

ANTERO RESOURCES CORPORATION

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

Slot: Slot #09
 Well: Waldo Unit 1H
 Wellbore: Waldo Unit 1H PWB

API: 47-085-10353-0000
 BHI Job #: 109460559
 Rig: H&P 519
 Duration: 10/22/2018-10/26/2018

Plot reference wellpath is Waldo Unit 1H PWP Rev-A.0	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 #09): -1220.5 feet	Created by: delaset on 2018-10-29
Coordinates are in feet referenced to Slot	Database: WA_MPL_EasternUS_Defn

Gyrodata MS Gyro <17-1/2">(50'-525') : 0.38° Inc, 50.00ft MD, 50.00ft TVD, 0.05ft VS

WFT EM <12-1/4">(525')(602'-2599') : 0.31° Inc, 602.00ft MD, 601.99ft TVD, 1.92ft VS

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)	Latitude	Longitude
Slot #09	0.01	9.43	1668333.419	14269435.815	39°17'42.740"N	80°54'04.770"W
H&P 519 (RKB) to Ground level (At Slot: Slot #09)				30ft		
Mean Sea Level to Ground level (At Slot: Slot #09)				-1220.5ft		
H&P 519 (RKB) to Mean Sea Level				1250.5ft		

WFT EM <8-3/4">(2599')(2736'-6529') : 27.62° Inc, 2736.00ft MD, 2618.45ft TVD, -113.49ft VS

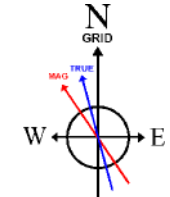
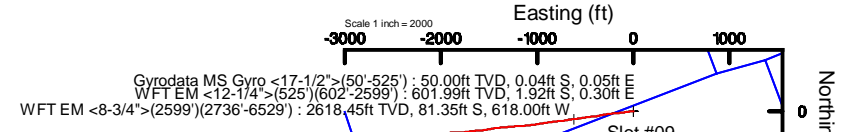
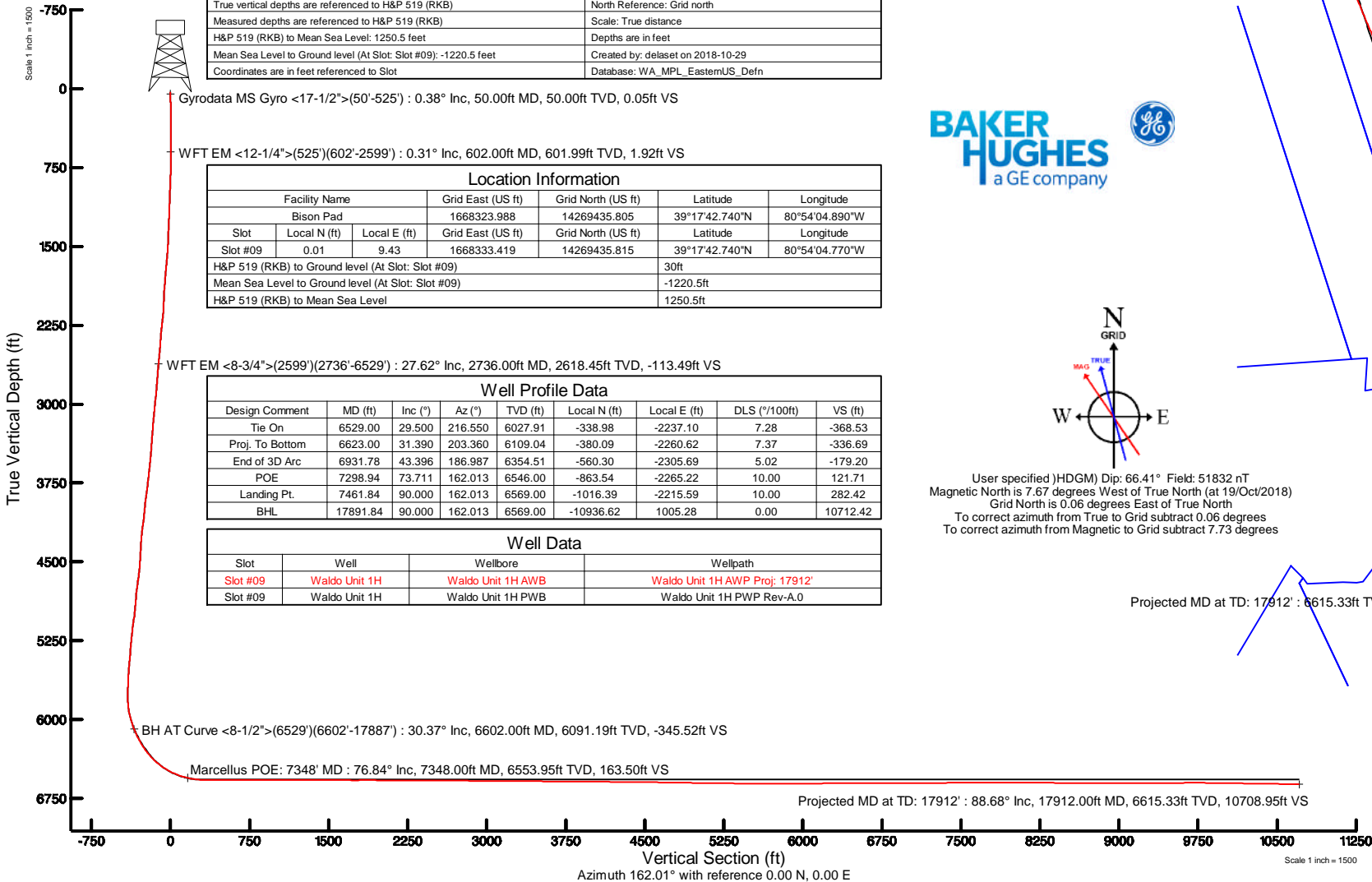
Well Profile Data								
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	6529.00	29.500	216.550	6027.91	-338.98	-2237.10	7.28	-368.53
Proj. To Bottom	6623.00	31.390	203.360	6109.04	-380.09	-2260.62	7.37	-336.69
End of 3D Arc	6931.78	43.396	186.987	6354.51	-560.30	-2305.69	5.02	-179.20
POE	7298.94	73.711	162.013	6546.00	-863.54	-2265.22	10.00	121.71
Landing Pt.	7461.84	90.000	162.013	6569.00	-1016.39	-2215.59	10.00	282.42
BHL	17891.84	90.000	162.013	6569.00	-10936.62	1005.28	0.00	10712.42

Well Data			
Slot	Well	Wellbore	Wellpath
Slot #09	Waldo Unit 1H	Waldo Unit 1H AWB	Waldo Unit 1H AWB Proj: 17912'
Slot #09	Waldo Unit 1H	Waldo Unit 1H PWB	Waldo Unit 1H PWP Rev-A.0

BH AT Curve <8-1/2">(6529')(6602'-17887') : 30.37° Inc, 6602.00ft MD, 6091.19ft TVD, -345.52ft VS

Marcellus POE: 7348' MD : 76.84° Inc, 7348.00ft MD, 6553.95ft TVD, 163.50ft VS

Projected MD at TD: 17912' : 88.68° Inc, 17912.00ft MD, 6615.33ft TVD, 10708.95ft VS



User specified (HDGM) Dip: 66.41° Field: 51832 nT
 Magnetic North is 7.67 degrees West of True North (at 19/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

Projected MD at TD: 17912' : 6615.33ft TVD, 10933.40ft S, 1003.97ft E + BHL: 63



Actual Wellpath Report

Waldo Unit 1H AWP Proj: 17912'

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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Waldo Unit 1H
Field	Ritchie	Wellbore	Waldo 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	29/Oct/2018 at 15:37
Convergence at slot	0.06° East	Database/Source file	WA_MPL_EasternUS_Defn/Waldo_Unit_1H_AWP_Proj_17912_.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	0.01	9.43	1668333.42	14269435.82	39°17'42.740"N	80°54'04.770"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 #09)	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	162.01°



