

NORTHEAST NATURAL ENERGY, LLC

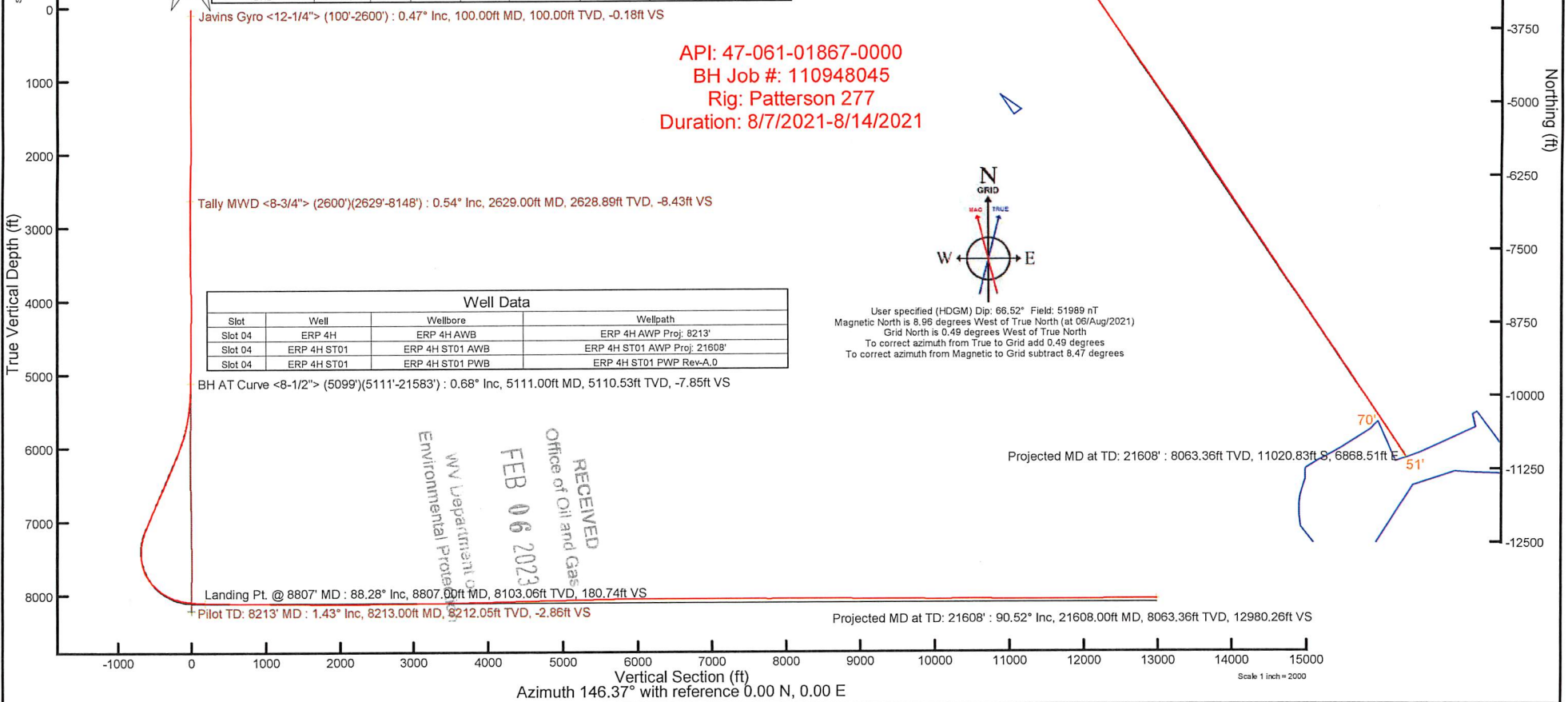
Location: Monongalia County, WV
 Field: Monongalia
 Facility: ERP Pad

Slot: Slot 04
 Well: ERP 4H ST01
 Wellbore: ERP 4H ST01 PWB

Plot reference wellpath is ERP 4H ST01 PWP Rev-A.0	Grid System: NAD83 / Lambert West Virginia SP, Northern Zone (4701), US feet
True vertical depths are referenced to Patterson 277 (RKB)	North Reference: Grid north
Reference wellpath measured depths are referenced to Patterson 277 (RKB)	Scale: True distance
Patterson 277 (RKB) to Mean Sea Level: 1399 feet	Coordinates are in feet referenced to Slot
Mean Sea Level to Ground level (At Slot: Slot 04): -1338 feet	Depths are in feet
Offset wellpath MDs are referenced to each path's default MD datum	Created by: edsaiyar on 2021-08-18; Database: WA_MPL_EASTERUS_DeM

Location Information					
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
ERP Pad	1750811.960	428438.070	39°40'25.3685"N	80°16'24.2106"W	
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Longitude
Slot 04	13.17	15.05	1750827.010	428451.240	39°40'25.4999"N 80°16'24.0196"W
Patterson 277 (RKB) to Ground level (At Slot: Slot 04): 28ft					
Mean Sea Level to Ground level (At Slot: Slot 04): -1338ft					
Patterson 277 (RKB) to Mean Sea Level: 1366ft					

Well Profile Data								
Design Comment	MD (ft)	Inc (")	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (*/100ft)	VS (ft)
Tie On	5099.00	0.580	321.850	5098.53	5.65	-5.44	0.03	-7.72
Survey	5194.00	0.620	302.650	5193.53	6.31	-6.17	0.21	-8.67
Sidetrack	5200.00	0.620	302.650	5199.53	6.34	-6.22	0.00	-8.73
End of 3D Arc	6155.13	24.497	306.458	6125.07	128.57	-172.25	2.50	-202.45
Curve KOP	7255.48	24.497	306.458	7126.37	399.69	-539.21	0.00	-631.42
Landing Pt.	8687.29	90.000	146.373	8110.00	-234.02	-301.10	8.00	28.10
BHL	21620.12	90.000	146.373	8110.00	-11019.38	6871.90	0.00	12980.93





Actual Wellpath Report

ERP 4H ST01 AWP Proj: 21608'

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REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Well	ERP 4H ST01
Field	Monongalia	API	47-061-01867-0000
Facility	ERP Pad	Wellbore	ERP 4H ST01 AWB
Slot	Slot 04	Sidetrack from	ERP 4H AWP Proj: 8213' at 5099.00 MD

REPORT SETUP INFORMATION

Projection System	NAD83 / Lambert West Virginia SP, Northern Zone (4701), US feet	Software System	WellArchitect® 6.0
North Reference	Grid	User	Edsaryar
Scale	0.999941	Report Generated	18/Aug/2021 at 11:04
Convergence at slot	0.49° West	Database	WA_MPL_EASTERNUS_Defn

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	13.17	15.05	1750827.01	428451.24	39°40'25.4999"N	80°16'24.0196"W
Facility Reference Pt			1750811.96	428438.07	39°40'25.3685"N	80°16'24.2106"W
Field Reference Pt			1777685.71	440640.65	39°42'28.1140"N	80°10'41.6900"W

WELLPATH DATUM

Calculation method	Minimum curvature	Patterson 277 (RKB) to Facility Vertical Datum	1366.00ft
Horizontal Reference Pt	Slot	Patterson 277 (RKB) to Mean Sea Level	1366.00ft
Vertical Reference Pt	Patterson 277 (RKB)	Patterson 277 (RKB) to Ground Level at Slot (Slot 04)	28.00ft
MD Reference Pt	Patterson 277 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	146.37°

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ERP 4H ST01 AWP Proj: 21608'
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Field	Monongalia	API	47-061-01867-0000
Facility	ERP Pad	Wellbore	ERP 4H ST01 AWB
Slot	Slot 04	Sidetrack from	ERP 4H AWP Proj: 8213' at 5099.00 MD

