



Company: Noble Energy

Rig: Production / CoreTech

API # 05-123-24136

Date: 10/16/2013

Surveyor: CJ Hines

VS: 0.000

Lat : 40.484

Long: -104.506

Well: Lapp #13-32

Location: Weld County, Colorado

North Reference: GRID

Convergence: Grid north is 0.64 Deg East of True

Declination: 8.41

Depth Reference: Ground Level

Elevation: 4667

Total Depth as Drilled: 6977

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	0.322	218.413	-0.220	-0.175	99.999	0.322	-0.220	0.281	218.413
200.000	0.386	204.534	-0.748	-0.490	199.998	0.107	-0.748	0.894	213.220
300.000	0.297	238.351	-1.190	-0.850	299.996	0.216	-1.190	1.462	215.533
400.000	0.359	266.920	-1.343	-1.383	399.994	0.173	-1.343	1.927	225.846
500.000	0.233	298.313	-1.263	-1.875	499.993	0.201	-1.263	2.261	236.034
600.000	0.415	263.652	-1.206	-2.414	599.991	0.260	-1.206	2.699	243.447
700.000	0.422	290.140	-1.120	-3.120	699.989	0.192	-1.120	3.315	250.260
800.000	0.147	290.857	-0.947	-3.586	799.988	0.275	-0.947	3.709	255.204
900.000	0.480	283.482	-0.804	-4.113	899.986	0.335	-0.804	4.191	258.941
1000.000	0.189	282.440	-0.671	-4.681	999.984	0.291	-0.671	4.729	261.844
1100.000	0.388	265.483	-0.662	-5.179	1099.983	0.215	-0.662	5.222	262.715
1200.000	0.166	285.016	-0.651	-5.657	1199.982	0.238	-0.651	5.695	263.435
1300.000	0.186	334.208	-0.468	-5.868	1299.981	0.148	-0.468	5.887	265.443
1400.000	0.357	323.969	-0.070	-6.122	1399.980	0.178	-0.070	6.123	269.348
1500.000	0.358	310.724	0.386	-6.542	1499.978	0.082	0.386	6.554	273.379
1600.000	0.353	336.068	0.871	-6.904	1599.976	0.156	0.871	6.958	277.192
1700.000	0.225	294.431	1.234	-7.207	1699.975	0.238	1.234	7.312	279.713
1800.000	0.183	1.815	1.474	-7.380	1799.975	0.229	1.474	7.526	281.297
1900.000	0.285	279.904	1.677	-7.621	1899.974	0.317	1.677	7.803	282.410
2000.000	0.329	308.164	1.897	-8.092	1999.973	0.156	1.897	8.311	283.195
2100.000	0.430	284.102	2.166	-8.681	2099.970	0.187	2.166	8.948	284.009
2200.000	0.370	273.946	2.280	-9.368	2199.968	0.093	2.280	9.641	283.677
2300.000	0.859	330.020	2.951	-10.065	2299.963	0.722	2.951	10.489	286.344
2400.000	0.864	338.584	4.303	-10.715	2399.951	0.129	4.303	11.547	291.880
2500.000	1.040	325.157	5.750	-11.509	2499.938	0.283	5.750	12.865	296.548
2600.000	1.560	325.472	7.617	-12.799	2599.912	0.520	7.617	14.894	300.757
2700.000	1.569	330.515	9.930	-14.245	2699.874	0.138	9.930	17.364	304.881
2800.000	2.081	321.039	12.534	-16.060	2799.823	0.592	12.534	20.372	307.969
2900.000	2.008	316.575	15.218	-18.406	2899.760	0.175	15.218	23.882	309.583
3000.000	2.091	325.502	17.994	-20.644	2999.696	0.330	17.994	27.386	311.077
3100.000	1.790	315.856	20.619	-22.765	3099.639	0.443	20.619	30.715	312.168
3200.000	1.716	323.084	22.937	-24.752	3199.592	0.233	22.937	33.746	312.820
3300.000	1.589	329.668	25.331	-26.352	3299.551	0.228	25.331	36.552	313.868
3400.000	1.244	344.201	27.572	-27.348	3399.520	0.496	27.572	38.834	315.234
3500.000	1.368	353.201	29.802	-27.785	3499.494	0.240	29.802	40.745	317.006

