



Company: Noble Energy
Rig: Production / V.E.S.
API # 05-123-25955
Date: 11/29/2013
Surveyor: Sean Bratt
VS: 0.000
Lat : 40.053
Long: -104.699

Well: Rossi XX 18-8
Location: Weld County, Colorado
North Reference: GRID
Convergence: Grid north is 0.52 Degrees East of
Declination: 8.47 Degrees
Depth Reference: Ground Level
Elevation: 4980 Feet
Total Depth as Drilled: 7580 Feet

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
100.000	0.266	327.836	0.197	-0.124	100.000	0.266	0.197	0.232	327.836
200.000	0.213	33.047	0.549	-0.146	199.999	0.262	0.549	0.568	345.109
300.000	0.051	18.378	0.747	-0.031	299.999	0.164	0.747	0.748	357.645
400.000	0.883	260.800	0.666	-0.777	399.995	0.907	0.666	1.023	310.580
500.000	1.610	274.381	0.650	-2.939	499.971	0.780	0.650	3.010	282.470
600.000	1.038	300.113	1.212	-5.123	599.944	0.812	1.212	5.265	283.306
700.000	0.910	310.889	2.186	-6.507	699.930	0.223	2.186	6.864	288.567
800.000	0.526	317.449	3.044	-7.418	799.922	0.391	3.044	8.018	292.309
900.000	0.667	290.097	3.582	-8.274	899.917	0.313	3.582	9.016	293.407
1000.000	0.714	337.316	4.357	-9.061	999.910	0.555	4.357	10.054	295.679
1100.000	1.028	344.671	5.797	-9.538	1099.899	0.332	5.797	11.162	301.287
1200.000	1.300	354.724	7.791	-9.880	1199.878	0.339	7.791	12.582	308.259
1300.000	1.400	358.254	10.142	-10.021	1299.850	0.130	10.142	14.258	315.343
1400.000	1.437	339.473	12.537	-10.498	1399.820	0.464	12.537	16.352	320.058
1500.000	1.522	355.925	15.036	-11.032	1499.787	0.432	15.036	18.649	323.732
1600.000	1.497	347.270	17.635	-11.414	1599.753	0.229	17.635	21.007	327.087
1700.000	1.370	352.083	20.093	-11.867	1699.721	0.175	20.093	23.336	329.434
1800.000	1.777	351.367	22.810	-12.264	1799.683	0.407	22.810	25.898	331.734
1900.000	1.829	349.216	25.910	-12.796	1899.634	0.085	25.910	28.898	333.718
2000.000	1.875	349.454	29.086	-13.393	1999.582	0.046	29.086	32.021	335.275
2100.000	1.598	339.933	32.004	-14.171	2099.536	0.398	32.004	35.001	336.116
2200.000	1.767	338.020	34.744	-15.227	2199.493	0.178	34.744	37.934	336.334
2300.000	1.719	341.256	37.594	-16.286	2299.447	0.110	37.594	40.970	336.577
2400.000	1.633	335.439	40.310	-17.360	2399.404	0.190	40.310	43.890	336.700
2500.000	0.769	326.092	42.164	-18.327	2499.381	0.883	42.164	45.975	336.507
2600.000	0.593	306.147	43.026	-19.120	2599.374	0.293	43.026	47.083	336.041
2700.000	0.396	327.708	43.624	-19.723	2699.370	0.267	43.624	47.875	335.672
2800.000	0.464	354.212	44.319	-19.948	2799.368	0.208	44.319	48.602	335.767
2900.000	0.320	42.525	44.928	-19.801	2899.365	0.347	44.928	49.098	336.216
3000.000	0.437	36.511	45.440	-19.385	2999.363	0.124	45.440	49.402	336.896
3100.000	0.560	69.845	45.915	-18.699	3099.360	0.309	45.915	49.577	337.841
3200.000	0.925	62.854	46.452	-17.522	3199.351	0.375	46.452	49.647	339.333
3300.000	1.276	67.470	47.246	-15.776	3299.333	0.362	47.246	49.811	341.536
3400.000	1.078	59.641	48.149	-13.935	3399.311	0.254	48.149	50.125	343.858
3500.000	1.199	60.382	49.141	-12.214	3499.292	0.121	49.141	50.636	346.042

