



# Actual Wellpath Report

Karen Unit 3H AWP Proj: 19270'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #07
Area	Ritchie County, WV	Well	Karen Unit 3H
Field	Ritchie	Wellbore	Karen Unit 3H AWB
Facility	Ireland North 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	2/12/2019 at 11:23:53 AM
Convergence at slot	0.06° East	Database/Source file	WA_MPL_EasternUS_Defn/Karen_Unit_3H_AWP_Proj_19270_.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-8.07	18.91	1668955.90	14224842.06	39°10'21.800"N	80°53'57.480"W
Facility Reference Pt			1668936.99	14224850.13	39°10'21.880"N	80°53'57.720"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	975.50ft
Vertical Reference Pt	H&P 519 (RKB)	H&P 519 (RKB) to Ground Level at Slot (Slot #07)	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	161.22°

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Area	Ritchie County, WV	Well	Karen Unit 3H
Field	Ritchie	Wellbore	Karen Unit 3H AWB
Facility	Ireland North Pad		

WELLPATH DATA (239 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	79.940	0.00	0.00	0.00	0.00	1668955.90	14224842.06	39°10'21.800"N	80°53'57.480"W	0.00	0.000	0.00	0.00	0.00	
30.00	0.000	79.940	30.00	0.00	0.00	0.00	1668955.90	14224842.06	39°10'21.800"N	80°53'57.480"W	0.00	0.000	0.00	0.00	0.00	
115.00	0.040	79.940	115.00	0.00	0.01	0.03	1668955.93	14224842.06	39°10'21.800"N	80°53'57.480"W	0.03	79.940	0.05	0.05	94.05	Gyrodatta MS Gyro <17-1/2">(100'-453')
140.00	0.090	11.930	140.00	-0.01	0.03	0.04	1668955.94	14224842.08	39°10'21.800"N	80°53'57.479"W	0.05	58.239	0.33	0.20	-272.04	
165.00	0.040	105.030	165.00	-0.02	0.04	0.05	1668955.95	14224842.10	39°10'21.800"N	80°53'57.479"W	0.07	51.739	0.40	-0.20	372.40	
190.00	0.070	76.070	190.00	-0.02	0.04	0.08	1668955.97	14224842.10	39°10'21.800"N	80°53'57.479"W	0.09	60.292	0.16	0.12	-115.84	
215.00	0.120	54.650	215.00	-0.02	0.06	0.11	1668956.01	14224842.12	39°10'21.801"N	80°53'57.479"W	0.13	60.987	0.24	0.20	-85.68	
240.00	0.140	73.490	240.00	-0.03	0.09	0.16	1668956.06	14224842.14	39°10'21.801"N	80°53'57.478"W	0.19	62.134	0.19	0.08	75.36	
265.00	0.030	179.120	265.00	-0.02	0.09	0.19	1668956.09	14224842.15	39°10'21.801"N	80°53'57.478"W	0.21	65.318	0.60	-0.44	422.52	
290.00	0.090	85.910	290.00	-0.01	0.08	0.21	1668956.11	14224842.14	39°10'21.801"N	80°53'57.477"W	0.23	68.540	0.39	0.24	-372.84	
315.00	0.160	134.850	315.00	0.03	0.06	0.26	1668956.15	14224842.12	39°10'21.801"N	80°53'57.477"W	0.26	76.751	0.49	0.28	195.76	
340.00	0.090	32.290	340.00	0.04	0.05	0.29	1668956.19	14224842.11	39°10'21.801"N	80°53'57.476"W	0.30	79.808	0.80	-0.28	-410.24	
365.00	0.060	142.130	365.00	0.04	0.06	0.31	1668956.21	14224842.12	39°10'21.801"N	80°53'57.476"W	0.32	79.287	0.50	-0.12	439.36	
390.00	0.170	136.440	390.00	0.09	0.02	0.35	1668956.24	14224842.08	39°10'21.800"N	80°53'57.476"W	0.35	86.396	0.44	0.44	-22.76	
415.00	0.070	131.260	415.00	0.14	-0.02	0.38	1668956.28	14224842.04	39°10'21.800"N	80°53'57.475"W	0.38	92.278	0.40	-0.40	-20.72	
440.00	0.090	189.890	440.00	0.17	-0.04	0.39	1668956.29	14224842.01	39°10'21.800"N	80°53'57.475"W	0.39	96.522	0.32	0.08	234.52	
465.00	0.120	172.730	465.00	0.21	-0.09	0.39	1668956.29	14224841.97	39°10'21.799"N	80°53'57.475"W	0.40	102.977	0.17	0.12	-68.64	
468.00	0.130	175.790	468.00	0.22	-0.10	0.39	1668956.29	14224841.96	39°10'21.799"N	80°53'57.475"W	0.40	103.859	0.40	0.33	102.00	
572.00	0.130	162.770	572.00	0.45	-0.33	0.43	1668956.33	14224841.73	39°10'21.797"N	80°53'57.474"W	0.54	126.947	0.03	0.00	-12.52	WFT EM <12-1/4">(453')(557'-2561')
663.00	1.290	23.990	662.99	-0.20	0.51	0.88	1668956.78	14224842.57	39°10'21.805"N	80°53'57.469"W	1.02	59.927	1.53	1.27	-152.51	
756.00	2.520	27.740	755.94	-2.37	3.28	2.26	1668958.15	14224845.33	39°10'21.832"N	80°53'57.451"W	3.98	34.583	1.33	1.32	4.03	
848.00	3.130	31.520	847.83	-5.37	7.21	4.51	1668960.41	14224849.26	39°10'21.871"N	80°53'57.423"W	8.50	32.054	0.69	0.66	4.11	
945.00	3.440	25.440	944.67	-9.15	12.09	7.15	1668963.04	14224854.14	39°10'21.919"N	80°53'57.389"W	14.05	30.586	0.48	0.32	-6.27	
1040.00	4.060	15.580	1039.46	-13.97	17.91	9.28	1668965.17	14224859.96	39°10'21.977"N	80°53'57.362"W	20.17	27.384	0.94	0.65	-10.38	
1135.00	3.380	9.390	1134.26	-19.21	23.91	10.64	1668966.53	14224865.96	39°10'22.036"N	80°53'57.345"W	26.17	23.982	0.83	-0.72	-6.52	
1230.00	2.300	8.830	1229.15	-23.37	28.56	11.38	1668967.27	14224870.60	39°10'22.082"N	80°53'57.335"W	30.74	21.725	1.14	-1.14	-0.80	
1325.00	1.360	356.140	1324.10	-26.16	31.57	11.59	1668967.48	14224873.61	39°10'22.112"N	80°53'57.332"W	33.63	20.160	1.07	-0.99	-13.15	
1419.00	1.240	324.300	1418.07	-28.21	33.51	10.92	1668966.81	14224875.55	39°10'22.131"N	80°53'57.341"W	35.24	18.052	0.77	-0.13	-33.87	
1515.00	0.690	298.330	1514.06	-29.62	34.62	9.81	1668965.70	14224876.67	39°10'22.142"N	80°53'57.355"W	35.99	15.812	0.72	-0.57	-27.05	
1610.00	1.180	259.540	1609.05	-30.18	34.72	8.34	1668964.23	14224876.76	39°10'22.143"N	80°53'57.374"W	35.70	13.508	0.81	0.52	-40.83	

