



Company: Noble Energy
Rig: Production/Coretech
API # 05-123-10762
Date: 5-14-14
Surveyor: Justin Williams
VS: 0.000
Lat : 40.361
Long: -104.561

Well: Wonenberg 01
Location: Weld County, Colorado
North Reference: GRID
Convergence: GRID North is 0.61 De
Declination: 8.36
Depth Reference: RKB = Ground Level
Elevation: 4699
Total Depth as Drilled: 6996

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	0.614	349.130	0.526	-0.101	99.998	0.614	0.526	0.536
200.000	0.081	359.282	1.123	-0.203	199.996	0.534	1.123	1.141
300.000	0.142	271.646	1.197	-0.328	299.996	0.161	1.197	1.241
400.000	0.132	271.247	1.203	-0.567	399.995	0.010	1.203	1.331
500.000	0.148	284.060	1.237	-0.809	499.995	0.035	1.237	1.478
600.000	0.138	255.985	1.240	-1.051	599.995	0.070	1.240	1.625
700.000	0.234	241.350	1.113	-1.347	699.994	0.106	1.113	1.747
800.000	0.240	215.968	0.845	-1.649	799.994	0.104	0.845	1.853
900.000	0.233	228.381	0.541	-1.924	899.993	0.052	0.541	1.999
1000.000	0.183	216.332	0.277	-2.171	999.992	0.066	0.277	2.189
1100.000	0.108	168.682	0.056	-2.247	1099.992	0.136	0.056	2.248
1200.000	0.283	89.352	-0.034	-1.982	1199.991	0.283	-0.034	1.982
1300.000	0.240	98.696	-0.062	-1.528	1299.990	0.060	-0.062	1.530
1400.000	0.399	52.395	0.118	-1.045	1399.989	0.291	0.118	1.052
1500.000	0.476	238.283	0.112	-1.123	1499.988	0.874	0.112	1.128
1600.000	0.582	247.281	-0.302	-1.945	1599.983	0.135	-0.302	1.968
1700.000	0.636	223.885	-0.899	-2.799	1699.978	0.253	-0.899	2.939
1800.000	0.505	275.607	-1.256	-3.622	1799.974	0.512	-1.256	3.834
1900.000	0.725	266.517	-1.251	-4.692	1899.968	0.240	-1.251	4.856
2000.000	0.637	270.581	-1.284	-5.880	1999.961	0.100	-1.284	6.019
2100.000	0.849	247.548	-1.562	-7.121	2099.952	0.362	-1.562	7.290
2200.000	0.836	264.053	-1.920	-8.532	2199.942	0.242	-1.920	8.745
2300.000	1.019	265.315	-2.068	-10.143	2299.929	0.184	-2.068	10.352
2400.000	1.554	282.021	-1.859	-12.355	2399.903	0.648	-1.859	12.494
2500.000	2.027	290.142	-0.967	-15.341	2499.855	0.536	-0.967	15.372
2600.000	2.088	294.917	0.409	-18.654	2599.790	0.182	0.409	18.658
2700.000	2.197	300.419	2.147	-21.958	2699.720	0.233	2.147	22.063
2800.000	2.288	305.863	4.287	-25.229	2799.644	0.232	4.287	25.591
2900.000	2.511	315.721	7.025	-28.376	2899.557	0.468	7.025	29.233
3000.000	2.848	321.130	10.527	-31.464	2999.447	0.421	10.527	33.179
3100.000	3.028	320.823	14.508	-34.692	3099.316	0.181	14.508	37.603
3200.000	3.604	327.204	19.198	-38.063	3199.148	0.683	19.198	42.630
3300.000	3.639	341.434	24.848	-40.776	3298.951	0.897	24.848	47.750
3400.000	3.471	355.466	30.874	-42.025	3398.760	0.884	30.874	52.147

3500.000	3.441	9.192	36.854	-41.785	3498.580	0.826	36.854	55.715
3600.000	2.962	9.598	42.364	-40.875	3598.424	0.479	42.364	58.868
3700.000	2.664	18.981	47.110	-39.688	3698.304	0.547	47.110	61.599
3800.000	3.130	14.262	51.953	-38.260	3798.176	0.522	51.953	64.521
3900.000	3.404	23.278	57.327	-36.414	3898.014	0.582	57.327	67.914
4000.000	3.423	19.572	62.867	-34.240	3997.836	0.221	62.867	71.587
4100.000	3.174	10.653	68.400	-32.729	4097.671	0.570	68.400	75.827
4200.000	2.946	3.915	73.685	-32.041	4197.529	0.425	73.685	80.350
4300.000	2.859	2.360	78.740	-31.763	4297.401	0.118	78.740	84.906
4400.000	2.425	359.019	83.348	-31.697	4397.294	0.460	83.348	89.171
4500.000	2.078	358.478	87.276	-31.781	4497.217	0.348	87.276	92.882
4600.000	1.518	17.500	90.351	-31.431	4597.168	0.811	90.351	95.662
4700.000	1.546	29.058	92.793	-30.378	4697.133	0.310	92.793	97.639
4800.000	1.494	22.766	95.175	-29.218	4797.097	0.175	95.175	99.558
4900.000	1.245	33.151	97.286	-28.119	4897.069	0.351	97.286	101.268
5000.000	1.480	37.952	99.214	-26.731	4997.041	0.261	99.214	102.752
5100.000	0.915	60.176	100.630	-25.244	5097.019	0.721	100.630	103.748
5200.000	1.070	61.998	101.465	-23.727	5197.004	0.158	101.465	104.202
5300.000	0.787	67.467	102.167	-22.268	5296.991	0.296	102.167	104.565
5400.000	1.119	85.163	102.512	-20.661	5396.977	0.440	102.512	104.574
5500.000	1.501	86.200	102.681	-18.382	5496.951	0.383	102.681	104.314
5600.000	1.562	88.730	102.798	-15.712	5596.915	0.091	102.798	103.992
5700.000	2.058	108.618	102.255	-12.647	5696.866	0.794	102.255	103.034
5800.000	2.450	115.618	100.758	-9.018	5796.788	0.478	100.758	101.160
5900.000	2.925	115.910	98.719	-4.796	5896.678	0.475	98.719	98.835
6000.000	2.549	128.747	96.212	-0.767	5996.565	0.717	96.212	96.215
6100.000	1.601	130.400	93.915	2.031	6096.498	0.949	93.915	93.937
6200.000	1.550	125.974	92.215	4.190	6196.460	0.132	92.215	92.310
6300.000	1.483	116.712	90.838	6.441	6296.425	0.254	90.838	91.066
6400.000	1.659	139.143	89.161	8.544	6396.389	0.635	89.161	89.570
6500.000	1.650	130.462	87.132	10.587	6496.347	0.251	87.132	87.773
6550.000	1.935	138.342	86.034	11.696	6546.323	0.751	86.034	86.826

0

degrees East of True North

Cbrg

0.000
349.130
349.756
344.684
334.754
326.837
319.708
309.554
297.139
285.704
277.276
271.428
269.030
267.659
276.462
275.720
261.165
252.195
250.877
255.069
257.681
257.632
257.316
258.474
261.445
266.392
271.256
275.584
279.644
283.904
288.499
292.695
296.766
301.358
306.303

311.412
316.025
319.887
323.631
327.576
331.425
334.430
336.498
338.031
339.178
339.991
340.818
341.873
342.934
343.879
344.921
345.917
346.839
347.704
348.605
349.851
351.310
352.949
354.886
357.219
359.543
1.239
2.602
4.056
5.474
6.928
7.742