



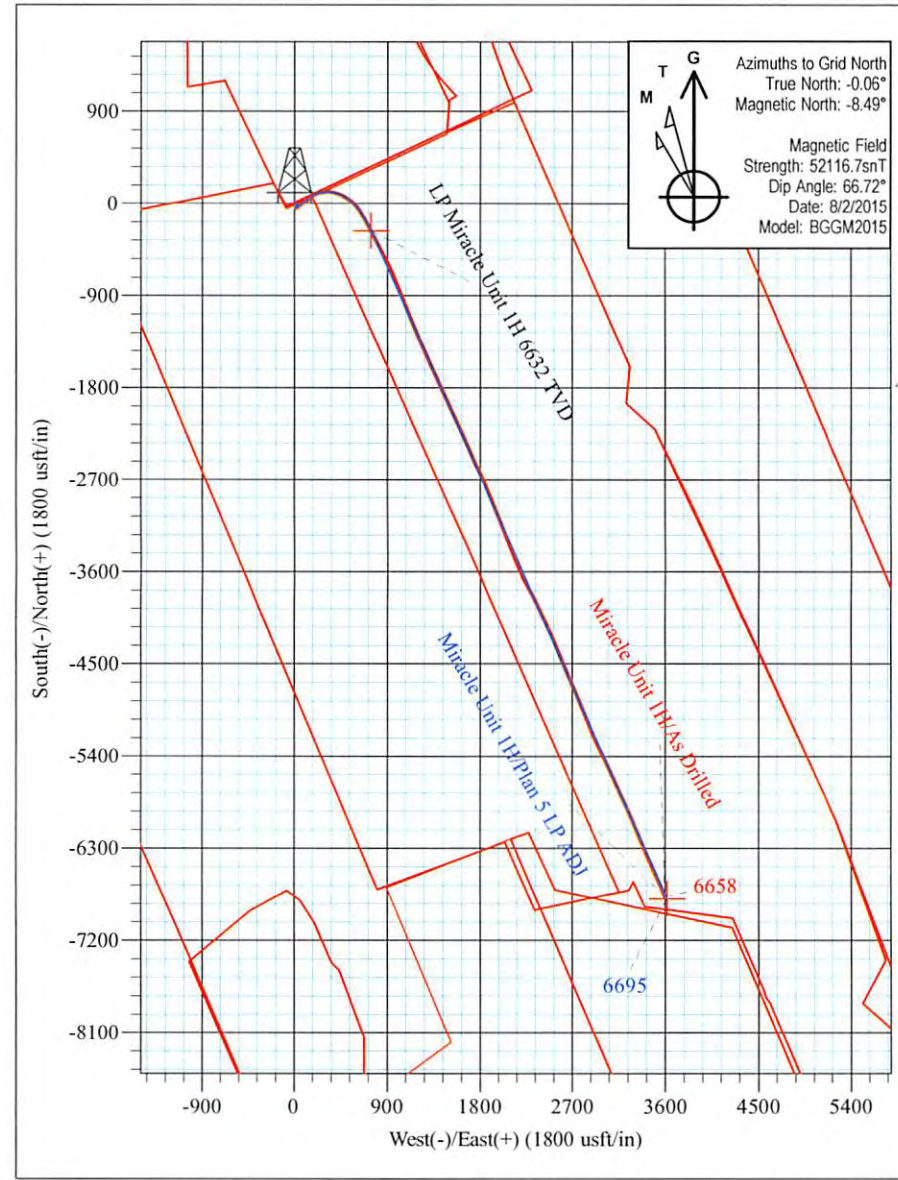
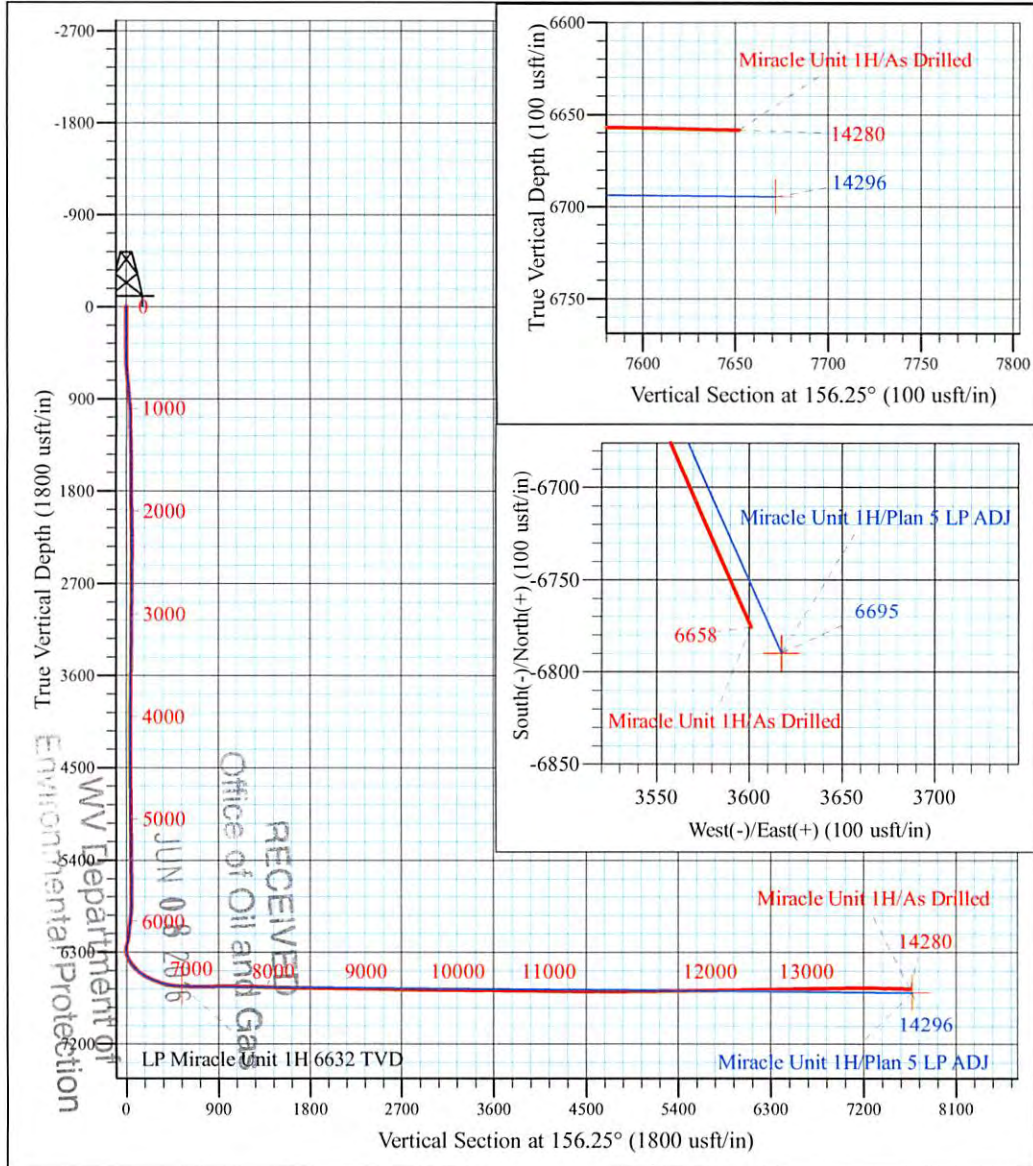
Edwin Pad: Homet/Miracle/Moats/Myrtle
 Miracle Unit 1H
 Plan 5 LP ADJ
 Precision 522: GL 1191' + KB 18' @ 1209.0usft
 Ritchie County WV

