



Company/Rig: Noble Energy/CoreTech
WELL: Bauer 9-1
DECLINATION: 8.31
TD AS DRILLED: 6781'
COUNTY/STATE: Weld /Colorado
Latitude: 40.412, Longitude: -104.553
GRID North is 0.610 Degrees East of True North
VS-Azi: 0.000 Degrees



DEPTH REFERENCE : RKB=Surface Elevation=4578'

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01-de_01.ut

Minimum Curvature Method

Report Date/Time: 10/2/2014 / 14:15

Lat & Long Obtained By Handheld GPS At Wellhead

North Reference: Grid

Henderson, Co.

303-853-4976

Surveyor: Mark Simmons

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	0.704	179.757	99.997	-0.614	0.003	-0.614	0.614	179.757	0.704
200.000	0.554	182.801	199.991	-1.711	-0.018	-1.711	1.711	180.616	0.154
300.000	0.475	198.815	299.987	-2.586	-0.176	-2.586	2.592	183.886	0.163
400.000	0.443	193.381	399.984	-3.355	-0.399	-3.355	3.379	186.780	0.054
500.000	0.445	192.437	499.981	-4.111	-0.572	-4.111	4.150	187.922	0.008
600.000	0.306	183.459	599.979	-4.756	-0.672	-4.756	4.803	188.039	0.151
700.000	0.478	163.554	699.977	-5.423	-0.570	-5.423	5.453	185.996	0.217
800.000	0.476	146.871	799.973	-6.171	-0.225	-6.171	6.175	182.084	0.138
900.000	0.499	169.448	899.970	-6.947	0.082	-6.947	6.948	179.323	0.192
1000.000	0.495	161.709	999.966	-7.786	0.298	-7.786	7.792	177.811	0.067
1100.000	0.517	145.689	1099.962	-8.569	0.687	-8.569	8.596	175.413	0.143
1200.000	0.428	165.252	1199.959	-9.303	1.037	-9.303	9.360	173.640	0.183
1300.000	0.378	141.504	1299.956	-9.922	1.337	-9.922	10.012	172.324	0.173
1400.000	0.383	159.142	1399.954	-10.492	1.662	-10.492	10.623	171.001	0.117
1500.000	0.356	151.548	1499.952	-11.078	1.929	-11.078	11.244	170.124	0.056
1600.000	0.333	153.987	1599.950	-11.612	2.204	-11.612	11.819	169.253	0.028
1700.000	0.483	140.542	1699.948	-12.198	2.599	-12.198	12.472	167.972	0.177
1800.000	0.491	142.193	1799.944	-12.862	3.129	-12.862	13.237	166.325	0.016
1900.000	0.554	173.621	1899.940	-13.681	3.446	-13.681	14.108	165.863	0.290

