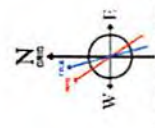




ANTERO RESOURCES CORPORATION
 Location: Ritchie County, WV
 Field: Ritchie
 Facility: Zinn Pad
 Slot: Slot #03
 Well: Norma Unit 2H
 Wellbore: Norma_Unit_2H_PWB



BCOM (1545.0 to 2017.0) Dip: 68.31° FxM: 52071.4 mT
 Magnetic North is 8.0° degrees West of True North (162.2016)
 To convert azimuth from True to Grid subtract 8.04 degrees
 To convert azimuth from Magnetic to Grid subtract 8.04 degrees

API: 47-085-10170-0000
BHI Job #: 7992644
Rig: Patterson 343
Duration: 06.05.2016-06.09.2016

SDI Sid. Keeper Gyro (100°-5645°) : 0.22° Inc. 100.00ft MD, 100.00ft TVD, 0.10ft VS

Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
Zinn Pad	1657882.100	14276491.400	80°56'17.680"W
Slot	Local E (ft)	Grid East (US ft)	Longitude
Slot #03	25.31	1657865.600	80°56'17.890"W
Patterson 343 (RKB) to Mud line (At Slot Slot #03)	25ft	14276516.700	
Mean Sea Level to Mud line (At Slot Slot #03)	-1119ft		
Patterson 343 (RKB) to Mean Sea Level	1144ft		

Well Data			
Slot	Wellbore	Wellpath	
Slot #03	Norma Unit 2H AWB	Norma Unit 2H AWP Prtg. 15430'	
Slot #03	Norma Unit 2H PWB	Norma Unit 2H PWP Rev-A.0	

Plot reference wellpath is Norma Unit 2H PWP Rev-A.0
 Grid System: NAD83 / UTM Zone 17 North, US feet
 * s Wellpath was transformed from a different geoidic datum
 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
 Scale: True distance
 Depths are in feet
 Mean Sea Level to Mud line (At Slot Slot #03): -1119 feet
 Coordinates are in feet referenced to Slot
 Created by: harelik on 2016-06-17
 Database: WA_MPL_EASTERNUS_Dept

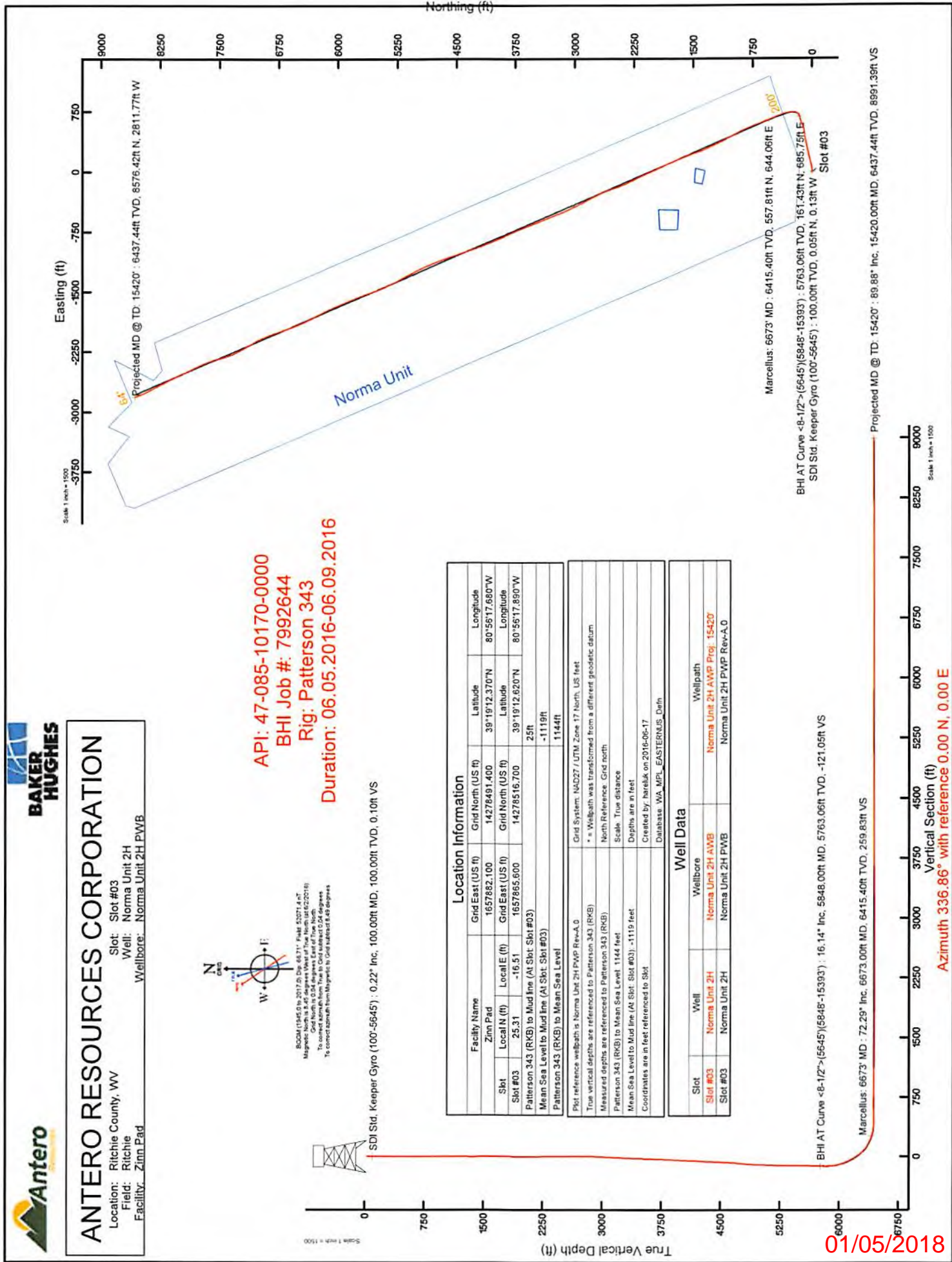
BHI AT Curve <8-1/2"> (5645°/5848°-15393°) : 16.14° Inc. 5848.00ft MD, 5763.06ft TVD, -121.05ft VS

Marcellus: 6673° MD : 72.29° Inc. 6673.00ft MD, 6415.40ft TVD, 259.83ft VS

Marcellus: 6673° MD : 6415.40ft TVD, 557.81ft N, 644.06ft E

BHI AT Curve <8-1/2"> (5645°/5848°-15393°) : 5763.06ft TVD, 161.43ft N, 685.75ft E
 SDI Sid. Keeper Gyro (100°-5645°) : 100.00ft TVD, 0.05ft N, 0.13ft W

Projected MD @ TD: 15420° : 89.88° Inc. 15420.00ft MD, 6437.44ft TVD, 8591.38ft VS



Azimuth 336.86° with reference 0.00 N, 0.00 E

18/05/2018



Actual Wellpath Report

Norma Unit 2H AWP Proj: 15420'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #03
Area	Ritchie County, WV	Well	Norma Unit 2H
Field	Ritchie	Wellbore	Norma Unit 2H 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 9:32:13 AM
Convergence at slot	0.04° East	Database/Source file	WA_MPL_EASTERNUS_Defn/Norma_Unit_2H_AWP_Proj_15420_.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	25.31	-16.51	1657865.60	14278516.70	39°19'12.620"N	80°56'17.890"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 #03)	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°



Actual Wellpath Report

Norma Unit 2H AWP Proj: 15420'

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REFERENCE WELLPATH IDENTIFICATION				
Operator	ANTERO RESOURCES CORPORATION		Slot	Slot #03
Area	Ritchie County, WV		Well	Norma Unit 2H
Field	Ritchie		Wellbore	Norma Unit 2H AWP
Facility	ZInn Pad			

