



ANTERO RESOURCES CORPORATION

Location: Ritchie County, WV
Slot: Norma Unit 1H
Field: Norma Unit 1H PWB
Facility: Zinn Pad

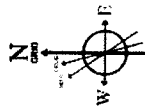


Plot reference wellpath is Norma Unit 1H PWP Rev-A.0
True vertical depths are referenced to Patterson 343 (RKB)
Measured depths are referenced to Patterson 343 (RKB)
Patterson 343 (RKB) to Mean Sea Level: 1144 feet
Mean Sea Level to Mud line (At Slot: Slot #02): -1119 feet
Coordinates are in feet referenced to Slot
Grid System: NAD27 / UTM Zone 17 North, US feet
* = Wellpath was transformed from a different geodetic datum
North Reference: Grid north
Scale: True distance
Depths are in feet
Created by: hareluk on 2016-06-17
Database: WA_MPL_EASTERNUUS_Defn

Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
Zinn Pad	1657882.100	14278491.400	80°56'17.860"W
Local N (ft)	Local E (ft)	Grid North (US ft)	Latitude
33.31	-22.01	1657860.100	39°19'12.700"N
Patterson 343 (RKB) to Mud line (At Slot: Slot #02)			Longitude
Mean Sea Level to Mud line (At Slot: Slot #02)			80°56'17.960"W
Patterson 343 (RKB) to Mean Sea Level			25ft
			-1119ft
			1144ft

SDI Gyro Sid Keeper (112° - 5587') : 0.08° Inc, 112.00ft TVD, 0.00ft VS

Well Data			
Slot	Well	Wellbore	Wellpath
Slot #02	Norma Unit 1H	Norma Unit 1H AWB	Norma Unit 1H AWP Proj: 15674'
Slot #02	Norma Unit 1H	Norma Unit 1H PWB	Norma Unit 1H PWP Rev-A.0



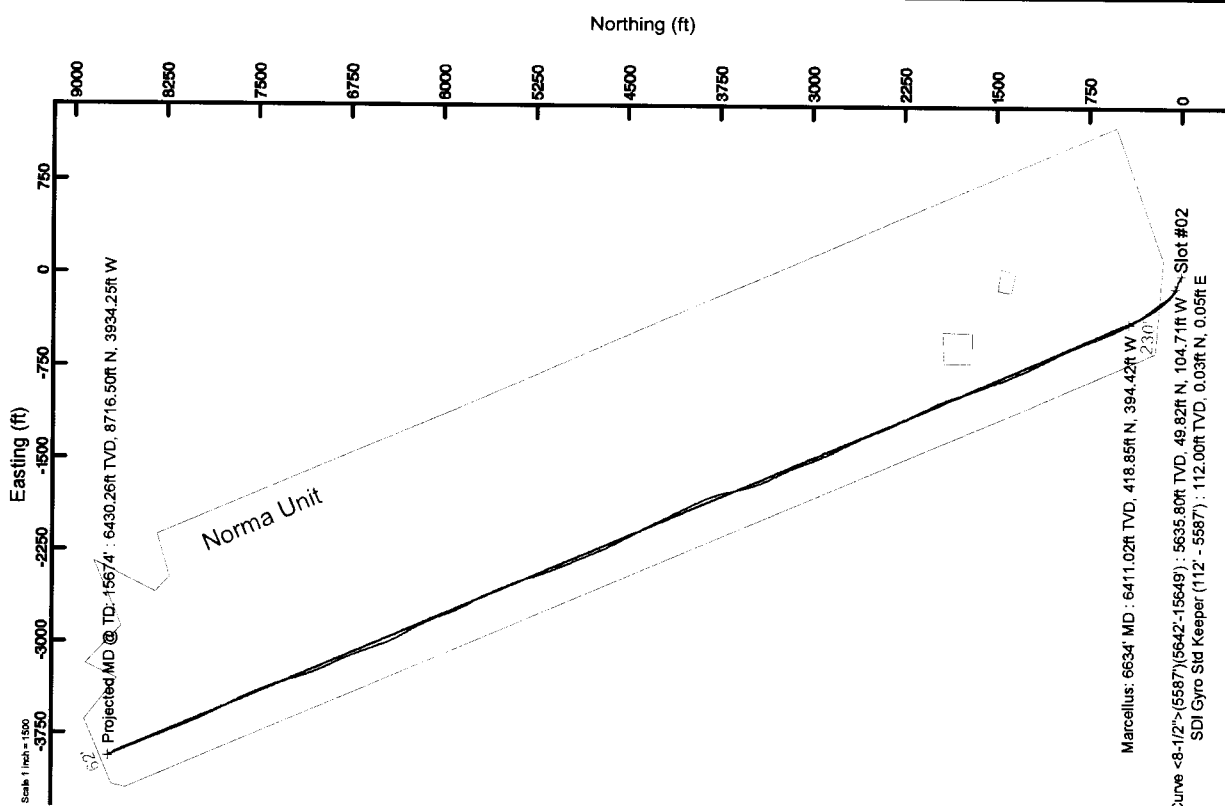
Bottom (1900.0 to 2016.0) Dip: 68.85° Field: 32120.47T
Magnetic Declination: 10.00° East of True (06/2016)
Grid North is 0.04 degrees East of True North
To correct azimuth from True to Grid subtract 0.04 degrees
To correct azimuth from Magnetic to Grid subtract 8.57 degrees

API: 47-085-10169-0000
BHI Job #: 7998992
Rig: Patterson 343
Duration: 06.11.216-06.13.2016

BHI AT Curve <8-1/2"> (5587') (5642'-15649') : 0.54° Inc, 5642.00ft MD, 5635.80ft TVD, 86.96ft VS

Marcellus: 6634' MD : 74.56° Inc, 6634.00ft MD, 6411.02ft TVD, 540.15ft VS

Projected MD @ TD: 15674' : 90.09° Inc, 15674.00ft MD, 6430.26ft TVD, 9561.31ft VS



Scale 1 inch = 1500

Scale 1 inch = 1500

Vertical Section (ft)
Azimuth 336.86° with reference 0.00 N, 0.00 E



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Norma Unit 1H AWP Proj: 15674'

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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #02
Area	Ritchie County, WV	Well	Norma Unit 1H
Field	Ritchie	Wellbore	Norma Unit 1H AWB
Facility	Zinn Pad		

REPORT SETUP INFORMATION

Projection System	NAD27 / UTM Zone 17 North, US feet	Software System	WellArchitect® 5.0
North Reference	Grid	User	Hareluk
Scale	0.999600	Report Generated	6/17/2016 at 10:09:03 AM
Convergence at slot	0.04° East	Database/Source file	WA_MPL_EASTERNUS_Defn\Norma_Unit_1H_AWP_Proj_15674_.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	33.31	-22.01	1657860.10	14278524.70	39°19'12.700"N	80°56'17.960"W
Facility Reference Pt			1657882.10	14278491.40	39°19'12.370"N	80°56'17.680"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.301"W

WELLPATH DATUM

Calculation method	Minimum curvature	Patterson 343 (RKB) to Facility Vertical Datum	25.00ft
Horizontal Reference Pt	Slot	Patterson 343 (RKB) to Mean Sea Level	1144.00ft
Vertical Reference Pt	Patterson 343 (RKB)	Patterson 343 (RKB) to Mud Line at Slot (Slot #02)	25.00ft
MD Reference Pt	Patterson 343 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	336.86°



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Norma Unit 1H AWP Proj: 15674'

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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #02
Area	Ritchie County, WV	Well	Norma Unit 1H
Field	Ritchie	Wellbore	Norma Unit 1H AWB
Facility	Zinn Pad		

WELLPATH DATA (344 stations) † = interpolated/extrapolated station

MD	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [ft]	Grid North [ft]	Latitude [°]	Longitude [°]	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]	Comments
0.00	0.000	63.200	0.00	0.00	0.00	0.00	1657860.10	14278524.70	39°19'12.700"N	80°56'17.960"W	0.00	0.000	0.00	0.00	0.00	
25.00	0.000	63.200	25.00	0.00	0.00	0.00	1657860.10	14278524.70	39°19'12.700"N	80°56'17.960"W	0.00	0.000	0.00	0.00	0.00	
112.00	0.080	63.200	112.00	0.00	0.03	0.05	1657860.15	14278524.73	39°19'12.700"N	80°56'17.959"W	0.08	63.200	0.09	0.09	72.64	SDI Gyro Std Keeper (112' - 5587')
137.00	0.030	339.330	137.00	0.01	0.04	0.07	1657860.17	14278524.74	39°19'12.700"N	80°56'17.959"W	0.08	58.484	0.33	-0.20	-335.48	
162.00	0.030	354.770	162.00	0.02	0.05	0.06	1657860.16	14278524.75	39°19'12.700"N	80°56'17.959"W	0.08	50.986	0.03	0.00	61.76	
187.00	0.090	346.080	187.00	0.05	0.08	0.06	1657860.16	14278524.78	39°19'12.700"N	80°56'17.959"W	0.10	36.666	0.24	0.24	-34.76	
212.00	0.090	7.980	212.00	0.09	0.12	0.06	1657860.16	14278524.82	39°19'12.701"N	80°56'17.959"W	0.13	25.865	0.14	0.00	87.60	
237.00	0.100	12.620	237.00	0.12	0.16	0.06	1657860.16	14278524.86	39°19'12.701"N	80°56'17.959"W	0.17	22.179	0.05	0.04	18.56	
262.00	0.040	323.790	262.00	0.15	0.19	0.06	1657860.16	14278524.89	39°19'12.701"N	80°56'17.959"W	0.20	18.977	0.32	-0.24	-195.32	
287.00	0.050	297.530	287.00	0.17	0.20	0.05	1657860.15	14278524.90	39°19'12.702"N	80°56'17.959"W	0.21	13.370	0.12	0.08	-105.04	
312.00	0.050	328.470	312.00	0.19	0.22	0.03	1657860.13	14278524.92	39°19'12.702"N	80°56'17.960"W	0.22	7.996	0.12	-0.04	123.76	
337.00	0.060	329.420	337.00	0.21	0.24	0.02	1657860.12	14278524.94	39°19'12.702"N	80°56'17.960"W	0.24	4.340	0.04	0.04	3.80	
362.00	0.070	226.880	362.00	0.22	0.25	0.01	1657860.10	14278524.95	39°19'12.702"N	80°56'17.960"W	0.25	1.111	0.22	-0.12	-270.04	
387.00	0.070	226.880	387.00	0.22	0.24	-0.01	1657860.09	14278524.94	39°19'12.702"N	80°56'17.960"W	0.24	356.874	0.19	0.16	-140.12	
412.00	0.050	247.490	412.00	0.22	0.22	-0.03	1657860.07	14278524.92	39°19'12.702"N	80°56'17.960"W	0.22	351.219	0.12	-0.08	82.44	
437.00	0.060	219.290	437.00	0.21	0.21	-0.05	1657860.05	14278524.91	39°19'12.702"N	80°56'17.961"W	0.21	345.735	0.11	0.04	-112.80	
462.00	0.030	200.640	462.00	0.20	0.19	-0.06	1657860.04	14278524.89	39°19'12.701"N	80°56'17.961"W	0.20	341.645	0.13	-0.12	-74.60	
487.00	0.060	87.500	487.00	0.19	0.18	-0.05	1657860.05	14278524.88	39°19'12.701"N	80°56'17.961"W	0.19	344.179	0.31	0.12	-452.56	
512.00	0.060	202.400	512.00	0.18	0.17	-0.04	1657860.06	14278524.87	39°19'12.701"N	80°56'17.961"W	0.18	345.669	0.40	0.00	459.60	
537.00	0.040	106.640	537.00	0.16	0.16	-0.04	1657860.06	14278524.86	39°19'12.701"N	80°56'17.961"W	0.16	345.547	0.30	-0.08	-383.04	
562.00	0.090	213.110	562.00	0.15	0.14	-0.04	1657860.06	14278524.84	39°19'12.701"N	80°56'17.961"W	0.15	342.790	0.43	0.20	425.88	
587.00	0.090	256.420	587.00	0.14	0.12	-0.06	1657860.04	14278524.82	39°19'12.701"N	80°56'17.961"W	0.14	331.813	0.25	-0.16	173.24	
612.00	0.170	163.310	612.00	0.10	0.08	-0.06	1657860.04	14278524.78	39°19'12.700"N	80°56'17.961"W	0.10	321.922	0.72	0.48	-372.44	
637.00	0.270	173.270	637.00	0.01	-0.01	-0.05	1657860.05	14278524.69	39°19'12.699"N	80°56'17.961"W	0.05	255.909	0.43	0.40	39.84	
662.00	0.290	195.570	662.00	-0.11	-0.13	-0.02	1657860.08	14278524.57	39°19'12.698"N	80°56'17.960"W	0.13	190.433	0.17	0.08	-30.80	
687.00	0.240	170.530	687.00	-0.22	-0.24	0.00	1657860.10	14278524.46	39°19'12.697"N	80°56'17.960"W	0.24	179.962	0.22	-0.20	19.84	
712.00	0.260	159.780	712.00	-0.33	-0.35	0.03	1657860.13	14278524.35	39°19'12.696"N	80°56'17.960"W	0.35	175.355	0.20	0.08	-43.00	
737.00	0.260	174.050	737.00	-0.44	-0.46	0.05	1657860.15	14278524.24	39°19'12.695"N	80°56'17.959"W	0.46	173.306	0.26	0.00	57.08	
762.00	0.220	166.840	762.00	-0.54	-0.56	0.07	1657860.17	14278524.14	39°19'12.694"N	80°56'17.959"W	0.57	172.834	0.20	-0.16	-28.84	
787.00	0.240	165.890	787.00	-0.64	-0.66	0.08	1657860.19	14278524.04	39°19'12.693"N	80°56'17.959"W	0.67	171.842	0.08	0.08	-4.64	



