



Company/Rig: Noble Energy Inc/Production
WELL/API#: Uhrich 17-21/05-123-21658
DECLINATION: 8.18 Degrees
TD AS DRILLED: 7189 Feet
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.49143, Longitude: -104.57642
Grid North = True North -0.60 degs (NAD 27)
Grid Correction Applied = -0.60 degs



DEPTH REFERENCE : RKB=GL/Elevation=4757'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 10/31/2016 / 09:00

Lat/Long Obtained By Handheld GPS at Wellhead

North Reference: Grid

Denver, Colorado

303-853-4976

Surveyor: Jason Kinchelow / Uhrich 17-21

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	0.614	124.875	99.998	-0.306	0.439	-0.306	0.536	124.875	0.614
200.000	0.491	140.029	199.993	-0.941	1.154	-0.941	1.489	129.190	0.190
300.000	0.274	113.157	299.991	-1.363	1.649	-1.363	2.140	129.581	0.276
400.000	0.283	106.051	399.990	-1.526	2.106	-1.526	2.601	125.917	0.036
500.000	0.207	150.168	499.989	-1.751	2.434	-1.751	2.998	125.733	0.197
600.000	0.278	172.110	599.988	-2.148	2.557	-2.148	3.340	130.034	0.116
700.000	0.221	205.113	699.987	-2.564	2.509	-2.564	3.587	135.620	0.152
800.000	0.259	216.725	799.987	-2.919	2.292	-2.919	3.711	141.866	0.061
900.000	0.113	268.933	899.986	-3.102	2.058	-3.102	3.723	146.440	0.209
1000.000	0.306	208.018	999.985	-3.340	1.833	-3.340	3.810	151.237	0.270
1100.000	0.184	191.719	1099.985	-3.734	1.675	-3.734	4.092	155.837	0.139
1200.000	0.296	231.220	1199.984	-4.053	1.441	-4.053	4.302	160.429	0.193
1300.000	0.183	249.770	1299.983	-4.270	1.090	-4.270	4.407	165.683	0.136
1400.000	0.213	274.264	1399.982	-4.311	0.755	-4.311	4.377	170.071	0.089
1500.000	0.213	203.423	1499.982	-4.469	0.495	-4.469	4.496	173.674	0.247
1600.000	0.295	221.530	1599.981	-4.832	0.251	-4.832	4.838	177.027	0.113

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	0.412	234.324	1699.979	-5.234	-0.211	-5.234	5.238	182.314	0.141
1800.000	0.408	265.030	1799.976	-5.474	-0.858	-5.474	5.541	188.906	0.217
1900.000	0.514	286.911	1899.973	-5.375	-1.641	-5.375	5.620	196.981	0.204
2000.000	0.676	287.051	1999.968	-5.071	-2.634	-5.071	5.715	207.446	0.162
2100.000	0.676	292.160	2099.961	-4.676	-3.744	-4.676	5.990	218.685	0.060
2200.000	0.933	286.950	2199.951	-4.216	-5.070	-4.216	6.594	230.253	0.267
2300.000	0.900	294.180	2299.938	-3.657	-6.565	-3.657	7.515	240.881	0.120
2400.000	1.019	292.869	2399.924	-2.990	-8.100	-2.990	8.635	249.741	0.121
2500.000	0.845	294.964	2499.911	-2.333	-9.588	-2.333	9.868	256.325	0.177
2600.000	0.965	296.219	2599.898	-1.650	-11.012	-1.650	11.135	261.479	0.121
2700.000	0.890	291.622	2699.885	-0.992	-12.489	-0.992	12.528	265.459	0.105
2800.000	0.926	289.026	2799.873	-0.443	-13.974	-0.443	13.981	268.186	0.055
2900.000	0.827	284.705	2899.861	0.004	-15.436	0.004	15.436	270.015	0.119
3000.000	0.653	277.679	2999.853	0.263	-16.699	0.263	16.701	270.904	0.196
3100.000	0.721	251.535	3099.846	0.140	-17.861	0.140	17.862	270.450	0.318
3200.000	0.929	254.842	3199.835	-0.271	-19.241	-0.271	19.243	269.193	0.213
3300.000	0.593	259.792	3299.826	-0.575	-20.532	-0.575	20.540	268.397	0.342
3400.000	0.529	253.505	3399.822	-0.797	-21.484	-0.797	21.499	267.874	0.089
3500.000	0.622	269.014	3499.817	-0.938	-22.469	-0.938	22.489	267.610	0.181
3600.000	0.619	219.706	3599.811	-1.363	-23.358	-1.363	23.397	266.661	0.518
3700.000	0.317	199.953	3699.808	-2.039	-23.797	-2.039	23.884	265.103	0.338
3800.000	0.588	255.988	3799.805	-2.423	-24.389	-2.423	24.509	264.326	0.487
3900.000	0.202	271.352	3899.803	-2.543	-25.063	-2.543	25.192	264.206	0.396
4000.000	0.182	17.175	3999.802	-2.388	-25.193	-2.388	25.305	264.586	0.306
4100.000	0.132	66.628	4099.802	-2.190	-25.040	-2.190	25.136	265.001	0.139
4200.000	0.179	341.128	4199.802	-1.997	-24.984	-1.997	25.064	265.430	0.214