

ANTERO RESOURCES CORPORATION

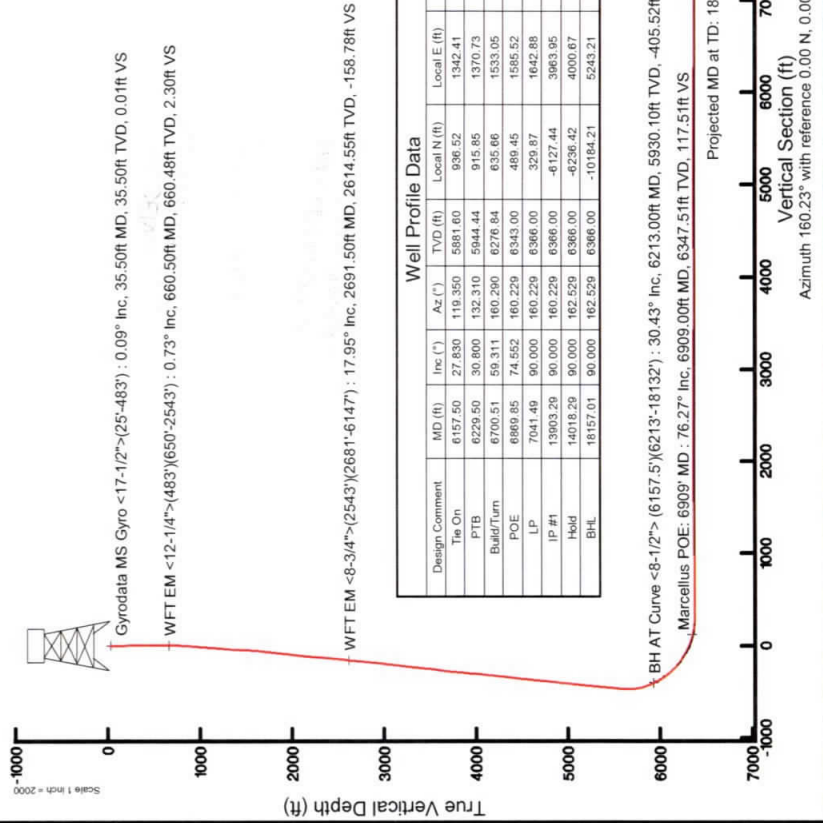
Location: Ritchie County, WV
 Facility: Ritchie
 Slot: Slot #08
 Well: Hayes Unit 2H
 Wellbore: Hayes Unit 2H PWB

Plot reference wellbore path is Hayes Unit 2H PWB Rev-A.0
 True vertical depths are referenced to H&P 317 (RKB)
 Measured depths are referenced to H&P 317 (RKB)
 H&P 317 (RKB) to Mean Sea Level: 995.5 feet
 Mean Sea Level to Ground level (At Slot Slot #08): -970 feet
 Coordinates are in feet referenced to Slot

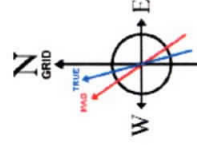
Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
Lettie Pad	1665974.089	14294790.024	80°54'39.290"W
Slot	Local E (ft)	Grid East (US ft)	Longitude
Slot #08	-3.99	59.70	80°54'37.530"W
Comment	Hayes Unit 2H		
H&P 317 (RKB) to Ground level (At Slot Slot #08)	25.5ft		
Mean Sea Level to Ground level (At Slot Slot #08)	-970ft		
H&P 317 (RKB) to Mean Sea Level	995.5ft		

Well Data			
Slot	Well	Wellbore	Wellpath
Slot #08	Hayes Unit 2H	Hayes Unit 2H AWP	Hayes Unit 2H AWP Proj: 18156
Slot #08	Hayes Unit 2H	Hayes Unit 2H PWB	Hayes Unit 2H PWB Rev-A.0

API: 47-085-10366-0000
 BHI Job #: 109574758
 Rig: H&P 317
 Duration: 12/26/2018-12/28/2018



Marcellus POE: 6909' MD : 6347.51ft TVD, 450.84ft N, 1601.73ft E
 BH AT Curve <8-1/2"> : (6157.5)(6213-18132) : 5930.10ft TVD, 921.45ft N, 1364.73ft E
 WFT EM <8-3/4">(2543)(2681-6147) : 2614.55ft TVD, 314.76ft N, 406.31ft E
 WFT EM <12-1/4">(483)(650-2543) : 660.48ft TVD, 2.84ft S, 1.10ft W
 Gyrodala MS Gyro <17-1/2">(25-483) : 35.50ft TVD, 0.01ft S, 0.00ft E



User specified (HDGM) Dip: 66.48° Field: 51830 nT
 Magnetic North is 7.66 degrees West of True North (at 12/24/2018)
 Grid North is 0.06 degrees East of True North
 To correct azimuth from True to Grid subtract 0.06 degrees
 To correct azimuth from Magnetic to Grid subtract 7.72 degrees



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Hayes Unit 2H AWP Proj: 18156'
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REFERENCE WELLPATH IDENTIFICATION	
Operator	ANTERO RESOURCES CORPORATION
Area	Ritchie County, WV
Field	Ritchie
Facility	Lettie Pad
Slot	Slot #08
Well	Hayes Unit 2H
Wellbore	Hayes Unit 2H AWB

REPORT SETUP INFORMATION	
Projection System	NAD27 / UTM Zone 17 North, US feet
North Reference	Grid
Scale	0.999601
Convergence at slot	0.06° East
Software System	WellArchitect® 5.1
User	Delaset
Report Generated	1/4/2019 at 4:41:21 PM
Database/Source file	WA_MPL_EasternUS_Defn/Hayes_Unit_2H_AWP_Proj_18156_.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-3.99	59.70	1665733.76	14294786.04	39°21'53.420"N	80°54'37.530"W
Facility Reference Pt			1665674.09	14294790.02	39°21'53.460"N	80°54'38.290"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.301"W

WELLPATH DATUM	
Calculation method	Minimum curvature
Horizontal Reference Pt	Slot
Vertical Reference Pt	H&P 317 (RKB)
MD Reference Pt	H&P 317 (RKB)
Field Vertical Reference	Mean Sea Level
	H&P 317 (RKB) to Facility Vertical Datum
	H&P 317 (RKB) to Mean Sea Level
	H&P 317 (RKB) to Ground Level at Slot (Slot #08)
	Section Origin
	Section Azimuth
	25.50ft
	995.50ft
	25.50ft
	N 0.00, E 0.00 ft
	160.23°

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REFERENCE WELLPATH IDENTIFICATION	
Operator	ANTERO RESOURCES CORPORATION
Area	Ritchie County, WV
Field	Ritchie
Facility	Lettie Pad
Slot	Slot #08
Well	Hayes Unit 2H
Wellbore	Hayes Unit 2H AWB

