



Actual Wellpath Report

MND-3F-HS AWP Proj: 12839'
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51-01669

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot F
Area	Marshall County, WV	Well	MND-3F-HS
Field	Marshall	Wellbore	MND-3F-HS AWB
Facility	MND-3 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	0.999948	Report Generated	8/21/2014 at 11:15:49 AM
Convergence at slot	0.82° West	Database/Source file	WA_NorthEast/MND-3F-HS_AWB.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-60.89	-43.78	1637190.95	494425.68	39°51'01.109"N	80°47'32.111"W
Facility Reference Pt			1637234.73	494486.57	39°51'01.717"N	80°47'31.561"W
Field Reference Pt			609601.22	0.00	38°23'48.753"N	84°21'09.765"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Precision 543 (RKB) to Facility Vertical Datum	1134.18ft
Horizontal Reference Pt	Slot	Precision 543 (RKB) to Mean Sea Level	1134.18ft
Vertical Reference Pt	Precision 543 (RKB)	Precision 543 (RKB) to Mud Line at Slot (Slot F)	18.50ft
MD Reference Pt	Precision 543 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	145.00°



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Field	Marshall	Wellbore	MND-3F-HS AWB
Facility	MND-3 Pad		

WELLPATH DATA (155 stations) † = interpolated/extrapolated station														
MD [ft]	Course Length [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†	0.00	0.000	104.690	0.00	0.00	0.00	0.00	1637190.95	494425.68	39°51'01.109"N	80°47'32.111"W	0.00	0.000	0.00
18.50	18.50	0.000	104.690	18.50	0.00	0.00	0.00	1637190.95	494425.68	39°51'01.109"N	80°47'32.111"W	0.00	0.000	0.00
109.50	91.00	0.200	104.690	109.50	0.12	-0.04	0.15	1637191.10	494425.64	39°51'01.109"N	80°47'32.109"W	0.16	104.690	0.22
209.50	100.00	0.180	99.100	209.50	0.36	-0.11	0.48	1637191.43	494425.57	39°51'01.108"N	80°47'32.104"W	0.49	102.900	0.03
309.50	100.00	0.270	83.060	309.50	0.58	-0.11	0.87	1637191.82	494425.57	39°51'01.108"N	80°47'32.099"W	0.87	96.958	0.11
409.50	100.00	0.290	52.940	409.50	0.69	0.08	1.30	1637192.25	494425.76	39°51'01.110"N	80°47'32.094"W	1.30	86.694	0.15
509.50	100.00	0.320	54.620	509.50	0.67	0.39	1.73	1637192.68	494426.07	39°51'01.113"N	80°47'32.088"W	1.78	77.328	0.03
546.50	37.00	0.320	61.750	546.50	0.69	0.50	1.91	1637192.86	494426.18	39°51'01.114"N	80°47'32.086"W	1.97	75.362	0.11
562.00	15.50	0.610	95.390	561.99	0.74	0.51	2.03	1637192.98	494426.19	39°51'01.114"N	80°47'32.085"W	2.09	75.857	2.49
606.00	44.00	0.980	110.620	605.99	1.21	0.36	2.61	1637193.56	494426.04	39°51'01.113"N	80°47'32.077"W	2.64	82.233	0.96
