



**Actual Wellpath Report**  
 MND-6E-HS AWP Proj: 15653'  
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WV Department of Environmental Protection  
 02/03/2017

**REFERENCE WELL PATH IDENTIFICATION**

Operator	NOBLE ENERGY	Slot	Slot E
Area	Marshall County, WV	Well	MND-6E-HS
Field	Marshall	Wellbore	MND-6E-HS AWP
Facility	MND-6 Pad		

**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	Kroschr
Scale	0.999946	Report Generated	12/3/2014 at 10:38:05 AM
Convergence at slot	0.82° West	Database/Source file	WA_NorthEast/MND-6E-HS_AWP.xml

**WELL PATH LOCATION**

	Local coordinates			Grid coordinates		Geographic coordinates	
	North(ft)	East(ft)	Easting(US ft)	Northing(US ft)	Latitude	Longitude	
Slot Location	3.57	-63.31	1637114.47	482515.80	39°49'03.401"N	80°47'30.895"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	

**WELL PATH DATUM**

Calculation method	Minimum curvature	Nomac 79 (RKB) to Facility Vertical Datum	746.79ft
Horizontal Reference Pt	Slot	Nomac 79 (RKB) to Mean Sea Level	746.79ft
Vertical Reference Pt	Nomac 79 (RKB)	Nomac 79 (RKB) to Mud Line at Slot (Slot E)	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°



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Area	Marshall County, WV	MND-6E-HS
Field	Marshall	Well
Facility	MND-6 Pad	Wellbore
		MND-6E-HS AWP

WELLPATH DATA (172 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)
0.00†	0.000	1.150	0.00	0.00	0.00	0.00	1637114.47	482515.80	39°49'03.401"N	80°47'30.895"W	0.00	0.000	0.00
26.00	0.000	1.150	26.00	0.00	0.00	0.00	1637114.47	482515.80	39°49'03.401"N	80°47'30.895"W	0.00	0.000	0.00
50.00	0.220	1.150	50.00	0.04	0.05	0.00	1637114.47	482515.85	39°49'03.403"N	80°47'30.895"W	0.05	1.150	0.92
100.00	0.430	282.070	100.00	0.25	0.18	-0.18	1637114.29	482515.98	39°49'03.403"N	80°47'30.897"W	0.26	315.103	0.89
150.00	0.330	227.990	150.00	0.37	0.12	-0.47	1637114.00	482515.92	39°49'03.402"N	80°47'30.901"W	0.49	284.763	0.71
200.00	0.430	315.220†	200.00	0.54	0.16	-0.71	1637113.76	482515.96	39°49'03.402"N	80°47'30.904"W	0.73	282.769	1.06
250.00	0.820	309.140	249.99	1.07	0.52	-1.12	1637113.35	482516.32	39°49'03.406"N	80°47'30.910"W	1.23	294.906	0.79
265.00	1.000	277.410	264.99	1.26	0.60	-1.33	1637113.14	482516.40	39°49'03.407"N	80°47'30.912"W	1.46	294.398	3.51
