







# Actual Wellpath Report

Twig Unit 1H AWP Proj: 20643  
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06/14/2024

REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Well	Twig Unit 1H
Field	Richie	API	47-085-10498-0000
Facility	Cashew Pad	Wellbore	Twig Unit 1H AWB
Slot	Slot 1		

REPORT SETUP INFORMATION			
Projection System	NAD27 / UTM Zone 17 North, US feet	Software System	WellArchitect® 6.0
North Reference	Grid	User	Edsaryar
Scale	0.999602	Report Generated	11/21/2023 at 1:43:13 PM
Convergence at slot	0.09° East	Database	WA_MPL_EASTERNUS_Defn

WELLPATH LOCATION							
	Local coordinates			Grid coordinates		Geographic coordinates	
	North [ft]	East [ft]	Easting [US ft]	Northing [US ft]	Latitude	Longitude	
Slot Location	299.63	100.34	1680771.18	14224669.78	39°10'19.9400"N	80°51'27.4000"W	
Facility Reference Pt			1680670.88	14224370.27	39°10'16.9800"N	80°51'28.6800"W	
Field Reference Pt			0.00	0.00	0°00'0.0000"	85°29'19.3013"W	

WELLPATH DATUM			
Calculation method	Minimum curvature	H&P 519 (RKB) to Facility Vertical Datum	1049.00ft
Horizontal Reference Pt	Slot	H&P 519 (RKB) to Mean Sea Level	1049.00ft
Vertical Reference Pt	H&P 519 (RKB)	H&P 519 (RKB) to Ground Level at Slot (Slot 1)	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	337.38°

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Well	Twig Unit 1H
Field	Ritchie	API	47-085-10498-000
Facility	Cashew Pad	Wellbore	Twig Unit 1H AWP
Slot	Slot 1		

WELLPATH DATA (235 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	333.200	0.00	0.00	0.00	0.00	1680771.18	14224669.78	39°10'19.9400"N	80°51'27.4000"W	0.00	0.000	0.00	0.00	0.00	
30.00	0.000	333.200	30.00	0.00	0.00	0.00	1680771.14	14224669.78	39°10'19.9400"N	80°51'27.4000"W	0.00	0.000	0.00	0.00	0.00	
50.00	0.460	333.200	50.00	0.08	0.07	-0.04	1680771.14	14224669.85	39°10'19.9407"N	80°51'27.4004"W	0.08	333.200	2.30	2.30	0.00	Gyrodatta MS Gyro <17-112"> (50°-262°)
75.00	0.580	325.060	75.00	0.30	0.26	-0.15	1680771.03	14224670.04	39°10'19.9426"N	80°51'27.4019"W	0.31	329.848	0.56	0.48	-32.56	
100.00	0.490	317.890	100.00	0.53	0.45	-0.30	1680770.88	14224670.23	39°10'19.9444"N	80°51'27.4038"W	0.54	326.963	0.45	-0.36	-28.68	
125.00	0.360	344.560	125.00	0.71	0.60	-0.39	1680770.79	14224670.38	39°10'19.9460"N	80°51'27.4049"W	0.72	327.063	0.53	-0.52	-106.68	
150.00	0.280	3.680	150.00	0.84	0.74	-0.41	1680770.77	14224670.52	39°10'19.9473"N	80°51'27.4051"W	0.84	331.140	0.53	-0.32	-76.48	
175.00	0.330	27.180	175.00	0.94	0.86	-0.37	1680770.81	14224670.64	39°10'19.9486"N	80°51'27.4047"W	0.94	336.787	0.53	0.20	94.00	
200.00	0.320	39.570	200.00	1.02	0.98	-0.29	1680770.89	14224670.76	39°10'19.9497"N	80°51'27.4033"W	1.03	343.369	0.28	-0.04	49.56	
225.00	0.360	59.840	225.00	1.06	1.08	-0.18	1680771.00	14224670.86	39°10'19.9506"N	80°51'27.4023"W	1.09	350.444	0.50	0.16	81.08	
250.00	0.260	50.290	250.00	1.09	1.15	-0.07	1680771.11	14224670.93	39°10'19.9514"N	80°51'27.4006"W	1.15	356.543	0.45	-0.40	-38.20	
262.00	0.570	81.880	262.00	1.08	1.18	0.01	1680771.19	14224670.96	39°10'19.9516"N	80°51'27.3998"W	2.13	54.389	0.12	2.58	263.25	
416.00	0.720	92.520	416.00	0.48	1.24	1.74	1680772.91	14224671.02	39°10'19.9523"N	80°51'27.3799"W	2.93	70.591	0.34	-0.06	27.79	APFS EM <12-114"> (262°)(416-2783°)
506.00	0.670	117.530	506.00	-0.16	0.97	2.77	1680773.95	14224670.75	39°10'19.9496"N	80°51'27.3648"W	3.82	83.381	0.16	-0.16	-0.37	
596.00	0.810	117.200	596.00	-1.05	0.44	3.80	1680774.98	14224669.73	39°10'19.9443"N	80°51'27.3517"W	4.88	90.613	0.13	-0.10	-6.33	
685.00	0.720	111.570	684.96	-1.92	-0.05	4.88	1680776.06	14224669.19	39°10'19.9341"N	80°51'27.3239"W	6.02	95.596	0.19	0.16	8.24	
775.00	0.860	118.990	774.95	-2.85	-0.59	6.00	1680777.17	14224668.47	39°10'19.9269"N	80°51'27.3101"W	7.20	100.484	0.16	-0.06	10.58	
864.00	0.810	128.510	864.95	-3.93	-1.31	7.08	1680778.26	14224668.47	39°10'19.9269"N	80°51'27.3101"W	8.21	105.100	0.22	-0.10	14.31	
954.00	0.720	141.250	953.94	-5.02	-2.14	7.93	1680779.10	14224667.64	39°10'19.9187"N	80°51'27.2994"W	9.24	109.194	0.13	0.10	-5.93	
1044.00	0.810	135.910	1043.93	-6.16	-3.04	8.72	1680779.90	14224666.74	39°10'19.9099"N	80°51'27.2893"W	10.44	112.916	0.10	0.03	6.29	
1139.00	0.840	141.890	1138.92	-7.45	-4.07	9.62	1680780.80	14224666.71	39°10'19.8897"N	80°51'27.2779"W	11.59	116.403	0.12	-0.06	6.89	
1233.00	0.780	148.370	1232.91	-8.75	-5.15	10.38	1680781.56	14224666.63	39°10'19.8889"N	80°51'27.2683"W	12.76	120.440	0.30	0.23	11.79	
1327.00	1.000	159.450	1326.90	-10.20	-6.47	11.00	1680782.18	14224666.32	39°10'19.8759"N	80°51'27.2604"W	13.95	124.369	0.20	-0.20	1.34	
1422.00	0.810	160.720	1421.89	-11.70	-7.88	11.52	1680782.69	14224666.91	39°10'19.8620"N	80°51'27.2539"W	15.04	127.526	0.05	0.02	3.49	
1516.00	0.830	164.000	1515.88	-13.04	-9.16	11.92	1680783.10	14224660.63	39°10'19.8493"N	80°51'27.2488"W	16.10	130.642	0.11	-0.02	7.84	
1611.00	0.810	171.450	1610.87	-14.37	-10.48	12.21	1680783.67	14224657.77	39°10'19.8362"N	80°51'27.2451"W	17.33	133.891	0.30	0.30	-3.17	
1705.00	1.090	168.470	1704.85	-15.90	-12.02	12.49	1680784.12	14224654.89	39°10'19.8210"N	80°51'27.2359"W	19.73	138.996	1.46	1.46	3.87	
1799.00	2.460	172.110	1798.81	-18.73	-14.89	12.95	1680784.12	14224650.31	39°10'19.7473"N	80°51'27.2247"W	23.89	144.618	0.81	0.76	-5.66	
1894.00	3.180	166.730	1893.69	-23.30	-19.48	13.83	1680785.01	14224650.31	39°10'19.6971"N	80°51'27.2118"W	28.70	148.819	0.22	-0.04	3.94	
1988.00	3.140	170.430	1987.55	-28.38	-24.55	14.86	1680786.03	14224645.24	39°10'19.6971"N	80°51'27.2118"W						

