



Company: Noble Energy
Rig: Production / V.E.S.
API # 05-123-30542

Date: 10/14/2013

Surveyor: CJ Hines

VS: 0.000

Lat : 40.329

Long: -104.788

Well: Five Rivers K #09-24D

Location: Weld County, Colorado

North Reference: GRID

Convergence: Grid north is 0.46 Deg East of True

Declination: 8.56

Depth Reference: Ground Level

Elevation: 4698

Total Depth as Drilled: 7980

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	0.164	173.511	-0.143	0.016	100.000	0.164	-0.143	0.143	173.511
200.000	0.363	156.623	-0.576	0.158	199.999	0.211	-0.576	0.597	164.649
300.000	0.120	158.869	-0.964	0.321	299.998	0.243	-0.964	1.016	161.561
400.000	0.120	168.842	-1.164	0.379	399.998	0.021	-1.164	1.225	161.950
500.000	0.350	240.719	-1.416	0.133	499.997	0.333	-1.416	1.422	174.623
600.000	0.615	287.071	-1.408	-0.646	599.994	0.452	-1.408	1.549	204.662
700.000	1.341	163.792	-2.374	-0.833	699.985	1.756	-2.374	2.516	199.338
800.000	3.245	153.526	-6.032	0.755	799.900	1.940	-6.032	6.079	172.862
900.000	5.160	150.438	-12.478	4.236	899.627	1.928	-12.478	13.177	161.248
1000.000	7.972	153.168	-22.579	9.586	998.961	2.828	-22.579	24.530	156.996
1100.000	10.502	159.219	-37.290	15.951	1097.659	2.707	-37.290	40.558	156.841
1200.000	12.269	159.303	-55.752	22.940	1195.687	1.766	-55.752	60.287	157.635
1300.000	14.196	160.077	-77.221	30.874	1293.028	1.935	-77.221	83.164	158.208
1400.000	15.696	151.902	-100.686	41.425	1389.653	2.584	-100.686	108.875	157.636
1500.000	18.069	147.734	-125.737	56.078	1485.339	2.662	-125.737	137.675	155.963
1600.000	19.782	147.991	-153.202	73.328	1579.930	1.715	-153.202	169.846	154.423
1700.000	21.054	145.831	-182.415	92.387	1673.646	1.478	-182.415	204.476	153.139
1800.000	23.759	147.922	-214.352	113.178	1766.090	2.820	-214.352	242.396	152.166
1900.000	25.623	147.985	-249.757	135.341	1856.943	1.864	-249.757	284.070	151.547
2000.000	27.324	148.490	-287.661	158.801	1946.454	1.716	-287.661	328.583	151.099
2100.000	30.446	146.161	-328.283	184.913	2034.005	3.318	-328.283	376.780	150.609
2200.000	30.809	143.225	-369.843	214.354	2120.060	1.539	-369.843	427.471	149.904
2300.000	30.865	145.792	-411.570	244.108	2205.927	1.317	-411.570	478.517	149.327
2400.000	32.237	145.763	-454.835	273.535	2291.142	1.372	-454.835	530.751	148.977
2500.000	32.610	147.467	-499.603	303.033	2375.555	0.987	-499.603	584.322	148.761
2600.000	32.362	144.411	-544.088	333.101	2459.913	1.660	-544.088	637.956	148.524
2700.000	33.978	144.714	-588.665	364.820	2543.616	1.625	-588.665	692.546	148.212
2800.000	34.928	143.650	-634.533	397.931	2626.074	1.125	-634.533	748.987	147.907
2900.000	35.666	140.975	-680.241	433.259	2707.695	1.713	-680.241	806.499	147.506
3000.000	32.834	138.312	-723.146	469.656	2790.350	3.203	-723.146	862.274	146.998
3100.000	34.419	140.431	-765.182	505.693	2873.617	1.972	-765.182	917.185	146.540
3200.000	35.355	140.424	-809.269	542.129	2955.644	0.935	-809.269	974.074	146.182
3300.000	36.748	142.600	-855.338	578.735	3036.495	1.892	-855.338	1032.733	145.917
3400.000	34.879	143.162	-901.990	614.050	3117.584	1.898	-901.990	1091.166	145.754
3500.000	32.674	145.922	-947.239	646.324	3200.705	2.685	-947.239	1146.733	145.693