PROJECT DETAILS:
 Geodetic System: Universal Transverse Mercator (US Survey Feet)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: 17N (84 W to 78 W)
 System Datum: Mean Sea Level



WELL DETAILS: **Miracle Unit 1H SHL**

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14245845.59	1667888.40	39° 13' 49.491 N	80° 54' 10.754 W



Miracle Unit 1H
Approx. BHL
39° 12' 42.454 N 80° 53' 25.079 W

Shane Rhodes
 12:59, August 14 2015
 Scientific Drilling International
 124 Vista Drive
 Charleroi, PA 15022



Antero

Ritchie County WV
Edwin Pad: Hornet/Miracle/Moats/Myrtle
Miracle Unit 1H

Original Wellpath

Design: As Drilled

Standard Survey Report

14 August, 2015



www.scientificdrilling.com

RECEIVED

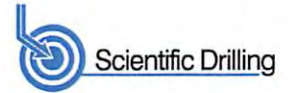
Office of Oil

JUN 08 2016

WV Department of
Environmental Protection 08/12/2016



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 1H
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 1H	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	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 1H, Marcellus					
Well Position	+N/-S	0.0 usft	Northing:	14,245,845.58 usft	Latitude:	39° 13' 49.491 N
	+E/-W	0.0 usft	Easting:	1,667,888.40 usft	Longitude:	80° 54' 10.754 W
Position Uncertainty	2.0 usft		Wellhead Elevation:	1,209.0 usft	Ground Level:	1,191.0 usft

Wellbore	Original Wellpath				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2015	8/2/2015	-8.43	66.72	52,117

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

Survey Program	Date	8/14/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
105.0	5,799.0	Survey #6 Final Gyro (Original Wellpath)	SDI Standard Keeper	Scientific Drilling Intl. Standard Wireline Keeper
5,830.0	14,280.0	Survey #7 MWD Survey (Original Wellpath)	SDI MWD	Scientific Drilling Intl. MWD - Standard ver 1.0.1

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
105.0	0.22	342.56	105.0	0.2	-0.1	-0.2	0.21	0.21	0.00	
First SDI Gyro @ 105 MD										
130.0	0.20	289.50	130.0	0.3	-0.1	-0.3	0.75	0.08	-212.24	
155.0	0.12	322.95	155.0	0.3	-0.2	-0.3	0.48	-0.32	133.80	
180.0	0.03	296.94	180.0	0.3	-0.2	-0.4	0.38	-0.55	-104.04	
205.0	0.06	261.51	205.0	0.3	-0.2	-0.4	0.16	0.12	-141.72	
230.0	0.02	129.64	230.0	0.3	-0.2	-0.4	0.30	-0.16	-527.48	
255.0	0.09	176.75	255.0	0.3	-0.2	-0.3	0.31	0.28	188.44	
280.0	0.06	172.30	280.0	0.3	-0.2	-0.3	0.12	0.12	-17.80	



Scientific Drilling International
Survey Report



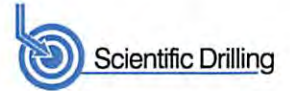
Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 1H
Project:	Ritchie County WV	TVD Reference:	Precision 522: GL 1191' + KB 18' @ 1209.0usft
Site:	Edwin Pad: Hornet/Miracle/Moats/Myrtle	MD Reference:	Precision 522: GL 1191' + KB 18' @ 1209.0usft
Well:	Miracle Unit 1H	North Reference:	Grid
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)	
305.0	0.05	195.65	305.0	0.2	-0.2	-0.3	0.10	-0.04	93.40	
330.0	0.05	125.42	330.0	0.2	-0.2	-0.3	0.23	0.00	-280.92	
355.0	0.09	82.05	355.0	0.2	-0.2	-0.3	0.25	0.16	-173.48	
380.0	0.09	80.35	380.0	0.2	-0.1	-0.3	0.01	0.00	-6.80	
405.0	0.07	100.24	405.0	0.2	-0.1	-0.2	0.14	-0.08	79.56	
430.0	0.12	85.92	430.0	0.2	-0.1	-0.2	0.22	0.20	-57.28	
455.0	0.79	112.20	455.0	0.2	0.1	-0.1	2.74	2.68	105.12	
480.0	1.24	115.42	480.0	0.0	0.5	0.2	1.81	1.80	12.88	
505.0	1.76	117.46	505.0	-0.3	1.1	0.7	2.09	2.08	8.16	
530.0	2.41	123.29	530.0	-0.8	1.9	1.5	2.73	2.60	23.32	
555.0	2.64	124.59	554.9	-1.4	2.8	2.4	0.95	0.92	5.20	
580.0	3.69	127.85	579.9	-2.2	3.9	3.6	4.26	4.20	13.04	
605.0	4.08	127.52	604.8	-3.3	5.2	5.1	1.56	1.56	-1.32	
630.0	4.37	128.99	629.8	-4.4	6.7	6.7	1.24	1.16	5.88	
655.0	4.96	133.08	654.7	-5.7	8.2	8.6	2.71	2.36	16.36	
680.0	5.02	133.75	679.6	-7.2	9.8	10.6	0.33	0.24	2.68	
705.0	5.19	133.56	704.5	-8.8	11.4	12.6	0.68	0.68	-0.76	
730.0	5.20	133.25	729.4	-10.3	13.1	14.7	0.12	0.04	-1.24	
755.0	5.22	133.11	754.3	-11.9	14.7	16.8	0.09	0.08	-0.56	
780.0	5.15	133.44	779.2	-13.4	16.4	18.9	0.30	-0.28	1.32	
805.0	5.07	134.12	804.1	-15.0	18.0	20.9	0.40	-0.32	2.72	
830.0	4.95	132.88	829.0	-16.5	19.6	22.9	0.65	-0.48	-4.96	
855.0	4.91	133.01	853.9	-17.9	21.1	24.9	0.17	-0.16	0.52	
880.0	4.84	132.91	878.8	-19.4	22.7	26.9	0.28	-0.28	-0.40	
905.0	4.79	133.52	903.7	-20.8	24.2	28.8	0.29	-0.20	2.44	
930.0	4.69	134.54	928.6	-22.3	25.7	30.7	0.52	-0.40	4.08	
955.0	3.65	141.73	953.6	-23.6	26.9	32.4	4.65	-4.16	28.76	
980.0	2.78	150.74	978.5	-24.7	27.7	33.8	4.01	-3.48	36.04	
1,005.0	2.20	164.48	1,003.5	-25.7	28.1	34.9	3.31	-2.32	54.96	
1,030.0	2.09	168.25	1,028.5	-26.6	28.3	35.8	0.72	-0.44	15.08	
1,055.0	2.08	169.22	1,053.5	-27.5	28.5	36.7	0.15	-0.04	3.88	
1,080.0	1.87	171.35	1,078.5	-28.4	28.7	37.5	0.89	-0.84	8.52	
1,105.0	1.70	172.35	1,103.5	-29.2	28.8	38.3	0.69	-0.68	4.00	
1,130.0	1.69	174.08	1,128.4	-29.9	28.9	39.0	0.21	-0.04	6.92	
1,155.0	1.65	173.14	1,153.4	-30.6	29.0	39.7	0.19	-0.16	-3.76	
1,180.0	1.49	172.96	1,178.4	-31.3	29.0	40.3	0.64	-0.64	-0.72	
1,205.0	1.36	173.36	1,203.4	-31.9	29.1	40.9	0.52	-0.52	1.60	
1,230.0	1.33	177.86	1,228.4	-32.5	29.2	41.5	0.44	-0.12	18.00	
1,255.0	1.27	173.16	1,253.4	-33.1	29.2	42.0	0.49	-0.24	-18.80	
1,280.0	1.18	176.95	1,278.4	-33.6	29.2	42.5	0.48	-0.36	15.16	
1,305.0	1.06	174.60	1,303.4	-34.1	29.3	43.0	0.51	-0.48	-9.40	
1,330.0	1.06	174.55	1,328.4	-34.5	29.3	43.4	0.00	0.00	-0.20	
1,355.0	1.04	172.16	1,353.4	-35.0	29.4	43.9	0.19	-0.08	-9.55	