Actual Wellpath Report

Waldo Unit 1H AWP Proj: 17912'

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REFERENCE WELLPATH IDENTIFICATION

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Area	Ritchie County, WV	Well	Waldo Unit 1H
Field	Ritchie	Wellbore	Waldo Unit 1H AWB
Facility	Bison Pad		

WELLPATH DATA (224 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	125.980	0.00	0.00	0.00	0.00	1668333.42	14269435.82	39°17'42.740"N	80°54'04.770"W	0.00	0.000	0.00	0.00	0.00	
30.00	0.000	125.980	30.00	0.00	0.00	0.00	1668333.42	14269435.82	39°17'42.740"N	80°54'04.770"W	0.00	0.000	0.00	0.00	0.00	
50.00	0.380	125.980	50.00	0.05	-0.04	0.05	1668333.47	14269435.78	39°17'42.740"N	80°54'04.769"W	0.07	125.980	1.90	1.90	629.90	Gyrodata MS Gyro <17-1/2">(50'-525')
75.00	0.360	135.000	75.00	0.19	-0.14	0.18	1668333.59	14269435.67	39°17'42.739"N	80°54'04.768"W	0.23	129.088	0.25	-0.08	36.08	
100.00	0.400	142.610	100.00	0.34	-0.27	0.28	1668333.70	14269435.55	39°17'42.737"N	80°54'04.766"W	0.39	133.266	0.26	0.16	30.44	
125.00	0.450	144.960	125.00	0.52	-0.42	0.39	1668333.81	14269435.40	39°17'42.736"N	80°54'04.765"W	0.57	136.666	0.21	0.20	9.40	
150.00	0.480	147.550	150.00	0.71	-0.59	0.51	1668333.93	14269435.23	39°17'42.734"N	80°54'04.764"W	0.78	139.175	0.15	0.12	10.36	
175.00	0.450	151.610	175.00	0.91	-0.76	0.61	1668334.03	14269435.05	39°17'42.732"N	80°54'04.762"W	0.98	141.314	0.18	-0.12	16.24	
200.00	0.400	156.900	200.00	1.10	-0.93	0.69	1668334.11	14269434.89	39°17'42.731"N	80°54'04.761"W	1.16	143.345	0.25	-0.20	21.16	
225.00	0.350	156.680	225.00	1.26	-1.08	0.75	1668334.17	14269434.74	39°17'42.729"N	80°54'04.760"W	1.32	145.002	0.20	-0.20	-0.88	
250.00	0.150	169.470	249.99	1.37	-1.18	0.79	1668334.21	14269434.64	39°17'42.728"N	80°54'04.760"W	1.42	146.172	0.83	-0.80	51.16	
275.00	0.150	171.770	274.99	1.43	-1.25	0.80	1668334.22	14269434.57	39°17'42.728"N	80°54'04.760"W	1.48	147.219	0.02	0.00	9.20	
300.00	0.130	158.820	299.99	1.49	-1.30	0.82	1668334.24	14269434.51	39°17'42.727"N	80°54'04.760"W	1.54	147.938	0.15	-0.08	-51.80	
325.00	0.070	92.420	324.99	1.53	-1.33	0.84	1668334.26	14269434.48	39°17'42.727"N	80°54'04.759"W	1.58	147.675	0.48	-0.24	-265.60	
350.00	0.070	269.980	349.99	1.53	-1.33	0.84	1668334.26	14269434.48	39°17'42.727"N	80°54'04.759"W	1.58	147.688	0.56	0.00	710.24	
375.00	0.130	222.700	374.99	1.54	-1.35	0.81	1668334.23	14269434.46	39°17'42.727"N	80°54'04.760"W	1.58	149.154	0.39	0.24	-189.12	
400.00	0.140	186.510	399.99	1.58	-1.40	0.79	1668334.20	14269434.41	39°17'42.726"N	80°54'04.760"W	1.61	150.783	0.34	0.04	-144.76	
425.00	0.020	196.310	424.99	1.61	-1.44	0.78	1668334.20	14269434.38	39°17'42.726"N	80°54'04.760"W	1.64	151.517	0.48	-0.48	39.20	
450.00	0.180	232.030	449.99	1.63	-1.47	0.75	1668334.17	14269434.35	39°17'42.725"N	80°54'04.761"W	1.65	152.972	0.66	0.64	142.88	
475.00	0.200	222.110	474.99	1.66	-1.52	0.69	1668334.11	14269434.29	39°17'42.725"N	80°54'04.761"W	1.67	155.692	0.15	0.08	-39.68	
500.00	0.140	228.160	499.99	1.70	-1.58	0.64	1668334.05	14269434.24	39°17'42.724"N	80°54'04.762"W	1.70	158.023	0.25	-0.24	24.20	
525.00	0.280	229.890	524.99	1.73	-1.64	0.57	1668333.98	14269434.18	39°17'42.724"N	80°54'04.763"W	1.73	160.897	0.56	0.56	6.92	
602.00	0.310	217.540	601.99	1.92	-1.92	0.30	1668333.71	14269433.89	39°17'42.721"N	80°54'04.766"W	1.94	171.254	0.09	0.04	-16.04	WFT EM <12-1/4">(525')(602'-2599')
662.00	0.400	247.770	661.99	2.03	-2.13	0.00	1668333.42	14269433.69	39°17'42.719"N	80°54'04.770"W	2.13	179.922	0.34	0.15	50.38	
753.00	1.920	272.050	752.97	1.53	-2.20	-1.81	1668331.60	14269433.62	39°17'42.718"N	80°54'04.793"W	2.85	219.574	1.72	1.67	26.68	
843.00	3.810	271.670	842.85	0.01	-2.05	-6.31	1668327.11	14269433.76	39°17'42.720"N	80°54'04.850"W	6.64	251.967	2.10	2.10	-0.42	
938.00	7.230	272.160	937.40	-3.12	-1.74	-15.44	1668317.98	14269434.08	39°17'42.723"N	80°54'04.966"W	15.54	263.582	3.60	3.60	0.52	
1032.00	9.320	266.050	1030.42	-7.00	-2.04	-28.95	1668304.48	14269433.78	39°17'42.720"N	80°54'05.138"W	29.02	265.972	2.41	2.22	-6.50	
1127.00	11.280	262.580	1123.88	-10.57	-3.77	-45.84	1668287.60	14269432.05	39°17'42.703"N	80°54'05.353"W	45.99	265.300	2.16	2.06	-3.65	
1221.00	12.360	262.320	1215.89	-14.06	-6.30	-64.92	1668268.52	14269429.52	39°17'42.678"N	80°54'05.596"W	65.23	264.457	1.15	1.15	-0.28	



Actual Wellpath Report

Waldo Unit 1H AWP Proj: 17912'
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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Waldo Unit 1H
Field	Ritchie	Wellbore	Waldo Unit 1H AWB
Facility	Bison Pad		

