



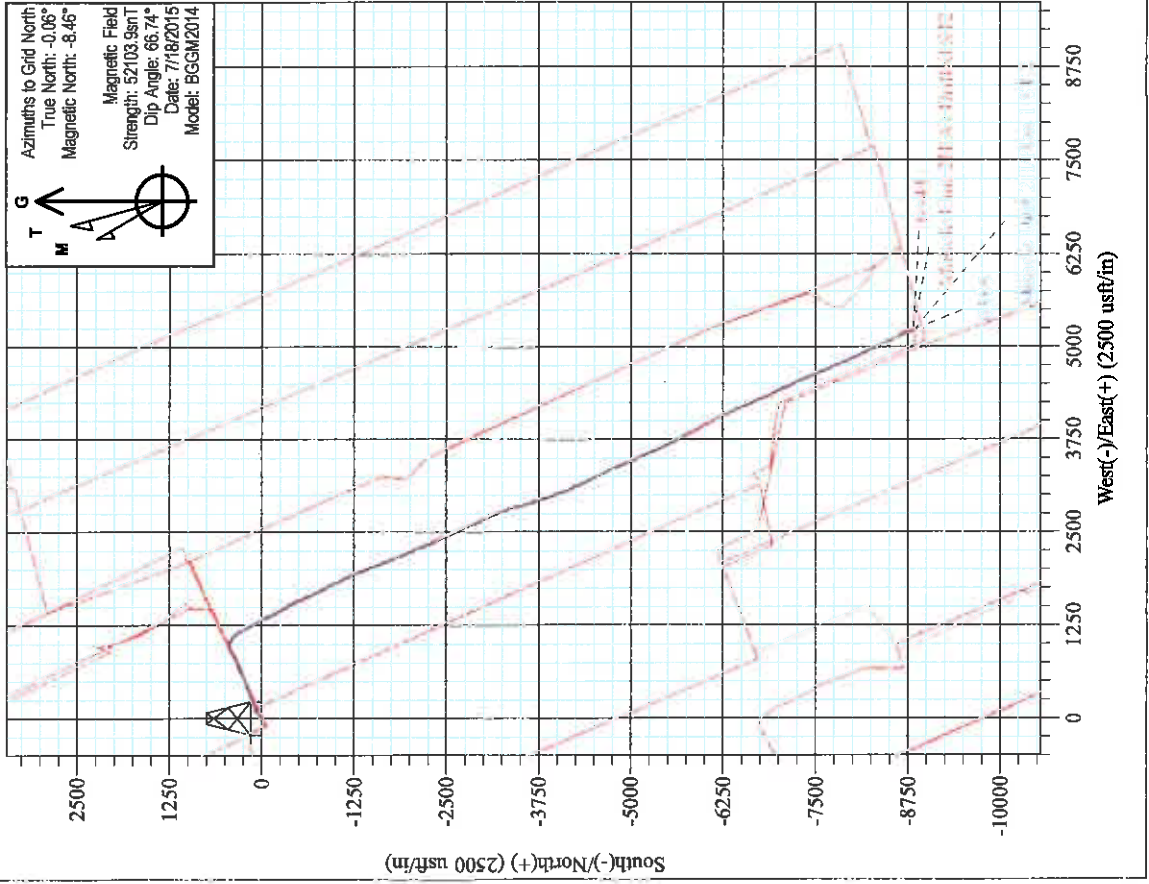
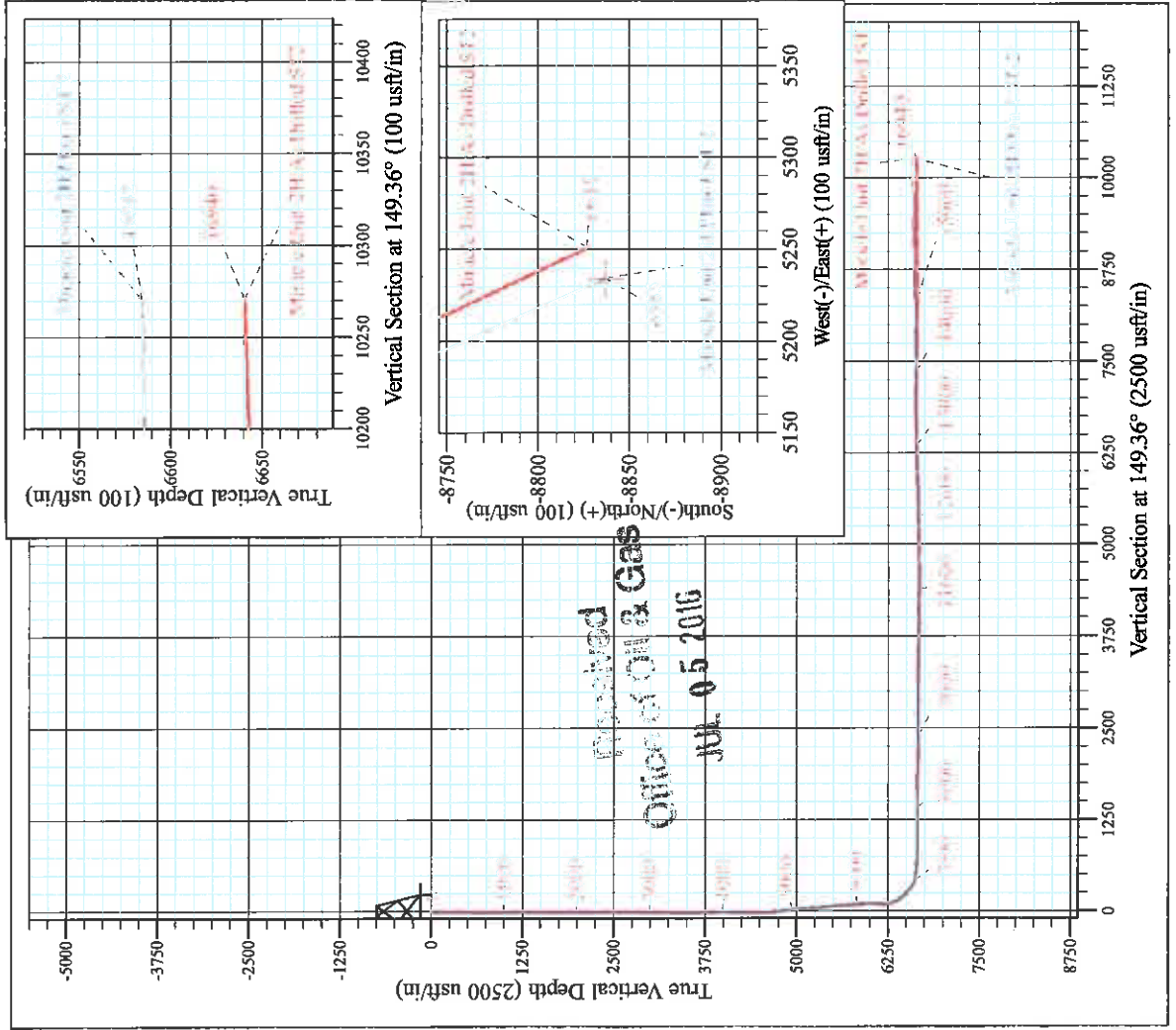
Edwin Pad: Hornet/Miracle/Moats/Myrtle
 Miracle Unit 2H
 Plan 1 ST 2
 Precision 522: GL 1191 + KB 18 @ 1209.0usft
 Ritchie County WV

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: Miracle Unit 2H SHL

+N/-S	+E/-W	Northing	Latitude	Longitude
0.0	0.0	14245855.60	39° 13' 49.590 N	80° 54' 10.744 W
1667889.24				



