

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot G
Area	Marshall County, WV	Well	SHL-22G-HS
Field	Marshall	Wellbore	SHL-22G-HS AWB
Facility	SHL-22 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	Edsaryar
Scale	0.999963	Report Generated	17/Jun/2015 at 11:31
Convergence at slot	0.69° West	Database/Source file	WellArchitectEasternDB/SHL-22G-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	84.46	85.20	1698398.04	552142.89	40°00'39.459"N	80°34'36.236"W
Facility Reference Pt			1698312.84	552058.43	40°00'38.614"N	80°34'37.318"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 584 (RKB) to Facility Vertical Datum	1342.00ft
Horizontal Reference Pt	Slot	Precision 584 (RKB) to Mean Sea Level	1342.00ft
Vertical Reference Pt	Precision 584 (RKB)	Precision 584 (RKB) to Mud Line at Slot (Slot G)	19.40ft
MD Reference Pt	Precision 584 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	145.00°

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WELLPATH DATA (190 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
0.00†	0.000	297.000	0.00	0.00	0.00	0.00	1698398.04	552142.89	40°00'39.459"N	80°34'36.236"W	0.00	0.000	0.00	0.00	0.00
19.40	0.000	297.000	19.40	0.00	0.00	0.00	1698398.04	552142.89	40°00'39.459"N	80°34'36.236"W	0.00	0.000	0.00	0.00	0.00
107.40	0.380	297.000	107.40	-0.26	0.13	-0.26	1698397.78	552143.02	40°00'39.460"N	80°34'36.240"W	0.29	297.000	0.43	0.43	0.00
207.40	0.700	336.650	207.40	-1.15	0.84	-0.80	1698397.24	552143.73	40°00'39.467"N	80°34'36.247"W	1.16	316.615	0.47	0.32	39.65
307.40	0.410	301.160	307.39	-2.07	1.59	-1.35	1698396.69	552144.48	40°00'39.475"N	80°34'36.254"W	2.08	319.750	0.44	-0.29	-35.49
407.40	0.640	320.710	407.39	-2.96	2.21	-2.01	1698396.03	552145.10	40°00'39.481"N	80°34'36.262"W	2.98	317.738	0.29	0.23	19.55
507.40	0.260	335.360	507.38	-3.74	2.85	-2.45	1698395.59	552145.74	40°00'39.487"N	80°34'36.268"W	3.76	319.227	0.39	-0.38	14.65
607.40	0.210	350.860	607.38	-4.13	3.23	-2.58	1698395.46	552146.12	40°00'39.491"N	80°34'36.270"W	4.13	321.433	0.08	-0.05	15.50
707.40	0.200	26.230	707.38	-4.38	3.57	-2.53	1698395.51	552146.46	40°00'39.494"N	80°34'36.269"W	4.38	324.682	0.12	-0.01	35.37
807.40	0.370	40.360	807.38	-4.54	3.97	-2.24	1698395.80	552146.86	40°00'39.498"N	80°34'36.266"W	4.56	330.548	0.18	0.17	14.13
907.40	0.300	30.630	907.38	-4.73	4.44	-1.90	1698396.14	552147.33	40°00'39.503"N	80°34'36.261"W	4.83	336.842	0.09	-0.07	-9.73
1007.40	0.260	50.890	1007.38	-4.86	4.81	-1.59	1698396.45	552147.70	40°00'39.506"N	80°34'36.258"W	5.07	341.701	0.11	-0.04	20.26
1107.40	0.300	38.960	1107.38	-4.94	5.16	-1.25	1698396.79	552148.05	40°00'39.510"N	80°34'36.253"W	5.31	346.372	0.07	0.04	-11.93
1207.40	0.300	72.590	1207.38	-4.94	5.44	-0.84	1698397.20	552148.33	40°00'39.513"N	80°34'36.248"W	5.51	351.261	0.17	0.00	33.63
1307.40	0.700	91.900	1307.37	-4.49	5.50	0.02	1698398.06	552148.39	40°00'39.513"N	80°34'36.237"W	5.50	0.249	0.43	0.40	19.31
1407.40	0.660	99.110	1407.36	-3.72	5.39	1.20	1698399.24	552148.28	40°00'39.512"N	80°34'36.222"W	5.52	12.588	0.09	-0.04	7.21
1507.40	0.610	96.500	1507.36	-2.97	5.24	2.30	1698400.34	552148.13	40°00'39.511"N	80°34'36.208"W	5.72	23.719	0.06	-0.05	-2.61
1607.40	0.480	100.360	1607.35	-2.32	5.10	3.24	1698401.28	552147.99	40°00'39.510"N	80°34'36.196"W	6.04	32.436	0.14	-0.13	3.86
1707.40	0.710	61.910	1707.35	-1.95	5.32	4.20	1698402.24	552148.21	40°00'39.512"N	80°34'36.183"W	6.78	38.306	0.45	0.23	-38.45
1807.40	0.790	71.180	1807.34	-1.68	5.83	5.40	1698403.44	552148.72	40°00'39.517"N	80°34'36.168"W	7.95	42.797	0.15	0.08	9.27
1907.40	0.570	69.880	1907.33	-1.36	6.22	6.52	1698404.56	552149.11	40°00'39.521"N	80°34'36.154"W	9.01	46.322	0.22	-0.22	-1.30
2007.40	0.440	64.440	2007.33	-1.17	6.56	7.33	1698405.37	552149.45	40°00'39.525"N	80°34'36.143"W	9.84	48.175	0.14	-0.13	-5.44
2107.40	0.440	57.230	2107.33	-1.09	6.94	8.00	1698406.04	552149.82	40°00'39.529"N	80°34'36.135"W	10.59	49.084	0.06	0.00	-7.21
2207.40	0.080	67.120	2207.32	-1.06	7.17	8.39	1698406.43	552150.06	40°00'39.531"N	80°34'36.130"W	11.04	49.479	0.36	-0.36	9.89
2307.40	0.100	264.410	2307.32	-1.09	7.19	8.37	1698406.41	552150.08	40°00'39.531"N	80°34'36.130"W	11.03	49.329	0.18	0.02	-162.71
2407.40	0.200	281.550	2407.32	-1.26	7.22	8.11	1698406.15	552150.10	40°00'39.531"N	80°34'36.133"W	10.85	48.336	0.11	0.10	17.14
507.40	0.280	266.470	2507.32	-1.51	7.24	7.69	1698405.73	552150.12	40°00'39.531"N	80°34'36.139"W	10.56	46.759	0.10	0.08	-15.08
2607.40	0.190	281.420	2607.32	-1.76	7.25	7.29	1698405.33	552150.14	40°00'39.532"N	80°34'36.144"W	10.28	45.135	0.11	-0.09	14.95
707.40	0.200	252.100	2707.32	-1.93	7.23	6.96	1698405.00	552150.09	40°00'39.531"N	80°34'36.148"W	10.04	43.896	0.10	0.01	-29.32
2807.40	0.190	276.750	2807.32	-2.09	7.20	6.63	1698404.67	552150.09	40°00'39.531"N	80°34'36.152"W	9.78	42.639	0.08	-0.01	24.65



