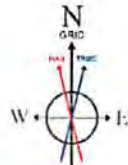
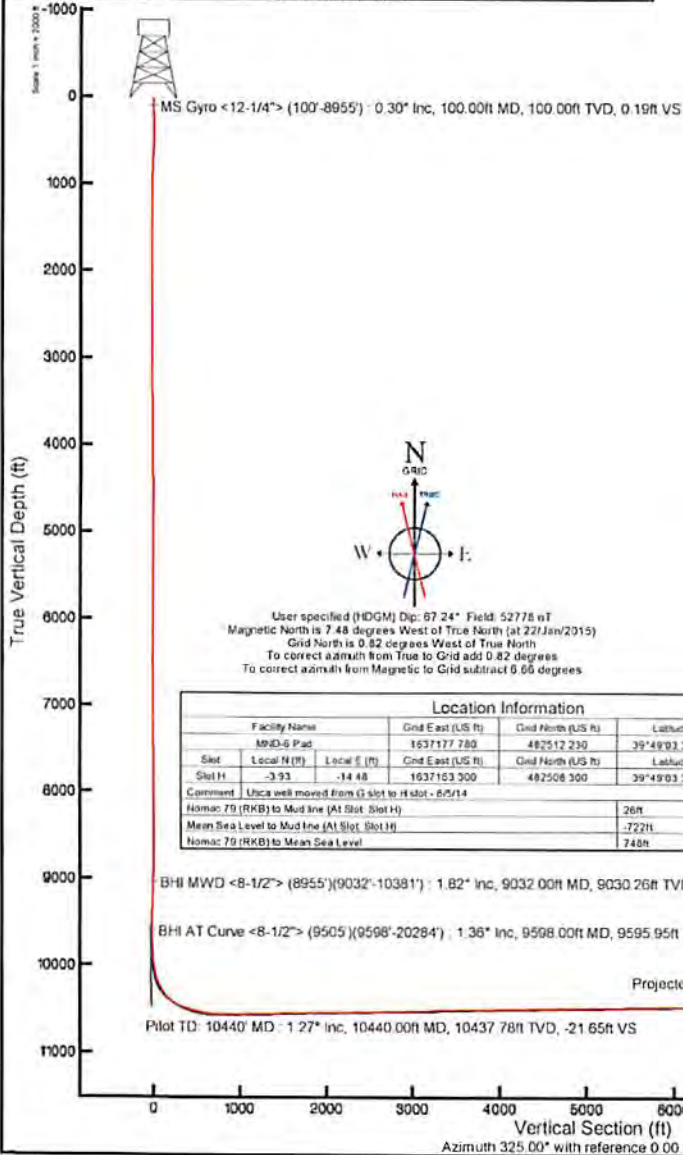


Location: Marshall County, WV
 Field: Marshall
 Facility: MND-6 Pad

Slot: Slot H
 Well: MND-6H-UHS ST01
 Wellbore: MND-6H-UHS ST01 PWB

The reference wellpath is MND-6H-UHS ST01 PWB Rev A-5	
True vertical depths are referenced to Home: 79 (RKB)	Grid System: NAD83 / Lambert West Virginia SP, North Zone (4276), US foot
Measured depths are referenced to Home: 79 (RKB)	North Reference: Grid north
Home: 79 (RKB) to Mean Sea Level: 748 feet	Scale: True distance
Mean Sea Level to Mud line (RKB) (RKB) - 772 feet	Depths are in feet
Construction area is feet referenced by SIA	Created by: vslu@gn on 24 Feb 2015



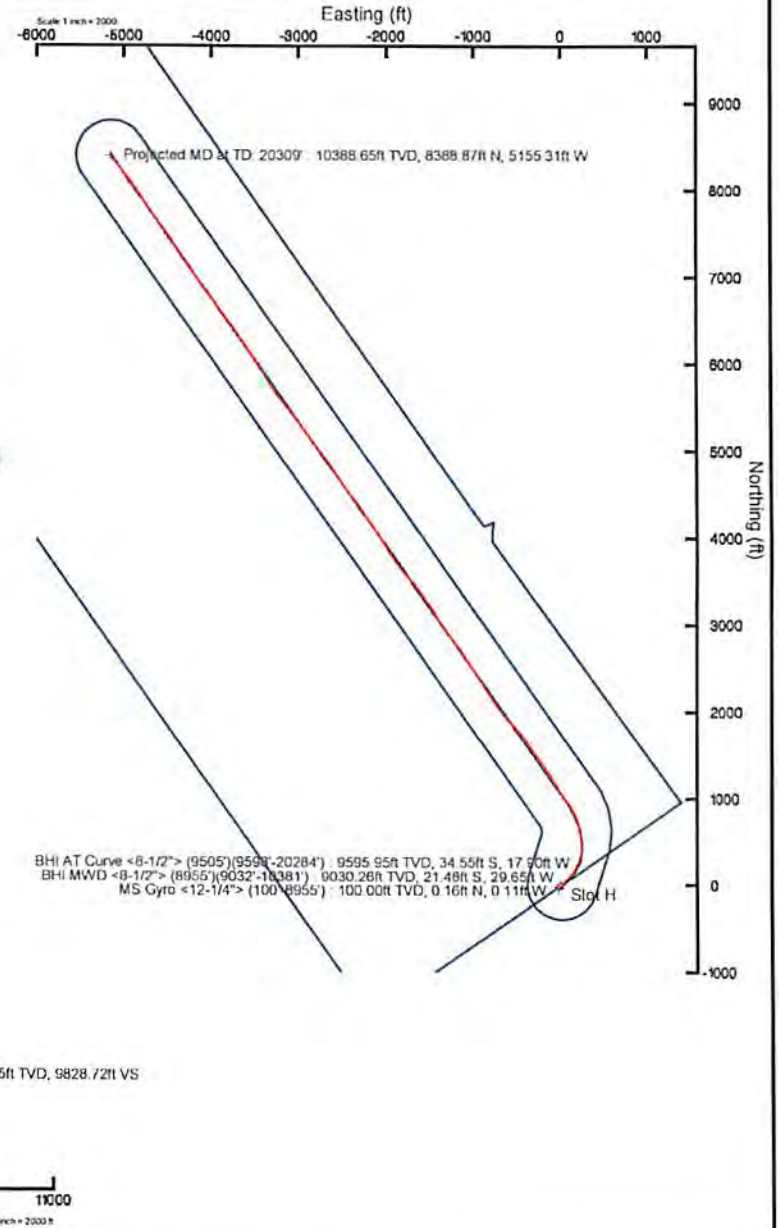
User specified (HDGM) Dip: 67.24° Field: 52778 nT
 Magnetic North is 7.48 degrees West of True North (at 22 Jan 2015)
 Grid North is 0.82 degrees West of True North
 To correct azimuth from True to Grid add 0.82 degrees
 To correct azimuth from Magnetic to Grid subtract 0.66 degrees

