



Actual Wellpath Report

Karen Unit 2H AWP Proj: 19386'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #06
Area	Ritchie County, WV	Well	Karen Unit 2H
Field	Ritchie	Wellbore	Karen Unit 2H AWP
Facility	Ireland North Pad		

WELLPATH DATA (236 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	252.190	0.00	0.00	0.00	0.00	1668946.44	14224846.09	39°10'21.840"N	80°53'57.600"W	0.00	0.000	0.00	0.00	0.00	
30.00	0.000	252.190	30.00	0.00	0.00	0.00	1668946.44	14224846.09	39°10'21.840"N	80°53'57.600"W	0.00	0.000	0.00	0.00	0.00	
115.00	0.780	252.190	115.00	-0.01	-0.18	-0.55	1668945.89	14224845.91	39°10'21.838"N	80°53'57.607"W	0.58	252.190	0.92	0.92	-126.84	Gyrodata SS Gyro <17-1/2">(100'-425')
140.00	0.740	246.570	140.00	0.00	-0.29	-0.86	1668945.58	14224845.80	39°10'21.837"N	80°53'57.611"W	0.91	251.194	0.34	-0.16	-22.48	
165.00	0.440	227.610	164.99	0.05	-0.42	-1.08	1668945.37	14224845.67	39°10'21.836"N	80°53'57.614"W	1.16	248.652	1.42	-1.20	-75.84	
190.00	0.410	226.760	189.99	0.13	-0.55	-1.22	1668945.23	14224845.54	39°10'21.835"N	80°53'57.615"W	1.33	245.739	0.12	-0.12	-3.40	
215.00	0.510	231.150	214.99	0.20	-0.68	-1.37	1668945.08	14224845.41	39°10'21.833"N	80°53'57.617"W	1.53	243.595	0.42	0.40	17.56	
240.00	0.580	231.700	239.99	0.28	-0.83	-1.55	1668944.89	14224845.26	39°10'21.832"N	80°53'57.620"W	1.76	241.965	0.28	0.28	2.20	
265.00	0.220	249.960	264.99	0.32	-0.92	-1.70	1668944.75	14224845.17	39°10'21.831"N	80°53'57.622"W	1.93	241.495	1.51	-1.44	73.04	
290.00	0.260	256.450	289.99	0.32	-0.95	-1.80	1668944.65	14224845.14	39°10'21.831"N	80°53'57.623"W	2.03	242.106	0.19	0.16	25.96	
315.00	0.150	254.590	314.99	0.31	-0.97	-1.89	1668944.56	14224845.12	39°10'21.830"N	80°53'57.624"W	2.12	242.676	0.44	-0.44	-7.44	
340.00	0.150	275.690	339.99	0.30	-0.98	-1.95	1668944.50	14224845.11	39°10'21.830"N	80°53'57.625"W	2.18	243.322	0.22	0.00	84.40	
365.00	0.260	249.070	364.99	0.29	-1.00	-2.03	1668944.41	14224845.10	39°10'21.830"N	80°53'57.626"W	2.27	243.909	0.57	0.44	-106.48	
390.00	0.190	252.940	389.99	0.29	-1.03	-2.13	1668944.32	14224845.06	39°10'21.830"N	80°53'57.627"W	2.36	244.190	0.29	-0.28	15.48	
415.00	0.230	260.410	414.99	0.28	-1.05	-2.22	1668944.23	14224845.04	39°10'21.830"N	80°53'57.628"W	2.45	244.665	0.19	0.16	29.88	
440.00	0.250	248.120	439.99	0.27	-1.08	-2.32	1668944.13	14224845.01	39°10'21.829"N	80°53'57.629"W	2.56	245.044	0.22	0.08	-49.16	
583.00	0.060	311.810	582.99	0.22	-1.14	-2.66	1668943.78	14224844.95	39°10'21.829"N	80°53'57.634"W	2.90	246.736	0.16	-0.13	44.54	WFT EM <12-1/4">(425')(568'-254')
676.00	0.730	287.350	675.99	-0.17	-0.94	-3.28	1668943.18	14224845.16	39°10'21.831"N	80°53'57.641"W	3.40	254.009	0.73	0.72	-26.30	
790.00	3.560	283.980	789.89	-2.52	0.14	-7.39	1668939.06	14224846.23	39°10'21.841"N	80°53'57.694"W	7.39	271.058	2.48	2.48	-2.96	
883.00	5.650	279.860	882.59	-6.28	1.62	-14.71	1668931.75	14224847.71	39°10'21.856"N	80°53'57.787"W	14.79	276.280	2.27	2.25	-4.43	
980.00	7.420	284.310	978.96	-12.00	3.98	-25.48	1668920.98	14224850.07	39°10'21.880"N	80°53'57.923"W	25.79	278.887	1.90	1.82	4.59	
1170.00	8.460	271.490	1167.15	-23.57	7.38	-51.34	1668895.12	14224853.47	39°10'21.914"N	80°53'58.252"W	51.87	278.180	1.08	0.55	-6.75	
1265.00	9.730	270.630	1260.95	-28.68	7.65	-66.36	1668880.12	14224853.74	39°10'21.916"N	80°53'58.442"W	66.79	276.577	1.34	1.34	-0.91	
1360.00	11.040	269.980	1354.39	-34.29	7.74	-83.48	1668863.00	14224853.82	39°10'21.917"N	80°53'58.660"W	83.84	275.294	1.38	1.38	-0.68	
1455.00	13.640	269.600	1447.19	-40.77	7.65	-103.78	1668842.71	14224853.74	39°10'21.917"N	80°53'58.918"W	104.06	274.218	2.74	2.74	-0.40	
1550.00	17.060	272.120	1538.79	-49.31	8.09	-128.91	1668817.58	14224854.18	39°10'21.921"N	80°53'59.237"W	129.17	273.592	3.67	3.60	2.65	
1645.00	18.540	269.480	1629.24	-59.05	8.47	-157.95	1668788.56	14224854.56	39°10'21.925"N	80°53'59.605"W	158.17	273.070	1.77	1.56	-2.78	
1739.00	20.730	268.150	1717.77	-68.81	7.80	-189.52	1668757.00	14224853.89	39°10'21.919"N	80°54'00.006"W	189.68	272.356	2.38	2.33	-1.41	
1835.00	21.840	267.590	1807.22	-78.63	6.50	-224.34	1668722.19	14224852.59	39°10'21.907"N	80°54'00.448"W	224.44	271.659	1.18	1.16	-0.58	
1929.00	21.540	266.470	1894.56	-88.14	4.70	-259.04	1668687.51	14224850.79	39°10'21.889"N	80°54'00.889"W	259.08	271.039	0.54	-0.32	-1.19	

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION		Slot #06
Area	Ritchie County, WV		Well
Field	Ritchie		Wellbore
Facility	Ireland North Pad		Karen Unit 2H AWB

