



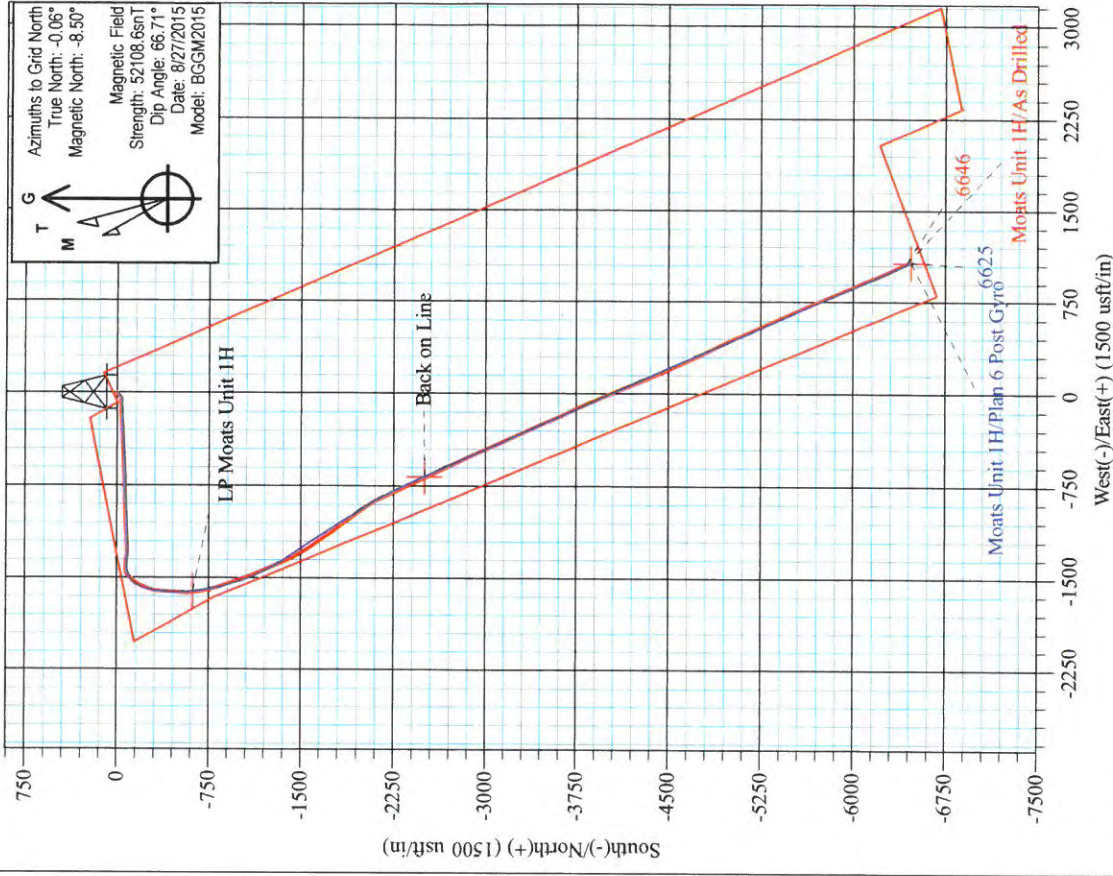
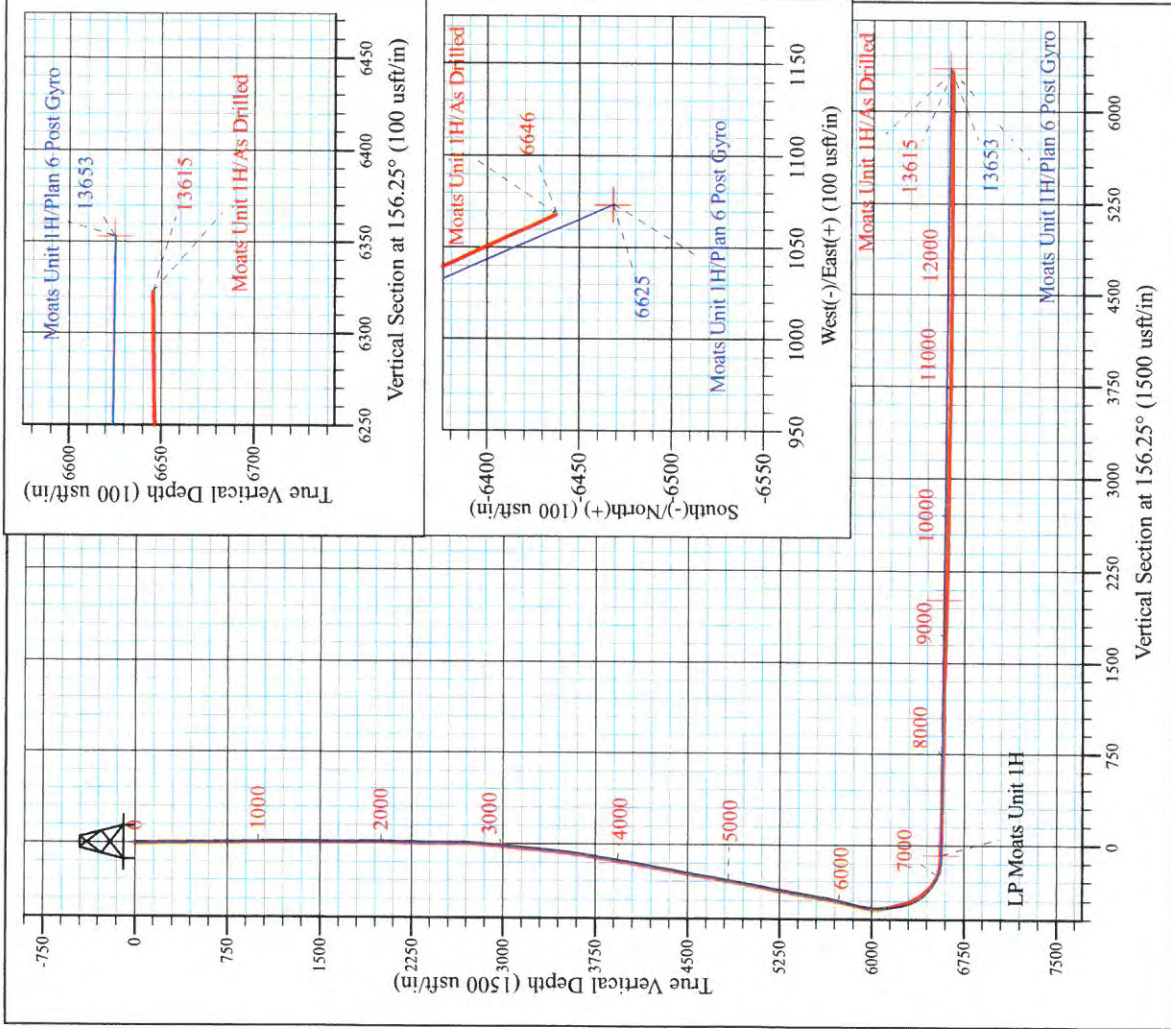
Edwin Pad: Hornet/Miracle/Moats/Myrtle  
 Moats Unit 1H  
 Plan 6 Post Gyro  
 Precision 522: 1191' GL + 18' KB @ 1209.0usft  
 Ritchie County WV

