

ANTERO RESOURCES CORPORATION

Location: Ritchie County, WV
 Facility: Lettie Pad
 Slot: Slot #07
 Well: Hayes Unit 1H
 Wellbore: Hayes Unit 1H PWB



API: 47-085-10365-0000
 BHI Job #: 109563130
 Rig: H&P 317
 Duration: 12/21/2018-12/23/2018

Plot reference wellbore is Hayes Unit 1H PWB Rev-A.0	Grid System: MAD27 UTM Zone 17 North, US feet
True vertical depths are referenced to H&P 317 (RKB)	North Reference: Grid north
Measured depths are referenced to H&P 317 (RKB)	Scale: True distance
H&P 317 (RKB) to Mean Sea Level: 995.5 feet	Depths are in feet
Mean Sea Level to Ground level (At Slot: Slot #07): -970 feet	Created by: delabed on 2019-01-02
Coordinates are in feet referenced to Slot	Database: WA_MPL_EasternUS_Defn

Gyrodatta MS Gyro <17-1/2>(100-490) : 0.28° Inc, 110.50ft TVD, 110.50ft TVD, 0.06ft VS

WFT EM <12-1/4>(490)(623-2493) : 1.15° Inc, 633.50ft MD, 633.49ft TVD, 0.84ft VS

Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
Lettie Pad	1665674.089	14294790.024	39°21'53.4607N
Slot	Local E (ft)	Grid North (US ft)	Longitude
Slot #07	-2.99	14294787.040	39°21'53.4307N
Comment	Hayes Unit 1H		80°54'37.6507W
H&P 317 (RKB) to Ground level (At Slot: Slot #07)			25.8ft
Mean Sea Level to Ground level (At Slot: Slot #07)			-970ft
H&P 317 (RKB) to Mean Sea Level			995.5ft

WFT EM <8-3/4>(2493)(2652-6008) : 1.14° Inc, 2662.50ft MD, 2660.84ft TVD, -53.08ft VS

Well Profile Data						
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local E (ft)	VS (ft)
Tie On	6018.50	26.170	128.200	5926.95	542.11	9.68
Proj. To Bottom	6094.50	31.910	132.730	5993.38	516.10	8.06
End of 3D Arc	6273.50	41.799	144.078	6136.59	437.39	6.69
POE	6671.61	75.440	148.500	6341.00	157.50	8.50
Landing PL	6853.60	90.000	148.500	6364.00	3.98	841.85
On Azimuth	7244.58	90.000	160.229	6364.00	-347.89	1010.70
BHL	13660.58	90.000	160.229	6364.00	-6385.70	3180.96
						7085.25

Well Data		
Slot	Well	Wellbore
Slot #07	Hayes Unit 1H	Hayes Unit 1H AWB
Slot #07	Hayes Unit 1H	Hayes Unit 1H PWB
		Hayes Unit 1H PWB Rev-A.0

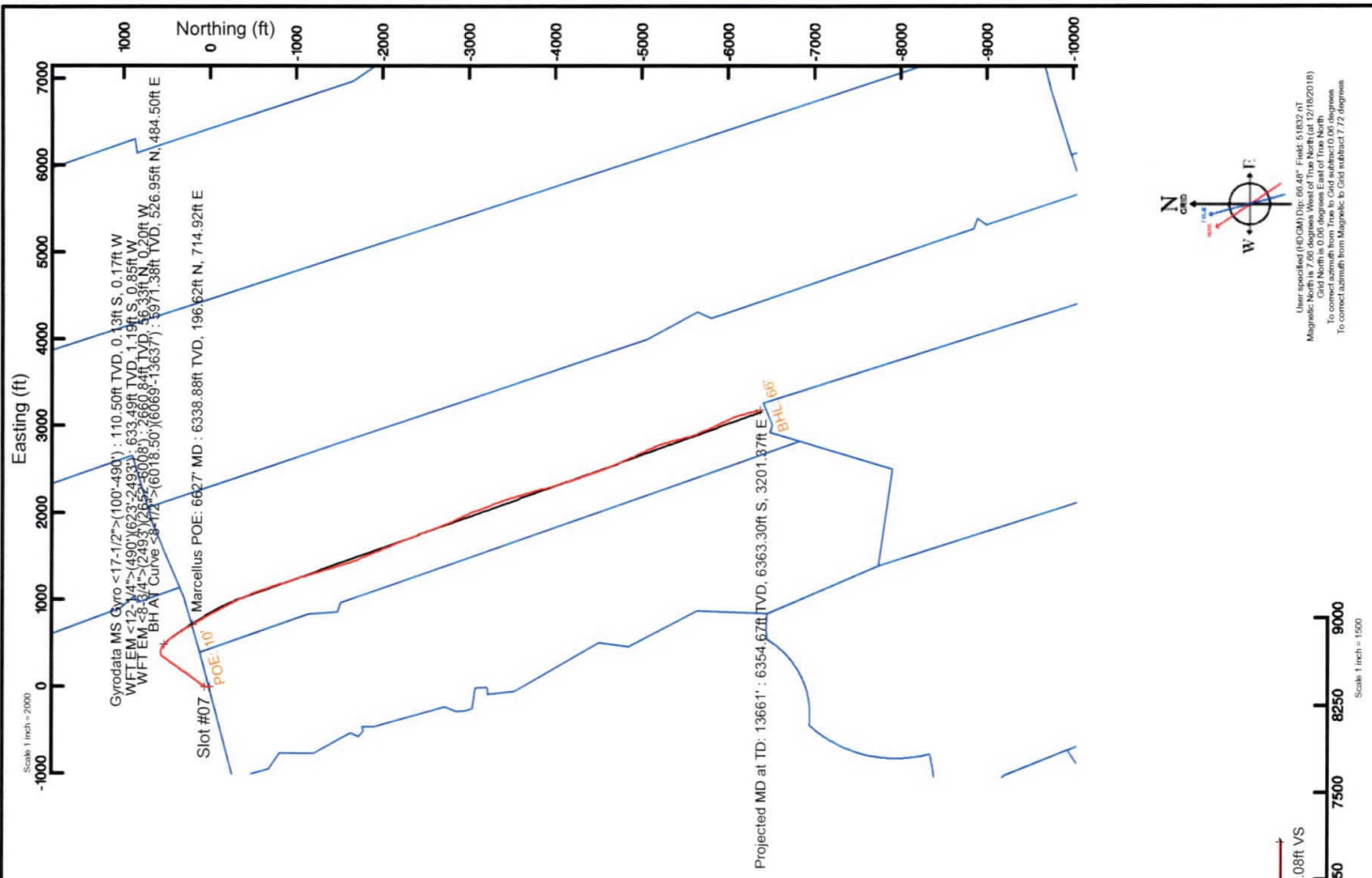
BH AT Curve <8-1/2>(6018.50)(6069-13637) : 30.53° Inc, 6069.00ft MD, 5971.38ft TVD, -332.01ft VS

