



Company: Noble Energy
Rig: Production/Nabors
API # 05-123-12012
Date: 3-5-14
Surveyor: Justin Williams
VS: 0.000
Lat : 40.307
Long: -104.769

Well: McWilliams 02
Location: Weld County, Colorado
North Reference: GRID
Convergence: GRID North is 0.47 De
Declination: 8.49
Depth Reference: RKB = Ground Level
Elevation: 4742
Total Depth as Drilled: 7840

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	0.226	28.617	0.173	0.095	100.000	0.226	0.173	0.197
200.000	0.257	44.184	0.507	0.345	199.999	0.072	0.507	0.614
300.000	0.182	52.406	0.765	0.628	299.998	0.081	0.765	0.990
400.000	0.160	55.547	0.941	0.869	399.998	0.024	0.941	1.281
500.000	0.270	102.765	0.968	1.214	499.997	0.199	0.968	1.553
600.000	0.267	285.200	0.977	1.219	599.997	0.536	0.977	1.562
700.000	0.293	314.088	1.216	0.810	699.996	0.142	1.216	1.462
800.000	0.208	239.830	1.303	0.470	799.995	0.310	1.303	1.385
900.000	0.335	239.310	1.063	0.062	899.994	0.127	1.063	1.065
1000.000	0.249	215.542	0.737	-0.316	999.992	0.147	0.737	0.802
1100.000	0.189	12.261	0.721	-0.408	1099.992	0.429	0.721	0.828
1200.000	0.334	358.260	1.173	-0.381	1199.991	0.158	1.173	1.233
1300.000	0.314	251.204	1.376	-0.650	1299.990	0.521	1.376	1.521
1400.000	0.259	85.010	1.307	-0.684	1399.990	0.569	1.307	1.475
1500.000	0.070	14.927	1.386	-0.443	1499.989	0.244	1.386	1.455
1600.000	0.086	117.004	1.411	-0.361	1599.989	0.121	1.411	1.456
1700.000	0.293	112.337	1.280	-0.058	1699.989	0.208	1.280	1.281
1800.000	0.248	120.017	1.074	0.366	1799.988	0.058	1.074	1.135
1900.000	0.308	68.123	1.066	0.803	1899.986	0.249	1.066	1.335
2000.000	0.162	195.580	1.030	1.014	1999.986	0.427	1.030	1.446
2100.000	0.473	71.852	1.022	1.368	2099.985	0.579	1.022	1.708
2200.000	0.490	74.266	1.267	2.172	2199.981	0.027	1.267	2.515
2300.000	0.432	66.561	1.533	2.930	2299.978	0.085	1.533	3.307
2400.000	0.522	137.052	1.349	3.587	2399.975	0.555	1.349	3.832
2500.000	0.400	135.717	0.766	4.141	2499.972	0.122	0.766	4.211
2600.000	0.326	271.816	0.525	4.100	2599.971	0.674	0.525	4.133
2700.000	0.295	292.365	0.632	3.577	2699.970	0.115	0.632	3.633
2800.000	0.194	66.382	0.798	3.495	2799.969	0.452	0.798	3.585
2900.000	0.270	192.514	0.636	3.599	2899.969	0.415	0.636	3.655
3000.000	0.341	140.833	0.175	3.737	2999.968	0.274	0.175	3.741
3100.000	0.324	104.413	-0.126	4.199	3099.966	0.209	-0.126	4.201
3200.000	0.555	71.575	-0.044	4.932	3199.963	0.332	-0.044	4.932
3300.000	0.881	35.191	0.737	5.834	3299.956	0.545	0.737	5.881
3400.000	0.807	38.876	1.913	6.719	3399.945	0.092	1.913	6.986
3500.000	0.407	20.112	2.795	7.283	3499.939	0.441	2.795	7.801