WELLPATH DATA (236 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
2024.00	22.510	268.040	1982.63	-98.03	3.00	-294.62	16686651.94	14224849.09	39°10'21.873"N	80°54'01.341"W	294.63	270.584	1.19	1.02	1.65	
2119.00	22.380	269.140	2070.43	-108.90	2.11	-330.88	16686615.70	14224848.20	39°10'21.864"N	80°54'01.801"W	330.88	270.365	0.46	-0.14	1.16	
2214.00	21.010	266.150	2158.71	-118.90	0.70	-365.96	1668580.64	14224846.79	39°10'21.851"N	80°54'02.247"W	365.96	270.109	1.85	-1.44	-3.15	
2309.00	20.610	264.940	2247.51	-127.29	-1.92	-399.60	1668547.00	14224844.17	39°10'21.825"N	80°54'02.674"W	399.61	269.724	0.62	-0.42	-1.27	
2404.00	21.090	266.050	2336.29	-135.67	-4.57	-433.31	1668513.31	14224844.52	39°10'21.800"N	80°54'03.102"W	433.33	269.395	0.65	0.51	1.17	
2499.00	19.680	264.740	2425.34	-143.82	-7.22	-466.29	1668480.34	14224838.88	39°10'21.774"N	80°54'03.521"W	466.35	269.113	1.56	-1.48	-1.38	
2562.00	18.970	263.400	2484.79	-148.49	-9.37	-487.03	1668459.61	14224836.73	39°10'21.753"N	80°54'03.784"W	487.12	268.898	1.33	-1.13	-2.13	
2700.00	17.660	263.470	2615.79	-157.71	-14.33	-530.11	1668416.55	14224831.77	39°10'21.704"N	80°54'04.331"W	530.30	268.452	0.95	-0.95	0.05	WFT EM <8-3/4">(2547)(2685'-6199')
2795.00	18.560	266.390	2706.09	-164.76	-16.92	-559.51	1668387.15	14224829.18	39°10'21.679"N	80°54'04.705"W	559.77	268.268	1.35	0.95	3.07	
2890.00	20.480	268.500	2795.62	-173.70	-18.30	-591.22	1668355.46	14224827.79	39°10'21.665"N	80°54'05.107"W	591.50	268.227	2.15	2.02	2.22	
2984.00	21.570	266.770	2883.37	-183.25	-19.71	-624.91	1668321.78	14224826.39	39°10'21.652"N	80°54'05.535"W	625.22	268.194	1.33	1.16	-1.84	
3079.00	20.960	264.330	2971.90	-191.83	-22.37	-659.26	1668287.45	14224823.73	39°10'21.626"N	80°54'05.971"W	659.64	268.056	1.13	-0.64	-2.57	
3179.00	20.860	263.340	3065.31	-199.67	-26.20	-694.74	1668251.98	14224819.90	39°10'21.589"N	80°54'06.422"W	695.23	267.840	0.37	-0.10	-0.99	
3274.00	21.260	263.460	3153.97	-206.91	-30.13	-728.65	1668218.09	14224815.98	39°10'21.550"N	80°54'06.852"W	729.27	267.632	0.42	0.42	0.13	
3369.00	20.880	264.830	3242.62	-214.59	-33.61	-762.62	1668184.13	14224812.49	39°10'21.516"N	80°54'07.284"W	763.36	267.476	0.65	-0.40	1.44	
3464.00	21.360	268.400	3331.24	-223.72	-35.62	-796.78	1668149.98	14224810.48	39°10'21.497"N	80°54'07.718"W	797.58	267.440	1.44	0.51	3.76	
3559.00	20.660	269.410	3419.92	-234.10	-36.28	-830.83	1668115.95	14224809.83	39°10'21.490"N	80°54'08.150"W	831.62	267.500	0.83	-0.74	1.06	
3653.00	20.150	271.770	3508.03	-245.00	-35.95	-863.60	1668083.19	14224810.16	39°10'21.494"N	80°54'08.566"W	864.35	267.616	1.03	-0.54	2.51	
3748.00	20.880	276.610	3597.01	-258.04	-33.50	-896.77	1668050.03	14224812.61	39°10'21.519"N	80°54'08.987"W	897.40	267.861	1.94	0.77	5.09	
3843.00	21.750	276.350	3685.51	-272.81	-29.60	-931.08	1668015.73	14224816.50	39°10'21.557"N	80°54'09.423"W	931.55	268.179	0.92	0.92	-0.27	
3938.00	22.520	271.850	3773.51	-286.74	-27.07	-966.76	1667980.07	14224819.04	39°10'21.583"N	80°54'09.876"W	967.14	268.396	1.96	0.81	-4.74	
4032.00	22.740	272.990	3860.27	-299.86	-25.54	-1002.90	1667943.95	14224820.57	39°10'21.598"N	80°54'10.335"W	1003.22	268.541	0.52	0.23	1.21	
4127.00	22.530	274.980	3947.96	-314.05	-23.00	-1039.37	1667907.49	14224823.10	39°10'21.624"N	80°54'10.798"W	1039.62	268.732	0.84	-0.22	2.09	
4222.00	22.890	275.050	4035.59	-328.88	-19.79	-1075.90	1667870.97	14224826.31	39°10'21.656"N	80°54'11.261"W	1076.09	268.946	0.38	0.38	0.07	
4317.00	23.360	273.720	4122.96	-343.60	-16.94	-1113.10	1667833.79	14224829.15	39°10'21.684"N	80°54'11.734"W	1113.23	269.128	0.74	0.49	-1.40	
4412.00	22.640	272.560	4210.41	-357.50	-14.91	-1150.16	1667796.74	14224831.19	39°10'21.705"N	80°54'12.204"W	1150.26	269.258	0.90	-0.76	-1.22	
4507.00	22.660	269.910	4298.08	-370.06	-14.12	-1186.73	1667760.19	14224831.98	39°10'21.713"N	80°54'12.669"W	1186.81	269.318	1.07	0.02	-2.79	
4602.00	21.640	269.000	4386.07	-381.32	-14.45	-1222.55	1667724.39	14224831.65	39°10'21.710"N	80°54'13.123"W	1222.63	269.323	1.13	-1.07	-0.96	
4697.00	21.710	266.680	4474.36	-391.39	-15.78	-1257.60	1667689.35	14224830.32	39°10'21.698"N	80°54'13.568"W	1257.70	269.281	0.90	0.07	-2.44	
4792.00	20.560	265.180	4562.96	-400.14	-18.19	-1291.77	1667655.20	14224827.90	39°10'21.674"N	80°54'14.002"W	1291.89	269.193	1.34	-1.21	-1.58	

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REFERENCE WELLPATH IDENTIFICATION				
Operator	ANTERO RESOURCES CORPORATION		Slot	Slot #06
Area	Ritchie County, WV		Well	Karen Unit 2H
Field	Ritchie		Wellbore	Karen Unit 2H AWB
Facility	Ireland North Pad			