311.00	0.520	159.270	310.99	1.33	0.46	-1.61	1637112.81	482516.26	39°49'03.405"N	80°47'30.916"W	1.72	285.551	2.88
327.00	0.540	167.240	326.99	1.19	0.32	-1.61	1637112.86	482516.12	39°49'03.404"N	80°47'30.916"W	1.65	281.199	0.46
426.00	1.110	160.580	425.98	-2.40	-3.15	-0.32	1637114.15	482512.65	39°49'03.370"N	80°47'30.899"W	3.16	185.756	0.51
523.00	1.590	155.260	522.95	-5.26	-5.70	1.03	1637115.50	482510.10	39°49'03.345"N	80°47'30.881"W	5.79	169.743	0.41
617.00	1.930	149.540	616.91	-7.70	-7.73	2.38	1637116.85	482508.07	39°49'03.325"N	80°47'30.863"W	8.09	162.912	0.70
702.00	1.370	142.310	701.87	-16.65	-14.99	7.62	1637122.69	482500.81	39°49'02.254"N	80°47'30.795"W	16.81	153.051	1.16
904.00	3.710	144.820	903.66	-24.23	-21.55	11.46	1637125.93	482494.25	39°49'03.190"N	80°47'30.744"W	24.41	151.992	2.00
999.00	5.500	152.910	998.35	-33.26	-29.53	15.82	1637130.29	482486.27	39°49'03.111"N	80°47'30.687"W	33.50	151.825	0.31
1094.00	5.480	149.840	1092.91	-40.79	-36.04	19.64	1637134.11	482479.76	39°49'03.048"N	80°47'30.637"W	41.05	151.408	1.85
1188.00	3.740	149.140	1186.61	-45.54	-40.03	22.22	1637136.69	482475.77	39°49'03.009"N	80°47'30.603"W	45.79	150.967	1.77
1281.00	2.120	143.660	1279.48	-48.91	-42.67	24.34	1637138.81	482473.13	39°49'02.983"N	80°47'30.575"W	49.12	150.296	0.23
1375.00	2.010	138.560	1373.42	-52.21	-45.09	26.62	1637141.09	482470.71	39°49'02.959"N	80°47'30.546"W	52.37	149.443	0.13
1470.00	1.770	131.000	1468.36	-55.24	-47.21	28.89	1637143.35	482468.59	39°49'02.929"N	80°47'30.516"W	55.35	148.540	0.22
1566.00	1.590	127.530	1464.27	-60.39	-50.49	33.18	1637147.65	482466.88	39°49'02.922"N	80°47'30.489"W	57.90	147.663	0.22
1755.00	1.550	123.030	1753.23	-64.69	-52.90	37.23	1637151.70	482462.26	39°49'02.877"N	80°47'30.461"W	60.42	146.686	0.13
1850.00	1.430	121.990	1848.20	-66.05	-53.54	38.70	1637153.17	482461.37	39°49'02.869"N	80°47'30.358"W	68.23	142.922	0.14
1944.00	1.310	115.520	1942.18	-68.19	-54.44	41.14	1637155.60	482461.36	39°49'02.869"N	80°47'30.352"W	68.51	142.632	1.83
2015.00	1.120	108.900	2137.13	-67.26	-53.71	40.56	1637155.03	482462.05	39°49'02.876"N	80°47'30.366"W	67.30	142.940	0.28
2139.00	0.630	303.660	2232.13										
2234.00	0.890	307.530	2327.12										
2329.00													

