



Noble Energy SHL-6K-HS Gyro+MWD 0' MD to 12120' MD Survey Report

(Def Survey)

Report Date: May 21, 2012 - 10:00 AM
 Client: Noble Energy
 Field: WV Marshall County (NAD 27)
 Structure / Slot: CNL/Noble Energy SHL-6 Pad / SHL-6K-HS
 Well: SHL-6K-HS
 Borehole: Original Borehole
 UWI / APW: Unknown / Unknown
 Survey Name: Noble Energy SHL-6K-HS Gyro+MWD 0' MD to 12120' MD
 Survey Date: February 15, 2012
 Tori / AHD / DDI / ERD Ratio: 205.557' / 7284.587' R / 6.466' / 1.174
 Coordinate Reference System: NAD27 West Virginia State Plane, Northern Zone, US Feet
 Location Lat / Long: N 30° 57' 22.32086", W 80° 34' 32.20672"
 Location Grid N/E UTM: N 532193.239 R/US, E 1698472.742 R/US
 CRS Grid Convergence Angle: -0.8659890°
 Grid Scale Factor: 0.99995731

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Admitt: 340.010' (Fixed North)
 Vertical Section Origin: 0.000 R, 0.000 R
 TVD Reference Datum: KB
 TVD Reference Elevation: 854.120 ft above MSL
 Seabed / Ground Elevation: 831.020 ft above MSL
 Magnetic Declination: -8.738°
 Total Field Strength: 52862.241 nT
 Magnetic Dip Angle: 67.533°
 Declination Date: February 15, 2012
 BGMG 2011
 North Reference: Grid North
 Grid Convergence Used: -0.868°
 Total Corr Mag North->Grid North: -8.052°
 Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azlm Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°(100ft))	BR (°(100ft))	TR (°(100ft))	Northing (ftUS)	Easting (ftUS)	Latitude (NS **)	Longitude (EW **)	Directional Difficulty	Index
SHL	0.00	0.00	0.00	0.00	-854.12	0.00	0.00	0.00	N/A	N/A	N/A	532193.24	1698472.74	N 30° 57' 22.32" W	80° 34' 32.21" W	0.00	0.00
	116.00	0.42	4.78	116.00	-739.12	0.38	0.42	0.04	0.37	0.07	0.00	532193.66	1698472.78	N 30° 57' 22.33" W	80° 34' 32.21" W	0.00	0.00
	215.00	0.43	13.87	215.00	-639.12	1.03	1.15	0.18	0.07	0.01	9.19	532194.39	1698472.90	N 30° 57' 22.33" W	80° 34' 32.20" W	0.00	0.18
	315.00	0.66	15.81	314.99	-539.13	1.81	2.07	0.40	0.23	0.03	1.64	532195.31	1698473.14	N 30° 57' 22.34" W	80° 34' 32.20" W	0.18	1.51
	415.00	0.84	36.84	414.88	-439.14	2.67	3.21	1.00	0.33	0.18	21.33	532196.45	1698473.74	N 30° 57' 22.35" W	80° 34' 32.19" W	0.55	
	515.00	0.77	32.26	514.87	-339.15	3.49	4.36	1.80	0.10	-0.07	-4.86	532197.60	1698474.54	N 30° 57' 22.36" W	80° 34' 32.18" W	0.74	
	615.00	0.55	34.70	614.97	-239.15	4.17	5.33	2.43	0.22	-0.22	2.44	532198.68	1698475.17	N 30° 57' 22.37" W	80° 34' 32.18" W	0.91	
	715.00	1.66	33.00	714.95	-139.17	5.32	6.84	3.49	1.11	-1.70	532200.17	1698476.23	N 30° 57' 22.39" W	80° 34' 32.16" W	1.29		
	815.00	1.78	15.67	814.90	-39.22	7.46	9.65	4.70	0.53	0.12	-17.33	532202.88	1698477.44	N 30° 57' 22.42" W	80° 34' 32.15" W	1.51	
	915.00	2.02	13.28	914.85	60.73	10.19	12.86	5.52	0.25	0.24	-2.39	532206.09	1698478.26	N 30° 57' 22.45" W	80° 34' 32.14" W	1.87	
	1015.00	1.71	4.18	1014.79	160.67	13.03	16.96	6.04	0.43	-0.31	-9.12	532209.30	1698478.78	N 30° 57' 22.48" W	80° 34' 32.13" W	1.81	