WELLPATH DATA (236 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
4886.00	20.810	265.070	4650.91	-408.16	-21.02	-1324.85	1667622.13	14224825.08	39°10'21.646"N	80°54'14.422"W	1325.02	269.091	0.27	0.27	-0.12	
4981.00	21.470	265.450	4739.51	-416.51	-23.85	-1358.99	1667588.00	14224822.25	39°10'21.619"N	80°54'14.856"W	1359.20	268.995	0.71	0.69	0.40	
5076.00	22.040	265.840	4827.74	-425.33	-26.52	-1394.10	1667552.90	14224819.58	39°10'21.593"N	80°54'15.302"W	1394.36	268.910	0.62	0.60	0.41	
5171.00	22.440	267.920	4915.68	-435.08	-28.47	-1430.00	1667517.02	14224817.63	39°10'21.574"N	80°54'15.758"W	1430.28	268.859	0.93	0.42	2.19	
5266.00	22.530	268.420	5003.46	-445.71	-29.63	-1466.31	1667480.72	14224816.47	39°10'21.563"N	80°54'16.219"W	1466.61	268.842	0.22	0.08	0.53	
5361.00	21.650	267.440	5091.48	-456.03	-30.91	-1502.02	1667445.03	14224815.19	39°10'21.550"N	80°54'16.672"W	1502.33	268.821	1.00	-0.93	-1.03	
5456.00	21.830	264.860	5179.73	-465.14	-33.28	-1537.12	1667409.95	14224812.83	39°10'21.527"N	80°54'17.118"W	1537.48	268.760	1.02	0.19	-2.72	
5550.00	21.430	266.540	5267.11	-473.83	-35.88	-1571.66	1667375.41	14224810.22	39°10'21.502"N	80°54'17.557"W	1572.07	268.692	0.78	-0.43	1.79	
5645.00	19.700	265.240	5356.05	-482.34	-38.26	-1604.95	1667342.14	14224807.85	39°10'21.479"N	80°54'17.979"W	1605.40	268.634	1.88	-1.82	-1.37	
5740.00	19.300	266.170	5445.60	-490.31	-40.63	-1636.57	1667310.53	14224805.47	39°10'21.456"N	80°54'18.381"W	1637.07	268.578	0.53	-0.42	0.98	
5835.00	19.350	264.740	5535.25	-498.07	-43.13	-1667.90	1667279.21	14224802.98	39°10'21.432"N	80°54'18.779"W	1668.46	268.519	0.50	0.05	-1.51	
5866.00	19.200	262.300	5564.51	-500.27	-44.28	-1678.07	1667269.05	14224801.83	39°10'21.420"N	80°54'18.908"W	1678.65	268.488	2.64	-0.48	-7.87	
5898.00	19.460	254.790	5594.71	-501.62	-46.38	-1688.43	1667258.69	14224799.73	39°10'21.400"N	80°54'19.039"W	1689.07	268.426	7.81	0.81	-23.47	
5929.00	19.510	244.850	5623.95	-501.38	-49.94	-1698.10	1667249.02	14224796.17	39°10'21.364"N	80°54'19.162"W	1698.84	268.315	10.68	0.16	-32.06	
5961.00	20.530	237.610	5654.02	-499.48	-55.22	-1707.68	1667239.45	14224790.90	39°10'21.312"N	80°54'19.284"W	1708.57	268.148	8.37	3.19	-22.62	
5992.00	21.040	231.850	5683.00	-496.37	-61.57	-1716.65	1667230.49	14224784.55	39°10'21.250"N	80°54'19.398"W	1717.75	267.946	6.79	1.65	-18.58	
6024.00	21.450	227.270	5712.83	-492.10	-69.09	-1725.46	1667221.68	14224777.03	39°10'21.176"N	80°54'19.510"W	1726.84	267.707	5.34	1.28	-14.31	
6056.00	21.570	222.390	5742.60	-486.90	-77.40	-1733.73	1667213.41	14224768.72	39°10'21.093"N	80°54'19.615"W	1735.45	267.444	5.60	0.37	-15.25	
6087.00	22.630	217.660	5771.33	-480.87	-86.33	-1741.21	1667205.93	14224759.79	39°10'21.005"N	80°54'19.710"W	1743.35	267.161	6.68	3.42	-15.26	
6119.00	24.140	214.170	5800.70	-473.53	-96.62	-1748.65	1667198.50	14224749.51	39°10'20.904"N	80°54'19.805"W	1751.32	266.837	6.40	4.72	-10.91	
6151.00	25.360	210.220	5829.76	-465.11	-107.96	-1755.77	1667191.37	14224738.18	39°10'20.792"N	80°54'19.895"W	1759.09	266.481	6.42	3.81	-12.34	
6182.00	26.020	207.630	5857.70	-456.08	-119.72	-1762.27	1667184.88	14224726.42	39°10'20.675"N	80°54'19.978"W	1766.33	266.114	4.20	2.13	-8.35	
6214.00	27.470	204.150	5886.28	-445.84	-132.67	-1768.54	1667178.61	14224713.47	39°10'20.547"N	80°54'20.058"W	1773.51	265.710	6.67	4.53	-10.88	
6257.00	28.790	196.540	5924.21	-430.14	-151.66	-1775.55	1667171.60	14224694.50	39°10'20.360"N	80°54'20.147"W	1782.02	265.118	8.88	3.07	-17.70	BH AT Curve <8-1/2"> (6214')(6257'-19361')
6312.00	29.150	192.390	5972.33	-407.89	-177.44	-1782.20	1667164.96	14224688.72	39°10'20.105"N	80°54'20.232"W	1791.01	264.314	3.71	0.65	-7.55	
6359.00	32.340	187.140	6012.73	-386.79	-201.10	-1786.22	1667160.94	14224645.07	39°10'19.871"N	80°54'20.283"W	1797.50	263.576	8.86	6.79	-11.17	
6407.00	36.390	181.890	6052.35	-361.92	-228.09	-1788.28	1667158.88	14224618.09	39°10'19.605"N	80°54'20.310"W	1802.77	262.731	10.45	8.44	-10.94	
6454.00	40.320	178.520	6089.20	-334.36	-257.24	-1788.35	1667158.81	14224588.95	39°10'19.316"N	80°54'20.311"W	1806.76	261.815	9.47	8.36	-7.17	
6501.00	43.900	175.590	6124.07	-304.05	-288.70	-1786.71	1667160.46	14224557.51	39°10'19.005"N	80°54'20.290"W	1809.88	260.821	8.69	7.62	-6.23	
6548.00	47.470	174.340	6156.90	-271.40	-322.19	-1783.74	1667163.42	14224524.03	39°10'18.674"N	80°54'20.253"W	1812.61	259.761	7.83	7.60	-2.66	

6/18/2020
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Actual Wellpath Report

Karen Unit 2H AWP Proj: 19386'

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REFERENCE WELLPATH IDENTIFICATION				
Operator	ANTERO RESOURCES CORPORATION		Slot	Slot #06
Area	Ritchie County, WV		Well	Karen Unit 2H
Field	Ritchie		Wellbore	Karen Unit 2H AWB
Facility	Ireland North Pad			

