706.0	2.47	46.42	705.9	2.1	2.7	-0.9	1.75	1.56	20.08	
731.0	2.70	46.34	730.9	2.9	3.5	-1.3	0.92	0.92	-0.32	
756.0	3.24	48.23	755.9	3.8	4.4	-1.7	2.19	2.16	7.56	
781.0	3.72	50.06	780.8	4.8	5.6	-2.2	1.97	1.92	7.32	
806.0	3.89	50.25	805.8	5.8	6.9	-2.7	0.68	0.68	0.76	
831.0	4.03	50.77	830.7	6.9	8.2	-3.1	0.58	0.56	2.08	
856.0	4.15	50.80	855.7	8.0	9.6	-3.6	0.48	0.48	0.12	
881.0	4.47	53.52	880.6	9.2	11.1	-4.1	1.52	1.28	10.88	
906.0	4.63	54.41	905.5	10.4	12.7	-4.6	0.70	0.64	3.56	
931.0	4.68	54.86	930.4	11.5	14.3	-5.0	0.25	0.20	1.80	
956.0	4.69	54.72	955.4	12.7	16.0	-5.4	0.06	0.04	-0.56	
981.0	4.76	55.22	980.3	13.9	17.7	-5.8	0.32	0.28	2.00	
1,006.0	4.77	54.99	1,005.2	15.1	19.4	-6.3	0.09	0.04	-0.92	
1,031.0	4.77	54.76	1,030.1	16.3	21.1	-6.7	0.08	0.00	-0.92	
1,056.0	4.51	55.14	1,055.0	17.4	22.7	-7.1	1.05	-1.04	1.52	
1,081.0	4.17	53.52	1,079.9	18.5	24.3	-7.5	1.45	-1.36	-6.48	
1,106.0	3.92	53.46	1,104.9	19.6	25.7	-7.9	1.00	-1.00	-0.24	
1,131.0	3.65	54.00	1,129.8	20.6	27.0	-8.3	1.09	-1.08	2.16	
1,156.0	3.39	55.15	1,154.8	21.5	28.3	-8.6	1.08	-1.04	4.60	
1,181.0	3.11	54.43	1,179.7	22.3	29.4	-8.9	1.13	-1.12	-2.88	
1,206.0	2.75	53.21	1,204.7	23.0	30.5	-9.2	1.46	-1.44	-4.88	
1,231.0	2.47	53.78	1,229.7	23.7	31.4	-9.5	1.12	-1.12	2.28	
1,256.0	2.21	55.26	1,254.7	24.3	32.2	-9.7	1.07	-1.04	5.92	
1,281.0	2.00	57.40	1,279.6	24.8	33.0	-9.9	0.90	-0.84	8.56	



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 3H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Well:	McNabb Unit 3H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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)
1,306.0	1.78	58.32	1,304.6	25.2	33.7	-10.0	0.89	-0.88	3.68
1,331.0	1.54	60.14	1,329.6	25.6	34.3	-10.1	0.98	-0.96	7.28
1,356.0	1.39	63.13	1,354.6	25.9	34.9	-10.2	0.67	-0.60	11.96
1,381.0	1.36	65.00	1,379.6	26.2	35.4	-10.2	0.22	-0.12	7.48
1,406.0	1.31	67.32	1,404.6	26.4	35.9	-10.2	0.29	-0.20	9.28
1,431.0	1.08	68.98	1,429.6	26.6	36.4	-10.2	0.93	-0.92	6.64
1,456.0	1.04	68.91	1,454.6	26.8	36.8	-10.2	0.16	-0.16	-0.28
1,481.0	0.99	69.84	1,479.6	26.9	37.3	-10.2	0.21	-0.20	3.72
1,506.0	0.89	73.88	1,504.6	27.1	37.6	-10.1	0.48	-0.40	16.16
1,531.0	0.83	74.17	1,529.6	27.2	38.0	-10.1	0.24	-0.24	1.16
1,556.0	0.84	71.87	1,554.6	27.3	38.4	-10.0	0.14	0.04	-9.20
1,581.0	0.78	74.21	1,579.6	27.4	38.7	-10.0	0.27	-0.24	9.36
1,606.0	0.65	76.46	1,604.6	27.5	39.0	-10.0	0.53	-0.52	9.00
1,631.0	0.56	78.52	1,629.6	27.5	39.3	-9.9	0.37	-0.36	8.24
1,656.0	0.49	82.61	1,654.6	27.6	39.5	-9.9	0.32	-0.28	16.36
1,681.0	0.51	80.64	1,679.6	27.6	39.7	-9.8	0.11	0.08	-7.88
1,706.0	0.48	86.33	1,704.6	27.6	39.9	-9.7	0.23	-0.12	22.76
1,731.0	0.47	84.69	1,729.6	27.6	40.1	-9.7	0.07	-0.04	-6.56
1,756.0	0.47	80.45	1,754.6	27.7	40.3	-9.6	0.14	0.00	-16.96
1,781.0	0.48	85.27	1,779.6	27.7	40.5	-9.6	0.16	0.04	19.28
1,806.0	0.52	94.11	1,804.6	27.7	40.7	-9.5	0.35	0.16	35.36
1,831.0	0.57	100.31	1,829.6	27.6	41.0	-9.4	0.31	0.20	24.80
1,856.0	0.62	100.43	1,854.6	27.6	41.2	-9.2	0.20	0.20	0.48
1,881.0	0.62	101.16	1,879.6	27.6	41.5	-9.1	0.03	0.00	2.92
1,906.0	0.63	106.54	1,904.6	27.5	41.8	-8.9	0.24	0.04	21.52
1,931.0	0.62	114.30	1,929.5	27.4	42.0	-8.7	0.34	-0.04	31.04
1,956.0	0.63	108.04	1,954.5	27.3	42.3	-8.5	0.28	0.04	-25.04
1,981.0	0.69	104.83	1,979.5	27.2	42.5	-8.3	0.28	0.24	-12.84
2,006.0	0.70	112.01	2,004.5	27.1	42.8	-8.1	0.35	0.04	28.72
2,031.0	0.63	104.98	2,029.5	27.0	43.1	-7.9	0.43	-0.28	-28.12
2,056.0	0.50	109.57	2,054.5	27.0	43.3	-7.8	0.55	-0.52	18.36
2,081.0	0.52	111.36	2,079.5	26.9	43.6	-7.6	0.10	0.08	7.16
2,106.0	0.55	108.20	2,104.5	26.8	43.8	-7.5	0.17	0.12	-12.64
