

NORTHEAST NATURAL ENERGY, LLC

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

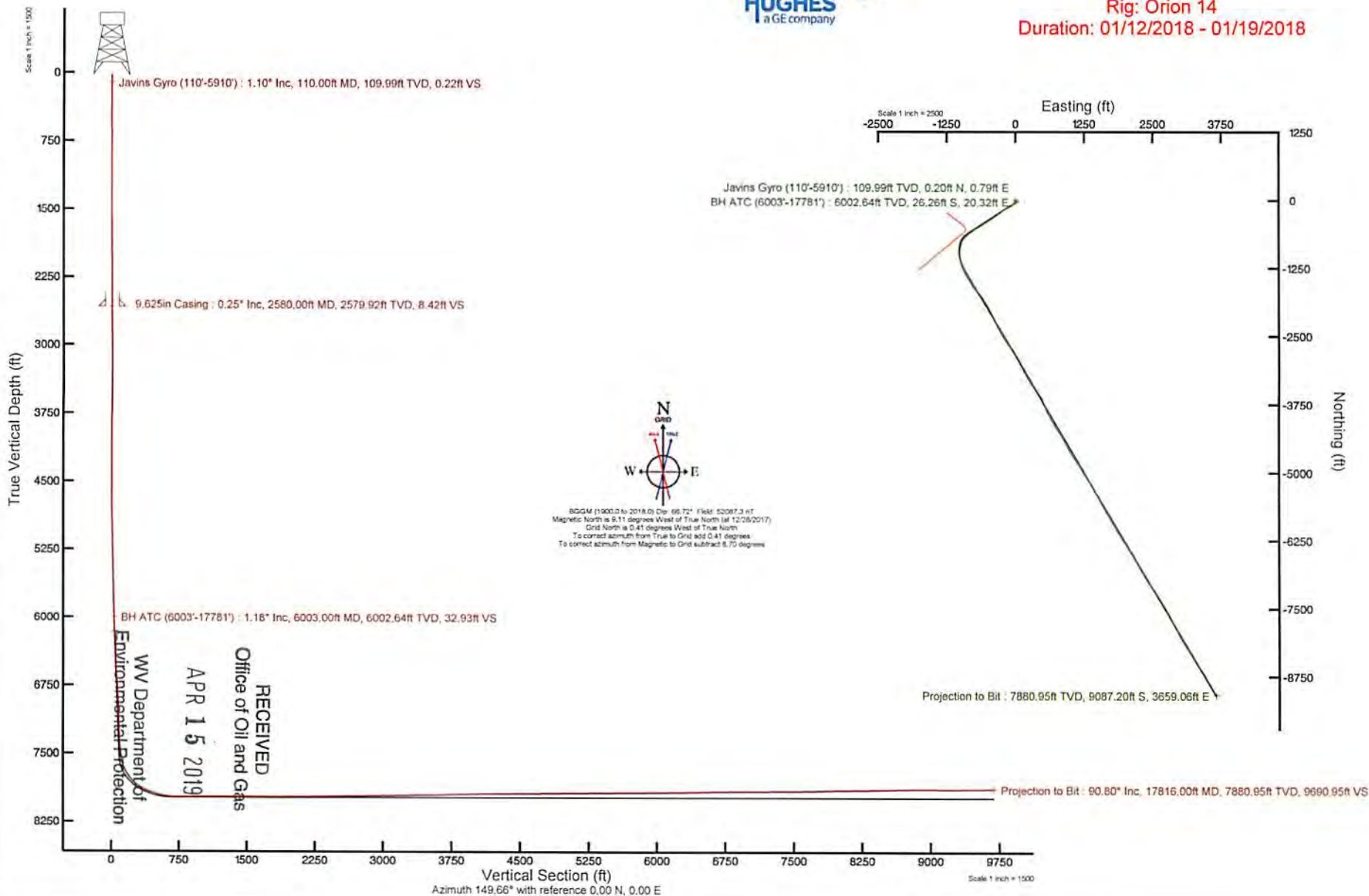
Slot: Slot #08
 Well: Jenkins 8H
 Wellbore: Jenkins 8H PWB



Old reference wellbore is Jenkins 8H PWB Row 8L3	Grid System: GCSNAD (Lambert West Virginia SP, Northern Zone (477)) U.S. Feet
True vertical depths are referenced to Petroleum 554 (RWS)	* = Wellbore was transferred from a different periodic datum
Measured depths are referenced to Petroleum 554 (RWS)	North Reference: Grid North
Petroleum 554 (RWS) to Mean Sea Level: +11.39 feet	Depth: True Distance
Mean Sea Level to Ground level (MSL) (NAVD83): +11.14 feet	Depth: true or false
Coordinates are in feet referenced to NAD	Created by: Petroleum on 2018-01-23
	Discipline: Well Performance



API: 47-061-01720-0000
 Job #: 8935632
 Rig: Orion 14
 Duration: 01/12/2018 - 01/19/2018



REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #08
Area	Monongalia County, WV	Well	Jenkins 8H
Field	Monongalia	Wellbore	Jenkins 8H AWB
Facility	Jenkins Pad		

REPORT SETUP INFORMATION

Projection System	NAD83 / Lambert West Virginia SP, Northern Zone (4701), US feet	Software System	WellArchitect® 5.0
North Reference	Grid	User	Thomsuzc
Scale	0.999942	Report Generated	1/23/2018 at 4:51:49 PM
Convergence at slot	0.41° West	Database/Source file	WA_Pennsylvania/Jenkins_8H_AWP_Proj__17816_MD.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	5.75	-41.07	1788439.71	441091.94	39°42'33.354"N	80°08'24.126"W
Facility Reference Pt			1788480.78	441086.19	39°42'33.300"N	80°08'23.600"W
Field Reference Pt			1777685.71	440640.65	39°42'28.114"N	80°10'41.690"W

WELLPATH DATUM

Calculation method	Minimum curvature	Patterson 334 (RKB) to Facility Vertical Datum	25.00ft
Horizontal Reference Pt	Slot	Patterson 334 (RKB) to Mean Sea Level	1139.00ft
Vertical Reference Pt	Patterson 334 (RKB)	Patterson 334 (RKB) to Ground Level at Slot (Slot #08)	25.00ft
MD Reference Pt	Patterson 334 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	149.66°