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Field	Marshall	Wellbore	SHL-22G-HS AWB
Facility	SHL-22 Pad		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
2907.40	0.190	249.580	2907.32	-2.25	7.16	6.31	1698404.35	552150.05	40°00'39.531"N	80°34'36.156"W	9.54	41.381	0.09	0.00	-27.17
3007.40	0.130	230.660	3007.32	-2.28	7.03	6.06	1698404.10	552149.92	40°00'39.529"N	80°34'36.160"W	9.28	40.785	0.08	-0.06	-18.92
3104.40	0.230	262.220	3104.32	-2.36	6.93	5.79	1698403.83	552149.82	40°00'39.528"N	80°34'36.163"W	9.03	39.848	0.14	0.10	32.54
3207.40	0.320	248.080	3207.32	-2.52	6.80	5.32	1698403.35	552149.69	40°00'39.527"N	80°34'36.169"W	8.63	38.019	0.11	0.09	-13.73
3256.40	0.290	262.800	3256.32	-2.61	6.73	5.07	1698403.10	552149.62	40°00'39.526"N	80°34'36.172"W	8.42	36.958	0.17	-0.06	30.04
3286.40	0.080	313.960	3286.32	-2.67	6.74	4.97	1698403.01	552149.63	40°00'39.526"N	80°34'36.173"W	8.37	36.444	0.83	-0.70	170.55
3316.40	1.110	115.350	3316.32	-2.43	6.63	5.22	1698403.26	552149.52	40°00'39.525"N	80°34'36.170"W	8.44	38.239	3.95	3.43	537.97
3349.40	1.460	114.400	3349.31	-1.79	6.32	5.89	1698403.93	552149.21	40°00'39.522"N	80°34'36.162"W	8.64	43.019	1.06	1.06	-2.88
3379.40	1.840	114.930	3379.30	-1.05	5.96	6.68	1698404.72	552148.85	40°00'39.519"N	80°34'36.151"W	8.95	48.277	1.27	1.27	1.77
3411.40	1.540	122.620	3411.28	-0.21	5.51	7.51	1698405.55	552148.40	40°00'39.514"N	80°34'36.141"W	9.31	53.736	1.17	-0.94	24.03
3441.40	1.750	116.470	3441.27	0.57	5.09	8.26	1698406.30	552147.98	40°00'39.510"N	80°34'36.131"W	9.70	58.369	0.91	0.70	-20.50
3471.40	1.620	119.010	3471.26	1.35	4.68	9.04	1698407.08	552147.57	40°00'39.506"N	80°34'36.121"W	10.18	62.644	0.50	-0.43	8.47
3501.40	1.600	114.920	3501.24	2.10	4.29	9.79	1698407.83	552147.18	40°00'39.503"N	80°34'36.111"W	10.69	66.315	0.39	-0.07	-13.63
3532.40	2.100	77.850	3532.23	2.69	4.23	10.74	1698408.78	552147.12	40°00'39.502"N	80°34'36.099"W	11.54	68.491	4.09	1.61	-119.58
3562.40	2.920	69.980	3562.20	3.10	4.61	11.99	1698410.03	552147.50	40°00'39.506"N	80°34'36.083"W	12.85	68.978	2.96	2.73	-26.23
3592.40	3.310	64.170	3592.16	3.44	5.25	13.49	1698411.53	552148.14	40°00'39.512"N	80°34'36.064"W	14.47	68.744	1.67	1.30	-19.37
3623.40	4.200	54.480	3623.09	3.57	6.30	15.22	1698413.26	552149.19	40°00'39.523"N	80°34'36.042"W	16.47	67.522	3.52	2.87	-31.26
3653.40	4.850	47.860	3653.00	3.40	7.79	17.05	1698415.09	552150.68	40°00'39.538"N	80°34'36.018"W	18.75	65.460	2.78	2.17	-22.07
3683.40	5.150	45.360	3682.88	3.02	9.58	18.95	1698416.99	552152.47	40°00'39.556"N	80°34'35.994"W	21.24	63.176	1.24	1.00	-8.33
3713.40	5.140	44.710	3712.76	2.55	11.48	20.85	1698418.89	552154.37	40°00'39.575"N	80°34'35.970"W	23.81	61.160	0.20	-0.03	-2.17
3743.40	6.390	39.060	3742.61	1.86	13.74	22.85	1698420.89	552156.62	40°00'39.597"N	80°34'35.945"W	26.66	58.992	4.57	4.17	-18.83
3774.40	7.680	39.290	3773.37	0.82	16.68	25.25	1698423.29	552159.57	40°00'39.627"N	80°34'35.914"W	30.26	56.555	4.16	4.16	0.74
3804.40	8.390	38.600	3803.08	-0.34	19.94	27.89	1698425.92	552162.83	40°00'39.659"N	80°34'35.881"W	34.28	54.433	2.39	2.37	-2.30
3834.40	9.110	41.410	3832.73	-1.52	23.43	30.82	1698428.86	552166.32	40°00'39.694"N	80°34'35.844"W	38.72	52.757	2.79	2.40	9.37
3864.40	10.120	43.300	3862.31	-2.61	27.13	34.20	1698432.24	552170.02	40°00'39.731"N	80°34'35.801"W	43.66	51.575	3.53	3.37	6.30
3895.40	10.510	42.600	3892.81	-3.77	31.19	37.98	1698436.02	552174.08	40°00'39.772"N	80°34'35.753"W	49.15	50.604	1.32	1.26	-2.26
3925.40	11.520	44.730	3922.26	-4.89	35.34	41.94	1698439.98	552178.23	40°00'39.813"N	80°34'35.703"W	54.84	49.886	3.63	3.37	7.10
3955.40	12.820	47.540	3951.58	-5.86	39.71	46.51	1698444.54	552182.60	40°00'39.857"N	80°34'35.645"W	61.15	49.506	4.76	4.33	9.37
3985.40	13.020	47.290	3980.82	-6.74	44.25	51.45	1698449.48	552187.14	40°00'39.902"N	80°34'35.582"W	67.86	49.299	0.69	0.67	-0.83
4015.40	13.810	47.970	4010.00	-7.63	48.94	56.59	1698454.63	552191.83	40°00'39.949"N	80°34'35.517"W	74.82	49.145	2.69	2.63	2.27

