



Company: Noble Energy
 Rig: Production/ CoreTech
 API # 05-123-31307
 Date: 6/16/2013
 Surveyor: Sean Bratt
 VS: 0.000
 Lat : 40.219
 Long: -104.583

Well: Thompson D 20-31D
 Location: Weld County, Colorado
 North Reference: GRID
 Convergence: Grid north is 0.59 Degrees East of
 Declination: 8.35 Degrees
 Depth Reference: Ground Level
 Elevation: 4763 Feet
 T.D as Drilled: 8025 Feet

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
100.000	0.255	41.438	0.167	0.147	100.000	0.255	0.167	0.223	41.438
200.000	0.420	2.259	0.700	0.309	199.998	0.275	0.700	0.765	23.824
300.000	0.374	93.624	1.046	0.650	299.996	0.569	1.046	1.231	31.854
400.000	0.082	246.211	0.996	0.910	399.996	0.449	0.996	1.349	42.416
500.000	0.428	88.242	0.978	1.218	499.995	0.506	0.978	1.562	51.221
600.000	0.336	104.838	0.915	1.875	599.993	0.144	0.915	2.086	63.986
700.000	0.270	227.914	0.682	1.983	699.992	0.533	0.682	2.097	71.021
800.000	2.166	207.742	-1.148	0.928	799.965	1.914	-1.148	1.477	141.052
900.000	3.848	202.375	-5.924	-1.229	899.824	1.704	-5.924	6.050	191.718
1000.000	5.635	204.737	-13.486	-4.561	999.478	1.798	-13.486	14.237	198.684
1100.000	7.090	202.231	-23.658	-8.950	1098.860	1.480	-23.658	25.295	200.722
1200.000	8.122	199.997	-36.009	-13.701	1197.979	1.074	-36.009	38.528	200.831
1300.000	9.935	196.888	-50.904	-18.623	1296.736	1.876	-50.904	54.203	200.095
1400.000	11.460	195.804	-68.718	-23.835	1394.995	1.538	-68.718	72.734	199.129
1500.000	12.981	194.237	-89.164	-29.303	1492.727	1.556	-89.164	93.855	198.193
1600.000	13.812	192.011	-111.726	-34.549	1590.006	0.979	-111.726	116.946	197.183
1700.000	15.405	192.145	-136.388	-39.828	1686.770	1.593	-136.388	142.084	196.279
1800.000	16.680	193.225	-163.345	-45.906	1782.874	1.310	-163.345	169.673	195.697
1900.000	17.326	192.310	-191.865	-52.364	1878.502	0.699	-191.865	198.882	195.265
2000.000	17.682	200.622	-220.631	-60.889	1973.887	2.523	-220.631	228.879	195.428
2100.000	18.906	193.502	-250.603	-70.021	2068.843	2.546	-250.603	260.201	195.611
2200.000	22.663	193.272	-285.119	-78.230	2162.318	3.758	-285.119	295.656	195.343
2300.000	22.411	197.897	-322.013	-88.511	2254.689	1.790	-322.013	333.956	195.369
2400.000	23.260	192.132	-359.462	-98.520	2346.862	2.392	-359.462	372.719	195.327
2500.000	23.965	195.476	-398.342	-108.090	2438.493	1.514	-398.342	412.746	195.182
2600.000	24.058	197.530	-437.352	-119.649	2529.841	0.841	-437.352	453.423	195.300
2700.000	26.941	197.632	-478.386	-132.653	2620.090	2.884	-478.386	496.438	195.498
2800.000	28.453	197.335	-522.718	-146.614	2708.629	1.518	-522.718	542.890	195.668
2900.000	29.289	196.663	-568.892	-160.726	2796.200	0.897	-568.892	591.161	195.776
3000.000	29.411	196.233	-615.900	-174.603	2883.364	0.244	-615.900	640.171	195.828
3100.000	28.327	194.333	-662.464	-187.341	2970.937	1.420	-662.464	688.444	195.791
3200.000	27.120	193.800	-707.588	-198.651	3059.456	1.232	-707.588	734.945	195.682
3300.000	27.857	193.841	-752.410	-209.678	3148.165	0.737	-752.410	781.079	195.572
3400.000	21.733	193.269	-793.154	-219.525	3238.903	6.129	-793.154	822.973	195.471
3500.000	17.724	200.297	-825.469	-229.060	3333.027	4.652	-825.469	856.660	195.509

