



COMPANY/RIG: Noble Energy/Production/CoreTech

WELL: Lamp H 26-08

DECLINATION: 8.33

TD AS DRILLED: 7750

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_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 10/22/2014 / 16:14

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	0.795	184.819	99.997	-0.691	-0.058	-0.691	0.693	184.819	0.795
200.000	0.716	152.910	199.989	-1.938	0.168	-1.938	1.945	175.048	0.422
300.000	0.687	205.434	299.982	-3.035	0.195	-3.035	3.042	176.328	0.621
400.000	0.340	135.593	399.979	-3.789	0.145	-3.789	3.792	177.808	0.653
500.000	0.532	227.193	499.977	-4.316	0.012	-4.316	4.316	179.838	0.639
600.000	0.661	185.078	599.972	-5.206	-0.379	-5.206	5.220	184.168	0.445
700.000	0.830	204.995	699.963	-6.437	-0.736	-6.437	6.479	186.526	0.307
800.000	0.980	196.873	799.951	-7.912	-1.291	-7.912	8.016	189.265	0.197
900.000	0.713	237.977	899.941	-9.060	-2.066	-9.060	9.292	192.847	0.645
1000.000	0.963	198.117	999.931	-10.188	-2.855	-10.188	10.581	195.653	0.618
1100.000	0.671	214.117	1099.921	-11.471	-3.444	-11.471	11.977	196.713	0.368
1200.000	1.006	214.318	1199.910	-12.681	-4.267	-12.681	13.379	198.600	0.335
1300.000	0.812	212.336	1299.897	-14.004	-5.141	-14.004	14.918	200.159	0.196
1400.000	0.865	214.229	1399.886	-15.227	-5.945	-15.227	16.346	201.326	0.059
1500.000	0.880	216.308	1499.875	-16.470	-6.824	-16.470	17.828	202.506	0.035
1600.000	0.920	225.287	1599.863	-17.654	-7.849	-17.654	19.320	203.972	0.147
1700.000	1.082	231.218	1699.847	-18.810	-9.156	-18.810	20.920	205.955	0.192
1800.000	1.047	257.941	1799.831	-19.592	-10.785	-19.592	22.365	208.832	0.493
1900.000	1.124	261.604	1899.813	-19.926	-12.649	-19.926	23.602	212.407	0.104

