



ANTERO RESOURCES CORPORATION

Location: Ritchie County, WV
 Field: Ritchie
 Facility: Mulvay Pad

Slot: Slot #09
 Well: Penny Unit 3H
 Wellbore: Penny Unit 3H PWB



BAKER HUGHES
 a GE company

API: 47-085-10300-0000
 BHI Job #: 8636486
 Rig: Frontier 22
 Duration: 07/06/2017-07/09/2017

Wellbore: Penny Unit 3H PWB Rev-A.0

True vertical depth are referenced to Frontier 22 (RKB)

Measured depths are referenced to Frontier 22 (RKB)

Frontier 22 (RKB) to Mean Sea Level: 1053.5 feet

Mean Sea Level to Mud line (At Slot Slot #09) : 1020 feet

Coordinates are in feet referenced to Slot

Created by: dlabat on 2017-07-21

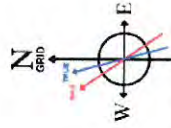
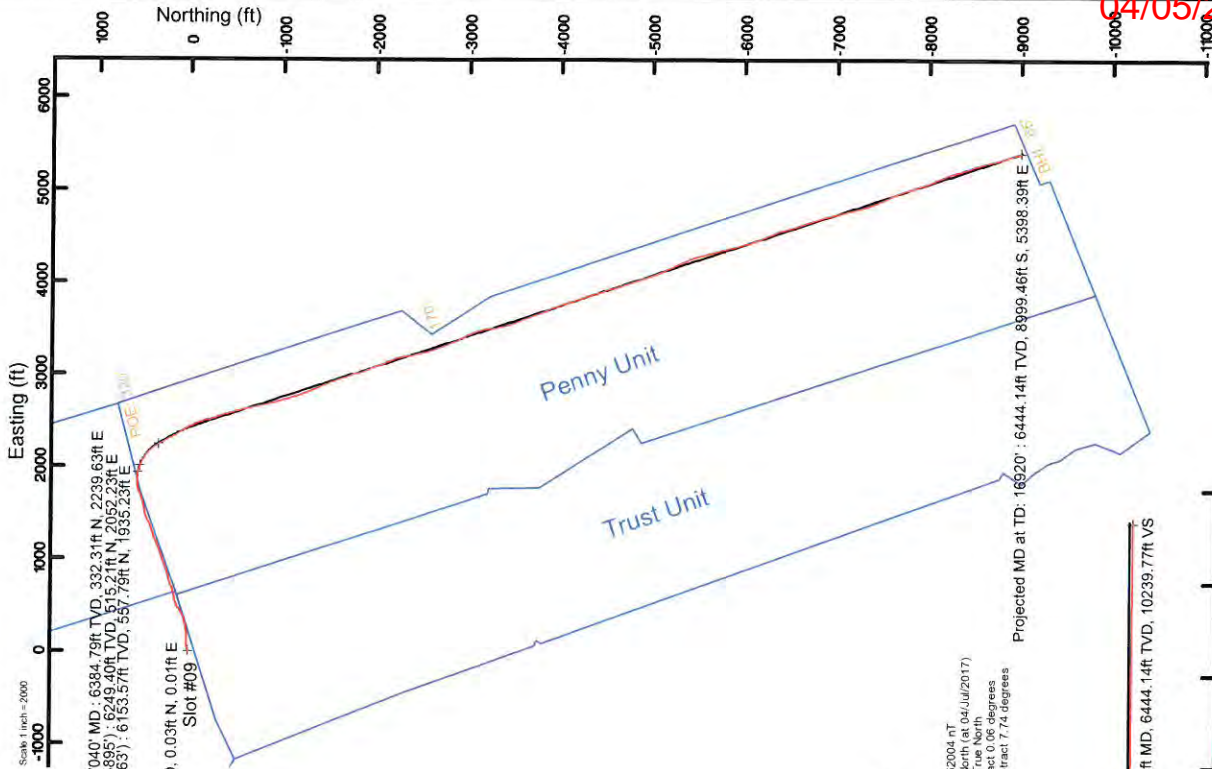
Database: WA_MPL_Eskelmeis_Dash

Gyrodata MS Gyro <8-3/4"> : 0.10° Inc, 59.50ft MD, 59.50ft TVD, -0.03R VS

Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
Mulvay Pad	1688044.745	14270379.196	39°19'21.050"N
Slot	Local N (ft)	Grid East (US ft)	Longitude
Slot #09	-29.33	6.32	89°53'58.770"W
Comment	Penny Unit 3H	14270349.874	39°19'20.760"N
Frontier 22 (RKB) to Mud line (At Slot Slot #09)			24.5ft
Mean Sea Level to Mud line (At Slot Slot #09)			-1020ft
Frontier 22 (RKB) to Mean Sea Level			1053.5ft

Well Profile Data							
Design Comment	MD (ft)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	6672.50	53.100	110.640	6210.06	2000.93	0.00	118.09
Prof. To Bottom	6760.50	58.000	117.000	6259.86	2067.19	8.15	166.80
End of 3D Ac	6896.90	61.913	132.935	6328.46	2163.27	10.50	261.16
POE	7083.78	72.144	151.685	6394.00	2255.78	12.00	405.38
Landing Pt.	7212.58	90.000	151.685	6417.00	2325.22	3.00	540.56
On Azimuth	7545.93	90.000	151.685	6417.00	2456.99	3.00	881.21
BHL	16918.51	90.000	161.685	6417.00	-9012.97	0.00	10253.79

Well Data		
Slot	Well	Wellbore
Slot #09	Penny Unit 3H	Penny Unit 3H PWB
Slot #09	Penny Unit 3H	Penny Unit 3H PWB
Slot #09	Penny Unit 3H	Penny Unit 3H PWB



User specified Dip: 66.59° Field: 52604 nT
 Magnetic North is 7.66 degrees West of True North (at 04/Jul/2017)
 Grid North is 0.00 degrees East of True North
 To correct slant to true, subtract 7.66 degrees
 To correct azimuth from Magnetic to Grid subtract 7.74 degrees

Directional ONE MWD <8-3/4"> : (6556)(6574-6663) : 47.61° Inc, 6583.50ft MD, 6153.57ft TVD, 78.42ft VS
 BHI AT Curve <8-1/2"> : (6672.5)(6741-16895) : 56.82° Inc, 6741.00ft MD, 6249.40ft TVD, 155.60ft VS
 Marcellus POE: 7040° MD : 72.37° Inc, 7040.00ft MD, 6384.79ft TVD, 388.11ft VS

Projected MD at TD: 16920° : 89.69° Inc, 16920.00ft MD, 6444.14ft TVD, 10239.77ft VS



04/05/2019



Actual Wellpath Report

Penny Unit 3H AWP Proj: 16920

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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot #09
Area	Ritchie County, WV	Penny Unit 3H
Field	Ritchie	Penny Unit 3H AWB
Facility	Mulvey Pad	

REPORT SETUP INFORMATION

Projection System	NAD27 / UTM Zone 17 North, US feet	Software System	WeilArchitect® 5.0
North Reference	Grid	User	Delaset
Scale	0.999601	Report Generated	21/Jul/2017 at 11:25
Convergence at slot	0.06° East	Database/Source file	WA_MPL_EasternUS_Defn/Penny_Unit_3H_AWP_Proj_16920_.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-29.33	6.32	1668951.06	14279349.87	39°19'20.760"N	80°53'56.770"W
Facility Reference Pt			1668944.75	14279379.20	39°19'21.050"N	80°53'56.850"W
Field Reference Pt			0.00	0.00	0°00'00.000"	85°29'19.301"W

WELLPATH DATUM

Calculation method	Minimum curvature	Frontier 22 (RKB) to Facility Vertical Datum	24.50ft
Horizontal Reference Pt	Slot	Frontier 22 (RKB) to Mean Sea Level	1053.50ft
Vertical Reference Pt	Frontier 22 (RKB)	Frontier 22 (RKB) to Mud Line at Slot (Slot #09)	24.50ft
MD Reference Pt	Frontier 22 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	161.69°



Actual Wellpath Report

Penny Unit 3H AWP Proj: 16920'

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04/05/2019

REFERENCE WELLPATH IDENTIFICATION		Slot	Slot #09
Operator	ANTERO RESOURCES CORPORATION	Well	Penny Unit 3H
Area	Ritchie County, WV	Wellbore	Penny Unit 3H AWB
Field	Ritchie		
Facility	Mulvay Pad		