3600.000	21.032	198.566	-856.765	-240.057	3427.350	3.357	-856.765	889.761	195.652
3700.000	22.998	196.564	-892.504	-251.341	3520.055	2.103	-892.504	927.219	195.728
3800.000	23.698	192.550	-930.847	-261.278	3611.872	1.738	-930.847	966.820	195.679
3900.000	22.671	191.394	-969.356	-269.452	3703.795	1.124	-969.356	1006.109	195.534
4000.000	22.871	191.945	-1007.260	-277.281	3796.001	0.293	-1007.260	1044.729	195.391
4100.000	22.417	189.365	-1045.090	-284.406	3888.295	1.092	-1045.090	1083.094	195.224
4200.000	20.260	189.978	-1080.960	-290.510	3981.434	2.169	-1080.960	1119.313	195.043
4300.000	20.890	190.702	-1115.530	-296.821	4075.055	0.680	-1115.530	1154.341	194.900
4400.000	18.968	190.327	-1149.040	-303.046	4169.062	1.926	-1149.040	1188.329	194.775
4500.000	17.301	194.321	-1179.440	-309.638	4264.095	2.079	-1179.440	1219.406	194.710
4600.000	20.502	199.301	-1210.380	-319.107	4358.697	3.582	-1210.380	1251.742	194.769
4700.000	19.378	198.784	-1242.620	-330.238	4452.700	1.138	-1242.620	1285.753	194.883
4800.000	15.949	203.703	-1270.920	-341.107	4547.977	3.737	-1270.920	1315.896	195.024
4900.000	15.387	202.116	-1295.790	-351.625	4644.261	0.707	-1295.790	1342.649	195.182
5000.000	15.804	196.435	-1321.140	-360.473	4740.585	1.583	-1321.140	1369.436	195.262
5100.000	16.699	193.878	-1348.150	-367.773	4836.589	1.146	-1348.150	1397.414	195.259
5200.000	17.328	193.982	-1376.550	-374.817	4932.212	0.629	-1376.550	1426.666	195.232
5300.000	17.239	194.942	-1405.320	-382.236	5027.697	0.299	-1405.320	1456.372	195.216
5400.000	12.965	190.872	-1430.660	-388.175	5124.224	4.402	-1430.660	1482.388	195.180
5500.000	12.011	188.447	-1451.970	-391.819	5221.858	1.088	-1451.970	1503.909	195.102
5600.000	11.386	189.424	-1472.000	-394.964	5319.780	0.656	-1472.000	1524.068	195.020
5700.000	10.563	187.590	-1490.820	-397.791	5417.951	0.894	-1490.820	1542.983	194.940
5800.000	11.509	183.846	-1509.860	-399.671	5516.102	1.186	-1509.860	1561.867	194.827
5900.000	12.009	184.736	-1530.190	-401.199	5614.003	0.532	-1530.190	1581.907	194.692
6000.000	12.410	184.950	-1551.260	-402.985	5711.741	0.403	-1551.260	1602.749	194.562
6100.000	11.904	186.008	-1572.220	-404.992	5809.498	0.552	-1572.220	1623.546	194.445
6200.000	9.648	194.333	-1590.600	-408.146	5907.734	2.736	-1590.600	1642.132	194.392
6300.000	9.102	192.991	-1606.430	-411.999	6006.398	0.588	-1606.430	1658.419	194.385
6400.000	8.426	191.130	-1621.320	-415.192	6105.230	0.733	-1621.320	1673.642	194.364
6500.000	7.653	179.288	-1635.170	-416.523	6204.253	1.823	-1635.170	1687.389	194.291
6600.000	5.864	179.700	-1646.940	-416.414	6303.554	1.789	-1646.940	1698.768	194.189
6700.000	5.105	179.084	-1656.500	-416.316	6403.096	0.761	-1656.500	1708.012	194.108
6800.000	4.936	180.888	-1665.250	-416.311	6502.712	0.231	-1665.250	1716.499	194.036
6900.000	4.233	191.276	-1673.170	-417.100	6602.393	1.085	-1673.170	1724.375	193.998
7000.000	4.166	192.588	-1680.330	-418.613	6702.125	0.117	-1680.330	1731.693	193.989
7100.000	3.738	193.606	-1687.050	-420.172	6801.887	0.433	-1687.050	1738.584	193.985
7200.000	2.390	193.958	-1692.240	-421.441	6901.742	1.349	-1692.240	1743.929	193.985
7300.000	1.849	193.013	-1695.830	-422.307	7001.673	0.542	-1695.830	1747.626	193.984
7400.000	1.520	198.650	-1698.660	-423.094	7101.630	0.368	-1698.660	1750.561	193.986
7500.000	1.254	204.612	-1700.910	-423.974	7201.600	0.302	-1700.910	1752.958	193.996
7600.000	0.922	198.408	-1702.670	-424.684	7301.582	0.352	-1702.670	1754.836	194.005
7650.000	0.775	201.136	-1703.370	-424.933	7351.577	0.305	-1703.370	1755.572	194.007

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