WELLPATH DATA (229 stations) † = interpolated/extrapolated station																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (ft)	Grid North (ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
0.00	0.00	164.090	0.00	0.00	0.00	0.00	1665733.76	14294786.04	39°21'53.420"N	80°54'37.530"W	0.00	0.000	0.00	0.00	0.00	
25.50	0.00	164.090	25.50	0.00	0.00	0.00	1665733.76	14294786.04	39°21'53.420"N	80°54'37.530"W	0.00	0.000	0.00	0.00	0.00	
35.50	0.09	164.090	35.50	0.01	-0.01	0.00	1665733.76	14294786.03	39°21'53.420"N	80°54'37.530"W	0.01	164.090	0.90	0.90	1640.90	Cyrodota MS Gyro <17-1/2">(25'-483')
60.50	0.06	218.300	60.50	0.03	-0.04	0.00	1665733.76	14294786.00	39°21'53.420"N	80°54'37.530"W	0.04	180.901	0.29	-0.12	216.84	
85.50	0.13	287.110	85.50	0.02	-0.04	-0.04	1665733.72	14294786.00	39°21'53.420"N	80°54'37.530"W	0.05	222.815	0.49	0.28	275.24	
110.50	0.17	319.690	110.50	-0.03	0.00	-0.09	1665733.67	14294786.04	39°21'53.420"N	80°54'37.531"W	0.09	268.674	0.37	0.16	130.32	
135.50	0.27	209.520	135.50	-0.02	-0.02	-0.14	1665733.62	14294786.01	39°21'53.420"N	80°54'37.532"W	0.14	259.874	1.46	0.40	-440.68	
160.50	0.33	212.830	160.50	0.06	-0.14	-0.21	1665733.55	14294785.90	39°21'53.419"N	80°54'37.533"W	0.25	236.675	0.25	0.24	13.24	
185.50	0.30	205.090	185.50	0.15	-0.26	-0.27	1665733.49	14294785.78	39°21'53.417"N	80°54'37.534"W	0.38	226.967	0.21	-0.12	-30.96	
210.50	0.37	207.090	210.50	0.25	-0.39	-0.34	1665733.42	14294785.65	39°21'53.416"N	80°54'37.534"W	0.52	221.192	0.28	0.28	8.00	
235.50	0.37	202.570	235.50	0.36	-0.53	-0.41	1665733.35	14294785.50	39°21'53.415"N	80°54'37.535"W	0.67	217.311	0.12	0.00	-18.08	
260.50	0.41	207.220	260.50	0.49	-0.69	-0.48	1665733.28	14294785.35	39°21'53.413"N	80°54'37.536"W	0.84	214.836	0.20	0.16	18.60	
285.50	0.53	202.740	285.50	0.63	-0.87	-0.56	1665733.20	14294785.16	39°21'53.411"N	80°54'37.537"W	1.04	212.849	0.50	0.48	-17.92	
310.50	0.68	208.650	310.50	0.82	-1.11	-0.88	1665733.08	14294784.93	39°21'53.409"N	80°54'37.539"W	1.30	211.479	0.65	0.60	23.64	
335.50	0.43	207.190	335.49	0.98	-1.32	-0.79	1665732.97	14294784.71	39°21'53.407"N	80°54'37.540"W	1.54	210.947	1.00	-1.00	-5.84	
360.50	0.46	205.580	360.49	1.11	-1.50	-0.88	1665732.88	14294784.54	39°21'53.405"N	80°54'37.541"W	1.74	210.435	0.13	0.12	-6.44	
385.50	0.50	200.710	385.49	1.27	-1.69	-0.96	1665732.80	14294784.35	39°21'53.403"N	80°54'37.542"W	1.95	209.642	0.23	0.16	-19.48	
410.50	0.54	195.350	410.49	1.45	-1.91	-1.03	1665732.73	14294784.13	39°21'53.401"N	80°54'37.543"W	2.17	208.426	0.25	0.16	-21.44	
435.50	0.62	194.420	435.49	1.65	-2.15	-1.10	1665732.66	14294783.89	39°21'53.399"N	80°54'37.544"W	2.42	207.017	0.32	0.32	-3.72	
460.50	0.71	202.540	460.49	1.88	-2.43	-1.19	1665732.57	14294783.61	39°21'53.396"N	80°54'37.545"W	2.70	206.135	0.52	0.36	32.48	
485.50	0.69	202.090	485.49	2.11	-2.71	-1.31	1665732.45	14294783.33	39°21'53.393"N	80°54'37.547"W	3.01	205.748	0.08	-0.08	-1.80	
493.50	0.68	201.950	493.49	2.18	-2.80	-1.34	1665732.42	14294783.24	39°21'53.392"N	80°54'37.547"W	3.10	205.633	0.13	-0.12	-1.75	
660.50	0.73	34.940	660.48	2.30	-2.84	-1.10	1665732.66	14294783.19	39°21'53.392"N	80°54'37.544"W	3.05	201.201	0.84	0.03	-100.01	WFT EM <12-1/4">(483')(650'-2543')
751.50	3.36	42.890	751.42	0.74	-0.41	1.04	1665734.80	14294785.62	39°21'53.416"N	80°54'37.517"W	1.12	111.646	2.90	2.89	8.74	
845.50	5.88	34.820	845.10	-3.31	5.56	5.67	1665739.43	14294791.59	39°21'53.475"N	80°54'37.458"W	7.94	45.569	2.76	2.68	-8.59	
940.50	8.24	36.830	939.38	-9.88	15.00	12.53	1665746.28	14294801.03	39°21'53.568"N	80°54'37.370"W	19.55	39.867	2.50	2.48	2.12	
1035.50	9.33	43.030	1033.26	-17.15	26.08	21.87	1665755.62	14294812.11	39°21'53.678"N	80°54'37.251"W	34.03	39.975	1.52	1.15	6.53	
1130.50	10.17	47.220	1126.90	-23.93	37.37	33.24	1665766.99	14294823.40	39°21'53.789"N	80°54'37.106"W	50.02	41.650	1.11	0.82	4.41	
1225.50	11.08	46.160	1220.28	-30.91	49.36	45.95	1665779.69	14294835.38	39°21'53.907"N	80°54'36.944"W	67.43	42.948	1.04	1.02	-1.12	
1320.50	12.11	47.850	1313.34	-38.43	62.37	59.92	1665793.65	14294848.38	39°21'54.036"N	80°54'36.766"W	86.49	43.851	1.14	1.08	1.78	

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REFERENCE WELLPATH IDENTIFICATION	
Operator	ANTERO RESOURCES CORPORATION
Area	Ritchie County, WV
Field	Ritchie
Facility	Lettie Pad
Slot	Slot #08
Well	Hayes Unit 2H
Wellbore	Hayes Unit 2H AWB

