



Actual Wellpath Report
 MND-6F-HS AWP Proj: 14650'
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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot F
Area	Marshall County, WV	Well	MND-6F-HS
Field	Marshall	Wellbore	MND-6F-HS AWB
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	12/17/2014 at 11:51:22 AM
Convergence at slot	0.82° West	Database/Source file	WA_NorthEast/MND-6F-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	-0.22	-77.74	1637100.04	482512.01	39°49'03.362"N	80°47'31.079"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	746.82ft
Horizontal Reference Pt	Slot	Nomac 79 (RKB) to Mean Sea Level	746.82ft
Vertical Reference Pt	Nomac 79 (RKB)	Nomac 79 (RKB) to Mud Line at Slot (Slot F)	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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REFERENCE WELLPATH IDENTIFICATION		Operator	NOBLE ENERGY	Slot F	MND-6F-HS
		Area	Marshall County, WV	Well	MND-6F-HS
		Field	Marshall	Wellbore	MND-6F-HS AWB
		Facility	MND-6 Pad		

WELLPATH DATA (170 stations) † = interpolated/extended station

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 (P/100ft)
0.00†	0.000	248.560	0.00	0.00	0.00	0.00	1637100.04	482512.01	39°49'03.362"N	80°47'31.079"W	0.00	0.000	0.00
26.00	0.000	248.560	26.00	0.00	0.00	0.00	1637100.04	482512.01	39°49'03.362"N	80°47'31.079"W	0.00	0.000	0.00
50.00	0.060	248.560	50.00	0.00	0.00	-0.01	1637100.03	482512.01	39°49'03.361"N	80°47'31.080"W	0.01	248.560	0.25
100.00	0.550	306.650	100.00	0.24	0.13	-0.23	1637099.81	482512.14	39°49'03.363"N	80°47'31.082"W	0.26	299.453	1.04
150.00	0.680	316.290	150.00	0.76	0.49	-0.63	1637099.41	482512.36	39°49'03.366"N	80°47'31.087"W	0.79	307.863	0.33
200.00	1.070	306.290	199.99	1.49	0.98	-1.21	1637098.83	482512.99	39°49'03.371"N	80°47'31.095"W	1.55	308.994	0.83
250.00	1.140	314.070	249.98	2.42	1.60	-1.94	1637098.10	482513.61	39°49'03.377"N	80°47'31.105"W	2.52	309.495	0.33
300.00	1.690	307.140	299.97	3.61	2.39	-2.89	1637097.15	482514.40	39°49'03.385"N	80°47'31.117"W	3.75	309.638	1.15
323.00	2.030	313.020	322.95	4.34	2.87	-3.45	1637096.59	482514.88	39°49'03.389"N	80°47'31.124"W	4.49	309.756	1.69
391.00	1.930	306.440	390.91	6.60	4.38	-5.26	1637094.78	482516.39	39°49'03.404"N	80°47'31.148"W	6.84	309.776	0.36
420.00	2.090	304.690	419.90	7.56	4.97	-6.08	1637093.96	482516.98	39°49'03.410"N	80°47'31.158"W	7.85	309.226	0.59
461.00	1.930	304.010	460.87	8.90	5.78	-7.27	1637092.77	482517.79	39°49'03.418"N	80°47'31.174"W	9.29	308.474	0.39
491.00	1.790	299.720	490.85	9.80	6.29	-8.10	1637091.94	482518.30	39°49'03.423"N	80°47'31.184"W	10.25	307.856	0.66
531.00	1.790	299.820	530.82	11.49	7.22	-9.72	1637090.32	482519.23	39°49'03.432"N	80°47'31.205"W	12.11	306.609	0.01
584.00	2.010	294.090	583.81	12.46	7.72	-10.70	1637089.54	482519.73	39°49'03.436"N	80°47'31.218"W	13.19	305.890	0.88
646.00	2.670	297.410	645.75	14.67	8.82	-12.97	1637087.07	482520.83	39°49'03.447"N	80°47'31.247"W	15.69	304.224	1.09
708.00	2.770	294.050	707.68	17.23	10.10	-15.62	1637084.42	482522.11	39°49'03.447"N	80°47'31.281"W	18.60	302.881	0.30
773.00	2.980	303.620	772.60	20.16	11.68	-18.46	1637081.58	482523.69	39°49'03.474"N	80°47'31.318"W	21.85	302.306	0.80
805.00	3.100	297.690	804.56	21.70	12.54	-19.92	1637080.12	482524.55	39°49'03.483"N	80°47'31.337"W	23.54	302.183	1.05
902.00	3.180	285.680	901.41	26.11	14.48	-24.84	1637075.20	482526.46	39°49'03.501"N	80°47'31.400"W	28.75	300.250	0.68
943.00	4.650	272.720	942.32	28.01	14.87	-27.59	1637072.45	482526.88	39°49'03.505"N	80°47'31.436"W	31.34	298.322	4.16
992.00	5.300	263.630	991.13	30.31	14.71	-31.82	1637069.81	482526.72	39°49'03.502"N	80°47'31.490"W	35.06	294.813	2.08
1085.00	5.990	238.690	1083.70	32.67	11.71	-40.24	1637058.22	482523.72	39°49'03.471"N	80°47'31.597"W	41.91	286.224	2.72
1180.00	0.930	174.480	1178.51	32.31	8.36	-44.40	1637055.65	482520.37	39°49'03.438"N	80°47'31.650"W	45.18	280.659	5.94
1276.00	1.100	93.180	1274.50	31.06	7.53	-43.46	1637056.64	482519.54	39°49'03.430"N	80°47'31.637"W	44.06	279.841	1.38
1370.00	1.080	86.560	1368.48	30.04	7.53	-41.62	1637058.43	482519.54	39°49'03.430"N	80°47'31.614"W	42.29	280.251	0.73
1465.00	1.780	78.600	1463.45	28.97	7.87	-39.28	1637060.77	482519.87	39°49'03.434"N	80°47'31.584"W	40.06	281.324	0.17
1561.00	2.020	77.880	1559.40	27.72	8.52	-36.16	1637063.88	482519.82	39°49'03.441"N	80°47'31.544"W	37.15	283.251	0.25
1656.00	1.690	71.720	1654.35	26.66	9.31	-33.19	1637066.85	482521.32	39°49'03.449"N	80°47'31.506"W	34.47	285.661	0.41
1752.00	1.780	58.230	1750.30	26.17	10.54	-30.58	1637069.46	482522.54	39°49'03.449"N	80°47'31.473"W	32.34	289.049	0.43



