



# Actual Wellpath Report

Hughes River Unit 2H AWP Proj: 19235'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Hughes River Unit 2H
Field	Ritchie	Wellbore	Hughes River Unit 2H 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	2/25/2019 at 2:04:33 PM
Convergence at slot	0.06° East	Database/Source file	WA_MPL_EasternUS_Defn/Hughes_River_Unit_2H_AWP_Proj_19235_.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-16.15	37.03	1668974.01	14224833.99	39°10'21.720"N	80°53'57.250"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 #09)	30.00ft
MD Reference Pt	H&P 519 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	161.22°

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WELLPATH DATA (239 stations) † = interpolated/extrapolated station																	
MD (ft)	Course Length (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	0.00	0.000	158.770	0.00	0.00	0.00	0.00	1668974.01	14224833.99	39°10'21.720"N	80°53'57.250"W	0.00	0.000	0.00	0.00	0.00	
30.00	30.00	0.000	158.770	30.00	0.00	0.00	0.00	1668974.01	14224833.99	39°10'21.720"N	80°53'57.250"W	0.00	0.000	0.00	0.00	0.00	
65.00	35.00	0.540	158.770	65.00	0.16	-0.15	0.06	1668974.07	14224833.83	39°10'21.718"N	80°53'57.249"W	0.16	158.770	1.54	1.54	453.63	Gyrodata MS Gyro <17-1/2">(50'-453')
90.00	25.00	0.630	155.510	90.00	0.42	-0.39	0.16	1668974.17	14224833.60	39°10'21.716"N	80°53'57.248"W	0.42	157.704	0.38	0.36	-13.04	
115.00	25.00	0.820	155.420	115.00	0.73	-0.68	0.29	1668974.30	14224833.31	39°10'21.713"N	80°53'57.246"W	0.74	156.740	0.76	0.76	-0.36	
140.00	25.00	0.930	151.990	139.99	1.11	-1.02	0.46	1668974.47	14224832.97	39°10'21.710"N	80°53'57.244"W	1.12	155.667	0.49	0.44	-13.72	
165.00	25.00	0.980	154.580	164.99	1.52	-1.39	0.65	1668974.66	14224832.60	39°10'21.706"N	80°53'57.242"W	1.53	155.029	0.26	0.20	10.36	
190.00	25.00	0.670	157.120	189.99	1.88	-1.72	0.80	1668974.81	14224832.27	39°10'21.703"N	80°53'57.240"W	1.89	155.140	1.25	-1.24	10.16	
215.00	25.00	0.730	150.230	214.99	2.19	-1.99	0.93	1668974.94	14224832.00	39°10'21.700"N	80°53'57.238"W	2.20	154.916	0.41	0.24	-27.56	
240.00	25.00	0.600	149.100	239.98	2.47	-2.24	1.08	1668975.09	14224831.74	39°10'21.698"N	80°53'57.236"W	2.49	154.811	0.52	-0.52	-4.52	
265.00	25.00	0.540	140.700	264.98	2.71	-2.45	1.22	1668975.23	14224831.54	39°10'21.696"N	80°53'57.235"W	2.73	153.480	0.41	-0.24	-33.60	
290.00	25.00	0.590	139.530	289.98	2.94	-2.63	1.38	1668975.39	14224831.35	39°10'21.694"N	80°53'57.233"W	2.97	152.360	0.21	0.20	-4.68	
315.00	25.00	0.640	141.130	314.98	3.19	-2.84	1.55	1668975.56	14224831.15	39°10'21.692"N	80°53'57.230"W	3.24	151.391	0.21	0.20	6.40	
340.00	25.00	0.360	153.520	339.98	3.40	-3.02	1.67	1668975.68	14224830.97	39°10'21.690"N	80°53'57.229"W	3.45	151.026	1.19	-1.12	49.56	
365.00	25.00	0.380	139.660	364.98	3.55	-3.15	1.76	1668975.77	14224830.83	39°10'21.689"N	80°53'57.228"W	3.61	150.822	0.37	0.08	-55.44	
390.00	25.00	0.430	149.430	389.98	3.72	-3.30	1.86	1668975.87	14224830.69	39°10'21.687"N	80°53'57.226"W	3.79	150.544	0.34	0.20	39.08	
415.00	25.00	0.420	156.120	414.98	3.90	-3.46	1.95	1668975.96	14224830.53	39°10'21.686"N	80°53'57.225"W	3.97	150.646	0.20	-0.04	26.76	
440.00	25.00	0.520	155.810	439.98	4.11	-3.65	2.03	1668976.04	14224830.34	39°10'21.684"N	80°53'57.224"W	4.18	150.906	0.40	0.40	-1.24	
465.00	25.00	0.530	151.740	464.98	4.34	-3.85	2.13	1668976.14	14224830.13	39°10'21.682"N	80°53'57.223"W	4.40	151.054	0.15	0.04	-16.28	
468.00	3.00	0.560	156.350	467.97	4.36	-3.88	2.14	1668976.16	14224830.11	39°10'21.682"N	80°53'57.223"W	4.43	151.074	1.77	1.00	153.67	
588.00	120.00	0.440	337.020	587.97	4.49	-3.99	2.20	1668976.21	14224829.99	39°10'21.681"N	80°53'57.222"W	4.56	151.152	0.83	-0.10	-149.44	WFT EM <12-1/4">(453')(573'-2519')
680.00	92.00	2.840	20.980	679.93	2.38	-1.54	2.88	1668976.89	14224832.45	39°10'21.705"N	80°53'57.213"W	3.26	118.143	2.76	2.61	47.78	
772.00	92.00	5.290	29.320	771.69	-2.20	4.29	5.77	1668979.78	14224838.27	39°10'21.762"N	80°53'57.177"W	7.19	53.391	2.73	2.66	9.07	
888.00	116.00	7.160	38.430	887.01	-9.69	14.61	12.88	1668986.89	14224848.59	39°10'21.864"N	80°53'57.086"W	19.48	41.400	1.82	1.61	7.85	
984.00	96.00	8.190	46.040	982.15	-15.84	24.05	21.52	1668995.53	14224858.02	39°10'21.957"N	80°53'56.976"W	32.27	41.831	1.51	1.07	7.93	
1079.00	95.00	9.340	52.410	1076.04	-21.20	33.45	32.50	1669006.50	14224867.42	39°10'22.050"N	80°53'56.837"W	46.64	44.181	1.58	1.21	6.71	
1174.00	95.00	10.860	57.020	1169.57	-25.88	43.02	46.12	1669020.12	14224876.99	39°10'22.145"N	80°53'56.664"W	63.07	46.991	1.81	1.60	4.85	
1268.00	94.00	12.370	61.100	1261.64	-29.83	52.71	62.37	1669036.35	14224886.67	39°10'22.240"N	80°53'56.457"W	81.66	49.797	1.83	1.61	4.34	
1363.00	95.00	13.170	61.790	1354.29	-33.39	62.74	80.81	1669054.79	14224896.70	39°10'22.339"N	80°53'56.223"W	102.31	52.174	0.86	0.84	0.73	
1458.00	95.00	13.240	60.590	1446.78	-37.17	73.20	99.83	1669073.80	14224907.16	39°10'22.442"N	80°53'55.981"W	123.79	53.748	0.30	0.07	-1.26	

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Area	Ritchie County, WV	Well	Hughes River Unit 2H
Field	Ritchie	Wellbore	Hughes River Unit 2H AWP
Facility	Ireland North Pad		