WELLPATH DATA (229 stations)																
MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (IUS, ft)	Grid North (IUS, ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (ft/100ft)	Build Rate (ft/100ft)	Turn Rate (ft/100ft)	Comments
1474.50	13.740	54.810	1404.96	-45.15	75.42	76.35	1665810.08	14294861.43	39°21'54.165"N	80°54'36.557"W	107.32	45.351	2.39	1.73	7.40	
1509.50	17.110	60.040	1496.53	-50.63	88.91	97.69	1665831.41	14294874.91	39°21'54.298"N	80°54'36.285"W	132.09	47.694	3.83	3.55	5.51	
1604.50	18.090	57.430	1587.08	-56.37	103.83	122.23	1665855.94	14294889.82	39°21'54.445"N	80°54'35.972"W	160.37	49.653	1.32	1.03	-2.75	
1699.50	17.900	52.520	1677.44	-64.07	120.65	146.24	1665879.94	14294906.64	39°21'54.611"N	80°54'35.666"W	189.59	50.477	1.61	-0.20	-5.17	
1794.50	19.170	52.220	1767.51	-73.34	139.09	170.16	1665903.85	14294925.07	39°21'54.793"N	80°54'35.362"W	219.77	50.736	1.34	1.34	-0.32	
1889.50	20.520	53.780	1856.87	-82.88	158.49	195.92	1665929.60	14294944.46	39°21'54.984"N	80°54'35.034"W	252.00	51.029	1.53	1.42	1.64	
1984.50	21.340	54.230	1945.60	-92.36	178.43	223.38	1665957.05	14294964.40	39°21'55.181"N	80°54'34.684"W	285.89	51.383	0.88	0.88	0.47	
2079.50	21.750	53.030	2033.96	-102.33	199.12	251.47	1665985.12	14294985.08	39°21'55.386"N	80°54'34.326"W	320.75	51.627	0.63	0.43	-1.26	
2174.50	18.590	52.610	2123.13	-112.12	218.91	277.57	1666011.21	14295004.85	39°21'55.581"N	80°54'33.993"W	353.50	51.739	3.33	-3.33	-0.44	
2269.50	17.310	52.760	2213.50	-120.94	236.65	300.85	1666034.49	14295022.60	39°21'55.756"N	80°54'33.697"W	382.77	51.811	1.35	-1.35	0.16	
2364.50	18.180	54.830	2303.98	-129.12	253.74	324.22	1666057.85	14295039.68	39°21'55.925"N	80°54'33.399"W	411.71	51.952	1.13	0.92	2.18	
2459.50	18.390	55.700	2394.18	-136.82	270.72	348.71	1666082.33	14295056.65	39°21'56.092"N	80°54'33.087"W	441.46	52.176	0.36	0.22	0.92	
2553.50	18.310	52.460	2483.41	-145.04	288.08	372.67	1666106.28	14295074.00	39°21'56.264"N	80°54'32.781"W	471.03	52.295	1.09	-0.09	-3.45	
2691.50	17.950	50.680	2614.55	-158.78	314.76	406.31	1666139.90	14295100.67	39°21'56.527"N	80°54'32.353"W	513.97	52.236	0.48	-0.26	-1.29	WIFT EM -8-3/4"-(2543)/(2681-6147)
2786.50	18.290	53.830	2704.85	-167.88	332.83	429.67	1666163.25	14295118.74	39°21'56.705"N	80°54'32.055"W	543.50	52.237	1.09	0.36	3.32	
2881.50	19.270	57.300	2794.79	-175.60	350.10	454.89	1666188.47	14295136.00	39°21'56.876"N	80°54'31.734"W	574.02	52.417	1.56	1.03	3.65	
2981.50	20.770	55.880	2888.74	-183.69	368.96	483.46	1666217.03	14295154.85	39°21'57.062"N	80°54'31.370"W	608.17	52.650	1.58	1.50	-1.42	
3076.50	21.060	53.290	2977.49	-192.84	388.62	511.09	1666244.64	14295174.50	39°21'57.256"N	80°54'31.018"W	642.05	52.752	1.02	0.31	-2.73	
3170.50	20.870	50.900	3065.27	-203.30	409.27	537.62	1666271.17	14295195.15	39°21'57.460"N	80°54'30.680"W	675.68	52.719	0.93	-0.20	-2.54	
3265.50	20.490	48.120	3154.15	-215.16	431.04	563.14	1666296.67	14295216.91	39°21'57.675"N	80°54'30.355"W	709.17	52.568	1.11	-0.40	-2.93	
3360.50	20.030	50.510	3243.27	-226.91	452.49	588.07	1666321.60	14295238.35	39°21'57.886"N	80°54'30.037"W	742.01	52.424	1.00	-0.48	2.52	
3455.50	19.600	54.830	3332.65	-236.63	472.02	613.65	1666347.17	14295257.86	39°21'58.079"N	80°54'29.711"W	774.19	52.433	1.61	-0.45	4.55	
3549.50	19.680	54.430	3421.18	-245.13	490.31	639.42	1666372.92	14295276.15	39°21'58.260"N	80°54'29.383"W	805.76	52.519	0.17	0.09	-0.43	
3644.50	19.370	51.350	3510.72	-254.58	509.45	664.73	1666398.23	14295295.28	39°21'58.449"N	80°54'29.060"W	837.50	52.533	1.13	-0.33	-3.24	
3739.50	19.230	48.270	3600.38	-265.53	529.70	688.71	1666422.20	14295315.63	39°21'58.649"N	80°54'28.754"W	868.86	52.435	1.08	-0.15	-3.24	
3834.50	18.070	49.570	3690.40	-276.58	549.67	711.60	1666445.08	14295335.49	39°21'58.846"N	80°54'28.463"W	899.18	52.316	1.30	-1.22	1.37	
3929.50	17.000	52.870	3780.98	-285.92	567.61	733.89	1666467.36	14295353.42	39°21'59.023"N	80°54'28.179"W	927.78	52.281	1.54	-1.13	3.47	
4024.50	18.280	53.790	3871.51	-294.28	584.80	756.99	1666490.44	14295370.60	39°21'59.192"N	80°54'27.884"W	956.56	52.313	1.38	1.35	0.97	
4119.50	19.430	53.850	3961.41	-302.95	602.92	781.77	1666515.21	14295388.72	39°21'59.371"N	80°54'27.569"W	987.26	52.360	1.21	1.21	0.06	
4213.50	19.410	52.220	4050.07	-312.19	621.71	806.74	1666540.17	14295407.30	39°21'59.557"N	80°54'27.250"W	1018.50	52.380	0.58	-0.02	-1.73	

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Hayes Unit 2H AWP Proj: 18156'
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REFERENCE WELLPATH IDENTIFICATION		Slot	Slot #08
Operator	ANTERO RESOURCES CORPORATION	Well	Hayes Unit 2H
Area	Ritchie County, WV	Wellbore	Hayes Unit 2H AWB
Field	Ritchie		
Facility	Lettie Pad		

