



Company: Noble Energy Inc  
 Rig: Production/V.E.S.  
 Latitude: 40.15536  
 Longitude: -104.70966  
 API # 05-123-24924  
 Date: 3/6/13

Well: Thomsen USX X 7-6  
 Location: Weld County, Colorado  
 North Reference: Grid North (-0.51)  
 Depth Reference: KB= Ground Level  
 Surveyor: Jay Hinman  
 VS: 0.000

#### 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	0.708	22.069	0.573	0.232	99.997	0.708	0.573	0.618
200.000	0.615	23.206	1.639	0.676	199.991	0.094	1.639	1.773
300.000	0.661	6.664	2.705	0.954	299.985	0.189	2.705	2.869
400.000	0.367	11.150	3.593	1.083	399.981	0.297	3.593	3.752
500.000	0.222	354.273	4.099	1.126	499.979	0.168	4.099	4.251
600.000	0.308	0.187	4.560	1.107	599.978	0.090	4.560	4.693
700.000	0.210	351.332	5.010	1.081	699.977	0.105	5.010	5.125
800.000	0.164	2.760	5.334	1.060	799.977	0.059	5.334	5.438
900.000	0.270	299.757	5.594	0.862	899.976	0.244	5.594	5.660
1000.000	0.313	283.556	5.775	0.392	999.975	0.092	5.775	5.788
1100.000	0.196	281.534	5.873	-0.041	1099.974	0.117	5.873	5.873
1200.000	0.471	266.484	5.882	-0.619	1199.972	0.286	5.882	5.914
1300.000	0.434	292.884	6.004	-1.378	1299.969	0.210	6.004	6.160
1400.000	0.649	237.976	5.851	-2.207	1399.965	0.534	5.851	6.254
1500.000	0.645	254.202	5.398	-3.229	1499.959	0.183	5.398	6.290
1600.000	0.445	231.660	5.004	-4.074	1599.954	0.290	5.004	6.453
1700.000	0.695	240.641	4.466	-4.907	1699.949	0.265	4.466	6.635
1800.000	0.834	238.933	3.793	-6.059	1799.940	0.141	3.793	7.149
1900.000	0.654	223.735	3.005	-7.077	1899.932	0.266	3.005	7.689
2000.000	0.852	214.218	1.978	-7.890	1999.923	0.234	1.978	8.134
2100.000	1.398	239.525	0.745	-9.359	2099.904	0.726	0.745	9.389
2200.000	1.877	247.623	-0.498	-11.925	2199.863	0.531	-0.498	11.935
2300.000	1.851	248.548	-1.712	-14.942	2299.810	0.040	-1.712	15.040
2400.000	2.160	253.132	-2.849	-18.249	2399.749	0.348	-2.849	18.470
2500.000	2.728	257.062	-3.929	-22.371	2499.658	0.592	-3.929	22.714
2600.000	2.990	270.493	-4.439	-27.299	2599.534	0.717	-4.439	27.657
2700.000	3.331	280.878	-3.868	-32.759	2699.383	0.665	-3.868	32.987
2800.000	3.599	285.581	-2.477	-38.635	2799.200	0.391	-2.477	38.715
2900.000	3.906	289.993	-0.469	-44.860	2898.986	0.421	-0.469	44.863
3000.000	3.864	290.689	1.886	-51.214	2998.756	0.063	1.886	51.248
3100.000	3.848	292.667	4.369	-57.462	3098.530	0.134	4.369	57.628
3200.000	3.543	296.130	7.023	-63.332	3198.322	0.377	7.023	63.720
3300.000	3.312	297.575	9.721	-68.667	3298.143	0.247	9.721	69.351
3400.000	3.201	296.996	12.326	-73.715	3397.981	0.115	12.326	74.738
3500.000	1.791	279.831	13.860	-77.743	3497.885	1.581	13.860	78.968
3600.000	1.664	259.807	13.870	-80.712	3597.841	0.614	13.870	81.895
3700.000	1.270	228.527	12.879	-82.971	3697.809	0.877	12.879	83.965
3800.000	1.242	246.414	11.712	-84.794	3797.786	0.391	11.712	85.599