RECEIVED
Office of Oil and Gas
JUN 08 2016



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 1H
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 1H	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)	
1,380.0	0.98	169.30	1,378.4	-35.4	29.4	44.3	0.31	-0.24	-11.44	
1,405.0	0.86	177.52	1,403.4	-35.8	29.5	44.7	0.71	-0.48	32.88	
1,430.0	0.70	164.75	1,428.4	-36.2	29.5	45.0	0.94	-0.64	-51.08	
1,455.0	0.67	180.07	1,453.4	-36.5	29.6	45.3	0.74	-0.12	61.28	
1,480.0	0.61	180.00	1,478.4	-36.7	29.6	45.5	0.24	-0.24	-0.28	
1,505.0	0.67	186.16	1,503.4	-37.0	29.6	45.8	0.36	0.24	24.64	
1,530.0	0.64	187.03	1,528.4	-37.3	29.5	46.0	0.13	-0.12	3.48	
1,555.0	0.73	191.06	1,553.4	-37.6	29.5	46.3	0.41	0.36	16.12	
1,580.0	0.70	187.34	1,578.4	-37.9	29.4	46.6	0.22	-0.12	-14.88	
1,605.0	0.71	190.83	1,603.4	-38.2	29.4	46.8	0.18	0.04	13.96	
1,630.0	0.72	194.24	1,628.4	-38.5	29.3	47.1	0.17	0.04	13.64	
1,655.0	0.54	186.84	1,653.4	-38.8	29.3	47.3	0.79	-0.72	-29.60	
1,680.0	0.48	181.68	1,678.4	-39.0	29.3	47.5	0.30	-0.24	-20.64	
1,705.0	0.53	192.62	1,703.4	-39.2	29.2	47.7	0.43	0.20	43.76	
1,730.0	0.52	181.77	1,728.4	-39.4	29.2	47.9	0.40	-0.04	-43.40	
1,755.0	0.37	188.24	1,753.4	-39.6	29.2	48.0	0.63	-0.60	25.88	
1,780.0	0.47	203.77	1,778.4	-39.8	29.1	48.2	0.60	0.40	62.12	
1,805.0	0.46	205.76	1,803.4	-40.0	29.0	48.3	0.08	-0.04	7.96	
1,830.0	0.51	209.82	1,828.4	-40.2	28.9	48.4	0.24	0.20	16.24	
1,855.0	0.51	199.15	1,853.4	-40.4	28.9	48.6	0.38	0.00	-42.68	
1,880.0	0.56	209.07	1,878.3	-40.6	28.8	48.7	0.42	0.20	39.68	
1,905.0	0.52	199.93	1,903.3	-40.8	28.7	48.9	0.38	-0.16	-36.56	
1,930.0	0.52	205.22	1,928.3	-41.0	28.6	49.1	0.19	0.00	21.16	
1,955.0	0.50	209.22	1,953.3	-41.2	28.5	49.2	0.16	-0.08	16.00	
1,980.0	0.57	212.73	1,978.3	-41.4	28.3	49.3	0.31	0.28	14.04	
2,005.0	0.53	204.50	2,003.3	-41.6	28.2	49.5	0.35	-0.16	-32.92	
2,030.0	0.48	208.54	2,028.3	-41.8	28.1	49.6	0.25	-0.20	16.16	
2,055.0	0.41	206.18	2,053.3	-42.0	28.0	49.7	0.29	-0.28	-9.44	
2,080.0	0.44	202.18	2,078.3	-42.2	28.0	49.9	0.17	0.12	-16.00	
2,105.0	0.48	212.90	2,103.3	-42.3	27.9	50.0	0.38	0.16	42.88	
2,130.0	0.49	201.96	2,128.3	-42.5	27.8	50.1	0.37	0.04	-43.76	
2,155.0	0.39	216.00	2,153.3	-42.7	27.7	50.2	0.59	-0.40	56.16	
2,180.0	0.38	216.51	2,178.3	-42.8	27.6	50.3	0.04	-0.04	2.04	
2,205.0	0.33	219.25	2,203.3	-43.0	27.5	50.4	0.21	-0.20	10.96	
2,230.0	0.31	218.19	2,228.3	-43.1	27.4	50.5	0.08	-0.08	-4.24	
2,255.0	0.32	222.38	2,253.3	-43.2	27.3	50.5	0.10	0.04	16.76	
2,280.0	0.29	225.63	2,278.3	-43.3	27.2	50.6	0.14	-0.12	13.00	
2,305.0	0.27	234.25	2,303.3	-43.3	27.1	50.6	0.19	-0.08	34.48	
2,330.0	0.30	218.29	2,328.3	-43.4	27.0	50.6	0.34	0.12	63.84	
2,355.0	0.17	249.80	2,353.3	-43.5	27.0	50.7	0.71	0.82	126.04	
2,380.0	0.39	247.43	2,378.3	-43.5	26.9	50.7	0.88	0.88	-9.48	
2,405.0	0.28	244.09	2,403.3	-43.6	26.7	50.7	0.45	0.44	-13.36	
2,430.0	0.23	239.85	2,428.3	-43.7	26.6	50.7	0.21	-0.20	-16.96	