WELLPATH DATA (256 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 ft/100ft	Build Rate ft/100ft	Turn Rate ft/100ft	Comments
0.00	0.000	12.620	0.00	0.00	0.00	0.00	1668951.06	14279349.87	39°19'20.760"N	80°53'56.770"W	0.00	0.000	0.00	0.00	0.00	
24.50	0.000	12.620	24.50	0.00	0.00	0.00	1668951.06	14279349.87	39°19'20.760"N	80°53'56.770"W	0.00	0.000	0.00	0.00	0.00	
59.50	0.100	12.620	59.50	-0.03	0.03	0.01	1668951.07	14279349.90	39°19'20.760"N	80°53'56.770"W	0.03	12.620	0.29	0.29	36.06	Gyrodata MS Gyro -8-3/4" > (50-6556')
109.50	0.200	20.440	109.50	-0.13	0.15	0.05	1668951.11	14279350.03	39°19'20.762"N	80°53'56.769"W	0.16	16.848	0.20	0.20	15.64	
159.50	0.190	22.290	159.50	-0.26	0.31	0.11	1668951.17	14279350.19	39°19'20.763"N	80°53'56.769"W	0.33	19.156	0.02	-0.02	3.70	
209.50	0.140	16.620	209.50	-0.38	0.45	0.16	1668951.22	14279350.32	39°19'20.764"N	80°53'56.768"W	0.47	19.377	0.11	-0.10	-11.34	
259.50	0.070	213.860	259.50	-0.41	0.48	0.16	1668951.22	14279350.35	39°19'20.765"N	80°53'56.768"W	0.51	18.180	0.42	-0.14	-325.52	
309.50	0.060	233.320	309.50	-0.38	0.44	0.12	1668951.18	14279350.31	39°19'20.764"N	80°53'56.768"W	0.46	15.249	0.05	-0.02	38.92	
359.50	0.050	215.910	359.50	-0.36	0.41	0.09	1668951.15	14279350.28	39°19'20.764"N	80°53'56.769"W	0.42	11.961	0.04	-0.02	-34.82	
409.50	0.100	70.990	409.50	-0.35	0.40	0.11	1668951.18	14279350.28	39°19'20.764"N	80°53'56.769"W	0.42	15.867	0.29	0.10	-289.84	
459.50	0.220	67.920	459.50	-0.35	0.45	0.24	1668951.31	14279350.33	39°19'20.764"N	80°53'56.767"W	0.52	28.359	0.24	0.24	-6.14	
509.50	0.250	65.270	509.50	-0.37	0.54	0.43	1668951.49	14279350.41	39°19'20.765"N	80°53'56.764"W	0.69	38.960	0.06	0.06	-5.30	
559.50	0.360	73.220	559.50	-0.38	0.63	0.68	1668951.74	14279350.50	39°19'20.766"N	80°53'56.761"W	0.93	47.453	0.24	0.22	15.90	
609.50	1.580	69.900	609.49	-0.40	0.91	1.48	1668952.54	14279350.78	39°19'20.769"N	80°53'56.751"W	1.74	58.457	2.44	2.44	-6.64	
659.50	3.920	77.600	659.43	-0.24	1.51	3.80	1668954.86	14279351.39	39°19'20.775"N	80°53'56.722"W	4.09	68.280	4.73	4.68	15.40	
709.50	5.470	79.770	709.28	0.27	2.30	7.81	1668958.87	14279352.18	39°19'20.783"N	80°53'56.671"W	8.14	73.575	3.12	3.10	4.34	
759.50	6.500	78.970	758.99	0.96	3.27	12.93	1668963.99	14279353.14	39°19'20.792"N	80°53'56.605"W	13.34	75.823	2.07	2.06	-1.60	
809.50	7.230	77.780	808.63	1.65	4.47	18.79	1668969.84	14279354.35	39°19'20.804"N	80°53'56.531"W	19.31	76.603	1.49	1.46	-2.38	
859.50	7.950	76.140	858.19	2.26	5.97	25.22	1668976.27	14279355.84	39°19'20.819"N	80°53'56.449"W	25.92	76.684	1.50	1.44	-3.28	
909.50	8.030	75.460	907.70	2.75	7.67	31.96	1668983.01	14279357.55	39°19'20.835"N	80°53'56.363"W	32.87	76.497	0.25	0.16	-1.36	
959.50	7.900	73.970	957.22	3.12	9.50	38.64	1668989.69	14279359.37	39°19'20.853"N	80°53'56.278"W	39.79	76.187	0.49	-0.26	-2.98	
1009.50	7.950	73.990	1006.74	3.40	11.40	45.27	1668996.31	14279361.27	39°19'20.872"N	80°53'56.194"W	45.68	75.862	0.10	0.10	0.04	
1059.50	8.150	75.280	1056.25	3.76	13.26	52.02	1669010.18	14279363.13	39°19'20.890"N	80°53'56.108"W	53.68	75.701	0.54	0.40	2.54	
1109.50	8.660	79.190	1105.71	4.47	14.87	59.14	1669017.77	14279364.73	39°19'20.906"N	80°53'56.017"W	60.98	75.891	1.54	1.02	7.86	
1159.50	9.030	83.290	1155.12	5.75	16.03	66.74	1669017.77	14279366.56	39°19'20.918"N	80°53'55.921"W	68.64	76.494	1.46	0.74	8.20	
1209.50	9.510	87.180	1204.47	7.64	16.69	74.76	1669025.79	14279368.68	39°19'20.924"N	80°53'55.818"W	76.60	77.414	1.58	0.96	7.78	
1259.50	10.190	91.100	1253.73	10.21	16.81	83.31	1669034.34	14279366.68	39°19'20.925"N	80°53'55.710"W	84.99	78.592	1.91	1.36	7.84	
1309.50	10.440	91.560	1302.92	13.22	16.60	92.26	1669043.28	14279366.47	39°19'20.923"N	80°53'55.596"W	93.74	79.799	0.53	0.50	0.92	
1359.50	11.250	91.820	1352.03	16.44	16.32	101.66	1669052.88	14279366.19	39°19'20.920"N	80°53'55.476"W	102.96	80.878	1.62	1.62	0.52	
1409.50	12.230	92.510	1400.98	20.00	15.94	111.83	1669062.84	14279365.80	39°19'20.916"N	80°53'55.347"W	112.96	81.899	1.98	1.96	1.38	



Actual Wellpath Report

Penny Unit 3H AWP Proj: 16920'

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REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot #09
ANTERO RESOURCES CORPORATION	Well	Penny Unit 3H
Area	Wellbore	Penny Unit 3H AWB
Field		
Facility		