2,131.0	0.57	104.46	2,129.5	26.7	44.0	-7.3	0.17	0.08	-14.96
2,156.0	0.46	119.02	2,154.5	26.6	44.2	-7.2	0.68	-0.44	58.24
2,181.0	0.39	105.12	2,179.5	26.6	44.4	-7.0	0.50	-0.28	-55.60
2,206.0	0.32	126.29	2,204.5	26.5	44.5	-6.9	0.59	-0.28	84.68
2,231.0	0.17	117.45	2,229.5	26.5	44.6	-6.8	0.62	-0.60	-35.36
2,256.0	0.12	106.58	2,254.5	26.4	44.7	-6.8	0.23	-0.20	-43.48
2,281.0	0.05	82.79	2,279.5	26.4	44.7	-6.8	0.31	-0.28	-95.16
2,306.0	0.04	43.43	2,304.5	26.4	44.7	-6.8	0.13	-0.04	-157.44
2,331.0	0.00	135.99	2,329.5	26.4	44.7	-6.8	0.16	-0.16	0.00
2,356.0	0.09	81.18	2,354.5	26.4	44.7	-6.8	0.36	0.36	0.00



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 3H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Well:	McNabb Unit 3H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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)
2,381.0	0.09	99.35	2,379.5	26.4	44.8	-6.7	0.11	0.00	72.68
2,406.0	0.06	130.76	2,404.5	26.4	44.8	-6.7	0.20	-0.12	125.64
2,431.0	0.07	187.80	2,429.5	26.4	44.8	-6.7	0.25	0.04	228.16
2,456.0	0.17	297.18	2,454.5	26.4	44.8	-6.7	0.82	0.40	437.52
2,481.0	0.10	307.59	2,479.5	26.4	44.7	-6.8	0.30	-0.28	41.64
2,506.0	0.08	274.60	2,504.5	26.5	44.7	-6.8	0.22	-0.08	-131.96
2,531.0	0.23	287.63	2,529.5	26.5	44.6	-6.8	0.61	0.60	52.12
2,556.0	0.40	305.14	2,554.5	26.5	44.5	-6.9	0.77	0.68	70.04
2,581.0	0.38	305.40	2,579.5	26.6	44.4	-7.1	0.08	-0.08	1.04
2,606.0	0.23	306.50	2,604.5	26.7	44.3	-7.2	0.60	-0.60	4.40
2,631.0	0.28	289.05	2,629.5	26.8	44.2	-7.3	0.37	0.20	-69.80
2,656.0	0.41	281.09	2,654.5	26.8	44.0	-7.4	0.55	0.52	-31.84
2,681.0	0.44	289.75	2,679.5	26.8	43.8	-7.5	0.28	0.12	34.64
2,706.0	0.46	301.25	2,704.5	26.9	43.7	-7.6	0.37	0.08	46.00
2,731.0	0.45	308.74	2,729.5	27.0	43.5	-7.8	0.24	-0.04	29.96
2,756.0	0.49	315.47	2,754.5	27.2	43.4	-8.0	0.27	0.16	26.92
2,781.0	0.44	305.68	2,779.5	27.3	43.2	-8.2	0.37	-0.20	-39.16
2,806.0	0.39	285.80	2,804.5	27.4	43.0	-8.3	0.61	-0.20	-79.52
2,831.0	0.40	297.70	2,829.5	27.5	42.9	-8.4	0.33	0.04	47.60
2,856.0	0.41	279.81	2,854.5	27.5	42.7	-8.5	0.51	0.04	-71.56
2,881.0	0.37	292.07	2,879.5	27.6	42.6	-8.7	0.37	-0.16	49.04
2,906.0	0.42	8.32	2,904.5	27.7	42.5	-8.8	1.96	0.20	305.00
2,931.0	0.97	48.73	2,929.5	27.9	42.7	-8.9	2.82	2.20	161.64
2,956.0	1.61	62.00	2,954.5	28.2	43.1	-9.0	2.81	2.56	53.08
2,981.0	2.27	69.17	2,979.5	28.6	43.9	-9.0	2.81	2.64	28.68
3,006.0	2.99	72.66	3,004.5	28.9	45.0	-9.0	2.95	2.88	13.96
3,031.0	3.78	72.87	3,029.4	29.4	46.4	-8.8	3.16	3.16	0.84
3,056.0	4.55	73.50	3,054.4	29.9	48.1	-8.6	3.09	3.08	2.52
3,081.0	5.14	78.00	3,079.3	30.4	50.2	-8.3	2.81	2.36	18.00
3,106.0	5.97	84.22	3,104.2	30.8	52.6	-7.7	4.10	3.32	24.88
3,131.0	6.80	85.19	3,129.0	31.0	55.3	-6.8	3.35	3.32	3.88
3,156.0	7.41	87.49	3,153.8	31.2	58.4	-5.8	2.69	2.44	9.20
3,181.0	7.88	90.08	3,178.6	31.3	61.8	-4.5	2.33	1.88	10.36
3,206.0	8.21	92.46	3,203.3	31.2	65.3	-3.1	1.88	1.32	9.52
3,231.0	8.31	92.92	3,228.1	31.0	68.8	-1.5	0.48	0.40	1.84
3,256.0	8.46	92.78	3,252.8	30.9	72.5	0.1	0.61	0.60	-0.56
3,281.0	8.55	93.64	3,277.5	30.6	76.2	1.7	0.62	0.36	3.44
3,306.0	8.72	92.42	3,302.3	30.4	79.9	3.3	1.00	0.68	-4.88
3,331.0	9.11	91.32	3,327.0	30.3	83.8	5.0	1.70	1.56	-4.40
3,356.0	9.48	91.02	3,351.6	30.2	87.8	6.6	1.49	1.48	-1.20
3,381.0	9.74	90.18	3,376.3	30.2	92.0	8.3	1.18	1.04	-3.36
3,406.0	9.93	89.79	3,400.9	30.2	96.3	10.0	0.81	0.76	-1.56
3,431.0	10.10	90.15	3,425.5	30.2	100.6	11.7	0.72	0.68	1.44
3,456.0	10.18	90.16	3,450.1	30.2	105.0	13.4	0.32	0.32	0.04



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 3H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Well:	McNabb 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)	
