



Company: Noble Energy

Rig: Production / Coretech

API # 05-123-17176

Date: 9/23/2013

Surveyor: Norman Cowan

VS: 0.000

Lat : 40.340

Long: -104.627

Well: Lower Latham 02-12G

Location: Weld County, Colorado

North Reference: GRID

Convergence: Grid north is 0.56 Deg East of True

Declination: 8.48 Degrees

Depth Reference: Ground Level

Elevation: 4671 Feet

Total Depth as Drilled: 8055 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	0.353	37.264	0.245	0.186	99.999	0.353	0.245	0.308	37.264
200.000	0.351	56.069	0.661	0.627	199.998	0.115	0.661	0.911	43.486
300.000	0.058	114.513	0.811	0.927	299.997	0.325	0.811	1.232	48.821
400.000	0.051	311.700	0.820	0.940	399.997	0.108	0.820	1.247	48.892
500.000	0.247	104.622	0.795	1.115	499.997	0.293	0.795	1.369	54.485
600.000	0.146	116.693	0.684	1.437	599.996	0.108	0.684	1.591	64.551
700.000	0.353	85.112	0.653	1.858	699.995	0.241	0.653	1.969	70.639
800.000	0.437	31.572	1.004	2.364	799.993	0.364	1.004	2.569	66.988
900.000	0.102	54.703	1.381	2.637	899.992	0.346	1.381	2.976	62.361
1000.000	0.172	95.052	1.419	2.859	999.991	0.115	1.419	3.191	63.605
1100.000	0.459	65.723	1.570	3.374	1099.990	0.320	1.570	3.721	65.040
1200.000	0.440	38.506	2.036	3.978	1199.987	0.212	2.036	4.469	62.901
1300.000	0.321	37.784	2.557	4.389	1299.985	0.120	2.557	5.079	59.771
1400.000	0.513	26.664	3.178	4.761	1399.982	0.208	3.178	5.724	56.273
1500.000	0.366	20.571	3.877	5.074	1499.979	0.154	3.877	6.386	52.614
1600.000	0.510	25.556	4.578	5.378	1599.976	0.149	4.578	7.063	49.594
1700.000	0.420	6.366	5.344	5.611	1699.973	0.179	5.344	7.749	46.395
1800.000	0.347	26.279	5.980	5.786	1799.971	0.151	5.980	8.321	44.054
1900.000	0.473	15.528	6.650	6.031	1899.968	0.147	6.650	8.977	42.205
2000.000	0.548	28.250	7.469	6.368	1999.964	0.136	7.469	9.815	40.450
2100.000	0.629	32.105	8.355	6.886	2099.959	0.090	8.355	10.827	39.493
2200.000	0.695	21.801	9.383	7.402	2199.952	0.136	9.383	11.951	38.271
2300.000	0.864	32.346	10.583	8.031	2299.943	0.221	10.583	13.285	37.194
2400.000	0.784	61.995	11.541	9.038	2399.933	0.429	11.541	14.658	38.066
2500.000	1.239	58.237	12.431	10.561	2499.917	0.460	12.431	16.311	40.350
2600.000	1.064	70.506	13.309	12.355	2599.897	0.301	13.309	18.160	42.870
2700.000	1.181	62.494	14.095	14.144	2699.878	0.196	14.095	19.968	45.099
2800.000	1.215	59.502	15.109	15.972	2799.856	0.071	15.109	21.986	46.589
2900.000	1.452	71.365	16.052	18.086	2899.829	0.363	16.052	24.182	48.409
3000.000	3.006	261.163	16.054	16.695	2999.794	4.444	16.054	23.162	46.121
3100.000	7.959	248.454	13.107	7.659	3099.309	5.070	13.107	15.180	30.299
3200.000	13.239	249.997	6.643	-9.553	3197.568	5.287	6.643	11.635	304.814
3300.000	18.703	247.477	-3.423	-35.142	3293.673	5.507	-3.423	35.309	264.436
3400.000	23.534	250.588	-16.208	-68.803	3386.932	4.957	-16.208	70.687	256.744
3500.000	28.022	249.385	-31.122	-109.640	3476.958	4.519	-31.122	113.972	254.153