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Area	Marshall County, WV	Well	MND-6E-HS
Field	Marshall	Wellbore	MND-6E-HS AWB
Facility	MND-6 Pad		

WELLPATH DATA (172 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 (P/100ft)
2423.00	0.960	294.510	2421.11	-65.88	-52.94	39.26	1637153.73	482462.87	39°49'02.883"N	80°47'30.382"W	65.91	143.435	0.24
2518.00	0.920	293.790	2516.09	-64.55	-52.30	37.84	1637152.31	482463.50	39°49'02.890"N	80°47'30.401"W	64.55	144.111	0.04
2613.00	0.710	293.920	2611.08	-63.39	-51.75	36.61	1637151.07	482464.05	39°49'02.895"N	80°47'30.417"W	63.39	144.727	0.22
2707.00	0.790	306.200	2705.07	-62.28	-51.13	35.55	1637150.02	482464.67	39°49'02.901"N	80°47'30.430"W	62.28	145.191	0.19
2802.00	0.580	298.670	2800.07	-61.23	-50.52	34.60	1637149.07	482465.29	39°49'02.907"N	80°47'30.442"W	61.23	145.591	0.24
2897.00	0.550	299.610	2895.06	-60.38	-50.06	33.78	1637148.25	482465.74	39°49'02.911"N	80°47'30.453"W	60.39	145.987	0.03
3181.00	0.620	285.950	3179.05	-57.96	-48.96	31.12	1637143.59	482466.94	39°49'02.922"N	80°47'30.487"W	58.02	147.561	0.05
3276.00	3.180	256.170	3273.99	-56.61	-49.45	28.07	1637142.54	482466.35	39°49'02.916"N	80°47'30.526"W	56.86	150.423	2.80
3371.00	6.800	241.040	3368.62	-55.06	-52.81	20.58	1637133.05	482463.00	39°49'02.882"N	80°47'30.622"W	56.88	158.704	4.02
3466.00	8.360	240.460	3462.78	-53.82	-58.94	9.65	1637124.12	482456.87	39°49'02.820"N	80°47'30.761"W	59.72	170.697	1.64
3561.00	9.820	238.060	3556.59	-52.73	-66.63	-3.23	1637111.24	482449.18	39°49'02.742"N	80°47'30.924"W	66.71	182.775	1.59
3656.00	12.650	236.200	3649.76	-52.08	-76.70	-18.75	1637095.72	482439.10	39°49'02.640"N	80°47'31.121"W	78.96	193.738	3.00
3708.00	13.800	239.910	3700.38	-51.43	-82.98	-28.85	1637085.62	482432.83	39°49'02.577"N	80°47'31.250"W	87.85	199.171	2.75
3817.00	19.400	246.550	3804.81	-46.68	-96.71	-56.73	1637057.74	482419.09	39°49'02.437"N	80°47'31.604"W	112.12	210.395	5.42
3912.00	26.670	243.870	3892.17	-40.23	-112.40	-90.39	1637024.08	482403.40	39°49'02.277"N	80°47'32.033"W	144.24	218.805	7.73
4007.00	26.620	241.350	3977.09	-34.59	-132.00	-128.21	1636986.26	482383.81	39°49'02.078"N	80°47'32.514"W	184.02	224.166	1.19
4101.00	26.780	238.200	4061.07	-31.08	-153.26	-164.69	1636949.79	482362.55	39°49'01.863"N	80°47'32.977"W	224.97	227.060	1.52
4196.00	26.400	236.070	4146.02	-29.49	-176.32	-200.41	1636914.07	482339.49	39°49'01.630"N	80°47'33.431"W	266.93	228.658	1.08
4291.00	26.830	237.230	4230.96	-28.26	-199.72	-233.96	1636878.53	482316.10	39°49'01.394"N	80°47'33.882"W	309.13	229.755	0.71
4385.00	22.340	232.930	4316.42	-28.08	-221.98	-268.07	1636846.45	482293.33	39°45'01.169"N	80°47'34.289"W	348.05	230.373	5.14
4480.00	26.700	240.110	4402.83	-26.83	-243.51	-301.00	1636813.49	482272.48	39°49'00.952"N	80°47'34.707"W	387.17	231.027	5.55
4575.00	26.680	238.380	4487.73	-23.67	-265.33	-337.67	1636776.82	482250.58	39°49'00.731"N	80°47'35.173"W	429.44	231.840	0.82
4669.00	26.420	238.630	4571.82	-21.10	-287.28	-373.49	1636741.07	482228.53	39°49'00.509"N	80°47'35.628"W	471.20	232.433	0.30
4764.00	26.320	239.660	4656.93	-18.05	-308.92	-409.72	1636704.78	482206.89	39°49'00.290"N	80°47'36.088"W	513.13	232.984	0.49
4859.00	25.460	241.280	4742.40	-14.11	-329.37	-445.80	1636668.69	482186.44	39°49'00.083"N	80°47'36.547"W	554.28	233.542	1.17
4953.00	25.540	240.950	4827.24	-9.80	-348.92	-481.23	1636632.26	482166.90	39°48'59.885"N	80°47'36.997"W	594.42	234.056	0.17
5048.00	25.460	240.210	4912.99	-5.82	-369.01	-516.86	1636597.64	482146.81	39°48'59.681"N	80°47'37.450"W	635.07	234.475	0.35
5142.00	24.890	240.860	4998.06	-1.97	-388.68	-551.67	1636562.83	482127.14	39°48'59.482"N	80°47'37.892"W	674.84	234.833	0.67
5237.00	25.670	241.200	5083.96	2.30	-408.33	-587.16	1636527.34	482107.49	39°48'59.282"N	80°47'38.344"W	715.19	235.184	0.84
5331.00	25.470	240.920	5168.75	6.58	-427.96	-622.67	1636491.84	482087.86	39°48'59.083"N	80°47'38.795"W	755.56	235.499	0.25