3600.000	0.205	215.159	2.982	7.302	3599.939	0.607	2.982	7.888
3700.000	0.238	134.182	2.692	7.348	3699.938	0.289	2.692	7.825
3800.000	0.534	268.508	2.535	7.031	3799.937	0.720	2.535	7.474
3900.000	0.288	9.541	2.771	6.607	3899.935	0.653	2.771	7.165
4000.000	0.408	324.362	3.308	6.442	3999.933	0.289	3.308	7.241
4100.000	1.286	348.680	4.698	6.014	4099.922	0.930	4.698	7.631
4200.000	1.723	359.417	7.302	5.778	4199.887	0.518	7.302	9.311
4300.000	1.664	355.935	10.253	5.660	4299.844	0.119	10.253	11.712
4400.000	1.655	353.858	13.137	5.403	4399.802	0.061	13.137	14.205
4500.000	1.609	359.423	15.977	5.234	4499.761	0.165	15.977	16.813
4600.000	0.831	342.011	18.071	4.996	4599.738	0.853	18.071	18.749
4700.000	0.844	334.241	19.424	4.452	4699.727	0.114	19.424	19.928
4800.000	0.839	280.232	20.217	3.411	4799.718	0.764	20.217	20.503
4900.000	0.932	274.499	20.411	1.880	4899.706	0.129	20.411	20.497
5000.000	0.787	313.371	20.946	0.570	4999.696	0.588	20.946	20.954
5100.000	0.334	330.434	21.672	-0.073	5099.691	0.477	21.672	21.672
5200.000	0.246	342.724	22.131	-0.281	5199.689	0.107	22.131	22.133
5300.000	0.174	29.703	22.469	-0.270	5299.689	0.180	22.469	22.470
5400.000	0.255	151.890	22.405	-0.089	5399.688	0.378	22.405	22.405
5500.000	0.773	227.302	21.751	-0.480	5499.685	0.751	21.751	21.756
5600.000	0.721	288.728	21.495	-1.571	5599.678	0.764	21.495	21.552
5700.000	0.506	299.429	21.914	-2.551	5699.672	0.242	21.914	22.062
5800.000	0.458	225.070	21.848	-3.219	5799.669	0.584	21.848	22.084
5900.000	0.207	274.918	21.581	-3.682	5899.668	0.362	21.581	21.893
6000.000	0.097	76.845	21.616	-3.779	5999.668	0.301	21.616	21.944
6100.000	0.567	343.267	22.109	-3.838	6099.666	0.581	22.109	22.439
6200.000	0.659	15.232	23.138	-3.829	6199.660	0.349	23.138	23.452
6300.000	0.735	19.646	24.297	-3.463	6299.653	0.093	24.297	24.542
6400.000	0.691	24.847	25.448	-2.994	6399.645	0.078	25.448	25.623
6500.000	1.413	36.347	26.988	-2.009	6499.628	0.749	26.988	27.063
6600.000	1.390	15.352	29.151	-0.958	6599.599	0.511	29.151	29.167
6700.000	1.265	32.446	31.252	-0.044	6699.572	0.413	31.252	31.253
6800.000	0.972	40.631	32.828	1.100	6799.553	0.334	32.828	32.846
6900.000	0.957	51.531	33.990	2.306	6899.539	0.184	33.990	34.068
7000.000	0.358	20.708	34.802	3.070	6999.532	0.675	34.802	34.937
7100.000	0.445	178.689	34.706	3.189	7099.531	0.789	34.706	34.852
7200.000	0.628	184.908	33.771	3.151	7199.527	0.192	33.771	33.918
7260.000	0.639	188.692	33.113	3.073	7259.523	0.072	33.113	33.255

0

degrees East of True North

Cbrg

0.000
28.617
34.249
39.366
42.712
51.412
51.268
33.673
19.825
3.317
336.777
330.519
341.984
334.717
332.373
342.266
345.653
357.419
18.815
36.972
44.558
53.241
59.753
62.387
69.383
79.520
82.702
79.983
77.144
79.983
87.318
91.724
90.509
82.798
74.104
69.005

67.784
69.882
70.175
67.249
62.816
52.003
38.357
28.900
22.354
18.138
15.454
12.909
9.578
5.263
1.559
359.806
359.272
359.313
359.772
358.736
355.819
353.359
351.618
350.318
350.084
350.151
350.602
351.889
353.291
355.742
358.119
359.919
1.920
3.881
5.041
5.251
5.331
5.301