

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot D
Area	Marshall County, WV	Well	SHL 25D-HS
Field	Marshall	Wellbore	SHL 25D-HS (AWB)
Facility	SHL-25 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	Frisjesl
Scale	0.999962	Report Generated	5/14/2014 at 10:05:54 AM
Convergence at slot	0.67° West	Database/Source file	WA_EasternUS/SHL_25D-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	17.91	-57.07	1704971.12	548375.28	40°00'02.997"N	80°33'11.198"W
Facility Reference Pt			1705028.19	548357.37	40°00'02.826"N	80°33'10.462"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 (RT) to Facility Vertical Datum	26.00ft
Horizontal Reference Pt	Slot	Nomac 79 (RT) to Mean Sea Level	1351.00ft
Vertical Reference Pt	Nomac 79 (RT)	Nomac 79 (RT) to Mud Line at Slot (Slot D)	26.00ft
MD Reference Pt	Nomac 79 (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	325.00°

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Field	Marshall	Wellbore	SHL 25D-HS (AWB)
Facility	SHL-25 Pad		

WELLPATH DATA (156 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	203.300	0.00	0.00	0.00	0.00	1704971.12	548375.28	40°00'02.997"N	80°33'11.198"W	0.00	0.000	0.00
26.00	0.000	203.300	26.00	0.00	0.00	0.00	1704971.12	548375.28	40°00'02.997"N	80°33'11.198"W	0.00	0.000	0.00
115.00	0.510	203.300	115.00	-0.21	-0.36	-0.16	1704970.96	548374.92	40°00'02.993"N	80°33'11.200"W	0.40	203.300	0.57
215.00	0.430	198.410	215.00	-0.67	-1.13	-0.45	1704970.67	548374.15	40°00'02.986"N	80°33'11.204"W	1.22	201.792	0.09
315.00	0.520	201.900	314.99	-1.14	-1.91	-0.74	1704970.38	548373.37	40°00'02.978"N	80°33'11.208"W	2.04	201.195	0.09
415.00	0.430	213.800	414.99	-1.52	-2.64	-1.12	1704970.00	548372.64	40°00'02.971"N	80°33'11.212"W	2.87	202.945	0.13
515.00	0.370	214.870	514.99	-1.77	-3.22	-1.51	1704969.61	548372.06	40°00'02.965"N	80°33'11.217"W	3.55	205.161	0.06
615.00	0.470	84.170	614.98	-2.08	-3.44	-1.29	1704969.83	548371.84	40°00'02.963"N	80°33'11.214"W	3.67	200.519	0.76
715.00	1.180	41.100	714.97	-2.03	-2.62	-0.20	1704970.92	548372.66	40°00'02.971"N	80°33'11.201"W	2.63	184.406	0.90
815.00	1.390	35.590	814.95	-1.38	-0.86	1.18	1704972.30	548374.42	40°00'02.989"N	80°33'11.183"W	1.46	126.024	0.24
915.00	0.570	356.670	914.93	-0.55	0.62	1.86	1704972.98	548375.90	40°00'03.003"N	80°33'11.175"W	1.96	71.426	1.01
1015.00	0.240	323.190	1014.93	0.08	1.29	1.70	1704972.82	548376.57	40°00'03.010"N	80°33'11.177"W	2.14	52.895	0.39
1115.00	0.230	313.140	1114.93	0.48	1.59	1.43	1704972.55	548376.87	40°00'03.013"N	80°33'11.180"W	2.14	41.935	0.04
1215.00	0.190	281.620	1214.93	0.80	1.76	1.12	1704972.24	548377.04	40°00'03.014"N	80°33'11.184"W	2.09	32.471	0.12
1315.00	0.610	277.990	1314.93	1.28	1.87	0.43	1704971.55	548377.15	40°00'03.015"N	80°33'11.193"W	1.92	13.028	0.42
1415.00	0.640	243.340	1414.92	1.73	1.69	-0.59	1704970.53	548376.97	40°00'03.014"N	80°33'11.206"W	1.80	340.710	0.37
1515.00	0.340	267.340	1514.92	1.97	1.43	-1.39	1704969.73	548376.71	40°00'03.011"N	80°33'11.216"W	1.99	315.849	0.36
1615.00	0.290	231.710	1614.92	2.11	1.26	-1.88	1704969.24	548376.54	40°00'03.009"N	80°33'11.223"W	2.27	303.776	0.20
1715.00	0.090	173.180	1714.92	2.03	1.03	-2.07	1704969.05	548376.31	40°00'03.007"N	80°33'11.225"W	2.31	296.313	0.25