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Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #07
Area	Ritchie County, WV	Well	Karen Unit 3H
Field	Ritchie	Wellbore	Karen Unit 3H AWP
Facility	Ireland North Pad		

## WELLPATH DATA (239 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
1705.00	1.200	261.160	1704.03	-30.50	34.39	6.40	1668962.29	14224876.43	39°10'22.140"N	80°53'57.398"W	34.98	10.535	0.04	0.02	1.71	
1800.00	1.540	263.180	1799.00	-30.93	34.08	4.14	1668960.04	14224876.12	39°10'22.137"N	80°53'57.427"W	34.33	6.933	0.36	0.36	2.13	
1895.00	1.940	269.270	1893.96	-31.70	33.91	1.27	1668957.16	14224875.95	39°10'22.135"N	80°53'57.463"W	33.93	2.143	0.46	0.42	6.41	
1990.00	1.590	275.590	1988.91	-32.74	34.02	-1.65	1668954.25	14224876.06	39°10'22.136"N	80°53'57.500"W	34.06	357.222	0.42	-0.37	6.65	
2085.00	0.540	243.650	2083.89	-33.22	33.95	-3.36	1668952.53	14224875.99	39°10'22.136"N	80°53'57.522"W	34.11	354.342	1.23	-1.11	33.62	
2180.00	0.060	193.270	2178.89	-33.12	33.70	-3.78	1668952.12	14224875.74	39°10'22.133"N	80°53'57.527"W	33.91	353.607	0.53	-0.51	-53.03	
2275.00	1.030	73.110	2273.89	-33.05	33.90	-2.97	1668952.93	14224875.94	39°10'22.135"N	80°53'57.517"W	34.03	354.992	1.12	1.02	-126.48	
2369.00	1.440	84.310	2367.87	-32.76	34.26	-0.99	1668954.91	14224876.31	39°10'22.139"N	80°53'57.492"W	34.28	358.351	0.50	0.44	11.91	
2464.00	1.290	102.680	2462.84	-31.93	34.15	1.24	1668957.14	14224876.19	39°10'22.137"N	80°53'57.464"W	34.17	2.087	0.48	-0.16	19.34	
2576.00	0.790	4.610	2574.83	-31.98	34.64	2.54	1668958.43	14224876.68	39°10'22.142"N	80°53'57.447"W	34.73	4.188	1.43	-0.45	-87.56	
2699.00	1.840	6.350	2697.79	-34.54	37.45	2.82	1668958.72	14224879.49	39°10'22.170"N	80°53'57.444"W	37.55	4.311	0.85	0.85	1.41	WFT EM <8-3/4">(2561')(2684'-6072')
2794.00	2.670	315.380	2792.73	-37.92	40.54	1.44	1668957.33	14224882.58	39°10'22.201"N	80°53'57.461"W	40.56	2.031	2.19	0.87	-53.65	
2889.00	5.070	286.640	2887.51	-42.34	43.32	-4.14	1668951.76	14224885.35	39°10'22.228"N	80°53'57.532"W	43.51	354.540	3.17	2.53	-30.25	
2984.00	5.240	281.120	2982.13	-46.94	45.35	-12.42	1668943.48	14224887.39	39°10'22.248"N	80°53'57.637"W	47.02	344.687	0.55	0.18	-5.81	
3079.00	6.510	278.480	3076.63	-51.57	46.99	-22.00	1668933.90	14224889.02	39°10'22.265"N	80°53'57.759"W	51.88	334.908	1.37	1.34	-2.78	
3180.00	7.700	282.480	3176.85	-57.70	49.29	-34.27	1668921.64	14224891.33	39°10'22.288"N	80°53'57.914"W	60.04	325.190	1.28	1.18	3.96	
3274.00	9.300	290.430	3269.82	-65.77	53.30	-47.54	1668908.38	14224895.34	39°10'22.327"N	80°53'58.083"W	71.42	318.272	2.11	1.70	8.46	
3369.00	11.780	294.810	3363.21	-77.31	60.05	-63.54	1668892.38	14224902.09	39°10'22.394"N	80°53'58.286"W	87.43	313.386	2.74	2.61	4.61	
3464.00	12.840	297.360	3456.03	-91.61	68.98	-81.72	1668874.21	14224911.00	39°10'22.483"N	80°53'58.517"W	106.93	310.167	1.25	1.12	2.68	
3559.00	14.890	296.870	3548.25	-107.95	79.34	-101.98	1668853.96	14224921.37	39°10'22.585"N	80°53'58.774"W	129.21	307.884	2.16	2.16	-0.52	
3654.00	16.600	296.500	3639.68	-126.32	90.92	-125.02	1668830.93	14224932.94	39°10'22.700"N	80°53'59.066"W	154.58	306.026	1.80	1.80	-0.39	
3749.00	18.320	294.480	3730.30	-146.20	103.16	-150.75	1668805.21	14224945.17	39°10'22.821"N	80°53'59.393"W	182.67	304.384	1.92	1.81	-2.13	
3843.00	19.400	287.040	3819.27	-165.46	113.86	-179.13	1668776.84	14224955.87	39°10'22.927"N	80°53'59.753"W	212.25	302.441	2.80	1.15	-7.91	
3938.00	19.930	279.870	3908.74	-182.46	121.26	-210.17	1668745.81	14224963.27	39°10'23.001"N	80°54'00.147"W	242.64	299.983	2.60	0.56	-7.55	
4033.00	18.270	274.790	3998.52	-196.18	125.28	-240.96	1668715.03	14224967.28	39°10'23.041"N	80°54'00.538"W	271.58	297.470	2.47	-1.75	-5.35	
4128.00	18.530	276.450	4088.66	-208.57	128.22	-270.80	1668685.20	14224970.22	39°10'23.070"N	80°54'00.917"W	299.62	295.336	0.62	0.27	1.75	
4222.00	19.110	279.300	4177.63	-222.18	132.38	-300.83	1668655.19	14224974.38	39°10'23.112"N	80°54'01.298"W	328.67	293.752	1.16	0.62	3.03	
4317.00	19.880	278.470	4267.19	-236.90	137.27	-332.15	1668623.88	14224979.27	39°10'23.160"N	80°54'01.696"W	359.40	292.454	0.86	0.81	-0.87	
4412.00	19.920	277.300	4356.52	-251.41	141.71	-364.18	1668591.86	14224983.71	39°10'23.205"N	80°54'02.102"W	390.78	291.262	0.42	0.04	-1.23	
4507.00	20.300	279.100	4445.72	-266.23	146.37	-396.51	1668559.55	14224988.37	39°10'23.251"N	80°54'02.513"W	422.66	290.262	0.76	0.40	1.89	

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Area	Ritchie County, WV	Well	Karen Unit 3H
Field	Ritchie	Wellbore	Karen Unit 3H AWB
Facility	Ireland North Pad		

