



Company: Noble Energy
Rig: Production/ CoreTech
API # 05-123-33909
Date: 9/24/2013
Surveyor: Sean Bratt
VS: 0.000
Lat : 40.343
Long: -104.623

Well: Lower Latham PC G 01
Location: Weld County, Colorado
North Reference: GRID
Convergence: Grid north is 0.57 Degr
Declination: 8.48 Degrees
Depth Reference: Ground Level
Elevation: 4692 Feet
Total Depth as Drilled: 7280 Feet

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
100.000	0.822	301.548	0.375	-0.611	99.997	0.822	0.375	0.717
200.000	0.741	320.903	1.253	-1.631	199.987	0.275	1.253	2.056
300.000	0.738	327.697	2.299	-2.383	299.979	0.088	2.299	3.311
400.000	0.628	323.886	3.286	-3.050	399.972	0.120	3.286	4.483
500.000	0.595	326.142	4.159	-3.662	499.966	0.041	4.159	5.542
600.000	0.296	247.242	4.491	-4.189	599.964	0.611	4.491	6.141
700.000	0.113	104.476	4.366	-4.332	699.964	0.392	4.366	6.151
800.000	0.254	37.815	4.516	-4.101	799.963	0.233	4.516	6.101
900.000	0.694	99.986	4.586	-3.369	899.960	0.618	4.586	5.691
1000.000	2.221	128.395	3.278	-1.254	999.926	1.644	3.278	3.509
1100.000	4.545	131.265	-0.540	3.244	1099.744	2.329	-0.540	3.289
1200.000	6.891	134.774	-7.379	10.482	1199.240	2.371	-7.379	12.819
1300.000	9.080	137.600	-17.432	20.062	1298.265	2.223	-17.432	26.577
1400.000	11.458	146.299	-31.524	30.896	1396.662	2.833	-31.524	44.140
1500.000	12.746	144.989	-48.824	42.736	1494.438	1.317	-48.824	64.886
1600.000	13.527	144.407	-67.370	55.873	1591.820	0.792	-67.370	87.524
1700.000	13.649	144.469	-86.482	69.537	1689.021	0.123	-86.482	110.971
1800.000	13.467	144.718	-105.589	83.119	1786.234	0.191	-105.589	134.380
1900.000	13.938	145.772	-125.052	96.619	1883.388	0.533	-125.052	158.029
2000.000	13.794	146.453	-144.945	109.981	1980.474	0.217	-144.945	181.948
2100.000	13.992	146.422	-164.953	123.256	2077.549	0.198	-164.953	205.916
2200.000	13.305	146.500	-184.620	136.293	2174.724	0.688	-184.620	229.479
2300.000	13.414	147.863	-204.038	148.814	2272.019	0.333	-204.038	252.541
2400.000	14.060	145.889	-223.917	161.797	2369.158	0.798	-223.917	276.255
2500.000	14.425	143.910	-244.040	175.946	2466.085	0.609	-244.040	300.853
2600.000	14.892	140.078	-263.960	191.529	2562.832	1.076	-263.960	326.127
2700.000	15.070	140.202	-283.803	208.097	2659.433	0.181	-283.803	351.921
2800.000	15.900	140.226	-304.319	225.181	2755.803	0.829	-304.319	378.572
2900.000	15.408	142.265	-325.354	242.075	2852.094	0.737	-325.354	405.531
3000.000	16.259	143.170	-347.065	258.597	2948.299	0.886	-347.065	432.813
3100.000	16.603	144.042	-369.835	275.378	3044.215	0.423	-369.835	461.098
3200.000	16.304	144.212	-392.785	291.976	3140.120	0.303	-392.785	489.418
3300.000	15.786	145.115	-415.330	307.963	3236.225	0.575	-415.330	517.049
3400.000	15.903	143.526	-437.505	323.887	3332.426	0.449	-437.505	544.347