WELLPATH DATA (342 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
0.00†	0.000	291.990	0.00	0.00	0.00	0.00	1657865.60	14278516.70	39°19'12.620"N	80°56'17.890"W	0.00	0.000	0.00	0.00	0.00	
25.00	0.000	291.990	25.00	0.00	0.00	0.00	1657865.60	14278516.70	39°19'12.620"N	80°56'17.890"W	0.00	0.000	0.00	0.00	0.00	
100.00	0.220	291.990	100.00	0.10	0.05	-0.13	1657865.47	14278516.75	39°19'12.621"N	80°56'17.892"W	0.14	291.990	0.29	0.29	-90.68	SDI Std. Keeper Gyro (100'-5645')
125.00	0.100	223.290	125.00	0.13	0.06	-0.19	1657865.41	14278516.76	39°19'12.621"N	80°56'17.893"W	0.20	286.184	0.82	-0.48	-274.80	
150.00	0.070	212.070	150.00	0.11	0.03	-0.22	1657865.38	14278516.73	39°19'12.621"N	80°56'17.893"W	0.22	277.172	0.14	-0.12	-44.88	
175.00	0.040	156.620	175.00	0.09	0.01	-0.22	1657865.38	14278516.71	39°19'12.620"N	80°56'17.893"W	0.22	271.618	0.23	-0.12	-221.80	
200.00	0.150	135.460	200.00	0.05	-0.03	-0.19	1657865.41	14278516.67	39°19'12.620"N	80°56'17.893"W	0.20	262.638	0.45	0.44	-84.64	
225.00	0.160	142.980	225.00	-0.01	-0.08	-0.15	1657865.45	14278516.62	39°19'12.620"N	80°56'17.892"W	0.17	243.088	0.09	0.04	30.08	
250.00	0.190	156.540	250.00	-0.09	-0.14	-0.11	1657865.49	14278516.56	39°19'12.619"N	80°56'17.892"W	0.18	218.422	0.20	0.12	54.24	
275.00	0.080	173.790	275.00	-0.14	-0.20	-0.09	1657865.51	14278516.50	39°19'12.618"N	80°56'17.891"W	0.22	205.538	0.46	-0.44	69.00	
300.00	0.200	153.440	300.00	-0.20	-0.25	-0.07	1657865.53	14278516.45	39°19'12.618"N	80°56'17.891"W	0.26	196.038	0.51	0.48	-81.40	
325.00	0.160	153.170	325.00	-0.28	-0.32	-0.04	1657865.56	14278516.38	39°19'12.617"N	80°56'17.891"W	0.33	186.640	0.16	-0.16	-1.08	
350.00	0.160	153.780	350.00	-0.35	-0.39	-0.01	1657865.59	14278516.31	39°19'12.617"N	80°56'17.890"W	0.39	180.972	0.01	0.00	2.44	
375.00	0.210	152.840	375.00	-0.43	-0.46	0.03	1657865.63	14278516.24	39°19'12.616"N	80°56'17.890"W	0.46	176.285	0.20	0.20	-3.76	
400.00	0.130	162.330	400.00	-0.51	-0.53	0.06	1657865.66	14278516.17	39°19'12.615"N	80°56'17.889"W	0.53	173.573	0.34	-0.32	37.96	
425.00	0.150	161.800	425.00	-0.57	-0.58	0.08	1657865.68	14278516.12	39°19'12.615"N	80°56'17.889"W	0.59	172.387	0.08	0.08	-2.12	
450.00	0.150	158.140	450.00	-0.63	-0.65	0.10	1657865.70	14278516.05	39°19'12.614"N	80°56'17.889"W	0.65	171.154	0.04	0.00	-14.64	
475.00	0.130	173.510	475.00	-0.69	-0.70	0.12	1657865.72	14278516.00	39°19'12.613"N	80°56'17.889"W	0.71	170.656	0.17	-0.08	61.48	
500.00	0.150	163.000	500.00	-0.75	-0.76	0.13	1657865.73	14278515.94	39°19'12.613"N	80°56'17.888"W	0.77	170.438	0.13	0.08	-42.04	
525.00	0.140	179.370	525.00	-0.81	-0.83	0.14	1657865.74	14278515.87	39°19'12.612"N	80°56'17.888"W	0.84	170.473	0.17	-0.04	65.48	
550.00	0.120	164.870	550.00	-0.87	-0.88	0.15	1657865.75	14278515.82	39°19'12.612"N	80°56'17.888"W	0.89	170.612	0.15	-0.08	-58.00	
575.00	0.170	177.660	575.00	-0.93	-0.94	0.15	1657865.75	14278515.76	39°19'12.611"N	80°56'17.888"W	0.96	170.728	0.24	0.20	51.16	
600.00	0.090	176.530	600.00	-0.98	-1.00	0.16	1657865.76	14278515.70	39°19'12.611"N	80°56'17.888"W	1.01	171.093	0.32	-0.32	-4.52	
625.00	0.080	152.450	625.00	-1.02	-1.04	0.17	1657865.77	14278515.66	39°19'12.610"N	80°56'17.888"W	1.05	170.890	0.15	-0.04	-96.32	
650.00	0.060	134.980	650.00	-1.05	-1.06	0.18	1657865.78	14278515.64	39°19'12.610"N	80°56'17.888"W	1.08	170.187	0.12	-0.08	-69.88	
675.00	0.080	163.460	675.00	-1.08	-1.09	0.20	1657865.80	14278515.61	39°19'12.610"N	80°56'17.888"W	1.10	169.690	0.16	0.08	113.92	
700.00	0.070	122.100	700.00	-1.11	-1.11	0.22	1657865.82	14278515.59	39°19'12.609"N	80°56'17.887"W	1.13	169.023	0.22	-0.04	-165.44	
725.00	0.090	121.530	725.00	-1.14	-1.13	0.25	1657865.85	14278515.57	39°19'12.609"N	80°56'17.887"W	1.16	167.753	0.08	0.08	-2.28	
750.00	0.110	126.020	750.00	-1.17	-1.15	0.28	1657865.88	14278515.55	39°19'12.609"N	80°56'17.887"W	1.19	166.298	0.09	0.08	17.96	
775.00	0.190	117.510	775.00	-1.22	-1.19	0.34	1657865.94	14278515.51	39°19'12.609"N	80°56'17.886"W	1.23	164.130	0.33	0.32	-34.04	



Actual Wellpath Report

Norma Unit 2H AWP Proj: 15420'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #03
Area	Ritchie County, WV	Well	Norma Unit 2H
Field	Ritchie	Wellbore	Norma Unit 2H AWP
Facility	Zinn Pad		

