



Company: Noble Energy

Rig: Production/Core-Tech

API # 05-123-21181

Date: 4/15/14

Surveyor: Mark Simmons

VS: 0.000

Lat : 40.36125

Long: -104.55695

Well: Wonenberg B 33-3

Location: Weld County, Colorado

North Reference: Grid North

Convergence: Grid North is 0.610 De

Declination: 8.37

Depth Reference: RKB = Ground Level

Elevation: 4661

Total Depth as Drilled: 6975

Lat & Long obtained by handheld GPS at wellhead

MS 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	0.719	247.528	-0.240	-0.580	99.997	0.719	-0.240	0.628
200.000	0.273	246.401	-0.575	-1.379	199.993	0.446	-0.575	1.494
300.000	0.272	218.997	-0.855	-1.746	299.992	0.129	-0.855	1.944
400.000	0.115	193.921	-1.137	-1.920	399.992	0.174	-1.137	2.231
500.000	0.239	142.044	-1.399	-1.816	499.991	0.191	-1.399	2.292
600.000	0.397	136.801	-1.816	-1.450	599.990	0.160	-1.816	2.324
700.000	0.481	156.489	-2.454	-1.046	699.987	0.172	-2.454	2.667
800.000	0.438	146.138	-3.156	-0.665	799.984	0.093	-3.156	3.226
900.000	0.437	167.263	-3.845	-0.368	899.981	0.160	-3.845	3.863
1000.000	0.382	153.224	-4.515	-0.134	999.978	0.114	-4.515	4.517
1100.000	0.304	149.946	-5.042	0.149	1099.976	0.081	-5.042	5.045
1200.000	0.397	152.133	-5.578	0.444	1199.975	0.094	-5.578	5.596
1300.000	0.425	142.912	-6.180	0.829	1299.972	0.072	-6.180	6.235
1400.000	0.392	150.009	-6.772	1.224	1399.969	0.060	-6.772	6.882
1500.000	0.452	102.247	-7.152	1.780	1499.967	0.346	-7.152	7.371
1600.000	0.447	91.015	-7.243	2.556	1599.964	0.088	-7.243	7.681
1700.000	0.328	66.699	-7.137	3.209	1699.962	0.201	-7.137	7.825
1800.000	0.378	1.222	-6.694	3.479	1799.960	0.384	-6.694	7.544
1900.000	0.655	353.644	-5.796	3.423	1899.956	0.285	-5.796	6.731
2000.000	0.894	354.593	-4.451	3.286	1999.947	0.240	-4.451	5.532
2100.000	1.014	350.914	-2.800	3.073	2099.933	0.134	-2.800	4.157
2200.000	1.182	325.685	-1.075	2.352	2199.915	0.507	-1.075	2.586
2300.000	1.113	314.976	0.463	1.084	2299.895	0.225	0.463	1.178
2400.000	1.135	311.410	1.804	-0.346	2399.876	0.074	1.804	1.837
2500.000	1.070	302.048	2.955	-1.880	2499.858	0.191	2.955	3.503
2600.000	1.190	307.677	4.085	-3.494	2599.838	0.164	4.085	5.376
2700.000	1.028	296.897	5.126	-5.116	2699.819	0.264	5.126	7.242
2800.000	0.988	302.203	5.991	-6.645	2799.804	0.101	5.991	8.946
2900.000	0.817	316.973	6.972	-7.861	2899.792	0.287	6.972	10.507
3000.000	0.672	321.696	7.953	-8.711	2999.783	0.158	7.953	11.795
3100.000	0.606	13.274	8.928	-8.952	3099.778	0.559	8.928	12.643
3200.000	0.936	52.068	9.945	-8.187	3199.769	0.599	9.945	12.881
3300.000	1.239	49.310	11.152	-6.722	3299.751	0.308	11.152	13.021
3400.000	1.211	57.167	12.430	-5.014	3399.728	0.170	12.430	13.404
3500.000	1.368	92.341	12.955	-2.934	3499.704	0.793	12.955	13.283