05/26/2017



Actual Wellpath Report

SHL-22G-HS AWP Proj: 13370'
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WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
4046.40	14.330	49.390	4040.07	-8.46	53.92	62.25	1698460.29	552196.80	40°00'39.999"N	80°34'35.445"W	82.35	49.103	2.01	1.68	4.58
4076.40	14.140	48.510	4069.15	-9.24	58.76	67.81	1698465.85	552201.65	40°00'40.048"N	80°34'35.374"W	89.73	49.091	0.96	-0.63	-2.93
4107.40	14.990	49.520	4099.15	-10.05	63.87	73.70	1698471.74	552206.76	40°00'40.099"N	80°34'35.299"W	97.52	49.086	2.86	2.74	3.26
4137.40	15.550	50.330	4128.10	-10.75	68.96	79.74	1698477.78	552211.84	40°00'40.150"N	80°34'35.222"W	105.42	49.150	2.00	1.87	2.70
4168.40	15.240	49.960	4157.98	-11.44	74.23	86.06	1698484.10	552217.12	40°00'40.203"N	80°34'35.142"W	113.65	49.222	1.05	-1.00	-1.19
4201.40	16.400	49.150	4189.73	-12.30	80.07	92.91	1698490.94	552222.95	40°00'40.261"N	80°34'35.055"W	122.65	49.245	3.58	3.52	-2.45
4231.40	16.730	48.570	4218.49	-13.21	85.69	99.35	1698497.38	552228.58	40°00'40.318"N	80°34'34.973"W	131.20	49.220	1.23	1.10	-1.93
4262.40	16.240	47.420	4248.21	-14.28	91.58	105.89	1698503.92	552234.47	40°00'40.377"N	80°34'34.890"W	140.00	49.143	1.90	-1.58	-3.71
4292.40	17.030	46.630	4276.96	-15.48	97.44	112.17	1698510.20	552240.32	40°00'40.435"N	80°34'34.810"W	148.58	49.020	2.74	2.63	-2.63
4322.40	17.730	45.550	4305.59	-16.87	103.65	118.62	1698516.66	552246.54	40°00'40.497"N	80°34'34.728"W	157.53	48.853	2.57	2.33	-3.60
4352.40	17.400	45.060	4334.19	-18.39	110.02	125.06	1698523.09	552252.90	40°00'40.561"N	80°34'34.646"W	166.56	48.661	1.21	-1.10	-1.63
4383.40	18.180	45.120	4363.71	-20.02	116.71	131.77	1698529.80	552259.59	40°00'40.628"N	80°34'34.561"W	176.02	48.469	2.52	2.52	0.19
4413.40	18.560	45.550	4392.18	-21.61	123.35	138.49	1698536.53	552266.24	40°00'40.694"N	80°34'34.476"W	185.46	48.309	1.34	1.27	1.43
4443.40	19.100	45.420	4420.57	-23.21	130.14	145.39	1698543.43	552273.02	40°00'40.762"N	80°34'34.388"W	195.13	48.169	1.81	1.80	-0.43
4473.40	19.620	46.390	4448.88	-24.78	137.06	152.54	1698550.57	552279.94	40°00'40.831"N	80°34'34.297"W	205.07	48.059	2.04	1.73	3.23
4504.40	19.750	46.440	4478.06	-26.34	144.26	160.10	1698558.14	552287.14	40°00'40.904"N	80°34'34.201"W	215.51	47.980	0.42	0.42	0.16
4534.40	19.130	48.290	4506.35	-27.67	151.02	167.44	1698565.48	552293.91	40°00'40.971"N	80°34'34.108"W	225.49	47.952	2.91	-2.07	6.17
4564.40	18.960	48.000	4534.71	-28.84	157.55	174.74	1698572.77	552300.44	40°00'41.037"N	80°34'34.015"W	235.28	47.960	0.65	-0.57	-0.97
4595.40	18.580	47.380	4564.06	-30.10	164.27	182.11	1698580.15	552307.15	40°00'41.104"N	80°34'33.921"W	245.25	47.949	1.38	-1.23	-2.00
4625.40	18.050	46.360	4592.54	-31.44	170.71	188.99	1698587.03	552313.60	40°00'41.168"N	80°34'33.834"W	254.68	47.910	2.06	-1.77	-3.40
4655.40	17.910	44.930	4621.08	-32.94	177.19	195.61	1698593.65	552320.07	40°00'41.233"N	80°34'33.750"W	263.93	47.830	1.54	-0.47	-4.77
4686.40	17.420	44.770	4650.62	-34.60	183.85	202.25	1698600.28	552326.74	40°00'41.300"N	80°34'33.666"W	273.33	47.728	1.59	-1.58	-0.52
4716.40	17.190	44.660	4679.26	-36.19	190.20	208.53	1698606.56	552333.08	40°00'41.363"N	80°34'33.586"W	282.24	47.632	0.77	-0.77	-0.37
4746.40	16.820	46.900	4707.95	-37.60	196.31	214.81	1698612.84	552339.20	40°00'41.424"N	80°34'33.506"W	291.01	47.576	2.51	-1.23	7.47
4777.40	16.320	49.530	4737.66	-38.65	202.21	221.40	1698619.43	552345.09	40°00'41.483"N	80°34'33.422"W	299.84	47.595	2.91	-1.61	8.48
4807.40	16.000	51.230	4766.47	-39.32	207.53	227.83	1698625.86	552350.41	40°00'41.537"N	80°34'33.341"W	308.18	47.670	1.90	-1.07	5.67
4837.40	15.620	53.520	4795.34	-39.70	212.52	234.30	1698632.33	552355.40	40°00'41.587"N	80°34'33.258"W	316.33	47.791	2.43	-1.27	7.63
4867.40	15.130	53.360	4824.27	-39.91	217.26	240.69	1698638.72	552360.14	40°00'41.634"N	80°34'33.177"W	324.24	47.929	1.64	-1.63	-0.53
4898.40	15.030	52.570	4854.20	-40.20	222.12	247.13	1698645.16	552365.00	40°00'41.683"N	80°34'33.095"W	332.28	48.051	0.74	-0.32	-2.55
4928.40	14.860	49.450	4883.18	-40.74	226.98	253.14	1698651.17	552369.86	40°00'41.732"N	80°34'33.018"W	340.00	48.119	2.74	-0.57	-10.40