Miracle Unit 2H
 Approx. **BHL**
 39° 12' 22.251 N 80° 53' 4.129 W

Shane Rhodes
 12:18, August 10 2015
 Scientific Drilling International
 124 Visa Drive
 Charleroi, PA 15022



Antero

Ritchie County WV

Edwin Pad: Hornet/Miracle/Moats/Myrtle

Miracle Unit 2H

ST 2

Design: As Drilled ST2

Standard Survey Report

10 August, 2015

Received
Office of Oil & Gas
JUL 05 2016





Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 522 GL 1191' + KB 18' @ 1209.0usft
Site:	Edwin Pad Hornet/Miracle/Moats/Myrtle	MD Reference:	Precision 522 GL 1191' + KB 18' @ 1209.0usft
Well:	Miracle Unit 2H	North Reference:	Grid
Wellbore:	ST 2	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST2	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	Edwin Pad Hornet/Miracle/Moats/Myrtle				
Site Position:		Northing:	14,245,885.63 usft	Latitude:	39° 13' 49.887 N
From:	Map	Easting:	1,667,891.73 usft	Longitude:	80° 54' 10.711 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.06 °

Well	Miracle Unit 2H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,245,855.60 usft	Latitude:	39° 13' 49.590 N
	+E/-W	0.0 usft	Easting:	1,667,889.23 usft	Longitude:	80° 54' 10.744 W
Position Uncertainty		2.0 usft	Wellhead Elevation:	1,209.0 usft	Ground Level:	1,191.0 usft

Wellbore	ST 2				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	7/18/2015	-8.40	66.74	52,104

Design	As Drilled ST2				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	10,889.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	149.36	

Survey Program	Date	8/10/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
105.0	6,030.0	Survey #6 Final Gyro (Original Wellpath)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
6,060.0	7,110.0	Survey #7 Crescent MWD Surveys (Origin	Other MWD	MWD Other Company	
7,151.0	10,889.0	Survey #1 Crescent MWD Surveys (ST 1)	Other MWD	MWD Other Company	
10,945.0	16,940.0	Survey #1 ST2 (ST 2)	SDI MWD	Scientific Drilling Intl. MWD Standard ver. 1.0.1 & Gas	

Survey	JUL 05 2016									
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	0.60	294.06	105.0	0.2	-0.5	-0.4	0.57	0.57	0.00	
130.0	0.73	303.00	130.0	0.4	-0.8	-0.7	0.66	0.52	35.76	
155.0	0.28	282.81	155.0	0.5	-0.9	-0.9	1.91	-1.80	-81.56	
180.0	0.20	285.63	180.0	0.5	-1.0	-1.0	0.32	-0.32	12.08	
205.0	0.15	306.27	205.0	0.5	-1.1	-1.0	0.32	-0.20	82.56	
230.0	0.10	303.73	230.0	0.6	-1.2	-1.1	0.20	-0.20	-10.16	
255.0	0.09	322.98	255.0	0.6	-1.2	-1.1	0.13	-0.04	77.00	



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 522 GL 1191' + KB 18' @ 1209.0usft
Site:	Edwin Pad Hornet/Miracle/Moats/Myrtle	MD Reference:	Precision 522 GL 1191' + KB 18' @ 1209.0usft
Well:	Miracle Unit 2H	North Reference:	Grid
Wellbore:	ST 2	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST2	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)	
280.0	0.15	4.11	280.0	0.6	-1.2	-1.2	0.41	0.24	164.52	
305.0	0.29	334.58	305.0	0.7	-1.2	-1.2	0.70	0.56	-118.12	
330.0	0.15	329.19	330.0	0.8	-1.3	-1.3	0.57	-0.56	-21.56	
355.0	0.17	313.40	355.0	0.9	-1.3	-1.4	0.19	0.08	-63.16	
380.0	0.18	338.84	380.0	0.9	-1.4	-1.5	0.31	0.04	101.76	
405.0	0.20	328.08	405.0	1.0	-1.4	-1.6	0.16	0.08	-43.04	
430.0	0.21	314.99	430.0	1.1	-1.4	-1.7	0.19	0.04	-52.36	
455.0	0.09	27.39	455.0	1.1	-1.5	-1.7	0.81	-0.48	289.60	
480.0	0.63	36.23	480.0	1.2	-1.4	-1.8	2.16	2.16	35.36	
505.0	1.28	31.00	505.0	1.6	-1.2	-2.0	2.62	2.60	-20.92	
530.0	2.23	41.05	530.0	2.2	-0.7	-2.2	3.98	3.80	40.20	
555.0	2.99	43.86	555.0	3.0	0.1	-2.6	3.08	3.04	11.24	
580.0	3.83	48.46	579.9	4.1	1.2	-2.9	3.53	3.36	18.40	
605.0	4.21	51.66	604.8	5.2	2.5	-3.2	1.76	1.52	12.80	
630.0	4.39	58.29	629.8	6.3	4.0	-3.4	1.56	0.72	18.52	
655.0	4.45	61.38	654.7	7.3	5.7	-3.4	1.59	0.24	20.36	
680.0	4.50	61.15	679.6	8.2	7.4	-3.3	0.21	0.20	-0.92	
705.0	4.47	61.14	704.5	9.2	9.1	-3.2	0.12	-0.12	-0.04	
730.0	4.48	61.45	729.5	10.1	10.8	-3.2	0.10	0.04	1.24	
755.0	4.38	57.75	754.4	11.1	12.5	-3.2	1.21	-0.40	-14.80	
780.0	4.48	54.18	779.3	12.2	14.1	-3.3	1.17	0.40	-14.28	
805.0	4.45	50.49	804.2	13.3	15.6	-3.5	1.16	-0.12	-14.76	
830.0	4.43	50.57	829.2	14.6	17.1	-3.8	0.08	-0.08	0.32	
855.0	4.41	50.12	854.1	15.8	18.6	-4.1	0.16	-0.08	-1.80	
880.0	4.48	51.32	879.0	17.0	20.1	-4.4	0.47	0.28	-4.80	
905.0	4.51	50.76	903.9	18.3	21.6	-4.7	0.21	0.12	-2.24	
930.0	4.60	50.25	928.9	19.5	23.1	-5.0	0.39	0.36	-2.04	
955.0	4.54	50.66	953.8	20.8	24.7	-5.3	0.27	-0.24	1.64	
980.0	3.96	51.21	978.7	22.0	26.1	-5.6	2.33	-2.32	2.20	
1,005.0	2.99	54.68	1,003.7	22.9	27.3	-5.8	3.97	-3.88	13.88	
1,030.0	2.49	57.42	1,028.6	23.5	28.3	-5.8	2.07	-2.00	10.96	
1,055.0	1.77	56.91	1,053.6	24.0	29.1	-5.9	2.88	-2.88	-2.04	
1,080.0	1.39	59.80	1,078.6	24.4	29.7	-5.9	1.55	-1.52	11.56	
1,105.0	1.30	59.86	1,103.6	24.7	30.2	-5.9	0.36	-0.36	0.24	
1,130.0	1.25	63.45	1,128.6	25.0	30.7	-5.9	0.38	-0.20	14.36	
1,155.0	1.15	62.21	1,153.6	25.2	31.1	-5.8	0.41	-0.40	-1.96	
1,180.0	1.02	66.44	1,178.6	25.4	31.6	-5.8	0.61	-0.52	16.92	
1,205.0	0.96	72.27	1,203.6	25.6	32.0	-5.7	0.47	-0.24	23.32	
1,230.0	0.84	67.13	1,228.6	25.7	32.3	-5.6	0.58	-0.48	-20.56	
1,255.0	0.84	73.49	1,253.6	25.8	32.7	-5.6	0.37	0.00	25.44	
1,280.0	0.81	76.23	1,278.6	25.9	33.0	-5.5	0.20	-0.12	10.96	
1,305.0	0.87	69.99	1,303.6	26.0	33.4	-5.4	0.44	0.24	-24.96	
1,330.0	0.88	70.41	1,328.6	26.2	33.7	-5.3	0.05	0.04	1.68	