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MND-6E-HS AWP Proj: 15653  
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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	MND-6E-HS
Area	Marshall County, WV	Well	MND-6E-HS
Field	Marshall	Wellbore	MND-6E-HS AWB
Facility	MND-6 Pad		

WELLPATH DATA (172 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 [p/100ft]
5426.00	25.280	240.710	5254.59	10.71	-447.81	-658.21	1636456.29	482068.01	39°48'58.882"N	80°47'39.247"W	796.10	235.771	0.22
5521.00	25.150	249.890	5340.57	17.92	-464.69	-694.87	1636419.64	482051.14	39°48'58.710"N	80°47'39.713"W	835.93	236.228	4.12
5615.00	27.840	262.710	5424.76	33.27	-474.35	-735.44	1636379.07	482041.48	39°48'58.609"N	80°47'40.231"W	875.15	237.179	6.71
5710.00	31.070	272.020	5507.51	58.36	-476.30	-781.98	1636332.53	482039.53	39°48'58.583"N	80°47'40.827"W	915.62	238.655	5.89
5805.00	33.370	281.770	5587.93	92.19	-470.10	-832.10	1636282.42	482045.72	39°48'58.637"N	80°47'41.471"W	955.71	240.535	5.98
5899.00	40.310	290.230	5663.16	136.08	-454.28	-886.04	1636228.48	482061.54	39°48'58.786"N	80°47'42.165"W	995.71	242.855	9.13
5994.00	50.950	293.590	5729.51	192.98	-428.82	-948.87	1636165.66	482087.00	39°48'59.028"N	80°47'42.975"W	1041.27	245.680	11.48
6089.00	59.560	301.840	5783.67	262.33	-392.34	-1017.67	1636096.85	482123.48	39°48'59.379"N	80°47'43.863"W	1090.68	248.917	11.52
6184.00	64.190	309.310	5828.49	341.28	-343.57	-1085.66	1636028.87	482172.25	39°48'59.851"N	80°47'44.743"W	1138.73	252.440	8.47
6278.00	72.030	316.220	5863.54	426.42	-284.33	-1149.50	1635965.04	482231.49	39°49'00.428"N	80°47'45.572"W	1184.14	256.107	10.77
6373.00	80.020	323.230	5886.49	518.08	-214.04	-1208.93	1635905.61	482301.78	39°49'01.114"N	80°47'46.347"W	1227.73	259.960	11.04
6468.00	89.260	326.680	5895.36	612.55	-136.68	-1263.16	1635831.38	482379.12	39°49'01.871"N	80°47'47.056"W	1270.53	263.824	10.38
6563.00	90.370	326.960	5895.44	637.54	-115.76	-1276.84	1635837.70	482400.05	39°49'02.075"N	80°47'47.235"W	1282.07	264.820	4.58
6658.00	90.310	327.900	5895.02	707.47	-56.77	-1314.52	1635800.02	482459.03	39°49'02.653"N	80°47'47.729"W	1315.74	267.527	1.35
6752.00	90.370	327.130	5893.80	896.26	103.00	-1415.47	1635699.08	482618.80	39°49'04.217"N	80°47'49.052"W	1365.20	270.995	0.10
6847.00	90.400	327.130	5893.17	991.19	182.79	-1467.03	1635647.52	482698.58	39°49'04.998"N	80°47'49.727"W	1419.21	274.162	0.83
6942.00	90.590	328.280	5892.35	1086.08	263.09	-1517.78	1635596.77	482778.88	39°49'05.785"N	80°47'50.393"W	1478.37	277.102	0.03
7036.00	90.650	328.670	5891.33	1179.90	343.21	-1566.93	1635547.63	482858.99	39°49'06.569"N	80°47'51.037"W	1540.42	279.834	1.23
7130.00	90.620	327.490	5890.29	1273.76	422.90	-1616.63	1635497.93	482938.77	39°49'07.351"N	80°47'51.889"W	1604.08	282.355	0.42
7225.00	90.550	324.140	5889.32	1368.73	501.56	-1669.99	1635444.57	483017.34	39°49'08.119"N	80°47'52.387"W	1671.05	284.663	1.26
7320.00	90.430	322.030	5887.89	1463.65	577.35	-1727.26	1635388.51	483093.12	39°49'08.860"N	80°47'53.135"W	1743.69	286.717	3.53
7415.00	90.570	321.710	5886.99	1558.51	652.08	-1785.92	1635328.65	483167.84	39°49'09.590"N	80°47'53.901"W	1821.20	288.483	2.56
7510.00	90.650	324.180	5886.99	1653.45	728.05	-1842.94	1635271.63	483243.81	39°49'10.333"N	80°47'54.645"W	1901.24	290.058	0.34
7605.00	90.310	324.620	5886.20	1748.44	805.29	-1898.24	1635216.33	483321.04	39°49'11.088"N	80°47'55.368"W	1981.54	291.556	2.27
7700.00	90.460	322.170	5885.56	1843.39	881.54	-1954.89	1635159.69	483397.29	39°49'11.834"N	80°47'56.108"W	2061.99	292.988	0.59
7794.00	90.340	322.290	5884.90	1937.28	955.85	-2012.46	1635104.12	483474.50	39°49'12.560"N	80°47'56.860"W	2144.46	294.273	2.58
7889.00	90.280	322.530	5884.39	2032.18	1031.12	-2070.41	1635042.18	483546.86	39°49'13.295"N	80°47'57.616"W	2227.92	295.406	0.18
7984.00	90.430	322.990	5883.80	2127.11	1106.75	-2127.90	1634986.69	483622.49	39°49'14.034"N	80°47'58.367"W	2312.96	296.475	0.26
8079.00	90.650	323.750	5882.91	2222.06	1182.98	-2184.57	1634930.02	483698.72	39°49'14.780"N	80°47'59.107"W	2398.51	297.480	0.51
											2484.31	298.436	0.83

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Operator	NOBLE ENERGY	Slot	Slot E
Area	Marshall County, WV	Well	MND-6E-HS
Field	Marshall	Wellbore	MND-6E-HS AWB
Facility	MND-6 Pad		

WELLPATH DATA (172 stations)