05/26/2017

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot G
Area	Marshall County, WV	Well	SHL-22G-HS
Field	Marshall	Wellbore	SHL-22G-HS AWB
Facility	SHL-22 Pad		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
4958.40	15.650	48.810	4912.13	-41.54	232.15	259.11	1698657.14	552375.03	40°00'41.784"N	80°34'32.942"W	347.89	48.142	2.69	2.63	-2.13
4988.40	16.130	48.580	4940.98	-42.45	237.57	265.28	1698663.31	552380.45	40°00'41.838"N	80°34'32.864"W	356.11	48.154	1.61	1.60	-0.77
5018.40	15.860	48.050	4969.82	-43.41	243.07	271.45	1698669.48	552385.95	40°00'41.893"N	80°34'32.785"W	364.37	48.158	1.02	-0.90	-1.77
5050.40	15.500	46.250	5000.63	-44.59	248.95	277.79	1698675.82	552391.83	40°00'41.952"N	80°34'32.705"W	373.02	48.135	1.89	-1.13	-5.63
5081.40	15.030	44.130	5030.54	-45.98	254.70	283.59	1698681.61	552397.58	40°00'42.009"N	80°34'32.631"W	381.17	48.072	2.35	-1.52	-6.84
5104.00	14.900	43.280	5052.37	-47.12	258.91	287.62	1698685.65	552401.79	40°00'42.052"N	80°34'32.580"W	386.99	48.006	1.13	-0.58	-3.76
5141.00	14.560	42.060	5088.15	-49.13	265.83	294.00	1698692.02	552408.71	40°00'42.121"N	80°34'32.499"W	396.36	47.880	1.24	-0.92	-3.30
5230.00	12.410	41.930	5174.69	-53.80	281.25	307.88	1698705.91	552424.13	40°00'42.275"N	80°34'32.323"W	417.01	47.588	2.42	-2.42	-0.15
5320.00	10.330	47.130	5262.93	-57.09	293.94	320.26	1698718.29	552436.82	40°00'42.402"N	80°34'32.166"W	434.70	47.454	2.57	-2.31	5.78
5409.00	8.180	51.620	5350.76	-58.55	303.30	331.07	1698729.10	552446.18	40°00'42.495"N	80°34'32.029"W	449.00	47.507	2.55	-2.42	5.04
5499.00	8.150	54.720	5439.85	-58.96	310.96	341.30	1698739.33	552453.84	40°00'42.572"N	80°34'31.898"W	461.72	47.663	0.49	-0.03	3.44
5588.00	8.160	55.580	5527.95	-58.93	318.17	351.66	1698749.69	552461.05	40°00'42.645"N	80°34'31.766"W	474.24	47.862	0.14	0.01	0.97
5678.00	8.360	46.600	5617.02	-59.82	326.28	361.68	1698759.71	552469.16	40°00'42.726"N	80°34'31.639"W	487.11	47.946	1.45	0.22	-9.98
5767.00	8.120	46.180	5705.10	-61.73	335.08	370.92	1698768.94	552477.95	40°00'42.814"N	80°34'31.521"W	499.86	47.906	0.28	-0.27	-0.47
5857.00	8.170	50.980	5794.20	-63.15	343.51	380.47	1698778.50	552486.38	40°00'42.899"N	80°34'31.400"W	512.60	47.923	0.76	0.06	5.33
5947.00	8.190	44.100	5883.28	-64.81	352.14	389.90	1698787.93	552495.01	40°00'42.985"N	80°34'31.280"W	525.38	47.914	1.09	0.02	-7.64
6036.00	8.130	41.730	5971.38	-67.46	361.38	398.50	1698796.53	552504.26	40°00'43.077"N	80°34'31.171"W	537.96	47.797	0.38	-0.07	-2.66
6126.00	11.310	83.680	6060.18	-64.68	367.11	411.53	1698809.55	552509.99	40°00'43.135"N	80°34'31.005"W	551.48	48.265	8.38	3.53	46.61
6215.00	15.710	122.560	6146.87	-49.31	361.58	430.41	1698828.43	552504.45	40°00'43.083"N	80°34'30.761"W	562.13	49.967	11.06	4.94	43.69
6305.00	20.210	137.420	6232.51	-22.62	343.55	451.22	1698849.24	552486.43	40°00'42.907"N	80°34'30.491"W	567.12	52.715	7.10	5.00	16.51
6395.00	27.940	135.970	6314.62	13.67	316.91	476.43	1698874.45	552459.78	40°00'42.647"N	80°34'30.163"W	572.20	56.369	8.61	8.59	-1.61
6484.00	37.840	136.480	6389.26	61.38	282.03	509.80	1698907.82	552424.91	40°00'42.306"N	80°34'29.729"W	582.61	61.048	11.13	11.12	0.57
6574.00	46.690	137.310	6455.80	121.25	237.86	551.09	1698949.11	552380.74	40°00'41.875"N	80°34'29.191"W	600.23	66.654	9.85	9.83	0.92
6663.00	55.620	138.190	6511.56	189.95	186.58	597.63	1698995.64	552329.46	40°00'41.373"N	80°34'28.585"W	626.08	72.662	10.06	10.03	0.99
6753.00	64.560	137.910	6556.39	267.31	128.62	649.73	1699047.75	552271.51	40°00'40.807"N	80°34'27.907"W	662.34	78.802	9.94	9.93	-0.31
6843.00	69.900	139.270	6591.22	349.75	66.40	704.59	1699102.60	552209.28	40°00'40.199"N	80°34'27.192"W	707.71	84.617	6.09	5.93	1.51
6932.00	75.770	143.860	6617.48	434.57	-0.20	757.36	1699155.38	552142.69	40°00'39.547"N	80°34'26.504"W	757.36	90.015	8.23	6.60	5.16
7022.00	85.940	145.610	6631.77	523.30	-72.66	808.58	1699206.59	552070.23	40°00'38.837"N	80°34'25.835"W	811.84	95.135	11.46	11.30	1.94
7111.00	88.310	145.170	6636.23	612.18	-145.81	859.06	1699257.07	551997.08	40°00'38.120"N	80°34'25.175"W	871.35	99.633	2.71	2.66	-0.49
7201.00	88.400	144.370	6638.82	702.14	-219.30	910.96	1699308.97	551923.60	40°00'37.400"N	80°34'24.496"W	936.99	103.535	0.89	0.10	-0.89



