



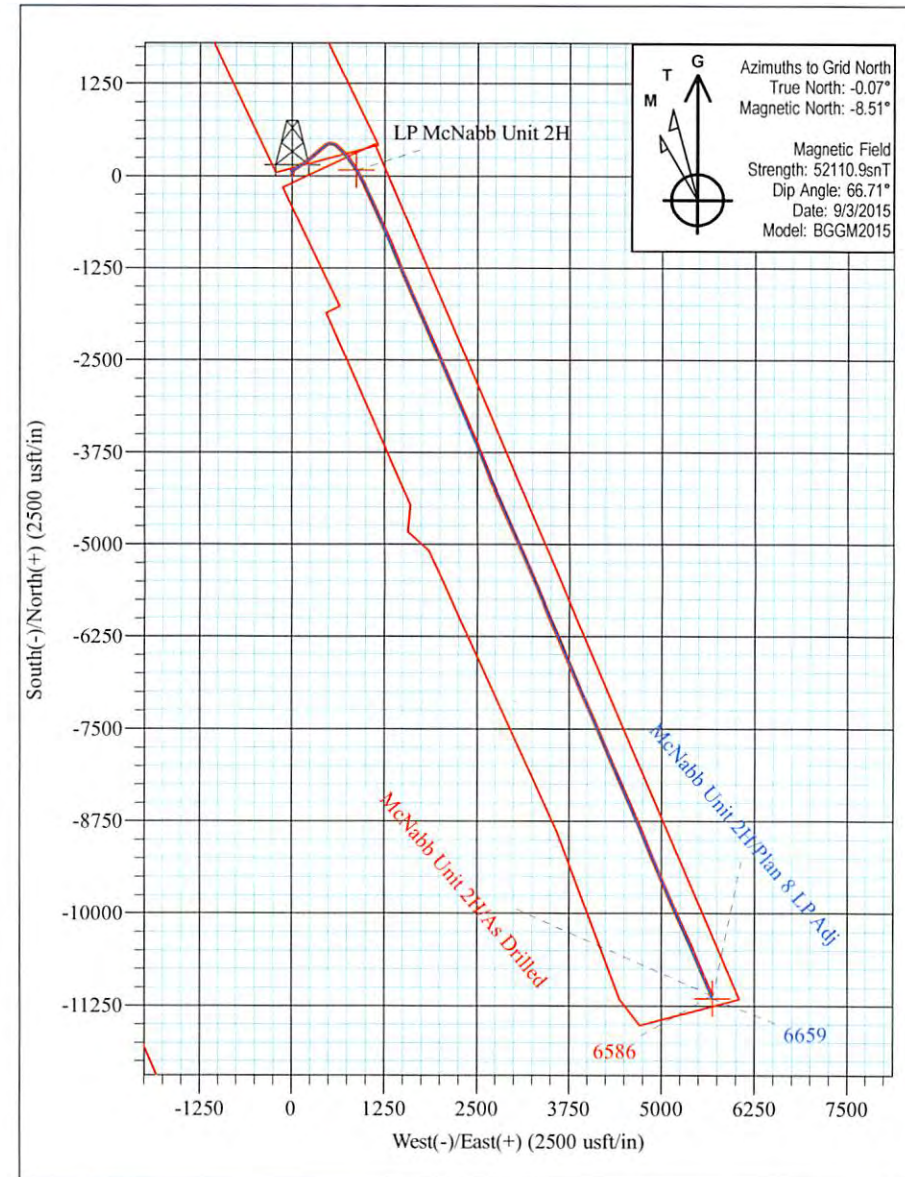
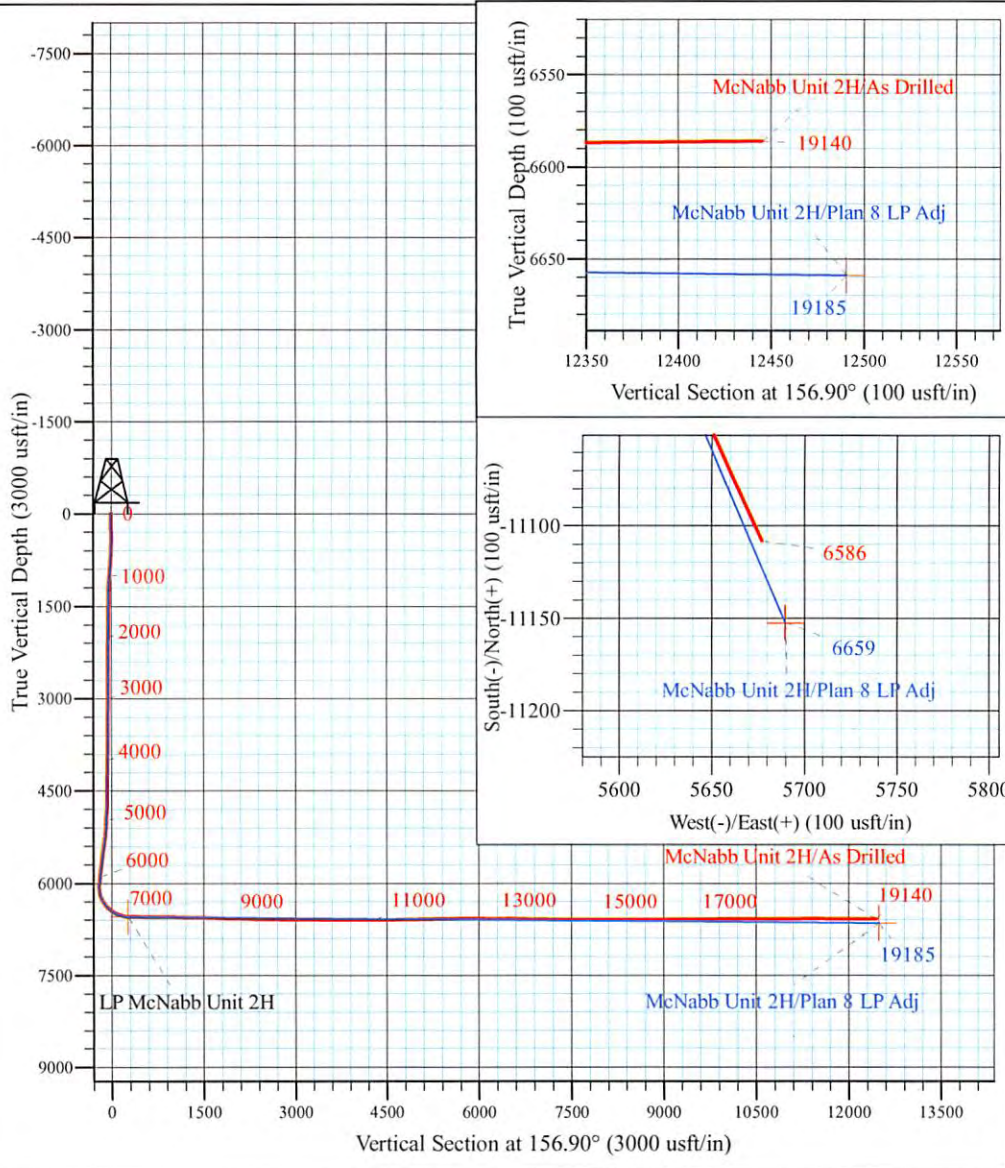
Mackay Pad - Caldwell/Greenback/McNabb
 McNabb Unit 2H
 Plan 8 LP Adj
 Precision 523: 1099' GL + 19' KB @ 1118.0usft
 Ritchie County WV

