

# ANTERO RESOURCES CORPORATION

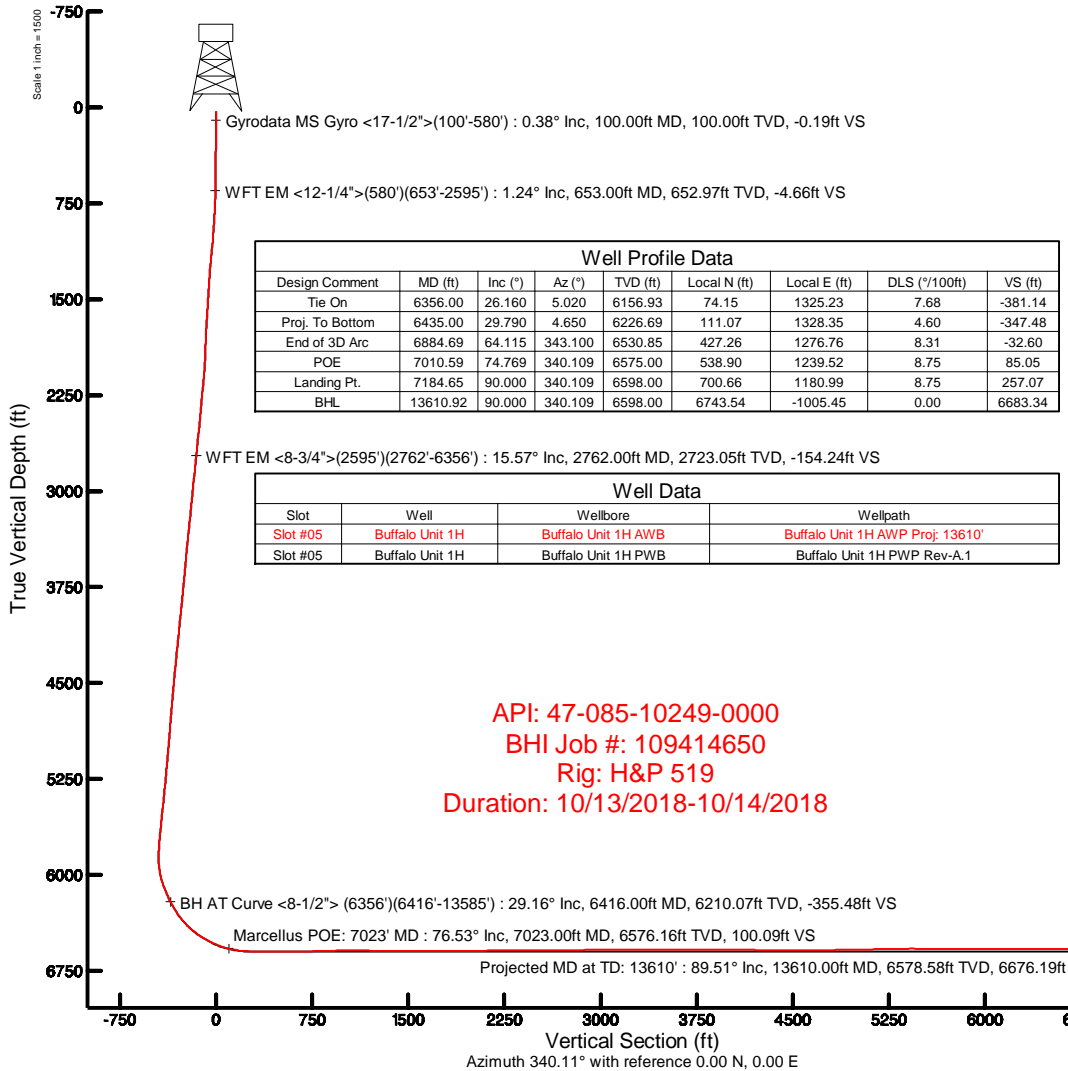
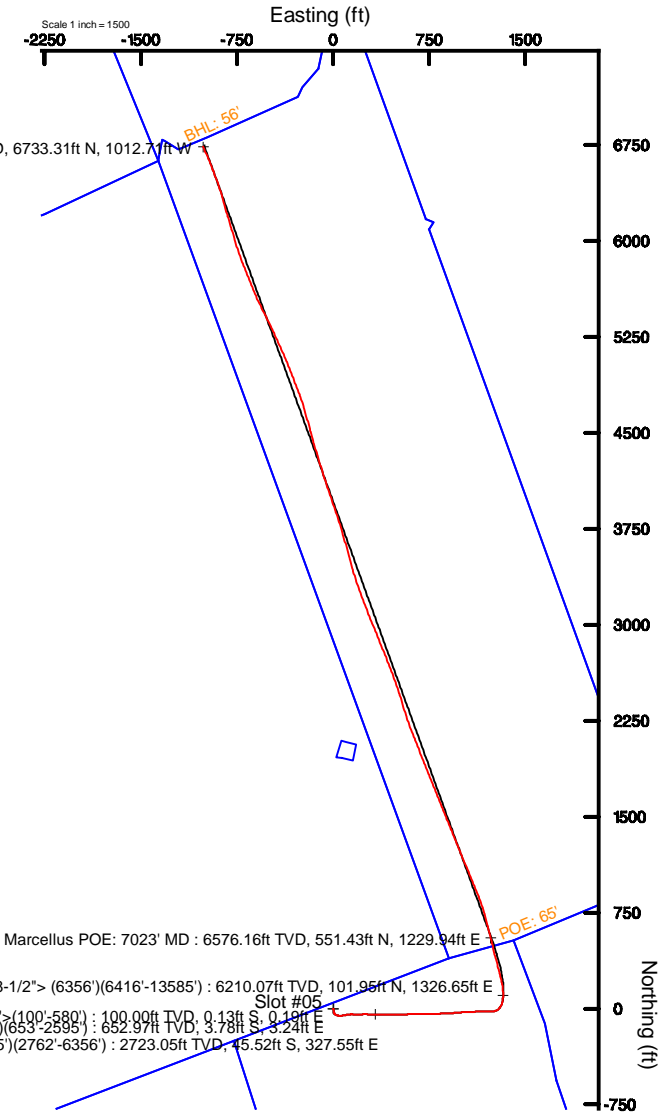
Location: Ritchie County, WV  
 Field: Ritchie  
 Facility: Bison Pad