Actual Wellpath Report

SHL-22G-HS AWP Proj: 13370'
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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot G
Area	Marshall County, WV	Well	SHL-22G-HS
Field	Marshall	Wellbore	SHL-22G-HS AWB
Facility	SHL-22 Pad		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
7290.00	88.310	142.650	6641.37	791.07	-290.82	963.86	1699361.87	551852.08	40°00'36.699"N	80°34'23.806"W	1006.78	106.790	1.93	-0.10	-1.93
7380.00	88.950	143.220	6643.52	880.99	-362.61	1018.09	1699416.09	551780.29	40°00'35.996"N	80°34'23.098"W	1080.74	109.604	0.95	0.71	0.63
7470.00	88.830	144.210	6645.27	970.95	-435.15	1071.34	1699469.34	551707.76	40°00'35.286"N	80°34'22.402"W	1156.34	112.105	1.11	-0.13	1.10
7559.00	89.230	146.930	6646.77	1059.92	-508.54	1121.65	1699519.65	551634.37	40°00'34.566"N	80°34'21.745"W	1231.55	114.389	3.09	0.45	3.06
7649.00	89.450	149.070	6647.81	1149.79	-584.85	1169.34	1699567.33	551558.06	40°00'33.818"N	80°34'21.120"W	1307.44	116.572	2.39	0.24	2.38
7739.00	89.600	147.220	6648.56	1239.65	-661.29	1216.83	1699614.83	551481.62	40°00'33.068"N	80°34'20.498"W	1384.92	118.522	2.06	0.17	-2.06
7828.00	89.850	145.020	6648.99	1328.62	-735.17	1266.44	1699664.44	551407.74	40°00'32.344"N	80°34'19.849"W	1464.36	120.135	2.49	0.28	-2.47
7918.00	90.340	142.070	6648.84	1418.58	-807.55	1319.92	1699717.90	551335.37	40°00'31.635"N	80°34'19.151"W	1547.36	121.459	3.32	0.54	-3.28
8007.00	89.510	137.680	6648.95	1507.20	-875.59	1377.26	1699775.24	551267.33	40°00'30.969"N	80°34'18.404"W	1632.02	122.446	5.02	-0.93	-4.93
8097.00	89.350	138.010	6649.85	1596.50	-942.31	1437.66	1699835.64	551200.62	40°00'30.317"N	80°34'17.617"W	1718.95	123.243	0.41	-0.18	0.37
8187.00	89.420	143.920	6650.81	1686.23	-1012.18	1494.31	1699892.29	551130.75	40°00'29.633"N	80°34'16.879"W	1804.85	124.112	6.57	0.08	6.57
8276.00	89.320	142.480	6651.79	1775.18	-1083.44	1547.62	1699945.60	551059.49	40°00'28.936"N	80°34'16.183"W	1889.17	124.995	1.62	-0.11	-1.62
8366.00	89.350	148.950	6652.84	1865.12	-1157.76	1598.29	1699996.26	550985.18	40°00'28.207"N	80°34'15.520"W	1973.56	125.919	7.19	0.03	7.19
8455.00	89.570	151.360	6653.68	1953.75	-1234.94	1642.57	1700040.55	550907.99	40°00'27.450"N	80°34'14.939"W	2055.03	126.937	2.72	0.25	2.71
8545.00	89.600	150.420	6654.33	2043.27	-1313.57	1686.35	1700084.33	550829.37	40°00'26.678"N	80°34'14.365"W	2137.58	127.917	1.04	0.03	-1.04
8635.00	89.660	148.980	6654.91	2132.96	-1391.27	1731.76	1700129.73	550751.67	40°00'25.915"N	80°34'13.769"W	2221.40	128.778	1.60	0.07	-1.60
8724.00	89.630	146.390	6655.46	2221.86	-1466.48	1779.33	1700177.30	550676.46	40°00'25.178"N	80°34'13.147"W	2305.77	129.495	2.91	-0.03	-2.91
8814.00	89.570	144.970	6656.09	2311.84	-1540.81	1830.07	1700228.04	550602.14	40°00'24.449"N	80°34'12.483"W	2392.33	130.095	1.58	-0.07	-1.58
8904.00	89.660	144.700	6656.70	2401.84	-1614.38	1881.91	1700279.87	550528.57	40°00'23.728"N	80°34'11.806"W	2479.48	130.624	0.32	0.10	-0.30
8993.00	89.510	139.690	6657.34	2490.70	-1684.68	1936.44	1700334.41	550458.28	40°00'23.040"N	80°34'11.094"W	2566.70	131.023	5.63	-0.17	-5.63
9083.00	89.380	136.610	6658.21	2580.05	-1751.71	1996.48	1700394.44	550391.25	40°00'22.385"N	80°34'10.313"W	2656.01	131.264	3.43	-0.14	-3.42
9173.00	89.200	141.320	6659.33	2669.52	-1819.57	2055.54	1700453.50	550323.39	40°00'21.721"N	80°34'09.543"W	2745.20	131.515	5.24	-0.20	5.23
9262.00	89.050	144.290	6660.69	2758.43	-1890.45	2109.33	1700507.29	550252.51	40°00'21.027"N	80°34'08.841"W	2832.51	131.868	3.34	-0.17	3.34
9352.00	89.140	145.040	6662.11	2848.42	-1963.86	2161.38	1700559.34	550179.10	40°00'20.308"N	80°34'08.161"W	2920.33	132.259	0.84	0.10	0.83
9441.00	89.660	148.060	6663.04	2937.37	-2038.11	2210.43	1700608.38	550104.86	40°00'19.580"N	80°34'07.520"W	3006.64	132.677	3.44	0.58	3.39
9531.00	89.820	149.340	6663.45	3027.18	-2115.01	2257.18	1700655.14	550027.97	40°00'18.825"N	80°34'06.907"W	3093.24	133.137	1.43	0.18	1.42
9621.00	90.000	149.560	6663.59	3116.91	-2192.51	2302.93	1700700.88	549950.46	40°00'18.065"N	80°34'06.308"W	3179.72	133.593	0.32	0.20	0.24
9710.00	89.850	148.210	6663.71	3205.70	-2268.71	2348.92	1700746.87	549874.27	40°00'17.317"N	80°34'05.705"W	3265.65	134.005	1.53	-0.17	-1.52
9800.00	89.820	146.290	6663.97	3295.63	-2344.40	2397.61	1700795.55	549798.58	40°00'16.575"N	80°34'05.068"W	3353.31	134.357	2.13	-0.03	-2.13
9889.00	89.910	147.360	6664.18	3384.58	-2418.89	2446.30	1700844.25	549724.10	40°00'15.845"N	80°34'04.431"W	3440.27	134.677	1.21	0.10	1.20

