



Company: Noble Energy
Rig: Production/VES
API # 05-123-29830
Date: 4/27/2013
Surveyor: Justin Williams

Well: Lundvall J17-30D
Location: Weld County, Colorado
North Reference: GRID
Convergence: Grid North is of 0.44 Degrees East
Declination: 8.65
Depth Reference: Ground Level
Elevation: 4936
Total Depth as Drilled: 8175

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	0.341	352.136	0.295	-0.041	99.999	0.341	0.295	0.298	352.136
200.000	0.271	336.683	0.807	-0.175	199.998	0.108	0.807	0.826	347.764
300.000	0.269	341.365	1.247	-0.344	299.997	0.022	1.247	1.293	344.591
400.000	0.252	290.843	1.547	-0.624	399.996	0.223	1.547	1.668	338.040
500.000	0.764	320.641	2.141	-1.252	499.992	0.560	2.141	2.480	329.680
600.000	0.748	300.039	2.983	-2.240	599.983	0.271	2.983	3.730	323.098
700.000	0.688	41.211	3.761	-2.410	699.979	1.110	3.761	4.467	327.357
800.000	2.030	42.054	5.528	-0.828	799.948	1.342	5.528	5.590	351.484
900.000	3.526	44.839	9.024	2.527	899.828	1.502	9.024	9.371	15.645
1000.000	5.140	40.747	14.599	7.620	999.539	1.642	14.599	16.468	27.563
1100.000	6.772	37.721	22.657	14.152	1098.996	1.661	22.657	26.714	31.989
1200.000	8.654	42.831	32.839	22.875	1198.088	2.001	32.839	40.021	34.860
1300.000	11.130	46.308	45.026	34.970	1296.595	2.546	45.026	57.011	37.835
1400.000	13.499	47.313	59.609	50.531	1394.287	2.379	59.609	78.144	40.288
1500.000	16.192	47.774	76.896	69.439	1490.940	2.695	76.896	103.608	42.083
1600.000	18.424	48.868	96.664	91.668	1586.406	2.255	96.664	133.218	43.481
1700.000	20.439	47.368	118.887	116.420	1680.705	2.076	118.887	166.396	44.399
1800.000	23.701	45.995	144.682	143.730	1773.366	3.302	144.682	203.939	44.811
1900.000	24.992	45.523	173.446	173.261	1864.471	1.306	173.446	245.159	44.969
2000.000	27.132	46.254	204.017	204.810	1954.298	2.164	204.017	289.085	45.111
2100.000	29.379	48.589	236.014	239.685	2042.379	2.504	236.014	336.380	45.442
2200.000	28.862	46.034	268.996	275.455	2129.742	1.347	268.996	385.012	45.680
2300.000	29.795	45.785	303.078	310.633	2216.924	0.941	303.078	433.992	45.705
2400.000	29.721	44.046	338.222	345.675	2303.739	0.866	338.222	483.617	45.624
2500.000	28.535	47.957	372.039	380.652	2391.099	2.242	372.039	532.267	45.656
2600.000	27.586	48.083	403.503	415.619	2479.343	0.951	403.503	579.270	45.847
2700.000	28.304	46.548	435.277	450.060	2567.683	1.016	435.277	626.115	45.957
2800.000	29.354	42.715	469.594	483.901	2655.296	2.126	469.594	674.298	45.860
2900.000	31.398	41.958	506.978	517.947	2741.564	2.080	506.978	724.773	45.613
3000.000	32.885	43.021	546.200	553.888	2826.236	1.591	546.200	777.898	45.400
3100.000	33.480	43.112	586.183	591.261	2909.928	0.597	586.183	832.587	45.247
3200.000	31.106	42.115	625.487	627.440	2994.455	2.433	625.487	885.954	45.089
3300.000	32.186	44.535	663.636	663.445	3079.588	1.667	663.636	938.388	44.992
3400.000	32.618	47.105	700.968	701.872	3164.022	1.443	700.968	991.958	45.037