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
2000.000	0.700	178.689	1999.934	-14.772	3.513	-14.772	15.184	166.621	0.156
2100.000	0.758	187.428	2099.926	-16.039	3.442	-16.039	16.404	167.888	0.125
2200.000	0.882	187.722	2199.916	-17.457	3.253	-17.457	17.758	169.444	0.124
2300.000	0.992	194.030	2299.903	-19.060	2.940	-19.060	19.285	171.232	0.151
2400.000	1.031	190.382	2399.887	-20.784	2.568	-20.784	20.942	172.957	0.075
2500.000	0.998	203.260	2499.871	-22.469	2.062	-22.469	22.563	174.757	0.230
2600.000	1.018	192.153	2599.856	-24.137	1.531	-24.137	24.185	176.371	0.196
2700.000	1.093	194.721	2699.839	-25.927	1.102	-25.927	25.951	177.567	0.088
2800.000	1.033	193.747	2799.822	-27.725	0.645	-27.725	27.732	178.666	0.063
2900.000	1.071	188.007	2899.805	-29.525	0.301	-29.525	29.527	179.416	0.112
3000.000	0.790	168.645	2999.792	-31.127	0.307	-31.127	31.128	179.436	0.418
3100.000	0.999	174.840	3099.780	-32.671	0.521	-32.671	32.675	179.087	0.230
3200.000	0.946	173.908	3199.765	-34.360	0.687	-34.360	34.366	178.855	0.056
3300.000	1.211	185.636	3299.748	-36.232	0.670	-36.232	36.238	178.940	0.344
3400.000	1.277	195.738	3399.724	-38.356	0.264	-38.356	38.357	179.605	0.229
3500.000	1.361	202.419	3499.698	-40.526	-0.491	-40.526	40.529	180.694	0.175
3600.000	1.410	203.490	3599.669	-42.753	-1.434	-42.753	42.777	181.921	0.055
3700.000	1.327	200.419	3699.640	-44.966	-2.328	-44.966	45.027	182.964	0.111
3800.000	1.424	201.179	3799.611	-47.211	-3.182	-47.211	47.318	183.855	0.099
3900.000	1.188	200.132	3899.585	-49.343	-3.987	-49.343	49.503	184.620	0.238
4000.000	0.931	211.762	3999.568	-51.006	-4.772	-51.006	51.229	185.344	0.333
4100.000	0.947	212.843	4099.555	-52.392	-5.648	-52.392	52.695	186.153	0.024
4200.000	0.884	219.631	4199.542	-53.680	-6.588	-53.680	54.083	186.997	0.126
4300.000	0.692	225.422	4299.533	-54.698	-7.510	-54.698	55.211	187.817	0.208
4400.000	0.628	227.180	4399.526	-55.494	-8.342	-55.494	56.117	188.549	0.066
4500.000	0.537	237.492	4499.521	-56.119	-9.139	-56.119	56.858	189.250	0.139
4600.000	0.833	230.401	4599.513	-56.834	-10.095	-56.834	57.724	190.072	0.307
4700.000	0.620	238.012	4699.505	-57.584	-11.114	-57.584	58.646	190.924	0.233
4800.000	0.759	237.895	4799.498	-58.222	-12.133	-58.222	59.473	191.772	0.139
4900.000	0.800	241.103	4899.489	-58.911	-13.305	-58.911	60.395	192.727	0.060
5000.000	0.526	267.740	4999.482	-59.267	-14.375	-59.267	60.985	193.633	0.405
5100.000	0.357	272.086	5099.479	-59.274	-15.144	-59.274	61.178	194.333	0.172
5200.000	0.411	285.818	5199.477	-59.164	-15.801	-59.164	61.238	194.953	0.106
5300.000	0.425	274.967	5299.474	-59.035	-16.516	-59.035	61.301	195.630	0.080
5400.000	0.567	284.992	5399.471	-58.874	-17.363	-58.874	61.381	196.432	0.166
5500.000	0.757	257.921	5499.464	-58.885	-18.487	-58.885	61.718	197.429	0.361
5600.000	0.984	244.890	5599.453	-59.387	-19.910	-59.387	62.636	198.534	0.299
5700.000	1.167	236.190	5699.435	-60.318	-21.533	-60.318	64.047	199.646	0.245
5800.000	1.392	241.451	5799.410	-61.466	-23.447	-61.466	65.786	200.880	0.253
5900.000	1.057	256.255	5899.387	-62.265	-25.410	-62.265	67.250	202.200	0.458

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
6000.000	0.928	275.733	5999.373	-62.404	-27.112	-62.404	68.039	203.483	0.359
6100.000	0.874	286.004	6099.360	-62.112	-28.651	-62.112	68.402	204.763	0.170
6200.000	0.713	280.008	6199.351	-61.794	-29.997	-61.794	68.690	205.894	0.181
6300.000	0.620	277.415	6299.344	-61.616	-31.147	-61.616	69.041	206.816	0.098
6400.000	0.807	286.856	6399.336	-61.342	-32.357	-61.342	69.353	207.811	0.221
6500.000	0.654	284.757	6499.328	-60.992	-33.582	-60.992	69.627	208.837	0.156
6600.000	0.385	303.252	6599.324	-60.663	-34.415	-60.663	69.745	209.567	0.313
6700.000	0.172	305.483	6699.323	-60.391	-34.818	-60.391	69.710	209.965	0.214