WELLPATH DATA (239 stations)																	
MD (ft)	Course Length (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	Closure Dis (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
1553.00	95.00	13.400	60.810	1539.22	-41.16	83.91	118.91	1669092.88	14224917.86	39°10'22.548"N	80°53'55.739"W	145.54	54.791	0.18	0.17	0.23	
1647.00	94.00	12.930	59.010	1630.75	-45.36	94.64	137.44	1669111.39	14224928.59	39°10'22.654"N	80°53'55.504"W	166.87	55.449	0.66	-0.50	-1.91	
1742.00	95.00	13.280	58.490	1723.28	-50.01	105.81	155.85	1669129.80	14224939.76	39°10'22.764"N	80°53'55.270"W	188.38	55.826	0.39	0.37	-0.55	
1837.00	95.00	13.530	57.720	1815.69	-55.01	117.45	174.55	1669148.49	14224951.39	39°10'22.879"N	80°53'55.032"W	210.39	56.064	0.32	0.26	-0.81	
1932.00	95.00	13.420	60.760	1908.07	-59.60	128.77	193.56	1669167.50	14224962.71	39°10'22.991"N	80°53'54.790"W	232.49	56.365	0.75	-0.12	3.20	
2027.00	95.00	14.390	61.950	2000.29	-63.50	139.71	213.60	1669187.53	14224973.64	39°10'23.099"N	80°53'54.536"W	255.23	56.813	1.06	1.02	1.25	
2122.00	95.00	13.130	61.090	2092.56	-67.30	150.48	233.47	1669207.38	14224984.40	39°10'23.205"N	80°53'54.283"W	277.76	57.197	1.34	-1.33	-0.91	
2217.00	95.00	12.370	59.220	2185.22	-71.32	160.90	251.65	1669225.57	14224994.82	39°10'23.308"N	80°53'54.052"W	298.70	57.406	0.91	-0.80	-1.97	
2312.00	95.00	12.820	59.360	2277.93	-75.60	171.48	269.47	1669243.37	14225005.40	39°10'23.412"N	80°53'53.826"W	319.40	57.529	0.47	0.47	0.15	
2407.00	95.00	12.690	57.640	2370.59	-80.22	182.44	287.35	1669261.24	14225016.35	39°10'23.520"N	80°53'53.599"W	340.37	57.589	0.42	-0.14	-1.81	
2534.00	127.00	11.680	59.140	2494.73	-86.18	196.50	310.17	1669284.05	14225030.40	39°10'23.659"N	80°53'53.309"W	367.17	57.645	0.83	-0.80	1.18	
2670.00	136.00	11.720	59.320	2627.90	-91.91	210.61	333.86	1669307.74	14225044.51	39°10'23.798"N	80°53'53.008"W	394.74	57.756	0.04	0.03	0.13	WFT EM <8-3/4">(2519')(2655'-6075')
2766.00	96.00	11.290	56.250	2721.97	-96.35	220.80	350.06	1669323.93	14225054.70	39°10'23.899"N	80°53'52.802"W	413.88	57.758	0.78	-0.45	-3.20	
2861.00	95.00	12.100	56.970	2815.00	-101.20	231.40	366.14	1669340.01	14225065.29	39°10'24.003"N	80°53'52.598"W	433.13	57.708	0.87	0.85	0.76	
2955.00	94.00	12.250	61.110	2906.89	-105.38	241.58	383.13	1669356.99	14225075.47	39°10'24.104"N	80°53'52.382"W	452.94	57.767	0.94	0.16	4.40	
3050.00	95.00	11.180	57.560	2999.91	-109.32	251.39	399.73	1669373.58	14225085.28	39°10'24.200"N	80°53'52.171"W	472.21	57.834	1.36	-1.13	-3.74	
3145.00	95.00	10.840	60.230	3093.16	-113.20	260.77	415.26	1669389.10	14225094.65	39°10'24.293"N	80°53'51.974"W	490.35	57.872	0.65	-0.36	2.81	
3245.00	100.00	11.790	61.900	3191.22	-116.65	270.25	432.43	1669406.27	14225104.13	39°10'24.386"N	80°53'51.755"W	509.94	57.997	1.00	0.95	1.67	
3340.00	95.00	12.840	61.460	3284.03	-120.01	279.87	450.27	1669424.10	14225113.74	39°10'24.481"N	80°53'51.529"W	530.16	58.137	1.11	1.11	-0.46	
3434.00	94.00	13.730	59.460	3375.51	-124.05	290.52	469.05	1669442.88	14225124.39	39°10'24.586"N	80°53'51.290"W	551.74	58.226	1.07	0.95	-2.13	
3529.00	95.00	12.740	58.490	3467.99	-128.66	301.73	487.69	1669461.51	14225135.59	39°10'24.697"N	80°53'51.053"W	573.49	58.256	1.07	-1.04	-1.02	
3624.00	95.00	11.480	56.720	3560.87	-133.33	312.39	504.53	1669478.34	14225146.25	39°10'24.802"N	80°53'50.839"W	593.41	58.235	1.38	-1.33	-1.86	
3719.00	95.00	11.320	57.580	3654.00	-137.90	322.58	520.30	1669494.11	14225156.43	39°10'24.903"N	80°53'50.639"W	612.18	58.202	0.25	-0.17	0.91	
3813.00	94.00	11.470	57.560	3746.15	-142.28	332.54	535.98	1669509.77	14225166.39	39°10'25.001"N	80°53'50.440"W	630.76	58.183	0.16	0.16	-0.02	
3908.00	95.00	12.580	60.760	3839.06	-146.39	342.66	552.98	1669526.77	14225176.51	39°10'25.101"N	80°53'50.224"W	650.54	58.215	1.36	1.17	3.37	
4002.00	94.00	13.910	60.980	3930.56	-150.26	353.14	571.79	1669545.57	14225186.98	39°10'25.204"N	80°53'49.985"W	672.05	58.300	1.42	1.41	0.23	
4097.00	95.00	13.560	58.630	4022.84	-154.72	364.48	591.28	1669565.06	14225198.32	39°10'25.316"N	80°53'49.737"W	694.59	58.350	0.69	-0.37	-2.47	
4192.00	95.00	13.150	56.260	4115.27	-159.93	376.28	609.78	1669583.55	14225210.11	39°10'25.432"N	80°53'49.502"W	716.53	58.323	0.72	-0.43	-2.49	
4286.00	94.00	14.450	56.800	4206.56	-165.62	388.64	628.49	1669602.25	14225222.47	39°10'25.554"N	80°53'49.264"W	738.94	58.269	1.39	1.38	0.57	
4381.00	95.00	14.290	54.920	4298.59	-171.86	401.87	648.00	1669621.75	14225235.69	39°10'25.685"N	80°53'49.016"W	762.50	58.194	0.52	-0.17	-1.98	