651.00	45.00	1.610	111.490	650.98	2.05	-0.01	3.56	1637194.51	494425.67	39°51'01.109"N	80°47'32.065"W	3.56	90.173	1.40
696.00	45.00	1.820	147.080	695.96	3.29	-0.84	4.54	1637195.49	494424.84	39°51'01.101"N	80°47'32.052"W	4.62	100.514	2.37
741.00	45.00	2.820	171.630	740.92	5.00	-2.54	5.09	1637196.04	494423.14	39°51'01.085"N	80°47'32.045"W	5.69	116.507	3.09
786.00	45.00	3.940	184.510	785.85	7.18	-5.17	5.13	1637196.08	494420.51	39°51'01.059"N	80°47'32.044"W	7.28	135.260	2.99
830.00	44.00	4.970	196.880	829.71	9.52	-8.50	4.45	1637195.40	494417.18	39°51'01.026"N	80°47'32.052"W	9.60	152.355	3.19
875.00	45.00	5.900	202.170	874.51	11.98	-12.51	3.02	1637193.97	494413.17	39°51'00.986"N	80°47'32.070"W	12.87	166.448	2.35
916.00	41.00	6.830	206.270	915.26	14.29	-16.65	1.14	1637192.09	494409.03	39°51'00.945"N	80°47'32.093"W	16.69	176.078	2.52
1006.00	90.00	3.870	209.390	1004.86	18.18	-24.10	-2.72	1637188.23	494401.58	39°51'00.870"N	80°47'32.141"W	24.25	186.436	3.30
1024.00	18.00	3.640	207.950	1022.82	18.70	-25.13	-3.28	1637187.67	494400.55	39°51'00.860"N	80°47'32.148"W	25.34	187.446	1.38
1052.00	28.00	2.890	207.640	1050.77	19.43	-26.54	-4.03	1637186.92	494399.14	39°51'00.846"N	80°47'32.157"W	26.85	188.630	2.68
1097.00	45.00	2.490	200.940	1095.72	20.50	-28.46	-4.90	1637186.05	494397.22	39°51'00.827"N	80°47'32.168"W	28.88	189.777	1.13
1186.00	89.00	0.730	219.540	1184.68	21.73	-30.70	-5.96	1637184.99	494394.98	39°51'00.805"N	80°47'32.181"W	31.27	190.979	2.04
1275.00	89.00	0.910	328.560	1273.68	21.18	-30.54	-6.69	1637184.26	494395.15	39°51'00.806"N	80°47'32.191"W	31.26	192.349	1.50
1318.00	43.00	1.110	329.760	1316.67	20.42	-29.89	-7.07	1637183.88	494395.80	39°51'00.813"N	80°47'32.196"W	30.71	193.316	0.47
1408.00	90.00	1.040	331.840	1406.66	18.74	-28.41	-7.90	1637183.05	494397.27	39°51'00.827"N	80°47'32.207"W	29.49	195.535	0.09
1497.00	89.00	1.760	330.270	1495.63	16.58	-26.51	-8.96	1637181.99	494399.17	39°51'00.846"N	80°47'32.221"W	27.99	198.667	0.81
1587.00	90.00	1.600	292.790	1585.59	14.14	-24.83	-10.80	1637180.15	494400.86	39°51'00.862"N	80°47'32.244"W	27.07	203.512	1.21
1676.00	89.00	1.440	270.280	1674.56	12.44	-24.34	-13.06	1637177.89	494401.34	39°51'00.867"N	80°47'32.274"W	27.62	208.225	0.69
1766.00	90.00	1.950	263.560	1764.52	11.06	-24.51	-15.72	1637175.23	494401.18	39°51'00.865"N	80°47'32.308"W	29.11	212.675	0.61
1855.00	89.00	2.220	265.860	1853.46	9.45	-24.80	-18.94	1637172.01	494400.88	39°51'00.861"N	80°47'32.349"W	31.21	217.371	0.32