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 Office of Oil and Gas
 APR 15 2019
 WV Department of
 Environmental Protection



Actual Wellpath Report

Jenkins 8H AWP Proj: 17816'MD

Page 2 of 10



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Area	Monongalia County, WV	Well	Jenkins 8H
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WELLPATH DATA (187 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	75.510	0.00	0.00	0.00	0.00	1788439.71	441091.94	39°42'33.354"N	80°08'24.126"W	0.00	0.000	0.00	0.00	0.00
25.00	0.000	75.510	25.00	0.00	0.00	0.00	1788439.71	441091.94	39°42'33.354"N	80°08'24.126"W	0.00	0.000	0.00	0.00	0.00
110.00	1.100	75.510	109.99	0.22	0.20	0.79	1788440.50	441092.14	39°42'33.356"N	80°08'24.116"W	0.82	75.510	1.29	1.29	88.84
210.00	1.180	75.310	209.97	0.76	0.71	2.72	1788442.43	441092.65	39°42'33.361"N	80°08'24.091"W	2.81	75.437	0.08	0.08	-0.20
310.00	0.540	71.510	309.96	1.14	1.12	4.16	1788443.87	441093.06	39°42'33.365"N	80°08'24.073"W	4.31	74.977	0.64	-0.64	-3.80
410.00	0.070	214.810	409.96	1.26	1.22	4.57	1788444.28	441093.16	39°42'33.366"N	80°08'24.068"W	4.73	75.109	0.60	-0.47	143.30
510.00	0.310	171.410	509.96	1.54	0.90	4.58	1788444.29	441092.84	39°42'33.363"N	80°08'24.068"W	4.66	78.901	0.26	0.24	-43.40
610.00	0.490	138.710	609.96	2.21	0.31	4.90	1788444.61	441092.25	39°42'33.357"N	80°08'24.063"W	4.91	86.392	0.28	0.18	-32.70
710.00	0.160	181.010	709.96	2.75	-0.15	5.18	1788444.89	441091.79	39°42'33.353"N	80°08'24.060"W	5.18	91.682	0.39	-0.33	42.30
810.00	0.230	211.410	809.96	2.96	-0.46	5.07	1788444.78	441091.48	39°42'33.350"N	80°08'24.061"W	5.09	95.216	0.12	0.07	30.40
910.00	0.160	193.810	909.96	3.16	-0.77	4.93	1788444.64	441091.17	39°42'33.347"N	80°08'24.063"W	4.99	98.870	0.09	-0.07	-17.60
1010.00	0.190	302.510	1009.96	3.11	-0.82	4.76	1788444.47	441091.12	39°42'33.346"N	80°08'24.065"W	4.83	99.731	0.28	0.03	108.70
1110.00	0.170	86.310	1109.96	3.03	-0.72	4.77	1788444.48	441091.22	39°42'33.347"N	80°08'24.065"W	4.82	98.559	0.34	-0.02	143.80
1210.00	0.190	285.110	1209.96	2.98	-0.66	4.76	1788444.47	441091.28	39°42'33.348"N	80°08'24.065"W	4.80	97.958	0.36	0.02	-161.20
1310.00	0.170	100.510	1309.96	2.96	-0.65	4.74	1788444.45	441091.29	39°42'33.348"N	80°08'24.065"W	4.79	97.790	0.36	-0.02	175.40
1410.00	0.240	99.710	1409.95	3.19	-0.71	5.09	1788444.80	441091.23	39°42'33.347"N	80°08'24.061"W	5.14	97.947	0.07	0.07	-0.80
1510.00	0.850	115.410	1509.95	3.93	-1.06	5.97	1788445.68	441090.88	39°42'33.344"N	80°08'24.050"W	6.08	100.111	0.62	0.61	15.70
1610.00	0.860	97.810	1609.94	5.01	-1.48	7.38	1788447.09	441090.46	39°42'33.340"N	80°08'24.031"W	7.53	101.371	0.26	0.01	-17.60
1710.00	0.550	113.210	1709.93	5.86	-1.78	8.57	1788448.28	441090.16	39°42'33.337"N	80°08'24.016"W	8.75	101.710	0.36	-0.31	15.40
1810.00	0.390	91.510	1809.93	6.43	-1.97	9.35	1788449.06	441089.97	39°42'33.335"N	80°08'24.006"W	9.56	101.923	0.24	-0.16	-21.70
1910.00	0.370	113.110	1909.93	6.87	-2.11	9.99	1788449.70	441089.83	39°42'33.334"N	80°08'23.998"W	10.21	101.929	0.14	-0.02	21.60
2010.00	0.300	135.510	2009.92	7.38	-2.42	10.47	1788450.18	441089.52	39°42'33.331"N	80°08'23.992"W	10.74	103.035	0.15	-0.07	22.40
2110.00	0.180	69.610	2109.92	7.66	-2.56	10.80	1788450.51	441089.38	39°42'33.329"N	80°08'23.988"W	11.10	103.314	0.28	-0.12	-65.90
2210.00	0.390	107.810	2209.92	7.94	-2.60	11.27	1788450.98	441089.34	39°42'33.329"N	80°08'23.982"W	11.57	103.014	0.27	0.21	38.20
2310.00	0.210	78.710	2309.92	8.25	-2.67	11.77	1788451.48	441089.27	39°42'33.328"N	80°08'23.975"W	12.07	102.791	0.23	-0.18	-29.10
2410.00	0.260	98.110	2409.92	8.45	-2.67	12.18	1788451.89	441089.27	39°42'33.328"N	80°08'23.970"W	12.47	102.363	0.09	0.05	19.40
2510.00	0.140	316.510	2509.92	8.48	-2.61	12.32	1788452.03	441089.33	39°42'33.329"N	80°08'23.968"W	12.59	101.974	0.38	-0.12	-141.60
2610.00	0.390	78.610	2609.92	8.47	-2.46	12.57	1788452.28	441089.48	39°42'33.331"N	80°08'23.965"W	12.81	101.060	0.48	0.25	122.10
2710.00	0.420	114.010	2709.92	8.88	-2.54	13.24	1788452.95	441089.40	39°42'33.330"N	80°08'23.956"W	13.48	100.857	0.25	0.03	35.40
2810.00	0.380	132.310	2809.91	9.49	-2.91	13.82	1788453.53	441089.03	39°42'33.326"N	80°08'23.949"W	14.12	101.898	0.13	-0.04	18.30



