



Company: Noble Energy
Rig: Production/VES
API # 05-123-22910
Date: 1-9-14
Surveyor: Justin Williams
VS: 0.000
Lat : 40.238
Long: -104.463

Well: Guttersen State DD08-
Location: Weld County, Colorado
North Reference: GRID
Convergence: GRID North is 0.67 De
Declination: 8.34
Depth Reference: RKB = Ground Level
Elevation: 4874
Total Depth as Drilled: 7760

Lat & Long obtained by handheld GPS at wellhead

HA Gyro Survey Calculations

Depth	Inc	AzG	N/-S	E/-W	TVD	DL	VS	CD
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100.000	0.525	172.182	-0.454	0.062	99.999	0.525	-0.454	0.458
200.000	0.370	196.100	-1.217	0.035	199.996	0.239	-1.217	1.218
300.000	0.308	199.983	-1.780	-0.146	299.994	0.066	-1.780	1.786
400.000	0.320	191.691	-2.305	-0.295	399.992	0.047	-2.305	2.324
500.000	0.304	184.296	-2.843	-0.371	499.991	0.043	-2.843	2.867
600.000	0.270	168.627	-3.339	-0.344	599.990	0.085	-3.339	3.356
700.000	0.245	173.332	-3.782	-0.273	699.989	0.032	-3.782	3.792
800.000	0.293	169.911	-4.246	-0.204	799.988	0.051	-4.246	4.251
900.000	0.291	174.551	-4.751	-0.135	899.986	0.024	-4.751	4.753
1000.000	0.268	171.905	-5.235	-0.078	999.985	0.026	-5.235	5.236
1100.000	0.240	203.687	-5.659	-0.129	1099.984	0.142	-5.659	5.660
1200.000	0.225	163.893	-6.039	-0.158	1199.983	0.159	-6.039	6.041
1300.000	0.369	171.586	-6.546	-0.057	1299.982	0.149	-6.546	6.547
1400.000	0.317	171.325	-7.138	0.032	1399.980	0.052	-7.138	7.138
1500.000	0.257	167.667	-7.630	0.122	1499.979	0.062	-7.630	7.631
1600.000	0.355	171.926	-8.156	0.213	1599.977	0.101	-8.156	8.159
1700.000	0.349	172.488	-8.765	0.296	1699.976	0.007	-8.765	8.770
1800.000	0.316	168.508	-9.337	0.391	1799.974	0.041	-9.337	9.346
1900.000	0.215	183.893	-9.795	0.433	1899.973	0.122	-9.795	9.804
2000.000	0.251	304.612	-9.858	0.240	1999.972	0.406	-9.858	9.861
2100.000	0.417	345.550	-9.381	-0.031	2099.971	0.281	-9.381	9.381
2200.000	0.569	351.449	-8.537	-0.196	2199.967	0.159	-8.537	8.539
2300.000	0.645	358.049	-7.484	-0.289	2299.961	0.104	-7.484	7.489
2400.000	0.518	26.149	-6.515	-0.109	2399.957	0.308	-6.515	6.516
2500.000	0.605	44.400	-5.733	0.460	2499.952	0.198	-5.733	5.751
2600.000	0.865	65.414	-5.041	1.516	2599.944	0.371	-5.041	5.264
2700.000	1.058	70.076	-4.412	3.070	2699.930	0.208	-4.412	5.375
2800.000	1.054	94.095	-4.163	4.856	2799.913	0.439	-4.163	6.396
2900.000	1.163	70.909	-3.897	6.732	2899.895	0.458	-3.897	7.779
3000.000	1.117	63.367	-3.128	8.563	2999.875	0.157	-3.128	9.116
3100.000	1.236	65.115	-2.237	10.413	3099.854	0.125	-2.237	10.650
3200.000	0.707	56.939	-1.447	11.908	3199.839	0.545	-1.447	11.996
3300.000	0.382	45.299	-0.876	12.663	3299.835	0.342	-0.876	12.693
3400.000	0.475	37.595	-0.312	13.152	3399.832	0.110	-0.312	13.156
3500.000	0.467	14.014	0.412	13.504	3499.829	0.193	0.412	13.511

