



Company: Noble Energy
Rig: Production/VES
API # 05-123-32436

Date: 5/16/2013
Surveyor: Nick Kula

VS: 0.000
Lat : 40.32211
Long: -104.798

Well: Five Rivers K08-24D
Location: Weld County, Colorado
North Reference: GRID
Convergence: Grid north is -0.45 of Tr
Declination: 8.62

Depth Reference: Ground Level
Elevation: 4703'

Total Depth as Drilled: 7548'

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	0.487	95.138	-0.038	0.423	99.999	0.487	-0.038	0.425	95.138
200.000	0.782	138.933	-0.591	1.295	199.993	0.547	-0.591	1.424	114.514
300.000	0.413	121.743	-1.295	2.050	299.988	0.406	-1.295	2.425	122.276
400.000	0.294	97.339	-1.517	2.611	399.986	0.189	-1.517	3.020	120.158
500.000	0.335	77.702	-1.488	3.151	499.984	0.114	-1.488	3.485	115.272
600.000	0.305	331.521	-1.191	3.310	599.983	0.512	-1.191	3.518	109.798
700.000	0.380	201.872	-1.265	3.059	699.982	0.621	-1.265	3.310	112.467
800.000	0.509	325.442	-1.207	2.684	799.981	0.786	-1.207	2.943	114.215
900.000	3.720	295.830	0.573	-0.489	899.901	3.287	0.573	0.753	319.512
1000.000	5.339	291.264	3.674	-7.745	999.586	1.658	3.674	8.572	295.376
1100.000	6.911	288.812	7.301	-17.777	1099.012	1.593	7.301	19.218	292.329
1200.000	8.480	285.239	11.180	-30.586	1198.109	1.639	11.180	32.566	290.078
1300.000	9.607	278.894	14.408	-45.945	1296.867	1.504	14.408	48.152	287.411
1400.000	10.523	272.268	16.060	-63.316	1395.330	1.475	16.060	65.321	284.233
1500.000	12.134	279.520	18.159	-82.808	1493.383	2.147	18.159	84.775	282.369
1600.000	14.095	278.405	21.678	-105.220	1590.771	1.977	21.678	107.430	281.641
1700.000	15.497	282.324	26.309	-130.320	1687.455	1.722	26.309	132.949	281.414
1800.000	16.352	279.914	31.584	-157.239	1783.617	1.080	31.584	160.380	281.358
1900.000	16.808	280.086	36.540	-185.341	1879.459	0.459	36.540	188.908	281.153
2000.000	17.191	279.685	41.558	-214.143	1975.090	0.401	41.558	218.138	280.983
2100.000	17.376	280.544	46.777	-243.391	2070.574	0.315	46.777	247.845	280.879
2200.000	17.194	276.449	51.169	-272.759	2166.062	1.230	51.169	277.517	280.625
2300.000	17.382	275.770	54.331	-302.308	2261.544	0.276	54.331	307.151	280.189
2400.000	18.028	279.561	58.403	-332.430	2356.810	1.321	58.403	337.522	279.964
2500.000	18.307	276.105	62.644	-363.307	2451.827	1.113	62.644	368.668	279.783
2600.000	18.863	277.227	66.348	-394.960	2546.613	0.661	66.348	400.494	279.536
2700.000	19.490	278.236	70.771	-427.508	2641.064	0.710	70.771	433.326	279.400
2800.000	19.394	278.279	75.552	-460.448	2735.361	0.097	75.552	466.605	279.318
2900.000	17.897	278.947	80.332	-492.058	2830.110	1.512	80.332	498.572	279.272
3000.000	18.183	279.294	85.242	-522.634	2925.195	0.305	85.242	529.540	279.263
3100.000	17.077	280.203	90.362	-552.483	3020.496	1.139	90.362	559.824	279.289
3200.000	16.488	277.771	94.882	-580.996	3116.238	0.916	94.882	588.692	279.275
3300.000	16.153	282.350	99.777	-608.646	3212.212	1.329	99.777	616.770	279.310
3400.000	15.749	282.791	105.756	-635.468	3308.362	0.421	105.756	644.208	279.449
3500.000	16.023	283.129	111.896	-662.143	3404.542	0.289	111.896	671.531	279.592