WELLPATH DATA (256 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 °/100ft	Build Rate °/100ft	Turn Rate °/100ft	Comments
1459.50	13.130	93.410	1449.76	23.99	15.37	122.79	1669073.80	14279365.23	39°19'20.911"N	80°53'55.207"W	123.75	82.866	1.84	1.80	1.80	
1509.50	13.500	92.750	1498.42	28.18	14.75	134.29	1669085.29	14279364.62	39°19'20.904"N	80°53'55.061"W	135.09	83.732	0.80	0.74	-1.32	
1559.50	13.900	90.580	1547.00	32.23	14.41	146.12	1669097.12	14279364.28	39°19'20.901"N	80°53'54.910"W	146.83	84.368	1.30	0.80	-4.34	
1609.50	13.860	88.740	1595.54	35.93	14.48	158.11	1669109.11	14279364.35	39°19'20.901"N	80°53'54.758"W	158.77	84.768	0.89	-0.08	-3.68	
1659.50	13.670	87.250	1644.10	39.27	14.89	170.00	1669121.00	14279364.76	39°19'20.905"N	80°53'54.607"W	170.65	84.993	0.80	-0.38	-2.98	
1709.50	13.790	87.120	1692.67	42.44	15.48	181.86	1669132.84	14279365.35	39°19'20.911"N	80°53'54.456"W	182.51	85.135	0.25	0.24	-0.26	
1759.50	14.490	87.300	1741.16	45.71	16.07	194.06	1669145.04	14279365.94	39°19'20.917"N	80°53'54.301"W	194.72	85.266	1.40	1.40	0.36	
1809.50	14.520	87.060	1789.56	49.05	16.69	206.56	1669157.54	14279366.55	39°19'20.923"N	80°53'54.141"W	207.24	85.381	0.13	0.06	-0.48	
1859.50	13.770	84.010	1838.05	51.98	17.63	218.74	1669169.72	14279367.00	39°19'20.928"N	80°53'53.986"W	219.45	85.392	2.11	-1.50	-6.10	
1909.50	13.820	81.470	1886.61	54.27	19.14	230.57	1669181.53	14279368.00	39°19'20.947"N	80°53'53.836"W	231.36	85.255	1.22	0.10	-5.08	
1959.50	16.040	79.080	1934.92	56.17	21.33	243.26	1669194.22	14279371.20	39°19'20.968"N	80°53'53.674"W	244.19	84.988	4.61	4.44	-4.78	
2009.50	16.820	78.550	1982.87	57.92	24.08	257.13	1669208.09	14279373.94	39°19'20.995"N	80°53'53.513"W	258.25	84.651	1.59	1.56	-1.06	
2059.50	16.970	78.590	2030.72	59.66	26.96	271.37	1669222.32	14279376.82	39°19'21.023"N	80°53'53.317"W	272.71	84.327	0.30	0.30	0.08	
2109.50	16.790	77.710	2078.56	61.30	29.94	285.58	1669236.53	14279379.80	39°19'21.053"N	80°53'53.136"W	287.14	84.016	0.63	-0.36	-1.76	
2159.50	16.410	76.780	2126.48	62.68	33.09	299.51	1669250.45	14279382.95	39°19'21.084"N	80°53'52.958"W	301.33	83.696	0.93	-0.76	-1.86	
2209.50	14.640	75.740	2174.65	63.75	36.26	312.51	1669263.45	14279386.12	39°19'21.115"N	80°53'52.793"W	314.61	83.382	3.58	-3.54	-2.08	
2259.50	13.640	73.890	2223.14	64.43	39.45	324.30	1669275.23	14279389.31	39°19'21.146"N	80°53'52.643"W	326.69	83.064	2.19	-2.00	-3.70	
2309.50	13.430	72.550	2271.75	64.74	42.83	335.50	1669286.43	14279392.69	39°19'21.180"N	80°53'52.500"W	338.23	82.725	0.75	-0.42	-2.68	
2359.50	13.530	72.100	2320.37	64.87	46.37	346.61	1669297.53	14279396.22	39°19'21.214"N	80°53'52.359"W	349.70	82.380	0.29	0.20	-0.90	
2409.50	13.770	71.180	2368.96	64.86	50.09	357.81	1669308.73	14279399.94	39°19'21.251"N	80°53'52.216"W	361.30	82.031	0.65	0.48	-1.84	
2459.50	13.780	69.940	2417.52	64.52	54.15	369.00	1669319.91	14279404.00	39°19'21.291"N	80°53'52.074"W	372.95	81.652	1.07	0.02	-4.48	
2509.50	14.080	68.660	2466.05	63.70	58.70	380.14	1669331.05	14279408.55	39°19'21.336"N	80°53'51.932"W	384.64	81.223	1.25	0.60	-4.56	
2559.50	14.390	65.760	2514.51	62.52	63.66	391.39	1669342.29	14279413.50	39°19'21.385"N	80°53'51.789"W	396.53	80.762	0.76	0.62	-1.80	
2609.50	14.370	64.930	2562.95	61.15	68.84	402.67	1669353.57	14279418.68	39°19'21.436"N	80°53'51.645"W	408.51	80.299	0.41	-0.04	-1.66	
2659.50	14.070	62.460	2611.42	59.45	74.27	413.88	1669364.58	14279424.12	39°19'21.490"N	80°53'51.505"W	420.30	79.821	1.35	-0.60	-4.94	
2709.50	13.660	58.310	2659.96	57.11	80.19	424.10	1669374.99	14279430.03	39°19'21.548"N	80°53'51.372"W	431.61	79.293	2.15	-0.82	-8.30	
2759.50	13.860	56.360	2708.53	54.36	86.43	434.22	1669385.11	14279436.27	39°19'21.609"N	80°53'51.244"W	442.74	78.743	0.40	0.40	0.10	
2809.50	13.900	55.230	2757.07	51.28	93.00	444.25	1669395.13	14279442.83	39°19'21.674"N	80°53'51.116"W	453.88	78.177	1.50	0.08	-6.26	
2859.50	14.780	53.760	2805.51	47.61	100.19	454.33	1669405.21	14279450.03	39°19'21.745"N	80°53'50.988"W	465.24	77.564	1.90	1.76	-2.94	
2909.50	15.080	52.350	2853.82	43.49	107.94	464.62	1669415.50	14279457.77	39°19'21.822"N	80°53'50.856"W	476.99	76.922	0.94	0.60	-2.82	



Actual Wellpath Report

Penny Unit 3H AWP Proj: 16920'

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REFERENCE WELLPATH IDENTIFICATION

Operator	Slot	Slot #09
ANTERO RESOURCES CORPORATION	Well	Penny Unit 3H
Area	Wellbore	Penny Unit 3H AWB
Field		
Facility		

WELLPATH DATA (256 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
2959.50	16.630	56.140	2901.92	39.42	115.90	475.71	1669426.58	14279465.72	39°19'21.900"N	80°53'50.715"W	489.63	76.308	3.73	3.10	7.58	
3009.50	17.420	61.850	2949.73	36.22	129.41	488.25	1669439.12	14279473.24	39°19'21.974"N	80°53'50.555"W	503.61	75.815	3.70	1.58	11.42	
3059.50	18.180	66.360	2997.34	34.22	130.07	502.00	1669452.86	14279479.89	39°19'22.040"N	80°53'50.380"W	518.58	75.474	3.15	1.52	9.02	
3109.50	18.870	68.480	3044.75	33.04	136.17	516.67	1669467.52	14279485.99	39°19'22.100"N	80°53'50.194"W	534.31	75.236	1.93	1.38	4.24	
3159.50	19.450	72.860	3091.98	32.76	141.59	532.15	1669482.99	14279491.40	39°19'22.153"N	80°53'49.997"W	550.66	75.101	3.10	1.16	8.76	
3209.50	20.330	76.470	3139.00	33.65	148.07	548.55	1669499.39	14279495.89	39°19'22.198"N	80°53'49.788"W	567.66	75.089	3.02	1.76	7.22	
3259.50	21.540	78.360	3185.70	35.44	149.96	565.98	1669516.82	14279499.77	39°19'22.236"N	80°53'49.566"W	585.51	75.161	2.77	2.42	3.78	
3309.50	22.490	79.370	3232.05	37.79	153.57	584.37	1669535.20	14279503.38	39°19'22.271"N	80°53'49.332"W	604.21	75.276	2.05	1.90	2.02	
3359.50	23.350	79.820	3278.10	40.47	157.09	603.52	1669554.34	14279506.90	39°19'22.306"N	80°53'49.088"W	623.63	75.411	1.76	1.72	0.90	
3409.50	24.440	78.820	3323.82	43.15	160.84	623.42	1669574.24	14279510.65	39°19'22.343"N	80°53'48.835"W	643.84	75.533	2.33	2.18	-2.00	
3459.50	25.380	76.250	3369.17	45.29	165.40	643.98	1669594.78	14279515.20	39°19'22.388"N	80°53'48.573"W	664.88	75.596	2.87	1.88	-5.14	
3509.50	25.280	73.380	3414.36	46.46	171.00	664.62	1669615.41	14279520.80	39°19'22.443"N	80°53'48.311"W	686.26	75.571	2.46	-0.20	-5.74	
3559.50	26.160	69.380	3459.41	46.33	177.93	685.17	1669635.95	14279527.74	39°19'22.511"N	80°53'48.049"W	707.89	75.442	3.89	1.76	-8.00	
3609.50	25.980	66.700	3504.33	44.93	186.15	705.54	1669656.32	14279535.95	39°19'22.592"N	80°53'47.790"W	729.69	75.220	2.38	-0.36	-5.36	
3659.50	25.470	64.620	3549.37	42.65	195.09	725.31	1669676.09	14279544.88	39°19'22.680"N	80°53'47.538"W	751.09	74.945	2.07	-1.02	-4.16	
3709.50	23.570	67.990	3594.86	40.68	203.44	744.30	1669695.06	14279553.24	39°19'22.762"N	80°53'47.296"W	771.60	74.712	4.72	-3.80	6.74	
3759.50	22.410	74.050	3640.90	40.43	209.81	762.73	1669713.49	14279559.60	39°19'22.825"N	80°53'47.062"W	791.06	74.620	5.27	-2.32	12.12	
3809.50	21.950	75.350	3687.20	41.42	214.79	780.94	1669731.69	14279566.58	39°19'22.874"N	80°53'46.830"W	809.94	74.621	1.35	-0.92	2.60	
3859.50	20.740	73.920	3733.77	42.36	219.61	798.49	1669749.23	14279569.39	39°19'22.922"N	80°53'46.606"W	828.14	74.622	2.63	-2.42	-2.86	
3909.50	19.510	73.440	3780.71	42.96	224.44	815.00	1669765.73	14279574.22	39°19'22.969"N	80°53'46.396"W	845.34	74.603	2.48	-2.46	-0.96	
3959.50	19.470	75.450	3827.85	43.76	228.91	831.07	1669781.80	14279578.70	39°19'23.013"N	80°53'46.192"W	862.02	74.600	1.34	-0.08	4.02	
4009.50	19.550	75.400	3874.98	44.85	233.12	847.23	1669797.95	14279582.90	39°19'23.055"N	80°53'45.986"W	878.71	74.616	0.16	0.16	-0.10	
4059.50	19.820	74.930	3922.06	45.87	237.43	863.51	1669814.22	14279587.21	39°19'23.097"N	80°53'45.779"W	895.56	74.626	0.63	0.54	-0.94	
4109.50	19.780	73.610	3969.10	46.63	242.02	879.81	1669830.52	14279591.80	39°19'23.142"N	80°53'45.571"W	912.49	74.619	0.90	-0.08	-2.64	
4159.50	19.930	71.500	4016.13	46.89	247.11	896.01	1669846.71	14279596.89	39°19'23.192"N	80°53'45.365"W	929.46	74.582	1.46	0.30	-4.22	
4209.50	20.340	69.330	4063.07	46.50	252.88	912.22	1669862.92	14279602.65	39°19'23.249"N	80°53'45.159"W	946.82	74.506	1.70	0.82	-4.34	
4259.50	20.710	67.850	4109.90	45.55	259.28	928.54	1669879.23	14279609.05	39°19'23.312"N	80°53'44.951"W	964.06	74.398	1.27	0.74	-2.96	
4309.50	21.500	67.780	4156.54	44.34	266.08	945.21	1669895.89	14279615.85	39°19'23.379"N	80°53'44.739"W	981.95	74.278	1.58	1.58	-0.14	
4359.50	22.030	68.040	4202.98	43.11	273.05	962.39	1669913.07	14279622.82	39°19'23.448"N	80°53'44.520"W	1000.38	74.160	1.08	1.06	0.52	
4409.50	22.590	69.350	4249.24	42.13	279.95	980.07	1669930.74	14279629.71	39°19'23.516"N	80°53'44.295"W	1019.27	74.059	1.50	1.12	2.62	