Location Information					
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
MND-6 Pad	1637177.780	482512.230	39°48'03.3737N	80°47'30.0537W	
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude
Slot H	-3.93	-14.48	1637183.300	482508.300	39°48'03.3347N

Comment: Ulica well moved from G slot to H slot - 8/2/14

Home: 79 (RKB) to Mud line (At Slot: Slot H)	26ft
Mean Sea Level to Mud line (At Slot: Slot H)	-772ft
Home: 79 (RKB) to Mean Sea Level	748ft

API: 47-510-17320-0100
 BHI Job #: 6944065
 Rig: Nomac 79
 Duration: 1/24/2015-2/7/2015



Vertical Section (ft)
 Azimuth 325.00° with reference 0.00 N, 0.00 E

Scale 1 inch = 2000'



Actual Wellpath Report

MND-6H-UHS ST01 AWP Proj: 20309'
Page 1 of 11



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot H
Area	Marshall County, WV	Well	MND-6H-UHS ST01
Field	Marshall	Wellbore	MND-6H-UHS ST01 AWB
Facility	MND-6 Pad	Sidetrack from	MND-6H-UHS AWB at 9505.00 MD

REPORT SETUP INFORMATION

Projection System	NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet	Software System	WellArchitect@ 4.0.1
North Reference	Grid	User	Edsaryar
Scale	0.999946	Report Generated	24/Feb/2015 at 10:58
Convergence at slot	0.82° West	Database/Source file	WellArchitectEasternDB/MND-6H-UHS_ST01_AWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-3.93	-14.48	1637163.30	482508.30	39°49'03.334"N	80°47'30.268"W
Facility Reference Pt			1637177.78	482512.23	39°49'03.375"N	80°47'30.083"W
Field Reference Pt			609601.22	0.00	38°23'48.753"N	84°21'09.765"W

WELLPATH DATUM

Calculation method	Minimum curvature	Nomac 79 (RKB) to Facility Vertical Datum	748.00ft
Horizontal Reference Pt	Slot	Nomac 79 (RKB) to Mean Sea Level	748.00ft
Vertical Reference Pt	Nomac 79 (RKB)	Nomac 79 (RKB) to Mud Line at Slot (Slot H)	26.00ft
MD Reference Pt	Nomac 79 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	325.00°



