



Company: Noble Energy

Rig: Production / CoreTech

API # 05-123-30543

Date: 10/10/2013

Surveyor: CJ Hines

VS: 0.000

Lat : 40.329

Long: -104.788

Well: Five Rivers K #09-19

Location: Weld County, Colorado

North Reference: GRID

Convergence: Grid north is 0.46 Deg East of True

Declination: 8.55

Depth Reference: Ground Level

Elevation: 4685

Total Depth as Drilled: 7390

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	0.798	83.907	0.074	0.692	99.997	0.798	0.074	0.696	83.907
200.000	0.513	75.170	0.262	1.817	199.990	0.300	0.262	1.836	81.782
300.000	0.490	111.947	0.217	2.647	299.987	0.317	0.217	2.656	85.311
400.000	0.208	150.612	-0.101	3.133	399.985	0.353	-0.101	3.135	91.841
500.000	0.260	117.958	-0.365	3.423	499.984	0.141	-0.365	3.442	96.088
600.000	0.618	168.659	-1.000	3.729	599.981	0.496	-1.000	3.861	105.015
700.000	0.679	164.459	-2.100	3.994	699.975	0.077	-2.100	4.512	117.731
800.000	0.808	172.723	-3.369	4.242	799.966	0.168	-3.369	5.417	128.460
900.000	0.880	201.581	-4.782	4.049	899.956	0.426	-4.782	6.266	139.748
1000.000	1.054	206.739	-6.317	3.353	999.942	0.194	-6.317	7.152	152.044
1100.000	1.024	198.585	-7.986	2.654	1099.925	0.151	-7.986	8.415	161.614
1200.000	1.058	214.011	-9.598	1.853	1199.909	0.281	-9.598	9.775	169.073
1300.000	0.776	216.042	-10.911	0.938	1299.896	0.283	-10.911	10.951	175.086
1400.000	1.040	225.244	-12.098	-0.105	1399.883	0.301	-12.098	12.098	180.498
1500.000	0.984	242.796	-13.130	-1.513	1499.868	0.314	-13.130	13.217	186.576
1600.000	0.243	270.087	-13.522	-2.490	1599.862	0.776	-13.522	13.749	190.432
1700.000	0.754	308.532	-13.112	-3.216	1699.858	0.583	-13.112	13.501	193.783
1800.000	1.432	332.024	-11.599	-4.317	1799.840	0.799	-11.599	12.376	200.416
1900.000	1.374	331.672	-9.440	-5.472	1899.810	0.058	-9.440	10.911	210.101
2000.000	1.426	348.234	-7.166	-6.295	1999.780	0.406	-7.166	9.539	221.296
2100.000	1.611	358.577	-4.543	-6.584	2099.745	0.330	-4.543	7.999	235.390
2200.000	1.609	345.962	-1.776	-6.959	2199.706	0.354	-1.776	7.182	255.679
2300.000	1.241	343.380	0.623	-7.609	2299.675	0.373	0.623	7.635	274.680
2400.000	1.107	332.060	2.514	-8.372	2399.654	0.267	2.514	8.741	286.716
2500.000	1.034	329.535	4.145	-9.282	2499.637	0.088	4.145	10.165	294.066
2600.000	1.095	328.890	5.741	-10.233	2599.619	0.063	5.741	11.733	299.294
2700.000	1.077	311.144	7.178	-11.434	2699.602	0.336	7.178	13.501	302.117
2800.000	0.875	306.326	8.249	-12.758	2799.587	0.218	8.249	15.192	302.885
2900.000	0.778	280.836	8.829	-14.040	2899.577	0.377	8.829	16.585	302.162
3000.000	0.844	279.248	9.075	-15.434	2999.567	0.070	9.075	17.905	300.454
3100.000	0.768	278.076	9.287	-16.826	3099.557	0.078	9.287	19.219	298.898
3200.000	0.649	287.084	9.548	-18.031	3199.549	0.163	9.548	20.403	297.903
3300.000	0.476	293.136	9.878	-18.954	3299.545	0.182	9.878	21.373	297.525
3400.000	0.335	328.337	10.290	-19.490	3399.542	0.280	10.290	22.039	297.832
3500.000	0.617	356.955	11.076	-19.672	3499.539	0.360	11.076	22.575	299.381