Slot: Slot #05  
 Well: Buffalo Unit 1H  
 Wellbore: Buffalo Unit 1H PWB



Plot reference wellpath is Buffalo Unit 1H PWP Rev-A.1	Grid System: NAD27 / UTM Zone 17 North, US feet
True vertical depths are referenced to H&P 519 (RKB)	North Reference: Grid north
Measured depths are referenced to H&P 519 (RKB)	Scale: True distance
H&P 519 (RKB) to Mean Sea Level: 1250.5 feet	Depths are in feet
Mean Sea Level to Ground level (At Slot: Slot #05): -1220.5 feet	Created by: delaset on 2018-10-16
Coordinates are in feet referenced to Slot	Database: WA_MPL_EasternUS_Defn

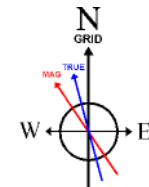
Location Information					
Facility Name		Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Bison Pad		1668323.988	14269435.805	39°17'42.740"N	80°54'04.890"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Longitude
Slot #05	-0.03	-29.88	1668294.125	14269435.773	80°54'05.270"W
H&P 519 (RKB) to Ground level (At Slot: Slot #05)				30ft	
Mean Sea Level to Ground level (At Slot: Slot #05)				-1220.5ft	
H&P 519 (RKB) to Mean Sea Level				1250.5ft	



Well Profile Data								
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	6356.00	26.160	5.020	6156.93	74.15	1325.23	7.68	-381.14
Proj. To Bottom	6435.00	29.790	4.650	6226.69	111.07	1328.35	4.60	-347.48
End of 3D Arc	6884.69	64.115	343.100	6530.85	427.26	1276.76	8.31	-32.60
POE	7010.59	74.769	340.109	6575.00	538.90	1239.52	8.75	85.05
Landing Pt.	7184.65	90.000	340.109	6598.00	700.66	1180.99	8.75	257.07
BHL	13610.92	90.000	340.109	6598.00	6743.54	-1005.45	0.00	6683.34

Well Data			
Slot	Well	Wellbore	Wellpath
Slot #05	Buffalo Unit 1H	Buffalo Unit 1H AWB	Buffalo Unit 1H AWP Proj: 13610'
Slot #05	Buffalo Unit 1H	Buffalo Unit 1H PWB	Buffalo Unit 1H PWP Rev-A.1

API: 47-085-10249-0000  
 BHI Job #: 109414650  
 Rig: H&P 519  
 Duration: 10/13/2018-10/14/2018



User specified (HDGM) Dip: 66.41° Field: 51835 nT  
 Magnetic North is 7.67 degrees West of True North (at 11/Oct/2018)  
 Grid North is 0.06 degrees East of True North  
 To correct azimuth from True to Grid subtract 0.06 degrees  
 To correct azimuth from Magnetic to Grid subtract 7.73 degrees



# Actual Wellpath Report

Buffalo Unit 1H AWP Proj: 13610'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #05
Area	Ritchie County, WV	Well	Buffalo Unit 1H
Field	Ritchie	Wellbore	Buffalo Unit 1H AWB
Facility	Bison Pad		

REPORT SETUP INFORMATION			
Projection System	NAD27 / UTM Zone 17 North, US feet	Software System	WellArchitect® 5.1
North Reference	Grid	User	Delaset
Scale	0.999601	Report Generated	16/Oct/2018 at 15:31
Convergence at slot	0.06° East	Database/Source file	WA_MPL_EasternUS_Defn/Buffalo_Unit_1H_AWP_Proj_13610_.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-0.03	-29.88	1668294.13	14269435.77	39°17'42.740"N	80°54'05.270"W
Facility Reference Pt			1668323.99	14269435.81	39°17'42.740"N	80°54'04.890"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.301"W

WELLPATH DATUM			
Calculation method	Minimum curvature	H&P 519 (RKB) to Facility Vertical Datum	30.00ft
Horizontal Reference Pt	Slot	H&P 519 (RKB) to Mean Sea Level	1250.50ft
Vertical Reference Pt	H&P 519 (RKB)	H&P 519 (RKB) to Ground Level at Slot (Slot #05)	30.00ft
MD Reference Pt	H&P 519 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	340.11°



# Actual Wellpath Report

Buffalo Unit 1H AWP Proj: 13610'  
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## REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #05
Area	Ritchie County, WV	Well	Buffalo Unit 1H
Field	Ritchie	Wellbore	Buffalo Unit 1H AWB
Facility	Bison Pad		