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 2H SHL**

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14248726.59	1669544.94	39° 14' 17.960 N	80° 53' 49.653 W



Azimuths to Grid North
 True North: -0.07°
 Magnetic North: -8.51°
 Magnetic Field
 Strength: 52110.9snT
 Dip Angle: 66.71°
 Date: 9/3/2015
 Model: BGGM2015

McNabb Unit 2H
Approx. BHL
39° 12' 28.054 N 80° 52' 37.661 W

Shane Rhodes
 14:35, September 21 2015
 Scientific Drilling International
 124 Vista Drive
 Charleroi, PA 15022



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Well:	McNabb Unit 2H	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 2H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,248,726.59 usft	Latitude:	39° 14' 17.960 N
	+E/-W	0.0 usft	Easting:	1,669,544.94 usft	Longitude:	80° 53' 49.653 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	9/3/2015	-8.44	66.71	52,111

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	9/21/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
106.0	5,940.4	Survey #8 Final Gyro (Original Wellpath)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
5,970.0	19,140.0	Survey #9 SDI MWD (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1	

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	
106.0	0.26	157.61	106.0	-0.2	0.1	0.2	0.25	0.25	0.00	
First SDI Gyro @ 106 MD										
131.0	0.11	99.28	131.0	-0.3	0.1	0.3	0.89	-0.60	-233.32	
156.0	0.17	103.17	156.0	-0.3	0.2	0.3	0.24	0.24	15.56	
181.0	0.10	131.32	181.0	-0.3	0.2	0.4	0.36	-0.28	112.60	
206.0	0.08	126.55	206.0	-0.3	0.3	0.4	0.09	-0.08	-19.08	
231.0	0.30	133.30	231.0	-0.4	0.3	0.5	0.88	0.88	27.00	
256.0	0.25	143.92	256.0	-0.5	0.4	0.6	0.28	-0.20	42.48	
281.0	0.12	67.33	281.0	-0.5	0.5	0.7	1.00	-0.52	-306.36	



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Well:	McNabb Unit 2H	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)
306.0	0.14	109.42	306.0	-0.5	0.5	0.7	0.38	0.08	168.36
331.0	0.17	118.28	331.0	-0.5	0.6	0.7	0.15	0.12	35.44
356.0	0.28	120.12	356.0	-0.6	0.7	0.8	0.44	0.44	7.36
381.0	0.24	126.78	381.0	-0.7	0.8	0.9	0.20	-0.16	26.64
406.0	0.51	104.91	406.0	-0.7	0.9	1.0	1.20	1.08	-87.48
431.0	0.25	112.55	431.0	-0.8	1.1	1.1	1.06	-1.04	30.56
456.0	0.30	107.35	456.0	-0.8	1.2	1.2	0.22	0.20	-20.80
481.0	0.23	109.69	481.0	-0.8	1.3	1.3	0.28	-0.28	9.36
506.0	0.16	89.98	506.0	-0.9	1.4	1.3	0.38	-0.28	-78.84
531.0	0.09	71.58	531.0	-0.9	1.4	1.3	0.32	-0.28	-73.60
556.0	0.32	50.37	556.0	-0.8	1.5	1.3	0.95	0.92	-84.84
581.0	0.73	19.07	581.0	-0.6	1.6	1.2	1.94	1.64	-125.20
606.0	1.12	16.90	606.0	-0.2	1.7	0.9	1.57	1.56	-8.68
631.0	1.64	13.06	631.0	0.4	1.9	0.4	2.11	2.08	-15.36
656.0	2.27	9.17	656.0	1.2	2.1	-0.3	2.57	2.52	-15.56
681.0	2.81	8.58	680.9	2.3	2.2	-1.2	2.16	2.16	-2.36
706.0	3.24	8.04	705.9	3.6	2.4	-2.4	1.72	1.72	-2.16
731.0	3.51	6.91	730.9	5.1	2.6	-3.6	1.11	1.08	-4.52
756.0	3.86	7.11	755.8	6.7	2.8	-5.0	1.40	1.40	0.80
781.0	4.63	7.28	780.7	8.5	3.0	-6.6	3.08	3.08	0.68
806.0	5.24	7.50	805.7	10.6	3.3	-8.5	2.44	2.44	0.88
831.0	5.48	7.83	830.5	12.9	3.6	-10.5	0.97	0.96	1.32
856.0	5.69	7.29	855.4	15.3	3.9	-12.6	0.87	0.84	-2.16
881.0	5.93	7.42	880.3	17.9	4.3	-14.8	0.96	0.96	0.52
906.0	5.97	8.08	905.2	20.4	4.6	-17.0	0.32	0.16	2.64
931.0	6.04	8.30	930.0	23.0	5.0	-19.2	0.29	0.28	0.88
956.0	6.03	8.70	954.9	25.6	5.4	-21.5	0.17	-0.04	1.60
981.0	5.89	9.07	979.8	28.2	5.8	-23.7	0.58	-0.56	1.48
1,006.0	5.56	10.27	1,004.6	30.6	6.2	-25.8	1.40	-1.32	4.80
1,031.0	5.22	11.35	1,029.5	32.9	6.6	-27.7	1.42	-1.36	4.32
1,056.0	4.82	12.33	1,054.4	35.1	7.1	-29.5	1.64	-1.60	3.92
1,081.0	4.66	11.64	1,079.3	37.1	7.5	-31.2	0.68	-0.64	-2.76
1,106.0	4.46	11.66	1,104.3	39.1	7.9	-32.8	0.80	-0.80	0.08
1,131.0	3.88	11.95	1,129.2	40.8	8.3	-34.3	2.32	-2.32	1.16
1,156.0	3.60	11.10	1,154.1	42.4	8.6	-35.6	1.14	-1.12	-3.40
1,181.0	3.52	11.35	1,179.1	44.0	8.9	-36.9	0.33	-0.32	1.00
1,206.0	3.20	11.62	1,204.0	45.4	9.2	-38.1	1.28	-1.28	1.08
1,231.0	2.88	10.46	1,229.0	46.7	9.5	-39.2	1.30	-1.28	-4.64
1,256.0	2.64	13.62	1,254.0	47.9	9.7	-40.2	1.14	-0.96	12.64
1,281.0	2.53	12.40	1,279.0	49.0	10.0	-41.1	0.49	-0.44	-4.88
1,306.0	2.17	12.45	1,303.9	50.0	10.2	-42.0	1.44	-1.44	0.20
1,331.0	1.98	12.29	1,328.9	50.8	10.4	-42.7	0.76	-0.76	-0.64
1,356.0	1.83	12.76	1,353.9	51.7	10.6	-43.4	0.60	-0.60	1.88