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Area	Marshall County, WV	Well	MND-3F-HS
Field	Marshall	Wellbore	MND-3F-HS AWB
Facility	MND-3 Pad		

WELLPATH DATA (155 stations)														
MD [ft]	Course Length [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]
1945.00	90.00	1.950	252.780	1943.40	8.09	-25.38	-22.14	1637168.81	494400.30	39°51'00.855"N	80°47'32.390"W	33.68	221.103	0.61
2034.00	89.00	0.480	255.680	2032.38	7.49	-25.92	-23.95	1637167.00	494399.76	39°51'00.849"N	80°47'32.413"W	35.29	222.738	1.65
2123.00	89.00	0.520	126.470	2121.38	7.75	-26.25	-23.99	1637166.97	494399.43	39°51'00.846"N	80°47'32.413"W	35.56	222.418	1.02
2212.00	89.00	0.200	164.230	2210.38	8.28	-26.64	-23.62	1637167.33	494399.04	39°51'00.842"N	80°47'32.408"W	35.60	221.559	0.43
2302.00	90.00	0.300	170.370	2300.38	8.64	-27.02	-23.54	1637167.41	494398.66	39°51'00.839"N	80°47'32.407"W	35.84	221.054	-0.11
2391.00	89.00	0.250	248.570	2389.38	8.80	-27.33	-23.68	1637167.27	494398.36	39°51'00.836"N	80°47'32.409"W	36.16	220.911	0.39
2481.00	90.00	0.630	308.090	2479.37	8.28	-27.09	-24.25	1637166.70	494398.59	39°51'00.838"N	80°47'32.416"W	36.36	221.833	0.61
2567.00	86.00	0.740	320.570	2565.37	7.28	-26.37	-24.98	1637165.98	494399.31	39°51'00.845"N	80°47'32.426"W	36.32	223.443	0.21
2658.00	91.00	1.070	338.340	2656.36	5.86	-25.13	-25.66	1637165.29	494400.55	39°51'00.857"N	80°47'32.435"W	35.92	225.604	0.47
2747.00	89.00	1.100	336.680	2745.34	4.22	-23.57	-26.31	1637164.64	494402.11	39°51'00.872"N	80°47'32.444"W	35.32	228.141	0.05
2836.00	89.00	0.160	125.900	2834.34	3.50	-22.86	-26.55	1637164.41	494402.82	39°51'00.879"N	80°47'32.447"W	35.03	229.267	1.39
2926.00	90.00	0.280	159.260	2924.34	3.83	-23.14	-26.37	1637164.59	494402.54	39°51'00.877"N	80°47'32.444"W	35.08	228.730	0.19
3015.00	89.00	0.210	274.900	3013.33	3.94	-23.33	-26.45	1637164.50	494402.35	39°51'00.875"N	80°47'32.445"W	35.27	228.590	0.47
3104.00	89.00	0.280	295.550	3102.33	3.64	-23.22	-26.81	1637164.14	494402.46	39°51'00.876"N	80°47'32.450"W	35.47	229.104	0.13
3194.00	90.00	0.210	296.030	3192.33	3.31	-23.05	-27.16	1637163.80	494402.63	39°51'00.877"N	80°47'32.454"W	35.62	229.672	0.08
3283.00	89.00	0.310	308.750	3281.33	2.93	-22.83	-27.49	1637163.46	494402.85	39°51'00.879"N	80°47'32.459"W	35.73	230.291	0.13
3373.00	90.00	2.430	301.210	3371.30	0.95	-21.69	-29.31	1637161.64	494403.99	39°51'00.890"N	80°47'32.482"W	36.46	233.501	2.36
3462.00	89.00	5.810	294.340	3460.06	-4.65	-18.85	-35.03	1637155.92	494406.83	39°51'00.918"N	80°47'32.556"W	39.78	241.711	3.83
3552.00	90.00	8.740	289.870	3549.33	-14.16	-14.65	-45.62	1637145.34	494411.03	39°51'00.958"N	80°47'32.693"W	47.91	252.193	3.31
3641.00	89.00	10.910	285.950	3637.02	-26.23	-10.04	-60.08	1637130.88	494415.64	39°51'01.001"N	80°47'32.879"W	60.91	260.513	2.55
3731.00	90.00	12.640	284.650	3725.12	-40.35	-5.21	-77.79	1637113.16	494420.47	39°51'01.046"N	80°47'33.107"W	77.97	266.170	1.94
3820.00	89.00	11.570	283.450	3812.14	-54.46	-0.67	-95.89	1637095.06	494425.01	39°51'01.089"N	80°47'33.340"W	95.90	269.601	1.23
3910.00	90.00	11.290	287.230	3900.36	-68.17	4.04	-113.09	1637077.87	494429.72	39°51'01.133"N	80°47'33.561"W	113.16	272.046	0.89
3999.00	89.00	12.180	290.030	3987.49	-82.75	9.84	-130.23	1637060.73	494435.52	39°51'01.188"N	80°47'33.782"W	130.60	274.320	1.19
4088.00	89.00	16.910	297.210	4073.62	-101.91	18.98	-150.57	1637040.38	494444.66	39°51'01.275"N	80°47'34.044"W	151.77	277.183	5.68
4178.00	90.00	17.300	294.810	4159.64	-125.06	30.58	-174.36	1637016.60	494456.26	39°51'01.386"N	80°47'34.352"W	177.02	279.947	0.90
4267.00	89.00	15.010	289.920	4245.13	-145.93	40.06	-197.21	1636993.75	494465.74	39°51'01.477"N	80°47'34.646"W	201.24	281.482	2.99
4357.00	90.00	13.660	292.280	4332.33	-164.41	48.06	-218.01	1636972.96	494473.74	39°51'01.553"N	80°47'34.914"W	223.24	282.432	1.63
4447.00	90.00	17.360	298.740	4419.04	-185.40	58.55	-239.62	1636951.34	494484.23	39°51'01.653"N	80°47'35.193"W	246.67	283.731	4.53
4536.00	89.00	21.590	301.080	4502.93	-212.29	73.39	-265.30	1636925.66	494499.07	39°51'01.796"N	80°47'35.525"W	275.26	285.464	4.83



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Field	Marshall	Wellbore	MND-3F-HS AWB
Facility	MND-3 Pad		

