



Company/Rig: Noble Energy Inc/Production  
WELL/API#: Connell C 4-25/05-123-24530  
DECLINATION: 8.19 Degrees  
TD AS DRILLED: 7055'  
COUNTY/STATE: Weld/Colorado  
VS-Azi: 0.000 Degrees  
Latitude: 40.33776, Longitude: -104.55968  
Grid North = True North -0.61 degs (NAD 27)  
Grid Correction Applied = -0.61 degs



DEPTH REFERENCE : RKB=GL/Elevation=4727'

DRILLOG MS GYRO SURVEY CALCULATIONS

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

Minimum Curvature Method

Report Date/Time: 7/18/2016 / 13:41

Lat/Long Obtained By Handheld GPS at Wellhead

North Reference: Grid

Denver, Colorado

303-853-4976

Surveyor: Jason Kinchelow / Connell C 4-25

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	0.135	302.671	100.000	0.064	-0.100	0.064	0.118	302.671	0.135
200.000	0.026	183.989	200.000	0.105	-0.201	0.105	0.226	297.657	0.150
300.000	0.185	10.449	300.000	0.241	-0.173	0.241	0.297	324.366	0.211
400.000	0.283	33.702	399.999	0.606	-0.006	0.606	0.606	359.390	0.135
500.000	0.181	32.265	499.998	0.945	0.215	0.945	0.969	12.831	0.102
600.000	0.034	127.663	599.998	1.061	0.323	1.061	1.109	16.934	0.188
700.000	0.044	243.711	699.998	1.026	0.312	1.026	1.072	16.899	0.066
800.000	0.151	109.661	799.998	0.964	0.401	0.964	1.045	22.597	0.185
900.000	0.121	86.106	899.997	0.927	0.631	0.927	1.121	34.242	0.063
1000.000	0.139	108.876	999.997	0.895	0.851	0.895	1.235	43.564	0.054
1100.000	0.123	39.668	1099.997	0.938	1.035	0.938	1.397	47.792	0.150
1200.000	0.095	71.211	1199.997	1.048	1.182	1.048	1.579	48.436	0.065
1300.000	0.097	37.500	1299.997	1.142	1.312	1.142	1.739	48.965	0.056
1400.000	0.060	47.662	1399.997	1.244	1.402	1.244	1.874	48.415	0.040
1500.000	0.054	17.283	1499.997	1.324	1.454	1.324	1.966	47.687	0.030
1600.000	0.110	357.807	1599.996	1.464	1.464	1.464	2.071	44.999	0.062