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Well:	McNabb Unit 2H	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)
1,381.0	1.55	13.53	1,378.9	52.4	10.7	-44.0	1.12	-1.12	3.08
1,406.0	1.47	15.54	1,403.9	53.0	10.9	-44.5	0.38	-0.32	8.04
1,431.0	1.32	20.29	1,428.9	53.6	11.1	-45.0	0.76	-0.60	19.00
1,456.0	1.22	13.91	1,453.9	54.1	11.2	-45.4	0.69	-0.40	-25.52
1,481.0	1.12	14.68	1,478.9	54.6	11.4	-45.8	0.40	-0.40	3.08
1,506.0	1.10	14.42	1,503.9	55.1	11.5	-46.2	0.08	-0.08	-1.04
1,531.0	0.96	16.47	1,528.9	55.5	11.6	-46.5	0.58	-0.56	8.20
1,556.0	0.86	20.56	1,553.9	55.9	11.7	-46.8	0.48	-0.40	16.36
1,581.0	0.88	13.57	1,578.9	56.3	11.8	-47.1	0.43	0.08	-27.96
1,606.0	0.68	14.56	1,603.8	56.6	11.9	-47.4	0.80	-0.80	3.96
1,631.0	0.49	22.80	1,628.8	56.8	12.0	-47.6	0.83	-0.76	32.96
1,656.0	0.50	13.79	1,653.8	57.0	12.1	-47.7	0.31	0.04	-36.04
1,681.0	0.46	2.99	1,678.8	57.2	12.1	-47.9	0.39	-0.16	-43.20
1,706.0	0.38	5.84	1,703.8	57.4	12.1	-48.1	0.33	-0.32	11.40
1,731.0	0.35	14.76	1,728.8	57.6	12.1	-48.2	0.26	-0.12	35.68
1,756.0	0.31	23.37	1,753.8	57.7	12.2	-48.3	0.25	-0.16	34.44
1,781.0	0.27	12.07	1,778.8	57.8	12.2	-48.4	0.28	-0.16	-45.20
1,806.0	0.22	18.32	1,803.8	57.9	12.3	-48.5	0.23	-0.20	25.00
1,831.0	0.22	11.36	1,828.8	58.0	12.3	-48.6	0.11	0.00	-27.84
1,856.0	0.23	38.62	1,853.8	58.1	12.3	-48.6	0.43	0.04	109.04
1,881.0	0.21	30.46	1,878.8	58.2	12.4	-48.7	0.15	-0.08	-32.64
1,906.0	0.21	41.99	1,903.8	58.3	12.4	-48.7	0.17	0.00	46.12
1,931.0	0.27	33.09	1,928.8	58.4	12.5	-48.8	0.28	0.24	-35.60
1,956.0	0.22	45.42	1,953.8	58.4	12.6	-48.8	0.29	-0.20	49.32
1,981.0	0.22	46.76	1,978.8	58.5	12.6	-48.9	0.02	0.00	5.36
2,006.0	0.15	23.83	2,003.8	58.6	12.7	-48.9	0.40	-0.28	-91.72
2,031.0	0.19	28.50	2,028.8	58.6	12.7	-48.9	0.17	0.16	18.68
2,056.0	0.07	344.83	2,053.8	58.7	12.7	-49.0	0.59	-0.48	-174.68
2,081.0	0.08	31.67	2,078.8	58.7	12.7	-49.0	0.24	0.04	187.36
2,106.0	0.12	355.26	2,103.8	58.8	12.7	-49.0	0.29	0.16	-145.64
2,131.0	0.13	24.33	2,128.8	58.8	12.7	-49.1	0.25	0.04	116.28
2,156.0	0.16	22.42	2,153.8	58.9	12.8	-49.1	0.12	0.12	-7.64
2,181.0	0.10	51.15	2,178.8	58.9	12.8	-49.2	0.35	-0.24	114.92
2,206.0	0.13	280.21	2,203.8	58.9	12.8	-49.2	0.84	0.12	-523.76
2,231.0	0.13	277.69	2,228.8	58.9	12.7	-49.2	0.02	0.00	-10.08
2,256.0	0.08	20.44	2,253.8	59.0	12.7	-49.2	0.67	-0.20	411.00
2,281.0	0.09	322.05	2,278.8	59.0	12.7	-49.3	0.33	0.04	-233.56
2,306.0	0.16	278.42	2,303.8	59.0	12.7	-49.3	0.45	0.28	-174.52
2,331.0	0.17	318.39	2,328.8	59.0	12.6	-49.4	0.45	0.04	159.88
2,356.0	0.16	289.42	2,353.8	59.1	12.5	-49.4	0.33	-0.04	-115.88
2,381.0	0.19	240.29	2,378.8	59.1	12.5	-49.4	0.59	0.12	-196.52
2,406.0	0.11	301.77	2,403.8	59.1	12.4	-49.5	0.67	-0.32	245.92
2,431.0	0.14	267.68	2,428.8	59.1	12.4	-49.5	0.31	0.12	-136.36



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Well:	McNabb Unit 2H	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)
2,456.0	0.29	286.43	2,453.8	59.1	12.3	-49.5	0.65	0.60	75.00
2,481.0	0.25	276.53	2,478.8	59.1	12.2	-49.6	0.25	-0.16	-39.60
2,506.0	0.23	286.29	2,503.8	59.1	12.1	-49.7	0.18	-0.08	39.04
2,531.0	0.28	291.21	2,528.8	59.2	12.0	-49.7	0.22	0.20	19.68
2,556.0	0.27	293.18	2,553.8	59.2	11.8	-49.8	0.06	-0.04	7.88
2,581.0	0.34	285.63	2,578.8	59.3	11.7	-49.9	0.32	0.28	-30.20
2,606.0	0.31	285.56	2,603.8	59.3	11.6	-50.0	0.12	-0.12	-0.28
2,631.0	0.29	289.44	2,628.8	59.3	11.5	-50.1	0.11	-0.08	15.52
2,656.0	0.36	292.60	2,653.8	59.4	11.3	-50.2	0.29	0.28	12.64
2,681.0	0.29	283.80	2,678.8	59.4	11.2	-50.3	0.34	-0.28	-35.20
2,706.0	0.29	278.93	2,703.8	59.5	11.1	-50.4	0.10	0.00	-19.48
2,731.0	0.34	286.59	2,728.8	59.5	10.9	-50.4	0.26	0.20	30.64
2,756.0	0.34	283.29	2,753.8	59.5	10.8	-50.5	0.08	0.00	-13.20
2,781.0	0.48	296.68	2,778.8	59.6	10.6	-50.6	0.67	0.56	53.56
2,806.0	0.54	292.28	2,803.8	59.7	10.4	-50.8	0.29	0.24	-17.60
2,831.0	0.46	292.00	2,828.8	59.8	10.2	-51.0	0.32	-0.32	-1.12
2,856.0	0.55	288.47	2,853.8	59.8	10.0	-51.1	0.38	0.36	-14.12
2,881.0	0.53	292.39	2,878.8	59.9	9.8	-51.3	0.17	-0.08	15.68
2,906.0	0.65	288.25	2,903.8	60.0	9.5	-51.5	0.51	0.48	-16.56
2,931.0	0.62	291.55	2,928.8	60.1	9.3	-51.6	0.19	-0.12	13.20
2,956.0	0.58	291.67	2,953.8	60.2	9.0	-51.8	0.16	-0.16	0.48
2,981.0	0.63	289.12	2,978.8	60.3	8.8	-52.0	0.23	0.20	-10.20
3,006.0	0.65	288.86	3,003.8	60.4	8.5	-52.2	0.08	0.08	-1.04
3,031.0	0.71	288.83	3,028.8	60.5	8.3	-52.4	0.24	0.24	-0.12
3,056.0	0.75	290.93	3,053.8	60.6	8.0	-52.6	0.19	0.16	8.40
3,081.0	0.74	295.36	3,078.8	60.7	7.7	-52.8	0.23	-0.04	17.72
3,106.0	0.68	289.97	3,103.8	60.8	7.4	-53.1	0.36	-0.24	-21.56
3,131.0	0.69	285.15	3,128.8	60.9	7.1	-53.3	0.23	0.04	-19.28
3,156.0	0.71	287.56	3,153.8	61.0	6.8	-53.5	0.14	0.08	9.64
3,181.0	0.74	289.83	3,178.8	61.1	6.5	-53.7	0.17	0.12	9.08
3,206.0	0.77	289.77	3,203.8	61.2	6.2	-53.9	0.12	0.12	-0.24
3,231.0	0.73	288.62	3,228.8	61.3	5.9	-54.1	0.17	-0.16	-4.60
3,256.0	0.81	291.22	3,253.8	61.5	5.6	-54.3	0.35	0.32	10.40
3,281.0	0.75	289.59	3,278.8	61.6	5.2	-54.6	0.26	-0.24	-6.52
3,306.0	0.75	287.87	3,303.8	61.7	4.9	-54.8	0.09	0.00	-6.88
3,331.0	0.77	291.18	3,328.8	61.8	4.6	-55.0	0.19	0.08	13.24
3,356.0	0.79	286.41	3,353.8	61.9	4.3	-55.2	0.27	0.08	-19.08
3,381.0	0.75	294.45	3,378.8	62.0	4.0	-55.5	0.46	-0.16	32.16
3,406.0	0.80	295.08	3,403.8	62.2	3.7	-55.7	0.20	0.20	2.52
3,431.0	0.68	295.78	3,428.8	62.3	3.4	-56.0	0.48	-0.48	2.80
3,456.0	0.72	302.32	3,453.8	62.4	3.1	-56.2	0.36	0.16	26.16
3,481.0	0.85	298.67	3,478.8	62.6	2.8	-56.5	0.56	0.52	-14.60
3,506.0	0.65	304.90	3,503.8	62.8	2.5	-56.8	0.86	-0.80	24.92
3,531.0	0.72	304.68	3,528.8	63.0	2.3	-57.0	0.28	0.28	-0.88



