



COMPANY/RIG: Noble Energy/Production/CoreTech

WELL: Lamp H 26-22

DECLINATION: 8.33

TD AS DRILLED: 7435

COUNTY/STATE: Weld/Colorado

Latitude: 40.198, Longitude: -104.624

GRID North is 0.570 Degrees East of True North

VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB = GL Elevation = 4853

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro.ut

Minimum Curvature Method

Report Date/Time: 10/22/2014 / 16:31

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: JUSTIN WILLIAMS

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	****
100.000	0.137	247.382	100.000	-0.046	-0.110	-0.046	0.119	247.382	0.137
200.000	0.372	226.496	199.999	-0.315	-0.456	-0.315	0.554	235.325	0.249
300.000	0.188	241.829	299.998	-0.616	-0.836	-0.616	1.038	233.597	0.198
400.000	0.441	217.666	399.996	-0.998	-1.215	-0.998	1.572	230.602	0.280
500.000	0.539	186.430	499.993	-1.769	-1.503	-1.769	2.321	220.337	0.280
600.000	0.785	200.243	599.986	-2.879	-1.792	-2.879	3.392	211.901	0.292
700.000	0.517	192.530	699.979	-3.963	-2.127	-3.963	4.498	208.227	0.281
800.000	0.422	186.895	799.976	-4.769	-2.269	-4.769	5.281	205.449	0.106
900.000	0.463	181.175	899.973	-5.538	-2.322	-5.538	6.005	202.745	0.060
1000.000	0.457	191.222	999.970	-6.333	-2.408	-6.333	6.776	200.815	0.081
1100.000	0.517	197.433	1099.966	-7.155	-2.621	-7.155	7.620	200.115	0.080
1200.000	0.424	233.828	1199.963	-7.804	-3.054	-7.804	8.381	201.375	0.307
1300.000	0.417	168.544	1299.961	-8.379	-3.281	-8.379	8.999	201.383	0.454
1400.000	0.586	209.985	1399.957	-9.179	-3.464	-9.179	9.811	200.678	0.389
1500.000	0.233	282.789	1499.955	-9.577	-3.918	-9.577	10.347	202.252	0.563
1600.000	0.756	231.301	1599.951	-9.944	-4.632	-9.944	10.970	204.975	0.638
1700.000	2.134	222.393	1699.917	-11.732	-6.402	-11.732	13.365	208.621	1.392
1800.000	3.523	214.331	1799.793	-15.645	-9.390	-15.645	18.246	210.974	1.441
1900.000	5.515	211.302	1899.478	-22.288	-13.620	-22.288	26.121	211.429	2.006