WELLPATH DATA (155 stations)														
MD [ft]	Course Length [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]
4626.00	90.00	25.070	304.030	4585.56	-245.24	92.62	-295.29	1636895.67	494518.29	39°51'01.982"N	80°47'35.913"W	309.48	287.414	4.08
4715.00	89.00	25.440	303.830	4666.05	-280.67	113.81	-326.80	1636864.17	494539.49	39°51'02.187"N	80°47'36.321"W	346.05	289.201	0.43
4804.00	89.00	23.340	300.670	4747.11	-314.57	133.45	-357.85	1636833.12	494559.12	39°51'02.377"N	80°47'36.723"W	381.92	290.452	2.78
4894.00	90.00	20.340	298.540	4830.64	-344.83	150.02	-386.93	1636804.04	494575.69	39°51'02.536"N	80°47'37.099"W	415.00	291.193	3.45
4939.00	45.00	21.260	298.980	4872.71	-359.16	157.71	-400.94	1636790.03	494583.38	39°51'02.610"N	80°47'37.280"W	430.84	291.473	2.07
4989.00	50.00	20.300	300.290	4919.46	-375.18	166.48	-416.36	1636774.61	494592.15	39°51'02.695"N	80°47'37.479"W	448.41	291.794	2.13
5042.00	53.00	19.280	298.410	4969.33	-391.36	175.28	-431.99	1636758.98	494600.95	39°51'02.780"N	80°47'37.681"W	466.20	292.085	2.27
5132.00	90.00	19.620	294.670	5054.19	-417.69	188.66	-458.79	1636732.18	494614.33	39°51'02.908"N	80°47'38.027"W	496.07	292.352	1.43
5221.00	89.00	19.490	292.840	5138.06	-443.16	200.66	-486.06	1636704.92	494626.33	39°51'03.023"N	80°47'38.379"W	525.85	292.432	0.70
5311.00	90.00	15.680	286.560	5223.85	-465.40	209.95	-511.56	1636679.42	494635.62	39°51'03.111"N	80°47'38.708"W	552.97	292.314	4.72
5400.00	89.00	10.480	266.880	5310.55	-479.12	212.95	-531.19	1636659.78	494638.61	39°51'03.138"N	80°47'38.960"W	572.29	291.845	7.61
5489.00	89.00	9.460	246.230	5398.23	-484.82	209.56	-545.98	1636645.00	494635.22	39°51'03.102"N	80°47'39.149"W	584.81	290.998	4.15
5579.00	90.00	11.180	218.760	5486.83	-483.82	199.76	-558.21	1636632.77	494625.43	39°51'03.004"N	80°47'39.304"W	592.88	289.690	5.73
5668.00	89.00	16.660	199.980	5573.22	-474.07	181.02	-567.99	1636622.99	494606.69	39°51'02.817"N	80°47'39.426"W	596.14	287.678	7.91
5758.00	90.00	20.150	172.830	5658.76	-452.91	153.46	-570.47	1636620.51	494579.13	39°51'02.544"N	80°47'39.452"W	590.75	285.056	10.17
5847.00	89.00	24.500	161.180	5741.11	-421.60	120.75	-562.59	1636628.39	494546.42	39°51'02.222"N	80°47'39.345"W	575.41	282.114	6.95
5937.00	90.00	31.970	156.530	5820.36	-380.27	81.17	-547.06	1636643.92	494506.85	39°51'01.833"N	80°47'39.139"W	553.05	278.440	8.65
6026.00	89.00	39.940	151.100	5892.36	-328.68	34.46	-523.83	1636667.15	494460.14	39°51'01.375"N	80°47'38.832"W	524.96	273.764	9.64
6116.00	90.00	46.560	147.840	5957.88	-267.25	-18.56	-492.43	1636698.54	494407.12	39°51'00.855"N	80°47'38.420"W	492.78	267.842	7.76
6205.00	89.00	53.710	154.050	6014.93	-199.43	-78.27	-459.48	1636731.50	494347.41	39°51'00.270"N	80°47'37.987"W	466.10	260.332	9.65
6295.00	90.00	61.090	154.740	6063.38	-124.68	-146.61	-426.75	1636764.22	494279.08	39°50'59.599"N	80°47'37.554"W	451.23	251.040	8.23
6384.00	89.00	64.590	153.370	6104.01	-46.49	-217.80	-392.10	1636798.87	494207.90	39°50'58.901"N	80°47'37.097"W	448.53	240.950	4.16
6474.00	90.00	71.100	151.880	6137.93	36.08	-291.76	-353.77	1636837.20	494133.93	39°50'58.175"N	80°47'36.592"W	458.56	230.487	7.39
6563.00	89.00	74.730	151.840	6164.07	120.53	-366.77	-313.65	1636877.31	494058.93	39°50'57.440"N	80°47'36.064"W	482.59	220.537	4.08
6653.00	90.00	82.350	147.850	6181.95	208.34	-442.94	-269.35	1636921.61	493982.76	39°50'56.694"N	80°47'35.482"W	518.41	211.304	9.51
6743.00	90.00	86.710	146.870	6190.52	297.83	-518.36	-221.04	1636969.92	493907.35	39°50'55.955"N	80°47'34.849"W	563.52	203.094	4.96
6832.00	89.00	87.290	146.900	6195.18	386.66	-592.80	-172.48	1637018.47	493832.91	39°50'55.226"N	80°47'34.212"W	617.39	196.223	0.65
6922.00	90.00	90.340	144.400	6197.04	476.62	-667.08	-121.72	1637069.23	493758.64	39°50'54.500"N	80°47'33.548"W	678.09	190.341	4.38
7011.00	89.00	90.280	141.860	6196.56	565.56	-738.27	-68.33	1637122.63	493687.45	39°50'53.804"N	80°47'32.850"W	741.43	185.288	2.85
7101.00	90.00	90.310	144.230	6196.10	655.50	-810.18	-14.22	1637176.73	493615.54	39°50'53.101"N	80°47'32.144"W	810.31	181.006	2.63