## WELLPATH DATA (164 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	123.800	0.00	0.00	0.00	0.00	1668294.12	14269435.77	39°17'42.740"N	80°54'05.270"W	0.00	0.000	0.00	0.00	0.00	
30.00	0.000	123.800	30.00	0.00	0.00	0.00	1668294.12	14269435.77	39°17'42.740"N	80°54'05.270"W	0.00	0.000	0.00	0.00	0.00	
100.00	0.380	123.800	100.00	-0.19	-0.13	0.19	1668294.32	14269435.64	39°17'42.739"N	80°54'05.268"W	0.23	123.800	0.54	0.54	176.86	Gyrodata MS Gyro <17-1/2">(100'-580')
200.00	0.540	132.970	200.00	-0.87	-0.63	0.81	1668294.94	14269435.14	39°17'42.734"N	80°54'05.260"W	1.03	127.974	0.18	0.16	9.17	
300.00	0.360	136.000	299.99	-1.58	-1.18	1.38	1668295.50	14269434.59	39°17'42.728"N	80°54'05.253"W	1.81	130.657	0.18	-0.18	3.03	
400.00	0.260	127.640	399.99	-2.06	-1.55	1.77	1668295.90	14269434.23	39°17'42.725"N	80°54'05.247"W	2.35	131.078	0.11	-0.10	-8.36	
500.00	0.480	143.590	499.99	-2.65	-2.02	2.20	1668296.33	14269433.75	39°17'42.720"N	80°54'05.242"W	2.99	132.556	0.24	0.22	15.95	
580.00	0.690	153.260	579.99	-3.45	-2.72	2.62	1668296.74	14269433.05	39°17'42.713"N	80°54'05.237"W	3.78	136.115	0.29	0.26	12.09	
653.00	1.240	147.330	652.97	-4.66	-3.78	3.24	1668297.37	14269431.99	39°17'42.703"N	80°54'05.229"W	4.98	139.375	0.76	0.75	-8.12	WFT EM <12-1/4">(580')(653'-2595')
744.00	2.330	157.600	743.93	-7.47	-6.32	4.48	1668298.60	14269429.46	39°17'42.677"N	80°54'05.213"W	7.75	144.671	1.24	1.20	11.29	
834.00	3.300	168.870	833.82	-11.85	-10.55	5.68	1668299.80	14269425.22	39°17'42.636"N	80°54'05.198"W	11.98	151.724	1.24	1.08	12.52	
929.00	3.930	175.860	928.63	-17.69	-16.48	6.44	1668300.56	14269419.30	39°17'42.577"N	80°54'05.188"W	17.69	158.661	0.81	0.66	7.36	
1023.00	4.690	178.320	1022.36	-24.44	-23.54	6.78	1668300.91	14269412.25	39°17'42.507"N	80°54'05.184"W	24.49	163.921	0.83	0.81	2.62	
1118.00	5.340	168.130	1117.00	-32.51	-31.74	7.81	1668301.93	14269404.04	39°17'42.426"N	80°54'05.171"W	32.69	166.183	1.16	0.68	-10.73	
1212.00	5.750	148.640	1210.57	-41.45	-40.05	11.16	1668305.28	14269395.74	39°17'42.344"N	80°54'05.129"W	41.57	164.431	2.04	0.44	-20.73	
1307.00	5.140	127.950	1305.15	-49.72	-46.73	16.99	1668311.11	14269389.06	39°17'42.278"N	80°54'05.055"W	49.72	160.018	2.15	-0.64	-21.78	
1401.00	5.030	112.010	1398.79	-56.04	-50.86	24.13	1668318.25	14269384.93	39°17'42.237"N	80°54'04.964"W	56.30	154.618	1.50	-0.12	-16.96	
1496.00	6.370	103.060	1493.32	-61.69	-53.61	33.13	1668327.24	14269382.18	39°17'42.210"N	80°54'04.849"W	63.02	148.289	1.69	1.41	-9.42	
1590.00	9.310	93.360	1586.43	-67.53	-55.24	45.80	1668339.91	14269380.56	39°17'42.194"N	80°54'04.688"W	71.76	140.336	3.42	3.13	-10.32	
1685.00	10.820	89.730	1679.97	-73.55	-55.65	62.39	1668356.49	14269380.15	39°17'42.189"N	80°54'04.477"W	83.60	131.731	1.72	1.59	-3.82	
1779.00	11.910	81.200	1772.13	-78.38	-54.12	80.80	1668374.89	14269381.67	39°17'42.204"N	80°54'04.243"W	97.25	123.815	2.13	1.16	-9.07	
1874.00	13.120	78.470	1864.87	-81.84	-50.47	101.05	1668395.14	14269385.33	39°17'42.240"N	80°54'03.985"W	112.95	116.538	1.42	1.27	-2.87	
1968.00	12.910	81.200	1956.46	-85.41	-46.73	121.88	1668415.96	14269389.06	39°17'42.277"N	80°54'03.720"W	130.53	110.976	0.69	-0.22	2.90	
2063.00	12.030	88.480	2049.22	-90.57	-44.84	142.27	1668436.34	14269390.95	39°17'42.295"N	80°54'03.461"W	149.17	107.494	1.89	-0.93	7.66	
2157.00	14.000	94.060	2140.81	-98.27	-45.39	163.41	1668457.47	14269390.40	39°17'42.290"N	80°54'03.192"W	169.59	105.523	2.48	2.10	5.94	
2252.00	16.090	91.530	2232.54	-107.75	-46.55	188.03	1668482.08	14269389.24	39°17'42.278"N	80°54'02.879"W	193.71	103.905	2.31	2.20	-2.66	
2346.00	15.200	85.500	2323.07	-115.77	-45.93	213.34	1668507.38	14269389.86	39°17'42.284"N	80°54'02.557"W	218.23	102.150	1.97	-0.95	-6.41	
2441.00	15.330	88.670	2414.72	-123.08	-44.66	238.31	1668532.34	14269391.13	39°17'42.296"N	80°54'02.239"W	242.46	100.615	0.89	0.14	3.34	
2535.00	16.590	91.800	2505.09	-131.99	-44.80	264.15	1668558.17	14269390.99	39°17'42.294"N	80°54'01.911"W	267.92	99.625	1.62	1.34	3.33	
2595.00	16.610	91.700	2562.59	-138.31	-45.32	281.28	1668575.29	14269390.47	39°17'42.289"N	80°54'01.693"W	284.91	99.153	0.06	0.03	-0.17	



# Actual Wellpath Report

Buffalo Unit 1H AWP Proj: 13610'  
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## REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #05
Area	Ritchie County, WV	Well	Buffalo Unit 1H
Field	Ritchie	Wellbore	Buffalo Unit 1H AWB
Facility	Bison Pad		