3600.000	30.800	145.577	-990.720	675.924	3285.748	1.883	-990.720	1199.333	145.696
3700.000	27.339	146.126	-1030.920	703.204	3373.138	3.472	-1030.920	1247.912	145.701
3800.000	27.464	149.192	-1069.790	727.814	3461.923	1.416	-1069.790	1293.894	145.771
3900.000	27.904	148.668	-1109.580	751.792	3550.475	0.503	-1109.580	1340.285	145.881
4000.000	28.233	149.466	-1149.940	775.977	3638.714	0.499	-1149.940	1387.267	145.989
4100.000	31.821	149.725	-1193.100	801.293	3725.279	3.590	-1193.100	1437.203	146.114
4200.000	31.760	147.108	-1237.970	828.877	3810.281	1.380	-1237.970	1489.832	146.196
4300.000	31.968	149.915	-1282.970	856.441	3895.216	1.497	-1282.970	1542.567	146.275
4400.000	31.816	148.780	-1328.420	883.374	3980.122	0.618	-1328.420	1595.323	146.377
4500.000	30.384	147.378	-1372.270	910.672	4065.748	1.605	-1372.270	1646.949	146.431
4600.000	31.637	147.897	-1415.790	938.244	4151.454	1.281	-1415.790	1698.456	146.467
4700.000	30.865	149.790	-1460.170	965.090	4236.945	1.249	-1460.170	1750.285	146.538
4800.000	32.053	151.450	-1505.650	990.680	4322.247	1.471	-1505.650	1802.339	146.656
4900.000	34.893	151.696	-1554.150	1016.930	4405.652	2.843	-1554.150	1857.291	146.802
5000.000	33.991	152.290	-1604.080	1043.491	4488.121	0.962	-1604.080	1913.623	146.955
5100.000	29.749	151.324	-1650.620	1068.406	4573.027	4.273	-1650.620	1966.223	147.086
5200.000	26.531	147.238	-1691.180	1092.406	4661.204	3.749	-1691.180	2013.317	147.140
5300.000	28.117	144.961	-1729.260	1118.023	4750.046	1.900	-1729.260	2059.202	147.116
5400.000	26.783	146.111	-1767.260	1144.116	4838.786	1.436	-1767.260	2105.279	147.081
5500.000	25.761	148.560	-1804.500	1168.014	4928.458	1.489	-1804.500	2149.532	147.086
5600.000	20.999	147.696	-1838.210	1188.936	5020.221	4.774	-1838.210	2189.194	147.106
5700.000	19.264	147.073	-1867.200	1207.480	5114.109	1.748	-1867.200	2223.609	147.110
5800.000	17.041	146.236	-1893.230	1224.592	5209.126	2.238	-1893.230	2254.760	147.104
5900.000	14.043	147.081	-1915.600	1239.332	5305.459	3.006	-1915.600	2281.549	147.098
6000.000	11.253	146.784	-1933.950	1251.273	5403.022	2.791	-1933.950	2303.443	147.097
6100.000	8.980	142.621	-1948.320	1261.358	5501.462	2.386	-1948.320	2320.984	147.081
6200.000	7.102	145.891	-1959.640	1269.563	5600.475	1.932	-1959.640	2334.946	147.063
6300.000	5.989	149.150	-1969.240	1275.705	5699.822	1.173	-1969.240	2346.340	147.064
6400.000	4.281	151.686	-1977.000	1280.150	5799.417	1.722	-1977.000	2355.275	147.076
6500.000	2.989	150.718	-1982.560	1283.196	5899.214	1.293	-1982.560	2361.598	147.087
6600.000	2.344	152.204	-1986.640	1285.425	5999.105	0.649	-1986.640	2366.237	147.096
6700.000	1.493	151.549	-1989.600	1286.999	6099.048	0.850	-1989.600	2369.572	147.103
6800.000	1.387	146.018	-1991.750	1288.297	6199.017	0.175	-1991.750	2372.082	147.105
6900.000	0.979	154.967	-1993.530	1289.335	6298.995	0.446	-1993.530	2374.138	147.107
7000.000	0.676	195.730	-1994.870	1289.536	6398.986	0.643	-1994.870	2375.375	147.120
7100.000	0.698	268.357	-1995.450	1288.768	6498.980	0.814	-1995.450	2375.450	147.144
7200.000	1.100	283.659	-1995.250	1287.226	6598.968	0.465	-1995.250	2374.438	147.172
7300.000	1.175	292.608	-1994.620	1285.347	6698.948	0.193	-1994.620	2372.898	147.202
7400.000	0.813	304.101	-1993.830	1283.813	6798.933	0.412	-1993.830	2371.401	147.223
7500.000	1.142	304.440	-1992.870	1282.404	6898.918	0.329	-1992.870	2369.831	147.239
7600.000	1.009	311.115	-1991.730	1280.919	6998.901	0.183	-1991.730	2368.066	147.254
7650.000	0.880	323.990	-1991.130	1280.361	7048.894	0.495	-1991.130	2367.260	147.258

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