3600.000	0.693	350.899	12.210	-19.796	3599.532	0.103	12.210	23.259	301.666
3700.000	1.394	342.966	13.970	-20.248	3699.515	0.714	13.970	24.600	304.604
3800.000	1.255	340.212	16.164	-20.975	3799.488	0.153	16.164	26.481	307.618
3900.000	1.332	3.709	18.354	-21.271	3899.464	0.532	18.354	28.094	310.790
4000.000	1.201	47.150	20.226	-20.427	3999.441	0.945	20.226	28.747	314.716
4100.000	1.463	84.475	21.062	-18.389	4099.416	0.888	21.062	27.960	318.876
4200.000	1.577	77.336	21.486	-15.776	4199.381	0.221	21.486	26.656	323.712
4300.000	1.022	72.166	22.061	-13.584	4299.355	0.567	22.061	25.908	328.376
4400.000	0.857	59.063	22.718	-12.094	4399.342	0.270	22.718	25.737	331.971
4500.000	0.718	44.390	23.551	-11.015	4499.332	0.243	23.551	25.999	334.934
4600.000	1.175	67.237	24.395	-9.631	4599.319	0.584	24.395	26.228	338.457
4700.000	1.765	81.260	25.026	-7.163	4699.286	0.686	25.026	26.031	344.027
4800.000	1.814	82.086	25.478	-4.074	4799.237	0.056	25.478	25.802	350.915
4900.000	1.229	87.358	25.745	-1.435	4899.201	0.600	25.745	25.785	356.809
5000.000	0.791	98.915	25.688	0.318	4999.186	0.481	25.688	25.690	0.710
5100.000	0.566	117.095	25.356	1.440	5099.179	0.309	25.356	25.397	3.251
5200.000	0.300	125.329	24.979	2.094	5199.176	0.272	24.979	25.067	4.791
5300.000	0.772	104.867	24.655	2.959	5299.171	0.502	24.655	24.832	6.843
5400.000	0.806	81.891	24.581	4.306	5399.162	0.316	24.581	24.955	9.936
5500.000	1.423	60.140	25.299	6.079	5499.143	0.738	25.299	26.019	13.511
5600.000	0.604	82.258	25.988	7.678	5599.127	0.893	25.988	27.098	16.459
5700.000	0.128	125.826	25.993	8.291	5699.124	0.519	25.993	27.283	17.690
5800.000	0.332	207.787	25.671	8.246	5799.124	0.339	25.671	26.963	17.808
5900.000	0.555	230.343	25.105	7.738	5899.121	0.279	25.105	26.271	17.131
6000.000	0.576	202.735	24.332	7.171	5999.116	0.271	24.332	25.367	16.420
6100.000	0.579	213.986	23.450	6.694	6099.111	0.113	23.450	24.387	15.932
6200.000	0.410	183.388	22.674	6.391	6199.107	0.308	22.674	23.558	15.740
6300.000	0.190	197.018	22.159	6.321	6299.106	0.229	22.159	23.043	15.921
6400.000	0.184	188.144	21.841	6.250	6399.105	0.030	21.841	22.718	15.968
6500.000	0.056	103.196	21.671	6.274	6499.105	0.188	21.671	22.561	16.147
6600.000	0.047	216.551	21.627	6.297	6599.105	0.086	21.627	22.525	16.234
6700.000	0.063	347.649	21.648	6.261	6699.105	0.100	21.648	22.535	16.131
6800.000	0.204	326.732	21.850	6.152	6799.105	0.147	21.850	22.700	15.724
6900.000	0.343	351.303	22.295	6.009	6899.104	0.179	22.295	23.091	15.084
7000.000	0.719	18.282	23.187	6.161	6999.099	0.442	23.187	23.992	14.879
7100.000	0.553	58.994	24.032	6.771	7099.094	0.469	24.032	24.968	15.736

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