3,481.0	10.27	91.73	3,474.7	30.1	109.5	15.2	1.17	0.36	6.28	
3,506.0	10.37	92.04	3,499.3	30.0	113.9	17.1	0.46	0.40	1.24	
3,531.0	10.36	92.66	3,523.9	29.8	118.4	19.1	0.45	-0.04	2.48	
3,556.0	10.52	92.85	3,548.5	29.6	123.0	21.0	0.65	0.64	0.76	
3,581.0	10.58	93.14	3,573.1	29.3	127.5	23.1	0.32	0.24	1.16	
3,606.0	10.65	93.30	3,597.7	29.1	132.1	25.1	0.30	0.28	0.64	
3,631.0	10.72	93.36	3,622.2	28.8	136.8	27.2	0.28	0.28	0.24	
3,656.0	10.66	93.13	3,646.8	28.5	141.4	29.2	0.29	-0.24	-0.92	
3,681.0	10.42	92.15	3,671.4	28.3	146.0	31.2	1.20	-0.96	-3.92	
3,706.0	10.25	91.11	3,696.0	28.2	150.4	33.1	1.01	-0.68	-4.16	
3,731.0	10.26	90.38	3,720.6	28.1	154.9	34.9	0.52	0.04	-2.92	
3,756.0	10.56	90.83	3,745.2	28.1	159.4	36.7	1.24	1.20	1.80	
3,781.0	10.95	90.70	3,769.7	28.0	164.1	38.6	1.56	1.56	-0.52	
3,806.0	11.44	90.13	3,794.2	28.0	168.9	40.5	2.01	1.96	-2.28	
3,831.0	11.80	88.85	3,818.7	28.0	174.0	42.5	1.77	1.44	-5.12	
3,856.0	11.98	87.73	3,843.2	28.2	179.1	44.3	1.17	0.72	-4.48	
3,881.0	12.25	86.75	3,867.6	28.4	184.3	46.2	1.36	1.08	-3.92	
3,906.0	12.75	86.85	3,892.0	28.8	189.7	48.0	2.00	2.00	0.40	
3,931.0	13.57	87.88	3,916.4	29.0	195.4	50.0	3.41	3.28	4.12	
3,956.0	14.42	89.35	3,940.6	29.2	201.5	52.2	3.69	3.40	5.88	
3,981.0	15.37	89.32	3,964.8	29.2	207.9	54.7	3.80	3.80	-0.12	
4,006.0	16.28	89.01	3,988.9	29.3	214.7	57.3	3.66	3.64	-1.24	
4,031.0	17.20	88.57	4,012.8	29.5	221.9	59.9	3.71	3.68	-1.76	
4,056.0	17.94	87.82	4,036.6	29.7	229.5	62.7	3.10	2.96	-3.00	
4,081.0	18.74	86.27	4,060.4	30.1	237.3	65.4	3.75	3.20	-6.20	
4,106.0	19.50	84.73	4,084.0	30.8	245.5	68.0	3.65	3.04	-6.16	
4,131.0	20.11	83.87	4,107.5	31.6	253.9	70.5	2.70	2.44	-3.44	
4,156.0	20.51	83.21	4,131.0	32.6	262.5	73.0	1.84	1.60	-2.64	
4,181.0	21.15	82.26	4,154.3	33.7	271.3	75.4	2.89	2.56	-3.80	
4,206.0	21.80	81.45	4,177.6	35.0	280.4	77.8	2.86	2.60	-3.24	
4,231.0	22.28	80.20	4,200.8	36.5	289.7	80.1	2.68	1.92	-5.00	
4,256.0	22.68	78.52	4,223.9	38.3	299.1	82.1	3.03	1.60	-6.72	
4,281.0	22.93	76.00	4,246.9	40.4	308.5	83.9	4.03	1.00	-10.08	
4,306.0	23.23	73.64	4,269.9	43.0	318.0	85.2	3.89	1.20	-9.44	
4,331.0	23.76	72.69	4,292.8	45.9	327.5	86.3	2.61	2.12	-3.80	
4,356.0	24.67	71.23	4,315.6	49.0	337.3	87.2	4.36	3.64	-5.84	
4,381.0	25.17	69.41	4,338.3	52.6	347.2	87.8	3.66	2.00	-7.28	
4,406.0	25.61	68.10	4,360.9	56.5	357.2	88.2	2.85	1.76	-5.24	
4,431.0	25.60	67.30	4,383.4	60.6	367.2	88.3	1.38	-0.04	-3.20	
4,456.0	25.61	66.50	4,406.0	64.8	377.1	88.3	1.38	0.04	-3.20	
4,481.0	25.64	65.66	4,428.5	69.2	387.0	88.2	1.46	0.12	-3.36	
4,506.0	25.80	65.27	4,451.0	73.7	396.8	87.9	0.93	0.64	-1.56	
4,531.0	26.15	64.91	4,473.5	78.3	406.8	87.6	1.54	1.40	-1.44	



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 3H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Well:	McNabb 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)	
4,556.0	26.20	64.37	4,496.0	83.0	416.7	87.1	0.97	0.20	-2.16	
4,581.0	26.39	63.83	4,518.4	87.9	426.7	86.6	1.22	0.76	-2.16	
4,606.0	26.85	63.77	4,540.7	92.8	436.8	86.0	1.84	1.84	-0.24	
4,631.0	27.41	63.74	4,563.0	97.9	447.0	85.3	2.24	2.24	-0.12	
4,656.0	27.95	63.76	4,585.1	103.0	457.4	84.7	2.16	2.16	0.08	
4,681.0	28.39	63.80	4,607.1	108.2	468.0	84.1	1.76	1.76	0.16	
4,706.0	28.85	63.95	4,629.1	113.5	478.7	83.4	1.86	1.84	0.60	
4,731.0	29.07	64.37	4,651.0	118.8	489.6	82.9	1.20	0.88	1.68	
4,756.0	29.16	64.66	4,672.8	124.0	500.6	82.4	0.67	0.36	1.16	
4,781.0	29.37	64.84	4,694.6	129.2	511.7	81.9	0.91	0.84	0.72	
4,806.0	29.40	65.25	4,716.4	134.4	522.8	81.5	0.81	0.12	1.64	
4,831.0	29.49	66.08	4,738.2	139.5	534.0	81.2	1.67	0.36	3.32	