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4476.00	95.00	13.920	52.150	4390.72	-178.88	415.62	666.62	1669640.36	14225249.44	39°10'25.821"N	80°53'48.780"W	785.57	58.058	0.81	-0.39	-2.92	
4571.00	95.00	13.890	57.960	4482.94	-185.23	428.68	685.31	1669659.04	14225262.49	39°10'25.949"N	80°53'48.542"W	808.34	57.973	1.47	-0.03	6.12	
4666.00	95.00	13.510	57.310	4575.24	-190.51	440.72	704.31	1669678.04	14225274.53	39°10'26.068"N	80°53'48.301"W	830.84	57.964	0.43	-0.40	-0.68	
4856.00	190.00	13.510	50.810	4759.99	-203.59	466.73	740.19	1669713.91	14225300.53	39°10'26.325"N	80°53'47.845"W	875.06	57.766	0.80	0.00	-3.42	
4951.00	95.00	12.950	57.930	4852.48	-209.91	479.40	757.82	1669731.52	14225313.19	39°10'26.450"N	80°53'47.621"W	896.72	57.682	1.81	-0.59	7.49	
5046.00	95.00	11.560	60.250	4945.31	-214.17	489.77	775.10	1669748.80	14225323.56	39°10'26.552"N	80°53'47.401"W	916.87	57.712	1.55	-1.46	2.44	
5141.00	95.00	11.970	58.290	5038.32	-218.18	499.67	791.75	1669765.44	14225333.46	39°10'26.650"N	80°53'47.190"W	936.24	57.744	0.60	0.43	-2.06	
5236.00	95.00	12.030	62.330	5131.24	-221.92	509.45	808.90	1669782.58	14225343.23	39°10'26.746"N	80°53'46.972"W	955.96	57.797	0.89	0.06	4.25	
5330.00	94.00	12.050	59.930	5223.17	-225.35	518.92	826.06	1669799.74	14225352.69	39°10'26.840"N	80°53'46.754"W	975.53	57.864	0.53	0.02	-2.55	
5425.00	95.00	12.120	57.580	5316.07	-229.64	529.23	843.06	1669816.74	14225363.00	39°10'26.941"N	80°53'46.538"W	995.41	57.882	0.52	0.07	-2.47	
5520.00	95.00	12.910	61.520	5408.81	-233.78	539.64	860.81	1669834.48	14225373.41	39°10'27.044"N	80°53'46.312"W	1015.97	57.917	1.22	0.83	4.15	
5615.00	95.00	13.550	61.100	5501.29	-237.53	550.08	879.88	1669853.54	14225383.84	39°10'27.147"N	80°53'46.070"W	1037.68	57.987	0.68	0.67	-0.44	
5710.00	95.00	12.870	62.810	5593.78	-241.03	560.29	899.04	1669872.69	14225394.05	39°10'27.248"N	80°53'45.826"W	1059.34	58.068	0.83	-0.72	1.80	
5742.00	32.00	12.780	69.070	5624.98	-241.68	563.18	905.51	1669879.16	14225396.94	39°10'27.276"N	80°53'45.744"W	1066.36	58.120	4.35	-0.28	19.56	
5773.00	31.00	13.420	81.260	5665.18	-241.19	564.96	912.27	1669885.92	14225398.72	39°10'27.294"N	80°53'45.658"W	1073.04	58.231	9.13	2.06	39.32	
5804.00	31.00	14.880	89.800	5685.24	-239.29	565.52	919.81	1669893.45	14225399.28	39°10'27.299"N	80°53'45.563"W	1079.75	58.416	8.21	4.71	27.55	
5836.00	32.00	16.500	97.520	5716.05	-235.97	564.94	928.42	1669902.06	14225398.70	39°10'27.293"N	80°53'45.453"W	1086.80	58.680	8.25	5.06	24.12	
5868.00	32.00	17.030	106.520	5746.70	-231.25	563.01	937.42	1669911.06	14225396.77	39°10'27.274"N	80°53'45.339"W	1093.50	59.011	8.27	1.66	28.13	
5900.00	32.00	16.710	113.990	5777.32	-225.41	559.81	946.12	1669919.75	14225393.57	39°10'27.243"N	80°53'45.229"W	1099.33	59.388	6.84	-1.00	23.34	
5931.00	31.00	16.750	121.460	5807.01	-218.95	555.66	954.00	1669927.63	14225389.42	39°10'27.201"N	80°53'45.129"W	1104.03	59.781	6.93	0.13	24.10	
5963.00	32.00	17.620	128.620	5837.59	-211.33	550.23	961.72	1669935.35	14225384.00	39°10'27.148"N	80°53'45.031"W	1108.00	60.225	7.14	2.72	22.38	
5994.00	31.00	19.660	134.530	5866.96	-202.71	543.64	969.11	1669942.73	14225377.41	39°10'27.083"N	80°53'44.937"W	1111.18	60.709	8.96	6.58	19.06	
6026.00	32.00	22.050	138.630	5896.87	-192.36	535.36	976.92	1669950.54	14225369.13	39°10'27.001"N	80°53'44.838"W	1113.99	61.277	8.75	7.47	12.81	
6058.00	32.00	24.140	141.340	5926.30	-180.65	525.74	984.97	1669958.59	14225359.52	39°10'26.905"N	80°53'44.736"W	1116.50	61.908	7.33	6.53	8.47	
6090.00	32.00	25.640	144.660	5955.33	-167.86	514.98	993.07	1669966.68	14225348.76	39°10'26.799"N	80°53'44.633"W	1118.66	62.590	6.40	4.69	10.37	
6152.00	62.00	28.060	150.230	6010.65	-140.68	491.38	1008.07	1669981.88	14225325.16	39°10'26.565"N	80°53'44.443"W	1121.45	64.013	5.63	3.90	8.98	BH AT Curve <8-1/2"> (6090)-(6152-19210)
6178.00	26.00	29.040	151.510	6033.49	-128.46	480.52	1014.12	1669987.72	14225314.31	39°10'26.458"N	80°53'44.366"W	1122.20	64.647	4.44	3.77	4.92	
6225.00	47.00	31.890	156.200	6074.00	-104.84	459.13	1024.57	1669998.17	14225292.93	39°10'26.247"N	80°53'44.234"W	1122.74	65.862	7.89	6.06	9.98	
6272.00	47.00	36.660	155.770	6112.83	-78.49	434.96	1035.35	1670008.94	14225268.77	39°10'26.008"N	80°53'44.097"W	1123.00	67.212	10.16	10.15	-0.91	
6320.00	48.00	40.570	154.200	6150.33	-48.72	407.83	1048.03	1670021.62	14225241.65	39°10'25.739"N	80°53'43.937"W	1124.58	68.737	8.40	8.15	-3.27	

Approved  
 Date: 02/11/2020  
 FEB 11 2020  
 Wells - Dept of  
 Environmental Protection



# Actual Wellpath Report

Hughes River Unit 2H AWP Proj: 19235'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Hughes River Unit 2H
Field	Ritchie	Wellbore	Hughes River Unit 2H AWB
Facility	Ireland North Pad		