MD ft	Inclination °	Azimuth °	TVD ft	Vert Sect ft	North ft	East ft	Grid East ft	Grid North ft	Latitude	Longitude	Closure Dist ft	Closure Dir °	DLS P/100ft
8173.00	91.010	324.880	5881.54	2316.05	1259.33	-2239.40	1634875.19	483775.05	39°49'15.526"N	80°47'59.824"W	2569.21	299.351	1.26
8268.00	90.980	325.420	5879.89	2411.03	1337.27	-2293.68	1634820.92	483853.00	39°49'16.289"N	80°48'00.534"W	2655.05	300.243	0.57
8363.00	91.050	326.700	5878.21	2506.00	1416.07	-2346.71	1634767.89	483931.80	39°49'17.060"N	80°48'01.228"W	2740.86	301.108	1.35
8458.00	91.170	325.460	5876.37	2600.96	1494.891	-2399.71	1634714.89	484010.61	39°49'17.831"N	80°48'01.922"W	2827.25	301.921	1.31
8553.00	91.200	325.790	5874.41	2695.94	1573.28	-2453.34	1634661.27	484089.00	39°49'18.598"N	80°48'02.628"W	2914.46	302.671	0.35
8648.00	91.390	326.880	5872.26	2790.88	1652.33	-2505.99	1634608.62	484168.04	39°49'19.372"N	80°48'03.313"W	3001.69	303.399	1.16
8742.00	91.320	327.330	5870.04	2884.79	1731.24	-2557.02	1634557.59	484246.94	39°49'20.144"N	80°48'03.982"W	3087.97	304.100	0.48
8837.00	90.980	326.870	5868.13	2979.71	1810.98	-2608.61	1634506.00	484326.68	39°49'20.925"N	80°48'04.658"W	3175.61	304.770	0.60
8931.00	90.890	326.320	5866.60	3073.66	1889.44	-2660.36	1634454.26	484405.14	39°49'21.693"N	80°48'05.336"W	3263.05	305.383	0.59
9026.00	91.050	325.700	5864.99	3168.63	1968.20	-2713.46	1634401.16	484483.89	39°49'22.463"N	80°48'06.031"W	3352.12	305.955	0.67
9121.00	91.080	326.000	5863.22	3263.61	2046.81	-2766.78	1634347.84	484562.49	39°49'23.232"N	80°48'06.729"W	3441.58	306.493	0.32
9215.00	90.620	327.470	5861.83	3357.55	2125.39	-2818.33	1634296.29	484641.07	39°49'24.002"N	80°48'07.404"W	3529.91	307.021	1.64
9310.00	90.680	328.640	5860.75	3452.41	2206.00	-2868.59	1634246.04	484721.68	39°49'24.791"N	80°48'08.063"W	3618.74	307.561	1.23
9405.00	90.460	331.750	5859.80	3547.00	2288.42	-2915.81	1634196.83	484804.09	39°49'25.599"N	80°48'08.683"W	3706.59	308.126	3.28
9500.00	90.370	332.240	5859.12	3641.29	2372.29	-2960.41	1634145.22	484887.96	39°49'26.421"N	80°48'09.270"W	3793.65	308.707	0.52
9594.00	89.880	328.110	5858.91	3734.89	2453.82	-3007.15	1634107.49	484969.49	39°49'27.220"N	80°48'09.885"W	3881.26	309.214	4.42
9644.00	89.970	325.960	5858.98	3784.85	2495.77	-3034.36	1634080.28	485011.43	39°49'27.631"N	80°48'10.241"W	3928.89	309.437	4.30
9689.00	90.000	323.500	5858.99	3829.85	2532.51	-3060.34	1634054.30	485048.17	39°49'27.990"N	80°48'10.581"W	3972.31	309.609	5.47
9784.00	90.490	321.490	5858.58	3924.75	2607.87	-3118.17	1633996.47	485123.52	39°49'28.726"N	80°48'11.336"W	4064.97	309.907	2.18
9879.00	90.460	319.840	5857.79	4019.47	2681.34	-3178.39	1633936.26	485196.99	39°49'29.444"N	80°48'12.121"W	4158.33	310.152	1.74
9973.00	90.490	318.870	5857.02	4113.01	2752.66	-3239.91	1633875.04	485268.31	39°49'30.140"N	80°48'12.919"W	4251.14	310.550	1.03
10068.00	90.400	319.860	5856.29	4207.55	2824.75	-3301.48	1633813.18	485340.39	39°49'30.843"N	80°48'13.725"W	4344.99	310.534	1.05
10162.00	90.310	322.680	5855.68	4301.34	2898.07	-3360.28	1633754.38	485410.71	39°49'31.559"N	80°48'14.493"W	4437.38	310.776	3.00
10257.00	90.460	323.210	5855.06	4396.28	2973.88	-3417.53	1633697.13	485484.52	39°49'32.300"N	80°48'15.240"W	4530.28	311.029	0.58
10352.00	90.960	322.330	5853.88	4491.19	3049.52	-3475.00	1633639.67	485565.15	39°49'33.039"N	80°48'15.991"W	4623.33	311.269	1.07
10447.00	90.770	321.200	5852.54	4586.03	3124.13	-3533.78	1633582.88	485639.75	39°49'33.768"N	80°48'16.758"W	4716.76	311.479	1.21
10542.00	90.370	323.620	5851.50	4680.92	3199.40	-3591.73	1633520.94	485715.02	39°49'34.504"N	80°48'17.515"W	4810.06	311.694	2.58
10637.00	90.030	326.860	5851.17	4775.91	3277.43	-3645.88	1633466.79	485793.05	39°49'35.267"N	80°48'18.223"W	4902.45	311.954	3.43
10732.00	90.770	328.220	5850.50	4870.81	3357.59	-3696.87	1633417.81	485873.20	39°49'36.052"N	80°48'18.892"W	4994.02	312.247	1.63
10827.00	91.170	327.380	5848.90	4965.68	3437.96	-3747.48	1633367.20	485953.57	39°49'36.839"N	80°48'19.555"W	5085.59	312.533	0.98



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MND-6E-HS AWP Proj: 15653'  
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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	MND-6E-HS
Area	Marshall County, WV	Well	Wellbore
Field	Marshall	Wellbore	MND-6E-HS AWB
Facility	MND-6 Pad		

