



Company: Noble Energy  
 Rig: Production/VES  
 API # 05-123-25522  
 Date: 9/21/2013  
 Surveyor: Nick Kula  
 VS: 0.000  
 Lat : 40.349  
 Long: -104.626

Well: Tool G #2-19  
 Location: Weld County, Colorado  
 North Reference: GRID  
 Convergence: GRID North is 0.560 Degrees East  
 Declination: 8.48  
 Depth Reference: Ground Level  
 Elevation: 4683'  
 Total Depth as Drilled: 7766'

Lat & Long obtained by handheld GPS at wellhead

MS Gyro Survey Calculations

Depth	Inc	AzG	N/-S	E/-W	TVD	DL	VS	CD	Cbrg
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100.000	0.884	330.068	0.669	-0.385	99.996	0.884	0.669	0.772	330.068
200.000	0.293	243.879	1.225	-1.000	199.992	0.913	1.225	1.581	320.770
300.000	2.897	193.168	-1.349	-1.806	299.946	2.721	-1.349	2.254	233.229
400.000	3.995	200.084	-7.082	-3.578	399.764	1.171	-7.082	7.934	206.802
500.000	8.650	210.901	-16.811	-8.638	499.131	4.785	-16.811	18.901	207.197
600.000	12.507	222.671	-31.232	-19.845	597.425	4.402	-31.232	37.003	212.432
700.000	14.424	231.273	-46.988	-36.904	694.681	2.768	-46.988	59.747	218.146
800.000	17.088	241.394	-61.820	-59.527	790.933	3.818	-61.820	85.820	223.918
900.000	20.372	244.789	-76.272	-88.182	885.627	3.460	-76.272	116.591	229.142
1000.000	23.965	240.790	-93.604	-121.669	978.225	3.895	-93.604	153.509	232.428
1100.000	26.473	241.983	-113.988	-159.078	1068.687	2.558	-113.988	195.702	234.376
1200.000	26.846	239.089	-136.058	-198.129	1158.060	1.351	-136.058	240.347	235.522
1300.000	27.756	240.514	-159.119	-237.772	1246.921	1.121	-159.119	286.102	236.209
1400.000	28.173	240.547	-182.188	-278.598	1335.245	0.417	-182.188	332.880	236.817
1500.000	27.856	238.760	-205.912	-319.129	1423.529	0.897	-205.912	379.794	237.169
1600.000	27.179	239.597	-229.587	-358.802	1512.216	0.779	-229.587	425.969	237.386
1700.000	28.005	239.602	-253.025	-398.751	1600.842	0.826	-253.025	472.254	237.603
1800.000	27.652	237.236	-277.464	-438.515	1689.280	1.159	-277.464	518.924	237.677
1900.000	27.925	237.630	-302.559	-477.806	1777.747	0.329	-302.559	565.545	237.657
2000.000	26.842	237.408	-327.258	-516.606	1866.541	1.088	-327.258	611.538	237.647
2100.000	26.276	235.377	-351.996	-553.843	1955.990	1.070	-351.996	656.234	237.562
2200.000	26.331	237.213	-376.582	-590.703	2045.637	0.816	-376.582	700.531	237.482
2300.000	25.448	239.315	-399.556	-627.826	2135.602	1.274	-399.556	744.184	237.527
2400.000	25.109	238.117	-421.727	-664.318	2226.027	0.614	-421.727	786.875	237.592
2500.000	25.560	238.207	-444.299	-700.670	2316.409	0.453	-444.299	829.663	237.621
2600.000	25.586	237.374	-467.307	-737.192	2406.613	0.361	-467.307	872.828	237.629
2700.000	25.439	240.508	-489.524	-774.075	2496.866	1.358	-489.524	915.874	237.691
2800.000	25.967	239.495	-511.210	-811.632	2586.972	0.686	-511.210	959.209	237.795
2900.000	26.313	238.044	-534.054	-849.300	2676.745	0.727	-534.054	1003.256	237.838
3000.000	26.459	238.386	-557.462	-887.077	2766.327	0.211	-557.462	1047.697	237.854
3100.000	24.787	238.544	-580.081	-923.933	2856.489	1.673	-580.081	1090.938	237.878
3200.000	25.292	237.835	-602.393	-959.898	2947.091	0.587	-602.393	1133.262	237.889
3300.000	24.425	239.519	-624.253	-995.800	3037.826	1.119	-624.253	1175.292	237.917
3400.000	22.166	239.945	-644.191	-1029.950	3129.668	2.265	-644.191	1214.817	237.976
3500.000	22.605	239.190	-663.483	-1062.790	3222.132	0.525	-663.483	1252.886	238.024