1815.00	0.280	240.690	1814.92	1.98	0.83	-2.28	1704968.84	548376.11	40°00'03.005"N	80°33'11.228"W	2.42	289.975	0.26
1915.00	0.460	202.270	1914.91	1.79	0.34	-2.64	1704968.48	548375.62	40°00'03.000"N	80°33'11.232"W	2.66	277.257	0.30
2015.00	0.310	169.080	2014.91	1.33	-0.30	-2.74	1704968.38	548374.98	40°00'02.994"N	80°33'11.234"W	2.76	263.744	0.26
2115.00	0.530	200.950	2114.91	0.82	-1.00	-2.86	1704968.26	548374.28	40°00'02.987"N	80°33'11.235"W	3.03	250.741	0.31
2215.00	0.320	217.810	2214.91	0.48	-1.65	-3.19	1704967.93	548373.63	40°00'02.980"N	80°33'11.239"W	3.59	242.665	0.24
2315.00	0.420	165.730	2314.91	0.05	-2.23	-3.27	1704967.85	548373.05	40°00'02.974"N	80°33'11.240"W	3.96	235.784	0.34
2415.00	0.460	193.770	2414.90	-0.55	-2.97	-3.28	1704967.84	548372.31	40°00'02.967"N	80°33'11.240"W	4.43	227.820	0.22
2515.00	0.640	227.620	2514.90	-0.89	-3.74	-3.79	1704967.33	548371.54	40°00'02.959"N	80°33'11.246"W	5.32	225.378	0.36
2615.00	0.290	222.710	2614.89	-1.02	-4.30	-4.37	1704966.75	548370.98	40°00'02.954"N	80°33'11.254"W	6.13	225.472	0.35
2715.00	0.430	217.740	2714.89	-1.18	-4.78	-4.77	1704966.35	548370.50	40°00'02.949"N	80°33'11.259"W	6.76	224.941	0.14
2815.00	0.750	245.780	2814.89	-1.17	-5.35	-5.60	1704965.52	548369.93	40°00'02.943"N	80°33'11.269"W	7.74	226.316	0.42
2915.00	0.630	263.060	2914.88	-0.79	-5.68	-6.74	1704964.38	548369.60	40°00'02.940"N	80°33'11.284"W	8.82	229.872	0.24
3015.00	0.630	239.630	3014.87	-0.49	-6.03	-7.76	1704963.36	548369.25	40°00'02.936"N	80°33'11.297"W	9.83	232.170	0.26
3115.00	0.660	239.760	3114.87	-0.39	-6.60	-8.73	1704962.39	548368.68	40°00'02.931"N	80°33'11.310"W	10.94	232.942	0.03
3215.00	0.490	260.080	3214.86	-0.16	-6.96	-9.65	1704961.47	548368.32	40°00'02.927"N	80°33'11.321"W	11.90	234.210	0.26
3315.00	0.820	248.270	3314.86	0.18	-7.30	-10.74	1704960.38	548367.98	40°00'02.924"N	80°33'11.335"W	12.98	235.801	0.35
3368.00	0.790	234.700	3367.85	0.27	-7.65	-11.39	1704959.73	548367.63	40°00'02.920"N	80°33'11.344"W	13.72	236.114	0.36
3463.00	0.970	247.180	3462.84	0.43	-8.34	-12.67	1704958.46	548366.94	40°00'02.913"N	80°33'11.360"W	15.16	236.636	0.28
3558.00	1.020	243.460	3557.83	0.73	-9.03	-14.16	1704956.96	548366.25	40°00'02.906"N	80°33'11.379"W	16.80	237.480	0.09
3653.00	1.350	243.530	3652.81	1.02	-9.91	-15.92	1704955.20	548365.37	40°00'02.897"N	80°33'11.401"W	18.75	238.110	0.35
3747.00	1.050	242.880	3746.78	1.30	-10.79	-17.68	1704953.44	548364.49	40°00'02.888"N	80°33'11.424"W	20.71	238.597	0.32
3842.00	1.120	250.410	3841.77	1.67	-11.50	-19.33	1704951.79	548363.78	40°00'02.881"N	80°33'11.445"W	22.49	239.247	0.17
3936.00	1.290	233.470	3935.75	1.88	-12.44	-21.04	1704950.08	548362.84	40°00'02.872"N	80°33'11.467"W	24.45	239.414	0.42
4031.00	0.980	232.330	4030.73	1.82	-13.57	-22.55	1704948.57	548361.71	40°00'02.860"N	80°33'11.486"W	26.32	238.955	0.33
4126.00	1.830	205.750	4125.70	1.04	-15.43	-23.85	1704947.27	548359.85	40°00'02.842"N	80°33'11.502"W	28.41	237.090	1.10
4170.00	3.480	203.210	4169.65	-0.01	-17.29	-24.68	1704946.44	548357.99	40°00'02.823"N	80°33'11.513"W	30.14	234.980	3.76

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# Actual Wellpath Report

SHL 25D-HS AWP Proj: 13788'  
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Area	Marshall County, WV	Well	SHL 25D-HS
Field	Marshall	Wellbore	SHL 25D-HS (AWB)
Facility	SHL-25 Pad		

