



Company/Rig: Noble Energy Inc/Production
WELL/API#: Stout 6-3/05-123-21915
DECLINATION: 8.2 Degrees
TD AS DRILLED: 6963'
COUNTY/STATE: Weld/Colorado
VS-Azi: 0.000 Degrees
Latitude: 40.42960, Longitude: -104.53794
Grid North = True North -0.62 degs (NAD 27)
Grid Correction Applied = -0.62 degs



DEPTH REFERENCE : RKB=GL/Elevation=4620'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 5/25/2016 / 16:38

Lat/Long Obtained By Handheld GPS at Wellhead

North Reference: Grid

Denver, Colorado

303-853-4976

Surveyor: Jason Kinchelow / Stout 6-3

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	0.279	44.370	100.000	0.174	0.170	0.174	0.243	44.370	0.279
200.000	0.230	32.888	199.999	0.517	0.449	0.517	0.685	41.018	0.070
300.000	0.193	127.108	299.998	0.584	0.693	0.584	0.906	49.904	0.312
400.000	0.459	123.243	399.996	0.262	1.163	0.262	1.192	77.282	0.266
500.000	0.643	140.448	499.992	-0.390	1.855	-0.390	1.896	101.871	0.246
600.000	0.905	139.167	599.983	-1.420	2.729	-1.420	3.076	117.494	0.262
700.000	0.905	127.264	699.970	-2.495	3.873	-2.495	4.608	122.793	0.188
800.000	0.937	124.349	799.957	-3.435	5.177	-3.435	6.213	123.566	0.057
900.000	1.100	124.225	899.942	-4.436	6.646	-4.436	7.990	123.725	0.162
1000.000	0.977	121.285	999.925	-5.419	8.167	-5.419	9.802	123.562	0.134
1100.000	1.116	123.828	1099.908	-6.404	9.705	-6.404	11.627	123.417	0.147
1200.000	0.945	123.770	1199.892	-7.404	11.200	-7.404	13.426	123.469	0.171
1300.000	1.203	121.287	1299.875	-8.408	12.782	-8.408	15.300	123.335	0.262
1400.000	1.212	119.565	1399.852	-9.475	14.599	-9.475	17.404	122.983	0.037
1500.000	1.149	115.627	1499.831	-10.430	16.423	-10.430	19.455	122.419	0.103
1600.000	1.118	119.598	1599.812	-11.345	18.175	-11.345	21.425	121.974	0.084
1700.000	0.954	104.983	1699.795	-12.042	19.827	-12.042	23.198	121.273	0.309
1800.000	0.971	77.243	1799.782	-12.071	21.458	-12.071	24.620	119.359	0.462