WELLPATH DATA (229 stations)																
MD Inclin (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert Sect (ft)	North (ft)	East (ft)	Grid East (IUS ft)	Grid North (IUS ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (ft/100ft)	Build Rate (ft/100ft)	Turn Rate (ft/100ft)	Comments
4308.50	19.150	52.300	4139.74	-321.87	640.91	831.54	1666564.97	14295426.69	39°21'59.746"N	80°54'26.934"W	1049.87	52.377	0.28	-0.27	0.08	
4403.50	19.140	54.380	4229.49	-330.92	659.51	856.53	1666589.95	14295445.28	39°21'59.930"N	80°54'26.616"W	1081.02	52.405	0.72	-0.01	2.19	
4498.50	19.250	53.050	4319.20	-339.80	678.00	881.71	1666615.11	14295463.76	39°22'00.112"N	80°54'26.295"W	1112.24	52.441	0.47	0.12	-1.40	
4593.50	19.430	50.490	4408.84	-349.76	697.46	906.41	1666639.81	14295483.22	39°22'00.304"N	80°54'25.980"W	1143.70	52.423	0.91	0.19	-2.69	
4688.50	18.580	51.500	4498.67	-359.96	716.94	930.45	1666663.84	14295502.69	39°22'00.497"N	80°54'25.674"W	1174.62	52.385	0.96	-0.89	1.06	
4782.50	19.230	54.130	4587.60	-369.06	735.33	954.71	1666688.09	14295521.07	39°22'00.678"N	80°54'25.365"W	1205.07	52.396	1.14	0.69	2.80	
4877.50	19.630	52.390	4677.19	-378.29	754.24	980.03	1666713.40	14295539.97	39°22'00.865"N	80°54'25.042"W	1236.66	52.418	0.74	0.42	-1.83	
4972.50	19.700	51.400	4766.65	-388.35	773.96	1005.19	1666738.55	14295559.69	39°22'01.059"N	80°54'24.722"W	1268.63	52.405	0.36	0.07	-1.04	
5067.50	19.480	51.660	4856.15	-398.56	793.78	1030.13	1666763.47	14295579.50	39°22'01.255"N	80°54'24.404"W	1300.48	52.383	0.25	-0.23	0.27	
5162.50	18.600	53.720	4945.95	-407.91	812.57	1054.77	1666788.10	14295598.28	39°22'01.441"N	80°54'24.090"W	1331.47	52.390	1.17	-0.93	2.17	
5257.50	18.450	52.110	5036.03	-416.89	830.77	1078.84	1666812.17	14295616.47	39°22'01.620"N	80°54'23.783"W	1361.65	52.402	0.56	-0.16	-1.69	
5351.50	18.990	51.670	5125.05	-426.38	849.39	1102.58	1666835.90	14295635.09	39°22'01.804"N	80°54'23.481"W	1391.81	52.391	0.59	0.57	-0.47	
5446.50	18.490	53.730	5215.02	-435.58	867.89	1126.85	1666860.16	14295653.58	39°22'01.987"N	80°54'23.171"W	1422.33	52.397	0.87	-0.53	2.17	
5541.50	18.100	56.520	5305.22	-443.36	884.94	1151.30	1666884.60	14295670.62	39°22'02.155"N	80°54'22.860"W	1452.11	52.453	1.01	-0.41	2.94	
5636.50	18.190	55.880	5395.49	-450.53	901.40	1175.89	1666909.18	14295687.08	39°22'02.317"N	80°54'22.547"W	1481.63	52.527	0.23	0.09	-0.67	
5730.50	19.160	51.660	5484.55	-459.08	919.20	1200.14	1666933.41	14295704.87	39°22'02.493"N	80°54'22.238"W	1511.70	52.551	1.77	1.03	-4.49	
5825.50	20.240	54.150	5573.99	-468.60	938.50	1225.68	1666958.95	14295724.16	39°22'02.683"N	80°54'21.912"W	1543.72	52.559	1.44	1.14	2.62	
5857.50	20.110	61.050	5604.03	-471.01	944.40	1234.99	1666968.25	14295730.06	39°22'02.742"N	80°54'21.794"W	1554.70	52.595	7.44	-0.41	21.56	
5888.50	19.270	67.710	5633.22	-472.08	948.92	1244.38	1666977.64	14295734.58	39°22'02.786"N	80°54'21.674"W	1564.91	52.672	7.72	-2.71	21.48	
5920.50	19.570	73.980	5663.40	-471.96	952.40	1254.42	1666987.68	14295738.06	39°22'02.821"N	80°54'21.546"W	1575.01	52.793	6.58	0.94	19.59	
5952.50	19.770	81.090	5693.54	-470.59	954.72	1264.92	1666998.17	14295740.38	39°22'02.843"N	80°54'21.412"W	1584.78	52.956	7.50	0.62	22.22	
5983.50	20.320	87.890	5722.67	-467.97	955.73	1275.48	1667008.73	14295741.39	39°22'02.853"N	80°54'21.278"W	1593.82	53.155	7.72	1.77	21.94	
6015.50	21.850	94.880	5752.53	-463.80	955.43	1286.97	1667020.21	14295741.08	39°22'02.850"N	80°54'21.131"W	1602.85	53.410	9.19	4.78	21.84	
6047.50	22.350	102.730	5782.18	-458.05	953.58	1298.84	1667032.08	14295739.24	39°22'02.832"N	80°54'20.980"W	1611.30	53.715	9.35	1.56	24.53	
6078.50	23.700	107.750	5810.72	-451.09	950.38	1310.52	1667043.76	14295736.04	39°22'02.800"N	80°54'20.832"W	1618.86	54.051	7.68	4.35	16.19	
6110.50	26.130	111.950	5839.74	-442.48	945.79	1323.19	1667056.42	14295731.45	39°22'02.754"N	80°54'20.670"W	1626.45	54.444	9.39	7.59	13.12	
6142.50	27.400	117.040	5868.31	-432.42	939.80	1336.28	1667069.51	14295725.47	39°22'02.695"N	80°54'20.504"W	1633.67	54.881	8.19	3.97	15.91	
6157.50	27.830	119.350	5881.60	-427.26	936.52	1342.41	1667075.63	14295722.18	39°22'02.663"N	80°54'20.426"W	1636.81	55.099	7.69	2.87	15.40	
6213.00	30.430	128.270	5930.10	-405.52	921.45	1364.75	1667097.96	14295707.12	39°22'02.514"N	80°54'20.142"W	1646.70	55.974	9.11	4.68	16.07	BH AT Curve <-8-1/2"> (6157.5)-(6213-18132')
6248.00	31.700	131.790	5960.09	-389.91	909.84	1378.57	1667111.78	14295695.51	39°22'02.399"N	80°54'19.966"W	1651.74	56.576	6.33	3.63	10.06	

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Hayes Unit 2H AWP Proj: 18156'
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REFERENCE WELLPATH IDENTIFICATION	
Operator	ANTERO RESOURCES CORPORATION
Area	Ritchie County, WV
Field	Ritchie
Facility	Lettie Pad
Slot	Slot #08
Well	Hayes Unit 2H
Wellbore	Hayes Unit 2H AWB

WELLPATH DATA (229 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 (1"/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
6296.00	34.420	137.140	6000.32	-366.34	891.48	1397.21	1667130.41	14295677.16	39°22'02.217"N	80°54'19.729"W	1657.38	57.460	8.31	5.67	11.15	
6343.00	36.780	141.920	6038.54	-340.75	870.66	1414.93	1667148.12	14295656.35	39°22'02.011"N	80°54'19.503"W	1661.34	58.394	7.76	5.02	10.17	
6391.00	39.960	145.980	6076.17	-312.18	846.62	1432.51	1667185.69	14295632.32	39°22'01.773"N	80°54'19.280"W	1663.99	59.417	8.14	6.63	7.63	
6438.00	43.370	148.700	6111.28	-281.76	820.37	1449.43	1667192.61	14295606.08	39°22'01.514"N	80°54'19.065"W	1665.49	60.490	8.49	7.26	6.64	
6486.00	46.250	151.070	6145.33	-248.48	791.11	1466.38	1667199.56	14295576.83	39°22'01.224"N	80°54'18.849"W	1666.17	61.653	6.94	6.00	4.94	
6533.00	49.880	153.930	6176.74	-213.85	760.10	1482.50	1667215.67	14295545.83	39°22'00.918"N	80°54'18.644"W	1666.00	62.855	8.95	7.72	6.09	
6545.00†	50.659	154.407	6184.41	-204.67	751.79	1486.52	1667219.69	14295537.53	39°22'00.835"N	80°54'18.593"W	1665.81	63.173	7.17	6.49	3.98	Middlesex: 6545' MD
6580.00	52.940	155.740	6206.06	-177.28	726.85	1498.11	1667231.27	14295512.59	39°22'00.589"N	80°54'18.446"W	1665.12	64.118	7.17	6.52	3.81	
6627.00	56.950	156.950	6233.05	-138.90	691.61	1513.53	1667246.68	14295477.37	39°22'00.240"N	80°54'18.250"W	1664.06	65.442	8.79	8.53	2.57	
6675.00	61.060	158.330	6257.76	-97.81	653.56	1529.17	1667262.32	14295439.34	39°21'59.864"N	80°54'18.052"W	1662.98	66.858	8.91	8.56	2.88	
6722.00	63.460	158.640	6279.64	-56.23	614.87	1544.42	1667277.57	14295400.66	39°21'59.481"N	80°54'17.858"W	1662.32	68.291	5.14	5.11	0.66	
6733.00†	63.810	158.770	6284.52	-46.38	605.68	1548.00	1667281.14	14295391.48	39°21'59.391"N	80°54'17.813"W	1662.28	68.631	3.36	3.19	1.18	Burkett: 6733' MD
6770.00	64.990	159.200	6300.51	-13.02	574.54	1559.97	1667293.10	14295360.34	39°21'59.083"N	80°54'17.661"W	1662.41	69.781	3.36	3.19	1.16	
6817.00	68.090	161.140	6319.22	30.09	533.98	1574.58	1667307.71	14295319.81	39°21'58.682"N	80°54'17.475"W	1662.66	71.267	7.60	6.60	4.13	
6825.00†	68.766	161.283	6322.16	37.53	526.94	1576.98	1667310.11	14295312.77	39°21'58.612"N	80°54'17.445"W	1662.69	71.523	8.62	8.45	1.79	Tully: 6825' MD
6865.00	72.150	161.980	6335.54	75.20	491.17	1588.86	1667321.98	14295277.01	39°21'58.258"N	80°54'17.294"W	1663.04	72.822	8.62	8.46	1.74	
6909.00†	76.269	162.999	6347.51	117.51	450.84	1601.73	1667334.85	14295236.70	39°21'57.860"N	80°54'17.131"W	1663.97	74.280	9.46	9.36	1.41	Marcellus POE: 6909' MD
6912.00	76.550	162.640	6348.21	120.42	448.06	1602.60	1667335.72	14295233.92	39°21'57.832"N	80°54'17.119"W	1664.06	74.380	9.46	9.36	1.38	
6960.00	80.660	163.770	6357.69	167.40	403.02	1616.19	1667349.30	14295188.90	39°21'57.387"N	80°54'16.947"W	1665.68	75.998	8.87	8.56	2.35	
7007.00	85.570	163.400	6363.33	213.97	358.28	1629.37	1667362.48	14295144.17	39°21'56.945"N	80°54'16.780"W	1668.30	77.599	10.48	10.45	-0.79	
7055.00	88.400	163.200	6365.85	261.83	312.37	1643.15	1667376.25	14295098.28	39°21'56.491"N	80°54'16.605"W	1672.58	79.236	5.91	5.90	-0.42	
7150.00	90.000	163.150	6367.18	356.69	221.45	1670.64	1667403.73	14295007.40	39°21'55.592"N	80°54'16.256"W	1685.25	82.449	1.69	1.68	-0.05	
7245.00	89.970	164.020	6367.20	451.53	130.32	1697.49	1667430.57	14294916.31	39°21'54.691"N	80°54'15.916"W	1702.48	85.610	0.92	-0.03	0.92	
7339.00	89.880	165.240	6367.33	545.25	39.69	1722.40	1667455.47	14294825.71	39°21'53.795"N	80°54'15.600"W	1722.86	88.680	1.30	-0.10	1.30	
7434.00	89.910	164.340	6367.50	639.94	-51.98	1747.33	1667480.38	14294734.07	39°21'52.888"N	80°54'15.284"W	1748.10	91.704	0.95	0.03	-0.95	
7529.00	90.150	164.180	6367.45	734.71	-143.42	1773.10	1667506.15	14294642.67	39°21'51.984"N	80°54'14.957"W	1778.89	94.624	0.30	0.25	-0.17	
7624.00	90.060	163.600	6367.28	829.52	-234.69	1799.46	1667532.50	14294551.44	39°21'51.082"N	80°54'14.622"W	1814.70	97.431	0.62	-0.09	-0.61	
7719.00	90.860	161.200	6366.51	924.44	-325.23	1828.18	1667561.21	14294460.93	39°21'50.187"N	80°54'14.258"W	1856.88	100.087	2.66	0.84	-2.53	
7813.00	91.820	158.160	6364.31	1018.39	-413.35	1860.81	1667593.82	14294372.85	39°21'49.316"N	80°54'13.844"W	1906.16	102.524	3.39	1.02	-3.23	
7908.00	91.200	154.650	6361.81	1113.13	-500.36	1898.81	1667631.81	14294285.88	39°21'48.455"N	80°54'13.361"W	1963.63	104.763	3.75	-0.65	-3.68	