3600.000	1.502	348.968	32.274	-28.177	3599.463	0.171	32.274	42.843	318.877
3700.000	1.755	347.137	35.053	-28.768	3699.423	0.258	35.053	45.347	320.624
3800.000	1.817	338.339	38.019	-29.694	3799.374	0.281	38.019	48.241	322.009
3900.000	1.310	326.430	40.445	-30.912	3899.337	0.599	40.445	50.905	322.610
4000.000	1.771	328.010	42.708	-32.362	3999.300	0.463	42.708	53.584	322.847
4100.000	1.289	304.938	44.663	-34.103	4099.265	0.773	44.663	56.194	322.636
4200.000	0.621	300.262	45.580	-35.493	4199.251	0.672	45.580	57.770	322.092
4300.000	1.405	288.084	46.234	-37.127	4299.235	0.809	46.234	59.296	321.235
4400.000	1.092	274.076	46.682	-39.243	4399.211	0.435	46.682	60.985	319.948
4500.000	0.985	252.713	46.494	-41.013	4499.195	0.399	46.494	61.998	318.584
4600.000	1.511	242.444	45.629	-43.003	4599.171	0.570	45.629	62.700	316.697
4700.000	1.985	232.082	43.955	-45.538	4699.125	0.568	43.955	63.291	313.987
4800.000	2.459	231.792	41.564	-48.590	4799.049	0.474	41.564	63.941	310.544
4900.000	2.423	230.555	38.894	-51.908	4898.958	0.064	38.894	64.862	306.844
5000.000	2.370	233.667	36.326	-55.206	4998.871	0.140	36.326	66.085	303.345
5100.000	1.749	223.740	33.998	-57.927	5098.806	0.714	33.998	67.167	300.409
5200.000	1.731	246.236	32.287	-60.365	5198.761	0.679	32.287	68.457	298.141
5300.000	0.920	237.972	31.252	-62.427	5298.734	0.832	31.252	69.813	296.593
5400.000	1.178	222.810	30.072	-63.806	5398.717	0.377	30.072	70.538	295.235
5500.000	0.524	234.867	29.055	-64.879	5498.705	0.674	29.055	71.088	294.124
5600.000	0.747	230.218	28.375	-65.754	5598.699	0.228	28.375	71.615	293.341
5700.000	0.827	165.025	27.261	-66.069	5698.692	0.850	27.261	71.472	292.422
5800.000	0.995	173.117	25.702	-65.778	5798.679	0.211	25.702	70.621	291.342
5900.000	0.398	210.304	24.540	-65.849	5898.672	0.719	24.540	70.273	290.439
6000.000	0.728	141.870	23.740	-65.632	5998.668	0.690	23.740	69.794	289.885
6100.000	0.778	160.340	22.600	-65.011	6098.659	0.247	22.600	68.828	289.169
6200.000	0.907	170.999	21.180	-64.659	6198.648	0.202	21.180	68.040	288.137
6300.000	0.797	160.791	19.741	-64.307	6298.637	0.187	19.741	67.269	287.066
6400.000	0.417	134.102	18.831	-63.816	6398.632	0.464	18.831	66.537	286.441
6500.000	0.198	104.930	18.534	-63.388	6498.630	0.262	18.534	66.042	286.298
6600.000	0.406	78.304	18.561	-62.873	6598.629	0.246	18.561	65.556	286.447
6700.000	0.503	240.292	18.415	-62.907	6698.628	0.898	18.415	65.547	286.317

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