



**Company:** Noble Energy **Well:** Bickling E 21-1  
**Rig:** Production/Coretech **Location:** Weld County, Colorado  
**API #** 05-123-18706 **North Reference:** GRID  
**Date:** 3/21/2014 **Convergence:** Grid north is 0.54 East of True North  
**Surveyor:** Randy Holcomb **Declination:** 8.44  
**VS:** 0.000 **Depth Reference:** Ground Level  
**Lat :** 40.477 **Elevation:** 4718 Feet  
**Long:** -104.661 **Total Depth as Drilled:** 7297 Feet

**Lat & Long obtained by handheld GPS at wellhead**  
**MS Gyro Survey Calculations**

Depth	Inc	AzG	N/-S	E/-W	TVD	DL	VS	CD	Cbrg
0.000	0.000	0.000	0.000	0.000	0.000	****	0.000	0.000	0.000
100.000	0.611	5.124	0.531	0.048	99.998	0.611	0.531	0.533	5.124
200.000	0.672	340.781	1.616	-0.098	199.992	0.277	1.616	1.619	356.542
300.000	0.104	93.275	2.164	-0.200	299.990	0.718	2.164	2.173	354.721
400.000	0.303	353.418	2.421	-0.140	399.989	0.337	2.421	2.425	356.700
500.000	0.254	104.519	2.629	0.044	499.989	0.460	2.629	2.629	0.969
600.000	0.323	80.259	2.621	0.537	599.987	0.139	2.621	2.675	11.571
700.000	0.190	136.195	2.549	0.929	699.987	0.268	2.549	2.713	20.024
800.000	0.211	99.124	2.400	1.225	799.986	0.129	2.400	2.695	27.044
900.000	0.443	279.560	2.435	1.026	899.985	0.654	2.435	2.643	22.849
1000.000	0.114	128.275	2.438	0.723	999.984	0.546	2.438	2.543	16.530
1100.000	0.332	255.664	2.304	0.521	1099.984	0.411	2.304	2.362	12.745
1200.000	0.160	254.779	2.196	0.106	1199.983	0.172	2.196	2.198	2.762
1300.000	0.211	250.078	2.096	-0.202	1299.982	0.053	2.096	2.106	354.501
1400.000	0.194	20.529	2.192	-0.316	1399.982	0.368	2.192	2.215	351.811
1500.000	0.161	29.417	2.473	-0.187	1499.982	0.043	2.473	2.480	355.674
1600.000	0.223	279.228	2.627	-0.310	1599.981	0.317	2.627	2.645	353.261
1700.000	0.290	188.343	2.407	-0.539	1699.981	0.369	2.407	2.467	347.369
1800.000	0.193	298.248	2.237	-0.725	1799.980	0.400	2.237	2.351	342.042
1900.000	0.331	218.680	2.091	-1.054	1899.979	0.352	2.091	2.341	333.240
2000.000	0.439	208.973	1.530	-1.420	1999.977	0.125	1.530	2.088	317.125
2100.000	0.851	249.632	0.937	-2.302	2099.971	0.592	0.937	2.485	292.138
2200.000	1.380	251.359	0.293	-4.139	2199.952	0.530	0.293	4.149	274.052
2300.000	2.091	249.644	-0.727	-6.991	2299.905	0.713	-0.727	7.029	264.067
2400.000	2.055	236.357	-2.355	-10.194	2399.840	0.481	-2.355	10.463	256.994
2500.000	2.108	221.626	-4.723	-12.909	2499.775	0.536	-4.723	13.745	249.905
2600.000	2.191	202.963	-7.857	-14.876	2599.706	0.702	-7.857	16.823	242.158
2700.000	1.821	218.002	-10.869	-16.600	2699.645	0.640	-10.869	19.842	236.785
2800.000	1.988	204.956	-13.694	-18.310	2799.590	0.463	-13.694	22.864	233.208
2900.000	1.736	208.513	-16.598	-19.765	2899.537	0.277	-16.598	25.810	229.978
3000.000	2.041	217.593	-19.340	-21.575	2999.483	0.427	-19.340	28.974	228.126
3100.000	2.055	212.707	-22.260	-23.630	3099.419	0.175	-22.260	32.463	226.710
3200.000	1.744	194.958	-25.238	-24.992	3199.365	0.662	-25.238	35.518	224.718
3300.000	1.950	184.718	-28.404	-25.524	3299.313	0.389	-28.404	38.188	221.943
3400.000	1.986	182.971	-31.831	-25.754	3399.254	0.070	-31.831	40.945	218.976
3500.000	1.399	180.056	-34.782	-25.845	3499.210	0.593	-34.782	43.333	216.614
3600.000	0.122	99.007	-36.020	-25.741	3599.200	1.385	-36.020	44.272	215.551
3700.000	0.248	277.681	-36.007	-25.850	3699.200	0.370	-36.007	44.326	215.675