Actual Wellpath Report

Penny Unit 3H AWP Proj: 16920'
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REFERENCE WELLPATH IDENTIFICATION	
Operator	ANTERO RESOURCES CORPORATION
Area	Ritche County, WV
Field	Ritche
Facility	Mulvay Pad
Slot	Slot #09
Well	Penny Unit 3H
Wellbore	Penny Unit 3H AWB

WELLPATH DATA (256 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
4459.50	22.590	70.360	4295.40	41.51	286.56	998.10	1669948.77	14279636.32	39°19'23.58"N	80°53'44.065"W	1038.43	73.981	0.78	0.00	2.02	
4509.50	23.080	72.020	4341.48	41.34	292.81	1016.47	1669987.13	14279642.57	39°19'23.643"N	80°53'43.832"W	1057.81	73.930	1.62	0.98	3.32	
4559.50	24.120	71.820	4387.30	41.42	299.03	1035.50	1669996.15	14279648.78	39°19'23.704"N	80°53'43.589"W	1077.81	73.893	2.09	2.08	-0.40	
4609.50	25.140	71.670	4432.75	41.44	305.55	1055.29	1670005.93	14279655.31	39°19'23.768"N	80°53'43.338"W	1098.63	73.852	2.04	2.04	-0.30	
4659.50	26.300	71.050	4477.80	41.32	312.49	1075.85	1670026.48	14279662.24	39°19'23.836"N	80°53'43.076"W	1120.31	73.803	2.38	2.32	-1.24	
4709.50	27.400	70.080	4522.41	40.87	320.01	1097.14	1670047.76	14279669.75	39°19'23.911"N	80°53'42.805"W	1142.86	73.739	2.37	2.20	-1.94	
4759.50	27.760	68.490	4566.73	39.90	328.20	1118.79	1670069.40	14279676.94	39°19'23.991"N	80°53'42.529"W	1165.93	73.651	1.63	0.70	-3.18	
4809.50	27.170	66.650	4611.09	38.24	336.99	1140.10	1670090.70	14279686.77	39°19'24.078"N	80°53'42.258"W	1188.86	73.533	2.06	-1.18	-3.68	
4859.50	26.610	65.340	4655.69	36.00	346.19	1160.76	1670111.35	14279696.92	39°19'24.169"N	80°53'41.995"W	1211.28	73.393	1.63	-1.12	-2.62	
4909.50	24.370	66.620	4700.82	33.85	354.95	1180.40	1670130.99	14279704.69	39°19'24.255"N	80°53'41.745"W	1232.82	73.264	4.61	-4.48	2.56	
4959.50	23.080	66.320	4746.59	32.02	362.98	1198.85	1670149.43	14279712.71	39°19'24.334"N	80°53'41.510"W	1252.60	73.155	2.59	-2.58	-0.60	
5009.50	21.310	67.090	4792.89	30.38	370.46	1216.19	1670166.77	14279720.18	39°19'24.408"N	80°53'41.289"W	1271.36	73.059	3.59	-3.54	1.54	
5059.50	21.540	67.100	4839.43	28.91	377.57	1233.02	1670183.59	14279727.29	39°19'24.478"N	80°53'41.075"W	1289.53	72.975	0.46	0.46	0.02	
5109.50	21.770	67.960	4885.90	27.57	384.62	1250.07	1670200.63	14279734.34	39°19'24.547"N	80°53'40.858"W	1307.90	72.898	0.78	0.46	1.72	
5159.50	22.750	72.040	4932.18	27.03	391.08	1267.86	1670218.41	14279740.80	39°19'24.611"N	80°53'40.631"W	1326.81	72.857	3.66	1.96	8.16	
5209.50	23.520	73.550	4978.16	27.41	396.88	1286.63	1670237.17	14279746.60	39°19'24.668"N	80°53'40.393"W	1346.45	72.857	1.94	1.94	3.02	
5259.50	24.380	73.890	5023.85	28.13	402.57	1306.11	1670256.65	14279752.29	39°19'24.724"N	80°53'40.145"W	1366.74	72.869	1.74	1.72	0.68	
5309.50	24.820	73.440	5069.31	28.85	408.43	1326.08	1670276.61	14279758.14	39°19'24.782"N	80°53'39.890"W	1387.56	72.881	0.96	0.88	-0.90	
5359.50	25.290	71.190	5114.61	29.08	414.86	1346.25	1670296.77	14279764.57	39°19'24.845"N	80°53'39.634"W	1408.73	72.873	2.12	0.94	-4.50	
5409.50	24.870	67.220	5159.90	28.16	422.38	1366.06	1670316.57	14279772.08	39°19'24.919"N	80°53'39.381"W	1429.87	72.819	3.47	-0.84	-7.94	
5459.50	24.170	64.120	5205.39	26.00	430.92	1384.96	1670335.47	14279780.62	39°19'25.003"N	80°53'39.141"W	1450.45	72.717	2.93	-1.40	-6.20	
5509.50	23.430	61.820	5251.14	22.94	440.08	1402.93	1670353.43	14279789.78	39°19'25.084"N	80°53'38.912"W	1470.34	72.584	2.37	-1.48	-4.60	
5559.50	23.130	65.230	5297.07	20.14	448.89	1420.61	1670371.11	14279796.58	39°19'25.181"N	80°53'38.667"W	1489.85	72.464	2.76	-0.80	6.82	
5609.50	23.150	64.530	5343.05	17.81	457.23	1438.41	1670388.89	14279806.92	39°19'25.263"N	80°53'38.460"W	1509.33	72.366	0.55	0.04	-1.40	
5659.50	22.210	62.100	5389.18	15.01	465.88	1455.63	1670406.11	14279815.57	39°19'25.348"N	80°53'38.241"W	1528.37	72.253	2.65	-1.88	-4.86	
5709.50	20.460	67.200	5435.76	12.75	473.69	1472.04	1670422.51	14279823.37	39°19'25.425"N	80°53'38.032"W	1546.38	72.162	5.10	-3.50	10.20	
5759.50	21.350	77.610	5482.48	13.00	479.03	1488.99	1670439.46	14279832.71	39°19'25.478"N	80°53'37.816"W	1564.15	72.166	7.63	1.78	20.82	
5809.50	22.950	79.750	5528.79	15.31	482.72	1507.48	1670457.93	14279838.40	39°19'25.514"N	80°53'37.581"W	1582.88	72.244	3.58	3.20	4.28	
5859.50	23.710	81.710	5574.70	18.42	485.90	1527.02	1670477.87	14279845.58	39°19'25.545"N	80°53'37.332"W	1602.46	72.349	2.17	1.52	3.92	
5909.50	25.070	80.880	5620.24	21.86	489.03	1547.43	1670497.87	14279853.71	39°19'25.576"N	80°53'37.073"W	1622.86	72.462	2.80	2.72	-1.66	



Actual Wellpath Report

Penny Unit 3H AWP Proj: 16920'
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04/05/2019

REFERENCE WELLPATH IDENTIFICATION		Slot	Slot #09
Operator	ANTERO RESOURCES CORPORATION	Well	Penny Unit 3H
Area	Ritchie County, WV	Wellbore	Penny Unit 3H AWB
Field	Ritchie		
Facility	Mulvey Pad		