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	1.247	42.920	1899.764	-11.087	23.024	-11.087	25.555	115.712	0.705
2000.000	1.488	16.430	1999.737	-9.045	24.133	-9.045	25.772	110.545	0.669
2100.000	1.577	17.906	2099.701	-6.490	24.923	-6.490	25.754	104.595	0.098
2200.000	1.479	11.517	2199.665	-3.915	25.604	-3.915	25.901	98.694	0.197
2300.000	0.626	12.029	2299.647	-2.116	25.975	-2.116	26.061	94.657	0.853
2400.000	0.364	16.801	2399.644	-1.277	26.181	-1.277	26.212	92.793	0.265
2500.000	0.100	346.265	2499.643	-0.888	26.252	-0.888	26.267	91.938	0.282
2600.000	0.180	338.918	2599.642	-0.656	26.175	-0.656	26.183	91.436	0.082
2700.000	0.094	245.329	2699.642	-0.544	26.043	-0.544	26.049	91.197	0.209
2800.000	0.180	204.390	2799.642	-0.721	25.904	-0.721	25.914	91.594	0.125
2900.000	0.416	222.360	2899.641	-1.132	25.595	-1.132	25.620	92.533	0.251
3000.000	0.309	204.015	2999.639	-1.646	25.240	-1.646	25.294	93.732	0.157
3100.000	0.335	42.709	3099.638	-1.677	25.329	-1.677	25.385	93.788	0.635
3200.000	0.830	43.250	3199.633	-0.935	26.024	-0.935	26.041	92.057	0.495
3300.000	1.661	61.520	3299.608	0.284	27.794	0.284	27.796	89.414	0.910
3400.000	2.558	67.771	3399.540	1.819	31.134	1.819	31.187	86.656	0.925
3500.000	2.863	66.542	3499.428	3.658	35.490	3.658	35.678	84.116	0.311
3600.000	3.076	74.699	3599.294	5.360	40.369	5.360	40.723	82.437	0.473
3700.000	2.859	66.413	3699.160	7.066	45.242	7.066	45.791	81.123	0.480
3800.000	2.767	67.044	3799.040	9.005	49.751	9.005	50.559	79.740	0.097
3900.000	2.440	65.880	3898.936	10.817	53.917	10.817	54.991	78.656	0.331
4000.000	2.017	60.689	3998.861	12.548	57.394	12.548	58.750	77.667	0.469
4100.000	1.601	54.255	4098.811	14.225	60.062	14.225	61.723	76.675	0.462
4200.000	1.240	33.182	4198.780	15.947	61.788	15.947	63.812	75.528	0.629
4300.000	1.077	7.853	4298.761	17.783	62.508	17.783	64.989	74.119	0.532
4400.000	1.253	346.002	4398.740	19.775	62.372	19.775	65.432	72.409	0.474
4500.000	1.474	323.611	4498.713	21.872	61.344	21.872	65.127	70.377	0.572
4600.000	1.660	331.601	4598.675	24.182	59.892	24.182	64.590	68.013	0.286
4700.000	1.839	357.982	4698.630	27.060	59.147	27.060	65.043	65.416	0.817
4800.000	1.659	10.498	4798.584	30.087	59.354	30.087	66.544	63.119	0.421
4900.000	1.916	36.289	4898.537	32.858	60.607	32.858	68.941	61.536	0.836
5000.000	1.788	48.980	4998.485	35.230	62.774	35.230	71.985	60.698	0.429
5100.000	0.993	34.436	5098.455	36.969	64.442	36.969	74.293	60.158	0.864
5200.000	0.321	112.961	5198.449	37.574	65.190	37.574	75.243	60.042	0.981
5300.000	0.648	146.136	5298.446	36.995	65.763	36.995	75.455	60.640	0.418
5400.000	1.348	115.709	5398.430	36.015	67.139	36.015	76.188	61.790	0.855
5500.000	1.910	103.111	5498.390	35.126	69.822	35.126	78.160	63.294	0.663
5600.000	2.064	104.384	5598.330	34.301	73.189	34.301	80.828	64.889	0.160
5700.000	2.196	113.606	5698.261	33.086	76.689	33.086	83.522	66.663	0.367
5800.000	2.280	112.925	5798.185	31.544	80.277	31.544	86.252	68.548	0.088

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	1.969	115.562	5898.116	30.028	83.659	30.028	88.885	70.255	0.326
6000.000	1.768	101.374	5998.063	28.983	86.721	28.983	91.436	71.520	0.502
6100.000	1.541	107.535	6098.021	28.274	89.515	28.274	93.874	72.471	0.288
6200.000	1.181	98.642	6197.993	27.714	91.816	27.714	95.908	73.204	0.416
6300.000	1.282	90.286	6297.970	27.553	93.954	27.553	97.911	73.656	0.205
6400.000	1.612	89.809	6397.938	27.552	96.479	27.552	100.336	74.062	0.331
6500.000	1.576	77.317	6497.900	27.859	99.227	27.859	103.064	74.317	0.349
6600.000	1.486	70.597	6597.864	28.591	101.792	28.591	105.731	74.311	0.201
6650.000	1.274	75.562	6647.850	28.945	102.941	28.945	106.933	74.295	0.486