Marcellus POE: 6627 MD, 71.92° Inc, 6627.00ft MD, 6338.88ft TVD, 56.78ft VS

Projected MD at TD: 13661 : 90.03° Inc, 13661.00ft MD, 6354.67ft TVD, 7071.08ft VS

Vertical Section (ft)

Azimuth 160.23° with reference 0.00 N, 0.00 E



User specified UTM Grid (at 48° Field, 51832.07
 Magnetic North is 7.86 degrees West of True North (at 12/19/2018)
 Grid North is 0.00 degrees East of True North
 To convert from Magnetic to Grid subtract 7.72 degrees
 To convert from Grid to Magnetic add 7.72 degrees

Scale 1 inch = 1500



Actual Wellpath Report

Hayes Unit 1H AWP Proj: 13661'

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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #07
Area	Ritchie County, WV	Well	Hayes Unit 1H
Field	Ritchie	Wellbore	Hayes Unit 1H AWB
Facility	Lettie 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	1/2/2019 at 4:22:11 PM
Convergence at slot	0.06° East	Database/Source file	WA_MPL_EasternUS_Defn/Hayes_Unit_1H_AWP_Proj_13661_.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Northing[US ft]	Latitude	Longitude	
Slot Location	-2.99	50.27	14294787.04	39°21'53.430"N	80°54'37.650"W	
Facility Reference Pt			1665674.09	39°21'53.460"N	80°54'38.290"W	
Field Reference Pt			0.00	0°00'00.000"	85°29'19.301"W	

WELLPATH DATUM

Calculation method	Minimum curvature	H&P 317 (RKB) to Facility Vertical Datum	25.50ft
Horizontal Reference Pt	Slot	H&P 317 (RKB) to Mean Sea Level	995.50ft
Vertical Reference Pt	H&P 317 (RKB)	H&P 317 (RKB) to Ground Level at Slot (Slot #07)	25.50ft
MD Reference Pt	H&P 317 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	160.23°

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Operator	ANTERO RESOURCES CORPORATION
Area	Ritchie County, WV
Field	Ritchie
Facility	Lettie Pad
Slot	Slot #07
Well	Hayes Unit 1H
Wellbore	Hayes Unit 1H AWB

WELLPATH DATA (181 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	232.660	0.00	0.00	0.00	0.00	1665724.34	14294787.04	39°21'53.430"N	80°54'37.650"W	0.00	0.000	0.00	0.00	0.00	
25.50	0.00	232.660	25.50	0.00	0.00	0.00	1665724.34	14294787.04	39°21'53.430"N	80°54'37.650"W	0.00	0.000	0.00	0.00	0.00	
110.50	0.280	232.660	110.50	0.06	-0.13	-0.17	1665724.17	14294786.91	39°21'53.429"N	80°54'37.652"W	0.21	232.660	0.33	0.33	-149.81	Gyrodata MS Gyro <17-1/2">(100'-490')
135.50	0.170	229.720	135.50	0.09	-0.19	-0.24	1665724.10	14294786.85	39°21'53.428"N	80°54'37.653"W	0.31	232.304	0.44	0.44	-0.44	-11.76
160.50	0.140	214.080	160.50	0.13	-0.24	-0.29	1665724.05	14294786.80	39°21'53.428"N	80°54'37.654"W	0.37	230.575	0.21	0.21	-0.12	-62.56
185.50	0.170	215.820	185.50	0.16	-0.29	-0.33	1665724.01	14294786.75	39°21'53.427"N	80°54'37.654"W	0.44	228.202	0.12	0.12	0.12	6.96
210.50	0.290	208.360	210.50	0.23	-0.38	-0.38	1665723.96	14294786.66	39°21'53.426"N	80°54'37.655"W	0.53	225.044	0.49	0.49	0.48	-29.84
235.50	0.380	200.740	235.50	0.33	-0.51	-0.44	1665723.90	14294786.53	39°21'53.425"N	80°54'37.656"W	0.67	220.584	0.40	0.36	0.36	-30.48
250.50	0.490	200.670	250.50	0.42	-0.62	-0.48	1665723.86	14294786.42	39°21'53.424"N	80°54'37.656"W	0.78	217.739	0.73	0.73	0.73	-0.47
260.50	0.230	174.470	260.50	0.47	-0.67	-0.50	1665723.84	14294786.37	39°21'53.423"N	80°54'37.656"W	0.84	216.392	2.82	2.82	-2.80	-59.20
285.50	0.230	174.470	285.50	0.55	-0.77	-0.50	1665723.83	14294786.27	39°21'53.422"N	80°54'37.656"W	0.92	213.249	0.32	0.08	0.08	-81.12
310.50	0.170	175.970	310.50	0.64	-0.86	-0.50	1665723.84	14294786.18	39°21'53.422"N	80°54'37.656"W	0.99	210.128	0.24	-0.24	0.00	6.00
335.50	0.290	199.410	335.50	0.72	-0.95	-0.52	1665723.82	14294786.09	39°21'53.421"N	80°54'37.657"W	1.08	208.403	0.60	0.60	0.48	93.76
360.50	0.330	203.600	360.50	0.82	-1.08	-0.57	1665723.77	14294785.96	39°21'53.419"N	80°54'37.657"W	1.22	207.654	0.18	0.18	0.16	16.76
385.50	0.290	188.180	385.50	0.93	-1.21	-0.60	1665723.74	14294785.83	39°21'53.418"N	80°54'37.658"W	1.35	206.542	0.37	0.37	-0.16	-61.68
410.50	0.330	180.510	410.50	1.06	-1.34	-0.61	1665723.73	14294785.70	39°21'53.417"N	80°54'37.658"W	1.47	204.540	0.23	0.16	0.16	-30.68
435.50	0.340	178.240	435.50	1.19	-1.49	-0.61	1665723.73	14294785.55	39°21'53.415"N	80°54'37.658"W	1.61	202.324	0.07	0.04	0.04	-9.08
460.50	0.370	170.330	460.50	1.34	-1.64	-0.60	1665723.74	14294785.40	39°21'53.414"N	80°54'37.658"W	1.75	199.927	0.23	0.12	0.12	-31.64
485.50	0.440	183.690	485.49	1.51	-1.82	-0.59	1665723.75	14294785.22	39°21'53.412"N	80°54'37.658"W	1.91	197.925	0.47	0.28	0.28	53.44
500.50	0.500	186.080	500.49	1.62	-1.94	-0.60	1665723.74	14294785.10	39°21'53.411"N	80°54'37.658"W	2.03	197.145	0.42	0.40	0.40	15.93
633.50	1.150	352.020	633.49	0.84	-1.19	-0.85	1665723.49	14294785.85	39°21'53.418"N	80°54'37.661"W	1.46	215.276	1.23	0.49	0.49	124.77 WFT EM <12-1/4">(490')(623'-2493')
726.50	3.790	353.260	726.39	-3.07	2.78	-1.34	1665723.00	14294789.82	39°21'53.458"N	80°54'37.667"W	3.09	334.363	2.84	2.84	2.84	1.33
819.50	4.990	354.430	819.12	-9.99	9.86	-2.09	1665722.25	14294796.90	39°21'53.527"N	80°54'37.676"W	10.08	348.040	1.29	1.29	1.29	1.26
914.50	5.640	350.490	913.71	-18.59	18.58	-3.26	1665721.08	14294805.61	39°21'53.614"N	80°54'37.691"W	18.86	350.043	0.78	0.68	0.68	-4.15
1009.50	4.400	356.160	1008.34	-26.68	26.82	-4.28	1665720.06	14294813.85	39°21'53.695"N	80°54'37.704"W	27.16	350.940	1.40	-1.31	-1.31	5.97
1104.50	2.180	23.040	1103.19	-31.51	32.12	-3.81	1665720.53	14294819.14	39°21'53.747"N	80°54'37.698"W	32.34	353.229	2.78	-2.34	-2.34	28.29
1199.50	1.490	57.060	1198.14	-33.12	34.45	-2.07	1665722.27	14294821.48	39°21'53.771"N	80°54'37.676"W	34.51	356.562	1.33	-0.73	-0.73	35.81
1294.50	1.350	75.200	1293.11	-33.31	35.41	0.05	1665724.39	14294822.43	39°21'53.780"N	80°54'37.649"W	35.41	0.079	0.49	-0.15	0.15	19.09
1389.50	0.960	56.270	1388.09	-33.40	36.14	1.79	1665726.13	14294823.16	39°21'53.787"N	80°54'37.627"W	36.18	2.840	0.57	-0.41	-0.41	-19.93
1483.50	1.080	20.510	1482.08	-34.27	37.40	2.76	1665727.10	14294824.43	39°21'53.800"N	80°54'37.614"W	37.51	4.217	0.68	0.13	0.13	-38.04