Actual Wellpath Report

Jenkins 8H AWP Proj: 17816'MD

Page 3 of 10



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Area	Monongalia County, WV	Well	Jenkins 8H
Field	Monongalia	Wellbore	Jenkins 8H AWB
Facility	Jenkins Pad		

WELLPATH DATA (187 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]
2910.00	0.280	152.910	2909.91	10.05	-3.35	14.17	1788453.88	441088.59	39°42'33.322"N	80°08'23.944"W	14.56	103.305	0.15	-0.10	20.60
3010.00	0.120	65.110	3009.91	10.31	-3.53	14.38	1788454.09	441088.42	39°42'33.320"N	80°08'23.942"W	14.80	103.775	0.30	-0.16	-87.80
3110.00	0.280	130.610	3109.91	10.55	-3.64	14.66	1788454.37	441088.30	39°42'33.319"N	80°08'23.938"W	15.10	103.945	0.25	0.16	65.50
3210.00	0.170	63.910	3209.91	10.79	-3.73	14.98	1788454.69	441088.21	39°42'33.318"N	80°08'23.934"W	15.44	103.998	0.26	-0.11	-66.70
3310.00	0.080	194.410	3309.91	10.85	-3.74	15.09	1788454.80	441088.20	39°42'33.318"N	80°08'23.933"W	15.55	103.903	0.23	-0.09	130.50
3410.00	0.170	99.410	3409.91	10.99	-3.83	15.22	1788454.93	441088.11	39°42'33.317"N	80°08'23.931"W	15.70	104.116	0.19	0.09	-95.00
3510.00	0.110	190.910	3509.91	11.16	-3.95	15.35	1788455.06	441087.99	39°42'33.316"N	80°08'23.929"W	15.85	104.418	0.20	-0.06	91.50
3610.00	0.330	324.310	3609.91	10.95	-3.81	15.17	1788454.87	441088.13	39°42'33.317"N	80°08'23.932"W	15.64	104.092	0.41	0.22	133.40
3710.00	0.430	329.510	3709.91	10.28	-3.25	14.81	1788454.52	441088.69	39°42'33.323"N	80°08'23.936"W	15.16	102.379	0.11	0.10	5.20
3810.00	0.470	325.610	3809.90	9.50	-2.59	14.38	1788454.09	441089.35	39°42'33.329"N	80°08'23.942"W	14.62	100.199	0.05	0.04	-3.90
3910.00	0.350	281.710	3909.90	8.89	-2.19	13.85	1788453.56	441089.75	39°42'33.333"N	80°08'23.949"W	14.03	98.973	0.33	-0.12	-43.90
4010.00	0.420	281.510	4009.90	8.44	-2.05	13.20	1788452.90	441089.89	39°42'33.335"N	80°08'23.957"W	13.35	98.841	0.07	0.07	-0.20
4110.00	0.070	84.410	4109.90	8.22	-1.97	12.90	1788452.61	441089.97	39°42'33.335"N	80°08'23.961"W	13.05	98.699	0.49	-0.35	162.90
4210.00	0.440	259.510	4209.90	8.11	-2.04	12.58	1788452.29	441089.90	39°42'33.335"N	80°08'23.965"W	12.74	99.199	0.51	0.37	175.10
4310.00	0.460	266.410	4309.90	7.80	-2.13	11.80	1788451.51	441089.81	39°42'33.334"N	80°08'23.975"W	11.99	100.241	0.06	0.02	6.90
4410.00	0.070	244.310	4409.89	7.62	-2.18	11.35	1788451.06	441089.76	39°42'33.333"N	80°08'23.981"W	11.56	100.895	0.40	-0.39	-22.10
4510.00	0.180	173.710	4509.89	7.75	-2.37	11.31	1788451.02	441089.57	39°42'33.331"N	80°08'23.981"W	11.55	101.820	0.17	0.11	-70.60
4610.00	0.130	93.910	4609.89	7.96	-2.53	11.44	1788451.15	441089.41	39°42'33.330"N	80°08'23.979"W	11.72	102.473	0.20	-0.05	-79.80
4710.00	0.840	183.210	4709.89	8.64	-3.27	11.51	1788451.22	441088.67	39°42'33.322"N	80°08'23.978"W	11.97	105.858	0.85	0.71	89.30
4810.00	0.980	154.210	4809.88	10.10	-4.77	11.84	1788451.55	441087.17	39°42'33.308"N	80°08'23.974"W	12.77	111.947	0.48	0.14	-29.00
4910.00	1.060	175.710	4909.86	11.78	-6.46	12.28	1788451.99	441085.48	39°42'33.291"N	80°08'23.968"W	13.88	117.756	0.39	0.08	21.50
5010.00	1.100	153.910	5009.84	13.57	-8.25	12.78	1788452.48	441083.69	39°42'33.273"N	80°08'23.962"W	15.21	122.850	0.41	0.04	-21.80
5110.00	0.840	171.610	5109.83	15.21	-9.84	13.30	1788453.01	441082.10	39°42'33.258"N	80°08'23.955"W	16.55	126.476	0.39	-0.26	17.70
5210.00	0.970	166.610	5209.82	16.70	-11.38	13.61	1788453.32	441080.56	39°42'33.242"N	80°08'23.951"W	17.74	129.918	0.15	0.13	-5.00
5310.00	1.430	164.310	5309.80	18.72	-13.41	14.14	1788453.85	441078.53	39°42'33.222"N	80°08'23.944"W	19.49	133.480	0.46	0.46	-2.30
5410.00	1.160	163.010	5409.77	20.91	-15.58	14.77	1788454.48	441076.36	39°42'33.201"N	80°08'23.936"W	21.47	136.519	0.27	-0.27	-1.30
5510.00	1.300	137.810	5509.75	23.00	-17.39	15.83	1788455.54	441074.55	39°42'33.183"N	80°08'23.922"W	23.51	137.681	0.55	0.14	-25.20
5610.00	0.800	152.810	5609.73	24.81	-18.85	16.91	1788456.62	441073.09	39°42'33.169"N	80°08'23.908"W	25.32	138.099	0.57	-0.50	15.00
5710.00	1.180	157.210	5709.72	26.53	-20.42	17.63	1788457.34	441071.52	39°42'33.153"N	80°08'23.899"W	26.98	139.192	0.39	0.38	4.40
5810.00	1.280	158.410	5809.69	28.65	-22.41	18.44	1788458.15	441069.53	39°42'33.134"N	80°08'23.888"W	29.02	140.547	0.10	0.10	1.20



