



**Company:** Noble Energy

**Rig:** Production / Coretech

**API #** 05-123-22350

**Date:** 1/13/14

**Surveyor:** Brian Brewbaker

**VS:** 0.000

**Lat :** 40.205

**Long:** -104.652

**Well:** Frank 22-34

**Location:** Weld County, Colorado

**North Reference:** GRID

**Convergence:** Grid north is 0.55 degrees East of

**Declination:** 8.44

**Depth Reference:** Ground Level

**Elevation:** 4806

**Total Depth as Drilled:** 7280

**Lat & Long obtained by handheld GPS at wellhead**

**MS Gyro Survey Calculations**

Depth	Inc	AzG	N/-S	E/-W	TVD	DL	VS	CD	Cbrg
100.000	0.888	36.366	0.624	0.459	99.996	0.888	0.624	0.775	36.366
200.000	0.273	83.112	1.276	1.155	199.991	0.729	1.276	1.721	42.143
300.000	0.304	297.867	1.429	1.156	299.990	0.551	1.429	1.838	38.981
400.000	0.214	135.072	1.420	1.054	399.990	0.513	1.420	1.769	36.567
500.000	0.330	120.271	1.143	1.434	499.989	0.134	1.143	1.834	51.455
600.000	0.478	128.707	0.737	2.009	599.986	0.159	0.737	2.140	69.857
700.000	0.541	136.459	0.133	2.660	699.982	0.093	0.133	2.663	87.131
800.000	0.538	140.164	-0.570	3.286	799.978	0.035	-0.570	3.335	99.833
900.000	0.109	86.830	-0.925	3.682	899.976	0.480	-0.925	3.796	104.095
1000.000	0.413	122.936	-1.115	4.080	999.975	0.331	-1.115	4.230	105.290
1100.000	0.649	179.531	-1.878	4.388	1099.971	0.545	-1.878	4.772	113.169
1200.000	0.133	71.169	-2.406	4.502	1199.969	0.702	-2.406	5.105	118.127
1300.000	0.603	190.558	-2.886	4.515	1299.967	0.678	-2.886	5.359	122.587
1400.000	0.412	110.094	-3.526	4.756	1399.965	0.671	-3.526	5.921	126.555
1500.000	0.441	237.771	-3.855	4.768	1499.963	0.766	-3.855	6.131	128.959
1600.000	0.536	191.537	-4.519	4.349	1599.960	0.393	-4.519	6.271	136.101
1700.000	0.513	183.294	-5.425	4.229	1699.956	0.079	-5.425	6.878	142.059
1800.000	0.636	197.799	-6.400	4.034	1799.951	0.189	-6.400	7.565	147.778
1900.000	0.221	168.790	-7.117	3.902	1899.948	0.456	-7.117	8.117	151.269
2000.000	0.163	165.511	-7.444	3.975	1999.947	0.058	-7.444	8.439	151.901
2100.000	0.199	215.455	-7.724	3.910	2099.947	0.156	-7.724	8.657	153.151
2200.000	0.356	12.537	-7.562	3.877	2199.946	0.544	-7.562	8.498	152.859
2300.000	0.213	13.123	-7.078	3.986	2299.945	0.143	-7.078	8.123	150.613
2400.000	0.554	233.732	-7.183	3.638	2399.944	0.729	-7.183	8.052	153.136
2500.000	0.311	212.794	-7.697	3.102	2499.941	0.286	-7.697	8.298	158.051
2600.000	0.505	240.685	-8.140	2.571	2599.938	0.272	-8.140	8.537	162.473
2700.000	0.461	188.717	-8.754	2.126	2699.935	0.425	-8.754	9.008	166.350
2800.000	0.314	206.507	-9.396	1.943	2799.933	0.188	-9.396	9.595	168.319
2900.000	0.504	214.818	-10.002	1.569	2899.930	0.199	-10.002	10.125	171.083
3000.000	0.489	276.305	-10.317	0.894	2999.927	0.508	-10.317	10.355	175.046
3100.000	1.209	292.631	-9.864	-0.504	3099.916	0.753	-9.864	9.876	182.922
3200.000	1.749	303.800	-8.609	-2.745	3199.882	0.609	-8.609	9.036	197.688
3300.000	2.574	318.085	-6.089	-5.513	3299.811	0.980	-6.089	8.214	222.161
3400.000	2.695	337.895	-2.239	-7.898	3399.707	0.914	-2.239	8.210	254.171
3500.000	2.915	325.184	2.026	-10.235	3499.589	0.658	2.026	10.433	281.198
3600.000	2.694	312.349	5.696	-13.423	3599.470	0.664	5.696	14.582	292.995