Actual Wellpath Report
MND-3F-HS AWP Proj: 12839'
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REFERENCE WELLPATH IDENTIFICATION					
Operator	NOBLE ENERGY			Slot	Slot F
Area	Marshall County, WV			Well	MND-3F-HS
Field	Marshall			Wellbore	MND-3F-HS AWB
Facility	MND-3 Pad				

WELLPATH DATA (155 stations)														
MD [ft]	Course Length [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]
7191.00	90.00	90.280	145.120	6195.64	745.50	-883.61	37.81	1637228.76	493542.12	39°50'52.383"N	80°47'31.463"W	884.42	177.550	0.99
7280.00	89.00	90.250	145.260	6195.22	834.50	-956.68	88.62	1637279.56	493469.05	39°50'51.668"N	80°47'30.798"W	960.78	174.708	0.16
7370.00	90.00	90.250	143.450	6194.83	924.49	-1029.82	141.06	1637332.01	493395.92	39°50'50.953"N	80°47'30.112"W	1039.44	172.200	2.01
7459.00	89.00	90.250	145.850	6194.44	1013.48	-1102.40	192.55	1637383.49	493323.34	39°50'50.243"N	80°47'29.439"W	1119.09	170.092	2.70
7549.00	90.00	90.340	146.200	6193.98	1103.46	-1177.04	242.85	1637433.78	493248.70	39°50'49.512"N	80°47'28.780"W	1201.83	168.342	0.40
7639.00	90.00	90.250	145.530	6193.52	1193.45	-1251.53	293.35	1637484.28	493174.22	39°50'48.783"N	80°47'28.119"W	1285.45	166.808	0.75
7728.00	89.00	90.250	145.370	6193.13	1282.45	-1324.83	343.82	1637534.75	493100.92	39°50'48.066"N	80°47'27.459"W	1368.72	165.451	0.18
7818.00	90.00	90.310	144.500	6192.69	1372.45	-1398.50	395.53	1637586.46	493027.26	39°50'47.346"N	80°47'26.782"W	1453.35	164.208	0.97
7908.00	90.00	90.580	143.210	6191.99	1462.42	-1471.17	448.61	1637639.54	492954.59	39°50'46.635"N	80°47'26.088"W	1538.05	163.042	1.46
7997.00	89.00	90.770	143.750	6190.94	1551.39	-1542.69	501.57	1637692.49	492883.07	39°50'45.936"N	80°47'25.396"W	1622.18	161.989	0.64
8087.00	90.00	90.520	142.900	6189.93	1641.34	-1614.87	555.32	1637746.24	492810.90	39°50'45.230"N	80°47'24.694"W	1707.68	161.023	0.98
8176.00	89.00	90.740	143.900	6188.95	1730.30	-1686.31	608.38	1637799.30	492739.46	39°50'44.532"N	80°47'24.001"W	1792.70	160.162	1.15
8266.00	90.00	90.280	146.480	6188.15	1820.29	-1760.20	659.75	1637850.67	492665.58	39°50'43.809"N	80°47'23.329"W	1879.78	159.453	2.91
8355.00	89.00	90.280	146.830	6187.71	1909.25	-1834.55	708.67	1637899.58	492591.23	39°50'43.081"N	80°47'22.688"W	1966.67	158.879	0.39
8445.00	90.00	90.220	147.030	6187.32	1999.20	-1909.97	757.78	1637948.69	492515.82	39°50'42.343"N	80°47'22.044"W	2054.80	158.359	0.23
8535.00	90.00	90.340	146.120	6186.88	2089.16	-1985.08	807.36	1637998.26	492440.71	39°50'41.608"N	80°47'21.395"W	2142.98	157.868	1.02
8624.00	89.00	90.250	144.550	6186.42	2178.16	-2058.28	857.97	1638048.88	492367.51	39°50'40.891"N	80°47'20.733"W	2229.94	157.372	1.77
8714.00	90.00	90.220	146.120	6186.05	2268.15	-2132.30	909.16	1638100.06	492293.50	39°50'40.167"N	80°47'20.063"W	2318.03	156.908	1.74
8803.00	89.00	90.310	145.140	6185.64	2357.14	-2205.76	959.41	1638150.30	492220.04	39°50'39.448"N	80°47'19.405"W	2405.38	156.493	1.11
8892.00	89.00	90.220	144.690	6185.23	2446.14	-2278.59	1010.56	1638201.46	492147.22	39°50'38.736"N	80°47'18.736"W	2492.63	156.083	0.52
8982.00	90.00	90.340	142.970	6184.79	2536.12	-2351.24	1063.67	1638254.57	492074.57	39°50'38.026"N	80°47'18.042"W	2580.64	155.659	1.92
9071.00	89.00	90.280	144.730	6184.31	2625.10	-2423.10	1116.17	1638307.06	492002.71	39°50'37.323"N	80°47'17.356"W	2667.82	155.267	1.98
9161.00	90.00	90.220	144.400	6183.92	2715.09	-2496.43	1168.35	1638359.24	491929.39	39°50'36.606"N	80°47'16.673"W	2756.30	154.920	0.37
9250.00	89.00	90.280	143.780	6183.53	2804.08	-2568.51	1220.55	1638411.44	491857.31	39°50'35.901"N	80°47'15.991"W	2843.76	154.583	0.70
9340.00	90.00	90.060	144.280	6183.26	2894.07	-2641.35	1273.41	1638464.30	491784.47	39°50'35.188"N	80°47'15.300"W	2932.29	154.261	0.61
9429.00	89.00	90.250	143.210	6183.02	2983.04	-2713.12	1326.05	1638516.92	491712.71	39°50'34.487"N	80°47'14.612"W	3019.83	153.953	1.22
9519.00	90.00	90.280	146.000	6182.60	3073.03	-2786.48	1378.17	1638569.04	491639.35	39°50'33.769"N	80°47'13.931"W	3108.66	153.683	3.10
9609.00	90.00	90.250	147.970	6182.19	3162.97	-2861.94	1427.20	1638618.08	491563.90	39°50'33.030"N	80°47'13.288"W	3198.06	153.495	2.19
9698.00	89.00	90.280	145.580	6181.77	3251.92	-2936.38	1475.96	1638666.84	491489.45	39°50'32.302"N	80°47'12.649"W	3286.46	153.314	2.69
9788.00	90.00	90.220	145.530	6181.38	3341.92	-3010.60	1526.87	1638717.74	491415.24	39°50'31.575"N	80°47'11.983"W	3375.66	153.108	0.09