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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #02
Area	Ritchie County, WV	Well	Norma Unit 1H
Field	Ritchie	Wellbore	Norma Unit 1H AWB
Facility	Zinn Pad		

WELLPATH DATA (344 stations)

ID	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [1/100ft]	Build Rate [1/100ft]	Turn Rate [1/100ft]	Comments
812.00	0.190	148.810	812.00	-0.74	-0.75	0.13	1657860.23	14278523.95	39°19'12.692"N	80°56'17.958"W	0.76	170.189	0.32	-0.20	-67.48	
837.00	0.240	154.320	837.00	-0.83	-0.83	0.17	1657860.27	14278523.87	39°19'12.691"N	80°56'17.958"W	0.85	168.196	0.22	0.20	22.04	
862.00	0.140	180.440	862.00	-0.91	-0.91	0.20	1657860.30	14278523.79	39°19'12.691"N	80°56'17.958"W	0.93	167.821	0.52	-0.40	104.48	
887.00	0.200	228.980	887.00	-0.95	-0.97	0.16	1657860.26	14278523.74	39°19'12.690"N	80°56'17.958"W	0.98	170.449	0.60	0.24	194.16	
912.00	0.280	251.500	912.00	-0.98	-1.01	0.07	1657860.17	14278523.69	39°19'12.690"N	80°56'17.959"W	1.02	175.960	0.49	0.32	90.08	
937.00	0.820	286.780	937.00	-0.84	-0.88	-0.16	1657859.94	14278523.72	39°19'12.690"N	80°56'17.962"W	0.99	189.127	2.45	2.16	141.12	
962.00	1.040	293.720	961.99	-0.56	-0.84	-0.54	1657859.56	14278523.86	39°19'12.693"N	80°56'17.967"W	1.00	212.628	0.99	0.88	27.76	
987.00	1.350	295.740	986.99	-0.17	-0.62	-1.01	1657859.09	14278524.08	39°19'12.693"N	80°56'17.973"W	1.18	238.486	1.25	1.24	8.08	
1012.00	1.780	300.840	1011.98	0.36	-0.29	-1.61	1657858.49	14278524.41	39°19'12.697"N	80°56'17.980"W	1.63	259.706	1.81	1.72	20.40	
1037.00	2.190	298.870	1036.96	1.05	0.14	-2.36	1657857.74	14278524.84	39°19'12.701"N	80°56'17.990"W	2.36	273.337	1.66	1.64	-7.88	
1062.00	2.900	302.610	1061.94	1.95	0.71	-3.31	1657856.79	14278525.41	39°19'12.707"N	80°56'18.002"W	3.39	282.087	2.92	2.84	14.96	
1087.00	3.350	303.870	1086.90	3.09	1.46	-4.45	1657855.65	14278526.16	39°19'12.714"N	80°56'18.017"W	4.68	288.128	1.82	1.80	5.04	
1112.00	3.780	304.860	1111.85	4.40	2.34	-5.73	1657854.37	14278527.03	39°19'12.723"N	80°56'18.033"W	6.19	292.162	1.74	1.72	3.96	
1137.00	4.270	305.440	1136.79	5.89	3.35	-7.17	1657852.94	14278528.04	39°19'12.733"N	80°56'18.051"W	7.91	295.023	1.97	1.96	2.32	
1162.00	4.830	305.600	1181.71	7.39	4.50	-8.78	1657851.32	14278529.20	39°19'12.744"N	80°56'18.072"W	9.87	297.123	2.24	2.24	0.64	
1187.00	5.600	305.610	1186.61	9.53	5.82	-10.63	1657849.48	14278530.52	39°19'12.757"N	80°56'18.095"W	12.12	298.708	3.08	3.08	0.04	
1212.00	6.130	305.430	1211.48	11.71	7.31	-12.71	1657847.40	14278532.00	39°19'12.772"N	80°56'18.122"W	14.66	299.892	2.12	2.12	-0.72	
1237.00	6.350	305.850	1236.33	14.04	8.89	-14.92	1657845.19	14278533.59	39°19'12.788"N	80°56'18.150"W	17.36	300.790	0.80	0.88	1.68	
1262.00	6.470	305.440	1261.17	16.42	10.52	-17.18	1657842.92	14278535.21	39°19'12.804"N	80°56'18.179"W	20.15	301.462	0.51	0.48	-1.64	
1287.00	6.480	304.940	1286.01	18.82	12.14	-19.48	1657840.62	14278536.83	39°19'12.820"N	80°56'18.208"W	22.96	301.919	0.23	0.04	-2.00	
1312.00	7.230	301.760	1310.83	21.31	13.78	-21.98	1657838.13	14278538.47	39°19'12.836"N	80°56'18.240"W	25.94	302.074	3.36	3.00	-12.72	
1337.00	7.260	300.410	1335.63	23.86	15.40	-24.68	1657835.43	14278540.10	39°19'12.852"N	80°56'18.274"W	29.09	301.966	0.69	0.12	-5.40	
1362.00	7.430	301.240	1360.43	26.45	17.04	-27.43	1657832.68	14278541.73	39°19'12.868"N	80°56'18.309"W	32.29	301.854	0.80	0.68	3.32	
1387.00	7.370	300.440	1385.22	29.05	18.69	-30.19	1657829.92	14278543.38	39°19'12.885"N	80°56'18.344"W	35.51	301.762	0.48	-0.24	-3.20	
1412.00	7.390	299.050	1410.01	31.61	20.29	-32.98	1657827.13	14278544.98	39°19'12.900"N	80°56'18.379"W	38.72	301.595	0.72	0.08	-5.96	
1437.00	7.420	296.890	1434.81	34.12	21.80	-35.82	1657824.29	14278546.49	39°19'12.915"N	80°56'18.416"W	41.93	301.316	1.12	0.12	-8.64	
1462.00	7.520	297.200	1459.59	36.62	23.27	-38.72	1657821.40	14278547.96	39°19'12.930"N	80°56'18.452"W	45.18	301.009	0.43	0.40	1.24	
1487.00	7.480	296.940	1484.38	39.12	24.76	-41.63	1657818.49	14278549.45	39°19'12.945"N	80°56'18.489"W	48.43	300.744	0.21	-0.16	-1.04	
1512.00	7.580	295.940	1509.16	41.62	26.22	-44.56	1657815.56	14278550.91	39°19'12.959"N	80°56'18.527"W	51.70	300.472	0.66	0.40	-4.00	
1537.00	7.590	289.010	1533.95	43.97	27.48	-47.80	1657812.52	14278552.16	39°19'12.971"N	80°56'18.565"W	54.96	299.994	3.65	0.00	-27.72	



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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #02
Area	Ritchie County, WV	Well	Norma Unit 1H
Field	Ritchie	Wellbore	Norma Unit 1H AWB
Facility	Zinn Pad		

WELLPATH DATA (344 stations)

MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (ft)	Grid North (ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (ft/100ft)	Build Rate (ft/100ft)	Turn Rate (ft/100ft)	Comments
1562.00	7.460	285.030	1568.73	46.08	28.43	-50.73	1657809.39	14278553.12	39°19'12.981"N	80°56'18.605"W	58.15	299.272	2.14	-0.48	-15.92	
1587.00	7.580	284.180	1583.52	48.08	29.26	-53.89	1657806.23	14278553.95	39°19'12.989"N	80°56'18.645"W	61.32	298.498	0.65	0.48	-3.40	
1612.00	7.560	284.460	1608.30	50.09	30.07	-57.08	1657803.04	14278554.76	39°19'12.997"N	80°56'18.686"W	64.52	297.781	0.17	-0.08	1.12	
1637.00	7.210	283.660	1633.09	52.03	30.85	-60.20	1657799.92	14278555.54	39°19'13.005"N	80°56'18.726"W	67.65	297.136	1.46	-1.40	-3.20	
1662.00	6.490	284.810	1657.91	53.93	31.58	-63.09	1657797.03	14278556.27	39°19'13.012"N	80°56'18.763"W	70.56	296.590	2.92	-2.88	3.80	
1687.00	6.130	283.630	1682.76	55.50	32.25	-65.76	1657794.37	14278556.94	39°19'13.019"N	80°56'18.796"W	73.24	296.127	1.50	-1.44	-3.92	
1712.00	5.950	284.590	1707.62	57.09	32.89	-68.31	1657791.82	14278557.58	39°19'13.025"N	80°56'18.829"W	75.82	295.713	0.83	-0.72	3.84	
1737.00	5.550	284.980	1732.50	58.63	33.53	-70.73	1657789.40	14278558.22	39°19'13.031"N	80°56'18.860"W	78.28	295.363	1.60	-1.60	1.16	
1762.00	5.000	286.030	1757.39	60.06	34.14	-72.95	1657787.18	14278558.83	39°19'13.038"N	80°56'18.888"W	80.54	295.081	2.24	-2.20	4.60	
1787.00	4.980	285.930	1782.30	61.43	34.74	-75.04	1657785.08	14278559.43	39°19'13.043"N	80°56'18.914"W	82.69	294.843	0.09	-0.08	-0.40	
1812.00	4.700	284.490	1807.21	62.74	35.29	-77.07	1657783.06	14278559.98	39°19'13.049"N	80°56'18.940"W	84.77	294.605	1.22	-1.12	-5.76	
1837.00	4.560	282.290	1832.13	63.94	35.76	-79.03	1657781.10	14278560.45	39°19'13.054"N	80°56'18.965"W	86.75	294.346	0.90	-0.56	-8.80	
1862.00	4.440	280.170	1857.05	65.05	36.14	-80.96	1657779.17	14278560.83	39°19'13.057"N	80°56'18.990"W	88.66	294.059	0.92	-0.48	-8.48	
1887.00	4.570	281.170	1881.97	66.14	36.51	-82.89	1657777.25	14278561.19	39°19'13.061"N	80°56'19.014"W	90.57	293.771	0.61	0.52	4.00	
1912.00	4.550	282.330	1906.89	67.28	36.91	-84.83	1657775.30	14278561.60	39°19'13.065"N	80°56'19.039"W	92.52	293.515	0.38	-0.08	4.64	
1937.00	4.300	287.180	1931.82	68.46	37.40	-86.70	1657773.44	14278562.09	39°19'13.070"N	80°56'19.063"W	94.42	293.335	1.80	-1.00	19.40	
1962.00	4.190	291.160	1956.75	69.71	38.01	-88.44	1657771.69	14278562.69	39°19'13.076"N	80°56'19.085"W	96.27	293.255	1.29	-0.44	15.92	
1987.00	4.220	292.790	1981.68	71.01	38.69	-90.14	1657769.99	14278563.38	39°19'13.083"N	80°56'19.107"W	98.10	293.231	0.49	0.12	6.52	
2012.00	4.360	294.560	2006.61	72.37	39.44	-91.86	1657768.28	14278564.13	39°19'13.090"N	80°56'19.128"W	99.97	293.240	0.77	0.56	7.08	
2037.00	4.450	294.980	2031.54	73.79	40.25	-93.60	1657766.54	14278564.93	39°19'13.098"N	80°56'19.151"W	101.89	293.288	0.38	0.36	1.68	
2062.00	4.490	294.280	2056.46	75.24	41.06	-95.37	1657764.77	14278565.74	39°19'13.106"N	80°56'19.173"W	103.83	293.294	0.27	0.16	-2.80	
2087.00	4.630	295.940	2081.38	76.72	41.91	-97.17	1657762.97	14278566.59	39°19'13.114"N	80°56'19.196"W	105.82	293.328	0.77	0.56	6.84	
2112.00	4.690	294.950	2106.30	78.24	42.78	-99.00	1657761.14	14278567.46	39°19'13.123"N	80°56'19.219"W	107.85	293.368	0.40	0.24	-3.96	
2137.00	4.250	290.970	2131.22	79.65	43.54	-100.80	1657759.34	14278568.22	39°19'13.131"N	80°56'19.242"W	109.80	293.363	2.15	-1.76	-15.92	
2162.00	3.870	286.590	2156.16	80.93	44.11	-102.47	1657757.67	14278568.78	39°19'13.136"N	80°56'19.263"W	111.56	293.292	1.96	-1.52	-17.52	
2187.00	3.060	279.260	2181.12	81.73	44.46	-103.94	1657756.20	14278569.14	39°19'13.140"N	80°56'19.282"W	113.05	293.160	3.89	-3.24	-29.32	
2212.00	2.850	273.920	2206.08	82.37	44.61	-105.21	1657754.93	14278569.29	39°19'13.141"N	80°56'19.298"W	114.28	292.977	1.38	-0.84	-21.36	
2237.00	2.840	271.080	2231.05	82.89	44.66	-106.41	1657753.73	14278569.35	39°19'13.142"N	80°56'19.314"W	115.40	292.769	1.00	-0.84	-11.36	
2262.00	2.220	268.990	2256.03	83.30	44.66	-107.47	1657752.67	14278569.35	39°19'13.142"N	80°56'19.327"W	116.38	292.567	1.73	-1.68	-9.96	
2287.00	1.790	270.430	2281.02	83.64	44.65	-108.35	1657751.80	14278569.34	39°19'13.142"N	80°56'19.338"W	117.19	292.399	1.74	-1.72	7.36	



Actual Wellpath Report

Norma Unit 1H AWP Proj: 15674'
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REFERENCE WELLPATH IDENTIFICATION		Slot	Slot #02
Operator	ANTERO RESOURCES CORPORATION	Well	Norma Unit 1H
Area	Ritchie County, WV	Wellbore	Norma Unit 1H AWB
Field	Ritchie		
Facility	Zinn Pad		

WELLPATH DATA (344 stations)

MD ft	Inclination °	Azimuth °	TVD ft	Vert Sec ft	North ft	East ft	Grid East ft	Grid North ft	Latitude	Longitude	Closure Dist ft	Closure Dir °	DLS ft/100ft	Build Rate ft/100ft	Turn Rate °/100ft	Comments
2312.00	1.490	267.800	2306.01	83.91	44.64	-109.06	1657751.08	14278569.33	39°19'13.142"N	80°56'19.347"W	117.84	292.262	1.24	-1.20	-10.52	
2337.00	1.490	269.010	2331.00	84.15	44.63	-109.71	1657750.43	14278569.31	39°19'13.141"N	80°56'19.356"W	118.44	292.135	0.13	0.00	4.84	
2362.00	1.300	275.400	2355.99	84.41	44.65	-110.32	1657749.83	14278569.33	39°19'13.142"N	80°56'19.363"W	119.01	292.034	0.98	-0.76	25.56	
2387.00	1.170	276.660	2380.98	84.67	44.70	-110.85	1657749.29	14278569.39	39°19'13.142"N	80°56'19.370"W	119.53	291.963	0.53	-0.52	5.12	
2412.00	0.910	288.660	2405.98	84.93	44.80	-111.30	1657748.85	14278569.48	39°19'13.143"N	80°56'19.378"W	119.97	291.925	1.35	-1.04	48.00	
2437.00	0.690	297.720	2430.98	85.18	44.93	-111.62	1657748.53	14278569.61	39°19'13.144"N	80°56'19.380"W	120.32	291.927	1.01	-0.88	36.16	
2462.00	0.620	309.170	2455.98	85.42	45.09	-111.85	1657748.29	14278569.77	39°19'13.146"N	80°56'19.383"W	120.60	291.953	0.59	-0.28	45.80	
2487.00	0.580	324.240	2480.97	85.66	45.27	-112.03	1657748.11	14278569.96	39°19'13.148"N	80°56'19.385"W	120.84	292.004	0.65	-0.16	60.28	
2512.00	0.530	327.710	2505.97	85.90	45.47	-112.17	1657747.98	14278570.16	39°19'13.150"N	80°56'19.387"W	121.04	292.068	0.24	-0.20	13.88	
2537.00	0.500	324.840	2530.97	86.12	45.68	-112.29	1657747.85	14278570.34	39°19'13.152"N	80°56'19.388"W	121.22	292.128	0.16	-0.12	-11.48	
2562.00	0.460	326.220	2555.97	86.33	45.84	-112.41	1657747.73	14278570.52	39°19'13.153"N	80°56'19.390"W	121.40	292.184	0.09	-0.08	5.52	
2587.00	0.470	319.560	2580.97	86.53	46.00	-112.54	1657747.61	14278570.68	39°19'13.155"N	80°56'19.392"W	121.58	292.233	0.22	-0.04	-26.64	
2612.00	0.460	317.650	2605.97	86.72	46.16	-112.67	1657747.47	14278570.84	39°19'13.157"N	80°56'19.393"W	121.76	292.276	0.07	-0.04	-7.64	
2637.00	0.450	319.640	2630.97	86.91	46.30	-112.80	1657747.34	14278570.99	39°19'13.158"N	80°56'19.395"W	121.94	292.317	0.07	-0.04	7.96	
2662.00	0.330	310.760	2655.97	87.07	46.43	-112.92	1657747.22	14278571.11	39°19'13.159"N	80°56'19.396"W	122.09	292.349	0.54	-0.48	-35.52	
2687.00	0.110	123.580	2680.97	87.11	46.46	-112.96	1657747.19	14278571.14	39°19'13.160"N	80°56'19.397"W	122.14	292.358	1.76	-0.88	691.28	
2712.00	0.810	129.790	2705.97	86.93	46.33	-112.80	1657747.34	14278571.01	39°19'13.158"N	80°56'19.395"W	121.95	292.330	2.80	2.80	24.84	
2737.00	1.090	134.800	2730.96	86.56	46.05	-112.50	1657747.65	14278570.73	39°19'13.155"N	80°56'19.391"W	121.56	292.263	1.17	1.12	20.04	
2762.00	1.080	136.390	2755.96	86.12	45.71	-112.17	1657747.98	14278570.40	39°19'13.152"N	80°56'19.387"W	121.12	292.174	0.13	-0.04	6.36	
2787.00	1.140	137.510	2780.95	85.66	45.36	-111.84	1657748.31	14278570.04	39°19'13.149"N	80°56'19.383"W	120.68	292.078	0.26	0.24	4.48	
2812.00	0.780	138.450	2805.95	85.26	45.05	-111.55	1657748.59	14278569.73	39°19'13.146"N	80°56'19.379"W	120.31	291.991	1.44	-1.44	3.76	
2837.00	0.400	175.020	2830.95	85.02	44.84	-111.43	1657748.71	14278569.52	39°19'13.143"N	80°56'19.378"W	120.12	291.917	2.07	-1.52	146.28	
2862.00	0.280	198.220	2855.95	84.89	44.69	-111.45	1657748.70	14278569.37	39°19'13.142"N	80°56'19.378"W	120.07	291.851	0.72	-0.48	92.80	
2887.00	0.500	196.290	2880.95	84.76	44.53	-111.50	1657748.65	14278569.21	39°19'13.140"N	80°56'19.378"W	120.06	291.779	0.88	0.88	-7.72	
2912.00	0.390	202.420	2905.95	84.62	44.35	-111.56	1657748.59	14278569.03	39°19'13.139"N	80°56'19.379"W	120.05	291.679	0.51	-0.48	24.52	
2937.00	0.490	194.760	2930.95	84.48	44.17	-111.62	1657748.53	14278568.85	39°19'13.137"N	80°56'19.380"W	120.04	291.579	0.50	-0.44	-30.64	
2962.00	0.190	231.790	2955.95	84.38	44.04	-111.68	1657748.47	14278568.72	39°19'13.136"N	80°56'19.381"W	120.05	291.521	1.43	-1.20	148.12	
2987.00	0.480	198.240	2980.95	84.29	43.91	-111.74	1657748.40	14278568.59	39°19'13.134"N	80°56'19.381"W	120.06	291.454	1.35	1.16	-134.20	
3012.00	0.650	202.780	3005.94	84.11	43.68	-111.83	1657748.32	14278568.36	39°19'13.132"N	80°56'19.383"W	120.06	291.336	0.70	0.68	18.16	
3037.00	0.820	206.720	3030.94	83.93	43.43	-111.95	1657748.20	14278568.11	39°19'13.130"N	80°56'19.384"W	120.07	291.204	0.21	-0.12	15.76	