WELLPATH DATA (239 stations) † = interpolated/extrapolated station																	
MD (ft)	Course Length (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
6367.00	47.00	45.100	152.930	6184.79	-17.06	379.23	1062.26	1670035.85	14225213.06	39°10'25.456"N	80°53'43.756"W	1127.93	70.353	9.81	9.64	-2.70	
6415.00	48.00	48.920	153.150	6217.51	17.69	347.94	1078.18	1670051.75	14225181.79	39°10'25.147"N	80°53'43.555"W	1132.93	72.114	7.97	7.96	0.46	
6416.00†	1.00	49.018	153.202	6218.17	18.43	347.27	1078.52	1670052.10	14225181.11	39°10'25.140"N	80°53'43.551"W	1133.04	72.152	10.55	9.80	5.17	Middlesex: 6416' MD
6462.00	46.00	53.550	155.430	6246.93	54.05	314.92	1094.05	1670067.62	14225148.78	39°10'24.820"N	80°53'43.354"W	1138.47	73.941	10.55	9.85	4.84	
6509.00	47.00	56.580	156.840	6273.84	92.43	279.69	1109.62	1670083.19	14225113.56	39°10'24.472"N	80°53'43.157"W	1144.33	75.853	6.90	6.45	3.00	
6556.00	47.00	60.260	157.870	6298.45	132.37	242.74	1125.03	1670098.59	14225076.63	39°10'24.107"N	80°53'42.961"W	1150.92	77.824	8.05	7.83	2.19	
6605.00	49.00	64.500	158.850	6321.16	175.72	202.39	1141.03	1670114.59	14225036.30	39°10'23.708"N	80°53'42.759"W	1158.84	79.942	8.83	8.65	2.00	
6619.00†	14.00	65.405	159.026	6327.09	188.39	190.56	1145.59	1670119.14	14225024.47	39°10'23.591"N	80°53'42.701"W	1161.33	80.556	6.57	6.47	1.25	Burkett: 6619' MD
6652.00	33.00	67.540	159.430	6340.26	218.63	162.27	1156.32	1670129.87	14224996.19	39°10'23.311"N	80°53'42.565"W	1167.65	82.012	6.57	6.47	1.23	
6700.00	48.00	70.810	160.160	6357.33	263.47	120.17	1171.81	1670145.35	14224954.11	39°10'22.895"N	80°53'42.369"W	1177.95	84.145	6.96	6.81	1.52	
6742.00†	42.00	73.871	161.029	6370.07	303.49	82.43	1185.10	1670158.64	14224916.38	39°10'22.521"N	80°53'42.201"W	1187.96	86.021	7.55	7.29	2.07	Tully: 6742' MD
6745.00	3.00	74.090	161.090	6370.89	306.37	79.70	1186.04	1670159.57	14224913.65	39°10'22.494"N	80°53'42.189"W	1188.71	86.156	7.55	7.29	2.03	
6795.00	50.00	77.590	161.560	6383.12	354.84	33.78	1201.56	1670175.09	14224867.75	39°10'22.040"N	80°53'41.993"W	1202.03	88.390	7.06	7.00	0.94	
6834.00†	39.00	79.490	162.158	6390.87	393.06	-2.54	1213.46	1670186.98	14224831.44	39°10'21.681"N	80°53'41.842"W	1213.46	90.120	5.10	4.87	1.53	Marcellus POE: 6834' MD
6842.00	8.00	79.880	162.280	6392.31	400.93	-10.04	1215.86	1670189.38	14224823.95	39°10'21.607"N	80°53'41.812"W	1215.90	90.473	5.10	4.87	1.52	
6889.00	47.00	82.780	161.420	6399.39	447.39	-54.18	1230.33	1670203.85	14224779.82	39°10'21.171"N	80°53'41.629"W	1231.53	92.522	6.43	6.17	-1.83	
6936.00	47.00	86.180	161.780	6403.91	494.16	-98.57	1245.10	1670218.61	14224735.46	39°10'20.732"N	80°53'41.442"W	1248.99	94.526	7.27	7.23	0.77	
6984.00	48.00	88.740	161.570	6406.04	542.11	-144.08	1260.17	1670233.68	14224689.96	39°10'20.282"N	80°53'41.251"W	1268.38	96.523	5.35	5.33	-0.44	
7079.00	95.00	88.950	158.050	6407.95	637.04	-233.22	1292.95	1670266.44	14224600.86	39°10'19.400"N	80°53'40.836"W	1313.81	100.225	3.71	0.22	-3.71	
7174.00	95.00	88.620	154.410	6409.97	731.65	-320.12	1331.22	1670304.70	14224513.99	39°10'18.541"N	80°53'40.352"W	1369.17	103.521	3.85	-0.35	-3.83	
7269.00	95.00	89.200	156.170	6411.77	826.12	-406.40	1370.93	1670344.39	14224427.74	39°10'17.688"N	80°53'39.849"W	1429.90	106.512	1.95	0.61	1.85	
7363.00	94.00	90.220	158.030	6412.25	919.87	-492.99	1407.50	1670380.95	14224341.19	39°10'16.831"N	80°53'39.386"W	1491.34	109.303	2.26	1.09	1.98	
7458.00	95.00	88.920	156.930	6412.96	1014.66	-580.74	1443.89	1670417.32	14224253.48	39°10'15.964"N	80°53'38.925"W	1556.30	111.910	1.79	-1.37	-1.16	
7553.00	95.00	89.420	158.800	6414.34	1109.48	-668.72	1479.68	1670453.09	14224165.53	39°10'15.094"N	80°53'38.472"W	1623.77	114.320	2.04	0.53	1.97	
7647.00	94.00	89.570	158.830	6415.17	1203.40	-756.37	1513.64	1670487.05	14224077.92	39°10'14.227"N	80°53'38.042"W	1692.10	116.551	0.16	0.16	0.03	
7743.00	96.00	89.910	157.920	6415.60	1299.28	-845.61	1549.02	1670522.41	14223988.72	39°10'13.345"N	80°53'37.594"W	1764.80	118.630	1.01	0.35	-0.95	
7837.00	94.00	89.850	159.150	6415.80	1393.17	-933.09	1583.42	1670556.80	14223901.27	39°10'12.480"N	80°53'37.159"W	1837.90	120.510	1.31	-0.06	1.31	
7932.00	95.00	89.910	160.540	6416.00	1488.14	-1022.27	1616.15	1670589.52	14223812.13	39°10'11.598"N	80°53'36.744"W	1912.32	122.315	1.46	0.06	1.46	
8026.00	94.00	89.780	161.190	6416.25	1582.14	-1111.07	1646.96	1670620.32	14223723.36	39°10'10.720"N	80°53'36.354"W	1986.70	124.004	0.71	-0.14	0.69	
8121.00	95.00	89.630	162.490	6416.74	1677.13	-1201.34	1676.57	1670649.91	14223633.13	39°10'09.827"N	80°53'35.980"W	2062.55	125.623	1.38	-0.16	1.37	

19235  
FEB 18 2020  
Environmental Protection



# Actual Wellpath Report

Hughes River Unit 2H AWP Proj: 19235'  
Page 6 of 11



REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Hughes River Unit 2H
Field	Ritchie	Wellbore	Hughes River Unit 2H AWB
Facility	Ireland North Pad		