WELLPATH DATA (236 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
6565.00†	49.043	173.590	6168.22	-259.03	-334.81	-1782.41	1667164.75	14224511.42	39°10'18.550"N	80°54'20.236"W	1813.58	259.362	9.82	9.25	-4.41	Middlesex: 6565' MD
6595.00	51.830	172.350	6187.32	-236.40	-357.76	-1779.57	1667167.58	14224488.48	39°10'18.323"N	80°54'20.201"W	1815.18	258.633	9.82	9.29	-4.13	
6642.00	56.130	170.170	6214.96	-198.98	-395.31	-1773.78	1667173.38	14224450.94	39°10'17.952"N	80°54'20.128"W	1817.30	257.436	9.89	9.15	-4.64	
6690.00	60.150	168.270	6240.29	-158.63	-435.35	-1766.14	1667181.01	14224410.92	39°10'17.556"N	80°54'20.031"W	1819.01	256.153	9.02	8.37	-3.96	
6737.00	63.680	166.336	6262.42	-117.41	-475.79	-1757.02	1667190.13	14224370.49	39°10'17.156"N	80°54'19.916"W	1820.30	254.848	8.35	7.51	-4.13	
6763.00†	65.123	165.682	6273.65	-94.04	-498.54	-1751.35	1667195.80	14224347.75	39°10'16.931"N	80°54'19.844"W	1820.92	254.110	5.99	5.55	-2.49	Burkett: 6763' MD
6784.00	66.290	165.170	6282.29	-74.96	-517.06	-1746.53	1667200.62	14224329.24	39°10'16.748"N	80°54'19.783"W	1821.46	253.509	5.99	5.56	-2.44	
6831.00	68.130	164.460	6300.50	-31.72	-558.88	-1735.18	1667211.96	14224287.44	39°10'16.335"N	80°54'19.640"W	1822.96	252.147	4.16	3.91	-1.51	
6864.00†	69.780	163.866	6312.35	-0.96	-588.51	-1726.77	1667220.36	14224257.82	39°10'16.042"N	80°54'19.533"W	1824.30	251.180	5.27	5.00	-1.80	Tully: 6864' MD
6879.00	70.530	163.600	6317.44	13.13	-602.05	-1722.82	1667224.31	14224244.28	39°10'15.908"N	80°54'19.483"W	1824.99	250.738	5.27	5.00	-1.77	
6918.00†	73.244	163.412	6329.56	50.16	-637.59	-1712.30	1667234.83	14224208.76	39°10'15.556"N	80°54'19.350"W	1827.15	249.577	6.97	6.96	-0.48	Marcellus POE: 6918' MD
6927.00	73.870	163.370	6332.11	58.79	-645.86	-1709.83	1667237.30	14224200.49	39°10'15.475"N	80°54'19.319"W	1827.75	249.307	6.97	6.96	-0.47	
6973.00	77.840	163.210	6343.35	103.35	-688.57	-1697.01	1667250.12	14224157.79	39°10'15.052"N	80°54'19.157"W	1831.38	247.915	8.64	8.63	-0.35	
7020.00	83.490	162.530	6350.97	149.69	-732.87	-1683.35	1667263.77	14224113.51	39°10'14.614"N	80°54'18.984"W	1835.97	246.473	12.11	12.02	-1.45	
7068.00	88.890	162.600	6354.16	197.55	-778.55	-1669.01	1667278.11	14224067.85	39°10'14.163"N	80°54'18.802"W	1841.66	244.992	11.25	11.25	0.15	
7162.00	89.320	160.780	6355.63	291.53	-867.78	-1639.48	1667307.62	14223978.66	39°10'13.280"N	80°54'18.429"W	1854.98	242.108	1.99	0.46	-1.94	
7257.00	90.180	158.850	6356.04	386.50	-956.94	-1606.70	1667340.39	14223889.54	39°10'12.399"N	80°54'18.014"W	1870.09	239.222	2.22	0.91	-2.03	
7351.00	89.170	158.050	6356.57	480.39	-1044.36	-1572.18	1667374.90	14223802.15	39°10'11.534"N	80°54'17.576"W	1887.44	236.405	1.37	-1.07	-0.85	
7446.00	90.620	160.430	6356.75	575.33	-1133.19	-1538.51	1667408.56	14223713.36	39°10'10.656"N	80°54'17.150"W	1910.79	233.627	2.93	1.53	2.51	
7540.00	89.910	160.260	6356.31	669.32	-1221.71	-1506.89	1667440.16	14223624.87	39°10'09.781"N	80°54'16.750"W	1939.92	230.967	0.78	-0.76	-0.18	
7635.00	89.880	160.200	6356.49	764.31	-1311.11	-1474.76	1667472.28	14223535.51	39°10'08.897"N	80°54'16.343"W	1973.30	228.362	0.07	-0.03	-0.06	
7729.00	89.720	159.010	6356.81	858.27	-1399.21	-1442.00	1667505.02	14223447.44	39°10'08.026"N	80°54'15.928"W	2009.27	225.863	1.28	-0.17	-1.27	
7824.00	89.720	158.480	6357.28	953.19	-1487.75	-1407.56	1667539.45	14223358.94	39°10'07.150"N	80°54'15.492"W	2048.08	223.414	0.56	0.00	-0.56	
7918.00	89.660	157.680	6357.79	1047.05	-1574.95	-1372.47	1667574.53	14223271.77	39°10'06.288"N	80°54'15.048"W	2089.05	221.070	0.85	-0.06	-0.85	
8012.00	89.630	158.580	6358.37	1140.92	-1662.18	-1337.46	1667609.53	14223184.57	39°10'05.425"N	80°54'14.605"W	2133.46	218.821	0.96	-0.03	0.96	
8107.00	89.660	158.650	6358.96	1235.82	-1750.64	-1302.82	1667644.15	14223096.15	39°10'04.551"N	80°54'14.166"W	2182.22	216.656	0.08	0.03	0.07	
8202.00	89.140	159.000	6359.95	1330.74	-1839.22	-1268.50	1667678.45	14223007.61	39°10'03.675"N	80°54'13.731"W	2234.24	214.594	0.66	-0.55	0.37	
8296.00	89.230	160.570	6361.29	1424.70	-1927.42	-1236.03	1667710.92	14222919.44	39°10'02.803"N	80°54'13.320"W	2289.70	212.671	1.67	0.10	1.67	
8391.00	89.140	161.340	6362.64	1519.69	-2017.21	-1205.03	1667741.90	14222829.69	39°10'01.915"N	80°54'12.928"W	2349.73	210.853	0.82	-0.09	0.81	
8485.00	89.940	163.500	6363.40	1613.66	-2106.81	-1176.64	1667770.28	14222740.12	39°10'01.029"N	80°54'12.569"W	2413.12	209.183	2.45	0.85	2.30	

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Actual Wellpath Report

Karen Unit 2H AWP Proj: 19386'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #06
Area	Ritchie County, WV	Well	Karen Unit 2H
Field	Ritchie	Wellbore	Karen Unit 2H AWB
Facility	Ireland North Pad		