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Actual Wellpath Report

Hayes Unit 2H AWP Proj: 18156'

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REFERENCE WELLPATH IDENTIFICATION	
Operator	ANTERO RESOURCES CORPORATION
Area	Ritchie County, WV
Field	Ritchie
Facility	Lettie Pad
Slot	Slot #08
Well	Hayes Unit 2H
Wellbore	Hayes Unit 2H AWB

WELLPATH DATA (229 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 (F/100ft)	Build Rate (F/100ft)	Turn Rate (F/100ft)	Comments
8003.00	90.490	153.620	6360.41	1207.59	-585.83	1940.25	1667673.23	14294200.44	39°21'47.610"N	80°54'12.834"W	2026.77	106.801	1.32	-0.75	-1.08	
8098.00	90.340	155.400	6359.72	1302.11	-671.58	1981.13	1667714.10	14294114.73	39°21'46.762"N	80°54'12.315"W	2091.87	108.726	1.88	-0.16	1.87	
8193.00	90.280	157.320	6359.88	1396.88	-758.60	2019.23	1667752.18	14294027.74	39°21'45.902"N	80°54'11.831"W	2157.02	110.591	2.02	-0.06	2.02	
8288.00	90.250	160.220	6358.77	1491.84	-847.15	2053.62	1667786.56	14293939.23	39°21'45.026"N	80°54'11.395"W	2221.49	112.417	3.05	-0.03	3.05	
8382.00	90.340	162.290	6358.28	1585.82	-936.15	2083.83	1667816.75	14293850.26	39°21'44.146"N	80°54'11.011"W	2284.45	114.192	2.20	0.10	2.20	
8477.00	90.460	162.950	6357.62	1680.73	-1026.81	2112.20	1667845.12	14293759.64	39°21'43.250"N	80°54'10.651"W	2348.56	115.926	0.71	0.13	0.69	
8572.00	90.430	162.690	6356.88	1775.63	-1117.57	2140.26	1667873.17	14293668.91	39°21'42.353"N	80°54'10.295"W	2414.48	117.572	0.28	-0.03	-0.27	
8666.00	90.400	163.220	6356.20	1869.53	-1207.44	2167.82	1667900.71	14293579.08	39°21'41.464"N	80°54'09.946"W	2481.40	119.117	0.56	-0.03	0.56	
8761.00	90.370	162.510	6355.56	1964.42	-1298.22	2195.81	1667928.68	14293488.34	39°21'40.566"N	80°54'09.591"W	2550.87	120.593	0.75	-0.03	-0.75	
8856.00	89.140	161.950	6355.97	2059.36	-1388.69	2224.80	1667957.67	14293397.91	39°21'39.672"N	80°54'09.223"W	2622.63	121.972	1.42	-1.28	-0.59	
8951.00	90.620	162.510	6356.17	2154.30	-1479.15	2253.79	1667986.65	14293307.48	39°21'38.778"N	80°54'08.855"W	2695.82	123.277	1.67	1.56	0.59	
9046.00	90.370	160.430	6355.35	2249.27	-1569.22	2283.98	1668016.82	14293217.45	39°21'37.887"N	80°54'08.472"W	2771.10	124.491	2.21	-0.26	-2.19	
9140.00	90.340	156.730	6354.76	2343.21	-1656.71	2318.30	1668051.13	14293129.99	39°21'37.022"N	80°54'08.036"W	2849.42	125.550	3.94	-0.03	-3.94	
9235.00	89.820	153.990	6354.63	2437.86	-1743.05	2357.90	1668090.72	14293043.69	39°21'36.168"N	80°54'07.533"W	2932.22	126.473	2.94	-0.55	-2.88	
9330.00	89.780	157.740	6354.96	2532.57	-1829.73	2396.74	1668129.54	14292957.04	39°21'35.311"N	80°54'07.040"W	3015.34	127.359	3.95	-0.04	3.95	
9425.00	89.140	159.470	6355.86	2627.52	-1918.17	2431.39	1668164.18	14292868.63	39°21'34.437"N	80°54'06.600"W	3096.94	128.271	1.94	-0.67	1.82	
9519.00	90.000	161.370	6356.56	2721.51	-2006.73	2462.89	1668195.66	14292780.11	39°21'33.561"N	80°54'06.200"W	3176.92	129.173	2.22	0.91	2.02	
9614.00	90.250	162.140	6356.36	2816.48	-2096.95	2492.64	1668225.40	14292689.93	39°21'32.669"N	80°54'05.823"W	3257.37	130.073	0.85	0.26	0.81	
9709.00	90.060	160.110	6356.10	2911.46	-2186.84	2523.37	1668256.11	14292600.07	39°21'31.780"N	80°54'05.433"W	3339.11	130.913	2.15	-0.20	-2.14	
9804.00	90.030	159.970	6356.03	3006.46	-2276.13	2555.80	1668288.53	14292510.82	39°21'30.897"N	80°54'05.021"W	3422.41	131.688	0.15	-0.03	-0.15	
9898.00	88.400	158.550	6357.31	3100.43	-2364.03	2589.08	1668321.80	14292422.96	39°21'30.028"N	80°54'04.598"W	3505.99	132.398	2.30	-1.73	-1.51	
9993.00	90.490	159.630	6358.23	3195.40	-2452.76	2622.98	1668355.69	14292334.26	39°21'29.151"N	80°54'04.168"W	3591.11	133.079	2.48	2.20	1.14	
10088.00	90.250	158.480	6357.62	3290.38	-2541.48	2656.94	1668389.63	14292245.58	39°21'28.274"N	80°54'03.737"W	3676.74	133.728	1.24	-0.25	-1.21	
10182.00	89.320	155.940	6357.97	3384.24	-2628.13	2693.35	1668426.03	14292158.96	39°21'27.417"N	80°54'03.275"W	3763.14	134.298	2.88	-0.93	-2.70	
10277.00	89.970	155.470	6358.56	3478.94	-2714.72	2732.43	1668465.10	14292072.41	39°21'26.561"N	80°54'02.778"W	3851.74	134.814	0.84	0.68	-0.49	
10372.00	89.880	156.110	6358.69	3573.65	-2801.36	2771.39	1668504.04	14291985.80	39°21'25.704"N	80°54'02.284"W	3940.59	135.308	0.68	-0.03	0.67	
10467.00	90.000	157.550	6358.79	3668.48	-2888.70	2808.77	1668541.40	14291898.50	39°21'24.840"N	80°54'01.809"W	4029.11	135.804	1.52	0.13	1.52	
10562.00	89.480	158.850	6359.22	3763.42	-2976.90	2844.05	1668576.66	14291810.33	39°21'23.968"N	80°54'01.361"W	4117.10	136.307	1.47	-0.55	1.37	
10657.00	90.150	161.640	6359.52	3858.41	-3066.30	2876.15	1668608.76	14291720.97	39°21'23.084"N	80°54'00.954"W	4204.10	136.833	3.02	0.71	2.94	
10752.00	90.280	162.680	6359.17	3953.35	-3156.73	2905.26	1668637.85	14291630.57	39°21'22.190"N	80°54'00.584"W	4290.16	137.375	1.10	0.14	1.09	