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REFERENCE WELLPATH IDENTIFICATION		Well	Twig Unit 1H
Operator	ANTERO RESOURCES CORPORATION	API	47-085-10498-0000
Field	Ritche	Wellbore	Twig Unit 1H AWB
Facility	Cashew Pad		
Slot	Slot 1		

WELLPATH DATA (235 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 (°)	D.L.S (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
2083.00	2.990	165.960	2082.41	-33.36	-29.52	15.89	1680787.07	14224640.27	39°10'19.6480"N	80°51'27.1988"W	33.53	151.706	0.30	-0.16	-4.71	
2177.00	4.500	166.400	2176.21	-39.43	-35.48	17.35	1680788.53	14224634.31	39°10'19.5890"N	80°51'27.1803"W	39.50	153.939	1.61	0.47	0.47	
2272.00	6.740	164.110	2270.75	-48.65	-44.47	19.76	1680790.93	14224625.33	39°10'19.5002"N	80°51'27.1500"W	48.66	156.046	2.37	2.36	-2.41	
2366.00	8.620	162.650	2363.90	-61.14	-56.50	23.37	1680794.54	14224613.30	39°10'19.3812"N	80°51'27.1044"W	61.14	157.530	2.01	2.00	-1.56	
2461.00	10.360	155.850	2457.60	-76.77	-71.09	28.99	1680800.15	14224598.72	39°10'19.2369"N	80°51'27.0334"W	76.77	157.818	2.18	1.83	-7.16	
2554.00	12.180	148.420	2548.81	-94.82	-87.08	37.55	1680808.71	14224582.73	39°10'19.0787"N	80°51'26.9250"W	94.83	156.676	2.50	1.96	-7.99	
2649.00	12.280	146.100	2641.65	-114.63	-104.00	48.43	1680819.59	14224566.82	39°10'18.9131"N	80°51'26.7871"W	114.73	155.031	0.53	0.11	-2.44	
2744.00	11.960	144.240	2734.53	-134.12	-120.38	59.82	1680830.97	14224549.45	39°10'18.7493"N	80°51'26.6429"W	134.42	153.577	0.53	-0.34	-1.96	
2783.00	11.790	143.320	2772.70	-141.92	-126.85	64.56	1680835.71	14224542.98	39°10'18.6852"N	80°51'26.5828"W	142.33	153.027	0.65	-0.44	-2.36	
2831.00	11.540	143.410	2819.71	-151.34	-134.64	70.35	1680841.50	14224535.19	39°10'18.6081"N	80°51'26.5094"W	151.91	152.413	0.52	-0.52	0.19	APS EM -8-3/4" > (2783)(2831-6326)
2927.00	12.250	151.330	2913.65	-170.79	-151.29	80.96	1680852.11	14224518.55	39°10'18.4434"N	80°51'26.3750"W	171.59	151.847	1.85	0.74	8.25	
3021.00	13.000	151.550	3005.38	-191.22	-169.33	90.78	1680861.93	14224500.51	39°10'18.2649"N	80°51'26.2507"W	192.13	151.681	0.92	-0.79	-2.17	
3116.00	12.250	149.490	3098.08	-211.84	-187.41	100.99	1680872.13	14224482.44	39°10'18.0861"N	80°51'26.1214"W	212.89	151.301	0.92	-0.79	-2.17	
3210.00	11.690	144.680	3190.04	-231.01	-203.77	111.56	1680882.69	14224466.09	39°10'17.9242"N	80°51'25.9876"W	232.31	151.301	1.22	-0.60	-5.12	
3304.00	11.810	152.770	3282.08	-249.88	-220.10	121.47	1680892.60	14224449.77	39°10'17.7627"N	80°51'25.8621"W	251.39	151.107	1.76	0.13	8.61	
3399.00	13.500	161.440	3374.77	-270.64	-239.26	129.44	1680900.57	14224430.62	39°10'17.5732"N	80°51'25.7612"W	272.03	151.585	2.67	1.78	9.13	
3493.00	15.900	156.490	3465.69	-294.46	-261.47	138.07	1680909.20	14224408.41	39°10'17.3535"N	80°51'25.6520"W	295.69	152.163	2.88	2.55	-5.27	
3587.00	15.760	151.330	3556.13	-320.03	-284.48	148.34	1680920.46	14224385.42	39°10'17.1259"N	80°51'25.6095"W	321.29	152.303	1.50	-0.15	-5.49	
3682.00	14.280	157.870	3647.89	-344.58	-306.65	159.94	1680931.06	14224363.25	39°10'16.9066"N	80°51'25.5753"W	345.86	152.455	2.37	-1.56	6.88	
3776.00	13.600	160.580	3739.12	-367.21	-327.82	167.98	1680939.10	14224342.09	39°10'16.6973"N	80°51'25.5236"W	368.35	152.868	1.00	-0.72	2.88	
3871.00	12.860	157.640	3831.60	-388.93	-348.13	175.72	1680946.83	14224321.79	39°10'16.4964"N	80°51'25.4758"W	389.96	153.218	1.05	-0.78	-3.09	
3965.00	11.880	152.590	3923.42	-409.04	-366.39	184.15	1680955.26	14224303.53	39°10'16.3157"N	80°51'25.0691"W	410.07	153.315	1.55	-1.04	-5.37	
4060.00	11.200	149.660	4016.50	-427.92	-383.04	193.31	1680964.42	14224286.90	39°10'16.1511"N	80°51'24.9531"W	429.05	153.220	0.94	-0.72	-3.08	
4154.00	13.220	145.540	4108.37	-447.49	-399.78	204.01	1680975.11	14224270.16	39°10'15.9854"N	80°51'24.8176"W	448.82	152.965	2.34	2.15	-4.38	
4248.00	14.770	141.750	4199.58	-469.55	-418.05	217.51	1680986.60	14224251.89	39°10'15.8046"N	80°51'24.6466"W	471.25	152.612	1.91	1.65	-4.03	
4343.00	13.440	145.360	4291.72	-492.01	-436.65	231.28	1681002.37	14224233.31	39°10'15.6206"N	80°51'24.4721"W	494.12	152.091	1.68	-1.40	3.80	
4437.00	12.820	145.180	4383.76	-512.89	-454.20	243.45	1681014.53	14224215.76	39°10'15.4470"N	80°51'24.3180"W	515.33	151.809	0.66	-0.66	-0.19	
4532.00	11.600	142.300	4476.11	-532.42	-470.41	255.31	1681026.99	14224193.56	39°10'15.2876"N	80°51'24.1677"W	535.22	151.510	1.43	-1.28	-3.03	
4626.00	12.080	150.590	4568.12	-551.31	-486.45	265.92	1681036.99	14224181.55	39°10'15.1286"N	80°51'24.0333"W	554.39	151.337	1.88	0.51	8.82	
4721.00	11.420	156.530	4661.13	-570.59	-503.74	274.55	1681045.62	14224166.24	39°10'14.9668"N	80°51'23.9241"W	573.70	151.409	1.45	-0.69	6.25	

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REFERENCE WELLPATH IDENTIFICATION		Well	Twig Unit 1H
Operator	ANTERO RESOURCES CORPORATION	API	47-085-10498-0000
Field	Richie	Wellbore	Twig Unit 1H AWP
Facility	Cashew Pad		
Slot	Slot 1		