Received
Office of Oil & Gas
JUL 15 2016



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 522. GL 1191' + KB 18' @ 1209.0usft
Site:	Edwin Pad. Hornet/Miracle/Moats/Myrtle	MD Reference:	Precision 522 GL 1191' + KB 18' @ 1209.0usft
Well:	Miracle Unit 2H	North Reference:	Grid
Wellbore:	ST 2	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST2	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)
1,355.0	0.84	62.88	1,353.6	26.3	34.1	-5.3	0.48	-0.16	-30.12
1,380.0	0.69	51.24	1,378.6	26.5	34.4	-5.3	0.86	-0.60	-46.56
1,405.0	0.65	56.43	1,403.6	26.7	34.8	-5.3	0.29	-0.16	20.76
1,430.0	0.55	54.45	1,428.6	26.8	34.8	-5.3	0.41	-0.40	-7.92
1,455.0	0.44	46.73	1,453.6	26.9	35.0	-5.4	0.51	-0.44	-30.88
1,480.0	0.36	39.13	1,478.6	27.1	35.1	-5.4	0.38	-0.32	-30.40
1,505.0	0.37	51.48	1,503.6	27.2	35.2	-5.4	0.32	0.04	49.40
1,530.0	0.34	63.03	1,528.6	27.3	35.3	-5.4	0.31	-0.12	46.20
1,555.0	0.25	75.60	1,553.6	27.3	35.5	-5.4	0.44	-0.36	50.28
1,580.0	0.28	65.28	1,578.6	27.3	35.6	-5.4	0.23	0.12	-41.28
1,605.0	0.29	65.28	1,603.6	27.4	35.7	-5.4	0.04	0.04	0.00
1,630.0	0.28	62.18	1,628.6	27.5	35.8	-5.4	0.13	-0.12	-12.40
1,655.0	0.34	64.66	1,653.6	27.5	35.9	-5.4	0.32	0.32	9.92
1,680.0	0.32	44.51	1,678.6	27.6	36.0	-5.4	0.47	-0.08	-80.60
1,705.0	0.34	27.20	1,703.6	27.7	36.1	-5.4	0.41	0.08	-69.24
1,730.0	0.30	15.60	1,728.6	27.8	36.1	-5.5	0.30	-0.16	-46.40
1,755.0	0.37	18.96	1,753.6	28.0	36.2	-5.6	0.29	0.28	13.44
1,780.0	0.30	19.66	1,778.6	28.1	36.2	-5.7	0.28	-0.28	2.80
1,805.0	0.36	13.01	1,803.6	28.3	36.3	-5.8	0.28	0.24	-26.60
1,830.0	0.33	12.53	1,828.6	28.4	36.3	-5.9	0.12	-0.12	-1.92
1,855.0	0.29	1.17	1,853.6	28.5	36.3	-6.0	0.29	-0.16	-45.44
1,880.0	0.23	21.76	1,878.6	28.6	36.4	-6.1	0.44	-0.24	62.36
1,905.0	0.23	357.83	1,903.6	28.7	36.4	-6.2	0.38	0.00	-95.72
1,930.0	0.23	7.39	1,928.6	28.8	36.4	-6.3	0.15	0.00	38.24
1,955.0	0.22	4.29	1,953.6	28.9	36.4	-6.4	0.06	-0.04	-12.40
1,980.0	0.26	342.72	1,978.6	29.0	36.4	-6.4	0.39	0.16	-86.28
2,005.0	0.21	4.13	2,003.6	29.1	36.4	-6.5	0.40	-0.20	85.64
2,030.0	0.12	323.74	2,028.6	29.2	36.3	-6.6	0.57	-0.36	-161.56
2,055.0	0.15	3.39	2,053.6	29.3	36.3	-6.7	0.38	0.12	158.60
2,080.0	0.08	2.77	2,078.6	29.3	36.3	-6.7	0.28	-0.28	-2.48
2,105.0	0.12	43.29	2,103.6	29.3	36.4	-6.7	0.32	0.16	162.08
2,130.0	0.08	358.60	2,128.6	29.4	36.4	-6.7	0.34	-0.16	-178.76
2,155.0	0.05	262.39	2,153.6	29.4	36.4	-6.8	0.40	-0.12	-384.84
2,180.0	0.02	252.08	2,178.6	29.4	36.3	-6.8	0.12	-0.12	-41.24
2,205.0	0.13	282.97	2,203.6	29.4	36.3	-6.8	0.45	0.44	123.56
2,230.0	0.08	179.40	2,228.6	29.4	36.3	-6.8	0.62	-0.28	-414.28
2,255.0	0.09	84.84	2,253.6	29.4	36.3	-6.8	0.45	0.12	-378.24
2,280.0	0.07	67.53	2,278.6	29.4	36.3	-6.8	0.12	-0.08	-69.24
2,305.0	0.04	80.29	2,303.6	29.4	36.4	-6.8	0.13	-0.12	51.04
2,330.0	0.07	114.77	2,328.6	29.4	36.4	-6.7	0.17	0.12	137.92
2,355.0	0.13	25.24	2,353.6	29.4	36.4	-6.7	0.59	0.24	-358.12
2,380.0	0.29	29.18	2,378.6	29.5	36.5	-6.8	0.64	0.64	15.76
2,405.0	0.19	351.70	2,403.6	29.6	36.5	-6.9	0.72	-0.40	-149.92
2,430.0	0.20	341.12	2,428.6	29.7	36.5	-6.9	0.15	0.04	-42.32