3700.000	2.612	320.285	9.032	-16.615	3699.363	0.376	9.032	18.912	298.528
3800.000	2.746	313.564	12.435	-19.807	3799.254	0.341	12.435	23.387	302.122
3900.000	2.617	311.504	15.599	-23.252	3899.144	0.161	15.599	28.000	303.856
4000.000	2.581	304.199	18.378	-26.824	3999.042	0.333	18.378	32.516	304.415
4100.000	2.637	300.300	20.804	-30.673	4098.938	0.186	20.804	37.062	304.147
4200.000	2.651	291.847	22.825	-34.806	4198.832	0.390	22.825	41.622	303.256
4300.000	2.710	284.812	24.290	-39.238	4298.723	0.334	24.290	46.148	301.759
4400.000	2.706	289.723	25.691	-43.746	4398.611	0.232	25.691	50.732	300.425
4500.000	2.514	285.816	27.085	-48.078	4498.508	0.261	27.085	55.182	299.395
4600.000	2.304	281.666	28.090	-52.157	4598.419	0.273	28.090	59.240	298.305
4700.000	2.181	276.785	28.721	-56.016	4698.343	0.227	28.721	62.950	297.146
4800.000	2.117	267.059	28.851	-59.750	4798.273	0.370	28.851	66.351	295.774
4900.000	1.732	261.307	28.528	-63.088	4898.216	0.430	28.528	69.239	294.332
5000.000	1.654	264.624	28.165	-66.018	4998.173	0.125	28.165	71.775	293.104
5100.000	1.557	255.411	27.687	-68.769	5098.134	0.275	27.687	74.134	291.930
5200.000	1.379	224.846	26.492	-70.933	5198.102	0.792	26.492	75.718	290.480
5300.000	1.257	184.719	24.545	-71.872	5298.078	0.912	24.545	75.947	288.856
5400.000	1.416	149.887	22.383	-71.342	5398.052	0.814	22.383	74.771	287.419
5500.000	2.043	125.287	20.284	-69.266	5498.007	0.958	20.284	72.175	286.322
5600.000	2.235	128.271	18.047	-66.280	5597.938	0.221	18.047	68.693	285.231
5700.000	2.312	125.043	15.681	-63.098	5697.859	0.150	15.681	65.018	283.956
5800.000	1.791	120.667	13.726	-60.103	5797.795	0.544	13.726	61.651	282.864
5900.000	1.065	106.061	12.672	-57.866	5897.763	0.806	12.672	59.237	282.352
6000.000	0.905	98.260	12.301	-56.191	5997.749	0.208	12.301	57.522	282.348
6100.000	0.668	95.261	12.134	-54.829	6097.739	0.240	12.134	56.156	282.479
6200.000	0.477	96.599	12.033	-53.835	6197.734	0.192	12.033	55.163	282.599
6300.000	0.225	105.217	11.933	-53.231	6297.732	0.257	11.933	54.553	282.636
6400.000	0.337	63.251	12.014	-52.779	6397.731	0.227	12.014	54.129	282.824
6500.000	0.321	72.077	12.233	-52.250	6497.729	0.053	12.233	53.663	283.177
6600.000	0.112	47.277	12.386	-51.911	6597.729	0.224	12.386	53.368	283.419
6700.000	0.057	153.221	12.407	-51.817	6697.728	0.140	12.407	53.281	283.466
6800.000	0.044	163.662	12.326	-51.783	6797.728	0.016	12.326	53.230	283.389
6900.000	0.349	141.506	12.050	-51.583	6897.728	0.309	12.050	52.972	283.149

True North