WELLPATH DATA (235 stations)															f = Interpolated, t = 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)	Built Rate (°/100ft)	Turn Rate (°/100ft)	Comments
4815.00	10.410	153.540	4753.43	-588.37	-519.88	282.04	1681053.10	14224150.11	39°10'14.7972"N	80°51'23.8293"W	591.46	151.520	1.23	-1.07	-3.18	
4910.00	12.460	152.170	4846.54	-607.14	-536.63	290.65	1681061.71	14224133.36	39°10'14.6315"N	80°51'23.7203"W	610.28	151.559	2.18	2.16	-1.44	
5004.00	13.140	150.980	4938.20	-627.85	-554.94	300.56	1681071.62	14224115.06	39°10'14.4503"N	80°51'23.5948"W	631.11	151.559	0.78	0.72	-1.27	
5098.00	12.490	147.790	5029.86	-648.50	-572.89	311.16	1681082.22	14224097.12	39°10'14.2728"N	80°51'23.4605"W	651.94	151.491	1.02	-0.89	-3.39	
5193.00	11.860	144.870	5122.72	-668.16	-589.56	322.26	1681093.31	14224080.45	39°10'14.1078"N	80°51'23.3200"W	671.89	151.339	0.93	-0.66	-3.07	
5287.00	11.480	142.280	5214.78	-686.62	-604.86	333.54	1681104.59	14224065.16	39°10'13.9564"N	80°51'23.1771"W	690.73	151.126	0.69	-0.40	-2.76	
5382.00	12.300	148.270	5307.75	-705.74	-620.95	344.65	1681115.69	14224049.08	39°10'13.7973"N	80°51'23.0364"W	710.18	150.968	1.56	0.86	6.31	
5476.00	11.380	147.370	5399.74	-724.76	-637.27	354.91	1681125.95	14224032.76	39°10'13.6577"N	80°51'22.9064"W	729.44	150.886	1.00	-0.98	-0.96	
5570.00	8.630	121.380	5492.35	-739.61	-648.76	365.94	1681136.97	14224021.28	39°10'13.5220"N	80°51'22.7666"W	744.85	150.574	5.55	-2.93	-27.65	
5665.00	8.810	89.760	5586.31	-748.15	-652.45	379.31	1681150.34	14224017.60	39°10'13.4854"N	80°51'22.5969"W	754.69	149.828	4.99	0.19	-33.28	
5759.00	8.860	63.620	5679.23	-750.41	-649.20	393.00	1681164.02	14224020.84	39°10'13.5173"N	80°51'22.4230"W	758.88	148.811	4.24	0.05	-27.81	
5854.00	8.390	33.900	5773.20	-746.11	-640.19	403.42	1681174.44	14224029.85	39°10'13.8061"N	80°51'22.2905"W	756.70	147.782	4.66	-0.49	-31.28	
5948.00	13.980	10.740	5865.42	-732.82	-623.32	409.37	1681180.39	14224046.71	39°10'13.7728"N	80°51'22.2146"W	745.73	146.705	7.52	5.95	-24.64	
6043.00	21.940	2.230	5955.74	-707.09	-594.26	412.21	1681183.22	14224075.76	39°10'14.0600"N	80°51'22.1781"W	723.23	145.253	8.80	8.38	-8.96	
6134.00	29.603	355.507	6037.64	-670.24	-554.80	411.10	1681182.12	14224115.20	39°10'14.4500"N	80°51'22.1912"W	690.51	143.462	9.00	8.42	-7.39	Sycamore: 6134 MD
6137.00	29.860	355.340	6040.25	-668.83	-553.32	410.99	1681182.00	14224116.69	39°10'14.4647"N	80°51'22.1927"W	669.25	143.396	9.00	8.57	-5.55	
6232.00	36.810	348.380	6119.60	-618.31	-501.79	403.32	1681174.34	14224168.19	39°10'14.9741"N	80°51'22.2890"W	643.78	141.209	8.34	7.32	-7.33	
6326.00	42.460	342.330	6191.99	-558.99	-443.90	388.00	1681159.02	14224226.06	39°10'15.5465"N	80°51'22.4824"W	589.57	138.845	7.27	6.01	-6.44	
6363.00	45.988	341.197	6218.50	-533.26	-419.40	379.92	1681150.94	14224250.55	39°10'15.9888"N	80°51'22.5845"W	565.89	137.828	9.77	9.54	-3.06	Middlesex: 6363 MD
6450.00	47.900	340.640	6232.15	-518.67	-405.59	375.14	1681146.17	14224264.35	39°10'15.9253"N	80°51'22.6449"W	552.48	137.234	9.77	9.56	-2.79	BH AT Curve <8-1/2"> (6326)(6383-20617)
6450.00	52.470	339.330	6275.04	-467.28	-357.26	357.51	1681128.55	14224312.67	39°10'16.4034"N	80°51'22.8677"W	505.42	134.980	6.98	6.82	-1.96	
6545.00	60.990	340.660	6327.11	-388.01	-282.67	330.41	1681104.45	14224387.22	39°10'17.1409"N	80°51'23.2104"W	424.83	130.548	6.39	8.97	1.40	
6545.00	61.501	340.640	6330.96	-381.01	-276.06	328.08	1681099.13	14224393.83	39°10'17.2064"N	80°51'23.2398"W	428.77	130.078	6.39	8.94	-0.25	Burkett: 6553 MD
6639.00	66.990	340.440	6368.31	-303.70	-203.05	302.29	1681073.34	14224466.81	39°10'17.9283"N	80°51'23.5659"W	364.15	123.890	6.39	6.38	-0.23	
6655.00	68.528	340.523	6374.37	-288.91	-189.10	297.34	1681068.40	14224480.76	39°10'18.0664"N	80°51'23.9384"W	352.37	122.455	9.61	9.60	0.52	Tully: 6655 MD
6733.00	76.014	340.905	6398.11	-214.80	-119.02	272.82	1681043.89	14224550.81	39°10'18.7594"N	80°51'23.9283"W	297.65	113.569	9.61	9.60	0.47	Marcellus POE: 6733 MD
6734.00	76.110	340.910	6398.35	-213.83	-118.10	272.50	1681043.57	14224551.73	39°10'18.7685"N	80°51'23.9423"W	297.00	113.432	9.61	9.60	0.47	
6829.00	82.940	342.710	6415.61	-120.75	-29.40	243.38	1681014.46	14224640.39	39°10'19.6466"N	80°51'24.3104"W	245.15	96.889	7.43	7.19	1.89	
6923.00	90.150	341.720	6421.27	-27.32	59.88	214.73	1680985.83	14224729.64	39°10'20.5285"N	80°51'24.6723"W	222.93	74.419	7.74	7.67	-1.05	
7018.00	89.450	339.470	6421.60	67.53	149.48	183.17	1680954.28	14224819.20	39°10'21.4146"N	80°51'25.0712"W	236.42	50.784	2.48	-0.74	-2.37	

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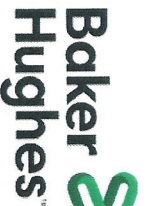
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# Actual Wellpath Report

Twig Unit 1H AWP Proj: 20643  
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06/14/2024

## REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Well	Twig Unit 1H
Field	Ritchie	API	47-085-10498-0000
Facility	Cashew Pad	Wellpore	Twig Unit 1H AWB
Slot	Slot 1		