WELLPATH DATA (342 stations)																
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
800.00	0.160	128.930	800.00	-1.29	-1.23	0.40	1657866.00	14278515.47	39°19'12.608"N	80°56'17.885"W	1.29	161.902	0.18	-0.12	45.68	
825.00	0.090	117.810	825.00	-1.33	-1.26	0.45	1657866.05	14278515.44	39°19'12.608"N	80°56'17.884"W	1.34	160.501	0.30	-0.28	-44.48	
850.00	0.180	135.510	850.00	-1.39	-1.30	0.49	1657866.09	14278515.40	39°19'12.608"N	80°56'17.884"W	1.39	159.265	0.39	0.36	70.80	
875.00	0.140	128.230	875.00	-1.45	-1.34	0.54	1657866.14	14278515.36	39°19'12.607"N	80°56'17.883"W	1.45	158.017	0.18	-0.16	-29.12	
900.00	0.210	132.760	900.00	-1.52	-1.39	0.60	1657866.20	14278515.31	39°19'12.607"N	80°56'17.882"W	1.52	156.706	0.29	0.28	18.12	
925.00	0.080	104.800	925.00	-1.57	-1.43	0.65	1657866.25	14278515.27	39°19'12.606"N	80°56'17.882"W	1.57	155.526	0.58	-0.52	-111.84	
950.00	0.090	140.420	950.00	-1.60	-1.45	0.68	1657866.28	14278515.25	39°19'12.606"N	80°56'17.881"W	1.60	154.859	0.21	0.04	142.48	
975.00	0.130	140.130	975.00	-1.65	-1.49	0.71	1657866.31	14278515.21	39°19'12.606"N	80°56'17.881"W	1.65	154.438	0.16	0.16	-1.16	
1000.00	0.110	138.460	1000.00	-1.70	-1.53	0.74	1657866.34	14278515.18	39°19'12.605"N	80°56'17.881"W	1.70	153.978	0.08	-0.08	-6.68	
1025.00	0.110	167.980	1025.00	-1.74	-1.57	0.77	1657866.37	14278515.13	39°19'12.605"N	80°56'17.880"W	1.74	153.958	0.22	0.00	118.08	
1050.00	0.050	173.420	1050.00	-1.78	-1.60	0.77	1657866.37	14278515.10	39°19'12.605"N	80°56'17.880"W	1.78	154.263	0.24	-0.24	21.76	
1075.00	0.010	170.470	1075.00	-1.79	-1.61	0.77	1657866.37	14278515.09	39°19'12.604"N	80°56'17.880"W	1.79	154.397	0.16	-0.16	-11.80	
1100.00	0.020	264.470	1100.00	-1.79	-1.62	0.77	1657866.37	14278515.08	39°19'12.604"N	80°56'17.880"W	1.79	154.547	0.09	0.04	376.00	
1125.00	0.120	154.950	1125.00	-1.81	-1.64	0.78	1657866.38	14278515.06	39°19'12.604"N	80°56'17.880"W	1.82	154.683	0.51	0.40	-438.08	
1150.00	0.090	133.840	1150.00	-1.86	-1.68	0.80	1657866.40	14278515.02	39°19'12.604"N	80°56'17.880"W	1.86	154.471	0.19	-0.12	-84.44	
1175.00	0.060	23.430	1175.00	-1.87	-1.68	0.82	1657866.42	14278515.02	39°19'12.604"N	80°56'17.880"W	1.87	153.957	0.50	-0.12	-441.64	
1200.00	0.230	124.460	1200.00	-1.90	-1.70	0.87	1657866.47	14278515.00	39°19'12.604"N	80°56'17.879"W	1.91	152.914	0.99	0.68	404.12	
1225.00	0.230	110.180	1225.00	-1.98	-1.74	0.96	1657866.56	14278514.96	39°19'12.603"N	80°56'17.878"W	1.99	151.243	0.23	0.00	-57.12	
1250.00	0.230	94.480	1250.00	-2.04	-1.76	1.05	1657866.65	14278514.94	39°19'12.603"N	80°56'17.877"W	2.05	149.152	0.25	0.00	-62.80	
1275.00	0.270	97.000	1275.00	-2.09	-1.77	1.16	1657866.76	14278514.93	39°19'12.603"N	80°56'17.875"W	2.12	146.788	0.17	0.16	10.08	
1300.00	0.300	107.480	1300.00	-2.16	-1.80	1.28	1657866.88	14278514.90	39°19'12.603"N	80°56'17.874"W	2.21	144.547	0.24	0.12	41.92	
1325.00	0.310	92.790	1325.00	-2.23	-1.82	1.41	1657867.01	14278514.88	39°19'12.602"N	80°56'17.872"W	2.31	142.247	0.31	0.04	-58.76	
1350.00	0.320	84.490	1350.00	-2.28	-1.82	1.55	1657867.15	14278514.88	39°19'12.602"N	80°56'17.870"W	2.39	139.600	0.19	0.04	-33.20	
1375.00	0.390	65.890	1374.99	-2.30	-1.78	1.70	1657867.30	14278514.92	39°19'12.603"N	80°56'17.869"W	2.46	136.360	0.54	0.28	-74.40	
1400.00	0.450	51.430	1399.99	-2.28	-1.68	1.85	1657867.45	14278515.02	39°19'12.604"N	80°56'17.867"W	2.50	132.280	0.49	0.24	-57.84	
1425.00	0.520	42.630	1424.99	-2.20	-1.54	2.00	1657867.60	14278515.16	39°19'12.605"N	80°56'17.865"W	2.53	127.505	0.41	0.28	-35.20	
1450.00	0.540	30.970	1449.99	-2.09	-1.35	2.14	1657867.74	14278515.35	39°19'12.607"N	80°56'17.863"W	2.53	122.297	0.44	0.08	-46.64	
1475.00	0.700	26.160	1474.99	-1.92	-1.12	2.27	1657867.87	14278515.58	39°19'12.609"N	80°56'17.861"W	2.53	116.178	0.67	0.64	-19.24	
1500.00	0.600	38.990	1499.99	-1.76	-0.88	2.42	1657868.02	14278515.82	39°19'12.612"N	80°56'17.859"W	2.57	109.924	0.70	-0.40	51.32	
1525.00	0.660	28.830	1524.99	-1.61	-0.65	2.57	1657868.17	14278516.05	39°19'12.614"N	80°56'17.857"W	2.65	104.166	0.51	0.24	-41.44	



Actual Wellpath Report

Norma Unit 2H AWP Proj: 15420'

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REFERENCE WELLPATH IDENTIFICATION				
Operator	ANTERO RESOURCES CORPORATION		Slot	Slot #03
Area	Ritchie County, WV		Well	Norma Unit 2H
Field	Ritchie		Wellbore	Norma Unit 2H AWB
Facility	Zinn Pad			

WELLPATH DATA (342 stations)																
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 (ft/100ft)	Comments
1550.00	0.680	26.060	1549.99	-1.42	-0.39	2.71	1657868.30	14278516.31	39°19'12.617"N	80°56'17.856"W	2.73	98.189	0.14	0.08	-10.28	
1575.00	0.620	30.320	1574.98	-1.24	-0.14	2.84	1657868.44	14278516.56	39°19'12.619"N	80°56'17.854"W	2.84	92.809	0.31	-0.24	-17.04	
1600.00	0.670	27.610	1599.98	-1.07	0.11	2.97	1657868.57	14278516.81	39°19'12.621"N	80°56'17.852"W	2.98	87.940	0.23	0.20	-10.84	
1625.00	0.550	24.180	1624.98	-0.90	0.35	3.09	1657868.69	14278517.05	39°19'12.624"N	80°56'17.851"W	3.11	83.614	0.50	-0.48	-13.72	
1650.00	0.240	14.840	1649.98	-0.77	0.51	3.15	1657868.75	14278517.21	39°19'12.625"N	80°56'17.850"W	3.19	80.885	1.26	-1.24	-37.36	
1675.00	0.100	292.780	1674.98	-0.72	0.57	3.15	1657868.75	14278517.26	39°19'12.626"N	80°56'17.850"W	3.20	79.821	0.99	-0.56	-328.24	
1700.00	0.200	231.590	1699.98	-0.71	0.55	3.09	1657868.69	14278517.25	39°19'12.626"N	80°56'17.851"W	3.14	79.981	0.70	0.40	-244.76	
1725.00	0.440	214.980	1724.98	-0.78	0.44	3.00	1657868.60	14278517.14	39°19'12.625"N	80°56'17.852"W	3.04	81.653	1.02	0.96	-66.44	
1750.00	0.750	211.960	1749.98	-0.92	0.22	2.86	1657868.46	14278516.92	39°19'12.623"N	80°56'17.854"W	2.87	85.540	1.25	1.24	-12.08	
1775.00	0.990	211.370	1774.98	-1.14	-0.10	2.66	1657868.26	14278516.60	39°19'12.619"N	80°56'17.856"W	2.67	92.150	0.96	0.96	-2.36	
1800.00	1.050	205.250	1799.97	-1.42	-0.49	2.45	1657868.05	14278516.21	39°19'12.616"N	80°56'17.859"W	2.50	101.331	0.50	0.24	-24.48	
1825.00	1.140	205.640	1824.97	-1.73	-0.92	2.25	1657867.85	14278515.78	39°19'12.611"N	80°56'17.861"W	2.43	112.323	0.36	0.36	1.56	
1850.00	1.180	198.900	1849.96	-2.09	-1.39	2.06	1657867.66	14278515.31	39°19'12.607"N	80°56'17.864"W	2.48	124.065	0.57	0.16	-26.96	
1875.00	1.050	194.040	1874.96	-2.46	-1.86	1.92	1657867.52	14278514.84	39°19'12.602"N	80°56'17.866"W	2.67	134.069	0.64	-0.52	-19.44	
1900.00	1.070	182.250	1899.95	-2.85	-2.31	1.85	1657867.45	14278514.39	39°19'12.598"N	80°56'17.867"W	2.96	141.287	0.87	0.08	-47.16	
1925.00	0.940	179.220	1924.95	-3.25	-2.75	1.85	1657867.45	14278513.95	39°19'12.593"N	80°56'17.867"W	3.31	146.120	0.56	-0.52	-12.12	
1950.00	0.770	157.190	1949.95	-3.61	-3.11	1.91	1657867.51	14278513.59	39°19'12.590"N	80°56'17.866"W	3.65	148.383	1.47	-0.68	-88.12	
1975.00	0.760	145.980	1974.94	-3.94	-3.40	2.07	1657867.67	14278513.30	39°19'12.587"N	80°56'17.864"W	3.98	148.553	0.60	-0.04	-44.84	
2000.00	0.610	106.390	1999.94	-4.19	-3.58	2.29	1657867.89	14278513.12	39°19'12.585"N	80°56'17.861"W	4.25	147.342	1.94	-0.60	-158.36	
2025.00	0.740	75.830	2024.94	-4.30	-3.58	2.58	1657868.18	14278513.13	39°19'12.585"N	80°56'17.857"W	4.41	144.216	1.51	0.52	-122.24	
2050.00	0.920	57.180	2049.94	-4.29	-3.43	2.90	1657868.50	14278513.27	39°19'12.587"N	80°56'17.853"W	4.49	139.739	1.29	0.72	-74.60	
2075.00	1.070	56.020	2074.93	-4.21	-3.19	3.26	1657868.86	14278513.51	39°19'12.589"N	80°56'17.849"W	4.56	134.319	0.61	0.60	-4.64	
2100.00	1.090	51.980	2099.93	-4.11	-2.91	3.65	1657869.24	14278513.79	39°19'12.592"N	80°56'17.844"W	4.67	128.607	0.31	0.08	-16.16	
2125.00	1.130	40.720	2124.93	-3.94	-2.58	3.99	1657869.59	14278514.12	39°19'12.595"N	80°56'17.839"W	4.75	122.840	0.89	0.16	-45.04	
2150.00	1.170	20.480	2149.92	-3.65	-2.15	4.24	1657869.84	14278514.55	39°19'12.599"N	80°56'17.836"W	4.76	116.886	1.62	0.16	-80.96	
2175.00	1.160	13.150	2174.92	-3.26	-1.67	4.39	1657869.99	14278515.03	39°19'12.604"N	80°56'17.834"W	4.70	110.781	0.60	-0.04	-29.32	
2200.00	1.220	4.180	2199.91	-2.82	-1.15	4.47	1657870.07	14278515.55	39°19'12.609"N	80°56'17.833"W	4.61	104.487	0.78	0.24	-35.88	
2225.00	1.250	355.950	2224.90	-2.32	-0.62	4.47	1657870.07	14278516.08	39°19'12.614"N	80°56'17.833"W	4.51	97.861	0.72	0.12	-32.92	
2250.00	1.260	345.540	2249.90	-1.79	-0.08	4.38	1657869.98	14278516.62	39°19'12.620"N	80°56'17.834"W	4.38	91.029	0.91	0.04	-41.64	
2275.00	0.970	303.930	2274.89	-1.34	0.31	4.14	1657869.73	14278517.01	39°19'12.623"N	80°56'17.837"W	4.15	85.774	3.35	-1.16	-166.44	



