



**Company:** Noble Energy  
**Rig:** Production / V.E.S.

**API #** 05-123-30499

**Date:** 4-21-13

**Surveyor:** Norman Cowan

**VS:** 0.000

**Lat :** 40.469

**Long:** -104.627

**Well:** Feit E 23-15D

**Location:** Weld County, Colorado

**North Reference:** GRID

**Convergence:** Grid North is 0.56 Degrees East of

**Declination:** 8.55 Degrees

**Depth Reference:** Ground Level

**Elevation:** 4699 Feet

**Total Depth as Drilled:** 7318 Feet

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

#### HA 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	0.266	150.600	-0.202	0.114	100.000	0.266	-0.202	0.232	150.600
200.000	0.298	133.699	-0.584	0.416	199.998	0.089	-0.584	0.717	144.551
300.000	0.235	133.735	-0.905	0.752	299.997	0.063	-0.905	1.176	140.293
400.000	0.244	145.210	-1.222	1.021	399.996	0.049	-1.222	1.592	140.109
500.000	1.128	105.586	-1.661	2.091	499.989	0.953	-1.661	2.671	128.465
600.000	1.193	109.968	-2.281	4.018	599.968	0.110	-2.281	4.620	119.588
700.000	1.099	129.638	-3.249	5.735	699.949	0.402	-3.249	6.592	119.531
800.000	1.148	146.051	-4.692	7.034	799.930	0.324	-4.692	8.455	123.707
900.000	1.436	165.427	-6.736	7.908	899.904	0.519	-6.736	10.388	130.423
1000.000	3.129	183.574	-10.673	8.054	999.823	1.820	-10.673	13.371	142.963
1100.000	4.715	181.749	-17.506	7.758	1099.585	1.591	-17.506	19.148	156.099
1200.000	5.884	179.405	-26.741	7.686	1199.156	1.188	-26.741	27.823	163.964
1300.000	7.488	180.116	-38.383	7.726	1298.473	1.606	-38.383	39.153	168.619
1400.000	8.731	179.036	-52.488	7.840	1397.471	1.252	-52.488	53.071	171.504
1500.000	9.772	177.894	-68.558	8.280	1496.169	1.057	-68.558	69.056	173.114
1600.000	10.721	177.572	-86.332	8.986	1594.573	0.951	-86.332	86.798	174.058
1700.000	12.201	180.923	-106.193	9.210	1692.577	1.622	-106.193	106.591	175.043
1800.000	13.520	180.249	-128.449	8.988	1790.066	1.328	-128.449	128.763	175.997
1900.000	14.879	180.162	-152.979	8.901	1887.009	1.359	-152.979	153.237	176.670
2000.000	16.285	179.585	-179.840	8.966	1983.331	1.414	-179.840	180.063	177.146
2100.000	17.513	178.139	-208.900	9.556	2079.011	1.298	-208.900	209.118	177.381
2200.000	16.693	176.504	-238.274	10.921	2174.589	0.951	-238.274	238.524	177.376
2300.000	16.376	179.259	-266.706	11.979	2270.455	0.846	-266.706	266.975	177.428
2400.000	16.752	180.441	-295.213	12.050	2366.305	0.505	-295.213	295.459	177.663
2500.000	17.363	179.461	-324.545	12.080	2461.906	0.675	-324.545	324.770	177.868
2600.000	17.605	177.170	-354.570	12.966	2557.287	0.730	-354.570	354.807	177.906
2700.000	17.242	177.947	-384.485	14.244	2652.699	0.431	-384.485	384.749	177.878
2800.000	19.015	179.154	-415.587	15.016	2747.732	1.812	-415.587	415.859	177.931
2900.000	17.764	176.462	-447.104	16.198	2842.625	1.512	-447.104	447.397	177.925
3000.000	16.990	180.867	-476.939	16.918	2938.065	1.525	-476.939	477.239	177.968
3100.000	18.167	180.384	-507.139	16.592	3033.394	1.186	-507.139	507.410	178.126
3200.000	15.445	180.419	-536.048	16.391	3129.114	2.723	-536.048	536.299	178.249
3300.000	13.645	176.896	-561.144	16.932	3225.907	2.005	-561.144	561.399	178.272
3400.000	13.566	181.424	-584.647	17.279	3323.103	1.068	-584.647	584.903	178.307

