



Company/Rig: Noble Energy Inc/Production
WELL/API#: Schmier 32-4A/05-123-14968
DECLINATION: 8.21 Degrees
TD AS DRILLED: 7107'
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.36105, Longitude: -104.58082
Grid North = True North -0.59 degs (NAD 27)
Grid Correction Applied = -0.59 degs



DEPTH REFERENCE : RKB=GL/Elevation=4735'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 6/15/2016 / 16:04

Lat/Long Obtained By Handheld GPS at Wellhead

North Reference: Grid

Denver, Colorado

303-853-4976

Surveyor: Jason Kinchelow / Schmier 32-4A

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	0.215	27.792	100.000	0.166	0.088	0.166	0.188	27.792	0.215
200.000	0.138	28.344	199.999	0.438	0.232	0.438	0.496	27.926	0.078
300.000	0.173	297.206	299.999	0.613	0.155	0.613	0.632	14.223	0.223
400.000	0.125	339.617	399.999	0.784	-0.017	0.784	0.784	358.783	0.116
500.000	0.245	49.967	499.998	1.023	0.109	1.023	1.029	6.086	0.235
600.000	0.506	26.797	599.996	1.555	0.472	1.555	1.625	16.880	0.297
700.000	0.503	51.116	699.992	2.224	1.012	2.224	2.444	24.474	0.212
800.000	0.556	46.944	799.988	2.831	1.709	2.831	3.307	31.114	0.066
900.000	0.435	63.880	899.984	3.330	2.404	3.330	4.107	35.830	0.189
1000.000	0.625	77.373	999.980	3.616	3.277	3.616	4.880	42.187	0.227
1100.000	0.637	58.795	1099.974	4.024	4.286	4.024	5.879	46.806	0.204
1200.000	0.640	77.166	1199.968	4.436	5.306	4.436	6.916	50.105	0.204
1300.000	0.738	87.353	1299.961	4.590	6.494	4.590	7.953	54.750	0.156
1400.000	0.897	89.514	1399.951	4.626	7.921	4.626	9.173	59.713	0.162
1500.000	0.897	92.853	1499.938	4.594	9.486	4.594	10.540	64.160	0.052
1600.000	0.677	82.425	1599.929	4.633	10.853	4.633	11.801	66.885	0.262
1700.000	0.428	76.504	1699.924	4.798	11.802	4.798	12.740	67.877	0.255
1800.000	0.368	58.111	1799.922	5.055	12.438	5.055	13.426	67.884	0.140