## WELLPATH DATA (156 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]
4220.00	3.980	205.820	4219.54	-1.66	-20.25	-26.03	1704945.09	548355.03	40°00'02.794"N	80°33'11.530"W	32.98	232.122	1.06
4240.00	4.750	202.080	4239.49	-2.44	-21.64	-26.65	1704944.47	548353.64	40°00'02.780"N	80°33'11.537"W	34.33	230.916	4.10
4273.00	5.790	198.140	4272.35	-4.19	-24.49	-27.68	1704943.44	548350.79	40°00'02.752"N	80°33'11.550"W	36.96	228.497	3.34
4315.00	6.770	194.790	4314.09	-7.05	-28.90	-28.97	1704942.15	548346.38	40°00'02.708"N	80°33'11.566"W	40.92	225.072	2.49
4410.00	9.440	201.020	4408.14	-15.03	-41.59	-33.20	1704937.93	548333.69	40°00'02.582"N	80°33'11.619"W	53.21	218.598	2.95
4505.00	12.990	204.460	4501.31	-24.81	-58.58	-40.41	1704930.71	548316.70	40°00'02.413"N	80°33'11.709"W	71.17	214.600	3.80
4599.00	9.960	204.070	4593.42	-34.36	-75.63	-48.11	1704923.02	548299.66	40°00'02.244"N	80°33'11.805"W	89.63	212.460	3.22
4694.00	10.050	197.120	4686.98	-43.67	-91.05	-53.90	1704917.23	548284.23	40°00'02.091"N	80°33'11.877"W	105.81	210.623	1.27
4789.00	9.200	200.180	4780.64	-53.10	-106.10	-58.96	1704912.17	548269.18	40°00'01.942"N	80°33'11.940"W	121.38	209.059	1.04
4825.00	10.410	198.620	4816.12	-56.67	-111.88	-60.99	1704910.13	548263.40	40°00'01.884"N	80°33'11.965"W	127.43	208.595	3.44
4857.00	11.820	197.270	4847.52	-60.39	-117.75	-62.88	1704908.24	548257.53	40°00'01.826"N	80°33'11.989"W	133.49	208.103	4.48
4903.00	13.380	195.680	4892.41	-66.65	-127.38	-65.72	1704905.40	548247.91	40°00'01.731"N	80°33'12.024"W	143.33	207.292	3.47
4952.00	13.790	194.780	4940.04	-74.01	-138.48	-68.74	1704902.38	548236.80	40°00'01.620"N	80°33'12.061"W	154.61	206.400	0.94
4998.00	13.560	196.340	4984.73	-80.92	-148.96	-71.66	1704899.46	548226.33	40°00'01.517"N	80°33'12.097"W	165.30	205.691	0.94
5046.00	13.420	199.590	5031.41	-87.66	-159.61	-75.11	1704896.01	548215.68	40°00'01.411"N	80°33'12.139"W	176.40	205.201	1.61
5092.00	13.360	198.900	5076.16	-93.88	-169.66	-78.62	1704892.50	548205.62	40°00'01.311"N	80°33'12.183"W	186.99	204.863	0.37
5141.00	13.500	196.310	5123.82	-100.80	-180.51	-82.06	1704889.06	548194.78	40°00'01.204"N	80°33'12.226"W	198.29	204.447	1.26
5187.00	14.300	194.070	5168.47	-107.87	-191.17	-84.95	1704886.17	548184.11	40°00'01.098"N	80°33'12.261"W	209.20	203.959	2.10
5235.00	15.960	189.660	5214.81	-116.45	-203.43	-87.50	1704883.62	548171.86	40°00'00.976"N	80°33'12.292"W	221.45	203.273	4.21
5330.00	15.350	190.200	5306.28	-134.60	-228.68	-91.92	1704879.21	548146.61	40°00'00.726"N	80°33'12.345"W	246.46	201.897	0.66
5425.00	16.870	191.080	5397.55	-153.03	-254.59	-96.79	1704874.33	548120.70	40°00'00.470"N	80°33'12.404"W	272.36	200.817	1.62
5520.00	17.730	186.750	5488.25	-173.38	-282.48	-101.14	1704869.98	548092.81	40°00'00.194"N	80°33'12.455"W	300.04	199.700	1.63
5615.00	17.710	183.790	5578.75	-195.44	-311.26	-103.80	1704867.33	548064.03	39°59'59.909"N	80°33'12.485"W	328.11	198.442	0.95
5709.00	17.220	183.690	5668.42	-217.44	-339.41	-105.64	1704865.49	548035.88	39°59'59.631"N	80°33'12.504"W	355.47	197.288	0.52
5804.00	17.040	188.530	5759.21	-238.51	-367.21	-108.61	1704862.52	548008.08	39°59'59.356"N	80°33'12.538"W	382.94	196.476	1.51
5899.00	16.930	192.330	5850.06	-257.98	-394.49	-113.63	1704857.50	547980.80	39°59'59.085"N	80°33'12.599"W	410.53	196.068	1.17
5994.00	16.600	195.010	5941.03	-276.07	-421.11	-120.10	1704851.03	547954.18	39°59'58.822"N	80°33'12.678"W	437.90	195.917	0.88
6089.00	14.190	225.820	6032.76	-286.67	-442.37	-131.98	1704839.14	547932.92	39°59'58.610"N	80°33'12.827"W	461.64	196.612	8.86
6184.00	12.010	248.940	6125.35	-286.15	-454.05	-149.57	1704821.56	547921.25	39°59'58.493"N	80°33'13.052"W	478.05	198.233	5.92
6278.00	16.030	278.650	6216.65	-274.81	-455.62	-171.56	1704799.56	547919.68	39°59'58.475"N	80°33'13.334"W	486.85	200.634	8.63
6373.00	19.230	295.400	6307.23	-252.14	-446.92	-198.69	1704772.44	547928.37	39°59'58.557"N	80°33'13.684"W	489.10	203.968	6.28
6468.00	21.690	301.310	6396.24	-222.45	-431.09	-227.83	1704743.30	547944.21	39°59'58.711"N	80°33'14.061"W	487.59	207.856	3.38
6563.00	34.610	309.830	6479.86	-180.14	-404.56	-263.71	1704707.42	547970.74	39°59'58.969"N	80°33'14.526"W	482.92	213.098	14.21
6657.00	45.100	314.630	6551.94	-121.45	-363.95	-308.04	1704663.09	548011.34	39°59'59.365"N	80°33'15.101"W	476.81	220.244	11.62
6752.00	56.760	318.370	6611.72	-48.62	-310.42	-358.56	1704612.57	548064.87	39°59'59.888"N	80°33'15.759"W	474.27	229.116	12.64
6847.00	69.820	322.100	6654.34	35.76	-245.25	-412.59	1704558.55	548130.04	40°00'00.526"N	80°33'16.463"W	479.97	239.272	14.18
6942.00	80.010	321.260	6679.03	127.21	-173.39	-469.40	1704501.74	548201.90	40°00'01.229"N	80°33'17.203"W	500.40	249.727	10.76
7036.00	82.720	319.030	6693.15	219.79	-102.06	-528.95	1704442.19	548273.22	40°00'01.927"N	80°33'17.979"W	538.71	259.079	3.72
7131.00	85.380	322.570	6703.00	314.00	-28.85	-588.65	1704382.49	548346.43	40°00'02.644"N	80°33'18.757"W	589.36	267.194	4.64
7186.00	89.970	325.930	6705.23	368.93	15.73	-620.74	1704350.40	548391.01	40°00'03.080"N	80°33'19.176"W	620.94	271.452	10.34
7225.00	90.090	325.950	6705.21	407.93	48.04	-642.59	1704328.56	548423.32	40°00'03.397"N	80°33'19.462"W	644.38	274.276	0.31
7320.00	89.230	325.660	6705.77	502.92	126.62	-695.98	1704275.17	548501.89	40°00'04.167"N	80°33'20.160"W	707.40	280.311	0.96
7415.00	89.170	324.790	6707.10	597.90	204.64	-750.15	1704221.00	548579.91	40°00'04.932"N	80°33'20.868"W	777.57	285.259	0.92
7510.00	88.920	322.890	6708.68	692.87	281.33	-806.20	1704164.95	548656.60	40°00'05.683"N	80°33'21.599"W	853.87	289.237	2.02
7604.00	88.920	322.690	6710.45	786.78	356.18	-863.03	1704108.12	548731.44	40°00'06.416"N	80°33'22.341"W	933.64	292.426	0.21