WELLPATH DATA (172 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]
10923.00	91.420	325.630	5846.73	5061.62	3518.00	-3800.45	163314.24	486033.60	39°49'37.622"N	80°48'20.249"W	5178.77	312.790	1.84
11017.00	90.950	321.230	5844.78	5155.54	3593.45	-3856.43	1633258.26	486109.05	39°49'38.360"N	80°48'20.980"W	5271.14	312.978	4.71
11112.00	90.370	320.700	5843.69	5250.30	3667.24	-3916.25	1633198.44	486182.84	39°49'39.080"N	80°48'21.761"W	5365.23	313.119	0.83
11207.00	90.800	325.100	5842.72	5345.21	3742.99	-3973.54	1633141.15	486258.88	39°49'39.821"N	80°48'22.509"W	5458.84	313.289	4.65
11301.00	90.580	326.120	5841.59	5439.19	3820.55	-4026.63	1633088.97	486336.14	39°49'40.579"N	80°48'23.264"W	5550.71	313.496	1.11
11396.00	90.310	324.160	5840.85	5534.18	3898.50	-4080.92	1633033.77	486414.08	39°49'41.342"N	80°48'23.914"W	5643.78	313.690	2.08
11491.00	90.710	327.990	5840.00	5629.15	3977.31	-4133.93	1632980.77	486492.89	39°49'42.113"N	80°48'24.608"W	5736.58	313.894	4.05
11586.00	92.030	336.390	5837.73	5723.29	4061.23	-4178.20	1632936.50	486576.81	39°49'42.936"N	80°48'25.191"W	5826.75	314.187	8.95
11680.00	91.730	332.880	5834.64	5815.90	4146.11	-4218.44	1632896.26	486691.78	39°49'43.769"N	80°48'25.723"W	5914.85	314.505	3.75
11775.00	92.250	325.850	5831.34	5910.50	4227.75	-4266.79	1632847.92	486743.32	39°49'44.569"N	80°48'26.358"W	6006.61	314.737	7.42
11870.00	92.340	320.470	5827.53	6005.34	4303.69	-4323.68	1632791.03	486819.25	39°49'45.311"N	80°48'27.101"W	6100.49	314.867	5.66
11965.00	90.920	319.130	5824.83	6099.91	4376.22	-4384.97	1632729.74	486891.78	39°49'46.019"N	80°48'27.900"W	6195.10	315.040	2.05
12060.00	90.280	323.650	5823.83	6194.69	4450.43	-4444.24	1632670.48	486965.98	39°49'46.744"N	80°48'28.674"W	6289.48	315.040	4.81
12154.00	90.460	326.890	5823.23	6288.67	4527.67	-4497.78	1632616.94	487043.22	39°49'47.499"N	80°48'29.374"W	6382.00	315.190	3.45
12249.00	90.830	325.390	5822.16	6383.65	4606.55	-4550.71	1632564.02	487122.10	39°49'48.271"N	80°48'30.067"W	6475.28	315.349	1.63
12344.00	91.050	324.900	5820.60	6478.63	4684.50	-4604.99	1632509.73	487200.04	39°49'49.033"N	80°48'30.778"W	6568.90	315.490	0.57
12438.00	91.110	322.600	5818.83	6572.39	4760.29	-4660.56	1632454.17	487275.82	39°49'49.774"N	80°48'31.504"W	6661.92	315.606	2.45
12533.00	90.990	321.570	5817.09	6667.45	4835.22	-4718.93	1632395.80	487350.75	39°49'50.506"N	80°48'32.266"W	6756.30	315.697	1.09
12628.00	90.890	325.270	5815.53	6762.38	4911.49	-4775.53	1632339.21	487427.01	39°49'51.252"N	80°48'33.005"W	6850.43	315.804	3.90
12722.00	91.170	326.150	5813.84	6856.36	4989.14	-4828.47	1632286.26	487504.66	39°49'52.012"N	80°48'33.699"W	6943.03	315.938	0.98
12816.00	91.230	324.140	5811.87	6950.33	5066.25	-4882.18	1632232.56	487581.77	39°49'52.766"N	80°48'34.401"W	7035.81	316.060	2.14
12911.00	91.260	323.860	5809.80	7045.30	5143.09	-4938.11	1632176.74	487658.60	39°49'53.517"N	80°48'35.131"W	7129.89	316.165	0.30
13006.00	91.230	324.550	5807.74	7140.26	5220.13	-4993.56	1632121.19	487735.64	39°49'54.270"N	80°48'35.858"W	7223.94	316.271	0.73
13101.00	90.770	323.630	5806.08	7235.24	5297.06	-5049.27	1632065.48	487812.56	39°49'55.023"N	80°48'36.586"W	7318.05	316.372	1.08
13196.00	90.890	322.160	5804.71	7330.16	5372.81	-5109.57	1632008.18	487888.31	39°49'55.763"N	80°48'37.335"W	7412.44	316.455	1.55
13290.00	90.520	320.990	5803.55	7423.98	5446.45	-5164.99	1631951.77	487961.95	39°49'56.482"N	80°48'38.097"W	7506.06	316.519	1.31
13385.00	90.490	324.850	5802.71	7518.90	5522.22	-5222.25	1631892.51	488037.71	39°49'57.223"N	80°48'38.845"W	7600.45	316.599	4.06
13480.00	90.460	326.840	5801.92	7613.88	5600.83	-5275.58	1631839.18	488116.32	39°49'57.992"N	80°48'39.543"W	7694.22	316.713	2.09
13575.00	90.460	327.020	5801.16	7708.82	5680.44	-5327.42	1631787.35	488195.92	39°49'58.771"N	80°48'40.223"W	7787.73	316.837	0.19
13669.00	90.990	330.470	5799.97	7802.60	5760.78	-5376.18	1631738.59	488276.25	39°49'59.558"N	80°48'40.863"W	7879.71	316.978	3.71