Actual Wellpath Report

Norma Unit 2H AWP Proj: 15420

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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #03
Area	Richie County, WV	Well	Norma Unit 2H
Field	Richie	Wellbore	Norma Unit 2H AWB
Facility	Zinn Pad		

WELLPATH DATA (342 stations)												
MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
2300.00	1.200	274.860	2299.89	-1.04	0.45	3.70	1657889.30	14278517.15	39°19'12.625"N	80°56'17.843"W	3.73	83.127
2325.00	1.270	2324.88	2324.88	-0.80	0.48	3.16	1657868.76	14278517.18	39°19'12.625"N	80°56'17.850"W	3.20	81.595
2350.00	1.280	2349.88	2349.88	-0.66	0.50	2.61	1657868.20	14278517.20	39°19'12.625"N	80°56'17.857"W	2.65	79.135
2375.00	1.280	2374.87	2374.87	-0.34	0.51	2.05	1657867.65	14278517.21	39°19'12.625"N	80°56'17.864"W	2.11	76.089
2400.00	1.270	2399.87	2399.87	-0.14	0.48	1.49	1657867.09	14278517.18	39°19'12.625"N	80°56'17.871"W	1.57	72.121
2425.00	0.990	2424.86	2424.86	0.00	0.42	1.00	1657866.60	14278517.12	39°19'12.625"N	80°56'17.877"W	1.09	67.081
2450.00	0.770	2449.86	2449.86	0.09	0.36	0.62	1657866.22	14278517.06	39°19'12.624"N	80°56'17.882"W	0.72	59.716
2475.00	0.850	2474.86	2474.86	0.17	0.30	0.28	1657865.88	14278517.00	39°19'12.623"N	80°56'17.887"W	0.41	42.178
2500.00	0.890	2499.85	2499.85	0.23	0.21	-0.09	1657865.51	14278516.91	39°19'12.623"N	80°56'17.891"W	0.23	336.379
2525.00	0.730	2524.85	2524.85	0.27	0.11	-0.43	1657865.17	14278516.81	39°19'12.621"N	80°56'17.896"W	0.44	283.927
2550.00	0.460	2549.85	2549.85	0.29	0.03	-0.68	1657864.92	14278516.73	39°19'12.621"N	80°56'17.899"W	0.68	272.264
2575.00	0.440	2574.85	2574.85	0.28	-0.06	-0.85	1657864.75	14278516.64	39°19'12.620"N	80°56'17.901"W	0.85	265.810
2600.00	0.110	2599.85	2599.85	0.26	-0.12	-0.95	1657864.65	14278516.58	39°19'12.619"N	80°56'17.902"W	0.96	262.584
2625.00	0.100	2624.85	2624.85	0.25	-0.15	-0.99	1657864.61	14278516.55	39°19'12.619"N	80°56'17.903"W	1.00	261.594
2650.00	0.830	2649.85	2649.85	0.25	-0.09	-0.84	1657864.76	14278516.61	39°19'12.620"N	80°56'17.901"W	0.85	264.122
2675.00	1.790	2674.84	2674.84	0.26	0.14	-0.32	1657865.28	14278516.84	39°19'12.622"N	80°56'17.894"W	0.35	294.407
2700.00	2.160	2699.82	2699.82	0.28	0.50	0.46	1657866.06	14278517.20	39°19'12.625"N	80°56'17.884"W	0.69	42.612
2725.00	3.280	2724.80	2724.80	0.32	1.00	1.54	1657867.14	14278517.70	39°19'12.630"N	80°56'17.870"W	1.84	56.879
2750.00	3.990	2749.75	2749.75	0.33	1.58	2.87	1657868.47	14278518.28	39°19'12.636"N	80°56'17.853"W	3.28	61.171
2775.00	3.940	2774.70	2774.70	0.24	2.13	4.37	1657869.97	14278518.83	39°19'12.641"N	80°56'17.834"W	4.87	64.050
2800.00	4.500	2799.63	2799.63	0.03	2.66	6.14	1657871.73	14278519.36	39°19'12.647"N	80°56'17.812"W	6.69	66.586
2825.00	4.600	2824.56	2824.56	-0.26	3.16	8.05	1657873.65	14278519.86	39°19'12.652"N	80°56'17.788"W	8.65	68.551
2850.00	5.270	2849.46	2849.46	-0.68	3.60	10.16	1657875.75	14278520.30	39°19'12.656"N	80°56'17.761"W	10.78	70.460
2875.00	5.630	2874.35	2874.35	-1.23	4.01	12.50	1657878.09	14278520.70	39°19'12.660"N	80°56'17.731"W	13.12	72.225
2900.00	6.100	2899.22	2899.22	-1.86	4.40	15.02	1657880.62	14278521.09	39°19'12.664"N	80°56'17.699"W	15.65	73.686
2925.00	6.620	2924.07	2924.07	-2.69	4.67	17.78	1657883.37	14278521.37	39°19'12.666"N	80°56'17.664"W	18.38	75.275
2950.00	6.730	2948.90	2948.90	-3.67	4.85	20.68	1657886.27	14278521.55	39°19'12.668"N	80°56'17.627"W	21.24	76.807
2975.00	7.550	2973.70	2973.70	-4.72	5.02	23.78	1657889.37	14278521.72	39°19'12.670"N	80°56'17.587"W	24.30	78.067
3000.00	7.790	2998.48	2998.48	-5.87	5.20	27.11	1657892.70	14278521.90	39°19'12.672"N	80°56'17.545"W	27.60	79.147
3025.00	8.320	3023.23	3023.23	-7.08	5.39	30.61	1657896.20	14278522.08	39°19'12.673"N	80°56'17.501"W	31.08	80.020

Comments	Turn Rate	F/100ft	Build Rate	F/100ft	DLS	F/100ft	Closure Dir	F/100ft	Closure Dist	F/100ft	Latitude	Longitude
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Actual Wellpath Report