	1115.00	1.94	35.24	1114.74	260.62	19.23	24.44	5.92	0.44	-11.74	532212.46	1698479.66	N 30° 57' 22.51" W	80° 34' 32.13" W	1.93		
	1215.00	1.18	352.18	1214.71	360.59	18.70	21.92	6.56	0.76	-0.78	-0.24	532215.16	1698478.30	N 30° 57' 22.54" W	80° 34' 32.14" W	2.08	
	1315.00	0.83	352.05	1314.89	460.57	20.42	23.86	5.32	0.35	-0.35	-0.13	532216.90	1698478.06	N 30° 57' 22.56" W	80° 34' 32.14" W	2.12	
	1415.00	0.75	345.72	1414.88	560.56	21.78	26.01	5.06	0.12	-0.08	-6.33	532218.25	1698477.80	N 30° 57' 22.57" W	80° 34' 32.15" W	2.15	
	1515.00	0.83	353.44	1514.87	660.55	23.22	28.45	4.80	0.21	0.18	7.72	532219.89	1698477.54	N 30° 57' 22.58" W	80° 34' 32.15" W	2.19	
	1615.00	0.82	358.41	1614.86	760.54	24.89	27.07	4.69	0.13	-0.11	4.97	532221.21	1698477.13	N 30° 57' 22.60" W	80° 34' 32.15" W	2.23	
	1715.00	0.92	344.04	1714.85	860.53	26.17	29.49	4.45	0.24	-0.10	-14.37	532222.70	1698477.49	N 30° 57' 22.61" W	80° 34' 32.15" W	2.26	
	1815.00	0.98	333.48	1814.83	960.51	27.80	30.98	3.85	0.18	0.04	-10.56	532224.22	1698476.80	N 30° 57' 22.63" W	80° 34' 32.16" W	2.30	
	1915.00	0.95	329.71	1914.82	1060.50	29.45	32.45	3.05	0.06	-0.01	-3.77	532225.69	1698475.85	N 30° 57' 22.64" W	80° 34' 32.17" W	2.33	
	2015.00	0.94	328.66	2014.81	1160.49	31.07	33.86	2.22	0.02	-0.01	-1.05	532227.10	1698474.96	N 30° 57' 22.66" W	80° 34' 32.18" W	2.35	
	2115.00	0.78	339.69	2114.80	1260.48	32.55	35.26	1.55	0.23	-0.16	11.03	532228.44	1698474.30	N 30° 57' 22.67" W	80° 34' 32.19" W	2.38	
	2215.00	1.24	331.95	2214.58	1360.46	34.30	36.80	0.81	0.46	0.40	-7.74	532230.03	1698473.55	N 30° 57' 22.68" W	80° 34' 32.20" W	2.43	
	2315.00	1.43	331.23	2314.55	1460.43	36.81	38.85	-0.30	0.19	0.19	-0.72	532232.08	1698472.44	N 30° 57' 22.70" W	80° 34' 32.22" W	2.47	
	2415.00	1.30	335.05	2414.52	1560.40	39.87	40.97	-1.38	0.16	-0.13	3.82	532234.21	1698471.36	N 30° 57' 22.73" W	80° 34' 32.23" W	2.50	
Final Gyro	2515.00	1.18	335.25	2514.50	1660.38	41.13	42.93	-2.29	0.12	-0.12	0.20	532236.17	1698470.45	N 30° 57' 22.74" W	80° 34' 32.24" W	2.53	
	2615.00	0.90	325.02	2614.48	1760.36	42.91	44.51	-3.17	0.33	-0.28	-10.23	532237.75	1698469.57	N 30° 57' 22.76" W	80° 34' 32.25" W	2.57	
	2695.00	0.86	335.37	2694.47	1840.35	44.13	45.96	-3.79	0.20	-0.03	12.84	532239.82	1698468.96	N 30° 57' 22.80" W	80° 34' 32.26" W	2.59	
	2781.00	0.57	318.75	2780.47	1936.35	45.31	46.61	-4.41	-0.59	-0.32	-17.31	532239.85	1698468.33	N 30° 57' 22.78" W	80° 34' 32.27" W	2.62	
	2887.00	0.53	313.11	2886.46	2032.34	46.15	47.27	-5.05	0.07	-0.04	-5.88	532240.51	1698467.69	N 30° 57' 22.79" W	80° 34' 32.28" W	2.63	
	2980.00	0.57	300.86	2979.46	2128.34	46.89	47.80	-5.76	0.14	0.04	-13.39	532241.04	1698466.96	N 30° 57' 22.79" W	80° 34' 32.29" W	2.64	
	3075.00	0.61	308.24	3074.45	2220.33	47.89	48.36	-6.66	0.05	0.04	7.98	532241.60	1698466.18	N 30° 57' 22.80" W	80° 34' 32.30" W	2.66	
	3170.00	0.68	309.45	3169.45	2316.33	48.58	49.02	-7.38	0.05	0.05	1.27	532242.28	1698465.36	N 30° 57' 22.80" W	80° 34' 32.31" W	2.67	