Actual Wellpath Report

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Page 4 of 10



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WELLPATH DATA (187 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]
5910.00	1.330	156.710	5909.67	30.91	-24.51	19.31	1788459.02	441067.43	39°42'33.113"N	80°08'23.877"W	31.20	141.769	0.06	0.05	-1.70
6003.00	1.180	142.320	6002.64	32.93	-26.26	20.32	1788460.03	441065.68	39°42'33.096"N	80°08'23.864"W	33.21	142.265	0.37	-0.16	-15.47
6098.00	11.030	224.550	6097.04	36.28	-33.53	14.53	1788454.24	441058.41	39°42'33.024"N	80°08'23.937"W	36.54	156.577	11.51	10.37	86.56
6193.00	21.490	227.450	6188.12	42.34	-51.83	-4.72	1788434.99	441040.12	39°42'32.841"N	80°08'24.182"W	52.04	185.205	11.04	11.01	3.05
6288.00	31.150	231.180	6273.18	49.67	-79.06	-36.76	1788402.95	441012.88	39°42'32.570"N	80°08'24.589"W	87.19	204.937	10.31	10.17	3.93
6383.00	39.370	241.680	6350.75	52.23	-108.84	-82.55	1788357.16	440983.11	39°42'32.273"N	80°08'25.172"W	136.60	217.179	10.72	8.65	11.05
6477.00	39.270	240.950	6423.47	50.51	-137.43	-134.80	1788304.91	440954.52	39°42'31.986"N	80°08'25.838"W	192.51	224.448	0.50	-0.11	-0.78
6571.00	39.590	237.040	6496.09	51.21	-168.17	-185.95	1788253.77	440923.78	39°42'31.679"N	80°08'26.490"W	250.72	227.874	2.66	0.34	-4.16
6666.00	39.520	234.930	6569.34	55.09	-202.01	-236.09	1788203.63	440889.94	39°42'31.341"N	80°08'27.128"W	310.72	229.448	1.42	-0.07	-2.22
6761.00	39.350	232.960	6642.71	61.10	-237.52	-284.87	1788154.86	440854.43	39°42'30.987"N	80°08'27.749"W	370.90	230.179	1.33	-0.18	-2.07
6856.00	39.450	233.970	6716.13	67.60	-273.42	-333.32	1788106.41	440818.54	39°42'30.628"N	80°08'28.366"W	431.12	230.638	0.68	0.11	1.06
6951.00	39.500	235.090	6789.46	73.00	-308.46	-382.51	1788057.23	440783.49	39°42'30.279"N	80°08'28.992"W	491.39	231.116	0.75	0.05	1.18
7046.00	39.490	236.420	6862.77	77.12	-342.46	-432.45	1788007.29	440749.50	39°42'29.939"N	80°08'29.628"W	551.63	231.624	0.89	-0.01	1.40
7141.00	39.440	237.530	6936.11	79.95	-375.37	-483.08	1787956.66	440716.59	39°42'29.610"N	80°08'30.273"W	611.77	232.151	0.74	-0.05	1.17
7236.00	38.810	237.680	7009.81	82.10	-407.49	-533.69	1787906.05	440684.48	39°42'29.289"N	80°08'30.917"W	671.47	232.637	0.67	-0.66	0.16
7331.00	38.890	237.080	7083.79	84.47	-439.61	-583.88	1787855.86	440652.35	39°42'28.968"N	80°08'31.557"W	730.88	233.024	0.41	0.08	-0.63
7427.00	38.950	237.660	7158.48	86.88	-472.13	-634.68	1787805.07	440619.84	39°42'28.643"N	80°08'32.204"W	791.03	233.355	0.38	0.06	0.60
7522.00	38.740	238.200	7232.47	88.68	-503.77	-685.17	1787754.58	440588.20	39°42'28.327"N	80°08'32.847"W	850.43	233.675	0.42	-0.22	0.57
7617.00	38.380	236.780	7306.76	90.92	-535.59	-735.10	1787704.65	440556.38	39°42'28.009"N	80°08'33.483"W	909.52	233.923	1.01	-0.38	-1.49
7712.00	38.690	233.430	7381.08	95.62	-569.44	-783.63	1787656.13	440522.53	39°42'27.671"N	80°08'34.101"W	968.68	233.995	2.22	0.33	-3.53
7807.00	38.760	231.210	7455.20	103.21	-605.77	-830.66	1787609.10	440486.21	39°42'27.309"N	80°08'34.699"W	1028.08	233.898	1.46	0.07	-2.34
7902.00	38.730	231.110	7529.29	112.00	-643.05	-876.97	1787562.80	440448.93	39°42'26.937"N	80°08'35.288"W	1087.47	233.749	0.07	-0.03	-0.11
7997.00	39.850	223.700	7602.86	124.80	-683.74	-921.15	1787518.61	440408.24	39°42'26.532"N	80°08'35.850"W	1147.18	233.415	5.08	1.18	-7.80
8092.00	41.800	204.740	7675.02	151.39	-734.70	-955.57	1787484.20	440357.28	39°42'26.026"N	80°08'36.285"W	1205.36	232.445	13.17	2.05	-19.96
8187.00	46.150	199.240	7743.40	191.76	-795.85	-980.13	1787459.64	440296.14	39°42'25.420"N	80°08'36.594"W	1262.55	230.924	6.09	4.58	-5.79
8282.00	53.170	193.510	7804.88	241.48	-865.28	-1000.33	1787439.44	440226.71	39°42'24.732"N	80°08'36.846"W	1322.64	229.140	8.70	7.39	-6.03
8377.00	60.120	182.750	7857.19	303.60	-943.64	-1011.22	1787428.55	440148.35	39°42'23.957"N	80°08'36.978"W	1383.13	226.980	11.95	7.32	-11.33
8472.00	67.490	172.700	7899.19	378.75	-1028.60	-1007.61	1787432.16	440063.40	39°42'23.118"N	80°08'36.924"W	1439.89	224.410	12.25	7.76	-10.58
8567.00	72.820	167.540	7931.44	462.43	-1116.55	-992.23	1787447.54	439975.46	39°42'22.250"N	80°08'36.719"W	1493.72	221.626	7.59	5.61	-5.43
8661.00	76.770	161.310	7956.12	550.09	-1203.85	-967.84	1787471.92	439888.16	39°42'21.389"N	80°08'36.399"W	1544.66	218.798	7.65	4.20	-6.63



north east
NATURAL ENERGY

Actual Wellpath Report

Jenkins 8H AWP Proj: 17816MD

Page 5 of 10



Operator	NORTHEAST NATURAL ENERGY, LLC
Area	Monongalia County, WV
Field	Monongalia
Facility	Jenkins Pad
Slot	Slot #08
	Well
	Jenkins 8H
	Jenkins 8H AWB
	Wellbore