3600.000	1.265	58.553	50.234	-10.363	3599.269	0.077	50.234	51.292	348.343
3700.000	1.091	74.445	51.065	-8.505	3699.248	0.368	51.065	51.768	350.544
3800.000	0.804	80.171	51.440	-6.896	3799.234	0.302	51.440	51.900	352.364
3900.000	1.451	115.535	51.014	-5.063	3899.215	0.922	51.014	51.264	354.332
4000.000	1.890	111.446	49.865	-2.385	3999.172	0.454	49.865	49.922	357.261
4100.000	1.848	117.070	48.528	0.586	4099.119	0.188	48.528	48.532	0.691
4200.000	1.840	116.628	47.075	3.457	4199.067	0.016	47.075	47.201	4.200
4300.000	1.857	116.943	45.621	6.337	4299.015	0.020	45.621	46.059	7.908
4400.000	1.580	121.060	44.175	8.963	4398.970	0.303	44.175	45.075	11.469
4445.000	1.354	110.338	43.670	9.993	4443.956	0.788	43.670	44.799	12.888
4500.000	1.236	111.435	43.228	11.154	4498.942	0.219	43.228	44.644	14.469
4600.000	1.148	89.132	42.849	13.160	4598.921	0.469	42.849	44.824	17.073
4700.000	0.874	93.832	42.813	14.922	4698.905	0.285	42.813	45.339	19.216
4800.000	1.017	84.086	42.853	16.566	4798.891	0.215	42.853	45.944	21.136
4900.000	0.706	84.788	43.001	18.063	4898.880	0.311	43.001	46.640	22.785
5000.000	0.622	57.542	43.348	19.134	4998.873	0.323	43.348	47.383	23.817
5100.000	0.310	14.485	43.901	19.660	5098.870	0.449	43.901	48.102	24.124
5200.000	0.322	337.308	44.422	19.619	5198.869	0.202	44.422	48.562	23.829
5300.000	0.869	310.550	45.175	18.935	5298.863	0.600	45.175	48.982	22.741
5400.000	1.092	311.203	46.296	17.641	5398.848	0.223	46.296	49.543	20.860
5500.000	1.066	306.543	47.477	16.177	5498.831	0.091	47.477	50.158	18.815
5600.000	1.262	305.497	48.671	14.533	5598.810	0.196	48.671	50.794	16.625
5700.000	1.384	306.543	50.029	12.666	5698.783	0.124	50.029	51.608	14.207
5800.000	1.580	309.316	51.622	10.629	5798.750	0.209	51.622	52.705	11.635
5900.000	2.028	300.733	53.399	8.042	5898.700	0.522	53.399	54.001	8.565
6000.000	1.831	297.881	55.050	5.109	5998.644	0.219	55.050	55.287	5.303
6100.000	2.093	303.427	56.803	2.174	6098.585	0.323	56.803	56.845	2.191
6200.000	2.200	317.935	59.234	-0.636	6198.516	0.552	59.234	59.238	359.385
6300.000	2.666	315.309	62.313	-3.558	6298.425	0.479	62.313	62.414	356.732
6400.000	2.546	314.678	65.528	-6.773	6398.322	0.124	65.528	65.877	354.099
6500.000	2.902	303.606	68.490	-10.460	6498.209	0.634	68.490	69.285	351.316
6600.000	3.006	305.847	71.426	-14.694	6598.076	0.155	71.426	72.922	348.376
6700.000	3.217	295.103	74.152	-19.359	6697.930	0.619	74.152	76.638	345.368
6800.000	2.994	301.019	76.688	-24.138	6797.783	0.390	76.688	80.397	342.528
6900.000	2.612	315.339	79.655	-27.977	6897.665	0.795	79.655	84.425	340.647
7000.000	2.415	306.040	82.515	-31.283	6997.569	0.452	82.515	88.246	339.237
7100.000	2.285	300.984	84.781	-34.696	7097.485	0.244	84.781	91.606	337.744
7200.000	3.052	312.118	87.593	-38.380	7197.376	0.922	87.593	95.632	336.339
7300.000	3.907	318.254	91.920	-42.623	7297.191	0.931	91.920	101.322	335.123

True North