	3265.00	0.55	306.99	3264.44	2410.32	49.44	49.64	-8.17	0.12	-0.12	-2.69	532242.88	1698464.57	N 30° 57' 22.81" W	80° 34' 32.32" W	2.68	
	3360.00	0.47	330.40	3359.44	2505.32	50.21	50.25	-6.73	0.23	-0.08	24.64	532243.49	1698464.02	N 30° 57' 22.82" W	80° 34' 32.33" W	2.70	
	3455.00	0.80	335.76	3454.43	2600.31	51.34	51.27	-9.23	0.46	0.45	5.84	532244.51	1698463.52	N 30° 57' 22.83" W	80° 34' 32.33" W	2.73	
	3550.00	0.83	322.81	3549.42	2695.30	52.74	52.60	-10.07	0.22	-0.07	-13.63	532245.74	1698462.80	N 30° 57' 22.84" W	80° 34' 32.34" W	2.75	
	3645.00	2.34	32.07	3640.40	2742.28	53.65	53.59	-9.64	4.86	3.21	147.36	532246.62	1698463.10	N 30° 57' 22.85" W	80° 34' 32.34" W	2.85	
	3645.00	6.51	45.13	3644.25	2790.13	55.40	56.34	-7.19	8.88	8.69	27.21	532249.57	1698465.55	N 30° 57' 22.88" W	80° 34' 32.31" W	3.01	
	3692.00	10.21	46.47	3690.74	2836.62	58.19	61.09	-4.28	7.88	7.87	2.85	532254.32	1698470.46	N 30° 57' 22.92" W	80° 34' 32.25" W	3.14	
	3740.00	12.45	47.73	3737.81	2883.69	61.85	67.50	-4.83	4.89	4.67	2.63	532260.74	1698477.37	N 30° 57' 22.99" W	80° 34' 32.16" W	3.24	
	3787.00	14.48	47.68	3783.51	2929.39	66.00	74.66	12.72	4.32	4.32	-0.11	532268.10	1698485.47	N 30° 57' 23.06" W	80° 34' 32.05" W	3.34	
	3835.00	16.88	47.82	3829.72	2975.60	70.91	83.68	22.32	4.96	4.96	0.29	532276.61	1698495.06	N 30° 57' 23.15" W	80° 34' 31.93" W	3.44	
	3882.00	19.17	46.43	3874.42	3020.30	76.20	93.18	33.24	5.03	4.81	3.43	532286.41	1698505.98	N 30° 57' 23.25" W	80° 34' 31.79" W	3.53	
	3930.00	20.48	51.54	3919.57	3065.45	81.63	103.62	45.79	3.07	2.69	4.40	532296.75	1698516.53	N 30° 57' 23.35" W	80° 34' 31.83" W	3.61	
	3977.00	21.64	51.83	3963.44	3109.32	86.94	113.99	59.04	2.52	2.51	0.62	532307.22	1698531.67	N 30° 57' 23.45" W	80° 34' 31.47" W	3.68	
	4020.00	24.57	50.90	4002.98	3148.86	92.34	124.63	72.21	6.87	6.81	-2.16	532317.78	1698544.95	N 30° 57' 23.56" W	80° 34' 31.30" W	3.76	
	4068.00	27.19	52.69	4044.37	3190.25	98.80	136.93	88.00	5.94	5.70	3.89	532330.16	1698560.73	N 30° 57' 23.68" W	80° 34' 31.10" W	3.85	
	4112.00	29.24	54.22	4084.90	3230.78	104.78	149.87	105.47	4.73	4.45	3.33	532343.10	1698578.21	N 30° 57' 23.81" W	80° 34' 30.88" W	3.92	
	4159.00	31.47	51.46	4125.46	3271.34	111.81	164.23	124.38	5.60	4.74	-5.87	532357.48	1698597.12	N 30° 57' 23.96" W	80° 34' 30.63" W	3.99	
	4204.00	34.37	49.80	4163.23	3309.11	119.94	179.75	143.28	6.75	6.44	-3.69	532372.98	1698616.01	N 30° 57' 24.11" W	80° 34' 30.39" W	4.07	
	4250.00	38.75	49.99	4200.65	3346.53	128.14	196.88	163.74	5.18	5.17	-0.11	532390.41	1698636.47	N 30° 57' 24.29" W	80° 34' 30.13" W	4.13	
	4297.00	36.22	48.83	4238.43	3384.31	138.74	214.88	185.12	1.15	-1.13	-0.34	532408.21	1698657.85	N 30° 57' 24.47" W	80° 34' 29.88" W	4.18	
	4349.00	38.18	54.61	4317.73	3457.51	155.67	248.89	229.08	3.79	3.79	5.20	532442.22	1698701.81	N 30° 57' 24.81" W	80° 34' 28.30" W	4.28	
	4482.00	38.98	62.13	4384.44	3530.32	172.26	283.59	275.60	1.88	2.84	-2.67	532478.33	1698748.33	N 30° 57' 25.16" W	80° 34' 28.71" W	4.36	
	4574.00	37.80	50.98	4456.53	3602.41	190.37	319										