WELLPATH DATA (224 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
1316.00	12.940	260.930	1308.58	-17.53	-9.34	-85.51	1668247.95	14269426.48	39°17'42.649"N	80°54'05.858"W	86.01	263.769	0.69	0.61	-1.46	
1410.00	13.900	260.960	1400.01	-20.92	-12.77	-107.05	1668226.41	14269423.05	39°17'42.615"N	80°54'06.132"W	107.81	263.198	1.02	1.02	0.03	
1505.00	15.420	263.180	1491.92	-25.14	-16.06	-130.86	1668202.61	14269419.76	39°17'42.583"N	80°54'06.435"W	131.84	263.002	1.71	1.60	2.34	
1599.00	17.200	265.450	1582.13	-30.79	-18.65	-157.13	1668176.36	14269417.17	39°17'42.557"N	80°54'06.769"W	158.23	263.231	2.01	1.89	2.41	
1694.00	20.610	265.940	1672.00	-38.08	-20.95	-187.82	1668145.68	14269414.88	39°17'42.535"N	80°54'07.159"W	188.98	263.636	3.59	3.59	0.52	
1788.00	23.700	264.150	1759.05	-46.04	-24.05	-223.12	1668110.39	14269411.78	39°17'42.505"N	80°54'07.608"W	224.41	263.849	3.36	3.29	-1.90	
1883.00	24.770	262.590	1845.67	-53.71	-28.56	-261.85	1668071.67	14269407.27	39°17'42.461"N	80°54'08.101"W	263.40	263.776	1.31	1.13	-1.64	
1977.00	23.680	259.600	1931.40	-59.82	-34.51	-299.95	1668033.59	14269401.32	39°17'42.402"N	80°54'08.586"W	301.92	263.438	1.75	-1.16	-3.18	
2072.00	21.850	258.260	2018.99	-64.26	-41.55	-336.02	1667997.53	14269394.28	39°17'42.333"N	80°54'09.045"W	338.58	262.951	2.00	-1.93	-1.41	
2166.00	23.050	258.190	2105.87	-68.15	-48.87	-371.16	1667962.40	14269386.96	39°17'42.261"N	80°54'09.492"W	374.37	262.499	1.28	1.28	-0.07	
2261.00	26.550	265.420	2192.11	-75.08	-54.38	-410.55	1667923.03	14269381.46	39°17'42.207"N	80°54'09.993"W	414.14	262.455	4.87	3.68	7.61	
2355.00	25.900	264.870	2276.44	-84.52	-57.89	-451.94	1667881.66	14269377.95	39°17'42.173"N	80°54'10.519"W	455.63	262.700	0.74	-0.69	-0.59	
2450.00	24.840	261.130	2362.28	-92.30	-62.82	-492.32	1667841.29	14269373.02	39°17'42.124"N	80°54'11.033"W	496.32	262.728	2.02	-1.12	-3.94	
2544.00	25.100	259.730	2447.50	-98.11	-69.42	-531.45	1667802.18	14269366.42	39°17'42.060"N	80°54'11.531"W	535.97	262.558	0.69	0.28	-1.49	
2599.00	27.250	262.210	2496.85	-101.91	-73.21	-555.41	1667778.23	14269362.64	39°17'42.022"N	80°54'11.836"W	560.21	262.491	4.39	3.91	4.51	
2736.00	27.620	262.960	2618.45	-113.49	-81.35	-618.00	1667715.67	14269354.50	39°17'41.943"N	80°54'12.632"W	623.33	262.501	0.37	0.27	0.55	WFT EM <8-3/4">(2599')(2736'-6529')
2762.00	27.440	262.700	2641.50	-115.75	-82.85	-629.92	1667703.75	14269353.00	39°17'41.928"N	80°54'12.783"W	635.35	262.507	0.83	-0.69	-1.00	
2856.00	26.920	260.430	2725.12	-122.88	-89.14	-672.39	1667661.30	14269346.71	39°17'41.866"N	80°54'13.324"W	678.28	262.448	1.23	-0.55	-2.41	
2951.00	25.880	261.110	2810.22	-129.31	-95.92	-714.08	1667619.62	14269339.93	39°17'41.800"N	80°54'13.854"W	720.50	262.349	1.14	-1.09	0.72	
3045.00	25.500	264.440	2894.93	-136.91	-101.05	-754.49	1667579.23	14269334.80	39°17'41.749"N	80°54'14.368"W	761.23	262.371	1.59	-0.40	3.54	
3140.00	25.510	264.330	2980.67	-145.68	-105.06	-795.20	1667538.53	14269330.80	39°17'41.710"N	80°54'14.886"W	802.11	262.474	0.05	0.01	-0.12	
3234.00	26.150	262.490	3065.28	-153.77	-109.76	-835.88	1667497.87	14269326.10	39°17'41.664"N	80°54'15.403"W	843.06	262.519	1.09	0.68	-1.96	
3328.00	25.770	262.070	3149.80	-161.10	-115.29	-876.66	1667457.11	14269320.57	39°17'41.610"N	80°54'15.922"W	884.21	262.508	0.45	-0.40	-0.45	
3423.00	26.730	262.070	3235.00	-168.44	-121.09	-918.27	1667415.51	14269314.78	39°17'41.553"N	80°54'16.452"W	926.22	262.488	1.01	1.01	0.00	
3522.00	26.520	261.110	3323.50	-175.83	-127.57	-962.16	1667371.64	14269308.29	39°17'41.489"N	80°54'17.010"W	970.58	262.447	0.48	-0.21	-0.97	
3616.00	25.790	259.310	3407.88	-181.75	-134.61	-1002.99	1667330.83	14269301.26	39°17'41.420"N	80°54'17.529"W	1011.98	262.356	1.15	-0.78	-1.91	
3711.00	26.430	263.000	3493.19	-188.40	-141.02	-1044.29	1667289.55	14269294.85	39°17'41.357"N	80°54'18.055"W	1053.76	262.309	1.84	0.67	3.88	
3805.00	25.930	263.120	3577.54	-196.35	-146.03	-1085.45	1667248.40	14269289.84	39°17'41.308"N	80°54'18.578"W	1095.23	262.338	0.53	-0.53	0.13	
3900.00	26.960	265.110	3662.60	-205.23	-150.36	-1127.53	1667206.34	14269285.52	39°17'41.266"N	80°54'19.114"W	1137.51	262.404	1.43	1.08	2.09	
3994.00	26.780	265.710	3746.45	-215.08	-153.76	-1169.88	1667164.01	14269282.12	39°17'41.233"N	80°54'19.652"W	1179.94	262.513	0.35	-0.19	0.64	



Actual Wellpath Report

Waldo Unit 1H AWP Proj: 17912'

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REFERENCE WELLPATH IDENTIFICATION

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Area	Ritchie County, WV	Well	Waldo Unit 1H
Field	Ritchie	Wellbore	Waldo Unit 1H AWB
Facility	Bison Pad		