3600.000	22.444	237.591	-683.558	-1095.410	3314.504	0.633	-683.558	1291.189	238.035
3700.000	22.384	241.171	-702.971	-1128.210	3406.954	1.366	-702.971	1329.291	238.073
3800.000	21.848	242.194	-720.833	-1161.350	3499.597	0.660	-720.833	1366.866	238.173
3900.000	23.427	237.475	-740.204	-1194.570	3591.897	2.405	-740.204	1405.311	238.216
4000.000	26.135	238.579	-762.378	-1230.130	3682.681	2.748	-762.378	1447.220	238.211
4100.000	26.840	238.046	-785.808	-1268.080	3772.184	0.744	-785.808	1491.820	238.214
4200.000	27.570	239.681	-809.438	-1307.210	3861.122	1.044	-809.438	1537.530	238.234
4300.000	27.161	238.834	-832.932	-1346.720	3949.932	0.564	-832.932	1583.488	238.264
4400.000	26.043	239.565	-855.865	-1385.180	4039.344	1.165	-855.865	1628.260	238.289
4500.000	27.660	238.273	-879.194	-1423.850	4128.560	1.719	-879.194	1673.422	238.306
4600.000	27.429	240.316	-902.807	-1463.610	4217.227	0.973	-902.807	1719.653	238.332
4700.000	28.792	236.576	-927.481	-1503.720	4305.435	2.228	-927.481	1766.748	238.334
4800.000	28.996	238.766	-953.315	-1544.550	4392.989	1.078	-953.315	1815.057	238.317
4900.000	28.734	238.993	-978.265	-1585.870	4480.565	0.284	-978.265	1863.329	238.331
5000.000	27.581	238.495	-1002.750	-1626.210	4568.730	1.176	-1002.750	1910.516	238.341
5100.000	28.487	236.866	-1027.880	-1665.920	4656.997	1.186	-1027.880	1957.508	238.325
5200.000	28.663	234.562	-1054.820	-1705.430	4744.819	1.116	-1054.820	2005.282	238.263
5300.000	25.987	236.484	-1080.830	-1743.250	4833.654	2.817	-1080.830	2051.123	238.201
5400.000	25.983	235.367	-1105.380	-1779.540	4923.546	0.490	-1105.380	2094.901	238.153
5500.000	26.095	239.781	-1128.900	-1816.570	5013.404	1.941	-1128.900	2138.768	238.141
5600.000	24.436	239.584	-1150.440	-1853.410	5103.834	1.661	-1150.440	2181.433	238.172
5700.000	23.932	239.242	-1171.280	-1888.680	5195.057	0.523	-1171.280	2222.391	238.194
5800.000	22.555	237.818	-1191.870	-1922.340	5286.939	1.487	-1191.870	2261.851	238.201
5900.000	22.364	239.194	-1211.830	-1954.920	5379.355	0.559	-1211.830	2300.052	238.206
6000.000	20.281	238.734	-1230.570	-1986.080	5472.504	2.090	-1230.570	2336.408	238.218
6100.000	18.682	238.202	-1248.010	-2014.500	5566.776	1.609	-1248.010	2369.756	238.221
6200.000	18.829	234.149	-1265.900	-2041.200	5661.470	1.311	-1265.900	2401.870	238.194
6300.000	15.652	240.967	-1281.900	-2066.080	5756.975	3.760	-1281.900	2431.451	238.182
6400.000	15.315	248.402	-1293.310	-2090.160	5853.355	2.012	-1293.310	2457.926	238.252
6500.000	13.813	249.881	-1302.280	-2113.650	5950.139	1.547	-1302.280	2482.625	238.362
6600.000	12.348	250.632	-1309.930	-2134.940	6047.542	1.475	-1309.930	2504.776	238.468
6700.000	11.420	252.211	-1316.500	-2154.460	6145.398	0.983	-1316.500	2524.850	238.573
6800.000	10.607	248.724	-1322.870	-2172.460	6243.556	1.050	-1322.870	2543.534	238.662
6900.000	9.787	245.991	-1329.660	-2188.800	6341.977	0.952	-1329.660	2561.028	238.722
7000.000	8.967	241.139	-1336.880	-2203.390	6440.641	1.138	-1336.880	2577.246	238.753
7100.000	8.392	244.648	-1343.770	-2216.810	6539.496	0.782	-1343.770	2592.291	238.777
7200.000	6.952	244.768	-1349.480	-2228.880	6638.598	1.440	-1349.480	2605.570	238.807
7300.000	5.891	257.823	-1353.140	-2239.370	6737.975	1.799	-1353.140	2616.443	238.858
7400.000	4.953	258.372	-1355.090	-2248.620	6837.526	0.939	-1355.090	2625.367	238.925
7500.000	3.391	270.795	-1355.920	-2255.800	6937.260	1.796	-1355.920	2631.952	238.991
7550.000	3.336	268.804	-1355.930	-2258.740	6987.174	0.259	-1355.930	2634.472	239.023

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