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Hayes Unit 1H AWP Proj: 13661'
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REFERENCE WELLPATH IDENTIFICATION	
Operator	ANTERO RESOURCES CORPORATION
Area	Ritchie County, WV
Field	Ritchie
Facility	Lettie Pad
Slot #07	Slot #07
Hayes Unit 1H	Hayes Unit 1H
Hayes Unit 1H AWB	Hayes Unit 1H AWB
Wellbore	Wellbore

WELLPATH DATA (181 stations)																
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 ft/100ft	Build Rate ft/100ft	Turn Rate ft/100ft	Comments
1578.50	1.350	22.820	1577.06	-35.77	39.27	3.51	1665727.84	14294826.30	39°21'53.818"N	80°54'37.605"W	39.43	5.101	0.29	0.28	2.43	
1673.50	1.440	29.030	1672.03	-37.38	41.35	4.52	1665728.86	14294828.37	39°21'53.839"N	80°54'37.592"W	41.60	6.237	0.19	0.09	6.54	
1768.50	1.490	34.310	1767.00	-38.89	43.41	5.79	1665730.13	14294830.44	39°21'53.859"N	80°54'37.576"W	43.80	7.603	0.15	0.05	5.56	
1863.50	0.480	17.360	1861.98	-39.94	44.81	6.61	1665730.94	14294831.83	39°21'53.873"N	80°54'37.565"W	45.30	8.390	1.10	-1.06	-17.84	
1958.50	0.670	290.540	1956.98	-40.61	45.39	6.21	1665730.54	14294832.41	39°21'53.879"N	80°54'37.570"W	45.81	7.789	0.84	0.20	-91.39	
2053.50	1.010	315.000	2051.97	-41.73	46.17	5.10	1665729.43	14294833.25	39°21'53.886"N	80°54'37.585"W	46.46	6.298	0.51	0.36	25.75	
2148.50	1.130	319.030	2146.95	-43.36	47.47	3.89	1665728.23	14294834.49	39°21'53.899"N	80°54'37.600"W	47.63	4.684	0.15	0.13	4.24	
2242.50	1.250	314.610	2240.93	-45.15	48.89	2.55	1665726.89	14294835.91	39°21'53.913"N	80°54'37.617"W	48.96	2.988	0.16	0.13	-4.70	
2337.50	1.520	314.500	2335.90	-47.22	50.50	0.92	1665725.25	14294837.52	39°21'53.929"N	80°54'37.638"W	50.51	1.039	0.28	0.28	-0.12	
2432.50	1.090	339.230	2430.88	-49.26	52.23	-0.30	1665724.03	14294839.25	39°21'53.946"N	80°54'37.653"W	52.23	359.667	0.74	-0.45	26.03	
2503.50	0.950	3.950	2501.87	-50.47	53.45	-0.50	1665723.84	14294840.47	39°21'53.958"N	80°54'37.656"W	53.45	359.462	0.64	-0.20	34.82	
2662.50	1.140	7.510	2660.84	-53.08	56.33	-0.20	1665724.13	14294843.35	39°21'53.987"N	80°54'37.652"W	56.33	359.792	0.13	0.12	2.24	WFT EM <8-3/4">(2493')(2652'-6008')
2757.50	1.800	36.350	2755.81	-54.76	58.47	0.80	1665725.14	14294845.49	39°21'54.008"N	80°54'37.639"W	58.48	0.787	1.02	0.69	30.36	
2852.50	3.140	39.560	2850.72	-56.91	61.68	3.34	1665727.68	14294848.70	39°21'54.040"N	80°54'37.607"W	61.77	3.104	1.42	1.41	3.38	
2947.50	4.810	39.800	2945.49	-60.26	66.75	7.55	1665731.89	14294853.76	39°21'54.090"N	80°54'37.563"W	67.17	6.455	1.76	1.76	0.25	
3046.50	6.400	38.910	3044.01	-65.23	74.23	13.67	1665738.01	14294861.24	39°21'54.164"N	80°54'37.475"W	75.48	10.438	1.61	1.61	-0.90	
3141.50	7.820	37.250	3138.28	-71.50	83.50	20.91	1665745.24	14294870.50	39°21'54.255"N	80°54'37.383"W	86.07	14.061	1.51	1.49	-1.75	
3236.50	9.630	35.950	3232.18	-79.49	95.07	29.49	1665753.82	14294882.07	39°21'54.369"N	80°54'37.273"W	99.54	17.233	1.92	1.91	-1.37	
3331.50	11.390	35.610	3325.58	-89.30	109.13	39.62	1665763.94	14294896.13	39°21'54.508"N	80°54'37.144"W	116.10	19.952	1.85	1.85	-0.36	
3426.50	13.050	34.370	3418.42	-100.91	125.61	51.14	1665775.45	14294912.60	39°21'54.671"N	80°54'36.997"W	135.62	22.151	1.77	1.75	-1.31	
3521.50	14.520	34.550	3510.69	-114.14	144.28	63.95	1665786.26	14294931.26	39°21'54.855"N	80°54'36.834"W	157.81	23.904	1.55	1.55	0.19	
3615.50	14.360	36.800	3601.72	-127.44	163.32	77.61	1665801.92	14294950.29	39°21'55.043"N	80°54'36.660"W	180.82	25.418	0.62	-0.17	2.39	
3710.50	13.400	39.190	3693.94	-139.61	181.28	91.62	1665815.93	14294968.25	39°21'55.221"N	80°54'36.481"W	203.12	26.813	1.18	-1.01	2.52	
3805.50	12.620	36.710	3786.50	-151.01	198.13	104.78	1665829.08	14294985.09	39°21'55.387"N	80°54'36.313"W	224.14	27.872	1.01	-0.82	-2.61	
3900.50	12.570	37.380	3879.22	-162.35	214.67	117.26	1665841.55	14295001.62	39°21'55.551"N	80°54'36.154"W	244.61	28.646	0.16	-0.05	0.71	
3995.50	13.640	36.800	3971.74	-174.13	231.85	130.25	1665854.54	14295018.80	39°21'55.720"N	80°54'35.989"W	265.93	29.326	1.13	1.13	-0.61	
4090.50	14.520	36.570	4063.89	-186.90	250.39	144.06	1665868.34	14295037.33	39°21'55.903"N	80°54'35.813"W	288.87	29.913	0.93	0.93	-0.24	
4185.50	13.750	34.210	4156.01	-200.14	269.29	157.50	1665881.77	14295056.22	39°21'56.090"N	80°54'35.641"W	311.96	30.322	1.01	-0.81	-2.48	
4280.50	12.780	31.490	4248.48	-213.36	287.59	169.34	1665893.61	14295074.51	39°21'56.271"N	80°54'35.490"W	333.74	30.490	1.21	-1.02	-2.86	
4375.50	13.750	32.720	4340.94	-226.81	306.04	180.93	1665905.19	14295092.96	39°21'56.453"N	80°54'35.343"W	355.52	30.591	1.06	1.02	1.29	