## WELLPATH DATA (235 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 (°)	D/S (ft/100ft)	Build Rate (ft/100ft)	Turn Rate (ft/100ft)	Comments
7113.00	89.660	338.290	6422.34	162.49	238.09	148.94	1680820.06	14224907.78	39°10'22.2910"N	80°51'25.5040"W	280.84	32.029	1.26	0.22	-1.24	
7207.00	89.320	336.760	6423.18	256.48	322.94	113.01	1680884.15	14224994.59	39°10'23.1600"N	80°51'25.9586"W	344.04	19.177	1.67	-0.36	-1.63	
7302.00	89.200	337.130	6424.40	351.47	412.35	75.81	1680846.96	14225081.96	39°10'24.0145"N	80°51'26.4292"W	419.26	10.418	0.41	-0.13	0.39	
7396.00	89.140	337.040	6425.77	445.46	498.92	39.21	1680810.38	14225168.50	39°10'24.8707"N	80°51'26.8921"W	500.46	4.494	0.12	-0.06	-0.10	
7491.00	89.170	336.960	6427.17	540.45	586.36	2.10	1680773.28	14225255.91	39°10'25.7555"N	80°51'27.3616"W	586.36	0.205	0.09	0.03	-0.08	
7585.00	89.010	336.430	6428.66	634.43	672.68	-35.09	1680736.11	14225342.19	39°10'26.5893"N	80°51'27.8321"W	673.59	357.014	0.59	-0.17	-0.56	
7680.00	89.110	337.020	6430.22	729.41	759.94	-72.62	1680698.59	14225429.41	39°10'27.4823"N	80°51'28.3069"W	763.40	354.541	0.63	0.11	0.62	
7774.00	88.960	336.970	6431.81	823.39	846.45	-109.35	1680661.87	14225515.89	39°10'28.3079"N	80°51'28.7716"W	853.48	352.639	0.18	-0.17	-0.05	
7868.00	89.200	337.210	6433.33	917.38	933.02	-145.94	1680625.30	14225602.43	39°10'29.1642"N	80°51'29.2345"W	944.37	351.110	0.37	0.27	0.26	
7963.00	90.400	337.830	6433.66	1012.38	1020.80	-182.26	1680588.99	14225690.17	39°10'30.0323"N	80°51'29.6939"W	1036.94	349.877	1.42	1.26	0.65	
8057.00	89.170	337.390	6434.01	1106.37	1107.71	-218.07	1680553.20	14225777.05	39°10'30.8919"N	80°51'30.1469"W	1128.97	348.863	1.39	-1.31	-0.47	
8152.00	89.140	336.810	6435.41	1201.36	1195.21	-265.03	1680516.25	14225864.52	39°10'31.7573"N	80°51'30.6145"W	1222.12	347.955	0.61	-0.03	-0.61	
8246.00	88.980	337.060	6436.96	1295.35	1281.69	-291.85	1680479.45	14225950.96	39°10'32.6126"N	80°51'31.0803"W	1314.50	347.172	0.32	-0.17	0.27	
8341.00	88.920	336.850	6438.70	1390.33	1369.09	-329.03	1680442.28	14226038.32	39°10'33.4771"N	80°51'31.5507"W	1408.08	346.486	0.23	-0.06	-0.22	
8435.00	89.450	337.250	6440.03	1484.32	1455.64	-365.68	1680405.65	14226124.84	39°10'34.3331"N	80°51'32.0144"W	1500.87	345.898	0.71	0.56	0.43	
8530.00	88.980	337.350	6441.33	1579.31	1543.28	-402.34	1680369.00	14226212.44	39°10'35.1998"N	80°51'32.4781"W	1594.86	345.388	0.51	-0.49	0.11	
8625.00	89.260	336.710	6442.79	1674.29	1630.73	-439.41	1680331.95	14226299.86	39°10'36.0648"N	80°51'32.9471"W	1688.89	344.920	0.74	0.29	-0.67	
8719.00	89.510	337.710	6443.80	1768.29	1717.39	-475.82	1680295.55	14226386.48	39°10'36.9218"N	80°51'33.4077"W	1782.08	344.514	1.10	0.27	1.06	
8814.00	89.910	337.020	6444.28	1863.28	1805.07	-512.38	1680259.01	14226474.13	39°10'37.7890"N	80°51'33.8703"W	1876.38	344.153	0.84	0.42	-0.73	
8908.00	88.740	337.200	6445.39	1957.28	1891.66	-548.94	1680222.46	14226560.68	39°10'38.6454"N	80°51'34.3328"W	1969.70	343.818	1.26	-1.24	0.19	
9003.00	88.800	337.590	6447.43	2052.25	1979.34	-585.44	1680185.97	14226648.33	39°10'39.5126"N	80°51'34.7947"W	2064.11	343.523	0.42	0.06	0.41	
9098.00	88.710	337.900	6449.49	2147.23	2067.24	-621.41	1680150.01	14226736.20	39°10'40.3820"N	80°51'35.2497"W	2158.62	343.269	0.34	-0.09	0.33	
9192.00	88.490	336.490	6451.79	2241.20	2153.87	-657.84	1680113.61	14226822.78	39°10'41.2387"N	80°51'35.7105"W	2252.09	343.016	1.52	-0.23	-1.50	
9287.00	88.710	337.470	6454.11	2336.17	2241.27	-694.97	1680076.48	14226910.16	39°10'42.1032"N	80°51'36.1804"W	2346.55	342.772	1.06	0.23	1.03	
9382.00	88.580	337.050	6456.36	2431.14	2328.86	-731.69	1680039.79	14226997.71	39°10'42.9685"N	80°51'36.6448"W	2441.10	342.558	0.46	-0.14	-0.44	
9476.00	88.710	337.130	6458.58	2525.11	2415.43	-768.27	1680003.22	14227084.24	39°10'43.8257"N	80°51'37.1077"W	2534.66	342.356	0.16	0.14	0.09	
9571.00	89.080	337.890	6460.00	2620.09	2503.18	-804.47	1679966.90	14227171.96	39°10'44.6936"N	80°51'37.5673"W	2629.32	342.181	0.89	0.39	0.80	
9665.00	88.980	337.240	6462.00	2714.08	2590.06	-840.40	1679931.05	14227258.80	39°10'45.5528"N	80°51'38.0211"W	2723.01	342.022	0.70	-0.11	-0.69	
9760.00	89.020	337.120	6463.66	2809.06	2677.61	-877.31	1679894.22	14227346.32	39°10'46.4187"N	80°51'38.4817"W	2817.67	341.859	0.13	0.04	-0.13	
9855.00	89.200	336.630	6465.14	2904.05	2764.96	-914.61	1679856.93	14227433.64	39°10'47.2927"N	80°51'38.9592"W	2912.31	341.696	0.55	0.19	-0.52	

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# Actual Wellpath Report

Twig Unit 1H AWP Proj: 20643

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06/14/2024

REFERENCE WELL PATH IDENTIFICATION				Well	Twig Unit 1H
Operator	ANTERO RESOURCES CORPORATION			API	47-085-10498-0000
Field	Ritche			Wellbore	Twig Unit 1H AWP
Facility	Cashew Pad				
Slot	Slot 1				

