



Company: Noble Energy
Rig: Production/CoreTech
API # 05-123-32583
Date: 8/21/2013
Surveyor: Randy Holcomb
VS: 0.000
Lat : 40.32812
Long: -104.79458

Well: Five Rivers K 08-17D
Location: Weld County, Colorado
North Reference: GRID
Convergence: Grid North is .46 Degrees East of T
Declination: 8.58
Depth Reference: Ground Level
Elevation: 4692 Feet
Total Depth as Drilled: 7331 Feet

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
100.000	0.221	119.361	-0.094	0.168	100.000	0.221	-0.094	0.193	119.361
200.000	0.337	148.570	-0.440	0.489	199.999	0.180	-0.440	0.658	131.964
300.000	0.261	174.720	-0.918	0.664	299.997	0.154	-0.918	1.132	144.120
400.000	0.330	226.639	-1.342	0.475	399.996	0.266	-1.342	1.423	160.489
500.000	0.374	250.821	-1.646	-0.042	499.994	0.154	-1.646	1.647	181.462
600.000	0.164	301.064	-1.680	-0.473	599.993	0.297	-1.680	1.745	195.720
700.000	0.698	335.808	-1.051	-0.845	699.990	0.570	-1.051	1.348	218.801
800.000	1.269	1.306	0.612	-1.069	799.975	0.707	0.612	1.232	299.777
900.000	3.377	12.715	4.592	-0.395	899.888	2.148	4.592	4.609	355.078
1000.000	5.180	11.038	11.897	1.117	999.605	1.807	11.897	11.949	5.365
1100.000	6.790	358.434	22.238	1.820	1099.061	2.069	22.238	22.312	4.679
1200.000	7.534	335.849	34.131	-1.024	1198.300	2.891	34.131	34.146	358.281
1300.000	8.319	322.215	45.831	-8.139	1297.353	2.031	45.831	46.548	349.929
1400.000	9.188	319.539	57.623	-17.753	1396.187	0.960	57.623	60.295	342.877
1500.000	11.457	313.618	70.551	-30.126	1494.565	2.502	70.551	76.714	336.877
1600.000	13.409	312.411	85.224	-45.879	1592.215	1.969	85.224	96.788	331.705
1700.000	15.399	313.219	102.138	-64.117	1689.067	2.000	102.138	120.595	327.881
1800.000	17.709	313.283	121.660	-84.867	1784.916	2.310	121.660	148.336	325.101
1900.000	18.887	308.468	142.158	-108.614	1879.863	1.916	142.158	178.902	322.619
2000.000	18.305	308.441	161.989	-133.587	1974.642	0.582	161.989	209.967	320.489
2100.000	17.370	309.575	181.263	-157.394	2069.834	0.997	181.263	240.061	319.032
2200.000	16.490	312.418	200.347	-179.378	2165.500	1.208	200.347	268.916	318.161
2300.000	16.420	311.030	219.199	-200.518	2261.405	0.399	219.199	297.079	317.548
2400.000	17.177	311.694	238.300	-222.207	2357.137	0.781	238.300	325.826	317.001
2500.000	17.745	308.952	257.702	-245.085	2452.530	0.999	257.702	355.637	316.438
2600.000	18.748	309.828	277.576	-269.279	2547.501	1.040	277.576	386.729	315.869
2700.000	19.011	311.194	298.596	-293.876	2642.121	0.515	298.596	418.955	315.456
2800.000	18.796	310.150	319.711	-318.447	2736.728	0.401	319.711	451.247	315.114
2900.000	17.628	310.285	339.890	-342.312	2831.717	1.169	339.890	482.393	314.797
3000.000	17.151	309.644	359.088	-365.217	2927.146	0.514	359.088	512.179	314.515
3100.000	16.910	309.375	377.722	-387.813	3022.761	0.254	377.722	541.362	314.245
3200.000	15.956	308.779	395.557	-409.771	3118.675	0.969	395.557	569.542	313.989
3300.000	16.665	313.140	413.971	-430.950	3214.653	1.415	413.971	597.570	313.849
3400.000	16.572	315.788	433.998	-451.357	3310.478	0.763	433.998	626.161	313.877