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Actual Wellpath Report  
MND-6E-HS AWP Proj: 15653  
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REFERENCE WELLPATH IDENTIFICATION  
Operator: NOBLE ENERGY  
Area: Marshall County, WV  
Field: Marshall  
Facility: MND-6 Pad

Slot: Well  
Slot E: MND-6E-HS  
Wellbore: MND-6E-HS AWB

WELLPATH DATA (172 stations)

MD [ft]	Inclination [°]	Admth [ft]	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 [ft/100ft]
13764.00	90.990	332.040	5798.33	7897.02	5844.05	-5421.86	1631692.91	488359.53	39°50'00.374"N	80°48'41.464"W	7971.79	317.146	1.65
13859.00	91.170	326.680	5796.54	7991.69	5925.75	-5470.25	1631644.53	488441.22	39°50'01.174"N	80°48'42.099"W	8064.62	317.289	5.64
13954.00	91.110	324.900	5794.65	8086.66	6004.29	-5523.65	1631591.13	488519.76	39°50'01.943"N	80°48'42.798"W	8158.56	317.388	1.87
14048.00	91.110	323.990	5792.83	8180.64	6080.75	-5578.29	1631536.49	488596.21	39°50'02.691"N	80°48'43.513"W	8251.84	317.468	0.97
14143.00	90.950	322.980	5791.12	8275.59	6157.09	-5634.81	1631479.97	488672.55	39°50'03.437"N	80°48'44.252"W	8346.31	317.536	1.08
14238.00	91.140	323.400	5789.39	8370.52	6233.13	-5691.72	1631423.06	488748.59	39°50'04.180"N	80°48'44.995"W	8440.83	317.600	0.49
14332.00	91.350	321.860	5787.34	8464.42	6307.82	-5748.76	1631366.03	488823.27	39°50'04.910"N	80°48'45.740"W	8534.45	317.655	1.65
14427.00	91.510	323.380	5784.97	8559.30	6383.28	-5806.42	1631308.38	488898.73	39°50'05.647"N	80°48'46.493"W	8629.07	317.709	1.61
14522.00	91.050	322.160	5782.85	8654.21	6458.90	-5863.88	1631250.92	488974.34	39°50'06.386"N	80°48'47.244"W	8723.67	317.764	1.37
14616.00	90.580	320.390	5781.51	8749.99	6532.23	-5922.68	1631192.12	489047.66	39°50'07.102"N	80°48'48.011"W	8817.46	317.802	1.95
14711.00	90.680	322.370	5780.47	8842.79	6606.44	-5981.96	1631132.84	489121.88	39°50'07.827"N	80°48'48.785"W	8912.29	317.840	2.09
14805.00	90.740	323.530	5779.30	8936.76	6682.43	-6037.27	1631077.54	489197.85	39°50'08.570"N	80°48'49.508"W	9005.75	317.904	3.36
14904.00	90.550	329.430	5778.23	9031.65	6762.51	-6088.33	1631026.48	489277.93	39°50'09.354"N	80°48'50.178"W	9099.41	318.003	4.11
14994.00	91.350	328.510	5776.68	9123.41	6843.05	-6136.78	1630978.04	489358.47	39°50'10.143"N	80°48'50.814"W	9191.70	318.115	1.30
15089.00	91.140	326.720	5774.61	9220.28	6923.25	-6187.64	1630927.17	489438.66	39°50'10.928"N	80°48'51.481"W	9285.38	318.211	1.90
15184.00	91.410	326.120	5772.50	9315.23	7002.37	-6240.18	1630874.64	489517.78	39°50'11.702"N	80°48'52.169"W	9379.39	318.294	0.69
15279.00	91.230	325.440	5770.31	9410.19	7080.91	-6293.99	1630821.23	489596.31	39°50'12.470"N	80°48'52.868"W	9473.57	318.369	0.74
15374.00	90.710	327.620	5768.70	9505.14	7160.14	-6345.97	1630768.85	489675.54	39°50'13.246"N	80°48'53.555"W	9567.60	318.450	2.36
15469.00	90.620	325.580	5767.60	9600.09	7239.44	-6398.26	1630716.57	489754.84	39°50'14.022"N	80°48'54.240"W	9661.63	318.530	2.15
15563.00	90.680	321.030	5766.53	9694.02	7314.79	-6454.41	1630660.42	489830.18	39°50'14.758"N	80°48'54.974"W	9755.28	318.576	4.84
15631.00	90.710	322.130	5765.71	9761.89	7368.06	-6496.66	1630618.17	489883.45	39°50'15.279"N	80°48'55.525"W	9823.18	318.596	1.62
15653.00	90.710	322.130	5765.43	9783.86	7385.42	-6510.17	1630604.67	489900.81	39°50'15.448"N	80°48'55.702"W	9845.14	318.604	0.00