WELLPATH DATA (235 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
9949.00	88.920	337.150	6466.68	2998.03	2951.41	-951.50	1679820.06	14227520.05	39°10'48.1376"N	80°51'39.4260"W	3005.97	341.546	0.63	-0.30	0.55	
10044.00	89.350	337.470	6468.11	3093.02	2939.04	-988.15	1679783.43	14227607.65	39°10'49.0044"N	80°51'39.8896"W	3100.71	341.417	0.56	0.48	0.34	
10138.00	88.860	337.320	6469.58	3187.01	3025.81	-1024.27	1679747.32	14227694.38	39°10'49.8625"N	80°51'40.3467"W	3194.48	341.298	0.55	-0.52	-0.16	
10233.00	88.650	336.680	6471.65	3281.98	3113.24	-1061.38	1679710.22	14227781.77	39°10'50.7272"N	80°51'40.8162"W	3289.19	341.174	0.71	-0.22	-0.67	
10328.00	89.110	336.830	6473.50	3376.96	3200.51	-1098.87	1679672.75	14227869.01	39°10'51.5904"N	80°51'41.2906"W	3383.90	341.051	0.51	0.48	0.16	
10422.00	90.710	337.450	6473.65	3470.95	3287.12	-1135.38	1679636.25	14227955.59	39°10'52.4470"N	80°51'41.7526"W	3477.68	340.945	1.83	1.70	0.66	
10517.00	89.140	337.010	6473.78	3565.95	3374.72	-1172.15	1679599.50	14228043.15	39°10'53.3133"N	80°51'42.2178"W	3572.49	340.846	1.72	-1.65	-0.46	
10611.00	89.170	337.130	6475.16	3659.94	3461.28	-1208.77	1679562.89	14228129.68	39°10'54.1695"N	80°51'42.6812"W	3666.28	340.749	0.13	0.03	0.13	
10706.00	89.290	336.770	6476.44	3754.93	3548.69	-1245.96	1679525.72	14228217.05	39°10'55.0339"N	80°51'43.1518"W	3761.06	340.654	0.40	0.13	-0.38	
10800.00	89.230	337.780	6477.65	3848.92	3635.38	-1282.27	1679489.42	14228303.71	39°10'55.8914"N	80°51'43.6112"W	3854.90	340.571	1.08	-0.06	1.07	
10895.00	89.230	337.320	6478.93	3943.91	3723.17	-1318.55	1679453.16	14228391.46	39°10'56.7596"N	80°51'44.0702"W	3949.76	340.499	0.48	0.00	-0.48	
10989.00	89.050	336.580	6480.34	4037.90	3809.66	-1356.35	1679416.38	14228477.91	39°10'57.6150"N	80°51'44.5358"W	4043.57	340.416	0.81	-0.19	-0.79	
11084.00	88.770	337.080	6482.15	4132.87	3896.98	-1392.72	1679379.02	14228565.20	39°10'58.4786"N	80°51'45.0087"W	4138.37	340.334	0.60	-0.29	0.33	
11179.00	89.290	337.180	6483.76	4227.86	3984.50	-1429.63	1679342.12	14228652.69	39°10'59.3442"N	80°51'45.4759"W	4233.21	340.262	0.56	0.56	0.11	
11273.00	90.280	336.810	6484.95	4321.85	4071.02	-1466.37	1679305.40	14228739.17	39°11'01.1999"N	80°51'45.9407"W	4327.06	340.191	0.39	-0.03	-0.39	
11368.00	89.280	337.100	6485.33	4416.84	4158.43	-1503.55	1679268.23	14228826.55	39°11'01.0645"N	80°51'46.4113"W	4421.91	340.122	1.12	1.07	0.31	
11462.00	89.290	337.270	6485.68	4510.84	4245.08	-1540.00	1679231.79	14228913.16	39°11'02.7875"N	80°51'46.8725"W	4516.78	340.061	1.07	-1.05	0.18	
11557.00	89.660	337.140	6486.55	4605.84	4332.65	-1576.81	1679195.00	14229000.70	39°11'04.5955"N	80°51'47.3382"W	4610.66	340.002	0.41	0.39	-0.14	
11651.00	89.200	337.040	6487.49	4699.83	4419.23	-1613.40	1679158.43	14229087.25	39°11'06.4638"N	80°51'47.8012"W	4704.54	339.944	0.50	-0.49	-0.11	
11746.00	89.630	337.070	6488.45	4794.82	4506.71	-1650.43	1679121.41	14229174.69	39°11'08.3666"N	80°51'48.2698"W	4799.42	339.886	0.45	0.45	0.03	
11840.00	89.320	337.510	6489.32	4888.82	4593.42	-1686.72	1679085.13	14229261.36	39°11'10.3666"N	80°51'48.7290"W	4893.32	339.837	0.57	-0.33	0.47	
11935.00	89.450	337.110	6490.34	4983.81	4681.06	-1723.36	1679048.51	14229348.97	39°11'12.2334"N	80°51'49.1927"W	4988.22	339.788	0.44	0.14	-0.42	
12030.00	89.500	337.570	6491.12	5078.81	4768.73	-1759.96	1679011.92	14229436.60	39°11'14.1004"N	80°51'49.6558"W	5083.13	339.743	0.51	0.16	0.48	
12124.00	89.550	337.410	6491.57	5172.81	4855.56	-1795.95	1678975.95	14229523.40	39°11'15.9528"N	80°51'50.1112"W	5177.06	339.702	0.32	0.27	0.17	
12219.00	89.600	336.830	6492.03	5267.81	4943.09	-1832.89	1678939.03	14229610.89	39°11'17.8248"N	80°51'50.5786"W	5271.96	339.655	0.66	-0.26	-0.61	
12313.00	89.820	337.360	6492.51	5361.80	5029.68	-1869.47	1678902.46	14229697.44	39°11'19.6812"N	80°51'51.0416"W	5365.87	339.611	0.61	0.23	0.56	
12408.00	89.660	337.750	6492.94	5456.80	5117.48	-1905.74	1678866.20	14229784.21	39°11'21.5495"N	80°51'51.5005"W	5460.81	339.575	0.44	-0.17	0.41	
12502.00	89.380	337.520	6493.73	5550.80	5204.40	-1941.51	1678830.36	14229871.22	39°11'23.4092"N	80°51'51.9631"W	5554.75	339.542	0.39	-0.30	-0.24	
12597.00	89.880	337.800	6494.34	5645.79	5292.27	-1977.62	1678794.35	14229959.93	39°11'25.2782"N	80°51'52.4100"W	5649.70	339.510	0.60	0.53	0.29	
12692.00	90.710	338.530	6493.85	5740.78	5380.45	-2012.95	1678759.04	14230048.08	39°11'27.1503"N	80°51'52.8671"W	5744.67	339.488	1.16	0.87	0.77	

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# Actual Wellpath Report

Twig Unit 1H AWP Proj: 20643'  
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## REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Well	Twig Unit 1H
Field	Ritchie	API	47-085-10498-0000
Facility	Cashew Pad	Wellbore	Twig Unit 1H AWB
Slot	Slot 1		