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Area	Marshall County, WV	Well	Wellbore
Field	Marshall	Slot F	MNND-6F-HS AWB
Facility	MNND-6 Pad		

WELLPATH DATA (170 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]
1846.00	1.670	62.690	1844.26	25.90	11.93	-28.12	1637071.92	482523.94	39°49'03.475"N	80°47'31.442"W	30.55	292.991	0.18
1941.00	1.420	57.090	1939.23	25.68	13.21	-25.90	1637074.14	482525.22	39°49'03.488"N	80°47'31.414"W	29.08	297.014	0.31
2015.00	1.230	60.920	2013.21	25.56	14.09	-24.44	1637075.60	482526.10	39°49'03.497"N	80°47'31.395"W	28.21	299.965	0.28
2233.00	0.910	51.550	2231.17	25.42	16.30	-21.04	1637079.00	482528.31	39°49'03.520"N	80°47'31.352"W	26.62	307.773	0.17
2328.00	1.220	225.360	2326.16	25.30	16.06	-21.17	1637078.87	482528.07	39°49'03.517"N	80°47'31.354"W	26.57	307.197	2.24
2422.00	1.360	236.400	2420.14	25.16	14.74	-22.81	1637077.23	482526.75	39°49'03.504"N	80°47'31.374"W	27.16	302.875	0.30
2518.00	1.260	242.500	2516.11	25.33	13.62	-24.70	1637075.35	482525.63	39°49'03.493"N	80°47'31.398"W	28.20	298.886	0.18
2612.00	3.540	226.740	2610.03	25.04	11.16	-27.73	1637072.32	482523.17	39°49'03.468"N	80°47'31.437"W	29.89	291.923	2.50
2707.00	5.290	229.900	2704.74	24.23	6.33	-33.21	1637066.83	482518.34	39°49'03.419"N	80°47'31.506"W	33.81	280.766	1.86
2802.00	4.200	221.570	2799.41	23.04	0.90	-38.87	1637061.17	482512.91	39°49'03.365"N	80°47'31.578"W	38.88	271.332	1.35
2896.00	8.900	231.560	2892.78	21.80	-6.20	-46.85	1637053.19	482505.81	39°49'03.294"N	80°47'31.679"W	47.26	262.466	5.13
2991.00	12.750	229.700	2986.07	20.39	-17.55	-60.61	1637039.43	482494.46	39°49'03.179"N	80°47'31.853"W	63.10	253.852	4.07
3086.00	13.160	237.520	3078.66	19.90	-30.14	-77.73	1637022.31	482481.87	39°49'03.053"N	80°47'32.070"W	83.37	248.807	1.89
3181.00	10.890	232.290	3171.57	19.95	-41.44	-93.96	1637006.09	482470.58	39°49'02.939"N	80°47'32.276"W	102.69	246.201	2.65
3276.00	12.990	241.090	3264.52	20.66	-52.09	-110.40	1636989.64	482459.92	39°49'02.831"N	80°47'32.484"W	122.08	244.742	2.92
3371.00	17.530	235.060	3356.15	21.80	-65.45	-131.49	1636978.47	482446.56	39°49'02.696"N	80°47'32.752"W	146.88	243.537	5.06
3465.00	20.380	230.060	3445.05	20.41	-84.07	-155.65	1636964.40	482432.23	39°49'02.509"N	80°47'33.058"W	176.91	241.625	3.49
3560.00	22.120	227.960	3533.59	16.79	-106.67	-181.62	1636918.43	482405.34	39°49'02.282"N	80°47'33.387"W	210.63	239.573	2.00
3655.00	22.770	232.740	3621.40	13.88	-129.78	-209.54	1636890.51	482382.23	39°49'02.049"N	80°47'33.740"W	246.48	238.227	2.04
3750.00	20.850	243.870	3709.63	15.76	-148.37	-239.36	1636860.69	482363.65	39°49'01.861"N	80°47'34.119"W	281.62	238.208	4.79
3773.00	21.100	242.170	3731.23	16.91	-152.10	-246.70	1636853.35	482359.91	39°49'01.823"N	80°47'34.213"W	289.82	238.344	2.86
3786.00	21.270	243.590	3743.11	17.55	-154.24	-250.88	1636849.17	482357.77	39°49'01.802"N	80°47'34.266"W	294.51	238.416	4.16
3836.00	24.230	240.140	3789.34	19.82	-163.39	-267.91	1636833.15	482348.63	39°49'01.709"N	80°47'34.482"W	311.80	238.622	6.49
3880.00	27.980	239.660	3828.84	21.47	-173.10	-284.65	1636815.40	482338.92	39°49'01.610"N	80°47'34.695"W	333.15	238.695	8.54
3975.00	34.400	240.064	3910.07	23.65	-197.78	-327.18	1636778.12	482314.24	39°49'01.361"N	80°47'35.235"W	382.32	238.848	6.76
4070.00	35.310	238.850	3988.82	29.86	-225.37	-373.94	1636726.12	482286.65	39°49'01.081"N	80°47'35.829"N	436.60	238.922	1.20
4165.00	35.200	234.990	4065.61	31.70	-255.29	-419.86	1636680.20	482256.73	39°49'00.779"N	80°47'36.412"W	491.38	238.699	2.35
4259.00	35.170	231.620	4142.44	30.10	-287.64	-463.28	1636636.78	482224.38	39°49'00.453"N	80°47'36.963"W	545.31	238.164	2.07
4354.00	35.210	230.770	4220.08	26.47	-321.95	-505.94	1636594.12	482190.08	39°49'00.108"N	80°47'37.503"W	599.69	237.530	0.52
4449.00	35.240	231.930	4297.69	22.98	-356.17	-548.74	1636551.33	482155.86	39°48'59.764"N	80°47'38.045"W	654.19	237.013	0.70



