



Company: Noble Energy
Rig: Production/VES
API # 05-123-30113
Date: 4/27/2013
Surveyor: Justin Williams

Well: Lundvall J18-01D
Location: Weld County, Colorado
North Reference: GRID
Convergence: Grid north is -0.44 of True North
Declination: 8.65
Depth Reference: Ground Level
Elevation: 4937
Total Depth as Drilled: 7930

Lat & Long obtained by handheld GPS at wellhead

HA 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	0.596	23.598	0.477	0.208	99.998	0.596	0.477	0.520	23.598
200.000	0.348	19.717	1.239	0.519	199.995	0.251	1.239	1.344	22.722
300.000	0.245	4.998	1.738	0.640	299.993	0.127	1.738	1.852	20.216
400.000	0.309	350.254	2.217	0.613	399.992	0.095	2.217	2.300	15.459
500.000	0.185	359.554	2.644	0.566	499.991	0.130	2.644	2.704	12.087
600.000	0.141	346.793	2.925	0.537	599.991	0.057	2.925	2.974	10.400
700.000	0.226	14.255	3.236	0.557	699.990	0.120	3.236	3.283	9.773
800.000	0.105	125.742	3.374	0.680	799.990	0.282	3.374	3.441	11.401
900.000	0.495	78.697	3.405	1.179	899.989	0.431	3.405	3.603	19.093
1000.000	1.960	54.940	4.472	3.002	999.963	1.520	4.472	5.386	33.877
1100.000	4.276	53.724	7.661	7.408	1099.809	2.317	7.661	10.657	44.041
1200.000	5.883	58.498	12.545	14.784	1199.413	1.660	12.545	19.389	49.684
1300.000	7.342	52.300	19.130	24.209	1298.746	1.622	19.130	30.855	51.684
1400.000	8.782	46.269	28.315	34.782	1397.757	1.668	28.315	44.850	50.852
1500.000	9.782	39.255	40.170	45.673	1496.450	1.508	40.170	60.825	48.668
1600.000	11.124	40.457	54.089	57.309	1594.788	1.360	54.089	78.803	46.656
1700.000	13.161	47.869	69.069	72.014	1692.552	2.561	69.069	99.782	46.196
1800.000	16.518	46.274	86.537	90.735	1789.203	3.381	86.537	125.385	46.357
1900.000	17.452	44.988	106.969	111.610	1884.840	1.007	106.969	154.594	46.216
2000.000	19.930	42.444	130.156	133.717	1979.560	2.608	130.156	186.604	45.773
2100.000	21.417	44.144	155.837	157.937	2073.119	1.603	155.837	221.877	45.383
2200.000	21.402	45.458	181.737	183.657	2166.219	0.480	181.737	258.376	45.301
2300.000	21.917	44.866	207.763	209.828	2259.158	0.559	207.763	295.285	45.283
2400.000	21.557	43.968	234.213	235.748	2352.048	0.490	234.213	332.314	45.187
2500.000	21.063	44.531	260.245	261.105	2445.211	0.535	260.245	368.651	45.094
2600.000	22.440	42.382	287.155	286.573	2538.090	1.591	287.155	405.687	44.942
2700.000	24.026	41.785	316.434	313.005	2629.978	1.604	316.434	445.088	44.688
2800.000	25.409	42.458	347.444	341.055	2720.814	1.411	347.444	486.863	44.468
2900.000	26.304	41.050	379.982	370.089	2810.803	1.085	379.982	530.426	44.244
3000.000	26.303	41.664	413.243	399.368	2900.449	0.272	413.243	574.686	44.022
3100.000	23.793	39.974	445.258	427.060	2991.038	2.610	445.258	616.957	43.805
3200.000	25.468	43.287	476.371	454.764	3081.941	2.170	476.371	658.589	43.671
3300.000	26.128	42.182	508.338	484.292	3171.974	0.816	508.338	702.101	43.612
3400.000	24.328	41.283	540.136	512.670	3262.433	1.840	540.136	744.699	43.506
3500.000	23.142	45.851	569.305	540.363	3353.981	2.188	569.305	784.921	43.506