3500.000	16.194	143.375	-459.713	340.351	3428.528	0.294	-459.713	571.992
3600.000	15.304	142.888	-481.429	356.633	3524.773	0.900	-481.429	599.134
3700.000	15.523	142.087	-502.510	372.818	3621.177	0.306	-502.510	625.708
3800.000	17.692	142.124	-525.064	390.372	3716.999	2.169	-525.064	654.280
3900.000	18.778	141.301	-549.620	409.764	3811.976	1.116	-549.620	685.557
4000.000	19.674	143.386	-575.694	429.867	3906.399	1.129	-575.694	718.477
4100.000	17.929	143.723	-601.616	449.016	4001.060	1.748	-601.616	750.704
4200.000	16.601	142.780	-625.401	466.765	4096.552	1.358	-625.401	780.382
4300.000	15.892	141.156	-647.440	483.993	4192.559	0.842	-647.440	808.349
4400.000	13.001	143.548	-667.155	499.267	4289.388	2.951	-667.155	833.285
4500.000	11.060	143.408	-683.906	511.669	4387.187	1.941	-683.906	854.127
4600.000	8.602	143.671	-697.635	521.819	4485.710	2.458	-697.635	871.200
4700.000	3.919	144.683	-706.453	528.229	4585.086	4.685	-706.453	882.101
4800.000	2.632	139.638	-710.992	531.692	4684.921	1.317	-710.992	887.809
4900.000	1.241	95.560	-712.847	534.257	4784.866	1.943	-712.847	890.832
5000.000	0.814	67.217	-712.676	535.990	4884.851	0.651	-712.676	891.736
5100.000	0.805	45.124	-711.906	537.143	4984.841	0.310	-711.906	891.814
5200.000	0.747	48.400	-710.977	538.129	5084.832	0.073	-710.977	891.668
5300.000	0.607	47.976	-710.190	539.010	5184.825	0.140	-710.190	891.572
5400.000	0.462	43.110	-709.541	539.679	5284.820	0.152	-709.541	891.460
5500.000	0.307	27.537	-709.009	540.078	5384.818	0.185	-709.009	891.279
5600.000	0.152	335.818	-708.650	540.148	5484.817	0.244	-708.650	891.035
5700.000	0.074	263.453	-708.536	540.029	5584.817	0.148	-708.536	890.873
5800.000	0.220	165.071	-708.729	540.015	5684.817	0.242	-708.729	891.017
5900.000	0.344	163.320	-709.202	540.150	5784.816	0.124	-709.202	891.476
6000.000	0.498	167.169	-709.913	540.333	5884.813	0.156	-709.913	892.152
6100.000	0.822	159.773	-711.009	540.677	5984.806	0.334	-711.009	893.233
6200.000	1.042	154.999	-712.506	541.309	6084.793	0.234	-712.506	894.807
6300.000	1.499	156.433	-714.529	542.217	6184.768	0.457	-714.529	896.967
6400.000	1.430	148.519	-716.792	543.391	6284.735	0.213	-716.792	899.480
6500.000	0.950	151.514	-718.585	544.438	6384.714	0.485	-718.585	901.541
6600.000	2.142	155.301	-721.011	545.614	6484.675	1.196	-721.011	904.186
6700.000	2.765	147.587	-724.745	547.688	6584.584	0.704	-724.745	908.415
6800.000	3.105	158.609	-729.303	549.969	6684.453	0.657	-729.303	913.427
6900.000	3.035	156.673	-734.256	552.005	6784.309	0.125	-734.256	918.608
7000.000	4.203	149.855	-739.856	554.894	6884.109	1.243	-739.856	924.821

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0

rees East of True North

Cbrg

0.000

301.548

307.531

313.976

317.135

318.641

316.988

315.221

317.758

323.701

339.070

99.443

125.144

130.987

135.577

138.804

140.330

141.199

141.790

142.309

142.810

143.232

143.564

143.895

144.149

144.209

144.035

143.750

143.500

143.349

143.310

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143.375

143.443

143.487

143.485
143.470
143.428
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143.294
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143.220
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