



Company: Noble Energy

Rig: Production / Coretech

API # 05-123-23388

Date: 5/28/2014

Surveyor: Norman Cowan

VS: 0.000

Lat : 40.122

Long: -104.553

Well: Gerkin 33-21

Location: Weld County, Colorado

North Reference: GRID

Convergence: Grid north is 0.61 Deg East of Tru

Declination: 8.33 Degrees

Depth Reference: Ground Level

Elevation: 4960 Feet

Total Depth as Drilled: 7683 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	0.696	248.965	-0.218	-0.567	99.998	0.696	-0.218	0.608	248.965
200.000	0.500	260.730	-0.507	-1.565	199.992	0.231	-0.507	1.645	252.065
300.000	0.106	251.481	-0.606	-2.083	299.990	0.396	-0.606	2.170	253.777
400.000	0.252	302.625	-0.517	-2.356	399.990	0.203	-0.517	2.412	257.619
500.000	0.257	292.000	-0.315	-2.749	499.989	0.047	-0.315	2.767	263.466
600.000	0.248	207.793	-0.422	-3.057	599.988	0.338	-0.422	3.086	262.140
700.000	0.091	209.678	-0.682	-3.197	699.988	0.157	-0.682	3.269	257.951
800.000	0.202	86.301	-0.740	-3.061	799.988	0.264	-0.740	3.149	256.403
900.000	0.488	115.567	-0.913	-2.500	899.986	0.327	-0.913	2.662	249.944
1000.000	0.539	88.197	-1.082	-1.646	999.982	0.248	-1.082	1.970	236.684
1100.000	0.594	105.412	-1.205	-0.676	1099.977	0.178	-1.205	1.382	209.300
1200.000	0.552	94.142	-1.377	0.304	1199.972	0.120	-1.377	1.411	167.540
1300.000	0.541	91.847	-1.427	1.257	1299.968	0.025	-1.427	1.902	138.635
1400.000	0.464	111.429	-1.590	2.105	1399.964	0.187	-1.590	2.639	127.068
1500.000	0.567	105.943	-1.874	2.957	1499.960	0.114	-1.874	3.501	122.362
1600.000	0.516	95.939	-2.056	3.881	1599.955	0.107	-2.056	4.392	117.921
1700.000	0.571	105.563	-2.237	4.808	1699.951	0.106	-2.237	5.303	114.947
1800.000	0.481	90.501	-2.374	5.707	1799.947	0.164	-2.374	6.181	112.585
1900.000	0.416	103.748	-2.464	6.479	1899.944	0.122	-2.464	6.932	110.820
2000.000	0.512	93.212	-2.575	7.278	1999.940	0.128	-2.575	7.720	109.486
2100.000	0.420	100.753	-2.669	8.083	2099.937	0.110	-2.669	8.512	108.269
2200.000	0.532	84.418	-2.692	8.905	2199.934	0.175	-2.692	9.303	106.818
2300.000	0.057	335.364	-2.601	9.347	2299.932	0.553	-2.601	9.702	105.554
2400.000	0.541	347.775	-2.095	9.226	2399.931	0.486	-2.095	9.461	102.792
2500.000	0.513	358.147	-1.185	9.111	2499.926	0.099	-1.185	9.188	97.412
2600.000	0.593	354.402	-0.223	9.046	2599.922	0.087	-0.223	9.049	91.411
2700.000	0.510	318.654	0.626	8.702	2699.917	0.347	0.626	8.724	85.885
2800.000	1.078	301.639	1.454	7.607	2799.907	0.609	1.454	7.744	79.179
2900.000	1.075	300.183	2.419	5.995	2899.890	0.028	2.419	6.465	68.026
3000.000	1.223	309.752	3.573	4.363	2999.870	0.242	3.573	5.640	50.687
3100.000	0.826	322.472	4.827	3.104	3099.854	0.456	4.827	5.739	32.741
3200.000	0.497	332.228	5.782	2.463	3199.847	0.346	5.782	6.285	23.074
3300.000	0.447	16.939	6.539	2.375	3299.844	0.362	6.539	6.957	19.961
3400.000	0.458	47.346	7.183	2.782	3399.841	0.238	7.183	7.703	21.174
3500.000	0.352	135.616	7.234	3.291	3499.839	0.569	7.234	7.947	24.463