3500.000	17.328	310.012	453.796	-472.709	3406.140	1.845	453.796	655.275	313.831
3600.000	16.290	308.829	472.165	-495.042	3501.866	1.092	472.165	684.110	313.645
3700.000	16.964	309.959	490.328	-517.150	3597.685	0.747	490.328	712.647	313.475
3800.000	18.196	306.949	509.084	-540.812	3693.015	1.531	509.084	742.727	313.269
3900.000	18.474	307.366	528.085	-565.882	3787.938	0.307	528.085	774.013	313.021
4000.000	18.205	307.792	547.273	-590.818	3882.859	0.301	547.273	805.341	312.809
4100.000	16.547	305.994	565.216	-614.686	3978.293	1.742	565.216	835.049	312.599
4200.000	16.443	307.542	582.208	-637.429	4074.178	0.452	582.208	863.297	312.408
4300.000	16.865	310.275	600.210	-659.719	4169.984	0.890	600.210	891.897	312.296
4400.000	15.566	313.770	618.870	-680.476	4266.006	1.624	618.870	919.809	312.285
4500.000	15.646	310.340	636.882	-700.444	4362.322	0.926	636.882	946.700	312.279
4600.000	16.770	310.102	654.904	-721.758	4458.346	1.125	654.904	974.594	312.220
4700.000	14.993	311.908	672.838	-742.421	4554.526	1.844	672.838	1001.947	312.185
4800.000	14.604	312.849	690.051	-761.290	4651.209	0.457	690.051	1027.488	312.190
4900.000	15.484	313.470	707.808	-780.220	4747.781	0.894	707.808	1053.440	312.214
5000.000	15.607	311.809	725.959	-799.934	4844.123	0.462	725.959	1080.237	312.224
5100.000	15.507	310.829	743.667	-820.076	4940.459	0.281	743.667	1107.053	312.203
5200.000	12.931	307.723	759.256	-839.045	5037.389	2.686	759.256	1131.576	312.142
5300.000	12.309	307.027	772.521	-856.405	5134.973	0.640	772.521	1153.350	312.052
5400.000	10.429	306.051	784.267	-872.233	5233.006	1.890	784.267	1172.973	311.960
5500.000	8.273	307.341	793.958	-885.272	5331.672	2.166	793.958	1189.149	311.887
5600.000	7.129	307.655	802.113	-895.904	5430.768	1.145	802.113	1202.509	311.838
5700.000	4.996	316.371	809.056	-903.822	5530.205	2.317	809.056	1213.040	311.833
5800.000	3.379	336.631	814.914	-907.996	5629.940	2.168	814.914	1220.058	311.908
5900.000	1.815	332.930	819.030	-909.886	5729.835	1.573	819.030	1224.215	311.992
6000.000	1.245	332.110	821.400	-911.115	5829.799	0.571	821.400	1226.714	312.036
6100.000	1.050	311.689	822.970	-912.307	5929.779	0.449	822.970	1228.651	312.053
6200.000	0.649	310.257	823.945	-913.424	6029.768	0.402	823.945	1230.134	312.052
6300.000	0.645	309.511	824.669	-914.290	6129.761	0.009	824.669	1231.262	312.050
6400.000	0.777	316.110	825.516	-915.194	6229.754	0.155	825.516	1232.501	312.051
6500.000	0.866	312.036	826.511	-916.226	6329.743	0.107	826.511	1233.933	312.053
6600.000	1.199	298.054	827.509	-917.711	6429.727	0.415	827.509	1235.704	312.041
6700.000	0.910	300.777	828.407	-919.316	6529.710	0.294	828.407	1237.498	312.022
6800.000	0.981	304.624	829.300	-920.703	6629.696	0.095	829.300	1239.125	312.010
6900.000	1.015	298.992	830.215	-922.181	6729.681	0.104	830.215	1240.837	311.996
7000.000	1.053	302.176	831.134	-923.734	6829.665	0.069	831.134	1242.605	311.979
7100.000	0.707	296.497	831.898	-925.063	6929.653	0.356	831.898	1244.105	311.965
7200.000	0.799	324.420	832.741	-926.021	7029.645	0.374	832.741	1245.381	311.964
7250.000	0.631	2.908	833.299	-926.210	7079.641	0.995	833.299	1245.895	311.977

True North