



Company: Noble Energy
Rig: Production/VES
API # 05-123-23443
Date: 12-27-13
Surveyor: Justin Williams
VS: 0.000
Lat : 40.487
Long: -104.459

Well: Bashor 17-13
Location: Weld County, Colorado
North Reference: GRID
Convergence: GRID North is 0.67 De
Declination: 8.37
Depth Reference: RKB = Ground Level
Elevation: 4671
Total Depth as Drilled: 7003

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	0.158	42.191	0.102	0.092	100.000	0.158	0.102	0.137
200.000	0.194	13.036	0.369	0.223	199.999	0.095	0.369	0.431
300.000	0.450	58.778	0.737	0.597	299.998	0.344	0.737	0.948
400.000	1.186	78.130	1.153	1.945	399.987	0.776	1.153	2.261
500.000	1.338	82.914	1.510	4.116	499.963	0.185	1.510	4.384
600.000	1.443	75.416	1.971	6.493	599.934	0.209	1.971	6.785
700.000	1.419	80.533	2.492	8.932	699.902	0.130	2.492	9.273
800.000	1.441	76.168	2.996	11.374	799.871	0.111	2.996	11.762
900.000	1.575	81.261	3.505	13.953	899.837	0.189	3.505	14.387
1000.000	1.594	82.796	3.889	16.691	999.798	0.047	3.889	17.139
1100.000	1.568	76.494	4.383	19.402	1099.760	0.176	4.383	19.891
1200.000	1.574	70.677	5.157	22.028	1199.723	0.160	5.157	22.624
1300.000	1.615	71.849	6.050	24.664	1299.684	0.052	6.050	25.396
1400.000	1.589	71.443	6.931	27.318	1399.645	0.028	6.931	28.184
1500.000	1.521	69.384	7.840	29.875	1499.608	0.088	7.840	30.887
1600.000	1.296	70.432	8.686	32.184	1599.578	0.226	8.686	33.335
1700.000	0.842	72.375	9.287	33.950	1699.560	0.455	9.287	35.197
1800.000	1.030	75.644	9.733	35.521	1799.547	0.195	9.733	36.831
1900.000	0.767	39.540	10.472	36.818	1899.535	0.611	10.472	38.278
2000.000	0.806	41.943	11.511	37.714	1999.526	0.052	11.511	39.432
2100.000	0.747	45.471	12.491	38.649	2099.517	0.076	12.491	40.618
2200.000	0.748	37.008	13.470	39.507	2199.508	0.110	13.470	41.740
2300.000	0.726	16.919	14.597	40.084	2299.500	0.258	14.597	42.659
2400.000	0.752	358.065	15.859	40.246	2399.492	0.244	15.859	43.258
2500.000	0.672	345.156	17.082	40.074	2499.484	0.179	17.082	43.563
2600.000	0.840	344.388	18.354	39.727	2599.476	0.168	18.354	43.762
2700.000	0.747	329.295	19.621	39.197	2699.466	0.228	19.621	43.833
2800.000	0.889	326.178	20.826	38.432	2799.456	0.148	20.826	43.712
2900.000	0.872	326.649	22.105	37.582	2899.444	0.018	22.105	43.601
3000.000	0.877	324.122	23.361	36.715	2999.432	0.039	23.361	43.517
3100.000	0.889	326.125	24.625	35.834	3099.421	0.033	24.625	43.480
3200.000	0.960	4.425	26.104	35.466	3199.408	0.610	26.104	44.038
3300.000	1.295	22.308	27.985	35.960	3299.389	0.482	27.985	45.566
3400.000	1.875	26.684	30.492	37.124	3399.351	0.593	30.492	48.041
3500.000	2.603	26.265	33.990	38.863	3499.274	0.728	33.990	51.630

3600.000	2.901	23.129	38.354	40.862	3599.158	0.334	38.354	56.043
3700.000	2.823	29.875	42.817	43.083	3699.034	0.346	42.817	60.741
3800.000	3.085	13.601	47.568	44.943	3798.902	0.875	47.568	65.441
3900.000	3.103	30.273	52.521	46.940	3898.759	0.897	52.521	70.440
4000.000	2.978	36.713	56.941	49.858	3998.618	0.364	56.941	75.684
4100.000	2.868	35.216	61.067	52.853	4098.488	0.134	61.067	80.763
4200.000	2.910	34.448	65.204	55.732	4198.361	0.057	65.204	85.777
4300.000	2.915	36.883	69.331	58.694	4298.232	0.124	69.331	90.839
4400.000	2.801	32.110	73.434	61.518	4398.108	0.264	73.434	95.797
4500.000	3.047	30.520	77.794	64.166	4497.977	0.260	77.794	100.842
4600.000	2.982	27.506	82.391	66.718	4597.839	0.171	82.391	106.016
4700.000	2.902	29.872	86.893	69.180	4697.707	0.146	86.893	111.069
4800.000	2.927	26.471	91.373	71.579	4797.578	0.175	91.373	116.071
4900.000	2.853	27.653	95.863	73.872	4897.451	0.094	95.863	121.024
5000.000	2.516	28.221	100.002	76.065	4997.341	0.338	100.002	125.643
5100.000	1.744	21.324	103.354	77.656	5097.271	0.812	103.354	129.277
5200.000	1.474	13.547	106.022	78.511	5197.232	0.347	106.022	131.927
5300.000	1.280	359.131	108.389	78.795	5297.203	0.396	108.389	134.003
5400.000	0.524	357.830	109.963	78.761	5397.190	0.756	109.963	135.259
5500.000	0.509	290.131	110.572	78.327	5497.187	0.576	110.572	135.504
5600.000	0.408	273.553	110.747	77.554	5597.184	0.166	110.747	135.202
5700.000	0.787	244.175	110.470	76.580	5697.178	0.475	110.470	134.418
5800.000	1.095	185.375	109.220	75.872	5797.167	0.962	109.220	132.987
5900.000	1.170	214.859	107.431	75.199	5897.148	0.581	107.431	131.135
6000.000	0.735	271.509	106.610	73.975	5997.136	0.981	106.610	129.761
6100.000	1.351	308.990	107.369	72.417	6097.120	0.888	107.369	129.508
6200.000	1.981	335.290	109.680	70.778	6197.079	0.975	109.680	130.535
6300.000	2.054	334.580	112.869	69.287	6297.017	0.077	112.869	132.439
6400.000	1.999	332.292	116.032	67.706	6396.954	0.098	116.032	134.341
6500.000	1.788	333.696	118.975	66.204	6496.899	0.216	118.975	136.154
6600.000	1.386	336.560	121.483	65.031	6596.861	0.410	121.483	137.794
6650.000	1.254	340.082	122.553	64.604	6646.848	0.310	122.553	138.538

0

degrees East of True North

Cbrg

0.000
42.191
31.146
38.983
59.326
69.849
73.111
74.412
75.242
75.897
76.885
77.271
76.824
76.217
75.764
75.296
74.897
74.701
74.677
74.124
73.027
72.090
71.173
69.990
68.493
66.914
65.202
63.409
61.548
59.536
57.533
55.504
53.646
52.109
50.602
48.827

46.814
45.178
43.375
41.789
41.205
40.876
40.521
40.250
39.954
39.517
39.000
38.525
38.074
37.618
37.258
36.920
36.521
36.016
35.612
35.313
35.003
34.730
34.787
34.991
34.756
33.998
32.835
31.544
30.264
29.094
28.161
27.796