WELLPATH DATA (224 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
4089.00	27.500	267.990	3831.00	-226.19	-156.13	-1213.14	1667120.76	14269279.75	39°17'41.210"N	80°54'20.203"W	1223.15	262.667	1.33	0.76	2.40	
4183.00	25.830	264.670	3915.00	-236.65	-158.79	-1255.23	1667078.69	14269277.09	39°17'41.184"N	80°54'20.738"W	1265.23	262.790	2.38	-1.78	-3.53	
4278.00	25.070	263.160	4000.78	-245.08	-163.11	-1295.82	1667038.12	14269272.77	39°17'41.142"N	80°54'21.254"W	1306.04	262.826	1.05	-0.80	-1.59	
4372.00	26.610	265.320	4085.38	-253.78	-167.20	-1336.58	1666997.38	14269268.68	39°17'41.102"N	80°54'21.773"W	1346.99	262.870	1.92	1.64	2.30	
4467.00	28.620	266.530	4169.56	-264.38	-170.31	-1380.50	1666953.47	14269265.57	39°17'41.071"N	80°54'22.331"W	1390.96	262.967	2.20	2.12	1.27	
4561.00	25.900	263.310	4253.11	-274.05	-174.07	-1423.37	1666910.62	14269261.82	39°17'41.035"N	80°54'22.877"W	1433.97	263.028	3.29	-2.89	-3.43	
4656.00	23.440	259.560	4339.44	-280.60	-179.91	-1462.57	1666871.44	14269255.98	39°17'40.977"N	80°54'23.375"W	1473.59	262.987	3.07	-2.59	-3.95	
4750.00	22.970	258.700	4425.84	-285.19	-186.89	-1498.94	1666835.08	14269249.00	39°17'40.909"N	80°54'23.838"W	1510.55	262.893	0.62	-0.50	-0.91	
4844.00	25.270	261.110	4511.63	-290.50	-193.59	-1536.76	1666797.28	14269242.30	39°17'40.843"N	80°54'24.319"W	1548.90	262.820	2.66	2.45	2.56	
4939.00	28.300	263.940	4596.43	-298.37	-199.10	-1579.19	1666754.86	14269236.79	39°17'40.789"N	80°54'24.859"W	1591.70	262.814	3.46	3.19	2.98	
5033.00	29.880	266.980	4678.57	-309.02	-202.69	-1624.74	1666709.33	14269233.21	39°17'40.754"N	80°54'25.439"W	1637.33	262.889	2.30	1.68	3.23	
5128.00	28.490	264.650	4761.51	-320.10	-206.05	-1670.93	1666663.16	14269229.85	39°17'40.721"N	80°54'26.026"W	1683.59	262.970	1.89	-1.46	-2.45	
5222.00	26.290	260.920	4844.97	-328.23	-211.42	-1713.82	1666620.29	14269224.48	39°17'40.668"N	80°54'26.572"W	1726.81	262.967	2.97	-2.34	-3.97	
5317.00	23.560	261.550	4931.12	-334.63	-217.53	-1753.38	1666580.74	14269218.37	39°17'40.608"N	80°54'27.075"W	1766.82	262.928	2.89	-2.87	0.66	
5411.00	21.870	272.550	5017.86	-343.90	-219.52	-1789.47	1666544.66	14269216.39	39°17'40.589"N	80°54'27.534"W	1802.89	263.006	4.86	-1.80	11.70	
5505.00	21.880	271.910	5105.10	-356.00	-218.15	-1824.47	1666509.68	14269217.75	39°17'40.603"N	80°54'27.979"W	1837.47	263.181	0.25	0.01	-0.68	
5600.00	24.890	265.040	5192.30	-366.54	-219.29	-1862.09	1666472.07	14269216.61	39°17'40.592"N	80°54'28.458"W	1874.96	263.283	4.27	3.17	-7.23	
5694.00	23.720	263.430	5277.97	-374.74	-223.17	-1900.58	1666433.60	14269212.74	39°17'40.554"N	80°54'28.947"W	1913.64	263.303	1.43	-1.24	-1.71	
5789.00	25.280	261.940	5364.41	-382.02	-228.20	-1939.65	1666394.54	14269207.71	39°17'40.505"N	80°54'29.444"W	1953.03	263.290	1.77	1.64	-1.57	
5883.00	29.030	261.660	5448.04	-389.31	-234.32	-1982.11	1666352.11	14269201.59	39°17'40.445"N	80°54'29.984"W	1995.91	263.258	3.99	3.99	-0.30	
5978.00	28.180	259.700	5531.44	-396.18	-241.68	-2026.99	1666307.25	14269194.24	39°17'40.372"N	80°54'30.555"W	2041.34	263.201	1.33	-0.89	-2.06	
6072.00	25.850	257.570	5615.18	-401.13	-250.06	-2068.84	1666265.41	14269185.86	39°17'40.290"N	80°54'31.088"W	2083.90	263.108	2.68	-2.48	-2.27	
6167.00	25.360	255.000	5700.85	-404.20	-259.78	-2108.72	1666225.54	14269176.14	39°17'40.194"N	80°54'31.595"W	2124.66	262.977	1.28	-0.52	-2.71	
6261.00	25.100	251.890	5785.89	-405.21	-271.19	-2147.12	1666187.16	14269164.73	39°17'40.082"N	80°54'32.084"W	2164.18	262.801	1.44	-0.28	-3.31	
6306.00	23.680	246.850	5826.88	-404.37	-277.71	-2164.50	1666169.79	14269158.22	39°17'40.018"N	80°54'32.305"W	2182.24	262.689	5.60	-3.16	-11.20	
6356.00	22.870	239.520	5872.82	-401.37	-286.59	-2182.11	1666152.18	14269149.34	39°17'39.930"N	80°54'32.529"W	2200.85	262.518	6.01	-1.62	-14.66	
6401.00	23.860	230.330	5914.14	-396.11	-296.84	-2196.66	1666137.64	14269139.10	39°17'39.829"N	80°54'32.714"W	2216.62	262.304	8.38	2.20	-20.42	
6451.00	26.980	225.760	5959.30	-387.36	-311.21	-2212.57	1666121.73	14269124.73	39°17'39.687"N	80°54'32.917"W	2234.35	261.994	7.37	6.24	-9.14	
6496.00	28.770	221.250	5999.08	-377.30	-326.48	-2227.03	1666107.28	14269109.47	39°17'39.536"N	80°54'33.101"W	2250.83	261.660	6.14	3.98	-10.02	
6529.00	29.500	216.550	6027.91	-368.53	-338.98	-2237.10	1666097.21	14269096.97	39°17'39.413"N	80°54'33.229"W	2262.64	261.384	7.28	2.21	-14.24	



Actual Wellpath Report

Waldo Unit 1H AWP Proj: 17912'

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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Waldo Unit 1H
Field	Ritchie	Wellbore	Waldo Unit 1H AWB
Facility	Bison Pad		