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	0.355	61.098	1899.920	5.374	12.982	5.374	14.051	67.512	0.023
2000.000	0.464	40.957	1999.917	5.830	13.519	5.830	14.722	66.673	0.179
2100.000	0.504	35.668	2099.914	6.493	14.041	6.493	15.469	65.183	0.060
2200.000	0.482	39.243	2199.910	7.176	14.563	7.176	16.235	63.769	0.037
2300.000	0.579	10.270	2299.906	7.999	14.920	7.999	16.929	61.803	0.281
2400.000	0.490	24.995	2399.902	8.883	15.190	8.883	17.597	59.681	0.163
2500.000	0.802	16.935	2499.895	9.940	15.575	9.940	18.476	57.453	0.324
2600.000	0.753	20.868	2599.886	11.223	16.013	11.223	19.554	54.973	0.073
2700.000	0.744	43.200	2699.878	12.311	16.691	12.311	20.740	53.590	0.290
2800.000	0.760	46.997	2799.869	13.236	17.621	13.236	22.038	53.087	0.052
2900.000	0.825	30.770	2899.860	14.307	18.474	14.307	23.366	52.244	0.233
3000.000	0.823	32.017	2999.849	15.534	19.223	15.534	24.715	51.058	0.018
3100.000	0.750	28.643	3099.840	16.717	19.917	16.717	26.003	49.992	0.086
3200.000	0.775	13.775	3199.831	17.948	20.392	17.948	27.166	48.647	0.199
3300.000	0.954	337.949	3299.820	19.376	20.241	19.376	28.020	46.250	0.558
3400.000	1.228	322.155	3399.802	20.994	19.271	20.994	28.497	42.550	0.404
3500.000	1.468	318.711	3499.775	22.802	17.768	22.802	28.908	37.927	0.254
3600.000	1.951	334.222	3599.730	25.298	16.183	25.298	30.031	32.606	0.665
3700.000	2.236	341.706	3699.664	28.683	14.830	28.683	32.290	27.340	0.394
3800.000	2.301	340.500	3799.585	32.427	13.548	32.427	35.144	22.674	0.080
3900.000	2.352	337.357	3899.503	36.213	12.088	36.213	38.177	18.458	0.138
4000.000	2.464	339.994	3999.415	40.127	10.562	40.127	41.494	14.747	0.157
4100.000	2.563	338.548	4099.318	44.227	9.009	44.227	45.136	11.514	0.117
4200.000	2.822	340.915	4199.208	48.634	7.387	48.634	49.192	8.636	0.282
4300.000	2.829	340.945	4299.086	53.293	5.776	53.293	53.606	6.186	0.007
4400.000	2.806	339.155	4398.966	57.914	4.099	57.914	58.059	4.049	0.091
4500.000	2.686	336.919	4498.851	62.357	2.310	62.357	62.400	2.121	0.161
4600.000	2.401	336.282	4598.752	66.430	0.549	66.430	66.432	0.473	0.287
4700.000	1.928	335.281	4698.680	69.876	-0.997	69.876	69.883	359.182	0.474
4800.000	1.189	350.122	4798.643	72.426	-1.879	72.426	72.451	358.514	0.836
4900.000	0.963	338.402	4898.626	74.230	-2.366	74.230	74.268	358.174	0.314
5000.000	1.025	338.867	4998.611	75.846	-2.998	75.846	75.905	357.736	0.062
5100.000	0.944	341.268	5098.596	77.460	-3.585	77.460	77.543	357.350	0.090
5200.000	0.910	335.886	5198.583	78.965	-4.174	78.965	79.075	356.974	0.094
5300.000	0.691	341.745	5298.573	80.262	-4.687	80.262	80.399	356.658	0.233
5400.000	0.659	356.019	5398.566	81.408	-4.916	81.408	81.557	356.544	0.171
5500.000	1.099	0.645	5498.554	82.941	-4.945	82.941	83.088	356.588	0.445
5600.000	1.389	16.036	5598.531	85.065	-4.599	85.065	85.189	356.905	0.440
5700.000	1.100	47.344	5698.508	86.880	-3.558	86.880	86.953	357.655	0.727
5800.000	0.839	60.746	5798.494	87.889	-2.214	87.889	87.916	358.557	0.345

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	0.785	79.379	5898.484	88.372	-0.902	88.372	88.377	359.415	0.268
6000.000	0.677	81.571	5998.476	88.585	0.355	88.585	88.586	0.230	0.111
6100.000	0.781	74.692	6098.468	88.852	1.597	88.852	88.866	1.030	0.135
6200.000	0.317	117.902	6198.463	88.902	2.499	88.902	88.937	1.610	0.591
6300.000	0.773	128.325	6298.458	88.354	3.274	88.354	88.415	2.122	0.465
6400.000	0.642	115.546	6398.451	87.694	4.308	87.694	87.800	2.813	0.205
6500.000	0.817	123.770	6498.443	87.056	5.406	87.056	87.224	3.553	0.204
6600.000	0.787	119.599	6598.433	86.321	6.595	86.321	86.573	4.369	0.066
6700.000	0.947	138.011	6698.422	85.368	7.745	85.368	85.718	5.184	0.320
6800.000	1.033	144.802	6798.407	84.016	8.818	84.016	84.478	5.991	0.145
6900.000	1.021	138.954	6898.391	82.608	9.922	82.608	83.202	6.849	0.105