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Well:	McNabb Unit 2H	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)
3,556.0	0.66	301.87	3,553.8	63.1	2.0	-57.3	0.28	-0.24	-11.24
3,581.0	0.65	303.34	3,578.8	63.3	1.8	-57.5	0.08	-0.04	5.88
3,606.0	0.61	304.49	3,603.8	63.4	1.6	-57.7	0.17	-0.16	4.60
3,631.0	0.67	300.02	3,628.8	63.6	1.3	-58.0	0.31	0.24	-17.88
3,656.0	0.65	302.61	3,653.8	63.7	1.1	-58.2	0.14	-0.08	10.36
3,681.0	0.70	301.79	3,678.8	63.9	0.8	-58.4	0.20	0.20	-3.28
3,706.0	0.72	298.41	3,703.8	64.0	0.6	-58.7	0.19	0.08	-13.52
3,731.0	0.65	297.52	3,728.8	64.2	0.3	-58.9	0.28	-0.28	-3.56
3,756.0	0.59	302.91	3,753.8	64.3	0.1	-59.1	0.33	-0.24	21.56
3,781.0	0.70	309.17	3,778.8	64.5	-0.2	-59.4	0.52	0.44	25.04
3,806.0	0.59	302.01	3,803.8	64.6	-0.4	-59.6	0.54	-0.44	-28.64
3,831.0	0.62	305.93	3,828.8	64.8	-0.6	-59.8	0.20	0.12	15.68
3,856.0	0.56	305.24	3,853.8	64.9	-0.8	-60.1	0.24	-0.24	-2.76
3,881.0	0.68	295.46	3,878.8	65.1	-1.0	-60.3	0.64	0.48	-39.12
3,906.0	0.62	316.29	3,903.8	65.2	-1.3	-60.5	0.97	-0.24	83.32
3,931.0	0.66	308.86	3,928.8	65.4	-1.5	-60.8	0.37	0.16	-29.72
3,956.0	0.68	306.39	3,953.8	65.6	-1.7	-61.0	0.14	0.08	-9.88
3,981.0	0.65	305.88	3,978.8	65.8	-1.9	-61.3	0.12	-0.12	-2.04
4,006.0	0.53	298.48	4,003.8	65.9	-2.2	-61.5	0.57	-0.48	-29.60
4,031.0	0.56	293.36	4,028.7	66.0	-2.4	-61.7	0.23	0.12	-20.48
4,056.0	0.46	308.64	4,053.7	66.1	-2.6	-61.8	0.67	-0.40	61.12
4,081.0	0.41	301.65	4,078.7	66.2	-2.7	-62.0	0.29	-0.20	-27.96
4,106.0	0.44	302.21	4,103.7	66.3	-2.9	-62.1	0.12	0.12	2.24
4,131.0	0.45	299.59	4,128.7	66.4	-3.0	-62.3	0.09	0.04	-10.48
4,156.0	0.45	301.09	4,153.7	66.5	-3.2	-62.5	0.05	0.00	6.00
4,181.0	0.44	292.10	4,178.7	66.6	-3.4	-62.6	0.28	-0.04	-35.96
4,206.0	0.43	330.43	4,203.7	66.7	-3.5	-62.8	1.14	-0.04	153.32
4,231.0	0.43	343.69	4,228.7	66.9	-3.6	-63.0	0.40	0.00	53.04
4,256.0	0.79	22.25	4,253.7	67.2	-3.5	-63.2	2.11	1.44	154.24
4,281.0	1.71	41.31	4,278.7	67.6	-3.2	-63.5	3.99	3.68	76.24
4,306.0	3.01	53.61	4,303.7	68.3	-2.5	-63.8	5.55	5.20	49.20
4,331.0	4.39	59.69	4,328.7	69.1	-1.1	-64.0	5.73	5.52	24.32
4,356.0	5.86	61.70	4,353.6	70.2	0.8	-64.3	5.92	5.88	8.04
4,381.0	6.68	62.47	4,378.4	71.5	3.3	-64.5	3.30	3.28	3.08
4,406.0	7.14	63.53	4,403.2	72.9	5.9	-64.7	1.91	1.84	4.24
4,431.0	7.47	65.04	4,428.0	74.2	8.8	-64.8	1.53	1.32	6.04
4,456.0	7.87	65.56	4,452.8	75.6	11.8	-64.9	1.62	1.60	2.08
4,481.0	7.98	66.08	4,477.6	77.1	15.0	-65.0	0.53	0.44	2.08
4,506.0	8.40	65.99	4,502.3	78.5	18.2	-65.1	1.68	1.68	-0.36
4,531.0	9.30	66.08	4,527.0	80.1	21.7	-65.1	3.60	3.60	0.36
4,556.0	10.11	65.05	4,551.7	81.8	25.6	-65.2	3.31	3.24	-4.12
4,581.0	11.52	64.08	4,576.2	83.8	29.8	-65.4	5.69	5.64	-3.88
4,606.0	11.98	63.64	4,600.7	86.1	34.4	-65.7	1.87	1.84	-1.76