3900.000	1.207	248.541	10.893	-86.768	3897.763	0.057	10.893	87.449
4000.000	0.770	250.496	10.283	-88.382	3997.748	0.438	10.283	88.978
4100.000	0.650	255.905	9.921	-89.565	4097.740	0.138	9.921	90.113
4200.000	0.826	237.288	9.393	-90.721	4197.732	0.295	9.393	91.206
4300.000	1.552	230.372	8.140	-92.371	4297.710	0.739	8.140	92.729
4400.000	2.161	228.152	6.019	-94.818	4397.657	0.613	6.019	95.009
4500.000	2.063	232.056	3.654	-97.642	4497.589	0.174	3.654	97.710
4600.000	1.667	223.186	1.487	-100.057	4597.536	0.489	1.487	100.068
4700.000	1.250	227.213	-0.314	-101.852	4697.503	0.429	-0.314	101.853
4800.000	1.645	246.496	-1.628	-103.969	4797.472	0.622	-1.628	103.982
4900.000	2.122	261.060	-2.488	-107.115	4897.418	0.672	-2.488	107.144
5000.000	2.227	262.708	-3.022	-110.871	4997.346	0.122	-3.022	110.913
5100.000	2.681	268.668	-3.323	-115.136	5097.254	0.520	-3.323	115.184
5200.000	2.634	267.614	-3.473	-119.770	5197.147	0.067	-3.473	119.821
5300.000	2.478	259.196	-3.974	-124.190	5297.047	0.406	-3.974	124.253
5400.000	2.152	280.234	-4.046	-128.162	5396.968	0.904	-4.046	128.225
5500.000	1.767	286.083	-3.285	-131.491	5496.909	0.434	-3.285	131.532
5600.000	1.434	299.942	-2.234	-134.056	5596.870	0.508	-2.234	134.075
5700.000	1.397	317.258	-0.714	-135.968	5696.840	0.428	-0.714	135.970
5800.000	1.465	320.155	1.162	-137.614	5796.809	0.099	1.162	137.619
5900.000	1.512	289.994	2.595	-139.673	5896.777	0.776	2.595	139.697
6000.000	1.948	265.891	2.925	-142.608	5996.732	0.839	2.925	142.638
6100.000	1.909	269.194	2.779	-145.969	6096.676	0.118	2.779	145.996
6200.000	1.942	274.182	2.879	-149.325	6196.619	0.171	2.879	149.352
6300.000	2.065	278.899	3.282	-152.795	6296.558	0.206	3.282	152.830
6400.000	2.323	290.497	4.270	-156.473	6396.485	0.512	4.270	156.532
6500.000	2.552	278.127	5.294	-160.575	6496.395	0.572	5.294	160.663
6600.000	2.023	259.115	5.276	-164.512	6596.317	0.918	5.276	164.597
6700.000	0.348	215.273	4.695	-166.421	6696.293	1.788	4.695	166.487
6800.000	0.654	251.703	4.268	-167.138	6796.289	0.427	4.268	167.192
6900.000	0.243	64.790	4.179	-167.488	6896.287	0.895	4.179	167.540
7000.000	0.573	304.412	4.551	-167.709	6996.286	0.727	4.551	167.771
7100.000	0.177	198.270	4.688	-168.170	7096.284	0.645	4.688	168.235
7200.000	0.102	313.586	4.602	-168.282	7196.284	0.239	4.602	168.345
7300.000	0.830	249.561	4.410	-169.026	7296.280	0.791	4.410	169.083
7400.000	0.641	256.068	4.022	-170.248	7396.272	0.207	4.022	170.295
7500.000	1.085	255.168	3.645	-171.706	7496.260	0.444	3.645	171.745
7600.000	1.745	245.078	2.761	-174.003	7596.229	0.703	2.761	174.025
7700.000	2.027	236.516	1.143	-176.859	7696.175	0.398	1.143	176.863
7800.000	1.609	228.865	-0.756	-179.392	7796.125	0.483	-0.756	179.393

0

Cbrg

0.000

22.069

22.414

19.432

16.779

15.357

13.649

12.172

11.238

8.762

3.883

359.599

353.995

347.074

339.334

329.115

320.845

312.304

302.045

293.005

284.074

274.549

267.611

263.465

261.127

260.040

260.764

263.266

266.332

269.401

272.109

274.348

276.328

278.058

279.492

280.109

279.751

278.823

277.864

277.156  
276.637  
276.321  
275.911  
275.036  
273.632  
272.143  
270.851  
269.823  
269.103  
268.669  
268.438  
268.347  
268.339  
268.167  
268.192  
268.569  
269.045  
269.699  
270.484  
271.064  
271.175  
271.091  
271.105  
271.230  
271.563  
271.888  
271.837  
271.616  
271.463  
271.429  
271.555  
271.597  
271.566  
271.495  
271.353  
271.216  
270.909  
270.370  
269.759