## WELLPATH DATA (235 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
12786.00	89.320	337.230	6493.82	5834.77	5467.53	-2048.34	1678723.66	14230135.12	39°11'14.0115"N	80°51'53.3049"W	5838.63	339.462	2.02	-1.48	-1.38	
12880.00	88.620	337.350	6495.51	5928.76	5554.23	-2084.63	1678867.39	14230221.79	39°11'14.8690"N	80°51'53.7641"W	5932.55	339.428	0.76	-0.74	0.13	
12975.00	89.690	337.180	6496.92	6023.75	5641.84	-2121.34	1678650.69	14230309.36	39°11'15.7354"N	80°51'54.2287"W	6027.47	339.394	1.14	1.13	-0.18	
13069.00	89.750	337.580	6497.37	6117.75	5728.60	-2157.49	1678614.55	14230396.09	39°11'16.5936"N	80°51'54.6662"W	6121.41	339.363	0.43	0.06	0.43	
13164.00	89.540	337.600	6497.96	6212.74	5816.43	-2193.71	1678578.35	14230483.88	39°11'17.4621"N	80°51'55.1445"W	6216.36	339.336	0.22	-0.22	0.02	
13258.00	89.720	337.400	6498.57	6306.74	5903.27	-2229.68	1678542.39	14230570.69	39°11'18.3210"N	80°51'55.5997"W	6310.31	339.308	0.29	0.19	-0.21	
13352.00	88.460	336.970	6500.06	6400.73	5989.90	-2266.12	1678505.97	14230657.29	39°11'19.1778"N	80°51'56.0609"W	6404.24	339.277	1.42	-1.34	-0.46	
13447.00	89.720	337.500	6501.57	6495.71	6077.49	-2302.88	1678469.23	14230744.84	39°11'20.0449"N	80°51'56.5260"W	6499.16	339.247	1.44	1.33	0.56	
13541.00	89.660	337.290	6502.08	6589.71	6164.27	-2339.01	1678433.11	14230831.58	39°11'20.9023"N	80°51'56.9833"W	6593.11	339.221	0.23	-0.06	-0.22	
13636.00	89.570	337.610	6502.72	6684.71	6252.00	-2375.44	1678396.69	14230919.28	39°11'21.7699"N	80°51'57.4443"W	6688.07	339.196	0.35	-0.09	0.34	
13730.00	89.780	337.000	6503.25	6778.71	6338.72	-2411.70	1678360.44	14231005.97	39°11'22.6276"N	80°51'57.9033"W	6782.01	339.170	0.69	0.22	-0.65	
13825.00	89.480	337.010	6503.87	6873.70	6426.17	-2448.82	1678323.34	14231093.38	39°11'23.4925"N	80°51'58.3730"W	6876.94	339.140	0.32	-0.32	0.01	
13919.00	89.630	336.960	6504.60	6967.70	6512.69	-2485.57	1678286.61	14231179.86	39°11'24.3481"N	80°51'58.8381"W	6970.88	339.111	0.17	0.16	-0.05	
14014.00	89.660	337.080	6505.18	7062.69	6600.15	-2522.65	1678249.54	14231267.28	39°11'25.2131"N	80°51'59.3075"W	7065.81	339.083	0.13	0.03	0.13	
14108.00	88.950	336.750	6506.32	7156.68	6686.61	-2559.51	1678212.70	14231353.72	39°11'26.0683"N	80°51'59.7740"W	7159.74	339.054	0.83	-0.76	-0.35	
14202.00	89.850	337.230	6507.31	7250.67	6773.13	-2596.25	1678175.97	14231440.20	39°11'26.9239"N	80°52'0.2390"W	7253.67	339.027	1.09	0.96	0.51	
14297.00	89.600	337.080	6507.76	7345.67	6860.67	-2633.13	1678139.10	14231527.71	39°11'27.7897"N	80°52'0.7058"W	7348.62	339.003	0.31	-0.26	-0.16	
14391.00	89.290	336.490	6508.68	7439.66	6947.06	-2670.18	1678102.07	14231614.06	39°11'28.6441"N	80°52'1.1747"W	7442.55	338.975	0.71	-0.33	-0.63	
14486.00	89.690	337.500	6509.52	7534.65	7034.50	-2707.31	1678064.96	14231701.46	39°11'29.5089"N	80°52'1.6446"W	7537.48	338.950	1.14	0.42	1.06	
14580.00	89.320	337.370	6510.33	7628.68	7121.30	-2743.38	1678028.90	14231788.23	39°11'30.3673"N	80°52'2.1011"W	7631.45	338.932	0.42	-0.39	-0.14	
14675.00	89.540	337.240	6511.28	7723.65	7208.94	-2780.03	1677992.26	14231875.83	39°11'31.2341"N	80°52'2.5650"W	7726.41	338.912	0.27	0.23	-0.14	
14769.00	89.510	337.140	6512.06	7817.64	7296.58	-2816.47	1677955.84	14231962.44	39°11'32.0910"N	80°52'3.0262"W	7820.36	338.891	0.11	-0.03	-0.11	
14863.00	89.630	337.190	6512.76	7911.64	7382.21	-2852.95	1677919.37	14232049.04	39°11'32.9479"N	80°52'3.4879"W	7914.32	338.870	0.14	0.13	0.05	
14957.00	89.510	337.140	6513.47	8005.64	7468.84	-2889.43	1677882.91	14232135.64	39°11'33.8045"N	80°52'3.9496"W	8008.27	338.850	0.14	-0.13	-0.05	
15051.00	89.630	337.400	6514.17	8099.63	7555.54	-2925.75	1677846.61	14232222.30	39°11'34.6620"N	80°52'4.8785"W	8102.23	338.832	0.30	0.13	0.28	
15146.00	89.200	336.660	6515.14	8194.62	7643.00	-2962.82	1677809.55	14232309.73	39°11'35.5270"N	80°52'4.8785"W	8197.18	338.811	0.90	-0.45	-0.78	
15240.00	89.380	336.400	6516.31	8288.61	7729.22	-3000.25	1677772.13	14232396.91	39°11'36.3797"N	80°52'5.3524"W	8291.10	338.785	0.34	0.19	-0.28	
15334.00	89.510	337.050	6517.22	8382.60	7815.57	-3037.39	1677735.00	14232482.22	39°11'37.2336"N	80°52'5.8226"W	8385.04	338.762	0.71	0.14	0.69	
15429.00	89.570	336.930	6517.98	8477.59	7903.00	-3074.53	1677697.88	14232569.62	39°11'38.0984"N	80°52'6.2926"W	8479.99	338.742	0.14	0.06	-0.13	
15523.00	89.450	337.170	6518.79	8571.59	7989.56	-3111.18	1677661.25	14232656.14	39°11'38.9544"N	80°52'6.7585"W	8573.94	338.724	0.29	-0.13	0.26	

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# Actual Wellpath Report

Twig Unit 1H AWP Proj: 20643  
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06/14/2024

REFERENCE WELLPATH IDENTIFICATION		Well	Twig Unit 1H
Operator	ANTERO RESOURCES CORPORATION	API	47-085-10498-0000
Field	Ritcheie	Wellbore	Twig Unit 1H AWB
Facility	Cashew Pad		
Slot	Slot 1		

