



Company: Noble Energy
Rig: Production/CoreTech
API # 05-123-17237
Date: 9/23/2013
Surveyor: Jason Kinchelow
VS: 0.000
Lat : 40.332
Long: -104.655

Well: Lower Latham 03-09G
Location: Weld County, Colorado
North Reference: GRID
Convergence: Grid north is 0.55 degrees east of
Declination: 8.5
Depth Reference: RKB = Ground Level
Elevation: 4671'
Total Depth as Drilled: 8070'

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	0.392	285.120	0.089	-0.331	99.999	0.392	0.089	0.342	285.120
200.000	0.327	268.440	0.171	-0.946	199.997	0.123	0.171	0.961	280.237
300.000	0.177	236.269	0.077	-1.360	299.996	0.200	0.077	1.362	273.244
400.000	0.327	124.372	-0.170	-1.254	399.996	0.426	-0.170	1.265	262.287
500.000	0.887	79.465	-0.189	-0.258	499.990	0.695	-0.189	0.320	233.719
600.000	0.904	54.249	0.413	1.143	599.978	0.391	0.413	1.215	70.133
700.000	0.618	70.631	1.052	2.291	699.970	0.356	1.052	2.521	65.330
800.000	0.949	77.978	1.404	3.609	799.960	0.345	1.404	3.873	68.750
900.000	0.789	75.680	1.746	5.086	899.949	0.163	1.746	5.378	71.051
1000.000	0.434	69.300	2.051	6.108	999.943	0.361	2.051	6.443	71.442
1100.000	0.476	113.680	2.018	6.843	1099.940	0.346	2.018	7.134	73.572
1200.000	0.329	113.698	1.735	7.487	1199.937	0.147	1.735	7.685	76.951
1300.000	0.262	111.177	1.537	7.963	1299.936	0.069	1.537	8.110	79.075
1400.000	0.214	166.825	1.273	8.219	1399.935	0.226	1.273	8.317	81.194
1500.000	0.243	165.634	0.886	8.314	1499.934	0.030	0.886	8.361	83.918
1600.000	0.369	183.131	0.359	8.349	1599.933	0.155	0.359	8.357	87.539
1700.000	0.339	181.714	-0.258	8.322	1699.931	0.031	-0.258	8.326	91.773
1800.000	0.285	187.511	-0.799	8.281	1799.930	0.062	-0.799	8.320	95.514
1900.000	0.213	243.621	-1.128	8.082	1899.929	0.243	-1.128	8.160	97.949
2000.000	0.375	275.398	-1.180	7.590	1999.928	0.224	-1.180	7.681	98.840
2100.000	0.607	271.574	-1.135	6.734	2099.924	0.235	-1.135	6.829	99.567
2200.000	0.530	264.800	-1.162	5.744	2199.919	0.102	-1.162	5.860	101.441
2300.000	2.011	66.520	-0.505	6.892	2299.902	2.520	-0.505	6.911	94.193
2400.000	6.591	67.245	2.415	13.797	2399.594	4.580	2.415	14.007	80.072
2500.000	10.758	65.124	8.563	27.562	2498.429	4.178	8.563	28.862	72.741
2600.000	16.191	61.895	19.065	48.342	2595.641	5.483	19.065	51.966	68.477
2700.000	21.411	62.770	33.995	76.890	2690.273	5.228	33.995	84.070	66.149
2800.000	26.355	60.756	53.203	112.510	2781.684	5.010	53.203	124.455	64.692
2900.000	30.542	61.067	76.349	154.133	2869.589	4.190	76.349	172.006	63.649
3000.000	34.698	58.507	103.523	200.663	2953.801	4.378	103.523	225.793	62.711
3100.000	36.417	57.505	134.340	249.972	3035.152	1.815	134.340	283.784	61.745
3200.000	35.623	59.702	164.981	300.156	3116.036	1.517	164.981	342.508	61.205
3300.000	34.503	60.369	193.677	349.921	3197.887	1.184	193.677	399.944	61.036
3400.000	35.732	61.252	221.725	400.142	3279.684	1.330	221.725	457.466	61.008
3500.000	35.420	62.304	249.238	451.402	3361.019	0.687	249.238	515.638	61.095

