



Company: Noble Energy
Rig: Production/ V.E.S
API # 05-123-21639
Date: 1/29/2014
Surveyor: Jay Hinman
VS: 0.000
Lat : 40.21957
Long: -104.65528

Well: Frico 16-15
Location: Weld County, Colorado
North Reference: GRID
Convergence: Grid North is 0.55 Deg
Declination: 8.43
Depth Reference: Ground Level
Elevation: 4805'
Total Depth as Drilled: 8158'

Lat & Long obtained by handheld GPS at wellhead

HA Gyro Survey Calculations

Depth	Inc	AzG	N/-S	E/-W	TVD	DL	VS	CD
0.000	0.000	0.000	0.000	0.000	0.000	****	0.000	0.000
100.000	0.286	345.018	0.241	-0.064	100.000	0.286	0.241	0.249
200.000	0.504	75.167	0.594	0.297	199.998	0.580	0.594	0.664
300.000	1.363	91.633	0.673	1.911	299.984	0.891	0.673	2.026
400.000	3.567	95.008	0.368	6.199	399.885	2.208	0.368	6.210
500.000	6.436	90.157	0.081	14.904	499.494	2.898	0.081	14.905
600.000	9.235	90.642	-0.024	28.536	598.551	2.800	-0.024	28.536
700.000	11.276	91.072	-0.297	46.337	696.948	2.042	-0.297	46.338
800.000	12.598	89.376	-0.361	67.018	794.784	1.368	-0.361	67.019
900.000	13.761	86.217	0.542	89.792	892.149	1.367	0.542	89.793
1000.000	15.986	85.951	2.300	115.399	988.793	2.226	2.300	115.422
1100.000	18.005	85.739	4.421	144.550	1084.420	2.020	4.421	144.618
1200.000	20.153	86.865	6.512	177.167	1178.922	2.179	6.512	177.287
1300.000	21.241	88.625	7.888	212.478	1272.468	1.253	7.888	212.625
1400.000	22.703	86.141	9.622	249.845	1365.204	1.733	9.622	250.030
1500.000	24.104	85.895	12.382	289.469	1456.974	1.404	12.382	289.734
1600.000	25.611	86.729	15.077	331.416	1547.708	1.546	15.077	331.759
1700.000	28.092	87.451	17.358	376.522	1636.919	2.502	17.358	376.922
1800.000	30.310	88.380	19.119	425.273	1724.206	2.264	19.119	425.702
1900.000	30.858	88.120	20.674	476.129	1810.294	0.564	20.674	476.577
2000.000	32.174	90.976	21.062	528.386	1895.546	1.990	21.062	528.806
2100.000	32.514	90.257	20.488	581.883	1980.032	0.514	20.488	582.243
2200.000	32.402	91.122	19.843	635.546	2064.410	0.478	19.843	635.855
2300.000	32.441	91.214	18.750	689.149	2148.823	0.063	18.750	689.404
2400.000	32.570	90.876	17.770	742.878	2233.157	0.223	17.770	743.090
2500.000	33.448	88.746	17.962	797.347	2317.017	1.455	17.962	797.549
2600.000	33.731	88.992	19.053	852.660	2400.319	0.314	19.053	852.873
2700.000	34.298	88.255	20.399	908.584	2483.209	0.701	20.399	908.813
2800.000	34.583	87.978	22.258	965.108	2565.680	0.325	22.258	965.365
2900.000	34.914	88.668	23.925	1022.081	2647.846	0.514	23.925	1022.361
3000.000	34.743	89.258	24.959	1079.183	2729.933	0.378	24.959	1079.471
3100.000	34.808	88.764	25.943	1136.210	2812.073	0.290	25.943	1136.506
3200.000	35.139	88.798	27.163	1193.517	2894.014	0.332	27.163	1193.826
3300.000	34.850	87.744	28.892	1250.839	2975.935	0.670	28.892	1251.172
3400.000	34.758	87.585	31.217	1307.868	3058.046	0.129	31.217	1308.241
3500.000	35.223	86.511	34.173	1365.134	3139.972	0.771	34.173	1365.562

