



Company: Noble Energy
Rig: Production/VES
API # 05-123-32439

Date: 5/17/2013

Surveyor: Nick Kula

VS: 0.000

Lat : 40.32212

Long: -104.797

Well: Five Rivers K08-23

Location: Weld County, Colorado

North Reference: GRID

Convergence: Grid North is .45 Degrees East of T

Declination: 8.62

Depth Reference: Ground Level

Elevation: 4703'

Total Depth as Drilled: 7391'

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	0.000
100.000	0.916	88.107	0.026	0.799	99.996	0.916	0.026	0.799	88.107
200.000	0.955	65.628	0.397	2.357	199.983	0.367	0.397	2.390	80.443
300.000	1.013	110.801	0.427	3.943	299.969	0.758	0.427	3.966	83.819
400.000	0.319	130.373	-0.067	4.981	399.962	0.720	-0.067	4.982	90.774
500.000	0.426	147.933	-0.563	5.391	499.960	0.155	-0.563	5.420	95.960
600.000	0.759	136.278	-1.356	6.046	599.955	0.352	-1.356	6.196	102.645
700.000	0.385	41.866	-1.585	6.728	699.951	0.877	-1.585	6.912	103.257
800.000	0.460	33.977	-1.002	7.176	799.948	0.095	-1.002	7.246	97.949
900.000	0.609	104.485	-0.802	7.915	899.945	0.629	-0.802	7.955	95.785
1000.000	0.228	308.179	-0.812	8.273	999.943	0.823	-0.812	8.313	95.604
1100.000	0.401	129.108	-0.910	8.388	1099.943	0.629	-0.910	8.437	96.189
1200.000	0.499	150.572	-1.510	8.874	1199.940	0.193	-1.510	9.001	99.656
1300.000	0.562	236.468	-2.160	8.679	1299.937	0.725	-2.160	8.943	103.977
1400.000	0.674	283.543	-2.294	7.698	1399.932	0.504	-2.294	8.032	106.591
1500.000	0.397	12.325	-1.818	7.200	1499.928	0.775	-1.818	7.426	104.168
1600.000	0.326	27.137	-1.226	7.404	1599.926	0.117	-1.226	7.504	99.405
1700.000	0.089	143.532	-1.036	7.579	1699.926	0.374	-1.036	7.650	97.782
1800.000	0.844	233.172	-1.540	7.036	1799.922	0.848	-1.540	7.203	102.345
1900.000	1.023	220.332	-2.662	5.869	1899.909	0.274	-2.662	6.444	114.395
2000.000	0.588	159.159	-3.822	5.474	1999.901	0.901	-3.822	6.676	124.920
2100.000	0.798	178.309	-4.997	5.677	2099.893	0.310	-4.997	7.563	131.354
2200.000	0.555	146.644	-6.097	5.964	2199.887	0.437	-6.097	8.529	135.633
2300.000	0.490	102.267	-6.592	6.648	2299.883	0.399	-6.592	9.362	134.760
2400.000	0.853	97.205	-6.777	7.804	2399.876	0.368	-6.777	10.336	130.969
2500.000	0.584	67.077	-6.672	9.012	2499.868	0.455	-6.672	11.213	126.513
2600.000	0.949	112.476	-6.790	10.247	2599.860	0.681	-6.790	12.292	123.531
2700.000	0.939	126.934	-7.599	11.667	2699.846	0.238	-7.599	13.923	123.077
2800.000	1.028	114.258	-8.460	13.140	2799.832	0.235	-8.460	15.627	122.775
2900.000	0.301	63.041	-8.709	14.192	2899.825	0.872	-8.709	16.651	121.536
3000.000	0.191	107.368	-8.640	14.585	2999.824	0.212	-8.640	16.952	120.641
3100.000	0.563	230.082	-9.005	14.367	3099.823	0.685	-9.005	16.955	122.078
3200.000	0.421	214.152	-9.624	13.784	3199.819	0.196	-9.624	16.811	124.923
3300.000	0.399	90.064	-9.928	13.926	3299.818	0.724	-9.928	17.102	125.486
3400.000	0.285	314.082	-9.755	14.095	3399.817	0.636	-9.755	17.142	124.687