Norma Unit 2H AWP Proj: 15420'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #03
Area	Ritchie County, WV	Well	Norma Unit 2H
Field	Ritchie	Wellbore	Norma Unit 2H AWP
Facility	Zinn Pad		

WELLPATH DATA (342 stations)																
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
3050.00	8.950	85.540	3047.95	-8.31	5.65	34.35	1657899.94	14278522.34	39°19'12.676"N	80°56'17.453"W	34.81	80.665	2.59	2.52	-3.96	
3075.00	9.110	83.670	3072.64	-9.50	6.02	38.26	1657903.84	14278522.71	39°19'12.680"N	80°56'17.403"W	38.73	81.063	1.34	0.64	-7.48	
3100.00	9.780	80.930	3097.30	-10.59	6.57	42.32	1657907.91	14278523.27	39°19'12.685"N	80°56'17.352"W	42.83	81.177	3.23	2.68	-10.96	
3125.00	9.930	80.500	3121.93	-11.62	7.26	46.54	1657912.13	14278523.96	39°19'12.692"N	80°56'17.298"W	47.11	81.135	0.67	0.60	-1.72	
3150.00	10.400	80.240	3146.54	-12.65	8.00	50.89	1657916.47	14278524.69	39°19'12.699"N	80°56'17.242"W	51.52	81.069	1.89	1.89	-1.04	
3175.00	11.040	79.920	3171.10	-13.71	8.80	55.48	1657921.05	14278525.50	39°19'12.707"N	80°56'17.184"W	56.17	80.987	2.57	2.56	-1.28	
3200.00	11.280	79.950	3195.63	-14.80	9.65	60.24	1657925.82	14278526.34	39°19'12.715"N	80°56'17.124"W	61.01	80.903	0.96	0.96	0.12	
3225.00	11.690	79.820	3220.13	-15.93	10.52	65.14	1657930.71	14278527.22	39°19'12.724"N	80°56'17.061"W	65.98	80.826	1.64	1.64	-0.52	
3250.00	11.990	79.830	3244.60	-17.08	11.43	70.19	1657935.76	14278528.12	39°19'12.733"N	80°56'16.997"W	71.11	80.754	1.20	1.20	0.04	
3275.00	12.530	79.600	3269.03	-18.26	12.37	75.41	1657940.98	14278529.07	39°19'12.742"N	80°56'16.930"W	76.42	80.682	2.17	2.16	-0.92	
3300.00	12.800	77.370	3293.42	-19.36	13.47	80.78	1657946.35	14278530.16	39°19'12.753"N	80°56'16.862"W	81.90	80.534	2.23	1.08	-8.92	
3325.00	13.030	76.800	3317.79	-20.35	14.72	86.23	1657951.79	14278531.41	39°19'12.765"N	80°56'16.793"W	87.47	80.314	1.05	0.92	-2.28	
3350.00	13.650	75.530	3342.11	-21.28	16.10	91.83	1657957.39	14278532.79	39°19'12.779"N	80°56'16.722"W	93.23	80.056	2.74	2.48	-5.08	
3375.00	13.990	74.590	3366.39	-22.13	17.64	97.60	1657963.16	14278534.33	39°19'12.794"N	80°56'16.648"W	99.18	79.756	1.63	1.36	-3.76	
3400.00	14.050	74.650	3390.64	-22.95	19.24	103.44	1657969.00	14278535.94	39°19'12.810"N	80°56'16.574"W	105.21	79.460	0.25	0.24	0.24	
3425.00	14.070	74.520	3414.89	-23.77	20.86	109.29	1657974.85	14278537.55	39°19'12.826"N	80°56'16.499"W	111.27	79.195	0.15	0.08	-0.52	
3450.00	14.180	74.160	3439.14	-24.56	22.51	115.17	1657980.72	14278539.20	39°19'12.842"N	80°56'16.424"W	117.35	78.942	0.56	0.44	-1.44	
3475.00	14.400	73.680	3463.36	-25.32	24.22	121.10	1657986.65	14278540.91	39°19'12.859"N	80°56'16.349"W	123.49	78.692	1.00	0.88	-1.92	
3500.00	14.640	73.470	3487.57	-26.05	25.99	127.11	1657992.66	14278542.68	39°19'12.876"N	80°56'16.273"W	129.74	78.445	0.98	0.96	-0.84	
3525.00	14.990	73.730	3511.73	-26.80	27.79	133.24	1657998.79	14278544.48	39°19'12.894"N	80°56'16.194"W	136.11	78.218	1.43	1.40	1.04	
3550.00	15.380	75.070	3535.86	-27.66	29.55	139.55	1658005.09	14278546.24	39°19'12.912"N	80°56'16.114"W	142.64	78.043	2.10	1.56	5.36	
3575.00	15.360	75.170	3559.97	-28.62	31.25	145.95	1658011.49	14278547.94	39°19'12.928"N	80°56'16.033"W	149.26	77.913	0.13	-0.08	0.40	
3600.00	15.060	75.010	3584.09	-29.56	32.94	152.29	1658017.83	14278549.63	39°19'12.945"N	80°56'15.952"W	155.81	77.794	1.21	-1.20	-0.64	
3625.00	14.750	75.010	3608.25	-30.47	34.61	158.50	1658024.04	14278551.29	39°19'12.961"N	80°56'15.873"W	162.23	77.684	1.24	-1.24	0.00	
3650.00	14.380	74.340	3632.45	-31.32	36.27	164.56	1658030.10	14278552.95	39°19'12.978"N	80°56'15.796"W	168.51	77.572	1.63	-1.48	-2.68	
3675.00	14.340	76.590	3656.67	-32.25	37.82	170.57	1658036.10	14278554.51	39°19'12.993"N	80°56'15.719"W	174.71	77.497	2.24	-0.16	9.00	
3700.00	13.880	76.970	3680.91	-33.30	39.22	176.50	1658042.03	14278555.90	39°19'13.007"N	80°56'15.644"W	180.80	77.473	1.88	-1.84	1.52	
3725.00	13.300	76.500	3705.21	-34.31	40.56	182.22	1658047.74	14278557.25	39°19'13.020"N	80°56'15.571"W	186.68	77.450	2.36	-2.32	-1.88	
3750.00	13.010	76.050	3729.56	-35.24	41.91	187.74	1658053.27	14278558.60	39°19'13.033"N	80°56'15.501"W	192.36	77.415	1.23	-1.16	-1.80	
3775.00	12.970	76.030	3753.92	-36.13	43.27	193.20	1658058.72	14278559.95	39°19'13.047"N	80°56'15.431"W	197.98	77.376	0.16	-0.16	-0.08	



Actual Wellpath Report

Norma Unit 2H AWP Proj: 15420'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #03
Area	Ritchie County, WV	Well	Norma Unit 2H
Field	Ritchie	Wellbore	Norma Unit 2H AWP
Facility	Zinn Pad		