WELLPATH DATA (231 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]
0.00†	0.000	18.200	0.00	0.00	0.00	0.00	1750827.01	428451.24	39°40'25.4999"N	80°16'24.0196"W	0.00	0.000	0.00	0.00	0.00
28.00	0.000	18.200	28.00	0.00	0.00	0.00	1750827.01	428451.24	39°40'25.4999"N	80°16'24.0196"W	0.00	0.000	0.00	0.00	0.00
100.00	0.470	18.200	100.00	-0.18	0.28	0.09	1750827.10	428451.52	39°40'25.5027"N	80°16'24.0184"W	0.30	18.200	0.65	0.65	0.00
200.00	0.900	348.100	199.99	-1.17	1.44	0.06	1750827.07	428452.68	39°40'25.5141"N	80°16'24.0190"W	1.44	2.324	0.55	0.43	-30.10
300.00	0.820	338.700	299.98	-2.59	2.87	-0.36	1750826.65	428454.11	39°40'25.5283"N	80°16'24.0245"W	2.90	352.792	0.16	-0.08	-9.40
400.00	0.720	319.200	399.97	-3.92	4.02	-1.03	1750825.98	428455.26	39°40'25.5395"N	80°16'24.0332"W	4.15	345.563	0.28	-0.10	-19.50
500.00	0.670	317.400	499.96	-5.12	4.92	-1.84	1750825.17	428456.16	39°40'25.5484"N	80°16'24.0436"W	5.25	339.501	0.05	-0.05	-1.80
600.00	0.310	18.700	599.96	-5.86	5.61	-2.15	1750824.86	428456.85	39°40'25.5551"N	80°16'24.0477"W	6.01	339.033	0.59	-0.36	61.30
700.00	0.370	116.900	699.96	-5.74	5.72	-1.77	1750825.24	428456.96	39°40'25.5563"N	80°16'24.0429"W	5.99	342.761	0.52	0.06	98.20
800.00	0.560	99.900	799.96	-5.13	5.49	-1.01	1750826.00	428456.73	39°40'25.5541"N	80°16'24.0330"W	5.58	349.622	0.23	0.19	-17.00
900.00	0.510	87.900	899.95	-4.56	5.42	-0.08	1750826.93	428456.66	39°40'25.5535"N	80°16'24.0212"W	5.42	359.164	0.12	-0.05	-12.00
1000.00	0.510	103.000	999.95	-4.00	5.34	0.80	1750827.81	428456.58	39°40'25.5527"N	80°16'24.0099"W	5.40	8.517	0.13	0.00	15.10
1100.00	0.450	130.200	1099.95	-3.30	4.98	1.53	1750828.54	428456.22	39°40'25.5493"N	80°16'24.0005"W	5.21	17.097	0.23	-0.06	27.20
1200.00	0.460	207.500	1199.94	-2.73	4.37	1.65	1750828.66	428455.61	39°40'25.5433"N	80°16'23.9990"W	4.67	20.639	0.57	0.01	77.30
1300.00	0.510	242.900	1299.94	-2.59	3.82	1.07	1750828.08	428455.06	39°40'25.5377"N	80°16'24.0064"W	3.96	15.609	0.30	0.05	35.40
1400.00	0.380	228.200	1399.94	-2.59	3.39	0.42	1750827.43	428454.63	39°40'25.5334"N	80°16'24.0145"W	3.42	7.102	0.17	-0.13	-14.70
1500.00	0.410	229.200	1499.93	-2.50	2.94	-0.10	1750826.91	428454.18	39°40'25.5289"N	80°16'24.0211"W	2.94	358.137	0.03	0.03	1.00
1600.00	0.320	179.500	1599.93	-2.22	2.42	-0.36	1750826.65	428453.66	39°40'25.5238"N	80°16'24.0245"W	2.45	351.461	0.32	-0.09	-49.70
1700.00	0.600	45.400	1699.93	-2.09	2.51	0.01	1750827.02	428453.75	39°40'25.5247"N	80°16'24.0197"W	2.51	0.259	0.85	0.28	-134.10
1800.00	0.690	345.000	1799.93	-2.76	3.46	0.23	1750827.24	428454.70	39°40'25.5341"N	80°16'24.0170"W	3.47	3.774	0.65	0.09	-60.40
1900.00	0.780	338.700	1899.92	-3.99	4.68	-0.17	1750826.84	428455.92	39°40'25.5461"N	80°16'24.0223"W	4.68	357.860	0.12	0.09	-6.30
2000.00	0.730	315.300	1999.91	-5.28	5.76	-0.87	1750826.14	428457.00	39°40'25.5568"N	80°16'24.0313"W	5.83	351.416	0.31	-0.05	-23.40
2100.00	0.430	290.400	2099.90	-6.21	6.35	-1.67	1750825.34	428457.59	39°40'25.5625"N	80°16'24.0416"W	6.56	345.261	0.39	-0.30	-24.90
2200.00	0.160	273.600	2199.90	-6.60	6.49	-2.16	1750824.85	428457.73	39°40'25.5638"N	80°16'24.0479"W	6.84	341.577	0.28	-0.27	-16.80
2300.00	0.250	218.200	2299.90	-6.61	6.32	-2.44	1750824.57	428457.56	39°40'25.5622"N	80°16'24.0514"W	6.78	338.941	0.21	0.09	-55.40
2400.00	0.550	306.100	2399.90	-7.00	6.44	-2.96	1750824.05	428457.68	39°40'25.5632"N	80°16'24.0581"W	7.08	335.317	0.60	0.30	87.90
2500.00	0.370	301.600	2499.90	-7.74	6.89	-3.62	1750823.39	428458.13	39°40'25.5677"N	80°16'24.0666"W	7.78	332.271	0.18	-0.18	-4.50
2600.00	0.370	325.700	2599.89	-8.36	7.32	-4.08	1750822.93	428458.56	39°40'25.5719"N	80°16'24.0725"W	8.38	330.892	0.15	0.00	24.10
2629.00	0.540	66.160	2628.89	-8.43	7.46	-4.01	1750823.00	428458.70	39°40'25.5732"N	80°16'24.0716"W	8.46	331.756	2.44	0.59	346.41
2724.00	0.820	57.450	2723.89	-8.34	8.00	-3.02	1750823.99	428459.24	39°40'25.5787"N	80°16'24.0591"W	8.56	339.307	0.31	0.29	-9.17

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Actual Wellpath Report

ERP 4H ST01 AWP Proj: 21608'
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Operator	NORTHEAST NATURAL ENERGY, LLC	Well	ERP 4H ST01
Field	Monongalia	API	47-061-01867-0000
Facility	ERP Pad	Wellbore	ERP 4H ST01 AWB
Slot	Slot 04	Sidetrack from	ERP 4H AWP Proj: 8213' at 5099.00 MD

