



Company/Rig: Noble Energy/ CoreTech  
 WELL/API#: Kohler 7-21/05-123-12292  
 DECLINATION: 8.29 Degrees  
 TD AS DRILLED: 6950 Feet  
 COUNTY/STATE: Weld/Colorado  
 VS-Azi: 0.000 Degrees  
 Latitude: 40.38659, Longitude: -104.55258  
 Grid North = True North -0.61 degs (NAD 27)  
 Grid Convergence Applied = -0.61 degs



DEPTH REFERENCE : RKB=GL/ ELEVATION= 4608 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro\_run01-01-de\_01.ut

Minimum Curvature Method

Report Date/Time: 8/24/2015 / 09:40

LAT & LONG OBTAINED BY HANDHELD GPS AT WELLHEAD

NORTH REFERENCE: GRID

HENDERSON, COLORADO

303-853-4976

Surveyor: Sean Bratt

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	0.324	39.384	99.999	0.219	0.180	0.219	0.283	39.384	0.324
200.000	0.208	62.408	199.998	0.522	0.520	0.522	0.736	44.904	0.156
300.000	0.459	17.318	299.997	0.988	0.800	0.988	1.271	38.994	0.345
400.000	0.461	28.656	399.994	1.723	1.112	1.723	2.050	32.833	0.091
500.000	0.462	51.007	499.990	2.330	1.618	2.330	2.836	34.780	0.179
600.000	0.503	56.605	599.987	2.825	2.298	2.825	3.641	39.125	0.063
700.000	0.678	28.308	699.982	3.588	2.945	3.588	4.642	39.382	0.335
800.000	0.625	64.301	799.976	4.346	3.717	4.346	5.719	40.545	0.406
900.000	0.705	42.762	899.969	5.034	4.626	5.034	6.837	42.586	0.260
1000.000	0.832	78.692	999.961	5.628	5.756	5.628	8.050	45.648	0.489
1100.000	0.515	115.134	1099.954	5.579	6.875	5.579	8.854	50.942	0.518
1200.000	0.453	142.316	1199.951	5.075	7.524	5.075	9.076	55.999	0.235
1300.000	0.453	151.913	1299.947	4.414	7.952	4.414	9.095	60.967	0.076
1400.000	0.432	150.906	1399.944	3.736	8.321	3.736	9.121	65.819	0.022
1500.000	0.610	154.275	1499.940	2.927	8.735	2.927	9.213	71.474	0.181
1600.000	0.671	155.610	1599.934	1.914	9.208	1.914	9.405	78.259	0.062
1700.000	0.548	159.645	1699.928	0.933	9.616	0.933	9.661	84.461	0.131
1800.000	0.106	285.848	1799.927	0.510	9.693	0.510	9.707	86.989	0.616
1900.000	0.412	314.827	1899.926	0.789	9.349	0.789	9.382	85.178	0.323