RECEIVED
Office of Oil and Gas
JUN 08 2016

WV Department of Environmental Protection
COMPASS 5000 Build 74
08/12/2016



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 1H
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 1H	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)	
2,455.0	0.28	275.30	2,453.3	-43.7	26.5	50.7	0.65	0.20	141.80	
2,480.0	0.38	250.05	2,478.3	-43.7	26.4	50.6	0.70	0.40	-101.00	
2,505.0	0.41	246.80	2,503.3	-43.8	26.2	50.6	0.15	0.12	-13.00	
2,530.0	0.29	244.94	2,528.3	-43.8	26.1	50.6	0.48	-0.48	-7.44	
2,555.0	0.36	252.09	2,553.3	-43.9	25.9	50.6	0.32	0.28	28.60	
2,580.0	0.33	267.70	2,578.3	-43.9	25.8	50.6	0.39	-0.12	62.44	
2,605.0	0.42	263.15	2,603.3	-43.9	25.6	50.5	0.38	0.36	-18.20	
2,630.0	0.41	266.31	2,628.3	-43.9	25.5	50.5	0.10	-0.04	12.64	
2,655.0	0.33	278.00	2,653.3	-43.9	25.3	50.4	0.44	-0.32	46.76	
2,680.0	0.40	278.44	2,678.3	-43.9	25.1	50.3	0.28	0.28	1.76	
2,705.0	0.44	274.49	2,703.3	-43.9	25.0	50.2	0.20	0.16	-15.80	
2,730.0	0.45	279.68	2,728.3	-43.9	24.8	50.1	0.17	0.04	20.76	
2,755.0	0.51	285.65	2,753.3	-43.8	24.6	50.0	0.31	0.24	23.88	
2,780.0	0.50	283.87	2,778.3	-43.8	24.4	49.9	0.07	-0.04	-7.12	
2,805.0	0.57	277.89	2,803.3	-43.7	24.1	49.7	0.36	0.28	-23.92	
2,830.0	0.52	282.75	2,828.3	-43.7	23.9	49.6	0.27	-0.20	19.44	
2,855.0	0.62	283.30	2,853.3	-43.6	23.6	49.4	0.40	0.40	2.20	
2,880.0	0.61	278.10	2,878.3	-43.6	23.4	49.3	0.23	-0.04	-20.80	
2,905.0	0.53	284.40	2,903.3	-43.5	23.1	49.1	0.41	-0.32	25.20	
2,930.0	0.54	288.47	2,928.3	-43.4	22.9	49.0	0.16	0.04	16.28	
2,955.0	0.59	284.97	2,953.3	-43.4	22.7	48.8	0.24	0.20	-14.00	
2,980.0	0.60	283.44	2,978.3	-43.3	22.4	48.7	0.08	0.04	-6.12	
3,005.0	0.62	292.04	3,003.3	-43.2	22.2	48.5	0.37	0.08	34.40	
3,030.0	0.65	288.02	3,028.3	-43.1	21.9	48.3	0.21	0.12	-16.08	
3,055.0	0.61	288.53	3,053.3	-43.1	21.7	48.1	0.16	-0.16	2.04	
3,080.0	0.52	290.73	3,078.3	-43.0	21.4	48.0	0.37	-0.36	8.80	
3,105.0	0.58	285.25	3,103.3	-42.9	21.2	47.8	0.32	0.24	-21.92	
3,130.0	0.72	288.30	3,128.3	-42.8	20.9	47.6	0.58	0.56	12.20	
3,155.0	0.65	283.51	3,153.3	-42.7	20.6	47.4	0.36	-0.28	-19.16	
3,180.0	0.62	287.39	3,178.3	-42.7	20.4	47.2	0.21	-0.12	15.52	
3,205.0	0.67	283.58	3,203.3	-42.6	20.1	47.1	0.26	0.20	-15.24	
3,230.0	0.71	287.07	3,228.3	-42.5	19.8	46.9	0.23	0.16	13.96	
3,255.0	0.69	290.04	3,253.3	-42.4	19.5	46.7	0.17	-0.08	11.88	
3,280.0	0.69	297.05	3,278.3	-42.3	19.2	46.5	0.34	0.00	28.04	
3,305.0	0.70	288.52	3,303.3	-42.2	19.0	46.2	0.42	0.04	-34.12	
3,330.0	0.65	287.43	3,328.3	-42.1	18.7	46.0	0.21	-0.20	-4.36	
3,355.0	0.69	289.23	3,353.3	-42.0	18.4	45.8	0.18	0.16	7.20	
3,380.0	0.68	287.42	3,378.3	-41.9	18.1	45.6	0.10	-0.04	-7.24	
3,405.0	0.71	287.86	3,403.3	-41.8	17.8	45.4	0.12	0.12	1.76	
3,430.0	0.60	290.91	3,428.3	-41.7	17.6	45.2	0.44	0.44	12.20	
3,455.0	0.68	294.50	3,453.3	-41.6	17.3	45.0	0.36	0.32	14.36	
3,480.0	0.66	291.71	3,478.3	-41.5	17.0	44.8	0.15	-0.08	-11.16	
3,505.0	0.78	291.56	3,503.3	-41.4	16.7	44.6	0.48	0.48	-0.60	
3,530.0	0.67	290.03	3,528.3	-41.3	16.4	44.4	0.45	-0.44	-6.12	