WELLPATH DATA (236 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
8580.00	89.720	164.520	6363.68	1708.54	-2198.13	-1150.47	1667796.43	14222648.84	39°10'00.126"N	80°54'12.238"W	2481.00	207.627	1.10	-0.23	1.07	
8674.00	90.000	162.470	6363.91	1802.45	-2288.26	-1123.77	1667823.13	14222558.75	39°09'59.235"N	80°54'11.900"W	2549.31	206.156	2.20	0.30	-2.18	
8769.00	90.310	161.990	6363.65	1897.43	-2378.72	-1094.77	1667852.11	14222468.32	39°09'58.341"N	80°54'11.533"W	2618.56	204.714	0.60	0.33	-0.51	
8863.00	89.050	160.130	6364.18	1991.43	-2467.63	-1064.27	1667882.61	14222379.45	39°09'57.462"N	80°54'11.147"W	2687.35	203.330	2.39	-1.34	-1.98	
8958.00	90.680	162.230	6364.40	2086.42	-2557.54	-1033.62	1667913.24	14222289.58	39°09'56.573"N	80°54'10.759"W	2758.51	202.006	2.80	1.72	2.21	
9052.00	89.110	160.220	6364.57	2180.41	-2646.53	-1003.37	1667943.48	14222200.62	39°09'55.693"N	80°54'10.376"W	2830.35	200.763	2.71	-1.67	-2.14	
9146.00	90.280	160.500	6365.07	2274.40	-2735.06	-971.78	1667975.06	14222112.13	39°09'54.817"N	80°54'09.976"W	2902.57	199.560	1.28	1.24	0.30	
9241.00	89.110	158.100	6365.58	2369.34	-2823.92	-938.20	1668008.62	14222023.31	39°09'53.939"N	80°54'09.551"W	2975.69	198.378	2.81	-1.23	-2.53	
9335.00	89.570	162.090	6366.66	2463.30	-2912.28	-906.21	1668040.60	14221934.98	39°09'53.065"N	80°54'09.146"W	3050.01	197.284	4.27	0.49	4.24	
9430.00	90.520	167.470	6366.59	2558.07	-3003.91	-881.28	1668065.52	14221843.39	39°09'52.159"N	80°54'08.831"W	3130.51	196.350	5.75	1.00	5.66	
9525.00	89.600	169.040	6366.49	2652.34	-3096.92	-861.94	1668084.85	14221750.42	39°09'51.240"N	80°54'08.587"W	3214.63	195.553	1.92	-0.97	1.65	
9620.00	88.920	170.480	6367.71	2746.26	-3190.39	-845.05	1668101.73	14221656.98	39°09'50.316"N	80°54'08.374"W	3300.41	194.835	1.68	-0.72	1.52	
9715.00	89.110	167.850	6369.35	2840.30	-3283.68	-827.20	1668119.58	14221563.73	39°09'49.393"N	80°54'08.148"W	3386.27	194.139	2.78	0.20	-2.77	
9810.00	89.200	164.870	6370.75	2934.89	-3375.98	-804.80	1668141.97	14221471.47	39°09'48.481"N	80°54'07.865"W	3470.58	193.409	3.14	0.09	-3.14	
9904.00	89.820	161.930	6371.55	3028.80	-3466.05	-777.95	1668168.81	14221381.44	39°09'47.590"N	80°54'07.525"W	3552.28	192.650	3.20	0.66	-3.13	
9999.00	89.940	159.130	6371.75	3123.79	-3555.60	-746.29	1668200.46	14221291.91	39°09'46.705"N	80°54'07.125"W	3633.08	191.854	2.95	0.13	-2.95	
10094.00	89.690	156.600	6372.06	3218.63	-3643.60	-710.50	1668236.23	14221203.96	39°09'45.835"N	80°54'06.672"W	3712.22	191.034	2.68	-0.26	-2.66	
10189.00	89.780	154.810	6372.50	3313.19	-3730.18	-671.41	1668275.30	14221117.41	39°09'44.978"N	80°54'06.177"W	3790.12	190.204	1.89	0.09	-1.88	
10283.00	89.630	151.700	6372.98	3406.29	-3814.11	-629.12	1668317.58	14221033.51	39°09'44.148"N	80°54'05.641"W	3865.65	189.366	3.31	-0.16	-3.31	
10378.00	89.690	153.560	6373.55	3500.23	-3898.47	-585.44	1668361.24	14220949.18	39°09'43.314"N	80°54'05.087"W	3942.18	188.540	1.96	0.06	1.96	
10472.00	90.550	157.050	6373.35	3593.73	-3983.86	-546.18	1668400.49	14220863.83	39°09'42.470"N	80°54'04.590"W	4021.12	187.806	3.82	0.91	3.71	
10567.00	90.370	158.010	6372.59	3688.54	-4071.64	-509.87	1668436.78	14220776.08	39°09'41.602"N	80°54'04.130"W	4103.44	187.138	1.03	-0.19	1.01	
10661.00	90.180	159.510	6372.14	3782.45	-4159.25	-475.82	1668470.82	14220688.51	39°09'40.735"N	80°54'03.699"W	4186.38	186.526	1.61	-0.20	1.60	
10756.00	90.220	161.640	6371.80	3877.44	-4248.84	-444.23	1668502.40	14220598.95	39°09'39.850"N	80°54'03.299"W	4272.00	185.969	2.24	0.04	2.24	
10850.00	90.250	164.590	6371.42	3971.37	-4338.78	-416.93	1668529.68	14220509.05	39°09'38.960"N	80°54'02.954"W	4358.76	185.489	3.14	0.03	3.14	
10945.00	90.430	164.210	6370.85	4066.22	-4430.28	-391.38	1668555.22	14220417.59	39°09'38.056"N	80°54'02.631"W	4447.53	185.049	0.44	0.19	-0.40	
11039.00	90.800	163.330	6369.85	4160.11	-4520.52	-365.11	1668581.48	14220327.38	39°09'37.163"N	80°54'02.299"W	4535.24	184.618	1.02	0.39	-0.94	
11134.00	90.430	160.780	6368.83	4255.09	-4610.89	-335.84	1668610.74	14220237.05	39°09'36.270"N	80°54'01.929"W	4623.10	184.166	2.71	-0.39	-2.68	
11229.00	90.310	159.150	6368.21	4350.06	-4700.14	-303.30	1668643.27	14220147.84	39°09'35.388"N	80°54'01.517"W	4709.91	183.692	1.72	-0.13	-1.72	
11323.00	90.370	159.610	6367.65	4444.02	-4788.11	-270.20	1668676.36	14220059.90	39°09'34.518"N	80°54'01.098"W	4795.73	183.230	0.49	0.06	0.49	

Antero Resources Corporation
 Environmental Protection
 Department of Environmental Protection



Actual Wellpath Report

Karen Unit 2H AWP Proj: 19386'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #06
Area	Ritchie County, WV	Well	Karen Unit 2H
Field	Ritchie	Wellbore	Karen Unit 2H AWB
Facility	Ireland North Pad		