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 522: GL 1191' + KB 18' @ 1209.0usft
Site:	Edwin Pad: Hornet/Miracle/Moats/Myrtle	MD Reference:	Precision 522: GL 1191' + KB 18' @ 1209.0usft
Well:	Miracle Unit 2H	North Reference:	Grid
Wellbore:	ST 2	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST2	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)	
2,455.0	0.07	356.59	2,453.6	29.7	36.4	-7.0	0.54	-0.52	61.88	
2,480.0	0.11	336.06	2,478.6	29.8	36.4	-7.0	0.20	0.16	-82.12	
2,505.0	0.09	329.26	2,503.6	29.8	36.4	-7.1	0.09	-0.08	-27.20	
2,530.0	0.13	316.49	2,528.6	29.8	36.4	-7.1	0.19	0.16	-51.08	
2,555.0	0.06	310.74	2,553.6	29.9	36.4	-7.2	0.26	-0.28	-23.00	
2,580.0	0.22	296.43	2,578.6	29.9	36.3	-7.2	0.65	0.64	-57.24	
2,605.0	0.13	275.65	2,603.6	29.9	36.2	-7.3	0.43	-0.36	-83.12	
2,630.0	0.23	282.22	2,628.6	29.9	36.1	-7.3	0.41	0.40	26.28	
2,655.0	0.24	272.74	2,653.6	29.9	36.0	-7.4	0.16	0.04	-37.92	
2,680.0	0.30	277.28	2,678.6	30.0	35.9	-7.5	0.25	0.24	18.16	
2,705.0	0.41	281.63	2,703.6	30.0	35.8	-7.6	0.45	0.44	17.40	
2,730.0	0.18	268.66	2,728.6	30.0	35.7	-7.6	0.95	-0.92	-51.88	
2,755.0	0.36	275.33	2,753.6	30.0	35.5	-7.7	0.73	0.72	26.68	
2,780.0	0.32	284.07	2,778.6	30.0	35.4	-7.8	0.26	-0.16	34.96	
2,805.0	0.30	275.94	2,803.6	30.1	35.3	-7.9	0.19	-0.08	-32.52	
2,830.0	0.26	265.14	2,828.6	30.1	35.1	-8.0	0.26	-0.16	-43.20	
2,855.0	0.36	282.11	2,853.6	30.1	35.0	-8.0	0.54	0.40	67.88	
2,880.0	0.33	284.65	2,878.6	30.1	34.9	-8.1	0.13	-0.12	10.16	
2,905.0	0.23	263.17	2,903.6	30.1	34.7	-8.2	0.57	-0.40	-85.92	
2,930.0	0.36	273.12	2,928.6	30.1	34.6	-8.3	0.56	0.52	39.80	
2,955.0	0.24	276.84	2,953.6	30.1	34.5	-8.4	0.49	-0.48	14.88	
2,980.0	0.26	275.16	2,978.6	30.1	34.4	-8.4	0.09	0.08	-6.72	
3,005.0	0.26	279.68	3,003.6	30.2	34.3	-8.5	0.08	0.00	18.08	
3,030.0	0.29	281.94	3,028.6	30.2	34.1	-8.6	0.13	0.12	9.04	
3,055.0	0.43	287.36	3,053.6	30.2	34.0	-8.7	0.58	0.56	21.68	
3,080.0	0.38	286.19	3,078.6	30.3	33.8	-8.8	0.20	-0.20	-4.68	
3,105.0	0.26	289.81	3,103.6	30.3	33.7	-8.9	0.49	-0.48	14.48	
3,130.0	0.46	290.61	3,128.6	30.4	33.5	-9.0	0.80	0.80	3.20	
3,155.0	0.24	278.62	3,153.5	30.4	33.4	-9.1	0.92	-0.88	-47.96	
3,180.0	0.29	288.52	3,178.5	30.4	33.3	-9.2	0.27	0.20	39.60	
3,205.0	0.38	290.99	3,203.5	30.5	33.1	-9.3	0.36	0.36	9.88	
3,230.0	0.31	284.80	3,228.5	30.5	33.0	-9.5	0.32	-0.28	-24.76	
3,255.0	0.30	277.36	3,253.5	30.6	32.9	-9.5	0.16	-0.04	-29.76	
3,280.0	0.53	290.34	3,278.5	30.6	32.7	-9.7	0.99	0.92	51.92	
3,305.0	0.56	289.32	3,303.5	30.7	32.5	-9.9	0.13	0.12	-4.08	
3,330.0	0.43	294.57	3,328.5	30.8	32.3	-10.0	0.55	-0.52	21.00	
3,355.0	0.48	282.24	3,353.5	30.8	32.1	-10.2	0.44	0.20	-49.32	
3,380.0	0.61	285.87	3,378.5	30.9	31.9	-10.3	0.54	0.52	14.52	
3,405.0	0.49	290.16	3,403.5	31.0	31.6	-10.5	0.51	-0.48	17.16	
3,430.0	0.44	281.93	3,428.5	31.0	31.4	-10.7	0.21	-0.20	7.08	
3,455.0	0.52	293.31	3,453.5	31.1	31.2	-10.8	0.32	0.32	5.52	
3,480.0	0.53	273.24	3,478.5	31.2	31.0	-11.0	0.73	0.04	-80.28	
3,505.0	0.57	288.30	3,503.5	31.2	30.8	-11.2	0.60	0.16	60.24	



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 522 GL 1191' + KB 18' @ 1209.0usft
Site:	Edwin Pad Hornet/Miracle/Moats/Myrtle	MD Reference:	Precision 522 GL 1191' + KB 18' @ 1209.0usft
Well:	Miracle Unit 2H	North Reference:	Grid
Wellbore:	ST 2	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST2	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)
3,530.0	0.55	288.10	3,528.5	31.3	30.6	-11.3	0.08	-0.08	-0.80
3,555.0	0.51	301.54	3,553.5	31.4	30.3	-11.5	0.52	-0.16	53.76
3,580.0	0.59	302.15	3,578.5	31.5	30.1	-11.7	0.32	0.32	2.44
3,605.0	0.78	299.32	3,603.5	31.7	29.9	-12.0	0.77	0.76	-11.32
3,630.0	0.71	298.46	3,628.5	31.8	29.6	-12.3	0.28	-0.28	-3.44
3,655.0	0.66	295.23	3,653.5	32.0	29.3	-12.5	0.25	-0.20	-12.92
3,680.0	0.53	309.24	3,678.5	32.1	29.1	-12.8	0.78	-0.52	56.04
3,705.0	0.50	289.00	3,703.5	32.2	28.9	-13.0	0.73	-0.12	-80.96
3,730.0	0.20	321.65	3,728.5	32.3	28.8	-13.1	1.39	-1.20	130.60
3,755.0	0.66	81.74	3,753.5	32.3	28.9	-13.1	3.12	1.84	480.36
3,780.0	1.47	83.52	3,778.5	32.4	29.4	-12.9	3.24	3.24	7.12
3,805.0	2.67	80.64	3,803.5	32.5	30.3	-12.5	4.82	4.80	-11.52
3,830.0	3.94	77.59	3,828.5	32.8	31.7	-12.1	5.13	5.08	-12.20
3,855.0	4.86	76.15	3,853.4	33.2	33.5	-11.5	3.71	3.88	-5.76
3,880.0	5.63	73.57	3,878.3	33.8	35.7	-10.9	3.22	3.08	-10.32
3,905.0	6.38	69.06	3,903.1	34.7	38.2	-10.4	3.54	3.00	-18.04
3,930.0	7.18	65.46	3,928.0	35.8	40.9	-10.0	3.62	3.20	-14.40
3,955.0	7.79	62.93	3,952.8	37.2	43.9	-9.7	2.77	2.44	-10.12
3,980.0	8.40	61.29	3,977.5	38.9	47.0	-9.5	2.81	2.44	-6.56
4,005.0	9.00	61.22	4,002.2	40.7	50.3	-9.4	2.40	2.40	-0.28
4,030.0	9.48	62.63	4,026.9	42.6	53.8	-9.2	2.12	1.92	5.64
4,055.0	9.94	63.80	4,051.5	44.5	57.6	-8.9	2.00	1.84	4.68
4,080.0	10.42	63.53	4,076.1	46.4	61.6	-8.6	1.93	1.92	-1.08
4,105.0	10.72	63.21	4,100.7	48.5	65.7	-8.3	1.22	1.20	-1.28
4,130.0	10.95	62.75	4,125.3	50.6	69.8	-8.0	0.98	0.92	-1.84
4,155.0	11.21	61.25	4,149.8	52.9	74.1	-7.8	1.55	1.04	-6.00
4,180.0	11.41	59.23	4,174.3	55.3	78.3	-7.7	1.77	0.80	-8.08
4,205.0	11.46	56.09	4,198.8	58.0	82.5	-7.8	2.50	0.20	-12.56
4,230.0	11.44	53.27	4,223.3	60.8	86.6	-8.2	2.24	-0.08	-11.28
4,255.0	11.47	52.57	4,247.8	63.8	90.5	-8.8	0.57	0.12	-2.80
4,280.0	11.35	51.88	4,272.3	66.9	94.4	-9.4	0.73	-0.48	-2.76
4,305.0	11.31	51.92	4,296.9	69.9	98.3	-10.0	0.16	-0.16	0.16
4,330.0	11.34	52.27	4,321.4	72.9	102.2	-10.7	0.30	0.12	1.40
4,355.0	11.66	53.86	4,345.9	75.9	106.2	-11.2	1.80	1.28	6.36
4,380.0	12.12	56.35	4,370.3	78.9	110.4	-11.6	2.76	1.84	9.96
4,405.0	12.82	58.90	4,394.7	81.7	115.0	-11.7	3.56	2.80	10.20
4,430.0	14.26	61.24	4,419.0	84.7	120.0	-11.7	6.16	5.76	9.56
4,455.0	15.54	61.35	4,443.2	87.7	125.7	-11.4	5.12	5.12	0.44
4,480.0	16.68	60.91	4,467.2	91.1	131.7	-11.2	4.59	4.56	-1.76
4,505.0	17.98	60.50	4,491.1	94.7	138.2	-11.1	5.22	5.20	-1.64
4,530.0	18.80	60.91	4,514.8	98.6	145.1	-10.9	3.32	3.28	1.64
4,555.0	19.58	62.46	4,538.4	102.5	152.4	-10.5	3.73	3.12	6.20
4,580.0	20.23	64.34	4,561.9	106.3	160.0	-9.9	3.85	2.80	7.52