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Well:	McNabb Unit 2H	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)	
4,631.0	12.44	63.12	4,625.1	88.4	39.1	-66.0	1.89	1.84	-2.08	
4,656.0	12.99	62.44	4,649.5	91.0	44.0	-66.4	2.28	2.20	-2.72	
4,681.0	13.14	61.47	4,673.9	93.6	49.0	-66.9	1.06	0.60	-3.88	
4,706.0	13.38	60.20	4,698.2	96.4	54.0	-67.5	1.51	0.96	-5.08	
4,731.0	13.76	58.58	4,722.5	99.4	59.0	-68.3	2.15	1.52	-6.48	
4,756.0	14.08	57.68	4,746.8	102.6	64.2	-69.2	1.55	1.28	-3.60	
4,781.0	13.92	55.94	4,771.0	105.9	69.2	-70.2	1.80	-0.64	-6.96	
4,806.0	14.22	54.62	4,795.3	109.3	74.2	-71.5	1.76	1.20	-5.28	
4,831.0	14.09	53.54	4,819.5	112.9	79.2	-72.8	1.18	-0.52	-4.32	
4,856.0	14.55	53.75	4,843.7	116.6	84.1	-74.2	1.85	1.84	0.84	
4,881.0	14.99	54.53	4,867.9	120.3	89.3	-75.6	1.93	1.76	3.12	
4,906.0	15.67	55.44	4,892.0	124.1	94.7	-77.0	2.89	2.72	3.64	
4,931.0	16.71	56.85	4,916.0	128.0	100.5	-78.3	4.45	4.16	5.64	
4,956.0	17.88	58.02	4,939.9	132.0	106.8	-79.5	4.88	4.68	4.68	
4,981.0	19.38	59.79	4,963.6	136.1	113.6	-80.6	6.41	6.00	7.08	
5,006.0	20.31	60.51	4,987.1	140.3	121.0	-81.6	3.85	3.72	2.88	
5,031.0	20.89	61.05	5,010.5	144.6	128.7	-82.6	2.44	2.32	2.16	
5,056.0	21.06	60.92	5,033.8	149.0	136.5	-83.5	0.71	0.68	-0.52	
5,081.0	21.82	59.67	5,057.1	153.5	144.4	-84.5	3.55	3.04	-5.00	
5,106.0	22.07	58.62	5,080.3	158.3	152.4	-85.8	1.86	1.00	-4.20	
5,131.0	22.10	56.78	5,103.5	163.3	160.4	-87.3	2.77	0.12	-7.36	
5,156.0	21.88	54.26	5,126.6	168.6	168.1	-89.1	3.88	-0.88	-10.08	
5,181.0	21.46	52.45	5,149.9	174.1	175.5	-91.3	3.16	-1.68	-7.24	
5,206.0	21.53	51.20	5,173.1	179.8	182.7	-93.7	1.85	0.28	-5.00	
5,231.0	21.57	50.73	5,196.4	185.6	189.8	-96.2	0.71	0.16	-1.88	
5,256.0	22.15	50.40	5,219.6	191.5	197.0	-98.8	2.37	2.32	-1.32	
5,281.0	23.00	50.12	5,242.7	197.6	204.4	-101.6	3.43	3.40	-1.12	
5,306.0	23.47	50.09	5,265.7	203.9	212.0	-104.4	1.88	1.88	-0.12	
5,331.0	24.16	50.19	5,288.5	210.4	219.7	-107.3	2.76	2.76	0.40	
5,356.0	24.51	50.12	5,311.3	217.0	227.6	-110.3	1.40	1.40	-0.28	
5,381.0	24.97	50.07	5,334.0	223.7	235.7	-113.3	1.84	1.84	-0.20	
5,406.0	25.11	50.18	5,356.7	230.5	243.8	-116.4	0.59	0.56	0.44	
5,431.0	25.51	50.18	5,379.3	237.4	252.0	-119.5	1.60	1.60	0.00	
5,456.0	25.53	50.61	5,401.8	244.2	260.3	-122.5	0.75	0.08	1.72	
5,481.0	25.81	50.52	5,424.4	251.1	268.6	-125.6	1.13	1.12	-0.36	
5,506.0	25.60	50.43	5,446.9	258.0	277.0	-128.6	0.85	-0.84	-0.36	
5,531.0	25.08	50.73	5,469.5	264.8	285.3	-131.6	2.14	-2.08	1.20	
5,556.0	24.76	50.64	5,492.1	271.5	293.4	-134.6	1.29	-1.28	-0.36	
5,581.0	24.16	50.15	5,514.9	278.1	301.4	-137.5	2.53	-2.40	-1.96	
5,606.0	24.01	50.48	5,537.7	284.6	309.3	-140.4	0.81	-0.60	1.32	
5,631.0	24.12	50.40	5,560.6	291.1	317.1	-143.3	0.46	0.44	-0.32	
5,656.0	23.61	50.53	5,583.4	297.5	324.9	-146.2	2.05	-2.04	0.52	
5,681.0	23.23	49.54	5,606.4	303.9	332.5	-149.1	2.19	-1.52	-3.96	



Scientific Drilling International
Survey Report



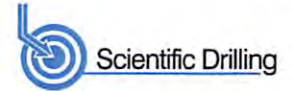
Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Well:	McNabb Unit 2H	North Reference:	Grid
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)	
5,706.0	23.06	49.51	5,629.3	310.3	340.0	-152.0	0.68	-0.68	-0.12	
5,731.0	23.11	49.49	5,652.3	316.6	347.5	-154.9	0.20	0.20	-0.08	
5,756.0	22.88	48.79	5,675.4	323.0	354.8	-157.9	1.43	-0.92	-2.80	
5,781.0	22.42	47.94	5,698.4	329.4	362.0	-161.0	2.26	-1.84	-3.40	
5,806.0	22.59	47.50	5,721.5	335.9	369.1	-164.1	0.96	0.68	-1.76	
5,831.0	22.73	48.00	5,744.6	342.3	376.2	-167.3	0.95	0.56	2.00	
5,856.0	22.98	47.82	5,767.6	348.8	383.5	-170.4	1.04	1.00	-0.72	
5,881.0	22.51	47.13	5,790.7	355.4	390.6	-173.6	2.16	-1.88	-2.76	
5,906.0	22.64	48.76	5,813.8	361.8	397.7	-176.8	2.56	0.52	6.52	
5,931.0	22.54	50.50	5,836.9	368.0	405.0	-179.6	2.70	-0.40	6.96	
5,940.0	22.55	51.36	5,845.2	370.2	407.7	-180.6	3.65	0.11	9.51	
Last SDI Gyro @ 5940 MD										
5,940.4	22.55	51.39	5,845.5	370.3	407.8	-180.6	3.65	0.13	9.50	
5,970.0	22.63	52.99	5,872.9	377.3	416.8	-183.5	2.09	0.27	5.40	
First SDI MWD @ 5970 MD										
6,008.0	22.74	54.37	5,907.9	385.9	428.6	-186.8	1.43	0.29	3.63	
6,038.0	22.41	53.02	5,935.6	392.8	437.9	-189.5	2.05	-1.10	-4.50	
6,068.0	21.92	53.15	5,963.4	399.6	446.9	-192.2	1.64	-1.63	0.43	
6,098.0	21.80	52.17	5,991.3	406.3	455.8	-194.9	1.28	-0.40	-3.27	
6,128.0	21.75	50.34	6,019.1	413.3	464.5	-197.9	2.27	-0.17	-6.10	
6,158.0	21.91	54.31	6,047.0	420.1	473.3	-200.7	4.95	0.53	13.23	
6,188.0	22.61	63.62	6,074.7	425.9	483.0	-202.3	11.97	2.33	31.03	
6,200.0	23.21	67.53	6,085.8	427.9	487.3	-202.4	13.64	5.03	32.57	
Sycamore @ 6200 MD										
6,218.0	24.29	73.01	6,102.3	430.3	494.1	-202.0	13.64	5.98	30.46	
6,248.0	25.86	80.36	6,129.4	433.2	506.5	-199.8	11.62	5.23	24.50	
6,277.0	26.81	88.45	6,155.4	434.4	519.2	-195.9	12.79	3.28	27.90	
6,307.0	27.71	97.13	6,182.1	433.8	532.9	-189.9	13.58	3.00	28.93	
6,337.0	28.64	105.50	6,208.6	431.0	546.8	-181.9	13.52	3.10	27.90	
6,360.0	29.39	111.69	6,228.7	427.4	557.3	-174.5	13.44	3.26	26.90	
Middlesex @ 6360 MD										
6,366.0	29.63	113.25	6,233.9	426.3	560.1	-172.4	13.44	4.02	26.04	
6,396.0	31.24	120.26	6,259.8	419.4	573.6	-160.8	12.99	5.37	23.37	
6,426.0	32.64	125.64	6,285.3	410.8	586.9	-147.6	10.57	4.67	17.93	
6,456.0	34.54	128.81	6,310.2	400.8	600.1	-133.2	8.62	6.33	10.57	
6,469.0	35.50	130.02	6,320.9	396.0	605.9	-126.6	9.14	7.41	9.31	
Burkett @ 6469 MD										
6,486.0	36.78	131.52	6,334.6	389.5	613.5	-117.6	9.14	7.51	8.82	
6,505.0	38.51	132.63	6,349.7	381.7	622.1	-107.0	9.76	9.09	5.83	
Tully @ 6505 MD										
6,516.0	39.51	133.23	6,358.2	377.0	627.2	-100.7	9.76	9.13	5.48	
6,531.0	40.89	133.94	6,369.7	370.3	634.2	-91.8	9.72	9.23	4.74	
MRCL_HOT @ 6531 MD										
6,545.0	42.19	134.57	6,380.1	363.8	640.8	-83.2	9.72	9.26	4.49	
6,575.0	45.04	135.61	6,401.9	349.2	655.4	-64.0	9.80	9.50	3.47	