RECEIVED
Office of Oil and Gas
JUN 08 2016



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 1H
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 1H	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)
3,555.0	0.71	286.60	3,553.3	-41.2	16.2	44.2	0.23	0.16	-13.72
3,580.0	0.72	285.10	3,578.3	-41.1	15.9	44.0	0.08	0.04	-6.00
3,605.0	0.64	286.53	3,603.3	-41.0	15.6	43.8	0.33	-0.32	5.72
3,630.0	0.62	290.81	3,628.3	-40.9	15.3	43.6	0.20	-0.08	17.12
3,655.0	0.71	289.06	3,653.3	-40.8	15.0	43.4	0.37	0.36	-7.00
3,680.0	0.68	289.10	3,678.3	-40.7	14.8	43.2	0.12	-0.12	0.16
3,705.0	0.70	285.39	3,703.3	-40.6	14.5	43.0	0.20	0.08	-14.84
3,730.0	0.72	281.68	3,728.3	-40.5	14.2	42.8	0.20	0.08	-14.84
3,755.0	0.69	283.01	3,753.3	-40.5	13.9	42.6	0.14	-0.12	5.32
3,780.0	0.69	291.44	3,778.3	-40.4	13.6	42.4	0.41	0.00	33.72
3,805.0	0.69	289.76	3,803.3	-40.3	13.3	42.2	0.08	0.00	-6.72
3,830.0	0.68	286.28	3,828.3	-40.2	13.0	42.0	0.17	-0.04	-13.92
3,855.0	0.63	285.48	3,853.3	-40.1	12.7	41.9	0.20	-0.20	-3.20
3,880.0	0.67	291.60	3,878.3	-40.0	12.5	41.7	0.32	0.16	24.48
3,905.0	0.64	296.29	3,903.3	-39.9	12.2	41.4	0.25	-0.12	18.76
3,930.0	0.60	294.46	3,928.3	-39.8	12.0	41.2	0.18	-0.16	-7.32
3,955.0	0.61	288.29	3,953.3	-39.7	11.7	41.1	0.26	0.04	-24.68
3,980.0	0.58	291.56	3,978.3	-39.6	11.5	40.9	0.18	-0.12	13.08
4,005.0	0.62	289.75	4,003.2	-39.5	11.2	40.7	0.18	0.16	-7.24
4,030.0	0.57	289.29	4,028.2	-39.4	11.0	40.5	0.20	-0.20	-1.84
4,055.0	0.56	288.25	4,053.2	-39.4	10.8	40.4	0.06	-0.04	-4.16
4,080.0	0.50	286.75	4,078.2	-39.3	10.5	40.2	0.25	-0.24	-6.00
4,105.0	0.34	312.70	4,103.2	-39.2	10.4	40.1	0.98	-0.64	103.80
4,130.0	0.45	302.55	4,128.2	-39.1	10.2	39.9	0.52	0.44	-40.60
4,155.0	0.53	285.16	4,153.2	-39.0	10.0	39.8	0.67	0.32	-69.56
4,180.0	0.37	286.24	4,178.2	-39.0	9.9	39.6	0.64	-0.64	4.32
4,205.0	0.47	277.81	4,203.2	-38.9	9.7	39.5	0.47	0.40	-33.72
4,230.0	0.29	288.54	4,228.2	-38.9	9.5	39.4	0.77	-0.72	42.92
4,255.0	0.38	271.77	4,253.2	-38.9	9.4	39.4	0.53	0.36	-67.08
4,280.0	0.26	297.45	4,278.2	-38.8	9.2	39.3	0.74	-0.48	102.72
4,305.0	0.25	285.28	4,303.2	-38.8	9.1	39.2	0.22	-0.04	-48.68
4,330.0	0.23	268.67	4,328.2	-38.8	9.0	39.1	0.29	-0.08	-66.44
4,355.0	0.16	271.74	4,353.2	-38.8	8.9	39.1	0.28	-0.28	12.28
4,380.0	0.05	284.55	4,378.2	-38.8	8.9	39.1	0.45	-0.44	51.24
4,405.0	0.07	260.78	4,403.2	-38.8	8.9	39.1	0.13	0.08	-95.08
4,430.0	0.09	253.16	4,428.2	-38.8	8.8	39.1	0.09	0.08	-30.48
4,455.0	0.08	95.49	4,453.2	-38.8	8.8	39.1	0.67	-0.04	-630.68
4,480.0	0.09	159.80	4,478.2	-38.8	8.9	39.1	0.36	0.04	257.24
4,505.0	0.18	135.29	4,503.2	-38.9	8.9	39.2	0.42	0.36	96.04
4,530.0	0.23	115.30	4,528.2	-38.9	9.0	39.2	0.35	0.20	-79.96
4,555.0	0.26	99.16	4,553.2	-38.9	9.1	39.3	0.30	0.12	-64.56
4,580.0	0.27	120.78	4,578.2	-39.0	9.2	39.4	0.40	0.04	86.48
4,605.0	0.31	127.23	4,603.2	-39.1	9.3	39.5	0.21	0.16	25.80

RECEIVED
Office of Oil and Gas
JUN 08 2016
WV Department of Environmental Protection
CDMPASS 8000.1 Build 74



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 1H
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 1H	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)
4,630.0	0.36	121.53	4,628.2	-39.1	9.4	39.6	0.24	0.20	-22.80
4,655.0	0.39	127.35	4,653.2	-39.2	9.5	39.7	0.19	0.12	23.28
4,680.0	0.33	133.14	4,678.2	-39.3	9.7	39.9	0.28	-0.24	23.16
4,705.0	0.37	103.03	4,703.2	-39.4	9.8	40.0	0.74	0.16	-120.44
4,730.0	0.40	109.56	4,728.2	-39.4	10.0	40.1	0.21	0.12	26.12
4,755.0	0.33	112.50	4,753.2	-39.5	10.1	40.2	0.29	-0.28	11.76
4,780.0	0.31	125.79	4,778.2	-39.6	10.2	40.3	0.31	-0.08	53.16
4,805.0	0.38	122.06	4,803.2	-39.7	10.3	40.5	0.29	0.28	-14.92
4,830.0	0.38	126.69	4,828.2	-39.7	10.5	40.6	0.12	0.00	18.52
4,855.0	0.43	121.48	4,853.2	-39.8	10.6	40.8	0.25	0.20	-20.84
4,880.0	0.46	115.30	4,878.2	-39.9	10.8	40.9	0.23	0.12	-24.72
4,905.0	0.38	118.63	4,903.2	-40.0	11.0	41.0	0.33	-0.32	13.32
4,930.0	0.35	125.07	4,928.2	-40.1	11.1	41.2	0.20	-0.12	25.76
4,955.0	0.37	125.84	4,953.2	-40.2	11.2	41.3	0.08	0.08	3.08
4,980.0	0.44	117.98	4,978.2	-40.3	11.4	41.5	0.36	0.28	-31.44
5,005.0	0.47	128.85	5,003.2	-40.4	11.5	41.6	0.36	0.12	43.48
5,030.0	0.48	133.91	5,028.2	-40.5	11.7	41.8	0.17	0.04	20.24
5,055.0	0.48	119.17	5,053.2	-40.7	11.9	42.0	0.49	0.00	-58.96
5,080.0	0.42	131.06	5,078.2	-40.8	12.0	42.2	0.44	-0.24	47.56
5,105.0	0.48	120.81	5,103.2	-40.9	12.2	42.3	0.40	0.24	-41.00
5,130.0	0.53	131.52	5,128.2	-41.0	12.4	42.5	0.43	0.20	42.84
5,155.0	0.48	122.87	5,153.2	-41.1	12.5	42.7	0.36	-0.20	-34.60
5,180.0	0.57	124.00	5,178.2	-41.3	12.7	42.9	0.36	0.36	4.52
5,205.0	0.48	114.50	5,203.2	-41.4	12.9	43.1	0.50	-0.36	-38.00
5,230.0	0.50	126.37	5,228.2	-41.5	13.1	43.3	0.41	0.08	47.48
5,255.0	0.51	123.62	5,253.2	-41.6	13.3	43.4	0.10	0.04	-11.00
5,280.0	0.52	132.57	5,278.2	-41.8	13.5	43.6	0.32	0.04	35.80
5,305.0	0.55	123.04	5,303.2	-41.9	13.6	43.8	0.38	0.12	-38.12
5,330.0	0.63	129.83	5,328.2	-42.1	13.9	44.1	0.42	0.32	27.16
5,355.0	0.56	127.73	5,353.2	-42.2	14.1	44.3	0.29	-0.28	-8.40
5,380.0	0.56	129.16	5,378.2	-42.4	14.2	44.5	0.06	0.00	5.72
5,405.0	0.47	142.07	5,403.2	-42.5	14.4	44.7	0.59	-0.36	51.64
5,430.0	0.44	132.63	5,428.2	-42.7	14.5	44.9	0.32	-0.12	-37.76
5,455.0	0.47	130.98	5,453.2	-42.8	14.7	45.1	0.13	0.12	-6.60
5,480.0	0.48	127.68	5,478.2	-42.9	14.8	45.3	0.12	0.04	-13.20
5,505.0	0.42	140.32	5,503.2	-43.1	15.0	45.5	0.46	-0.24	50.56
5,530.0	0.53	145.51	5,528.2	-43.2	15.1	45.7	0.47	0.44	20.76
5,555.0	0.63	129.52	5,553.2	-43.4	15.3	45.9	0.76	0.40	-63.96
5,580.0	0.73	127.65	5,578.2	-43.6	15.5	46.2	0.41	0.40	-7.48
5,605.0	0.56	124.37	5,603.2	-43.8	15.7	46.4	0.70	-0.88	-13.12
5,630.0	0.56	121.84	5,628.2	-43.9	15.9	46.6	0.10	0.00	-10.12
5,655.0	0.63	130.40	5,653.2	-44.1	16.2	46.8	0.45	0.28	34.24
5,680.0	0.43	130.60	5,678.2	-44.2	16.3	47.0	0.80	-0.80	0.80