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Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 522 GL 1191' + KB 18' @ 1209.0usft
Site:	Edwin Pad: Hornet/Miracle/Moats/Myrtle	MD Reference:	Precision 522 GL 1191' + KB 18' @ 1209 0usft
Well:	Miracle Unit 2H	North Reference:	Grid
Wellbore:	ST 2	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST2	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)
4,605.0	20.95	66.66	4,585.3	109.9	168.0	-9.0	4.35	2.88	9.28
4,630.0	22.19	69.27	4,608.6	113.4	176.5	-7.6	6.27	4.96	10.44
4,655.0	23.15	70.39	4,631.6	116.7	185.5	-5.9	4.21	3.84	4.48
4,680.0	24.16	71.11	4,654.5	120.0	195.0	-3.9	4.20	4.04	2.88
4,705.0	25.04	71.67	4,677.3	123.3	204.9	-1.7	3.64	3.52	2.24
4,730.0	26.15	72.18	4,699.8	126.7	215.1	0.6	4.53	4.44	2.04
4,755.0	27.09	72.28	4,722.2	130.1	225.8	3.1	3.76	3.76	0.40
4,780.0	27.64	72.33	4,744.4	133.6	236.7	5.7	2.20	2.20	0.20
4,805.0	27.94	72.34	4,766.5	137.1	247.8	8.3	1.20	1.20	0.04
4,830.0	28.19	72.29	4,788.5	140.7	259.1	11.0	1.00	1.00	-0.20
4,855.0	28.08	71.91	4,810.6	144.3	270.3	13.6	0.84	-0.44	-1.52
4,880.0	28.34	71.85	4,832.6	148.0	281.5	16.1	1.05	1.04	-0.24
4,905.0	28.66	71.58	4,854.6	151.7	292.8	18.7	1.38	1.28	-1.08
4,930.0	28.59	71.43	4,876.5	155.5	304.2	21.2	0.40	-0.28	-0.60
4,955.0	28.18	70.80	4,898.5	159.4	315.4	23.6	2.03	-1.64	-2.52
4,980.0	27.52	70.04	4,920.6	163.3	326.4	25.9	3.00	-2.64	-3.04
5,005.0	27.18	69.31	4,942.8	167.3	337.2	27.9	1.91	-1.36	-2.92
5,030.0	27.30	69.12	4,965.1	171.4	347.9	29.9	0.59	0.48	-0.76
5,055.0	27.82	69.11	4,987.2	175.5	358.7	31.8	2.08	2.08	-0.04
5,080.0	28.15	69.18	5,009.3	179.7	369.7	33.8	1.33	1.32	0.28
5,105.0	28.60	69.37	5,031.3	183.9	380.8	35.9	1.84	1.80	0.76
5,130.0	28.53	69.26	5,053.3	188.1	392.0	37.9	0.35	-0.28	-0.44
5,155.0	28.05	68.89	5,075.3	192.3	403.0	39.9	2.04	-1.92	-1.48
5,180.0	27.67	68.27	5,097.4	196.6	413.9	41.8	1.91	-1.52	-2.48
5,205.0	27.45	67.75	5,119.5	200.9	424.6	43.6	1.30	-0.88	-2.08
5,230.0	27.42	67.63	5,141.7	205.3	435.3	45.2	0.25	-0.12	-0.48
5,255.0	27.41	67.75	5,163.9	209.7	445.9	46.9	0.22	-0.04	0.48
5,280.0	27.30	67.83	5,186.1	214.0	456.6	48.6	0.46	-0.44	0.32
5,305.0	26.88	67.69	5,208.4	218.3	467.1	50.2	1.70	-1.68	-0.56
5,330.0	26.84	67.71	5,230.7	222.6	477.6	51.9	0.16	-0.16	0.08
5,355.0	26.98	68.67	5,253.0	226.8	488.1	53.6	1.83	0.56	3.84
5,380.0	27.05	70.01	5,275.3	230.8	498.7	55.6	2.45	0.28	5.36
5,405.0	27.20	70.98	5,297.5	234.6	509.4	57.8	1.87	0.60	3.88
5,430.0	26.90	71.33	5,319.8	238.3	520.2	60.1	1.36	-1.20	1.40
5,455.0	27.02	71.42	5,342.1	241.9	530.9	62.5	0.51	0.48	0.36
5,480.0	27.32	71.58	5,364.3	245.5	541.8	64.9	1.24	1.20	0.64
5,505.0	27.63	71.43	5,386.5	249.2	552.7	67.3	1.27	1.24	-0.60
5,530.0	27.74	71.34	5,408.6	252.9	563.7	69.7	0.47	0.44	-0.36
5,555.0	28.11	71.09	5,430.7	256.7	574.8	72.1	1.55	1.48	-1.00
5,580.0	28.25	70.69	5,452.7	260.5	586.0	74.5	0.94	0.56	-1.60
5,605.0	28.10	69.90	5,474.8	264.5	597.1	76.7	1.61	-0.60	-3.16
5,630.0	28.00	68.74	5,496.8	268.7	608.1	78.7	2.22	-0.40	-4.64
5,655.0	27.96	67.74	5,518.9	273.0	619.0	80.6	1.88	-0.16	-4.00
5,680.0	28.41	66.72	5,541.0	277.6	629.8	82.2	2.64	1.80	-4.08