3600.000	0.355	18.185	1.102	13.700	3599.826	0.116	1.102	13.744
3700.000	0.441	359.274	1.781	13.792	3699.824	0.156	1.781	13.906
3800.000	0.438	2.709	2.548	13.805	3799.821	0.027	2.548	14.038
3900.000	0.353	19.019	3.222	13.923	3899.818	0.140	3.222	14.291
4000.000	0.110	20.474	3.603	14.057	3999.817	0.243	3.603	14.512
4100.000	0.143	80.904	3.713	14.214	4099.817	0.131	3.713	14.691
4200.000	0.099	40.409	3.798	14.394	4199.817	0.094	3.798	14.886
4300.000	0.045	23.879	3.899	14.465	4299.817	0.057	3.899	14.982
4400.000	0.028	240.205	3.923	14.459	4399.817	0.070	3.923	14.982
4500.000	0.220	226.238	3.777	14.299	4499.817	0.193	3.777	14.790
4600.000	0.225	271.151	3.648	13.964	4599.816	0.170	3.648	14.432
4700.000	0.264	225.943	3.492	13.601	4699.815	0.191	3.492	14.042
4800.000	0.578	262.705	3.268	12.935	4799.812	0.399	3.268	13.342
4900.000	0.567	233.882	2.912	12.035	4899.808	0.285	2.912	12.383
5000.000	0.649	247.355	2.403	11.113	4999.802	0.164	2.403	11.370
5100.000	0.744	245.997	1.921	9.997	5099.795	0.096	1.921	10.180
5200.000	0.802	235.185	1.257	8.830	5199.786	0.157	1.257	8.919
5300.000	0.431	257.634	0.777	7.888	5299.780	0.436	0.777	7.926
5400.000	0.315	283.276	0.760	7.253	5399.778	0.200	0.760	7.293
5500.000	0.360	242.115	0.676	6.708	5499.776	0.241	0.676	6.742
5600.000	0.340	260.974	0.482	6.137	5599.774	0.116	0.482	6.156
5700.000	0.355	289.967	0.541	5.552	5699.773	0.175	0.541	5.579
5800.000	0.207	282.552	0.686	5.085	5799.771	0.152	0.686	5.131
5900.000	0.096	144.694	0.657	4.956	5899.771	0.286	0.657	5.000
6000.000	0.153	345.961	0.719	4.972	5999.771	0.245	0.719	5.024
6100.000	0.197	65.582	0.920	5.096	6099.771	0.227	0.920	5.178
6200.000	0.215	46.554	1.120	5.388	6199.770	0.070	1.120	5.504
6300.000	0.347	59.694	1.401	5.786	6299.769	0.146	1.401	5.953
6400.000	0.326	90.812	1.550	6.332	6399.767	0.182	1.550	6.519
6500.000	0.298	72.213	1.626	6.865	6499.766	0.105	1.626	7.055
6600.000	0.196	142.628	1.569	7.217	6599.765	0.297	1.569	7.386
6700.000	0.442	143.782	1.123	7.548	6699.763	0.246	1.123	7.631
6800.000	0.432	118.054	0.634	8.109	6799.761	0.195	0.634	8.134

-11

0

degrees East of True North

Cbrg

0.000

172.182

178.351

184.697

187.281

187.433

185.890

184.133

182.745

181.623

180.849

181.303

181.502

180.497

179.743

179.088

178.504

178.064

177.602

177.468

178.605

180.192

181.316

182.212

180.959

175.416

163.267

145.167

130.610

120.064

110.067

102.126

96.926

93.955

91.361

88.254

85.402
82.640
79.541
76.972
75.624
75.361
75.218
74.913
74.822
75.202
75.357
75.601
75.822
76.397
77.800
79.125
81.898
84.374
84.022
84.248
85.508
84.431
82.311
82.444
81.772
79.768
78.261
76.385
76.244
76.677
77.732
81.541
85.527