WELLPATH DATA (187 stations)														
MD	Inclination	North	East	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	DLS	Build Rate	Turn Rate		
(ft)	(°)	(ft)	(ft)	(US ft)	(US ft)			(ft)	(°)	(°/100ft)	(°/100ft)	(°/100ft)		
8756.00	82.310	154.170	7973.37	642.43	-1290.39	-932.90	1787508.87	439801.62	39°42'20.536"N	80°08'35.944"W	1592.30	215.865	8.93	-6.88
8852.00	91.020	147.860	7978.96	738.08	-1374.32	-886.95	1787552.82	439717.70	39°42'19.710"N	80°08'35.349"W	1635.68	212.837	11.57	-7.20
8947.00	90.400	149.010	7977.78	833.05	-1455.26	-837.22	1787602.54	439636.77	39°42'18.913"N	80°08'34.705"W	1678.91	209.912	1.38	-0.65
9042.00	90.770	149.390	7976.81	928.04	-1536.86	-788.58	1787651.18	439555.18	39°42'18.110"N	80°08'34.075"W	1727.36	207.163	0.56	0.39
9137.00	90.030	144.320	7976.15	1022.89	-1616.37	-736.66	1787703.10	439475.67	39°42'17.328"N	80°08'33.404"W	1776.32	204.501	5.39	-0.78
9232.00	89.910	144.300	7976.20	1116.84	-1690.49	-677.30	1787762.45	439401.55	39°42'16.600"N	80°08'32.638"W	1821.12	201.834	6.34	-0.13
9327.00	90.340	144.370	7975.99	1210.79	-1764.63	-617.97	1787821.77	439327.42	39°42'15.871"N	80°08'31.872"W	1869.71	199.300	6.41	0.46
9421.00	90.090	147.350	7975.64	1304.58	-1842.42	-565.23	1787874.52	439249.63	39°42'15.106"N	80°08'31.190"W	1927.17	197.055	3.18	-0.27
9517.00	89.970	151.160	7975.59	1400.56	-1924.91	-516.16	1787923.58	439167.14	39°42'14.294"N	80°08'30.554"W	1992.92	195.011	3.97	3.17
9612.00	90.280	153.070	7975.38	1495.46	-2008.88	-471.73	1787968.01	439083.18	39°42'13.468"N	80°08'29.978"W	2063.52	193.215	2.04	0.33
9707.00	89.940	154.300	7975.20	1590.23	-2094.03	-429.62	1788010.12	438998.03	39°42'12.629"N	80°08'29.432"W	2137.65	191.594	1.34	-0.36
9803.00	89.850	153.690	7975.38	1685.95	-2180.31	-387.52	1788062.21	438911.76	39°42'11.780"N	80°08'28.885"W	2214.48	190.078	0.64	-0.09
9897.00	89.970	152.720	7975.52	1779.77	-2264.22	-345.15	1788094.58	438827.86	39°42'10.953"N	80°08'28.336"W	2290.37	188.667	1.04	0.13
9990.00	90.180	151.680	7975.40	1872.68	-2346.48	-301.78	1788137.95	438745.60	39°42'10.143"N	80°08'27.773"W	2365.81	187.328	1.14	0.23
10086.00	90.860	152.130	7974.53	1968.60	-2431.17	-256.57	1788183.16	438660.92	39°42'09.310"N	80°08'27.187"W	2444.67	186.024	0.85	0.71
10181.00	90.490	151.780	7973.41	2063.52	-2515.01	-211.91	1788227.82	438577.09	39°42'08.484"N	80°08'26.608"W	2523.92	184.816	0.54	-0.39
10276.00	90.460	146.460	7972.62	2158.48	-2566.66	-163.42	1788276.30	438495.44	39°42'07.681"N	80°08'25.980"W	2601.80	183.601	5.23	-0.03
10371.00	90.460	142.460	7971.86	2253.09	-2674.11	-108.45	1788331.27	438417.99	39°42'06.919"N	80°08'25.270"W	2676.31	182.322	4.58	0.00
10466.00	91.020	145.270	7970.63	2347.59	-2750.82	-52.44	1788387.28	438341.29	39°42'06.165"N	80°08'24.546"W	2751.32	181.092	3.02	0.59
10562.00	91.080	151.390	7968.87	2443.50	-2832.47	-2.07	1788437.64	438259.64	39°42'05.362"N	80°08'23.894"W	2832.47	180.042	6.37	0.06
10657.00	90.710	151.200	7967.39	2538.45	-2915.79	43.56	1788483.26	438176.33	39°42'04.542"N	80°08'23.303"W	2916.11	179.144	0.44	-0.39
10752.00	90.220	151.010	7966.62	2633.42	-2998.96	89.46	1788529.16	438093.17	39°42'03.723"N	80°08'22.708"W	3000.29	178.291	0.55	-0.52
10847.00	90.620	154.650	7965.92	2728.25	-3083.46	132.83	1788572.53	438008.67	39°42'02.891"N	80°08'22.146"W	3086.32	177.533	3.85	0.42
10942.00	90.800	152.480	7964.74	2823.02	-3168.51	175.12	1788614.82	437923.62	39°42'02.053"N	80°08'21.597"W	3173.36	176.837	2.29	0.19
11037.00	91.050	149.740	7963.21	2917.97	-3251.67	221.01	1788660.70	437840.47	39°42'01.235"N	80°08'21.002"W	3259.17	176.112	2.90	0.26
11128.00	90.950	146.400	7961.55	3012.90	-3332.27	271.23	1788710.93	437759.87	39°42'00.442"N	80°08'20.352"W	3343.29	175.347	3.52	-0.11
11228.00	90.770	144.800	7960.11	3108.65	-3411.47	325.46	1788765.15	437680.67	39°41'59.663"N	80°08'19.651"W	3426.96	174.550	1.68	-0.19
11323.00	90.680	144.870	7958.91	3203.30	-3489.13	380.17	1788819.86	437603.02	39°41'58.899"N	80°08'18.944"W	3509.78	173.782	0.12	-0.09
11418.00	91.570	146.870	7957.04	3298.07	-3567.74	433.46	1788873.14	437524.41	39°41'58.126"N	80°08'18.255"W	3593.98	173.073	2.30	0.94
11514.00	90.740	154.060	7955.10	3393.98	-3651.20	480.74	1788920.42	437440.96	39°41'57.305"N	80°08'17.643"W	3682.71	172.499	7.54	-0.86