WELLPATH DATA (224 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
6602.00	30.370	209.080	6091.19	-345.52	-369.55	-2256.78	1666077.54	14269066.41	39°17'39.111"N	80°54'33.480"W	2286.84	260.700	5.24	1.19	-10.23	BH AT Curve <8-1/2">(6529')(6602'-17887')
6638.00	30.660	205.260	6122.21	-332.64	-385.81	-2265.13	1666069.20	14269050.16	39°17'38.950"N	80°54'33.586"W	2297.75	260.334	5.45	0.81	-10.61	
6685.00	33.120	201.820	6162.11	-314.04	-408.57	-2275.01	1666059.32	14269027.41	39°17'38.725"N	80°54'33.712"W	2311.41	259.819	6.51	5.23	-7.32	
6732.00	35.410	200.880	6200.96	-293.57	-433.22	-2284.64	1666049.69	14269002.77	39°17'38.482"N	80°54'33.835"W	2325.35	259.263	5.00	4.87	-2.00	
6779.00	37.820	198.580	6238.68	-271.39	-459.61	-2294.09	1666040.25	14268976.39	39°17'38.221"N	80°54'33.955"W	2339.67	258.671	5.90	5.13	-4.89	
6827.00	39.750	195.190	6276.10	-246.73	-488.37	-2302.80	1666031.54	14268947.64	39°17'37.937"N	80°54'34.067"W	2354.02	258.026	5.98	4.02	-7.06	
6874.00	41.440	190.420	6311.79	-220.46	-518.18	-2309.55	1666024.79	14268917.84	39°17'37.642"N	80°54'34.153"W	2366.97	257.354	7.52	3.60	-10.15	
6922.00	43.620	186.790	6347.17	-191.45	-550.25	-2314.38	1666019.96	14268885.78	39°17'37.325"N	80°54'34.215"W	2378.90	256.626	6.84	4.54	-7.56	
6969.00	47.670	183.830	6380.02	-160.59	-583.70	-2317.46	1666016.89	14268852.35	39°17'36.995"N	80°54'34.254"W	2389.84	255.863	9.72	8.62	-6.30	
6976.00†	48.234	183.525	6384.71	-155.75	-588.89	-2317.80	1666016.55	14268847.16	39°17'36.944"N	80°54'34.259"W	2391.44	255.744	8.68	8.05	-4.36	Middlesex: 6976' MD
7017.00	51.550	181.840	6411.12	-126.42	-620.21	-2319.25	1666015.10	14268815.86	39°17'36.634"N	80°54'34.278"W	2400.75	255.028	8.68	8.09	-4.11	
7064.00	55.800	179.100	6438.96	-90.51	-658.06	-2319.54	1666014.81	14268778.02	39°17'36.260"N	80°54'34.282"W	2411.08	254.161	10.19	9.04	-5.83	
7111.00	58.820	176.930	6464.35	-52.49	-697.58	-2318.15	1666016.19	14268738.51	39°17'35.869"N	80°54'34.265"W	2420.84	253.252	7.51	6.43	-4.62	
7158.00	61.870	173.100	6487.60	-12.70	-738.25	-2314.59	1666019.76	14268697.86	39°17'35.467"N	80°54'34.220"W	2429.47	252.310	9.60	6.49	-8.15	
7175.00†	63.084	172.241	6495.46	2.11	-753.20	-2312.66	1666021.68	14268682.91	39°17'35.319"N	80°54'34.195"W	2432.23	251.960	8.43	7.14	-5.05	Burkett: 7175' MD
7206.00	65.310	170.720	6508.95	29.64	-780.80	-2308.52	1666025.82	14268655.33	39°17'35.047"N	80°54'34.143"W	2436.99	251.313	8.43	7.18	-4.91	
7253.00	70.160	168.240	6526.76	72.75	-823.55	-2300.57	1666033.77	14268612.60	39°17'34.624"N	80°54'34.043"W	2443.53	250.304	11.42	10.32	-5.28	
7258.00†	70.481	167.985	6528.44	77.43	-828.15	-2299.60	1666034.74	14268607.99	39°17'34.579"N	80°54'34.030"W	2444.18	250.195	8.03	6.43	-5.10	Tully: 7258' MD
7301.00	73.260	165.830	6541.82	118.14	-867.95	-2290.34	1666044.00	14268568.22	39°17'34.185"N	80°54'33.913"W	2449.28	249.245	8.03	6.46	-5.01	
7348.00	76.840	162.660	6553.95	163.50	-911.64	-2278.00	1666056.33	14268524.55	39°17'33.753"N	80°54'33.757"W	2453.65	248.189	10.02	7.62	-6.74	Marcellus POE: 7348' MD
7396.00	80.320	160.040	6563.45	210.54	-956.20	-2262.95	1666071.37	14268480.00	39°17'33.313"N	80°54'33.566"W	2456.68	247.094	9.01	7.25	-5.46	
7443.00	85.040	159.380	6569.44	257.10	-999.91	-2246.79	1666087.53	14268436.30	39°17'32.880"N	80°54'33.361"W	2459.25	246.009	10.14	10.04	-1.40	
7491.00	87.260	159.950	6572.66	304.95	-1044.82	-2230.15	1666104.16	14268391.42	39°17'32.436"N	80°54'33.150"W	2462.77	244.897	4.77	4.62	1.19	
7585.00	90.370	160.370	6574.60	398.87	-1133.21	-2198.26	1666136.04	14268303.06	39°17'31.562"N	80°54'32.745"W	2473.16	242.729	3.34	3.31	0.45	
7680.00	91.050	158.930	6573.43	493.78	-1222.27	-2165.23	1666169.06	14268214.04	39°17'30.682"N	80°54'32.326"W	2486.39	240.555	1.68	0.72	-1.52	
7775.00	90.650	156.300	6572.02	588.48	-1310.09	-2129.05	1666205.22	14268126.25	39°17'29.814"N	80°54'31.867"W	2499.84	238.394	2.80	-0.42	-2.77	
7869.00	89.630	154.100	6571.79	681.81	-1395.42	-2089.63	1666244.63	14268040.96	39°17'28.970"N	80°54'31.367"W	2512.72	236.266	2.58	-1.09	-2.34	
7964.00	89.690	155.390	6572.35	776.04	-1481.33	-2049.10	1666285.14	14267955.08	39°17'28.120"N	80°54'30.853"W	2528.47	234.136	1.36	0.06	1.36	
8058.00	89.690	157.260	6572.86	869.58	-1567.42	-2011.36	1666322.87	14267869.03	39°17'27.269"N	80°54'30.374"W	2549.97	232.071	1.99	0.00	1.99	
8152.00	89.690	159.090	6573.37	963.36	-1654.67	-1976.41	1666357.80	14267781.81	39°17'26.406"N	80°54'29.930"W	2577.62	230.064	1.95	0.00	1.95	



Actual Wellpath Report

Waldo Unit 1H AWP Proj: 17912'

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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Waldo Unit 1H
Field	Ritchie	Wellbore	Waldo Unit 1H AWB
Facility	Bison Pad		

WELLPATH DATA (224 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
8247.00	89.630	161.210	6573.93	1058.30	-1744.02	-1944.16	1666390.04	14267692.49	39°17'25.523"N	80°54'29.521"W	2611.77	228.106	2.23	-0.06	2.23	
8341.00	89.720	161.820	6574.47	1152.30	-1833.17	-1914.35	1666419.83	14267603.38	39°17'24.641"N	80°54'29.143"W	2650.52	226.241	0.66	0.10	0.65	
8436.00	89.780	161.850	6574.88	1247.30	-1923.44	-1884.74	1666449.44	14267513.15	39°17'23.749"N	80°54'28.768"W	2692.92	224.418	0.07	0.06	0.03	
8530.00	90.460	160.980	6574.68	1341.29	-2012.53	-1854.78	1666479.38	14267424.09	39°17'22.868"N	80°54'28.388"W	2736.88	222.664	1.17	0.72	-0.93	
8625.00	89.660	160.880	6574.58	1436.27	-2102.32	-1823.74	1666510.41	14267334.34	39°17'21.980"N	80°54'27.994"W	2783.12	220.941	0.85	-0.84	-0.11	
8719.00	89.660	162.340	6575.14	1530.27	-2191.51	-1794.09	1666540.05	14267245.18	39°17'21.098"N	80°54'27.618"W	2832.22	219.306	1.55	0.00	1.55	
8814.00	89.600	164.690	6575.76	1625.22	-2282.60	-1767.13	1666567.00	14267154.13	39°17'20.198"N	80°54'27.277"W	2886.70	217.746	2.47	-0.06	2.47	
8908.00	89.600	165.750	6576.41	1719.07	-2373.49	-1743.15	1666590.97	14267063.28	39°17'19.299"N	80°54'26.973"W	2944.83	216.295	1.13	0.00	1.13	
9003.00	90.620	166.440	6576.23	1813.83	-2465.70	-1720.32	1666613.79	14266971.10	39°17'18.388"N	80°54'26.684"W	3006.52	214.904	1.30	1.07	0.73	
9098.00	89.570	165.320	6576.07	1908.61	-2557.83	-1697.15	1666636.95	14266879.01	39°17'17.477"N	80°54'26.390"W	3069.66	213.565	1.62	-1.11	-1.18	
9192.00	89.630	165.910	6576.73	2002.42	-2648.88	-1673.80	1666660.29	14266788.00	39°17'16.577"N	80°54'26.094"W	3133.39	212.288	0.63	0.06	0.63	
9287.00	89.880	165.710	6577.13	2097.21	-2740.98	-1650.51	1666683.57	14266695.94	39°17'15.666"N	80°54'25.799"W	3199.55	211.055	0.34	0.26	-0.21	
9381.00	89.690	165.390	6577.49	2191.03	-2832.00	-1627.05	1666707.02	14266604.95	39°17'14.766"N	80°54'25.502"W	3266.12	209.878	0.40	-0.20	-0.34	
9476.00	89.750	165.930	6577.95	2285.84	-2924.04	-1603.52	1666730.54	14266512.95	39°17'13.856"N	80°54'25.204"W	3334.86	208.740	0.57	0.06	0.57	
9571.00	89.600	164.250	6578.49	2380.70	-3015.84	-1579.08	1666754.97	14266421.19	39°17'12.949"N	80°54'24.895"W	3404.23	207.636	1.78	-0.16	-1.77	
9665.00	89.170	163.200	6579.50	2474.65	-3106.07	-1552.74	1666781.30	14266331.00	39°17'12.057"N	80°54'24.561"W	3472.56	206.561	1.21	-0.46	-1.12	
9760.00	90.030	162.670	6580.16	2569.63	-3196.88	-1524.86	1666809.17	14266240.22	39°17'11.159"N	80°54'24.207"W	3541.93	205.500	1.06	0.91	-0.56	
9854.00	90.090	159.940	6580.06	2663.61	-3285.91	-1494.73	1666839.28	14266151.22	39°17'10.279"N	80°54'23.825"W	3609.91	204.460	2.90	0.06	-2.90	
9949.00	89.260	157.310	6580.60	2758.44	-3374.37	-1460.11	1666873.89	14266062.80	39°17'09.404"N	80°54'23.386"W	3676.72	203.398	2.90	-0.87	-2.77	
10044.00	89.350	157.900	6581.76	2853.15	-3462.20	-1423.92	1666910.07	14265975.01	39°17'08.536"N	80°54'22.927"W	3743.57	202.356	0.63	0.09	0.62	
10138.00	90.090	157.260	6582.21	2946.87	-3549.09	-1388.07	1666945.90	14265888.15	39°17'07.676"N	80°54'22.472"W	3810.88	201.361	1.04	0.79	-0.68	
10233.00	89.320	156.500	6582.70	3041.48	-3636.46	-1350.77	1666983.19	14265800.82	39°17'06.813"N	80°54'21.999"W	3879.23	200.378	1.14	-0.81	-0.80	
10328.00	88.860	156.810	6584.21	3136.06	-3723.67	-1313.13	1667020.81	14265713.64	39°17'05.950"N	80°54'21.522"W	3948.42	199.425	0.58	-0.48	0.33	
10422.00	90.280	161.160	6584.92	3229.90	-3811.39	-1279.43	1667054.50	14265625.96	39°17'05.083"N	80°54'21.094"W	4020.40	198.556	4.87	1.51	4.63	
10517.00	89.970	162.810	6584.71	3324.89	-3901.73	-1250.05	1667083.87	14265535.65	39°17'04.190"N	80°54'20.722"W	4097.09	197.765	1.77	-0.33	1.74	
10611.00	89.600	163.950	6585.06	3418.87	-3991.80	-1223.17	1667110.74	14265445.62	39°17'03.299"N	80°54'20.381"W	4175.00	197.036	1.28	-0.39	1.21	
10706.00	89.170	164.400	6586.08	3513.79	-4083.19	-1197.26	1667136.64	14265354.26	39°17'02.396"N	80°54'20.053"W	4255.10	196.342	0.66	-0.45	0.47	
10801.00	89.600	165.890	6587.10	3608.64	-4175.01	-1172.91	1667160.98	14265262.48	39°17'01.488"N	80°54'19.744"W	4336.64	195.692	1.63	0.45	1.57	
10895.00	89.540	166.010	6587.81	3702.42	-4266.19	-1150.09	1667183.79	14265171.33	39°17'00.586"N	80°54'19.455"W	4418.50	195.087	0.14	-0.06	0.13	
10990.00	89.660	163.840	6588.47	3797.29	-4357.92	-1125.38	1667208.49	14265079.65	39°16'59.679"N	80°54'19.142"W	4500.88	194.480	2.29	0.13	-2.28	