4,856.0	29.41	66.50	4,759.9	144.4	545.2	81.1	0.89	-0.32	1.68	
4,881.0	29.24	66.67	4,781.7	149.3	556.5	81.0	0.76	-0.68	0.68	
4,906.0	29.37	66.94	4,803.5	154.1	567.7	81.0	0.74	0.52	1.08	
4,931.0	29.24	67.13	4,825.3	158.9	579.0	81.0	0.64	-0.52	0.76	
4,956.0	29.33	67.23	4,847.1	163.6	590.3	81.1	0.41	0.36	0.40	
4,981.0	29.05	67.03	4,869.0	168.3	601.5	81.1	1.19	-1.12	-0.80	
5,006.0	28.73	66.69	4,890.9	173.1	612.6	81.1	1.44	-1.28	-1.36	
5,031.0	28.65	66.28	4,912.8	177.9	623.6	81.1	0.85	-0.32	-1.64	
5,056.0	28.34	65.79	4,934.8	182.7	634.5	80.9	1.55	-1.24	-1.96	
5,081.0	28.03	65.26	4,956.8	187.6	645.3	80.6	1.59	-1.24	-2.12	
5,106.0	27.76	64.69	4,978.9	192.6	655.8	80.2	1.52	-1.08	-2.28	
5,131.0	27.62	64.28	5,001.0	197.6	666.3	79.7	0.95	-0.56	-1.64	
5,156.0	27.83	64.17	5,023.2	202.6	676.8	79.2	0.86	0.84	-0.44	
5,181.0	27.96	64.47	5,045.2	207.7	687.3	78.6	0.77	0.52	1.20	
5,206.0	27.69	65.18	5,067.4	212.6	697.9	78.2	1.71	-1.08	2.84	
5,231.0	27.49	65.37	5,089.5	217.5	708.4	77.9	0.87	-0.80	0.76	
5,256.0	27.26	64.88	5,111.7	222.3	718.9	77.5	1.29	-0.92	-1.96	
5,281.0	26.94	64.10	5,134.0	227.2	729.1	77.1	1.91	-1.28	-3.12	
5,306.0	26.64	63.23	5,156.3	232.2	739.2	76.4	1.97	-1.20	-3.48	
5,331.0	26.21	62.68	5,178.7	237.3	749.1	75.7	1.98	-1.72	-2.20	
5,356.0	26.28	62.82	5,201.1	242.3	759.0	74.9	0.37	0.28	0.56	
5,381.0	26.37	63.57	5,223.5	247.3	768.9	74.1	1.38	0.36	3.00	
5,406.0	26.52	64.43	5,245.9	252.2	778.9	73.6	1.65	0.60	3.44	
5,431.0	26.46	64.72	5,268.3	257.0	788.9	73.1	0.57	-0.24	1.16	
5,456.0	26.47	65.09	5,290.6	261.7	799.0	72.7	0.66	0.04	1.48	
5,481.0	26.71	65.44	5,313.0	266.4	809.2	72.4	1.15	0.96	1.40	
5,506.0	26.83	65.79	5,335.3	271.1	819.4	72.2	0.79	0.48	1.40	
5,531.0	26.88	66.03	5,357.6	275.7	829.8	72.0	0.48	0.20	0.96	
5,556.0	26.75	65.79	5,379.9	280.3	840.1	71.8	0.68	-0.52	-0.96	
5,581.0	26.77	65.36	5,402.3	284.9	850.3	71.5	0.78	0.08	-1.72	
5,606.0	26.66	65.05	5,424.6	289.7	860.5	71.2	0.71	-0.44	-1.24	



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 3H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Well:	McNabb Unit 3H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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)
5,631.0	26.63	64.95	5,446.9	294.4	870.7	70.8	0.22	-0.12	-0.40
5,656.0	26.51	65.40	5,469.3	299.1	880.8	70.5	0.94	-0.48	1.80
5,681.0	26.38	66.46	5,491.7	303.6	891.0	70.3	1.96	-0.52	4.24
5,706.0	26.29	67.05	5,514.1	308.0	901.2	70.3	1.11	-0.36	2.36
5,731.0	26.01	67.42	5,536.5	312.3	911.3	70.3	1.30	-1.12	1.48
5,756.0	25.94	67.92	5,559.0	316.4	921.5	70.5	0.92	-0.28	2.00
5,781.0	25.78	68.76	5,581.5	320.5	931.6	70.7	1.60	-0.64	3.36
5,806.0	25.27	69.44	5,604.1	324.3	941.7	71.2	2.35	-2.04	2.72
5,831.0	24.79	69.11	5,626.7	328.0	951.5	71.6	2.00	-1.92	-1.32
5,856.0	24.42	68.22	5,649.4	331.8	961.2	71.9	2.09	-1.48	-3.56
5,881.0	24.38	67.58	5,672.2	335.7	970.8	72.1	1.07	-0.16	-2.56
5,906.0	24.46	67.20	5,695.0	339.7	980.4	72.2	0.71	0.32	-1.52
5,931.0	24.40	66.90	5,717.7	343.7	989.9	72.2	0.55	-0.24	-1.20
5,956.0	24.22	67.10	5,740.5	347.7	999.3	72.2	0.79	-0.72	0.80
5,981.0	23.77	67.23	5,763.4	351.7	1,008.7	72.3	1.81	-1.80	0.52
6,006.0	23.25	66.97	5,786.3	355.6	1,017.9	72.3	2.12	-2.08	-1.04
6,031.0	22.92	66.55	5,809.3	359.4	1,026.9	72.3	1.48	-1.32	-1.68
6,056.0	22.82	66.42	5,832.3	363.3	1,035.8	72.2	0.45	-0.40	-0.52
6,081.0	22.88	65.93	5,855.4	367.2	1,044.7	72.1	0.80	0.24	-1.96
6,106.0	22.91	65.11	5,878.4	371.3	1,053.6	71.9	1.28	0.12	-3.28
6,124.0	22.62	64.88	5,895.0	374.2	1,059.9	71.6	1.67	-1.60	-1.27
Last Gyro @ 6124 MD									
6,124.1	22.62	64.88	5,895.1	374.2	1,059.9	71.6	1.67	-1.60	-1.28