3600.000	33.752	248.062	-49.787	-157.436	3562.742	5.770	-49.787	165.121	252.451
3700.000	39.666	245.505	-73.421	-212.300	3642.879	6.107	-73.421	224.637	250.923
3800.000	41.041	244.074	-101.009	-270.873	3719.085	1.658	-101.009	289.093	249.549
3900.000	41.414	245.105	-129.286	-330.401	3794.295	0.775	-129.286	354.796	248.630
4000.000	41.560	244.426	-157.528	-390.324	3869.206	0.473	-157.528	420.913	248.022
4100.000	41.182	244.915	-185.805	-450.062	3944.251	0.497	-185.805	486.908	247.567
4200.000	40.374	246.038	-212.918	-509.479	4019.975	1.092	-212.918	552.180	247.319
4300.000	41.083	245.899	-239.490	-569.070	4095.756	0.715	-239.490	617.411	247.177
4400.000	40.613	246.663	-265.800	-628.948	4171.401	0.686	-265.800	682.807	247.091
4500.000	40.071	246.916	-291.314	-688.443	4247.621	0.566	-291.314	747.541	247.064
4600.000	40.719	248.794	-315.733	-748.465	4323.782	1.379	-315.733	812.334	247.128
4700.000	40.409	251.349	-337.899	-809.588	4399.756	1.690	-337.899	877.273	247.346
4800.000	39.136	254.365	-356.772	-870.696	4476.621	2.311	-356.772	940.955	247.718
4900.000	37.886	257.914	-371.708	-931.120	4554.878	2.538	-371.708	1002.572	248.238
5000.000	37.097	258.425	-384.188	-990.690	4634.222	0.849	-384.188	1062.576	248.804
5100.000	37.924	259.333	-395.928	-1050.440	4713.546	0.995	-395.928	1122.575	249.348
5200.000	37.458	260.089	-406.851	-1110.590	4792.678	0.657	-406.851	1182.768	249.880
5300.000	39.147	262.910	-415.982	-1171.880	4871.157	2.430	-415.982	1243.521	250.457
5400.000	39.161	262.596	-423.947	-1234.520	4948.702	0.198	-423.947	1305.282	251.047
5500.000	39.375	262.387	-432.218	-1297.270	5026.121	0.251	-432.218	1367.376	251.573
5600.000	38.746	266.250	-438.468	-1359.940	5103.781	2.514	-438.468	1428.882	252.130
5700.000	38.540	268.067	-441.566	-1422.310	5181.888	1.154	-441.566	1489.276	252.753
5800.000	37.677	272.265	-441.409	-1483.990	5260.586	2.730	-441.409	1548.248	253.435
5900.000	37.740	274.118	-438.003	-1545.060	5339.702	1.135	-438.003	1605.940	254.173
6000.000	35.657	277.898	-431.799	-1604.460	5419.887	3.072	-431.799	1661.553	254.937
6100.000	34.441	278.128	-423.796	-1661.330	5501.752	1.223	-423.796	1714.532	255.689
6200.000	35.052	278.490	-415.558	-1717.730	5583.920	0.645	-415.558	1767.278	256.400
6300.000	33.071	281.333	-405.956	-1772.890	5666.764	2.541	-405.956	1818.772	257.103
6400.000	35.594	276.407	-397.344	-1828.580	5749.352	3.751	-397.344	1871.253	257.740
6500.000	33.843	279.153	-389.665	-1885.000	5831.550	2.347	-389.665	1924.854	258.320
6600.000	35.785	277.945	-381.194	-1941.450	5913.648	2.060	-381.194	1978.522	258.892
6700.000	34.237	276.317	-374.057	-1998.370	5995.551	1.808	-374.057	2033.082	259.398
6800.000	35.284	274.347	-368.772	-2055.140	6077.707	1.535	-368.772	2087.961	259.827
6900.000	37.108	271.824	-365.622	-2114.100	6158.408	2.355	-365.622	2145.478	260.188
7000.000	35.976	272.624	-363.317	-2173.590	6238.749	1.229	-363.317	2203.744	260.511
7100.000	34.520	271.055	-361.450	-2231.260	6320.415	1.714	-361.450	2260.351	260.798
7200.000	32.603	271.825	-360.071	-2286.530	6403.741	1.963	-360.071	2314.705	261.051
7300.000	30.638	270.393	-359.038	-2338.940	6488.891	2.103	-359.038	2366.337	261.273
7400.000	28.913	268.299	-359.581	-2388.590	6575.688	2.014	-359.581	2415.503	261.439
7500.000	28.086	269.047	-360.690	-2436.290	6663.570	0.900	-360.690	2462.845	261.579
7600.000	27.274	268.876	-361.531	-2482.730	6752.125	0.816	-361.531	2508.919	261.715
7700.000	26.488	269.703	-362.096	-2527.940	6841.320	0.870	-362.096	2553.745	261.849
7800.000	25.435	270.631	-361.975	-2571.720	6931.227	1.129	-361.975	2597.068	261.988
7850.000	25.120	268.234	-362.184	-2593.060	6976.441	2.142	-362.184	2618.235	262.049

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