WELLPATH DATA (231 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]
2822.00	1.030	49.970	2821.87	-8.42	8.95	-1.76	1750825.25	428460.19	39°40'25.5882"N	80°16'24.0430"W	9.12	348.887	0.25	0.21	-7.63
2917.00	0.540	290.040	2916.87	-8.88	9.65	-1.52	1750825.49	428460.89	39°40'25.5951"N	80°16'24.0401"W	9.77	351.024	1.45	-0.52	-126.24
3011.00	1.010	264.180	3010.86	-9.62	9.72	-2.76	1750824.25	428460.96	39°40'25.5957"N	80°16'24.0560"W	10.10	344.119	0.61	0.50	-27.51
3105.00	0.840	265.520	3104.85	-10.34	9.58	-4.28	1750822.73	428460.82	39°40'25.5942"N	80°16'24.0753"W	10.49	335.947	0.18	-0.18	1.43
3200.00	1.060	268.430	3199.84	-11.15	9.50	-5.85	1750821.16	428460.74	39°40'25.5933"N	80°16'24.0954"W	11.16	328.386	0.24	0.23	3.06
3294.00	0.900	252.820	3293.82	-11.82	9.26	-7.42	1750819.59	428460.50	39°40'25.5908"N	80°16'24.1155"W	11.87	321.282	0.33	-0.17	-16.61
3389.00	1.060	257.440	3388.81	-12.35	8.85	-8.99	1750818.02	428460.09	39°40'25.5866"N	80°16'24.1356"W	12.62	314.533	0.19	0.17	4.86
3484.00	1.390	187.940	3483.79	-11.80	7.52	-10.01	1750817.00	428458.75	39°40'25.5733"N	80°16'24.1484"W	12.52	306.898	1.50	0.35	-73.16
3579.00	2.010	160.010	3578.75	-9.32	4.81	-9.60	1750817.41	428456.05	39°40'25.5466"N	80°16'24.1429"W	10.74	296.606	1.07	0.65	-29.40
3673.00	2.240	152.900	3672.69	-5.89	1.62	-8.20	1750818.81	428452.86	39°40'25.5152"N	80°16'24.1246"W	8.36	281.203	0.37	0.24	-7.56
3768.00	1.370	134.930	3767.64	-2.94	-0.83	-6.55	1750820.46	428450.41	39°40'25.4911"N	80°16'24.1032"W	6.60	262.770	1.08	-0.92	-18.92
3862.00	1.520	138.560	3861.61	-0.60	-2.56	-4.93	1750822.08	428448.68	39°40'25.4742"N	80°16'24.0823"W	5.55	242.562	0.19	0.16	3.86
3957.00	0.760	74.420	3956.59	0.84	-3.33	-3.49	1750823.52	428447.91	39°40'25.4666"N	80°16'24.0638"W	4.83	226.290	1.44	-0.80	-67.52
4052.00	0.620	57.000	4051.58	1.05	-2.89	-2.45	1750824.56	428448.35	39°40'25.4712"N	80°16'24.0506"W	3.79	220.337	0.26	-0.15	-18.34
4146.00	0.350	41.450	4145.58	0.98	-2.39	-1.83	1750825.18	428448.85	39°40'25.4761"N	80°16'24.0428"W	3.01	217.458	0.32	-0.29	-16.54
4241.00	0.410	14.980	4240.58	0.68	-1.85	-1.55	1750825.46	428449.39	39°40'25.4815"N	80°16'24.0392"W	2.41	220.064	0.19	0.06	-27.86
4336.00	0.520	354.040	4335.58	0.07	-1.09	-1.51	1750825.50	428450.15	39°40'25.4890"N	80°16'24.0388"W	1.86	234.181	0.21	0.12	-22.04
4431.00	0.540	355.510	4430.57	-0.70	-0.22	-1.59	1750825.42	428451.02	39°40'25.4976"N	80°16'24.0399"W	1.60	262.297	0.03	0.02	1.55
4525.00	0.580	347.820	4524.57	-1.53	0.69	-1.73	1750825.28	428451.93	39°40'25.5066"N	80°16'24.0417"W	1.86	291.842	0.09	0.04	-8.18
4624.00	0.680	318.010	4623.56	-2.58	1.62	-2.22	1750824.79	428452.86	39°40'25.5157"N	80°16'24.0482"W	2.75	306.036	0.34	0.10	-30.11
4719.00	0.460	344.650	4718.56	-3.50	2.40	-2.70	1750824.31	428453.64	39°40'25.5234"N	80°16'24.0544"W	3.62	311.667	0.36	-0.23	28.04
4814.00	0.820	308.510	4813.55	-4.51	3.20	-3.34	1750823.68	428454.44	39°40'25.5312"N	80°16'24.0626"W	4.62	313.778	0.55	0.38	-38.04
4908.00	0.650	321.780	4907.54	-5.68	4.03	-4.19	1750822.82	428455.27	39°40'25.5394"N	80°16'24.0736"W	5.82	313.901	0.25	-0.18	14.12
5004.00	0.610	322.990	5003.54	-6.73	4.87	-4.84	1750822.17	428456.11	39°40'25.5476"N	80°16'24.0819"W	6.86	315.198	0.04	-0.04	1.26
5099.00	0.580	321.850	5098.53	-7.72	5.65	-5.44	1750821.57	428456.89	39°40'25.5553"N	80°16'24.0897"W	7.84	316.106	0.03	-0.03	-1.20
5111.00	0.680	314.480	5110.53	-7.85	5.75	-5.53	1750821.48	428456.99	39°40'25.5562"N	80°16'24.0909"W	7.97	316.135	1.07	0.83	-61.42
5206.00	2.700	309.050	5205.49	-10.53	7.55	-7.67	1750819.34	428458.79	39°40'25.5739"N	80°16'24.1184"W	10.76	314.579	2.13	2.13	-5.72
5301.00	3.270	303.850	5300.36	-15.17	10.47	-11.65	1750815.36	428461.71	39°40'25.6024"N	80°16'24.1698"W	15.67	311.945	0.66	0.60	-5.47
5395.00	5.190	305.290	5394.10	-21.62	14.42	-17.35	1750809.66	428465.66	39°40'25.6409"N	80°16'24.2430"W	22.56	309.734	2.05	2.04	1.53
5489.00	6.980	305.500	5487.56	-30.92	20.20	-25.47	1750801.54	428471.43	39°40'25.6973"N	80°16'24.3475"W	32.51	308.410	1.90	1.90	0.22

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Slot	Slot 04	Sidetrack from	ERP 4H AWP Proj: 8213' at 5099.00 MD

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5584.00	9.720	304.480	5581.55	-43.76	28.09	-36.78	1750790.23	428479.33	39°40'25.7744"N	80°16'24.4931"W	46.28	307.367	2.89	2.88	-1.07	
5679.00	11.850	304.590	5674.86	-60.26	38.17	-51.43	1750775.59	428489.41	39°40'25.8727"N	80°16'24.6814"W	64.04	306.582	2.24	2.24	0.12	
5774.00	13.830	304.180	5767.48	-79.83	50.09	-68.85	1750758.16	428501.32	39°40'25.9890"N	80°16'24.9056"W	85.14	306.034	2.09	2.08	-0.43	
5868.00	17.060	304.730	5858.08	-103.06	64.26	-89.48	1750737.53	428515.49	39°40'26.1273"N	80°16'25.1710"W	110.16	305.682	3.44	3.44	0.59	
5963.00	20.780	304.670	5947.93	-131.68	81.79	-114.80	1750712.21	428533.02	39°40'26.2984"N	80°16'25.4968"W	140.96	305.466	3.92	3.92	-0.06	
6057.00	22.260	304.960	6035.37	-163.75	101.48	-143.11	1750683.91	428552.71	39°40'26.4906"N	80°16'25.8609"W	175.44	305.339	1.58	1.57	0.31	
6153.00	24.330	307.220	6123.54	-199.37	123.86	-173.77	1750653.26	428575.09	39°40'26.7092"N	80°16'26.2554"W	213.39	305.481	2.35	2.16	2.35	
6247.00	23.410	306.990	6209.50	-235.27	146.81	-204.10	1750622.92	428598.04	39°40'26.9334"N	80°16'26.6459"W	251.42	305.727	0.98	-0.98	-0.24	
6342.00	23.080	307.380	6296.79	-270.68	169.47	-233.97	1750593.05	428620.70	39°40'27.1547"N	80°16'27.0304"W	288.90	305.916	0.38	-0.35	0.41	
6437.00	24.870	308.450	6383.59	-307.30	193.20	-264.42	1750562.61	428644.43	39°40'27.3867"N	80°16'27.4223"W	327.48	306.154	1.94	1.88	1.13	
6531.00	25.260	307.510	6468.74	-345.09	217.70	-295.80	1750531.22	428668.93	39°40'27.6261"N	80°16'27.8265"W	367.28	306.352	0.59	0.41	-1.00	
6626.00	25.130	307.330	6554.70	-383.34	242.28	-327.92	1750499.11	428693.50	39°40'27.8663"N	80°16'28.2399"W	407.71	306.458	0.16	-0.14	-0.19	
6721.00	24.920	307.810	6640.78	-421.38	266.78	-359.78	1750467.26	428718.00	39°40'28.1057"N	80°16'28.6500"W	447.89	306.557	0.31	-0.22	0.51	
6816.00	24.860	308.040	6726.96	-459.31	291.35	-391.32	1750435.72	428742.57	39°40'28.3459"N	80°16'29.0560"W	487.87	306.669	0.12	-0.06	0.24	
6911.00	24.450	307.420	6813.30	-496.86	315.60	-422.66	1750404.38	428766.82	39°40'28.5829"N	80°16'29.4595"W	527.49	306.749	0.51	-0.43	-0.65	
7006.00	24.080	308.050	6899.91	-533.85	339.50	-453.53	1750373.50	428790.72	39°40'28.8163"N	80°16'29.8570"W	566.52	306.817	0.48	-0.39	0.66	
7102.00	23.780	308.060	6987.66	-570.82	363.50	-484.19	1750342.84	428814.72	39°40'29.0509"N	80°16'30.2518"W	605.45	306.897	0.31	-0.31	0.01	
7196.00	23.610	307.900	7073.73	-606.67	386.75	-513.97	1750313.07	428837.96	39°40'29.2781"N	80°16'30.6352"W	643.22	306.960	0.19	-0.18	-0.17	
7291.00	20.160	304.860	7161.87	-639.95	407.80	-542.42	1750284.62	428859.01	39°40'29.4837"N	80°16'31.0014"W	678.62	306.936	3.82	-3.63	-3.20	
7385.00	15.390	292.370	7251.39	-665.39	421.81	-567.27	1750259.77	428873.03	39°40'29.6202"N	80°16'31.3207"W	706.91	306.634	6.47	-5.07	-13.29	
7480.00	10.720	270.830	7343.97	-680.86	426.75	-587.79	1750239.26	428877.96	39°40'29.6671"N	80°16'31.5836"W	726.37	305.980	7.02	-4.92	-22.67	
7575.00	9.180	227.340	7437.66	-684.67	421.73	-602.22	1750224.83	428872.95	39°40'29.6164"N	80°16'31.7676"W	735.20	305.004	7.87	-1.62	-45.78	
7671.00	12.300	192.940	7532.06	-676.43	406.56	-610.15	1750216.90	428857.77	39°40'29.4657"N	80°16'31.8673"W	733.19	303.677	7.28	3.25	-35.83	
7766.00	19.300	173.870	7623.47	-655.51	381.04	-610.74	1750216.31	428832.25	39°40'29.2135"N	80°16'31.8721"W	719.85	301.960	9.08	7.37	-20.07	
7860.00	27.680	164.890	7709.64	-620.95	344.44	-603.37	1750223.67	428795.66	39°40'28.8524"N	80°16'31.7738"W	694.76	299.720	9.67	8.91	-9.55	
7955.00	36.360	159.260	7790.12	-572.48	296.70	-587.61	1750239.43	428747.92	39°40'28.3819"N	80°16'31.5670"W	658.27	296.790	9.65	9.14	-5.93	
8050.00	44.080	155.450	7862.62	-512.30	240.21	-563.87	1750263.17	428691.44	39°40'27.8257"N	80°16'31.2572"W	612.91	293.074	8.53	8.13	-4.01	
8145.00	51.470	154.660	7926.42	-442.80	176.48	-534.20	1750292.84	428627.71	39°40'27.1985"N	80°16'30.8706"W	562.60	288.282	7.80	7.78	-0.83	
8240.00	59.260	152.970	7980.37	-365.35	106.42	-499.69	1750327.35	428557.65	39°40'26.5090"N	80°16'30.4216"W	510.89	282.023	8.33	8.20	-1.78	
8335.00	66.020	148.220	8024.03	-281.28	33.04	-458.21	1750368.83	428484.28	39°40'25.7874"N	80°16'29.8830"W	459.40	274.125	8.39	7.12	-5.00	