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 522 GL 1191' + KB 18' @ 1209.0usft
Site:	Edwin Pad Hornet/Miracle/Moats/Myrtle	MD Reference:	Precision 522 GL 1191' + KB 18' @ 1209.0usft
Well:	Miracle Unit 2H	North Reference:	Grid
Wellbore:	ST 2	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST2	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)	
5,705.0	28.47	66.38	5,562.9	282.3	640.8	83.7	0.69	0.24	-1.36	
5,730.0	28.15	65.77	5,584.9	287.1	651.6	85.1	1.73	-1.28	-2.44	
5,755.0	27.03	64.68	5,607.1	292.0	662.1	86.2	4.93	-4.48	-4.44	
5,780.0	26.39	63.63	5,629.4	296.9	672.2	87.2	3.16	-2.56	-4.12	
5,805.0	26.15	63.31	5,651.9	301.8	682.1	88.0	1.11	-0.96	-1.28	
5,830.0	26.14	64.05	5,674.3	306.7	692.0	88.8	1.30	-0.04	2.96	
5,855.0	25.89	65.06	5,696.8	311.4	701.9	89.8	2.03	-1.00	4.04	
5,880.0	25.59	65.78	5,719.3	315.9	711.8	90.9	1.73	-1.20	2.88	
5,905.0	25.19	66.37	5,741.9	320.3	721.6	92.2	1.89	-1.60	2.36	
5,930.0	25.57	67.58	5,764.5	324.5	731.4	93.8	2.57	1.52	4.84	
5,955.0	26.00	68.40	5,787.0	328.5	741.5	95.2	2.23	1.72	3.28	
5,980.0	25.72	68.54	5,809.5	332.5	751.7	97.0	1.15	-1.12	0.56	
6,005.0	25.70	69.24	5,832.0	336.4	761.8	98.8	1.22	-0.08	2.80	
6,030.0	25.83	69.80	5,854.5	340.2	772.0	100.7	1.10	0.52	2.24	
6,060.0	25.50	68.90	5,881.5	344.8	784.1	102.9	1.70	-1.10	-3.00	
6,120.0	24.30	68.50	5,936.0	354.0	807.7	107.0	2.02	-2.00	-0.67	
6,153.0	23.40	67.10	5,966.1	359.0	820.0	109.0	3.22	-2.73	-4.24	
6,168.0	22.80	65.22	5,979.9	361.4	825.4	109.7	6.33	-3.99	-12.54	
RNST @ 6168 MD										
6,184.0	22.19	63.11	5,994.7	364.1	830.9	110.2	6.33	-3.83	-13.18	
6,214.0	21.73	56.55	6,022.6	369.7	840.6	110.3	8.32	-1.53	-21.87	
6,245.0	21.99	50.98	6,051.3	376.5	849.9	109.2	6.74	0.84	-17.97	
6,276.0	23.38	45.79	6,079.9	384.5	858.8	108.9	7.86	4.48	-16.74	
6,307.0	25.43	46.52	6,108.2	393.3	868.0	104.0	6.68	6.61	2.35	
6,338.0	27.30	50.36	6,135.9	402.5	878.4	101.4	8.16	6.03	12.39	
6,369.0	29.36	55.96	6,163.2	411.2	890.1	99.8	10.84	6.65	18.06	
6,400.0	30.37	61.74	6,190.1	419.2	903.3	99.7	9.84	3.26	18.65	
6,430.0	31.76	67.19	6,215.8	425.9	917.3	101.1	10.45	4.63	18.17	
6,461.0	32.85	73.34	6,242.0	431.4	932.9	104.2	11.17	3.52	19.84	
6,492.0	33.56	79.29	6,268.0	435.4	949.3	109.2	10.75	2.29	19.19	
6,512.0	33.99	82.97	6,284.6	437.2	960.3	113.3	10.44	2.14	18.38	
SCMR @ 6512 MD										
6,523.0	34.27	84.95	6,293.7	437.8	966.5	115.9	10.44	2.56	18.04	
6,554.0	35.77	91.40	6,319.1	438.4	984.2	124.4	12.88	4.84	20.81	
6,585.0	36.82	95.95	6,344.1	437.2	1,002.5	134.8	9.32	3.39	14.68	
6,616.0	38.27	99.98	6,368.7	434.5	1,021.2	146.6	9.20	4.68	13.00	
6,647.0	39.00	105.45	6,392.9	430.3	1,040.1	159.9	11.26	2.35	17.65	
6,677.0	39.50	109.43	6,416.1	424.6	1,058.2	174.0	8.56	1.67	13.27	
6,708.0	39.88	116.25	6,440.0	416.9	1,076.4	189.9	14.10	1.23	22.00	
6,715.0	40.27	117.97	6,445.4	414.9	1,080.4	193.7	16.82	5.63	24.62	
MDLX @ 6716 MD										
6,739.0	41.81	123.66	6,463.5	406.8	1,093.9	207.5	16.82	6.40	23.69	
6,770.0	45.32	129.05	6,485.9	394.1	1,111.1	227.2	16.48	11.32	17.39	



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 522 GL 1191' + KB 18' @ 1209.0usft
Site:	Edwin Pad Hornet/Miracle/Moats/Myrtle	MD Reference:	Precision 522 GL 1191' + KB 18' @ 1209.0usft
Well:	Miracle Unit 2H	North Reference:	Grid
Wellbore:	ST 2	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST2	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)
6,801.0	47.91	134.99	6,507.2	379.0	1,127.8	248.7	16.23	8.35	19.16
6,832.0	50.54	140.67	6,527.5	361.6	1,143.5	271.7	16.26	8.48	18.32
6,863.0	52.90	144.80	6,546.7	342.2	1,158.3	295.8	12.93	7.61	13.32
6,881.0	54.47	146.84	6,557.4	330.3	1,166.4	310.3	12.62	8.70	11.35
BRKT @ 6881 MD									
6,893.0	55.53	148.16	6,564.2	322.0	1,171.7	320.1	12.62	8.86	10.98
6,924.0	59.14	152.52	6,581.0	299.3	1,184.6	346.2	16.60	11.65	14.06
6,944.0	61.38	154.24	6,590.9	283.8	1,192.3	363.5	13.45	11.20	8.58
TLLY @ 6944 MD									
6,955.0	62.62	155.15	6,596.1	275.0	1,196.5	373.2	13.45	11.28	8.30
6,986.0	67.16	156.25	6,609.2	249.4	1,208.0	401.1	14.99	14.65	3.55
7,000.0	69.26	155.64	6,614.4	237.5	1,213.3	414.0	15.52	14.99	-4.33
MRCL_HOT @ 7000 MD									
7,017.0	71.81	154.93	6,620.1	223.0	1,220.0	429.9	15.52	15.01	-4.20
7,048.0	77.37	153.55	6,628.3	196.1	1,233.0	459.7	18.44	17.94	-4.45
7,079.0	82.68	152.10	6,633.7	168.9	1,247.0	490.2	17.74	17.13	-4.68
7,110.0	88.67	150.22	6,636.0	141.9	1,261.9	521.1	20.25	19.32	-6.06
7,151.0	83.96	151.46	6,638.6	106.1	1,281.8	561.9	11.88	-11.49	3.02
7,188.0	83.79	151.86	6,642.6	73.8	1,299.3	598.7	1.22	-0.46	1.14
7,219.0	85.34	152.92	6,645.5	46.4	1,313.6	629.5	6.01	5.00	3.35
7,250.0	86.57	153.43	6,647.7	18.8	1,327.5	660.4	4.29	3.97	1.65
7,281.0	87.27	153.85	6,649.4	-8.9	1,341.3	691.2	2.63	2.26	1.35
7,312.0	88.99	153.83	6,650.4	-36.7	1,354.9	722.1	5.55	5.55	-0.06
7,343.0	90.11	154.41	6,650.6	-64.6	1,368.4	753.0	4.07	3.61	1.87
7,373.0	90.70	155.12	6,650.4	-91.8	1,381.2	782.9	3.08	1.97	2.37
7,406.0	88.83	151.17	6,650.8	-174.7	1,423.2	875.7	4.70	-2.01	-4.25
7,559.0	89.09	151.05	6,652.5	-256.1	1,468.2	968.6	0.31	0.28	-0.13
7,651.0	88.65	151.85	6,654.3	-336.9	1,512.1	1,060.5	0.99	-0.48	0.87
7,742.0	90.77	154.97	6,654.8	-418.3	1,552.8	1,151.3	4.14	2.33	3.43
7,834.0	91.39	155.61	6,653.0	-501.8	1,591.3	1,242.8	0.97	0.67	0.70
7,927.0	89.21	155.66	6,652.5	-586.5	1,629.7	1,335.2	2.34	-2.34	0.05
8,020.0	90.10	155.16	6,653.1	-671.1	1,668.4	1,427.7	1.10	0.96	-0.54
8,112.0	89.82	154.18	6,653.2	-754.3	1,707.7	1,519.3	1.11	-0.30	-1.07
8,204.0	90.15	154.48	6,653.2	-837.2	1,747.6	1,610.9	0.48	0.36	0.33
8,297.0	87.50	152.75	6,655.1	-920.5	1,788.9	1,703.6	3.40	-2.85	-1.86
8,390.0	88.70	152.32	6,658.2	-1,002.9	1,831.8	1,796.5	1.37	1.29	-0.46
8,482.0	89.06	153.24	6,660.0	-1,084.7	1,873.8	1,888.3	1.07	0.39	1.00
8,575.0	88.67	155.40	6,661.8	-1,168.5	1,914.1	1,980.9	2.36	-0.42	2.32
8,668.0	88.47	159.21	6,664.1	-1,254.3	1,950.0	2,073.0	4.10	-0.22	4.10
8,760.0	90.84	159.66	6,664.7	-1,340.5	1,982.1	2,163.5	2.67	2.58	0.71
8,853.0	91.48	159.78	6,662.8	-1,427.7	2,014.2	2,254.9	0.69	0.69	-0.09
8,946.0	89.78	158.25	6,661.8	-1,514.6	2,047.5	2,346.6	2.46	-1.83	-1.65
9,038.0	88.66	158.56	6,663.0	-1,600.1	2,081.4	2,437.5	1.26	-1.22	0.34
9,131.0	90.62	158.55	6,663.6	-1,686.9	2,114.6	2,528.1	2.36	2.11	1.06