Actual Wellpath Report

MND-3F-HS AWP Proj: 12839'

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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot F
Area	Marshall County, WV	Well	MND-3F-HS
Field	Marshall	Wellbore	MND-3F-HS AWB
Facility	MND-3 Pad		

WELLPATH DATA (155 stations)

MD [ft]	Course Length [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]
9877.00	89.00	90.250	146.100	6181.02	3430.91	-3084.22	1576.87	1638767.74	491341.62	39°50'30.855"N	80°47'11.329"W	3463.95	152.921	0.64
9967.00	90.00	90.250	145.980	6180.62	3520.89	-3158.87	1627.15	1638818.01	491266.98	39°50'30.125"N	80°47'10.671"W	3553.32	152.747	0.13
10057.00	90.00	90.180	144.830	6180.29	3610.89	-3232.96	1678.25	1638869.11	491192.90	39°50'29.400"N	80°47'10.002"W	3642.60	152.566	1.28
10146.00	89.00	90.220	144.390	6179.98	3699.88	-3305.51	1729.79	1638920.65	491120.35	39°50'28.690"N	80°47'09.328"W	3730.76	152.377	0.50
10236.00	90.00	90.250	143.420	6179.61	3789.87	-3378.23	1782.81	1638973.67	491047.63	39°50'27.979"N	80°47'08.635"W	3819.80	152.178	1.08
10325.00	89.00	90.310	143.650	6179.17	3878.84	-3449.81	1835.71	1639026.56	490976.06	39°50'27.279"N	80°47'07.944"W	3907.81	151.982	0.27
10415.00	90.00	90.310	144.850	6178.68	3968.83	-3522.85	1888.29	1639079.14	490903.02	39°50'26.565"N	80°47'07.256"W	3997.01	151.808	1.33
10504.00	89.00	90.220	144.200	6178.27	4057.82	-3595.33	1939.94	1639130.78	490830.55	39°50'25.856"N	80°47'06.581"W	4085.31	151.650	0.74
10594.00	90.00	90.650	146.030	6177.59	4147.81	-3669.15	1991.41	1639182.25	490756.73	39°50'25.134"N	80°47'05.908"W	4174.73	151.509	2.09
10683.00	89.00	91.110	147.200	6176.22	4236.77	-3743.45	2040.37	1639231.21	490682.43	39°50'24.406"N	80°47'05.267"W	4263.40	151.407	1.41
10773.00	90.00	91.630	147.270	6174.07	4326.67	-3819.11	2089.07	1639279.90	490606.77	39°50'23.666"N	80°47'04.629"W	4353.14	151.321	0.58
10862.00	89.00	91.880	144.550	6171.34	4415.61	-3892.78	2138.92	1639329.76	490533.11	39°50'22.945"N	80°47'03.976"W	4441.70	151.213	3.07
10952.00	90.00	91.910	144.380	6168.37	4505.56	-3965.97	2191.20	1639382.03	490459.92	39°50'22.229"N	80°47'03.292"W	4531.04	151.079	0.19
11042.00	90.00	91.880	145.430	6165.39	4595.51	-4039.57	2242.92	1639433.75	490386.33	39°50'21.509"N	80°47'02.616"W	4620.48	150.959	1.17
11131.00	89.00	91.880	144.730	6162.47	4684.46	-4112.51	2293.84	1639484.66	490313.39	39°50'20.795"N	80°47'01.950"W	4708.97	150.848	0.79
11220.00	89.00	92.000	143.570	6159.46	4773.40	-4184.60	2345.93	1639536.75	490241.30	39°50'20.090"N	80°47'01.269"W	4797.32	150.725	1.31
11310.00	90.00	91.880	143.140	6156.41	4863.31	-4256.77	2399.62	1639590.44	490169.14	39°50'19.384"N	80°47'00.568"W	4886.54	150.589	0.50