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Actual Wellpath Report

ERP 4H ST01 AWP Proj: 21608'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	ERP 4H ST01
Field	Monongalia	API	47-061-01867-0000
Facility	ERP Pad	Wellbore	ERP 4H ST01 AWB
Slot	Slot 04	Sidetrack from	ERP 4H AWP Proj: 8213' at 5099.00 MD

WELLPATH DATA (231 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]	
8428.00	73.560	149.280	8056.13	-194.15	-41.52	-412.98	1750414.05	428409.72	39°40'25.0544"N	80°16'29.2964"W	415.07	264.258	8.18	8.11	1.14	
8522.00	80.570	148.960	8077.16	-102.70	-120.10	-365.99	1750461.04	428331.15	39°40'24.2818"N	80°16'28.6868"W	385.19	251.832	7.46	7.46	-0.34	
8617.00	83.930	149.310	8089.97	-8.69	-200.89	-317.71	1750509.32	428250.36	39°40'23.4875"N	80°16'28.0604"W	375.89	237.694	3.56	3.54	0.37	
8712.00	85.990	147.560	8098.32	85.88	-281.51	-268.17	1750558.85	428169.74	39°40'22.6950"N	80°16'27.4181"W	388.80	223.610	2.84	2.17	-1.84	
8807.00	88.280	147.070	8103.06	180.74	-361.37	-216.94	1750610.09	428089.90	39°40'21.9102"N	80°16'26.7541"W	421.48	210.978	2.46	2.41	-0.52	
8903.00	88.400	147.700	8105.85	276.68	-442.19	-165.22	1750661.80	428009.07	39°40'21.1159"N	80°16'26.0837"W	472.05	200.487	0.67	0.13	0.66	
8997.00	88.740	146.680	8108.19	370.64	-521.17	-114.30	1750712.72	427930.10	39°40'20.3397"N	80°16'25.4239"W	533.56	192.370	1.14	0.36	-1.09	
9092.00	89.720	147.960	8109.47	465.62	-601.12	-63.01	1750764.00	427850.15	39°40'19.5539"N	80°16'24.7592"W	604.42	185.984	1.70	1.03	1.35	
9187.00	89.350	147.140	8110.24	560.59	-681.29	-12.04	1750814.97	427770.00	39°40'18.7660"N	80°16'24.0985"W	681.39	181.012	0.95	-0.39	-0.86	
9282.00	88.860	147.140	8111.72	655.57	-761.08	39.50	1750866.51	427690.21	39°40'17.9819"N	80°16'23.4306"W	762.10	177.029	0.52	-0.52	0.00	
9376.00	89.170	146.770	8113.34	749.55	-839.86	90.75	1750917.76	427611.43	39°40'17.2077"N	80°16'22.7666"W	844.75	173.833	0.51	0.33	-0.39	
9470.00	89.260	147.360	8114.63	843.54	-918.74	141.85	1750968.85	427532.55	39°40'16.4324"N	80°16'22.1044"W	929.63	171.223	0.63	0.10	0.63	
9564.00	89.600	147.250	8115.56	937.52	-997.85	192.63	1751019.62	427453.45	39°40'15.6550"N	80°16'21.4464"W	1016.27	169.074	0.38	0.36	-0.12	
9659.00	89.630	147.810	8116.20	1032.50	-1077.99	243.63	1751070.62	427373.31	39°40'14.8673"N	80°16'20.7854"W	1105.18	167.265	0.59	0.03	0.59	
9752.00	89.420	146.890	8116.97	1125.48	-1156.29	293.80	1751120.79	427295.02	39°40'14.0978"N	80°16'20.1352"W	1193.04	165.744	1.01	-0.23	-0.99	
9847.00	89.600	147.220	8117.78	1220.47	-1236.01	345.46	1751172.45	427215.30	39°40'13.3143"N	80°16'19.4658"W	1283.38	164.385	0.40	0.19	0.35	
9942.00	89.380	146.860	8118.63	1315.46	-1315.72	397.14	1751224.13	427135.60	39°40'12.5310"N	80°16'18.7961"W	1374.35	163.204	0.44	-0.23	-0.38	
10037.00	89.170	147.190	8119.83	1410.45	-1395.41	448.84	1751275.83	427055.91	39°40'11.7479"N	80°16'18.1262"W	1465.82	162.169	0.41	-0.22	0.35	
10132.00	88.890	146.480	8121.44	1505.43	-1474.92	500.81	1751327.79	426976.41	39°40'10.9665"N	80°16'17.4530"W	1557.63	161.245	0.80	-0.29	-0.75	
10227.00	89.140	146.910	8123.07	1600.41	-1554.31	552.96	1751379.94	426897.03	39°40'10.1864"N	80°16'16.7773"W	1649.74	160.416	0.52	0.26	0.45	
10321.00	89.450	147.030	8124.23	1694.40	-1633.11	604.20	1751431.17	426818.23	39°40'9.4120"N	80°16'16.1135"W	1741.29	159.697	0.35	0.33	0.13	
10416.00	89.720	146.270	8124.92	1789.40	-1712.46	656.42	1751483.39	426738.88	39°40'8.6322"N	80°16'15.4370"W	1833.96	159.027	0.85	0.28	-0.80	
10510.00	89.690	146.120	8125.40	1883.39	-1790.57	708.72	1751535.69	426660.78	39°40'7.8647"N	80°16'14.7596"W	1925.73	158.406	0.16	-0.03	-0.16	
10604.00	90.060	146.040	8125.61	1977.39	-1868.57	761.17	1751588.14	426582.78	39°40'7.0983"N	80°16'14.0803"W	2017.66	157.836	0.40	0.39	-0.09	
10699.00	89.910	146.180	8125.63	2072.39	-1947.43	814.15	1751641.11	426503.92	39°40'6.3235"N	80°16'13.3943"W	2110.77	157.312	0.22	-0.16	0.15	
10794.00	90.120	146.180	8125.61	2167.39	-2026.36	867.02	1751693.98	426425.00	39°40'5.5480"N	80°16'12.7095"W	2204.05	156.835	0.22	0.22	0.00	
10889.00	90.460	146.020	8125.13	2262.39	-2105.21	920.01	1751746.96	426346.16	39°40'4.7732"N	80°16'12.0233"W	2297.46	156.394	0.40	0.36	-0.17	
10984.00	90.980	146.250	8123.93	2357.38	-2184.09	972.94	1751799.89	426267.29	39°40'3.9982"N	80°16'11.3378"W	2390.99	155.989	0.60	0.55	0.24	
11078.00	90.830	146.110	8122.45	2451.37	-2262.17	1025.25	1751852.20	426189.21	39°40'3.2310"N	80°16'10.6603"W	2483.66	155.619	0.22	-0.16	-0.15	
11172.00	90.890	145.750	8121.04	2545.35	-2340.03	1077.91	1751904.85	426111.36	39°40'2.4660"N	80°16'9.9785"W	2576.35	155.267	0.39	0.06	-0.38	