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot D
Area	Marshall County, WV	Well	SHL 25D-HS
Field	Marshall	Wellbore	SHL 25D-HS (AWB)
Facility	SHL-25 Pad		

WELLPATH DATA (156 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]
7699.00	89.720	321.900	6711.58	881.67	431.33	-921.13	1704050.03	548806.60	40°00'07.152"N	80°33'23.099"W	1017.12	295.092	1.18
7794.00	89.720	322.100	6712.04	976.54	506.19	-979.62	1703991.54	548881.45	40°00'07.885"N	80°33'23.862"W	1102.67	297.327	0.21
7889.00	90.430	326.540	6711.92	1071.50	583.34	-1035.01	1703936.15	548958.60	40°00'08.641"N	80°33'24.585"W	1188.08	299.406	4.73
7983.00	90.520	327.660	6711.14	1165.44	662.26	-1086.07	1703885.09	549037.51	40°00'09.415"N	80°33'25.253"W	1272.06	301.374	1.20
8078.00	90.430	327.260	6710.35	1260.35	742.34	-1137.17	1703834.00	549117.60	40°00'10.201"N	80°33'25.922"W	1358.02	303.137	0.43
8173.00	90.430	329.670	6709.64	1355.16	823.31	-1186.85	1703784.32	549198.55	40°00'10.995"N	80°33'26.572"W	1444.45	304.749	2.54
8267.00	90.280	327.210	6709.06	1448.98	903.40	-1236.04	1703735.13	549278.64	40°00'11.781"N	80°33'27.216"W	1530.99	306.162	2.62
8362.00	90.250	326.120	6708.62	1543.94	982.76	-1288.25	1703682.93	549358.00	40°00'12.559"N	80°33'27.899"W	1620.31	307.339	1.15
8457.00	90.250	321.940	6708.20	1638.91	1059.63	-1344.03	1703627.14	549434.87	40°00'13.312"N	80°33'28.628"W	1711.50	308.252	4.40
8552.00	90.220	323.910	6707.81	1733.84	1135.42	-1401.30	1703569.88	549510.66	40°00'14.054"N	80°33'29.375"W	1803.56	309.017	2.07
8647.00	90.460	326.150	6707.25	1828.83	1213.26	-1455.75	1703515.43	549588.50	40°00'14.817"N	80°33'30.086"W	1895.05	309.809	2.37
8742.00	90.400	327.220	6706.54	1923.78	1292.65	-1507.92	1703463.26	549667.88	40°00'15.595"N	80°33'30.769"W	1986.14	310.604	1.13
8837.00	91.170	327.540	6705.23	2018.69	1372.66	-1559.13	1703412.06	549747.88	40°00'16.380"N	80°33'31.439"W	2077.27	311.361	4.98
8932.00	90.580	322.850	6703.78	2113.65	1450.63	-1613.33	1703357.85	549825.85	40°00'17.144"N	80°33'32.147"W	2169.60	311.960	4.88
9027.00	90.150	319.970	6703.18	2208.46	1524.87	-1672.58	1703298.61	549900.09	40°00'17.871"N	80°33'32.920"W	2263.35	312.355	3.07
9122.00	90.250	319.530	6702.85	2303.06	1597.38	-1733.96	1703237.23	549972.60	40°00'18.580"N	80°33'33.719"W	2357.59	312.652	0.47
9216.00	91.420	322.710	6701.48	2396.82	1670.54	-1792.95	1703178.24	550045.75	40°00'19.296"N	80°33'34.488"W	2450.58	312.976	3.60
9311.00	91.450	324.450	6699.10	2491.75	1746.96	-1849.33	1703121.86	550122.17	40°00'20.045"N	80°33'35.224"W	2543.99	313.369	1.83
9406.00	88.980	323.030	6698.74	2586.72	1823.55	-1905.51	1703065.68	550198.76	40°00'20.795"N	80°33'35.958"W	2637.48	313.741	3.00
9501.00	88.950	324.630	6700.46	2681.68	1900.23	-1961.57	1703009.63	550275.43	40°00'21.547"N	80°33'36.690"W	2731.04	314.090	1.68
9596.00	89.350	327.080	6701.87	2776.65	1978.83	-2014.88	1702956.32	550354.04	40°00'22.317"N	80°33'37.387"W	2824.10	314.483	2.61
9691.00	89.510	329.240	6702.81	2871.50	2059.53	-2064.99	1702906.21	550434.73	40°00'23.109"N	80°33'38.043"W	2916.48	314.924	2.28