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REFERENCE WELLPATH IDENTIFICATION		Slot
Operator	ANTERO RESOURCES CORPORATION	Slot #02
Area	Ritchie County, WV	Well
Field	Ritchie	Norma Unit 1H
Facility	Zinn Pad	Wellbore
		Norma Unit 1H AWB

WELLPATH DATA (344 stations)

MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (ft)	Grid North (ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (ft/100ft)	Build Rate (ft/100ft)	Turn Rate (°/100ft)	Comments
3062.00	0.470	223.990	3055.94	83.80	43.24	-112.08	1657748.07	14278567.92	39°19'13.128"N	80°56'19.386"W	120.13	291.095	0.88	-0.60	69.08	
3087.00	0.440	220.550	3080.94	83.72	43.09	-112.21	1657747.93	14278567.77	39°19'13.126"N	80°56'19.387"W	120.20	291.007	0.16	-0.12	-13.76	
3112.00	0.480	226.090	3105.94	83.64	42.94	-112.35	1657747.80	14278567.63	39°19'13.125"N	80°56'19.389"W	120.28	290.919	0.24	0.16	22.16	
3137.00	0.570	216.180	3130.94	83.54	42.77	-112.50	1657747.65	14278567.45	39°19'13.123"N	80°56'19.391"W	120.35	290.816	0.51	0.36	-39.64	
3162.00	0.610	213.920	3155.94	83.40	42.56	-112.65	1657747.50	14278567.24	39°19'13.121"N	80°56'19.393"W	120.42	290.698	0.19	0.16	-9.04	
3187.00	0.510	218.750	3180.94	83.28	42.36	-112.79	1657747.36	14278567.05	39°19'13.119"N	80°56'19.395"W	120.48	290.586	0.44	-0.40	19.32	
3212.00	0.330	254.890	3205.94	83.24	42.26	-112.93	1657747.22	14278566.94	39°19'13.118"N	80°56'19.397"W	120.56	290.516	1.25	-0.72	144.56	
3237.00	0.500	5.930	3230.94	83.34	42.35	-112.99	1657747.16	14278567.03	39°19'13.119"N	80°56'19.397"W	120.66	290.546	2.76	0.68	444.16	
3262.00	0.710	9.660	3255.93	83.57	42.61	-112.95	1657747.20	14278567.29	39°19'13.121"N	80°56'19.397"W	120.72	290.668	0.85	0.84	14.92	
3312.00	0.730	4.970	3305.93	84.13	43.26	-112.87	1657747.24	14278567.61	39°19'13.125"N	80°56'19.396"W	120.79	290.819	0.32	0.28	-12.00	
3337.00	0.720	1.310	3330.93	84.42	43.57	-112.85	1657747.28	14278568.26	39°19'13.131"N	80°56'19.396"W	120.97	291.112	0.19	-0.04	-14.64	
3362.00	0.770	358.910	3355.93	84.72	43.90	-112.85	1657747.29	14278568.58	39°19'13.134"N	80°56'19.396"W	121.09	291.256	0.24	0.20	-9.60	
3387.00	0.850	355.670	3380.92	85.05	44.25	-112.87	1657747.17	14278568.93	39°19'13.138"N	80°56'19.396"W	121.23	291.408	0.37	0.32	-12.96	
3437.00	0.750	347.700	3430.92	85.76	44.98	-112.97	1657747.17	14278569.67	39°19'13.145"N	80°56'19.397"W	121.41	291.568	0.30	0.20	-14.72	
3462.00	0.800	347.140	3455.92	86.09	45.31	-113.05	1657747.10	14278570.00	39°19'13.148"N	80°56'19.398"W	121.79	291.843	0.20	0.20	-2.24	
3487.00	0.780	342.500	3480.91	86.44	45.65	-113.14	1657747.01	14278570.33	39°19'13.151"N	80°56'19.399"W	122.00	291.973	0.27	-0.08	-18.56	
3512.00	0.800	343.010	3505.91	86.78	45.98	-113.24	1657746.91	14278570.66	39°19'13.155"N	80°56'19.400"W	122.22	292.098	0.08	0.08	2.04	
3537.00	0.760	335.410	3530.91	87.12	46.30	-113.35	1657746.79	14278570.98	39°19'13.158"N	80°56'19.402"W	122.44	292.217	0.30	-0.16	-18.40	
3562.00	0.760	335.480	3555.91	87.45	46.60	-113.48	1657746.67	14278571.28	39°19'13.161"N	80°56'19.404"W	122.68	292.326	0.16	0.00	-11.72	
3587.00	0.790	339.050	3580.90	87.79	46.91	-113.61	1657746.53	14278571.60	39°19'13.164"N	80°56'19.405"W	122.92	292.438	0.23	0.12	14.28	
3612.00	0.730	336.580	3605.90	88.12	47.22	-113.74	1657746.41	14278571.90	39°19'13.167"N	80°56'19.407"W	123.15	292.547	0.27	-0.24	-9.88	
3637.00	0.740	334.210	3630.90	88.44	47.51	-113.87	1657746.28	14278572.19	39°19'13.170"N	80°56'19.408"W	123.38	292.649	0.13	0.04	-9.48	
3662.00	0.420	325.410	3655.90	88.69	47.73	-113.99	1657746.15	14278572.44	39°19'13.172"N	80°56'19.410"W	123.58	292.721	1.32	-1.28	-36.20	
3687.00	0.240	195.340	3680.90	88.74	47.76	-114.06	1657746.09	14278572.44	39°19'13.172"N	80°56'19.411"W	123.65	292.720	2.41	-0.72	-520.28	
3712.00	0.280	180.980	3705.90	88.64	47.65	-114.07	1657746.07	14278572.33	39°19'13.171"N	80°56'19.411"W	123.62	292.670	0.30	0.16	-57.44	
3737.00	0.330	172.180	3730.90	88.52	47.51	-114.07	1657746.07	14278572.04	39°19'13.170"N	80°56'19.411"W	123.57	292.611	0.28	0.28	-9.08	
3762.00	0.930	172.180	3755.90	88.37	47.36	-114.06	1657746.09	14278572.04	39°19'13.168"N	80°56'19.411"W	123.50	292.550	0.17	-0.08	-26.12	
3787.00	0.410	163.720	3780.90	88.22	47.20	-114.03	1657746.12	14278571.89	39°19'13.167"N	80°56'19.410"W	123.41	292.489	0.39	0.32	-33.84	



Actual Wellpath Report

Norma Unit 1H AWP Proj: 15674'

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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #02
Area	Ritchie County, WV	Well	Norma Unit 1H
Field	Ritchie	Wellbore	Norma Unit 1H AWB
Facility	Zinn Pad		

WELLPATH DATA (344 stations)

ID	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [ft]	Grid North [ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [ft/100ft]	Build Rate [ft/100ft]	Turn Rate [ft/100ft]	Comments
3812.00	0.410	150.000	3805.90	88.04	47.04	-113.96	1657746.19	14278571.72	39°19'13.165"N	80°56'19.410"W	123.28	292.431	0.39	0.00	-54.88	
3837.00	0.400	131.560	3830.90	87.87	46.91	-113.85	1657746.30	14278571.59	39°19'13.164"N	80°56'19.408"W	123.13	292.392	0.52	-0.04	-73.76	
3862.00	0.430	123.140	3855.89	87.71	46.80	-113.70	1657746.44	14278571.48	39°19'13.163"N	80°56'19.406"W	122.96	292.371	0.27	0.12	-33.68	
3887.00	0.420	114.080	3880.89	87.57	46.71	-113.54	1657746.61	14278571.39	39°19'13.162"N	80°56'19.404"W	122.77	292.361	0.27	-0.04	-36.24	
3912.00	0.450	113.580	3905.89	87.43	46.63	-113.37	1657746.78	14278571.31	39°19'13.161"N	80°56'19.402"W	122.58	292.359	0.12	0.12	-2.00	
3937.00	0.470	116.380	3930.89	87.28	46.55	-113.18	1657746.96	14278571.23	39°19'13.160"N	80°56'19.400"W	122.38	292.355	0.12	0.08	11.20	
3962.00	0.410	103.450	3955.89	87.15	46.48	-113.01	1657747.14	14278571.16	39°19'13.160"N	80°56'19.397"W	122.19	292.358	0.46	-0.24	-51.72	
3987.00	0.500	102.590	3980.89	87.03	46.44	-112.81	1657747.33	14278571.12	39°19'13.159"N	80°56'19.395"W	121.99	292.373	0.36	0.36	-3.44	
4012.00	0.540	100.730	4005.89	86.90	46.39	-112.59	1657747.56	14278571.07	39°19'13.159"N	80°56'19.392"W	121.77	292.393	0.17	0.16	-7.44	
4037.00	0.570	102.300	4030.89	86.77	46.34	-112.35	1657747.79	14278571.02	39°19'13.158"N	80°56'19.389"W	121.53	292.415	0.13	0.12	6.28	
4062.00	0.610	98.950	4055.89	86.62	46.29	-112.10	1657748.05	14278570.98	39°19'13.158"N	80°56'19.386"W	121.28	292.440	0.21	0.16	-13.40	
4087.00	0.610	99.690	4080.89	86.48	46.25	-111.84	1657748.31	14278570.93	39°19'13.157"N	80°56'19.383"W	121.02	292.468	0.03	0.00	2.96	
4112.00	0.660	92.150	4105.88	86.35	46.22	-111.56	1657748.58	14278570.91	39°19'13.157"N	80°56'19.379"W	120.76	292.506	0.39	0.20	-30.16	
4137.00	0.730	94.760	4130.88	86.21	46.20	-111.26	1657748.89	14278570.89	39°19'13.157"N	80°56'19.375"W	120.47	292.553	0.31	0.28	10.44	
4162.00	0.780	90.970	4155.88	86.07	46.19	-110.93	1657749.21	14278570.87	39°19'13.157"N	80°56'19.371"W	120.16	292.606	0.28	0.20	-15.16	
4187.00	0.840	86.260	4180.88	85.94	46.20	-110.58	1657749.57	14278570.88	39°19'13.157"N	80°56'19.367"W	119.84	292.675	0.36	0.24	-18.84	
4212.00	0.910	82.800	4205.88	85.82	46.23	-110.20	1657749.95	14278570.92	39°19'13.157"N	80°56'19.362"W	119.50	292.761	0.35	0.28	-13.84	
4237.00	0.860	86.650	4230.87	85.70	46.27	-109.81	1657750.33	14278570.95	39°19'13.158"N	80°56'19.357"W	119.16	292.849	0.31	-0.20	15.40	
4262.00	0.860	83.260	4255.87	85.59	46.30	-109.44	1657750.70	14278570.98	39°19'13.158"N	80°56'19.352"W	118.83	292.933	0.20	0.00	-13.56	
4287.00	0.760	66.520	4280.87	85.53	46.39	-108.87	1657751.04	14278571.07	39°19'13.159"N	80°56'19.348"W	118.55	293.034	0.92	-0.40	-58.96	
4312.00	0.860	21.980	4305.86	85.66	46.62	-108.10	1657751.27	14278571.30	39°19'13.161"N	80°56'19.345"W	118.44	293.181	2.59	0.40	-186.56	
4337.00	0.920	9.130	4330.86	85.96	46.99	-108.77	1657751.37	14278571.67	39°19'13.165"N	80°56'19.344"W	118.49	293.366	0.83	0.24	-51.00	
4362.00	1.100	8.690	4355.86	86.33	47.43	-108.70	1657751.44	14278572.11	39°19'13.169"N	80°56'19.343"W	118.60	293.572	0.72	0.72	-1.76	
4387.00	1.150	7.990	4380.85	86.75	47.91	-108.63	1657751.51	14278572.60	39°19'13.174"N	80°56'19.342"W	118.73	293.801	0.21	0.20	-3.20	
4412.00	1.030	9.040	4405.85	87.16	48.38	-108.56	1657751.58	14278573.07	39°19'13.179"N	80°56'19.341"W	118.86	294.022	0.49	-0.48	4.60	
4437.00	1.080	8.080	4430.84	87.55	48.84	-108.50	1657751.65	14278573.52	39°19'13.183"N	80°56'19.340"W	118.98	294.235	0.21	0.20	-3.84	
4462.00	0.980	9.540	4455.84	87.87	49.22	-108.44	1657751.71	14278573.90	39°19'13.187"N	80°56'19.339"W	119.09	294.413	1.60	-1.60	5.84	
4487.00	0.920	17.390	4480.84	88.08	49.47	-108.38	1657751.76	14278574.15	39°19'13.189"N	80°56'19.338"W	119.14	294.536	0.72	-0.64	31.40	
4512.00	0.400	14.630	4505.84	88.24	49.67	-108.32	1657751.82	14278574.35	39°19'13.191"N	80°56'19.337"W	119.17	294.632	0.49	-0.48	-11.44	
4537.00	0.460	15.990	4530.84	88.39	49.85	-108.27	1657751.87	14278574.53	39°19'13.193"N	80°56'19.337"W	119.20	294.721	0.24	0.24	5.84	