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	BR (ft/100ft)	TR (ft/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ° ' '')	Longitude (E/W ° ° ' '')	Directional Difficulty Index
	7152.00	85.05	323.64	6179.47	5325.35	1288.38	1707.50	925.09	3.21	2.02	-2.50	533900.96	1696397.79	N 39 57 39.30 W	80 34 20.59	5.63
	7198.00	86.36	322.58	6182.92	5328.80	1332.26	1744.18	897.55	3.69	2.85	-2.35	533937.34	1696370.25	N 39 57 39.96 W	80 34 20.85	5.64
	7331.00	91.13	323.19	6185.63	5331.71	1458.29	1850.16	817.32	3.52	3.59	0.47	534043.32	1696280.02	N 39 57 40.70 W	80 34 22.00	5.69
	7426.00	91.13	324.29	6183.91	5329.79	1552.39	1928.38	759.98	1.13	0.00	1.13	534121.52	1696232.87	N 39 57 41.47 W	80 34 22.74	5.71
	7523.00	90.79	323.20	6182.32	5328.20	1643.57	2004.96	703.79	1.20	-0.36	-1.15	534108.11	1696176.50	N 39 57 42.22 W	80 34 23.48	5.74
	7818.00	90.76	321.63	6181.08	5328.94	1732.21	2078.65	647.07	1.69	-0.03	-1.89	534271.79	1696119.78	N 39 57 42.94 W	80 34 24.22	5.76
	7712.00	90.48	322.03	6180.03	5325.91	1623.41	2154.12	587.74	0.51	-0.29	0.42	534347.26	1696060.48	N 39 57 43.68 W	80 34 24.99	5.78
	7807.00	90.17	322.39	6179.49	5325.37	1813.88	2229.19	526.53	0.50	-0.53	0.36	534422.33	1696002.25	N 39 57 44.41 W	80 34 25.75	5.80
	7901.00	90.31	322.99	6179.09	5324.97	2003.60	2303.85	472.56	0.66	0.15	0.64	534407.09	1695945.28	N 39 57 45.14 W	80 34 26.49	5.82
	7996.00	90.41	323.90	6178.50	5324.38	2094.56	2380.11	415.78	0.65	0.11	0.64	534573.25	1695888.50	N 39 57 45.88 W	80 34 27.23	5.84
	8090.00	90.41	324.02	6177.82	5323.70	2184.85	2455.98	360.27	0.45	0.00	0.45	534649.11	1695833.00	N 39 57 46.63 W	80 34 27.96	5.86
	8184.00	90.31	323.47	6177.23	5323.11	2275.08	2531.78	304.69	0.59	-0.11	-0.59	534724.90	1695777.41	N 39 57 47.38 W	80 34 28.68	5.88
	8281.00	90.34	322.81	6176.68	5322.56	2367.91	2609.38	246.60	0.68	0.03	-0.68	534802.51	1695719.23	N 39 57 48.14 W	80 34 29.44	5.90
	8373.00	90.41	323.45	6176.08	5321.96	2455.04	2682.98	191.30	0.70	0.08	0.08	534876.10	1695664.04	N 39 57 48.88 W	80 34 30.16	5.92
	8468.00	90.69	322.98	6175.17	5321.05	2546.88	2759.09	134.42	0.68	0.29	-0.49	534952.18	1695607.15	N 39 57 49.60 W	80 34 30.90	5.94
	8562.00	90.86	322.45	6173.90	5319.78	2636.62	2833.64	77.48	0.59	0.18	-0.56	535026.96	1695550.22	N 39 57 50.33 W	80 34 31.65	5.95
	8657.00	90.86	322.21	6172.47	5318.35	2727.13	2909.03	19.43	0.25	0.00	-0.25	535102.14	1695492.17	N 39 57 51.07 W	80 34 32.40	5.97
	8752.00	90.86	321.39	6171.05	5316.93	2817.36	2983.68	-39.31	0.88	0.00	-0.86	535176.79	1695433.43	N 39 57 51.80 W	80 34 33.17	5.99
	8847.00	90.86	320.35	6169.62	5315.50	2907.10	3057.38	-99.26	1.09	0.00	-1.09	535250.47	1695373.49	N 39 57 52.52 W	80 34 33.95	6.01
	8941.00	90.93	321.72	6168.15	5314.03	2995.98	3130.44	-156.36	1.48	0.07	1.48	535323.54	1695314.39	N 39 57 53.24 W	80 34 34.72	6.02
	9036.00	90.86	322.38	6166.67	5312.55	3086.33	3205.33	-216.79	0.68	-0.07	0.67	535398.43	1695255.96	N 39 57 53.97 W	80 34 35.48	6.04
	9131.00	90.79	322.85	6165.30	5311.18	3176.97	3280.80	-274.47	0.52	-0.07	0.52	535473.89	1695198.28	N 39 57 54.71 W	80 34 36.24	6.06
	9226.00	90.89	323.72	6163.91	5309.79	3267.94	3359.94	-331.26	0.92	0.11	0.92	535550.03	1695141.49	N 39 57 55.45 W	80 34 36.98	6.07
	9320.00	90.55	323.12	6162.73	5308.61	3356.02	3432.42	-387.28	0.73	-0.38	-0.64	535625.51	1695085.48	N 39 57 56.19 W	80 34 37.71	6.09
	9416.00	90.34	323.10	6161.58	5307.86	3448.87	3509.20	-444.90	0.22	-0.02	-0.02	535702.28	1695027.86	N 39 57 56.95 W	80 34 38.48	6.10
	9511.00	90.45	322.24	6161.32	5307.20	3540.55	3584.74	-502.51	0.91	0.12	-0.91	535777.82	1694970.26	N 39 57 57.69 W	80 34 39.21	6.12