Actual Wellpath Report

Waldo Unit 1H AWP Proj: 17912'

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REFERENCE WELLPATH IDENTIFICATION				
Operator	ANTERO RESOURCES CORPORATION		Slot	Slot #09
Area	Ritchie County, WV		Well	Waldo Unit 1H
Field	Ritchie		Wellbore	Waldo Unit 1H AWB
Facility	Bison Pad			

WELLPATH DATA (224 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
11085.00	89.350	161.960	6589.29	3892.27	-4448.71	-1097.45	1667236.41	14264988.89	39°16'58.782"N	80°54'18.788"W	4582.08	193.858	2.01	-0.33	-1.98	
11179.00	89.200	162.630	6590.48	3986.26	-4538.25	-1068.87	1667264.98	14264899.39	39°16'57.897"N	80°54'18.426"W	4662.42	193.253	0.73	-0.16	0.71	
11274.00	90.220	164.870	6590.96	4081.20	-4629.45	-1042.29	1667291.55	14264808.23	39°16'56.995"N	80°54'18.089"W	4745.33	192.688	2.59	1.07	2.36	
11368.00	89.170	163.830	6591.46	4175.12	-4719.96	-1016.93	1667316.90	14264717.75	39°16'56.100"N	80°54'17.768"W	4828.27	192.159	1.57	-1.12	-1.11	
11463.00	89.200	164.700	6592.82	4270.04	-4811.39	-991.17	1667342.65	14264626.36	39°16'55.196"N	80°54'17.442"W	4912.42	191.640	0.92	0.03	0.92	
11558.00	89.290	164.230	6594.07	4364.94	-4902.91	-965.73	1667368.08	14264534.87	39°16'54.291"N	80°54'17.119"W	4997.11	191.143	0.50	0.09	-0.49	
11652.00	89.970	164.540	6594.67	4458.86	-4993.44	-940.43	1667393.37	14264444.38	39°16'53.396"N	80°54'16.799"W	5081.22	190.666	0.80	0.72	0.33	
11747.00	89.140	162.170	6595.41	4553.82	-5084.45	-913.22	1667420.57	14264353.41	39°16'52.496"N	80°54'16.454"W	5165.81	190.182	2.64	-0.87	-2.49	
11842.00	89.200	161.560	6596.79	4648.81	-5174.72	-883.65	1667450.12	14264263.17	39°16'51.604"N	80°54'16.079"W	5249.62	189.691	0.65	0.06	-0.64	
11936.00	89.140	160.290	6598.15	4742.78	-5263.55	-852.94	1667480.83	14264174.38	39°16'50.726"N	80°54'15.690"W	5332.20	189.205	1.35	-0.06	-1.35	
12031.00	89.140	158.800	6599.58	4837.68	-5352.54	-819.74	1667514.01	14264085.42	39°16'49.846"N	80°54'15.269"W	5414.95	188.707	1.57	0.00	-1.57	
12126.00	89.080	158.230	6601.05	4932.49	-5440.93	-784.95	1667548.78	14263997.07	39°16'48.972"N	80°54'14.828"W	5497.26	188.209	0.60	-0.06	-0.60	
12220.00	89.110	159.690	6602.54	5026.35	-5528.65	-751.21	1667582.51	14263909.38	39°16'48.104"N	80°54'14.400"W	5579.45	187.738	1.55	0.03	1.55	
12315.00	89.080	161.100	6604.04	5121.29	-5618.13	-719.34	1667614.37	14263819.94	39°16'47.220"N	80°54'13.996"W	5663.99	187.296	1.48	-0.03	1.48	
12410.00	89.510	161.180	6605.21	5216.28	-5708.02	-688.63	1667645.07	14263730.08	39°16'46.331"N	80°54'13.606"W	5749.41	186.879	0.46	0.45	0.08	
12504.00	89.420	159.770	6606.08	5310.24	-5796.61	-657.22	1667676.47	14263641.53	39°16'45.455"N	80°54'13.208"W	5833.75	186.469	1.50	-0.10	-1.50	
12598.00	89.940	161.600	6606.61	5404.20	-5885.31	-626.13	1667707.54	14263552.86	39°16'44.578"N	80°54'12.814"W	5918.53	186.073	2.02	0.55	1.95	
12693.00	89.420	158.850	6607.14	5499.15	-5974.70	-593.99	1667739.67	14263463.51	39°16'43.694"N	80°54'12.406"W	6004.16	185.678	2.95	-0.55	-2.89	
12788.00	90.000	162.060	6607.62	5594.10	-6064.21	-562.21	1667771.43	14263374.03	39°16'42.809"N	80°54'12.003"W	6090.22	185.297	3.43	0.61	3.38	
12882.00	90.150	161.040	6607.50	5688.09	-6153.38	-532.46	1667801.17	14263284.90	39°16'41.927"N	80°54'11.626"W	6176.38	184.946	1.10	0.16	-1.09	
12977.00	89.820	160.410	6607.52	5783.07	-6243.06	-501.10	1667832.52	14263195.26	39°16'41.041"N	80°54'11.229"W	6263.13	184.589	0.75	-0.35	-0.66	
13072.00	90.430	163.540	6607.31	5878.06	-6333.38	-471.71	1667861.90	14263104.97	39°16'40.148"N	80°54'10.856"W	6350.92	184.260	3.36	0.64	3.29	
13166.00	90.180	164.640	6606.81	5971.99	-6423.78	-445.94	1667887.65	14263014.61	39°16'39.254"N	80°54'10.530"W	6439.24	183.971	1.20	-0.27	1.17	
13261.00	90.030	163.360	6606.64	6066.93	-6515.10	-419.76	1667913.83	14262923.33	39°16'38.351"N	80°54'10.198"W	6528.60	183.686	1.36	-0.16	-1.35	
13355.00	90.150	163.550	6606.49	6160.90	-6605.20	-392.99	1667940.59	14262833.26	39°16'37.460"N	80°54'09.859"W	6616.88	183.405	0.24	0.13	0.20	
13450.00	90.400	163.310	6606.04	6255.87	-6696.26	-365.90	1667967.67	14262742.24	39°16'36.560"N	80°54'09.516"W	6706.25	183.128	0.36	0.26	-0.25	
13545.00	90.460	164.050	6605.32	6350.83	-6787.43	-339.20	1667994.35	14262651.11	39°16'35.659"N	80°54'09.177"W	6795.90	182.861	0.78	0.06	0.78	
13639.00	90.310	163.630	6604.69	6444.78	-6877.71	-313.04	1668020.50	14262560.86	39°16'34.766"N	80°54'08.846"W	6884.83	182.606	0.47	-0.16	-0.45	
13734.00	90.060	161.970	6604.38	6539.77	-6968.46	-284.95	1668048.58	14262470.15	39°16'33.869"N	80°54'08.490"W	6974.28	182.342	1.77	-0.26	-1.75	
13828.00	89.540	160.570	6604.71	6633.75	-7057.48	-254.77	1668078.75	14262381.17	39°16'32.989"N	80°54'08.107"W	7062.07	182.067	1.59	-0.55	-1.49	