WELLPATH DATA (236 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
11418.00	90.400	160.400	6367.02	4538.99	-4877.38	-237.71	1668708.83	14219970.66	39°09'33.635"N	80°54'00.686"W	4883.17	182.790	0.83	0.03	0.83	
11512.00	90.370	157.520	6366.38	4632.91	-4965.10	-203.97	1668742.56	14219882.98	39°09'32.767"N	80°54'00.259"W	4969.29	182.352	3.06	-0.03	-3.06	
11607.00	90.310	156.490	6365.82	4727.66	-5052.55	-166.86	1668779.65	14219795.56	39°09'31.903"N	80°53'59.789"W	5055.31	181.891	1.09	-0.06	-1.09	
11701.00	89.820	160.100	6365.71	4821.53	-5139.87	-132.10	1668814.40	14219708.28	39°09'31.039"N	80°53'59.349"W	5141.57	181.472	3.88	-0.52	3.84	
11796.00	90.370	163.380	6365.56	4916.51	-5230.08	-102.34	1668844.15	14219618.11	39°09'30.147"N	80°53'58.973"W	5231.08	181.121	3.50	0.58	3.45	
11890.00	90.340	163.810	6364.97	5010.42	-5320.25	-75.79	1668870.88	14219527.98	39°09'29.256"N	80°53'58.637"W	5320.79	180.816	0.46	-0.03	0.46	
11985.00	90.460	164.860	6364.31	5105.27	-5411.72	-50.14	1668896.32	14219436.55	39°09'28.352"N	80°53'58.313"W	5411.95	180.531	1.11	0.13	1.11	
12080.00	90.620	165.830	6363.42	5200.01	-5503.62	-26.11	1668920.35	14219344.68	39°09'27.443"N	80°53'58.009"W	5503.68	180.272	1.03	0.17	1.02	
12174.00	90.490	164.540	6362.50	5293.77	-5594.49	-2.07	1668944.37	14219253.85	39°09'26.544"N	80°53'57.705"W	5594.49	180.021	1.38	-0.14	-1.37	
12269.00	90.580	163.590	6361.62	5388.65	-5685.83	24.01	1668970.44	14219162.54	39°09'25.641"N	80°53'57.375"W	5685.88	179.758	1.00	0.09	-1.00	
12363.00	90.650	161.920	6360.61	5482.60	-5775.60	51.87	1668998.30	14219072.81	39°09'24.754"N	80°53'57.023"W	5775.83	179.485	1.78	0.07	-1.78	
12458.00	90.490	159.960	6359.66	5577.59	-5865.38	82.89	1669029.30	14218983.06	39°09'23.866"N	80°53'56.630"W	5865.97	179.190	2.07	-0.17	-2.06	
12552.00	90.710	160.210	6358.68	5671.57	-5953.76	114.91	1669061.31	14218894.72	39°09'22.992"N	80°53'56.225"W	5954.86	178.894	0.35	0.23	0.27	
12647.00	90.490	159.770	6357.68	5766.54	-6043.02	147.41	1669093.80	14218805.50	39°09'22.110"N	80°53'55.814"W	6044.81	178.603	0.52	-0.23	-0.46	
12741.00	90.680	160.630	6356.72	5860.52	-6131.45	179.25	1669125.63	14218717.10	39°09'21.235"N	80°53'55.411"W	6134.07	178.325	0.94	0.20	0.91	
12836.00	90.460	160.820	6355.78	5955.52	-6221.12	210.61	1669156.97	14218627.46	39°09'20.349"N	80°53'55.014"W	6224.69	178.061	0.31	-0.23	0.20	
12930.00	90.710	159.810	6354.82	6049.50	-6309.62	242.27	1669188.62	14218539.00	39°09'19.473"N	80°53'54.613"W	6314.27	177.801	1.11	0.27	-1.07	
13025.00	90.520	159.200	6353.80	6144.46	-6398.61	275.53	1669221.87	14218450.05	39°09'18.594"N	80°53'54.192"W	6404.54	177.534	0.67	-0.20	-0.64	
13120.00	90.770	159.680	6352.73	6239.41	-6487.55	308.89	1669255.21	14218361.14	39°09'17.714"N	80°53'53.770"W	6494.90	177.274	0.57	0.26	0.51	
13214.00	90.620	159.720	6351.59	6333.37	-6575.70	341.50	1669287.81	14218273.02	39°09'16.842"N	80°53'53.358"W	6584.57	177.027	0.17	-0.16	0.04	
13309.00	90.490	162.440	6350.67	6428.36	-6665.56	372.30	1669318.60	14218183.21	39°09'15.954"N	80°53'52.968"W	6675.95	176.803	2.87	-0.14	2.86	
13403.00	90.860	163.230	6349.56	6522.31	-6755.36	400.04	1669346.33	14218093.44	39°09'15.066"N	80°53'52.617"W	6767.20	176.611	0.93	0.39	0.84	
13498.00	90.920	160.920	6348.09	6617.28	-6845.74	429.27	1669375.55	14218003.10	39°09'14.172"N	80°53'52.247"W	6859.18	176.412	2.43	0.06	-2.43	
13592.00	90.920	158.270	6346.58	6711.22	-6933.82	462.04	1669408.30	14217915.05	39°09'13.301"N	80°53'51.833"W	6949.20	176.188	2.82	0.00	-2.82	
13687.00	90.890	158.300	6345.08	6806.09	-7022.07	497.19	1669443.43	14217826.84	39°09'12.429"N	80°53'51.388"W	7039.64	175.950	0.04	-0.03	0.03	
13781.00	90.950	158.670	6343.57	6899.98	-7109.50	531.66	1669477.89	14217739.44	39°09'11.564"N	80°53'50.951"W	7129.36	175.723	0.40	0.06	0.39	
13876.00	90.550	158.830	6342.32	6994.89	-7198.04	566.08	1669512.30	14217650.94	39°09'10.689"N	80°53'50.516"W	7220.26	175.503	0.45	-0.42	0.17	
13970.00	90.180	160.990	6341.73	7088.86	-7286.31	598.37	1669544.57	14217562.70	39°09'09.816"N	80°53'50.107"W	7310.84	175.305	2.33	-0.39	2.30	
14064.00	90.280	160.970	6341.35	7182.86	-7375.18	629.00	1669575.20	14217473.87	39°09'08.937"N	80°53'49.719"W	7401.95	175.125	0.11	0.11	-0.02	
14159.00	90.280	163.490	6340.88	7277.83	-7465.64	657.99	1669604.18	14217383.45	39°09'08.043"N	80°53'49.353"W	7494.58	174.963	2.65	0.00	2.65	

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BY: [Signature]
W. [Signature]
Environmental Protection



Actual Wellpath Report

Karen Unit 2H AWP Proj: 19386'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #06
Area	Ritchie County, WV	Well	Karen Unit 2H
Field	Ritchie	Wellbore	Karen Unit 2H AWB
Facility	Ireland North Pad		