3600.000	21.785	45.766	595.938	567.759	3446.391	1.357	595.938	823.099	43.613
3700.000	20.956	46.909	621.099	594.114	3539.515	0.928	621.099	859.498	43.728
3800.000	19.001	43.296	645.167	618.340	3633.497	2.311	645.167	893.636	43.784
3900.000	20.073	44.707	669.212	641.577	3727.739	1.171	669.212	927.074	43.792
4000.000	20.331	43.453	694.020	665.597	3821.587	0.504	694.020	961.604	43.802
4100.000	22.340	42.643	720.614	690.422	3914.729	2.031	720.614	997.982	43.774
4200.000	23.196	42.146	749.197	716.512	4006.936	0.877	749.197	1036.671	43.723
4300.000	23.590	40.447	779.027	742.709	4098.717	0.781	779.027	1076.336	43.633
4400.000	22.461	42.358	808.371	768.562	4190.750	1.354	808.371	1115.415	43.554
4500.000	21.341	42.905	835.816	793.821	4283.532	1.138	835.816	1152.710	43.524
4600.000	22.662	46.601	862.383	820.208	4376.252	1.913	862.383	1190.145	43.564
4700.000	23.912	49.667	888.738	849.656	4468.107	1.741	888.738	1229.541	43.712
4800.000	26.027	47.277	916.744	881.228	4558.758	2.343	916.744	1271.606	43.868
4900.000	25.930	47.311	946.453	913.416	4648.654	0.099	946.453	1315.334	43.982
5000.000	24.802	45.990	975.850	944.573	4739.012	1.262	975.850	1358.124	44.067
5100.000	25.706	44.685	1005.843	974.910	4829.454	1.062	1005.843	1400.775	44.105
5200.000	26.540	43.196	1037.551	1005.454	4919.240	1.060	1037.551	1444.801	44.100
5300.000	27.864	39.490	1071.876	1035.611	5008.185	2.149	1071.876	1490.439	44.014
5400.000	25.823	39.888	1106.626	1064.442	5097.404	2.048	1106.626	1535.466	43.887
5500.000	23.133	40.780	1138.218	1091.244	5188.408	2.715	1138.218	1576.818	43.793
5600.000	19.603	39.323	1166.078	1114.712	5281.520	3.570	1166.078	1613.171	43.710
5700.000	17.316	40.599	1190.358	1135.029	5376.369	2.322	1190.358	1644.762	43.637
5800.000	16.545	42.513	1212.153	1154.336	5472.035	0.951	1212.153	1673.860	43.600
5900.000	13.385	40.862	1231.407	1171.534	5568.632	3.189	1231.407	1699.664	43.573
6000.000	12.385	40.916	1248.265	1186.130	5666.112	1.000	1248.265	1721.938	43.538
6100.000	12.019	42.072	1264.097	1200.131	5763.853	0.440	1264.097	1743.059	43.513
6200.000	10.935	41.735	1278.905	1213.422	5861.852	1.086	1278.905	1762.949	43.495
6300.000	9.059	42.864	1291.755	1225.093	5960.329	1.886	1291.755	1780.304	43.483
6400.000	8.130	46.754	1302.370	1235.599	6059.206	1.096	1302.370	1795.237	43.493
6500.000	5.478	50.310	1310.265	1244.425	6158.493	2.684	1310.265	1807.038	43.524
6600.000	4.106	53.185	1315.459	1250.965	6258.142	1.392	1315.459	1815.309	43.560
6700.000	3.158	49.628	1319.389	1255.930	6357.940	0.974	1319.389	1821.579	43.588
6800.000	2.231	41.884	1322.623	1259.329	6457.828	0.994	1322.623	1826.264	43.596
6900.000	1.539	28.510	1325.252	1261.269	6557.774	0.816	1325.252	1829.506	43.583
7000.000	0.946	22.947	1327.192	1262.232	6657.750	0.605	1327.192	1831.576	43.563
7100.000	0.739	26.710	1328.528	1262.844	6757.739	0.214	1328.528	1832.965	43.548
7200.000	0.525	6.803	1329.560	1263.188	6857.733	0.303	1329.560	1833.950	43.534
7300.000	0.660	346.704	1330.575	1263.110	6957.728	0.245	1330.575	1834.632	43.510
7400.000	0.487	65.047	1331.315	1263.363	7057.724	0.737	1331.315	1835.343	43.500
7500.000	0.489	105.847	1331.377	1264.159	7157.721	0.340	1331.377	1835.937	43.516
7600.000	0.247	86.042	1331.276	1264.784	7257.719	0.270	1331.276	1836.294	43.533
7700.000	0.149	58.032	1331.360	1265.110	7357.718	0.135	1331.360	1836.579	43.538