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REFERENCE WELLPATH IDENTIFICATION				
Operator	ANTERO RESOURCES CORPORATION		Slot	Slot #09
Area	Ritchie County, WV		Well	Waldo Unit 1H
Field	Ritchie		Wellbore	Waldo Unit 1H AWB
Facility	Bison Pad			

WELLPATH DATA (224 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
13923.00	90.460	161.560	6604.71	6728.74	-7147.33	-223.94	1668109.57	14262291.35	39°16'32.100"N	80°54'07.717"W	7150.84	181.795	1.42	0.97	1.04	
14017.00	90.430	160.400	6603.98	6822.72	-7236.20	-193.31	1668140.19	14262202.52	39°16'31.221"N	80°54'07.328"W	7238.78	181.530	1.23	-0.03	-1.23	
14112.00	90.060	160.990	6603.58	6917.69	-7325.85	-161.90	1668171.58	14262112.90	39°16'30.335"N	80°54'06.930"W	7327.64	181.266	0.73	-0.39	0.62	
14206.00	89.690	160.880	6603.78	7011.68	-7414.70	-131.20	1668202.27	14262024.09	39°16'29.457"N	80°54'06.541"W	7415.86	181.014	0.41	-0.39	-0.12	
14301.00	90.400	160.840	6603.71	7106.66	-7504.45	-100.05	1668233.41	14261934.38	39°16'28.569"N	80°54'06.146"W	7505.11	180.764	0.75	0.75	-0.04	
14396.00	89.480	157.930	6603.81	7201.55	-7593.35	-66.61	1668266.84	14261845.51	39°16'27.690"N	80°54'05.722"W	7593.64	180.503	3.21	-0.97	-3.06	
14490.00	91.510	158.140	6602.99	7295.31	-7680.52	-31.45	1668301.98	14261758.37	39°16'26.828"N	80°54'05.276"W	7680.59	180.235	2.17	2.16	0.22	
14585.00	91.450	158.800	6600.54	7390.10	-7768.86	3.40	1668336.82	14261670.07	39°16'25.955"N	80°54'04.834"W	7768.86	179.975	0.70	-0.06	0.69	
14679.00	90.950	160.280	6598.57	7483.99	-7856.91	36.25	1668369.66	14261582.06	39°16'25.084"N	80°54'04.418"W	7856.99	179.736	1.66	-0.53	1.57	
14774.00	90.000	161.220	6597.78	7578.96	-7946.59	67.57	1668400.96	14261492.41	39°16'24.197"N	80°54'04.021"W	7946.88	179.513	1.41	-1.00	0.99	
14869.00	89.820	161.000	6597.93	7673.95	-8036.48	98.33	1668431.71	14261402.56	39°16'23.309"N	80°54'03.631"W	8037.08	179.299	0.30	-0.19	-0.23	
14963.00	89.880	161.670	6598.18	7767.94	-8125.53	128.41	1668461.78	14261313.54	39°16'22.428"N	80°54'03.250"W	8126.55	179.095	0.72	0.06	0.71	
15058.00	89.420	162.050	6598.76	7862.94	-8215.81	157.99	1668491.34	14261223.30	39°16'21.535"N	80°54'02.875"W	8217.33	178.898	0.63	-0.48	0.40	
15152.00	89.570	162.290	6599.59	7956.93	-8305.29	186.77	1668520.11	14261133.86	39°16'20.651"N	80°54'02.510"W	8307.39	178.712	0.30	0.16	0.26	
15247.00	90.060	164.890	6599.90	8051.89	-8396.41	213.60	1668546.94	14261042.77	39°16'19.750"N	80°54'02.170"W	8399.13	178.543	2.78	0.52	2.74	
15342.00	89.970	166.260	6599.87	8146.70	-8488.42	237.27	1668570.59	14260950.81	39°16'18.840"N	80°54'01.871"W	8491.73	178.399	1.45	-0.09	1.44	
15436.00	89.600	166.760	6600.22	8240.41	-8579.82	259.20	1668592.51	14260859.44	39°16'17.937"N	80°54'01.593"W	8583.73	178.270	0.66	-0.39	0.53	
15531.00	89.480	167.740	6600.99	8335.01	-8672.47	280.16	1668613.47	14260766.82	39°16'17.021"N	80°54'01.328"W	8677.00	178.150	1.04	-0.13	1.03	
15626.00	89.720	167.550	6601.65	8429.55	-8765.27	300.49	1668633.79	14260674.06	39°16'16.103"N	80°54'01.071"W	8770.42	178.037	0.32	0.25	-0.20	
15720.00	89.420	168.350	6602.35	8523.04	-8857.20	320.11	1668653.40	14260582.17	39°16'15.194"N	80°54'00.823"W	8862.98	177.930	0.91	-0.32	0.85	
15815.00	89.480	168.660	6603.27	8617.42	-8950.29	339.04	1668672.32	14260489.12	39°16'14.274"N	80°54'00.583"W	8956.71	177.831	0.33	0.06	0.33	
15909.00	90.340	170.390	6603.41	8710.61	-9042.72	356.13	1668689.41	14260396.73	39°16'13.360"N	80°54'00.367"W	9049.73	177.745	2.06	0.91	1.84	
16004.00	89.780	168.660	6603.31	8804.79	-9136.13	373.40	1668706.67	14260303.35	39°16'12.437"N	80°54'00.149"W	9143.76	177.660	1.91	-0.59	-1.82	
16099.00	90.000	166.500	6603.50	8899.34	-9228.90	393.83	1668727.09	14260210.62	39°16'11.520"N	80°53'59.890"W	9237.30	177.556	2.29	0.23	-2.27	
16193.00	89.910	163.800	6603.57	8993.19	-9319.75	417.92	1668751.17	14260119.80	39°16'10.622"N	80°53'59.585"W	9329.12	177.432	2.87	-0.10	-2.87	
16288.00	89.780	160.720	6603.83	9088.18	-9410.22	446.86	1668780.10	14260029.37	39°16'09.727"N	80°53'59.219"W	9420.83	177.281	3.24	-0.14	-3.24	
16382.00	90.030	158.230	6603.98	9182.08	-9498.25	479.82	1668813.05	14259941.38	39°16'08.857"N	80°53'58.801"W	9510.36	177.108	2.66	0.27	-2.65	
16477.00	90.250	157.810	6603.75	9276.85	-9586.34	515.38	1668848.59	14259853.32	39°16'07.986"N	80°53'58.350"W	9600.19	176.923	0.50	0.23	-0.44	
16572.00	90.180	156.850	6603.40	9371.53	-9674.00	551.99	1668885.19	14259765.69	39°16'07.119"N	80°53'57.886"W	9689.74	176.734	1.01	-0.07	-1.01	
16666.00	90.430	156.620	6602.90	9465.13	-9760.36	589.12	1668922.30	14259679.37	39°16'06.265"N	80°53'57.415"W	9778.12	176.546	0.36	0.27	-0.24	