Actual Wellpath Report

Norma Unit 1H AWP Proj: 15674'
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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #02
Area	Ritchie County, WV	Well	Norma Unit 1H
Field	Ritchie	Wellbore	Norma Unit 1H AWB
Facility	Zinn Pad		

WELLPATH DATA (344 stations)

MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	DLS	Build Rate	Turn Rate	Comments
ft	°	°	ft	ft	ft	ft	ft	ft	°	°	ft	°	ft/100ft	ft/100ft	°/100ft	
4562.00	0.520	9.580	4555.84	88.56	50.06	-108.23	1657751.92	14278574.74	39°19'13.195"N	80°56'19.337"W	119.24	294.821	0.32	0.24	-25.60	
4567.00	0.580	19.000	4580.84	88.75	50.29	-108.17	1657751.98	14278574.97	39°19'13.197"N	80°56'19.336"W	119.29	294.834	0.43	0.24	37.64	
4612.00	0.570	19.430	4605.83	88.94	50.52	-108.09	1657752.06	14278575.20	39°19'13.200"N	80°56'19.335"W	119.31	295.054	0.04	-0.04	1.72	
4637.00	0.420	9.600	4630.83	89.10	50.73	-108.03	1657752.11	14278575.41	39°19'13.202"N	80°56'19.334"W	119.35	295.156	0.69	-0.60	-39.32	
4662.00	0.230	208.490	4655.83	89.15	50.78	-108.04	1657752.11	14278575.48	39°19'13.202"N	80°56'19.334"W	119.38	295.174	2.57	-0.76	-644.44	
4687.00	0.320	211.320	4680.83	89.08	50.57	-108.10	1657752.05	14278575.35	39°19'13.201"N	80°56'19.335"W	119.39	295.117	0.36	0.36	11.32	
4712.00	0.330	206.790	4705.83	88.99	50.55	-108.17	1657751.98	14278575.23	39°19'13.200"N	80°56'19.336"W	119.40	295.049	0.11	0.04	-18.12	
4737.00	0.240	210.720	4730.83	88.91	50.44	-108.23	1657751.92	14278575.12	39°19'13.199"N	80°56'19.337"W	119.40	294.989	0.37	-0.36	15.72	
4762.00	0.330	207.680	4755.83	88.84	50.33	-108.29	1657751.86	14278575.01	39°19'13.198"N	80°56'19.337"W	119.41	294.930	0.36	0.36	-12.16	
4787.00	0.220	185.400	4780.83	88.75	50.22	-108.32	1657751.82	14278574.90	39°19'13.197"N	80°56'19.338"W	119.40	294.874	0.61	-0.44	-89.12	
4812.00	0.160	106.110	4805.83	88.68	50.16	-108.29	1657751.85	14278574.84	39°19'13.196"N	80°56'19.337"W	119.34	294.855	1.03	-0.16	-317.16	
4837.00	0.130	176.100	4830.83	88.63	50.12	-108.25	1657751.89	14278574.80	39°19'13.196"N	80°56'19.337"W	119.29	294.846	0.73	-0.20	279.96	
4862.00	0.170	101.680	4855.83	88.58	50.09	-108.21	1657751.93	14278574.77	39°19'13.195"N	80°56'19.336"W	119.24	294.838	0.74	0.16	-297.88	
4887.00	0.200	121.020	4880.83	88.53	50.06	-108.14	1657752.00	14278574.74	39°19'13.195"N	80°56'19.336"W	119.16	294.839	0.28	0.12	77.36	
4912.00	0.830	184.900	4905.83	88.39	49.90	-108.07	1657752.08	14278574.56	39°19'13.194"N	80°56'19.335"W	119.03	294.787	2.02	1.72	175.52	
4937.00	0.590	159.150	4930.83	88.09	49.65	-107.98	1657752.16	14278574.33	39°19'13.191"N	80°56'19.334"W	118.85	294.692	0.29	-0.16	-23.00	
4962.00	0.670	155.020	4955.83	87.82	49.40	-107.88	1657752.27	14278574.08	39°19'13.189"N	80°56'19.332"W	118.65	294.603	0.37	0.32	-16.52	
4987.00	0.660	156.590	4980.83	87.52	49.13	-107.76	1657752.39	14278573.81	39°19'13.186"N	80°56'19.331"W	118.43	294.509	0.08	0.04	6.28	
5012.00	0.650	147.260	5005.82	87.23	48.87	-107.62	1657752.52	14278573.55	39°19'13.183"N	80°56'19.329"W	118.20	294.424	0.45	-0.12	-37.32	
5037.00	0.590	150.150	5030.82	86.97	48.64	-107.48	1657752.66	14278573.32	39°19'13.181"N	80°56'19.327"W	117.97	294.350	0.27	-0.24	11.56	
5062.00	0.570	138.160	5055.82	86.72	48.44	-107.33	1657752.81	14278573.12	39°19'13.179"N	80°56'19.325"W	117.76	294.289	0.49	-0.08	-47.96	
5087.00	0.520	123.120	5080.82	86.51	48.28	-107.15	1657752.99	14278572.96	39°19'13.178"N	80°56'19.323"W	117.53	294.256	0.60	-0.20	-60.16	
5112.00	0.510	111.190	5105.82	86.34	48.18	-106.96	1657753.19	14278572.86	39°19'13.176"N	80°56'19.321"W	117.31	294.250	0.43	-0.04	-47.72	
5137.00	0.580	97.480	5130.82	86.19	48.12	-106.73	1657753.42	14278572.80	39°19'13.176"N	80°56'19.318"W	117.07	294.271	0.59	0.28	-54.84	
5162.00	0.570	80.600	5155.82	86.14	48.17	-106.49	1657753.65	14278572.85	39°19'13.176"N	80°56'19.315"W	116.88	294.338	1.48	-0.04	-147.82	
5187.00	0.630	64.160	5180.82	86.16	48.29	-106.26	1657753.88	14278572.97	39°19'13.178"N	80°56'19.312"W	116.72	294.439	0.28	0.24	14.24	
5212.00	0.720	50.280	5205.81	86.21	48.45	-106.02	1657754.13	14278573.13	39°19'13.179"N	80°56'19.309"W	116.56	294.561	0.74	0.36	-55.52	
5237.00	0.840	47.990	5230.81	86.30	48.64	-105.79	1657754.35	14278573.32	39°19'13.181"N	80°56'19.306"W	116.44	294.693	0.34	-0.32	-9.16	
5262.00	0.720	45.630	5255.81	86.41	48.85	-105.58	1657754.57	14278573.53	39°19'13.183"N	80°56'19.303"W	116.33	294.829	0.34	0.32	-9.44	
5287.00	0.720	45.090	5280.81	86.52	49.07	-105.35	1657754.79	14278573.73	39°19'13.185"N	80°56'19.300"W	116.22	294.974	0.03	0.00	-2.16	



Actual Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION		Slot	Slot #02
Operator	ANTERO RESOURCES CORPORATION	Well	Norma Unit 1H
Area	Ritchie County, WV	Wellbore	Norma Unit 1H AWB
Field	Ritchie		
Facility	Zinn Pad		