WELLPATH DATA (239 stations)																	
MD [ft]	Course Length [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
8215.00	94.00	89.780	165.450	6417.23	1771.01	-1291.67	1702.53	1670675.85	14223542.83	39°10'08.934"N	80°53'35.652"W	2137.06	127.187	3.15	0.16	3.15	
8309.00	94.00	90.220	166.680	6417.23	1864.67	-1382.90	1725.16	1670698.48	14223451.64	39°10'08.032"N	80°53'35.366"W	2211.02	128.716	1.39	0.47	1.31	
8403.00	94.00	90.520	163.860	6416.62	1958.42	-1473.80	1749.06	1670722.37	14223360.77	39°10'07.133"N	80°53'35.064"W	2287.21	130.118	3.02	0.32	-3.00	
8497.00	94.00	91.050	161.190	6415.33	2052.38	-1563.45	1777.28	1670750.58	14223271.16	39°10'06.247"N	80°53'34.707"W	2367.09	131.338	2.90	0.56	-2.84	
8591.00	94.00	90.460	158.230	6414.09	2146.33	-1651.60	1809.87	1670783.16	14223183.05	39°10'05.375"N	80°53'34.294"W	2450.19	132.382	3.21	-0.63	-3.15	
8684.00	93.00	90.180	158.980	6413.57	2239.23	-1738.19	1843.80	1670817.07	14223096.50	39°10'04.519"N	80°53'33.865"W	2533.95	133.311	0.86	-0.30	0.81	
8778.00	94.00	89.660	162.650	6413.71	2333.21	-1826.95	1874.68	1670847.94	14223007.77	39°10'03.641"N	80°53'33.474"W	2617.67	134.261	3.94	-0.55	3.90	
8872.00	94.00	90.340	165.240	6413.71	2427.10	-1917.28	1900.68	1670873.93	14222917.48	39°10'02.748"N	80°53'33.145"W	2699.73	135.249	2.85	0.72	2.76	
8965.00	93.00	90.830	166.830	6412.76	2519.76	-2007.52	1923.12	1670896.36	14222827.27	39°10'01.856"N	80°53'32.862"W	2780.02	136.230	1.79	0.53	1.71	
9059.00	94.00	90.830	165.060	6411.39	2613.43	-2098.69	1945.94	1670919.17	14222736.13	39°10'00.955"N	80°53'32.573"W	2862.03	137.163	1.88	0.00	-1.88	
9154.00	95.00	90.520	161.600	6410.27	2708.34	-2189.68	1973.19	1670946.41	14222645.18	39°10'00.055"N	80°53'32.229"W	2947.57	137.977	3.66	-0.33	-3.64	
9248.00	94.00	90.430	161.280	6409.49	2802.34	-2278.79	2003.11	1670976.32	14222556.11	39°09'59.174"N	80°53'31.850"W	3034.03	138.684	0.35	-0.10	-0.34	
9341.00	93.00	90.280	163.820	6408.92	2895.31	-2367.50	2030.99	1671004.19	14222467.44	39°09'58.297"N	80°53'31.497"W	3119.29	139.375	2.74	-0.16	2.73	
9435.00	94.00	90.250	165.510	6408.48	2989.13	-2458.15	2055.85	1671029.04	14222376.82	39°09'57.400"N	80°53'31.183"W	3204.53	140.093	1.80	-0.03	1.80	
9529.00	94.00	90.430	168.020	6407.93	3082.68	-2549.64	2077.37	1671050.55	14222285.37	39°09'56.496"N	80°53'30.911"W	3288.79	140.828	2.68	0.19	2.67	
9623.00	94.00	90.460	167.240	6407.20	3176.09	-2641.46	2097.51	1671070.68	14222193.59	39°09'55.588"N	80°53'30.657"W	3372.95	141.548	0.83	0.03	-0.83	
9717.00	94.00	90.550	166.300	6406.37	3269.65	-2732.96	2119.02	1671092.18	14222102.13	39°09'54.684"N	80°53'30.385"W	3458.22	142.212	1.00	0.10	-1.00	
9811.00	94.00	90.490	163.640	6405.51	3363.43	-2823.73	2143.39	1671116.54	14222011.39	39°09'53.786"N	80°53'30.077"W	3545.08	142.799	2.83	-0.06	-2.83	
9905.00	94.00	90.430	161.160	6404.76	3457.40	-2913.32	2171.81	1671144.95	14221921.83	39°09'52.900"N	80°53'29.718"W	3633.76	143.296	2.64	-0.06	-2.64	
9999.00	94.00	90.430	159.140	6404.05	3551.38	-3001.73	2203.73	1671176.85	14221833.46	39°09'52.026"N	80°53'29.314"W	3723.81	143.716	2.15	0.00	-2.15	
10093.00	94.00	90.490	155.390	6403.30	3645.13	-3088.41	2240.05	1671213.16	14221746.82	39°09'51.169"N	80°53'28.854"W	3815.24	144.046	3.99	0.06	-3.99	
10187.00	94.00	90.370	152.980	6402.59	3738.42	-3173.02	2280.98	1671254.07	14221662.24	39°09'50.332"N	80°53'28.336"W	3907.80	144.289	2.57	-0.13	-2.56	
10281.00	94.00	90.340	154.870	6402.01	3831.65	-3257.44	2322.29	1671295.37	14221577.85	39°09'49.497"N	80°53'27.813"W	4000.50	144.514	2.01	-0.03	2.01	
10375.00	94.00	90.400	156.480	6401.40	3925.20	-3343.09	2361.01	1671334.07	14221492.23	39°09'48.650"N	80°53'27.322"W	4092.75	144.769	1.71	0.06	1.71	
10468.00	93.00	90.340	158.490	6400.80	4018.00	-3429.00	2396.62	1671369.67	14221406.36	39°09'47.801"N	80°53'26.872"W	4183.52	145.049	2.16	-0.06	2.16	
10562.00	94.00	90.430	160.470	6400.17	4111.95	-3517.03	2429.57	1671402.60	14221318.37	39°09'46.930"N	80°53'26.455"W	4274.61	145.363	2.11	0.10	2.11	
10656.00	94.00	90.310	162.390	6399.56	4205.94	-3606.13	2459.50	1671432.53	14221229.30	39°09'46.049"N	80°53'26.076"W	4365.01	145.705	2.05	-0.13	2.04	
10750.00	94.00	92.120	165.020	6397.57	4299.82	-3696.32	2485.87	1671458.88	14221139.15	39°09'45.157"N	80°53'25.743"W	4454.47	146.078	3.40	1.93	2.80	
10844.00	94.00	90.920	166.470	6395.08	4393.49	-3787.39	2509.00	1671482.01	14221048.12	39°09'44.257"N	80°53'25.450"W	4543.06	146.477	2.00	-1.28	1.54	
10937.00	93.00	91.690	165.790	6392.96	4486.13	-3877.65	2531.29	1671504.29	14220957.89	39°09'43.365"N	80°53'25.169"W	4630.73	146.864	1.10	0.83	-0.73	

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 FEB 18 2020  
 WYOMING DEPARTMENT OF ENVIRONMENTAL PROTECTION



# Actual Wellpath Report

Hughes River Unit 2H AWP Proj: 19235'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Hughes River Unit 2H
Field	Ritchie	Wellbore	Hughes River Unit 2H AWB
Facility	Ireland North Pad		

