



**Company:** Noble Energy  
**Rig:** Producton / V.E.S.

**API #** 05-123-33339

**Date:** 2/25/2014

**Surveyor:** Norman Cowan

**VS:** 0.000

**Lat :** 40.220

**Long:** -104.657

**Well:** Frico 2-15 HZ

**Location:** Weld County, Colorado

**North Reference:** GRID

**Convergence:** Grid north is 0.54 Deg East of Tru

**Declination:** 8.44 Degrees

**Depth Reference:** Ground Level

**Elevation:** 4795 Feet

**Total Depth as Drilled:** 12,417 Feet

**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	0.255	285.605	0.060	-0.214	100.000	0.255	0.060	0.222	285.605
200.000	0.297	273.726	0.137	-0.687	199.999	0.071	0.137	0.701	281.239
300.000	0.224	272.516	0.162	-1.141	299.997	0.073	0.162	1.152	278.079
400.000	0.254	352.071	0.390	-1.367	399.997	0.307	0.390	1.421	285.936
500.000	0.303	358.985	0.874	-1.402	499.996	0.059	0.874	1.652	301.939
600.000	0.383	356.886	1.472	-1.425	599.994	0.081	1.472	2.048	315.923
700.000	0.154	340.340	1.932	-1.488	699.993	0.239	1.932	2.439	322.387
800.000	0.341	301.645	2.215	-1.787	799.992	0.241	2.215	2.846	321.097
900.000	0.379	301.168	2.542	-2.324	899.990	0.038	2.542	3.445	317.567
1000.000	0.967	307.345	3.226	-3.279	999.982	0.592	3.226	4.599	314.535
1100.000	1.907	295.482	4.454	-5.452	1099.950	0.981	4.454	7.040	309.246
1200.000	2.767	280.150	5.595	-9.331	1199.867	1.056	5.595	10.880	300.950
1300.000	3.406	270.333	6.038	-14.678	1299.722	0.827	6.038	15.871	292.361
1400.000	3.771	269.698	6.038	-20.936	1399.526	0.367	6.038	21.790	286.087
1500.000	4.047	268.551	5.931	-27.752	1499.293	0.287	5.931	28.379	282.064
1600.000	3.548	264.071	5.523	-34.357	1599.073	0.581	5.523	34.799	279.132
1700.000	3.367	259.351	4.660	-40.321	1698.892	0.337	4.660	40.590	276.593
1800.000	3.068	256.943	3.513	-45.815	1798.734	0.328	3.513	45.949	274.385
1900.000	2.791	254.014	2.238	-50.762	1898.603	0.316	2.238	50.812	272.524
2000.000	2.227	248.658	0.860	-54.912	1998.507	0.610	0.860	54.919	270.898
2100.000	1.836	243.999	-0.549	-58.161	2098.444	0.424	-0.549	58.164	269.459
2200.000	1.834	230.216	-2.275	-60.831	2198.393	0.440	-2.275	60.873	267.858
2300.000	1.934	226.878	-4.452	-63.292	2298.339	0.148	-4.452	63.448	265.976
2400.000	2.094	230.792	-6.760	-65.939	2398.277	0.211	-6.760	66.284	264.146
2500.000	2.290	239.855	-8.919	-69.082	2498.205	0.398	-8.919	69.656	262.644
2600.000	2.702	251.720	-10.661	-73.048	2598.110	0.658	-10.661	73.822	261.696
2700.000	2.927	251.810	-12.198	-77.711	2697.989	0.225	-12.198	78.663	261.080
2800.000	4.052	251.022	-14.144	-83.478	2797.802	1.126	-14.144	84.668	260.384
2900.000	4.884	252.919	-16.543	-90.889	2897.498	0.846	-16.543	92.382	259.684
3000.000	5.658	244.814	-19.891	-99.419	2997.075	1.072	-19.891	101.390	258.686
3100.000	6.425	241.808	-24.632	-108.811	3096.520	0.829	-24.632	111.565	257.245
3200.000	7.851	243.250	-30.350	-119.842	3195.742	1.437	-30.350	123.625	255.789
3300.000	8.873	240.755	-37.192	-132.670	3294.678	1.085	-37.192	137.785	254.340
3400.000	9.096	239.730	-44.945	-146.227	3393.451	0.275	-44.945	152.978	252.915
3500.000	9.472	237.710	-53.325	-160.010	3492.141	0.497	-53.325	168.662	251.569