## WELLPATH DATA (164 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
2762.00	15.570	88.690	2723.05	-154.24	-45.52	327.55	1668621.54	14269390.27	39°17'42.287"N	80°54'01.104"W	330.70	97.911	0.80	-0.62	-1.80	WFT EM <8-3/4">(2595')(2762'-6356')
2856.00	16.160	91.150	2813.47	-162.95	-45.49	353.24	1668647.22	14269390.30	39°17'42.287"N	80°54'00.778"W	356.16	97.338	0.95	0.63	2.62	
2951.00	16.820	91.780	2904.56	-172.78	-46.18	380.20	1668674.17	14269389.61	39°17'42.279"N	80°54'00.435"W	382.99	96.926	0.72	0.69	0.66	
3046.00	15.780	89.180	2995.75	-182.07	-46.42	406.85	1668700.81	14269389.37	39°17'42.277"N	80°54'00.096"W	409.49	96.510	1.34	-1.09	-2.74	
3140.00	16.450	89.970	3086.05	-190.77	-46.23	432.94	1668726.89	14269389.56	39°17'42.278"N	80°53'59.764"W	435.40	96.096	0.75	0.71	0.84	
3238.00	17.260	87.440	3179.84	-199.81	-45.58	461.34	1668755.28	14269390.21	39°17'42.285"N	80°53'59.403"W	463.59	95.642	1.11	0.83	-2.58	
3333.00	16.940	90.610	3270.64	-208.86	-45.10	489.26	1668783.19	14269390.69	39°17'42.289"N	80°53'59.047"W	491.34	95.266	1.04	-0.34	3.34	
3427.00	15.050	93.750	3361.00	-218.55	-46.04	515.14	1668809.05	14269389.75	39°17'42.279"N	80°53'58.718"W	517.19	95.107	2.21	-2.01	3.34	
3522.00	15.820	89.970	3452.58	-227.90	-46.84	540.39	1668834.30	14269388.95	39°17'42.271"N	80°53'58.397"W	542.42	94.954	1.33	0.81	-3.98	
3616.00	17.320	85.340	3542.68	-235.93	-45.70	567.16	1668861.05	14269390.09	39°17'42.282"N	80°53'58.057"W	568.99	94.606	2.12	1.60	-4.93	
3711.00	17.200	87.880	3633.40	-243.93	-44.03	595.29	1668889.17	14269391.76	39°17'42.298"N	80°53'57.699"W	596.91	94.230	0.80	-0.13	2.67	
3805.00	16.260	89.540	3723.42	-252.55	-43.41	622.34	1668916.21	14269392.38	39°17'42.304"N	80°53'57.355"W	623.85	93.990	1.12	-1.00	1.77	
3900.00	16.040	88.790	3814.67	-261.17	-43.02	648.76	1668942.62	14269392.77	39°17'42.308"N	80°53'57.019"W	650.18	93.794	0.32	-0.23	-0.79	
3994.00	16.280	92.060	3904.96	-270.26	-43.22	674.91	1668968.76	14269392.57	39°17'42.305"N	80°53'56.686"W	676.29	93.664	1.00	0.26	3.48	
4089.00	17.360	89.400	3995.89	-279.92	-43.55	702.39	1668996.23	14269392.24	39°17'42.302"N	80°53'56.337"W	703.74	93.548	1.40	1.14	-2.80	
4183.00	17.880	87.420	4085.48	-288.85	-42.76	730.83	1669024.66	14269393.03	39°17'42.309"N	80°53'55.975"W	732.08	93.348	0.84	0.55	-2.11	
4278.00	17.390	88.730	4176.02	-297.72	-41.79	759.59	1669053.41	14269394.00	39°17'42.319"N	80°53'55.609"W	760.74	93.149	0.66	-0.52	1.38	
4372.00	17.200	89.190	4265.77	-306.75	-41.28	787.53	1669081.34	14269394.51	39°17'42.323"N	80°53'55.254"W	788.61	93.000	0.25	-0.20	0.49	
4467.00	17.590	88.470	4356.43	-315.86	-40.70	815.92	1669109.72	14269395.09	39°17'42.329"N	80°53'54.892"W	816.94	92.855	0.47	0.41	-0.76	
4561.00	17.320	87.460	4446.10	-324.51	-39.70	844.10	1669137.89	14269396.09	39°17'42.338"N	80°53'54.534"W	845.03	92.693	0.43	-0.29	-1.07	
4656.00	16.520	86.510	4536.98	-332.54	-38.25	871.71	1669165.49	14269397.54	39°17'42.352"N	80°53'54.183"W	872.55	92.512	0.89	-0.84	-1.00	
4750.00	15.840	86.140	4627.26	-339.85	-36.57	897.85	1669191.61	14269399.22	39°17'42.369"N	80°53'53.850"W	898.59	92.332	0.73	-0.72	-0.39	
4845.00	16.820	89.000	4718.43	-347.88	-35.46	924.53	1669218.28	14269400.33	39°17'42.379"N	80°53'53.511"W	925.21	92.196	1.33	1.03	3.01	
4939.00	17.510	84.610	4808.24	-355.83	-33.89	952.21	1669245.95	14269401.89	39°17'42.395"W	80°53'53.159"W	952.81	92.039	1.56	0.73	-4.67	
5033.00	16.220	85.150	4898.20	-362.77	-31.45	979.37	1669273.10	14269404.33	39°17'42.418"N	80°53'52.813"W	979.87	91.840	1.38	-1.37	0.57	
5128.00	15.410	87.250	4989.60	-369.94	-29.73	1005.20	1669298.92	14269406.06	39°17'42.435"N	80°53'52.485"W	1005.64	91.694	1.04	-0.85	2.21	
5222.00	17.110	87.090	5079.84	-377.66	-28.43	1031.48	1669325.20	14269407.36	39°17'42.448"N	80°53'52.150"W	1031.88	91.579	1.81	1.81	-0.17	
5317.00	17.510	88.660	5170.54	-386.28	-27.38	1059.73	1669353.43	14269408.40	39°17'42.458"N	80°53'51.791"W	1060.08	91.480	0.65	0.42	1.65	
5411.00	17.380	86.080	5260.22	-394.65	-26.09	1087.87	1669381.56	14269409.69	39°17'42.470"N	80°53'51.433"W	1088.19	91.374	0.83	-0.14	-2.74	
5506.00	17.340	88.130	5350.89	-402.93	-24.66	1116.18	1669409.85	14269411.12	39°17'42.484"N	80°53'51.073"W	1116.45	91.266	0.65	-0.04	2.16	



# Actual Wellpath Report

Buffalo Unit 1H AWP Proj: 13610'  
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REFERENCE WELLPATH IDENTIFICATION				
Operator	ANTERO RESOURCES CORPORATION		Slot	Slot #05
Area	Ritchie County, WV		Well	Buffalo Unit 1H
Field	Ritchie		Wellbore	Buffalo Unit 1H AWB
Facility	Bison Pad			