05/26/2017

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot G
Area	Marshall County, WV	Well	SHL-22G-HS
Field	Marshall	Wellbore	SHL-22G-HS AWB
Facility	SHL-22 Pad		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [%/100ft]	Build Rate [%/100ft]	Turn Rate [%/100ft]
9979.00	90.310	146.230	6664.00	3474.53	-2494.19	2495.59	1700893.53	549648.80	40°00'15.106"N	80°34'03.786"W	3528.31	134.984	1.33	0.44	-1.26
10068.00	89.820	143.920	6663.90	3563.53	-2567.16	2546.54	1700944.48	549575.83	40°00'14.391"N	80°34'03.120"W	3615.96	135.231	2.65	-0.55	-2.60
10158.00	89.570	143.470	6664.38	3653.50	-2639.68	2599.83	1700997.77	549503.31	40°00'13.681"N	80°34'02.424"W	3705.00	135.436	0.57	-0.28	-0.50
10247.00	89.720	144.240	6664.93	3742.48	-2711.55	2652.32	1701050.26	549431.44	40°00'12.977"N	80°34'01.739"W	3793.06	135.633	0.88	0.17	0.87
10337.00	89.720	147.250	6665.37	3832.46	-2785.93	2702.97	1701100.91	549357.07	40°00'12.248"N	80°34'01.077"W	3881.69	135.866	3.34	0.00	3.34
10427.00	89.940	144.540	6665.64	3922.44	-2860.45	2753.43	1701151.37	549282.56	40°00'11.517"N	80°34'00.417"W	3970.33	136.092	3.02	0.24	-3.01
10516.00	89.940	143.550	6665.73	4011.43	-2932.49	2805.69	1701203.62	549210.52	40°00'10.812"N	80°33'59.735"W	4058.49	136.266	1.11	0.00	-1.11
10606.00	89.910	143.560	6665.85	4101.40	-3004.89	2859.15	1701257.08	549138.12	40°00'10.102"N	80°33'59.037"W	4147.78	136.424	0.04	-0.03	0.01
10695.00	89.820	147.140	6666.06	4190.39	-3078.09	2909.75	1701307.67	549064.92	40°00'09.385"N	80°33'58.375"W	4235.71	136.610	4.02	-0.10	4.02
10785.00	89.910	146.320	6666.27	4280.34	-3153.34	2959.12	1701357.04	548989.67	40°00'08.647"N	80°33'57.730"W	4324.34	136.820	0.92	0.10	-0.91
10874.00	89.880	142.540	6666.44	4369.32	-3225.72	3010.88	1701408.80	548917.30	40°00'07.938"N	80°33'57.053"W	4412.56	136.973	4.25	-0.03	-4.25
10964.00	89.510	143.400	6666.92	4459.25	-3297.39	3065.30	1701463.23	548845.62	40°00'07.236"N	80°33'56.343"W	4502.10	137.089	0.69	-0.41	0.56
11054.00	89.660	145.640	6667.57	4549.24	-3370.51	3117.77	1701515.69	548772.51	40°00'06.520"N	80°33'55.658"W	4591.38	137.231	2.89	0.17	2.89
11143.00	89.720	147.800	6668.05	4638.19	-3444.91	3166.60	1701564.52	548698.12	40°00'05.790"N	80°33'55.019"W	4679.18	137.410	2.43	0.07	2.43
11233.00	89.660	148.450	6668.54	4728.06	-3521.33	3214.13	1701612.04	548621.69	40°00'05.041"N	80°33'54.397"W	4767.64	137.611	0.73	-0.07	0.72
11322.00	89.910	146.150	6668.87	4816.98	-3596.22	3262.20	1701660.12	548546.81	40°00'04.306"N	80°33'53.768"W	4855.39	137.788	2.60	0.28	-2.58
11412.00	89.820	141.250	6669.08	4906.93	-3668.74	3315.47	1701713.38	548474.30	40°00'03.596"N	80°33'53.072"W	4944.89	137.896	5.45	-0.10	-5.44
11501.00	89.630	139.020	6669.51	4995.60	-3737.04	3372.51	1701770.42	548405.99	40°00'02.928"N	80°33'52.329"W	5033.82	137.935	2.51	-0.21	-2.51
11591.00	89.690	143.100	6670.04	5085.37	-3807.03	3429.06	1701826.97	548336.01	40°00'02.243"N	80°33'51.592"W	5123.67	137.990	4.53	0.07	4.53
11681.00	89.600	146.510	6670.60	5175.35	-3880.56	3480.93	1701878.83	548262.48	40°00'01.522"N	80°33'50.914"W	5213.03	138.107	3.79	-0.10	3.79
11770.00	89.720	146.980	6671.13	5264.31	-3954.99	3529.73	1701927.63	548188.06	40°00'00.792"N	80°33'50.276"W	5301.03	138.252	0.55	0.13	0.53
11860.00	89.510	147.810	6671.73	5354.23	-4030.80	3578.23	1701976.13	548112.24	40°00'00.049"N	80°33'49.641"W	5389.90	138.404	0.95	-0.23	0.92
11949.00	89.600	146.610	6672.43	5443.15	-4105.62	3626.42	1702024.32	548037.43	39°59'59.315"N	80°33'49.011"W	5477.87	138.546	1.35	0.10	-1.35
12039.00	89.630	143.190	6673.03	5533.14	-4179.24	3678.16	1702076.06	547963.81	39°59'58.594"N	80°33'48.335"W	5567.31	138.649	3.80	0.03	-3.80
12128.00	89.570	145.490	6673.65	5622.13	-4251.54	3730.04	1702127.94	547891.51	39°59'57.885"N	80°33'47.657"W	5655.87	138.738	2.59	-0.07	2.58
12218.00	89.600	147.700	6674.30	5712.08	-4326.67	3779.59	1702177.48	547816.39	39°59'57.149"N	80°33'47.009"W	5745.03	138.861	2.46	0.03	2.46
12308.00	89.940	146.650	6674.67	5802.02	-4402.30	3828.37	1702226.27	547740.76	39°59'56.407"N	80°33'46.371"W	5834.10	138.989	1.23	0.38	-1.17
12397.00	89.940	144.350	6674.76	5891.01	-4475.64	3878.78	1702276.67	547667.42	39°59'55.688"N	80°33'45.712"W	5922.52	139.086	2.58	0.00	-2.58
12487.00	89.880	144.480	6674.90	5981.00	-4548.83	3931.15	1702329.04	547594.23	39°59'54.971"N	80°33'45.028"W	6012.14	139.166	0.16	-0.07	0.14
12576.00	89.880	144.130	6675.09	6069.99	-4621.11	3983.08	1702380.97	547521.96	39°59'54.263"N	80°33'44.350"W	6100.79	139.241	0.39	0.00	-0.39