WELLPATH DATA (236 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
14253.00	89.970	164.320	6340.68	7371.72	-7555.95	684.05	1669630.22	14217293.17	39°09'07.150"N	80°53'49.023"W	7586.85	174.827	0.94	-0.33	0.88	
14348.00	90.000	167.460	6340.70	7466.38	-7648.07	707.21	1669653.37	14217201.08	39°09'06.239"N	80°53'48.731"W	7680.70	174.717	3.31	0.03	3.31	
14442.00	89.970	168.090	6340.73	7559.76	-7739.94	727.12	1669673.27	14217109.25	39°09'05.331"N	80°53'48.479"W	7774.02	174.633	0.67	-0.03	0.67	
14537.00	89.940	168.980	6340.80	7653.97	-7833.05	746.00	1669692.14	14217016.19	39°09'04.410"N	80°53'48.241"W	7868.49	174.560	0.94	-0.03	0.94	
14631.00	89.940	168.510	6340.90	7747.14	-7925.24	764.34	1669710.48	14216924.03	39°09'03.499"N	80°53'48.009"W	7962.01	174.491	0.50	0.00	-0.50	
14726.00	89.940	166.620	6341.00	7841.54	-8018.00	784.80	1669730.93	14216831.30	39°09'02.582"N	80°53'47.751"W	8056.32	174.410	1.99	0.00	-1.99	
14820.00	90.220	163.060	6340.87	7935.33	-8108.72	809.38	1669755.50	14216740.62	39°09'01.685"N	80°53'47.440"W	8149.01	174.300	3.80	0.30	-3.79	
14914.00	90.120	160.900	6340.59	8029.32	-8198.10	838.46	1669784.56	14216651.28	39°09'00.801"N	80°53'47.073"W	8240.87	174.160	2.30	-0.11	-2.30	
15009.00	90.220	160.410	6340.31	8124.31	-8287.74	869.92	1669816.02	14216561.68	39°08'59.915"N	80°53'46.674"W	8333.27	174.008	0.53	0.11	-0.52	
15103.00	90.220	159.000	6339.95	8218.28	-8375.90	902.53	1669848.61	14216473.55	39°08'59.043"N	80°53'46.262"W	8424.38	173.850	1.50	0.00	-1.50	
15198.00	90.250	157.880	6339.56	8313.17	-8464.25	937.44	1669883.51	14216385.24	39°08'58.169"N	80°53'45.820"W	8516.00	173.680	1.18	0.03	-1.18	
15292.00	90.150	157.640	6339.23	8407.01	-8551.26	973.01	1669919.07	14216298.26	39°08'57.309"N	80°53'45.370"W	8606.44	173.508	0.28	-0.11	-0.26	
15387.00	90.280	156.760	6338.87	8501.78	-8638.83	1009.83	1669955.87	14216210.72	39°08'56.443"N	80°53'44.904"W	8697.65	173.333	0.94	0.14	-0.93	
15481.00	90.000	156.950	6338.64	8595.51	-8725.27	1046.78	1669992.80	14216124.32	39°08'55.588"N	80°53'44.436"W	8787.83	173.159	0.38	-0.30	0.20	
15576.00	90.120	156.580	6338.54	8690.24	-8812.56	1084.25	1670030.26	14216037.06	39°08'54.725"N	80°53'43.962"W	8879.01	172.986	0.41	0.13	-0.39	
15670.00	90.120	157.770	6338.35	8784.01	-8899.20	1120.72	1670066.71	14215950.46	39°08'53.868"N	80°53'43.500"W	8969.49	172.822	1.27	0.00	1.27	
15765.00	90.280	159.920	6338.02	8878.92	-8987.79	1155.00	1670100.98	14215861.91	39°08'52.992"N	80°53'43.066"W	9061.70	172.677	2.27	0.17	2.26	
15859.00	90.120	160.240	6337.69	8972.91	-9076.17	1187.03	1670132.99	14215773.57	39°08'52.118"N	80°53'42.661"W	9153.46	172.549	0.38	-0.17	0.34	
15954.00	90.030	162.210	6337.56	9067.90	-9166.11	1217.60	1670163.56	14215683.66	39°08'51.229"N	80°53'42.274"W	9246.62	172.433	2.08	-0.09	2.07	
16048.00	90.340	163.560	6337.26	9161.86	-9255.94	1245.26	1670191.21	14215593.86	39°08'50.341"N	80°53'41.924"W	9339.33	172.338	1.47	0.33	1.44	
16143.00	90.770	165.460	6336.34	9256.68	-9347.48	1270.63	1670216.57	14215502.36	39°08'49.436"N	80°53'41.604"W	9433.45	172.259	2.05	0.45	2.00	
16237.00	90.580	164.740	6335.23	9350.45	-9438.31	1294.80	1670240.73	14215411.56	39°08'48.538"N	80°53'41.298"W	9526.71	172.189	0.79	-0.20	-0.77	
16332.00	90.520	164.710	6334.32	9445.26	-9529.95	1319.83	1670265.74	14215319.96	39°08'47.632"N	80°53'40.982"W	9620.91	172.115	0.07	-0.06	-0.03	
16426.00	90.550	163.720	6333.44	9539.13	-9620.40	1345.40	1670291.30	14215229.55	39°08'46.737"N	80°53'40.659"W	9714.02	172.039	1.05	0.03	-1.05	
16521.00	90.890	163.150	6332.25	9634.04	-9711.45	1372.48	1670318.37	14215138.53	39°08'45.837"N	80°53'40.316"W	9807.96	171.956	0.70	0.36	-0.60	
16615.00	90.770	159.810	6330.89	9728.02	-9800.56	1402.33	1670348.21	14215049.46	39°08'44.956"N	80°53'39.939"W	9900.38	171.857	3.56	-0.13	-3.55	
16710.00	90.920	158.040	6329.49	9822.93	-9889.20	1436.49	1670382.35	14214960.86	39°08'44.080"N	80°53'39.507"W	9992.98	171.735	1.87	0.16	-1.86	
16804.00	90.860	157.780	6328.02	9916.77	-9976.28	1471.83	1670417.69	14214873.81	39°08'43.218"N	80°53'39.059"W	10084.27	171.608	0.28	-0.06	-0.28	
16899.00	90.770	157.730	6326.67	10011.59	-10064.20	1507.79	1670453.63	14214785.92	39°08'42.349"N	80°53'38.604"W	10176.52	171.479	0.11	-0.09	-0.05	
16993.00	90.710	158.050	6325.46	10105.43	-10151.29	1543.17	1670488.99	14214698.88	39°08'41.488"N	80°53'38.156"W	10267.91	171.356	0.35	-0.06	0.34	

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Environmental Section



Actual Wellpath Report

Karen Unit 2H AWP Proj: 19386'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #06
Area	Ritchie County, WV	Well	Karen Unit 2H
Field	Ritchie	Wellbore	Karen Unit 2H AWP
Facility	Ireland North Pad		

WELLPATH DATA (236 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
17088.00	90.550	158.490	6324.42	10200.31	-10239.53	1578.34	1670524.15	14214610.67	39°08'40.615"N	80°53'37.711"W	10360.46	171.237	0.49	-0.17	0.46	
17183.00	89.690	156.000	6324.22	10295.08	-10327.13	1615.08	1670560.88	14214523.11	39°08'39.749"N	80°53'37.246"W	10452.66	171.111	2.77	-0.91	-2.62	
17277.00	89.850	159.610	6324.59	10388.90	-10414.15	1650.58	1670596.37	14214436.12	39°08'38.889"N	80°53'36.797"W	10544.14	170.994	3.84	0.17	3.84	
17371.00	89.880	164.070	6324.82	10482.87	-10503.44	1679.87	1670625.64	14214346.86	39°08'38.006"N	80°53'36.427"W	10636.93	170.913	4.74	0.03	4.74	
17466.00	89.970	161.780	6324.94	10577.82	-10594.25	1707.77	1670653.53	14214256.09	39°08'37.108"N	80°53'36.074"W	10731.01	170.843	2.41	0.09	-2.41	
17561.00	90.000	159.840	6324.96	10672.81	-10683.96	1738.99	1670684.74	14214166.41	39°08'36.221"N	80°53'35.679"W	10824.56	170.755	2.04	0.03	-2.04	
17655.00	89.820	160.440	6325.11	10766.80	-10772.37	1770.92	1670716.66	14214078.04	39°08'35.346"N	80°53'35.275"W	10916.97	170.664	0.67	-0.19	0.64	
17750.00	89.910	162.060	6325.34	10861.79	-10862.33	1801.46	1670747.18	14213988.12	39°08'34.457"N	80°53'34.889"W	11010.70	170.584	1.71	0.09	1.71	
17844.00	89.940	162.930	6325.46	10955.77	-10951.97	1829.73	1670775.45	14213898.51	39°08'33.571"N	80°53'34.531"W	11103.77	170.515	0.93	0.03	0.93	
17939.00	89.910	164.640	6325.58	11050.66	-11043.19	1856.26	1670801.96	14213807.33	39°08'32.669"N	80°53'34.196"W	11198.12	170.458	1.80	-0.03	1.80	
18033.00	89.970	164.390	6325.68	11144.50	-11133.78	1881.36	1670827.05	14213716.78	39°08'31.773"N	80°53'33.879"W	11291.61	170.409	0.27	0.06	-0.27	
18128.00	89.910	164.820	6325.78	11239.33	-11225.37	1906.58	1670852.26	14213625.22	39°08'30.867"N	80°53'33.560"W	11386.13	170.361	0.46	-0.06	0.45	
18222.00	90.340	164.640	6325.58	11333.14	-11316.05	1931.33	1670877.00	14213534.58	39°08'29.971"N	80°53'33.247"W	11479.68	170.315	0.50	0.46	-0.19	
18317.00	89.880	160.380	6325.39	11428.09	-11406.64	1959.88	1670905.54	14213444.03	39°08'29.075"N	80°53'32.886"W	11573.79	170.251	4.51	-4.48	-4.48	
18411.00	89.480	157.530	6325.92	11522.01	-11494.36	1993.63	1670939.28	14213356.34	39°08'28.208"N	80°53'32.459"W	11665.97	170.160	3.06	-4.43	-3.03	
18505.00	89.600	155.990	6326.67	11615.73	-11580.73	2030.72	1670976.35	14213270.01	39°08'27.354"N	80°53'31.990"W	11757.42	170.054	1.84	0.13	-1.64	
18600.00	89.780	156.210	6327.19	11710.36	-11667.58	2069.21	1671014.82	14213183.19	39°08'26.495"N	80°53'31.503"W	11849.64	169.943	0.30	0.19	0.23	
18694.00	89.600	157.970	6327.70	11804.12	-11754.16	2105.80	1671051.40	14213096.65	39°08'25.639"N	80°53'31.040"W	11941.30	169.843	1.88	-0.19	1.87	
18789.00	89.720	159.350	6328.26	11899.03	-11842.64	2140.37	1671085.95	14213008.20	39°08'24.764"N	80°53'30.602"W	12034.51	169.755	1.46	0.13	1.45	
18883.00	89.750	161.230	6328.69	11993.01	-11931.13	2172.07	1671117.64	14212919.75	39°08'23.889"N	80°53'30.201"W	12127.23	169.682	2.00	0.03	2.00	
18978.00	89.820	163.260	6329.05	12087.99	-12021.60	2201.04	1671146.60	14212829.31	39°08'22.994"N	80°53'29.835"W	12221.43	169.625	2.14	0.07	2.14	
19072.00	89.880	165.120	6329.30	12181.85	-12112.04	2226.64	1671172.20	14212738.91	39°08'22.100"N	80°53'29.511"W	12315.01	169.583	1.98	0.06	1.98	
19166.00	89.880	164.390	6329.49	12275.67	-12202.73	2251.36	1671196.90	14212648.26	39°08'21.203"N	80°53'29.199"W	12408.68	169.547	0.78	0.00	-0.78	
19261.00	89.780	164.410	6329.78	12370.51	-12294.23	2276.91	1671222.44	14212556.79	39°08'20.299"N	80°53'28.876"W	12503.30	169.508	0.11	-0.11	0.02	
19361.00	89.690	163.500	6330.24	12470.39	-12390.33	2304.55	1671250.07	14212460.73	39°08'19.348"N	80°53'28.527"W	12602.83	169.464	0.91	-0.09	-0.91	
19386.00	89.690	163.500	6330.37	12495.37	-12414.30	2311.65	1671257.16	14212436.77	39°08'19.111"N	80°53'28.437"W	12627.69	169.452	0.00	0.00	0.00	Projected MD at TD: 19386'