RECEIVED
Office of Oil and Gas
JUN 08 2016

WV Department of Environmental Protection
COMPASS 5000 v. Build 74
08/12/2016



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 1H
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 1H	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)	
5,705.0	0.55	150.99	5,703.2	-44.4	16.5	47.2	0.84	0.48	81.56	
5,730.0	0.60	156.04	5,728.2	-44.6	16.6	47.5	0.28	0.20	20.20	
5,755.0	0.68	134.40	5,753.2	-44.8	16.7	47.8	1.01	0.32	-86.56	
5,780.0	0.74	132.54	5,778.2	-45.0	17.0	48.0	0.26	0.24	-7.44	
5,799.0	0.78	140.46	5,797.2	-45.2	17.1	48.3	0.59	0.21	41.68	
Last SDI Gyro @ 5799 MD										
5,830.0	3.04	63.28	5,828.2	-45.0	18.0	48.4	9.57	7.29	-248.97	
First SDI MWD @ 5830 MD										
5,861.0	8.33	55.15	5,859.0	-43.4	20.6	48.0	17.22	17.06	-26.23	
5,891.0	12.33	50.09	5,888.5	-40.1	24.8	46.7	13.66	13.33	-16.87	
5,922.0	16.01	48.26	5,918.6	-35.1	30.6	44.4	11.96	11.87	-5.90	
5,953.0	19.47	48.36	5,948.1	-28.8	37.6	41.5	11.16	11.16	0.32	
5,984.0	22.34	50.59	5,977.1	-21.6	46.0	38.3	9.61	9.26	7.19	
6,015.0	25.17	52.84	6,005.4	-13.9	55.8	35.2	9.58	9.13	7.26	
6,046.0	26.78	54.06	6,033.3	-5.8	66.7	32.2	5.47	5.19	3.94	
6,077.0	28.04	56.62	6,060.8	2.3	78.5	29.5	5.56	4.06	8.26	
6,107.0	27.86	59.15	6,087.3	9.8	90.4	27.5	4.00	-0.60	8.43	
6,138.0	28.84	57.83	6,114.6	17.5	102.9	25.5	3.75	3.16	-4.26	
6,169.0	31.35	52.60	6,141.4	26.3	115.7	22.5	11.70	8.10	-16.87	
6,200.0	34.64	48.88	6,167.4	37.0	128.7	17.9	12.46	10.61	-12.00	
6,231.0	37.56	47.55	6,192.5	49.2	142.3	12.3	9.75	9.42	-4.29	
6,262.0	41.18	50.48	6,216.4	62.1	157.2	6.5	13.12	11.68	9.45	
6,293.0	45.02	54.37	6,239.1	75.0	174.0	1.4	15.06	12.39	12.55	
6,323.0	46.93	60.76	6,259.9	86.5	192.2	-1.8	16.58	6.37	21.30	
6,343.0	47.35	64.96	6,273.5	93.2	205.2	-2.7	15.55	2.11	21.02	
Sycamore @ 6343 MD										
6,354.0	47.65	67.25	6,281.0	96.5	212.6	-2.7	15.55	2.70	20.78	
6,385.0	48.36	73.12	6,301.7	104.3	234.3	-1.1	14.26	2.29	18.94	
6,416.0	48.98	78.68	6,322.2	109.9	256.8	2.8	13.61	2.00	17.94	
6,447.0	50.50	82.88	6,342.2	113.7	280.2	8.8	11.44	4.90	13.55	
6,478.0	50.82	86.78	6,361.9	115.9	304.1	16.4	9.78	1.03	12.58	
6,508.0	51.32	91.56	6,380.7	116.2	327.4	25.5	12.50	1.67	15.93	
6,539.0	50.90	97.26	6,400.2	114.4	351.4	36.9	14.37	-1.35	18.39	
6,570.0	50.46	101.50	6,419.9	110.5	375.1	50.0	10.67	-1.42	13.68	
6,596.0	51.23	104.67	6,436.3	105.9	394.7	62.0	9.91	2.97	12.19	
Middlesex @ 6596 MD										
6,601.0	51.39	105.27	6,439.4	104.9	398.5	64.5	9.91	3.16	12.03	
6,632.0	52.91	110.48	6,458.4	97.4	421.8	80.7	14.14	4.90	16.81	
6,663.0	55.00	114.30	6,476.7	87.8	444.9	98.8	12.03	6.74	12.32	
6,693.0	58.64	117.56	6,493.1	76.8	467.5	118.0	15.16	12.13	10.87	
6,724.0	61.15	122.03	6,508.7	63.5	490.7	139.5	14.87	8.10	14.42	
6,755.0	62.35	125.24	6,523.3	48.4	513.5	162.5	9.91	3.87	10.35	
6,786.0	63.25	129.03	6,537.5	31.7	535.4	186.6	11.25	2.90	12.23	
6,817.0	65.73	132.44	6,550.9	13.5	556.6	211.9	12.75	8.00	11.00	
Burkett @ 6817 MD										