6,154.0	23.02	61.69	5,922.6	379.4	1,070.3	70.9	4.35	1.34	-10.68
First SDI MWD @ 6154 MD									
6,183.0	23.29	61.90	5,949.3	384.8	1,080.3	69.9	0.97	0.93	0.72
6,213.0	22.65	60.84	5,976.9	390.4	1,090.6	68.7	2.54	-2.13	-3.53
6,243.0	22.15	61.19	6,004.7	396.0	1,100.6	67.6	1.72	-1.67	1.17
6,273.0	21.95	62.56	6,032.5	401.3	1,110.5	66.6	1.84	-0.67	4.57
6,303.0	22.13	67.75	6,060.3	406.0	1,120.7	66.2	6.52	0.60	17.30
6,333.0	23.15	68.63	6,088.0	410.3	1,131.4	66.5	3.58	3.40	2.93
6,362.0	26.11	68.59	6,114.3	414.7	1,142.7	66.9	10.21	10.21	-0.14
6,392.0	28.37	69.20	6,141.0	419.6	1,155.5	67.4	7.59	7.53	2.03
6,422.0	28.99	74.19	6,167.3	424.2	1,169.2	68.6	8.24	2.07	16.63
6,452.0	29.28	83.45	6,193.5	427.0	1,183.5	71.6	15.05	0.97	30.87
6,477.0	30.40	90.84	6,215.2	427.6	1,195.9	75.9	15.37	4.47	29.58
Sycamore @ 6477 MD									
6,482.0	30.67	92.26	6,219.5	427.5	1,198.4	76.9	15.37	5.43	28.30
6,512.0	32.15	98.02	6,245.1	426.1	1,214.0	84.3	11.15	4.93	19.20
6,542.0	34.25	101.36	6,270.2	423.3	1,230.1	93.3	9.28	7.00	11.13
6,572.0	36.28	105.35	6,294.7	419.3	1,247.0	103.6	10.23	6.77	13.30
6,602.0	38.12	108.86	6,318.6	414.0	1,264.3	115.3	9.36	6.13	11.70
6,631.0	39.91	111.03	6,341.2	407.7	1,281.5	127.7	7.76	6.17	7.48
6,661.0	41.81	113.36	6,363.9	400.3	1,299.6	141.7	8.12	6.33	7.77



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 3H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Well:	McNabb Unit 3H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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)	
6,678.0	42.82	115.38	6,376.4	395.6	1,310.0	150.1	9.95	5.92	11.87	
Middlesex @ 6678 MD										
6,691.0	43.61	116.87	6,385.9	391.7	1,318.0	156.9	9.95	6.10	11.47	
6,721.0	45.69	119.36	6,407.2	381.7	1,336.6	173.3	9.06	6.93	8.30	
6,751.0	48.87	121.47	6,427.6	370.6	1,355.6	191.0	11.79	10.60	7.03	
6,781.0	52.54	124.28	6,446.6	357.9	1,375.1	210.3	14.22	12.23	9.37	
6,810.0	56.46	126.87	6,463.4	344.2	1,394.3	230.4	15.35	13.52	8.93	
6,840.0	59.16	129.93	6,479.4	328.4	1,414.2	252.7	12.47	9.00	10.20	
6,855.0	60.16	131.23	6,487.0	320.0	1,424.0	264.3	10.03	6.69	8.65	
Burkett @ 6855 MD										
6,870.0	61.18	132.50	6,494.3	311.3	1,433.7	276.2	10.03	6.77	8.48	
6,900.0	62.84	134.94	6,508.4	293.0	1,452.9	300.5	9.07	5.53	8.13	
6,930.0	66.64	137.15	6,521.2	273.4	1,471.7	325.9	14.31	12.67	7.37	
6,932.0	66.89	137.31	6,522.0	272.1	1,473.0	327.6	14.54	12.58	7.93	
Tully @ 6932 MD										
6,960.0	70.43	139.47	6,532.2	252.6	1,490.3	352.3	14.54	12.64	7.72	
6,989.0	73.36	141.91	6,541.2	231.3	1,507.7	378.8	12.88	10.10	8.41	
7,014.0	75.25	143.76	6,548.0	212.1	1,522.3	402.2	10.40	7.56	7.41	
MRCL_HOT @ 7014 MD										
7,019.0	75.63	144.13	6,549.2	208.2	1,525.1	406.9	10.40	7.60	7.33	
7,049.0	78.93	146.42	6,555.8	184.1	1,541.8	435.5	13.28	11.00	7.63	
7,079.0	83.29	148.05	6,560.5	159.2	1,557.8	464.7	15.49	14.53	5.43	
7,108.0	87.99	147.51	6,562.7	134.8	1,573.2	493.3	16.31	16.21	-1.86	
7,142.0	91.24	149.04	6,562.9	105.8	1,591.1	526.9	10.56	9.56	4.50	
7,169.0	91.82	150.18	6,562.2	82.6	1,604.7	553.7	4.74	2.15	4.22	
7,258.0	91.04	149.11	6,560.0	5.8	1,649.7	641.9	1.49	-0.88	-1.20	
7,348.0	88.96	154.41	6,560.0	-73.5	1,692.3	731.5	6.33	-2.31	5.89	
7,437.0	87.64	158.25	6,562.6	-154.9	1,728.0	820.5	4.56	-1.48	4.31	
7,527.0	86.68	158.46	6,567.1	-238.5	1,761.1	910.3	1.09	-1.07	0.23	
7,616.0	87.48	158.48	6,571.6	-321.2	1,793.8	999.2	0.90	0.90	0.02	
7,706.0	87.30	158.93	6,575.7	-404.9	1,826.4	1,089.0	0.54	-0.20	0.50	
7,795.0	88.74	158.83	6,578.8	-487.9	1,858.5	1,177.9	1.62	1.62	-0.11	
7,885.0	88.13	156.57	6,581.2	-571.1	1,892.6	1,267.9	2.60	-0.68	-2.51	