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 522 GL 1191' + KB 18' @ 1209.0usft
Site:	Edwin Pad Hornet/Miracle/Moats/Myrtle	MD Reference:	Precision 522 GL 1191' + KB 18' @ 1209.0usft
Well:	Miracle Unit 2H	North Reference:	Grid
Wellbore:	ST 2	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST2	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)
9,227.0	90.90	158.01	6,662.4	-1,776.4	2,149.4	2,623.8	1.63	0.29	-1.60
9,316.0	90.84	157.18	6,661.0	-1,858.7	2,183.3	2,711.9	0.93	-0.07	-0.93
9,408.0	89.59	157.21	6,660.7	-1,943.5	2,218.9	2,803.0	1.36	-1.36	0.03
9,501.0	89.98	157.72	6,661.0	-2,029.4	2,254.6	2,895.1	0.69	0.42	0.55
9,594.0	90.12	156.84	6,660.9	-2,115.2	2,290.5	2,987.2	0.96	0.15	-0.95
9,687.0	88.67	157.43	6,661.9	-2,200.9	2,326.6	3,079.3	1.68	-1.56	0.63
9,779.0	89.03	158.46	6,663.8	-2,286.1	2,361.2	3,170.3	1.19	0.39	1.12
9,871.0	88.83	157.34	6,665.5	-2,371.3	2,395.8	3,261.3	1.24	-0.22	-1.22
9,964.0	87.97	157.18	6,668.1	-2,457.1	2,431.7	3,353.3	0.94	-0.92	-0.17
10,056.0	88.78	158.01	6,670.7	-2,542.1	2,466.8	3,444.3	1.26	0.88	0.90
10,149.0	89.39	156.36	6,672.2	-2,627.8	2,502.8	3,536.5	1.89	0.66	-1.77
10,241.0	90.25	155.86	6,672.5	-2,711.9	2,540.1	3,627.8	1.08	0.93	-0.54
10,334.0	88.33	154.60	6,673.6	-2,796.3	2,579.0	3,720.3	2.47	-2.06	-1.35
10,427.0	89.05	154.84	6,675.7	-2,880.4	2,618.7	3,812.9	0.82	0.77	0.26
10,519.0	89.95	154.26	6,676.5	-2,963.5	2,658.3	3,904.5	1.16	0.98	-0.63
10,612.0	90.14	155.63	6,678.5	-3,047.7	2,697.7	3,997.1	1.49	0.20	1.47
10,704.0	89.25	156.66	6,677.0	-3,131.9	2,734.9	4,088.4	1.48	-0.97	1.12
10,797.0	89.39	157.78	6,678.1	-3,217.6	2,770.9	4,180.5	1.21	0.15	1.20
10,889.0	89.25	158.61	6,679.1	-3,303.0	2,805.0	4,271.4	0.91	-0.15	0.90
10,945.0	90.46	159.00	6,679.3	-3,355.3	2,825.3	4,326.7	2.27	2.16	0.70
10,965.0	88.89	162.20	6,679.4	-3,374.1	2,831.9	4,346.3	17.84	-7.86	16.02
10,995.0	87.92	165.17	6,680.2	-3,402.9	2,840.4	4,375.3	10.41	-3.23	9.90
11,026.0	88.25	167.02	6,681.3	-3,432.9	2,847.8	4,405.0	6.06	1.06	5.97
11,057.0	88.73	166.47	6,682.1	-3,463.1	2,854.9	4,434.6	2.35	1.55	-1.77
11,088.0	88.59	166.44	6,682.8	-3,493.2	2,862.2	4,464.2	0.46	-0.45	-0.10
11,119.0	88.75	166.24	6,683.5	-3,523.4	2,869.5	4,493.9	0.83	0.52	-0.65
11,150.0	88.02	165.20	6,684.4	-3,553.4	2,877.1	4,523.6	4.10	-2.35	-3.35
11,181.0	87.95	165.35	6,685.5	-3,583.3	2,885.0	4,553.4	0.53	-0.23	0.48
11,212.0	88.59	163.63	6,686.4	-3,613.2	2,893.3	4,583.3	5.92	2.06	-5.55
11,242.0	89.43	162.87	6,687.0	-3,641.9	2,901.9	4,612.4	3.78	2.80	-2.53
11,273.0	89.60	162.55	6,687.2	-3,671.5	2,911.1	4,642.6	1.17	0.55	-1.03
11,304.0	90.13	162.20	6,687.3	-3,701.1	2,920.5	4,672.8	2.05	1.71	-1.13
11,335.0	91.01	161.84	6,687.0	-3,730.6	2,930.1	4,703.0	3.07	2.84	-1.16
11,366.0	92.15	161.76	6,686.1	-3,760.0	2,939.8	4,733.3	3.69	3.68	-0.26
11,397.0	92.25	161.71	6,684.9	-3,789.4	2,949.5	4,763.5	0.36	0.32	-0.16
11,458.0	92.55	161.85	6,682.4	-3,847.3	2,968.5	4,823.1	0.54	0.49	0.23
11,551.0	91.58	160.97	6,679.0	-3,935.4	2,998.2	4,913.9	1.41	-1.04	-0.95
11,643.0	91.61	159.82	6,676.5	-4,022.0	3,029.0	5,004.2	1.25	0.03	-1.25
11,736.0	91.45	159.36	6,674.0	-4,109.1	3,061.4	5,095.7	0.52	-0.17	-0.49
11,828.0	89.46	155.32	6,673.3	-4,194.0	3,096.9	5,186.8	4.89	-2.16	-4.39
11,921.0	90.50	154.09	6,673.3	-4,278.1	3,136.6	5,279.4	1.73	1.12	-1.32
12,013.0	90.81	153.42	6,672.2	-4,360.6	3,177.3	5,371.1	0.80	0.34	-0.73
12,106.0	91.62	154.84	6,670.3	-4,444.3	3,217.9	5,463.7	1.76	0.87	1.53
12,198.0	91.04	153.34	6,668.1	-4,527.0	3,258.1	5,555.4	1.75	-0.83	-1.63