3500.000	0.511	354.415	-9.138	13.873	3499.815	0.347	-9.138	16.612	123.373
3600.000	1.088	33.070	-7.899	14.348	3599.805	0.759	-7.899	16.378	118.834
3700.000	0.949	22.585	-6.339	15.184	3699.789	0.232	-6.339	16.454	112.660
3800.000	0.787	340.920	-4.925	15.277	3799.779	0.635	-4.925	16.051	107.869
3900.000	0.903	332.300	-3.578	14.686	3899.768	0.172	-3.578	15.116	103.693
4000.000	1.143	8.933	-1.895	14.475	3999.753	0.682	-1.895	14.598	97.459
4100.000	0.690	351.352	-0.314	14.539	4099.740	0.528	-0.314	14.542	91.239
4200.000	0.803	358.286	0.982	14.427	4199.732	0.145	0.982	14.461	86.107
4300.000	0.912	337.200	2.416	14.098	4299.721	0.332	2.416	14.304	80.274
4400.000	1.500	344.318	4.410	13.436	4399.698	0.606	4.410	14.141	71.827
4500.000	1.516	327.522	6.787	12.372	4499.664	0.441	6.787	14.111	61.252
4600.000	1.818	330.965	9.289	10.891	4599.622	0.318	9.289	14.315	49.539
4700.000	1.915	344.278	12.285	9.669	4699.569	0.443	12.285	15.633	38.205
4800.000	2.147	352.219	15.749	8.963	4799.506	0.364	15.749	18.120	29.644
4900.000	1.572	350.787	18.959	8.489	4899.453	0.576	18.959	20.773	24.122
5000.000	1.798	346.509	21.839	7.904	4999.410	0.259	21.839	23.225	19.896
5100.000	1.212	352.344	24.413	7.397	5099.375	0.605	24.413	25.509	16.856
5200.000	1.061	322.123	26.192	6.687	5199.356	0.610	26.192	27.032	14.323
5300.000	0.975	3.741	27.771	6.175	5299.342	0.728	27.771	28.449	12.535
5400.000	0.334	315.915	28.829	6.027	5399.335	0.790	28.829	29.453	11.809
5500.000	0.654	327.427	29.520	5.517	5499.331	0.334	29.520	30.031	10.586
5600.000	0.890	273.154	30.044	4.434	5599.324	0.735	30.044	30.369	8.396
5700.000	0.381	206.596	29.789	3.510	5699.318	0.817	29.789	29.995	6.720
5800.000	0.580	276.399	29.548	2.858	5799.315	0.574	29.548	29.686	5.524
5900.000	0.754	220.631	29.105	1.926	5899.309	0.643	29.105	29.169	3.786
6000.000	1.386	246.190	28.117	0.391	5999.292	0.777	28.117	28.120	0.796
6100.000	1.325	237.362	27.005	-1.690	6099.264	0.218	27.005	27.058	356.420
6200.000	2.074	241.550	25.520	-4.254	6199.219	0.759	25.520	25.872	350.537
6300.000	2.506	239.307	23.542	-7.724	6299.139	0.442	23.542	24.777	341.835
6400.000	2.988	247.241	21.418	-12.008	6399.025	0.613	21.418	24.554	330.724
6500.000	2.031	251.301	19.842	-16.089	6498.928	0.973	19.842	25.545	320.962
6600.000	1.293	268.949	19.253	-18.896	6598.885	0.889	19.253	26.976	315.537
6700.000	0.985	295.493	19.602	-20.800	6698.866	0.603	19.602	28.581	313.302
6800.000	0.523	293.107	20.151	-21.995	6798.857	0.463	20.151	29.830	312.495
6900.000	0.588	355.757	20.842	-22.452	6898.854	0.580	20.842	30.635	312.870
7000.000	0.585	335.687	21.820	-22.701	6998.848	0.205	21.820	31.487	313.866
7100.000	0.791	53.795	22.693	-22.354	7098.843	0.882	22.693	31.854	315.430
7200.000	0.553	335.956	23.541	-21.994	7198.838	0.864	23.541	32.217	316.946

True North