Actual Wellpath Report

MND-6H-UHS ST01 AWP Proj: 20309'
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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot H
Area	Marshall County, WV	Well	MND-6H-UHS ST01
Field	Marshall	Wellbore	MND-6H-UHS ST01 AWB
Facility	MND-6 Pad	Sidetrack from	MND-6H-UHS AWB at 9505.00 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	327.140	0.00	0.00	0.00	0.00	1637163.30	482508.30	39°49'03.334"N	80°47'30.268"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	327.140	26.00	0.00	0.00	0.00	1637163.30	482508.30	39°49'03.334"N	80°47'30.268"W	0.00	0.000	0.00	0.00	0.00
100.00	0.300	327.140	100.00	0.19	0.16	-0.11	1637163.19	482508.46	39°49'03.335"N	80°47'30.269"W	0.19	327.140	0.41	0.41	0.00
200.00	1.110	355.070	199.99	1.29	1.35	-0.33	1637162.97	482509.65	39°49'03.347"N	80°47'30.273"W	1.39	346.225	0.86	0.81	27.93
300.00	1.760	2.370	299.96	3.35	3.85	-0.35	1637162.95	482512.15	39°49'03.372"N	80°47'30.273"W	3.86	354.799	0.67	0.65	7.30
400.00	1.760	4.710	399.91	5.75	6.91	-0.16	1637163.14	482515.21	39°49'03.402"N	80°47'30.271"W	6.91	358.669	0.07	0.00	2.34
500.00	1.440	163.840	499.90	5.75	7.24	0.32	1637163.62	482515.54	39°49'03.405"N	80°47'30.265"W	7.24	2.496	3.15	-0.32	159.13
600.00	4.520	166.940	599.75	0.90	2.19	1.56	1637164.86	482510.49	39°49'03.356"N	80°47'30.248"W	2.69	35.402	3.08	3.08	3.10
700.00	3.590	166.070	699.50	-5.68	-4.69	3.20	1637166.50	482503.61	39°49'03.288"N	80°47'30.226"W	5.68	145.685	0.93	-0.93	-0.87
800.00	1.950	164.420	799.38	-10.20	-9.37	4.41	1637167.71	482498.93	39°49'03.242"N	80°47'30.210"W	10.35	154.784	1.64	-1.64	-1.65
900.00	1.160	164.900	899.34	-12.76	-11.98	5.13	1637168.43	482496.32	39°49'03.216"N	80°47'30.200"W	13.03	156.817	0.79	-0.79	0.48
1000.00	0.600	171.610	999.33	-14.18	-13.48	5.47	1637168.77	482494.82	39°49'03.201"N	80°47'30.195"W	14.55	157.905	0.57	-0.56	6.71
1100.00	0.560	160.290	1099.32	-15.12	-14.46	5.71	1637169.01	482493.85	39°49'03.192"N	80°47'30.192"W	15.54	158.437	0.12	-0.04	-11.32
1200.00	0.560	159.240	1199.32	-16.06	-15.37	6.05	1637169.35	482492.93	39°49'03.183"N	80°47'30.188"W	16.52	158.515	0.01	0.00	-1.05
1300.00	0.240	75.190	1299.32	-16.61	-15.78	6.43	1637169.73	482492.52	39°49'03.179"N	80°47'30.183"W	17.03	157.837	0.59	-0.32	-84.05
1400.00	0.260	81.060	1399.32	-16.78	-15.69	6.85	1637170.15	482492.61	39°49'03.180"N	80°47'30.177"W	17.12	156.402	0.03	0.02	5.87
1500.00	0.320	86.770	1499.32	-17.03	-15.64	7.36	1637170.66	482492.66	39°49'03.180"N	80°47'30.171"W	17.28	154.806	0.07	0.06	5.71
1600.00	0.260	56.300	1599.31	-17.18	-15.49	7.82	1637171.12	482492.81	39°49'03.182"N	80°47'30.165"W	17.36	153.210	0.16	-0.06	-30.47
1700.00	0.220	57.290	1699.31	-17.19	-15.27	8.17	1637171.47	482493.04	39°49'03.184"N	80°47'30.160"W	17.32	151.833	0.04	-0.04	0.99
1800.00	0.150	105.200	1799.31	-17.30	-15.20	8.46	1637171.76	482493.11	39°49'03.185"N	80°47'30.157"W	17.39	150.889	0.16	-0.07	47.91
1900.00	0.380	250.140	1899.31	-17.31	-15.34	8.28	1637171.58	482492.96	39°49'03.183"N	80°47'30.159"W	17.43	151.657	0.51	0.23	144.94
2000.00	0.310	29.880	1999.31	-17.11	-15.22	8.10	1637171.40	482493.08	39°49'03.185"N	80°47'30.161"W	17.24	151.982	0.65	-0.07	139.74
2047.00	0.170	181.850	2046.31	-17.12	-15.18	8.16	1637171.46	482493.12	39°49'03.185"N	80°47'30.161"W	17.23	151.740	0.99	-0.30	323.34
2100.00	0.050	143.750	2099.31	-17.20	-15.28	8.17	1637171.47	482493.02	39°49'03.184"N	80°47'30.161"W	17.33	151.860	0.25	-0.23	-71.89
2200.00	0.250	314.750	2199.31	-17.03	-15.16	8.04	1637171.34	482493.14	39°49'03.185"N	80°47'30.162"W	17.16	152.053	0.30	0.20	171.00
2300.00	0.250	289.690	2299.31	-16.64	-14.93	7.68	1637170.98	482493.37	39°49'03.187"N	80°47'30.167"W	16.79	152.776	0.11	0.00	-25.06
2400.00	0.360	312.060	2399.31	-16.15	-14.65	7.24	1637170.54	482493.65	39°49'03.190"N	80°47'30.173"W	16.34	153.689	0.16	0.11	22.37
2500.00	0.360	307.340	2499.31	-15.55	-14.25	6.76	1637170.06	482494.05	39°49'03.194"N	80°47'30.179"W	15.77	154.616	0.03	0.00	-4.72
2600.00	0.120	222.890	2599.31	-15.27	-14.13	6.44	1637169.74	482494.17	39°49'03.195"N	80°47'30.183"W	15.53	155.506	0.37	-0.24	-84.45
2700.00	0.040	73.120	2699.31	-15.30	-14.20	6.40	1637169.70	482494.10	39°49'03.194"N	80°47'30.183"W	15.58	155.734	0.16	-0.08	-149.77



Actual Wellpath Report

MND-6H-UHS ST01 AWP Proj: 20309



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot H
Area	Marshall County, WV	Well	MND-6H-UHS ST01
Field	Marshall	Wellbore	MND-6H-UHS ST01 AWB
Facility	MND-6-Pad	Sidetrack from	MND-6H-UHS AWB at 9505.00 MD

WELLPATH DATA (231 stations)