	9605.00	90.79	322.45	6160.31	5306.19	3630.11	3659.15	-559.93	0.43	0.36	0.22	535852.23	1694912.84	N 39 57 58.41 W	80 34 39.98	6.13
	9700.00	90.79	322.61	6159.60	5304.88	3720.72	3734.54	-617.72	0.17	0.00	0.17	535927.62	1694855.05	N 39 57 59.15 W	80 34 40.71	6.14
	9795.00	90.82	321.62	6157.68	5303.54	3811.11	3809.51	-676.05	1.04	0.03	-1.04	536002.56	1694796.72	N 39 57 59.89 W	80 34 41.47	6.16
	9887.00	90.82	323.00	6156.35	5302.23	3898.74	3882.31	-732.29	1.50	0.00	1.50	536075.37	1694738.33	N 39 57 60.60 W	80 34 42.21	6.17
	9983.00	90.89	323.29	6154.91	5300.79	3990.61	3959.11	-789.86	0.31	0.07	0.30	536152.18	1694682.91	N 39 58 1.35 W	80 34 42.96	6.19
	10065.00	90.70	324.09	6153.71	5299.59	4089.29	4025.18	-838.41	0.98	-0.12	0.98	536218.24	1694624.37	N 39 58 2.00 W	80 34 43.59	6.20
	10171.00	90.65	324.86	6152.38	5298.26	4171.41	4111.45	-890.00	0.74	-0.13	0.73	536294.50	1694565.05	N 39 58 2.84 W	80 34 44.40	6.22
	10268.00	90.41	324.67	6151.48	5297.36	4264.90	4190.87	-955.96	0.32	-0.25	-0.20	536363.72	1694505.82	N 39 58 3.62 W	80 34 45.13	6.23
	10358.00	90.21	323.83	6151.00	5296.88	4351.57	4263.82	-1008.87	1.18	-0.22	-1.18	536436.67	1694444.12	N 39 58 4.33 W	80 34 45.82	6.24
	10456.00	90.52	323.15	6150.37	5296.25	4445.47	4342.28	-1067.11	0.58	0.32	-0.49	536535.33	1694385.33	N 39 58 5.10 W	80 34 46.58	6.25
	10552.00	90.48	323.68	6149.53	5295.41	4537.47	4419.37	-1124.33	0.55	-0.04	0.55	536612.41	1694328.47	N 39 58 5.86 W	80 34 47.33	6.27
	10647.00	90.51	323.17	6148.71	5294.59	4628.51	4495.65	-1180.03	0.54	0.03	-0.54	536688.69	1694271.19	N 39 58 6.61 W	80 34 48.08	6.28
	10741.00	90.24	322.67	6148.10	5293.98	4718.36	4570.65	-1237.61	0.60	-0.29	-0.53	536763.68	1694213.49	N 39 58 7.34 W	80 34 48.80	6.29
	10836.00	90.69	323.11	6147.33	5293.21	4809.14	4648.40	-1294.02	0.66	0.47	0.46	536839.43	1694157.88	N 39 58 8.08 W	80 34 49.55	6.30
	10930.00	90.82	323.26	6146.09	5291.97	4896.11	4721.65	-1351.24	0.21	0.14	0.16	536914.68	1694101.58	N 39 58 8.82 W	80 34 50.29	6.31
	11025.00	90.93	323.69	6144.64	5290.52	4990.17	4797.98	-1407.78	0.47	0.12	0.45	536991.01	1694045.03	N 39 58 9.57 W	80 34 51.02	6.33
	11120.00	90.86	324.18	6143.15	5289.03	5081.45	4874.77	-1463.70	0.52	-0.07	0.52	537067.79	1693987.79	N 39 58 10.32 W	80 34 51.75	6.34
	11215.00	90.62	322.47	6141.93	5287.81	5172.44	4950.95	-1520.43	0.84	0.25	-1.80	537143.97	1693930.38	N 39 58 11.07 W	80 34 52.49	6.35
	11305.00	90.82	321.74	6140.80	5286.68	5258.07	5021.97	-1575.71	0.84	-0.22	-0.81	537214.98	1693871.48	N 39 58 11.76 W	80 34 53.22	6.36
	11403.00	90.72	320.12	6139.49	5285.36	5350.68	5098.04	-1637.47	1.68	-0.10	-1.65	537291.05	1693813.35	N 39 58 12.50 W	80 34 53.96	6.38
	11498.00	90.69	320.57	6138.31	5284.19	5440.13	5171.18	-1698.09	0.47	-0.03	0.47	537364.19	1693754.73	N 39 58 13.22 W	80 34 54.61	6.39
	11593.00	90.69	322.02	6137.17	5283.05	5530.10	5245.31	-1757.49	1.53	0.00	1.53	537438.31	1693695.33	N 39 58 13.95 W	80 34 55.58	6.40
	11688.00	91.06	325.05	6135.71	5281.59	5621.17	5321.69	-1813.93	3.21	0.39	3.19	537514.69	1693636.89	N 39 58 14.69 W	80 34 56.32	6.42
	11782.00	91.20	324.59	6133.86	5279.74	5711.87	5398.50	-1868.08	0.51	0.15	-0.49	537591.50	1693578.47	N 39 58 15.45 W	80 34 57.03	6.43
	11877.00	91.48	325.28	6131.64	5277.52	5803.58	5478.24	-1922.64	0.78	0.29	0.73	537669.23	1693520.18	N 39 58 16.21 W	80 34 57.74	6.44
	11969.00	91.72	326.16	6129.07	5274.95	5892.89	5552.23	-1974.44	0.99	0.26	0.96	537745.22	1693461.39	N 39 58 16.95 W	80 34 58.42	6.45
	12038.00	91.61	327.48	6127.07	5272.95	5986.84	5609.95	-2012.19	1.92	-0.18	1.91	537802.94	1693403.05	N 39 58 17.52 W	80 34 58.91	6.46
	12120.00	91.91	327.48	6124.76	5270.64	6039.86	5679.07	-2056.25	0.00	0.00	0.00	537872.05	1693344.68	N 39 58 18.20 W	80 34 59.49	6.47

Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

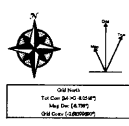
Survey Program:

Description	MD From (ft)	MD To (ft)	EOU Freq (ft)	Survey Tool Type	Borehole / Survey
	0.000	23.100	Act Sns	SLB_NSG+MSHOT-Depth Only	Original Borehole / Noble Energy SHL-6K-HS Gyro+MWD 0' MD to 12120' MD
	23.100	23.100	Act Sns	SLB_NSG+MSHOT-Depth Only	Original Borehole / Noble Energy SHL-6K-HS Gyro+MWD 0' MD to 12120' MD
	23.100	2615.000	Act Sns	SLB_NSG+MSHOT	Original Borehole / Noble Energy SHL-6K-HS Gyro+MWD 0' MD to 12120' MD
	2615.000	12038.000	Act Sns	SLB_MWD-STD	Original Borehole / Noble Energy SHL-6K-HS Gyro+MWD 0' MD to 12120' MD
	12038.000	12120.000	Act Sns	SLB_BLIND+TREND	Original Borehole / Noble Energy SHL-6K-HS Gyro+MWD 0' MD to 12120' MD

WELL SHL-6K-HS			FIELD WV Marshall County (NAD 27)			STRUCTURE Nebors M59		
Magnetic Parameters Model: B00M 2011 Dip: 67.53° Mag Dec: -8.78°	Date: February 15, 2012 FS: 52862.267	Surface Location Lat: N 39 57 32.321 Lon: W 80 34 32.207	Northings: N 4237 West Virginia State Plane, Northern Zone, US Feet 532 953.24 81.5 Easting: 14994 72.74 81.5	Grid Contour: -0.48199660 Scale Fact: 0.99999731	Miscellaneous Site: SHL-6K-HS Plan: MWD Survey	TVD Ref: K30054.128 above MSL Srvy Date: February 15, 2012		