11400.00	90.00	91.880	144.780	6153.46	4953.24	-4329.51	2452.54	1639643.36	490096.41	39°50'18.673"N	80°46'59.876"W	4975.90	150.470	1.82
11489.00	89.00	91.880	143.860	6150.54	5042.19	-4401.76	2504.42	1639695.23	490024.16	39°50'17.967"N	80°46'59.198"W	5064.35	150.362	1.03
11579.00	90.00	91.390	146.280	6147.97	5132.14	-4475.51	2555.92	1639746.74	489950.41	39°50'17.245"N	80°46'58.524"W	5153.93	150.270	2.74
11668.00	89.00	90.920	146.190	6146.18	5221.10	-4549.48	2605.38	1639796.19	489876.44	39°50'16.521"N	80°46'57.877"W	5242.69	150.201	0.54
11758.00	90.00	90.370	144.590	6145.16	5311.09	-4623.55	2656.49	1639847.30	489802.38	39°50'15.796"N	80°46'57.208"W	5332.37	150.120	1.88
11847.00	89.00	89.880	144.750	6144.97	5400.09	-4696.16	2707.96	1639898.77	489729.77	39°50'15.086"N	80°46'56.535"W	5420.97	150.031	0.58
11937.00	90.00	89.970	146.410	6145.09	5490.08	-4770.40	2758.83	1639949.63	489655.54	39°50'14.360"N	80°46'55.869"W	5510.70	149.958	1.85
12027.00	90.00	89.880	143.780	6145.21	5580.07	-4844.20	2810.33	1640001.13	489581.74	39°50'13.638"N	80°46'55.196"W	5600.38	149.880	2.92
12116.00	89.00	90.000	146.940	6145.30	5669.06	-4917.41	2860.91	1640051.71	489508.53	39°50'12.921"N	80°46'54.534"W	5689.09	149.810	3.55
12206.00	90.00	90.030	146.450	6145.28	5759.02	-4992.63	2910.33	1640101.12	489433.31	39°50'12.185"N	80°46'53.887"W	5778.96	149.761	0.55
12295.00	89.00	89.350	143.840	6145.76	5848.01	-5065.66	2961.19	1640151.98	489360.29	39°50'11.470"N	80°46'53.222"W	5867.67	149.691	3.03
12384.00	89.00	88.800	144.850	6147.19	5936.99	-5137.96	3013.06	1640203.85	489287.99	39°50'10.763"N	80°46'52.544"W	5956.27	149.611	1.29
12474.00	90.00	88.830	143.000	6149.06	6026.95	-5210.69	3066.04	1640256.82	489215.27	39°50'10.052"N	80°46'51.851"W	6045.81	149.527	2.06



Actual Wellpath Report
 MND-3F-HS AWP Proj: 12839'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot F
Area	Marshall County, WV	Well	MND-3F-HS
Field	Marshall	Wellbore	MND-3F-HS AWB
Facility	MND-3 Pad		

WELLPATH DATA (155 stations)														
MD [ft]	Course Length [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]
12563.00	89.00	88.800	142.660	6150.90	6115.87	-5281.59	3119.80	1640310.58	489144.37	39°50'09.359"N	80°46'51.149"W	6134.20	149.430	0.38
12652.00	89.00	88.920	143.520	6152.67	6204.80	-5352.74	3173.24	1640364.02	489073.23	39°50'08.663"N	80°46'50.451"W	6222.64	149.339	0.98
12742.00	90.00	88.860	145.620	6154.41	6294.78	-5426.06	3225.40	1640416.18	488999.91	39°50'07.946"N	80°46'49.769"W	6312.31	149.272	2.33
12816.00	74.00	88.860	148.520	6155.88	6368.71	-5488.15	3265.61	1640456.39	488937.83	39°50'07.338"N	80°46'49.242"W	6386.24	149.246	3.92
12839.00	23.00	88.860	148.520	6156.34	6391.66	-5507.76	3277.62	1640468.40	488918.22	39°50'07.146"N	80°46'49.085"W	6409.23	149.243	0.00

