



**Company:** Noble Energy  
**Rig:** Production/ V.E.S  
**API #** 05-123-25471  
**Date:** 3/19/2013  
**Surveyor:** Jay Hinman  
**VS:** 0.000  
**Lat :** 40.48789  
**Long:** -104.63762

**Well:** Dinner E 14-05  
**Location:** Weld County, Colorado  
**North Reference:** GRID  
**Convergence:** Grid North is 0.56 Deg  
**Declination:** 8.57  
**Depth Reference:** Ground Level  
**Elevation:** 4721'  
**Total Depth as Drilled:** 7251'

**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
100.000	0.313	243.581	-0.121	-0.244	100.000	0.313	-0.121	0.273
200.000	0.424	223.424	-0.512	-0.743	199.997	0.169	-0.512	0.902
300.000	0.365	236.650	-0.955	-1.263	299.995	0.108	-0.955	1.584
400.000	0.212	226.368	-1.258	-1.663	399.994	0.161	-1.258	2.085
500.000	0.026	300.861	-1.374	-1.817	499.994	0.207	-1.374	2.278
600.000	0.311	265.551	-1.383	-2.106	599.993	0.290	-1.383	2.520
700.000	0.526	286.928	-1.271	-2.815	699.990	0.262	-1.271	3.089
800.000	0.912	287.861	-0.893	-4.012	799.982	0.387	-0.893	4.110
900.000	1.290	314.226	0.136	-5.576	899.964	0.623	0.136	5.578
1000.000	1.450	315.185	1.819	-7.275	999.936	0.161	1.819	7.499
1100.000	1.451	312.858	3.578	-9.095	1099.904	0.059	3.578	9.773
1200.000	1.324	306.923	5.133	-10.946	1199.874	0.191	5.133	12.090
1300.000	1.193	312.201	6.526	-12.641	1299.850	0.175	6.526	14.226
1400.000	1.170	309.058	7.869	-14.205	1399.829	0.069	7.869	16.238
1500.000	1.181	306.370	9.123	-15.827	1499.808	0.056	9.123	18.268
1600.000	0.900	285.545	9.944	-17.414	1599.792	0.467	9.944	20.053
1700.000	0.575	222.720	9.786	-18.511	1699.785	0.817	9.786	20.939
1800.000	0.776	226.588	8.952	-19.344	1799.778	0.206	8.952	21.315
1900.000	1.011	217.586	7.787	-20.374	1899.766	0.273	7.787	21.811
2000.000	1.045	221.905	6.410	-21.521	1999.749	0.085	6.410	22.455
2100.000	1.404	234.600	5.021	-23.128	2099.727	0.448	5.021	23.667
2200.000	1.604	239.818	3.608	-25.337	2199.692	0.242	3.608	25.593
2300.000	1.642	238.321	2.152	-27.766	2299.652	0.057	2.152	27.849
2400.000	1.554	229.035	0.511	-30.009	2399.613	0.273	0.511	30.013
2500.000	1.383	211.264	-1.410	-31.659	2499.581	0.484	-1.410	31.691
2600.000	1.189	202.605	-3.400	-32.684	2599.556	0.274	-3.400	32.861
2700.000	1.242	178.852	-5.441	-33.062	2699.534	0.503	-5.441	33.506
2800.000	1.144	173.157	-7.516	-32.921	2799.512	0.154	-7.516	33.768
2900.000	1.126	219.314	-9.267	-33.424	2899.495	0.890	-9.267	34.685
3000.000	0.896	235.326	-10.471	-34.690	2999.479	0.362	-10.471	36.236
3100.000	0.563	205.700	-11.359	-35.546	3099.471	0.493	-11.359	37.317
3200.000	0.862	182.982	-12.554	-35.799	3199.464	0.406	-12.554	37.936
3300.000	1.297	150.911	-14.294	-35.287	3299.447	0.729	-14.294	38.073
3400.000	2.510	145.258	-17.083	-33.489	3399.390	1.225	-17.083	37.595