Scientific Drilling International

Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Well:	McNabb Unit 2H	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)
6,605.0	48.46	136.47	6,422.4	333.4	670.6	-43.6	11.59	11.40	2.87
6,635.0	51.67	137.26	6,441.7	316.6	686.3	-22.0	10.89	10.70	2.63
6,665.0	55.19	138.08	6,459.5	298.8	702.5	0.8	11.94	11.73	2.73
6,695.0	58.76	139.42	6,475.9	279.9	719.1	24.6	12.47	11.90	4.47
6,724.0	61.86	140.75	6,490.3	260.6	735.3	48.8	11.41	10.69	4.59
6,754.0	65.00	142.80	6,503.7	239.5	751.9	74.7	12.12	10.47	6.83
6,784.0	67.97	144.41	6,515.6	217.4	768.2	101.4	11.06	9.90	5.37
6,814.0	70.97	145.88	6,526.2	194.3	784.2	128.9	11.00	10.00	4.90
6,844.0	73.63	147.18	6,535.3	170.5	800.0	157.0	9.78	8.87	4.33
6,874.0	76.41	147.84	6,543.0	146.0	815.5	185.6	9.51	9.27	2.20
6,904.0	80.45	147.10	6,549.1	121.3	831.3	214.6	13.68	13.47	-2.47
6,934.0	86.11	146.93	6,552.6	96.3	847.6	244.0	18.88	18.87	-0.57
6,965.0	89.43	147.13	6,553.8	70.3	864.4	274.5	10.73	10.71	0.65
6,994.0	89.20	147.78	6,554.1	45.9	880.0	303.1	2.38	-0.79	2.24
7,083.0	89.30	150.70	6,555.3	-30.6	925.5	391.3	3.28	0.11	3.28
7,173.0	89.55	153.89	6,556.2	-110.3	967.4	481.0	3.56	0.28	3.54
7,262.0	89.25	155.75	6,557.1	-190.8	1,005.2	569.9	2.12	-0.34	2.09
7,352.0	89.40	155.59	6,558.2	-272.8	1,042.3	659.9	0.24	0.17	-0.18
7,442.0	89.50	155.91	6,559.0	-354.9	1,079.3	749.8	0.37	0.11	0.36
7,531.0	89.37	155.76	6,559.9	-436.1	1,115.7	838.8	0.22	-0.15	-0.17
7,621.0	89.48	156.12	6,560.8	-518.2	1,152.4	928.8	0.42	0.12	0.40
7,711.0	89.48	155.65	6,561.6	-600.4	1,189.1	1,018.8	0.52	0.00	-0.52
7,800.0	88.60	154.13	6,563.1	-681.0	1,226.9	1,107.7	1.97	-0.99	-1.71
7,890.0	88.22	156.38	6,565.6	-762.6	1,264.6	1,197.6	2.53	-0.42	2.50
7,979.0	88.22	156.12	6,568.4	-844.1	1,300.4	1,286.6	0.29	0.00	-0.29
8,069.0	88.36	157.57	6,571.1	-926.8	1,335.8	1,376.5	1.62	0.16	1.61
8,159.0	88.67	157.85	6,573.4	-1,010.0	1,369.9	1,466.5	0.46	0.34	0.31
8,249.0	89.20	158.34	6,575.1	-1,093.5	1,403.5	1,556.5	0.80	0.59	0.54
8,338.0	89.61	157.92	6,576.0	-1,176.1	1,436.6	1,645.4	0.66	0.46	-0.47
8,427.0	88.57	156.99	6,577.4	-1,258.3	1,470.7	1,734.4	1.57	-1.17	-1.04
8,517.0	88.54	157.45	6,579.7	-1,341.2	1,505.6	1,824.4	0.51	-0.03	0.51
8,607.0	89.35	158.83	6,581.3	-1,424.8	1,539.1	1,914.4	1.78	0.90	1.53
8,696.0	89.45	159.69	6,582.3	-1,508.0	1,570.6	2,003.3	0.97	0.11	0.97
8,785.0	87.74	157.66	6,584.5	-1,590.9	1,602.9	2,092.2	2.98	-1.92	-2.28
8,875.0	88.07	155.77	6,587.8	-1,673.5	1,638.5	2,182.1	2.13	0.37	-2.10
8,964.0	87.83	155.67	6,590.9	-1,754.5	1,675.1	2,271.1	0.29	-0.27	-0.11
9,054.0	88.78	155.62	6,593.6	-1,836.5	1,712.2	2,361.0	1.06	1.06	-0.06
9,143.0	88.68	155.25	6,595.6	-1,917.4	1,749.2	2,449.9	0.43	-0.11	-0.42
9,233.0	88.91	157.05	6,597.5	-1,999.7	1,785.5	2,539.9	2.02	-0.26	2.00
9,322.0	88.78	157.14	6,599.3	-2,081.7	1,820.2	2,628.9	0.18	-0.15	0.10
9,412.0	88.95	156.22	6,601.0	-2,164.3	1,855.8	2,718.9	1.04	0.19	-1.02
9,501.0	89.86	156.32	6,602.0	-2,245.8	1,891.6	2,807.9	1.03	1.02	0.11
9,591.0	89.99	155.61	6,602.1	-2,328.0	1,928.3	2,897.9	0.80	0.14	-0.79