WELLPATH DATA (164 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
5600.00	16.590	91.260	5440.80	-412.10	-24.50	1143.60	1669437.26	14269411.29	39°17'42.485"N	80°53'50.724"W	1143.86	91.227	1.26	-0.80	3.33	
5695.00	16.990	90.030	5531.75	-421.73	-24.80	1171.03	1669464.69	14269410.98	39°17'42.482"N	80°53'50.375"W	1171.30	91.213	0.56	0.42	-1.29	
5789.00	16.430	88.870	5621.78	-430.68	-24.55	1198.06	1669491.70	14269411.23	39°17'42.484"N	80°53'50.032"W	1198.31	91.174	0.69	-0.60	-1.23	
5883.00	16.960	89.470	5711.82	-439.50	-24.16	1225.06	1669518.69	14269411.62	39°17'42.488"N	80°53'49.688"W	1225.30	91.130	0.59	0.56	0.64	
5978.00	17.360	78.370	5802.61	-446.13	-21.17	1252.81	1669546.43	14269414.61	39°17'42.517"N	80°53'49.335"W	1252.98	90.968	3.47	0.42	-11.68	
6025.00	17.110	74.010	5847.51	-447.61	-17.85	1266.32	1669559.94	14269417.93	39°17'42.550"N	80°53'49.163"W	1266.45	90.808	2.80	-0.53	-9.28	
6072.00	16.170	62.570	5892.55	-447.22	-12.93	1278.78	1669572.39	14269422.84	39°17'42.598"N	80°53'49.005"W	1278.84	90.579	7.24	-2.00	-24.34	
6119.00	17.480	49.640	5937.55	-443.89	-5.34	1289.97	1669583.58	14269430.43	39°17'42.673"N	80°53'48.862"W	1289.98	90.237	8.42	2.79	-27.51	
6167.00	20.180	39.160	5982.99	-437.11	5.75	1300.70	1669594.30	14269441.52	39°17'42.782"N	80°53'48.726"W	1300.71	89.747	9.00	5.62	-21.83	
6214.00	22.230	29.100	6026.82	-427.10	19.81	1310.14	1669603.74	14269455.57	39°17'42.921"N	80°53'48.605"W	1310.29	89.134	8.87	4.36	-21.40	
6261.00	23.270	19.730	6070.18	-414.11	36.32	1317.61	1669611.20	14269472.08	39°17'43.084"N	80°53'48.510"W	1318.11	88.421	8.01	2.21	-19.94	
6308.00	23.410	10.890	6113.35	-398.94	54.24	1322.50	1669616.10	14269489.99	39°17'43.261"N	80°53'48.448"W	1323.62	87.652	7.45	0.30	-18.81	
6356.00	26.160	5.020	6156.93	-381.14	74.15	1325.23	1669618.83	14269509.89	39°17'43.458"N	80°53'48.413"W	1327.31	86.798	7.68	5.73	-12.23	
6416.00	29.160	1.030	6210.07	-355.48	101.95	1326.65	1669620.25	14269537.68	39°17'43.733"N	80°53'48.394"W	1330.56	85.606	5.87	5.00	-6.65	BH AT Curve <8-1/2"> (6356')(6416'-13585')
6458.00	30.500	358.980	6246.51	-335.84	122.83	1326.65	1669620.24	14269558.56	39°17'43.939"N	80°53'48.394"W	1332.32	84.710	4.01	3.19	-4.88	
6506.00	33.970	354.420	6287.11	-311.31	148.37	1325.13	1669618.72	14269584.09	39°17'44.192"N	80°53'48.413"W	1333.41	83.611	8.82	7.23	-9.50	
6553.00	37.540	350.450	6325.25	-284.48	175.57	1321.47	1669615.07	14269611.28	39°17'44.461"N	80°53'48.459"W	1333.08	82.432	9.06	7.60	-8.45	
6601.00	41.270	347.960	6362.33	-254.40	205.49	1315.74	1669609.34	14269641.18	39°17'44.756"N	80°53'48.531"W	1331.69	81.123	8.44	7.77	-5.19	
6648.00	45.560	346.910	6396.46	-222.37	237.01	1308.70	1669602.30	14269672.68	39°17'45.068"N	80°53'48.620"W	1329.99	79.735	9.26	9.13	-2.23	
6659.00†	46.496	346.743	6404.10	-214.51	244.72	1306.90	1669600.50	14269680.39	39°17'45.144"N	80°53'48.643"W	1329.61	79.394	8.58	8.51	-1.52	Middlesex: 6659' MD
6695.00	49.560	346.230	6428.17	-187.91	270.74	1300.64	1669594.25	14269706.40	39°17'45.402"N	80°53'48.723"W	1328.52	78.242	8.58	8.51	-1.42	
6742.00	53.640	345.820	6457.36	-151.28	306.47	1291.75	1669585.35	14269742.12	39°17'45.755"N	80°53'48.835"W	1327.60	76.653	8.71	8.68	-0.87	
6790.00	57.420	345.360	6484.52	-111.90	344.79	1281.90	1669575.51	14269780.42	39°17'46.134"N	80°53'48.960"W	1327.46	74.946	7.91	7.88	-0.96	
6837.00	61.210	344.960	6508.51	-71.64	383.85	1271.54	1669565.16	14269819.47	39°17'46.520"N	80°53'49.091"W	1328.22	73.202	8.10	8.06	-0.85	
6848.00†	62.043	345.166	6513.73	-62.00	393.20	1269.05	1669562.67	14269828.82	39°17'46.612"N	80°53'49.123"W	1328.57	72.785	7.75	7.57	1.88	Burkett: 6848' MD
6884.00	64.770	345.820	6529.85	-29.96	424.37	1260.99	1669554.61	14269859.97	39°17'46.920"N	80°53'49.225"W	1330.48	71.400	7.75	7.58	1.82	
6930.00†	68.528	346.623	6548.08	12.03	465.38	1250.94	1669544.56	14269900.96	39°17'47.326"N	80°53'49.352"W	1334.70	69.594	8.33	8.17	1.75	Tully: 6930' MD
6931.00	68.610	346.640	6548.44	12.95	466.28	1250.72	1669544.34	14269901.87	39°17'47.335"N	80°53'49.355"W	1334.81	69.554	8.33	8.17	1.70	
6979.00	72.500	346.250	6564.42	57.93	510.27	1240.11	1669533.74	14269945.84	39°17'47.770"N	80°53'49.489"W	1340.99	67.634	8.14	8.10	-0.81	
7023.00†	76.535	345.978	6576.16	100.09	551.43	1229.94	1669523.57	14269986.98	39°17'48.177"N	80°53'49.618"W	1347.90	65.851	9.19	9.17	-0.62	Marcellus POE: 7023' MD



# Actual Wellpath Report

Buffalo Unit 1H AWP Proj: 13610'  
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## REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #05
Area	Ritchie County, WV	Well	Buffalo Unit 1H
Field	Ritchie	Wellbore	Buffalo Unit 1H AWB
Facility	Bison Pad		