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

WELLPATH DATA (170 stations)

MID (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 (ft/100ft)
4544.00	35.260	235.030	4375.28	21.53	-388.79	-592.79	1636507.29	482123.24	39°48'59.435"N	80°47'38.604"W	708.91	236.740	1.88
4638.00	35.120	234.490	4452.10	21.30	-420.05	-637.03	1636463.05	482091.98	39°48'59.120"N	80°47'39.165"W	763.05	236.600	0.36
4732.00	35.220	232.710	4528.94	19.98	-452.18	-680.61	1636419.47	482059.86	39°48'58.796"N	80°47'39.717"W	817.12	236.401	1.10
4827.00	34.190	234.070	4607.04	18.45	-484.44	-724.02	1636376.06	482027.60	39°48'58.471"N	80°47'40.267"W	871.14	236.214	1.36
4922.00	33.830	232.660	4685.70	16.94	-516.14	-766.65	1636333.43	481995.90	39°48'58.152"N	80°47'40.808"W	924.21	236.050	0.91
5016.00	31.920	235.390	4764.74	16.04	-546.13	-807.92	1636292.17	481965.91	39°48'57.850"N	80°47'41.331"W	975.19	235.942	2.57
5111.00	32.010	238.250	4845.34	17.64	-573.65	-850.00	1636250.09	481938.39	39°48'57.572"N	80°47'42.396"W	1025.46	235.985	1.60
5205.00	32.040	235.810	4925.03	19.40	-600.77	-891.81	1636208.28	481911.27	39°48'57.298"N	80°47'42.996"W	1075.29	236.034	1.38
5300.00	32.010	234.870	5005.58	19.70	-629.42	-933.25	1636166.84	481882.63	39°48'57.009"N	80°47'42.922"W	1125.66	236.003	0.53
5395.00	31.930	235.520	5086.17	19.87	-658.13	-974.55	1636125.54	481853.92	39°48'56.715"N	80°47'43.446"W	1175.96	235.966	0.37
5490.00	32.070	236.300	5166.73	20.67	-686.34	-1016.24	1636083.86	481825.70	39°48'56.435"N	80°47'44.497"W	1226.30	235.966	0.46
5584.00	31.930	235.200	5246.45	21.32	-714.38	-1057.41	1636042.69	481797.67	39°48'56.152"N	80°47'44.497"W	1276.11	235.957	0.64
5679.00	32.000	233.760	5327.05	20.87	-743.60	-1098.35	1636001.76	481768.46	39°48'55.857"N	80°47'45.016"W	1326.38	235.901	0.81
5773.00	33.890	249.350	5406.07	26.83	-767.61	-1143.04	1635957.06	481744.45	39°48'55.613"N	80°47'45.584"W	1376.87	236.117	9.22
5868.00	36.800	266.380	5483.74	48.27	-778.77	-1196.37	1635903.74	48.733.28	39°48'55.426"N	80°47'46.266"W	1427.51	236.938	10.78
5962.00	39.990	270.360	5557.42	80.43	-780.36	-1254.69	1635845.42	481731.69	39°48'55.471"N	80°47'47.013"W	1477.57	238.120	4.29
6057.00	43.730	282.670	5628.28	122.45	-772.95	-1317.38	1635782.73	481719.10	39°48'55.536"N	80°47'47.817"W	1527.40	239.598	9.49
6152.00	48.150	294.150	5694.44	177.22	-751.23	-1381.85	1635718.27	481760.82	39°48'55.741"N	80°47'48.647"W	1572.84	241.470	9.84
6247.00	57.230	301.180	5752.01	244.33	-715.97	-1448.49	1635651.63	481796.08	39°48'56.080"N	80°47'49.508"W	1615.78	243.697	11.22
6342.00	62.790	303.130	5799.48	320.14	-672.17	-1518.10	1635582.02	481839.88	39°48'56.503"N	80°47'50.408"W	1660.25	246.118	5.12
6436.00	67.580	308.360	5838.94	400.65	-622.30	-1587.25	1635512.88	481889.74	39°48'56.986"N	80°47'51.303"W	1704.88	248.592	7.17
6531.00	76.910	319.570	5867.96	489.23	-559.51	-1652.02	1635448.11	481952.83	39°48'57.597"N	80°47'52.145"W	1744.20	251.289	14.91
6626.00	81.070	322.090	5886.10	582.21	-487.23	-1710.89	1635389.25	482024.80	39°48'58.303"N	80°47'52.912"W	1778.91	254.104	5.09
6721.00	90.920	321.520	5892.73	676.71	-412.85	-1769.42	1635330.72	482099.19	39°48'59.030"N	80°47'53.676"W	1816.94	256.867	10.39
6816.00	92.040	323.180	5891.44	770.62	-374.07	-1799.34	1635300.80	482137.96	39°48'59.489"N	80°47'54.067"W	1837.8	258.256	4.14
6910.00	91.080	326.150	5890.20	865.59	-337.37	-1825.35	1635274.79	482174.65	39°48'59.788"N	80°47'54.407"W	1856.76	259.528	6.97
7005.00	91.110	320.210	5888.18	960.42	-299.65	-1879.92	1635220.22	482252.37	39°49'00.528"N	80°47'55.120"W	1897.77	262.136	2.59
7099.00	91.140	322.750	5884.30	1054.21	-111.34	-1996.97	1635161.70	482337.16	39°49'01.258"N	80°47'55.884"W	1947.24	264.552	3.68
7194.00	91.170	324.520	5882.38	1149.16	34.86	-2053.29	1635103.18	482400.68	39°49'01.977"N	80°47'56.648"W	2000.08	266.809	2.70
							1635046.87	482477.15	39°49'02.724"N	80°47'57.384"W	2053.58	269.027	1.86