3500.000	1.728	141.624	-20.064	-31.305	3499.321	0.793	-20.064	37.183
3600.000	0.909	142.443	-21.875	-29.886	3599.293	0.820	-21.875	37.036
3700.000	0.617	146.957	-22.955	-29.109	3699.284	0.297	-22.955	37.071
3800.000	0.684	152.183	-23.935	-28.536	3799.278	0.090	-23.935	37.245
3900.000	0.621	168.914	-24.995	-28.153	3899.271	0.200	-24.995	37.648
4000.000	0.480	158.587	-25.917	-27.896	3999.267	0.172	-25.917	38.078
4100.000	0.274	109.752	-26.388	-27.519	4099.265	0.364	-26.388	38.126
4200.000	0.567	57.383	-26.202	-26.877	4199.262	0.455	-26.202	37.535
4300.000	0.546	7.866	-25.463	-26.395	4299.258	0.467	-25.463	36.675
4400.000	1.170	5.761	-23.976	-26.227	4399.246	0.625	-23.976	35.535
4500.000	1.728	17.510	-21.523	-25.671	4499.214	0.630	-21.523	33.499
4600.000	2.601	22.373	-17.986	-24.353	4599.142	0.891	-17.986	30.275
4700.000	2.283	37.294	-14.302	-22.282	4699.052	0.708	-14.302	26.478
4800.000	1.573	48.889	-11.815	-20.041	4798.995	0.807	-11.815	23.265
4900.000	0.815	52.489	-10.480	-18.443	4898.973	0.762	-10.480	21.213
5000.000	0.871	69.507	-9.781	-17.167	4998.962	0.255	-9.781	19.758
5100.000	0.777	48.039	-9.061	-15.951	5098.952	0.320	-9.061	18.345
5200.000	0.888	119.681	-8.992	-14.773	5198.944	0.979	-8.992	17.295
5300.000	0.979	120.696	-9.812	-13.365	5298.930	0.092	-9.812	16.580
5400.000	0.738	126.783	-10.633	-12.115	5398.919	0.258	-10.633	16.120
5500.000	1.208	109.014	-11.362	-10.603	5498.905	0.553	-11.362	15.541
5600.000	0.565	135.442	-12.057	-9.261	5598.893	0.745	-12.057	15.203
5700.000	0.993	125.347	-12.910	-8.208	5698.883	0.447	-12.910	15.298
5800.000	0.509	120.172	-13.634	-7.117	5798.874	0.488	-13.634	15.380
5900.000	0.283	164.230	-14.095	-6.666	5898.872	0.363	-14.095	15.592
6000.000	0.629	166.435	-14.865	-6.471	5998.869	0.346	-14.865	16.213
6100.000	0.668	186.935	-15.978	-6.412	6098.862	0.234	-15.978	17.216
6200.000	0.358	150.972	-16.830	-6.331	6198.859	0.433	-16.830	17.981
6300.000	0.373	220.625	-17.350	-6.391	6298.857	0.418	-17.350	18.490
6400.000	0.761	220.541	-18.101	-7.034	6398.852	0.388	-18.101	19.420
6500.000	0.925	277.807	-18.496	-8.265	6498.843	0.820	-18.496	20.259
6600.000	0.957	247.833	-18.702	-9.838	6598.830	0.488	-18.702	21.132
6700.000	1.324	212.234	-19.994	-11.228	6698.811	0.780	-19.994	22.931
6800.000	0.683	182.928	-21.566	-11.874	6798.796	0.801	-21.566	24.619
6900.000	1.608	170.637	-23.545	-11.676	6898.775	0.952	-23.545	26.282
7000.000	1.399	186.139	-26.143	-11.579	6998.741	0.455	-26.143	28.592
7030.000	1.155	186.368	-26.808	-11.651	7028.733	0.811	-26.808	29.230

0

rees East of True North

**Cbrg**

0.000  
243.581  
235.458  
232.906  
232.898  
232.897  
236.702  
245.703  
257.448  
271.402  
284.041  
291.475  
295.123  
297.306  
298.984  
299.960  
299.730  
297.864  
294.833  
290.917  
286.585  
282.249  
278.104  
274.432  
270.975  
267.450  
264.062  
260.654  
257.140  
254.504  
253.203  
252.278  
250.675  
247.948  
242.974

237.343  
233.798  
231.741  
230.012  
228.401  
227.106  
226.201  
225.729  
226.029  
227.567  
230.023  
233.553  
237.305  
239.479  
240.394  
240.328  
240.401  
238.673  
233.717  
228.728  
223.022  
217.527  
212.448  
207.566  
205.313  
203.523  
201.867  
200.615  
200.222  
201.236  
204.078  
207.747  
209.316  
208.837  
206.377  
203.888  
203.491