WELLPATH DATA (256 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 (ft)	Dist (ft)	Dir (°)	DLS (ft/100ft)	Build Rate (ft/100ft)	Turn Rate (ft/100ft)	Comments
5959.50	24.630	77.390	5665.61	24.59	492.99	1568.05	1670518.49	14279842.66	39°19'25.615"N	80°53'36.810"W	1643.72	72.547	72.547	3.06	-0.88	-6.98	
6009.50	24.810	74.950	5711.03	26.22	497.98	1588.35	1670538.78	14279847.66	39°19'25.664"N	80°53'36.552"W	1664.59	72.593	72.593	2.07	0.36	-4.88	
6059.50	27.270	74.520	5755.95	27.38	503.77	1609.53	1670559.94	14279853.44	39°19'25.721"N	80°53'36.282"W	1686.52	72.620	72.620	4.93	4.92	-0.86	
6109.50	29.680	73.330	5799.90	28.30	510.38	1632.43	1670582.83	14279860.04	39°19'25.786"N	80°53'35.991"W	1710.35	72.638	72.638	4.95	4.82	-2.38	
6159.50	33.590	71.800	5842.46	28.69	518.25	1657.43	1670607.83	14279867.92	39°19'25.863"N	80°53'35.672"W	1736.57	72.636	72.636	7.98	7.82	-3.06	
6209.50	37.960	69.850	5883.02	28.22	527.87	1685.02	1670635.41	14279877.53	39°19'25.958"N	80°53'35.321"W	1765.77	72.606	72.606	9.03	8.74	-3.90	
6259.50	41.810	67.690	5921.38	26.56	539.50	1714.89	1670665.27	14279889.16	39°19'26.073"N	80°53'34.941"W	1797.75	72.537	72.537	8.18	7.70	-4.32	
6309.50	44.340	69.860	5957.91	24.84	551.85	1746.72	1670697.08	14279901.50	39°19'26.194"N	80°53'34.536"W	1831.82	72.467	72.467	5.86	5.06	4.34	
6359.50	43.330	76.430	5993.99	25.70	561.89	1779.82	1670730.17	14279911.54	39°19'26.293"N	80°53'34.114"W	1866.41	72.479	72.479	9.32	-2.02	13.14	
6409.50	49.560	82.900	6030.31	30.47	568.05	1813.61	1670763.95	14279917.70	39°19'26.354"N	80°53'33.684"W	1900.49	72.609	72.609	8.91	0.46	12.94	
6459.50	43.970	90.440	6066.44	39.40	570.05	1848.09	1670798.41	14279919.69	39°19'26.373"N	80°53'33.246"W	1934.01	72.857	72.857	10.46	0.82	15.08	
6509.50	47.610	103.620	6153.57	52.56	567.70	1882.85	1670833.16	14279917.34	39°19'26.349"N	80°53'32.803"W	1966.58	73.222	73.222	9.59	1.12	13.66	
6559.50	46.730	101.930	6137.25	69.32	561.69	1918.07	1670868.36	14279911.34	39°19'26.290"N	80°53'32.355"W	1998.62	73.678	73.678	8.05	4.40	9.44	
6585.50	46.960	102.430	6141.36	71.54	560.77	1922.34	1670872.64	14279910.42	39°19'26.281"N	80°53'32.301"W	2002.47	73.738	73.738	6.58	3.83	7.33	
6583.50	47.610	103.620	6153.57	78.42	557.79	1935.23	1670885.51	14279907.44	39°19'26.251"N	80°53'32.137"W	2014.01	73.922	73.922	6.05	3.61	6.61	Directional ONE MWD <8-3/4"> (6556) (6574'-6663')
6627.50	50.800	106.630	6182.31	96.79	549.08	1967.37	1670917.64	14279898.73	39°19'26.164"N	80°53'31.728"W	2042.55	74.406	74.406	8.91	7.25	6.84	
6672.50	53.100	110.640	6210.06	118.09	537.74	2000.93	1670951.19	14279887.40	39°19'26.052"N	80°53'31.301"W	2071.92	74.957	74.957	8.68	5.11	8.91	
6678.00†	53.387	111.142	6213.35	120.88	536.17	2005.04	1670955.30	14279885.30	39°19'26.036"N	80°53'31.301"W	2071.92	74.957	74.957	8.68	5.11	8.91	
6741.00	56.820	116.640	6249.40	155.60	515.21	2052.23	1671002.47	14279864.88	39°19'25.829"N	80°53'30.649"W	2075.49	75.029	75.029	8.99	5.23	9.13	Middlesex: 6678' MD
6773.00	57.880	119.680	6266.67	175.13	502.49	2075.98	1671026.21	14279852.17	39°19'25.703"N	80°53'30.347"W	2135.93	76.393	76.393	8.66	3.31	9.50	
6820.00	59.460	127.350	6291.13	206.67	480.33	2109.40	1671059.61	14279830.01	39°19'25.483"N	80°53'29.922"W	2163.39	77.172	77.172	14.34	3.36	16.32	
6867.00	61.260	132.230	6314.39	241.34	454.19	2140.76	1671090.96	14279803.88	39°19'25.225"N	80°53'29.523"W	2188.41	78.022	78.022	9.80	3.83	10.38	
6888.00†	62.134	133.615	6324.34	257.55	441.60	2154.30	1671104.50	14279797.30	39°19'25.100"N	80°53'29.351"W	2199.09	78.416	78.416	7.14	4.16	6.59	Burket: 6888' MD
6912.00	63.150	135.170	6335.37	276.49	426.69	2169.53	1671119.72	14279776.39	39°19'24.952"N	80°53'29.157"W	2211.09	78.873	78.873	7.14	4.23	6.48	
6957.00†	65.495	141.132	6354.88	313.65	396.48	2196.55	1671146.73	14279746.20	39°19'24.654"N	80°53'28.814"W	2232.05	79.768	79.768	13.03	5.21	13.25	Tully: 6957' MD
6962.00	65.770	141.780	6356.95	317.93	392.92	2199.39	1671149.57	14279742.64	39°19'24.618"N	80°53'28.778"W	2234.21	79.871	79.871	13.03	5.50	12.96	
7008.00	69.700	147.620	6374.39	358.62	358.19	2223.95	1671174.12	14279707.92	39°19'24.275"N	80°53'28.466"W	2252.61	80.851	80.851	14.52	8.54	12.70	
7040.00†	72.368	149.931	6384.79	388.11	332.31	2239.63	1671189.79	14279682.05	39°19'24.019"N	80°53'28.267"W	2264.15	81.560	81.560	10.78	8.34	7.22	Marcellus POE: 7040' MD
7058.00	73.880	151.200	6390.01	405.01	317.31	2248.09	1671198.25	14279667.06	39°19'23.870"N	80°53'28.159"W	2270.37	81.966	81.966	10.78	8.40	7.05	
7104.00	78.830	151.210	6400.86	448.95	278.15	2289.62	1671219.77	14279627.91	39°19'23.483"N	80°53'27.866"W	2286.60	83.013	83.013	10.76	10.76	0.02	



Actual Wellpath Report

Penny Unit 3H AWP Proj: 16920'

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REFERENCE WELLPATH IDENTIFICATION

Operator	Slot #09
ANTERO RESOURCES CORPORATION	Penny Unit 3H
Area	Ritche County, WV
Field	Ritche
Facility	Mulvay Pad

WELLPATH DATA (256 stations)