WELLPATH DATA (344 stations) † = interpolated/extrapolated station																
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS ["/100ft]	Build Rate ["/100ft]	Turn Rate ["/100ft]	Comments
5312.00	0.080	95.860	5305.81	86.57	49.18	-105.22	1657754.92	14278573.86	39°19'13.186"N	80°56'19.298"W	116.15	295.049	2.69	-2.56	203.08	
5337.00	0.160	209.800	5330.81	86.54	49.14	-105.22	1657754.92	14278573.82	39°19'13.186"N	80°56'19.298"W	116.13	295.035	0.82	0.32	455.76	
5362.00	0.130	172.980	5355.81	86.49	49.09	-105.24	1657754.91	14278573.77	39°19'13.185"N	80°56'19.299"W	116.12	295.006	0.38	-0.12	-147.28	
5387.00	0.150	231.190	5380.81	86.46	49.04	-105.26	1657754.88	14278573.72	39°19'13.185"N	80°56'19.299"W	116.12	294.980	0.55	0.08	232.84	
5412.00	0.340	207.910	5405.81	86.40	48.95	-105.32	1657754.82	14278573.63	39°19'13.184"N	80°56'19.300"W	116.14	294.929	0.84	0.76	-93.12	
5437.00	0.140	77.460	5430.81	86.35	48.89	-105.32	1657754.82	14278573.57	39°19'13.184"N	80°56'19.300"W	116.12	294.901	1.78	-0.80	-521.80	
5462.00	0.050	74.810	5455.81	86.33	48.89	-105.29	1657754.85	14278573.57	39°19'13.183"N	80°56'19.299"W	116.09	294.906	0.62	-0.36	389.40	
5487.00	0.290	41.470	5480.81	86.35	48.92	-105.25	1657754.89	14278573.61	39°19'13.184"N	80°56'19.299"W	116.07	294.931	1.31	0.96	-533.36	
5512.00	0.240	53.500	5505.81	86.39	49.00	-105.17	1657754.98	14278573.68	39°19'13.185"N	80°56'19.298"W	116.02	294.984	0.30	-0.20	48.12	
5537.00	0.350	46.060	5530.81	86.43	49.09	-105.07	1657755.07	14278573.77	39°19'13.185"N	80°56'19.295"W	115.97	295.042	0.46	0.44	-29.68	
5562.00	0.370	42.770	5555.81	86.49	49.20	-104.96	1657755.18	14278573.88	39°19'13.187"N	80°56'19.295"W	115.92	295.115	0.12	0.08	-13.24	
5587.00	0.480	23.190	5580.81	86.59	49.36	-104.86	1657755.28	14278574.04	39°19'13.188"N	80°56'19.294"W	115.90	295.205	0.72	0.44	-78.32	
5642.00	0.540	13.040	5635.80	86.96	49.82	-104.71	1657755.43	14278574.50	39°19'13.193"N	80°56'19.292"W	115.96	295.443	0.20	0.11	-18.45	BHI AT Curve <8-1/2"> (5587') (5642'-15649')
5754.00	0.960	303.060	5747.79	88.31	51.25	-104.79	1657755.35	14278575.93	39°19'13.207"N	80°56'19.293"W	116.65	296.063	0.47	0.37	-22.23	
5804.00	4.260	303.060	5797.74	90.26	52.68	-106.43	1657753.71	14278577.35	39°19'13.221"N	80°56'18.314"W	118.75	286.332	7.29	6.60	-90.16	
5849.00	8.050	300.460	5842.47	94.19	55.19	-110.55	1657749.59	14278579.86	39°19'13.246"N	80°56'19.366"W	123.56	296.528	8.44	8.42	-5.78	
5894.00	10.520	295.490	5886.88	99.81	58.55	-116.97	1657743.17	14278583.23	39°19'13.279"N	80°56'19.448"W	130.81	296.590	5.77	5.49	-11.04	
5943.00	13.670	293.300	5934.79	107.36	62.77	-126.39	1657733.82	14278587.44	39°19'13.321"N	80°56'19.567"W	141.07	296.420	6.50	6.43	-4.47	
5990.00	16.410	300.200	5980.17	116.72	68.31	-137.17	1657722.98	14278592.98	39°19'13.376"N	80°56'19.705"W	153.24	296.471	6.95	5.83	14.68	
6038.00	19.840	309.290	6025.78	128.42	76.90	-149.39	1657710.76	14278601.57	39°19'13.461"N	80°56'19.860"W	168.01	297.241	9.41	7.35	18.94	
6084.00	23.910	317.420	6068.46	145.17	88.74	-161.76	1657698.40	14278613.41	39°19'13.578"N	80°56'20.018"W	184.50	298.749	10.85	8.63	17.67	
6132.00	27.460	321.240	6111.71	165.01	104.54	-175.28	1657684.89	14278629.20	39°19'13.734"N	80°56'20.189"W	204.08	300.813	8.16	7.40	7.96	
6179.00	31.910	322.740	6152.53	187.50	122.89	-189.59	1657670.59	14278647.54	39°19'13.915"N	80°56'20.371"W	225.93	302.950	9.60	9.47	3.19	
6227.00	36.560	324.390	6192.20	213.78	144.62	-205.60	1657654.58	14278669.26	39°19'14.130"N	80°56'20.575"W	251.37	305.122	9.88	9.69	3.44	
6272.00	40.900	324.570	6227.30	241.27	167.53	-221.95	1657638.23	14278693.16	39°19'14.377"N	80°56'20.783"W	278.08	307.045	9.85	9.84	0.40	
6307.00†	44.162	324.196	6253.09	264.38	186.79	-235.69	1657624.50	14278711.41	39°19'14.547"N	80°56'20.957"W	300.73	308.397	9.32	9.32	-0.43	Middlesex: 6307 MD
6322.00	45.560	324.360	6263.72	274.71	195.39	-241.86	1657618.34	14278720.01	39°19'14.682"N	80°56'21.036"W	310.92	308.934	9.32	9.32	-0.40	
6370.00	50.720	323.780	6295.74	309.56	224.32	-262.83	1657597.37	14278748.93	39°19'14.918"N	80°56'21.302"W	345.54	310.480	10.79	10.76	-1.21	
6416.00	55.240	323.170	6323.43	345.28	253.82	-284.69	1657575.52	14278778.42	39°19'15.210"N	80°56'21.580"W	381.41	311.720	9.88	9.83	-1.33	
6460.00	60.040	323.520	6346.97	381.41	283.63	-306.87	1657553.35	14278808.22	39°19'15.505"N	80°56'21.862"W	417.87	312.747	10.93	10.91	0.80	



Actual Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #02
Area	Ritchie County, WV	Well	Norma Unit 1H
Field	Ritchie	Wellbore	Norma Unit 1H AWB
Facility	Zinn Pad		

WELLPATH DATA (344 stations) † = interpolated/extrapolated station

MD ft	Inclination °	Azimuth °	TVD ft	Vert Sect ft	North ft	East ft	Grid East US ft	Grid North US ft	Latitude	Longitude	Closure Dist ft	Closure Dir °	DLS ft/100ft	Build Rate ft/100ft	Turn Rate °/100ft	Comments
6486.00†	62.740	324.250	6359.42	403.65	302.07	-320.32	1657539.91	14278826.65	39°19'15.687"N	80°56'22.033"W	440.29	313.321	10.67	10.39	2.81	Burkett: 6486' MD
6511.00	65.340	324.920	6370.37	425.61	320.39	-333.34	1657526.89	14278844.96	39°19'15.868"N	80°56'22.199"W	462.35	314.865	10.67	10.40	2.68	
6557.00	69.840	327.140	6387.90	467.37	355.65	-357.09	1657503.16	14278880.21	39°19'16.217"N	80°56'22.501"W	503.98	314.885	10.75	9.78	4.83	Tully: 6557' MD
6605.00	73.430	329.890	6403.02	512.43	394.50	-380.86	1657479.39	14278919.04	39°19'16.601"N	80°56'22.803"W	548.35	316.008	9.25	7.48	5.73	
6634.00†	74.560	331.873	6411.02	540.15	418.85	-384.42	1657465.83	14278943.38	39°19'16.942"N	80°56'22.975"W	575.33	316.720	7.64	3.90	6.84	Marcellus: 6634' MD
6653.00	75.310	333.160	6415.96	558.45	435.13	-402.89	1657457.37	14278959.65	39°19'17.003"N	80°56'23.083"W	593.01	317.203	7.64	3.95	6.77	
6699.00	76.870	334.420	6427.02	603.03	475.18	-422.61	1657437.66	14278999.69	39°19'17.399"N	80°56'23.333"W	635.92	318.351	4.31	3.39	2.74	
6746.00	83.180	335.330	6435.15	649.27	517.07	-442.25	1657418.03	14279041.57	39°19'17.813"N	80°56'23.583"W	680.40	319.460	13.56	13.43	1.94	
6794.00	89.480	336.510	6438.23	697.14	560.78	-461.78	1657398.50	14279085.26	39°19'18.245"N	80°56'23.833"W	726.44	320.530	13.35	13.13	2.46	
6885.00	90.370	338.820	6438.35	791.12	647.73	-497.50	1657362.80	14279172.17	39°19'19.105"N	80°56'24.285"W	816.74	322.473	2.63	0.95	2.46	
6983.00	90.490	339.330	6437.64	886.05	736.46	-531.43	1657328.88	14279260.86	39°19'19.982"N	80°56'24.716"W	908.18	324.186	0.55	0.13	0.54	
7077.00	90.310	337.710	6436.98	980.00	823.92	-565.85	1657294.48	14279348.29	39°19'20.847"N	80°56'25.153"W	999.52	325.520	1.73	-0.19	-1.72	
7172.00	90.460	337.220	6436.34	1075.00	911.67	-602.26	1657258.09	14279436.00	39°19'21.714"N	80°56'25.615"W	1092.63	326.551	0.54	0.16	-0.52	
7266.00	90.490	334.610	6435.56	1168.97	997.47	-640.61	1657219.75	14279521.77	39°19'22.563"N	80°56'26.103"W	1185.47	327.290	2.78	0.03	-2.78	
7361.00	90.430	333.100	6434.80	1263.83	1082.75	-682.47	1657177.90	14279607.01	39°19'23.406"N	80°56'26.635"W	1279.89	327.776	1.59	-0.06	-1.59	
7455.00	89.450	333.980	6434.90	1357.67	1166.90	-724.35	1657136.04	14279691.13	39°19'24.238"N	80°56'27.167"W	1373.44	328.170	1.40	-1.04	0.94	
7550.00	89.940	336.180	6435.40	1452.62	1253.05	-764.38	1657096.03	14279777.24	39°19'25.089"N	80°56'27.676"W	1467.79	328.616	2.37	0.52	2.32	
7644.00	89.540	337.090	6435.83	1546.62	1339.34	-801.66	1657058.77	14279863.50	39°19'25.942"N	80°56'28.149"W	1560.92	329.097	1.06	-0.43	0.97	
7738.00	89.570	338.770	6436.56	1640.60	1426.44	-836.97	1657023.46	14279950.57	39°19'26.804"N	80°56'28.598"W	1653.86	329.597	1.79	0.03	1.79	
7833.00	89.630	339.840	6437.22	1735.51	1515.31	-870.54	1656989.90	14280039.40	39°19'27.682"N	80°56'29.024"W	1747.57	330.123	1.13	0.06	1.13	
7927.00	89.510	340.280	6437.93	1829.36	1603.67	-902.60	1656957.86	14280127.73	39°19'28.556"N	80°56'29.432"W	1840.23	330.628	0.49	-0.13	0.47	
8021.00	89.600	340.720	6438.66	1923.16	1692.28	-933.98	1656926.50	14280216.30	39°19'29.432"N	80°56'29.830"W	1932.90	331.105	0.48	0.10	0.47	
8116.00	89.570	342.890	6439.35	2017.80	1782.52	-963.64	1656896.85	14280306.50	39°19'30.324"N	80°56'30.207"W	2026.32	331.604	2.28	-0.03	2.28	
8210.00	89.380	341.130	6440.21	2111.42	1871.92	-992.67	1656867.83	14280395.87	39°19'31.207"N	80°56'30.575"W	2118.84	332.063	1.88	-0.20	-1.87	
8305.00	89.570	338.710	6441.08	2206.33	1960.53	-1026.83	1656833.68	14280484.45	39°19'32.084"N	80°56'31.009"W	2213.16	332.557	4.66	0.20	-4.65	
8400.00	89.570	334.120	6441.79	2301.29	2046.91	-1066.35	1656794.18	14280570.79	39°19'32.938"N	80°56'31.512"W	2308.02	332.483	2.73	0.00	-2.73	
8494.00	89.790	333.690	6442.35	2396.16	2131.30	-1107.69	1656752.85	14280655.17	39°19'33.772"N	80°56'32.037"W	2401.99	332.538	0.50	0.19	-0.46	
8589.00	89.970	333.190	6442.58	2489.99	2216.30	-1150.17	1656710.39	14280740.11	39°19'34.612"N	80°56'32.577"W	2496.98	332.573	0.58	0.23	-0.53	
8683.00	89.850	333.930	6442.73	2583.83	2300.47	-1192.03	1656668.55	14280824.25	39°19'35.444"N	80°56'33.109"W	2590.96	332.608	0.80	-0.13	0.79	
8778.00	89.750	335.690	6443.06	2678.77	2386.43	-1232.46	1656628.14	14280910.17	39°19'36.294"N	80°56'33.623"W	2685.89	332.686	1.86	-0.11	1.85	