## WELLPATH DATA (164 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
7026.00	76.810	345.960	6576.85	103.00	554.26	1229.23	1669522.86	14269989.81	39°17'48.205"N	80°53'49.627"W	1348.41	65.729	9.19	9.17	-0.61	
7073.00	80.320	345.940	6586.17	148.82	598.94	1218.05	1669511.68	14270034.48	39°17'48.646"N	80°53'49.768"W	1357.34	63.816	7.47	7.47	-0.04	
7120.00	84.330	345.830	6592.45	195.15	644.11	1206.69	1669500.33	14270079.62	39°17'49.093"N	80°53'49.912"W	1367.84	61.908	8.54	8.53	-0.23	
7168.00	87.350	345.800	6595.93	242.78	690.52	1194.96	1669488.61	14270126.01	39°17'49.552"N	80°53'50.061"W	1380.12	59.978	6.29	6.29	-0.06	
7215.00	89.200	344.460	6597.34	289.58	735.92	1182.91	1669476.56	14270171.40	39°17'50.001"N	80°53'50.213"W	1393.14	58.113	4.86	3.94	-2.85	
7263.00	89.910	342.070	6597.71	337.50	781.88	1169.09	1669462.74	14270217.34	39°17'50.455"N	80°53'50.389"W	1406.45	56.226	5.19	1.48	-4.98	
7358.00	90.520	338.630	6597.36	432.48	871.33	1137.14	1669430.81	14270306.76	39°17'51.340"N	80°53'50.794"W	1432.59	52.539	3.68	0.64	-3.62	
7452.00	90.340	337.160	6596.65	526.41	958.42	1101.77	1669395.46	14270393.81	39°17'52.201"N	80°53'51.242"W	1460.30	48.980	1.58	-0.19	-1.56	
7547.00	89.570	337.920	6596.73	621.31	1046.21	1065.48	1669359.18	14270481.56	39°17'53.069"N	80°53'51.703"W	1493.25	45.523	1.14	-0.81	0.80	
7641.00	90.490	337.160	6596.68	715.21	1133.08	1029.57	1669323.28	14270568.40	39°17'53.928"N	80°53'52.158"W	1530.97	42.260	1.27	0.98	-0.81	
7736.00	92.190	338.580	6594.46	810.11	1221.05	993.79	1669287.52	14270656.33	39°17'54.798"N	80°53'52.612"W	1574.36	39.142	2.33	1.79	1.49	
7831.00	91.140	337.570	6591.70	905.01	1309.14	958.34	1669252.08	14270744.39	39°17'55.669"N	80°53'53.062"W	1622.42	36.205	1.53	-1.11	-1.06	
7926.00	90.030	337.500	6590.73	999.90	1396.93	922.04	1669215.79	14270832.14	39°17'56.537"N	80°53'53.522"W	1673.79	33.427	1.17	-1.17	-0.07	
8020.00	89.780	338.180	6590.88	1093.83	1483.98	886.58	1669180.35	14270919.16	39°17'57.398"N	80°53'53.972"W	1728.65	30.856	0.77	-0.27	0.72	
8115.00	89.850	337.990	6591.19	1188.77	1572.12	851.13	1669144.91	14271007.26	39°17'58.269"N	80°53'54.422"W	1787.73	28.431	0.21	0.07	-0.20	
8209.00	89.970	338.250	6591.34	1282.71	1659.34	816.10	1669109.89	14271094.45	39°17'59.132"N	80°53'54.866"W	1849.17	26.189	0.30	0.13	0.28	
8304.00	90.060	337.920	6591.31	1377.65	1747.48	780.64	1669074.45	14271182.55	39°18'00.003"N	80°53'55.316"W	1913.92	24.071	0.36	0.09	-0.35	
8399.00	89.880	338.590	6591.36	1472.60	1835.72	745.44	1669039.27	14271270.76	39°18'00.876"N	80°53'55.762"W	1981.30	22.101	0.73	-0.19	0.71	
8493.00	89.970	337.560	6591.48	1566.54	1922.92	710.35	1669004.19	14271357.92	39°18'01.738"N	80°53'56.207"W	2049.93	20.275	1.10	0.10	-1.10	
8588.00	90.000	338.910	6591.51	1661.49	2011.14	675.12	1668968.97	14271446.11	39°18'02.610"N	80°53'56.654"W	2121.44	18.556	1.42	0.03	1.42	
8682.00	89.660	338.080	6591.79	1755.45	2098.60	640.66	1668934.53	14271533.53	39°18'03.475"N	80°53'57.091"W	2194.21	16.976	0.95	-0.36	-0.88	
8777.00	89.970	339.370	6592.09	1850.42	2187.12	606.19	1668900.07	14271622.02	39°18'04.350"N	80°53'57.529"W	2269.58	15.491	1.40	0.33	1.36	
8872.00	89.570	341.610	6592.48	1945.41	2276.66	574.47	1668868.36	14271711.52	39°18'05.236"N	80°53'57.931"W	2348.02	14.162	2.40	-0.42	2.36	
8966.00	90.650	343.420	6592.30	2039.32	2366.31	546.23	1668840.13	14271801.14	39°18'06.122"N	80°53'58.289"W	2428.54	12.998	2.24	1.15	1.93	
9061.00	91.140	342.580	6590.81	2134.19	2457.15	518.46	1668812.37	14271891.94	39°18'07.020"N	80°53'58.641"W	2511.25	11.915	1.02	0.52	-0.88	
9155.00	89.880	340.130	6589.97	2228.15	2546.20	488.41	1668782.34	14271980.96	39°18'07.901"N	80°53'59.022"W	2592.62	10.858	2.93	-1.34	-2.61	
9250.00	89.780	339.170	6590.26	2323.15	2635.43	455.79	1668749.73	14272070.15	39°18'08.783"N	80°53'59.435"W	2674.55	9.812	0.45	-0.11	-0.44	
9344.00	90.950	338.140	6589.66	2417.13	2723.14	421.99	1668715.95	14272157.82	39°18'09.650"N	80°53'59.864"W	2755.64	8.809	2.08	1.24	-1.67	
9439.00	89.720	337.850	6589.10	2512.06	2811.21	386.40	1668680.37	14272245.86	39°18'10.521"N	80°54'00.316"W	2837.64	7.826	1.33	-1.29	-0.31	
9533.00	90.520	338.240	6588.91	2606.00	2898.39	351.25	1668645.24	14272333.00	39°18'11.383"N	80°54'00.762"W	2919.60	6.910	0.95	0.85	0.41	





# Actual Wellpath Report

Buffalo Unit 1H AWP Proj: 13610'  
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## REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #05
Area	Ritchie County, WV	Well	Buffalo Unit 1H
Field	Ritchie	Wellbore	Buffalo Unit 1H AWB
Facility	Bison Pad		