Legend

- Noble Energy SHL-6K-HS (MWD) of MD to 12120 MD
- Noble Energy SHL-6K-HS (MWD) of MD to 12120 MD
- Noble Energy SHL-6K-HS (MWD) of MD to 12120 MD
- Noble Energy SHL-6K-HS (MWD) of MD to 12120 MD
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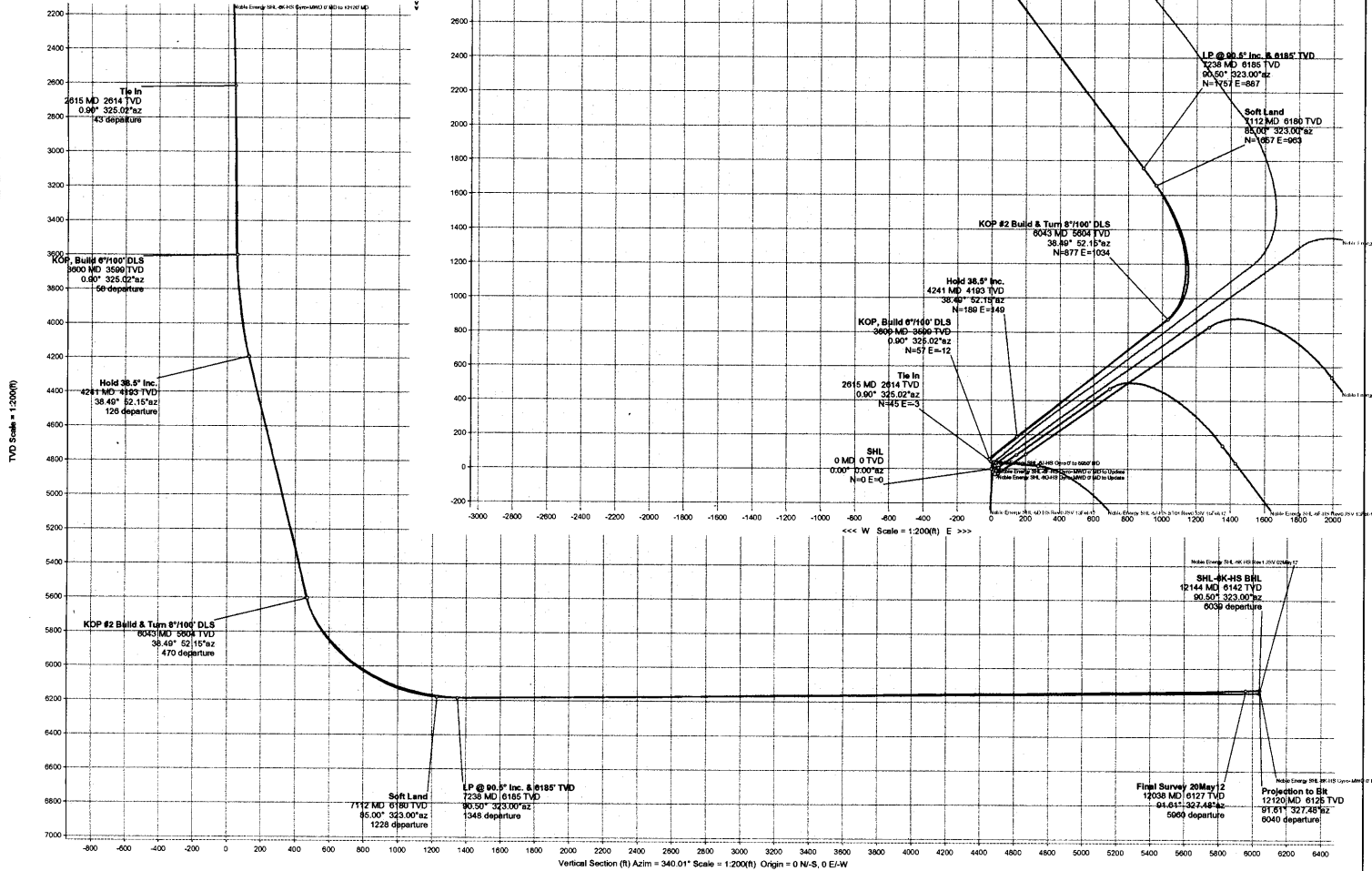


Section Location

Section	Start	End	Depth	Interval	Count
1	0	100	0.00	100.00	1
2	100	200	0.00	100.00	1
3	200	300	0.00	100.00	1
4	300	400	0.00	100.00	1
5	400	500	0.00	100.00	1
6	500	600	0.00	100.00	1
7	600	700	0.00	100.00	1
8	700	800	0.00	100.00	1
9	800	900	0.00	100.00	1
10	900	1000	0.00	100.00	1
11	1000	1100	0.00	100.00	1
12	1100	1200	0.00	100.00	1
13	1200	1300	0.00	100.00	1
14	1300	1400	0.00	100.00	1
15	1400	1500	0.00	100.00	1
16	1500	1600	0.00	100.00	1
17	1600	1700	0.00	100.00	1
18	1700	1800	0.00	100.00	1
19	1800	1900	0.00	100.00	1
20	1900	2000	0.00	100.00	1
21	2000	2100	0.00	100.00	1
22	2100	2200	0.00	100.00	1
23	2200	2300	0.00	100.00	1
24	2300	2400	0.00	100.00	1
25	2400	2500	0.00	100.00	1
26	2500	2600	0.00	100.00	1
27	2600	2700	0.00	100.00	1
28	2700	2800	0.00	100.00	1
29	2800	2900	0.00	100.00	1
30	2900	3000	0.00	100.00	1
31	3000	3100	0.00	100.00	1
32	3100	3200	0.00	100.00	1
33	3200	3300	0.00	100.00	1
34	3300	3400	0.00	100.00	1
35	3400	3500	0.00	100.00	1
36	3500	3600	0.00	100.00	1
37	3600	3700	0.00	100.00	1
38	3700	3800	0.00	100.00	1
39	3800	3900	0.00	100.00	1
40	3900	4000	0.00	100.00	1
41	4000	4100	0.00	100.00	1
42	4100	4200	0.00	100.00	1
43	4200	4300	0.00	100.00	1
44	4300	4400	0.00	100.00	1
45	4400	4500	0.00	100.00	1
46	4500	4600	0.00	100.00	1
47	4600	4700	0.00	100.00	1
48	4700	4800	0.00	100.00	1
49	4800	4900	0.00	100.00	1
50	4900	5000	0.00	100.00	1
51	5000	5100	0.00	100.00	1
52	5100	5200	0.00	100.00	1
53	5200	5300	0.00	100.00	1
54	5300	5400	0.00	100.00	1
55	5400	5500	0.00	100.00	1
56	5500	5600	0.00	100.00	1
57	5600	5700	0.00	100.00	1
58	5700	5800	0.00	100.00	1
59	5800	5900	0.00	100.00	1
60	5900	6000	0.00	100.00	1
61	6000	6100	0.00	100.00	1
62	6100	6200	0.00	100.00	1
63	6200	6300	0.00	100.00	1
64	6300	6400	0.00	100.00	1
65	6400	6500	0.00	100.00	1
66	6500	6600	0.00	100.00	1
67	6600	6700	0.00	100.00	1
68	6700	6800	0.00	100.00	1
69	6800	6900	0.00	100.00	1
70	6900	7000	0.00	100.00	1