MD (ft)	Inclination (°)	Azimuth (°)	TVD (ft)	Vert.Sect (ft)	North (ft)	East (ft)	Grid East (JUS ft)	Grid North (JUS ft)	Latitude	Longitude	Closure Dist (ft)	Closure Dir (°)	DLS (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Comments
7152.00	89.940	151.250	6407.22	495.71	236.47	2292.50	1671242.64	14279586.25	39°19'23.071"N	80°53'27.596"W	2304.66	84.111	14.81	14.81	0.08	
7198.00	89.880	151.340	6408.89	540.92	196.16	2314.57	1671284.71	14279545.95	39°19'22.672"N	80°53'27.315"W	2322.87	85.156	8.57	8.57	0.20	
7246.00	89.820	151.540	6409.02	588.15	154.00	2337.52	1671287.65	14279503.81	39°19'22.255"N	80°53'27.024"W	2342.59	86.231	0.44	-0.12	0.42	
7340.00	89.120	148.160	6409.07	680.14	72.73	2384.73	1671334.83	14279422.57	39°19'21.451"N	80°53'26.425"W	2385.84	88.253	3.61	0.32	-3.60	
7436.00	89.910	152.950	6409.04	774.30	-10.85	2431.91	1671381.99	14279339.03	39°19'20.625"N	80°53'25.826"W	2431.93	90.256	4.99	-0.22	4.99	
7530.00	89.910	161.110	6409.19	867.91	-97.32	2468.56	1671418.63	14279252.59	39°19'19.770"N	80°53'25.361"W	2470.48	92.258	8.68	0.00	8.68	
7625.00	89.970	162.170	6409.29	962.91	-187.48	2498.47	1671448.54	14279162.47	39°19'18.878"N	80°53'24.981"W	2505.51	94.291	1.12	0.06	1.12	
7720.00	90.030	162.550	6409.29	1057.90	-278.02	2527.27	1671477.32	14279071.97	39°19'17.983"N	80°53'24.616"W	2542.52	96.278	0.40	0.06	0.40	
7815.00	89.820	162.480	6409.42	1152.89	-368.63	2555.81	1671505.85	14278981.40	39°19'17.087"N	80°53'24.254"W	2582.26	98.207	0.23	-0.22	-0.07	
7910.00	89.820	163.360	6409.71	1247.87	-459.43	2583.72	1671533.74	14278890.62	39°19'16.189"N	80°53'23.904"W	2624.25	100.083	0.93	0.00	0.93	
8005.00	90.120	166.430	6409.76	1342.71	-551.14	2608.47	1671558.49	14278798.95	39°19'15.283"N	80°53'23.587"W	2666.06	101.931	3.25	0.32	3.23	
8100.00	90.250	166.220	6409.46	1437.40	-643.45	2630.93	1671580.94	14278706.68	39°19'14.370"N	80°53'23.303"W	2708.47	103.743	0.26	0.14	-0.22	
8194.00	89.940	167.290	6409.30	1531.03	-734.95	2652.46	1671602.46	14278615.22	39°19'13.465"N	80°53'23.030"W	2752.40	105.487	1.19	-0.33	1.14	
8289.00	89.600	167.780	6409.68	1625.53	-827.71	2672.97	1671622.96	14278522.50	39°19'12.548"N	80°53'22.771"W	2798.19	107.206	0.63	-0.36	0.52	
8384.00	89.570	165.600	6410.37	1720.16	-920.15	2694.84	1671644.82	14278430.10	39°19'11.694"N	80°53'22.494"W	2847.60	108.852	2.29	-0.03	-2.29	
8479.00	89.600	165.380	6411.06	1814.95	-1012.11	2718.64	1671668.61	14278338.17	39°19'10.725"N	80°53'22.193"W	2900.93	110.420	0.23	0.03	-0.23	
8574.00	89.630	163.410	6411.70	1909.84	-1103.60	2744.19	1671694.16	14278246.71	39°19'09.821"N	80°53'21.869"W	2957.79	111.908	2.07	0.03	-2.07	
8669.00	89.850	161.430	6412.13	2004.83	-1194.16	2772.89	1671722.84	14278156.19	39°19'08.925"N	80°53'21.505"W	3019.09	113.299	2.10	0.23	-2.08	
8764.00	89.820	157.390	6412.40	2099.73	-1283.08	2806.29	1671756.22	14278067.31	39°19'08.046"N	80°53'21.082"W	3085.70	114.571	4.25	-0.03	4.25	
8858.00	89.510	154.650	6412.95	2193.26	-1368.95	2844.49	1671794.41	14277981.47	39°19'07.197"N	80°53'20.597"W	3156.76	115.700	2.93	-0.33	-2.91	
8953.00	89.540	156.660	6413.74	2287.73	-1455.50	2883.65	1671833.55	14277894.96	39°19'06.341"N	80°53'20.100"W	3230.15	116.782	2.12	0.03	2.12	
9048.00	89.510	157.880	6414.53	2382.44	-1543.11	2920.35	1671870.24	14277807.38	39°19'05.475"N	80°53'19.634"W	3302.98	117.852	1.28	-0.03	1.28	
9143.00	89.450	160.870	6415.39	2477.35	-1632.01	2953.81	1671903.69	14277718.52	39°19'04.595"N	80°53'19.210"W	3374.68	118.921	3.15	-0.06	3.15	
9237.00	89.480	162.930	6416.27	2571.34	-1721.35	2983.01	1671932.88	14277629.21	39°19'03.712"N	80°53'18.840"W	3444.04	119.987	2.19	0.03	2.19	
9332.00	89.720	161.300	6416.93	2666.33	-1811.76	3012.18	1671962.04	14277538.85	39°19'02.818"N	80°53'18.470"W	3515.07	121.026	1.73	0.25	-1.72	
9427.00	89.780	160.130	6417.35	2761.31	-1901.42	3043.56	1671993.40	14277449.21	39°19'01.932"N	80°53'18.072"W	3588.68	121.995	1.23	0.06	-1.23	
9522.00	89.600	158.960	6417.86	2856.24	-1990.43	3076.76	1672026.58	14277360.24	39°19'01.052"N	80°53'17.651"W	3664.46	122.900	1.25	-0.19	-1.23	
9616.00	89.540	157.530	6418.57	2950.07	-2077.73	3111.59	1672061.41	14277272.98	39°19'00.188"N	80°53'17.209"W	3741.52	123.733	1.52	-0.06	-1.52	
9711.00	89.380	157.580	6419.46	3044.82	-2165.53	3147.86	1672097.66	14277185.21	39°18'59.320"N	80°53'16.749"W	3820.81	124.525	0.18	-0.17	0.05	
9806.00	89.820	163.590	6420.12	3139.75	-2255.08	3179.43	1672129.21	14277095.69	39°18'58.434"N	80°53'16.349"W	3897.97	125.347	6.34	0.46	6.33	



Actual Wellpath Report

Penny Unit 3H AWP Proj: 16920'

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REFERENCE WELLPATH IDENTIFICATION		Slot	Slot #09
Operator	ANTERO RESOURCES CORPORATION	Well	Penny Unit 3H
Area	Ritchie County, WV	Wellbore	Penny Unit 3H AWB
Field	Ritchie		
Facility	Mulvay Pad		

WELLPATH DATA (256 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 (ft/100ft)	Build Rate (ft/100ft)	Turn Rate (ft/100ft)	Comments
9901.00	90.220	169.650	6420.09	3234.36	-2347.46	3201.40	1672151.18	14277003.35	39°18'57.52"N	80°53'16.07"W	3969.83	126.251	6.39	0.42	6.38	
9996.00	90.430	169.480	6419.55	3328.46	-2440.89	3218.61	1672168.38	14276909.96	39°18'56.59"N	80°53'15.85"W	4039.48	127.176	0.28	0.22	-0.18	
10091.00	90.490	165.670	6418.79	3422.94	-2533.64	3239.04	1672188.81	14276817.25	39°18'55.68"N	80°53'15.59"W	4112.27	128.033	4.01	0.06	-4.01	
10185.00	90.180	161.370	6418.24	3516.87	-2623.76	3265.70	1672215.45	14276727.17	39°18'54.79"N	80°53'15.25"W	4189.14	128.779	4.59	-0.33	-4.57	
10280.00	89.720	158.220	6418.32	3611.80	-2712.90	3298.51	1672248.25	14276638.06	39°18'53.90"N	80°53'14.84"W	4270.83	129.436	3.35	-0.48	-3.32	
10375.00	89.660	158.340	6418.84	3706.63	-2801.16	3333.66	1672283.39	14276549.84	39°18'53.03"N	80°53'14.39"W	4354.28	130.039	0.14	-0.06	0.13	
10471.00	89.660	156.240	6419.41	3802.34	-2897.71	3370.72	1672320.43	14276461.33	39°18'51.309"N	80°53'13.925"W	4439.84	130.606	2.19	0.00	-2.19	
10566.00	89.780	153.450	6419.87	3896.66	-2975.69	3411.10	1672360.80	14276375.38	39°18'51.309"N	80°53'13.413"W	4526.62	131.100	2.94	0.13	-2.94	
10661.00	90.030	158.030	6420.03	3991.12	-3062.27	3450.12	1672399.90	14276288.83	39°18'50.453"N	80°53'12.918"W	4613.12	131.592	4.83	0.26	4.82	
10755.00	90.030	167.600	6419.77	4074.99	-3151.97	3477.87	1672427.53	14276199.16	39°18'49.566"N	80°53'12.566"W	4693.66	132.186	10.18	0.00	10.18	
10849.00	90.280	172.730	6419.72	4177.93	-3244.56	3493.92	1672443.58	14276106.61	39°18'48.651"N	80°53'12.364"W	4768.08	132.881	5.46	0.27	5.46	
10944.00	89.660	168.420	6419.77	4271.77	-3338.26	3509.47	1672459.12	14276012.96	39°18'47.725"N	80°53'12.167"W	4843.59	133.568	4.58	-0.65	-4.54	
11039.00	90.060	162.870	6420.01	4366.51	-3430.25	3533.01	1672482.66	14275921.00	39°18'46.815"N	80°53'11.969"W	4924.31	134.155	5.86	0.42	-5.84	
11134.00	90.950	159.160	6419.17	4461.48	-3520.07	3563.91	1672513.54	14275831.22	39°18'45.927"N	80°53'11.477"W	5009.22	134.645	4.02	0.94	-3.91	
11229.00	89.420	157.810	6418.86	4556.32	-3608.44	3598.75	1672548.37	14275742.88	39°18'45.053"N	80°53'11.036"W	5096.26	135.077	2.15	-1.61	-1.42	
11325.00	89.480	160.510	6419.78	4652.22	-3698.15	3632.90	1672582.50	14275653.21	39°18'44.166"N	80°53'10.603"W	5184.04	135.510	2.81	0.06	2.81	
11418.00	89.480	160.360	6420.63	4745.19	-3785.77	3664.04	1672613.63	14275563.62	39°18'43.300"N	80°53'10.208"W	5268.52	135.936	0.16	0.00	-0.16	
11512.00	89.480	157.550	6421.48	4839.07	-3873.49	3697.79	1672647.37	14275477.93	39°18'42.432"N	80°53'09.780"W	5355.15	136.329	2.99	0.00	-2.99	
11607.00	89.420	159.200	6422.39	4933.90	-3961.80	3732.80	1672682.36	14275389.66	39°18'41.559"N	80°53'09.336"W	5443.31	136.705	1.74	-0.06	1.74	
11702.00	89.450	162.580	6423.33	5028.88	-4051.55	3763.89	1672713.45	14275299.95	39°18'40.672"N	80°53'08.942"W	5530.09	137.108	3.56	0.03	3.56	
11797.00	89.880	163.590	6423.89	5123.85	-4142.43	3791.53	1672741.08	14275209.10	39°18'39.773"N	80°53'08.592"W	5615.65	137.532	1.16	0.45	1.06	
11892.00	89.600	162.070	6424.32	5218.82	-4233.20	3819.58	1672769.11	14275118.38	39°18'38.876"N	80°53'08.236"W	5701.68	137.940	1.63	-0.29	-1.60	
11986.00	89.290	160.160	6425.23	5312.81	-4322.13	3850.00	1672799.52	14275029.48	39°18'37.996"N	80°53'07.851"W	5788.20	138.306	2.06	-0.33	-2.03	
12082.00	89.540	161.930	6426.21	5408.79	-4412.91	3881.18	1672830.59	14274938.73	39°18'37.099"N	80°53'07.455"W	5876.85	138.668	1.86	0.26	1.84	
12177.00	89.420	163.920	6427.07	5503.76	-4503.72	3909.07	1672868.57	14274847.96	39°18'36.201"N	80°53'07.102"W	5963.58	139.043	2.10	-0.13	2.09	
12271.00	89.380	161.910	6428.05	5597.73	-4593.56	3936.68	1672896.17	14274758.16	39°18'35.312"N	80°53'06.752"W	6049.65	139.403	2.14	-0.04	-2.14	
12366.00	89.630	161.810	6428.87	5692.73	-4683.83	3966.26	1672915.73	14274667.92	39°18'34.420"N	80°53'06.377"W	6137.55	139.742	0.28	0.26	-0.11	
12461.00	89.720	162.800	6429.41	5787.72	-4774.34	3995.14	1672944.60	14274577.45	39°18'33.525"N	80°53'06.011"W	6225.38	140.078	1.05	0.09	1.04	
12556.00	89.850	160.510	6429.77	5882.71	-4864.50	4025.03	1672974.48	14274487.32	39°18'32.633"N	80°53'05.633"W	6313.82	140.395	2.41	0.14	-2.41	
12651.00	89.750	162.440	6430.10	5977.71	-4954.58	4055.21	1673004.65	14274397.29	39°18'31.743"N	80°53'05.250"W	6402.55	140.700	2.03	-0.11	2.03	