## WELLPATH DATA (164 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
9628.00	90.550	337.600	6588.02	2700.92	2986.42	315.54	1668609.54	14272421.00	39°18'12.253"N	80°54'01.215"W	3003.05	6.031	0.67	0.03	-0.67	
9722.00	90.370	338.250	6587.26	2794.85	3073.53	280.22	1668574.23	14272508.07	39°18'13.115"N	80°54'01.663"W	3086.28	5.209	0.72	-0.19	0.69	
9817.00	91.080	339.470	6586.06	2889.82	3162.13	245.96	1668539.99	14272596.63	39°18'13.991"N	80°54'02.097"W	3171.68	4.448	1.49	0.75	1.28	
9912.00	90.030	339.650	6585.14	2984.81	3251.14	212.79	1668506.83	14272685.61	39°18'14.871"N	80°54'02.518"W	3258.09	3.745	1.12	-1.11	0.19	
10006.00	90.060	341.450	6585.07	3078.80	3339.77	181.49	1668475.54	14272774.20	39°18'15.747"N	80°54'02.915"W	3344.70	3.110	1.92	0.03	1.91	
10101.00	89.820	343.780	6585.17	3173.70	3430.42	153.10	1668447.17	14272864.82	39°18'16.644"N	80°54'03.275"W	3433.84	2.555	2.47	-0.25	2.45	
10195.00	89.880	345.000	6585.41	3267.44	3520.96	127.81	1668421.88	14272955.32	39°18'17.539"N	80°54'03.595"W	3523.27	2.079	1.30	0.06	1.30	
10290.00	89.970	344.890	6585.54	3362.10	3612.69	103.13	1668397.22	14273047.02	39°18'18.446"N	80°54'03.908"W	3614.17	1.635	0.15	0.09	-0.12	
10385.00	89.940	343.950	6585.61	3456.83	3704.20	77.62	1668371.71	14273138.49	39°18'19.350"N	80°54'04.231"W	3705.02	1.200	0.99	-0.03	-0.99	
10479.00	90.000	342.450	6585.66	3550.69	3794.19	50.45	1668344.56	14273228.44	39°18'20.240"N	80°54'04.576"W	3794.52	0.762	1.60	0.06	-1.60	
10574.00	89.910	341.080	6585.74	3645.65	3884.42	20.72	1668314.84	14273318.63	39°18'21.132"N	80°54'04.953"W	3884.47	0.306	1.45	-0.09	-1.44	
10668.00	89.940	341.110	6585.86	3739.64	3973.34	-9.73	1668284.40	14273407.52	39°18'22.011"N	80°54'05.339"W	3973.36	359.860	0.05	0.03	0.03	
10763.00	89.940	341.470	6585.96	3834.61	4063.32	-40.20	1668253.94	14273497.47	39°18'22.901"N	80°54'05.725"W	4063.52	359.433	0.38	0.00	0.38	
10858.00	89.970	342.320	6586.03	3929.57	4153.62	-69.73	1668224.43	14273587.73	39°18'23.794"N	80°54'06.099"W	4154.20	359.038	0.90	0.03	0.89	
10952.00	89.940	343.380	6586.11	4023.46	4243.44	-97.44	1668196.72	14273677.51	39°18'24.682"N	80°54'06.451"W	4244.56	358.685	1.13	-0.03	1.13	
11047.00	90.030	342.720	6586.13	4118.33	4334.31	-125.14	1668169.03	14273768.35	39°18'25.580"N	80°54'06.802"W	4336.12	358.346	0.70	0.09	-0.69	
11141.00	89.850	343.610	6586.23	4212.20	4424.28	-152.36	1668141.82	14273858.28	39°18'26.470"N	80°54'07.147"W	4426.90	358.028	0.97	-0.19	0.95	
11236.00	89.850	345.030	6586.48	4306.94	4515.74	-178.04	1668116.16	14273949.71	39°18'27.374"N	80°54'07.472"W	4519.25	357.742	1.49	0.00	1.49	
11331.00	89.940	345.510	6586.65	4401.55	4607.62	-202.19	1668092.01	14274041.55	39°18'28.282"N	80°54'07.778"W	4612.06	357.487	0.51	0.09	0.51	
11425.00	90.060	343.500	6586.65	4495.27	4698.20	-227.30	1668066.91	14274132.09	39°18'29.178"N	80°54'08.097"W	4703.70	357.230	2.14	0.13	-2.14	
11520.00	90.060	339.490	6586.55	4590.23	4788.27	-257.45	1668036.78	14274222.12	39°18'30.069"N	80°54'08.479"W	4795.19	356.922	4.22	0.00	-4.22	
11615.00	89.940	338.590	6586.55	4685.21	4876.98	-291.43	1668002.81	14274310.80	39°18'30.946"N	80°54'08.910"W	4885.68	356.580	0.96	-0.13	-0.95	
11709.00	90.030	338.340	6586.58	4779.17	4964.42	-325.94	1667968.32	14274398.20	39°18'31.810"N	80°54'09.348"W	4975.11	356.244	0.28	0.10	-0.27	
11804.00	92.000	338.620	6584.90	4874.11	5052.78	-360.78	1667933.49	14274486.53	39°18'32.684"N	80°54'09.790"W	5065.64	355.916	2.09	2.07	0.29	
11899.00	90.060	335.910	6583.19	4968.97	5140.37	-397.48	1667896.80	14274574.08	39°18'33.550"N	80°54'10.256"W	5155.72	355.578	3.51	-2.04	-2.85	
11993.00	91.050	335.450	6582.28	5062.68	5226.02	-436.19	1667858.11	14274659.70	39°18'34.397"N	80°54'10.747"W	5244.20	355.229	1.16	1.05	-0.49	
12088.00	90.550	334.360	6580.95	5157.28	5312.05	-476.48	1667817.84	14274745.69	39°18'35.248"N	80°54'11.258"W	5333.37	354.874	1.26	-0.53	-1.15	
12182.00	91.170	333.340	6579.54	5250.70	5396.41	-517.90	1667776.43	14274830.02	39°18'36.082"N	80°54'11.784"W	5421.21	354.518	1.27	0.66	-1.09	
12277.00	91.630	333.570	6577.22	5345.03	5481.37	-560.34	1667734.00	14274914.95	39°18'36.922"N	80°54'12.323"W	5509.94	354.163	0.54	0.48	0.24	
12372.00	89.660	336.480	6576.15	5439.64	5567.47	-600.45	1667693.92	14275001.01	39°18'37.774"N	80°54'12.832"W	5599.76	353.844	3.70	-2.07	3.06	



# Actual Wellpath Report

Buffalo Unit 1H AWP Proj: 13610'  
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## REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #05
Area	Ritchie County, WV	Well	Buffalo Unit 1H
Field	Ritchie	Wellbore	Buffalo Unit 1H AWB
Facility	Bison Pad		