7,974.0	89.17	157.21	6,583.3	-653.0	1,927.5	1,356.8	1.37	1.17	0.72	
8,064.0	89.41	157.08	6,584.4	-735.9	1,962.5	1,446.8	0.30	0.27	-0.14	
8,154.0	88.77	156.09	6,585.9	-818.5	1,998.2	1,536.8	1.31	-0.71	-1.10	
8,243.0	89.84	156.81	6,587.0	-900.1	2,033.8	1,625.8	1.45	1.20	0.81	
8,333.0	89.03	157.55	6,587.8	-983.0	2,068.7	1,715.8	1.22	-0.90	0.82	
8,422.0	88.60	157.05	6,589.7	-1,065.1	2,103.0	1,804.8	0.74	-0.48	-0.56	
8,512.0	89.73	158.47	6,591.0	-1,148.4	2,137.1	1,894.8	2.02	1.26	1.58	
8,601.0	88.42	156.43	6,592.4	-1,230.6	2,171.2	1,983.7	2.72	-1.47	-2.29	
8,691.0	88.05	156.18	6,595.2	-1,312.9	2,207.4	2,073.7	0.50	-0.41	-0.28	
8,781.0	89.36	155.78	6,597.2	-1,395.1	2,244.0	2,163.7	1.52	1.46	-0.44	
8,871.0	88.96	155.91	6,598.6	-1,477.2	2,280.8	2,253.6	0.47	-0.44	0.14	



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 3H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Well:	McNabb 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)	
8,960.0	88.62	155.76	6,600.4	-1,558.4	2,317.2	2,342.6	0.42	-0.38	-0.17	
9,050.0	89.76	157.20	6,601.7	-1,640.9	2,353.1	2,432.6	2.04	1.27	1.60	
9,140.0	89.66	157.08	6,602.2	-1,723.9	2,388.1	2,522.6	0.17	-0.11	-0.13	
9,229.0	89.42	156.84	6,602.9	-1,805.7	2,422.9	2,611.6	0.38	-0.27	-0.27	
9,319.0	89.12	156.38	6,604.0	-1,888.3	2,458.7	2,701.6	0.61	-0.33	-0.51	
9,408.0	89.09	155.83	6,605.4	-1,969.7	2,494.7	2,790.5	0.62	-0.03	-0.62	
9,497.0	89.12	157.30	6,606.8	-2,051.4	2,530.1	2,879.5	1.65	0.03	1.65	
9,587.0	90.30	157.11	6,607.3	-2,134.3	2,565.0	2,969.5	1.33	1.31	-0.21	
9,677.0	89.29	157.27	6,607.6	-2,217.3	2,599.9	3,059.5	1.14	-1.12	0.18	
9,766.0	88.99	157.24	6,608.9	-2,299.4	2,634.3	3,148.5	0.34	-0.34	-0.03	
9,856.0	90.30	157.39	6,609.5	-2,382.4	2,669.0	3,238.5	1.47	1.46	0.17	
9,945.0	90.30	157.30	6,609.0	-2,464.5	2,703.3	3,327.5	0.10	0.00	-0.10	
10,035.0	90.37	157.34	6,608.5	-2,547.6	2,738.0	3,417.5	0.09	0.08	0.04	
10,124.0	89.39	156.08	6,608.7	-2,629.3	2,773.1	3,506.5	1.79	-1.10	-1.42	
10,214.0	89.09	155.65	6,609.9	-2,711.4	2,809.9	3,596.5	0.58	-0.33	-0.48	
10,303.0	90.00	157.50	6,610.6	-2,793.1	2,845.3	3,685.5	2.32	1.02	2.08	
10,393.0	90.17	158.61	6,610.4	-2,876.6	2,879.0	3,775.4	1.25	0.19	1.23	
10,482.0	90.20	158.58	6,610.1	-2,959.4	2,911.4	3,864.4	0.05	0.03	-0.03	
10,572.0	91.28	158.89	6,609.0	-3,043.3	2,944.1	3,954.4	1.25	1.20	0.34	
10,661.0	90.64	156.79	6,607.5	-3,125.7	2,977.6	4,043.3	2.47	-0.72	-2.36	
10,751.0	90.84	157.25	6,606.3	-3,208.5	3,012.8	4,133.3	0.56	0.22	0.51	
10,840.0	91.17	156.14	6,604.8	-3,290.3	3,048.0	4,223.3	1.30	0.37	-1.25	
10,930.0	91.64	156.11	6,602.6	-3,372.5	3,084.4	4,312.3	0.52	0.52	-0.03	
11,019.0	90.90	155.35	6,600.6	-3,453.7	3,121.0	4,401.2	1.19	-0.83	-0.85	
11,108.0	91.04	155.12	6,599.1	-3,534.5	3,158.2	4,490.2	0.30	0.16	-0.26	
11,198.0	91.24	155.20	6,597.3	-3,616.1	3,196.0	4,580.1	0.24	0.22	0.09	
11,287.0	91.34	158.03	6,595.3	-3,697.8	3,231.4	4,669.1	3.18	0.11	3.18	
11,377.0	90.33	159.03	6,594.0	-3,781.5	3,264.3	4,759.0	1.58	-1.12	1.11	
11,466.0	89.63	158.17	6,594.0	-3,864.4	3,296.8	4,848.0	1.25	-0.79	-0.97	
11,556.0	90.06	157.00	6,594.3	-3,947.6	3,331.1	4,938.0	1.39	0.48	-1.30	
11,646.0	91.68	156.42	6,592.9	-4,030.2	3,366.7	5,028.0	1.91	1.80	-0.64	
11,735.0	91.47	155.42	6,590.4	-4,111.5	3,403.0	5,116.9	1.15	-0.24	-1.12	
11,825.0	92.61	155.30	6,587.2	-4,193.2	3,440.5	5,206.8	1.27	1.27	-0.13	
11,914.0	91.78	155.79	6,583.8	-4,274.2	3,477.3	5,295.7	1.08	-0.93	0.55	
12,004.0	90.56	156.45	6,582.0	-4,356.4	3,513.7	5,385.7	1.54	-1.36	0.73	
12,093.0	89.96	157.79	6,581.6	-4,438.4	3,548.3	5,474.7	1.65	-0.67	1.51	