Actual Wellpath Report

SHL-22G-HS AWP Proj: 13370'
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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot G
Area	Marshall County, WV	Well	SHL-22G-HS
Field	Marshall	Wellbore	SHL-22G-HS AWB
Facility	SHL-22 Pad		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
12666.00	89.910	143.590	6675.25	6159.98	-4693.79	4036.16	1702434.04	547449.28	39°59'53.551"N	80°33'43.657"W	6190.50	139.308	0.60	0.03	-0.60
12756.00	90.000	142.110	6675.32	6249.91	-4765.53	4090.51	1702488.39	547377.55	39°59'52.848"N	80°33'42.948"W	6280.33	139.359	1.65	0.10	-1.64
12845.00	89.820	141.620	6675.46	6338.78	-4835.53	4145.47	1702543.35	547307.55	39°59'52.163"N	80°33'42.231"W	6369.24	139.394	0.59	-0.20	-0.55
12935.00	89.110	142.530	6676.30	6428.65	-4906.52	4200.78	1702598.66	547236.56	39°59'51.468"N	80°33'41.509"W	6459.14	139.431	1.28	-0.79	1.01
13024.00	89.350	144.880	6677.50	6517.62	-4978.24	4253.46	1702651.33	547164.84	39°59'50.765"N	80°33'40.822"W	6547.88	139.489	2.65	0.27	2.64
13114.00	89.420	144.280	6678.46	6607.61	-5051.58	4305.61	1702703.49	547091.51	39°59'50.047"N	80°33'40.140"W	6637.53	139.558	0.67	0.08	-0.67
13203.00	89.420	146.630	6679.37	6696.60	-5124.88	4356.08	1702753.95	547018.21	39°59'49.328"N	80°33'39.481"W	6726.05	139.636	2.64	0.00	2.64
13293.00	89.480	147.130	6680.23	6786.54	-5200.25	4405.25	1702803.12	546942.84	39°59'48.589"N	80°33'38.838"W	6815.34	139.731	0.56	0.07	0.56
13345.00	89.510	146.670	6680.69	6838.51	-5243.81	4433.64	1702831.51	546899.28	39°59'48.162"N	80°33'38.466"W	6866.93	139.785	0.89	0.06	-0.88
13370.00	89.510	146.670	6680.90	6863.50	-5264.70	4447.38	1702845.25	546878.40	39°59'47.957"N	80°33'38.287"W	6891.75	139.810	0.00	0.00	0.00

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
SHL-22G-HS LP Rev-3		6635.00	-101.90	831.70	1699229.71	552040.99	40°00'38.550"N	80°34'25.533"W	point
SHL-22G-HS BHL Rev-3		6679.00	-5265.00	4446.94	1702844.81	546878.09	39°59'47.954"N	80°33'38.292"W	point
SHL-22 Pad LL		7002.00	-84.46	-85.20	1698312.84	552058.43	40°00'38.614"N	80°34'37.318"W	polygon