WELLPATH DATA (239 stations)																	
MD [ft]	Course Length [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
11031.00	94.00	89.510	163.030	6391.97	4579.96	-3968.18	2556.55	1671529.54	14220867.40	39°09'42.470"N	80°53'24.849"W	4720.42	147.208	3.74	-2.32	-2.94	
11125.00	94.00	89.940	160.510	6392.43	4673.95	-4057.45	2585.95	1671558.93	14220778.16	39°09'41.587"N	80°53'24.478"W	4811.45	147.489	2.72	0.46	-2.68	
11219.00	94.00	90.620	160.370	6391.97	4767.94	-4146.02	2617.42	1671590.38	14220689.63	39°09'40.711"N	80°53'24.079"W	4903.10	147.735	0.74	0.72	-0.15	
11312.00	93.00	90.650	158.030	6390.94	4860.87	-4232.95	2650.44	1671623.39	14220602.73	39°09'39.851"N	80°53'23.662"W	4994.27	147.947	2.52	0.03	-2.52	
11405.00	93.00	90.580	155.810	6389.94	4953.59	-4318.50	2686.90	1671659.83	14220517.22	39°09'39.005"N	80°53'23.200"W	5086.14	148.111	2.39	-0.08	-2.39	
11499.00	94.00	90.680	154.370	6388.90	5047.05	-4403.74	2726.48	1671699.40	14220432.01	39°09'38.162"N	80°53'22.699"W	5179.45	148.237	1.54	0.11	-1.53	
11593.00	94.00	90.310	155.440	6388.09	5140.47	-4488.87	2766.35	1671739.25	14220346.92	39°09'37.321"N	80°53'22.194"W	5272.82	148.356	1.20	-0.39	1.14	
11687.00	94.00	90.460	159.980	6387.46	5234.27	-4575.82	2801.99	1671774.88	14220260.00	39°09'36.461"N	80°53'21.743"W	5365.56	148.519	4.83	0.16	4.83	
11781.00	94.00	90.460	162.150	6386.71	5328.26	-4664.72	2832.49	1671805.37	14220171.13	39°09'35.582"N	80°53'21.357"W	5457.35	148.733	2.31	0.00	2.31	
11874.00	93.00	91.050	162.700	6385.48	5421.23	-4753.37	2860.57	1671833.44	14220082.52	39°09'34.705"N	80°53'21.002"W	5547.74	148.961	0.87	0.63	0.59	
11969.00	95.00	90.890	162.360	6383.87	5516.19	-4843.98	2889.09	1671861.94	14219991.95	39°09'33.809"N	80°53'20.641"W	5640.12	149.187	0.40	-0.17	-0.36	
12063.00	94.00	90.860	164.140	6382.44	5610.12	-4933.98	2916.17	1671889.02	14219901.99	39°09'32.919"N	80°53'20.299"W	5731.33	149.415	1.89	-0.03	1.89	
12157.00	94.00	90.550	165.930	6381.28	5703.90	-5024.78	2940.44	1671913.28	14219811.22	39°09'32.022"N	80°53'19.992"W	5821.91	149.664	1.93	-0.33	1.90	
12251.00	94.00	90.770	164.430	6380.20	5797.67	-5115.64	2964.49	1671937.31	14219720.40	39°09'31.123"N	80°53'19.688"W	5912.53	149.908	1.61	0.23	-1.60	
12345.00	94.00	91.170	162.670	6378.60	5891.57	-5205.78	2991.10	1671963.91	14219630.30	39°09'30.232"N	80°53'19.352"W	6003.90	150.119	1.92	0.43	-1.87	
12439.00	94.00	90.830	161.510	6376.96	5985.54	-5295.21	3020.00	1671992.80	14219540.90	39°09'29.348"N	80°53'18.986"W	6095.87	150.303	1.29	-0.36	-1.23	
12533.00	94.00	90.920	161.520	6375.53	6079.53	-5384.35	3049.80	1672022.59	14219451.80	39°09'28.466"N	80°53'18.609"W	6188.09	150.472	0.10	0.10	0.01	
12627.00	94.00	91.780	159.990	6373.31	6173.50	-5473.07	3080.78	1672053.55	14219363.12	39°09'27.589"N	80°53'18.218"W	6280.57	150.625	1.87	0.91	-1.63	
12721.00	94.00	91.570	158.610	6370.57	6267.40	-5560.96	3113.99	1672086.75	14219275.26	39°09'26.720"N	80°53'17.797"W	6373.47	150.752	1.48	-0.22	-1.47	
12815.00	94.00	91.690	158.040	6367.89	6361.24	-5648.28	3148.69	1672121.44	14219187.98	39°09'25.856"N	80°53'17.358"W	6466.63	150.862	0.62	0.13	-0.61	
12909.00	94.00	92.030	156.680	6364.84	6454.98	-5734.98	3184.85	1672157.59	14219101.30	39°09'24.999"N	80°53'16.901"W	6559.98	150.955	1.49	0.36	-1.45	
13003.00	94.00	91.540	155.720	6361.91	6548.57	-5820.95	3222.77	1672195.49	14219015.37	39°09'24.149"N	80°53'16.421"W	6653.55	151.029	1.15	-0.52	-1.02	
13096.00	93.00	91.200	154.520	6359.69	6641.02	-5905.29	3261.88	1672234.59	14218931.06	39°09'23.315"N	80°53'15.925"W	6746.28	151.085	1.34	-0.37	-1.29	
13190.00	94.00	90.890	156.740	6357.98	6734.55	-5990.89	3300.66	1672273.35	14218845.49	39°09'22.468"N	80°53'15.434"W	6839.97	151.148	2.38	-0.33	2.36	
13284.00	94.00	90.710	160.620	6356.66	6828.43	-6078.44	3334.83	1672307.50	14218757.99	39°09'21.602"N	80°53'15.002"W	6933.14	151.249	4.13	-0.19	4.13	
13379.00	95.00	90.800	164.350	6355.41	6923.38	-6169.01	3363.41	1672336.07	14218667.45	39°09'20.707"N	80°53'14.641"W	7026.32	151.400	3.93	0.09	3.93	
13473.00	94.00	90.370	165.400	6354.45	7017.18	-6259.75	3387.94	1672360.59	14218576.75	39°09'19.810"N	80°53'14.331"W	7117.76	151.577	1.21	-0.46	1.12	
13567.00	94.00	89.910	167.310	6354.22	7110.80	-6351.09	3410.11	1672382.76	14218485.44	39°09'18.907"N	80°53'14.051"W	7208.69	151.767	2.09	-0.49	2.03	
13661.00	94.00	89.880	167.930	6354.39	7204.22	-6442.90	3430.26	1672402.90	14218393.67	39°09'17.999"N	80°53'13.796"W	7299.16	151.969	0.66	-0.03	0.66	
13755.00	94.00	90.000	168.520	6354.49	7297.51	-6534.92	3449.45	1672422.07	14218301.68	39°09'17.089"N	80°53'13.554"W	7389.45	152.173	0.64	0.13	0.63	

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 Director, Operational Division



# Actual Wellpath Report

Hughes River Unit 2H AWP Proj: 19235'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Hughes River Unit 2H
Field	Ritchie	Wellbore	Hughes River Unit 2H AWB
Facility	Ireland North Pad		