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Area	Ritchie County, WV
Field	Ritchie
Facility	Lettie Pad
Slot	Slot #07
Well	Hayes Unit 1H
Wellbore	Hayes Unit 1H AWB

WELLPATH DATA (181 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
4470.50	14.570	36.660	4433.06	-240.29	325.13	194.16	1665918.42	14295112.04	39°21'56.642"N	80°54'35.174"W	378.69	30.845	1.33	0.86	4.15	
4565.50	14.300	34.180	4525.06	-253.80	344.42	207.89	1665932.14	14295131.32	39°21'56.832"N	80°54'34.999"W	402.30	31.115	0.71	-0.28	-2.61	
4659.50	14.920	36.360	4616.02	-267.38	363.77	221.59	1665945.84	14295150.66	39°21'57.023"N	80°54'34.824"W	425.95	31.347	0.88	0.66	2.32	
4754.50	14.650	33.850	4707.87	-281.32	383.60	235.53	1665959.77	14295170.48	39°21'57.219"N	80°54'34.646"W	450.13	31.550	0.73	-0.28	-2.64	
4849.50	13.870	35.180	4799.95	-294.99	402.88	248.78	1665973.02	14295189.76	39°21'57.409"N	80°54'34.477"W	475.50	31.696	0.89	-0.82	-1.40	
4943.50	14.040	33.560	4891.17	-308.27	421.59	261.58	1665985.81	14295208.46	39°21'57.594"N	80°54'34.314"W	496.15	31.817	0.45	0.18	-1.72	
5038.50	13.950	36.820	4983.35	-321.45	440.36	274.81	1665999.04	14295227.22	39°21'57.780"N	80°54'34.145"W	519.07	31.966	0.84	-0.09	3.43	
5133.50	13.360	37.540	5075.67	-333.69	458.23	288.36	1666012.58	14295245.99	39°21'57.956"N	80°54'33.973"W	541.41	32.182	0.65	-0.62	0.76	
5228.50	13.420	34.240	5168.09	-346.09	476.05	301.25	1666025.47	14295262.90	39°21'58.132"N	80°54'33.808"W	563.36	32.326	0.81	0.06	-3.47	
5323.50	13.030	37.930	5260.57	-358.29	493.61	314.04	1666038.25	14295280.45	39°21'58.306"N	80°54'33.645"W	585.04	32.465	0.98	-0.41	3.88	
5417.50	13.180	36.710	5352.12	-369.87	510.56	326.96	1666051.16	14295297.39	39°21'58.473"N	80°54'33.481"W	606.28	32.635	0.33	0.16	-1.30	
5512.50	12.600	33.230	5444.73	-382.09	527.91	339.11	1666063.31	14295314.74	39°21'58.644"N	80°54'33.326"W	627.44	32.715	1.02	-0.61	-3.66	
5607.50	13.940	35.480	5537.19	-394.85	545.90	351.43	1666075.63	14295332.72	39°21'58.822"N	80°54'33.169"W	649.23	32.772	1.51	1.41	2.37	
5638.50	14.760	43.780	5567.23	-398.74	551.79	356.33	1666080.52	14295338.61	39°21'58.880"N	80°54'33.106"W	656.84	32.853	7.14	2.65	26.77	
5670.50	16.010	51.550	5598.08	-401.97	557.48	362.61	1666086.80	14295344.29	39°21'58.936"N	80°54'33.026"W	665.03	33.042	7.53	3.91	24.28	
5702.50	15.230	61.710	5628.91	-404.00	562.21	369.77	1666093.96	14295349.03	39°21'58.983"N	80°54'32.935"W	672.91	33.333	8.88	-2.44	31.75	
5733.50	15.080	70.460	5658.83	-404.59	565.49	377.15	1666101.34	14295352.30	39°21'59.015"N	80°54'32.841"W	679.72	33.701	7.39	-0.48	28.23	
5765.50	15.470	81.500	5689.71	-403.74	567.52	385.30	1666109.48	14295354.33	39°21'59.035"N	80°54'32.737"W	685.95	34.173	9.16	1.22	34.50	
5796.50	16.640	88.760	5719.50	-401.52	568.22	393.83	1666118.01	14295355.03	39°21'59.042"N	80°54'32.628"W	691.36	34.725	7.49	3.77	23.42	
5828.50	18.180	93.820	5750.04	-398.07	567.99	403.39	1666127.56	14295355.80	39°21'59.040"N	80°54'32.507"W	696.66	35.383	6.74	4.81	15.81	
5859.50	19.830	98.350	5779.35	-393.65	566.90	413.42	1666137.59	14295353.72	39°21'59.029"N	80°54'32.379"W	701.64	36.102	7.14	5.32	14.61	
5891.50	20.170	104.170	5809.42	-388.01	564.76	424.14	1666148.31	14295351.58	39°21'59.008"N	80°54'32.243"W	706.29	36.907	6.31	1.06	18.19	
5923.50	20.850	110.640	5839.39	-381.24	561.41	434.82	1666158.98	14295348.22	39°21'58.974"N	80°54'32.107"W	710.10	37.758	7.39	2.13	20.22	
5954.50	21.600	118.910	5868.30	-373.38	556.70	444.98	1666169.14	14295343.52	39°21'58.928"N	80°54'31.977"W	712.69	38.636	9.95	2.42	26.68	
5986.50	23.250	125.720	5897.88	-363.75	550.17	455.26	1666179.42	14295336.98	39°21'58.863"N	80°54'31.846"W	714.11	39.608	9.61	5.16	21.28	
6018.50	26.170	128.200	5926.95	-352.56	542.11	465.94	1666190.09	14295328.93	39°21'58.783"N	80°54'31.711"W	714.83	40.679	9.68	9.13	7.75	
6069.00	30.530	130.160	5971.38	-332.01	526.95	484.50	1666208.65	14295313.77	39°21'58.633"N	80°54'31.474"W	715.83	42.597	8.83	8.63	3.88	BH AT Curve <8-1/2">(6018.50)(6069-13637')
6104.00	32.390	131.210	6001.24	-316.11	515.04	498.35	1666222.49	14295301.87	39°21'58.515"N	80°54'31.298"W	716.67	44.057	5.54	5.31	3.00	
6151.00	35.270	135.300	6040.28	-292.79	497.09	517.37	1666241.50	14295283.93	39°21'58.338"N	80°54'31.056"W	717.48	46.145	7.81	6.13	8.70	
6199.00	37.140	140.460	6079.02	-266.58	476.06	536.35	1666260.47	14295262.91	39°21'58.130"N	80°54'30.815"W	717.15	48.408	7.45	3.90	10.75	