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: **Moats Unit 1H SHL**

+N/-S	+E/-W	Northing	Latitude	Longitude
0.0	0.0	14245825.56	39° 13' 49.293 N	80° 54' 10.776 W



**Moats Unit 1H**  
 Approx. BHL  
**39° 12' 45.626 N 80° 53' 57.285 W**

Shane Rhodes  
 13:51, September 09 2015  
 Scientific Drilling International  
 124 Vista Drive  
 Charleroi, PA 15022



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MAY 20 2016

WV GEOLOGICAL SURVEY  
MORGANTOWN, WV

## Antero

Ritchie County WV

Edwin Pad: Hornet/Miracle/Moats/Myrtle

Moats Unit 1H

Original Wellpath

Design: As Drilled

## Standard Survey Report

09 September, 2015



[www.scientificdrilling.com](http://www.scientificdrilling.com)



<b>Company:</b>	Antero	<b>Local Co-ordinate Reference:</b>	Well Moats Unit 1H
<b>Project:</b>	Ritchie County WV	<b>TVD Reference:</b>	Precision 522: 1191' GL + 18' KB @ 1209.0usft
<b>Site:</b>	Edwin Pad: Hornet/Miracle/Moats/Myrtle	<b>MD Reference:</b>	Precision 522: 1191' GL + 18' KB @ 1209.0usft
<b>Well:</b>	Moats Unit 1H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Wellpath	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	As Drilled	<b>Database:</b>	Antero NE

<b>Project</b>	Ritchie County WV, Ritchie County WV, WV North		
<b>Map System:</b>	Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	Zone 17N (84 W to 78 W)		

<b>Site</b>	Edwin Pad: Hornet/Miracle/Moats/Myrtle				
<b>Site Position:</b>		<b>Northing:</b>	14,245,885.63 usft	<b>Latitude:</b>	39° 13' 49.887 N
<b>From:</b>	Map	<b>Easting:</b>	1,667,891.73 usft	<b>Longitude:</b>	80° 54' 10.711 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.06 °

<b>Well</b>	Moats Unit 1H, Marcellus					
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	14,245,825.56 usft	<b>Latitude:</b>	39° 13' 49.293 N
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	1,667,886.74 usft	<b>Longitude:</b>	80° 54' 10.776 W
<b>Position Uncertainty</b>		2.0 usft	<b>Wellhead Elevation:</b>	1,209.0 usft	<b>Ground Level:</b>	1,191.0 usft

<b>Wellbore</b>	Original Wellpath				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	BGGM2015	8/27/2015	-8.44	66.71	52,109

<b>Design</b>	As Drilled				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	156.25	

<b>Survey Program</b>	<b>Date</b>	9/9/2015			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
105.0	6,116.0	Survey #6 Final Gyro (Original Wellpath)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
6,209.0	13,615.0	Survey #7 SDI MWD (Original Wellpath)	MWD SDI	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	
105.0	0.38	286.01	105.0	0.1	-0.3	-0.2	0.36	0.36	0.00	
<b>First SDI Gyro @ 105 MD</b>										
130.0	0.47	286.00	130.0	0.1	-0.5	-0.3	0.36	0.36	-0.04	
155.0	0.45	283.67	155.0	0.2	-0.7	-0.5	0.11	-0.08	-9.32	
180.0	0.38	246.13	180.0	0.2	-0.9	-0.5	1.10	-0.28	-150.16	
205.0	0.18	262.00	205.0	0.1	-1.0	-0.5	0.85	-0.80	63.48	
230.0	0.23	261.37	230.0	0.1	-1.1	-0.6	0.20	0.20	-2.52	
255.0	0.25	264.41	255.0	0.1	-1.2	-0.6	0.09	0.08	12.16	
280.0	0.23	260.60	280.0	0.1	-1.3	-0.6	0.10	-0.08	-15.24	



**Company:** Antero  
**Project:** Ritchie County WV  
**Site:** Edwin Pad: Hornet/Miracle/Moats/Myrtle  
**Well:** Moats Unit 1H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Moats Unit 1H  
**TVD Reference:** Precision 522: 1191' GL + 18' KB @ 1209.0usft  
**MD Reference:** Precision 522: 1191' GL + 18' KB @ 1209.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**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)
305.0	0.21	256.18	305.0	0.1	-1.4	-0.6	0.10	-0.08	-17.68
330.0	0.18	235.60	330.0	0.1	-1.5	-0.6	0.30	-0.12	-82.32
355.0	0.87	241.10	355.0	-0.1	-1.7	-0.6	2.76	2.76	22.00
380.0	1.46	239.42	380.0	-0.3	-2.1	-0.6	2.36	2.36	-6.72
405.0	2.16	236.05	405.0	-0.7	-2.8	-0.4	2.83	2.80	-13.48
430.0	2.79	233.99	430.0	-1.4	-3.6	-0.2	2.54	2.52	-8.24
455.0	3.45	233.32	454.9	-2.2	-4.7	0.1	2.64	2.64	-2.68
480.0	3.68	233.03	479.9	-3.1	-6.0	0.4	0.92	0.92	-1.16
505.0	4.02	231.79	504.8	-4.1	-7.3	0.8	1.40	1.36	-4.96
530.0	4.42	229.04	529.7	-5.3	-8.7	1.3	1.79	1.60	-11.00
555.0	4.54	229.81	554.7	-6.6	-10.2	1.9	0.54	0.48	3.08
580.0	4.48	229.36	579.6	-7.8	-11.7	2.5	0.28	-0.24	-1.80
605.0	4.58	229.32	604.5	-9.1	-13.2	3.0	0.40	0.40	-0.16
630.0	4.51	228.92	629.4	-10.4	-14.7	3.6	0.31	-0.28	-1.60
655.0	4.59	229.26	654.4	-11.7	-16.2	4.2	0.34	0.32	1.36
680.0	4.56	229.27	679.3	-13.0	-17.7	4.8	0.12	-0.12	0.04
705.0	4.51	229.12	704.2	-14.3	-19.2	5.4	0.21	-0.20	-0.60
730.0	4.39	228.43	729.1	-15.6	-20.7	5.9	0.53	-0.48	-2.76
755.0	4.32	228.71	754.0	-16.8	-22.1	6.5	0.29	-0.28	1.12
780.0	4.07	228.39	779.0	-18.1	-23.5	7.1	1.00	-1.00	-1.28
805.0	3.53	227.85	803.9	-19.2	-24.7	7.6	2.16	-2.16	-2.16
830.0	3.59	228.54	828.9	-20.2	-25.9	8.1	0.29	0.24	2.76
855.0	3.27	229.00	853.8	-21.2	-27.0	8.5	1.28	-1.28	1.84
880.0	3.03	230.55	878.8	-22.1	-28.0	8.9	1.02	-0.96	6.20
905.0	2.91	232.13	903.8	-22.9	-29.0	9.2	0.58	-0.48	6.32
930.0	2.84	230.95	928.7	-23.7	-30.0	9.6	0.37	-0.28	-4.72
955.0	2.73	232.72	953.7	-24.4	-31.0	9.9	0.56	-0.44	7.08
980.0	2.60	233.53	978.7	-25.1	-31.9	10.1	0.54	-0.52	3.24
1,005.0	2.51	233.49	1,003.6	-25.8	-32.8	10.4	0.36	-0.36	-0.16
1,030.0	2.34	235.24	1,028.6	-26.4	-33.7	10.6	0.74	-0.68	7.00
1,055.0	2.26	235.15	1,053.6	-27.0	-34.5	10.8	0.32	-0.32	-0.36
1,080.0	2.07	236.56	1,078.6	-27.5	-35.3	11.0	0.79	-0.76	5.64
1,105.0	1.95	235.36	1,103.6	-28.0	-36.0	11.1	0.51	-0.48	-4.80
1,130.0	2.01	237.28	1,128.6	-28.5	-36.7	11.3	0.36	0.24	7.68
1,155.0	1.94	238.41	1,153.5	-28.9	-37.4	11.4	0.32	-0.28	4.52
1,180.0	1.75	239.06	1,178.5	-29.3	-38.1	11.5	0.76	-0.76	2.60
1,205.0	1.81	239.86	1,203.5	-29.7	-38.8	11.6	0.26	0.24	3.20
1,230.0	1.56	237.95	1,228.5	-30.1	-39.4	11.7	1.02	-1.00	-7.64
1,255.0	1.48	240.99	1,253.5	-30.4	-40.0	11.8	0.45	-0.32	12.16
1,280.0	1.53	244.45	1,278.5	-30.7	-40.6	11.8	0.41	0.20	13.84
1,305.0	1.37	242.88	1,303.5	-31.0	-41.2	11.8	0.66	-0.64	-6.28
1,330.0	1.34	245.13	1,328.5	-31.3	-41.7	11.9	0.24	-0.12	9.00
1,355.0	1.24	243.94	1,353.5	-31.5	-42.2	11.9	0.41	-0.40	-4.76