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Actual Wellpath Report

ERP 4H ST01 AWP Proj: 21608'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	ERP 4H ST01
Field	Monongalia	API	47-061-01867-0000
Facility	ERP Pad	Wellbore	ERP 4H ST01 AWB
Slot	Slot 04	Sidetrack from	ERP 4H AWP Proj: 8213' at 5099.00 MD

WELLPATH DATA (231 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]	
11266.00	90.800	145.810	8119.65	2639.34	-2417.75	1130.76	1751957.70	426033.64	39°40'1.7024"N	80°16'9.2940"W	2669.10	154.935	0.12	-0.10	0.06	
11360.00	89.940	145.180	8119.04	2733.32	-2495.21	1184.01	1752010.95	425956.19	39°40'0.9414"N	80°16'8.6047"W	2761.87	154.615	1.13	-0.91	-0.67	
11455.00	90.460	145.800	8118.71	2828.31	-2573.49	1237.83	1752064.77	425877.91	39°40'0.1723"N	80°16'7.9079"W	2855.71	154.313	0.85	0.55	0.65	
11549.00	90.710	145.600	8117.75	2922.30	-2651.14	1290.80	1752117.73	425800.27	39°39'59.4095"N	80°16'7.2221"W	2948.68	154.039	0.34	0.27	-0.21	
11643.00	90.520	146.070	8116.74	3016.29	-2728.91	1343.58	1752170.51	425722.50	39°39'58.6453"N	80°16'6.5386"W	3041.74	153.787	0.54	-0.20	0.50	
11737.00	90.460	145.630	8115.94	3110.28	-2806.70	1396.35	1752223.28	425644.71	39°39'57.8810"N	80°16'5.8554"W	3134.86	153.549	0.47	-0.06	-0.47	
11832.00	90.890	146.080	8114.82	3205.27	-2885.32	1449.67	1752276.59	425566.10	39°39'57.1086"N	80°16'5.1650"W	3229.02	153.324	0.66	0.45	0.47	
11926.00	90.830	145.880	8113.41	3299.26	-2963.22	1502.25	1752329.17	425488.20	39°39'56.3432"N	80°16'4.4840"W	3322.26	153.116	0.22	-0.06	-0.21	
12021.00	91.260	145.830	8111.68	3394.24	-3041.83	1555.57	1752382.48	425409.60	39°39'55.5708"N	80°16'3.7937"W	3416.51	152.915	0.46	0.45	-0.05	
12115.00	91.450	145.770	8109.45	3488.21	-3119.55	1608.39	1752435.30	425331.88	39°39'54.8072"N	80°16'3.1098"W	3509.78	152.725	0.21	0.20	-0.06	
12210.00	91.510	145.620	8107.00	3583.17	-3198.00	1661.91	1752488.82	425253.43	39°39'54.0364"N	80°16'2.4168"W	3604.05	152.540	0.17	0.06	-0.16	
12304.00	91.420	145.890	8104.60	3677.13	-3275.68	1714.79	1752541.70	425175.76	39°39'53.2732"N	80°16'1.7322"W	3697.38	152.368	0.30	-0.10	0.29	
12399.00	91.050	145.900	8102.55	3772.11	-3354.32	1768.05	1752594.95	425097.12	39°39'52.5005"N	80°16'1.0426"W	3791.76	152.206	0.39	-0.39	0.01	
12493.00	90.950	145.760	8100.91	3866.09	-3432.08	1820.83	1752647.73	425019.37	39°39'51.7365"N	80°16'0.3592"W	3885.18	152.053	0.18	-0.11	-0.15	
12588.00	90.950	145.780	8099.33	3961.07	-3510.62	1874.27	1752701.16	424940.84	39°39'50.9649"N	80°15'59.6674"W	3979.61	151.903	0.02	0.00	0.02	
12683.00	91.600	146.030	8097.22	4056.04	-3589.27	1927.51	1752754.40	424862.19	39°39'50.1921"N	80°15'58.9780"W	4074.08	151.763	0.73	0.68	0.26	
12777.00	91.290	145.430	8094.85	4150.01	-3666.92	1980.42	1752807.31	424784.54	39°39'49.4291"N	80°15'58.2930"W	4167.54	151.628	0.72	-0.33	-0.64	
12871.00	91.510	145.710	8092.55	4243.97	-3744.43	2033.55	1752860.44	424707.03	39°39'48.6676"N	80°15'57.6051"W	4261.00	151.494	0.38	0.23	0.30	
12966.00	91.260	145.890	8090.26	4338.94	-3822.98	2086.93	1752913.82	424628.49	39°39'47.8958"N	80°15'56.9140"W	4355.51	151.370	0.32	-0.26	0.19	
13061.00	91.510	145.780	8087.96	4433.91	-3901.57	2140.27	1752967.15	424549.91	39°39'47.1237"N	80°15'56.2235"W	4450.05	151.252	0.29	0.26	-0.12	
13156.00	90.950	145.710	8085.92	4528.88	-3980.07	2193.73	1753020.61	424471.41	39°39'46.3524"N	80°15'55.5313"W	4544.60	151.137	0.59	-0.59	-0.07	
13251.00	91.050	145.420	8084.26	4623.85	-4058.41	2247.44	1753074.31	424393.08	39°39'45.5827"N	80°15'54.8360"W	4639.15	151.023	0.32	0.11	-0.31	
13345.00	90.980	145.690	8082.60	4717.83	-4135.92	2300.60	1753127.47	424315.58	39°39'44.8213"N	80°15'54.1479"W	4732.71	150.915	0.30	-0.07	0.29	
13440.00	91.110	145.760	8080.87	4812.81	-4214.41	2354.09	1753180.96	424237.09	39°39'44.0501"N	80°15'53.4554"W	4827.31	150.813	0.16	0.14	0.07	
13534.00	91.020	146.140	8079.12	4906.79	-4292.28	2406.71	1753233.58	424159.23	39°39'43.2850"N	80°15'52.7740"W	4920.97	150.720	0.42	-0.10	0.40	
13629.00	91.050	145.730	8077.40	5001.77	-4370.96	2459.92	1753286.78	424080.55	39°39'42.5118"N	80°15'52.0852"W	5015.63	150.630	0.43	0.03	-0.43	
13724.00	91.110	145.670	8075.61	5096.75	-4449.43	2513.44	1753340.30	424002.08	39°39'41.7409"N	80°15'51.3923"W	5110.26	150.538	0.09	0.06	-0.06	
13819.00	91.200	145.800	8073.70	5191.72	-4527.92	2566.92	1753393.77	423923.59	39°39'40.9696"N	80°15'50.7000"W	5204.92	150.451	0.17	0.09	0.14	
13914.00	90.890	145.740	8071.96	5286.70	-4606.45	2620.35	1753447.20	423845.07	39°39'40.1980"N	80°15'50.0082"W	5299.59	150.367	0.33	-0.33	-0.06	
14009.00	91.170	145.940	8070.26	5381.68	-4685.05	2673.68	1753500.53	423766.47	39°39'39.4258"N	80°15'49.3178"W	5394.28	150.287	0.36	0.29	0.21	