3600.000	35.578	64.190	275.373	503.250	3442.434	1.106	275.373	573.664	61.313
3700.000	35.391	65.181	300.194	555.721	3523.862	0.605	300.194	631.619	61.623
3800.000	35.708	65.505	324.448	608.560	3605.224	0.369	324.448	689.646	61.936
3900.000	36.456	64.850	349.174	662.011	3686.041	0.842	349.174	748.452	62.191
4000.000	37.278	63.546	375.292	716.019	3766.045	1.134	375.292	808.411	62.339
4100.000	37.788	62.803	402.786	770.383	3845.346	0.682	402.786	869.325	62.398
4200.000	37.464	63.767	430.233	824.914	3924.548	0.672	430.233	930.367	62.456
4300.000	36.241	65.309	456.026	879.055	4004.566	1.533	456.026	990.301	62.581
4400.000	34.827	68.184	478.988	932.428	4085.946	2.189	478.988	1048.261	62.810
4500.000	34.968	68.640	500.037	985.626	4167.964	0.296	500.037	1105.213	63.100
4600.000	34.624	69.279	520.526	1038.886	4250.083	0.501	520.526	1161.994	63.387
4700.000	34.550	67.067	541.627	1091.575	4332.413	1.258	541.627	1218.563	63.610
4800.000	35.356	66.128	564.386	1144.148	4414.375	0.969	564.386	1275.777	63.744
4900.000	35.947	65.632	588.205	1197.344	4495.633	0.658	588.205	1334.023	63.837
5000.000	35.699	66.813	611.804	1250.901	4576.717	0.734	611.804	1392.500	63.937
5100.000	35.097	69.919	633.164	1304.726	4658.238	1.897	633.164	1450.244	64.113
5200.000	34.681	67.303	654.014	1357.977	4740.268	1.553	654.014	1507.261	64.284
5300.000	34.229	66.573	676.174	1410.031	4822.726	0.612	676.174	1563.777	64.380
5400.000	35.045	65.423	699.297	1461.949	4905.003	1.045	699.297	1620.590	64.437
5500.000	34.967	64.132	723.741	1513.843	4986.914	0.745	723.741	1677.952	64.448
5600.000	34.466	65.553	747.955	1565.387	5069.113	0.952	747.955	1734.898	64.461
5700.000	34.201	68.164	770.120	1617.237	5151.694	1.497	770.120	1791.240	64.536
5800.000	32.580	70.389	789.612	1668.693	5235.189	2.031	789.612	1846.083	64.677
5900.000	32.787	62.540	811.144	1718.103	5319.394	4.241	811.144	1899.956	64.727
6000.000	32.280	68.719	833.328	1767.024	5403.725	3.361	833.328	1953.666	64.751
6100.000	33.040	66.237	854.005	1816.859	5487.917	1.540	854.005	2007.561	64.824
6200.000	34.740	66.709	876.258	1867.984	5570.925	1.721	876.258	2063.296	64.869
6300.000	34.350	62.001	900.773	1919.074	5653.308	2.698	900.773	2119.962	64.856
6400.000	34.948	60.769	928.005	1968.979	5735.574	0.921	928.005	2176.711	64.765
6500.000	34.602	62.542	955.084	2019.170	5817.716	1.069	955.084	2233.659	64.685
6600.000	34.334	62.543	981.179	2069.389	5900.160	0.268	981.179	2290.215	64.633
6700.000	34.889	63.971	1006.733	2120.113	5982.464	0.983	1006.733	2346.996	64.599
6800.000	35.147	61.663	1032.947	2171.148	6064.365	1.350	1032.947	2404.342	64.557
6900.000	34.529	61.902	1059.958	2221.484	6146.441	0.633	1059.958	2461.403	64.492
7000.000	34.596	62.903	1086.238	2271.759	6228.792	0.572	1086.238	2518.095	64.445
7100.000	33.568	59.553	1113.182	2320.872	6311.622	2.140	1113.182	2574.028	64.376
7200.000	32.402	61.691	1139.900	2368.298	6395.505	1.647	1139.900	2628.346	64.298
7300.000	31.696	62.499	1164.737	2415.189	6480.264	0.826	1164.737	2681.371	64.254
7400.000	30.968	65.130	1187.689	2461.836	6565.684	1.549	1187.689	2733.358	64.245
7500.000	26.946	67.426	1207.216	2506.120	6653.167	4.172	1207.216	2781.727	64.280
7600.000	27.697	67.946	1224.640	2548.581	6742.011	0.787	1224.640	2827.545	64.335
7700.000	26.712	67.768	1241.870	2590.926	6830.948	0.989	1241.870	2873.175	64.391
7800.000	26.155	68.641	1258.401	2632.256	6920.494	0.679	1258.401	2917.593	64.449

True North