9785.00	89.510	326.110	6703.62	2965.38	2138.95	-2115.25	1702855.96	550514.15	40°00'23.888"N	80°33'38.701"W	3008.22	315.319	3.33
9880.00	89.880	325.440	6704.12	3060.37	2217.50	-2168.68	1702802.53	550592.69	40°00'24.658"N	80°33'39.399"W	3101.69	315.638	0.81
9975.00	89.910	325.580	6704.30	3155.37	2295.80	-2222.47	1702748.74	550670.99	40°00'25.425"N	80°33'40.102"W	3195.32	315.930	0.15
10070.00	90.060	331.850	6704.32	3250.12	2376.95	-2271.78	1702699.43	550752.13	40°00'26.221"N	80°33'40.748"W	3287.99	316.296	6.60
10165.00	90.650	331.300	6703.73	3344.49	2460.49	-2317.00	1702654.21	550835.67	40°00'27.041"N	80°33'41.342"W	3379.72	316.720	0.85
10259.00	91.480	324.930	6701.98	3438.29	2540.25	-2366.62	1702604.60	550915.43	40°00'27.824"N	80°33'41.992"W	3471.85	317.027	6.83
10354.00	89.820	321.540	6700.90	3533.22	2616.34	-2423.47	1702547.75	550991.51	40°00'28.569"N	80°33'42.734"W	3566.29	317.192	3.97
10449.00	89.750	320.900	6701.26	3628.01	2690.39	-2482.97	1702488.25	551065.57	40°00'29.294"N	80°33'43.510"W	3661.06	317.296	0.68
10543.00	89.750	329.480	6701.67	3721.92	2767.50	-2536.58	1702434.64	551142.67	40°00'30.050"N	80°33'44.210"W	3754.10	317.493	9.13
10638.00	90.430	328.910	6701.52	3816.67	2849.10	-2585.23	1702386.00	551224.26	40°00'30.850"N	80°33'44.848"W	3847.17	317.780	0.93
10732.00	90.490	322.950	6700.77	3910.61	2926.92	-2637.86	1702333.36	551302.09	40°00'31.613"N	80°33'45.536"W	3940.20	317.974	6.34
10828.00	90.770	325.130	6699.71	4006.58	3004.62	-2694.23	1702277.00	551379.78	40°00'32.374"N	80°33'46.272"W	4035.66	318.118	2.29
10922.00	90.650	326.960	6698.55	4100.56	3082.58	-2746.72	1702224.51	551457.74	40°00'33.139"N	80°33'46.958"W	4128.78	318.297	1.95
11017.00	90.650	326.890	6697.47	4195.50	3162.18	-2798.57	1702172.67	551537.33	40°00'33.919"N	80°33'47.637"W	4222.72	318.491	0.07
11112.00	90.680	325.350	6696.37	4290.47	3241.04	-2851.52	1702119.72	551616.19	40°00'34.692"N	80°33'48.329"W	4316.89	318.658	1.62
11207.00	90.740	324.430	6695.19	4385.46	3318.75	-2906.15	1702065.08	551693.90	40°00'35.454"N	80°33'49.043"W	4411.33	318.792	0.97
11302.00	90.340	323.170	6694.29	4480.43	3395.41	-2962.26	1702008.98	551770.55	40°00'36.205"N	80°33'49.776"W	4505.97	318.898	1.39
11397.00	90.370	324.390	6693.71	4575.41	3472.05	-3018.39	1701952.85	551847.19	40°00'36.955"N	80°33'50.509"W	4600.63	318.998	1.28
11492.00	90.280	322.160	6693.17	4670.36	3548.18	-3075.19	1701896.05	551923.32	40°00'37.701"N	80°33'51.250"W	4695.36	319.085	2.35
11587.00	89.970	320.950	6692.96	4765.19	3622.59	-3134.26	1701836.99	551997.72	40°00'38.429"N	80°33'52.021"W	4790.27	319.134	1.31
11682.00	89.820	323.920	6693.13	4860.08	3697.88	-3192.17	1701779.08	552073.01	40°00'39.167"N	80°33'52.776"W	4885.11	319.198	3.13
11776.00	89.940	324.870	6693.33	4954.07	3774.31	-3246.89	1701724.35	552149.44	40°00'39.916"N	80°33'53.491"W	4978.73	319.296	1.02
11871.00	89.970	323.820	6693.40	5049.07	3851.50	-3302.27	1701668.98	552226.62	40°00'40.672"N	80°33'54.214"W	5073.36	319.390	1.11