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Environmental Protection



Actual Wellpath Report

Hayes Unit 2H AWP Proj: 18156
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REFERENCE WELLPATH IDENTIFICATION	
Operator	ANTERO RESOURCES CORPORATION
Area	Ritchie County, WV
Field	Ritchie
Facility	Lettie Pad
Slot	Slot #08
Well	Hayes Unit 2H
Wellbore	Hayes Unit 2H AWB

WELLPATH DATA (229 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 (F/100ft)	Build Rate (F/100ft)	Turn Rate (F/100ft)	Comments
10846.00	89.420	162.220	6359.41	4047.28	-3246.35	2933.60	1668666.18	14291540.99	39°21'21.304"N	80°54'00.225"W	4375.48	137.897	1.04	-0.91	-0.49	
10941.00	90.400	165.020	6359.56	4142.11	-3337.49	2960.39	1668692.96	14291449.89	39°21'20.403"N	80°53'59.885"W	4461.25	138.427	3.12	1.03	2.95	
11036.00	90.370	163.620	6358.97	4236.86	-3428.95	2986.06	1668718.62	14291358.47	39°21'19.499"N	80°53'59.560"W	4546.89	138.949	1.48	-0.09	-1.47	
11131.00	90.520	160.080	6358.29	4331.80	-3519.20	3015.65	1668748.20	14291268.25	39°21'18.606"N	80°53'59.184"W	4634.54	139.406	3.73	0.22	-3.73	
11226.00	91.970	159.320	6356.22	4426.77	-3608.28	3048.60	1668781.14	14291179.21	39°21'17.726"N	80°53'58.766"W	4723.73	139.806	1.72	1.53	-0.80	
11321.00	90.620	154.120	6354.07	4521.54	-3695.49	3086.12	1668818.64	14291092.03	39°21'16.863"N	80°53'58.289"W	4814.64	140.135	5.65	-1.42	-5.47	
11415.00	88.830	154.000	6354.52	4614.99	-3780.02	3127.24	1668859.74	14291007.54	39°21'16.027"N	80°53'57.767"W	4905.93	140.399	1.91	-1.90	-0.13	
11510.00	89.570	158.450	6355.85	4709.72	-3866.92	3165.52	1668898.01	14290920.67	39°21'15.168"N	80°53'57.281"W	4997.36	140.696	4.75	0.78	4.68	
11605.00	89.910	157.900	6356.28	4804.66	-3955.11	3200.84	1668933.32	14290832.51	39°21'14.296"N	80°53'56.833"W	5088.05	141.017	0.68	0.36	-0.58	
11700.00	90.710	155.610	6355.77	4899.48	-4042.39	3238.33	1668970.79	14290745.27	39°21'13.433"N	80°53'56.357"W	5179.55	141.302	2.55	0.84	-2.41	
11795.00	89.630	154.250	6355.49	4994.07	-4128.44	3278.58	1669011.03	14290659.25	39°21'12.582"N	80°53'55.846"W	5271.92	141.545	1.83	-1.14	-1.43	
11890.00	89.480	155.700	6356.22	5088.66	-4214.52	3318.77	1669051.20	14290573.21	39°21'11.731"N	80°53'55.335"W	5364.36	141.781	1.53	-0.16	1.53	
11984.00	89.260	156.040	6357.26	5182.38	-4300.30	3357.19	1669089.61	14290487.47	39°21'10.883"N	80°53'54.847"W	5455.98	142.021	0.43	-0.23	0.36	
12079.00	91.170	160.400	6356.90	5277.30	-4388.49	3392.43	1669124.83	14290399.31	39°21'10.010"N	80°53'54.400"W	5546.84	142.295	5.01	2.01	4.59	
12174.00	89.630	160.350	6356.24	5372.29	-4477.97	3424.34	1669156.72	14290309.87	39°21'09.126"N	80°53'53.995"W	5637.22	142.595	1.62	-1.62	-0.05	
12269.00	90.280	159.500	6356.31	5467.29	-4567.19	3456.95	1669189.32	14290220.68	39°21'08.244"N	80°53'53.581"W	5727.98	142.878	1.13	0.68	-0.89	
12364.00	89.850	160.480	6356.20	5562.29	-4656.46	3489.45	1669221.81	14290131.45	39°21'07.361"N	80°53'53.169"W	5818.84	143.153	1.13	-0.45	1.03	
12458.00	89.880	160.870	6356.43	5656.28	-4745.16	3520.56	1669252.91	14290042.78	39°21'06.484"N	80°53'52.774"W	5908.54	143.427	0.42	0.03	0.41	
12553.00	90.370	159.120	6356.22	5751.28	-4834.42	3553.06	1669285.39	14289953.55	39°21'05.601"N	80°53'52.362"W	5999.66	143.686	1.91	0.52	-1.84	
12648.00	90.340	157.670	6355.63	5846.23	-4922.75	3588.04	1669320.36	14289865.27	39°21'04.728"N	80°53'51.918"W	6091.59	143.913	1.53	-0.03	-1.53	
12743.00	89.320	157.030	6355.91	5941.10	-5010.42	3624.62	1669356.93	14289777.63	39°21'03.861"N	80°53'51.453"W	6184.02	144.117	1.27	-1.07	-0.67	
12838.00	90.400	159.750	6356.14	6036.04	-5098.73	3659.60	1669391.89	14289689.35	39°21'02.988"N	80°53'51.009"W	6276.12	144.331	3.08	1.14	2.86	
12933.00	89.660	160.400	6356.09	6131.04	-5186.04	3691.98	1669424.26	14289600.08	39°21'02.105"N	80°53'50.598"W	6367.61	144.563	1.04	-0.78	0.68	
13028.00	88.680	160.750	6357.47	6226.03	-5277.62	3723.57	1669455.83	14289510.53	39°21'01.219"N	80°53'50.198"W	6458.97	144.796	1.10	-1.03	0.37	
13123.00	88.990	164.530	6359.40	6320.91	-5368.26	3751.90	1669484.16	14289419.93	39°21'00.323"N	80°53'49.838"W	6549.43	145.050	3.99	0.33	3.98	
13217.00	89.660	165.850	6360.51	6414.55	-5459.13	3775.93	1669508.17	14289329.10	39°20'59.424"N	80°53'49.534"W	6637.75	145.329	1.57	0.71	1.40	
13312.00	89.660	165.800	6361.07	6509.09	-5551.24	3799.19	1669531.43	14289237.03	39°20'58.514"N	80°53'49.239"W	6726.82	145.613	0.05	0.00	-0.05	
13407.00	89.320	164.760	6361.92	6603.72	-5643.11	3823.33	1669555.56	14289145.19	39°20'57.605"N	80°53'48.933"W	6816.35	145.882	1.15	-0.36	-1.09	
13502.00	90.400	164.570	6362.15	6698.43	-5734.73	3848.45	1669580.67	14289053.61	39°20'56.700"N	80°53'48.614"W	6906.35	146.135	1.15	1.14	-0.20	
13596.00	90.400	164.070	6361.50	6792.19	-5825.23	3873.86	1669606.06	14288963.15	39°20'55.805"N	80°53'48.292"W	6995.72	146.376	0.53	0.00	-0.53	