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	1.228	263.055	1999.792	-20.199	-14.684	-20.199	24.972	216.016	0.108
2100.000	0.926	283.490	2099.774	-20.140	-16.534	-20.140	26.057	219.383	0.485
2200.000	1.408	315.809	2199.754	-19.071	-18.176	-19.071	26.345	223.623	0.798
2300.000	1.274	324.112	2299.727	-17.289	-19.684	-17.289	26.199	228.706	0.236
2400.000	1.413	293.358	2399.701	-15.899	-21.468	-15.899	26.714	233.476	0.725
2500.000	1.687	257.755	2499.666	-15.723	-24.038	-15.723	28.723	236.813	0.983
2600.000	2.054	254.025	2599.613	-16.528	-27.199	-16.528	31.827	238.715	0.387
2700.000	1.732	257.997	2699.558	-17.335	-30.401	-17.335	34.996	240.307	0.348
2800.000	1.368	272.907	2799.522	-17.589	-33.071	-17.589	37.457	241.993	0.541
2900.000	1.208	313.860	2899.499	-16.798	-35.023	-16.798	38.843	244.376	0.913
3000.000	1.176	329.008	2999.477	-15.188	-36.312	-15.188	39.360	247.303	0.316
3100.000	0.798	351.508	3099.462	-13.619	-36.943	-13.619	39.373	249.764	0.535
3200.000	0.610	5.514	3199.455	-12.400	-36.995	-12.400	39.018	251.470	0.254
3300.000	0.742	14.420	3299.448	-11.243	-36.782	-11.243	38.462	253.003	0.169
3400.000	1.124	36.196	3399.435	-9.825	-36.042	-9.825	37.357	254.752	0.514
3500.000	1.247	50.495	3499.414	-8.342	-34.624	-8.342	35.614	256.454	0.319
3600.000	1.239	48.697	3599.390	-6.936	-32.972	-6.936	33.694	258.121	0.040
3700.000	1.358	38.424	3699.365	-5.294	-31.423	-5.294	31.866	260.437	0.261
3800.000	1.737	35.750	3799.328	-3.136	-29.802	-3.136	29.966	263.993	0.386
3900.000	1.658	41.815	3899.284	-0.828	-27.952	-0.828	27.964	268.304	0.196
4000.000	2.091	39.934	3999.230	1.650	-25.816	1.650	25.869	273.656	0.437
4100.000	2.315	40.391	4099.156	4.587	-23.336	4.587	23.782	281.121	0.225
4200.000	2.368	46.195	4199.073	7.556	-20.536	7.556	21.882	290.199	0.243
4300.000	1.901	66.342	4299.005	9.651	-17.526	9.651	20.007	298.841	0.876
4400.000	1.347	76.535	4398.964	10.590	-14.863	10.590	18.250	305.471	0.623
4500.000	1.142	76.983	4498.941	11.088	-12.750	11.088	16.897	311.013	0.205
4600.000	0.868	69.663	4598.925	11.576	-11.069	11.576	16.016	316.283	0.301
4700.000	1.178	81.505	4698.909	11.991	-9.342	11.991	15.201	322.080	0.373
4800.000	1.199	75.022	4798.888	12.414	-7.314	12.414	14.408	329.493	0.136
4900.000	1.909	55.852	4898.851	13.619	-4.925	13.619	14.482	340.119	0.870
5000.000	2.631	57.770	4998.772	15.778	-1.605	15.778	15.859	354.191	0.726
5100.000	2.665	61.025	5098.665	18.128	2.370	18.128	18.283	7.449	0.154
5200.000	2.513	60.128	5198.563	20.346	6.305	20.346	21.301	17.216	0.158
5300.000	2.058	65.254	5298.484	22.189	9.836	22.189	24.272	23.906	0.498
5400.000	2.067	51.708	5398.419	24.059	12.882	24.059	27.290	28.166	0.486
5500.000	2.530	36.918	5498.340	26.941	15.623	26.941	31.143	30.110	0.749
5600.000	2.275	35.514	5598.252	30.321	18.102	30.321	35.313	30.838	0.262
5700.000	2.596	48.316	5698.162	33.442	20.946	33.442	39.460	32.060	0.630
5800.000	1.983	67.438	5798.083	35.612	24.234	35.612	43.076	34.236	0.971
5900.000	1.202	90.161	5898.045	36.273	26.881	36.273	45.148	36.542	0.989

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	1.052	133.319	5998.027	35.640	28.598	35.640	45.695	38.744	0.841
6100.000	1.376	137.520	6098.004	34.124	30.077	34.124	45.487	41.393	0.336
6200.000	1.476	133.283	6197.973	32.355	31.826	32.355	45.385	44.528	0.145
6300.000	1.909	134.218	6297.930	30.310	33.958	30.310	45.518	48.248	0.433
6400.000	2.657	121.925	6397.850	27.923	37.119	27.923	46.449	53.047	0.890
6500.000	3.452	111.339	6497.708	25.602	41.890	25.602	49.094	58.568	0.972
6600.000	3.198	126.056	6597.541	22.865	46.949	22.865	52.221	64.034	0.888
6700.000	3.324	132.116	6697.380	19.278	51.355	19.278	54.854	69.424	0.367
6800.000	3.725	121.771	6797.191	15.624	56.267	15.624	58.396	74.481	0.750
6900.000	2.792	124.130	6897.029	12.547	61.045	12.547	62.321	78.385	0.942
7000.000	1.897	133.045	6996.944	10.051	64.271	10.051	65.052	81.112	0.965