



Company: Noble Energy
Rig: Production/ V.E.S
API # 05-123-20750
Date: 4/30/2013
Surveyor: Jay Hinman
VS:
Lat : 40.41925
Long: -104.52875

Well: Wacker 41-10
Location: Weld County, Colorado
North Reference: GRID
Convergence: Grid North is -0.63 of 1
Declination: 8.49
Depth Reference: Ground Level
Elevation: 4605'
Total Depth as Drilled: 6991'

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	0.575	342.733	0.479	-0.149	99.998	0.575	0.479	0.502
200.000	0.279	323.550	1.154	-0.443	199.995	0.325	1.154	1.236
300.000	0.411	309.686	1.579	-0.863	299.994	0.155	1.579	1.800
400.000	0.579	3.872	2.312	-1.105	399.990	0.475	2.312	2.563
500.000	0.462	357.099	3.220	-1.091	499.986	0.132	3.220	3.400
600.000	0.194	58.922	3.710	-0.966	599.985	0.408	3.710	3.834
700.000	0.443	295.044	3.961	-1.171	699.984	0.574	3.961	4.131
800.000	0.394	356.305	4.468	-1.544	799.982	0.428	4.468	4.727
900.000	0.238	341.963	5.008	-1.630	899.980	0.173	5.008	5.267
1000.000	0.320	277.974	5.244	-1.971	999.979	0.304	5.244	5.603
1100.000	0.235	358.653	5.489	-2.252	1099.978	0.365	5.489	5.933
1200.000	0.280	45.853	5.864	-2.081	1199.977	0.211	5.864	6.223
1300.000	0.277	43.930	6.209	-1.738	1299.976	0.010	6.209	6.447
1400.000	0.331	68.702	6.488	-1.301	1399.975	0.141	6.488	6.617
1500.000	0.299	39.938	6.793	-0.864	1499.973	0.160	6.793	6.848
1600.000	0.508	69.165	7.151	-0.282	1599.971	0.287	7.151	7.156
1700.000	0.628	42.518	7.712	0.502	1699.966	0.287	7.712	7.729
1800.000	0.650	8.766	8.677	0.959	1799.960	0.372	8.677	8.730
1900.000	0.871	15.374	9.970	1.247	1899.951	0.237	9.970	10.047
2000.000	1.122	1.548	11.681	1.475	1999.936	0.346	11.681	11.774
2100.000	0.902	352.162	13.440	1.394	2099.921	0.275	13.440	13.512
2200.000	1.208	16.167	15.232	1.580	2199.904	0.531	15.232	15.314
2300.000	1.348	10.902	17.400	2.096	2299.879	0.183	17.400	17.526
2400.000	1.440	23.850	19.704	2.827	2399.850	0.327	19.704	19.906
2500.000	1.719	21.819	22.246	3.892	2499.812	0.285	22.246	22.584
2600.000	1.813	26.616	25.053	5.159	2599.764	0.175	25.053	25.579
2700.000	1.783	20.572	27.925	6.414	2699.715	0.192	27.925	28.652
2800.000	2.313	33.450	31.065	8.073	2799.651	0.699	31.065	32.097
2900.000	3.110	28.967	35.123	10.500	2899.539	0.824	35.123	36.658
3000.000	2.969	28.459	39.772	13.047	2999.398	0.144	39.772	41.858
3100.000	2.594	24.725	44.105	15.228	3099.280	0.416	44.105	46.660
3200.000	1.449	26.092	47.296	16.731	3199.216	1.146	47.296	50.168
3300.000	0.918	40.396	49.041	17.806	3299.195	0.604	49.041	52.174
3400.000	0.486	67.860	49.811	18.717	3399.187	0.535	49.811	53.212
3500.000	0.189	56.195	50.063	19.248	3499.186	0.303	50.063	53.636

3600.000	0.233	190.192	49.954	19.349	3599.185	0.390	49.954	53.571
3700.000	0.122	145.066	49.667	19.374	3699.185	0.171	49.667	53.312
3800.000	0.076	259.922	49.567	19.370	3799.185	0.169	49.567	53.218
3900.000	0.186	203.812	49.407	19.240	3899.184	0.157	49.407	53.021
4000.000	0.188	217.990	49.130	19.074	3999.184	0.046	49.130	52.702
4100.000	0.379	105.730	48.911	19.291	4099.183	0.483	48.911	52.578
4200.000	0.102	339.444	48.904	19.579	4199.182	0.447	48.904	52.678
4300.000	0.104	302.393	49.036	19.471	4299.182	0.065	49.036	52.760
4400.000	0.346	71.129	49.182	19.680	4399.182	0.419	49.182	52.974
4500.000	0.390	294.312	49.420	19.656	4499.181	0.684	49.420	53.185
4600.000	1.165	294.278	49.978	18.419	4599.171	0.776	49.978	53.264
4700.000	0.618	245.839	50.175	17.000	4699.160	0.886	50.175	52.977
4800.000	0.736	263.159	49.878	15.870	4799.153	0.235	49.878	52.342
4900.000	0.764	252.136	49.597	14.597	4899.144	0.147	49.597	51.701
5000.000	0.617	245.463	49.169	13.474	4999.137	0.167	49.169	50.982
5100.000	0.626	234.236	48.626	12.541	5099.131	0.122	48.626	50.218
5200.000	0.521	205.150	47.896	11.904	5199.126	0.305	47.896	49.353
5300.000	0.751	242.624	47.182	11.129	5299.121	0.463	47.182	48.477
5400.000	1.368	240.367	46.291	9.509	5399.103	0.618	46.291	47.258
5500.000	1.222	245.344	45.256	7.503	5499.077	0.184	45.256	45.874
5600.000	1.376	244.103	44.287	5.454	5599.052	0.157	44.287	44.621
5700.000	1.248	254.499	43.471	3.323	5699.026	0.270	43.471	43.598
5800.000	1.319	258.876	42.958	1.145	5799.000	0.121	42.958	42.973
5900.000	1.495	270.182	42.740	-1.288	5898.971	0.328	42.740	42.760
6000.000	2.220	288.553	43.361	-4.428	5998.918	0.929	43.361	43.586
6100.000	2.809	307.470	45.467	-8.209	6098.823	1.010	45.467	46.202
6200.000	5.610	314.589	50.390	-13.636	6198.544	2.845	50.390	52.202
6300.000	6.226	317.288	57.806	-20.795	6298.011	0.675	57.806	61.432
6400.000	5.270	315.151	65.046	-27.711	6397.507	0.979	65.046	70.703
6500.000	4.467	312.041	70.909	-33.842	6497.146	0.845	70.909	78.571
6600.000	3.214	311.959	75.392	-38.820	6596.919	1.253	75.392	84.799
6700.000	2.719	317.473	79.015	-42.508	6696.785	0.571	79.015	89.723
6730.000	2.556	317.296	80.031	-43.443	6726.753	0.545	80.031	91.062

0

True North

Cbrg

0.000

342.733

339.025

331.342

334.463

341.279

345.401

343.527

340.939

341.969

339.404

337.691

340.460

344.362

348.662

352.751

357.739

3.726

6.307

7.129

7.196

5.921

5.922

6.869

8.163

9.924

11.635

12.936

14.568

16.644

18.162

19.048

19.481

19.955

20.595

21.030

21.173
21.310
21.345
21.277
21.218
21.525
21.818
21.657
21.808
21.689
20.231
18.717
17.649
16.400
15.324
14.461
13.958
13.272
11.608
9.414
7.020
4.372
1.526
358.273
354.168
349.766
344.858
340.215
336.925
334.487
332.756
331.721
331.506