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Norma Unit 1H AWP Proj: 15674'

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REFERENCE WELLPATH IDENTIFICATION		Slot	Slot #02
Operator	ANTERO RESOURCES CORPORATION	Well	Norma Unit 1H
Area	Ritchie County, WV	Wellbore	Norma Unit 1H AWB
Field	Ritchie		
Facility	Zinn Pad		

WELLPATH DATA (344 stations)

MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (ft)	Grid North (ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (ft/100ft)	Build Rate (ft/100ft)	Turn Rate (°/100ft)	Comments
8873.00	89.850	338.910	6443.39	2773.75	2474.06	-1269.11	1655591.50	14280997.77	39°19'37.161"N	80°56'34.088"W	2780.58	332.844	3.39	0.11	3.39	
8967.00	90.090	336.650	6443.44	2867.73	2561.07	-1304.66	1655655.97	14281084.75	39°19'38.021"N	80°56'34.540"W	2874.24	333.005	2.42	0.28	-2.40	
9062.00	89.880	333.570	6443.47	2962.88	2647.24	-1344.64	1656516.00	14281170.88	39°19'38.873"N	80°56'35.048"W	2969.16	333.072	3.25	-0.22	-3.24	
9156.00	89.690	333.450	6443.82	3056.52	2731.37	-1386.56	1656474.09	14281254.97	39°19'39.704"N	80°56'35.581"W	3063.16	333.086	0.24	-0.20	-0.13	
9251.00	89.970	332.030	6444.10	3151.27	2815.82	-1430.08	1656430.80	14281339.39	39°19'40.538"N	80°56'36.134"W	3158.15	333.075	1.52	0.29	-1.48	
9345.00	89.690	337.380	6444.38	3245.17	2900.77	-1470.23	1656390.46	14281424.31	39°19'41.378"N	80°56'36.644"W	3252.08	333.122	5.70	-0.30	5.69	
9439.00	89.850	339.750	6444.76	3339.12	2988.26	-1504.57	1656356.13	14281511.76	39°19'42.244"N	80°56'37.081"W	3345.86	333.275	2.53	0.17	2.52	
9534.00	90.890	338.890	6444.14	3434.02	3077.14	-1538.12	1656322.60	14281600.60	39°19'43.123"N	80°56'37.507"W	3440.15	333.442	1.42	1.09	-0.91	
9628.00	90.090	337.830	6443.34	3527.99	3164.51	-1572.78	1656287.95	14281687.94	39°19'43.987"N	80°56'37.947"W	3533.80	333.572	1.41	-0.85	-1.13	
9723.00	89.850	333.500	6443.39	3622.94	3251.05	-1611.92	1656246.83	14281774.44	39°19'44.842"N	80°56'38.445"W	3628.72	333.627	4.56	-0.25	-4.56	
9817.00	90.000	338.240	6443.78	3811.70	3421.43	-1693.54	1656167.24	14281861.76	39°19'45.672"N	80°56'38.983"W	3722.72	333.617	0.61	0.00	-0.61	
9912.00	90.340	346.320	6443.48	3905.20	3510.90	-1722.12	1656115.60	14281944.76	39°19'46.527"N	80°56'39.482"W	3817.63	333.666	5.59	0.16	5.59	
10006.00	90.180	345.580	6443.05	3999.00	3603.05	-1745.20	1656115.60	14282034.19	39°19'47.411"N	80°56'39.845"W	3910.51	333.872	8.60	0.36	8.60	
10101.00	90.430	347.260	6442.54	4092.68	3695.39	-1767.52	1656093.29	14282126.30	39°19'48.322"N	80°56'40.138"W	4003.46	334.156	0.82	-0.17	-0.80	
10196.00	90.250	342.120	6441.99	4185.77	3786.02	-1792.33	1656068.49	14282218.60	39°19'49.235"N	80°56'40.421"W	4096.34	334.438	1.81	0.26	1.79	
10290.00	90.220	336.450	6441.60	4280.65	3874.84	-1825.92	1656034.91	14282309.20	39°19'50.131"N	80°56'40.736"W	4188.84	334.667	5.47	-0.19	-5.47	
10385.00	90.280	333.320	6441.19	4374.58	3959.94	-1865.81	1655995.03	14282397.98	39°19'51.009"N	80°56'41.163"W	4283.50	334.769	5.97	-0.03	-5.97	
10479.00	90.090	334.430	6440.88	4469.45	4045.24	-1907.65	1655952.99	14282483.05	39°19'51.860"N	80°56'41.670"W	4377.49	334.771	3.33	0.06	-3.33	
10574.00	90.250	332.780	6440.60	4563.29	4129.43	-1949.43	1655911.45	14282568.31	39°19'52.693"N	80°56'42.202"W	4472.48	334.752	1.19	-0.20	1.17	
10668.00	92.120	334.410	6438.64	4658.11	4214.50	-1991.67	1655869.23	14282652.47	39°19'53.526"N	80°56'42.733"W	4566.45	334.729	1.76	0.17	-1.76	
10763.00	90.150	333.460	6436.77	4751.97	4298.91	-2032.96	1655827.96	14282737.50	39°19'54.367"N	80°56'43.270"W	4661.41	334.706	2.61	1.97	1.72	
10857.00	90.250	331.160	6436.44	4846.86	4383.03	-2077.10	1655783.83	14282821.89	39°19'55.201"N	80°56'43.794"W	4755.37	334.690	2.33	-2.10	-1.01	
10952.00	90.150	331.720	6436.11	4940.24	4465.59	-2122.04	1655738.91	14282905.97	39°19'56.033"N	80°56'44.356"W	4850.29	334.644	2.42	0.11	-2.42	
11046.00	89.940	333.250	6436.04	5034.96	4549.86	-2165.90	1655695.07	14282988.50	39°19'56.849"N	80°56'44.927"W	4944.14	334.583	0.61	-0.11	0.60	
11141.00	90.150	333.500	6435.97	5128.97	4633.90	-2208.00	1655652.99	14283072.73	39°19'57.682"N	80°56'45.484"W	5039.08	334.544	1.67	-0.22	1.65	
11235.00	90.150	336.520	6435.72	5223.73	4720.00	-2248.12	1655612.88	14283156.74	39°19'58.513"N	80°56'46.019"W	5133.96	334.523	0.32	0.22	0.22	
11330.00	90.150	338.370	6435.47	5317.72	4806.81	-2284.18	1655570.84	14283242.80	39°19'59.365"N	80°56'46.530"W	5228.04	334.532	3.18	0.00	3.18	
11424.00	90.150	338.220	6435.20	5412.71	4894.44	-2320.84	1655540.19	14283329.17	39°20'00.223"N	80°56'46.988"W	5321.92	334.583	1.97	0.00	1.97	
11519.00	90.120	337.290	6434.95	5506.71	4980.81	-2357.94	1655503.50	14283417.17	39°20'01.089"N	80°56'47.454"W	5416.81	334.631	2.26	0.03	-2.26	
11613.00	90.120	337.290	6434.95	5506.71	4980.81	-2357.94	1655503.50	14283503.50	39°20'01.943"N	80°56'47.925"W	5510.75	334.687	1.14	-0.06	1.14	



Actual Wellpath Report

Norma Unit 1H AWP Proj: 15674'

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REFERENCE WELLPATH IDENTIFICATION		Slot	Slot #02
Operator	ANTERO RESOURCES CORPORATION	Well	Norma Unit 1H
Area	Ritchie County, WV	Wellbore	Norma Unit 1H AWB
Field	Ritchie		
Facility	Zinn Pad		

WELLPATH DATA (344 stations)

MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (ft)	Grid North (ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (ft/100ft)	Build Rate (ft/100ft)	Turn Rate (ft/100ft)	Comments
11708.00	89.910	338.120	6434.93	5601.70	5068.70	-2393.98	1655467.08	14283591.37	39°20'02.812"N	80°56'48.383"W	5605.61	334.718	0.90	-0.22	0.87	
11803.00	90.220	340.110	6434.82	5696.62	5157.46	-2427.85	1655433.23	14283680.08	39°20'03.689"N	80°56'48.813"W	5700.33	334.792	2.12	0.33	2.08	
11897.00	90.180	343.900	6434.49	5790.22	5246.84	-2456.88	1655404.20	14283769.43	39°20'04.573"N	80°56'49.182"W	5793.58	334.908	4.03	-0.04	4.03	
11991.00	90.520	341.770	6433.92	5883.92	5336.65	-2484.62	1655376.48	14283859.20	39°20'05.461"N	80°56'49.535"W	5886.69	335.034	2.29	0.36	-2.27	
12086.00	91.020	337.840	6432.64	5978.55	5425.78	-2517.41	1655343.70	14283948.30	39°20'06.342"N	80°56'49.951"W	5981.34	335.110	4.17	0.53	-4.14	
12181.00	90.180	337.240	6431.64	6073.54	5513.57	-2553.70	1655307.11	14284036.05	39°20'07.210"N	80°56'50.412"W	6076.25	335.148	1.09	-0.88	-0.63	
12275.00	90.340	337.280	6431.22	6167.54	5600.26	-2590.03	1655271.43	14284122.71	39°20'08.087"N	80°56'50.874"W	6170.19	335.180	0.18	0.17	0.04	
12370.00	90.430	333.070	6430.58	6262.47	5686.46	-2629.91	1655231.25	14284208.88	39°20'08.919"N	80°56'51.381"W	6265.16	335.180	4.43	0.09	-4.43	
12464.00	90.250	330.630	6430.02	6356.10	5769.34	-2674.25	1655186.92	14284291.72	39°20'09.738"N	80°56'51.945"W	6359.00	335.131	2.60	-0.19	-2.60	
12559.00	89.690	332.080	6430.07	6450.66	5852.71	-2719.79	1655141.40	14284375.05	39°20'10.563"N	80°56'52.524"W	6453.79	335.075	1.64	-0.59	1.53	
12748.00	90.310	340.370	6430.73	6639.47	6027.11	-2792.14	1655069.08	14284459.39	39°20'12.287"N	80°56'53.443"W	6642.45	335.143	1.92	0.75	1.77	
12842.00	90.220	336.260	6430.29	6733.42	6114.44	-2826.87	1655034.37	14284543.68	39°20'13.150"N	80°56'53.885"W	6736.29	335.188	4.37	-0.10	-4.37	
12937.00	89.890	332.540	6430.21	6826.31	6200.10	-2867.91	1654993.34	14284627.31	39°20'13.997"N	80°56'54.406"W	6831.26	335.177	3.93	-0.36	-3.92	
13031.00	89.450	328.910	6430.76	6921.76	6282.08	-2913.87	1654947.40	14284710.25	39°20'14.807"N	80°56'54.991"W	6924.96	335.116	3.89	-0.46	-3.86	
13125.00	89.570	332.040	6431.56	7015.16	6363.86	-2960.18	1654901.10	14284793.20	39°20'15.616"N	80°56'55.580"W	7018.65	335.054	3.33	0.13	3.33	
13220.00	90.060	338.460	6431.87	7110.07	6450.09	-2999.94	1654861.37	14284872.20	39°20'16.468"N	80°56'56.085"W	7113.59	335.057	6.78	0.52	6.76	
13314.00	90.220	340.570	6431.64	7203.97	6538.12	-3032.87	1654826.45	14284956.20	39°20'17.339"N	80°56'56.503"W	7207.31	335.115	2.20	0.17	2.19	
13409.00	90.150	339.530	6431.34	7298.82	6627.41	-3065.32	1654796.01	14285039.39	39°20'18.221"N	80°56'56.916"W	7301.97	335.178	1.04	-0.07	-1.04	
13503.00	89.120	339.230	6431.11	7392.73	6715.38	-3098.43	1654762.82	14285123.39	39°20'19.091"N	80°56'57.337"W	7395.72	335.232	0.32	-0.03	-0.32	
13598.00	89.940	335.690	6431.06	7487.71	6803.11	-3134.84	1654728.52	14285208.00	39°20'19.958"N	80°56'57.799"W	7490.63	335.260	3.73	-0.19	-3.73	
13692.00	89.910	334.580	6431.19	7581.66	6888.40	-3174.36	1654687.01	14285292.00	39°20'20.802"N	80°56'58.302"W	7584.63	335.258	1.18	-0.03	-1.18	
13787.00	90.000	335.300	6431.26	7676.61	6974.45	-3214.60	1654646.79	14285376.00	39°20'21.652"N	80°56'58.813"W	7679.63	335.255	0.76	0.09	0.76	
13881.00	90.030	341.040	6431.24	7770.55	7061.68	-3249.54	1654611.87	14285460.54	39°20'22.515"N	80°56'59.257"W	7773.47	335.290	6.11	0.03	6.11	
13976.00	90.150	342.110	6431.09	7865.22	7151.81	-3279.56	1654581.85	14285544.63	39°20'23.406"N	80°56'59.639"W	7867.90	335.365	1.13	0.13	1.13	
14070.00	90.280	343.130	6430.74	7958.75	7241.51	-3307.64	1654553.79	14285628.39	39°20'24.292"N	80°56'59.996"W	7961.16	335.451	1.09	0.14	1.09	
14165.00	90.180	341.910	6430.35	8053.28	7332.12	-3336.18	1654525.26	14285712.88	39°20'25.188"N	80°57'00.358"W	8055.44	335.534	1.29	-0.11	-1.28	
14259.00	90.120	339.270	6430.11	8147.07	7420.77	-3367.41	1654494.04	14285797.49	39°20'26.064"N	80°57'00.755"W	8148.07	335.592	2.81	-0.06	-2.81	
14354.00	90.180	337.480	6429.86	8242.04	7509.08	-3402.42	1654459.05	14285883.00	39°20'26.937"N	80°57'01.200"W	8243.95	335.624	1.89	0.06	-1.88	
14448.00	89.760	335.110	6429.91	8336.03	7595.14	-3440.21	1654421.27	14285968.00	39°20'27.788"N	80°57'01.680"W	8337.94	335.632	2.56	-0.45	-2.52	



Actual Wellpath Report

Norma Unit 1H AWP Proj: 15674'



REFERENCE WELLPATH IDENTIFICATION		Slot	Slot #02
Operator	ANTERO RESOURCES CORPORATION	Well	Norma Unit 1H
Area	Ritchie County, WV	Wellbore	Norma Unit 1H AWB
Field	Ritchie		
Facility	Zinn Pad		

WELLPATH DATA (344 stations)

MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	DLS	Build Rate	Turn Rate	Comments
	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(US ft)	(US ft)	(US ft)	(US ft)	(ft)	(°)	(ft/100ft)	(ft/100ft)	(°/100ft)	
14543.00	90.000	333.410	6430.11	8430.92	7680.71	-3481.46	1654380.03	14286202.33	39°20'28.634"N	80°57'02.205"W	8432.91	335.616	1.81	0.25	-1.79	
14637.00	89.880	332.690	6430.21	8524.72	7764.51	-3524.07	1654337.45	14286286.09	39°20'29.463"N	80°57'02.747"W	8526.82	335.588	0.78	-0.13	-0.77	
14732.00	89.850	333.450	6430.43	8619.51	7849.20	-3567.09	1654294.44	14286370.75	39°20'30.300"N	80°57'03.294"W	8621.72	335.560	0.80	-0.03	0.80	
14827.00	89.940	335.130	6430.60	8714.41	7934.79	-3608.30	1654253.25	14286456.31	39°20'31.146"N	80°57'03.817"W	8716.70	335.547	1.77	0.03	1.77	
14921.00	89.850	336.300	6430.78	8808.39	8020.48	-3648.56	1654214.60	14286541.95	39°20'31.993"N	80°57'04.309"W	8810.70	335.548	1.25	-0.10	1.24	
15016.00	90.120	337.380	6430.80	8903.39	8107.82	-3694.32	1654177.26	14286629.26	39°20'32.857"N	80°57'04.784"W	8905.67	335.562	1.17	0.28	1.14	
15110.00	90.030	337.560	6430.68	8997.38	8194.64	-3720.34	1654141.25	14286716.05	39°20'33.715"N	80°57'05.242"W	8999.62	335.582	0.21	-0.10	0.19	
15205.00	90.030	338.110	6430.63	9092.37	8282.62	-3756.18	1654105.43	14286804.00	39°20'34.585"N	80°57'05.697"W	9094.55	335.606	0.58	0.00	0.58	
15299.00	90.090	337.760	6430.53	9186.35	8369.74	-3791.50	1654070.13	14286891.08	39°20'35.446"N	80°57'06.146"W	9188.47	335.629	0.38	0.06	-0.37	
15394.00	90.060	337.580	6430.38	9281.34	8457.65	-3827.51	1654034.12	14286978.95	39°20'36.315"N	80°57'06.604"W	9283.41	335.651	0.08	0.00	-0.08	
15488.00	89.970	337.720	6430.33	9375.33	8544.61	-3863.18	1653998.47	14287065.88	39°20'37.175"N	80°57'07.057"W	9377.35	335.671	0.13	-0.13	0.04	
15583.00	90.000	337.490	6430.36	9470.32	8632.45	-3899.38	1653962.29	14287153.68	39°20'38.043"N	80°57'07.518"W	9472.29	335.691	0.24	0.03	-0.24	
15649.00	90.090	337.450	6430.30	9536.32	8693.41	-3924.66	1653937.01	14287214.62	39°20'38.846"N	80°57'07.839"W	9538.26	335.703	0.15	0.14	-0.06	
15674.00	90.090	337.450	6430.26	9561.31	8716.50	-3934.25	1653927.43	14287237.70	39°20'38.874"N	80°57'07.961"W	9563.25	335.708	0.00	0.00	0.00	Projected MD @ TD: 15674'

TARGETS

Name	TVD	North	East	Grid East	Grid North	Latitude	Longitude	Shape
	(ft)	(ft)	(ft)	(US ft)	(US ft)	(US ft)	(US ft)	
Norma Unit 1H POE Rev-1	6411.00	394.49	-373.60	1657486.66	14278919.04	39°19'16.60"N	80°56'22.710"W	point
Norma Unit 1H BHL Rev-1	6435.00	8663.50	-3907.44	1653954.23	14287184.72	39°20'38.350"N	80°57'07.620"W	point
Norma Unit 1H LP Rev-1	6435.00	531.94	-432.33	1657427.94	14279056.43	39°19'17.960"N	80°56'23.457"W	point



Actual Wellpath Report

Norma Unit 1H AWP Proj: 15674'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #02
Area	Ritchie County, WV	Well	Norma Unit 1H
Field	Ritchie	Wellbore	Norma Unit 1H AWB
Facility	Zinn Pad		

WELLPATH COMPOSITION - Ref Wellbore: Norma Unit 1H AWB Ref Wellpath: Norma Unit 1H AWP Proj: 15674'			
Start MD ft)	End MD ft)	Positional Uncertainty Model	Log Name/Comment
25.00	5587.00	SDI Keeper v1.04	01 SDI Gyro Std Keeper (100' - 5575')
5587.00	15649.00	BHI Auto Trak Curve (Short)	02 BHI AT Curve <8-1/2">(5642-15649)
15649.00	15674.00	Blind Drilling (std)	Projection to bit
			Wellbore
			Norma Unit 1H AWB
			Norma Unit 1H AWB



Actual Wellpath Report

Norma Unit 1H AWP Proj: 15674'

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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #02
Area	Ritchie County, WV	Well	Norma Unit 1H
Field	Ritchie	Wellbore	Norma Unit 1H AWB
Facility	Zinn Pad		

WELLPATH COMMENTS

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment
112.00	0.080	63.200	112.00	SDI Gyro Std Keeper (112' - 5587')
5642.00	0.540	13.040	5635.80	BHI AT Curve <-8-1/2">(5587')(5642'-15649')
6307.00	44.162	324.419	6253.09	Middlesex: 6307' MD
6486.00	62.740	324.250	6359.42	Burkett: 6486' MD
6557.00	69.840	327.140	6387.90	Tully: 6557' MD
6634.00	74.560	331.873	6411.02	Marcellus: 6634' MD
15674.00	90.090	337.450	6430.26	Projected MD @ TD: 15674'

COMMENTS

Wellpath general comments
 API: 47-085-10169-0000
 BHI Job #: 7998992
 Rig: Patterson 343
 Duration: 06.11.2016-06.13.2016
 SDI Gyro Std Keeper (112' - 5587')
 BHI AT Curve <-8-1/2">(5587')(5642'-15649')
 Middlesex: 6307' MD
 Burkett: 6486' MD
 Tully: 6557' MD
 Marcellus: 6634' MD
 Projected MD @ TD: 15674'