51-01686

REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot D
Area	Marshall County, WV	Well	SHL 25D-HS
Field	Marshall	Wellbore	SHL 25D-HS (AWB)
Facility	SHL-25 Pad		

WELLPATH DATA (156 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]
11966.00	90.000	322.200	6693.43	5144.00	3927.37	-3359.43	1701611.83	552302.50	40°00'41.415"N	80°33'54.960"W	5168.17	319.457	1.71
12060.00	89.850	323.600	6693.55	5237.94	4002.35	-3416.13	1701555.13	552377.47	40°00'42.149"N	80°33'55.701"W	5262.00	319.518	1.50
12155.00	90.060	328.010	6693.63	5332.91	4080.90	-3469.50	1701501.75	552456.02	40°00'42.919"N	80°33'56.398"W	5356.42	319.629	4.65
12249.00	89.910	337.980	6693.65	5425.88	4164.55	-3512.13	1701459.13	552539.66	40°00'43.741"N	80°33'56.959"W	5447.80	319.858	10.61
12344.00	90.430	335.380	6693.37	5518.90	4251.78	-3549.74	1701421.52	552626.89	40°00'44.598"N	80°33'57.456"W	5538.80	320.142	2.79
12438.00	90.340	324.830	6692.74	5612.39	4333.15	-3596.52	1701374.74	552708.26	40°00'45.397"N	80°33'58.069"W	5631.27	320.307	11.22
12533.00	90.250	320.820	6692.25	5707.30	4408.83	-3653.91	1701317.35	552783.94	40°00'46.138"N	80°33'58.818"W	5726.16	320.349	4.22
12627.00	90.250	317.930	6691.84	5800.84	4480.17	-3715.11	1701256.16	552855.27	40°00'46.836"N	80°33'59.616"W	5820.13	320.333	3.07
12722.00	90.280	323.680	6691.40	5895.54	4553.76	-3775.12	1701196.15	552928.86	40°00'47.556"N	80°34'00.398"W	5915.09	320.341	6.05
12816.00	90.150	321.530	6691.04	5989.46	4628.44	-3832.20	1701139.07	553003.53	40°00'48.287"N	80°34'01.143"W	6009.01	320.376	2.29
12911.00	90.490	318.120	6690.51	6084.05	4701.01	-3893.48	1701077.80	553076.11	40°00'48.997"N	80°34'01.941"W	6103.99	320.368	3.61
13006.00	90.460	319.480	6689.73	6178.49	4772.49	-3956.05	1701015.23	553147.58	40°00'49.696"N	80°34'02.756"W	6198.95	320.344	1.43
13101.00	90.710	325.170	6688.76	6273.34	4847.65	-4014.09	1700957.19	553222.73	40°00'50.432"N	80°34'03.514"W	6293.85	320.374	5.99
13196.00	90.710	327.240	6687.58	6368.31	4926.58	-4066.92	1700904.36	553301.67	40°00'51.206"N	80°34'04.205"W	6388.35	320.460	2.18
13290.00	90.800	326.820	6686.34	6462.24	5005.44	-4118.07	1700853.21	553380.52	40°00'51.979"N	80°34'04.874"W	6481.74	320.555	0.46
13385.00	91.010	326.300	6684.84	6557.20	5084.70	-4170.42	1700800.87	553459.78	40°00'52.756"N	80°34'05.559"W	6576.21	320.642	0.59
13480.00	91.020	325.550	6683.16	6652.17	5163.38	-4223.63	1700747.66	553538.45	40°00'53.527"N	80°34'06.255"W	6670.80	320.717	0.79
13574.00	91.080	322.060	6681.43	6746.12	5239.21	-4279.13	1700692.17	553614.28	40°00'54.270"N	80°34'06.980"W	6764.63	320.760	3.71
13669.00	91.050	322.130	6679.67	6840.98	5314.16	-4337.48	1700633.81	553689.23	40°00'55.004"N	80°34'07.741"W	6859.59	320.778	0.08
13763.00	91.140	323.480	6677.87	6934.89	5389.02	-4394.29	1700577.00	553764.09	40°00'55.737"N	80°34'08.483"W	6953.51	320.806	1.44
13788.00	91.140	323.480	6677.37	6959.88	5409.11	-4409.17	1700562.13	553784.17	40°00'55.934"N	80°34'08.677"W	6978.48	320.815	0.00