3600.000	1.781	109.861	12.378	-0.280	3599.667	0.630	12.378	12.381
3700.000	1.956	117.014	11.075	2.703	3699.614	0.291	11.075	11.400
3800.000	2.130	111.514	9.618	5.952	3799.551	0.262	9.618	11.311
3900.000	1.958	105.379	8.484	9.327	3899.487	0.278	8.484	12.609
4000.000	1.876	94.888	7.891	12.606	3999.431	0.360	7.891	14.872
4100.000	2.256	81.132	8.055	16.182	4099.367	0.622	8.055	18.076
4200.000	3.086	75.126	9.049	20.729	4199.257	0.874	9.049	22.618
4300.000	3.309	73.525	10.559	26.098	4299.102	0.241	10.559	28.153
4400.000	3.490	73.011	12.267	31.777	4398.926	0.184	12.267	34.062
4500.000	3.537	73.597	14.027	37.647	4498.738	0.059	14.027	40.175
4600.000	2.863	73.394	15.612	42.999	4598.581	0.674	15.612	45.745
4700.000	2.435	73.744	16.920	47.431	4698.474	0.429	16.920	50.359
4800.000	2.363	76.265	18.004	51.473	4798.386	0.128	18.004	54.531
4900.000	1.943	73.689	18.970	55.103	4898.316	0.431	18.970	58.277
5000.000	1.485	74.664	19.789	57.981	4998.271	0.459	19.789	61.265
5100.000	1.285	73.311	20.454	60.305	5098.241	0.203	20.454	63.679
5200.000	1.308	77.000	21.033	62.491	5198.216	0.086	21.033	65.936
5300.000	0.931	63.499	21.652	64.330	5298.197	0.458	21.652	67.876
5400.000	0.960	50.947	22.542	65.707	5398.183	0.209	22.542	69.467
5500.000	1.008	45.771	23.683	66.988	5498.168	0.101	23.683	71.051
5600.000	0.646	45.065	24.695	68.017	5598.158	0.362	24.695	72.361
5700.000	0.404	18.537	25.427	68.528	5698.154	0.337	25.427	73.093
5800.000	0.211	358.444	25.946	68.635	5798.152	0.218	25.946	73.376
5900.000	0.135	327.917	26.230	68.568	5898.152	0.117	26.230	73.413
6000.000	0.184	18.774	26.481	68.557	5998.151	0.144	26.481	73.494
6100.000	0.088	67.622	26.662	68.679	6098.151	0.142	26.662	73.673
6200.000	0.174	251.684	26.644	68.606	6198.151	0.261	26.644	73.598
6300.000	0.089	274.129	26.602	68.385	6298.151	0.098	26.602	73.377
6400.000	0.265	253.415	26.541	68.086	6398.150	0.185	26.541	73.076
6500.000	0.450	227.741	26.211	67.573	6498.148	0.240	26.211	72.479
6600.000	0.453	217.503	25.634	67.042	6598.145	0.081	25.634	71.775
6650.000	0.336	214.589	25.356	66.839	6648.144	0.238	25.356	71.487

0

degrees East of True North

Cbrg

0.000
247.528
247.348
243.910
239.359
232.375
218.606
203.084
191.904
185.471
181.700
178.307
175.451
172.358
169.757
166.022
160.562
155.787
152.536
149.434
143.561
132.343
114.564
66.862
349.141
327.530
319.463
315.057
312.038
311.570
312.397
314.921
320.539
328.920
338.032
347.241

358.706

13.714

31.749

47.712

57.954

63.537

66.416

67.972

68.892

69.565

70.045

70.367

70.721

71.003

71.155

71.264

71.398

71.398

71.064

70.529

70.046

69.643

69.292

69.066

68.880

68.783

68.776

68.744

68.703

68.799

69.076

69.225