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**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**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)
1,380.0	1.09	245.50	1,378.5	-31.7	-42.7	11.9	0.61	-0.60	6.24
1,405.0	0.96	243.89	1,403.5	-31.9	-43.1	11.9	0.53	-0.52	-6.44
1,430.0	0.90	245.58	1,428.5	-32.1	-43.4	11.9	0.26	-0.24	6.76
1,455.0	0.92	250.67	1,453.5	-32.3	-43.8	11.9	0.33	0.08	20.36
1,480.0	0.82	248.68	1,478.5	-32.4	-44.1	11.9	0.42	-0.40	-7.96
1,505.0	0.83	252.58	1,503.4	-32.5	-44.5	11.8	0.23	0.04	15.60
1,530.0	0.83	252.11	1,528.4	-32.6	-44.8	11.8	0.03	0.00	-1.88
1,555.0	0.82	252.55	1,553.4	-32.7	-45.2	11.8	0.05	-0.04	1.76
1,580.0	0.79	252.19	1,578.4	-32.8	-45.5	11.7	0.12	-0.12	-1.44
1,605.0	0.78	253.07	1,603.4	-32.9	-45.8	11.7	0.06	-0.04	3.52
1,630.0	0.77	251.27	1,628.4	-33.0	-46.2	11.7	0.11	-0.04	-7.20
1,655.0	0.78	257.95	1,653.4	-33.1	-46.5	11.6	0.36	0.04	26.72
1,680.0	0.70	252.81	1,678.4	-33.2	-46.8	11.6	0.42	-0.32	-20.56
1,705.0	0.69	255.74	1,703.4	-33.3	-47.1	11.5	0.15	-0.04	11.72
1,730.0	0.71	260.69	1,728.4	-33.4	-47.4	11.4	0.25	0.08	19.80
1,755.0	0.70	250.91	1,753.4	-33.4	-47.7	11.4	0.48	-0.04	-39.12
1,780.0	0.73	256.57	1,778.4	-33.5	-48.0	11.4	0.31	0.12	22.64
1,805.0	0.73	256.86	1,803.4	-33.6	-48.3	11.3	0.01	0.00	1.16
1,830.0	0.62	255.17	1,828.4	-33.7	-48.6	11.2	0.45	-0.44	-6.76
1,855.0	0.70	256.72	1,853.4	-33.7	-48.9	11.2	0.33	0.32	6.20
1,880.0	0.70	260.51	1,878.4	-33.8	-49.2	11.1	0.19	0.00	15.16
1,905.0	0.62	257.59	1,903.4	-33.8	-49.4	11.1	0.35	-0.32	-11.68
1,930.0	0.64	261.63	1,928.4	-33.9	-49.7	11.0	0.19	0.08	16.16
1,955.0	0.60	256.69	1,953.4	-33.9	-50.0	10.9	0.27	-0.16	-19.76
1,980.0	0.59	260.00	1,978.4	-34.0	-50.2	10.9	0.14	-0.04	13.24
2,005.0	0.45	257.30	2,003.4	-34.0	-50.5	10.8	0.57	-0.56	-10.80
2,030.0	0.36	270.49	2,028.4	-34.1	-50.6	10.8	0.52	-0.36	52.76
2,055.0	0.33	263.73	2,053.4	-34.1	-50.8	10.7	0.20	-0.12	-27.04
2,080.0	0.30	266.83	2,078.4	-34.1	-50.9	10.7	0.14	-0.12	12.40
2,105.0	0.38	264.74	2,103.4	-34.1	-51.1	10.6	0.32	0.32	-8.36
2,130.0	0.38	255.80	2,128.4	-34.1	-51.2	10.6	0.24	0.00	-35.76
2,155.0	0.37	265.26	2,153.4	-34.1	-51.4	10.6	0.25	-0.04	37.84
2,180.0	0.37	255.10	2,178.4	-34.2	-51.5	10.5	0.26	0.00	-40.64
2,205.0	0.36	266.23	2,203.4	-34.2	-51.7	10.5	0.29	-0.04	44.52
2,230.0	0.25	264.78	2,228.4	-34.2	-51.8	10.4	0.44	-0.44	-5.80
2,255.0	0.36	267.90	2,253.4	-34.2	-52.0	10.4	0.44	0.44	12.48
2,280.0	0.28	281.37	2,278.4	-34.2	-52.1	10.3	0.44	-0.32	53.88
2,305.0	0.34	277.64	2,303.4	-34.2	-52.2	10.3	0.25	0.24	-14.92
2,330.0	0.37	280.86	2,328.4	-34.2	-52.4	10.2	0.14	0.12	12.88
2,355.0	0.43	272.15	2,353.4	-34.1	-52.6	10.1	0.34	0.24	-34.84
2,380.0	0.50	263.81	2,378.4	-34.2	-52.8	10.0	0.39	0.28	-33.36
2,405.0	0.40	295.88	2,403.4	-34.1	-53.0	9.9	1.07	-0.40	128.28
2,430.0	0.40	273.10	2,428.4	-34.1	-53.1	9.8	0.63	0.00	-91.12