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REFERENCE WELL PATH IDENTIFICATION		Operator	Area	Field	Facility	Slot	Slot F
		NOBLE ENERGY	Marshall County, WV	Marshall	MND-6 Pad	Well	MND-6F-HS
						Wellbore	MND-6F-HS AWB

WELLPATH DATA (170 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]
7289.00	90.800	325.530	5880.75	1244.15	42.97	-2107.73	1634992.42	482554.98	39°49'03.486"N	80°47'58.096"W	2108.17	271.168	1.13
7383.00	90.180	327.650	5879.95	1338.10	121.43	-2159.49	1634940.67	482633.43	39°49'04.254"N	80°47'58.773"W	2162.90	273.218	2.35
7478.00	90.310	331.190	5879.54	1432.80	203.20	-2207.81	1634892.35	482715.20	39°49'05.055"N	80°47'59.408"W	2217.14	275.259	3.73
7573.00	90.340	329.640	5879.00	1527.38	285.82	-2254.71	1634845.45	482797.81	39°49'05.864"N	80°48'00.024"W	2272.75	277.224	1.63
7668.00	90.340	326.420	5878.44	1622.23	366.39	-2305.06	1634795.10	482878.38	39°49'06.653"N	80°48'00.683"W	2333.94	279.932	3.39
7763.00	90.250	322.600	5877.95	1717.21	443.73	-2360.15	1634740.02	482955.71	39°49'07.410"N	80°48'01.404"W	2401.50	280.648	4.02
7857.00	90.230	324.330	5877.54	1811.17	519.25	-2416.11	1634684.06	483031.23	39°49'08.148"N	80°48'02.136"W	2471.28	282.129	1.83
7952.00	90.430	329.050	5876.97	1906.10	598.61	-2468.27	1634631.91	483110.59	39°49'08.925"N	80°48'02.819"W	2539.82	283.632	4.98
8047.00	90.830	331.300	5875.93	2000.70	681.02	-2515.51	1634584.67	483192.99	39°49'09.732"N	80°48'03.439"W	2606.07	285.148	2.41
8142.00	90.710	333.160	5874.65	2094.93	765.07	-2559.77	1634540.41	483271.03	39°49'10.537"N	80°48'04.022"W	2671.66	286.640	1.96
8236.00	92.090	328.890	5872.35	2188.36	847.26	-2605.28	1634494.90	483359.22	39°49'11.362"N	80°48'04.621"W	2739.59	288.015	4.77
8332.00	91.390	323.040	5869.44	2284.26	926.74	-2658.97	1634441.22	483438.70	39°49'12.140"N	80°48'05.323"W	2815.84	289.215	6.13
8426.00	90.680	321.290	5867.74	2378.12	1000.96	-2716.61	1634383.58	483512.92	39°49'12.865"N	80°48'06.076"W	2895.15	290.227	2.01
8521.00	90.650	321.960	5866.64	2472.95	1075.43	-2775.58	1634324.61	483587.38	39°49'13.593"N	80°48'06.845"W	2976.65	291.179	0.71
8616.00	90.650	325.460	5865.56	2567.91	1151.99	-2831.80	1634268.40	483663.94	39°49'14.341"N	80°48'07.580"W	3057.15	292.137	3.68
8711.00	90.740	327.620	5864.41	2662.86	1231.23	-2884.17	1634216.03	483743.18	39°49'15.117"N	80°48'08.266"W	3135.98	293.117	2.28
8805.00	91.170	324.500	5862.84	2756.82	1309.20	-2936.64	1634163.56	483821.14	39°49'15.880"N	80°48'08.952"W	3215.25	294.028	3.35
8900.00	91.350	317.050	5860.75	2851.47	1382.72	-2996.66	1634103.55	483894.66	39°49'16.598"N	80°48'09.735"W	3300.28	294.770	7.84
8995.00	90.680	317.510	5859.06	2945.60	1452.51	-3061.10	1634039.11	483964.43	39°49'17.278"N	80°48'10.574"W	3388.23	295.385	0.86
9089.00	90.580	322.470	5858.03	3039.20	1524.48	-3121.51	1633978.71	484036.40	39°49'17.980"N	80°48'11.362"W	3473.88	296.030	5.28
9184.00	90.490	326.710	5857.14	3134.17	1601.88	-3176.54	1633923.68	484113.80	39°49'18.738"N	80°48'12.181"W	3557.59	296.761	4.46
9278.00	90.740	329.360	5856.13	3228.03	1681.62	-3226.50	1633873.92	484193.53	39°49'19.518"N	80°48'12.734"W	3638.24	297.530	2.83
9373.00	91.880	326.100	5853.96	3322.88	1761.91	-3277.00	1633823.23	484273.82	39°49'20.304"N	80°48'13.398"W	3720.62	298.265	3.63
9468.00	89.880	321.060	5852.50	3417.81	1838.32	-3333.37	1633766.86	484350.23	39°49'21.051"N	80°48'14.135"W	3806.67	298.876	5.71
9563.00	89.680	320.830	5852.86	3512.57	1912.09	-3393.23	1633707.00	484423.94	39°49'21.772"N	80°48'14.916"W	3894.88	299.491	0.31
9657.00	89.690	324.530	5853.37	3606.47	1986.83	-3450.20	1633650.03	484495.73	39°49'22.507"N	80°48'15.660"W	3981.38	299.936	3.94
9752.00	89.750	323.610	5853.83	3701.46	2063.75	-3505.95	1633593.29	484575.65	39°49'23.254"N	80°48'16.388"W	4068.26	300.483	0.97
9847.00	89.750	322.930	5854.25	3796.41	2139.89	-3562.76	1633537.48	484651.78	39°49'23.999"N	80°48'17.131"W	4156.01	300.990	0.72
9942.00	89.720	324.120	5854.68	3891.38	2216.28	-3619.23	1633481.01	484728.17	39°49'24.745"N	80°48'17.868"W	4243.91	301.482	1.25
10037.00	90.030	331.460	5854.89	3986.26	2296.60	-3669.84	1633430.41	484808.46	39°49'25.532"N	80°48'18.532"W	4329.21	302.035	7.73