Prepared by: [Name]
 Date: [Date]
 Checked by: [Name]
 Date: [Date]
 Approved by: [Name]
 Date: [Date]



Actual Wellpath Report

Karen Unit 2H AWP Proj: 19386'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #06
Area	Ritchie County, WV	Well	Karen Unit 2H
Field	Ritchie	Wellbore	Karen Unit 2H AWB
Facility	Ireland North Pad		

HOLE & CASING SECTIONS - Ref Wellbore: Karen Unit 2H AWB Ref Wellpath: Karen Unit 2H AWP Proj: 19386'									
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	-0.16	-0.49
20in Conductor	30.00	110.00	80.00	30.00	110.00	0.00	0.00	-0.16	-0.49
17.5in Open Hole	110.00	481.00	371.00	110.00	480.99	-0.16	-0.49	-1.13	-2.46
13.375in Casing Surface	30.00	481.00	451.00	30.00	480.99	0.00	0.00	-1.13	-2.46
12.25in Open Hole	481.00	2659.60	2178.60	480.99	2577.34	-1.13	-2.46	-12.92	-517.80
9.625in Casing Intermediate	30.00	2659.60	2629.60	30.00	2577.34	0.00	0.00	-12.92	-517.80
8.75in Open Hole	2659.60	6286.00	3626.40	2577.34	5949.60	-12.92	-517.80	-165.15	-1779.28
8.5in Open Hole	6286.00	19386.00	13100.00	5949.60	6330.37	-165.15	-1779.28	-12414.30	2311.65
5.5in Casing Production	30.00	19386.00	19356.00	30.00	6330.37	0.00	0.00	-12414.30	2311.65

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Karen Unit 2H POE Plat	6328.00	-614.34	-1715.13	1667232.00	14224232.00	39°10'15.786"N	80°54'19.386"W	point
Karen Unit 2H POE Rev-1	6328.00	-620.22	-1712.61	1667234.52	14224226.12	39°10'15.728"N	80°54'19.354"W	point
Karen Unit 2H BHL Plat	6353.00	-14837.56	3140.95	1672086.13	14210014.49	39°07'55.150"N	80°53'17.950"W	point
Karen Unit 2H BHL Rev-1	6353.00	-12450.28	2325.54	1671271.05	14212400.80	39°08'18.756"N	80°53'28.261"W	point
Karen Unit 2H LP Rev-1	6353.00	-793.91	-1653.32	1667293.78	14224052.50	39°10'14.011"N	80°54'18.603"W	point

APPROVED
 Office of Oil and Gas
 FEB 16 2020
 West Virginia Department of
 Environmental Protection



Actual Wellpath Report

Karen Unit 2H AWP Proj: 19386'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #06
Area	Ritchie County, WV	Well	Karen Unit 2H
Field	Ritchie	Wellbore	Karen Unit 2H AWB
Facility	Ireland North Pad		

WELLPATH COMPOSITION - Ref Wellbore: Karen Unit 2H AWB Ref Wellpath: Karen Unit 2H AWP Proj: 19386'				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
30.00	440.00	Gyrodatta standard - Single-shot	01 Gyrodatta SS Gyro <17-1/2">(100'-425')	Karen Unit 2H AWB
440.00	2562.00	ISCWSA MWD, Rev. 4 (Standard)	02 WFT EM <12-1/4">(425')(568'-2547')	Karen Unit 2H AWB
2562.00	6214.00	ISCWSA MWD, Rev. 4 (Standard)	03 WFT EM <8-3/4">(2547')(2685'-6199')	Karen Unit 2H AWB
6214.00	19361.00	BHI AutoTrak Curve (Short)	04 BH AT Curve <8-1/2"> (6214')(6257'-19361')	Karen Unit 2H AWB
19361.00	19386.00	Blind Drilling (std)	Projection to bit	Karen Unit 2H AWB

Prepared by: [Name]
 Date: [Date]
 Checked by: [Name]
 Date: [Date]



Actual Wellpath Report

Karen Unit 2H AWP Proj: 19386'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #06
Area	Ritchie County, WV	Well	Karen Unit 2H
Field	Ritchie	Wellbore	Karen Unit 2H AWB
Facility	Ireland North Pad		

COMMENTS
<p>Wellpath general comments API: 47-085-10370-0000 BHI Job #: 109613304 Rig: H&P 519 Duration: 01/23/2019-01/26/2019 Gyrodata SS Gyro <17-1/2">(100'-425') WFT EM <12-1/4">(425')(568'-2547') WFT EM <8-3/4">(2547')(2685'-6199') BH AT Curve <8-1/2"> (6214')(6257'-19361') Middlesex: 6565' MD Burkett: 6763' MD Tully: 6864' MD Marcellus POE: 6918' MD Projected MD at TD: 19386'</p>

Approved by:
[Signature]
[Name]
[Title]
[Department]