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 1H
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 1H	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)
6,848.0	67.29	136.85	6,563.2	-6.5	576.8	238.3	13.98	5.03	14.23
6,879.0	68.74	140.59	6,574.8	-28.1	595.8	265.7	12.13	4.68	12.06
6,905.0	69.23	142.68	6,584.2	-47.1	610.9	289.2	7.74	1.89	8.04
Tully @ 6905 MD									
6,909.0	69.31	143.00	6,585.6	-50.1	613.1	292.8	7.74	1.95	8.01
6,940.0	70.75	145.27	6,596.2	-73.7	630.2	321.3	8.30	4.65	7.32
6,971.0	73.47	147.67	6,605.7	-98.3	646.5	350.4	11.46	8.77	7.74
6,985.0	75.23	148.44	6,609.5	-109.8	653.6	363.7	13.63	12.56	5.49
MRCL_HOT @ 6985 MD									
7,006.0	77.87	149.57	6,614.3	-127.3	664.1	384.0	13.63	12.58	5.39
7,037.0	79.37	152.04	6,620.5	-153.8	678.9	414.2	9.19	4.84	7.97
7,067.0	81.86	151.77	6,625.4	-179.9	692.9	443.7	8.35	8.30	-0.90
7,098.0	83.47	152.09	6,629.3	-207.0	707.4	474.4	5.29	5.19	1.03
7,129.0	86.39	151.36	6,632.0	-234.2	722.0	505.2	9.71	9.42	-2.35
7,160.0	89.15	151.40	6,633.3	-261.4	736.8	536.0	8.90	8.90	0.13
7,191.0	89.60	151.41	6,633.6	-288.6	751.7	566.9	1.45	1.45	0.03
7,222.0	89.28	151.59	6,633.9	-315.9	766.4	597.8	1.18	-1.03	0.58
7,314.0	90.32	154.19	6,634.2	-397.8	808.4	689.6	3.04	1.13	2.83
7,407.0	88.79	153.03	6,634.9	-481.1	849.7	782.5	2.06	-1.65	-1.25
7,499.0	90.57	153.12	6,635.5	-563.1	891.4	874.4	1.94	1.93	0.10
7,592.0	91.19	154.88	6,634.0	-646.7	932.1	967.3	2.01	0.67	1.89
7,684.0	88.63	158.20	6,634.2	-731.0	968.7	1,059.3	4.56	-2.78	3.61
7,777.0	89.67	157.81	6,635.5	-817.3	1,003.6	1,152.2	1.19	1.12	-0.42
7,869.0	87.80	158.36	6,637.6	-902.6	1,037.9	1,244.2	2.12	-2.03	0.60
7,962.0	88.23	157.98	6,640.8	-988.9	1,072.4	1,337.0	0.62	0.46	-0.41
8,054.0	89.62	158.05	6,642.5	-1,074.2	1,106.9	1,429.0	1.51	1.51	0.08
8,147.0	88.21	158.23	6,644.3	-1,160.5	1,141.5	1,521.9	1.53	-1.52	0.19
8,240.0	89.59	157.53	6,646.1	-1,246.6	1,176.5	1,614.9	1.66	1.48	-0.75
8,332.0	88.43	157.44	6,647.7	-1,331.6	1,211.7	1,706.8	1.26	-1.26	-0.10
8,425.0	89.54	156.69	6,649.3	-1,417.2	1,248.0	1,799.8	1.44	1.19	-0.81
8,517.0	89.00	155.96	6,650.5	-1,501.4	1,284.9	1,891.8	0.99	-0.59	-0.79
8,610.0	88.32	156.07	6,652.7	-1,586.4	1,322.7	1,984.8	0.74	-0.73	0.12
8,702.0	88.48	156.03	6,655.2	-1,670.4	1,360.0	2,076.7	0.18	0.17	-0.04
8,795.0	89.16	155.85	6,657.1	-1,755.3	1,397.9	2,169.7	0.76	0.73	-0.19
8,887.0	89.46	155.16	6,658.2	-1,839.0	1,436.1	2,261.7	0.82	0.33	-0.75
8,980.0	89.53	154.79	6,659.1	-1,923.3	1,475.4	2,354.7	0.40	0.08	-0.40
9,073.0	88.89	155.81	6,660.4	-2,007.8	1,514.3	2,447.6	1.29	-0.69	1.10
9,165.0	88.66	156.02	6,662.3	-2,091.8	1,551.8	2,539.6	0.34	-0.25	0.23
9,258.0	88.76	156.19	6,664.4	-2,176.8	1,589.5	2,632.6	0.21	0.11	0.18
9,350.0	89.07	156.39	6,666.2	-2,261.0	1,626.5	2,724.6	0.40	0.34	0.22
9,443.0	89.17	155.65	6,667.6	-2,346.0	1,664.3	2,817.6	0.80	0.11	0.89
9,535.0	89.68	155.81	6,668.5	-2,429.8	1,702.1	2,909.5	0.58	0.55	0.17
9,628.0	89.38	156.12	6,669.3	-2,514.8	1,739.9	3,002.5	0.46	0.38	0.33

