



Company/Rig: Noble Energy Inc/Production
WELL/API#: Dietrich RC 7-1/05-123-13183
DECLINATION: 8.22 Degrees
TD AS DRILLED: 7154'
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.33206, Longitude: -104.58645
Grid North = True North -0.59 degs (NAD 27)
Grid Correction Applied = -0.59 degs



DEPTH REFERENCE : RKB=GL/Elevation=4796'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 6/1/2016 / 16:06

Lat/Long Obtained By Handheld GPS at Wellhead

North Reference: Grid

Denver, Colorado

303-853-4976

Surveyor: Jason Kinchelow / Dietrich RC 7-1

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	0.127	219.613	100.000	-0.085	-0.071	-0.085	0.111	219.613	0.127
200.000	0.291	97.860	200.000	-0.205	0.110	-0.205	0.233	151.796	0.374
300.000	0.413	169.603	299.998	-0.595	0.427	-0.595	0.732	144.349	0.425
400.000	0.476	192.850	399.995	-1.355	0.400	-1.355	1.413	163.566	0.189
500.000	0.468	204.826	499.992	-2.131	0.136	-2.131	2.135	176.356	0.099
600.000	0.294	173.872	599.990	-2.756	-0.009	-2.756	2.756	180.178	0.264
700.000	0.438	218.208	699.988	-3.311	-0.217	-3.311	3.318	183.756	0.306
800.000	0.409	216.265	799.985	-3.899	-0.664	-3.899	3.955	189.672	0.032
900.000	0.317	218.054	899.983	-4.404	-1.046	-4.404	4.526	193.358	0.093
1000.000	0.411	222.350	999.981	-4.886	-1.457	-4.886	5.099	196.609	0.098
1100.000	0.280	205.058	1099.979	-5.372	-1.802	-5.372	5.666	198.546	0.166
1200.000	0.330	204.393	1199.978	-5.855	-2.024	-5.855	6.195	199.073	0.050
1300.000	0.405	213.929	1299.976	-6.410	-2.340	-6.410	6.824	200.057	0.096
1400.000	0.508	198.465	1399.972	-7.123	-2.678	-7.123	7.610	200.602	0.160
1500.000	0.513	198.093	1499.969	-7.969	-2.957	-7.969	8.500	200.359	0.006
1600.000	0.559	210.476	1599.964	-8.814	-3.343	-8.814	9.427	200.772	0.124
1700.000	0.406	190.023	1699.961	-9.583	-3.652	-9.583	10.255	200.862	0.228
1800.000	0.526	200.701	1799.957	-10.361	-3.876	-10.361	11.063	200.510	0.148