HOLE & CASING SECTIONS - Ref Wellbore: MND-3F-HS AWB Ref Wellpath: MND-3F-HS AWP Proj: 12839'									
String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
20in Casing Surface	18.50	445.00	426.50	18.50	445.00	0.00	0.00	0.18	1.45
13.375in Open Hole	18.50	1062.00	1043.50	18.50	1060.76	0.00	0.00	-26.98	-4.25
9.625in Open Hole	18.50	2567.00	2548.50	18.50	2565.37	0.00	0.00	-26.37	-24.98



Actual Wellpath Report
 MND-3F-HS AWP Proj: 12839'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot F
Area	Marshall County, WV	Well	MND-3F-HS
Field	Marshall	Wellbore	MND-3F-HS AWB
Facility	MND-3 Pad		

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
MND-3F-HS BHL Plat		6153.00	-5508.14	3276.61	1640467.38	488917.84	39°50'07.142"N	80°46'49.098"W	point
MND-3F-HS Lateral2		6153.00	-4557.92	2611.26	1639802.07	489868.00	39°50'16.438"N	80°46'57.800"W	point
MND-3F-HS Lateral1		6174.00	-3738.87	2037.75	1639228.59	490687.01	39°50'24.451"N	80°47'05.301"W	point
MND-3F-HS LP Plat		6196.00	-555.14	-191.53	1636999.43	493870.57	39°50'55.596"N	80°47'34.464"W	point
MND-3 Pad LL		6499.97	12.23	8.78	1637199.73	494437.91	39°51'01.231"N	80°47'32.000"W	polygon

WELLPATH COMPOSITION - Ref Wellbore: MND-3F-HS AWB Ref Wellpath: MND-3F-HS AWP Proj: 12839'				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
18.50	1408.00	Generic gyro - northseeking (Standard)	01 Gyro MS <17-1/2"> (109.5'-1408')	MND-3F-HS AWB
1408.00	2567.00	ISCWSA MWD, Rev. 2 (Standard)	02 Schlum MWD <12-1/4"> (1408')(1497'-2567')	MND-3F-HS AWB
2567.00	4939.00	NaviTrak (Standard)	03 BHI MWD <8-3/4"> (2567')(2658'-4939')	MND-3F-HS AWB
4939.00	12816.00	NaviTrak (AT Curve Short Spaced)	04 BHI AT Curve <8-3/4"> (4939')(4989'-12816')	MND-3F-HS AWB
12816.00	12839.00	Blind Drilling (std)	Projection to bit	MND-3F-HS AWB



Actual Wellpath Report
 MND-3F-HS AWP Proj: 12839'
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51-01669

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot F
Area	Marshall County, WV	Well	MND-3F-HS
Field	Marshall	Wellbore	MND-3F-IIS AWB
Facility	MND-3 Pad		

COMMENTS
<p>Wellpath general comments API: 47-051-01669-0000 BHI Job #: 6586193 Rig: Precision 543 Duration: 08.11.2014 - 08.21.2014 Gyro MS <17-1/2"> (109.5'-1408') Schlum MWD <12-1/4"> (1408')(1497'-2567') BHI MWD <8-3/4"> (2567')(2658'-4939') BHI AT Curve <8-3/4"> (4939')(4989'-12816') Projected MD at TD: 12839'</p>

Location: Marshall County, WV
 Field: Marshall
 Facility: MND-3 Pad

Slot: Slot F
 Well: MND-3F-HS
 Wellbore: MND-3F-HS PWB

Plot reference wellpath is MND-3F-HS PWP Rev-B.0	
True vertical depths are referenced to Precision 543 (RKB)	Grid System: NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet
Measured depths are referenced to Precision 543 (RKB)	North Reference: Grid north
Precision 543 (RKB) to Mean Sea Level: 1134.18 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: Slot F): -1115.68 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: kroschr on 8/21/2014

Well Data			
Slot	Well	Wellbore	Wellpath
Slot F	MND-3F-HS	MND-3F-HS AWB	MND-3F-HS AWP Proj: 12839'
Slot F	MND-3F-HS	MND-3F-HS PWB	MND-3F-HS PWP Rev-B.0

Location Information						
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude		
MND-3 Pad	1637234.730	494486.570	39°51'01.717"N	80°47'31.561"W		
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot F	-60.89	-43.78	1637190.950	494425.680	39°51'01.109"N	80°47'32.111"W
Precision 543 (RKB) to Mud line (At Slot: Slot F)			18.5ft			
Mean Sea Level to Mud line (At Slot: Slot F)			-1115.68ft			
Precision 543 (RKB) to Mean Sea Level			1134.18ft			

API: 47-051-01669-0000
 BHI Job #: 6586193
 Rig: Precision 543
 Duration: 08.11.2014 - 08.21.2014

51-01669