3600.000	1.133	193.742	6.054	3.271	3599.831	0.994	6.054	6.881	28.385
3700.000	2.060	203.112	3.440	2.331	3699.791	0.959	3.440	4.155	34.119
3800.000	2.622	222.668	0.105	0.075	3799.709	0.969	0.105	0.129	35.489
3900.000	2.640	244.244	-2.578	-3.550	3899.606	0.985	-2.578	4.387	234.015
4000.000	1.864	238.785	-4.421	-7.015	3999.528	0.805	-4.421	8.292	237.778
4100.000	1.583	209.946	-6.461	-9.095	4099.485	0.900	-6.461	11.157	234.611
4200.000	0.812	177.921	-8.366	-9.759	4199.463	0.993	-8.366	12.854	229.397
4300.000	1.369	132.563	-9.882	-8.853	4299.446	0.986	-9.882	13.268	221.859
4400.000	1.472	105.658	-11.037	-6.736	4399.417	0.669	-11.037	12.930	211.398
4500.000	1.617	88.005	-11.334	-4.090	4499.381	0.495	-11.334	12.049	199.841
4600.000	1.857	71.738	-10.777	-1.141	4599.335	0.546	-10.777	10.837	186.044
4700.000	2.713	70.875	-9.494	2.634	4699.255	0.856	-9.494	9.853	164.496
4800.000	2.835	52.300	-7.206	6.827	4799.140	0.903	-7.206	9.926	136.550
4900.000	2.840	36.670	-3.707	10.263	4899.019	0.771	-3.707	10.912	109.860
5000.000	1.956	36.531	-0.349	12.758	4998.930	0.883	-0.349	12.763	91.566
5100.000	1.799	16.389	2.529	14.217	5098.877	0.675	2.529	14.440	79.915
5200.000	1.800	18.511	5.524	15.159	5198.828	0.067	5.524	16.134	69.978
5300.000	1.603	24.021	8.291	16.227	5298.784	0.256	8.291	18.222	62.936
5400.000	1.737	20.047	10.992	17.315	5398.742	0.178	10.992	20.510	57.592
5500.000	1.604	26.105	13.673	18.451	5498.699	0.221	13.673	22.965	53.460
5600.000	1.853	48.109	16.010	20.271	5598.655	0.703	16.010	25.830	51.698
5700.000	1.503	21.270	18.311	21.950	5698.613	0.850	18.311	28.585	50.164
5800.000	1.860	15.027	21.101	22.846	5798.570	0.401	21.101	31.100	47.275
5900.000	1.836	16.617	24.203	23.725	5898.518	0.057	24.203	33.892	44.429
6000.000	1.569	25.408	26.974	24.771	5998.474	0.372	26.974	36.622	42.562
6100.000	1.241	13.965	29.262	25.620	6098.444	0.430	29.262	38.893	41.203
6200.000	0.883	20.897	31.033	26.156	6198.427	0.380	31.033	40.586	40.125
6300.000	1.008	26.485	32.540	26.823	6298.413	0.156	32.540	42.170	39.499
6400.000	1.317	59.156	33.917	28.201	6398.393	0.718	33.917	44.110	39.743
6500.000	1.853	81.559	34.743	30.787	6498.356	0.810	34.743	46.421	41.545
6600.000	2.472	96.925	34.720	34.527	6598.285	0.843	34.720	48.965	44.840
6700.000	3.360	102.658	33.818	39.526	6698.155	0.934	33.818	52.019	49.450
6800.000	5.111	107.228	31.857	46.640	6797.878	1.782	31.857	56.481	55.665
6900.000	6.384	107.573	28.859	56.194	6897.373	1.273	28.859	63.171	62.817
7000.000	6.050	102.304	26.058	66.643	6996.786	0.661	26.058	71.556	68.644
7100.000	3.776	102.410	24.227	75.009	7096.412	2.274	24.227	78.824	72.100
7200.000	2.229	106.323	22.972	80.092	7196.272	1.560	22.972	83.321	73.996
7300.000	1.331	110.797	22.013	83.044	7296.222	0.907	22.013	85.912	75.153
7400.000	0.723	101.719	21.473	84.748	7396.206	0.628	21.473	87.426	75.782
7450.000	0.717	91.950	21.398	85.369	7446.202	0.246	21.398	88.010	75.929

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