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Facility	Lettie Pad
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WELLPATH DATA (229 stations)																
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13691.00	90.740	163.420	6360.55	6887.01	-5916.42	3900.45	1669632.64	14288871.99	39°20'54.903"N	80°53'47.955"W	7086.44	146.605	0.77	0.36	-0.68	
13786.00	90.490	163.230	6359.53	6981.86	-6007.42	3927.70	1669659.89	14288781.02	39°20'54.004"N	80°53'47.610"W	7177.47	146.823	0.33	-0.26	-0.20	
13881.00	90.770	162.850	6358.49	7076.74	-6098.29	3955.41	1669687.59	14288690.20	39°20'53.105"N	80°53'47.258"W	7268.73	147.032	0.50	0.29	-0.40	
13975.00	90.620	164.240	6357.35	7170.58	-6188.43	3982.04	1669714.20	14288600.09	39°20'52.214"N	80°53'46.921"W	7358.89	147.240	1.49	-0.16	1.48	
14070.00	90.620	160.850	6356.32	7265.48	-6279.04	4010.53	1669742.68	14288509.52	39°20'51.318"N	80°53'46.559"W	7450.55	147.433	3.57	0.00	-3.57	
14164.00	90.830	162.380	6355.13	7359.44	-6368.23	4040.17	1669772.31	14288420.37	39°20'50.436"N	80°53'46.183"W	7541.71	147.608	1.64	0.22	1.63	
14259.00	90.460	163.170	6354.06	7454.34	-6458.96	4068.30	1669800.43	14288329.67	39°20'49.539"N	80°53'45.826"W	7633.43	147.794	0.92	-0.39	0.83	
14354.00	90.400	162.180	6353.35	7549.25	-6549.65	4096.59	1669828.71	14288239.02	39°20'48.643"N	80°53'45.468"W	7725.28	147.975	1.04	-0.06	-1.04	
14449.00	90.460	160.570	6352.63	7644.23	-6639.67	4126.93	1669859.04	14288149.04	39°20'47.752"N	80°53'45.083"W	7817.72	148.137	1.70	0.06	-1.69	
14544.00	90.310	158.490	6351.99	7739.21	-6728.66	4160.15	1669892.24	14288060.08	39°20'46.872"N	80°53'44.661"W	7910.86	148.273	2.20	-0.16	-2.19	
14639.00	89.970	160.800	6351.76	7834.20	-6817.72	4193.19	1669925.27	14287971.05	39°20'45.992"N	80°53'44.242"W	8004.01	148.407	2.46	-0.36	2.43	
14734.00	89.940	164.470	6351.84	7929.10	-6908.38	4221.54	1669953.61	14287880.43	39°20'45.096"N	80°53'43.883"W	8096.11	148.572	3.86	-0.03	3.86	
14829.00	89.940	164.910	6351.94	8023.81	-7000.00	4246.63	1669978.68	14287788.84	39°20'44.190"N	80°53'43.565"W	8187.42	148.756	0.46	0.00	0.46	
14923.00	89.940	165.570	6352.03	8117.45	-7090.90	4270.57	1670002.62	14287697.98	39°20'43.291"N	80°53'43.261"W	8277.60	148.941	0.70	0.00	0.70	
15018.00	89.890	165.960	6352.18	8212.01	-7182.98	4293.93	1670025.97	14287605.94	39°20'42.381"N	80°53'42.965"W	8368.58	149.129	0.42	-0.06	0.41	
15113.00	89.850	163.770	6352.41	8306.69	-7274.68	4318.74	1670050.76	14287514.27	39°20'41.474"N	80°53'42.651"W	8460.05	149.304	2.31	-0.03	-2.31	
15208.00	89.970	163.890	6352.56	8401.50	-7365.93	4345.19	1670077.21	14287423.07	39°20'40.572"N	80°53'42.315"W	8552.05	149.463	0.18	0.13	0.13	
15303.00	89.910	164.420	6352.66	8496.28	-7457.32	4371.13	1670103.14	14287331.71	39°20'39.668"N	80°53'41.987"W	8643.98	149.623	0.56	-0.06	0.56	
15398.00	90.090	165.450	6352.66	8590.96	-7549.05	4395.82	1670127.82	14287240.02	39°20'38.761"N	80°53'41.674"W	8735.64	149.788	1.10	0.19	1.08	
15492.00	90.120	167.240	6352.48	8684.42	-7640.39	4418.01	1670150.00	14287148.72	39°20'37.858"N	80°53'41.393"W	8825.78	149.962	1.90	0.03	1.90	
15587.00	90.430	166.660	6352.03	8778.77	-7732.93	4439.46	1670171.44	14287056.21	39°20'36.943"N	80°53'41.121"W	8916.67	150.140	0.69	0.33	-0.61	
15682.00	90.430	164.540	6351.32	8873.34	-7824.94	4463.09	1670195.06	14286964.24	39°20'36.034"N	80°53'40.822"W	9008.27	150.301	2.23	0.00	-2.23	
15777.00	90.460	161.510	6350.58	8968.21	-7915.79	4490.82	1670222.78	14286873.43	39°20'35.136"N	80°53'40.470"W	9100.94	150.433	3.19	0.03	-3.19	
15872.00	90.550	158.230	6349.74	9063.20	-8004.97	4523.51	1670255.45	14286784.28	39°20'34.254"N	80°53'40.055"W	9194.65	150.530	3.45	0.09	-3.45	
15967.00	90.250	157.290	6349.08	9158.10	-8092.90	4559.46	1670291.39	14286696.39	39°20'33.384"N	80°53'39.599"W	9288.90	150.604	1.04	-0.32	-0.99	
16062.00	89.940	158.590	6348.92	9253.03	-8180.94	4595.14	1670327.06	14286608.38	39°20'32.514"N	80°53'39.146"W	9383.13	150.678	1.41	-0.33	1.37	
16157.00	89.880	159.460	6349.07	9348.00	-8269.65	4629.15	1670361.05	14286519.71	39°20'31.637"N	80°53'38.715"W	9477.13	150.761	0.92	-0.06	0.92	
16252.00	89.970	163.080	6349.19	9442.97	-8359.60	4659.65	1670391.54	14286429.79	39°20'30.747"N	80°53'38.328"W	9570.54	150.865	3.81	0.09	3.81	
16346.00	89.880	162.950	6349.32	9536.86	-8449.50	4687.11	1670418.99	14286339.93	39°20'29.858"N	80°53'37.980"W	9662.45	150.982	0.17	-0.10	-0.14	
16441.00	89.940	161.990	6349.47	9631.79	-8540.09	4715.72	1670447.59	14286249.38	39°20'28.963"N	80°53'37.617"W	9755.57	151.093	1.01	0.06	-1.01	

