



**Company:** Noble Energy  
**Rig:** Production/VES  
**API #** 05-123-32441  
**Date:** 5/16/2013  
**Surveyor:** Nick Kula  
**VS:** 0.000  
**Lat :** 40.32212  
**Long:** -104.797

**Well:** Five Rivers K 09-33D  
**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:** 7622'

**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	0.493	196.728	-0.412	-0.124	99.999	0.493	-0.412	0.431	196.728
200.000	0.560	252.499	-0.972	-0.714	199.995	0.496	-0.972	1.205	216.301
300.000	0.117	242.377	-1.166	-1.270	299.993	0.445	-1.166	1.724	227.449
400.000	0.348	174.695	-1.515	-1.332	399.992	0.322	-1.515	2.018	221.318
500.000	0.315	167.864	-2.086	-1.246	499.991	0.052	-2.086	2.430	210.851
600.000	0.979	245.271	-2.712	-1.964	599.985	0.961	-2.712	3.349	215.914
700.000	1.169	122.689	-3.621	-1.882	699.976	1.886	-3.621	4.081	207.462
800.000	3.447	100.541	-4.722	1.933	799.890	2.405	-4.722	5.102	157.736
900.000	4.985	103.083	-6.256	9.122	899.617	1.549	-6.256	11.061	124.443
1000.000	8.028	94.650	-7.806	20.317	998.963	3.182	-7.806	21.765	111.017
1100.000	9.584	97.914	-9.518	35.523	1097.782	1.633	-9.518	36.776	104.999
1200.000	10.729	91.881	-10.970	53.073	1196.216	1.562	-10.970	54.195	101.678
1300.000	12.059	86.733	-10.680	72.806	1294.245	1.673	-10.680	73.586	98.345
1400.000	13.511	83.244	-8.710	94.838	1391.765	1.644	-8.710	95.237	95.248
1500.000	15.530	79.924	-4.994	119.622	1488.567	2.183	-4.994	119.726	92.390
1600.000	16.807	80.837	-0.349	147.077	1584.610	1.302	-0.349	147.078	90.136
1700.000	18.311	81.240	4.346	176.877	1679.948	1.508	4.346	176.931	88.593
1800.000	19.045	80.786	9.351	208.508	1774.681	0.748	9.351	208.717	87.432
1900.000	19.292	77.596	15.512	240.747	1869.139	1.076	15.512	241.246	86.313
2000.000	19.494	75.521	23.232	273.036	1963.467	0.718	23.232	274.023	85.137
2100.000	19.631	78.257	30.823	305.639	2057.697	0.926	30.823	307.189	84.241
2200.000	19.611	78.346	37.631	338.521	2151.890	0.036	37.631	340.606	83.657
2300.000	19.337	77.719	44.543	371.135	2246.169	0.345	44.543	373.798	83.156
2400.000	19.736	79.906	51.024	403.935	2340.413	0.833	51.024	407.145	82.801
2500.000	20.031	77.723	57.625	437.294	2434.453	0.799	57.625	441.074	82.493
2600.000	20.653	78.194	64.875	471.292	2528.216	0.643	64.875	475.736	82.162
2700.000	20.409	79.501	71.660	505.699	2621.864	0.519	71.660	510.751	81.935
2800.000	20.981	78.183	78.504	540.367	2715.412	0.738	78.504	546.040	81.734
2900.000	20.708	78.039	85.834	575.187	2808.867	0.278	85.834	581.556	81.512
3000.000	21.007	79.302	92.826	610.096	2902.314	0.540	92.826	617.118	81.349
3100.000	20.942	79.894	99.289	645.303	2995.688	0.222	99.289	652.897	81.253
3200.000	20.995	81.279	105.141	680.604	3089.066	0.498	105.141	688.677	81.218
3300.000	21.013	80.154	110.923	715.976	3182.422	0.404	110.923	724.518	81.193
3400.000	20.860	82.694	116.253	751.302	3275.822	0.920	116.253	760.243	81.204