WELLPATH DATA (239 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
4601.00	20.000	280.090	4533.97	-281.62	151.77	-428.43	1668527.63	14224993.76	39°10'23.305"N	80°54'02.918"W	454.52	289.506	0.48	-0.32	1.05	
4696.00	19.880	279.800	4623.28	-297.19	157.36	-460.35	1668495.74	14224999.36	39°10'23.360"N	80°54'03.323"W	486.50	288.872	0.16	-0.13	-0.31	
4791.00	19.840	281.410	4712.63	-313.02	163.30	-492.07	1668464.03	14225005.29	39°10'23.419"N	80°54'03.726"W	518.46	288.359	0.58	-0.04	1.69	
4886.00	20.420	281.790	4801.82	-329.56	169.88	-524.09	1668432.02	14225011.86	39°10'23.485"N	80°54'04.132"W	550.94	287.959	0.63	0.61	0.40	
4980.00	19.730	280.430	4890.11	-345.64	176.10	-555.75	1668400.37	14225018.09	39°10'23.547"N	80°54'04.534"W	582.98	287.582	0.89	-0.73	-1.45	
5075.00	18.040	278.330	4980.00	-360.17	181.13	-586.08	1668370.05	14225023.12	39°10'23.597"N	80°54'04.919"W	613.43	287.174	1.92	-1.78	-2.21	
5170.00	18.500	278.620	5070.21	-373.81	185.52	-615.53	1668340.61	14225027.51	39°10'23.640"N	80°54'05.293"W	642.88	286.773	0.49	0.48	0.31	
5265.00	19.220	280.240	5160.11	-388.33	190.56	-645.82	1668310.33	14225032.54	39°10'23.691"N	80°54'05.678"W	673.35	286.440	0.94	0.76	1.71	
5360.00	18.060	281.890	5250.12	-403.43	196.38	-675.62	1668280.55	14225038.35	39°10'23.748"N	80°54'06.056"W	703.58	286.207	1.34	-1.22	1.74	
5455.00	18.000	282.010	5340.46	-418.45	202.47	-704.39	1668251.79	14225044.44	39°10'23.809"N	80°54'06.421"W	732.91	286.036	0.07	-0.06	0.13	
5549.00	18.140	282.950	5429.82	-433.58	208.77	-732.86	1668223.34	14225050.74	39°10'23.871"N	80°54'06.782"W	762.01	285.901	0.34	0.15	1.00	
5644.00	18.110	281.180	5520.11	-448.74	214.94	-761.75	1668194.45	14225056.91	39°10'23.933"N	80°54'07.149"W	791.50	285.757	0.58	-0.03	-1.86	
5676.00	18.510	273.790	5550.49	-453.17	216.24	-771.70	1668184.50	14225058.21	39°10'23.946"N	80°54'07.276"W	801.43	285.654	7.36	1.25	-23.09	
5707.00	19.430	267.110	5579.81	-456.47	216.31	-781.76	1668174.45	14225058.28	39°10'23.946"N	80°54'07.403"W	811.14	285.466	7.60	2.97	-21.55	
5739.00	19.570	260.970	5609.98	-458.84	215.20	-792.37	1668163.84	14225057.17	39°10'23.936"N	80°54'07.538"W	821.08	285.194	6.42	0.44	-19.19	
5770.00	18.680	253.610	5639.27	-459.92	212.98	-802.26	1668153.95	14225054.95	39°10'23.914"N	80°54'07.664"W	830.05	284.868	8.29	-2.87	-23.74	
5802.00	18.390	244.610	5669.62	-459.55	209.37	-811.74	1668144.48	14225051.34	39°10'23.878"N	80°54'07.784"W	838.31	284.463	8.98	-0.91	-28.12	
5834.00	18.440	234.640	5699.99	-457.53	204.28	-820.43	1668135.79	14225046.25	39°10'23.828"N	80°54'07.895"W	845.48	283.982	9.83	0.16	-31.16	
5865.00	19.140	224.080	5729.34	-453.81	197.79	-827.97	1668128.26	14225039.76	39°10'23.764"N	80°54'07.990"W	851.26	283.435	11.19	2.26	-34.06	
5897.00	19.620	215.310	5759.54	-448.26	189.63	-834.72	1668121.51	14225031.61	39°10'23.683"N	80°54'08.076"W	855.99	282.799	9.21	1.50	-27.41	
5929.00	20.190	208.650	5789.63	-441.38	180.40	-840.48	1668115.75	14225022.39	39°10'23.592"N	80°54'08.149"W	859.62	282.114	7.30	1.78	-20.81	
5960.00	20.980	202.800	5818.65	-433.61	170.59	-845.19	1668111.04	14225012.58	39°10'23.495"N	80°54'08.209"W	862.24	281.411	7.10	2.55	-18.87	
5992.00	22.270	197.750	5848.40	-424.45	159.53	-849.26	1668106.97	14225001.52	39°10'23.386"N	80°54'08.261"W	864.12	280.639	7.07	4.03	-15.78	
6024.00	23.750	195.200	5877.86	-414.23	147.54	-852.80	1668103.44	14224989.54	39°10'23.267"N	80°54'08.306"W	865.47	279.815	5.58	4.62	-7.97	
6055.00	25.710	193.770	5906.01	-403.39	134.98	-856.04	1668100.20	14224976.98	39°10'23.143"N	80°54'08.348"W	866.62	278.961	6.61	6.32	-4.61	
6087.00	27.290	191.590	5934.65	-391.20	121.05	-859.17	1668097.08	14224963.06	39°10'23.006"N	80°54'08.388"W	867.65	278.020	5.80	4.94	-6.81	
6129.00	29.700	188.560	5971.56	-373.65	101.33	-862.65	1668093.59	14224943.34	39°10'22.811"N	80°54'08.432"W	868.58	276.699	6.69	5.74	-7.21	3H AT Curve <8-1/2">(6087')(6129'-19245')
6170.00	31.460	186.430	6006.86	-354.95	80.65	-865.36	1668090.88	14224922.67	39°10'22.606"N	80°54'08.467"W	869.11	275.325	5.04	4.29	-5.20	
6218.00	33.350	182.270	6047.39	-331.30	55.01	-867.29	1668088.96	14224897.05	39°10'22.353"N	80°54'08.492"W	869.03	273.630	6.09	3.94	-8.67	
6265.00	36.300	177.670	6085.97	-305.89	28.19	-867.23	1668089.01	14224870.24	39°10'22.088"N	80°54'08.491"W	867.69	271.862	8.40	6.28	-9.79	

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# Actual Wellpath Report

Karen Unit 3H AWP Proj: 19270'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #07
Area	Ritchie County, WV	Well	Karen Unit 3H
Field	Ritchie	Wellbore	Karen Unit 3H AWB
Facility	Ireland North Pad		