Actual Wellpath Report
MND-6F-HS AWP Proj: 14650'
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REFERENCE WELLPATH IDENTIFICATION		Operator	NOBLE ENERGY	Slot	Slot F
Area	Marshall County, WV	Well	MND-6F-HS	Wellbore	MND-6F-HS AWB
Field	Marshall				
Facility	MND-6 Pad				

WELLPATH DATA (170 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]
10131.00	90.060	330.380	5854.82	4079.70	2378.75	-3715.52	1633384.72	484890.63	39°49'26.337"N	80°48'19.133"W	4411.76	302.628	1.15
10226.00	90.090	325.480	5854.69	4174.54	2459.23	-3765.95	1633334.30	484971.10	39°49'27.125"N	80°48'19.794"W	4497.80	303.145	5.16
10320.00	90.520	331.730	5854.19	4268.31	2539.43	-3814.89	1633285.36	485051.30	39°49'27.911"N	80°48'20.436"W	4582.80	303.650	6.66
10415.00	90.800	328.170	5853.10	4362.93	2621.64	-3862.45	1633237.80	485133.51	39°49'28.716"N	80°48'21.061"W	4668.14	304.167	3.76
10511.00	91.450	328.790	5851.21	4458.74	2703.46	-3912.63	1633187.63	485215.32	39°49'29.577"N	80°48'21.719"W	4755.77	304.643	0.94
10606.00	91.450	329.760	5848.81	4553.44	2785.10	-3961.15	1633139.11	485296.95	39°49'30.317"N	80°48'22.356"W	4842.26	305.111	1.02
10701.00	90.620	322.890	5847.09	4648.34	2864.10	-4013.79	1633086.48	485375.95	39°49'31.090"N	80°48'23.045"W	4930.88	305.510	7.28
10796.00	90.710	317.860	5845.99	4743.00	2937.24	-4074.35	1633025.92	485449.09	39°49'31.804"N	80°48'23.835"W	5022.72	305.788	5.30
10891.00	90.620	317.410	5844.89	4837.21	3007.43	-4138.36	1632961.91	485519.27	39°49'32.489"N	80°48'24.669"W	5115.73	306.007	0.48
10986.00	90.580	322.140	5843.89	4931.78	3079.94	-4199.65	1632900.58	485591.17	39°49'33.196"N	80°48'25.468"W	5208.01	306.255	4.98
11081.00	90.710	320.680	5842.82	5026.59	3154.18	-4258.94	1632841.33	485666.02	39°49'33.922"N	80°48'26.241"W	5299.76	306.524	1.54
11175.00	90.650	319.470	5841.71	5120.23	3226.26	-4319.26	1632780.02	485738.10	39°49'34.625"N	80°48'27.028"W	5391.18	306.758	1.29
11270.00	90.580	321.780	5840.69	5214.94	3299.69	-4379.52	1632720.76	485811.52	39°49'35.342"N	80°48'27.814"W	5483.45	306.996	2.43
11364.00	90.580	326.480	5839.73	5308.90	3375.84	-4434.59	1632665.70	485887.66	39°49'36.087"N	80°48'28.534"W	5573.31	307.280	5.00
11460.00	91.140	331.330	5838.29	5404.64	3458.01	-4484.14	1632616.14	485969.83	39°49'36.891"N	80°48'29.184"W	5662.63	307.638	5.09