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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)
2,455.0	0.41	271.39	2,453.4	-34.1	-53.3	9.7	0.06	0.04	-6.84
2,480.0	0.55	293.44	2,478.4	-34.0	-53.5	9.6	0.92	0.56	88.20
2,505.0	0.52	284.54	2,503.4	-33.9	-53.7	9.4	0.35	-0.12	-35.60
2,530.0	0.51	286.77	2,528.4	-33.9	-53.9	9.3	0.09	-0.04	8.92
2,555.0	0.50	288.63	2,553.4	-33.8	-54.1	9.2	0.08	-0.04	7.44
2,580.0	0.52	273.80	2,578.4	-33.8	-54.4	9.0	0.53	0.08	-59.32
2,605.0	0.45	271.89	2,603.4	-33.8	-54.6	8.9	0.29	-0.28	-7.64
2,630.0	0.41	287.17	2,628.4	-33.7	-54.8	8.8	0.48	-0.16	61.12
2,655.0	0.96	280.85	2,653.4	-33.7	-55.0	8.7	2.22	2.20	-25.28
2,680.0	2.21	283.50	2,678.4	-33.5	-55.7	8.2	5.01	5.00	10.60
2,705.0	3.45	281.13	2,703.4	-33.3	-56.9	7.5	4.98	4.96	-9.48
2,730.0	5.13	280.62	2,728.3	-32.9	-58.8	6.5	6.72	6.72	-2.04
2,755.0	6.19	277.02	2,753.2	-32.5	-61.2	5.1	4.47	4.24	-14.40
2,780.0	7.33	274.95	2,778.0	-32.2	-64.1	3.7	4.66	4.56	-8.28
2,805.0	8.58	274.76	2,802.7	-31.9	-67.6	2.0	5.00	5.00	-0.76
2,830.0	9.54	273.40	2,827.4	-31.7	-71.5	0.2	3.93	3.84	-5.44
2,855.0	10.61	272.45	2,852.0	-31.4	-75.9	-1.8	4.33	4.28	-3.80
2,880.0	11.43	270.90	2,876.6	-31.3	-80.6	-3.8	3.49	3.28	-6.20
2,905.0	12.10	270.18	2,901.1	-31.3	-85.7	-5.9	2.74	2.68	-2.88
2,930.0	12.87	268.93	2,925.5	-31.3	-91.1	-8.1	3.26	3.08	-5.00
2,955.0	13.11	268.65	2,949.8	-31.4	-96.8	-10.2	0.99	0.96	-1.12
2,980.0	13.56	267.80	2,974.2	-31.6	-102.5	-12.4	1.96	1.80	-3.40
3,005.0	14.24	266.82	2,998.4	-31.9	-108.5	-14.5	2.88	2.72	-3.92
3,030.0	14.94	267.22	3,022.6	-32.2	-114.8	-16.8	2.83	2.80	1.60
3,055.0	15.11	267.48	3,046.8	-32.5	-121.3	-19.1	0.73	0.68	1.04
3,080.0	15.20	267.38	3,070.9	-32.8	-127.8	-21.4	0.37	0.36	-0.40
3,105.0	15.40	267.48	3,095.0	-33.1	-134.4	-23.8	0.81	0.80	0.40
3,130.0	15.27	267.13	3,119.1	-33.4	-141.0	-26.2	0.64	-0.52	-1.40
3,155.0	15.19	266.65	3,143.2	-33.8	-147.6	-28.5	0.60	-0.32	-1.92
3,180.0	15.12	266.24	3,167.4	-34.2	-154.1	-30.8	0.51	-0.28	-1.64
3,205.0	15.00	265.89	3,191.5	-34.6	-160.6	-33.0	0.60	-0.48	-1.40
3,230.0	14.68	265.16	3,215.7	-35.1	-167.0	-35.1	1.48	-1.28	-2.92
3,255.0	14.78	265.20	3,239.9	-35.7	-173.3	-37.2	0.40	0.40	0.16
3,280.0	14.90	265.90	3,264.0	-36.2	-179.7	-39.3	0.86	0.48	2.80
3,305.0	15.07	266.44	3,288.2	-36.6	-186.1	-41.5	0.88	0.68	2.16
3,330.0	15.30	267.32	3,312.3	-36.9	-192.7	-43.8	1.30	0.92	3.52
3,355.0	15.77	267.52	3,336.4	-37.2	-199.3	-46.2	1.89	1.88	0.80
3,380.0	16.22	266.69	3,360.4	-37.6	-206.2	-48.7	2.02	1.80	-3.32
3,405.0	17.06	265.59	3,384.4	-38.1	-213.4	-51.1	3.59	3.36	-4.40
3,430.0	17.98	265.06	3,408.2	-38.7	-220.9	-53.5	3.73	3.68	-2.12
3,455.0	18.41	264.66	3,432.0	-39.4	-228.6	-56.0	1.79	1.72	-1.60
3,480.0	19.21	264.68	3,455.6	-40.1	-236.7	-58.6	3.20	3.20	0.08
3,505.0	19.66	265.09	3,479.2	-40.9	-245.0	-61.2	1.88	1.80	1.64
3,530.0	19.99	266.17	3,502.7	-41.5	-253.4	-64.1	1.97	1.32	4.32