WELLPATH DATA (239 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
6312.00	39.120	174.530	6123.15	-278.11	-0.48	-865.25	1668090.99	14224841.58	39°10'21.805"N	80°54'08.466"W	865.25	269.969	7.26	6.00	-6.68	
6359.00	43.190	172.650	6158.54	-247.90	-31.20	-861.78	1668094.46	14224810.87	39°10'21.501"N	80°54'08.423"W	862.34	267.927	9.05	8.66	-4.00	
6395.00†	46.770	170.676	6184.00	-222.88	-56.37	-858.08	1668098.16	14224785.71	39°10'21.252"N	80°54'08.376"W	859.93	266.241	10.67	9.94	-5.48	Middlesex: 6395' MD
6407.00	47.970	170.070	6192.13	-214.16	-65.07	-856.60	1668099.64	14224777.01	39°10'21.166"N	80°54'08.357"W	859.07	265.656	10.67	10.00	-5.05	
6454.00	52.880	168.660	6222.06	-178.31	-100.66	-849.90	1668106.34	14224741.43	39°10'20.814"N	80°54'08.273"W	855.84	263.245	10.70	10.45	-3.00	
6501.00	57.270	165.110	6248.97	-139.98	-138.17	-841.13	1668115.10	14224703.94	39°10'20.443"N	80°54'08.162"W	852.40	260.672	11.20	9.34	-7.55	
6548.00	61.190	162.170	6273.01	-99.64	-176.90	-829.74	1668126.49	14224665.23	39°10'20.061"N	80°54'08.018"W	848.39	257.965	9.92	8.34	-6.26	
6590.00†	64.917	161.748	6292.04	-62.21	-212.49	-818.14	1668138.08	14224629.65	39°10'19.709"N	80°54'07.871"W	845.29	255.441	8.92	8.87	-1.00	Burkett: 6590' MD
6596.00	65.450	161.690	6294.56	-56.77	-217.66	-816.44	1668139.79	14224624.48	39°10'19.657"N	80°54'07.850"W	844.95	255.072	8.92	8.88	-0.97	
6643.00	69.130	162.780	6312.70	-13.43	-258.94	-803.22	1668153.00	14224583.22	39°10'19.249"N	80°54'07.682"W	843.92	252.132	8.12	7.83	2.32	
6690.00	73.070	163.270	6327.92	31.01	-301.46	-790.24	1668165.97	14224540.71	39°10'18.829"N	80°54'07.518"W	845.79	249.119	8.44	8.38	1.04	Tully: 6690' MD
6737.00	77.050	161.540	6340.04	76.40	-344.74	-776.51	1668179.70	14224497.46	39°10'18.401"N	80°54'07.344"W	849.59	246.061	9.18	8.47	-3.68	
6765.00†	77.142	160.542	6346.29	103.69	-370.55	-767.64	1668188.56	14224471.66	39°10'18.146"N	80°54'07.232"W	852.40	244.233	3.49	0.33	-3.56	Marcellus POE: 6765' MD
6785.00	77.210	159.830	6350.73	123.19	-388.90	-761.03	1668195.17	14224453.32	39°10'17.964"N	80°54'07.148"W	854.64	242.932	3.49	0.34	-3.56	
6832.00	79.540	159.910	6360.20	169.21	-432.12	-745.19	1668211.01	14224410.11	39°10'17.537"N	80°54'06.948"W	861.41	239.892	4.96	4.96	0.17	
6879.00	82.740	160.140	6367.44	215.63	-475.76	-729.33	1668226.86	14224366.49	39°10'17.106"N	80°54'06.747"W	870.78	236.883	6.83	6.81	0.49	
6926.00	86.360	160.380	6371.90	262.41	-519.79	-713.53	1668242.65	14224322.48	39°10'16.670"N	80°54'06.547"W	882.78	233.928	7.72	7.70	0.51	
6974.00	90.280	159.870	6373.31	310.37	-564.90	-697.22	1668258.96	14224277.38	39°10'16.224"N	80°54'06.341"W	897.34	230.985	8.24	8.17	-1.06	
7068.00	90.120	159.150	6372.98	404.32	-652.95	-664.32	1668291.85	14224189.37	39°10'15.353"N	80°54'05.924"W	931.48	225.494	0.78	-0.17	-0.77	
7162.00	89.410	158.960	6373.37	498.25	-740.74	-630.71	1668325.44	14224101.61	39°10'14.485"N	80°54'05.499"W	972.88	220.413	0.78	-0.76	-0.20	
7257.00	88.710	157.610	6374.92	593.11	-828.98	-595.57	1668360.56	14224013.41	39°10'13.613"N	80°54'05.054"W	1020.74	215.695	1.60	-0.74	-1.42	
7351.00	89.480	158.230	6376.41	686.95	-916.08	-560.24	1668395.88	14223926.35	39°10'12.752"N	80°54'04.606"W	1073.81	211.448	1.05	0.82	0.66	
7446.00	89.480	160.820	6377.27	781.89	-1005.06	-527.01	1668429.09	14223837.39	39°10'11.872"N	80°54'04.186"W	1134.86	207.671	2.73	0.00	2.73	
7540.00	89.510	162.020	6378.10	875.89	-1094.16	-497.06	1668459.03	14223748.34	39°10'10.991"N	80°54'03.807"W	1201.77	204.432	1.28	0.03	1.28	
7635.00	89.570	161.510	6378.86	970.88	-1184.39	-467.34	1668488.74	14223658.15	39°10'10.099"N	80°54'03.430"W	1273.25	201.533	0.54	0.06	-0.54	
7729.00	89.630	162.070	6379.52	1064.87	-1273.68	-437.96	1668518.11	14223568.89	39°10'09.216"N	80°54'03.059"W	1346.87	198.976	0.60	0.06	0.60	
7824.00	89.480	162.480	6380.26	1159.85	-1364.16	-409.04	1668547.02	14223478.44	39°10'08.321"N	80°54'02.693"W	1424.17	196.691	0.46	-0.16	0.43	
7918.00	89.260	161.990	6381.29	1253.83	-1453.68	-380.36	1668575.68	14223388.96	39°10'07.436"N	80°54'02.330"W	1502.61	194.663	0.57	-0.23	-0.52	
8013.00	89.510	162.030	6382.31	1348.82	-1544.03	-351.03	1668605.01	14223298.65	39°10'06.543"N	80°54'01.959"W	1583.42	192.808	0.27	0.26	0.04	
8107.00	89.480	161.400	6383.14	1442.81	-1633.28	-321.53	1668634.49	14223209.44	39°10'05.660"N	80°54'01.585"W	1664.62	191.137	0.67	-0.03	-0.67	

Prepared by:  
Oilfield Services and Gas

FOR THE RECORD

WVDE Department of  
Environmental Protection



# Actual Wellpath Report

Karen Unit 3H AWP Proj: 19270'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #07
Area	Ritchie County, WV	Well	Karen Unit 3H
Field	Ritchie	Wellbore	Karen Unit 3H AWB
Facility	Ireland North Pad		