11554.00	91.290	329.250	5836.30	5498.21	3539.63	-4530.72	1632569.57	486051.44	39°49'37.691"N	80°48'29.796"W	5749.47	307.999	5.17
11649.00	91.480	324.340	5834.00	5593.11	3619.07	-4582.71	1632517.58	486130.88	39°49'38.469"N	80°48'30.477"W	5839.43	308.299	2.22
11744.00	91.230	319.560	5831.75	5687.92	3693.84	-4641.23	1632459.07	486215.64	39°49'39.199"N	80°48'31.241"W	5931.74	308.515	5.04
11839.00	91.170	320.790	5829.76	5782.56	3766.78	-4702.06	1632398.24	486278.58	39°49'39.911"N	80°48'32.034"W	6024.78	308.698	1.30
11933.00	90.980	322.450	5828.00	5876.38	3840.45	-4760.41	1632349.89	486352.25	39°49'40.631"N	80°48'32.796"W	6116.42	308.895	1.78
12028.00	91.140	321.110	5826.24	5971.21	3915.08	-4819.17	1632291.13	486426.87	39°49'41.360"N	80°48'33.563"W	6209.05	309.090	1.42
12123.00	91.030	322.970	5824.54	6066.00	3989.33	-4878.40	1632232.91	486501.12	39°49'42.082"N	80°48'34.336"W	6301.87	309.275	0.66
12218.00	91.030	322.970	5822.54	6160.88	4064.54	-4936.41	1632163.91	486576.32	39°49'42.820"N	80°48'35.136"W	6394.42	309.467	1.30
12312.00	91.260	324.160	5820.64	6254.83	4140.15	-4992.22	1632108.09	486651.93	39°49'43.599"N	80°48'35.823"W	6485.61	309.670	1.29
12407.00	91.080	326.930	5818.70	6349.81	4218.18	-5046.37	1632052.95	486728.95	39°49'44.322"N	80°48'36.531"W	6577.14	309.892	2.29
12502.00	91.050	327.930	5816.94	6444.72	4297.95	-5097.92	1632002.41	486809.72	39°49'45.103"N	80°48'37.207"W	6667.92	310.134	1.68
12596.00	91.260	330.230	5815.04	6538.46	4378.57	-5146.20	1631954.12	486890.34	39°49'45.893"N	80°48'37.841"W	6756.87	310.392	2.46
12690.00	91.260	328.540	5812.97	6632.16	4459.45	-5194.06	1631906.27	486971.21	39°49'46.685"N	80°48'38.469"W	6845.80	310.648	1.80
12785.00	91.200	326.970	5810.93	6727.02	4539.77	-5244.73	1631855.60	487051.53	39°49'47.472"N	80°48'39.134"W	6936.63	310.879	1.65
12880.00	91.110	321.990	5809.02	6821.97	4617.02	-5299.90	1631800.44	487128.81	39°49'48.227"N	80°48'39.855"W	7028.95	311.061	5.24



Actual Wellpath Report
MND-6F-HS AWP Proj: 14650'
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Operator	NOBLE ENERGY	Slot	Slot F
Area	Marshall County, WV	Well	MND-6F-HS
Field	Marshall	Wellbore	MND-6F-HS AWB
Facility	MND-6 Pad		

WELLPATH DATA (170 stations)