**Company:** Antero  
**Project:** Ritchie County WV  
**Site:** Edwin Pad: Hornet/Miracle/Moats/Myrtle  
**Well:** Moats Unit 1H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Moats Unit 1H  
**TVD Reference:** Precision 522: 1191' GL + 18' KB @ 1209.0usft  
**MD Reference:** Precision 522: 1191' GL + 18' KB @ 1209.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**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)
3,555.0	20.36	267.64	3,526.2	-42.0	-262.0	-67.1	2.51	1.48	5.88
3,580.0	20.74	267.93	3,549.6	-42.3	-270.8	-70.3	1.57	1.52	1.16
3,605.0	21.25	268.19	3,572.9	-42.6	-279.7	-73.6	2.07	2.04	1.04
3,630.0	21.67	268.34	3,596.2	-42.9	-288.9	-77.1	1.69	1.68	0.60
3,655.0	21.82	268.29	3,619.4	-43.2	-298.1	-80.6	0.60	0.60	-0.20
3,680.0	22.16	268.07	3,642.6	-43.5	-307.5	-84.1	1.40	1.36	-0.88
3,705.0	22.42	268.01	3,665.7	-43.8	-317.0	-87.6	1.04	1.04	-0.24
3,730.0	22.79	267.96	3,688.8	-44.1	-326.6	-91.1	1.48	1.48	-0.20
3,755.0	23.38	267.88	3,711.8	-44.5	-336.4	-94.7	2.36	2.36	-0.32
3,780.0	24.14	267.83	3,734.7	-44.9	-346.4	-98.5	3.04	3.04	-0.20
3,805.0	24.91	268.17	3,757.4	-45.2	-356.8	-102.3	3.13	3.08	1.36
3,830.0	25.13	268.17	3,780.1	-45.6	-367.4	-106.2	0.88	0.88	0.00
3,855.0	25.45	268.07	3,802.7	-45.9	-378.1	-110.2	1.29	1.28	-0.40
3,880.0	24.94	267.18	3,825.3	-46.4	-388.7	-114.1	2.54	-2.04	-3.56
3,905.0	24.88	266.60	3,848.0	-46.9	-399.2	-117.8	1.01	-0.24	-2.32
3,930.0	25.06	266.39	3,870.7	-47.6	-409.7	-121.5	0.80	0.72	-0.84
3,955.0	25.50	266.41	3,893.3	-48.2	-420.4	-125.1	1.76	1.76	0.08
3,980.0	25.84	266.38	3,915.8	-48.9	-431.2	-128.9	1.36	1.36	-0.12
4,005.0	25.98	266.51	3,938.3	-49.6	-442.1	-132.6	0.60	0.56	0.52
4,030.0	25.74	266.03	3,960.8	-50.3	-453.0	-136.4	1.27	-0.96	-1.92
4,055.0	25.15	265.52	3,983.3	-51.1	-463.7	-140.0	2.52	-2.36	-2.04
4,080.0	25.26	265.40	4,006.0	-51.9	-474.3	-143.5	0.49	0.44	-0.48
4,105.0	25.40	265.70	4,028.6	-52.8	-485.0	-147.0	0.76	0.56	1.20
4,130.0	25.91	266.47	4,051.1	-53.5	-495.8	-150.7	2.44	2.04	3.08
4,155.0	26.90	267.70	4,073.5	-54.1	-506.9	-154.6	4.52	3.96	4.92
4,180.0	27.28	268.15	4,095.7	-54.5	-518.2	-158.8	1.73	1.52	1.80
4,205.0	27.70	268.20	4,117.9	-54.9	-529.8	-163.2	1.68	1.68	0.20
4,230.0	26.95	267.61	4,140.1	-55.3	-541.2	-167.4	3.19	-3.00	-2.36
4,255.0	26.87	267.54	4,162.4	-55.8	-552.6	-171.5	0.34	-0.32	-0.28
4,280.0	26.85	267.59	4,184.7	-56.2	-563.8	-175.6	0.12	-0.08	0.20
4,305.0	27.02	267.80	4,207.0	-56.7	-575.2	-179.8	0.78	0.68	0.84
4,330.0	26.69	268.07	4,229.3	-57.1	-586.4	-183.9	1.41	-1.32	1.08
4,355.0	26.02	267.44	4,251.7	-57.5	-597.5	-188.0	2.90	-2.68	-2.52
4,380.0	25.66	267.18	4,274.2	-58.0	-608.4	-191.9	1.51	-1.44	-1.04
4,405.0	25.82	267.08	4,296.7	-58.6	-619.3	-195.8	0.66	0.64	-0.40
4,430.0	26.14	267.16	4,319.2	-59.1	-630.2	-199.7	1.29	1.28	0.32
4,455.0	26.18	267.43	4,341.7	-59.7	-641.2	-203.6	0.50	0.16	1.08
4,480.0	26.13	268.09	4,364.1	-60.1	-652.2	-207.7	1.18	-0.20	2.64
4,505.0	26.36	269.38	4,386.5	-60.3	-663.3	-211.9	2.46	0.92	5.16
4,530.0	26.43	269.80	4,408.9	-60.4	-674.4	-216.3	0.80	0.28	1.68
4,555.0	26.69	269.90	4,431.3	-60.4	-685.6	-220.8	1.06	1.04	0.40
4,580.0	26.80	269.73	4,453.6	-60.5	-696.8	-225.3	0.54	0.44	-0.68
4,605.0	26.67	269.84	4,475.9	-60.5	-708.1	-229.8	0.56	-0.52	0.44



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**Design:** As Drilled

**Local Co-ordinate Reference:** Well Moats Unit 1H  
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**MD Reference:** Precision 522: 1191' GL + 18' KB @ 1209.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**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)
4,630.0	26.46	269.53	4,498.3	-60.6	-719.2	-234.2	1.01	-0.84	-1.24
4,655.0	25.92	269.06	4,520.7	-60.7	-730.3	-238.5	2.31	-2.16	-1.88
4,680.0	25.17	268.17	4,543.3	-61.0	-741.0	-242.6	3.37	-3.00	-3.56
4,705.0	25.03	267.66	4,565.9	-61.4	-751.6	-246.6	1.03	-0.56	-2.04
4,730.0	25.10	267.56	4,588.6	-61.8	-762.2	-250.4	0.33	0.28	-0.40
4,755.0	25.25	267.56	4,611.2	-62.3	-772.9	-254.3	0.60	0.60	0.00
4,780.0	25.44	267.73	4,633.8	-62.7	-783.5	-258.2	0.81	0.76	0.68
4,805.0	25.80	267.83	4,656.3	-63.1	-794.3	-262.2	1.45	1.44	0.40
4,830.0	25.90	267.85	4,678.8	-63.5	-805.2	-266.2	0.40	0.40	0.08
4,855.0	26.27	268.00	4,701.3	-63.9	-816.2	-270.2	1.50	1.48	0.60
4,880.0	26.53	268.31	4,723.7	-64.3	-827.3	-274.4	1.18	1.04	1.24
4,905.0	26.86	268.36	4,746.0	-64.6	-838.6	-278.6	1.32	1.32	0.20
4,930.0	26.67	268.26	4,768.3	-64.9	-849.8	-282.8	0.78	-0.76	-0.40
4,955.0	26.57	268.03	4,790.7	-65.3	-861.0	-287.0	0.57	-0.40	-0.92
4,980.0	26.70	268.02	4,813.0	-65.7	-872.2	-291.2	0.52	0.52	-0.04
5,005.0	26.48	267.57	4,835.4	-66.1	-883.4	-295.3	1.19	-0.88	-1.80
5,030.0	26.20	267.13	4,857.8	-66.6	-894.5	-299.3	1.37	-1.12	-1.76
5,055.0	26.32	267.10	4,880.2	-67.2	-905.5	-303.2	0.48	0.48	-0.12
5,080.0	26.64	267.17	4,902.6	-67.7	-916.7	-307.2	1.29	1.28	0.28
5,105.0	26.37	267.22	4,925.0	-68.3	-927.8	-311.2	1.08	-1.08	0.20
5,130.0	25.92	267.15	4,947.4	-68.8	-938.8	-315.1	1.80	-1.80	-0.28
5,155.0	25.62	266.78	4,969.9	-69.4	-949.7	-318.9	1.36	-1.20	-1.48
5,180.0	25.81	266.80	4,992.4	-70.0	-960.5	-322.7	0.76	0.76	0.08
5,205.0	26.01	267.28	5,014.9	-70.6	-971.4	-326.6	1.16	0.80	1.92
5,230.0	26.20	267.85	5,037.4	-71.0	-982.4	-330.6	1.26	0.76	2.28
5,255.0	26.40	267.92	5,059.8	-71.5	-993.5	-334.7	0.81	0.80	0.28
5,280.0	26.57	268.10	5,082.2	-71.8	-1,004.6	-338.8	0.75	0.68	0.72
5,305.0	26.94	267.98	5,104.5	-72.2	-1,015.8	-343.0	1.50	1.48	-0.48
5,330.0	27.06	268.02	5,126.8	-72.6	-1,027.2	-347.2	0.49	0.48	0.16
5,355.0	26.65	267.46	5,149.1	-73.1	-1,038.5	-351.4	1.93	-1.64	-2.24
5,380.0	26.29	267.17	5,171.4	-73.6	-1,049.6	-355.4	1.53	-1.44	-1.16
5,405.0	26.33	266.98	5,193.9	-74.2	-1,060.7	-359.3	0.37	0.16	-0.76
5,430.0	26.33	267.26	5,216.3	-74.7	-1,071.7	-363.3	0.50	0.00	1.12
5,455.0	26.43	267.51	5,238.7	-75.2	-1,082.8	-367.3	0.60	0.40	1.00
5,480.0	26.12	267.33	5,261.1	-75.7	-1,093.9	-371.3	1.28	-1.24	-0.72
5,505.0	26.00	267.27	5,283.5	-76.2	-1,104.9	-375.2	0.49	-0.48	-0.24
5,530.0	25.93	267.25	5,306.0	-76.8	-1,115.8	-379.1	0.28	-0.28	-0.08
5,555.0	26.46	267.39	5,328.4	-77.3	-1,126.8	-383.1	2.13	2.12	0.56
5,580.0	26.23	267.77	5,350.8	-77.7	-1,137.9	-387.1	1.14	-0.92	1.52
5,605.0	25.73	267.49	5,373.3	-78.2	-1,148.8	-391.1	2.06	-2.00	-1.12
5,630.0	25.42	267.05	5,395.9	-78.7	-1,159.6	-395.0	1.45	-1.24	-1.76
5,655.0	25.07	266.44	5,418.5	-79.3	-1,170.3	-398.7	1.74	-1.40	-2.44
5,680.0	25.44	266.70	5,441.1	-80.0	-1,180.9	-402.4	1.55	1.48	1.04