MD	Inclination	Azimuth	TVD	Vert Sect	East	North	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	DLS	Build Rate	Turn Rate
ft	°	°	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft	ft/100ft	ft/100ft
2800.00	0.190	255.730	2799.31	-15.26	-14.23	6.27	1637169.57	482494.07	39°49'03.194"N	80°47'30.185"W	15.55	156.208	0.23	0.15	-177.39
2900.00	0.340	321.120	2899.30	-14.90	-14.04	5.93	1637169.23	482494.85	39°49'03.196"N	80°47'30.189"W	15.24	157.114	0.31	0.15	65.39
3000.00	0.460	333.040	2999.30	-14.21	-13.45	5.56	1637168.86	482494.85	39°49'03.202"N	80°47'30.194"W	14.55	157.548	0.15	0.12	11.92
3100.00	0.360	340.780	3099.30	-13.51	-12.80	5.27	1637168.57	482495.50	39°49'03.208"N	80°47'30.198"W	13.84	157.605	0.11	-0.10	7.74
3200.00	0.400	334.450	3199.30	-12.86	-12.19	5.02	1637168.32	482496.12	39°49'03.214"N	80°47'30.201"W	13.18	157.613	0.06	0.04	-6.33
3300.00	0.050	293.450	3299.30	-12.48	-11.85	4.83	1637168.13	482496.45	39°49'03.217"N	80°47'30.204"W	12.80	157.835	0.36	-0.35	-11.00
3400.00	0.200	324.510	3399.30	-12.27	-11.69	4.69	1637167.99	482496.61	39°49'03.219"N	80°47'30.206"W	12.60	158.157	0.16	0.15	31.06
3500.00	0.610	16.820	3499.29	-11.76	-11.04	4.74	1637168.04	482497.26	39°49'03.225"N	80°47'30.205"W	12.02	156.767	0.51	0.41	52.31
3600.00	0.460	14.730	3599.29	-11.18	-10.14	5.00	1637168.30	482498.16	39°49'03.234"N	80°47'30.202"W	11.31	153.779	0.15	-0.15	-2.09
3700.00	0.440	11.880	3699.29	-10.65	-9.38	5.18	1637168.48	482498.92	39°49'03.242"N	80°47'30.200"W	10.71	151.104	0.03	-0.02	-2.85
3800.00	0.840	5.820	3799.28	-9.84	-8.28	5.33	1637168.63	482500.03	39°49'03.253"N	80°47'30.198"W	9.84	147.212	0.41	0.40	-6.06
3900.00	0.510	357.370	3899.27	-8.91	-7.10	5.38	1637168.68	482501.20	39°49'03.264"N	80°47'30.198"W	8.91	142.830	0.34	-0.33	-8.45
4000.00	0.330	27.450	3999.27	-8.40	-6.40	5.50	1637168.80	482501.90	39°49'03.271"N	80°47'30.196"W	8.44	139.347	0.28	-0.18	30.08
4100.00	0.500	7.070	4099.27	-7.94	-5.71	5.68	1637168.98	482502.59	39°49'03.278"N	80°47'30.194"W	8.06	135.148	0.22	0.17	-20.38
4200.00	0.600	2.380	4199.26	-7.20	-4.76	5.76	1637169.06	482503.54	39°49'03.288"N	80°47'30.193"W	7.47	129.556	0.11	0.10	-4.69
4300.00	0.910	16.010	4299.25	-6.28	-3.47	6.00	1637169.30	482504.83	39°49'03.300"N	80°47'30.191"W	6.93	120.046	0.36	0.31	13.63
4400.00	0.870	1.680	4399.24	-5.18	-1.95	6.24	1637169.54	482506.35	39°49'03.315"N	80°47'30.188"W	6.54	107.336	0.23	-0.04	-14.33
4500.00	0.670	19.420	4499.23	-4.23	-0.64	6.46	1637169.76	482507.66	39°49'03.328"N	80°47'30.185"W	6.49	95.641	0.31	-0.20	17.74
4600.00	0.340	20.140	4599.23	-3.72	0.19	6.75	1637170.05	482508.49	39°49'03.337"N	80°47'30.182"W	6.76	88.371	0.33	-0.33	0.72
4700.00	0.400	6.000	4699.23	-3.28	0.82	6.89	1637170.19	482509.12	39°49'03.343"N	80°47'30.180"W	6.94	83.233	0.11	0.06	-14.14
4800.00	0.620	11.120	4799.22	-2.65	1.70	7.03	1637170.33	482510.00	39°49'03.352"N	80°47'30.178"W	7.24	76.444	0.22	0.22	5.12
4900.00	0.860	29.090	4899.22	-1.94	2.88	7.50	1637170.80	482511.18	39°49'03.363"N	80°47'30.172"W	8.04	68.983	0.33	0.24	17.97
5000.00	0.990	18.410	4999.20	-1.10	4.36	8.14	1637171.44	482512.66	39°49'03.378"N	80°47'30.165"W	9.23	61.837	0.22	0.13	-10.68
5100.00	0.560	39.800	5099.19	-0.46	5.55	8.73	1637172.03	482513.85	39°49'03.390"N	80°47'30.157"W	10.34	57.528	0.51	-0.43	21.39
5200.00	0.480	21.720	5199.19	-0.10	6.32	9.19	1637172.49	482514.62	39°49'03.398"N	80°47'30.151"W	11.16	55.504	0.18	-0.08	-18.08
5300.00	0.330	53.950	5299.19	0.14	6.88	9.58	1637172.88	482515.18	39°49'03.403"N	80°47'30.147"W	11.79	54.335	0.27	-0.15	32.23
5400.00	0.440	110.840	5399.18	-0.18	6.91	10.17	1637173.47	482515.21	39°49'03.404"N	80°47'30.139"W	12.30	55.818	0.38	0.11	56.89
5500.00	0.480	74.250	5499.18	-0.63	6.89	10.94	1637174.23	482515.19	39°49'03.403"N	80°47'30.129"W	12.92	57.800	0.29	0.04	-36.59
5600.00	0.460	122.270	5599.18	-1.14	6.79	11.68	1637174.98	482515.09	39°49'03.403"N	80°47'30.120"W	13.51	59.840	0.38	-0.02	48.02
5700.00	0.470	127.970	5699.18	-1.90	6.32	12.34	1637175.64	482514.62	39°49'03.398"N	80°47'30.111"W	13.86	62.885	0.05	0.01	5.70