RECEIVED
Office of Oil and Gas
JUN 08 2016



Scientific Drilling International
Survey Report



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 1H
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 1H	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)
9,720.0	89.11	154.60	6,670.5	-2,598.4	1,778.3	3,094.5	1.68	-0.29	-1.65
9,813.0	90.22	155.93	6,671.0	-2,682.8	1,817.2	3,187.5	1.86	1.19	1.43
9,906.0	89.51	156.53	6,671.2	-2,767.9	1,854.7	3,280.5	1.00	-0.76	0.65
9,998.0	89.21	156.60	6,672.3	-2,852.3	1,891.3	3,372.5	0.33	-0.33	0.08
10,091.0	90.30	157.99	6,672.7	-2,938.1	1,927.2	3,465.5	1.90	1.17	1.49
10,183.0	89.19	159.05	6,673.1	-3,023.7	1,960.9	3,557.4	1.67	-1.21	1.15
10,276.0	88.75	158.83	6,674.7	-3,110.5	1,994.3	3,650.3	0.53	-0.47	-0.24
10,368.0	89.19	157.50	6,676.4	-3,195.9	2,028.5	3,742.2	1.52	0.48	-1.45
10,461.0	90.01	160.14	6,677.1	-3,282.6	2,062.1	3,835.1	2.97	0.88	2.84
10,553.0	89.44	158.21	6,677.5	-3,368.6	2,094.8	3,927.0	2.19	-0.62	-2.10
10,646.0	89.13	157.01	6,678.7	-3,454.6	2,130.2	4,019.9	1.33	-0.33	-1.29
10,738.0	89.85	158.06	6,679.5	-3,539.6	2,165.4	4,111.9	1.38	0.78	1.14
10,831.0	89.61	155.41	6,679.9	-3,625.0	2,202.1	4,204.9	2.86	-0.26	-2.85
10,923.0	88.64	151.25	6,681.3	-3,707.2	2,243.4	4,296.8	4.64	-1.05	-4.52
11,016.0	89.58	151.76	6,682.8	-3,788.9	2,287.7	4,389.4	1.15	1.01	0.55
11,108.0	91.06	153.98	6,682.2	-3,870.8	2,329.7	4,481.3	2.90	1.61	2.41
11,200.0	90.99	153.27	6,680.6	-3,953.2	2,370.6	4,573.1	0.78	-0.08	-0.77
11,293.0	88.00	154.49	6,681.4	-4,036.7	2,411.5	4,666.0	3.47	-3.22	1.31
11,385.0	89.95	157.01	6,683.1	-4,120.5	2,449.3	4,758.0	3.46	2.12	2.74
11,478.0	90.38	155.99	6,682.8	-4,205.8	2,486.3	4,851.0	1.19	0.46	-1.10
11,570.0	90.04	157.21	6,682.5	-4,290.3	2,522.9	4,943.0	1.38	-0.37	1.33
11,663.0	90.51	157.89	6,682.0	-4,376.2	2,558.4	5,036.0	0.89	0.51	0.73
11,756.0	90.72	158.07	6,681.0	-4,462.4	2,593.3	5,128.9	0.30	0.23	0.19
11,848.0	90.45	156.32	6,680.1	-4,547.2	2,628.9	5,220.9	1.92	-0.29	-1.90
11,941.0	90.96	155.60	6,678.9	-4,632.1	2,666.8	5,313.9	0.95	0.55	-0.77
12,033.0	90.32	157.24	6,677.9	-4,716.5	2,703.6	5,405.9	1.91	-0.70	1.78
12,126.0	91.14	156.47	6,676.7	-4,802.0	2,740.2	5,498.9	1.21	0.88	-0.83
12,219.0	90.67	157.09	6,675.3	-4,887.4	2,776.8	5,591.9	0.84	-0.51	0.67
12,311.0	91.37	156.89	6,673.6	-4,972.1	2,812.8	5,683.8	0.79	0.76	-0.22
12,404.0	90.80	157.95	6,671.9	-5,057.9	2,848.5	5,776.8	1.29	-0.61	1.14
12,496.0	91.64	157.93	6,669.9	-5,143.2	2,883.0	5,868.7	0.91	0.91	-0.02
12,589.0	89.50	156.04	6,669.0	-5,228.8	2,919.4	5,961.7	3.07	-2.30	-2.03
12,681.0	89.83	155.19	6,669.5	-5,312.6	2,957.4	6,053.7	0.99	0.36	-0.92
12,774.0	91.42	154.55	6,668.5	-5,396.7	2,996.8	6,146.7	1.84	1.71	-0.69
12,866.0	91.25	154.79	6,666.4	-5,479.9	3,036.2	6,238.6	0.32	-0.18	0.26
12,959.0	91.25	156.61	6,664.3	-5,564.6	3,074.5	6,331.6	1.96	0.00	1.96
13,051.0	91.80	157.29	6,661.9	-5,649.2	3,110.5	6,423.5	0.95	0.60	0.74
13,144.0	90.63	155.82	6,659.9	-5,734.5	3,147.5	6,516.5	2.02	-1.26	-1.58
13,237.0	90.86	155.22	6,658.7	-5,819.2	3,186.0	6,609.5	0.69	0.25	-0.65
13,329.0	91.70	154.76	6,656.6	-5,902.5	3,224.9	6,701.5	1.04	0.91	-0.50
13,422.0	91.87	155.72	6,653.7	-5,986.9	3,263.8	6,794.4	1.05	0.76	1.03
13,515.0	92.11	157.02	6,650.5	-6,072.1	3,301.1	6,887.3	1.42	-0.26	0.40
13,607.0	90.93	157.63	6,648.1	-6,156.9	3,336.5	6,979.3	1.44	-1.28	0.66
13,700.0	90.09	157.90	6,647.2	-6,243.0	3,371.7	7,072.2	0.95	-0.90	0.29

RECEIVED
Office of Oil and Gas
JUN 08 2016



Company:	Antero	Local Co-ordinate Reference:	Well Miracle Unit 1H
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 1H	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)
13,792.0	88.91	156.64	6,648.0	-6,327.9	3,407.2	7,164.2	1.88	-1.28	-1.37
13,885.0	88.98	156.48	6,649.8	-6,413.2	3,444.2	7,257.2	0.19	0.08	-0.17
13,977.0	89.18	156.63	6,651.2	-6,497.6	3,480.8	7,349.2	0.27	0.22	0.16
14,070.0	87.97	156.69	6,653.5	-6,582.9	3,517.7	7,442.2	1.30	-1.30	0.06
14,162.0	88.78	156.69	6,656.2	-6,667.4	3,554.1	7,534.1	0.88	0.88	0.00
14,213.0	89.00	156.69	6,657.1	-6,714.2	3,574.2	7,585.1	0.43	0.43	0.00
Last SDI MWD @ 14213 MD									
14,280.0	88.70	156.20	6,658.5	-6,775.6	3,601.0	7,652.1	0.86	-0.45	-0.73
Projection To Bit @ 14280 MD / 6658 TVD									

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,343.0	6,273.5	Sycamore @ 6343 MD		0.00	
6,596.0	6,436.3	Middlesex @ 6596 MD		0.00	
6,817.0	6,550.9	Burkett @ 6817 MD		0.00	
6,905.0	6,584.2	Tully @ 6905 MD		0.00	
6,985.0	6,609.5	MRCL_HOT @ 6985 MD		0.00	

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
105.0	105.0	0.2	-0.1	First SDI Gyro @ 105 MD
5,799.0	5,797.2	-45.2	17.1	Last SDI Gyro @ 5799 MD
5,830.0	5,828.2	-45.0	18.0	First SDI MWD @ 5830 MD
14,213.0	6,657.1	-6,714.2	3,574.2	Last SDI MWD @ 14213 MD
14,280.0	6,658.5	-6,775.6	3,601.0	Projection To Bit @ 14280 MD / 6658 TVD

Checked By: _____ Approved By: _____ Date: _____