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### Actual Wellpath Report

MND-6E-HS AWP Proj: 15653'  
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**REFERENCE WELLPATH IDENTIFICATION**

Operator	NOBLE ENERGY	Slot	Slot E
Area	Marshall County, WV	Well	MND-6E-HS
Field	Marshall	Wellbore	MND-6E-HS AWB
Facility	MND-6 Pad		

**TARGETS**

Name	MD [ft]	TYD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
MND-6E-HS BHL Rev-2		5758.62	7386.22	-6509.25	1630605.58	489901.61	39°50'15.456"N	80°48'55.690"W	point
MND-6E-HS LP Rev-2		5895.00	-92.64	-1272.50	1635842.04	482423.17	39°49'02.304"N	80°47'47.184"W	point
MND-6E-HS LP Plat		5940.00	-125.00	-1249.85	1635864.69	482390.81	39°49'01.988"N	80°47'46.888"W	point
MND-6 Pad LL		6499.81	15.70	58.19	1637172.66	482531.50	39°49'03.564"N	80°47'30.152"W	polygon

**WELLPATH COMPOSITION - Ref Wellbore: MND-6E-HS AWB Ref Wellpath: MND-6E-HS AWP Proj: 15653'**

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	265.00	Generic gyro - northseeking (Standard)	01 Gyro <14-3/4"> (50-265')	MND-6E-HS AWB
265.00	702.00	ISCWSA MWD, Rev. 2 (Standard)	02 APS EM <14-3/4"> (265')(311'-702') Proj: 760'	MND-6E-HS AWB
702.00	2015.00	ISCWSA MWD, Rev. 2 (Standard)	03 APS EM <12-1/4"> (702')(904'-2015') Proj: 2070'	MND-6E-HS AWB
2015.00	3656.00	NavTrak (MagCorr)	04 BHI MWD <8-3/4"> (2015')(2139'-3656')	MND-6E-HS AWB
3656.00	15631.00	NavTrak (AT Curve Short Spaced)	05 BHI AT Curve <8-3/4"> (3656')(3708'-15631')	MND-6E-HS AWB
15631.00	15653.00	Blind Drilling (std)	Projection to bit	MND-6E-HS AWB





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MND-6E-HS AWP Proj: 15653'  
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REFERENCE WELL PATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot E
Area	Marshall County, WV	Well	MND-6E-HS
Field	Marshall	Wellbore	MND-6E-HS AWP
Facility	MND-6 Pad		

COMMENTS

Wellpath general comments  
 API: 47-051-01761-0000  
 BHI Job #: 6639448A  
 Rig: Nomac 79  
 Duration: 11.15.2014 - 11.23.2014  
 Gyro <1-4-3/4"> (50'-265')  
 APS EM <1-4-3/4"> (265')(311'-702')  
 APS EM <1-2-1/4"> (702')(904'-2015')  
 BHI MWD <8-3/4"> (2015')(2139'-3656')  
 BHI AT Curve <8-3/4"> (3656')(3708'-15631')  
 Projected MD at TD: 15653'



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

# NOBLE ENERGY

Slot: Slot E  
 Well: MND-6E-HS  
 Wellbore: MND-6E-HS-PWB



Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude
MND-6 Pad	1637177.780	482512.230	39°49'03.375"N
Slot	Local N (ft)	Grid East (US ft)	Longitude
3.57	1637114.470	482515.800	80°47'30.895"W
Nomac 79 (RKB) to Mud line (At Slot: Slot E)			26ft
Mean Sea Level to Mud line (At Slot: Slot E)			-720.79ft
Nomac 79 (RKB) to Mean Sea Level			746.79ft

Plot reference wellpath is MND-6E-HS PWB Rev-B.0	Grid System: NAD27 / Lambert West	North Reference: Grid north
True vertical depth are referenced to Nomac 79 (RKB)	Measured depths are referenced to Nomac 79 (RKB)	Scale: True distance
Mean Sea Level to Mud line (At Slot: Slot E): -720.79 feet	Coordinates are in feet referenced to Slot	Depths are in feet
		Created by: krocker on 12/3/2014

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 WV Department of  
 Environmental Protection

02/03/2017