Actual Wellpath Report

Penny Unit 3H AWP Proj: 16920'

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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Penny Unit 3H
Field	Ritchie	Wellbore	Penny Unit 3H AWB
Facility	Mulvay Pad		

WELLPATH DATA (256 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 °/100ft	Build Rate °/100ft	Turn Rate °/100ft	Comments
12746.00	89.850	160.670	6430.43	6072.70	-5044.69	4085.27	1673034.59	14274307.21	39°18'30.852"N	80°53'04.869"W	6491.41	140.999	1.87	0.11	-1.86	
12841.00	89.780	157.310	6430.74	6167.58	-5133.36	4119.33	1673068.74	14274218.57	39°18'29.975"N	80°53'04.437"W	6581.81	141.254	3.54	-0.07	-3.54	
12936.00	89.850	155.620	6431.05	6262.18	-5220.46	4157.26	1673106.65	14274131.51	39°18'29.114"N	80°53'03.956"W	6673.53	141.468	1.78	0.07	-1.78	
13031.00	89.780	153.840	6431.35	6356.48	-5306.36	4197.81	1673147.19	14274045.64	39°18'28.264"N	80°53'03.442"W	6766.02	141.653	1.88	-0.07	-1.87	
13125.00	89.570	157.480	6431.89	6449.94	-5391.99	4236.55	1673185.91	14273960.05	39°18'27.417"N	80°53'02.950"W	6857.25	141.843	3.88	-0.22	3.87	
13220.00	89.630	163.130	6432.55	6544.87	-5481.39	4268.55	1673217.90	14273870.68	39°18'26.533"N	80°53'02.545"W	6947.39	142.091	5.95	0.06	5.95	
13315.00	89.850	163.630	6432.98	6639.83	-5572.42	4298.72	1673250.08	14273779.68	39°18'25.633"N	80°53'02.200"W	7035.99	142.372	0.58	0.23	0.53	
13409.00	89.820	165.480	6433.25	6733.71	-5663.03	4320.75	1673282.06	14273689.12	39°18'24.737"N	80°53'01.883"W	7123.11	142.657	1.97	-0.03	1.97	
13504.00	89.820	165.970	6433.55	6828.47	-5755.09	4344.18	1673293.50	14273597.09	39°18'23.827"N	80°53'01.587"W	7210.61	142.953	0.52	0.00	0.52	
13599.00	89.880	166.560	6433.80	6923.17	-5847.37	4366.73	1673316.04	14273504.85	39°18'22.915"N	80°53'01.302"W	7297.95	143.248	0.62	0.06	0.62	
13694.00	90.000	165.770	6433.90	7017.88	-5939.62	4389.45	1673338.75	14273412.64	39°18'22.003"N	80°53'01.014"W	7385.55	143.535	0.84	0.13	-0.83	
13789.00	90.030	162.910	6433.87	7112.77	-6031.08	4415.09	1673364.38	14273321.21	39°18'21.098"N	80°53'00.689"W	7474.42	143.794	3.01	0.03	-3.01	
13883.00	90.030	160.190	6433.83	7206.76	-6120.24	4444.84	1673394.12	14273232.09	39°18'20.217"N	80°53'00.312"W	7563.99	144.011	2.89	0.00	-2.89	
13978.00	89.940	158.640	6433.85	7301.68	-6209.17	4478.24	1673427.50	14273143.19	39°18'19.377"N	80°52'59.889"W	7655.61	144.200	1.63	-0.09	-1.63	
14072.00	89.910	156.200	6433.97	7395.41	-6295.96	4514.33	1673463.58	14273056.44	39°18'18.479"N	80°52'59.431"W	7747.15	144.359	2.60	-0.03	-2.60	
14167.00	89.850	160.880	6434.17	7490.24	-6384.29	4549.23	1673498.47	14272968.14	39°18'17.606"N	80°52'58.989"W	7839.30	144.528	4.72	-0.06	4.72	
14262.00	89.970	167.260	6434.32	7585.11	-6475.55	4575.45	1673524.68	14272876.92	39°18'16.703"N	80°52'58.657"W	7928.90	144.756	6.93	0.13	6.93	
14356.00	89.880	161.290	6434.44	7678.97	-6565.99	4600.91	1673550.13	14272786.52	39°18'15.809"N	80°52'58.334"W	8017.52	144.980	6.35	-0.10	-6.35	
14451.00	89.850	160.680	6434.67	7773.96	-6655.80	4631.86	1673581.07	14272696.74	39°18'14.921"N	80°52'57.942"W	8108.88	145.165	0.64	-0.03	-0.64	
14545.00	89.970	162.910	6434.82	7867.96	-6745.09	4661.23	1673610.42	14272607.49	39°18'14.038"N	80°52'57.570"W	8198.98	145.353	2.38	0.13	2.37	
14640.00	89.910	163.330	6434.92	7962.93	-6836.00	4689.82	1673638.00	14272516.62	39°18'13.139"N	80°52'57.221"W	8289.50	145.554	0.45	-0.06	0.44	
14734.00	89.750	164.650	6435.19	8056.85	-6926.35	4714.74	1673663.91	14272426.30	39°18'12.246"N	80°52'56.892"W	8378.73	145.757	1.41	-0.17	1.40	
14829.00	89.690	165.230	6435.66	8151.69	-7018.09	4739.42	1673688.58	14272334.60	39°18'11.339"N	80°52'56.580"W	8468.51	145.968	0.61	0.06	0.61	
14923.00	89.690	165.320	6436.17	8245.51	-7109.00	4763.32	1673712.47	14272243.73	39°18'10.440"N	80°52'56.277"W	8557.28	146.176	0.10	0.00	0.10	
15018.00	89.720	166.850	6436.66	8340.22	-7201.21	4786.16	1673735.30	14272151.56	39°18'09.528"N	80°52'55.988"W	8646.66	146.391	1.61	0.03	1.61	
15113.00	89.820	163.900	6437.04	8435.02	-7293.12	4810.14	1673759.28	14272059.68	39°18'08.620"N	80°52'55.685"W	8736.53	146.593	3.11	0.11	-3.11	
15207.00	90.310	160.070	6436.93	8529.00	-7382.49	4839.21	1673788.33	14271970.34	39°18'07.736"N	80°52'55.316"W	8827.18	146.755	4.11	0.52	-4.07	
15303.00	89.510	156.290	6437.08	8624.80	-7471.60	4874.89	1673823.99	14271881.27	39°18'06.855"N	80°52'54.864"W	8921.28	146.877	4.02	-0.83	-3.94	
15397.00	89.510	155.790	6437.89	8718.34	-7557.49	4913.06	1673862.15	14271795.41	39°18'06.005"N	80°52'54.380"W	9014.09	146.972	0.53	0.00	-0.53	
15492.00	89.600	158.350	6438.62	8813.02	-7644.98	4950.07	1673899.14	14271707.96	39°18'05.140"N	80°52'53.911"W	9107.62	147.077	2.70	0.09	2.69	