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Actual Wellpath Report

ERP 4H ST01 AWP Proj: 21608'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	ERP 4H ST01
Field	Monongalia	API	47-061-01867-0000
Facility	ERP Pad	Wellbore	ERP 4H ST01 AWB
Slot	Slot 04	Sidetrack from	ERP 4H AWP Proj: 8213' at 5099.00 MD

WELLPATH DATA (231 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]	
14103.00	91.480	145.830	8068.08	5475.65	-4762.85	2726.39	1753553.24	423688.68	39°39'38.6613"N	80°15'48.6354"W	5487.99	150.212	0.35	0.33	-0.12	
14197.00	91.290	146.140	8065.81	5569.62	-4840.75	2778.96	1753605.80	423610.79	39°39'37.8959"N	80°15'47.9548"W	5581.71	150.141	0.39	-0.20	0.33	
14292.00	91.420	145.700	8063.56	5664.59	-4919.41	2832.18	1753659.02	423532.13	39°39'37.1230"N	80°15'47.2658"W	5676.43	150.070	0.48	0.14	-0.46	
14386.00	90.890	145.630	8061.67	5758.57	-4997.01	2885.19	1753712.02	423454.53	39°39'36.3606"N	80°15'46.5796"W	5770.13	149.999	0.57	-0.56	-0.07	
14480.00	90.460	145.730	8060.56	5852.55	-5074.64	2938.18	1753765.01	423376.91	39°39'35.5978"N	80°15'45.8936"W	5863.86	149.929	0.47	-0.46	0.11	
14574.00	90.460	145.470	8059.81	5946.54	-5152.20	2991.29	1753818.11	423299.35	39°39'34.8358"N	80°15'45.2062"W	5957.60	149.861	0.28	0.00	-0.28	
14669.00	90.400	145.500	8059.09	6041.53	-5230.48	3045.11	1753871.94	423221.08	39°39'34.0668"N	80°15'44.5094"W	6052.32	149.793	0.07	-0.06	0.03	
14763.00	90.460	146.470	8058.39	6135.52	-5308.39	3097.70	1753924.52	423143.17	39°39'33.3012"N	80°15'43.8287"W	6146.11	149.734	1.03	0.06	1.03	
14858.00	90.520	146.500	8057.58	6230.52	-5387.59	3150.15	1753976.97	423063.98	39°39'32.5229"N	80°15'43.1494"W	6240.96	149.685	0.07	0.06	0.03	
14953.00	89.850	146.220	8057.27	6325.52	-5466.68	3202.78	1754029.59	422984.89	39°39'31.7457"N	80°15'42.4680"W	6335.80	149.635	0.76	-0.71	-0.29	
15048.00	89.480	146.260	8057.83	6420.51	-5545.66	3255.57	1754082.38	422905.92	39°39'30.9696"N	80°15'41.7844"W	6430.64	149.585	0.39	-0.39	0.04	
15143.00	89.780	146.770	8058.44	6515.51	-5624.89	3307.98	1754134.79	422826.69	39°39'30.1910"N	80°15'41.1057"W	6525.50	149.540	0.62	0.32	0.54	
15237.00	89.570	146.570	8058.97	6609.51	-5703.43	3359.63	1754186.43	422748.16	39°39'29.4191"N	80°15'40.4368"W	6619.38	149.500	0.31	-0.22	-0.21	
15332.00	90.030	146.530	8059.30	6704.51	-5782.69	3411.99	1754238.79	422668.90	39°39'28.6402"N	80°15'39.7587"W	6714.26	149.458	0.49	0.48	-0.04	
15427.00	89.970	146.400	8059.30	6799.51	-5861.88	3464.47	1754291.27	422589.72	39°39'27.8620"N	80°15'39.0791"W	6809.13	149.416	0.15	-0.06	-0.14	
15522.00	90.090	146.390	8059.25	6894.51	-5941.00	3517.05	1754343.85	422510.60	39°39'27.0845"N	80°15'38.3983"W	6904.00	149.375	0.13	0.13	-0.01	
15617.00	89.940	146.510	8059.23	6989.51	-6020.18	3569.56	1754396.35	422431.43	39°39'26.3064"N	80°15'37.7185"W	6998.88	149.335	0.20	-0.16	0.13	
15711.00	89.850	146.360	8059.40	7083.51	-6098.50	3621.53	1754448.32	422353.11	39°39'25.5367"N	80°15'37.0455"W	7092.76	149.297	0.19	-0.10	-0.16	
15807.00	89.720	146.210	8059.76	7179.51	-6178.36	3674.81	1754501.60	422273.26	39°39'24.7520"N	80°15'36.3556"W	7188.63	149.256	0.21	-0.14	-0.16	
15901.00	89.480	146.750	8060.42	7273.50	-6256.72	3726.72	1754553.50	422194.90	39°39'23.9819"N	80°15'35.6835"W	7282.51	149.220	0.63	-0.26	0.57	
15995.00	89.540	146.530	8061.22	7367.50	-6335.23	3778.41	1754605.19	422116.40	39°39'23.2104"N	80°15'35.0141"W	7376.42	149.188	0.24	0.06	-0.23	
16090.00	89.380	146.640	8062.12	7462.49	-6414.52	3830.72	1754657.50	422037.11	39°39'22.4311"N	80°15'34.3367"W	7471.32	149.155	0.20	-0.17	0.12	
16185.00	89.970	146.700	8062.66	7557.49	-6493.90	3882.92	1754709.70	421957.74	39°39'21.6511"N	80°15'33.6608"W	7566.22	149.123	0.62	0.62	0.06	
16280.00	89.850	146.800	8062.80	7652.49	-6573.34	3935.01	1754761.78	421878.30	39°39'20.8703"N	80°15'32.9862"W	7661.14	149.094	0.16	-0.13	0.11	
16375.00	89.850	146.680	8063.05	7747.49	-6652.78	3987.11	1754813.88	421798.86	39°39'20.0896"N	80°15'32.3115"W	7756.06	149.065	0.13	0.00	-0.13	
16469.00	90.280	146.870	8062.95	7841.48	-6731.41	4038.62	1754865.38	421720.24	39°39'19.3168"N	80°15'31.6445"W	7849.99	149.038	0.50	0.46	0.20	
16564.00	90.400	146.510	8062.38	7936.48	-6810.80	4090.79	1754917.55	421640.85	39°39'18.5366"N	80°15'30.9689"W	7944.91	149.010	0.40	0.13	-0.38	
16659.00	90.310	146.740	8061.79	8031.48	-6890.14	4143.05	1754969.80	421561.52	39°39'17.7569"N	80°15'30.2922"W	8039.83	148.981	0.26	-0.09	0.24	
16753.00	90.770	146.630	8060.91	8125.47	-6968.69	4194.67	1755021.43	421482.98	39°39'16.9850"N	80°15'29.6237"W	8133.75	148.955	0.50	0.49	-0.12	
16847.00	90.710	146.650	8059.69	8219.46	-7047.19	4246.36	1755073.11	421404.48	39°39'16.2134"N	80°15'28.9544"W	8227.66	148.928	0.07	-0.06	0.02	

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ERP 4H ST01 AWP Proj: 21608'

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	ERP 4H ST01
Field	Monongalia	API	47-061-01867-0000
Facility	ERP Pad	Wellbore	ERP 4H ST01 AWB
Slot	Slot 04	Sidetrack from	ERP 4H AWP Proj: 8213' at 5099.00 MD