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Well:	McNabb Unit 2H	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)
9,680.0	89.46	156.82	6,602.5	-2,409.4	1,964.1	2,986.8	1.48	-0.60	1.36
9,770.0	90.67	157.54	6,602.4	-2,492.4	1,999.1	3,076.8	1.56	1.34	0.80
9,859.0	90.33	157.76	6,601.6	-2,574.7	2,032.9	3,165.8	0.46	-0.38	0.25
9,949.0	90.26	158.07	6,601.2	-2,658.1	2,066.7	3,255.8	0.35	-0.08	0.34
10,038.0	88.11	155.45	6,602.4	-2,739.8	2,101.8	3,344.8	3.81	-2.42	-2.94
10,128.0	89.69	156.19	6,604.2	-2,821.9	2,138.7	3,434.8	1.94	1.76	0.82
10,218.0	89.46	156.52	6,604.8	-2,904.4	2,174.8	3,524.7	0.45	-0.26	0.37
10,307.0	89.46	156.42	6,605.7	-2,986.0	2,210.3	3,613.7	0.11	0.00	-0.11
10,397.0	90.47	157.46	6,605.7	-3,068.8	2,245.6	3,703.7	1.61	1.12	1.16
10,486.0	90.53	157.25	6,604.9	-3,150.9	2,279.8	3,792.7	0.25	0.07	-0.24
10,576.0	89.56	156.21	6,604.9	-3,233.6	2,315.4	3,882.7	1.58	-1.08	-1.16
10,665.0	88.85	155.33	6,606.1	-3,314.7	2,351.9	3,971.7	1.27	-0.80	-0.99
10,755.0	90.40	156.55	6,606.7	-3,396.9	2,388.6	4,061.7	2.19	1.72	1.36
10,844.0	90.67	157.45	6,605.9	-3,478.8	2,423.4	4,150.7	1.06	0.30	1.01
10,933.0	90.24	157.78	6,605.2	-3,561.1	2,457.3	4,239.7	0.61	-0.48	0.37
11,023.0	89.60	157.06	6,605.3	-3,644.2	2,491.8	4,329.7	1.07	-0.71	-0.80
11,112.0	90.50	157.90	6,605.2	-3,726.4	2,525.9	4,418.7	1.38	1.01	0.94
11,202.0	90.07	157.42	6,604.8	-3,809.7	2,560.1	4,508.6	0.72	-0.48	-0.53
11,291.0	90.61	157.93	6,604.2	-3,892.0	2,593.9	4,597.6	0.83	0.61	0.57
11,381.0	90.68	157.76	6,603.2	-3,975.3	2,627.9	4,687.6	0.20	0.08	-0.19
11,470.0	90.91	158.92	6,602.0	-4,058.1	2,660.7	4,776.6	1.33	0.26	1.30
11,560.0	91.45	157.19	6,600.1	-4,141.5	2,694.3	4,866.5	2.01	0.60	-1.92
11,649.0	90.20	157.26	6,598.8	-4,223.6	2,728.8	4,955.5	1.41	-1.40	0.08
11,739.0	90.07	157.24	6,598.6	-4,306.6	2,763.6	5,045.5	0.15	-0.14	-0.02
11,828.0	93.06	157.79	6,596.2	-4,388.8	2,797.6	5,134.5	3.42	3.36	0.62
11,918.0	91.41	155.82	6,592.7	-4,471.4	2,833.0	5,224.4	2.85	-1.83	-2.19
12,008.0	91.15	155.76	6,590.7	-4,553.5	2,869.9	5,314.4	0.30	-0.29	-0.07
12,097.0	90.91	155.80	6,589.1	-4,634.6	2,906.4	5,403.3	0.27	-0.27	0.04
12,187.0	91.79	156.22	6,587.0	-4,716.8	2,943.0	5,493.3	1.08	0.98	0.47
12,276.0	90.91	156.91	6,584.9	-4,798.5	2,978.4	5,582.3	1.26	-0.99	0.78
12,366.0	90.95	157.10	6,583.4	-4,881.3	3,013.6	5,672.3	0.22	0.04	0.21
12,455.0	89.64	157.00	6,582.9	-4,963.3	3,048.3	5,761.3	1.48	-1.47	-0.11
12,545.0	90.11	157.85	6,583.1	-5,046.4	3,082.8	5,851.2	1.08	0.52	0.94
12,634.0	89.10	155.62	6,583.8	-5,128.1	3,118.0	5,940.2	2.75	-1.13	-2.51
12,724.0	89.20	154.55	6,585.1	-5,209.7	3,155.9	6,030.2	1.19	0.11	-1.19
12,813.0	90.07	156.65	6,585.7	-5,290.8	3,192.6	6,119.1	2.55	0.98	2.36
12,903.0	89.80	156.37	6,585.8	-5,373.3	3,228.5	6,209.1	0.43	-0.30	-0.31
12,992.0	89.64	155.77	6,586.2	-5,454.7	3,264.6	6,298.1	0.70	-0.18	-0.67
13,082.0	89.37	157.41	6,587.0	-5,537.2	3,300.4	6,388.1	1.85	-0.30	1.82
13,171.0	89.20	157.12	6,588.1	-5,619.3	3,334.8	6,477.1	0.38	-0.19	-0.33
13,261.0	89.40	157.97	6,589.2	-5,702.5	3,369.1	6,567.1	0.97	0.22	0.94
13,350.0	89.17	157.88	6,590.3	-5,785.0	3,402.6	6,656.1	0.28	-0.26	-0.10
13,440.0	89.33	158.78	6,591.5	-5,868.6	3,435.8	6,746.0	1.02	0.18	1.00
13,530.0	88.43	155.95	6,593.2	-5,951.6	3,470.4	6,836.0	3.30	-1.00	-3.14