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot G
Area	Marshall County, WV	Well	SHL-22G-HS
Field	Marshall	Wellbore	SHL-22G-HS AWB
Facility	SHL-22 Pad		

WELLPATH COMPOSITION - Ref Wellbore: SHL-22G-HS AWB Ref Wellpath: SHL-22G-HS AWP Proj: 13370'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
19.40	3834.40	Generic gyro - northseeking (Standard)	01_MS Gyro <8-3/4"> (100'-3827')	SHL-22G-HS AWB
3834.40	5081.40	ISWISA MWD, Rev. 2 (Standard)	02_SDI MWD <8-3/4"> (3827')(3857'-5074')	SHL-22G-HS AWB
5081.40	13345.00	NaviTrak (AT Curve Short Spaced)	03_BHI AT Curve <8-1/2"> (5081.4')(5104'-13345')	SHL-22G-HS AWB
13345.00	13370.00	Blind Drilling (std)	Projection to bit	SHL-22G-HS AWB

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot G
Area	Marshall County, WV	Well	SHL-22G-HS
Field	Marshall	Wellbore	SHL-22G-HS AWB
Facility	SHL-22 Pad		

COMMENTS

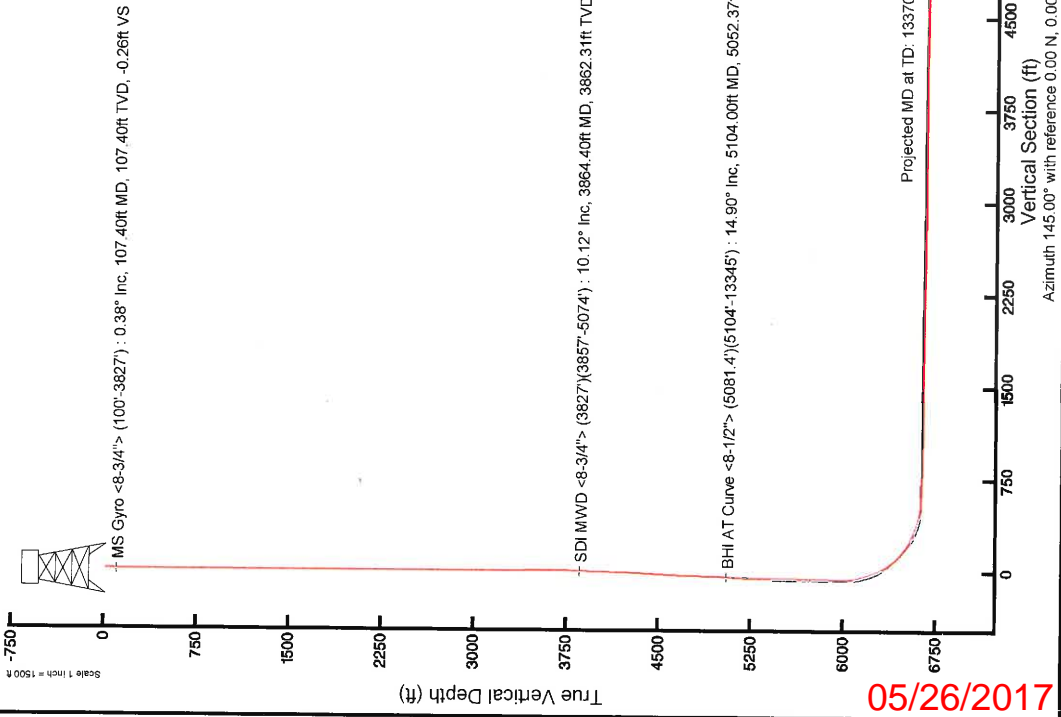
Wellpath general comments
 API: 47-051-01789-0000
 BHI Job #: 7294735
 Rig: Precision 584
 Duration: 6/11/2015-6/15/2015
 MS Gyro <8-3/4"> (100'-3827')
 SDI MWD <8-3/4"> (3827')(3857'-5074')
 BHI AT Curve <8-1/2"> (5081.4')(5104'-13345')
 Projected MD at TD: 13370'

Location: Marshall County, WV
 Field: Marshall
 Facility: SHL-22 Pad

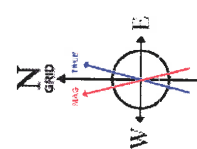
Slot: Slot G
 Well: SHL-22G-HS
 Wellbore: SHL-22G-HS PWB

Slot reference azimuth is SHL-22G-HS PWB Row-B-0
 True vertical depths are referenced to Precision 584 (RKB)
 Measured depths are referenced to Precision 584 (RKB)
 Precision 584 (RKB) to Mean Sea Level: 1342 feet
 Mean Sea Level to Mud line (At Slot: Slot G): -1322.8 feet
 Coordinates are in feet referenced to BNA
 Created by: edstaylor on 17/Jun/2015

Location Information			
Facility Name	Grid East (US ft)	Grid North (US ft)	Longitude
SHL-22 Pad	1698312.840	552058.430	80°34'37.318"W
Local N (ft)	Grid East (US ft)	Grid North (US ft)	Longitude
Slot G	84.46	85.20	80°34'36.236"W
Precision 584 (RKB) to Mud line (At Slot: Slot G)	552742.890	40739739.459"N	
Mean Sea Level to Mud line (At Slot: Slot G)	19.4ft	-1322.8ft	
Precision 584 (RKB) to Mean Sea Level	1342ft		



API: 47-051-01789-0000
 BHI Job #: 7294735
 Rig: Precision 584
 Duration: 6/11/2015-6/15/2015



User specified (HDGM) Dip: 67.51° Field: 53036 nT
 Magnetic North is 8.33 degrees West of True North (at 09/Jun/2015)
 Grid North is 0.69 degrees West of True North
 To correct azimuth from True to Grid add 0.69 degrees
 To correct azimuth from Magnetic to Grid subtract 7.64 degrees