WELLPATH DATA (231 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]
16942.00	90.180	146.900	8058.96	8314.46	-7126.66	4298.41	1755125.16	421325.02	39°39'15.4324"N	80°15'28.2804"W	8322.59	148.904	0.62	-0.56	0.26
17036.00	89.910	146.210	8058.88	8408.46	-7205.09	4350.22	1755176.96	421246.59	39°39'14.6616"N	80°15'27.6096"W	8416.52	148.878	0.79	-0.29	-0.73
17131.00	89.660	146.500	8059.24	8503.45	-7284.18	4402.85	1755229.59	421167.51	39°39'13.8844"N	80°15'26.9281"W	8511.42	148.850	0.40	-0.26	0.31
17225.00	89.690	146.460	8059.77	8597.45	-7362.54	4454.76	1755281.50	421089.15	39°39'13.1143"N	80°15'26.2561"W	8605.34	148.824	0.05	0.03	-0.04
17320.00	89.630	146.660	8060.34	8692.45	-7441.82	4507.11	1755333.84	421009.88	39°39'12.3353"N	80°15'25.5782"W	8700.27	148.799	0.22	-0.06	0.21
17415.00	89.320	146.360	8061.21	8787.45	-7521.04	4559.53	1755386.26	420930.66	39°39'11.5567"N	80°15'24.8995"W	8795.19	148.774	0.45	-0.33	-0.32
17510.00	88.860	146.560	8062.72	8882.43	-7600.21	4612.01	1755438.74	420851.49	39°39'10.7786"N	80°15'24.2200"W	8890.10	148.750	0.53	-0.48	0.21
17604.00	89.570	146.810	8064.00	8976.42	-7678.76	4663.63	1755490.36	420772.95	39°39'10.0067"N	80°15'23.5516"W	8984.03	148.728	0.80	0.76	0.27
17699.00	89.480	146.920	8064.79	9071.42	-7758.31	4715.56	1755542.28	420693.41	39°39'9.2249"N	80°15'22.8792"W	9078.98	148.708	0.15	-0.09	0.12
17793.00	90.060	146.680	8065.17	9165.41	-7836.96	4767.03	1755593.75	420614.76	39°39'8.4518"N	80°15'22.2127"W	9172.92	148.689	0.67	0.62	-0.26
17888.00	90.000	146.870	8065.12	9260.41	-7916.43	4819.08	1755645.80	420535.29	39°39'7.6708"N	80°15'21.5386"W	9267.87	148.669	0.21	-0.06	0.20
17983.00	89.940	146.690	8065.17	9355.41	-7995.91	4871.13	1755697.84	420455.82	39°39'6.8897"N	80°15'20.8647"W	9362.82	148.650	0.20	-0.06	-0.19
18077.00	89.660	146.050	8065.50	9449.41	-8074.17	4923.19	1755749.90	420377.56	39°39'6.1206"N	80°15'20.1907"W	9456.75	148.627	0.74	-0.30	-0.68
18172.00	89.350	146.700	8066.32	9544.40	-8153.27	4975.79	1755802.50	420298.46	39°39'5.3432"N	80°15'19.5097"W	9551.67	148.605	0.76	-0.33	0.68
18267.00	89.420	146.890	8067.34	9639.39	-8232.76	5027.81	1755854.52	420218.99	39°39'4.5621"N	80°15'18.8361"W	9646.62	148.587	0.21	0.07	0.20
18362.00	89.110	146.540	8068.56	9734.38	-8312.16	5079.95	1755906.65	420139.58	39°39'3.7816"N	80°15'18.1611"W	9741.56	148.569	0.49	-0.33	-0.37
18456.00	89.720	146.690	8069.52	9828.38	-8390.65	5131.67	1755958.37	420061.10	39°39'3.0103"N	80°15'17.4914"W	9835.50	148.550	0.67	0.65	0.16
18552.00	89.720	146.500	8069.98	9924.38	-8470.79	5184.52	1756011.22	419980.97	39°39'2.2227"N	80°15'16.8071"W	9931.44	148.531	0.20	0.00	-0.20
18647.00	89.690	145.910	8070.47	10019.37	-8549.74	5237.36	1756064.05	419902.02	39°39'1.4469"N	80°15'16.1231"W	10026.36	148.509	0.62	-0.03	-0.62
18742.00	90.250	146.620	8070.52	10114.37	-8628.74	5290.12	1756116.81	419823.03	39°39'0.6705"N	80°15'15.4402"W	10121.29	148.488	0.95	0.59	0.75
18837.00	90.490	146.830	8069.91	10209.37	-8708.16	5342.24	1756168.93	419743.61	39°38'59.8899"N	80°15'14.7653"W	10216.24	148.472	0.34	0.25	0.22
18932.00	90.620	147.030	8068.99	10304.36	-8787.77	5394.08	1756220.76	419664.01	39°38'59.1075"N	80°15'14.0941"W	10311.20	148.458	0.25	0.14	0.21
19027.00	89.850	146.480	8068.60	10399.36	-8867.22	5446.16	1756272.83	419584.56	39°38'58.3267"N	80°15'13.4198"W	10406.16	148.442	1.00	-0.81	-0.58
19122.00	89.910	146.390	8068.80	10494.36	-8946.38	5498.68	1756325.35	419505.41	39°38'57.5487"N	80°15'12.7399"W	10501.10	148.424	0.11	0.06	-0.09
19217.00	89.780	146.000	8069.06	10589.35	-9025.32	5551.53	1756378.21	419426.47	39°38'56.7730"N	80°15'12.0557"W	10596.03	148.404	0.43	-0.14	-0.41
19311.00	89.820	145.800	8069.38	10683.35	-9103.15	5604.23	1756430.90	419348.64	39°38'56.0081"N	80°15'11.3736"W	10689.94	148.382	0.22	0.04	-0.21
19405.00	89.690	145.700	8069.79	10777.34	-9180.85	5657.14	1756483.80	419270.95	39°38'55.2446"N	80°15'10.6890"W	10783.84	148.359	0.17	-0.14	-0.11
19500.00	89.660	146.550	8070.32	10872.34	-9259.72	5710.09	1756536.75	419192.08	39°38'54.4696"N	80°15'10.0036"W	10878.77	148.340	0.90	-0.03	0.89
19595.00	89.660	146.630	8070.89	10967.34	-9339.02	5762.40	1756589.05	419112.78	39°38'53.6902"N	80°15'9.3264"W	10973.72	148.324	0.08	0.00	0.08
19689.00	89.690	146.810	8071.42	11061.34	-9417.61	5813.98	1756640.63	419034.21	39°38'52.9179"N	80°15'8.6586"W	11067.68	148.311	0.19	0.03	0.19

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Field	Monongalia	API	47-061-01867-0000
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Slot	Slot 04	Sidetrack from	ERP 4H AWP Proj: 8213' at 5099.00 MD