WELLPATH DATA (235 stations)																
MID (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
15618.00	89.570	337.230	6519.60	8666.58	8077.13	-3147.99	1677624.45	14232743.68	39°1'39.8205"N	80°52'7.2225"W	8668.91	338.707	0.14	0.13	0.06	
15712.00	89.750	337.840	6520.16	8760.58	8164.00	-3183.91	1677588.55	14232830.51	39°1'40.6796"N	80°52'7.6771"W	8762.89	338.695	0.68	0.19	0.65	
15806.00	90.090	337.930	6520.29	8854.58	8251.08	-3219.30	1677553.17	14232917.56	39°1'41.5408"N	80°52'8.1249"W	8856.88	338.686	0.37	0.36	0.10	
15900.00	89.690	336.270	6520.47	8948.57	8337.67	-3255.87	1677516.61	14233004.12	39°1'42.3972"N	80°52'8.5879"W	8950.84	338.689	1.82	-0.43	-1.77	
15994.00	90.060	337.020	6520.67	9042.56	8423.97	-3293.14	1677479.36	14233090.38	39°1'43.2507"N	80°52'9.0597"W	9044.78	338.648	0.89	0.39	0.80	
16089.00	89.880	336.370	6520.72	9137.55	8511.22	-3330.72	1677441.79	14233177.59	39°1'44.1136"N	80°52'9.5354"W	9139.12	338.628	0.71	-0.19	-0.68	
16184.00	90.280	337.350	6520.59	9232.55	8598.57	-3368.05	1677404.47	14233264.91	39°1'44.9751"N	80°52'10.0080"W	9234.68	338.610	1.11	0.42	1.03	
16278.00	90.090	336.970	6520.29	9326.55	8686.20	-3404.54	1677368.00	14233351.51	39°1'45.8342"N	80°52'10.4699"W	9328.65	338.595	0.45	-0.20	-0.40	
16372.00	90.060	337.220	6520.16	9420.55	8771.79	-3441.13	1677331.43	14233438.06	39°1'46.6906"N	80°52'10.9330"W	9422.61	338.560	0.27	-0.03	0.27	
16466.00	90.060	336.960	6520.06	9514.54	8856.37	-3477.72	1677294.85	14233524.61	39°1'47.5469"N	80°52'11.3962"W	9516.58	338.565	0.28	0.00	-0.28	
16560.00	90.180	337.700	6519.87	9608.54	8945.11	-3513.95	1677258.64	14233611.31	39°1'48.4047"N	80°52'11.8548"W	9610.56	338.541	0.80	0.13	0.79	
16655.00	90.250	336.780	6519.51	9703.54	9032.71	-3550.70	1677221.90	14233698.88	39°1'49.2711"N	80°52'12.3200"W	9705.53	338.526	0.97	-0.07	-0.97	
16749.00	90.120	337.350	6519.21	9797.54	9119.28	-3587.33	1677185.29	14233785.41	39°1'50.1272"N	80°52'12.7837"W	9799.50	338.541	0.62	-0.14	-0.61	
16844.00	90.060	337.620	6519.06	9892.54	9207.04	-3623.71	1677148.92	14233873.14	39°1'50.9951"N	80°52'13.2442"W	9894.49	338.516	0.29	-0.06	-0.28	
16938.00	90.030	337.400	6518.99	9986.54	9293.89	-3659.66	1677112.98	14233959.95	39°1'51.8541"N	80°52'13.6993"W	9988.47	338.507	0.24	-0.03	-0.23	
17032.00	90.250	337.040	6518.76	10080.54	9380.56	-3696.06	1677076.60	14234046.58	39°1'52.7112"N	80°52'14.1600"W	10082.45	338.495	0.45	0.23	-0.38	
17127.00	90.150	338.260	6518.42	10175.53	9468.42	-3732.18	1677040.49	14234134.41	39°1'53.5801"N	80°52'14.6173"W	10177.43	338.487	1.29	-0.11	-1.28	
17221.00	90.180	338.060	6518.15	10269.53	9556.67	-3767.15	1677005.53	14234221.63	39°1'54.4430"N	80°52'15.0599"W	10271.43	338.484	0.22	0.03	-0.21	
17315.00	89.780	338.280	6518.19	10363.52	9642.93	-3802.11	1676970.59	14234308.85	39°1'55.3059"N	80°52'15.5023"W	10365.43	338.481	0.49	-0.43	0.23	
17409.00	90.090	338.240	6518.29	10457.50	9730.25	-3836.93	1676935.79	14234396.13	39°1'56.1694"N	80°52'16.9430"W	10459.43	338.479	0.33	0.33	-0.04	
17504.00	90.060	338.270	6518.17	10552.49	9818.49	-3872.12	1676900.61	14234484.34	39°1'57.0421"N	80°52'16.3884"W	10554.43	338.477	0.04	-0.03	0.03	
17598.00	90.060	338.270	6518.07	10646.48	9905.81	-3906.92	1676865.82	14234571.62	39°1'57.9056"N	80°52'16.8289"W	10648.43	338.475	0.00	0.00	0.00	
17692.00	90.060	338.010	6517.97	10740.47	9993.05	-3941.92	1676830.84	14234658.83	39°1'58.7684"N	80°52'17.2719"W	10742.43	338.472	0.28	0.00	-0.28	
17787.00	90.030	338.300	6517.90	10835.47	10081.22	-3977.27	1676795.50	14234746.97	39°1'59.6404"N	80°52'17.7194"W	10837.42	338.470	0.31	-0.03	0.31	
17881.00	90.120	338.010	6517.77	10929.46	10168.47	-4012.25	1676760.54	14234834.19	39°1'20.5033"N	80°52'18.1621"W	10931.42	338.467	0.32	0.10	-0.31	
17975.00	89.970	338.000	6517.70	11023.45	10255.63	-4047.45	1676725.35	14234921.31	39°1'21.3653"N	80°52'18.6077"W	11025.42	338.463	0.16	-0.16	-0.01	
18070.00	90.090	338.070	6517.65	11118.44	10343.74	-4082.99	1676689.83	14235009.38	39°1'22.2266"N	80°52'19.0575"W	11120.42	338.459	0.13	0.13	0.07	
18164.00	89.970	338.080	6517.60	11212.44	10430.94	-4118.09	1676654.74	14235096.54	39°1'23.0898"N	80°52'19.5018"W	11214.42	338.456	0.13	-0.13	0.01	
18258.00	89.970	337.930	6517.65	11306.43	10518.10	-4153.29	1676619.55	14235183.67	39°1'23.9609"N	80°52'19.9474"W	11308.41	338.452	0.16	0.00	-0.16	
18353.00	89.880	337.470	6517.77	11401.43	10605.99	-4189.34	1676583.52	14235271.53	39°1'24.8301"N	80°52'20.4037"W	11403.40	338.446	0.49	-0.09	-0.48	

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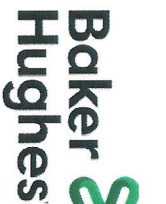
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# Actual Wellpath Report

Twig Unit 1H AWP Proj: 20643  
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06/14/2024

REFERENCE WELLPATH IDENTIFICATION		Well	Twig Unit 1H
Operator	ANTERO RESOURCES CORPORATION	API	47-085-10498-0000
Field	Ritchie	Wellbore	Twig Unit 1H AWP
Facility	Cashew Pad		
Slot	Slot 1		