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SHL 25D-HS BHL:Plat		6647.00	5411.49	-4399.96	1700571.34	553786.55	40°00'55.958"N	80°34'08.559"W	point
SHL 25D-HS LP:Plat		6708.00	-3.11	-608.61	1704362.53	548372.17	40°00'02.896"N	80°33'19.018"W	point

WELLPATH COMPOSITION - Ref Wellbore: SHL 25D-HS (AWB) Ref Wellpath: SHL 25D-HS AWP Proj: 13788'				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	3315.00	Generic gyro - northseeking (Standard)	01 12 1/4" VES Gyro Surveys (100'-3300')	SHL 25D-HS (AWB)
3315.00	4789.00	NaviTrak (Standard)	02 BHI MWD Surveys (3315')(3368'-4789')	SHL 25D-HS (AWB)
4789.00	13763.00	NaviTrak (AT Curve Short Spaced)	03 BHI AT Curve <8-3/4"> (4789')(4825'-13763')	SHL 25D-HS (AWB)
13763.00	13788.00	Blind Drilling (std)	Projection to bit	SHL 25D-HS (AWB)

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## REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot D
Area	Marshall County, WV	Well	SHL 25D-HS
Field	Marshall	Wellbore	SHL 25D-HS (AWB)
Facility	SHL-25 Pad		

## COMMENTS

**Wellpath general comments**

API#:47-051-01686-0000  
 Rig:Nomac 79  
 BHI Job#: 6349376  
 Duration:05/03/14-05/09/14  
 VES Gyro <12-1/4"> (100'-3300')  
 BHI MWD <8-3/4"> (3315')(3368'-4789')  
 BHI AT Curve <8-3/4"> (4789')(4825'-13763')  
 Projected MD at TD: 13788'

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 DEC 15 2014



# NOBLE ENERGY



Location: Marshall County, WV  
 Field: Marshall  
 Facility: SHL-25 Pad

Slot: Slot D  
 Well: SHL 25D-HS  
 Wellbore: SHL 25D-HS (PWB)

### Location Information

Facility Name		Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
SHL-25 Pad		1705028.190	548357.370	40°00'02.826"N	80°33'10.462"W	
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot D	17.91	-57.07	1704971.120	548375.280	40°00'02.997"N	80°33'11.198"W
Nomac 79 (RT) to Mud line (At Slot: Slot D)				26ft		
Mean Sea Level to Mud line (At Slot: Slot D)				-1325ft		
Nomac 79 (RT) to Mean Sea Level				1351ft		

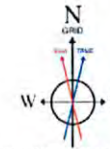
### Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
SHL 25D-HS BHL Plat	13759.37	6647.00	5411.49	-4399.96	1700571.34	553786.55	40°00'55.958"N	80°34'08.559"W
SHL 25D-HS LP Plat	7149.08	6708.00	-3.11	-608.61	1704362.53	548372.17	40°00'02.896"N	80°33'19.018"W

