



Company/Rig: Noble Energy/ CoreTech
WELL/API#: Carpio 22-45/05-123-26079
DECLINATION: 8.27 Degrees
TD AS DRILLED: 7102 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.46768, Longitude: -104.53045
Grid North = True North -0.63 degs (NAD 27)
Grid Convergence Applied = -0.63 degs



DEPTH REFERENCE : RKB=GL/ ELEVATION= 4711 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut
Minimum Curvature Method
Report Date/Time: 10/14/2015 / 15:05

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID
HENDERSON, COLORADO
303-853-4976

Surveyor: Sean Bratt / Carpio 22-45

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	0.876	155.788	99.996	-0.697	0.313	-0.697	0.764	155.788	0.876
200.000	0.875	134.040	199.985	-1.925	1.176	-1.925	2.256	148.581	0.330
300.000	0.552	156.494	299.977	-2.898	1.917	-2.898	3.474	146.513	0.421
400.000	0.295	159.827	399.974	-3.582	2.198	-3.582	4.203	148.462	0.258
500.000	0.424	128.018	499.972	-4.052	2.579	-4.052	4.803	147.525	0.233
600.000	0.326	172.807	599.970	-4.562	2.906	-4.562	5.409	147.501	0.300
700.000	0.181	80.778	699.970	-4.818	3.097	-4.818	5.728	147.267	0.378
800.000	0.367	153.438	799.969	-5.079	3.396	-5.079	6.110	146.234	0.358
900.000	0.275	97.708	899.967	-5.398	3.777	-5.398	6.588	145.019	0.311
1000.000	0.108	49.167	999.967	-5.369	4.087	-5.369	6.747	142.721	0.219
1100.000	0.338	147.083	1099.966	-5.555	4.319	-5.555	7.036	142.135	0.369
1200.000	0.197	130.860	1199.965	-5.915	4.609	-5.915	7.499	142.073	0.159
1300.000	0.322	122.286	1299.964	-6.178	4.977	-6.178	7.933	141.145	0.130
1400.000	0.233	164.035	1399.963	-6.523	5.270	-6.523	8.385	141.064	0.214
1500.000	0.234	143.665	1499.962	-6.882	5.447	-6.882	8.777	141.642	0.083
1600.000	0.291	182.502	1599.961	-7.301	5.557	-7.301	9.175	142.725	0.183
1700.000	0.320	206.264	1699.960	-7.804	5.422	-7.804	9.503	145.211	0.129
1800.000	0.477	238.214	1799.957	-8.274	4.945	-8.274	9.639	149.137	0.266