Actual Wellpath Report

MND-6H-UHS ST01 AWP Proj: 20309'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot H
Area	Marshall County, WV	Well	MND-6H-UHS ST01
Field	Marshall	Wellbore	MND-6H-UHS ST01 AWB
Facility	MND-6 Pad	Sidetrack from	MND-6H-UHS AWB at 9505.00 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]
5800.00	0.510	112.610	5799.17	-2.67	5.90	13.07	1637176.37	482514.20	39°49'03.394"N	80°47'30.102"W	14.34	65.729	0.14	0.04	-15.36
5900.00	0.060	231.120	5899.17	-3.05	5.69	13.45	1637176.74	482513.99	39°49'03.392"N	80°47'30.097"W	14.60	67.056	0.54	-0.45	118.51
6000.00	0.380	177.480	5999.17	-3.33	5.33	13.42	1637176.72	482513.63	39°49'03.388"N	80°47'30.097"W	14.44	68.346	0.35	0.32	-53.64
6100.00	0.250	178.670	6099.17	-3.79	4.78	13.44	1637176.74	482513.08	39°49'03.383"N	80°47'30.097"W	14.26	70.427	0.13	-0.13	1.19
6200.00	0.500	194.390	6199.17	-4.26	4.14	13.34	1637176.63	482512.44	39°49'03.377"N	80°47'30.098"W	13.96	72.763	0.27	0.25	15.72
6300.00	0.480	187.310	6299.16	-4.85	3.30	13.17	1637176.47	482511.60	39°49'03.368"N	80°47'30.100"W	13.58	75.940	0.06	-0.02	-7.08
6400.00	0.370	200.270	6399.16	-5.35	2.58	13.01	1637176.31	482510.88	39°49'03.361"N	80°47'30.102"W	13.26	78.778	0.15	-0.11	12.96
6500.00	0.280	228.210	6499.16	-5.56	2.12	12.71	1637176.01	482510.42	39°49'03.357"N	80°47'30.105"W	12.89	80.555	0.18	-0.09	27.94
6600.00	0.220	274.060	6599.16	-5.47	1.97	12.34	1637175.64	482510.27	39°49'03.355"N	80°47'30.110"W	12.50	80.948	0.20	-0.06	45.85
6700.00	0.350	248.510	6699.16	-5.28	1.87	11.86	1637175.16	482510.17	39°49'03.354"N	80°47'30.116"W	12.01	81.055	0.18	0.13	-25.55
6800.00	0.930	254.160	6799.15	-4.94	1.53	10.80	1637174.10	482509.83	39°49'03.351"N	80°47'30.130"W	10.91	81.915	0.58	0.58	5.65
6900.00	1.750	244.630	6899.12	-4.42	0.66	8.64	1637171.94	482508.96	39°49'03.342"N	80°47'30.157"W	8.66	85.642	0.85	0.82	-9.53
7000.00	2.010	251.370	6999.07	-3.67	-0.56	5.60	1637168.90	482507.74	39°49'03.329"N	80°47'30.196"W	5.63	95.672	0.34	0.26	6.74
7100.00	2.180	252.570	7099.00	-2.60	-1.69	2.12	1637165.42	482506.61	39°49'03.317"N	80°47'30.241"W	2.71	128.474	0.18	0.17	1.20
7200.00	2.350	246.330	7198.92	-1.62	-3.08	-1.57	1637161.73	482505.22	39°49'03.303"N	80°47'30.288"W	3.46	207.031	0.30	0.17	-6.24
7300.00	2.640	250.880	7298.83	-0.59	-4.66	-5.62	1637157.68	482503.64	39°49'03.287"N	80°47'30.339"W	7.30	230.381	0.35	0.29	4.55
7400.00	2.630	245.970	7398.72	0.48	-6.34	-9.90	1637153.40	482501.96	39°49'03.270"N	80°47'30.394"W	11.76	237.334	0.23	-0.01	-4.91
7500.00	2.620	246.210	7498.62	1.36	-8.20	-14.08	1637149.22	482500.10	39°49'03.251"N	80°47'30.447"W	16.30	239.786	0.01	-0.01	0.24
7600.00	2.290	252.570	7598.53	2.41	-9.72	-18.08	1637145.22	482498.58	39°49'03.235"N	80°47'30.498"W	20.53	241.734	0.43	-0.33	6.36
7700.00	1.640	246.620	7698.47	3.30	-10.89	-21.30	1637142.00	482497.41	39°49'03.223"N	80°47'30.539"W	23.92	242.926	0.68	-0.65	-5.95
7800.00	1.140	234.490	7798.44	3.58	-12.03	-23.42	1637139.88	482496.27	39°49'03.212"N	80°47'30.566"W	26.33	242.809	0.58	-0.50	-12.13
7900.00	1.250	243.680	7898.41	3.73	-13.09	-25.21	1637138.09	482495.21	39°49'03.201"N	80°47'30.589"W	28.41	242.552	0.22	0.11	9.19
8000.00	1.140	243.930	7998.39	4.05	-14.02	-27.08	1637136.22	482494.29	39°49'03.191"N	80°47'30.612"W	30.49	242.637	0.11	-0.11	0.25
8100.00	1.000	234.480	8098.38	4.20	-14.96	-28.69	1637134.62	482493.34	39°49'03.182"N	80°47'30.633"W	32.35	242.458	0.22	-0.14	-9.45
8200.00	1.230	240.270	8198.36	4.29	-16.00	-30.33	1637132.97	482492.30	39°49'03.171"N	80°47'30.654"W	34.29	242.187	0.26	0.23	5.79
8300.00	0.590	229.760	8298.34	4.34	-16.86	-31.65	1637131.65	482491.44	39°49'03.163"N	80°47'30.671"W	35.87	241.952	0.66	-0.64	-10.51
8400.00	0.810	207.680	8398.34	3.97	-17.82	-32.37	1637130.93	482490.48	39°49'03.153"N	80°47'30.680"W	36.96	241.167	0.34	0.22	-22.08
8500.00	0.760	208.980	8498.33	3.35	-19.03	-33.02	1637130.28	482489.27	39°49'03.141"N	80°47'30.688"W	38.11	240.049	0.05	-0.05	1.30
8600.00	0.680	240.060	8598.32	3.12	-19.90	-33.86	1637129.44	482488.40	39°49'03.132"N	80°47'30.698"W	39.28	239.550	0.39	-0.08	31.08
8700.00	0.220	176.010	8698.32	3.00	-20.39	-34.36	1637128.94	482487.91	39°49'03.127"N	80°47'30.705"W	39.96	239.311	0.62	-0.46	-64.05



Actual Wellpath Report

MND-6H-UHS ST01 AWP Proj: 20309'