WELLPATH DATA (239 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
8202.00	89.510	161.400	6383.98	1537.80	-1723.31	-291.23	1668664.78	14223119.44	39°10'04.770"N	80°54'01.202"W	1747.75	189.592	0.03	0.03	0.00	
8296.00	89.630	162.470	6384.68	1631.79	-1812.67	-262.09	1668693.91	14223030.11	39°10'03.887"N	80°54'00.833"W	1831.52	188.227	1.15	0.13	1.14	
8391.00	89.780	165.230	6385.17	1726.68	-1903.91	-235.67	1668720.33	14222938.91	39°10'02.984"N	80°54'00.499"W	1918.44	187.056	2.91	0.16	2.91	
8485.00	90.400	167.440	6385.02	1820.30	-1995.25	-213.46	1668742.52	14222847.61	39°10'02.081"N	80°54'00.218"W	2006.63	186.107	2.44	0.66	2.35	
8580.00	90.090	163.990	6384.62	1914.99	-2087.29	-190.02	1668765.95	14222755.60	39°10'01.171"N	80°53'59.922"W	2095.93	185.202	3.65	-0.33	-3.63	
8675.00	90.120	162.040	6384.44	2009.94	-2178.15	-162.27	1668793.69	14222664.78	39°10'00.273"N	80°53'59.571"W	2184.18	184.261	2.05	0.03	-2.05	
8769.00	90.150	161.580	6384.22	2103.94	-2267.45	-132.93	1668823.02	14222575.52	39°09'59.390"N	80°53'59.200"W	2271.34	183.355	0.49	0.03	-0.49	
8863.00	90.060	161.080	6384.05	2197.94	-2356.50	-102.84	1668853.10	14222486.50	39°09'58.510"N	80°53'58.819"W	2358.74	182.499	0.54	-0.10	-0.53	
8958.00	90.090	160.130	6383.92	2292.93	-2446.11	-71.29	1668884.63	14222396.93	39°09'57.624"N	80°53'58.420"W	2447.15	181.669	1.00	0.03	-1.00	
9052.00	89.970	159.980	6383.88	2386.91	-2534.47	-39.23	1668916.69	14222308.60	39°09'56.750"N	80°53'58.014"W	2534.77	180.887	0.20	-0.13	-0.16	
9147.00	90.220	160.610	6383.72	2481.90	-2623.91	-7.19	1668948.71	14222219.20	39°09'55.866"N	80°53'57.608"W	2623.92	180.157	0.71	0.26	0.66	
9241.00	90.060	159.660	6383.49	2575.88	-2712.31	24.75	1668980.63	14222130.83	39°09'54.991"N	80°53'57.204"W	2712.42	179.477	1.02	-0.17	-1.01	
9336.00	89.880	159.210	6383.54	2670.83	-2801.26	58.12	1669013.99	14222041.92	39°09'54.112"N	80°53'56.782"W	2801.86	178.811	0.51	-0.19	-0.47	
9431.00	90.310	159.660	6383.38	2765.79	-2890.20	91.49	1669047.35	14221953.01	39°09'53.232"N	80°53'56.359"W	2891.65	178.187	0.66	0.45	0.47	
9525.00	90.430	159.090	6382.77	2859.74	-2978.18	124.60	1669080.45	14221865.07	39°09'52.363"N	80°53'55.940"W	2980.78	177.604	0.62	0.13	-0.61	
9620.00	90.460	157.900	6382.04	2954.62	-3066.56	159.42	1669115.25	14221776.73	39°09'51.489"N	80°53'55.499"W	3070.70	177.024	1.25	0.03	-1.25	
9715.00	90.220	167.380	6381.47	3049.44	-3154.41	195.56	1669151.38	14221688.91	39°09'50.620"N	80°53'55.042"W	3160.47	176.452	0.60	-0.25	-0.55	
9810.00	90.370	157.470	6380.98	3144.23	-3242.13	232.03	1669187.83	14221601.22	39°09'49.752"N	80°53'54.580"W	3250.43	175.906	0.18	0.16	0.09	
9905.00	90.310	159.390	6380.42	3239.11	-3330.47	266.95	1669222.74	14221512.92	39°09'48.879"N	80°53'54.138"W	3341.16	175.417	2.02	-0.06	2.02	
10000.00	90.180	160.480	6380.01	3334.08	-3419.71	299.55	1669255.32	14221423.72	39°09'47.997"N	80°53'53.725"W	3432.80	174.994	1.16	-0.14	1.15	
10094.00	90.400	162.190	6379.54	3428.08	-3508.76	329.63	1669285.39	14221334.71	39°09'47.116"N	80°53'53.345"W	3524.21	174.633	1.83	0.23	1.82	
10189.00	90.340	163.770	6378.92	3523.03	-3599.59	357.43	1669313.19	14221243.91	39°09'46.218"N	80°53'52.993"W	3617.30	174.329	1.66	-0.06	1.66	
10283.00	89.720	163.360	6378.87	3616.95	-3689.75	384.03	1669339.77	14221153.79	39°09'45.327"N	80°53'52.657"W	3709.68	174.058	0.79	-0.66	-0.44	
10378.00	90.030	164.450	6379.08	3711.84	-3781.03	410.37	1669366.10	14221062.55	39°09'44.424"N	80°53'52.323"W	3803.23	173.806	1.19	0.33	1.15	
10473.00	89.970	165.310	6379.08	3806.65	-3872.74	435.15	1669390.87	14220970.87	39°09'43.517"N	80°53'52.010"W	3897.11	173.589	0.91	-0.06	0.91	
10567.00	89.880	164.400	6379.20	3900.46	-3963.47	459.70	1669415.42	14220880.18	39°09'42.620"N	80°53'51.700"W	3990.04	173.384	0.97	-0.10	-0.97	
10662.00	90.060	163.970	6379.25	3995.33	-4054.87	485.59	1669441.30	14220788.81	39°09'41.717"N	80°53'51.372"W	4083.85	173.171	0.49	0.19	-0.45	
10756.00	90.220	164.710	6379.02	4089.19	-4145.38	510.97	1669466.66	14220698.34	39°09'40.822"N	80°53'51.052"W	4176.76	172.973	0.81	0.17	0.79	
10851.00	90.250	165.260	6378.63	4183.98	-4237.14	535.58	1669491.26	14220606.62	39°09'39.914"N	80°53'50.740"W	4270.85	172.796	0.58	0.03	0.58	
10945.00	90.340	166.100	6378.15	4277.70	-4328.22	558.83	1669514.50	14220515.58	39°09'39.014"N	80°53'50.447"W	4364.14	172.643	0.90	0.10	0.89	

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# Actual Wellpath Report

Karen Unit 3H AWP Proj: 19270'

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REFERENCE WELLPATH IDENTIFICATION				
Operator	ANTERO RESOURCES CORPORATION		Slot	Slot #07
Area	Ritchie County, WV		Well	Karen Unit 3H
Field	Ritchie		Wellbore	Karen Unit 3H AWP
Facility	Ireland North Pad			