Actual Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Waldo Unit 1H
Field	Ritchie	Wellbore	Waldo Unit 1H AWB
Facility	Bison Pad		

WELLPATH DATA (224 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
16761.00	90.620	156.590	6602.02	9559.70	-9847.54	626.84	1668960.01	14259592.22	39°16'05.403"N	80°53'56.937"W	9867.47	176.358	0.20	0.20	-0.03	
16856.00	90.550	156.370	6601.05	9654.25	-9934.65	664.75	1668997.90	14259505.15	39°16'04.541"N	80°53'56.456"W	9956.86	176.172	0.24	-0.07	-0.23	
16950.00	89.600	156.420	6600.93	9747.80	-10020.78	702.39	1669035.53	14259419.05	39°16'03.690"N	80°53'55.978"W	10045.37	175.991	1.01	-1.01	0.05	
17045.00	89.660	157.750	6601.55	9842.45	-10108.28	739.38	1669072.50	14259331.59	39°16'02.824"N	80°53'55.509"W	10135.28	175.817	1.40	0.06	1.40	
17140.00	89.630	159.370	6602.13	9937.27	-10196.70	774.10	1669107.21	14259243.20	39°16'01.950"N	80°53'55.069"W	10226.04	175.659	1.71	-0.03	1.71	
17235.00	88.890	161.200	6603.36	10032.21	-10286.12	806.14	1669139.24	14259153.82	39°16'01.066"N	80°53'54.663"W	10317.66	175.519	2.08	-0.78	1.93	
17330.00	88.860	161.970	6605.23	10127.19	-10376.24	836.15	1669169.23	14259063.74	39°16'00.175"N	80°53'54.283"W	10409.87	175.393	0.81	-0.03	0.81	
17425.00	88.770	162.820	6607.19	10222.17	-10466.77	864.87	1669197.95	14258973.25	39°15'59.280"N	80°53'53.919"W	10502.44	175.276	0.90	-0.09	0.89	
17519.00	89.230	163.440	6608.83	10316.14	-10556.71	892.15	1669225.21	14258883.34	39°15'58.391"N	80°53'53.573"W	10594.34	175.169	0.82	0.49	0.66	
17614.00	89.450	163.970	6609.93	10411.09	-10647.89	918.80	1669251.85	14258792.20	39°15'57.489"N	80°53'53.236"W	10687.45	175.068	0.60	0.23	0.56	
17709.00	88.830	163.500	6611.35	10506.03	-10739.07	945.41	1669278.45	14258701.05	39°15'56.588"N	80°53'52.899"W	10780.61	174.969	0.82	-0.65	-0.49	
17803.00	89.050	163.460	6613.09	10599.99	-10829.18	972.13	1669305.16	14258610.98	39°15'55.697"N	80°53'52.560"W	10872.72	174.870	0.24	0.23	-0.04	
17887.00	88.680	162.730	6614.75	10683.95	-10909.53	996.55	1669329.57	14258530.66	39°15'54.902"N	80°53'52.251"W	10954.95	174.781	0.97	-0.44	-0.87	
17912.00	88.680	162.730	6615.33	10708.95	-10933.40	1003.97	1669336.99	14258506.80	39°15'54.666"N	80°53'52.157"W	10979.40	174.753	0.00	0.00	0.00	Projected MD at TD: 17912'

HOLE & CASING SECTIONS - Ref Wellbore: Waldo Unit 1H AWB Ref Wellpath: Waldo Unit 1H AWP Proj: 17912'

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	-0.33	0.33
17.5in Open Hole	110.00	554.10	444.10	110.00	554.09	-0.33	0.33	-1.73	0.46
13.375in Casing Surface	30.00	554.10	524.10	30.00	554.09	0.00	0.00	-1.73	0.46
12.25in Open Hole	554.10	2682.40	2128.30	554.09	2570.92	-1.73	0.46	-78.25	-593.41
9.625in Casing Intermediate	30.00	2682.40	2652.40	30.00	2570.92	0.00	0.00	-78.25	-593.41
8.75in Open Hole	2682.40	6623.00	3940.60	2570.92	6109.30	-78.25	-593.41	-378.95	-2261.77
8.5in Open Hole	6623.00	17912.00	11289.00	6109.30	6615.33	-378.95	-2261.77	-10933.40	1003.97
5.5in Casing Production	30.00	17912.00	17882.00	30.00	6615.33	0.00	0.00	-10933.40	1003.97



Actual Wellpath Report

Waldo Unit 1H AWP Proj: 17912'

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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Waldo Unit 1H
Field	Ritchie	Wellbore	Waldo 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
Waldo Unit 1H POE Rev-2	6546.00	-863.54	-2265.22	1666069.11	14268572.62	39°17'34.228"N	80°54'33.593"W	point
Waldo Unit 1H BHL Rev-2	6569.00	-10936.62	1005.28	1669338.30	14258503.58	39°15'54.634"N	80°53'52.140"W	point
Waldo Unit 1H LP Rev-2	6569.00	-1016.39	-2215.59	1666118.72	14268419.83	39°17'32.717"N	80°54'32.964"W	point

WELLPATH COMPOSITION - Ref Wellbore: Waldo Unit 1H AWB Ref Wellpath: Waldo Unit 1H AWP Proj: 17912'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
30.00	525.00	Gyrodata standard - Drop gyro or Multi-shot	01_Gyrodata MS Gyro <17-1/2">(50'-525')	Waldo Unit 1H AWB
525.00	2599.00	ISCWSA MWD, Rev. 4 (Standard)	02_WFT EM <12-1/4">(525')(602'-2599')	Waldo Unit 1H AWB
2599.00	6529.00	ISCWSA MWD, Rev. 4 (Standard)	03_WFT EM <8-3/4">(2599')(2736'-6529')	Waldo Unit 1H AWB
6529.00	17887.00	BHI AutoTrak Curve (Standard)	04_BH AT Curve <8-1/2">(6529')(6602'-17887')	Waldo Unit 1H AWB
17887.00	17912.00	Blind Drilling (std)	Projection to bit	Waldo Unit 1H AWB



Actual Wellpath Report

Waldo Unit 1H AWP Proj: 17912'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Waldo Unit 1H
Field	Ritchie	Wellbore	Waldo Unit 1H AWB
Facility	Bison Pad		

COMMENTS
<p>Wellpath general comments API: 47-085-10353-0000 BHI Job #: 109460559 Rig: H&P 519 Duration: 10/22/2018-10/26/2018 Gyrodatta MS Gyro <17-1/2">(50'-525') WFT EM <12-1/4">(525')(602'-2599') WFT EM <8-3/4">(2599')(2736'-6529') BH AT Curve <8-1/2">(6529')(6602'-17887') Middlesex: 6976' MD Burkett: 7175' MD Tully: 7258' MD Marcellus POE: 7348' MD Projected MD at TD: 17912'</p>