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
1700.000	0.081	13.145	1699.996	1.629	1.477	1.629	2.199	42.191	0.038
1800.000	0.306	270.856	1799.996	1.702	1.226	1.702	2.097	35.758	0.333
1900.000	0.425	270.926	1899.994	1.712	0.587	1.712	1.810	18.933	0.119
2000.000	0.726	277.610	1999.989	1.802	-0.412	1.802	1.848	347.122	0.307
2100.000	1.099	293.793	2099.976	2.273	-1.918	2.273	2.974	319.844	0.450
2200.000	1.392	299.686	2199.952	3.261	-3.850	3.261	5.046	310.264	0.319
2300.000	1.335	305.414	2299.924	4.538	-5.855	4.538	7.407	307.777	0.148
2400.000	1.295	311.210	2399.898	5.957	-7.654	5.957	9.700	307.893	0.139
2500.000	1.124	338.905	2499.876	7.617	-8.858	7.617	11.683	310.694	0.602
2600.000	1.172	9.835	2599.857	9.540	-9.036	9.540	13.141	316.554	0.614
2700.000	1.348	10.161	2699.833	11.706	-8.654	11.706	14.558	323.525	0.177
2800.000	1.312	9.025	2799.806	13.995	-8.267	13.995	16.254	329.429	0.045
2900.000	0.982	353.206	2899.786	15.976	-8.189	15.976	17.952	332.861	0.454
3000.000	0.599	350.706	2999.776	17.342	-8.375	17.342	19.259	334.224	0.384
3100.000	0.353	348.605	3099.773	18.160	-8.520	18.160	20.060	334.867	0.247
3200.000	0.017	82.947	3199.772	18.464	-8.566	18.464	20.354	335.113	0.354
3300.000	0.226	207.954	3299.772	18.291	-8.643	18.291	20.231	334.708	0.237
3400.000	0.463	240.928	3399.770	17.920	-9.089	17.920	20.094	333.106	0.300
3500.000	0.773	236.178	3499.764	17.349	-10.003	17.349	20.026	330.033	0.314
3600.000	1.213	260.279	3599.749	16.794	-11.607	16.794	20.415	325.352	0.597
3700.000	1.619	248.262	3699.719	16.092	-13.962	16.092	21.305	319.054	0.502
3800.000	1.807	247.901	3799.674	14.976	-16.735	14.976	22.458	311.824	0.188
3900.000	2.158	244.437	3899.614	13.570	-19.894	13.570	24.082	304.298	0.371
4000.000	2.100	250.613	3999.545	12.150	-23.321	12.150	26.296	297.518	0.237
4100.000	2.155	268.308	4099.477	11.486	-26.928	11.486	29.276	293.100	0.656
4200.000	2.170	288.043	4199.407	12.017	-30.607	12.017	32.882	291.436	0.741
4300.000	2.764	300.895	4299.315	13.841	-34.476	13.841	37.151	291.874	0.808
4400.000	3.066	318.611	4399.188	17.086	-38.313	17.086	41.950	294.034	0.946
4500.000	3.943	345.104	4499.006	22.415	-40.966	22.415	46.697	298.686	1.818
4600.000	4.912	2.924	4598.711	30.014	-41.631	30.014	51.322	305.790	1.672
4700.000	5.806	7.205	4698.273	39.308	-40.778	39.308	56.639	313.949	0.979
4800.000	6.507	12.439	4797.697	49.861	-38.923	49.861	63.254	322.023	0.897
4900.000	6.476	10.668	4897.056	60.936	-36.659	60.936	71.113	328.969	0.203
5000.000	5.828	9.524	4996.479	71.485	-34.775	71.485	79.494	334.059	0.659
5100.000	5.255	11.244	5096.012	80.983	-33.042	80.983	87.465	337.804	0.597
5200.000	4.592	7.957	5195.642	89.440	-31.595	89.440	94.856	340.544	0.720
5300.000	3.977	12.843	5295.363	96.785	-30.270	96.785	101.408	342.633	0.715
5400.000	4.020	20.068	5395.120	103.459	-28.296	103.459	107.259	344.704	0.505
5500.000	3.637	25.935	5494.897	109.603	-25.706	109.603	112.578	346.801	0.548

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
5600.000	3.506	35.588	5594.704	114.942	-22.540	114.942	117.131	348.905	0.615
5700.000	3.834	31.684	5694.499	120.274	-19.004	120.274	121.766	351.021	0.412
5800.000	4.111	42.818	5794.260	125.749	-14.811	125.749	126.618	353.283	0.818
5900.000	4.176	40.534	5893.998	131.146	-10.008	131.146	131.528	355.636	0.177
6000.000	4.277	44.975	5993.727	136.552	-5.006	136.552	136.644	357.901	0.342
6100.000	4.537	46.161	6093.431	141.929	0.483	141.929	141.930	0.195	0.275
6200.000	5.032	47.988	6193.082	147.604	6.594	147.604	147.751	2.558	0.518
6300.000	5.125	51.709	6292.690	153.307	13.359	153.307	153.888	4.980	0.342
6400.000	4.603	42.482	6392.331	159.035	19.575	159.035	160.235	7.017	0.939
6500.000	4.330	40.335	6492.027	164.872	24.728	164.872	166.716	8.530	0.320
6600.000	4.033	42.961	6591.761	170.323	29.568	170.323	172.870	9.848	0.353
6700.000	3.527	38.457	6691.543	175.305	33.878	175.305	178.548	10.938	0.586
6800.000	3.526	38.345	6791.354	180.125	37.698	180.125	184.027	11.821	0.007