## WELLPATH DATA (164 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
12466.00	89.940	338.560	6576.48	5533.54	5654.32	-636.39	1667657.99	14275087.83	39°18'38.632"N	80°54'13.288"W	5690.02	353.578	2.23	0.30	2.21	
12561.00	89.820	338.010	6576.68	5628.49	5742.58	-671.54	1667622.86	14275176.05	39°18'39.505"N	80°54'13.734"W	5781.71	353.330	0.59	-0.13	-0.58	
12656.00	89.940	338.490	6576.88	5723.44	5830.82	-706.74	1667587.67	14275264.25	39°18'40.378"N	80°54'14.181"W	5873.49	353.089	0.52	0.13	0.51	
12750.00	90.090	340.600	6576.85	5817.43	5918.89	-739.59	1667554.83	14275352.29	39°18'41.248"N	80°54'14.597"W	5964.91	352.878	2.25	0.16	2.24	
12845.00	89.910	344.550	6576.85	5912.32	6009.51	-768.03	1667526.40	14275442.87	39°18'42.144"N	80°54'14.958"W	6058.39	352.717	4.16	-0.19	4.16	
12940.00	90.090	343.270	6576.85	6007.11	6100.79	-794.36	1667500.09	14275534.11	39°18'43.047"N	80°54'15.292"W	6152.28	352.581	1.36	0.19	-1.35	
13035.00	90.030	343.430	6576.75	6101.96	6191.80	-821.58	1667472.88	14275625.09	39°18'43.947"N	80°54'15.637"W	6246.07	352.442	0.18	-0.06	0.17	
13130.00	90.250	344.250	6576.52	6196.76	6283.05	-848.02	1667446.45	14275716.30	39°18'44.849"N	80°54'15.972"W	6340.02	352.313	0.89	0.23	0.86	
13225.00	89.630	343.880	6576.62	6291.53	6374.40	-874.10	1667420.38	14275807.61	39°18'45.752"N	80°54'16.303"W	6434.05	352.192	0.76	-0.65	-0.39	
13319.00	89.480	339.620	6577.35	6385.47	6463.65	-903.53	1667390.96	14275896.83	39°18'46.634"N	80°54'16.676"W	6526.49	352.042	4.53	-0.16	-4.53	
13414.00	89.480	339.210	6578.21	6480.46	6552.58	-936.93	1667357.57	14275985.72	39°18'47.514"N	80°54'17.100"W	6619.22	351.863	0.43	0.00	-0.43	
13508.00	90.400	336.830	6578.31	6574.39	6639.74	-972.11	1667322.41	14276072.85	39°18'48.375"N	80°54'17.546"W	6710.52	351.671	2.71	0.98	-2.53	
13585.00	89.510	336.370	6578.37	6651.24	6710.40	-1002.69	1667291.84	14276143.48	39°18'49.074"N	80°54'17.934"W	6784.90	351.502	1.30	-1.16	-0.60	
13610.00	89.510	336.370	6578.58	6676.19	6733.31	-1012.71	1667281.82	14276166.38	39°18'49.301"N	80°54'18.061"W	6809.04	351.447	0.00	0.00	0.00	Projected MD at TD: 13610'

## HOLE & CASING SECTIONS - Ref Wellbore: Buffalo Unit 1H AWB Ref Wellpath: Buffalo Unit 1H AWP Proj: 13610'

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	30.00	110.00	80.00	30.00	110.00	0.00	0.00	-0.17	0.25
17.5in Open Hole	110.00	598.70	488.70	110.00	598.68	-0.17	0.25	-2.94	2.73
13.375in Casing Surface	30.00	598.70	568.70	30.00	598.68	0.00	0.00	-2.94	2.73
12.25in Open Hole	598.70	2671.90	2073.20	598.68	2636.38	-2.94	2.73	-45.71	302.95
9.625in Casing Intermediate	30.00	2671.90	2641.90	30.00	2636.38	0.00	0.00	-45.71	302.95
8.75in Open Hole	2671.90	6435.00	3763.10	2636.38	6226.61	-45.71	302.95	111.29	1326.74
8.5in Open Hole	6435.00	13610.00	7175.00	6226.61	6578.58	111.29	1326.74	6733.31	-1012.71
5.5in Casing Production	30.00	13610.00	13580.00	30.00	6578.58	0.00	0.00	6733.31	-1012.71





# Actual Wellpath Report

Buffalo Unit 1H AWP Proj: 13610'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #05
Area	Ritchie County, WV	Well	Buffalo Unit 1H
Field	Ritchie	Wellbore	Buffalo Unit 1H AWB
Facility	Bison Pad		

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Buffalo Unit 1H POE Plat	6575.00	527.44	1243.37	1669537.00	14269963.00	39°17'47.939"N	80°53'49.447"W	point
Buffalo Unit 1H POE Rev-2	6575.00	538.90	1239.51	1669533.14	14269974.46	39°17'48.053"N	80°53'49.496"W	point
Buffalo Unit 1H BHL Plat	6598.00	6737.30	-1003.19	1667291.34	14276170.37	39°18'49.340"N	80°54'17.940"W	point
Buffalo Unit 1H BHL Rev-2	6598.00	6743.55	-1005.44	1667289.08	14276176.61	39°18'49.402"N	80°54'17.969"W	point
Buffalo Unit 1H LP Rev-2	6598.00	700.66	1180.99	1669474.64	14270136.15	39°17'49.652"N	80°53'50.238"W	point

WELLPATH COMPOSITION - Ref Wellbore: Buffalo Unit 1H AWB Ref Wellpath: Buffalo Unit 1H AWP Proj: 13610'				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
30.00	580.00	Gyrodata standard - Drop gyro or Multi-shot	01 Gyrodata MS Gyro <17-1/2">(100'-580')	Buffalo Unit 1H AWB
580.00	2595.00	ISCWSA MWD, Rev. 4 (Standard)	02 WFT EM <12-1/4">(580')(653'-2595')	Buffalo Unit 1H AWB
2595.00	6356.00	ISCWSA MWD, Rev. 4 (Standard)	03 WFT EM <8-3/4">(2595')(2762'-6356')	Buffalo Unit 1H AWB
6356.00	13585.00	BHI AutoTrak Curve (Short)	04 BH AT Curve <8-1/2"> (6356')(6416'-13585')	Buffalo Unit 1H AWB
13585.00	13610.00	Blind Drilling (std)	Projection to bit	Buffalo Unit 1H AWB



# Actual Wellpath Report

Buffalo Unit 1H AWP Proj: 13610'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #05
Area	Ritchie County, WV	Well	Buffalo Unit 1H
Field	Ritchie	Wellbore	Buffalo Unit 1H AWB
Facility	Bison Pad		

COMMENTS
<p><b>Wellpath general comments</b> API: 47-085-10249-0000 BHI Job #: 109414650 Rig: H&amp;P 519 Duration: 10/13/2018-10/14/2018 Gyrodata MS Gyro &lt;17-1/2"&gt;(100'-580') WFT EM &lt;12-1/4"&gt;(580')(653'-2595') WFT EM &lt;8-3/4"&gt;(2595')(2762'-6356') BH AT Curve &lt;8-1/2"&gt; (6356')(6416'-13585') Middlesex: 6659' MD Burkett: 6848' MD Tully: 6930' MD Marcellus POE: 7023' MD Projected MD at TD: 13610'</p>