### Well Profile Data

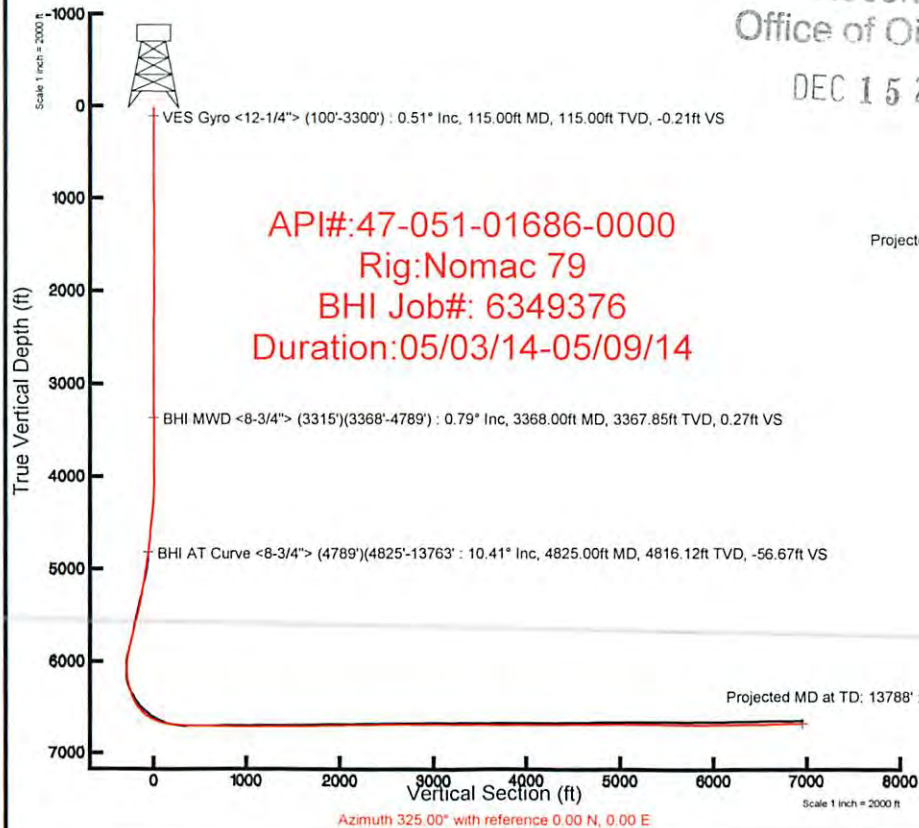
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (*/100ft)	VS (ft)
Tie On	4789.00	9.200	200.180	4780.64	-106.10	-58.96	0.00	-53.10
KOP	4900.00	9.200	200.180	4890.21	-122.76	-65.08	0.00	-63.23
End of 3D Arc	5174.63	17.059	188.762	5157.50	-183.28	-78.81	3.00	-104.93
Curve KOP	6007.43	17.059	188.762	5953.65	-424.74	-116.03	0.00	-281.37
LP	7149.08	90.529	325.000	6708.00	-3.11	-608.61	9.00	346.54
BHL	13759.37	90.529	325.000	6647.00	5411.49	-4399.96	0.00	6956.54

Plot reference wellpath is SHL 25D-HS PWP Rev-B 0	
True vertical depths are referenced to Nomac 79 (RT)	Grid System: NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet
Measured depths are referenced to Nomac 79 (RT)	North Reference: Grid north
Nomac 79 (RT) to Mean Sea Level 1351 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: Slot D) -1325 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: frajesi on 5/14/2014

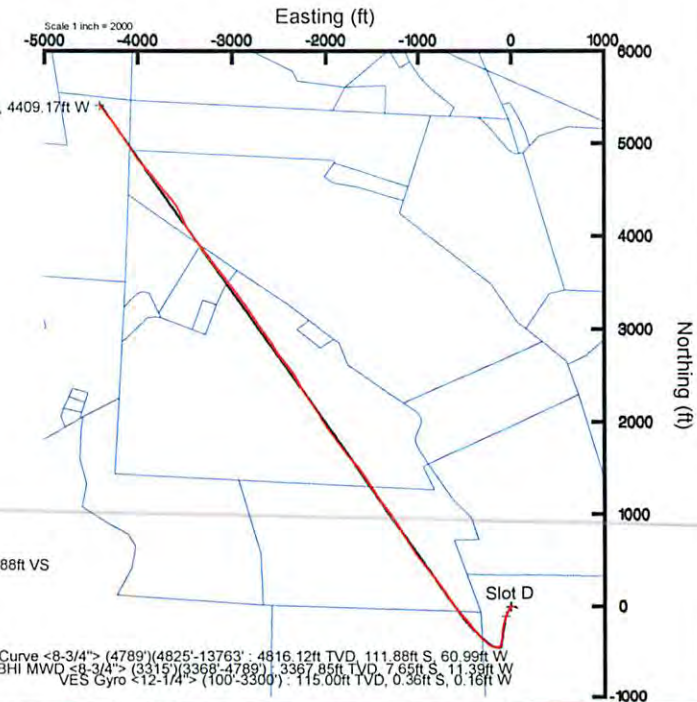


User specified Dip: 67.55° Field: 53205 nT  
 Magnetic North is 8.37 degrees West of True North (at 5/1/2014)  
 Grid North is 0.67 degrees West of True North  
 To correct azimuth from True to Grid add 0.67 degrees  
 To correct azimuth from Magnetic to Grid subtract 7.70 degrees

Received  
 Office of Oil & Gas  
 DEC 15 2014



API#:47-051-01686-0000  
 Rig:Nomac 79  
 BHI Job#: 6349376  
 Duration:05/03/14-05/09/14



Azimuth 325.00° with reference 0.00 N, 0.00 E

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