12,183.0	89.93	157.54	6,581.7	-4,521.7	3,582.5	5,564.7	0.28	-0.03	-0.28	
12,272.0	89.09	157.68	6,582.4	-4,604.0	3,616.4	5,653.7	0.96	-0.94	0.16	
12,362.0	87.78	157.20	6,584.9	-4,687.1	3,650.9	5,743.6	1.55	-1.46	-0.53	
12,451.0	87.31	157.07	6,588.7	-4,769.0	3,685.5	5,832.6	0.55	-0.53	-0.15	
12,541.0	88.15	157.35	6,592.3	-4,851.9	3,720.3	5,922.5	0.98	0.93	0.31	
12,631.0	89.52	158.54	6,594.1	-4,935.3	3,754.1	6,012.5	2.02	1.52	1.32	
12,720.0	90.10	159.49	6,594.4	-5,018.4	3,786.0	6,101.4	1.25	0.65	1.07	
12,810.0	88.48	157.11	6,595.5	-5,102.0	3,819.2	6,191.3	3.20	-1.80	-2.64	



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 3H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Well:	McNabb Unit 3H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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)
12,899.0	88.48	156.94	6,597.9	-5,183.9	3,854.0	6,280.3	0.19	0.00	-0.19
12,989.0	90.16	156.62	6,598.9	-5,266.6	3,889.4	6,370.3	1.90	1.87	-0.36
13,078.0	88.69	156.40	6,599.8	-5,348.2	3,924.9	6,459.3	1.67	-1.65	-0.25
13,168.0	88.89	156.33	6,601.7	-5,430.7	3,961.0	6,549.3	0.24	0.22	-0.08
13,257.0	88.31	155.63	6,603.9	-5,511.9	3,997.2	6,638.2	1.02	-0.65	-0.79
13,347.0	90.03	156.01	6,605.2	-5,594.0	4,034.1	6,728.2	1.96	1.91	0.42
13,436.0	90.13	155.64	6,605.1	-5,675.2	4,070.5	6,817.2	0.43	0.11	-0.42
13,526.0	91.00	157.28	6,604.2	-5,757.7	4,106.4	6,907.2	2.06	0.97	1.82
13,615.0	89.89	156.25	6,603.5	-5,839.5	4,141.6	6,996.2	1.70	-1.25	-1.16
13,705.0	90.26	156.98	6,603.4	-5,922.1	4,177.3	7,086.2	0.91	0.41	0.81
13,794.0	90.70	157.22	6,602.6	-6,004.1	4,211.9	7,175.2	0.56	0.49	0.27
13,884.0	90.03	158.15	6,602.1	-6,087.3	4,246.1	7,265.2	1.27	-0.74	1.03
13,973.0	89.96	158.47	6,602.1	-6,170.0	4,279.0	7,354.1	0.37	-0.08	0.36
14,063.0	88.32	156.53	6,603.4	-6,253.2	4,313.4	7,444.1	2.82	-1.82	-2.16
14,152.0	88.92	157.73	6,605.6	-6,335.1	4,348.0	7,533.1	1.51	0.67	1.35
14,242.0	90.43	158.03	6,606.1	-6,418.5	4,381.9	7,623.1	1.71	1.68	0.33
14,331.0	90.50	156.18	6,605.4	-6,500.5	4,416.5	7,712.0	2.08	0.08	-2.08
14,421.0	90.53	156.22	6,604.5	-6,582.8	4,452.8	7,802.0	0.06	0.03	0.04
14,511.0	90.60	155.82	6,603.7	-6,665.1	4,489.4	7,892.0	0.45	0.08	-0.44
14,599.0	90.73	156.17	6,602.6	-6,745.4	4,525.2	7,980.0	0.42	0.15	0.40
14,689.0	91.00	156.43	6,601.3	-6,827.8	4,561.4	8,070.0	0.42	0.30	0.29
14,778.0	88.08	153.99	6,602.0	-6,908.6	4,598.7	8,158.9	4.28	-3.28	-2.74
14,868.0	89.39	154.88	6,604.0	-6,989.8	4,637.5	8,248.8	1.76	1.46	0.99
14,957.0	89.89	157.35	6,604.5	-7,071.2	4,673.5	8,337.8	2.83	0.56	2.78
15,047.0	90.90	159.58	6,603.9	-7,154.9	4,706.6	8,427.8	2.72	1.12	2.48
15,136.0	89.89	158.39	6,603.3	-7,237.9	4,738.5	8,516.7	1.75	-1.13	-1.34
15,226.0	90.06	157.18	6,603.3	-7,321.3	4,772.5	8,606.7	1.36	0.19	-1.34
15,315.0	89.83	156.54	6,603.4	-7,403.1	4,807.5	8,695.7	0.76	-0.26	-0.72
15,405.0	89.93	156.35	6,603.6	-7,485.6	4,843.4	8,785.7	0.24	0.11	-0.21
15,494.0	89.93	156.71	6,603.7	-7,567.2	4,878.9	8,874.7	0.40	0.00	0.40
15,584.0	90.83	157.14	6,603.1	-7,650.0	4,914.2	8,964.7	1.11	1.00	0.48
15,673.0	91.13	157.32	6,601.6	-7,732.1	4,948.6	9,053.7	0.39	0.34	0.20
15,763.0	90.90	157.19	6,600.0	-7,815.1	4,983.4	9,143.6	0.29	-0.26	-0.14
15,852.0	90.53	157.01	6,598.9	-7,897.1	5,018.0	9,232.6	0.46	-0.42	-0.20
15,942.0	90.56	156.94	6,598.1	-7,979.9	5,053.2	9,322.6	0.08	0.03	-0.08
16,031.0	90.09	157.20	6,597.5	-8,061.9	5,087.9	9,411.6	0.60	-0.53	0.29
16,121.0	89.86	156.74	6,597.6	-8,144.7	5,123.1	9,501.6	0.57	-0.26	-0.51
16,210.0	89.56	156.72	6,598.0	-8,226.4	5,158.3	9,590.6	0.34	-0.34	-0.02
16,300.0	90.30	156.33	6,598.1	-8,309.0	5,194.1	9,680.6	0.93	0.82	-0.43