MID [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]
12974.00	91.200	323.570	5807.12	6915.88	4691.89	-536.75	1631743.59	487203.64	39°49'48.959"N	80°48'40.598"W	7120.99	311.215	1.68
13069.00	91.140	326.490	5805.18	7010.84	4769.71	-541.18	1631689.16	487281.46	39°49'49.720"N	80°48'41.310"W	7213.25	311.395	3.07
13164.00	91.200	330.240	5803.24	7105.64	4830.57	-546.99	1631639.36	487362.31	39°49'50.512"N	80°48'41.963"W	7304.13	311.612	3.95
13259.00	90.950	327.450	5801.46	7200.40	4931.84	-551.02	1631590.23	487443.58	39°49'51.308"N	80°48'42.608"W	7394.90	311.830	2.95
13353.00	90.950	322.750	5799.90	7294.37	5008.90	-556.88	1631536.47	487520.84	39°49'52.061"N	80°48'43.312"W	7486.38	311.995	5.00
13449.00	90.680	320.260	5798.53	7390.17	5084.03	-562.62	1631476.73	487595.75	39°49'52.795"N	80°48'44.092"W	7581.06	312.115	2.61
13543.00	90.710	320.390	5797.39	7483.85	5156.37	-568.63	1631416.72	487668.09	39°49'53.501"N	80°48'44.874"W	7674.10	312.215	0.14
13638.00	90.620	323.120	5796.29	7578.68	5230.97	-5742.43	1631357.93	487742.69	39°49'54.230"N	80°48'45.642"W	7767.79	312.331	2.88
13733.00	90.620	324.590	5795.26	7673.65	5307.68	-5798.46	1631301.90	487819.39	39°49'54.980"N	80°48'46.374"W	7860.89	312.470	1.55
13828.00	90.680	330.700	5794.18	7768.50	5387.89	-5849.27	1631251.09	487899.60	39°49'55.765"N	80°48'47.041"W	7952.57	312.649	6.43
13922.00	90.710	334.190	5793.04	7861.69	5471.20	-5892.75	1631207.62	487982.91	39°49'56.582"N	80°48'47.613"W	8041.05	312.876	3.71
14017.00	90.770	327.800	5791.82	7956.11	5554.24	-5938.78	1631161.59	488065.94	39°49'57.396"N	80°48'48.219"W	8131.34	313.084	6.73
14111.00	90.650	319.520	5790.65	8050.00	5629.89	-5994.43	1631105.94	488141.58	39°49'58.136"N	80°48'48.946"W	8223.68	313.204	8.81
14206.00	91.110	321.290	5789.19	8144.68	5703.08	-6054.97	1631045.40	488214.77	39°49'58.850"N	80°48'49.736"W	8317.92	313.286	1.92
14301.00	91.110	324.220	5787.35	8239.58	5778.68	-6112.45	1630987.93	488290.37	39°49'59.589"N	80°48'50.487"W	8411.61	313.392	3.08
14395.00	91.450	325.300	5785.25	8333.55	5855.43	-6166.68	1630933.71	488367.12	39°50'00.340"N	80°48'51.196"W	8503.76	313.517	1.20
14490.00	91.480	326.960	5782.82	8428.50	5934.28	-6219.60	1630880.79	488445.96	39°50'01.111"N	80°48'51.889"W	8596.46	313.655	1.75
14585.00	91.420	326.000	5780.42	8523.43	6013.46	-6272.04	1630828.34	488525.13	39°50'01.886"N	80°48'52.576"W	8689.09	313.794	1.01
14672.00	91.380	328.310	5779.39	8565.39	6048.73	-6294.82	1630805.57	488560.40	39°50'02.231"N	80°48'52.875"W	8729.94	313.858	5.50
14650.00	91.380	328.310	5778.84	8588.54	6068.30	-6306.89	1630793.50	488579.97	39°50'02.423"N	80°48'53.033"W	8752.21	313.895	0.00



Actual Wellpath Report
 MND-6F-HS AWP Proj: 14650'
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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot F
Area	Marshall County, WV	Well	MND-6F-HS
Field	Marshall	Wellbore	MND-6F-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-6F-HS BHL Rev-2		5779.58	6071.00	-6304.02	1630796.37	488582.67	39°50'02.450"N	80°48'52.997"W	point
MND-6F-HS LP Rev-2		5890.00	-424.88	-1755.56	1635344.58	482087.15	39°48'58.913"N	80°47'53.496"W	point
MND-6 Pad LL		6499.84	19.49	72.62	1637172.66	482531.50	39°49'03.564"N	80°47'30.152"W	polygon

WELLPATH COMPOSITION - Ret Wellbore: MND-6F-HS AWB Ret Wellpath: MND-6F-HS AWP Proj: 14650'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	300.00	Generic gyro - northseeking (Standard)	01 Gyro <1-3/4"> (50'-300')	MND-6F-HS AWB
300.00	708.00	ISCWSA MWD, Rev. 2 (Standard)	02 APS EM <1-3/4"> (300') (323'-708') Proj: 764'	MND-6F-HS AWB
708.00	2015.00	ISCWSA MWD, Rev. 2 (Standard)	03 APS EM <1-2-1/4"> (708') (773'-2015') Proj: 2070'	MND-6F-HS AWB
2015.00	3750.00	NavTrak (MagCor)	04 BHI MWD <8-3/4"> (2015') (2233'-3750')	MND-6F-HS AWB
3750.00	14627.00	NavTrak (AT Curve Short Spaced)	05 BHI AT Curve <8-3/4"> (3750') (3773'-14627') Projection to bit	MND-6F-HS AWB
14627.00	14650.00	Blind Drilling (std)		MND-6F-HS AWB



Actual Wellpath Report
 MNND-6F-HS AWP Proj: 14650'
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02/03/2017

REFERENCE WELLPATH IDENTIFICATION

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

COMMENTS

Wellpath general comments
 API: 47-051-01762-0000
 BHI Job #: 6638017
 Rig: Normac 79
 Duration: 11.24.2014 - 12.09.201
 Gyro <14-3/4" > (50'-300')
 APS EM <14-3/4" > (300')(323'-708')
 APS EM <12-1/4" > (708')(773'-2015')
 BHI MWD <8-3/4" > (2015')(2233'-3750')
 BHI AT Curve <8-3/4" > (3750')(3773'-14627')
 Projected MD at TD: 14650'