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REFERENCE WELLPATH IDENTIFICATION	
Operator	ANTERO RESOURCES CORPORATION
Area	Ritchie County, WV
Field	Ritchie
Facility	Lettie Pad
Slot	Slot #07
Well	Hayes Unit 1H
Wellbore	Hayes Unit 1H AWB

WELLPATH DATA (181 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
6246.00	38.810	143.500	6116.07	-239.12	453.27	554.15	1666278.26	14295240.13	39°21'57.904"N	80°54'30.589"W	715.92	50.718	5.33	3.55	6.47	
6294.00	41.780	144.650	6152.68	-209.30	428.13	572.35	1666296.46	14295215.00	39°21'57.656"N	80°54'30.357"W	714.76	53.203	6.38	6.19	2.40	
6330.00†	44.904	145.709	6178.86	-185.44	407.85	586.45	1666310.55	14295194.72	39°21'57.455"N	80°54'30.178"W	714.33	55.183	8.91	8.68	2.94	Middlesex: 6330' MD
6341.00	45.860	146.010	6186.58	-177.86	401.37	590.85	1666314.95	14295188.25	39°21'57.391"N	80°54'30.122"W	714.28	55.811	8.91	8.69	2.73	
6389.00	49.490	147.270	6218.90	-143.37	371.73	610.35	1666334.44	14295158.62	39°21'57.098"N	80°54'29.874"W	714.64	58.657	7.81	7.56	2.63	
6436.00	53.960	148.560	6248.01	-107.33	340.47	629.93	1666354.01	14295127.37	39°21'56.789"N	80°54'29.625"W	716.05	61.609	9.75	9.51	2.74	
6484.00	56.560	149.290	6275.36	-68.65	306.69	650.28	1666374.36	14295093.60	39°21'56.455"N	80°54'29.367"W	718.97	64.751	5.56	5.42	1.52	
6489.00†	56.993	149.330	6278.10	-64.55	303.09	652.42	1666376.49	14295090.01	39°21'56.419"N	80°54'29.339"W	719.38	65.082	8.68	8.66	0.80	Burkett: 6489' MD
6531.00	60.630	149.650	6299.84	-29.25	272.14	670.65	1666394.72	14295059.07	39°21'56.113"N	80°54'29.108"W	723.77	67.914	8.68	8.66	0.76	
6559.00†	63.537	149.632	6312.95	-4.93	250.79	683.16	1666407.22	14295037.73	39°21'55.902"N	80°54'28.949"W	727.74	69.842	10.38	10.38	-0.06	Tully: 6559' MD
6578.00	65.510	149.620	6321.12	11.92	235.99	691.83	1666415.89	14295022.94	39°21'55.756"N	80°54'28.838"W	730.97	71.165	10.38	10.38	-0.06	
6625.00	71.700	149.610	6338.28	54.92	198.26	713.95	1666438.01	14294985.22	39°21'55.382"N	80°54'28.557"W	740.97	74.480	13.17	13.17	-0.02	
6627.00†	71.919	149.614	6338.88	56.78	196.62	714.92	1666438.97	14294983.58	39°21'55.366"N	80°54'28.545"W	741.46	74.622	10.96	10.96	0.21	Marcellus POE: 6627' MD
6673.00	76.960	149.710	6351.22	100.33	158.39	737.29	1666461.33	14294945.37	39°21'54.988"N	80°54'28.261"W	754.11	77.876	10.96	10.96	0.21	
6720.00	82.410	150.110	6359.63	145.81	118.39	760.46	1666484.50	14294905.39	39°21'54.593"N	80°54'27.966"W	769.63	81.151	11.63	11.60	0.85	
6768.00	87.780	150.580	6363.74	192.90	76.85	784.12	1666508.14	14294863.86	39°21'54.182"N	80°54'27.666"W	787.87	84.402	11.23	11.19	0.98	
6815.00	90.430	150.990	6364.47	239.26	35.84	807.05	1666531.07	14294822.86	39°21'53.776"N	80°54'27.374"W	807.85	87.457	5.71	5.64	0.87	
6863.00	90.340	150.980	6364.15	286.63	-6.14	830.33	1666554.34	14294780.90	39°21'53.361"N	80°54'27.078"W	830.36	90.424	0.19	-0.19	-0.02	
6958.00	90.370	150.770	6363.56	380.37	-89.12	876.57	1666600.56	14294697.95	39°21'52.540"N	80°54'26.491"W	881.09	95.806	0.22	0.03	-0.22	
7053.00	90.280	153.660	6363.02	474.43	-173.16	920.85	1666644.82	14294613.95	39°21'51.709"N	80°54'25.928"W	936.99	100.650	3.04	-0.09	3.04	
7148.00	90.400	153.900	6362.46	568.82	-258.38	962.82	1666686.77	14294528.76	39°21'50.867"N	80°54'25.395"W	996.89	105.022	0.28	0.13	0.25	
7242.00	90.430	154.010	6361.77	662.26	-342.84	1004.09	1666728.03	14294444.34	39°21'50.032"N	80°54'24.870"W	1061.01	108.852	0.12	0.03	0.12	
7337.00	90.340	155.590	6361.14	756.83	-428.79	1044.54	1666768.46	14294358.42	39°21'49.182"N	80°54'24.356"W	1129.13	112.318	1.67	-0.09	1.66	
7432.00	90.430	158.590	6360.50	851.67	-516.28	1081.52	1666805.42	14294270.96	39°21'48.316"N	80°54'23.887"W	1198.43	115.518	3.16	0.09	3.16	
7527.00	89.970	161.440	6360.17	946.66	-605.55	1113.98	1666837.87	14294181.73	39°21'47.434"N	80°54'23.475"W	1267.93	118.528	3.04	-0.48	3.00	
7622.00	90.060	162.250	6360.14	1041.62	-695.82	1143.58	1666867.46	14294091.50	39°21'46.541"N	80°54'23.099"W	1338.64	121.319	0.86	0.09	0.85	
7716.00	89.970	160.860	6360.12	1135.59	-784.99	1173.32	1666897.19	14294002.36	39°21'45.660"N	80°54'22.721"W	1411.70	123.784	1.48	-0.10	-1.48	
7811.00	90.060	161.080	6360.09	1230.59	-874.80	1204.30	1666928.15	14293912.59	39°21'44.772"N	80°54'22.328"W	1488.49	125.995	0.25	0.09	0.23	
7906.00	89.940	161.720	6360.09	1325.57	-964.84	1234.60	1666958.44	14293822.59	39°21'43.882"N	80°54'21.944"W	1566.89	128.008	0.69	-0.13	0.67	
8001.00	90.000	163.310	6360.14	1420.49	-1055.45	1263.14	1666986.97	14293732.02	39°21'42.986"N	80°54'21.581"W	1646.05	129.881	1.67	0.06	1.67	