WELLPATH DATA (342 stations)																
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
3800.00	13.220	75.970	3778.27	-37.03	44.64	198.69	1658064.21	14278561.32	39°19'13.060"N	80°56'15.362"W	203.65	77.338	1.00	1.00	-0.24	
3825.00	13.310	76.400	3802.60	-37.96	46.01	204.26	1658069.78	14278562.69	39°19'13.074"N	80°56'15.291"W	209.38	77.306	0.53	0.36	1.72	
3850.00	13.480	77.880	3826.92	-39.00	47.30	209.91	1658075.42	14278563.98	39°19'13.086"N	80°56'15.219"W	215.17	77.302	1.53	0.68	5.92	
3875.00	13.370	78.690	3851.24	-40.15	48.48	215.59	1658081.11	14278565.16	39°19'13.098"N	80°56'15.146"W	220.98	77.328	0.87	-0.44	3.24	
3900.00	13.310	79.520	3875.56	-41.37	49.57	221.26	1658086.77	14278566.25	39°19'13.109"N	80°56'15.074"W	226.74	77.373	0.80	-0.24	3.32	
3925.00	13.410	79.220	3899.88	-42.62	50.63	226.93	1658092.44	14278567.31	39°19'13.119"N	80°56'15.002"W	232.51	77.423	0.49	0.40	-1.20	
3950.00	13.720	79.110	3924.19	-43.87	51.73	232.69	1658098.20	14278568.41	39°19'13.130"N	80°56'14.929"W	238.37	77.465	1.24	1.24	-0.44	
3975.00	14.080	79.080	3948.45	-45.14	52.87	238.59	1658104.09	14278569.55	39°19'13.141"N	80°56'14.854"W	244.38	77.505	1.44	1.44	-0.12	
4000.00	14.160	78.830	3972.70	-46.42	54.04	244.58	1658110.08	14278570.72	39°19'13.153"N	80°56'14.778"W	250.47	77.541	0.40	0.32	-1.00	
4025.00	13.940	77.980	3996.95	-47.64	55.26	250.52	1658116.02	14278571.94	39°19'13.165"N	80°56'14.702"W	256.54	77.561	1.21	-0.88	-3.40	
4050.00	14.500	78.530	4021.19	-48.85	56.51	256.53	1658122.03	14278573.19	39°19'13.177"N	80°56'14.625"W	262.68	77.578	2.30	2.24	2.20	
4075.00	14.680	78.500	4045.38	-50.12	57.76	262.71	1658128.20	14278574.44	39°19'13.190"N	80°56'14.547"W	268.98	77.599	0.72	0.72	-0.12	
4100.00	14.680	78.020	4069.56	-51.38	59.05	268.91	1658134.40	14278575.73	39°19'13.202"N	80°56'14.468"W	275.32	77.615	0.49	0.00	-1.92	
4125.00	14.230	77.200	4093.77	-52.54	60.39	275.00	1658140.49	14278577.07	39°19'13.215"N	80°56'14.390"W	281.56	77.615	1.98	-1.80	-3.28	
4150.00	13.180	76.570	4118.06	-53.57	61.73	280.77	1658146.26	14278578.41	39°19'13.229"N	80°56'14.317"W	287.48	77.600	4.24	-4.20	-2.52	
4175.00	12.710	76.210	4142.42	-54.50	63.05	286.22	1658151.70	14278579.72	39°19'13.242"N	80°56'14.242"W	293.08	77.577	1.91	-1.88	-1.44	
4200.00	12.080	75.210	4166.84	-55.33	64.37	291.42	1658156.90	14278581.05	39°19'13.255"N	80°56'14.182"W	298.44	77.544	2.66	-2.52	-4.00	
4225.00	12.070	78.090	4191.29	-56.22	65.58	296.50	1658161.98	14278582.25	39°19'13.267"N	80°56'14.117"W	303.67	77.528	2.41	-0.04	11.52	
4250.00	12.580	80.450	4215.71	-57.36	66.57	301.74	1658167.22	14278583.24	39°19'13.276"N	80°56'14.050"W	309.00	77.559	2.87	2.04	9.44	
4275.00	12.680	81.450	4240.11	-58.69	67.43	307.14	1658172.62	14278584.10	39°19'13.285"N	80°56'13.981"W	314.46	77.618	0.96	0.40	4.00	
4300.00	13.430	80.630	4264.46	-60.08	68.31	312.72	1658178.20	14278584.98	39°19'13.293"N	80°56'13.910"W	320.10	77.678	3.09	3.00	-3.28	
4325.00	13.740	80.550	4288.76	-61.47	69.27	318.51	1658183.99	14278585.94	39°19'13.303"N	80°56'13.837"W	325.96	77.730	1.24	1.24	-0.32	
4350.00	14.210	78.360	4313.02	-62.79	70.38	324.45	1658189.92	14278587.05	39°19'13.314"N	80°56'13.761"W	331.99	77.761	2.83	1.88	-8.76	
4375.00	14.610	77.220	4337.24	-63.96	71.69	330.53	1658196.00	14278588.37	39°19'13.327"N	80°56'13.684"W	338.21	77.762	1.96	1.60	-4.56	
4400.00	14.450	77.190	4361.44	-65.09	73.08	336.64	1658202.11	14278589.75	39°19'13.340"N	80°56'13.606"W	344.49	77.751	0.64	-0.64	-0.12	
4425.00	14.340	76.370	4385.65	-66.16	74.51	342.70	1658208.16	14278591.18	39°19'13.354"N	80°56'13.529"W	350.70	77.734	0.93	-0.44	-3.28	
4450.00	14.410	77.590	4409.87	-67.25	75.90	348.74	1658214.20	14278592.57	39°19'13.368"N	80°56'13.452"W	356.91	77.721	1.24	0.28	4.88	
4475.00	14.670	77.860	4434.07	-68.44	77.24	354.87	1658220.33	14278593.91	39°19'13.381"N	80°56'13.374"W	363.18	77.721	1.07	1.04	1.08	
4500.00	14.460	77.120	4458.26	-69.60	78.60	361.01	1658226.47	14278595.27	39°19'13.395"N	80°56'13.296"W	369.47	77.717	1.12	-0.84	-2.96	
4525.00	14.620	76.660	4482.46	-70.69	80.02	367.13	1658232.58	14278596.69	39°19'13.409"N	80°56'13.218"W	375.75	77.704	0.79	0.64	-1.84	



Actual Wellpath Report

Norma Unit 2H AWP Proj: 15420'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION		Slot #03
Area	Ritchie County, WV		Well
Field	Ritchie		Wellbore
Facility	Zinn Pad		Norma Unit 2H AWB