Actual Wellpath Report

Jenkins 8H AWP Proj: 17816'MD

Page 6 of 10



REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #08
Area	Monongalia County, WV	Well	Jenkins 8H
Field	Monongalia	Wellbore	Jenkins 8H AWB
Facility	Jenkins Pad		

WELLPATH DATA (187 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]
11606.00	90.680	155.680	7953.96	3485.59	-3734.48	519.81	1788959.49	437357.68	39°41'56.484"N	80°08'17.136"W	3770.48	172.076	1.76	-0.07	1.76
11701.00	91.140	154.690	7952.46	3580.13	-3820.70	559.67	1788999.35	437271.47	39°41'55.635"N	80°08'16.618"W	3861.47	171.666	1.15	0.48	-1.04
11796.00	91.420	153.940	7950.33	3674.80	-3906.29	600.84	1789040.51	437185.89	39°41'54.792"N	80°08'16.083"W	3952.23	171.256	0.84	0.29	-0.79
11891.00	91.420	151.340	7947.98	3769.63	-3990.63	644.48	1789084.15	437101.55	39°41'53.962"N	80°08'15.517"W	4042.33	170.826	2.74	0.00	-2.74
11986.00	90.920	149.450	7946.04	3864.60	-4073.20	691.40	1789131.07	437018.98	39°41'53.149"N	80°08'14.910"W	4131.47	170.366	2.06	-0.53	-1.99
12081.00	91.080	147.960	7944.38	3959.57	-4154.37	740.74	1789180.40	436937.82	39°41'52.350"N	80°08'14.271"W	4219.89	169.890	1.58	0.17	-1.57
12176.00	91.450	147.770	7942.28	4054.50	-4234.79	791.26	1789230.92	436857.40	39°41'51.559"N	80°08'13.617"W	4308.08	169.416	0.44	0.39	-0.20
12272.00	90.680	148.850	7940.50	4150.45	-4316.46	841.68	1789281.34	436775.74	39°41'50.755"N	80°08'12.965"W	4397.76	168.966	1.38	-0.80	1.12
12366.00	90.710	151.150	7939.36	4244.44	-4397.86	888.67	1789328.33	436694.35	39°41'49.954"N	80°08'12.356"W	4486.75	168.576	2.45	0.03	2.45
12461.00	90.490	152.020	7938.36	4339.38	-4481.41	933.88	1789373.53	436610.80	39°41'49.132"N	80°08'11.771"W	4577.68	168.229	0.94	-0.23	0.92
12557.00	91.170	152.900	7936.97	4435.25	-4566.52	978.26	1789417.91	436525.69	39°41'48.294"N	80°08'11.195"W	4670.13	167.909	1.16	0.71	0.92
12651.00	90.180	147.520	7935.87	4529.21	-4648.06	1024.94	1789464.59	436444.16	39°41'47.491"N	80°08'10.590"W	4759.72	167.565	5.82	-1.05	-5.72
12746.00	90.250	146.300	7935.51	4624.09	-4727.65	1076.80	1789516.45	436364.57	39°41'46.708"N	80°08'09.920"W	4848.73	167.169	1.29	0.07	-1.28
12840.00	90.400	146.770	7934.98	4717.95	-4806.07	1128.64	1789568.28	436286.16	39°41'45.937"N	80°08'09.250"W	4936.81	166.784	0.52	0.16	0.50
12936.00	90.650	147.400	7934.10	4813.85	-4886.65	1180.80	1789620.44	436205.58	39°41'45.144"N	80°08'08.575"W	5027.29	166.416	0.71	0.26	0.66
13032.00	90.740	148.170	7932.93	4909.79	-4967.87	1231.97	1789671.61	436124.37	39°41'44.345"N	80°08'07.913"W	5118.35	166.072	0.81	0.09	0.80
13127.00	90.710	148.490	7931.73	5004.76	-5048.71	1281.85	1789721.48	436043.53	39°41'43.550"N	80°08'07.268"W	5208.90	165.754	0.34	-0.03	0.34
13222.00	90.370	148.740	7930.83	5099.74	-5129.81	1331.32	1789770.95	435962.44	39°41'42.752"N	80°08'06.627"W	5299.75	165.451	0.44	-0.36	0.26
13317.00	90.340	150.090	7930.25	5194.73	-5211.59	1379.65	1789819.28	435880.66	39°41'41.947"N	80°08'06.002"W	5391.12	165.172	1.42	-0.03	1.42
13410.00	90.710	150.770	7929.39	5287.72	-5292.47	1425.55	1789865.17	435799.78	39°41'41.151"N	80°08'05.407"W	5481.10	164.925	0.83	0.40	0.73
13506.00	90.430	148.240	7928.44	5383.71	-5375.18	1474.26	1789913.88	435717.08	39°41'40.337"N	80°08'04.777"W	5573.69	164.663	2.65	-0.29	-2.64
13600.00	90.400	150.000	7927.76	5477.70	-5455.85	1522.50	1789962.12	435636.42	39°41'39.543"N	80°08'04.152"W	5664.30	164.408	1.87	-0.03	1.87
13695.00	90.650	152.440	7926.89	5572.65	-5539.11	1568.23	1790007.85	435553.17	39°41'38.723"N	80°08'03.560"W	5756.83	164.192	2.58	0.26	2.57
13791.00	90.310	153.210	7926.08	5668.50	-5624.51	1612.07	1790051.69	435467.77	39°41'37.882"N	80°08'02.991"W	5850.97	164.007	0.88	-0.35	0.80
13886.00	90.310	151.040	7925.57	5763.40	-5708.48	1656.49	1790096.10	435383.81	39°41'37.056"N	80°08'02.415"W	5943.96	163.818	2.28	0.00	-2.28
13981.00	90.490	150.840	7924.90	5858.38	-5791.52	1702.63	1790142.24	435300.77	39°41'36.238"N	80°08'01.818"W	6036.61	163.617	0.28	0.19	-0.21
14077.00	90.460	149.700	7924.11	5954.37	-5874.88	1750.23	1790189.84	435217.42	39°41'35.418"N	80°08'01.201"W	6130.05	163.410	1.19	-0.03	-1.19
14172.00	90.650	148.990	7923.19	6049.36	-5956.60	1798.67	1790238.27	435135.70	39°41'34.613"N	80°08'00.574"W	6222.24	163.198	0.77	0.20	-0.75
14267.00	90.550	148.780	7922.19	6144.35	-6037.92	1847.76	1790287.36	435054.38	39°41'33.813"N	80°07'59.939"W	6314.33	162.985	0.24	-0.11	-0.22
14362.00	90.710	148.510	7921.15	6239.33	-6119.05	1897.19	1790336.78	434973.26	39°41'33.015"N	80°07'59.299"W	6406.41	162.774	0.33	0.17	-0.28