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REFERENCE WELLPATH IDENTIFICATION	
Operator	ANTERO RESOURCES CORPORATION
Area	Ritchie County, WV
Field	Ritchie
Facility	Lettie Pad
Slot	Slot #07
Well	Hayes Unit 1H
Wellbore	Hayes Unit 1H AWB

WELLPATH DATA (181 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
8096.00	90.090	163.620	6360.07	1515.34	-1146.52	1290.18	1667014.00	14293640.98	39°21'42.085"N	80°54'21.238"W	1726.00	131.626	0.34	0.09	0.33	
8191.00	90.370	163.400	6359.69	1610.18	-1237.61	1317.15	1667040.96	14293549.93	39°21'41.185"N	80°54'20.896"W	1807.36	133.217	0.37	0.29	-0.23	
8285.00	90.460	162.790	6359.00	1704.06	-1327.54	1344.48	1667068.28	14293460.03	39°21'40.296"N	80°54'20.550"W	1889.44	134.637	0.66	0.10	-0.68	
8380.00	90.400	162.760	6358.29	1798.96	-1418.28	1372.61	1667096.40	14293369.33	39°21'39.398"N	80°54'20.193"W	1973.72	135.938	0.07	-0.06	-0.03	
8475.00	90.860	163.700	6357.25	1893.83	-1509.23	1400.02	1667123.79	14293278.41	39°21'38.499"N	80°54'19.845"W	2058.60	137.150	1.10	0.48	0.98	
8570.00	90.280	161.470	6356.30	1988.73	-1599.87	1428.45	1667152.21	14293187.81	39°21'37.603"N	80°54'19.484"W	2144.77	138.240	2.43	-0.61	-2.35	
8664.00	90.400	158.790	6355.74	2082.72	-1688.26	1460.39	1667184.15	14293099.45	39°21'36.729"N	80°54'19.079"W	2232.26	139.139	2.85	0.13	-2.85	
8759.00	90.180	157.630	6355.26	2177.66	-1776.47	1495.66	1667219.39	14293011.28	39°21'35.857"N	80°54'18.631"W	2322.25	139.905	1.24	-0.23	-1.22	
8854.00	90.180	157.900	6354.96	2272.57	-1864.41	1531.61	1667255.33	14292923.38	39°21'34.988"N	80°54'18.174"W	2412.85	140.597	0.28	0.00	0.28	
8949.00	90.180	157.290	6354.67	2367.47	-1952.23	1567.81	1667291.52	14292835.59	39°21'34.119"N	80°54'17.715"W	2503.85	141.233	0.64	0.00	-0.64	
9044.00	90.150	157.460	6354.39	2462.35	-2039.92	1604.36	1667328.05	14292747.93	39°21'33.252"N	80°54'17.250"W	2595.24	141.816	0.18	-0.03	0.18	
9138.00	90.030	157.050	6354.24	2556.23	-2126.61	1640.70	1667364.38	14292661.28	39°21'32.395"N	80°54'16.789"W	2685.96	142.349	0.45	-0.13	-0.44	
9233.00	90.180	157.660	6354.07	2651.11	-2214.29	1677.28	1667400.95	14292573.64	39°21'31.528"N	80°54'16.324"W	2777.83	142.857	0.66	0.16	0.64	
9328.00	90.180	158.040	6353.77	2746.02	-2302.28	1713.10	1667436.75	14292485.69	39°21'30.658"N	80°54'15.870"W	2869.70	143.347	0.40	0.00	0.40	
9423.00	90.120	159.310	6353.52	2840.99	-2390.77	1747.64	1667471.28	14292397.23	39°21'29.783"N	80°54'15.431"W	2961.43	143.833	1.34	-0.06	1.34	
9517.00	90.120	159.520	6353.33	2934.98	-2478.77	1780.69	1667504.32	14292309.27	39°21'28.913"N	80°54'15.011"W	3052.08	144.307	0.22	0.00	0.22	
9612.00	90.180	159.390	6353.08	3029.97	-2567.73	1814.03	1667537.64	14292220.34	39°21'28.033"N	80°54'14.588"W	3143.87	144.760	0.15	0.06	-0.14	
9707.00	90.250	159.480	6352.72	3124.96	-2656.67	1847.40	1667571.00	14292131.43	39°21'27.154"N	80°54'14.165"W	3235.86	145.186	0.12	0.07	0.09	
9802.00	90.060	157.270	6352.46	3219.90	-2744.98	1882.41	1667606.00	14292043.16	39°21'26.281"N	80°54'13.720"W	3328.42	145.559	2.33	-0.20	-2.33	
9896.00	90.150	153.860	6352.29	3313.58	-2830.55	1921.29	1667644.86	14291957.63	39°21'25.434"N	80°54'13.226"W	3421.02	145.833	3.63	0.10	-3.63	
9991.00	90.180	153.810	6352.02	3407.99	-2915.81	1963.18	1667686.73	14291872.40	39°21'24.591"N	80°54'12.694"W	3515.12	146.048	0.06	0.03	-0.05	
10086.00	90.120	158.090	6351.77	3502.70	-3002.54	2001.89	1667725.42	14291785.70	39°21'23.734"N	80°54'12.203"W	3608.72	146.307	4.51	-0.06	4.51	
10180.00	89.820	159.840	6351.82	3596.67	-3090.28	2035.63	1667759.15	14291698.00	39°21'22.866"N	80°54'11.774"W	3700.49	146.626	1.89	-0.32	1.86	
10275.00	89.850	158.820	6352.09	3691.66	-3179.16	2069.16	1667792.67	14291609.16	39°21'21.987"N	80°54'11.349"W	3793.22	146.942	1.07	0.03	-1.07	
10370.00	90.090	158.950	6352.14	3786.63	-3267.78	2103.38	1667826.88	14291520.57	39°21'21.111"N	80°54'10.914"W	3886.21	147.232	0.29	0.25	0.14	
10465.00	90.000	160.490	6352.07	3881.62	-3356.89	2136.31	1667859.79	14291431.50	39°21'20.230"N	80°54'10.496"W	3979.01	147.528	1.62	-0.09	1.62	
10560.00	89.970	161.520	6352.09	3976.61	-3446.72	2167.23	1667890.70	14291341.71	39°21'19.342"N	80°54'10.104"W	4071.45	147.839	1.08	-0.03	1.08	
10655.00	90.030	162.280	6352.09	4071.57	-3537.01	2196.74	1667920.20	14291251.44	39°21'18.449"N	80°54'09.729"W	4163.67	148.157	0.80	0.06	0.80	
10749.00	90.000	163.520	6352.07	4165.47	-3626.86	2224.38	1667947.83	14291161.64	39°21'17.561"N	80°54'09.379"W	4254.64	148.479	1.32	-0.03	1.32	
10844.00	90.000	164.690	6352.07	4260.25	-3718.22	2250.40	1667973.84	14291070.31	39°21'16.658"N	80°54'09.049"W	4346.20	148.816	1.23	0.00	1.23	