3500.000	15.073	183.972	-609.345	16.087	3419.994	1.633	-609.345	609.558	178.488
3600.000	16.039	183.450	-636.107	14.355	3516.330	0.976	-636.107	636.269	178.707
3700.000	16.616	185.861	-664.120	12.063	3612.298	0.890	-664.120	664.230	178.959
3800.000	17.824	187.813	-693.507	8.523	3707.814	1.338	-693.507	693.559	179.296
3900.000	18.422	180.251	-724.475	6.373	3802.866	2.425	-724.475	724.503	179.496
4000.000	19.610	175.695	-757.012	7.563	3897.413	1.900	-757.012	757.050	179.428
4100.000	19.251	175.907	-790.188	9.999	3991.717	0.366	-790.188	790.252	179.275
4200.000	18.069	178.913	-822.138	11.470	4086.461	1.524	-822.138	822.218	179.201
4300.000	18.813	179.972	-853.768	11.772	4181.326	0.816	-853.768	853.849	179.210
4400.000	18.273	181.345	-885.565	11.412	4276.135	0.694	-885.565	885.639	179.262
4500.000	18.172	183.363	-916.805	10.129	4371.121	0.639	-916.805	916.861	179.367
4600.000	18.429	179.961	-948.179	9.225	4466.066	1.099	-948.179	948.224	179.443
4700.000	17.054	175.791	-978.612	10.312	4561.311	1.872	-978.612	978.667	179.396
4800.000	15.161	169.527	-1006.100	13.765	4657.389	2.567	-1006.100	1006.194	179.216
4900.000	14.983	168.125	-1031.610	18.802	4753.949	0.406	-1031.610	1031.780	178.956
5000.000	15.628	172.938	-1057.630	23.119	4850.405	1.424	-1057.630	1057.880	178.748
5100.000	16.050	174.289	-1084.750	26.151	4946.609	0.560	-1084.750	1085.065	178.619
5200.000	16.917	175.774	-1113.020	28.599	5042.499	0.965	-1113.020	1113.383	178.528
5300.000	13.524	183.915	-1139.200	28.872	5138.988	4.002	-1139.200	1139.568	178.548
5400.000	9.326	197.187	-1158.620	25.678	5237.001	4.927	-1158.620	1158.905	178.730
5500.000	9.175	197.515	-1173.960	20.884	5335.700	0.161	-1173.960	1174.150	178.981
5600.000	9.236	193.339	-1189.380	16.633	5434.413	0.671	-1189.380	1189.492	179.199
5700.000	7.613	185.217	-1203.780	14.179	5533.335	2.008	-1203.780	1203.865	179.325
5800.000	6.642	185.170	-1216.140	13.056	5632.561	0.971	-1216.140	1216.209	179.385
5900.000	5.945	190.098	-1227.000	11.627	5731.958	0.881	-1227.000	1227.052	179.457
6000.000	5.736	180.839	-1237.090	10.645	5831.441	0.964	-1237.090	1237.139	179.507
6100.000	4.335	169.368	-1245.810	11.269	5931.055	1.719	-1245.810	1245.856	179.482
6200.000	3.252	170.113	-1252.310	12.454	6030.835	1.084	-1252.310	1252.376	179.430
6300.000	1.893	182.870	-1256.760	12.858	6130.732	1.467	-1256.760	1256.824	179.414
6400.000	0.790	222.319	-1258.920	12.312	6230.705	1.378	-1258.920	1258.978	179.440
6500.000	0.746	297.481	-1259.130	11.270	6330.698	0.937	-1259.130	1259.177	179.487
6600.000	1.001	305.866	-1258.310	9.985	6430.687	0.285	-1258.310	1258.354	179.545
6700.000	0.854	316.048	-1257.270	8.760	6530.674	0.220	-1257.270	1257.297	179.601
6800.000	0.733	101.249	-1256.850	8.870	6630.670	1.515	-1256.850	1256.886	179.596
6900.000	0.349	150.497	-1257.240	9.648	6730.666	0.570	-1257.240	1257.281	179.560
7000.000	0.196	218.993	-1257.640	9.690	6830.665	0.332	-1257.640	1257.679	179.559
7100.000	0.252	335.076	-1257.580	9.489	6930.664	0.382	-1257.580	1257.611	179.568

True North