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 2H
Project:	Ritche County WV	TVD Reference:	Precision 522: GL 1191' + KB 18' @ 1209 0usft
Site:	Edwin Pad. Homet/Miracle/Moats/Myrtle	MD Reference:	Precision 522: GL 1191' + KB 18' @ 1209 0usft
Well:	Miracle Unit 2H	North Reference:	Grid
Wellbore:	ST 2	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST2	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)
12,291.0	91.65	153.45	6,665.9	-4,610.1	3,299.7	5,648.1	0.67	0.66	0.12
12,383.0	90.40	153.98	6,664.3	-4,692.6	3,340.4	5,739.9	1.48	-1.36	0.58
12,476.0	91.75	156.19	6,662.6	-4,776.9	3,379.6	5,832.4	2.78	1.45	2.38
12,568.0	91.14	158.30	6,660.2	-4,861.7	3,415.2	5,923.5	2.39	-0.66	2.29
12,661.0	91.21	157.88	6,658.3	-4,948.0	3,449.9	6,015.4	0.46	0.08	-0.45
12,753.0	92.22	156.39	6,655.6	-5,032.7	3,485.6	6,106.5	1.96	1.10	-1.62
12,845.0	92.08	154.91	6,652.1	-5,116.5	3,523.5	6,197.9	1.61	-0.15	-1.61
12,938.0	91.95	157.40	6,648.9	-5,201.5	3,561.1	6,290.1	2.68	-0.14	2.68
13,031.0	92.22	156.23	6,645.5	-5,286.9	3,597.7	6,382.3	1.29	0.29	-1.26
13,123.0	90.84	155.66	6,643.0	-5,370.9	3,635.1	6,473.7	1.62	-1.50	-0.62
13,216.0	90.20	155.60	6,642.2	-5,455.6	3,673.5	6,566.1	0.69	-0.69	-0.06
13,308.0	91.75	153.93	6,640.6	-5,538.8	3,712.7	6,657.7	2.48	1.68	-1.82
13,401.0	90.47	152.17	6,638.8	-5,621.7	3,754.9	6,750.5	2.34	-1.38	-1.89
13,493.0	90.71	152.19	6,637.9	-5,703.0	3,797.8	6,842.3	0.26	0.26	0.02
13,586.0	89.17	152.56	6,638.0	-5,785.4	3,840.9	6,935.2	1.70	-1.66	0.40
13,678.0	89.66	152.37	6,638.9	-5,867.0	3,883.4	7,027.1	0.57	0.53	-0.21
13,771.0	90.20	151.92	6,639.0	-5,949.2	3,926.9	7,120.0	0.76	0.58	-0.48
13,863.0	89.05	151.69	6,639.6	-6,030.3	3,970.4	7,211.9	1.27	-1.25	-0.25
13,956.0	89.92	150.96	6,640.4	-6,111.9	4,015.0	7,304.8	1.22	0.94	-0.78
14,049.0	87.92	153.27	6,642.2	-6,194.1	4,058.5	7,397.7	3.29	-2.15	2.48
14,141.0	88.68	155.98	6,644.9	-6,277.2	4,097.9	7,489.2	3.06	0.83	2.95
14,234.0	88.82	155.64	6,647.0	-6,362.0	4,136.0	7,581.6	0.40	0.15	-0.37
14,327.0	88.63	155.58	6,649.0	-6,446.7	4,174.4	7,674.0	0.21	-0.20	-0.06
14,419.0	89.57	156.57	6,650.5	-6,530.7	4,211.7	7,765.4	1.48	1.02	1.08
14,512.0	90.92	157.60	6,650.1	-6,616.4	4,247.9	7,857.6	1.83	1.45	1.11
14,604.0	89.88	156.41	6,649.4	-6,701.1	4,283.8	7,948.7	1.72	-1.13	-1.29
14,697.0	90.14	156.77	6,649.4	-6,786.4	4,320.8	8,041.0	0.48	0.28	0.39
14,789.0	90.25	155.34	6,649.1	-6,870.5	4,358.1	8,132.4	1.56	0.12	-1.55
14,882.0	88.74	152.97	6,649.9	-6,954.2	4,398.6	8,225.0	3.02	-1.62	-2.55
14,974.0	90.02	153.69	6,650.9	-7,036.4	4,439.9	8,316.8	1.60	1.39	0.78
15,067.0	89.75	155.69	6,651.1	-7,120.5	4,479.7	8,409.4	2.17	-0.29	2.15
15,159.0	90.79	156.14	6,650.7	-7,204.4	4,517.2	8,500.8	1.23	1.13	0.49
15,252.0	90.52	155.84	6,649.6	-7,289.4	4,555.1	8,593.2	0.43	-0.29	-0.32
15,344.0	89.78	155.99	6,649.4	-7,373.4	4,592.6	8,684.6	0.82	-0.80	0.16
15,437.0	90.11	156.05	6,649.5	-7,458.4	4,630.4	8,776.9	0.36	0.35	0.06
15,529.0	89.70	156.91	6,649.6	-7,542.7	4,667.1	8,868.2	1.04	-0.45	0.93
15,622.0	89.90	157.32	6,649.9	-7,628.4	4,703.3	8,960.4	0.49	0.22	0.44
15,714.0	90.57	157.02	6,649.6	-7,713.2	4,739.0	9,051.5	0.80	-0.73	-0.33
15,807.0	90.20	157.42	6,648.9	-7,798.9	4,775.0	9,143.6	0.59	-0.40	0.43
15,900.0	90.74	157.02	6,648.2	-7,884.7	4,811.0	9,235.8	0.72	0.58	-0.43
15,992.0	89.26	155.72	6,648.2	-7,969.0	4,847.9	9,327.1	2.14	-1.61	-1.41
16,085.0	89.80	154.52	6,648.9	-8,053.3	4,887.0	9,419.6	1.41	0.58	-1.29
16,177.0	90.54	154.77	6,648.7	-8,136.5	4,926.4	9,511.2	0.85	0.80	0.27

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Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 2H
Project:	Ritchie County WV	TVD Reference:	Precision 522 GL 1191' + KB 18' @ 1209 0usft
Site:	Edwin Pad Hornet/Miracle/Moats/Myrtle	MD Reference:	Precision 522 GL 1191' + KB 18' @ 1209.0usft
Well:	Miracle Unit 2H	North Reference:	Grid
Wellbore:	ST 2	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled ST2	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)
16,270.0	90.74	153.76	6,647.6	-8,220.2	4,966.8	9,603.8	1.11	0.22	-1.09
16,362.0	89.43	154.98	6,647.5	-8,303.2	5,006.6	9,695.5	1.95	-1.42	1.33
16,455.0	90.61	155.30	6,647.4	-8,387.5	5,045.7	9,788.0	1.31	1.27	0.34
16,547.0	90.13	155.14	6,646.9	-8,471.1	5,084.2	9,879.5	0.55	-0.52	-0.17
16,640.0	90.34	154.92	6,646.5	-8,555.4	5,123.5	9,972.1	0.33	0.23	-0.24
16,732.0	91.14	154.55	6,645.3	-8,638.6	5,162.7	10,063.7	0.96	0.87	-0.40
16,825.0	91.01	154.89	6,643.5	-8,722.7	5,202.5	10,156.2	0.39	-0.14	0.37
16,879.0	91.62	154.95	6,642.3	-8,771.5	5,225.3	10,210.0	1.14	1.13	0.11
Last SDI MWD @ 16879 MD									
16,940.0	91.62	154.95	6,640.6	-8,826.8	5,251.2	10,270.7	0.00	0.00	0.00
Projection To Bit @ 16940 MD / 6640 TVD									

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,168.0	5,979.9	RNST @ 6168 MD		0.00	
6,512.0	6,284.6	SCMR @ 6512 MD		0.00	
6,715.0	6,445.4	MDLX @ 6715 MD		0.00	
6,881.0	6,557.4	BRKT @ 6881 MD		0.00	
6,944.0	6,590.9	TLLY @ 6944 MD		0.00	
7,000.0	6,614.4	MRCL_HOT @ 7000 MD		0.00	

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
16,879.0	6,642.3	-8,771.5	5,225.3	Last SDI MWD @ 16879 MD
16,940.0	6,640.6	-8,826.8	5,251.2	Projection To Bit @ 16940 MD / 6640 TVD

Checked By: _____ Approved By: _____ Date: _____

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