3600.000	8.591	235.875	-61.911	-173.149	3590.901	0.927	-61.911	183.884	250.325
3700.000	8.757	237.947	-70.141	-185.784	3689.757	0.354	-70.141	198.583	249.316
3800.000	9.222	241.059	-78.058	-199.248	3788.529	0.672	-78.058	213.993	248.607
3900.000	10.974	244.163	-86.085	-214.829	3886.977	1.834	-86.085	231.435	248.163
4000.000	12.198	245.187	-94.667	-232.986	3984.937	1.241	-94.667	251.484	247.887
4100.000	12.191	238.557	-104.609	-251.585	4082.686	1.400	-104.609	272.467	247.422
4200.000	11.016	237.619	-115.234	-268.662	4180.640	1.191	-115.234	292.333	246.785
4300.000	10.576	238.590	-125.134	-284.563	4278.870	0.476	-125.134	310.861	246.263
4400.000	9.311	238.176	-134.183	-299.270	4377.366	1.267	-134.183	327.975	245.850
4500.000	9.245	249.454	-141.268	-313.666	4476.066	1.817	-141.268	344.011	245.754
4600.000	9.787	247.923	-147.282	-329.065	4574.690	0.598	-147.282	360.521	245.888
4700.000	9.951	249.701	-153.474	-345.045	4673.210	0.346	-153.474	377.637	246.021
4800.000	9.981	250.884	-159.310	-361.337	4771.701	0.207	-159.310	394.898	246.208
4900.000	9.713	252.334	-164.708	-377.564	4870.228	0.365	-164.708	411.926	246.431
5000.000	9.635	249.583	-170.187	-393.445	4968.806	0.469	-170.187	428.676	246.609
5100.000	10.052	250.566	-176.011	-409.518	5067.334	0.449	-176.011	445.741	246.742
5200.000	10.215	251.213	-181.770	-426.142	5165.774	0.199	-181.770	463.290	246.899
5300.000	10.363	252.083	-187.393	-443.095	5264.166	0.215	-187.393	481.092	247.076
5400.000	9.549	248.648	-193.180	-459.379	5362.660	1.007	-193.180	498.345	247.192
5500.000	9.074	247.961	-199.159	-474.414	5461.342	0.488	-199.159	514.522	247.227
5600.000	8.053	251.490	-204.342	-488.366	5560.227	1.148	-204.342	529.393	247.295
5700.000	7.992	252.800	-208.621	-501.649	5659.248	0.193	-208.621	543.300	247.419
5800.000	8.251	251.886	-212.908	-515.110	5758.245	0.290	-212.908	557.376	247.543
5900.000	6.799	235.508	-218.492	-526.810	5857.393	2.576	-218.492	570.322	247.474
6000.000	6.639	229.195	-225.621	-536.064	5956.707	0.755	-225.621	581.610	247.175
6100.000	6.286	228.972	-232.993	-544.570	6056.072	0.354	-232.993	592.319	246.836
6200.000	6.288	222.874	-240.599	-552.425	6155.471	0.667	-240.599	602.546	246.465
6300.000	2.820	224.075	-246.381	-557.864	6255.141	3.469	-246.381	609.849	246.171
6400.000	8.884	46.673	-242.838	-553.944	6354.827	11.701	-242.838	604.835	246.328
6500.000	20.125	44.658	-225.247	-536.179	6451.485	11.251	-225.247	581.570	247.213
6550.000	22.491	44.857	-212.347	-523.386	6498.064	4.734	-212.347	564.822	247.917

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