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Well:	McNabb Unit 2H	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)
13,619.0	88.29	156.22	6,595.8	-6,033.0	3,506.5	6,925.0	0.34	-0.16	0.30
13,709.0	89.13	156.35	6,597.8	-6,115.3	3,542.7	7,014.9	0.94	0.93	0.14
13,798.0	89.13	156.04	6,599.2	-6,196.8	3,578.6	7,103.9	0.35	0.00	-0.35
13,887.0	89.43	157.76	6,600.3	-6,278.6	3,613.5	7,192.9	1.96	0.34	1.93
13,976.0	90.04	159.01	6,600.7	-6,361.3	3,646.3	7,281.9	1.56	0.69	1.40
14,066.0	90.04	159.32	6,600.6	-6,445.5	3,678.3	7,371.8	0.34	0.00	0.34
14,155.0	89.94	156.67	6,600.6	-6,528.0	3,711.7	7,460.8	2.98	-0.11	-2.98
14,245.0	90.17	156.61	6,600.6	-6,610.6	3,747.3	7,550.8	0.26	0.26	-0.07
14,334.0	90.41	157.12	6,600.1	-6,692.4	3,782.3	7,639.8	0.63	0.27	0.57
14,424.0	90.07	157.22	6,599.7	-6,775.4	3,817.2	7,729.8	0.39	-0.38	0.11
14,513.0	89.50	155.88	6,600.1	-6,857.0	3,852.6	7,818.8	1.64	-0.64	-1.51
14,603.0	89.50	155.59	6,600.8	-6,939.1	3,889.6	7,908.8	0.32	0.00	-0.32
14,692.0	89.87	156.57	6,601.3	-7,020.4	3,925.7	7,997.7	1.18	0.42	1.10
14,782.0	89.67	155.96	6,601.7	-7,102.8	3,961.9	8,087.7	0.71	-0.22	-0.68
14,871.0	90.61	156.07	6,601.5	-7,184.1	3,998.1	8,176.7	1.06	1.06	0.12
14,961.0	90.74	156.15	6,600.4	-7,266.4	4,034.6	8,266.7	0.17	0.14	0.09
15,050.0	90.74	155.97	6,599.3	-7,347.8	4,070.7	8,355.7	0.20	0.00	-0.20
15,140.0	90.21	157.23	6,598.5	-7,430.3	4,106.4	8,445.7	1.52	-0.59	1.40
15,229.0	89.17	157.44	6,599.0	-7,512.5	4,140.7	8,534.7	1.19	-1.17	0.24
15,319.0	88.96	156.91	6,600.5	-7,595.4	4,175.6	8,624.7	0.63	-0.23	-0.59
15,408.0	91.08	157.77	6,600.4	-7,677.5	4,209.9	8,713.7	2.57	2.38	0.97
15,498.0	90.17	157.73	6,599.5	-7,760.8	4,244.0	8,803.6	1.01	-1.01	-0.04
15,588.0	90.28	158.31	6,599.1	-7,844.3	4,277.7	8,893.6	0.66	0.12	0.64
15,677.0	90.41	156.62	6,598.6	-7,926.5	4,311.8	8,982.6	1.90	0.15	-1.90
15,767.0	90.61	156.67	6,597.8	-8,009.1	4,347.4	9,072.6	0.23	0.22	0.06
15,856.0	90.71	156.77	6,596.7	-8,090.9	4,382.6	9,161.6	0.16	0.11	0.11
15,946.0	90.61	156.49	6,595.7	-8,173.5	4,418.3	9,251.6	0.33	-0.11	-0.31
16,035.0	90.45	155.73	6,594.9	-8,254.8	4,454.4	9,340.6	0.87	-0.18	-0.85
16,125.0	90.08	155.28	6,594.5	-8,336.7	4,491.7	9,430.6	0.65	-0.41	-0.50
16,214.0	89.91	155.69	6,594.5	-8,417.7	4,528.6	9,519.5	0.50	-0.19	0.46
16,304.0	89.74	155.21	6,594.8	-8,499.6	4,566.0	9,609.5	0.57	-0.19	-0.53
16,393.0	90.28	157.37	6,594.7	-8,581.1	4,601.8	9,698.5	2.50	0.61	2.43
16,483.0	90.21	156.30	6,594.4	-8,663.8	4,637.2	9,788.5	1.19	-0.08	-1.19
16,573.0	90.18	157.94	6,594.0	-8,746.7	4,672.2	9,878.5	1.82	-0.03	1.82
16,662.0	90.04	158.05	6,593.9	-8,829.2	4,705.5	9,967.5	0.20	-0.16	0.12
16,752.0	90.38	157.82	6,593.5	-8,912.6	4,739.3	10,057.5	0.46	0.38	-0.26
16,841.0	90.28	158.32	6,593.0	-8,995.2	4,772.6	10,146.4	0.57	-0.11	0.56
16,930.0	90.11	158.28	6,592.7	-9,077.9	4,805.5	10,235.4	0.20	-0.19	-0.04
17,020.0	90.04	157.37	6,592.6	-9,161.2	4,839.4	10,325.4	1.01	-0.08	-1.01
17,110.0	89.98	158.04	6,592.6	-9,244.5	4,873.6	10,415.4	0.75	-0.07	0.74
17,199.0	90.55	157.43	6,592.2	-9,326.9	4,907.3	10,504.4	0.94	0.64	-0.69
17,289.0	90.28	157.12	6,591.5	-9,409.9	4,942.1	10,594.4	0.46	-0.30	-0.34
17,378.0	90.24	156.59	6,591.1	-9,491.7	4,977.1	10,683.4	0.60	-0.04	-0.60



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Well:	McNabb Unit 2H	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)
17,468.0	90.01	156.82	6,590.9	-9,574.4	5,012.6	10,773.4	0.36	-0.26	0.26
17,558.0	89.98	156.84	6,590.9	-9,657.1	5,048.1	10,863.4	0.04	-0.03	0.02
17,647.0	89.61	156.81	6,591.3	-9,738.9	5,083.1	10,952.4	0.42	-0.42	-0.03
17,737.0	90.75	156.39	6,591.0	-9,821.5	5,118.8	11,042.4	1.35	1.27	-0.47
17,826.0	90.81	156.77	6,589.8	-9,903.2	5,154.2	11,131.4	0.43	0.07	0.43
17,915.0	90.81	156.71	6,588.5	-9,984.9	5,189.3	11,220.3	0.07	0.00	-0.07
18,005.0	91.02	157.09	6,587.1	-10,067.7	5,224.6	11,310.3	0.48	0.23	0.42
18,094.0	90.08	155.45	6,586.2	-10,149.2	5,260.5	11,399.3	2.12	-1.06	-1.84
18,184.0	90.55	155.72	6,585.7	-10,231.1	5,297.7	11,489.3	0.60	0.52	0.30
18,273.0	89.27	155.61	6,585.9	-10,312.2	5,334.3	11,578.3	1.44	-1.44	-0.12
18,363.0	87.86	154.98	6,588.1	-10,394.0	5,371.9	11,668.2	1.72	-1.57	-0.70
18,452.0	89.00	157.65	6,590.6	-10,475.4	5,407.7	11,757.2	3.26	1.28	3.00
18,542.0	90.08	158.66	6,591.3	-10,559.0	5,441.2	11,847.1	1.64	1.20	1.12
18,631.0	90.24	158.04	6,591.0	-10,641.7	5,474.0	11,936.1	0.72	0.18	-0.70
18,721.0	89.91	156.06	6,590.9	-10,724.6	5,509.1	12,026.1	2.23	-0.37	-2.20
18,810.0	91.76	157.32	6,589.6	-10,806.3	5,544.3	12,115.1	2.51	2.08	1.42
18,899.0	90.45	156.62	6,587.9	-10,888.2	5,579.1	12,204.1	1.67	-1.47	-0.79
18,989.0	90.28	155.89	6,587.3	-10,970.5	5,615.3	12,294.1	0.83	-0.19	-0.81
19,077.0	90.48	155.68	6,586.7	-11,050.8	5,651.4	12,382.0	0.33	0.23	-0.24
Last SDI MWD @ 19077 MD									
19,140.0	90.48	155.68	6,586.2	-11,108.2	5,677.4	12,445.0	0.00	0.00	0.00
Projection To Bit @ 19140 MD / 6586 TVD									

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,200.0	6,085.8	Sycamore @ 6200 MD		0.00	
6,360.0	6,228.7	Middlesex @ 6360 MD		0.00	
6,469.0	6,320.9	Burkett @ 6469 MD		0.00	
6,505.0	6,349.7	Tully @ 6505 MD		0.00	
6,531.0	6,369.7	MRCL_HOT @ 6531 MD		0.00	

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,940.0	5,845.2	370.2	407.7	Last SDI Gyro @ 5940 MD
5,970.0	5,872.9	377.3	416.8	First SDI MWD @ 5970 MD
19,077.0	6,586.7	-11,050.8	5,651.4	Last SDI MWD @ 19077 MD
19,140.0	6,586.2	-11,108.2	5,677.4	Projection To Bit @ 19140 MD / 6586 TVD



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well McNabb Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Site:	Mackay Pad - Caldwell/Greenback/McNabb	MD Reference:	Precision 523: 1099' GL + 19' KB @ 1118.0usft
Well:	McNabb Unit 2H	North Reference:	Grid
Wellbore:	Original Wellpath	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Antero NE

Checked By: _____ Approved By: _____ Date: _____