WELLPATH DATA (235 stations) f = interpolated, t = extrapolated station																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (ft/100ft)	Build Rate (ft/100ft)	Turn Rate (ft/100ft)	Comments
18447.00	89.910	337.390	6517.95	11496.43	10692.79	-4225.42	1676547.45	14235358.29	39°12'25.6886"N	80°52'20.8605"W	11497.39	338.438	0.09	0.03	-0.09	
18541.00	90.030	337.300	6516.00	11589.43	10779.54	-4261.63	1676511.26	14235445.01	39°12'26.5465"N	80°52'21.3188"W	11591.37	338.429	0.16	0.13	-0.10	
18636.00	90.120	338.390	6517.87	11684.43	10867.52	-4297.45	1676475.45	14235532.95	39°12'27.4166"N	80°52'21.7723"W	11686.37	338.424	1.15	0.09	0.11	
18731.00	90.220	337.910	6517.59	11779.42	10955.70	-4332.81	1676440.11	14235621.09	39°12'28.2886"N	80°52'22.2199"W	11781.36	338.422	0.52	0.11	-0.51	
18825.00	90.090	337.970	6517.34	11873.41	11042.82	-4368.11	1676404.82	14235708.18	39°12'29.1501"N	80°52'22.6668"W	11875.36	338.418	0.15	-0.14	0.06	
18920.00	90.180	337.730	6517.11	11968.41	11130.80	-4403.93	1676369.01	14235796.13	39°12'30.0203"N	80°52'23.1202"W	11970.36	338.414	0.27	0.09	-0.25	
19014.00	90.550	338.280	6516.51	12062.40	11217.96	-4439.13	1676333.82	14235883.25	39°12'30.8822"N	80°52'23.5655"W	12064.35	338.410	0.71	0.39	0.59	
19108.00	90.000	337.840	6516.06	12156.39	11305.15	-4474.26	1676298.72	14235970.41	39°12'31.7445"N	80°52'24.0105"W	12158.35	338.408	0.75	-0.59	-0.47	
19202.00	90.180	338.010	6515.91	12250.39	11392.26	-4509.58	1676263.40	14236057.48	39°12'32.6059"N	80°52'24.4517"W	12252.34	338.404	0.26	0.19	0.18	
19297.00	90.220	338.290	6515.58	12345.38	11480.44	-4544.94	1676228.06	14236145.62	39°12'33.4779"N	80°52'24.9052"W	12347.34	338.402	0.30	0.04	0.29	
19391.00	90.030	337.210	6515.38	12439.37	11567.43	-4580.53	1676192.48	14236232.59	39°12'34.3383"N	80°52'25.3558"W	12441.33	338.397	1.17	-0.20	-1.15	
19485.00	90.370	337.510	6515.05	12533.37	11654.19	-4616.72	1676156.31	14236319.31	39°12'35.1963"N	80°52'25.8139"W	12535.32	338.389	0.48	0.36	0.32	
19579.00	90.340	338.170	6514.47	12627.37	11741.24	-4652.17	1676120.87	14236406.33	39°12'36.0572"N	80°52'26.2628"W	12629.31	338.385	0.70	-0.03	0.70	
19673.00	90.060	337.800	6514.14	12721.36	11828.39	-4687.41	1676085.65	14236493.44	39°12'36.9190"N	80°52'26.7089"W	12723.31	338.382	0.49	-0.30	-0.39	
19767.00	90.370	338.520	6513.79	12815.35	11915.64	-4722.37	1676050.69	14236580.65	39°12'37.7819"N	80°52'27.1515"W	12817.31	338.381	0.83	0.33	0.77	
19862.00	90.280	337.120	6513.25	12910.34	12003.61	-4758.24	1676014.85	14236668.59	39°12'38.6518"N	80°52'27.6055"W	12912.30	338.377	1.48	-0.09	-1.47	
19956.00	90.250	337.840	6512.81	13004.34	12090.44	-4794.24	1675978.86	14236755.38	39°12'39.5106"N	80°52'28.0614"W	13006.29	338.370	0.77	-0.03	0.77	
20051.00	90.400	338.200	6512.27	13099.34	12178.53	-4829.80	1675943.32	14236843.44	39°12'40.3817"N	80°52'28.5115"W	13101.28	338.368	0.41	0.16	0.38	
20145.00	90.370	337.780	6511.64	13193.33	12265.68	-4865.02	1675908.10	14236930.55	39°12'41.2436"N	80°52'28.9575"W	13195.28	338.365	0.45	-0.03	-0.45	
20239.00	90.520	338.340	6510.91	13287.32	12352.87	-4900.14	1675873.00	14237017.71	39°12'42.1058"N	80°52'29.4021"W	13289.27	338.363	0.62	0.16	0.60	
20334.00	90.490	338.050	6510.07	13382.30	12441.07	-4935.43	1675837.72	14237105.87	39°12'42.9781"N	80°52'29.8488"W	13384.27	338.362	0.31	-0.03	-0.31	
20428.00	91.010	338.850	6508.84	13476.28	12528.49	-4969.95	1675803.21	14237193.26	39°12'43.8426"N	80°52'30.2859"W	13478.26	338.362	1.01	0.55	0.85	
20522.00	90.340	337.900	6507.74	13570.26	12615.86	-5004.59	1675768.59	14237280.60	39°12'44.7067"N	80°52'30.7244"W	13572.25	338.362	1.24	-0.71	-1.01	
20617.00	90.460	337.980	6507.07	13665.25	12703.91	-5040.27	1675732.92	14237368.60	39°12'45.5774"N	80°52'31.1761"W	13667.25	338.359	0.15	0.13	0.08	
20643.00	90.460	337.980	6506.86	13691.25	12728.01	-5050.02	1675723.18	14237392.70	39°12'45.8157"N	80°52'31.2995"W	13693.24	338.359	0.00	0.00	0.00	Projected MD at T.D. 20643

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# Actual Wellpath Report

Twig Unit 1H AWP Proj: 20643'  
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06/14/2024

REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Well	Twig Unit 1H
Field	Ritche	API	47-085-10498-0000
Facility	Cashew Pad	Wellbore	Twig Unit 1H AWB
Slot	Slot 1		

HOLE & CASING SECTIONS - Ref Wellbore: Twig Unit 1H AWB Ref Wellpath: Twig Unit 1H AWP Proj: 20643'									
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	130.00	100.00	30.00	130.00	0.00	0.00	0.63	-0.40
17.5in Open Hole	130.00	383.00	253.00	130.00	382.99	0.63	-0.40	1.25	1.33
13.375in Casing Surface	30.00	363.00	333.00	30.00	362.99	0.00	0.00	1.25	1.09
12.25in Open Hole	383.00	2827.00	2474.00	382.99	2845.17	1.25	1.33	-138.91	73.39
9.625in Casing Intermediate	30.00	2827.00	2797.00	30.00	2815.79	0.00	0.00	-134.00	69.87
8.75in Open Hole	2827.00	6401.00	3544.00	2845.17	6244.08	-138.91	73.39	-392.88	370.63
8.5in Open Hole	6401.00	20643.00	14242.00	6244.08	6506.96	-392.88	370.63	12728.01	-5050.02
5.5in Casing Production	30.00	20623.00	20593.00	30.00	6507.02	0.00	0.00	12709.47	-5042.52

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# Actual Wellpath Report

Twig Unit 1H AWP Proj: 20643  
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06/14/2024

REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Well	Twig Unit 1H
Field	Ritche	API	47-085-10498-0000
Facility	Cashew Pad	Wellbore	Twig Unit 1H AWP
Slot	Slot 1		

TARGETS									
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape	
Twig Unit 1H POE Rev-3	6393.00	-107.15	285.48	1681056.55	14224562.67	39°10'18.8765"N	80°51'23.7773"W	point	
Twig Unit 1H BHL Rev-3	6415.00	12884.66	-5127.82	1675645.41	14237549.28	39°12'27.3650"N	80°52'32.2851"W	point	
Twig Unit 1H BHL Rev-4	6415.00	12758.18	-5075.12	1675698.09	14237422.85	39°12'26.1142"N	80°52'31.6178"W	point	
Twig Unit 1H LP Rev-3	6415.00	55.45	217.73	1680988.83	14224725.20	39°10'20.4847"N	80°51'24.6342"W	point	
Twig Unit 1H 50' L/R Hard Line R-2	7000.00	6325.51	-2394.82	1678377.32	14230992.76	39°11'22.4968"N	80°51'57.6891"W	rectangle	2D Rectangle 13937.5 x 100.

WELLPATH COMPOSITION - Ref Wellbore: Twig Unit 1H AWP Ref Wellpath: Twig Unit 1H AWP Proj: 20643									
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	Survey Date				
30.00	262.00	Gyrodala 2015 - GC+W/R+DPIPE	01 Gyrodala MS Gyro <17-1/2"> (50'-262')	Twig Unit 1H AWP	9/11/2023				
262.00	2783.00	BH NavITrak (2019) (Axial Corr+HRGM)	02 APS EM <12-1/4"> (262')(416'-2783')	Twig Unit 1H AWP	9/11/2023				
2783.00	6326.00	BH NavITrak (2019) (Axial Corr+HRGM)	03 APS EM <8-3/4"> (2783')(2831'-6326')	Twig Unit 1H AWP	10/25/2023				
6326.00	20643.00	BH AutoTrak Curve/Xpress (2019) (HRGM, Short spacing)	04 BH AT Curve <8-1/2"> (6326')(6383'-20617')	Twig Unit 1H AWP	10/25/2023				

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# Actual Wellpath Report

Twig Unit 1H AWP Proj: 20643'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Well	Twig Unit 1H
Field	Richie	API	47-085-10498-0000
Facility	Cashew Pad	Wellbore	Twig Unit 1H AWB
Slot	Slot 1		

COMMENTS
<p>Wellpath general comments</p> <p>API: 47-085-10498-0000</p> <p>BH Job #: 111948999</p> <p>Rig: H&amp;P 519</p> <p>Duration: 10/26/2023-10/30/2023</p> <p>Gyrodala MS Gyro &lt;17'-1/2"&gt; (50'-262')</p> <p>APS EM &lt;12'-1/4"&gt; (262')(416'-2783')</p> <p>APS EM &lt;8'-3/4"&gt; (2783')(2831'-6326')</p> <p>BH AT Curve &lt;8'-1/2"&gt; (6326')(6383'-20617')</p> <p>Sycamore: 6134' MD</p> <p>Middlesex: 6363' MD</p> <p>Burkett: 6553' MD</p> <p>Tully: 6655' MD</p> <p>Marcellus POE: 6733' MD</p> <p>Projected MD at TD: 20643'</p>

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