WELLPATH DATA (239 stations)																	
MD (ft)	Course Length (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
13849.00	94.00	89.880	169.480	6354.59	7390.65	-6627.19	3467.38	1672440.00	14218209.45	39°09'16.177"N	80°53'13.328"W	7479.47	152.381	1.03	-0.13	1.02	
13942.00	93.00	90.340	168.140	6354.41	7482.83	-6718.42	3485.43	1672458.04	14218118.26	39°09'15.275"N	80°53'13.100"W	7568.71	152.580	1.52	0.49	-1.44	
14036.00	94.00	90.430	162.790	6353.78	7576.54	-6809.38	3509.01	1672481.62	14218027.34	39°09'14.376"N	80°53'12.802"W	7660.34	152.737	5.69	0.10	-5.69	
14130.00	94.00	89.880	160.040	6353.52	7670.53	-6898.47	3538.97	1672511.56	14217938.28	39°09'13.495"N	80°53'12.424"W	7753.27	152.842	2.98	-0.59	-2.93	
14222.00	92.00	89.850	160.850	6353.74	7762.52	-6985.16	3569.76	1672542.34	14217851.62	39°09'12.637"N	80°53'12.034"W	7844.47	152.931	0.88	-0.03	0.88	
14316.00	94.00	90.150	160.310	6353.74	7856.51	-7073.81	3601.01	1672573.58	14217763.01	39°09'11.761"N	80°53'11.639"W	7937.64	153.021	0.66	0.32	-0.57	
14410.00	94.00	89.910	161.700	6353.69	7950.51	-7162.69	3631.61	1672604.16	14217674.17	39°09'10.882"N	80°53'11.252"W	8030.74	153.114	1.50	-0.26	1.48	
14504.00	94.00	89.850	161.590	6353.89	8044.50	-7251.91	3661.21	1672633.75	14217584.98	39°09'10.000"N	80°53'10.878"W	8123.71	153.213	0.13	-0.06	-0.12	
14598.00	94.00	89.880	159.050	6354.11	8138.48	-7340.41	3692.86	1672665.39	14217496.52	39°09'09.125"N	80°53'10.477"W	8216.99	153.294	2.70	0.03	-2.70	
14692.00	94.00	89.940	157.380	6354.26	8232.35	-7427.70	3727.75	1672700.26	14217409.27	39°09'08.262"N	80°53'10.036"W	8310.64	153.349	1.78	0.06	-1.78	
14786.00	94.00	90.430	157.580	6353.95	8326.15	-7514.53	3763.75	1672736.25	14217322.47	39°09'07.403"N	80°53'09.580"W	8404.40	153.395	0.56	0.52	0.21	
14880.00	94.00	90.000	157.990	6353.60	8419.98	-7601.55	3799.29	1672771.78	14217235.49	39°09'06.542"N	80°53'09.130"W	8498.13	153.444	0.63	-0.46	0.44	
14974.00	94.00	89.970	158.440	6353.63	8513.85	-7688.84	3834.18	1672806.65	14217148.23	39°09'05.679"N	80°53'08.689"W	8591.80	153.496	0.48	-0.03	0.48	
15068.00	94.00	89.540	156.480	6354.03	8607.64	-7775.65	3870.21	1672842.67	14217061.45	39°09'04.821"N	80°53'08.233"W	8685.58	153.539	2.13	-0.46	-2.09	
15162.00	94.00	89.450	158.310	6354.86	8701.43	-7862.42	3906.33	1672878.78	14216974.72	39°09'03.963"N	80°53'07.776"W	8779.36	153.580	1.95	-0.10	1.95	
15256.00	94.00	89.720	161.390	6355.54	8795.39	-7950.65	3938.71	1672911.14	14216886.52	39°09'03.090"N	80°53'07.366"W	8872.79	153.646	3.29	0.29	3.28	
15350.00	94.00	89.780	162.460	6355.95	8889.38	-8040.01	3967.87	1672940.30	14216797.20	39°09'02.206"N	80°53'06.997"W	8965.82	153.733	1.14	0.06	1.14	
15444.00	94.00	89.780	162.190	6356.31	8983.36	-8129.58	3996.41	1672968.82	14216707.67	39°09'01.321"N	80°53'06.637"W	9058.77	153.822	0.29	0.00	-0.29	
15538.00	94.00	89.750	163.160	6356.69	9077.33	-8219.31	4024.41	1672996.80	14216617.97	39°09'00.434"N	80°53'06.283"W	9151.66	153.912	1.03	-0.03	1.03	
15632.00	94.00	89.540	163.770	6357.28	9171.25	-8309.42	4051.16	1673023.55	14216527.90	39°08'59.543"N	80°53'05.945"W	9244.37	154.009	0.69	-0.22	0.65	
15726.00	94.00	89.750	165.330	6357.86	9265.09	-8400.02	4076.20	1673048.58	14216437.34	39°08'58.647"N	80°53'05.628"W	9336.79	154.115	1.67	0.22	1.66	
15820.00	94.00	89.940	165.470	6358.11	9358.84	-8490.98	4099.89	1673072.26	14216346.41	39°08'57.747"N	80°53'05.329"W	9428.99	154.226	0.25	0.20	0.15	
15914.00	94.00	89.970	161.170	6358.19	9452.75	-8581.01	4126.87	1673099.22	14216256.42	39°08'56.857"N	80°53'04.988"W	9521.80	154.316	4.57	0.03	-4.57	
16008.00	94.00	89.600	160.150	6358.54	9546.75	-8669.70	4158.00	1673130.34	14216167.76	39°08'55.980"N	80°53'04.594"W	9615.23	154.378	1.15	-0.39	-1.09	
16101.00	93.00	89.540	161.620	6359.24	9639.74	-8757.57	4188.45	1673160.78	14216079.93	39°08'55.111"N	80°53'04.209"W	9707.63	154.440	1.58	-0.06	1.58	
16195.00	94.00	89.850	159.670	6359.74	9733.73	-8846.25	4219.60	1673191.92	14215991.28	39°08'54.235"N	80°53'03.815"W	9801.08	154.499	2.10	0.33	-2.07	
16289.00	94.00	89.480	156.660	6360.29	9827.58	-8933.49	4254.56	1673226.86	14215904.07	39°08'53.372"N	80°53'03.373"W	9894.88	154.534	3.23	-0.39	-3.20	
16383.00	94.00	89.170	156.870	6361.40	9921.29	-9019.86	4291.64	1673263.93	14215817.74	39°08'52.518"N	80°53'02.904"W	9988.80	154.555	0.40	-0.33	0.22	
16477.00	94.00	89.970	161.040	6362.10	10015.19	-9107.57	4325.38	1673297.66	14215730.07	39°08'51.650"N	80°53'02.477"W	10082.50	154.596	4.52	0.85	4.44	
16571.00	94.00	90.460	162.590	6361.75	10109.18	-9196.87	4354.72	1673326.99	14215640.80	39°08'50.767"N	80°53'02.106"W	10175.76	154.662	1.73	0.52	1.65	

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# Actual Wellpath Report

Hughes River Unit 2H AWP Proj: 19235'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Hughes River Unit 2H
Field	Ritchie	Wellbore	Hughes River Unit 2H AWB
Facility	Ireland North Pad		