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
2000.000	6.715	214.942	1998.907	-31.187	-19.466	-31.187	36.763	211.971	1.260
2100.000	8.395	220.079	2098.037	-41.566	-27.515	-41.566	49.848	213.503	1.809
2200.000	9.736	222.850	2196.786	-53.351	-37.966	-53.351	65.481	215.437	1.410
2300.000	11.453	220.574	2295.078	-67.092	-50.175	-67.092	83.779	216.791	1.767
2400.000	12.678	221.131	2392.867	-82.899	-63.851	-82.899	104.639	217.604	1.231
2500.000	13.828	221.180	2490.202	-100.160	-78.939	-100.160	127.527	218.243	1.150
2600.000	14.542	222.684	2587.153	-118.383	-95.319	-118.383	151.988	218.840	0.803
2700.000	16.037	220.877	2683.611	-138.058	-112.871	-138.058	178.325	219.268	1.569
2800.000	17.574	218.010	2779.339	-160.399	-131.209	-160.399	207.228	219.284	1.746
2900.000	17.865	218.184	2874.595	-184.350	-149.988	-184.350	237.658	219.132	0.296
3000.000	18.089	217.018	2969.713	-208.802	-168.817	-208.802	268.509	218.956	0.424
3100.000	17.757	220.783	3064.863	-232.745	-188.125	-232.745	299.268	218.948	1.205
3200.000	17.649	224.009	3160.130	-255.195	-208.618	-255.195	329.615	219.266	0.987
3300.000	17.296	219.790	3255.520	-277.521	-228.665	-277.521	359.590	219.487	1.315
3400.000	16.604	218.145	3351.176	-300.180	-247.003	-300.180	388.740	219.449	0.842
3500.000	17.609	220.689	3446.752	-322.887	-265.690	-322.887	418.147	219.449	1.253
3600.000	16.467	223.067	3542.363	-344.712	-285.230	-344.712	447.418	219.606	1.338
3700.000	15.747	219.333	3638.439	-365.563	-303.510	-365.563	475.137	219.701	1.261
3800.000	16.329	216.815	3734.548	-387.314	-320.536	-387.314	502.747	219.611	0.907
3900.000	17.927	221.595	3830.114	-410.080	-339.179	-410.080	532.173	219.594	2.129
4000.000	18.235	219.411	3925.177	-433.679	-359.330	-433.679	563.201	219.644	0.744
4100.000	18.208	221.543	4020.164	-457.461	-379.625	-457.461	594.462	219.688	0.667
4200.000	16.900	220.640	4115.505	-480.185	-399.453	-480.185	624.612	219.756	1.337
4300.000	16.071	219.542	4211.394	-501.888	-417.733	-501.888	652.987	219.771	0.885
4400.000	17.387	218.280	4307.159	-524.292	-435.802	-524.292	681.767	219.734	1.365
4500.000	16.519	219.409	4402.813	-547.006	-454.084	-547.006	710.920	219.697	0.929
4600.000	17.620	217.513	4498.407	-569.996	-472.326	-569.996	740.262	219.647	1.234
4700.000	17.656	218.165	4593.707	-593.925	-490.913	-593.925	770.547	219.576	0.201
4800.000	16.400	219.327	4689.321	-616.770	-509.232	-616.770	799.826	219.545	1.300
4900.000	15.259	221.120	4785.528	-637.604	-526.833	-637.604	827.099	219.566	1.242
5000.000	13.973	221.665	4882.290	-656.538	-543.514	-656.538	852.320	219.620	1.293
5100.000	12.463	220.479	4979.638	-673.766	-558.546	-673.766	875.176	219.658	1.535
5200.000	11.695	220.028	5077.423	-689.734	-572.069	-689.734	896.101	219.672	0.774
5300.000	10.437	219.529	5175.562	-704.482	-584.353	-704.482	915.294	219.675	1.261
5400.000	9.158	219.924	5274.101	-717.571	-595.226	-717.571	932.310	219.676	1.281
5500.000	7.617	222.911	5373.029	-728.529	-604.846	-728.529	946.886	219.700	1.601
5600.000	5.854	223.776	5472.335	-737.066	-612.888	-737.066	958.591	219.744	1.766
5700.000	4.261	224.946	5571.942	-743.378	-619.040	-743.378	967.379	219.786	1.596
5800.000	4.246	223.792	5671.667	-748.680	-624.227	-748.680	974.772	219.820	0.087
5900.000	3.521	219.926	5771.437	-753.707	-628.760	-753.707	981.536	219.836	0.770

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
6000.000	3.425	216.420	5871.253	-758.466	-632.504	-758.466	987.589	219.826	0.233
6100.000	1.996	212.938	5971.139	-762.332	-635.225	-762.332	992.301	219.803	1.438
6200.000	1.759	220.384	6071.085	-764.962	-637.166	-764.962	995.564	219.792	0.339
6300.000	0.995	199.295	6171.056	-766.951	-638.448	-766.951	997.912	219.776	0.905
6400.000	0.937	202.114	6271.042	-768.527	-639.042	-768.527	999.504	219.744	0.075
6500.000	0.508	288.006	6371.036	-769.148	-639.771	-769.148	1000.448	219.753	1.033
6600.000	0.583	269.672	6471.032	-769.013	-640.702	-769.013	1000.940	219.799	0.189
6700.000	0.886	252.490	6571.023	-769.249	-641.948	-769.249	1001.919	219.845	0.371
6800.000	1.238	241.282	6671.006	-770.000	-643.633	-770.000	1003.575	219.892	0.407
6900.000	1.697	248.151	6770.973	-771.070	-645.954	-771.070	1005.886	219.954	0.492
7000.000	2.023	245.066	6870.920	-772.366	-648.930	-772.366	1008.791	220.036	0.341
7100.000	1.962	238.696	6970.860	-774.000	-651.993	-774.000	1012.013	220.110	0.230
7150.000	0.758	251.000	7020.845	-774.552	-653.037	-774.552	1013.108	220.135	2.465