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Actual Wellpath Report

Hayes Unit 1H AWP Proj: 13661'
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REFERENCE WELLPATH IDENTIFICATION	
Operator	ANTERO RESOURCES CORPORATION
Area	Ritchie County, WV
Field	Ritchie
Facility	Lettie Pad
Slot	Slot #07
Well	Hayes Unit 1H
Wellbore	Hayes Unit 1H AWB

WELLPATH DATA (181 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
10939.00	90.060	165.260	6352.02	4354.92	-3809.97	2275.03	1667998.45	14290978.59	39°21'15.750"N	80°54'08.736"W	4437.53	149.158	0.60	0.06	0.06	0.60
11034.00	89.970	164.560	6351.99	4449.61	-3901.70	2299.76	1668023.18	14290886.91	39°21'14.844"N	80°54'08.423"W	4529.03	149.484	0.74	-0.09	-0.09	-0.74
11129.00	89.970	163.300	6352.04	4544.41	-3992.98	2326.06	1668049.46	14290795.66	39°21'13.941"N	80°54'08.089"W	4621.09	149.778	1.33	0.00	0.00	-1.33
11224.00	89.970	161.910	6352.09	4639.32	-4083.64	2354.46	1668077.85	14290705.04	39°21'13.045"N	80°54'07.729"W	4713.76	150.034	1.46	0.00	0.00	-1.46
11318.00	90.060	161.610	6352.07	4733.29	-4172.91	2383.88	1668107.26	14290615.80	39°21'12.162"N	80°54'07.356"W	4805.84	150.262	0.33	0.10	0.10	-0.32
11413.00	90.090	161.400	6351.94	4828.27	-4263.01	2414.02	1668137.39	14290525.74	39°21'11.271"N	80°54'06.973"W	4899.05	150.478	0.22	0.03	0.03	-0.22
11508.00	90.060	160.560	6351.82	4923.26	-4352.82	2444.98	1668168.33	14290435.97	39°21'10.383"N	80°54'06.581"W	4992.49	150.677	0.88	-0.03	-0.03	-0.88
11603.00	90.060	160.230	6351.72	5018.26	-4442.31	2476.85	1668200.20	14290346.51	39°21'09.499"N	80°54'06.176"W	5086.15	150.858	0.35	0.00	0.00	-0.35
11698.00	90.000	159.430	6351.67	5113.25	-4531.49	2509.61	1668232.94	14290257.37	39°21'08.617"N	80°54'05.760"W	5180.01	151.022	0.84	-0.06	-0.06	-0.84
11792.00	90.180	157.990	6351.52	5207.22	-4619.07	2543.74	1668267.05	14290169.82	39°21'07.751"N	80°54'05.327"W	5273.18	151.158	1.54	0.19	0.19	-1.53
11887.00	90.060	157.210	6351.32	5302.12	-4706.90	2579.94	1668303.24	14290082.03	39°21'06.882"N	80°54'04.867"W	5367.59	151.272	0.83	-0.13	-0.13	-0.82
11982.00	90.060	157.170	6351.22	5396.98	-4794.47	2616.77	1668340.06	14289994.49	39°21'06.016"N	80°54'04.400"W	5462.09	151.375	0.04	0.00	0.00	-0.04
12077.00	90.060	156.350	6351.12	5491.75	-4881.43	2655.01	1668378.28	14289907.57	39°21'05.157"N	80°54'03.914"W	5556.75	151.458	1.92	0.00	0.00	-1.92
12172.00	90.030	154.300	6351.05	5586.33	-4967.40	2695.42	1668418.68	14289821.63	39°21'04.306"N	80°54'03.401"W	5651.58	151.515	1.11	-0.03	-0.03	-1.11
12267.00	89.970	156.190	6351.05	5680.96	-5053.67	2735.20	1668458.44	14289735.40	39°21'03.453"N	80°54'02.896"W	5746.38	151.576	1.99	-0.06	-0.06	1.99
12362.00	88.620	157.100	6352.22	5775.77	-5140.88	2772.86	1668496.08	14289648.23	39°21'02.591"N	80°54'02.418"W	5841.00	151.659	1.71	-1.42	-1.42	0.96
12457.00	89.780	161.690	6353.55	5870.72	-5229.76	2806.28	1668529.49	14289559.37	39°21'01.712"N	80°54'01.993"W	5935.12	151.782	4.98	1.22	4.83	4.83
12551.00	90.060	165.240	6353.68	5964.56	-5319.86	2833.03	1668556.23	14289469.31	39°21'00.821"N	80°54'01.654"W	6027.19	151.963	3.79	0.30	3.78	3.78
12646.00	89.940	166.720	6353.68	6059.08	-5412.03	2856.04	1668579.23	14289377.18	39°20'59.910"N	80°54'01.363"W	6119.40	152.178	1.56	-0.13	-0.13	1.56
12741.00	90.030	163.730	6353.70	6153.70	-5503.88	2880.26	1668603.45	14289285.37	39°20'59.002"N	80°54'01.055"W	6211.97	152.376	3.15	0.09	3.15	-3.15
12836.00	90.030	160.660	6353.65	6248.64	-5594.32	2909.31	1668632.48	14289194.97	39°20'58.108"N	80°54'00.687"W	6305.59	152.523	3.23	0.00	0.00	-3.23
12931.00	90.000	157.360	6353.63	6343.60	-5683.00	2943.33	1668666.49	14289106.32	39°20'57.231"N	80°54'00.255"W	6399.98	152.620	3.47	-0.03	-0.03	-3.47
13025.00	90.000	155.540	6353.63	6437.39	-5769.17	2980.89	1668704.03	14289020.19	39°20'56.379"N	80°53'59.778"W	6493.77	152.675	1.94	0.00	0.00	-1.94
13120.00	89.940	154.330	6353.68	6531.99	-5855.22	3021.14	1668744.26	14288934.17	39°20'55.528"N	80°53'59.267"W	6588.69	152.707	1.28	-0.06	-0.06	-1.27
13215.00	89.910	152.970	6353.80	6626.36	-5940.35	3063.30	1668786.41	14288849.08	39°20'54.686"N	80°53'58.732"W	6683.68	152.721	1.43	-0.03	-0.03	-1.43
13310.00	89.630	158.720	6354.18	6721.04	-6026.99	3102.16	1668825.25	14288762.47	39°20'53.829"N	80°53'58.238"W	6778.50	152.765	6.06	-0.29	-0.29	6.05
13405.00	89.820	161.240	6354.64	6816.03	-6116.24	3134.68	1668857.76	14288673.25	39°20'52.947"N	80°53'57.826"W	6872.75	152.864	2.66	0.20	2.65	2.65
13500.00	90.060	164.880	6354.74	6910.90	-6207.11	3162.35	1668885.42	14288582.42	39°20'52.049"N	80°53'57.475"W	6966.25	153.002	3.84	0.25	3.83	3.83
13594.00	90.000	166.590	6354.69	7004.46	-6298.20	3185.52	1668908.58	14288491.36	39°20'51.148"N	80°53'57.181"W	7057.97	153.171	1.82	-0.06	-0.06	1.82
13637.00	90.030	166.180	6354.68	7047.21	-6340.00	3195.64	1668918.69	14288449.59	39°20'50.735"N	80°53'57.053"W	7099.83	153.250	0.96	0.07	0.07	-0.95

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Hayes Unit 1H AWP Proj: 13661'
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REFERENCE WELLPATH IDENTIFICATION									
Operator	ANTERO RESOURCES CORPORATION								
Area	Ritchie County, WV								
Field	Ritchie								
Facility	Lettie Pad								
Slot	Slot #07								
Well	Hayes Unit 1H								
Wellbore	Hayes Unit 1H AWB								

WELLPATH DATA (181 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
13661.00	90.030	166.180	6354.67	7071.08	-6363.30	3201.37	1668924.42	14288426.29	39°20'50.504"N	80°53'56.980"W	7123.23	153.293	0.00	0.00	0.00	Protected MD at ID: 13661'

HOLE & CASING SECTIONS - Ref Wellbore: Hayes Unit 1H AWB										Ref Wellpath: Hayes Unit 1H AWP Proj: 13661'									
String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	End N/S [ft]	Start E/W [ft]	End E/W [ft]	Start N/S [ft]	End N/S [ft]	Start E/W [ft]	End E/W [ft]	Start N/S [ft]	End N/S [ft]	Start E/W [ft]	End E/W [ft]		
20in Conductor	25.50	105.50	80.00	25.50	105.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.15		
17.5in Open Hole	105.50	521.50	416.00	105.50	521.49	-0.11	-0.15	-0.15	-0.15	-0.11	-2.07	-0.15	-0.15	-0.11	-2.07	-0.15	-0.62		
13.375in Casing Surface	25.50	521.50	496.00	25.50	521.49	0.00	0.00	0.00	0.00	0.00	-2.07	0.00	0.00	0.00	-2.07	0.00	-0.62		
12.25in Open Hole	521.50	2585.50	2064.00	521.49	2583.86	-2.07	-0.62	-0.62	-0.62	-2.07	54.88	-0.62	-0.62	-2.07	54.88	-0.62	-0.38		
9.625in Casing Intermediate	25.50	2585.50	2560.00	25.50	2583.86	0.00	0.00	0.00	0.00	0.00	54.88	0.00	0.00	0.00	54.88	0.00	-0.38		
8.75in Open Hole	2585.50	6094.50	3509.00	2583.86	5993.19	54.88	-0.38	-0.38	-0.38	54.88	518.36	-0.38	-0.38	54.88	518.36	-0.38	494.54		
8.5in Open Hole	6094.50	13661.00	7566.50	5993.19	6354.67	518.36	0.00	0.00	0.00	518.36	-6363.30	0.00	0.00	518.36	-6363.30	0.00	3201.37		
5.5in Casing Production	25.50	13661.00	13635.50	25.50	6354.67	0.00	0.00	0.00	0.00	0.00	-6363.30	0.00	0.00	0.00	-6363.30	0.00	3201.37		

TARGETS											
Name	TVD [ft]	North [ft]	East [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Hayes Unit 1H - POE - Rev-2	6341.00	157.50	747.77	1666471.81	14294944.47	39°21'54.979"N	80°54'28.127"W	point			
Hayes Unit 1H - BHL - Rev-2	6364.00	-6385.70	3180.96	1668904.02	14288403.91	39°20'50.283"N	80°53'57.240"W	point			
Hayes Unit 1H - LP - Rev-2	6364.00	3.98	841.85	1666565.85	14294791.02	39°21'53.461"N	80°54'26.931"W	point			

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Hayes Unit 1H AWP Proj: 13661'

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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot #07
Area	Ritchie County, WV	Hayes Unit 1H
Field	Ritchie	Hayes Unit 1H AWB
Facility	Lettie Pad	

WELLPATH COMPOSITION - Ref Wellbore: Hayes Unit 1H AWB Ref Wellpath: Hayes Unit 1H AWP Proj: 13661'

Start MD (ft)	End MD (ft)	Positional Uncertainty Model	Log Name/Comment	Wellbore
25.50	500.50	Gyrodata standard - Drop gyro or Multi-shot	01 Gyrodata MS Gyro <17-1/2">(100'-490')	Hayes Unit 1H AWB
500.50	2503.50	ISCWSA MWD, Rev. 4 (Standard)	02 WFT EM <12-1/4">(490')(623'-2493')	Hayes Unit 1H AWB
2503.50	6018.50	ISCWSA MWD, Rev. 4 (Standard)	03 WFT EM <8-3/4">(2493')(2652'-6008')	Hayes Unit 1H AWB
6018.50	13637.00	BHI AutoTrak Curve (Short)	04 BH AT Curve <8-1/2">(6018.50')(6069'-13637')	Hayes Unit 1H AWB
13637.00	13661.00	Blind Drilling (std)	Projection to bit	Hayes Unit 1H AWB

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REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot #07
ANTERO RESOURCES CORPORATION	Well	Hayes Unit 1H
Ritchie County, WV	Wellbore	Hayes Unit 1H AWB
Ritchie		
Lettie Pad		

COMMENTS

Wellpath general comments

API: 47-085-10365-0000
 BHI Job #: 109563130
 Rig: H&P 317
 Duration: 12/21/2018-12/23/2018
 Gyrodatta MS Gyro <17-1/2">(100'-490')
 WFT EM <12-1/4">(490')(623'-2493')
 WFT EM <8-3/4">(2493')(2652'-6008')
 BH AT Curve <8-1/2">(6018.50')(6069'-13637')
 Middlesex: 6330' MD
 Burkett: 6489' MD
 Tully: 6559' MD
 Marcellus POE: 6627' MD
 Projected MD at TD: 13661'

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