WELLPATH DATA (342 stations)																
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
8777.00	89.850	340.720	6450.32	2358.96	2481.96	-195.12	1657670.56	14280997.66	39°19'37.153"N	80°56'20.351"W	2489.62	355.505	3.21	0.43	3.18	
8872.00	90.430	341.330	6450.09	2453.71	2571.80	-226.01	1657639.68	14281087.46	39°19'38.041"N	80°56'20.744"W	2581.71	354.978	0.89	0.61	0.64	
8967.00	89.970	336.590	6449.76	2548.61	2660.44	-260.11	1657605.60	14281176.07	39°19'38.917"N	80°56'21.177"W	2673.12	354.416	5.01	-0.48	-4.99	
9061.00	89.780	333.330	6449.96	2642.55	2745.59	-299.89	1657565.83	14281261.19	39°19'39.759"N	80°56'21.682"W	2761.92	353.767	3.47	-0.20	-3.47	
9156.00	89.940	332.180	6450.20	2737.30	2830.05	-343.38	1657522.36	14281345.61	39°19'40.594"N	80°56'22.235"W	2850.80	353.082	1.22	0.17	-1.21	
9250.00	90.150	332.990	6450.12	2831.04	2913.49	-386.66	1657479.10	14281429.02	39°19'41.419"N	80°56'22.785"W	2939.04	352.440	0.89	0.22	0.86	
9344.00	90.150	334.470	6449.88	2924.90	2997.78	-428.26	1657437.51	14281513.28	39°19'42.252"N	80°56'23.314"W	3028.22	351.870	1.57	0.00	1.57	
9439.00	90.060	335.030	6449.70	3019.83	3083.70	-468.78	1657397.00	14281599.16	39°19'43.102"N	80°56'23.829"W	3119.13	351.356	0.60	-0.09	0.59	
9533.00	89.820	337.720	6449.80	3113.82	3169.82	-506.45	1657359.35	14281685.24	39°19'43.953"N	80°56'24.307"W	3210.02	350.922	2.87	-0.26	2.86	
9628.00	90.740	339.280	6449.34	3208.78	3258.20	-541.27	1657324.55	14281773.59	39°19'44.827"N	80°56'24.750"W	3302.85	350.568	1.91	0.97	1.64	
9722.00	90.830	338.290	6448.05	3302.71	3345.82	-575.28	1657290.55	14281861.18	39°19'45.693"N	80°56'25.182"W	3394.92	350.244	1.06	0.10	-1.05	
9817.00	90.800	337.940	6446.70	3397.68	3433.97	-610.69	1657255.16	14281949.29	39°19'46.565"N	80°56'25.632"W	3487.85	349.916	0.37	-0.03	-0.37	
9911.00	90.680	337.580	6445.48	3491.66	3520.97	-646.26	1657219.60	14282036.25	39°19'47.425"N	80°56'26.084"W	3579.78	349.599	0.40	-0.13	-0.38	
10006.00	91.050	339.740	6444.05	3586.60	3609.44	-680.82	1657185.05	14282124.69	39°19'48.299"N	80°56'26.523"W	3673.09	349.318	2.31	0.39	2.27	
10100.00	90.680	338.240	6442.63	3680.52	3697.18	-714.52	1657151.36	14282212.39	39°19'49.167"N	80°56'26.951"W	3765.59	349.062	1.64	-0.39	-1.60	
10195.00	90.220	336.000	6441.88	3775.51	3784.69	-751.45	1657114.45	14282299.87	39°19'50.032"N	80°56'27.420"W	3858.57	348.770	2.41	-0.48	-2.36	
10290.00	90.950	335.830	6440.91	3870.49	3871.42	-790.22	1657075.70	14282386.56	39°19'50.889"N	80°56'27.913"W	3951.24	348.463	0.79	0.77	-0.18	
10384.00	90.250	335.810	6439.93	3964.47	3957.16	-828.72	1657037.21	14282472.27	39°19'51.737"N	80°56'28.402"W	4043.01	348.172	0.74	-0.74	-0.02	
10479.00	90.090	337.110	6439.65	4059.47	4044.26	-866.66	1656999.29	14282559.33	39°19'52.598"N	80°56'28.884"W	4136.07	347.905	1.38	-0.17	1.37	
10573.00	90.060	338.690	6439.52	4153.45	4131.35	-902.03	1656963.94	14282646.39	39°19'53.459"N	80°56'29.333"W	4228.67	347.683	1.68	-0.03	1.68	
10668.00	90.280	339.600	6439.24	4248.37	4220.12	-935.85	1656930.13	14282735.13	39°19'54.337"N	80°56'29.763"W	4322.64	347.497	0.99	0.23	0.96	
10762.00	90.180	340.330	6438.86	4342.23	4308.43	-968.05	1656897.94	14282823.40	39°19'55.210"N	80°56'30.172"W	4415.85	347.337	0.78	-0.11	0.78	
10857.00	90.220	341.680	6438.53	4436.98	4398.26	-998.97	1656867.03	14282913.19	39°19'56.098"N	80°56'30.565"W	4510.28	347.204	1.42	0.04	1.42	
10951.00	89.910	341.520	6438.43	4530.66	4487.45	-1028.64	1656837.37	14283002.35	39°19'56.980"N	80°56'30.942"W	4603.84	347.089	0.37	-0.33	-0.17	
11045.00	89.880	341.360	6438.60	4624.36	4576.56	-1058.56	1656807.46	14283091.42	39°19'57.861"N	80°56'31.322"W	4697.39	346.976	0.17	-0.03	-0.17	
11140.00	90.000	340.630	6438.70	4719.11	4666.38	-1089.50	1656776.54	14283181.21	39°19'58.748"N	80°56'31.715"W	4791.88	346.858	0.78	0.13	-0.77	
11235.00	89.940	338.920	6438.75	4813.98	4765.52	-1122.34	1656743.71	14283270.31	39°19'59.630"N	80°56'32.132"W	4886.17	346.721	1.80	-0.06	-1.80	
11329.00	89.940	337.500	6438.85	4907.95	4842.80	-1157.23	1656708.83	14283357.56	39°20'00.493"N	80°56'32.575"W	4979.15	346.561	1.51	0.00	-1.51	
11423.00	90.430	336.680	6438.54	5001.95	4929.39	-1193.82	1656672.26	14283444.11	39°20'01.349"N	80°56'33.040"W	5071.89	346.386	1.02	0.52	-0.87	
11518.00	90.740	334.600	6437.57	5096.92	5015.92	-1233.00	1656633.09	14283530.60	39°20'02.204"N	80°56'33.538"W	5165.24	346.189	2.21	0.33	-2.19	



Actual Wellpath Report

Norma Unit 2H AWP Proj: 15420'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #03
Area	Ritchie County, WV	Well	Norma Unit 2H
Field	Ritchie	Wellbore	Norma Unit 2H AWB
Facility	Zinn Pad		

WELLPATH DATA (342 stations)																
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
11613.00	89.630	331.220	6437.27	5191.68	5100.48	-1276.26	1656589.85	14283615.13	39°20'03.040"N	80°56'34.088"W	5257.73	345.952	3.74	-1.17	-3.56	
11707.00	90.340	331.060	6437.29	5285.21	5182.81	-1321.63	1656544.50	14283697.43	39°20'03.854"N	80°56'34.665"W	5348.66	345.694	0.77	0.76	-0.17	
11802.00	89.880	333.120	6437.11	5379.88	5266.75	-1366.09	1656500.05	14283781.34	39°20'04.684"N	80°56'35.230"W	5441.04	345.459	2.22	-0.48	2.17	
11896.00	90.030	334.430	6437.18	5473.74	5351.08	-1407.63	1656458.53	14283865.63	39°20'05.518"N	80°56'35.758"W	5533.12	345.262	1.40	0.16	1.39	
11991.00	89.880	336.250	6437.26	5568.70	5437.41	-1447.27	1656418.91	14283951.92	39°20'06.371"N	80°56'36.262"W	5626.72	345.095	1.92	-0.16	1.92	
12085.00	89.970	340.270	6437.38	5662.65	5524.70	-1482.08	1656384.12	14284039.18	39°20'07.234"N	80°56'36.704"W	5720.04	344.983	4.28	0.10	4.28	
12180.00	89.690	340.550	6437.66	5757.47	5614.20	-1513.93	1656352.28	14284128.65	39°20'08.119"N	80°56'37.109"W	5814.75	344.909	0.42	-0.29	0.29	
12275.00	89.820	338.360	6438.07	5852.37	5703.16	-1547.27	1656318.96	14284217.56	39°20'08.998"N	80°56'37.532"W	5909.32	344.821	2.31	0.14	-2.31	
12369.00	89.720	337.720	6438.44	5946.34	5790.33	-1582.42	1656283.82	14284304.71	39°20'09.860"N	80°56'37.979"W	6002.67	344.715	0.69	-0.11	-0.68	
12463.00	89.940	337.840	6438.72	6040.33	5877.35	-1617.97	1656248.28	14284391.69	39°20'10.721"N	80°56'38.431"W	6095.99	344.608	0.27	0.23	0.13	
12558.00	90.030	337.620	6438.75	6135.32	5965.27	-1653.97	1656212.30	14284479.57	39°20'11.590"N	80°56'38.888"W	6190.32	344.503	0.25	0.09	-0.23	
12652.00	90.000	336.490	6438.72	6229.32	6051.83	-1690.61	1656175.67	14284566.10	39°20'12.445"N	80°56'39.354"W	6283.53	344.392	1.20	-0.03	-1.20	
12747.00	89.880	334.990	6438.82	6324.30	6138.44	-1729.64	1656136.65	14284652.67	39°20'13.302"N	80°56'39.850"W	6377.47	344.264	1.58	-0.13	-1.58	
12842.00	90.000	333.520	6438.92	6419.20	6224.00	-1770.91	1656095.40	14284738.20	39°20'14.148"N	80°56'40.375"W	6471.04	344.117	1.55	0.13	-1.55	
12936.00	89.970	332.070	6438.95	6512.96	6307.60	-1813.88	1656052.45	14284821.77	39°20'14.974"N	80°56'40.921"W	6563.23	343.956	1.54	-0.03	-1.54	
13030.00	89.880	333.420	6439.07	6606.71	6391.16	-1856.93	1656009.42	14284905.30	39°20'15.800"N	80°56'41.468"W	6655.46	343.799	1.44	-0.10	1.44	
13125.00	90.000	337.180	6439.17	6701.66	6477.46	-1896.62	1655969.74	14284991.56	39°20'16.653"N	80°56'41.973"W	6749.42	343.680	3.96	0.13	3.96	
13219.00	89.970	340.170	6439.19	6795.60	6565.01	-1930.80	1655935.58	14285079.07	39°20'17.519"N	80°56'42.407"W	6843.05	343.611	3.18	-0.03	3.18	
13314.00	90.000	340.870	6439.22	6890.41	6654.57	-1962.48	1655903.91	14285168.60	39°20'18.404"N	80°56'42.809"W	6937.91	343.569	0.74	0.03	0.74	
13408.00	89.880	340.480	6439.32	6984.20	6743.28	-1993.59	1655872.82	14285257.27	39°20'19.281"N	80°56'43.205"W	7031.80	343.530	0.43	-0.13	-0.41	
13503.00	89.970	340.100	6439.44	7079.03	6832.71	-2025.63	1655840.79	14285346.67	39°20'20.165"N	80°56'43.612"W	7126.65	343.487	0.41	0.09	-0.40	
13597.00	90.090	337.080	6439.39	7172.98	6920.21	-2059.93	1655806.49	14285434.13	39°20'21.030"N	80°56'44.048"W	7220.30	343.423	3.22	0.13	-3.21	
13692.00	89.940	334.290	6439.37	7267.95	7006.78	-2099.05	1655767.40	14285520.66	39°20'21.886"N	80°56'44.545"W	7314.43	343.323	2.94	-0.16	-2.94	
13786.00	89.940	331.600	6439.47	7361.72	7090.48	-2141.80	1655724.66	14285604.34	39°20'22.714"N	80°56'45.088"W	7406.91	343.192	2.86	0.00	-2.86	
13881.00	89.940	327.730	6439.57	7455.95	7172.46	-2189.77	1655676.71	14285686.28	39°20'23.524"N	80°56'45.698"W	7499.29	343.022	4.07	0.00	-4.07	
13975.00	90.060	333.520	6439.57	7549.36	7254.34	-2235.86	1655630.64	14285768.13	39°20'24.334"N	80°56'46.284"W	7591.08	342.870	6.16	0.13	6.16	
14070.00	90.060	335.920	6439.47	7644.28	7340.24	-2276.43	1655590.09	14285853.99	39°20'25.183"N	80°56'46.800"W	7685.13	342.770	2.53	0.00	2.53	
14164.00	90.120	341.000	6439.32	7738.22	7427.64	-2310.93	1655555.60	14285941.36	39°20'26.047"N	80°56'47.238"W	7778.83	342.718	5.40	0.06	5.40	
14258.00	90.520	346.540	6438.79	7831.49	7517.86	-2337.19	1655529.35	14286031.54	39°20'26.939"N	80°56'47.572"W	7872.78	342.730	5.91	0.43	5.89	
14353.00	90.030	341.850	6438.34	7925.69	7609.24	-2363.06	1655503.49	14286122.89	39°20'27.842"N	80°56'47.900"W	7967.72	342.748	4.96	-0.52	-4.94	