WELLPATH DATA (239 stations)																	
MD (ft)	Course Length (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
16664.00	93.00	90.150	160.640	6361.25	10202.18	-9285.12	4384.05	1673356.30	14215552.59	39°08'49.895"N	80°53'01.735"W	10268.07	154.725	2.12	-0.33	-2.10	
16758.00	94.00	89.780	158.270	6361.31	10296.12	-9373.13	4417.04	1673389.28	14215464.61	39°08'49.024"N	80°53'01.318"W	10361.75	154.768	2.55	-0.39	-2.52	
16852.00	94.00	89.850	157.980	6361.61	10389.99	-9460.37	4452.06	1673424.29	14215377.41	39°08'48.162"N	80°53'00.875"W	10455.59	154.798	0.32	0.07	-0.31	
16946.00	94.00	89.850	157.100	6361.86	10483.79	-9547.23	4487.97	1673460.18	14215290.58	39°08'47.303"N	80°53'00.420"W	10549.48	154.823	0.94	0.00	-0.94	
17039.00	93.00	89.690	157.300	6362.23	10576.56	-9632.97	4524.01	1673496.21	14215204.88	39°08'46.455"N	80°52'59.964"W	10642.40	154.843	0.28	-0.17	0.22	
17133.00	94.00	89.720	158.470	6362.72	10670.40	-9720.05	4559.40	1673531.58	14215117.83	39°08'45.594"N	80°52'59.516"W	10736.27	154.870	1.25	0.03	1.24	
17227.00	94.00	89.570	159.350	6363.30	10764.32	-9807.75	4593.22	1673565.39	14215030.17	39°08'44.726"N	80°52'59.089"W	10830.03	154.905	0.95	-0.16	0.94	
17321.00	94.00	89.720	161.440	6363.88	10858.30	-9896.29	4624.76	1673596.91	14214941.66	39°08'43.851"N	80°52'58.690"W	10923.60	154.952	2.23	0.16	2.22	
17415.00	94.00	89.510	163.480	6364.51	10952.28	-9985.92	4653.08	1673625.23	14214852.07	39°08'42.965"N	80°52'58.332"W	11016.79	155.016	2.18	-0.22	2.17	
17510.00	95.00	89.780	165.910	6365.10	11047.09	-10077.54	4678.16	1673650.29	14214760.49	39°08'42.059"N	80°52'58.015"W	11110.44	155.099	2.57	0.28	2.56	
17603.00	93.00	89.690	167.250	6365.53	11139.68	-10168.00	4699.74	1673671.87	14214670.07	39°08'41.164"N	80°52'57.742"W	11201.59	155.193	1.44	-0.10	1.44	
17697.00	94.00	89.880	166.500	6365.89	11233.22	-10259.54	4721.09	1673693.20	14214578.56	39°08'40.259"N	80°52'57.473"W	11293.66	155.290	0.82	0.20	-0.80	
17791.00	94.00	89.820	164.530	6366.13	11326.95	-10350.55	4744.60	1673716.71	14214487.59	39°08'39.359"N	80°52'57.176"W	11386.18	155.374	2.10	-0.06	-2.10	
17885.00	94.00	90.060	163.540	6366.23	11420.84	-10440.92	4770.45	1673742.55	14214397.25	39°08'38.466"N	80°52'56.849"W	11479.11	155.444	1.08	0.26	-1.05	
17978.00	93.00	90.120	159.800	6366.08	11513.82	-10529.19	4799.69	1673771.78	14214309.02	39°08'37.593"N	80°52'56.480"W	11571.55	155.494	4.02	0.06	-4.02	
18072.00	94.00	89.820	159.230	6366.13	11607.78	-10617.24	4832.59	1673804.66	14214221.00	39°08'36.722"N	80°52'56.064"W	11665.32	155.527	0.69	-0.32	-0.61	
18166.00	94.00	89.890	160.550	6366.54	11701.75	-10705.51	4864.91	1673836.97	14214132.77	39°08'35.849"N	80°52'55.655"W	11759.05	155.562	1.41	-0.14	1.40	
18260.00	94.00	89.230	161.610	6367.42	11795.74	-10794.42	4895.38	1673867.43	14214043.89	39°08'34.970"N	80°52'55.270"W	11852.61	155.605	1.23	-0.49	1.13	
18353.00	93.00	89.850	163.740	6368.17	11888.70	-10883.20	4923.08	1673895.11	14213955.15	39°08'34.092"N	80°52'54.920"W	11944.90	155.660	2.39	0.67	2.29	
18447.00	94.00	89.690	164.760	6368.55	11982.57	-10973.66	4948.59	1673920.62	14213864.72	39°08'33.198"N	80°52'54.597"W	12037.85	155.727	1.10	-0.17	1.09	
18540.00	93.00	90.030	164.060	6368.77	12075.43	-11063.24	4973.59	1673945.60	14213775.18	39°08'32.312"N	80°52'54.282"W	12129.79	155.793	0.84	0.37	-0.75	
18633.00	93.00	89.820	162.280	6368.90	12168.37	-11152.25	5000.51	1673972.52	14213686.20	39°08'31.432"N	80°52'53.941"W	12222.02	155.849	1.93	-0.23	-1.91	
18727.00	94.00	90.370	159.790	6368.74	12262.36	-11241.14	5031.06	1674003.05	14213597.35	39°08'30.553"N	80°52'53.555"W	12315.64	155.889	2.71	0.59	-2.65	
18820.00	93.00	89.880	159.190	6368.54	12355.32	-11328.25	5063.64	1674035.62	14213510.28	39°08'29.692"N	80°52'53.143"W	12408.45	155.916	0.83	-0.53	-0.65	
18915.00	95.00	90.370	158.370	6368.33	12450.23	-11416.81	5098.03	1674069.99	14213421.76	39°08'28.816"N	80°52'52.708"W	12503.33	155.937	1.01	0.52	-0.86	
19008.00	93.00	90.310	158.510	6367.78	12543.12	-11503.30	5132.20	1674104.15	14213335.30	39°08'27.961"N	80°52'52.276"W	12596.24	155.956	0.16	-0.06	0.15	
19103.00	95.00	89.910	158.830	6367.59	12638.02	-11591.79	5166.76	1674138.70	14213246.84	39°08'27.086"N	80°52'51.839"W	12691.14	155.976	0.54	-0.42	0.34	
19210.00	107.00	90.220	160.850	6367.47	12744.99	-11692.23	5203.63	1674175.56	14213146.45	39°08'26.092"N	80°52'51.372"W	12797.89	156.009	1.91	0.29	1.89	
19235.00	25.00	90.220	160.850	6367.38	12769.99	-11715.85	5211.83	1674183.75	14213122.84	39°08'25.859"N	80°52'51.269"W	12822.80	156.018	0.00	0.00	0.00	Projected MD at TD: 19235'

HOLE & CASING SECTIONS - Ref Wellbore: Hughes River Unit 2H AWB Ref Wellpath: Hughes River Unit 2H AWP Proj: 19235'									
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	-0.61	0.26
20in Conductor	30.00	110.00	80.00	30.00	110.00	0.00	0.00	-0.61	0.26
17.5in Open Hole	110.00	483.00	373.00	110.00	482.97	-0.61	0.26	-4.00	2.20
13.375in Casing Surface	30.00	483.00	453.00	30.00	482.97	0.00	0.00	-4.00	2.20
12.25in Open Hole	483.00	2629.80	2146.80	482.97	2588.54	-4.00	2.20	206.44	326.85
9.625in Casing Intermediate	30.00	2629.80	2599.80	30.00	2588.54	0.00	0.00	206.44	326.85
8.75in Open Hole	2629.80	6165.00	3535.20	2588.54	6022.10	206.44	326.85	486.01	1011.10
8.5in Open Hole	6165.00	19235.00	13070.00	6022.10	6367.38	486.01	1011.10	-11715.85	5211.83
5in Casing Production	30.00	19235.00	19205.00	30.00	6367.38	0.00	0.00	-11715.85	5211.83

<b>TARGETS</b>								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Hughes River Unit 2H - POE - Rev-1	6371.00	96.64	1193.89	1670167.42	14224930.59	39°10'22.662"N	80°53'42.089"W	point
Hughes River Unit 2H - BHL - Rev-1	6395.00	-11740.38	5219.01	1674190.93	14213098.31	39°08'25.616"N	80°52'51.178"W	point
Hughes River Unit 2H - LP - Rev-1	6395.00	-67.29	1249.63	1670223.14	14224766.72	39°10'21.041"N	80°53'41.384"W	point

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# Actual Wellpath Report

Hughes River Unit 2H AWP Proj: 19235'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Hughes River Unit 2H
Field	Ritchie	Wellbore	Hughes River Unit 2H AWB
Facility	Ireland North Pad		

WELLPATH COMPOSITION - Ref Wellbore: Hughes River Unit 2H AWB Ref Wellpath: Hughes River Unit 2H AWP Proj: 19235'				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
30.00	468.00	Gyrodatta standard - Drop gyro or Multi-shot	01 Gyrodatta MS Gyro <17-1/2">(50'-453')	Hughes River Unit 2H AWB
468.00	2534.00	ISCWSA MWD, Rev. 4 (Standard)	02 WFT EM <12-1/4">(453')(573'-2519')	Hughes River Unit 2H AWB
2534.00	6090.00	ISCWSA MWD, Rev. 4 (Standard)	03 WFT EM <8-3/4">(2519')(2655'-6075')	Hughes River Unit 2H AWB
6090.00	19210.00	BHI AutoTrak Curve (Short)	04 BH AT Curve <8-1/2"> (6090')(6152'-19210')	Hughes River Unit 2H AWB
19210.00	19235.00	Blind Drilling (std)	Projection to bit	Hughes River Unit 2H AWB

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# Actual Wellpath Report

Hughes River Unit 2H AWP Proj: 19235'  
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Hughes River Unit 2H
Field	Ritchie	Wellbore	Hughes River Unit 2H AWB
Facility	Ireland North Pad		

COMMENTS
<p><b>Wellpath general comments</b> API: 47-085-10214-0000 BHI Job #: 109650452 Rig: H&amp;P 519 Duration: 02/12/2019-02/16/2019 Gyrodata MS Gyro &lt;17-1/2"&gt;(50'-453') WFT EM &lt;12-1/4"&gt;(453')(573'-2519') WFT EM &lt;8-3/4"&gt;(2519')(2655'-6075') BH AT Curve &lt;8-1/2"&gt; (6090')(6152'-19210') Middlesex: 6416' MD Burkett: 6619' MD Tully: 6742' MD Marcellus POE: 6834' MD Projected MD at TD: 19235'</p>

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