Actual Wellpath Report

Jenkins 8H AWP Proj: 17816'MD

Page 7 of 10



REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #08
Area	Monongalia County, WV	Well	Jenkins 8H
Field	Monongalia	Wellbore	Jenkins 8H AWB
Facility	Jenkins Pad		

WELLPATH DATA (187 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]
14457.00	91.110	148.870	7919.64	6334.30	-6200.20	1946.55	1790386.14	434892.11	39°41'32.216"N	80°07'58.661"W	6498.58	162.570	0.57	0.42	0.38
14552.00	90.980	147.890	7917.91	6429.26	-6281.08	1996.35	1790435.94	434811.24	39°41'31.420"N	80°07'58.016"W	6590.70	162.368	1.04	-0.14	-1.03
14647.00	91.050	148.440	7916.23	6524.21	-6361.78	2046.45	1790486.04	434730.54	39°41'30.626"N	80°07'57.368"W	6682.83	162.168	0.58	0.07	0.58
14741.00	91.110	148.710	7914.45	6618.18	-6441.98	2095.45	1790535.03	434650.35	39°41'29.837"N	80°07'56.734"W	6774.21	161.981	0.29	0.06	0.29
14837.00	90.800	150.350	7912.85	6714.16	-6524.70	2144.12	1790583.70	434567.63	39°41'29.023"N	80°07'56.104"W	6867.97	161.809	1.74	-0.32	1.71
14931.00	90.120	148.790	7912.10	6808.16	-6605.75	2191.73	1790631.31	434486.59	39°41'28.225"N	80°07'55.488"W	6959.86	161.645	1.81	-0.72	-1.66
15025.00	90.220	150.520	7911.82	6902.15	-6686.87	2239.22	1790678.79	434405.47	39°41'27.427"N	80°07'54.873"W	7051.83	161.486	1.84	0.11	1.84
15119.00	90.220	151.000	7911.46	6996.13	-6768.89	2285.13	1790724.70	434323.46	39°41'26.620"N	80°07'54.278"W	7144.21	161.346	0.51	0.00	0.51
15215.00	90.490	151.040	7910.86	7092.10	-6852.87	2331.64	1790771.21	434239.48	39°41'25.793"N	80°07'53.676"W	7238.67	161.209	0.28	0.28	0.04
15310.00	90.430	149.520	7910.10	7187.09	-6935.37	2378.74	1790818.30	434156.99	39°41'24.981"N	80°07'53.066"W	7331.96	161.069	1.60	-0.06	-1.60
15405.00	90.400	147.330	7909.41	7282.06	-7016.30	2428.48	1790868.04	434076.07	39°41'24.185"N	80°07'52.422"W	7424.68	160.908	2.31	-0.03	-2.31
15499.00	90.180	145.040	7908.94	7375.88	-7094.39	2480.78	1790920.35	433997.98	39°41'23.416"N	80°07'51.746"W	7515.63	160.726	2.45	-0.23	-2.44
15595.00	90.430	145.270	7908.43	7471.58	-7173.17	2535.63	1790975.19	433919.20	39°41'22.642"N	80°07'51.038"W	7608.14	160.532	0.35	0.26	0.24
15690.00	90.550	147.740	7907.61	7566.43	-7252.39	2588.06	1791027.61	433839.99	39°41'21.862"N	80°07'50.360"W	7700.34	160.361	2.60	0.13	2.60
15785.00	90.920	149.210	7906.39	7661.40	-7333.36	2637.72	1791077.27	433759.02	39°41'21.066"N	80°07'49.717"W	7793.31	160.217	1.60	0.39	1.55
15881.00	91.140	146.670	7904.67	7757.33	-7414.70	2688.67	1791128.22	433677.69	39°41'20.265"N	80°07'49.058"W	7887.12	160.069	2.66	0.23	-2.65
15976.00	92.090	150.920	7901.99	7852.26	-7495.90	2737.86	1791177.40	433596.49	39°41'19.466"N	80°07'48.422"W	7980.25	159.935	4.58	1.00	4.47
16071.00	90.770	152.650	7899.62	7947.16	-7579.58	2782.75	1791222.30	433512.81	39°41'18.642"N	80°07'47.840"W	8074.27	159.840	2.29	-1.39	1.82
16166.00	90.680	153.620	7898.42	8041.98	-7664.32	2825.68	1791265.22	433428.08	39°41'17.808"N	80°07'47.283"W	8168.62	159.762	1.03	-0.09	1.02
16261.00	90.710	152.410	7897.26	8136.80	-7748.97	2868.78	1791308.32	433343.44	39°41'16.974"N	80°07'46.724"W	8262.96	159.685	1.27	0.03	-1.27
16355.00	90.680	152.230	7896.12	8230.70	-7832.21	2912.44	1791351.98	433260.21	39°41'16.155"N	80°07'46.158"W	8356.18	159.602	0.19	-0.03	-0.19
16451.00	90.800	152.480	7894.88	8326.58	-7917.24	2956.98	1791396.52	433175.18	39°41'15.318"N	80°07'45.581"W	8451.42	159.520	0.29	0.12	0.26
16546.00	91.420	151.120	7893.04	8421.49	-8000.95	3001.87	1791441.40	433091.48	39°41'14.493"N	80°07'44.999"W	8545.54	159.434	1.57	0.65	-1.43
16642.00	91.630	149.660	7890.49	8517.45	-8084.38	3049.28	1791488.81	433008.05	39°41'13.672"N	80°07'44.386"W	8640.33	159.334	1.54	0.22	-1.52
16736.00	91.690	149.060	7887.77	8611.41	-8165.22	3097.17	1791536.69	432927.21	39°41'12.877"N	80°07'43.766"W	8732.88	159.228	0.64	0.06	-0.64
16831.00	90.890	148.030	7885.63	8706.37	-8246.24	3146.73	1791586.25	432846.20	39°41'12.079"N	80°07'43.125"W	8826.23	159.113	1.37	-0.84	-1.08
16927.00	90.490	148.530	7884.47	8802.33	-8327.89	3197.20	1791636.72	432764.55	39°41'11.276"N	80°07'42.472"W	8920.53	158.997	0.67	-0.42	0.52
17022.00	89.880	149.280	7884.16	8897.32	-8409.24	3246.26	1791685.78	432683.21	39°41'10.475"N	80°07'41.837"W	9014.07	158.892	1.02	-0.64	0.79
17116.00	89.820	148.640	7884.41	8991.31	-8489.78	3294.73	1791734.24	432602.67	39°41'09.683"N	80°07'41.210"W	9106.68	158.790	0.68	-0.06	-0.68
17211.00	89.660	146.340	7884.84	9086.24	-8569.88	3345.78	1791785.29	432522.57	39°41'08.895"N	80°07'40.550"W	9199.85	158.674	2.43	-0.17	-2.42