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**Survey Calculation Method:** Minimum Curvature  
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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)
5,705.0	25.57	267.34	5,463.7	-80.5	-1,191.7	-406.2	1.22	0.52	2.56
5,730.0	24.92	269.01	5,486.3	-80.9	-1,202.3	-410.2	3.86	-2.60	6.68
5,755.0	24.46	269.45	5,509.0	-81.0	-1,212.8	-414.3	1.98	-1.84	1.76
5,780.0	24.13	269.12	5,531.8	-81.1	-1,223.1	-418.3	1.43	-1.32	-1.32
5,805.0	23.89	268.35	5,554.6	-81.3	-1,233.2	-422.2	1.58	-0.96	-3.08
5,830.0	23.20	267.23	5,577.5	-81.7	-1,243.2	-425.9	3.29	-2.76	-4.48
5,855.0	23.06	266.91	5,600.5	-82.2	-1,253.0	-429.4	0.75	-0.56	-1.28
5,880.0	23.08	267.90	5,623.5	-82.7	-1,262.8	-432.9	1.55	0.08	3.96
5,905.0	23.62	269.17	5,646.5	-82.9	-1,272.7	-436.7	2.95	2.16	5.08
5,930.0	24.23	271.13	5,669.3	-82.9	-1,282.8	-440.8	4.01	2.44	7.84
5,955.0	24.96	272.70	5,692.0	-82.5	-1,293.2	-445.3	3.92	2.92	6.28
5,980.0	25.62	274.72	5,714.7	-81.9	-1,303.9	-450.2	4.35	2.64	8.08
6,005.0	26.32	276.52	5,737.1	-80.8	-1,314.8	-455.6	4.22	2.80	7.20
6,030.0	26.94	277.64	5,759.5	-79.4	-1,325.9	-461.3	3.19	2.48	4.48
6,055.0	27.11	277.61	5,781.7	-77.9	-1,337.2	-467.2	0.68	0.68	-0.12
6,080.0	26.55	277.36	5,804.1	-76.4	-1,348.4	-473.1	2.29	-2.24	-1.00
6,105.0	26.14	276.31	5,826.5	-75.1	-1,359.4	-478.7	2.48	-1.64	-4.20
6,116.0	25.91	275.88	5,836.3	-74.6	-1,364.2	-481.1	2.70	-2.09	-3.91
<b>Last SDI Gyro @ 6116 MD</b>									
6,209.0	25.97	271.39	5,920.0	-72.0	-1,404.7	-499.8	2.11	0.06	-4.83
<b>First SDI MWD @ 6209 MD</b>									
6,240.0	25.36	269.77	5,947.9	-71.9	-1,418.2	-505.4	3.00	-1.97	-5.23
6,271.0	25.14	264.84	5,976.0	-72.5	-1,431.4	-510.1	6.82	-0.71	-15.90
6,302.0	25.36	255.97	6,004.0	-74.7	-1,444.4	-513.3	12.22	0.71	-28.61
6,333.0	25.35	245.66	6,032.0	-79.0	-1,456.9	-514.4	14.23	-0.03	-33.26
6,364.0	25.82	241.06	6,060.0	-85.0	-1,468.8	-513.7	6.58	1.52	-14.84
6,394.0	26.60	233.67	6,086.9	-92.2	-1,479.9	-511.7	11.18	2.60	-24.63
6,425.0	28.08	227.18	6,114.5	-101.3	-1,490.9	-507.8	10.73	4.77	-20.94
6,456.0	28.81	220.84	6,141.7	-111.9	-1,501.1	-502.2	10.02	2.35	-20.45
6,487.0	28.61	218.25	6,168.9	-123.4	-1,510.6	-495.5	4.06	-0.65	-8.35
6,518.0	27.93	219.59	6,196.2	-134.8	-1,519.8	-488.7	3.00	-2.19	4.32
6,549.0	27.08	218.09	6,223.7	-145.9	-1,528.8	-482.2	3.54	-2.74	-4.84
6,560.0	27.13	217.58	6,233.5	-149.9	-1,531.9	-479.8	2.18	0.45	-4.68
<b>Sycamore @ 6560 MD</b>									
6,579.0	27.22	216.69	6,250.4	-156.8	-1,537.1	-475.5	2.18	0.48	-4.66
6,610.0	29.09	210.30	6,277.8	-169.0	-1,545.2	-467.6	11.44	6.03	-20.61
6,641.0	31.46	206.76	6,304.5	-182.7	-1,552.6	-458.1	9.57	7.65	-11.42
6,672.0	34.31	204.65	6,330.6	-197.9	-1,559.9	-447.1	9.91	9.19	-6.81
6,703.0	36.83	203.35	6,355.8	-214.4	-1,567.2	-435.0	8.49	8.13	-4.19
6,733.0	39.87	203.30	6,379.3	-231.5	-1,574.6	-422.3	10.13	10.13	-0.17
6,747.0	41.63	203.14	6,389.9	-239.9	-1,578.2	-416.1	12.60	12.58	-1.11
<b>Middlesex @ 6747 MD</b>									
6,764.0	43.77	202.97	6,402.4	-250.5	-1,582.7	-408.2	12.60	12.58	-1.03
6,795.0	46.42	199.28	6,424.3	-270.9	-1,590.6	-392.6	12.00	8.55	-11.90