3500.000	21.083	80.498	121.486	786.701	3369.199	0.817	121.486	796.026	81.221
3600.000	21.003	78.645	127.984	822.010	3462.532	0.670	127.984	831.914	81.150
3700.000	20.423	79.477	134.699	856.735	3556.068	0.650	134.699	867.259	81.065
3800.000	20.043	78.127	141.411	890.659	3649.897	0.602	141.411	901.815	80.978
3900.000	20.841	81.245	147.645	925.011	3743.602	1.350	147.645	936.720	80.931
4000.000	20.751	82.305	152.725	960.149	3837.088	0.387	152.725	972.220	80.962
4100.000	19.955	79.133	158.314	994.465	3930.846	1.360	158.314	1006.987	80.955
4200.000	19.080	80.704	164.172	1027.353	4025.100	1.020	164.172	1040.388	80.921
4300.000	18.732	78.838	169.921	1059.237	4119.706	0.698	169.921	1072.780	80.886
4400.000	18.774	84.869	174.469	1091.021	4214.406	1.939	174.469	1104.883	80.915
4500.000	18.723	85.026	177.300	1123.038	4309.100	0.072	177.300	1136.948	81.028
4600.000	19.334	84.999	180.135	1155.519	4403.635	0.611	180.135	1169.475	81.139
4700.000	18.668	83.704	183.333	1187.918	4498.186	0.788	183.333	1201.982	81.227
4800.000	19.448	80.054	187.964	1220.225	4592.707	1.424	187.964	1234.617	81.243
4900.000	18.798	80.887	193.391	1252.532	4687.189	0.705	193.391	1267.374	81.223
5000.000	18.162	80.910	198.405	1283.830	4782.031	0.636	198.405	1299.071	81.215
5100.000	16.290	78.350	203.700	1312.959	4877.543	2.020	203.700	1328.667	81.181
5200.000	14.413	79.847	208.727	1338.947	4973.971	1.918	208.727	1355.119	81.140
5300.000	11.629	79.267	212.798	1361.104	5071.390	2.787	212.798	1377.638	81.114
5400.000	10.278	77.751	216.568	1379.725	5169.567	1.381	216.568	1396.618	81.079
5500.000	8.736	79.677	219.822	1395.916	5268.190	1.574	219.822	1413.118	81.051
5600.000	8.952	82.116	222.250	1411.094	5367.002	0.433	222.250	1428.489	81.049
5700.000	7.204	80.931	224.306	1424.993	5466.006	1.756	224.306	1442.539	81.055
5800.000	6.288	74.298	226.776	1436.458	5565.314	1.201	226.776	1454.248	81.029
5900.000	5.094	61.654	230.366	1445.638	5664.823	1.725	230.366	1463.877	80.946
6000.000	3.368	59.327	233.973	1452.072	5764.547	1.734	233.973	1470.801	80.847
6100.000	2.514	57.389	236.653	1456.445	5864.414	0.860	236.653	1475.547	80.771
6200.000	1.455	71.902	238.230	1459.499	5964.353	1.164	238.230	1478.814	80.730
6300.000	0.910	86.906	238.667	1461.499	6064.332	0.622	238.667	1480.859	80.725
6400.000	0.279	32.125	238.916	1462.422	6164.327	0.784	238.916	1481.809	80.722
6500.000	0.572	54.989	239.408	1462.960	6264.324	0.333	239.408	1482.420	80.706
6600.000	0.944	60.865	240.096	1464.089	6364.315	0.379	240.096	1483.645	80.687
6700.000	0.589	11.690	241.000	1464.912	6464.307	0.715	241.000	1484.604	80.658
6800.000	0.038	86.829	241.504	1465.049	6564.305	0.580	241.504	1484.821	80.639
6900.000	0.233	1.388	241.710	1465.087	6664.305	0.233	241.710	1484.892	80.632
7000.000	0.773	75.709	242.080	1465.746	6764.301	0.745	242.080	1485.603	80.622
7100.000	0.833	14.717	242.950	1466.585	6864.293	0.817	242.950	1486.572	80.594
7200.000	0.809	33.433	244.243	1467.159	6964.283	0.268	244.243	1487.350	80.548
7300.000	0.992	90.822	244.819	1468.413	7064.272	0.880	244.819	1488.682	80.535
7400.000	1.040	48.819	245.405	1469.963	7164.258	0.730	245.405	1490.307	80.522

True North