Actual Wellpath Report

Jenkins 8H AWP Proj: 17816'MD

Page 8 of 10



REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #08
Area	Monongalia County, WV	Well	Jenkins 8H
Field	Monongalia	Wellbore	Jenkins 8H AWB
Facility	Jenkins Pad		

WELLPATH DATA (187 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]
17306.00	89.910	146.060	7885.20	9181.06	-8648.83	3398.63	1791838.14	432443.63	39°41'08.118"N	80°07'39.866"W	9292.63	158.547	0.40	0.26	-0.29
17401.00	90.280	149.830	7885.04	9276.00	-8729.33	3449.04	1791888.54	432363.14	39°41'07.326"N	80°07'39.215"W	9386.00	158.441	3.99	0.39	3.97
17496.00	90.280	149.850	7884.58	9371.00	-8811.47	3496.77	1791936.27	432281.00	39°41'06.518"N	80°07'38.597"W	9479.95	158.355	0.02	0.00	0.02
17591.00	90.490	150.470	7883.94	9465.99	-8893.87	3544.04	1791983.54	432198.61	39°41'05.706"N	80°07'37.985"W	9573.98	158.274	0.69	0.22	0.65
17686.00	90.860	149.610	7882.82	9560.98	-8976.17	3591.48	1792030.97	432116.31	39°41'04.896"N	80°07'37.371"W	9668.01	158.193	0.99	0.39	-0.91
17781.00	90.800	148.130	7881.44	9655.96	-9057.48	3640.58	1792080.08	432035.01	39°41'04.096"N	80°07'36.735"W	9761.75	158.103	1.56	-0.06	-1.56
17816.00	90.800	148.130	7880.95	9690.95	-9087.20	3659.06	1792098.55	432005.29	39°41'03.804"N	80°07'36.496"W	9796.22	158.067	0.00	0.00	0.00

HOLE & CASING SECTIONS - Ref Wellbore: Jenkins 8H AWB Ref Wellpath: Jenkins 8H AWP Proj: 17816'MD

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]
9.625in Casing	25.00	2580.00	2555.00	25.00	2579.92	0.00	0.00	-2.50	12.41
8.75in Open Hole	2580.00	5963.00	3383.00	2579.92	5962.65	-2.50	12.41	-25.57	19.85
8.5in Open Hole	5963.00	17816.00	11853.00	5962.65	7880.95	-25.57	19.85	-9087.20	3659.06

TARGETS

Name	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Jenkins 8H BHL Rev-3	7980.00	-9092.99	3650.99	1792090.48	431999.49	39°41'03.746"N	80°07'36.599"W	point
Jenkins 8H LP Rev-5	7980.00	-1301.02	-908.66	1787531.10	439791.00	39°42'20.432"N	80°08'35.633"W	point



Actual Wellpath Report

Jenkins 8H AWP Proj: 17816'MD

Page 9 of 10



REFERENCE WELLPATH IDENTIFICATION

Operator	NORTHEAST NATURAL ENERGY, LLC	Slot	Slot #08
Area	Monongalia County, WV	Well	Jenkins 8H
Field	Monongalia	Wellbore	Jenkins 8H AWB
Facility	Jenkins Pad		

WELLPATH COMPOSITION - Ref Wellbore: Jenkins 8H AWB Ref Wellpath: Jenkins 8H AWP Proj: 17816'MD

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
25.00	5910.00	BHI Generic gyro - northseeking (Standard)	01_Javins Gyro (110'-5910')	Jenkins 8H AWB
5910.00	17781.00	BHI AutoTrak Curve (Short)	02_BH AT Curve <8-1/2"> (5910')(6003'-17781')	Jenkins 8H AWB
17781.00	17816.00	Blind Drilling (std)	Projection to bit	Jenkins 8H AWB



Actual Wellpath Report

Jenkins 8H AWP Proj: 17816'MD

Page 10 of 10



REFERENCE WELLPATH IDENTIFICATION			
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Facility	Jenkins Pad		

COMMENTS
Wellpath general comments API: 47-061-01720-0000 Job #: 8935632 Rig: Orion 14 Duration: 01/12/2018 - 01/19/2018