Actual Wellpath Report

Penny Unit 3H AWP Proj: 16920'
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REFERENCE WELLPATH IDENTIFICATION	
Operator	ANTERO RESOURCES CORPORATION
Area	Ritchie County, WV
Field	Ritchie
Facility	Mulvay Pad
Slot #09	
Penny Unit 3H	
Penny Unit 3H AWB	

WELLPATH DATA (256 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
15885.00	89.750	161.920	6439.16	8906.97	-7733.37	4982.00	1673931.07	14271619.61	39°18'04.266"N	80°52'53.506"W	9199.20	147.209	3.80	0.16	3.80	
15881.00	89.750	161.920	6439.57	9001.97	-7823.68	5011.48	1673960.54	14271529.34	39°18'03.373"N	80°52'53.132"W	9291.12	147.358	0.00	0.00	0.00	
15775.00	89.820	161.940	6439.92	9095.97	-7913.04	5040.64	1673989.68	14271440.01	39°18'02.490"N	80°52'52.763"W	9382.12	147.503	0.08	0.07	0.02	
15870.00	89.780	158.530	6440.26	9190.92	-8002.43	5072.76	1674021.79	14271350.65	39°18'01.606"N	80°52'52.358"W	9474.80	147.629	3.59	-0.04	-3.59	
15964.00	89.750	156.580	6440.64	9284.67	-8089.30	5108.65	1674057.66	14271263.82	39°18'00.747"N	80°52'51.901"W	9567.40	147.726	2.07	-0.03	-2.07	
16060.00	89.970	158.370	6440.88	9380.41	-8177.98	5145.42	1674094.42	14271175.18	39°17'59.870"N	80°52'51.434"W	9652.02	147.823	1.88	0.23	1.86	
16155.00	89.780	161.910	6441.08	9475.36	-8267.31	5177.69	1674126.68	14271085.88	39°17'58.986"N	80°52'51.025"W	9754.84	147.942	3.73	-0.20	3.73	
16249.00	89.910	160.980	6441.34	9569.35	-8356.42	5207.60	1674156.58	14270996.80	39°17'58.105"N	80°52'50.646"W	9846.27	148.069	1.00	0.14	-0.99	
16344.00	89.850	162.640	6441.54	9664.35	-8446.67	5237.26	1674186.22	14270906.59	39°17'57.213"N	80°52'50.271"W	9938.57	148.200	1.75	-0.06	1.75	
16439.00	89.750	163.850	6441.87	9759.31	-8537.64	5264.64	1674213.59	14270815.66	39°17'56.313"N	80°52'49.924"W	10030.34	148.340	1.28	-0.11	1.27	
16534.00	89.690	166.000	6442.33	9854.15	-8629.36	5289.35	1674238.29	14270723.97	39°17'55.406"N	80°52'49.611"W	10121.42	148.494	2.26	-0.06	2.26	
16628.00	89.690	165.550	6442.84	9947.91	-8720.48	5312.45	1674261.38	14270632.89	39°17'54.506"N	80°52'49.319"W	10211.21	148.651	0.48	0.00	-0.48	
16723.00	89.780	163.560	6443.28	10042.79	-8812.04	5337.75	1674286.67	14270541.37	39°17'53.600"N	80°52'48.999"W	10302.60	148.795	2.10	0.09	-2.09	
16819.00	89.780	161.020	6443.65	10138.78	-8903.48	5366.95	1674315.86	14270449.96	39°17'52.696"N	80°52'48.629"W	10395.97	148.919	2.65	0.00	-2.65	
16895.00	89.690	162.370	6444.00	10214.77	-8975.63	5390.82	1674339.72	14270377.84	39°17'51.983"N	80°52'48.326"W	10470.10	149.011	1.78	-0.12	1.78	
16920.00	89.690	162.370	6444.14	10239.77	-8999.46	5398.39	1674347.28	14270354.02	39°17'51.747"N	80°52'48.231"W	10494.42	149.042	0.00	0.00	0.00	Projected MD at TD: 16920'



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Penny Unit 3H AWP Proj: 16920'
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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Penny Unit 3H
Field	Ritchie	Wellbore	Penny Unit 3H AWB
Facility	Mulvay Pad		

HOLE & CASING SECTIONS - Ref Wellbore: Penny Unit 3H AWB Ref Wellpath: Penny Unit 3H AWP Proj: 16920'

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]
20in Conductor	24.50	104.50	80.00	24.50	104.50	0.00	0.00	0.14	0.04
17.5in Open Hole	104.50	562.50	458.00	104.50	562.50	0.14	0.04	0.63	0.70
13.375in Casing Surface	24.50	562.50	538.00	24.50	562.50	0.00	0.00	0.63	0.70
12.25in Open Hole	562.50	2620.50	2058.00	562.50	2573.61	0.63	0.70	70.00	405.13
9.625in Casing Intermediate	24.50	2620.50	2596.00	24.50	2573.61	0.00	0.00	70.00	405.13
8.75in Open Hole	2620.50	6759.00	4138.50	2573.61	6259.18	70.00	405.13	508.23	2065.64
8.5in Open Hole	6759.00	16920.00	10161.00	6259.18	6444.14	508.23	2065.64	-8999.46	5398.39
5.5in Casing Production	24.50	16920.00	16895.50	24.50	6444.14	0.00	0.00	-8999.46	5398.39



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Penny Unit 3H AWP Proj: 16920'
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REFERENCE WELLPATH IDENTIFICATION

Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Penny Unit 3H
Field	Ritchie	Wellbore	Penny Unit 3H AWB
Facility	Mulway Pad		

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Penny Unit 3H POE Plat	6394.00	495.36	2254.90	1671205.06	14279845.04	39°19'25.630"N	80°53'28.070"W	point
Penny Unit 3H POE Rev-1	6394.00	319.47	2255.78	1671205.94	14279669.21	39°19'23.892"N	80°53'28.062"W	point
Penny Unit 3H AZI Rev-1	6417.00	-115.16	2456.99	1671407.06	14279234.76	39°19'19.594"N	80°53'25.508"W	point
Penny Unit 3H BHL Plat	6417.00	-892.09	5395.27	1674344.17	14270361.39	39°17'51.820"N	80°52'48.270"W	point
Penny Unit 3H BHL Rev-1	6417.00	-9012.97	5402.19	1674351.08	14270340.52	39°17'51.613"N	80°52'48.182"W	point
Penny Unit 3H LP Rev-1	6417.00	190.58	2325.22	1671275.35	14279540.37	39°19'22.617"N	80°53'27.180"W	point
Penny Unit 3H 25' L/R Hard Line	6500.00	-4584.07	3929.59	1672879.07	14274787.64	39°18'35.604"N	80°53'06.842"W	rectangle

WELLPATH COMPOSITION - Ref Wellbore: Penny Unit 3H AWB Ref Wellpath: Penny Unit 3H AWP Proj: 16920'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
24.50	6565.50	Gyrodata standard - Drop gyro or Multi-shot	05 Gyrodata MS Gyro <8-3/4">{50-6556}	Penny Unit 3H AWB
6565.50	6672.50	ISCWSA MWD, Rev. 4 (Standard)	04 Directional ONE MWD <8-3/4">{6556}{6574-6663}	Penny Unit 3H AWB
6672.50	16895.00	BHI Auto Trak Curve (Short)	06 BHI AT Curve <8-1/2"> {6672.5}{6741-16895}	Penny Unit 3H AWB
16895.00	16920.00	Blind Drilling (std)	Projection to bit	Penny Unit 3H AWB



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Penny Unit 3H AWP Proj: 16920'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	ANTERO RESOURCES CORPORATION	Slot	Slot #09
Area	Ritchie County, WV	Well	Penny Unit 3H
Field	Ritchie	Wellbore	Penny Unit 3H AWB
Facility	Mulvay Pad		

COMMENTS
<p>Wellpath general comments API: 47-085-10300-0000 BHI Job #: 8636486 Rig: Frontier 22 Duration: 07/06/2017-07/09/2017 Gyrodatta MS Gyro <8-3/4"> (50'-6556') Directional ONE MWD <8-3/4"> (6556')(6574'-6663') BHI AT Curve <8-1/2"> (6672.5')(6741'-16895') Middlesex: 6678' MD Burket: 6888' MD Tully: 6957' MD Marcellus POE: 7040' MD Projected MD at TD: 16920'</p>