WELLPATH DATA (239 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
11040.00	90.890	168.130	6377.13	4372.18	-4420.81	580.01	1669535.67	14220423.02	39°09'38.099"N	80°53'50.179"W	4458.70	172.525	2.21	0.58	2.14	
11134.00	91.080	167.970	6375.51	4465.50	-4512.76	599.47	1669555.13	14220331.10	39°09'37.190"N	80°53'49.933"W	4552.41	172.433	0.26	0.20	-0.17	
11229.00	90.920	163.910	6373.86	4560.15	-4604.88	622.54	1669578.19	14220239.02	39°09'36.279"N	80°53'49.642"W	4646.77	172.301	4.28	-0.17	-4.27	
11323.00	92.160	163.300	6371.33	4654.03	-4695.03	649.06	1669604.70	14220148.91	39°09'35.387"N	80°53'49.306"W	4739.68	172.129	1.47	1.32	-0.65	
11418.00	90.800	157.840	6368.87	4748.95	-4784.55	680.64	1669636.27	14220059.43	39°09'34.502"N	80°53'48.907"W	4832.72	171.904	5.92	-1.43	-5.75	
11512.00	90.740	155.280	6367.61	4842.62	-4870.78	718.03	1669673.64	14219973.23	39°09'33.650"N	80°53'48.433"W	4923.42	171.614	2.72	-0.06	-2.72	
11607.00	90.800	153.400	6366.33	4936.93	-4956.40	759.16	1669714.75	14219887.65	39°09'32.803"N	80°53'47.912"W	5014.20	171.292	1.98	0.06	-1.98	
11702.00	90.860	153.430	6364.96	5031.04	-5041.34	801.67	1669757.25	14219802.73	39°09'31.963"N	80°53'47.374"W	5104.69	170.965	0.07	0.06	0.03	
11796.00	90.650	154.770	6363.72	5124.30	-5125.89	842.73	1669798.29	14219718.22	39°09'31.127"N	80°53'46.854"W	5194.71	170.664	1.44	-0.22	1.43	
11891.00	90.550	155.430	6362.72	5218.76	-5212.06	882.72	1669838.27	14219632.09	39°09'30.275"N	80°53'46.347"W	5286.28	170.388	0.70	-0.11	0.69	
11985.00	90.590	156.650	6361.79	5312.37	-5297.95	920.89	1669876.42	14219546.23	39°09'29.425"N	80°53'45.864"W	5377.39	170.139	1.30	0.04	1.30	
12080.00	90.890	159.250	6360.56	5407.19	-5385.99	956.55	1669912.06	14219458.23	39°09'28.555"N	80°53'45.413"W	5470.27	169.929	2.75	0.32	2.74	
12174.00	90.890	163.430	6359.10	5501.16	-5475.02	986.62	1669942.12	14219369.24	39°09'27.674"N	80°53'45.032"W	5563.20	169.785	4.45	0.00	4.45	
12269.00	90.770	165.570	6357.73	5595.99	-5566.55	1012.00	1669967.49	14219277.74	39°09'26.769"N	80°53'44.711"W	5657.79	169.696	2.26	-0.13	2.25	
12364.00	90.340	163.740	6356.80	5690.81	-5658.15	1037.14	1669992.62	14219186.17	39°09'25.864"N	80°53'44.394"W	5752.42	169.613	1.98	-0.45	-1.93	
12458.00	90.650	161.560	6355.99	5784.77	-5747.86	1065.17	1670020.64	14219096.50	39°09'24.977"N	80°53'44.039"W	5845.73	169.501	2.34	0.33	-2.32	
12553.00	89.480	159.650	6355.88	5879.76	-5837.47	1096.71	1670052.17	14219006.93	39°09'24.091"N	80°53'43.640"W	5939.60	169.360	2.36	-1.23	-2.01	
12647.00	90.340	159.460	6356.03	5973.72	-5925.55	1129.55	1670084.99	14218918.89	39°09'23.220"N	80°53'43.224"W	6032.24	169.208	0.94	0.91	-0.20	
12742.00	90.740	159.030	6355.14	6068.66	-6014.38	1163.21	1670118.64	14218830.09	39°09'22.341"N	80°53'42.798"W	6125.83	169.054	0.62	0.42	-0.45	
12836.00	90.770	160.240	6353.90	6162.61	-6102.49	1195.92	1670151.34	14218742.01	39°09'21.470"N	80°53'42.385"W	6218.57	168.912	1.29	0.03	1.29	
12931.00	90.770	161.460	6352.62	6257.60	-6192.22	1227.08	1670182.48	14218652.31	39°09'20.583"N	80°53'41.990"W	6312.64	168.791	1.28	0.00	1.28	
13025.00	90.800	159.620	6351.33	6351.58	-6280.84	1258.39	1670213.78	14218563.73	39°09'19.706"N	80°53'41.594"W	6405.66	168.671	1.96	0.03	-1.96	
13120.00	90.770	157.360	6350.03	6446.46	-6369.21	1293.22	1670248.60	14218475.40	39°09'18.833"N	80°53'41.153"W	6499.18	168.523	2.38	-0.03	-2.38	
13214.00	90.460	157.400	6349.02	6540.24	-6455.98	1329.37	1670284.73	14218388.67	39°09'17.975"N	80°53'40.696"W	6591.42	168.365	0.33	-0.33	0.04	
13309.00	90.180	155.680	6348.49	6634.92	-6543.12	1367.19	1670322.54	14218301.56	39°09'17.113"N	80°53'40.217"W	6684.43	168.198	1.83	-0.29	-1.81	
13403.00	90.800	155.860	6347.69	6728.49	-6628.83	1405.77	1670361.10	14218215.88	39°09'16.265"N	80°53'39.728"W	6776.25	168.027	0.69	0.66	0.19	
13498.00	90.710	156.530	6346.44	6823.12	-6715.74	1444.11	1670399.42	14218129.01	39°09'15.406"N	80°53'39.243"W	6869.25	167.864	0.71	-0.09	0.71	
13592.00	90.580	159.850	6345.38	6916.97	-6803.00	1479.02	1670434.33	14218041.79	39°09'14.543"N	80°53'38.801"W	6961.92	167.734	3.53	-0.14	3.53	
13687.00	90.860	161.200	6344.18	7011.95	-6892.55	1510.69	1670465.98	14217952.27	39°09'13.657"N	80°53'38.400"W	7056.17	167.638	1.45	0.29	1.42	
13781.00	90.280	161.510	6343.25	7105.95	-6981.62	1540.74	1670496.02	14217863.24	39°09'12.777"N	80°53'38.020"W	7149.60	167.555	0.70	-0.62	0.33	

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# Actual Wellpath Report

Karen Unit 3H AWP Proj: 19270'

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## REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #07
Area	Ritchie County, WV	Well	Karen Unit 3H
Field	Ritchie	Wellbore	Karen Unit 3H AWP
Facility	Ireland North Pad		