Well Data

Well ID	MD	Depth	Interval	Count
SHL-6K-HS	0	0.00	100.00	1
SHL-6K-HS	100	0.00	100.00	1
SHL-6K-HS	200	0.00	100.00	1
SHL-6K-HS	300	0.00	100.00	1
SHL-6K-HS	400	0.00	100.00	1
SHL-6K-HS	500	0.00	100.00	1
SHL-6K-HS	600	0.00	100.00	1
SHL-6K-HS	700	0.00	100.00	1
SHL-6K-HS	800	0.00	100.00	1
SHL-6K-HS	900	0.00	100.00	1
SHL-6K-HS	1000	0.00	100.00	1
SHL-6K-HS	1100	0.00	100.00	1
SHL-6K-HS	1200	0.00	100.00	1
SHL-6K-HS	1300	0.00	100.00	1
SHL-6K-HS	1400	0.00	100.00	1
SHL-6K-HS	1500	0.00	100.00	1
SHL-6K-HS	1600	0.00	100.00	1
SHL-6K-HS	1700	0.00	100.00	1
SHL-6K-HS	1800	0.00	100.00	1
SHL-6K-HS	1900	0.00	100.00	1
SHL-6K-HS	2000	0.00	100.00	1
SHL-6K-HS	2100	0.00	100.00	1
SHL-6K-HS	2200	0.00	100.00	1
SHL-6K-HS	2300	0.00	100.00	1
SHL-6K-HS	2400	0.00	100.00	1
SHL-6K-HS	2500	0.00	100.00	1
SHL-6K-HS	2600	0.00	100.00	1
SHL-6K-HS	2700	0.00	100.00	1
SHL-6K-HS	2800	0.00	100.00	1
SHL-6K-HS	2900	0.00	100.00	1
SHL-6K-HS	3000	0.00	100.00	1
SHL-6K-HS	3100	0.00	100.00	1
SHL-6K-HS	3200	0.00	100.00	1
SHL-6K-HS	3300	0.00	100.00	1
SHL-6K-HS	3400	0.00	100.00	1
SHL-6K-HS	3500	0.00	100.00	1
SHL-6K-HS	3600	0.00	100.00	1
SHL-6K-HS	3700	0.00	100.00	1
SHL-6K-HS	3800	0.00	100.00	1
SHL-6K-HS	3900	0.00	100.00	1
SHL-6K-HS	4000	0.00	100.00	1
SHL-6K-HS	4100	0.00	100.00	1
SHL-6K-HS	4200	0.00	100.00	1
SHL-6K-HS	4300	0.00	100.00	1
SHL-6K-HS	4400	0.00	100.00	1
SHL-6K-HS	4500	0.00	100.00	1
SHL-6K-HS	4600	0.00	100.00	1
SHL-6K-HS	4700	0.00	100.00	1
SHL-6K-HS	4800	0.00	100.00	1
SHL-6K-HS	4900	0.00	100.00	1
SHL-6K-HS	5000	0.00	100.00	1
SHL-6K-HS	5100	0.00	100.00	1
SHL-6K-HS	5200	0.00	100.00	1
SHL-6K-HS	5300	0.00	100.00	1
SHL-6K-HS	5400	0.00	100.00	1
SHL-6K-HS	5500	0.00	100.00	1
SHL-6K-HS	5600	0.00	100.00	1
SHL-6K-HS	5700	0.00	100.00	1
SHL-6K-HS	5800	0.00	100.00	1
SHL-6K-HS	5900	0.00	100.00	1
SHL-6K-HS	6000	0.00	100.00	1
SHL-6K-HS	6100	0.00	100.00	1
SHL-6K-HS	6200	0.00	100.00	1
SHL-6K-HS	6300	0.00	100.00	1
SHL-6K-HS	6400	0.00	100.00	1
SHL-6K-HS	6500	0.00	100.00	1
SHL-6K-HS	6600	0.00	100.00	1
SHL-6K-HS	6700	0.00	100.00	1
SHL-6K-HS	6800	0.00	100.00	1
SHL-6K-HS	6900	0.00	100.00	1
SHL-6K-HS	7000	0.00	100.00	1



Drawn By: J. Waters
Date Created: May 21, 2012 10:23:06 AM
Checked By:
Checked Date:
Approved By:
Approved Date: