



**Company:** Noble Energy

**Rig:** Production/CoreTech

**API #** 05-123-33407

**Date:** 12/9/2013

**Surveyor:** Randy Holcomb

**VS:** 0.000

**Lat :** 40.516

**Long:** -104.641

**Well:** Bickling PC E 02-33D

**Location:** Weld County, Colorado

**North Reference:** GRID

**Convergence:** Grid north is 0.56 East of True North

**Declination:** 8.47

**Depth Reference:** Ground Level

**Elevation:** 4844 Feet

**Total Depth as Drilled:** 7595 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	0.815	151.010	-0.622	0.345	99.997	0.815	-0.622	0.711	151.010
200.000	1.043	154.867	-2.068	1.076	199.983	0.236	-2.068	2.332	152.514
300.000	1.157	145.426	-3.724	2.036	299.965	0.214	-3.724	4.244	151.336
400.000	1.107	148.222	-5.377	3.117	399.946	0.075	-5.377	6.215	149.893
500.000	1.161	175.112	-7.207	3.712	499.927	0.530	-7.207	8.107	152.747
600.000	1.175	181.386	-9.242	3.774	599.906	0.129	-9.242	9.983	157.788
700.000	0.992	178.356	-11.133	3.774	699.888	0.192	-11.133	11.755	161.273
800.000	1.575	180.715	-13.373	3.782	799.862	0.586	-13.373	13.897	164.210
900.000	3.605	196.206	-17.767	2.887	899.756	2.129	-17.767	18.000	170.771
1000.000	6.014	190.551	-25.937	1.050	999.397	2.452	-25.937	25.959	177.682
1100.000	8.597	182.726	-38.555	-0.265	1098.580	2.762	-38.555	38.556	180.394
1200.000	10.589	175.030	-55.176	0.176	1197.180	2.365	-55.176	55.176	179.818
1300.000	12.688	168.837	-75.107	3.098	1295.123	2.440	-75.107	75.171	177.638
1400.000	14.325	162.844	-97.705	8.874	1392.359	2.151	-97.705	98.107	174.810
1500.000	16.394	166.736	-123.264	15.762	1488.784	2.310	-123.264	124.267	172.713
1600.000	17.794	166.959	-151.886	22.448	1584.365	1.402	-151.886	153.536	171.593
1700.000	19.382	170.160	-183.123	28.732	1679.148	1.887	-183.123	185.363	171.083
1800.000	19.792	172.217	-216.247	33.860	1773.362	0.802	-216.247	218.882	171.101
1900.000	19.712	171.935	-249.718	38.519	1867.479	0.125	-249.718	252.672	171.231
2000.000	18.304	172.565	-281.988	42.918	1962.024	1.423	-281.988	285.236	171.346
2100.000	17.399	173.370	-312.411	46.676	2057.208	0.938	-312.411	315.879	171.503
2200.000	16.918	174.522	-341.747	49.791	2152.758	0.589	-341.747	345.355	171.711
2300.000	16.455	173.069	-370.291	52.889	2248.547	0.623	-370.291	374.049	171.871
2400.000	16.137	175.122	-398.197	55.780	2344.530	0.658	-398.197	402.085	172.026
2500.000	15.772	174.888	-425.580	58.173	2440.678	0.370	-425.580	429.537	172.216
2600.000	13.997	173.381	-451.131	60.778	2537.319	1.817	-451.131	455.207	172.327
2700.000	15.562	174.509	-476.498	63.456	2634.007	1.591	-476.498	480.705	172.414
2800.000	18.532	178.120	-505.741	65.261	2729.606	3.152	-505.741	509.935	172.647
2900.000	18.391	176.279	-537.367	66.806	2824.460	0.600	-537.367	541.503	172.913
3000.000	19.616	176.450	-569.863	68.869	2919.008	1.227	-569.863	574.010	173.109
3100.000	21.201	174.500	-604.619	71.642	3012.729	1.724	-604.619	608.849	173.242
3200.000	20.827	175.282	-640.335	74.837	3106.079	0.468	-640.335	644.693	173.334
3300.000	21.525	175.562	-676.343	77.719	3199.326	0.706	-676.343	680.794	173.445
3400.000	22.168	176.082	-713.456	80.428	3292.143	0.671	-713.456	717.975	173.568
3500.000	20.681	175.268	-749.878	83.174	3385.231	1.517	-749.878	754.477	173.671
3600.000	19.582	175.514	-784.184	85.941	3479.120	1.102	-784.184	788.879	173.746
3700.000	18.945	176.799	-817.098	88.158	3573.521	0.765	-817.098	821.840	173.842

3800.000	18.449	177.248	-849.111	89.824	3668.244	0.516	-849.111	853.849	173.961
3900.000	18.529	174.989	-880.745	91.972	3763.083	0.721	-880.745	885.535	174.038
4000.000	20.039	173.951	-913.614	95.166	3857.470	1.548	-913.614	918.557	174.053
4100.000	21.672	175.941	-949.073	98.279	3950.916	1.780	-949.073	954.148	174.088
4200.000	22.891	176.551	-986.907	100.756	4043.447	1.241	-986.907	992.037	174.171
4300.000	23.386	175.015	-1026.090	103.651	4135.404	0.781	-1026.090	1031.315	174.232
4400.000	22.597	176.190	-1065.030	106.652	4227.460	0.913	-1065.030	1070.361	174.282
4500.000	22.359	175.226	-1103.160	109.511	4319.863	0.438	-1103.160	1108.581	174.331
4600.000	22.183	176.740	-1140.960	112.168	4412.404	0.600	-1140.960	1146.462	174.385
4700.000	19.743	175.996	-1176.660	114.421	4505.778	2.454	-1176.660	1182.214	174.446
4800.000	17.929	173.930	-1208.820	117.229	4600.419	1.932	-1208.820	1214.492	174.461
4900.000	17.293	172.648	-1238.870	120.758	4695.732	0.745	-1238.870	1244.740	174.433
5000.000	15.165	174.235	-1266.630	123.975	4791.743	2.174	-1266.630	1272.680	174.410
5100.000	14.243	178.219	-1291.940	125.671	4888.469	1.368	-1291.940	1298.035	174.444
5200.000	13.416	177.852	-1315.830	126.488	4985.570	0.832	-1315.830	1321.891	174.509
5300.000	11.697	177.135	-1337.540	127.430	5083.174	1.726	-1337.540	1343.600	174.558
5400.000	10.154	179.388	-1356.480	128.030	5181.359	1.601	-1356.480	1362.512	174.608
5500.000	7.889	177.642	-1372.160	128.407	5280.116	2.281	-1372.160	1378.151	174.654
5600.000	5.392	176.015	-1383.700	129.016	5379.437	2.504	-1383.700	1389.703	174.673
5700.000	3.628	171.898	-1391.520	129.788	5479.124	1.792	-1391.520	1397.561	174.671
5800.000	2.796	162.190	-1396.980	130.980	5578.967	0.991	-1396.980	1403.103	174.644
5900.000	1.166	165.213	-1400.280	131.986	5678.904	1.632	-1400.280	1406.488	174.615
6000.000	0.488	110.015	-1401.410	132.645	5778.894	0.974	-1401.410	1407.675	174.593
6100.000	0.393	311.751	-1401.330	132.790	5878.893	0.865	-1401.330	1407.606	174.587
6200.000	0.574	317.394	-1400.730	132.195	5978.889	0.187	-1400.730	1406.956	174.609
6300.000	0.349	308.164	-1400.180	131.617	6078.886	0.236	-1400.180	1406.348	174.630
6400.000	0.495	280.329	-1399.910	130.953	6178.883	0.247	-1399.910	1406.022	174.656
6500.000	0.426	317.447	-1399.560	130.277	6278.880	0.300	-1399.560	1405.609	174.682
6600.000	0.360	311.921	-1399.080	129.792	6378.878	0.076	-1399.080	1405.083	174.700
6700.000	0.290	30.136	-1398.650	129.686	6478.877	0.413	-1398.650	1404.647	174.703
6800.000	0.381	56.183	-1398.240	130.089	6578.875	0.176	-1398.240	1404.282	174.685
6900.000	0.501	85.097	-1398.020	130.802	6678.872	0.249	-1398.020	1404.126	174.655
7000.000	0.817	114.773	-1398.280	131.884	6778.866	0.455	-1398.280	1404.488	174.612
7100.000	0.979	109.002	-1398.860	133.339	6878.854	0.186	-1398.860	1405.199	174.555
7200.000	1.314	99.447	-1399.320	135.278	6978.833	0.384	-1399.320	1405.848	174.478
7300.000	1.782	103.259	-1399.870	137.922	7078.797	0.479	-1399.870	1406.648	174.373
7350.000	2.220	105.794	-1400.310	139.611	7128.766	0.894	-1400.310	1407.254	174.306