**Company:** Antero  
**Project:** Ritchie County WV  
**Site:** Edwin Pad: Hornet/Miracle/Moats/Myrtle  
**Well:** Moats Unit 1H  
**Wellbore:** Original Wellpath  
**Design:** As Drilled

**Local Co-ordinate Reference:** Well Moats Unit 1H  
**TVD Reference:** Precision 522: 1191' GL + 18' KB @ 1209.0usft  
**MD Reference:** Precision 522: 1191' GL + 18' KB @ 1209.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**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)	
6,826.0	48.50	194.00	6,445.2	-292.8	-1,597.1	-375.2	14.23	6.71	-17.03	
6,857.0	50.02	189.00	6,465.5	-315.8	-1,601.8	-356.0	13.16	4.90	-16.13	
6,888.0	53.15	186.18	6,484.7	-339.9	-1,605.0	-335.3	12.36	10.10	-9.10	
6,910.0	55.76	184.63	6,497.5	-357.7	-1,606.7	-319.7	13.16	11.85	-7.05	
<b>Burkett @ 6910 MD</b>										
6,918.0	56.71	184.09	6,502.0	-364.3	-1,607.2	-313.8	13.16	11.91	-6.75	
6,949.0	61.25	182.45	6,518.0	-390.9	-1,608.7	-290.1	15.33	14.65	-5.29	
6,964.0	63.39	182.11	6,524.9	-404.1	-1,609.2	-278.2	14.42	14.29	-2.24	
<b>Tully @ 6964 MD</b>										
6,980.0	65.68	181.77	6,531.8	-418.6	-1,609.7	-265.2	14.42	14.29	-2.15	
7,011.0	70.53	182.73	6,543.4	-447.3	-1,610.8	-239.3	15.91	15.65	3.10	
7,024.0	73.10	183.52	6,547.4	-459.6	-1,611.5	-228.3	20.61	19.79	6.08	
<b>MRCL_HOT @ 7024 MD</b>										
7,036.0	75.48	184.23	6,550.7	-471.2	-1,612.3	-218.1	20.61	19.81	5.92	
7,067.0	82.36	185.31	6,556.6	-501.5	-1,614.8	-191.4	22.45	22.19	3.48	
7,098.0	84.05	183.53	6,560.3	-532.1	-1,617.2	-164.2	7.89	5.45	-5.74	
7,129.0	84.05	179.92	6,563.5	-563.0	-1,618.1	-136.4	11.58	0.00	-11.65	
7,160.0	84.86	176.79	6,566.5	-593.8	-1,617.2	-107.8	10.38	2.61	-10.10	
7,191.0	88.02	175.51	6,568.4	-624.7	-1,615.2	-78.7	10.99	10.19	-4.13	
7,221.0	88.96	172.14	6,569.2	-654.5	-1,611.9	-50.2	11.66	3.13	-11.23	
7,314.0	90.24	167.12	6,569.9	-745.9	-1,595.2	40.3	5.57	1.38	-5.40	
7,407.0	88.56	161.92	6,570.8	-835.5	-1,570.4	132.3	5.88	-1.81	-5.59	
7,499.0	89.23	160.73	6,572.6	-922.6	-1,540.9	223.9	1.48	0.73	-1.29	
7,592.0	89.06	159.27	6,574.0	-1,010.0	-1,509.1	316.7	1.58	-0.18	-1.57	
7,684.0	88.79	158.04	6,575.7	-1,095.7	-1,475.6	408.6	1.37	-0.29	-1.34	
7,777.0	89.23	157.87	6,577.3	-1,181.9	-1,440.7	501.5	0.51	0.47	-0.18	
7,869.0	88.55	155.69	6,579.1	-1,266.4	-1,404.5	593.5	2.48	-0.74	-2.37	
7,962.0	89.27	156.21	6,580.9	-1,351.3	-1,366.6	686.5	0.95	0.77	0.56	
8,054.0	88.60	152.73	6,582.6	-1,434.3	-1,327.0	778.4	3.85	-0.73	-3.78	
8,147.0	88.94	149.39	6,584.6	-1,515.7	-1,282.0	871.0	3.61	0.37	-3.59	
8,240.0	90.95	147.03	6,584.7	-1,594.7	-1,233.0	963.1	3.33	2.16	-2.54	
8,332.0	89.61	144.79	6,584.2	-1,670.9	-1,181.4	1,053.6	2.84	-1.46	-2.43	
8,425.0	89.28	143.82	6,585.1	-1,746.4	-1,127.2	1,144.6	1.10	-0.35	-1.04	
8,517.0	87.56	143.01	6,587.7	-1,820.3	-1,072.4	1,234.2	2.07	-1.87	-0.88	
8,610.0	88.54	142.33	6,590.8	-1,894.2	-1,016.0	1,324.6	1.28	1.05	-0.73	
8,702.0	88.77	141.94	6,593.0	-1,966.8	-959.5	1,413.8	0.49	0.25	-0.42	
8,795.0	88.80	147.34	6,595.0	-2,042.6	-905.7	1,504.8	5.81	0.03	5.81	
8,887.0	88.30	152.94	6,597.3	-2,122.3	-860.0	1,596.2	6.11	-0.54	6.09	
8,980.0	88.23	155.54	6,600.1	-2,206.0	-819.6	1,689.1	2.80	-0.08	2.80	
9,072.0	88.34	155.46	6,602.9	-2,289.7	-781.4	1,781.1	0.15	0.12	-0.09	
9,164.0	88.27	155.49	6,605.6	-2,373.4	-743.3	1,873.0	0.08	-0.08	0.03	
9,257.0	88.34	155.35	6,608.3	-2,457.9	-704.6	1,966.0	0.17	0.08	-0.15	
9,349.0	89.08	155.66	6,610.4	-2,541.6	-666.5	2,057.9	0.87	0.80	0.34	
9,442.0	88.74	154.86	6,612.2	-2,626.0	-627.6	2,150.9	0.93	-0.37	-0.86	