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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot H
Area	Marshall County, WV	Well	MND-6H-UHS ST01
Field	Marshall	Wellbore	MND-6H-UHS ST01 AWB
Facility	MND-6 Pad	Sidetrack from	MND-6H-UHS AWB at 9505.00 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]
8800.00	0.370	98.550	8798.32	2.62	-20.63	-34.03	1637129.27	482487.67	39°49'03.125"N	80°47'30.700"W	39.79	238.770	0.39	0.15	-77.46
8900.00	1.050	84.940	8898.31	1.94	-20.60	-32.80	1637130.51	482487.70	39°49'03.126"N	80°47'30.684"W	38.73	237.867	0.70	0.68	-13.61
8955.00	1.580	90.730	8953.29	1.24	-20.56	-31.54	1637131.77	482487.74	39°49'03.126"N	80°47'30.668"W	37.65	236.891	0.99	0.96	10.53
9032.00	1.820	137.320	9030.26	-0.59	-21.48	-29.65	1637133.66	482486.82	39°49'03.117"N	80°47'30.644"W	36.61	234.078	1.77	0.31	60.51
9127.00	2.110	139.100	9125.21	-3.82	-23.91	-27.48	1637135.82	482484.39	39°49'03.094"N	80°47'30.616"W	36.42	228.974	0.31	0.31	1.87
9221.00	2.130	132.570	9219.14	-7.25	-26.40	-25.06	1637138.24	482481.90	39°49'03.069"N	80°47'30.584"W	36.40	223.509	0.26	0.02	-6.95
9315.00	2.220	140.420	9313.07	-10.77	-28.98	-22.61	1637140.69	482479.32	39°49'03.044"N	80°47'30.552"W	36.76	217.960	0.33	0.10	8.35
9410.00	1.890	143.430	9408.01	-14.17	-31.66	-20.51	1637142.80	482476.64	39°49'03.018"N	80°47'30.525"W	37.72	212.931	0.37	-0.35	3.17
9505.00	1.800	154.290	9502.96	-17.21	-34.26	-18.93	1637144.38	482474.04	39°49'02.993"N	80°47'30.504"W	39.14	208.915	0.38	-0.09	11.43
9598.00	1.360	20.990	9595.95	-18.03	-34.55	-17.90	1637145.41	482473.75	39°49'02.990"N	80°47'30.491"W	38.91	207.385	3.13	-0.47	-143.33
9692.00	6.610	28.570	9689.69	-15.00	-28.75	-14.91	1637148.39	482479.55	39°49'03.048"N	80°47'30.454"W	32.38	207.407	5.60	5.59	8.06
9739.00	7.680	29.090	9736.32	-12.42	-23.63	-12.09	1637151.21	482484.67	39°49'03.099"N	80°47'30.419"W	26.54	207.089	2.28	2.28	1.11
9787.00	10.830	36.010	9783.69	-9.55	-17.18	-7.87	1637155.43	482491.12	39°49'03.163"N	80°47'30.366"W	18.90	204.628	6.95	6.56	14.42
9836.00	14.920	43.380	9831.45	-6.78	-8.86	-0.83	1637162.47	482499.44	39°49'03.246"N	80°47'30.277"W	8.90	185.362	8.98	8.35	15.04
9882.00	18.620	45.020	9875.49	-4.32	0.63	8.43	1637171.73	482508.93	39°49'03.341"N	80°47'30.160"W	8.46	85.703	8.11	8.04	3.57
9932.00	23.280	43.240	9922.17	-0.92	13.48	20.86	1637184.15	482521.78	39°49'03.470"N	80°47'30.003"W	24.83	57.121	9.41	9.32	-3.56
9977.00	27.350	41.860	9962.84	3.25	27.66	33.85	1637197.15	482535.96	39°49'03.612"N	80°47'29.839"W	43.72	50.743	9.14	9.04	-3.07
10025.00	31.960	41.420	10004.55	8.74	45.41	49.62	1637212.92	482553.71	39°49'03.790"N	80°47'29.641"W	67.26	47.536	9.61	9.60	-0.92
10071.00	36.350	42.150	10042.60	14.63	64.66	66.83	1637230.13	482572.95	39°49'03.982"N	80°47'29.424"W	92.99	45.948	9.58	9.54	1.59
10123.00	41.680	43.690	10082.99	21.45	88.60	89.13	1637252.43	482596.90	39°49'04.222"N	80°47'29.142"W	125.68	45.171	10.42	10.25	2.96
10166.00	45.420	43.020	10114.15	27.44	110.14	109.46	1637272.76	482618.44	39°49'04.438"N	80°47'28.886"W	155.29	44.823	8.76	8.70	-1.56
10215.00	46.940	36.680	10148.10	36.69	137.28	132.08	1637295.37	482645.57	39°49'04.709"N	80°47'28.601"W	190.50	43.894	9.83	3.10	-12.94
10261.00	47.250	28.840	10179.44	49.43	165.57	150.28	1637313.57	482673.86	39°49'04.991"N	80°47'28.373"W	223.60	42.228	12.50	0.67	-17.04
10309.00	46.880	24.480	10212.14	66.10	196.96	166.04	1637329.33	482705.25	39°49'05.304"N	80°47'28.177"W	257.61	40.132	6.69	-0.77	-9.08
10356.00	46.540	26.760	10244.37	82.89	227.80	180.83	1637344.12	482736.09	39°49'05.611"N	80°47'27.993"W	290.85	38.442	3.60	-0.72	4.85
10405.00	47.500	27.480	10277.78	99.65	259.71	197.17	1637360.46	482767.99	39°49'05.928"N	80°47'27.789"W	326.08	37.206	2.23	1.96	1.47
10451.00	48.940	21.550	10308.44	117.05	290.90	211.38	1637374.66	482799.18	39°49'06.238"N	80°47'27.613"W	359.59	36.003	10.11	3.13	-12.89
10500.00	51.090	14.220	10339.95	139.71	326.60	222.86	1637386.14	482834.88	39°49'06.593"N	80°47'27.473"W	395.38	34.308	12.27	4.39	-14.96
10545.00	53.940	8.360	10367.35	164.39	361.59	229.81	1637393.09	482869.87	39°49'06.940"N	80°47'27.390"W	428.44	32.438	12.12	6.33	-13.02
10594.00	57.300	4.160	10395.02	194.79	401.77	234.18	1637397.47	482910.05	39°49'07.337"N	80°47'27.341"W	465.04	30.237	9.85	6.86	-8.57