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	0.291	211.356	1899.955	-11.008	-4.170	-11.008	11.771	200.750	0.247
2000.000	0.441	264.242	1999.953	-11.263	-4.685	-11.263	12.199	202.586	0.352
2100.000	0.350	272.174	2099.951	-11.290	-5.373	-11.290	12.503	205.450	0.105
2200.000	0.337	11.339	2199.949	-10.990	-5.620	-10.990	12.344	207.085	0.523
2300.000	0.604	50.234	2299.946	-10.365	-5.157	-10.365	11.577	206.453	0.402
2400.000	0.474	42.042	2399.942	-9.720	-4.475	-9.720	10.701	204.719	0.151
2500.000	0.545	42.388	2499.938	-9.062	-3.877	-9.062	9.856	203.164	0.071
2600.000	0.450	35.085	2599.934	-8.389	-3.331	-8.389	9.026	201.654	0.114
2700.000	0.351	83.134	2699.932	-8.031	-2.801	-8.031	8.505	199.224	0.339
2800.000	0.462	57.233	2799.929	-7.776	-2.157	-7.776	8.070	195.503	0.212
2900.000	0.396	77.504	2899.927	-7.483	-1.480	-7.483	7.628	191.188	0.164
3000.000	0.359	11.919	2999.925	-7.102	-1.078	-7.102	7.183	188.628	0.410
3100.000	0.260	1.854	3099.923	-6.569	-1.006	-6.569	6.645	188.704	0.113
3200.000	0.519	267.675	3199.922	-6.360	-1.450	-6.360	6.524	192.846	0.597
3300.000	1.099	267.079	3299.911	-6.428	-2.860	-6.428	7.035	203.989	0.580
3400.000	1.174	257.384	3399.892	-6.700	-4.818	-6.700	8.253	215.717	0.206
3500.000	1.048	223.460	3499.874	-7.588	-6.446	-7.588	9.956	220.350	0.659
3600.000	1.013	189.662	3599.859	-9.122	-7.224	-9.122	11.636	218.374	0.600
3700.000	0.959	180.570	3699.844	-10.831	-7.380	-10.831	13.106	214.271	0.165
3800.000	1.119	181.314	3799.828	-12.644	-7.411	-12.644	14.656	210.375	0.160
3900.000	1.002	183.141	3899.810	-14.494	-7.481	-14.494	16.310	207.302	0.121
4000.000	0.832	167.559	3999.798	-16.076	-7.373	-16.076	17.686	204.637	0.300
4100.000	0.808	165.899	4099.788	-17.469	-7.045	-17.469	18.836	201.963	0.034
4200.000	1.128	170.205	4199.773	-19.122	-6.705	-19.122	20.263	199.324	0.328
4300.000	1.036	169.454	4299.755	-20.980	-6.373	-20.980	21.926	196.896	0.093
4400.000	0.921	164.494	4399.741	-22.643	-5.992	-22.643	23.423	194.823	0.142
4500.000	0.741	161.143	4499.730	-24.030	-5.568	-24.030	24.667	193.046	0.186
4600.000	0.803	168.123	4599.721	-25.329	-5.215	-25.329	25.860	191.634	0.113
4700.000	0.572	158.152	4699.714	-26.478	-4.885	-26.478	26.925	190.452	0.259
4800.000	0.474	153.038	4799.710	-27.311	-4.511	-27.311	27.681	189.379	0.109
4900.000	0.474	192.974	4899.707	-28.082	-4.417	-28.082	28.427	188.938	0.324
5000.000	0.542	163.650	4999.703	-28.940	-4.376	-28.940	29.269	188.599	0.266
5100.000	0.459	172.177	5099.699	-29.791	-4.188	-29.791	30.084	188.003	0.111
5200.000	0.466	181.946	5199.696	-30.594	-4.148	-30.594	30.874	187.720	0.079
5300.000	0.516	172.835	5299.692	-31.448	-4.105	-31.448	31.714	187.437	0.093
5400.000	0.500	180.800	5399.688	-32.331	-4.055	-32.331	32.584	187.149	0.072
5500.000	0.335	206.883	5499.686	-33.028	-4.193	-33.028	33.293	187.236	0.248
5600.000	0.567	158.961	5599.683	-33.750	-4.148	-33.750	34.004	187.006	0.423
5700.000	0.877	145.376	5699.675	-34.843	-3.535	-34.843	35.021	185.793	0.352
5800.000	1.141	127.550	5799.659	-36.079	-2.310	-36.079	36.153	183.664	0.407

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	1.161	132.798	5899.639	-37.375	-0.777	-37.375	37.383	181.192	0.107
6000.000	1.480	138.484	5999.613	-39.030	0.822	-39.030	39.039	178.793	0.344
6100.000	1.649	141.650	6099.575	-41.125	2.570	-41.125	41.205	176.424	0.190
6300.000	1.705	148.853	6299.490	-45.927	5.894	-45.927	46.304	172.687	0.109
6400.000	2.171	153.223	6399.432	-48.891	7.517	-48.891	49.466	171.259	0.489
6500.000	2.052	158.674	6499.365	-52.250	9.021	-52.250	53.023	170.204	0.233
6600.000	1.999	162.078	6599.302	-55.577	10.209	-55.577	56.507	169.591	0.131
6700.000	2.009	154.207	6699.241	-58.814	11.508	-58.814	59.930	168.929	0.275
6800.000	2.349	148.436	6799.169	-62.138	13.343	-62.138	63.555	167.881	0.404
6900.000	2.844	146.889	6899.066	-65.962	15.771	-65.962	67.822	166.553	0.500
6950.000	3.021	153.048	6949.001	-68.176	17.046	-68.176	70.274	165.962	0.722