**Company:** Antero  
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**Design:** As Drilled

**Local Co-ordinate Reference:** Well Moats Unit 1H  
**TVD Reference:** Precision 522: 1191' GL + 18' KB @ 1209.0usft  
**MD Reference:** Precision 522: 1191' GL + 18' KB @ 1209.0usft  
**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**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)
9,534.0	88.37	153.65	6,614.5	-2,708.9	-587.6	2,242.8	1.37	-0.40	-1.32
9,627.0	88.51	154.20	6,617.0	-2,792.4	-546.7	2,335.7	0.61	0.15	0.59
9,719.0	89.99	155.94	6,618.2	-2,875.8	-508.0	2,427.7	2.48	1.61	1.89
9,812.0	89.32	154.93	6,618.8	-2,960.4	-469.3	2,520.6	1.30	-0.72	-1.09
9,904.0	88.68	156.13	6,620.4	-3,044.1	-431.2	2,612.6	1.48	-0.70	-1.30
9,997.0	89.65	156.91	6,621.8	-3,129.4	-394.2	2,705.6	1.34	1.04	0.84
10,090.0	89.45	156.90	6,622.5	-3,214.9	-357.7	2,798.6	0.22	-0.22	-0.01
10,182.0	88.85	155.86	6,623.8	-3,299.2	-320.8	2,890.6	1.30	-0.65	-1.13
10,275.0	89.55	156.22	6,625.1	-3,384.2	-283.1	2,983.6	0.85	0.75	0.39
10,367.0	89.62	156.60	6,625.8	-3,468.5	-246.2	3,075.6	0.42	0.08	0.41
10,460.0	89.25	155.97	6,626.7	-3,553.6	-208.8	3,168.6	0.79	-0.40	-0.68
10,553.0	88.92	155.49	6,628.2	-3,638.4	-170.6	3,261.6	0.63	-0.35	-0.52
10,645.0	89.32	155.15	6,629.6	-3,722.0	-132.2	3,353.5	0.57	0.43	-0.37
10,738.0	90.06	156.88	6,630.1	-3,807.0	-94.4	3,446.5	2.02	0.80	1.86
10,830.0	87.74	157.04	6,631.9	-3,891.6	-58.4	3,538.5	2.53	-2.52	0.17
10,923.0	88.51	157.28	6,634.9	-3,977.3	-22.3	3,631.4	0.87	0.83	0.26
11,015.0	88.68	156.99	6,637.2	-4,062.0	13.4	3,723.4	0.37	0.18	-0.32
11,108.0	89.42	157.67	6,638.7	-4,147.8	49.2	3,816.4	1.08	0.80	0.73
11,200.0	89.42	157.52	6,639.7	-4,232.9	84.3	3,908.3	0.16	0.00	-0.16
11,293.0	89.96	158.27	6,640.2	-4,319.0	119.3	4,001.3	0.99	0.58	0.81
11,385.0	89.86	157.60	6,640.3	-4,404.3	153.9	4,093.3	0.74	-0.11	-0.73
11,478.0	88.31	156.09	6,641.8	-4,489.8	190.4	4,186.2	2.33	-1.67	-1.62
11,571.0	88.88	154.90	6,644.1	-4,574.4	229.0	4,279.2	1.42	0.61	-1.28
11,663.0	90.19	154.72	6,644.8	-4,657.6	268.1	4,371.2	1.44	1.42	-0.20
11,756.0	90.23	154.60	6,644.5	-4,741.7	307.9	4,464.1	0.14	0.04	-0.13
11,848.0	89.89	154.07	6,644.4	-4,824.6	347.8	4,556.1	0.68	-0.37	-0.58
11,941.0	89.66	153.61	6,644.8	-4,908.1	388.8	4,649.0	0.55	-0.25	-0.49
12,033.0	89.99	154.91	6,645.0	-4,990.9	428.7	4,740.9	1.46	0.36	1.41
12,126.0	90.53	156.23	6,644.6	-5,075.6	467.2	4,833.9	1.53	0.58	1.42
12,219.0	89.46	155.93	6,644.6	-5,160.6	504.9	4,926.9	1.19	-1.15	-0.32
12,311.0	89.52	154.88	6,645.4	-5,244.3	543.2	5,018.9	1.14	0.07	-1.14
12,404.0	89.12	156.57	6,646.5	-5,329.0	581.4	5,111.9	1.87	-0.43	1.82
12,497.0	90.13	157.05	6,647.2	-5,414.5	618.1	5,204.9	1.20	1.09	0.52
12,589.0	90.29	156.80	6,646.8	-5,499.1	654.1	5,296.9	0.32	0.17	-0.27
12,682.0	90.63	156.49	6,646.1	-5,584.5	691.0	5,389.9	0.49	0.37	-0.33
12,775.0	89.66	156.60	6,645.8	-5,669.8	728.0	5,482.9	1.05	-1.04	0.12
12,867.0	89.79	156.31	6,646.3	-5,754.2	764.7	5,574.9	0.35	0.14	-0.32
12,960.0	90.33	156.20	6,646.2	-5,839.3	802.2	5,667.9	0.59	0.58	-0.12
13,052.0	89.49	156.78	6,646.3	-5,923.7	838.9	5,759.9	1.11	-0.91	0.63
13,145.0	89.69	156.78	6,647.0	-6,009.1	875.5	5,852.8	0.22	0.22	0.00
13,237.0	90.29	156.70	6,647.0	-6,093.6	911.9	5,944.8	0.66	0.65	-0.09
13,330.0	89.62	155.86	6,647.1	-6,178.8	949.3	6,037.8	1.16	-0.72	-0.90
13,422.0	90.06	155.21	6,647.3	-6,262.5	987.4	6,129.8	0.85	0.48	-0.71
13,515.0	90.49	155.30	6,646.9	-6,347.0	1,026.3	6,222.8	0.47	0.46	0.10



**Company:** Antero  
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**Local Co-ordinate Reference:** Well Moats Unit 1H  
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**North Reference:** Grid  
**Survey Calculation Method:** Minimum Curvature  
**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)
13,548.0	90.73	155.12	6,646.5	-6,377.0	1,040.2	6,255.8	0.91	0.73	-0.55
<b>Last SDI MWD @ 13548 MD</b>									
13,615.0	90.73	155.12	6,645.7	-6,437.7	1,068.3	6,322.8	0.00	0.00	0.00
<b>Projection To Bit @ 13615 MD / 6645 TVD</b>									

**Formations**

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,560.0	6,233.5	Sycamore @ 6560 MD		0.00	
6,747.0	6,389.9	Middlesex @ 6747 MD		0.00	
6,910.0	6,497.5	Burkett @ 6910 MD		0.00	
6,964.0	6,524.9	Tully @ 6964 MD		0.00	
7,024.0	6,547.4	MRCL_HOT @ 7024 MD		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	-0.3	First SDI Gyro @ 105 MD
6,116.0	5,836.3	-74.6	-1,364.2	Last SDI Gyro @ 6116 MD
6,209.0	5,920.0	-72.0	-1,404.7	First SDI MWD @ 6209 MD
13,548.0	6,646.5	-6,377.0	1,040.2	Last SDI MWD @ 13548 MD
13,615.0	6,645.7	-6,437.7	1,068.3	Projection To Bit @ 13615 MD / 6645 TVD

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