## WELLPATH DATA (239 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
13876.00	90.310	163.540	6342.76	7200.91	-7072.22	1569.27	1670524.54	14217772.67	39°09'11.881"N	80°53'37.659"W	7244.24	167.489	2.14	0.03	2.14	
13970.00	90.220	166.590	6342.33	7294.69	-7163.04	1593.49	1670548.75	14217681.89	39°09'10.983"N	80°53'37.353"W	7338.14	167.458	3.25	-0.10	3.24	
14064.00	90.280	167.990	6341.92	7388.16	-7254.73	1614.17	1670569.42	14217590.23	39°09'10.077"N	80°53'37.092"W	7432.14	167.456	1.49	0.06	1.49	
14159.00	90.280	167.000	6341.45	7482.59	-7347.48	1634.74	1670589.98	14217497.53	39°09'09.160"N	80°53'36.832"W	7527.14	167.457	1.04	0.00	-1.04	
14253.00	90.430	167.160	6340.87	7576.10	-7439.09	1655.76	1670610.99	14217405.95	39°09'08.254"N	80°53'36.567"W	7621.13	167.452	0.23	0.16	0.17	
14348.00	90.220	166.350	6340.33	7670.65	-7531.56	1677.52	1670632.75	14217313.51	39°09'07.340"N	80°53'36.292"W	7716.12	167.443	0.88	-0.22	-0.85	
14442.00	90.340	167.680	6339.87	7764.17	-7623.16	1698.64	1670653.86	14217221.96	39°09'06.434"N	80°53'36.025"W	7810.12	167.438	1.42	0.13	1.41	
14537.00	90.280	167.160	6339.36	7858.61	-7715.88	1719.34	1670674.54	14217129.28	39°09'05.517"N	80°53'35.764"W	7905.12	167.438	0.55	-0.06	-0.55	
14631.00	90.400	165.070	6338.80	7952.26	-7807.12	1741.89	1670697.09	14217038.07	39°09'04.615"N	80°53'35.479"W	7999.08	167.422	2.23	0.13	-2.22	
14726.00	90.340	162.990	6338.18	8047.14	-7898.45	1768.03	1670723.21	14216946.78	39°09'03.712"N	80°53'35.149"W	8093.91	167.383	2.19	-0.06	-2.19	
14820.00	90.220	162.510	6337.73	8141.10	-7988.22	1795.90	1670751.08	14216857.04	39°09'02.825"N	80°53'34.796"W	8187.61	167.330	0.53	-0.13	-0.51	
14915.00	90.310	161.570	6337.29	8236.09	-8078.59	1825.19	1670780.36	14216766.71	39°09'01.931"N	80°53'34.426"W	8282.20	167.269	0.99	0.09	-0.99	
15009.00	90.430	160.330	6336.68	8330.09	-8167.44	1855.87	1670811.03	14216677.90	39°09'01.053"N	80°53'34.038"W	8375.64	167.198	1.33	0.13	-1.32	
15104.00	90.340	158.900	6336.04	8425.05	-8256.48	1888.96	1670844.10	14216588.89	39°09'00.172"N	80°53'33.619"W	8469.81	167.113	1.51	-0.09	-1.51	
15198.00	90.430	157.400	6335.41	8518.91	-8343.72	1923.95	1670879.07	14216501.68	39°08'59.309"N	80°53'33.176"W	8562.67	167.015	1.60	0.10	-1.60	
15292.00	90.740	156.490	6334.45	8612.64	-8430.21	1960.76	1670915.87	14216415.23	39°08'58.454"N	80°53'32.710"W	8655.23	166.907	1.02	0.33	-0.97	
15387.00	90.710	156.850	6333.25	8707.33	-8517.44	1998.38	1670953.47	14216328.04	39°08'57.591"N	80°53'32.234"W	8748.73	166.796	0.38	-0.03	0.38	
15482.00	90.520	156.960	6332.23	8802.06	-8604.82	2035.64	1670990.72	14216240.69	39°08'56.727"N	80°53'31.763"W	8842.33	166.690	0.23	-0.20	0.12	
15576.00	90.520	157.370	6331.37	8895.82	-8691.45	2072.12	1671027.18	14216154.09	39°08'55.871"N	80°53'31.301"W	8935.04	166.591	0.44	0.00	0.44	
15671.00	90.520	157.570	6330.51	8990.61	-8779.19	2108.51	1671063.57	14216066.38	39°08'55.003"N	80°53'30.840"W	9028.85	166.495	0.21	0.00	0.21	
15765.00	90.400	157.460	6329.76	9084.41	-8866.04	2144.46	1671099.50	14215979.57	39°08'54.144"N	80°53'30.385"W	9121.70	166.403	0.17	-0.13	-0.12	
15860.00	90.680	156.990	6328.86	9179.17	-8953.63	2181.24	1671136.26	14215892.01	39°08'53.278"N	80°53'29.920"W	9215.49	166.309	0.58	0.29	-0.49	
15954.00	90.620	156.980	6327.80	9272.91	-9040.15	2217.99	1671172.99	14215805.54	39°08'52.422"N	80°53'29.455"W	9308.26	166.215	0.06	-0.06	-0.01	
16048.00	90.430	157.450	6326.93	9366.68	-9126.81	2254.39	1671209.38	14215718.91	39°08'51.566"N	80°53'28.994"W	9401.11	166.125	0.54	-0.20	0.50	
16143.00	90.550	159.580	6326.12	9461.56	-9215.20	2289.18	1671244.16	14215630.56	39°08'50.691"N	80°53'28.554"W	9495.27	166.049	2.25	0.13	2.24	
16238.00	90.550	161.860	6325.21	9556.55	-9304.86	2320.54	1671275.51	14215540.93	39°08'49.805"N	80°53'28.157"W	9589.86	165.997	2.40	0.00	2.40	
16332.00	90.520	159.400	6324.33	9650.53	-9393.53	2351.72	1671306.67	14215452.30	39°08'48.928"N	80°53'27.763"W	9683.44	165.945	2.62	-0.03	-2.62	
16427.00	90.340	158.440	6323.62	9745.45	-9482.17	2385.88	1671340.82	14215363.69	39°08'48.052"N	80°53'27.330"W	9777.73	165.877	1.03	-0.19	-1.01	
16521.00	90.430	167.800	6322.99	9839.29	-9572.01	2413.15	1671368.08	14215273.88	39°08'47.163"N	80°53'26.986"W	9871.51	165.850	9.96	0.10	9.96	
16615.00	90.490	167.290	6322.23	9932.72	-9663.80	2433.42	1671388.34	14215182.13	39°08'46.266"N	80°53'26.730"W	9965.47	165.866	0.55	0.06	-0.54	

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# Actual Wellpath Report

Karen Unit 3H AWP Proj: 19270'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #07
Area	Ritchie County, WV	Well	Karen Unit 3H
Field	Ritchie	Wellbore	Karen Unit 3H AWB
Facility	Ireland North Pad		