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
1900.000	0.274	242.821	1899.955	-8.602	4.378	-8.602	9.653	153.026	0.206
2000.000	0.276	253.663	1999.954	-8.779	3.935	-8.779	9.621	155.860	0.052
2100.000	0.127	179.036	2099.954	-8.958	3.705	-8.958	9.694	157.529	0.272
2200.000	0.114	241.320	2199.953	-9.117	3.620	-9.117	9.810	158.344	0.125
2300.000	0.137	222.468	2299.953	-9.253	3.452	-9.253	9.876	159.542	0.047
2400.000	0.600	208.418	2399.951	-9.802	3.122	-9.802	10.287	162.334	0.468
2500.000	0.545	223.808	2499.946	-10.605	2.544	-10.605	10.906	166.512	0.163
2600.000	0.332	301.250	2599.944	-10.798	1.967	-10.798	10.976	169.676	0.573
2700.000	0.507	280.408	2699.941	-10.567	1.284	-10.567	10.645	173.074	0.230
2800.000	0.767	277.274	2799.935	-10.403	0.184	-10.403	10.404	178.986	0.262
2900.000	1.320	275.815	2899.918	-10.201	-1.626	-10.201	10.330	189.056	0.553
3000.000	1.465	262.303	2999.888	-10.256	-4.039	-10.256	11.022	201.494	0.358
3100.000	1.440	274.934	3099.857	-10.319	-6.557	-10.319	12.226	212.436	0.320
3200.000	0.686	274.568	3199.839	-10.163	-8.406	-10.163	13.189	219.595	0.755
3300.000	0.470	201.342	3299.835	-10.498	-9.152	-10.498	13.927	221.082	0.711
3400.000	0.376	151.498	3399.832	-11.168	-9.145	-11.168	14.434	219.313	0.367
3500.000	0.577	287.412	3499.831	-11.305	-9.469	-11.305	14.747	219.950	0.886
3600.000	0.735	315.013	3599.824	-10.700	-10.404	-10.700	14.924	224.194	0.349
3700.000	0.756	322.578	3699.816	-9.722	-11.258	-9.722	14.875	229.186	0.101
3800.000	0.749	330.596	3799.807	-8.629	-11.980	-8.629	14.764	234.235	0.105
3900.000	0.524	325.917	3899.801	-7.681	-12.557	-7.681	14.720	238.548	0.231
4000.000	0.284	332.100	3999.798	-7.082	-12.930	-7.082	14.743	241.289	0.243
4100.000	0.275	339.868	4099.797	-6.638	-13.129	-6.638	14.711	243.179	0.039
4200.000	0.309	335.003	4199.796	-6.168	-13.325	-6.168	14.684	245.160	0.042
4300.000	0.292	10.747	4299.795	-5.673	-13.392	-5.673	14.544	247.040	0.185
4400.000	0.275	323.440	4399.794	-5.230	-13.487	-5.230	14.466	248.803	0.228
4500.000	0.332	338.493	4499.792	-4.768	-13.736	-4.768	14.540	250.856	0.098
4600.000	0.660	347.795	4599.788	-3.936	-13.964	-3.936	14.508	254.260	0.337
4700.000	0.320	310.726	4699.785	-3.190	-14.297	-3.190	14.649	257.420	0.449
4800.000	0.958	290.815	4799.778	-2.711	-15.290	-2.711	15.529	259.945	0.667
4900.000	0.980	294.523	4899.764	-2.059	-16.850	-2.059	16.975	263.033	0.066
5000.000	1.026	277.698	4999.749	-1.584	-18.516	-1.584	18.583	265.110	0.297
5100.000	0.716	303.674	5099.737	-1.118	-19.923	-1.118	19.955	266.790	0.494
5200.000	0.505	280.490	5199.732	-0.691	-20.877	-0.691	20.889	268.105	0.321
5300.000	0.776	19.941	5299.728	0.026	-21.080	0.026	21.080	270.072	0.993
5400.000	1.123	35.585	5399.714	1.460	-20.278	1.460	20.331	274.119	0.430
5500.000	0.431	335.609	5499.705	2.600	-19.863	2.600	20.033	277.458	0.981
5600.000	0.864	301.935	5599.699	3.341	-20.659	3.341	20.927	279.188	0.559
5700.000	0.595	233.343	5699.693	3.430	-21.715	3.430	21.984	278.977	0.852
5800.000	0.293	329.305	5799.690	3.340	-22.262	3.340	22.511	278.533	0.690

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
5900.000	0.509	17.649	5899.688	3.983	-22.258	3.983	22.612	280.145	0.383
6000.000	0.746	20.709	5999.682	5.015	-21.893	5.015	22.460	282.901	0.239
6100.000	1.037	25.626	6099.670	6.439	-21.272	6.439	22.225	286.841	0.301
6200.000	1.271	6.249	6199.650	8.358	-20.760	8.358	22.379	291.929	0.452
6300.000	1.354	25.480	6299.624	10.527	-20.131	10.527	22.717	297.606	0.446
6400.000	1.811	20.551	6399.586	13.073	-19.068	13.073	23.119	304.435	0.476
6500.000	1.696	46.720	6499.541	15.567	-17.436	15.567	23.374	311.760	0.802
6600.000	1.332	21.754	6599.507	17.661	-15.928	17.661	23.783	317.955	0.745