Actual Wellpath Report

Norma Unit 2H AWP Proj: 15420'

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REFERENCE WELLPATH IDENTIFICATION				
Operator	ANTERO RESOURCES CORPORATION		Slot	Slot #03
Area	Ritchie County, WV		Well	Norma Unit 2H
Field	Ritchie		Wellbore	Norma Unit 2H AWB
Facility	Zinn Pad			

WELLPATH DATA (342 stations)																
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
14448.00	90.000	336.200	6438.31	8020.58	7697.91	-2397.05	1655469.51	14286211.52	39°20'28.719"N	80°56'48.332"W	8062.49	342.704	5.95	-0.03	-5.95	
14542.00	89.970	335.050	6438.34	8114.56	7783.53	-2435.84	1655430.74	14286297.10	39°20'29.565"N	80°56'48.826"W	8155.78	342.623	1.22	-0.03	-1.22	
14637.00	90.340	333.790	6438.08	8209.47	7869.22	-2476.86	1655389.74	14286382.76	39°20'30.413"N	80°56'49.347"W	8249.81	342.528	1.38	0.39	-1.33	
14731.00	90.030	336.750	6437.78	8303.42	7954.59	-2516.18	1655350.43	14286468.09	39°20'31.257"N	80°56'49.847"W	8343.06	342.447	3.17	-0.33	3.15	
14826.00	89.910	334.410	6437.83	8398.39	8041.08	-2555.45	1655311.18	14286554.55	39°20'32.112"N	80°56'50.346"W	8437.38	342.370	2.47	-0.13	-2.46	
14920.00	89.850	332.380	6438.02	8492.22	8125.12	-2597.55	1655269.10	14286638.56	39°20'32.943"N	80°56'50.881"W	8530.23	342.271	2.16	-0.06	-2.16	
15015.00	90.460	333.630	6437.77	8587.00	8209.77	-2640.67	1655225.99	14286723.17	39°20'33.779"N	80°56'51.429"W	8624.00	342.170	1.46	0.64	1.32	
15109.00	89.850	332.610	6437.51	8680.80	8293.61	-2683.16	1655183.51	14286806.98	39°20'34.608"N	80°56'51.970"W	8716.84	342.072	1.26	-0.65	-1.09	
15204.00	90.180	332.750	6437.49	8775.54	8378.02	-2726.77	1655139.93	14286891.35	39°20'35.443"N	80°56'52.524"W	8810.58	341.972	0.38	0.35	0.15	
15299.00	90.030	336.670	6437.31	8870.46	8463.89	-2767.34	1655099.37	14286977.19	39°20'36.292"N	80°56'53.040"W	8904.81	341.894	4.13	-0.16	4.13	
15393.00	89.880	339.590	6437.39	8964.43	8551.12	-2802.35	1655064.37	14287064.38	39°20'37.154"N	80°56'53.485"W	8998.60	341.855	3.11	-0.16	3.11	
15420.00	89.880	339.590	6437.44	8991.39	8576.42	-2811.77	1655054.96	14287089.68	39°20'37.404"N	80°56'53.605"W	9025.58	341.848	0.00	0.00	0.00	Projected MD @ TD: 15420'

HOLE & CASING SECTIONS - Ref Wellbore: Norma Unit 2H AWB Ref Wellpath: Norma Unit 2H AWP Proj: 15420'									
String/Diameter	Start MD (ft)	End MD (ft)	Interval (ft)	Start TVD (ft)	End TVD (ft)	Start N/S (ft)	Start E/W (ft)	End N/S (ft)	End E/W (ft)
20in Conductor	25.00	65.00	40.00	25.00	65.00	0.00	0.00	0.02	-0.04
13.375in Casing Surface	25.00	637.00	612.00	25.00	637.00	0.00	0.00	-1.05	0.17
9.625in Casing Intermediate	25.00	2536.00	2511.00	25.00	2535.85	0.00	0.00	0.07	-0.55



Actual Wellpath Report

Norma Unit 2H AWP Proj: 15420'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #03
Area	Ritchie County, WV	Well	Norma Unit 2H
Field	Ritchie	Wellbore	Norma Unit 2H AWB
Facility	Zinn Pad		

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Norma Unit 2H BHL Rev-1	6439.00	8555.78	-2776.04	1655090.67	14287069.04	39°20'37.200"N	80°56'53.150"W	point
Norma Unit 2H LP Rev-1	6439.00	683.10	587.88	1658453.24	14279199.53	39°19'19.368"N	80°56'10.404"W	point

WELLPATH COMPOSITION - Ref Wellbore: Norma Unit 2H AWB Ref Wellpath: Norma Unit 2H AWP Proj: 15420'				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
25.00	5645.00	SDI Keeper v1.04	03 SDI Std. Keeper Gyro (100'-5645') PTB: 5800'	Norma Unit 2H AWB
5645.00	15393.00	BHI AutoTrak Curve (Short)	04 BHI AT Curve <8-1/2">(5645')(5848'-15393')	Norma Unit 2H AWB
15393.00	15420.00	Blind Drilling (std)	Projection to bit	Norma Unit 2H AWB



Actual Wellpath Report

Norma Unit 2H AWP Proj: 15420'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #03
Area	Ritchie County, WV	Well	Norma Unit 2H
Field	Ritchie	Wellbore	Norma Unit 2H AWB
Facility	Zinn Pad		

WELLPATH COMMENTS					
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Comment	
100.00	0.220	291.990	100.00	SDI Std. Keeper Gyro (100'-5645')	
5848.00	16.140	73.270	5763.06	BHI AT Curve <8-1/2">(5645')(5848'-15393')	
6389.00	39.011	344.274	6257.68	Middlesex: 6389' MD	
6546.00	57.421	338.252	6362.26	Burkett: 6546' MD	
6610.00	65.450	337.775	6392.80	Tully: 6610' MD	
6673.00	72.286	338.284	6415.40	Marcellus: 6673' MD	
15420.00	89.880	339.590	6437.44	Projected MD @ TD: 15420'	

COMMENTS
<p>Wellpath general comments API: 47-085-10170-0000 BHI Job #: 7992644 Rig: Patterson 343 Duration: 06.05.2016-06.09.2016 SDI Std. Keeper Gyro (100'-5645') BHI AT Curve <8-1/2">(5645')(5848'-15393') Middlesex: 6389' MD Burkett: 6546' MD Tully: 6610' MD Marcellus: 6673' MD Projected MD @ TD: 15420'</p>