16,389.0	90.16	156.38	6,597.8	-8,390.5	5,229.8	9,769.6	0.17	-0.16	0.06
16,479.0	90.33	156.38	6,597.4	-8,473.0	5,265.9	9,859.6	0.19	0.19	0.00
16,568.0	90.63	156.89	6,596.7	-8,554.7	5,301.2	9,948.6	0.66	0.34	0.57
16,658.0	89.66	156.16	6,596.4	-8,637.2	5,337.0	10,038.6	1.35	-1.08	-0.81



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 3H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Well:	McNabb Unit 3H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

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)
16,747.0	89.42	155.63	6,597.1	-8,718.5	5,373.4	10,127.6	0.65	-0.27	-0.60
16,837.0	90.46	156.67	6,597.2	-8,800.8	5,409.8	10,217.6	1.63	1.16	1.16
16,926.0	89.79	155.92	6,597.0	-8,882.3	5,445.5	10,306.6	1.13	-0.75	-0.84
17,016.0	90.67	158.03	6,596.7	-8,965.1	5,480.7	10,396.6	2.54	0.98	2.34
17,105.0	89.15	157.01	6,596.8	-9,047.3	5,514.8	10,485.6	2.06	-1.71	-1.15
17,195.0	90.56	157.57	6,597.1	-9,130.3	5,549.5	10,575.6	1.69	1.57	0.62
17,284.0	90.70	158.06	6,596.1	-9,212.7	5,583.1	10,664.5	0.57	0.16	0.55
17,374.0	90.06	157.21	6,595.5	-9,296.0	5,617.4	10,754.5	1.18	-0.71	-0.94
17,463.0	89.49	156.49	6,595.8	-9,377.8	5,652.3	10,843.5	1.03	-0.64	-0.81
17,553.0	91.00	156.99	6,595.4	-9,460.5	5,687.9	10,933.5	1.77	1.68	0.56
17,642.0	90.73	156.83	6,594.1	-9,542.3	5,722.8	11,022.5	0.35	-0.30	-0.18
17,732.0	88.92	154.10	6,594.4	-9,624.2	5,760.2	11,112.5	3.64	-2.01	-3.03
17,821.0	89.93	156.85	6,595.3	-9,705.2	5,797.1	11,201.4	3.29	1.13	3.09
17,911.0	90.53	158.50	6,594.9	-9,788.4	5,831.3	11,291.4	1.95	0.67	1.83
18,000.0	90.26	158.55	6,594.3	-9,871.2	5,863.9	11,380.4	0.31	-0.30	0.06
18,090.0	89.32	157.50	6,594.6	-9,954.7	5,897.5	11,470.4	1.57	-1.04	-1.17
18,179.0	89.66	157.69	6,595.4	-10,037.0	5,931.5	11,559.4	0.44	0.38	0.21
18,268.0	89.42	157.32	6,596.1	-10,119.2	5,965.5	11,648.3	0.50	-0.27	-0.42
18,358.0	89.66	157.47	6,596.8	-10,202.3	6,000.1	11,738.3	0.31	0.27	0.17
18,447.0	90.87	156.69	6,596.4	-10,284.2	6,034.8	11,827.3	1.62	1.36	-0.88
18,537.0	91.17	157.04	6,594.8	-10,367.0	6,070.1	11,917.3	0.51	0.33	0.39
18,626.0	90.30	157.22	6,593.7	-10,449.0	6,104.7	12,006.3	1.00	-0.98	0.20
18,716.0	90.30	157.01	6,593.2	-10,531.9	6,139.7	12,096.3	0.23	0.00	-0.23
18,806.0	90.40	156.57	6,592.7	-10,614.6	6,175.2	12,186.3	0.50	0.11	-0.49
18,895.0	90.73	156.89	6,591.8	-10,696.4	6,210.3	12,275.3	0.52	0.37	0.36
18,984.0	89.73	156.11	6,591.4	-10,778.0	6,245.8	12,364.3	1.42	-1.12	-0.88
19,074.0	89.53	155.62	6,592.0	-10,860.1	6,282.6	12,454.3	0.59	-0.22	-0.54
19,107.0	89.53	155.44	6,592.3	-10,890.2	6,296.3	12,487.3	0.55	0.00	-0.55
Last SDI MWD @ 19107 MD									
19,171.0	89.53	155.44	6,592.8	-10,948.4	6,322.9	12,551.2	0.00	0.00	0.00
Projection To bit @ 19171 MD / 6592 TVD									

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,477.0	6,215.2	Sycamore @ 6477 MD		0.00	
6,678.0	6,376.4	Middlesex @ 6678 MD		0.00	
6,855.0	6,487.0	Burkett @ 6855 MD		0.00	
6,932.0	6,522.0	Tully @ 6932 MD		0.00	
7,014.0	6,548.0	MRCL_HOT @ 7014 MD		0.00	



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 3H
Project:	Ritchie County WV	TVD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: GL 1099' + KB 19' @ 1118.0usft
Well:	McNabb Unit 3H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
31.0	31.0	0.0	0.0	First Gyro @ 31 MD
6,124.0	5,895.0	374.2	1,059.9	Last Gyro @ 6124 MD
6,154.0	5,922.6	379.4	1,070.3	First SDI MWD @ 6154 MD
19,107.0	6,592.3	-10,890.2	6,296.3	Last SDI MWD @ 19107 MD
19,171.0	6,592.8	-10,948.4	6,322.9	Projection To bit @ 19171 MD / 6592 TVD

Checked By: _____ Approved By: _____ Date: _____