3500.000	32.268	45.782	737.930	740.749	3248.416	0.791	737.930	1045.586	45.109
3600.000	31.362	46.890	774.331	778.879	3333.391	1.079	774.331	1098.290	45.168
3700.000	32.028	47.952	809.874	817.567	3418.477	0.868	809.874	1150.788	45.271
3800.000	30.254	45.828	845.192	855.331	3504.066	2.085	845.192	1202.473	45.342
3900.000	29.399	46.692	879.582	891.261	3590.819	0.957	879.582	1252.203	45.378
4000.000	29.153	46.087	913.312	926.669	3678.047	0.385	913.312	1301.097	45.416
4100.000	29.109	45.918	947.127	961.688	3765.398	0.093	947.127	1349.775	45.437
4200.000	31.160	44.613	982.470	997.334	3851.879	2.153	982.470	1399.972	45.430
4300.000	32.920	43.637	1020.556	1034.259	3936.644	1.834	1020.556	1453.006	45.382
4400.000	34.135	42.075	1061.050	1071.814	4020.006	1.490	1061.050	1508.182	45.289
4500.000	35.067	44.030	1102.533	1110.583	4102.320	1.450	1102.533	1564.920	45.208
4600.000	34.836	45.028	1143.373	1150.756	4184.284	0.617	1143.373	1622.203	45.184
4700.000	32.265	43.700	1182.864	1189.410	4267.618	2.673	1182.864	1677.458	45.158
4800.000	33.131	43.951	1221.837	1226.818	4351.770	0.876	1221.837	1731.464	45.117
4900.000	32.901	44.463	1260.895	1264.809	4435.622	0.362	1260.895	1785.945	45.089
5000.000	31.470	44.893	1298.773	1302.257	4520.253	1.449	1298.773	1839.207	45.077
5100.000	31.022	45.836	1335.218	1339.165	4605.748	0.663	1335.218	1891.077	45.085
5200.000	30.203	43.431	1371.439	1374.944	4691.814	1.473	1371.439	1941.988	45.073
5300.000	28.954	43.982	1407.124	1409.047	4778.781	1.278	1407.124	1991.334	45.039
5400.000	28.943	46.582	1441.173	1443.433	4866.290	1.258	1441.173	2039.725	45.045
5500.000	29.890	48.532	1474.306	1479.681	4953.398	1.346	1474.306	2088.787	45.104
5600.000	28.685	47.105	1507.142	1515.935	5040.616	1.392	1507.142	2137.648	45.167
5700.000	28.514	47.468	1539.613	1551.106	5128.414	0.244	1539.613	2185.484	45.213
5800.000	25.050	47.472	1570.068	1584.307	5217.673	3.463	1570.068	2230.503	45.259
5900.000	23.548	48.607	1597.589	1614.896	5308.812	1.573	1597.589	2271.603	45.309
6000.000	22.104	47.300	1623.558	1643.711	5400.979	1.530	1623.558	2310.352	45.353
6100.000	21.090	45.579	1648.911	1670.389	5493.958	1.196	1648.911	2347.149	45.371
6200.000	19.238	44.045	1673.348	1694.694	5587.826	1.926	1673.348	2381.613	45.363
6300.000	16.984	44.918	1695.535	1716.463	5682.866	2.270	1695.535	2412.692	45.351
6400.000	17.079	36.796	1717.639	1735.574	5778.494	2.379	1717.639	2441.823	45.298
6500.000	18.245	37.584	1741.804	1753.918	5873.779	1.190	1741.804	2471.863	45.199
6600.000	18.753	37.453	1766.970	1773.240	5968.612	0.510	1766.970	2503.310	45.101
6700.000	18.145	38.425	1791.929	1792.693	6063.472	0.681	1791.929	2534.711	45.012
6800.000	15.337	37.038	1814.690	1810.340	6159.224	2.837	1814.690	2563.285	44.931
6900.000	14.450	37.262	1835.176	1825.860	6255.864	0.889	1835.176	2588.752	44.854
7000.000	13.971	38.510	1854.553	1840.931	6352.804	0.569	1854.553	2613.119	44.789
7100.000	12.676	41.293	1872.243	1855.689	6450.111	1.445	1872.243	2636.072	44.746
7200.000	11.792	43.578	1887.890	1869.973	6547.840	1.008	1887.890	2657.241	44.727
7300.000	11.278	46.363	1902.040	1884.094	6645.820	0.758	1902.040	2677.231	44.728
7400.000	10.208	49.038	1914.597	1897.863	6744.067	1.180	1914.597	2695.843	44.749
7500.000	9.519	48.142	1925.924	1910.713	6842.588	0.706	1925.924	2712.933	44.773
7600.000	10.182	49.082	1937.231	1923.550	6941.114	0.682	1937.231	2730.002	44.797
7700.000	9.288	49.136	1948.300	1936.332	7039.673	0.894	1948.300	2746.863	44.823
7800.000	9.852	55.521	1958.423	1949.488	7138.284	1.201	1958.423	2763.317	44.869
7900.000	9.781	57.104	1967.879	1963.672	7236.820	0.279	1967.879	2780.028	44.939
8000.000	9.080	61.869	1976.212	1977.763	7335.469	1.049	1976.212	2795.883	45.022

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