WELLPATH DATA (231 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]
19783.00	89.510	145.910	8072.08	11155.33	-9495.86	5866.05	1756692.70	418955.96	39°38'52.1488"N	80°15'7.9846"W	11161.63	148.294	0.98	-0.19	-0.96
19877.00	89.910	146.520	8072.55	11249.33	-9573.99	5918.32	1756744.97	418877.84	39°38'51.3811"N	80°15'7.3080"W	11255.56	148.277	0.78	0.43	0.65
19971.00	89.880	146.770	8072.73	11343.33	-9652.50	5970.00	1756796.65	418799.32	39°38'50.6094"N	80°15'6.6389"W	11349.53	148.264	0.27	-0.03	0.27
20064.00	89.940	146.690	8072.87	11436.33	-9730.26	6021.02	1756847.66	418721.57	39°38'49.8452"N	80°15'5.9784"W	11442.49	148.251	0.11	0.06	-0.09
20159.00	89.850	146.600	8073.05	11531.33	-9809.61	6073.25	1756899.89	418642.23	39°38'49.0653"N	80°15'5.3022"W	11537.46	148.238	0.13	-0.09	-0.09
20253.00	90.060	146.700	8073.12	11625.32	-9888.13	6124.93	1756951.57	418563.71	39°38'48.2936"N	80°15'4.6332"W	11631.42	148.225	0.25	0.22	0.11
20348.00	90.340	146.710	8072.79	11720.32	-9967.54	6177.08	1757003.71	418484.31	39°38'47.5132"N	80°15'3.9580"W	11726.39	148.213	0.29	0.29	0.01
20442.00	90.250	146.740	8072.30	11814.32	-10046.13	6228.65	1757055.28	418405.73	39°38'46.7408"N	80°15'3.2903"W	11820.35	148.201	0.10	-0.10	0.03
20537.00	90.340	146.900	8071.82	11909.31	-10125.63	6280.64	1757107.27	418326.22	39°38'45.9593"N	80°15'2.6172"W	11915.32	148.190	0.19	0.09	0.17
20632.00	90.340	146.930	8071.25	12004.31	-10205.23	6332.50	1757159.12	418246.63	39°38'45.1770"N	80°15'1.9458"W	12010.30	148.180	0.03	0.00	0.03
20727.00	90.280	146.940	8070.74	12099.30	-10284.84	6384.33	1757210.95	418167.02	39°38'44.3945"N	80°15'1.2747"W	12105.28	148.170	0.06	-0.06	0.01
20822.00	90.370	146.650	8070.20	12194.30	-10364.33	6436.36	1757262.97	418087.54	39°38'43.6132"N	80°15'0.6012"W	12200.25	148.159	0.32	0.09	-0.31
20916.00	90.400	146.770	8069.57	12288.29	-10442.90	6487.95	1757314.56	418008.97	39°38'42.8410"N	80°14'59.9333"W	12294.21	148.148	0.13	0.03	0.13
21010.00	90.400	146.860	8068.91	12382.29	-10521.57	6539.40	1757366.01	417930.31	39°38'42.0678"N	80°14'59.2672"W	12388.19	148.138	0.10	0.00	0.10
21104.00	90.680	146.650	8068.03	12476.28	-10600.18	6590.93	1757417.54	417851.70	39°38'41.2952"N	80°14'58.6001"W	12482.16	148.128	0.37	0.30	-0.22
21199.00	90.520	146.740	8067.03	12571.28	-10679.58	6643.09	1757469.69	417772.31	39°38'40.5148"N	80°14'57.9248"W	12577.12	148.117	0.19	-0.17	0.09
21292.00	90.550	146.620	8066.16	12664.27	-10757.28	6694.17	1757520.78	417694.61	39°38'39.7511"N	80°14'57.2635"W	12670.09	148.106	0.13	0.03	-0.13
21387.00	90.620	146.470	8065.19	12759.26	-10836.54	6746.54	1757573.14	417615.36	39°38'38.9722"N	80°14'56.5857"W	12765.05	148.095	0.17	0.07	-0.16
21482.00	90.370	146.380	8064.37	12854.26	-10915.69	6799.08	1757625.67	417536.22	39°38'38.1943"N	80°14'55.9057"W	12860.00	148.082	0.28	-0.26	-0.09
21583.00	90.520	146.680	8063.59	12955.26	-10999.94	6854.78	1757681.37	417451.97	39°38'37.3663"N	80°14'55.1847"W	12960.96	148.070	0.33	0.15	0.30
21608.00‡	90.520	146.680	8063.36	12980.26	-11020.83	6868.51	1757695.10	417431.08	39°38'37.1610"N	80°14'55.0069"W	12985.96	148.068	0.00	0.00	0.00



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ERP 4H ST01 AWP Proj: 21608'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	ERP 4H ST01
Field	Monongalia	API	47-061-01867-0000
Facility	ERP Pad	Wellbore	ERP 4H ST01 AWB
Slot	Slot 04	Sidetrack from	ERP 4H AWP Proj: 8213' at 5099.00 MD

HOLE & CASING SECTIONS - Ref Wellbore: ERP 4H ST01 AWB Ref Wellpath: ERP 4H ST01 AWP Proj: 21608'										
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]	
17.5in Open Hole	28.00	1336.00	1308.00	28.00	1335.94	0.00	0.00	3.67	0.80	
13.375in Casing Surface	28.00	1336.00	1308.00	28.00	1335.94	0.00	0.00	3.67	0.80	
12.25in Open Hole	1336.00	2600.00	1264.00	1335.94	2599.89	3.67	0.80	7.32	-4.08	
9.625in Casing Intermediate	28.00	2600.00	2572.00	28.00	2599.89	0.00	0.00	7.32	-4.08	
8.75in Open Hole	2600.00	5099.00	2499.00	2599.89	5098.53	7.32	-4.08	5.65	-5.44	
8.5in Open Hole	5099.00	21608.00	16509.00	5098.53	8063.36	5.65	-5.44	-11020.83	6868.51	
5.5in Casing Production	28.00	21608.00	21580.00	28.00	8063.36	0.00	0.00	-11020.83	6868.51	

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	ERP 4H ST01
Field	Monongalia	API	47-061-01867-0000
Facility	ERP Pad	Wellbore	ERP 4H ST01 AWB
Slot	Slot 04	Sidetrack from	ERP 4H AWP Proj: 8213' at 5099.00 MD

TARGETS								
Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
ERP 4H BHL Rev-2	8110.00	-11019.38	6871.90	1757698.49	417432.53	39°38'37.1756"N	80°14'54.9637"W	point
ERP 4H LP Rev-2	8110.00	-234.02	-301.10	1750525.93	428217.23	39°40'23.1615"N	80°16'27.8444"W	point
ERP Pad Hardline #1 (6.8.21)	8523.00	2725.02	1484.67	1752311.58	431176.10	39°40'52.5559"N	80°16'5.3309"W	polygon
	2D Polygon: dimensions not calculated							
ERP Pad Hardline #2 (6.8.21)	8523.00	2588.46	1559.30	1752386.22	431039.54	39°40'51.2126"N	80°16'4.3613"W	polygon
	2D Polygon: dimensions not calculated							
ERP Pad Hardline #3 (6.8.21)	8523.00	1253.54	743.83	1751570.79	429704.71	39°40'37.9512"N	80°16'14.6447"W	polygon
	2D Polygon: dimensions not calculated							
ERP Pad Hardline #4 (6.8.21)	8523.00	-4876.12	70.83	1750897.83	423575.42	39°39'37.3176"N	80°16'22.5773"W	polygon
	2D Polygon: dimensions not calculated							
ERP Pad Hardline #5 (6.8.21)	8523.00	-10453.95	6413.02	1757239.64	417997.93	39°38'42.7257"N	80°15'0.8900"W	polygon
	2D Polygon: dimensions not calculated							

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ERP 4H ST01 AWP Proj: 21608'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	ERP 4H ST01
Field	Monongalia	API	47-061-01867-0000
Facility	ERP Pad	Wellbore	ERP 4H ST01 AWB
Slot	Slot 04	Sidetrack from	ERP 4H AWP Proj: 8213' at 5099.00 MD

WELLPATH COMPOSITION - Ref Wellbore: ERP 4H ST01 AWB Ref Wellpath: ERP 4H ST01 AWP Proj: 21608'					
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore	Survey Date
28.00	2600.00	BH Generic gyro - northseeking (Standard)	01_Javins Inertial Gyro <12-1/4">(100'-2600')	ERP 4H AWB	15/Jul/2021
2600.00	5099.00	OWSG MWD rev2 + HRGM	02_Tally MWD <8-3/4">(2600')(2629'-8148')	ERP 4H AWB	15/Jul/2021
5099.00	21608.00	BH AutoTrak Curve/eXpress (2019) (HRGM, Short spacing)	03_BH AT Curve <8-1/2">(5099')(5111'-21583')	ERP 4H ST01 AWB	04/Aug/2021



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ERP 4H ST01 AWP Proj: 21608'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NORTHEAST NATURAL ENERGY, LLC	Well	ERP 4H ST01
Field	Monongalia	API	47-061-01867-0000
Facility	ERP Pad	Wellbore	ERP 4H ST01 AWB
Slot	Slot 04	Sidetrack from	ERP 4H AWP Proj: 8213' at 5099.00 MD

COMMENTS
<p>Wellpath general comments API: 47-061-01867-0000 BH Job #: 110948045 Rig: Patterson 277 Duration: 8/7/2021-8/14/2021 Javins Gyro <12-1/4"> (100'-2600') Tally MWD <8-3/4"> (2600')(2629'-8148') BH AT Curve <8-1/2"> (5099')(5111'-21583') Projected MD at TD: 21608'</p>

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