WELLPATH DATA (239 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
16710.00	90.280	163.620	6321.59	10027.44	-9755.74	2457.27	1671412.18	14215090.23	39°08'45.347"N	80°53'26.428"W	10060.45	165.862	3.87	-0.22	-3.86	
16804.00	90.400	162.350	6321.04	10121.39	-9845.62	2484.78	1671439.68	14215000.39	39°08'44.458"N	80°53'26.081"W	10154.33	165.836	1.36	0.13	-1.35	
16899.00	89.820	162.770	6320.85	10216.37	-9936.25	2513.25	1671468.14	14214909.79	39°08'43.562"N	80°53'25.721"W	10249.17	165.805	0.75	-0.61	0.44	
16994.00	90.000	163.330	6321.00	10311.32	-10027.12	2540.95	1671495.82	14214818.95	39°08'42.663"N	80°53'25.370"W	10344.06	165.780	0.62	0.19	0.59	
17088.00	89.820	163.100	6321.15	10405.26	-10117.12	2568.09	1671522.96	14214729.00	39°08'41.774"N	80°53'25.027"W	10437.97	165.757	0.31	-0.19	-0.24	
17183.00	89.970	163.550	6321.32	10500.19	-10208.12	2595.35	1671550.21	14214638.03	39°08'40.874"N	80°53'24.683"W	10532.88	165.735	0.50	0.16	0.47	
17277.00	89.850	163.020	6321.47	10594.13	-10298.15	2622.39	1671577.23	14214548.04	39°08'39.984"N	80°53'24.341"W	10626.80	165.713	0.58	-0.13	-0.56	
17372.00	89.940	164.260	6321.65	10689.05	-10389.30	2649.15	1671603.98	14214456.92	39°08'39.082"N	80°53'24.003"W	10721.73	165.695	1.31	0.09	1.31	
17466.00	89.600	163.800	6322.02	10782.93	-10479.67	2675.01	1671629.83	14214366.59	39°08'38.189"N	80°53'23.676"W	10815.69	165.681	0.61	-0.36	-0.49	
17561.00	89.750	163.600	6322.56	10877.84	-10570.85	2701.67	1671656.48	14214275.44	39°08'37.287"N	80°53'23.339"W	10910.64	165.663	0.26	0.16	-0.21	
17655.00	89.750	163.420	6322.97	10971.77	-10660.99	2728.35	1671683.15	14214185.35	39°08'36.396"N	80°53'23.002"W	11004.57	165.645	0.19	0.00	-0.19	
17750.00	89.880	162.480	6323.28	11066.72	-10751.81	2756.21	1671711.00	14214094.56	39°08'35.498"N	80°53'22.649"W	11099.46	165.622	1.00	0.14	-0.99	
17844.00	89.630	161.160	6323.68	11160.71	-10841.11	2785.53	1671740.31	14214005.29	39°08'34.615"N	80°53'22.279"W	11193.25	165.590	1.43	-0.27	-1.40	
17939.00	89.540	161.560	6324.37	11255.71	-10931.13	2815.90	1671770.66	14213915.31	39°08'33.725"N	80°53'21.895"W	11288.00	165.554	0.43	-0.09	0.42	
18033.00	89.660	160.480	6325.02	11349.71	-11020.01	2846.47	1671801.22	14213826.46	39°08'32.846"N	80°53'21.508"W	11381.70	165.517	1.16	0.13	-1.15	
18128.00	89.600	159.610	6325.64	11444.68	-11109.31	2878.89	1671833.63	14213737.20	39°08'31.963"N	80°53'21.098"W	11476.27	165.472	0.92	-0.06	-0.92	
18222.00	89.630	158.260	6326.27	11538.60	-11197.02	2912.67	1671867.40	14213649.52	39°08'31.096"N	80°53'20.670"W	11569.66	165.419	1.44	0.03	-1.44	
18317.00	89.660	157.380	6326.86	11633.43	-11284.99	2948.54	1671903.25	14213561.59	39°08'30.226"N	80°53'20.217"W	11663.83	165.357	0.93	0.03	-0.93	
18411.00	89.510	155.480	6327.54	11727.10	-11371.14	2986.12	1671940.82	14213475.48	39°08'29.374"N	80°53'19.741"W	11756.69	165.286	2.03	-0.16	-2.02	
18506.00	89.540	155.320	6328.33	11821.61	-11457.52	3025.67	1671980.35	14213389.14	39°08'28.520"N	80°53'19.240"W	11850.29	165.207	0.03	-0.03	-0.17	
18600.00	89.450	155.660	6329.16	11915.13	-11543.04	3064.66	1672019.33	14213303.64	39°08'27.674"N	80°53'18.747"W	11942.95	165.131	0.37	-0.10	0.36	
18695.00	89.630	156.380	6329.92	12009.74	-11629.84	3103.27	1672057.92	14213216.88	39°08'26.815"N	80°53'18.258"W	12036.75	165.059	0.78	0.19	0.76	
18789.00	89.630	156.640	6330.53	12103.42	-11716.05	3140.74	1672095.37	14213130.71	39°08'25.963"N	80°53'17.784"W	12129.71	164.993	0.28	0.00	0.28	
18883.00	89.570	159.470	6331.18	12197.26	-11803.23	3175.86	1672130.48	14213043.57	39°08'25.101"N	80°53'17.340"W	12223.02	164.940	3.01	-0.06	3.01	
18978.00	89.660	162.090	6331.82	12292.25	-11892.92	3207.13	1672161.74	14212953.91	39°08'24.214"N	80°53'16.944"W	12317.76	164.908	2.76	0.09	2.76	
19072.00	89.660	165.940	6332.38	12386.12	-11983.27	3233.01	1672187.61	14212863.60	39°08'23.321"N	80°53'16.617"W	12411.73	164.901	4.10	0.00	4.10	
19167.00	89.380	167.340	6333.17	12480.69	-12075.69	3254.96	1672209.55	14212771.21	39°08'22.407"N	80°53'16.340"W	12506.68	164.915	1.50	-0.29	1.47	
19245.00	89.660	166.670	6333.83	12558.29	-12151.69	3272.50	1672227.08	14212695.24	39°08'21.655"N	80°53'16.119"W	12584.63	164.928	0.93	0.36	-0.86	
19270.00	89.660	166.670	6333.98	12583.17	-12176.02	3278.26	1672232.85	14212670.92	39°08'21.415"N	80°53'16.046"W	12609.61	164.931	0.00	0.00	0.00	Projected MD at TD: 19270'

HOLE & CASING SECTIONS - Ref Wellbore: Karen Unit 3H AWB Ref Wellpath: Karen Unit 3H AWP Proj: 19270'									
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)
26in Open Hole	30.00	110.00	80.00	30.00	110.00	0.00	0.00	0.00	0.00
20in Conductor	30.00	110.00	80.00	30.00	110.00	0.00	0.00	0.00	0.00
17.5in Open Hole	110.00	486.30	376.30	110.00	486.30	0.00	0.03	-0.14	0.39
13.375in Casing Surface	30.00	486.30	456.30	30.00	486.30	0.00	0.00	-0.14	0.39
12.25in Open Hole	486.30	2658.20	2171.90	486.30	2657.01	-0.14	0.39	36.27	2.69
9.625in Casing Intermediate	30.00	2658.20	2628.20	30.00	2657.01	0.00	0.00	36.27	2.69
8.75in Open Hole	2658.20	6159.00	3500.80	2657.01	5997.45	36.27	2.69	86.31	-864.69
8.5in Open Hole	6159.00	19270.00	13111.00	5997.45	6333.98	86.31	-864.69	-12176.02	3278.26
5.5in Casing Production	30.00	19270.00	19240.00	30.00	6333.98	0.00	0.00	-12176.02	3278.26

<b>TARGETS</b>								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Karen Unit 3H POE Rev-1	6348.00	-342.55	-766.52	1668189.68	14224499.64	39°10'18.423"N	80°54'07.218"W	point
Karen Unit 3H BHL Rev-1	6373.00	-12192.45	3261.49	1672216.08	14212654.50	39°08'21.253"N	80°53'16.259"W	point

<b>WELLPATH COMPOSITION - Ref Wellbore: Karen Unit 3H AWB Ref Wellpath: Karen Unit 3H AWP Proj: 19270'</b>					
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	
30.00	468.00	Gyrodala standard - Drop gyro or Multi-shot	01 Gyrodala MS Gyro <17-1/2">(100'-453')	Karen Unit 3H AWB	
468.00	2576.00	ISCWSA MWD, Rev. 4 (Standard)	02 WFT EM <12-1/4">(453')(557'-2561')	Karen Unit 3H AWB	
2576.00	6087.00	ISCWSA MWD, Rev. 4 (Standard)	03 WFT EM <8-3/4">(2561')(2684'-6072')	Karen Unit 3H AWB	
6087.00	19245.00	BHI AutoTrak Curve (Short)	04 BH AT Curve <8-1/2">(6087')(6129'-19245')	Karen Unit 3H AWB	
19245.00	19270.00	Blind Drilling (std)	Projection to bit	Karen Unit 3H AWB	

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# Actual Wellpath Report

Karen Unit 3H AWP Proj: 19270'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #07
Area	Ritchie County, WV	Well	Karen Unit 3H
Field	Ritchie	Wellbore	Karen Unit 3H AWB
Facility	Ireland North Pad		

COMMENTS
<p><b>Wellpath general comments</b> API: 47-085-10216-0000 BHI Job #: 109628380 Rig: H&amp;P 519 Duration: 01/29/2019-02/01/2019 Gyrodata MS Gyro &lt;17-1/2"&gt;(100'-453') WFT EM &lt;12-1/4"&gt;(453')(557'-2561') WFT EM &lt;8-3/4"&gt;(2561')(2684'-6072') BH AT Curve &lt;8-1/2"&gt;(6087')(6129'-19245') Middlesex: 6395' MD Burkett: 6590' MD Tully: 6690' MD Marcellus POE: 6765' MD Projected MD at TD: 19270'</p>

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