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REFERENCE WELLPATH IDENTIFICATION	
Operator	ANTERO RESOURCES CORPORATION
Area	Ritchie County, WV
Field	Ritchie
Facility	Lettie Pad
Slot	Slot #08
Well	Hayes Unit 2H
Wellbore	Hayes Unit 2H AWB

WELLPATH DATA (229 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
16536.00	89.940	160.040	6349.56	9726.77	-8629.91	4746.63	1670478.48	14286159.59	39°20'28.074"N	80°53'37.225"W	9849.16	151.188	2.05	0.00	-2.05	
16631.00	89.970	158.750	6349.64	9821.76	-8718.84	4780.06	1670511.90	14286070.70	39°20'27.195"N	80°53'36.801"W	9943.19	151.266	1.36	0.03	-1.36	
16726.00	90.000	157.400	6349.66	9916.69	-8806.96	4815.53	1670547.36	14285982.61	39°20'26.324"N	80°53'36.350"W	10037.52	151.331	1.42	0.03	-1.42	
16821.00	89.940	158.340	6349.71	10011.61	-8894.96	4851.32	1670583.13	14285894.64	39°20'25.454"N	80°53'35.896"W	10131.91	151.392	0.99	-0.06	0.99	
16915.00	90.060	158.530	6349.71	10105.56	-8982.38	4885.87	1670617.67	14285807.26	39°20'24.589"N	80°53'35.458"W	10225.21	151.457	0.24	0.13	0.20	
17010.00	89.970	160.460	6349.69	10200.55	-9071.36	4919.14	1670650.93	14285718.32	39°20'23.709"N	80°53'35.036"W	10319.28	151.530	2.03	-0.09	2.03	
17105.00	90.030	162.670	6349.69	10295.52	-9161.48	4949.18	1670680.96	14285628.23	39°20'22.818"N	80°53'34.655"W	10412.83	151.621	2.33	0.06	2.33	
17200.00	89.970	162.520	6349.69	10390.44	-9252.13	4977.60	1670709.36	14285537.62	39°20'21.922"N	80°53'34.294"W	10506.11	151.720	0.17	-0.06	-0.16	
17294.00	89.970	162.700	6349.74	10484.36	-9341.83	5005.69	1670737.44	14285447.95	39°20'21.035"N	80°53'33.938"W	10598.43	151.816	0.19	0.00	0.19	
17389.00	90.090	163.130	6349.69	10579.25	-9432.64	5033.60	1670765.34	14285357.18	39°20'20.137"N	80°53'33.584"W	10691.67	151.914	0.47	0.13	0.45	
17484.00	89.570	161.210	6349.97	10674.19	-9523.07	5062.69	1670794.42	14285266.79	39°20'19.243"N	80°53'33.215"W	10785.16	152.004	2.09	-0.55	-2.02	
17579.00	89.110	156.350	6351.07	10769.13	-9611.60	5097.06	1670828.78	14285178.30	39°20'18.368"N	80°53'32.779"W	10879.47	152.063	5.14	-0.48	-5.12	
17674.00	88.310	159.210	6353.20	10864.01	-9699.51	5132.97	1670864.68	14285090.42	39°20'17.498"N	80°53'32.324"W	10973.97	152.112	3.13	-0.84	3.01	
17769.00	89.380	165.840	6355.12	10958.86	-9790.06	5161.48	1670893.17	14284999.91	39°20'16.603"N	80°53'31.962"W	11067.34	152.201	7.07	1.13	6.98	
17863.00	89.630	165.290	6355.93	11052.45	-9881.09	5184.91	1670916.59	14284908.92	39°20'15.703"N	80°53'31.665"W	11158.81	152.313	0.64	0.27	-0.59	
17958.00	89.750	165.200	6356.45	11147.08	-9972.95	5209.11	1670940.78	14284817.09	39°20'14.795"N	80°53'31.359"W	11251.42	152.421	0.16	0.13	-0.09	
18053.00	89.720	164.310	6356.89	11241.78	-10064.61	5234.08	1670965.74	14284725.47	39°20'13.889"N	80°53'31.042"W	11344.25	152.523	0.94	-0.03	-0.94	
18132.00	89.690	163.200	6357.29	11320.63	-10140.45	5256.18	1670987.84	14284649.66	39°20'13.139"N	80°53'30.762"W	11421.74	152.601	1.41	-0.04	-1.41	
18156.00	89.690	163.200	6357.42	11344.60	-10163.43	5283.12	1670994.77	14284626.69	39°20'12.912"N	80°53'30.674"W	11445.33	152.623	0.00	0.00	0.00	Projected MD at TD: 18156'

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Operator	Slot	Slot #08
ANTERO RESOURCES CORPORATION	Well	Hayes Unit 2H
Area	Wellbore	Hayes Unit 2H AWB
Field		
Facility		

HOLE & CASING SECTIONS - Ref Wellbore: Hayes Unit 2H AWB Ref Wellpath: Hayes Unit 2H AWP Proj: 18156'

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start EW [ft]	End N/S [ft]	End EW [ft]
20in Casing Surface	25.50	105.50	80.00	25.50	105.50	0.00	0.00	-0.01	-0.08
17.5in Open Hole	105.50	523.50	418.00	105.50	523.48	-0.01	-0.08	-3.07	-1.44
13.375in Casing Surface	25.50	523.50	498.00	25.50	523.48	0.00	0.00	-3.07	-1.44
12.25in Open Hole	523.50	2659.50	2136.00	523.48	2584.12	-3.07	-1.44	308.53	398.64
9.625in Casing Intermediate	25.50	2659.50	2634.00	25.50	2584.12	0.00	0.00	308.53	398.64
8.75in Open Hole	2659.50	6229.50	3570.00	2584.12	5944.29	308.53	398.64	916.14	1371.29
8.5in Open Hole	6229.50	18156.00	11926.50	5944.29	6357.42	916.14	1371.29	-10163.43	5263.12
5.5in Casing Production	25.50	18156.00	18130.50	25.50	6357.42	0.00	0.00	-10163.43	5263.12

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Hayes Unit 2H POE Rev-1	6343.00	489.45	1585.52	1667318.64	14295275.29	39°21'58.241"N	80°54'17.336"W	point
Hayes Unit 2H BHL Rev-1	6366.00	-10184.21	5243.21	1670974.87	14284605.91	39°20'12.707"N	80°53'30.928"W	point

WELLPATH COMPOSITION - Ref Wellbore: Hayes Unit 2H AWB Ref Wellpath: Hayes Unit 2H AWP Proj: 18156'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment
25.50	493.50	Gyrodata standard - Drop gyro or Multi-shot	01 Gyrodata MS Gyro <17-1/2">(25-483')
493.50	2553.50	ISCSWA MWD, Rev. 4 (Standard)	02 WFT EM <12-1/4">(483')(650'-2543')
2553.50	6157.50	ISCSWA MWD, Rev. 4 (Standard)	03 WFT EM <8-3/4">(2543')(2681'-6147')
6157.50	18132.00	BHI AutoTrak Curve (Short)	04 BH AT Curve <8-1/2">(6157.5')(6213'-18132')
18132.00	18156.00	Blind Drilling (std)	Projection to bit

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Actual Wellpath Report

Hayes Unit 2H AWP Proj: 18156'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #08
Area	Ritchie County, WV	Well	Hayes Unit 2H
Field	Ritchie	Wellbore	Hayes Unit 2H AWB
Facility	Lettie Pad		

COMMENTS
<p>Wellpath general comments API: 47-085-10366-0000 BHI Job #: 109574758 Rig: H&P 317 Duration: 12/26/2018-12/28/2018 Gyrodota MS Gyro <17-1/2">(25'-483') WFT EM <12-1/4">(483')(650'-2543') WFT EM <8-3/4">(2543')(2681'-6147') BH AT Curve <8-1/2"> (6157.5')(6213'-18132') Middlesex: 6545' MD Burkett: 6733' MD Tully: 6825' MD Marcellus POE: 6909' MD Projected MD at TD: 18156'</p>

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