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	0.535	318.718	1999.922	1.393	8.786	1.393	8.896	80.994	0.127
2100.000	0.532	305.887	2099.918	2.015	8.102	2.015	8.349	76.033	0.119
2200.000	0.613	295.089	2199.913	2.514	7.242	2.514	7.666	70.854	0.135
2300.000	0.601	261.036	2299.908	2.659	6.239	2.659	6.782	66.915	0.356
2400.000	0.501	272.260	2399.903	2.595	5.284	2.595	5.887	63.846	0.146
2500.000	0.559	273.606	2499.899	2.643	4.360	2.643	5.099	58.777	0.059
2600.000	0.481	303.814	2599.895	2.907	3.524	2.907	4.569	50.483	0.281
2700.000	0.395	347.185	2699.892	3.477	3.099	3.477	4.658	41.715	0.333
2800.000	0.500	16.287	2799.889	4.232	3.145	4.232	5.273	36.620	0.247
2900.000	0.676	11.216	2899.884	5.230	3.383	5.230	6.229	32.892	0.183
3000.000	0.641	2.315	2999.878	6.368	3.520	6.368	7.276	28.931	0.108
3100.000	1.364	325.850	3099.862	7.913	2.874	7.913	8.419	19.963	0.930
3200.000	1.839	306.177	3199.824	9.845	0.911	9.845	9.887	5.287	0.720
3300.000	2.176	304.237	3299.762	11.860	-1.954	11.860	12.020	350.645	0.345
3400.000	2.215	312.521	3399.689	14.235	-4.948	14.235	15.070	340.832	0.319
3500.000	2.153	316.611	3499.617	16.906	-7.663	16.906	18.562	335.617	0.168
3600.000	2.113	323.851	3599.547	19.760	-10.041	19.760	22.165	333.063	0.272
3700.000	1.411	343.670	3699.500	22.430	-11.475	22.430	25.195	332.907	0.920
3800.000	0.700	6.898	3799.483	24.218	-11.747	24.218	26.917	334.123	0.816
3900.000	0.770	61.534	3899.476	25.145	-11.083	25.145	27.479	336.213	0.677
4000.000	0.631	105.051	3999.469	25.322	-9.961	25.322	27.210	338.527	0.535
4100.000	0.654	109.469	4099.463	24.988	-8.890	24.988	26.523	340.416	0.055
4200.000	0.494	127.206	4199.458	24.537	-8.008	24.537	25.811	341.925	0.237
4300.000	0.834	137.421	4299.451	23.741	-7.172	23.741	24.800	343.190	0.358
4400.000	0.673	163.084	4399.443	22.643	-6.509	22.643	23.560	343.962	0.370
4500.000	0.639	137.501	4499.436	21.670	-5.961	21.670	22.475	344.619	0.292
4600.000	0.743	147.258	4599.429	20.713	-5.234	20.713	21.364	345.820	0.157
4700.000	0.785	148.043	4699.420	19.586	-4.520	19.586	20.101	347.005	0.043
4800.000	0.707	159.318	4799.412	18.428	-3.940	18.428	18.844	347.932	0.166
4900.000	0.884	171.970	4899.402	17.087	-3.614	17.087	17.465	348.057	0.248
5000.000	0.631	179.922	4999.393	15.773	-3.506	15.773	16.157	347.469	0.274
5100.000	0.889	189.777	5099.385	14.458	-3.637	14.458	14.908	345.881	0.289
5200.000	1.090	183.264	5199.370	12.743	-3.822	12.743	13.304	343.302	0.230
5300.000	1.488	183.592	5299.344	10.497	-3.958	10.497	11.218	339.340	0.398
5400.000	2.131	168.796	5399.294	7.377	-3.678	7.377	8.244	333.500	0.789
5500.000	1.935	161.016	5499.232	3.957	-2.768	3.957	4.829	325.031	0.338
5600.000	1.551	169.860	5599.185	1.029	-1.980	1.029	2.232	297.450	0.468
5700.000	1.307	184.489	5699.154	-1.440	-1.831	-1.440	2.330	231.815	0.437
5800.000	1.118	204.003	5799.132	-3.468	-2.317	-3.468	4.171	213.749	0.451
5900.000	1.129	209.541	5899.113	-5.216	-3.200	-5.216	6.120	211.526	0.109

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	1.312	216.980	5999.091	-6.988	-4.374	-6.988	8.244	212.045	0.242
6100.000	1.159	224.673	6099.067	-8.621	-5.773	-8.621	10.376	213.810	0.225
6200.000	1.110	222.487	6199.048	-10.055	-7.139	-10.055	12.331	215.375	0.065
6300.000	1.516	229.417	6299.021	-11.629	-8.798	-11.629	14.582	217.107	0.435
6400.000	1.796	235.897	6398.980	-13.369	-11.100	-13.369	17.376	219.702	0.337
6500.000	1.878	247.519	6498.929	-14.874	-13.912	-14.874	20.366	223.085	0.381
6600.000	1.964	248.103	6598.872	-16.140	-17.016	-16.140	23.453	226.514	0.088
6700.000	2.742	236.879	6698.788	-18.086	-20.609	-18.086	27.420	228.731	0.901