3600.000	15.918	282.835	118.077	-688.954	3500.683	0.133	118.077	698.999	279.725
3700.000	14.869	281.401	123.660	-714.902	3597.094	1.116	123.660	725.519	279.814
3800.000	15.992	276.660	127.794	-741.164	3693.492	1.688	127.794	752.101	279.783
3900.000	16.101	275.952	130.830	-768.639	3789.596	0.224	130.830	779.694	279.660
4000.000	16.051	277.781	134.139	-796.129	3885.686	0.509	134.139	807.350	279.564
4100.000	15.351	281.645	138.683	-822.792	3981.956	1.258	138.683	834.398	279.567
4200.000	15.488	281.054	143.915	-848.861	4078.357	0.208	143.915	860.974	279.622
4300.000	17.061	280.942	149.260	-876.369	4174.347	1.573	149.260	888.989	279.666
4400.000	16.019	281.420	154.776	-904.297	4270.208	1.051	154.776	917.447	279.712
4500.000	16.227	281.996	160.412	-931.489	4366.274	0.263	160.412	945.200	279.771
4600.000	16.592	279.531	165.680	-959.237	4462.202	0.786	165.680	973.440	279.800
4700.000	15.173	276.643	169.559	-986.317	4558.384	1.624	169.559	1000.786	279.754
4800.000	13.473	280.635	173.223	-1010.770	4655.275	1.965	173.223	1025.503	279.725
4900.000	12.042	286.583	178.350	-1032.220	4752.808	1.940	178.350	1047.511	279.803
5000.000	9.515	287.077	183.755	-1050.120	4851.036	2.528	183.755	1066.074	279.925
5100.000	7.854	293.244	188.879	-1064.300	4949.888	1.902	188.879	1080.928	280.063
5200.000	5.384	282.862	192.621	-1075.150	5049.217	2.734	192.621	1092.270	280.157
5300.000	3.284	272.701	193.801	-1082.590	5148.927	2.228	193.801	1099.798	280.149
5400.000	1.268	252.225	193.598	-1086.500	5248.844	2.143	193.598	1103.616	280.103
5500.000	1.899	164.654	191.662	-1087.120	5348.817	2.238	191.662	1103.884	279.999
5600.000	0.404	144.517	189.778	-1086.480	5448.794	1.526	189.778	1102.925	279.908
5700.000	0.882	77.918	189.651	-1085.520	5548.789	0.811	189.651	1101.960	279.910
5800.000	1.160	41.105	190.575	-1084.100	5648.774	0.697	190.575	1100.723	279.970
5900.000	0.815	24.865	191.983	-1083.130	5748.759	0.441	191.983	1100.018	280.051
6000.000	0.174	46.640	192.733	-1082.730	5848.755	0.657	192.733	1099.746	280.093
6100.000	0.690	295.095	193.093	-1083.160	5948.752	0.771	193.093	1100.237	280.108
6200.000	0.992	297.534	193.748	-1084.470	6048.742	0.304	193.748	1101.645	280.129
6300.000	0.357	280.060	194.203	-1085.550	6148.734	0.660	194.203	1102.782	280.143
6400.000	0.435	278.111	194.311	-1086.230	6248.732	0.079	194.311	1103.473	280.142
6500.000	1.083	279.539	194.521	-1087.540	6348.723	0.648	194.521	1104.797	280.141
6600.000	0.833	267.532	194.646	-1089.200	6448.709	0.319	194.646	1106.451	280.132
6700.000	0.846	273.270	194.657	-1090.660	6548.698	0.085	194.657	1107.893	280.119
6800.000	1.588	265.688	194.595	-1092.780	6648.675	0.758	194.595	1109.968	280.097
6900.000	0.715	267.914	194.468	-1094.780	6748.654	0.874	194.468	1111.920	280.072
7000.000	0.740	266.288	194.403	-1096.050	6848.645	0.032	194.403	1113.158	280.058
7100.000	1.258	271.813	194.396	-1097.790	6948.630	0.526	194.396	1114.872	280.042
7200.000	0.928	276.277	194.519	-1099.700	7048.612	0.341	194.519	1116.767	280.031
7300.000	0.691	281.014	194.723	-1101.090	7148.602	0.246	194.723	1118.177	280.029

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