NOBLE ENERGY

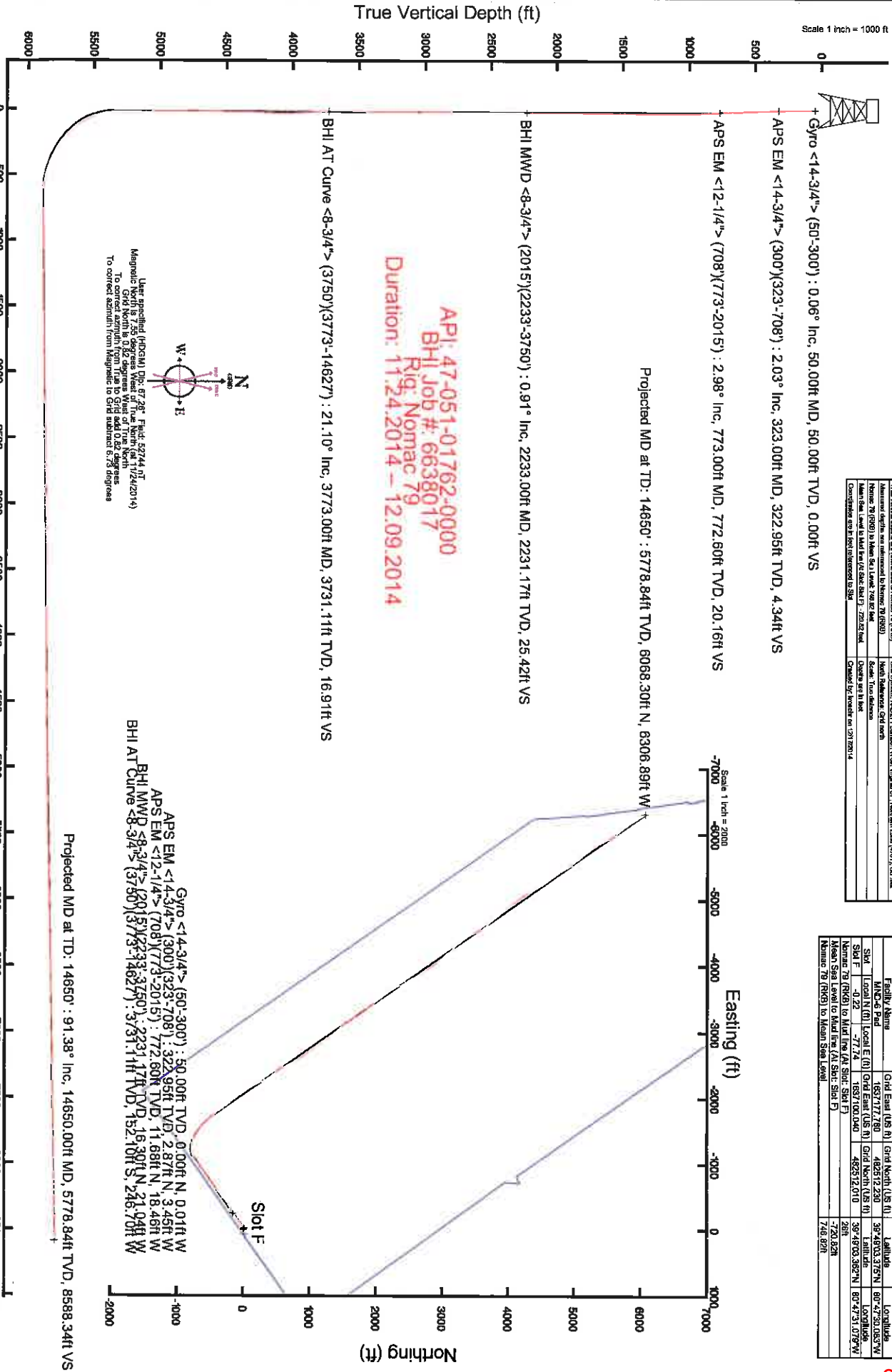
Location: Marshall County, WV
 Field: Marshall
 Facility: MND-6 Pad

Slot: Slot F
 Well: MND-6F-HS
 Wellpore: MND-6F-HS PWR

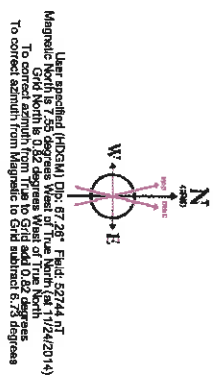


Pit Reference		Grid System	
True Vertical Depth (ft)	50.00ft	North	42512.230
Maximum Depth	322.95ft	East	8047.310
Minimum Depth	20.16ft	North	42512.230
Maximum Depth	322.95ft	East	8047.310
Minimum Depth	20.16ft	North	42512.230
Maximum Depth	322.95ft	East	8047.310

Location Information		Coordinates	
Facility Name	MND-6 Pad	Grid East (US ft)	8047.310
Local N (ft)	1857.777	Grid North (US ft)	42512.230
Local E (ft)	777.74	Grid East (US ft)	8047.310
Local S (ft)	1857.777	Grid South (US ft)	42512.230
Local W (ft)	777.74	Grid West (US ft)	8047.310
Mean Sea Level to Mud Line (ft)	2.87	Mean Sea Level to Mud Line (ft)	2.87
Mean Sea Level to Mean Sea Level	-76.82ft	Mean Sea Level to Mean Sea Level	-76.82ft



API: 47-051-01762-0000
 BHI Job #: 6638017
 Rig: Nomac 79
 Duration: 11.24.2014 - 12.09.2014



True Vertical Depth (ft) 0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000

Scale 1 inch = 1000 ft

Vertical Section (ft) 0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000

Scale 1 inch = 1000 ft

Projected MD at TD: 14650° : 91.38° Inc. 14650.00ft MD, 5779.84ft TVD, 8568.34ft VS

Projected MD at TD: 14650° : 5778.84ft TVD, 6068.30ft N, 8306.89ft W

Projected MD at TD: 14650° : 91.38° Inc. 14650.00ft MD, 5779.84ft TVD, 8568.34ft VS