Actual Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot H
Area	Marshall County, WV	Well	MND-6H-UHS ST01
Field	Marshall	Wellbore	MND-6H-UHS ST01 AWB
Facility	MND-6 Pad	Sidetrack from	MND-6H-UHS AWB at 9505.00 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]
10640.00	60.710	359.720	10418.72	226.31	441.16	235.49	1637398.78	482949.44	39°49'07.727"N	80°47'27.332"W	500.08	28.093	11.11	7.41	-9.65
10686.00	64.400	356.540	10439.92	260.49	481.95	234.14	1637397.43	482990.22	39°49'08.130"N	80°47'27.357"W	535.81	25.911	10.10	8.02	-6.91
10735.00	67.970	353.330	10459.70	299.33	526.58	230.17	1637393.45	483034.85	39°49'08.570"N	80°47'27.416"W	574.69	23.610	9.43	7.29	-6.55
10782.00	71.500	350.670	10475.98	338.61	570.23	224.02	1637387.31	483078.50	39°49'09.001"N	80°47'27.502"W	612.66	21.448	9.20	7.51	-5.66
10829.00	74.400	348.630	10489.76	379.45	614.43	215.94	1637379.23	483122.69	39°49'09.436"N	80°47'27.614"W	651.27	19.364	7.44	6.17	-4.34
10876.00	76.360	347.350	10501.63	421.31	658.90	206.48	1637369.77	483167.17	39°49'09.874"N	80°47'27.744"W	690.50	17.399	4.93	4.17	-2.72
10924.00	75.950	345.820	10513.11	464.65	704.24	195.67	1637358.96	483212.50	39°49'10.321"N	80°47'27.890"W	730.91	15.527	3.21	-0.85	-3.19
10970.00	76.650	343.410	10524.01	506.74	747.32	183.81	1637347.10	483255.58	39°49'10.745"N	80°47'28.050"W	769.60	13.818	5.31	1.52	-5.24
11019.00	77.190	338.640	10535.10	552.60	792.44	168.29	1637331.58	483300.70	39°49'11.188"N	80°47'28.257"W	810.12	11.990	9.55	1.10	-9.73
11066.00	80.110	333.390	10544.36	597.81	834.52	149.56	1637312.85	483342.77	39°49'11.602"N	80°47'28.505"W	847.82	10.161	12.59	6.21	-11.17
11113.00	81.970	327.470	10551.69	644.01	874.88	126.66	1637289.95	483383.13	39°49'11.997"N	80°47'28.806"W	884.00	8.237	13.06	3.96	-12.60
11159.00	84.390	323.470	10557.15	689.67	912.49	100.77	1637264.06	483420.74	39°49'12.365"N	80°47'29.145"W	918.04	6.302	10.11	5.26	-8.70
11208.00	89.570	322.720	10559.73	738.56	951.60	71.40	1637234.69	483459.85	39°49'12.748"N	80°47'29.528"W	954.28	4.291	10.68	10.57	-1.53
11233.00	90.830	323.890	10559.64	763.55	971.65	56.46	1637219.75	483479.89	39°49'12.943"N	80°47'29.724"W	973.29	3.325	6.88	5.04	4.68
11302.00	90.890	326.700	10558.61	832.53	1028.36	17.18	1637180.48	483536.60	39°49'13.498"N	80°47'30.237"W	1028.50	0.957	4.07	0.09	4.07
11397.00	90.950	329.240	10557.08	927.38	1108.88	-33.19	1637130.11	483617.12	39°49'14.287"N	80°47'30.898"W	1109.38	358.285	2.67	0.06	2.67
11491.00	90.890	328.560	10555.57	1021.15	1189.36	-81.74	1637081.56	483697.59	39°49'15.075"N	80°47'31.535"W	1192.17	356.068	0.73	-0.06	-0.72
11586.00	91.170	325.770	10553.86	1116.06	1269.16	-133.24	1637030.07	483777.39	39°49'15.856"N	80°47'32.209"W	1276.14	354.007	2.95	0.29	-2.94
11681.00	90.860	324.800	10552.18	1211.04	1347.24	-187.33	1636975.98	483855.46	39°49'16.620"N	80°47'32.917"W	1360.20	352.084	1.07	-0.33	-1.02
11775.00	90.920	325.800	10550.72	1305.03	1424.51	-240.84	1636922.48	483932.73	39°49'17.376"N	80°47'33.617"W	1444.73	350.404	1.07	0.06	1.06
11870.00	90.860	325.630	10549.25	1400.01	1502.99	-294.34	1636868.97	484011.21	39°49'18.144"N	80°47'34.317"W	1531.54	348.920	0.19	-0.06	-0.18
11965.00	90.950	324.710	10547.75	1495.00	1580.96	-348.60	1636814.72	484089.18	39°49'18.907"N	80°47'35.027"W	1618.94	347.566	0.97	0.09	-0.97
12060.00	90.950	324.400	10546.17	1589.98	1658.35	-403.68	1636759.64	484166.55	39°49'19.664"N	80°47'35.747"W	1706.77	346.319	0.33	0.00	-0.33
12155.00	91.020	322.620	10544.54	1684.93	1734.71	-460.16	1636703.16	484242.91	39°49'20.410"N	80°47'36.485"W	1794.71	345.143	1.87	0.07	-1.87
12250.00	90.830	318.050	10543.00	1779.58	1807.81	-520.78	1636642.55	484316.01	39°49'21.124"N	80°47'37.275"W	1881.33	343.930	4.81	-0.20	-4.81
12344.00	90.830	318.020	10541.64	1872.87	1877.70	-583.63	1636579.70	484385.89	39°49'21.806"N	80°47'38.093"W	1966.31	342.734	0.03	0.00	-0.03
12439.00	91.020	321.220	10540.11	1967.43	1950.05	-645.16	1636518.18	484458.24	39°49'22.512"N	80°47'38.895"W	2054.00	341.694	3.37	0.20	3.37
12534.00	90.980	323.100	10538.45	2062.30	2025.05	-703.42	1636459.91	484533.24	39°49'23.245"N	80°47'39.656"W	2143.75	340.845	1.98	-0.04	1.98
12628.00	90.800	323.740	10536.99	2156.25	2100.53	-759.44	1636403.91	484608.71	39°49'23.983"N	80°47'40.387"W	2233.60	340.123	0.71	-0.19	0.68
12721.00	90.920	326.850	10535.59	2249.22	2176.97	-812.37	1636350.97	484685.15	39°49'24.731"N	80°47'41.080"W	2323.60	339.536	3.35	0.13	3.34



Actual Wellpath Report

MND-6H-UHS ST01 AWP Proj: 20309'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot H
Area	Marshall County, WV	Well	MND-6H-UHS ST01
Field	Marshall	Wellbore	MND-6H-UHS ST01 AWB
Facility	MND-6 Pad	Sidetrack from	MND-6H-UHS AWB at 9505.00 MD