3800.000	0.312	19.047	-35.721	-25.975	3799.199	0.435	-35.721	44.167	216.023
3900.000	0.318	342.198	-35.200	-25.971	3899.198	0.199	-35.200	43.744	216.421
4000.000	0.204	332.254	-34.778	-26.139	3999.197	0.123	-34.778	43.506	216.928
4100.000	0.178	328.795	-34.488	-26.302	4099.196	0.028	-34.488	43.373	217.331
4200.000	0.352	13.658	-34.057	-26.310	4199.195	0.258	-34.057	43.036	217.687
4300.000	0.440	27.226	-33.418	-26.062	4299.193	0.128	-33.418	42.379	217.950
4400.000	0.336	52.080	-32.896	-25.655	4399.191	0.195	-32.896	41.717	217.950
4500.000	0.421	346.878	-32.358	-25.507	4499.189	0.415	-32.358	41.202	218.248
4600.000	0.454	18.141	-31.623	-25.467	4599.186	0.238	-31.623	40.603	218.846
4700.000	0.332	49.084	-31.057	-25.125	4699.184	0.240	-31.057	39.947	218.972
4800.000	0.335	326.463	-30.624	-25.067	4799.183	0.440	-30.624	39.575	219.302
4900.000	0.175	335.572	-30.241	-25.292	4899.182	0.164	-30.241	39.423	219.907
5000.000	0.225	55.897	-29.992	-25.193	4999.181	0.261	-29.992	39.169	220.030
5100.000	0.197	4.728	-29.711	-25.016	5099.181	0.184	-29.711	38.840	220.097
5200.000	0.366	82.891	-29.500	-24.685	5199.180	0.379	-29.500	38.466	219.922
5300.000	0.937	121.944	-29.893	-23.674	5299.173	0.692	-29.893	38.132	218.378
5400.000	1.057	113.599	-30.695	-22.135	5399.158	0.188	-30.695	37.844	215.797
5500.000	0.909	75.107	-30.860	-20.524	5499.144	0.663	-30.860	37.061	213.626
5600.000	1.043	40.155	-29.960	-19.170	5599.131	0.600	-29.960	35.568	212.613
5700.000	1.204	0.460	-28.215	-18.575	5699.113	0.778	-28.215	33.780	213.358
5800.000	0.807	54.566	-26.756	-17.992	5799.099	0.980	-26.756	32.243	213.919
5900.000	0.788	92.114	-26.373	-16.731	5899.090	0.514	-26.373	31.233	212.391
6000.000	0.583	100.786	-26.494	-15.544	5999.083	0.229	-26.494	30.717	210.400
6100.000	1.253	65.872	-26.142	-14.046	6099.070	0.844	-26.142	29.677	208.250
6200.000	1.372	61.314	-25.120	-11.998	6199.044	0.159	-25.120	27.838	205.530
6300.000	1.664	60.409	-23.828	-9.684	6299.009	0.293	-23.828	25.721	202.118
6400.000	1.780	65.113	-22.457	-7.013	6398.964	0.183	-22.457	23.527	197.341
6500.000	1.979	62.896	-21.017	-4.067	6498.910	0.211	-21.017	21.407	190.951
6600.000	2.093	63.069	-19.404	-0.902	6598.847	0.114	-19.404	19.425	182.662
6700.000	2.432	66.138	-17.719	2.666	6698.769	0.360	-17.719	17.918	171.444
6750.000	2.534	68.533	-16.885	4.664	6748.722	0.291	-16.885	17.517	164.558