WELLPATH DATA (231 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TYD [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]
12817.00	91.230	330.920	10533.79	2344.97	2259.12	-861.96	1636301.38	484767.30	39°49'25.535"N	80°47'41.730"W	2417.98	339.116	4.25	0.32	4.24
12912.00	91.110	327.670	10531.85	2439.67	2340.78	-910.46	1636252.90	484848.95	39°49'26.335"N	80°47'42.367"W	2511.61	338.746	3.42	-0.13	-3.42
13007.00	91.140	325.230	10529.98	2534.61	2419.93	-962.94	1636200.41	484928.09	39°49'27.110"N	80°47'43.054"W	2604.48	338.301	2.57	0.03	-2.57
13102.00	91.200	327.430	10528.04	2629.56	2498.97	-1015.60	1636147.76	485007.13	39°49'27.884"N	80°47'43.744"W	2697.46	337.883	2.32	0.06	2.32
13197.00	91.140	326.730	10526.10	2724.48	2578.70	-1067.22	1636096.14	485086.86	39°49'28.664"N	80°47'44.420"W	2790.81	337.517	0.74	-0.06	-0.74
13292.00	91.350	326.500	10524.04	2819.42	2658.00	-1119.48	1636043.88	485166.16	39°49'29.440"N	80°47'45.104"W	2884.13	337.160	0.33	0.22	-0.24
13386.00	91.380	323.390	10521.80	2913.38	2734.92	-1173.45	1635989.92	485243.07	39°49'30.193"N	80°47'45.810"W	2976.03	336.778	3.31	0.03	-3.31
13481.00	91.350	321.020	10519.54	3008.23	2809.97	-1231.65	1635931.72	485318.11	39°49'30.926"N	80°47'46.570"W	3068.04	336.331	2.49	-0.03	-2.49
13576.00	91.290	323.640	10517.35	3103.10	2885.14	-1289.68	1635873.69	485393.27	39°49'31.661"N	80°47'47.327"W	3160.27	335.915	2.76	-0.06	2.76
13670.00	91.480	324.300	10515.08	3197.05	2961.13	-1344.96	1635818.42	485469.27	39°49'32.404"N	80°47'48.050"W	3252.26	335.572	0.73	0.20	0.70
13765.00	91.380	329.570	10512.70	3291.94	3040.69	-1396.75	1635766.62	485548.82	39°49'33.182"N	80°47'48.728"W	3346.15	335.328	5.55	-0.11	5.55
13859.00	91.380	331.000	10510.44	3385.51	3122.31	-1443.33	1635720.05	485630.43	39°49'33.982"N	80°47'49.340"W	3439.77	335.191	1.52	0.00	1.52
13954.00	90.980	326.120	10508.48	3480.27	3203.32	-1492.86	1635670.52	485711.44	39°49'34.776"N	80°47'49.990"W	3534.10	335.013	5.15	-0.42	-5.14
14049.00	90.980	322.480	10506.86	3575.24	3280.44	-1548.28	1635615.11	485788.56	39°49'35.530"N	80°47'50.715"W	3627.46	334.734	3.83	0.00	-3.83
14144.00	90.830	325.670	10505.36	3670.20	3357.35	-1604.00	1635559.38	485865.46	39°49'36.282"N	80°47'51.443"W	3720.84	334.463	3.36	-0.16	3.36
14239.00	90.800	324.810	10504.01	3765.19	3435.39	-1658.16	1635505.23	485943.50	39°49'37.045"N	80°47'52.152"W	3814.63	334.235	0.91	-0.03	-0.91
14333.00	90.830	316.610	10502.67	3858.84	3508.07	-1717.63	1635445.77	486016.18	39°49'37.755"N	80°47'52.927"W	3906.00	333.913	8.72	0.03	-8.72
14428.00	90.890	320.560	10501.24	3953.21	3579.29	-1780.45	1635382.95	486087.39	39°49'38.450"N	80°47'53.745"W	3997.67	333.553	4.16	0.06	4.16
14523.00	90.950	323.560	10499.71	4048.06	3654.20	-1838.85	1635324.55	486162.29	39°49'39.182"N	80°47'54.508"W	4090.79	333.288	3.16	0.06	3.16
14618.00	91.080	321.900	10498.03	4142.97	3729.78	-1896.37	1635267.04	486237.88	39°49'39.921"N	80°47'55.259"W	4184.20	333.049	1.75	0.14	-1.75
14713.00	91.110	328.750	10496.21	4237.90	3807.85	-1950.37	1635213.04	486315.94	39°49'40.684"N	80°47'55.965"W	4278.28	332.879	7.21	0.03	7.21
14808.00	91.110	330.920	10494.37	4332.53	3889.96	-1998.10	1635165.31	486398.05	39°49'41.489"N	80°47'56.592"W	4373.12	332.812	2.28	0.00	2.28
14903.00	91.140	327.120	10492.51	4427.26	3971.38	-2046.98	1635116.43	486479.46	39°49'42.286"N	80°47'57.234"W	4467.89	332.732	4.00	0.03	-4.00
14997.00	91.170	324.770	10490.61	4521.23	4049.24	-2099.60	1635063.81	486557.31	39°49'43.048"N	80°47'57.923"W	4561.21	332.592	2.50	0.03	-2.50
15092.00	91.200	324.910	10488.65	4616.21	4126.89	-2154.30	1635009.12	486634.96	39°49'43.808"N	80°47'58.638"W	4655.34	332.435	0.15	0.03	0.15
15187.00	91.230	326.540	10486.63	4711.17	4205.37	-2207.79	1634955.64	486713.44	39°49'44.576"N	80°47'59.338"W	4749.68	332.301	1.72	0.03	1.72
15282.00	91.140	327.510	10484.67	4806.09	4285.05	-2259.48	1634903.95	486793.11	39°49'45.356"N	80°48'00.015"W	4844.27	332.198	1.03	-0.09	1.02
15377.00	90.890	325.290	10482.98	4901.04	4364.16	-2312.04	1634851.39	486872.22	39°49'46.130"N	80°48'00.704"W	4938.77	332.086	2.35	-0.26	-2.34
15472.00	90.920	320.760	10481.48	4995.95	4440.03	-2369.16	1634794.27	486948.08	39°49'46.871"N	80°48'01.450"W	5032.57	331.916	4.77	0.03	-4.77
15566.00	90.920	325.440	10479.97	5089.86	4515.17	-2425.57	1634737.86	487023.22	39°49'47.606"N	80°48'02.187"W	5125.44	331.755	4.98	0.00	4.98