3600.000	34.919	87.161	37.346	1422.505	3221.816	0.481	37.346	1422.995
3700.000	34.013	89.041	39.232	1479.059	3304.263	1.397	39.232	1479.579
3800.000	33.719	91.871	38.794	1534.769	3387.302	1.604	38.794	1535.260
3900.000	33.429	90.018	37.879	1590.058	3470.621	1.065	37.879	1590.509
4000.000	34.065	90.344	37.702	1645.610	3553.771	0.661	37.702	1646.042
4100.000	33.722	90.222	37.427	1701.374	3636.778	0.350	37.427	1701.785
4200.000	33.756	90.857	36.904	1756.911	3719.937	0.355	36.904	1757.299
4300.000	34.079	89.598	36.685	1812.708	3802.922	0.774	36.685	1813.079
4400.000	34.892	86.862	38.447	1869.287	3885.353	1.749	38.447	1869.682
4500.000	35.428	87.369	41.343	1926.800	3967.108	0.610	41.343	1927.243
4600.000	35.024	86.180	44.585	1984.386	4048.797	0.796	44.585	1984.887
4700.000	33.953	90.536	46.236	2040.953	4131.232	2.688	46.236	2041.477
4800.000	33.618	89.787	46.078	2096.561	4214.345	0.534	46.078	2097.067
4900.000	32.436	88.559	46.856	2151.055	4298.186	1.359	46.856	2151.566
5000.000	31.311	86.617	49.065	2203.807	4383.108	1.522	49.065	2204.353
5100.000	30.094	84.681	52.923	2254.712	4469.092	1.567	52.923	2255.333
5200.000	30.042	82.652	58.448	2304.503	4555.637	1.018	58.448	2305.244
5300.000	28.232	81.827	65.013	2352.746	4642.979	1.854	65.013	2353.644
5400.000	28.285	82.769	71.357	2399.662	4731.062	0.449	71.357	2400.723
5500.000	28.781	84.014	76.850	2447.109	4818.916	0.775	76.850	2448.316
5600.000	28.294	84.297	81.716	2494.635	4906.766	0.505	81.716	2495.973
5700.000	29.145	84.531	86.392	2542.458	4994.464	0.858	86.392	2543.926
5800.000	30.000	84.077	91.292	2591.566	5081.436	0.884	91.292	2593.174
5900.000	29.570	86.281	95.473	2641.057	5168.228	1.176	95.473	2642.782
6000.000	28.855	85.672	98.895	2689.741	5255.509	0.774	98.895	2691.559
6100.000	28.880	86.115	102.352	2737.896	5343.083	0.215	102.352	2739.809
6200.000	28.532	85.233	105.973	2785.790	5430.793	0.548	105.973	2787.805
6300.000	27.851	87.471	108.989	2832.928	5518.932	1.257	108.989	2835.023
6400.000	28.041	88.193	110.761	2879.757	5607.271	0.388	110.761	2881.887
6500.000	28.408	87.094	112.708	2927.008	5695.381	0.636	112.708	2929.177
6600.000	28.290	87.057	115.130	2974.430	5783.389	0.120	115.130	2976.657
6700.000	27.241	89.615	116.501	3020.984	5871.877	1.587	116.501	3023.230
6800.000	27.300	90.453	116.473	3066.803	5960.762	0.389	116.473	3069.014
6900.000	27.977	90.726	115.995	3113.189	6049.351	0.688	115.995	3115.350
7000.000	27.545	89.294	115.982	3159.764	6137.842	0.795	115.982	3161.892
7100.000	26.413	89.154	116.596	3205.125	6226.958	1.134	116.596	3207.245
7200.000	23.755	90.962	116.587	3247.511	6317.520	2.766	116.587	3249.603
7300.000	19.259	88.242	116.754	3284.153	6410.536	4.604	116.754	3286.228
7400.000	18.148	85.165	118.573	3316.157	6505.256	1.486	118.573	3318.277
7500.000	15.238	98.882	117.856	3344.676	6601.069	4.880	117.856	3346.752
7600.000	12.365	91.363	115.572	3368.371	6698.179	3.381	115.572	3370.353
7700.000	11.333	92.731	114.849	3388.890	6796.047	1.069	114.849	3390.835
7800.000	9.187	90.847	114.263	3406.688	6894.443	2.172	114.263	3408.604
7900.000	7.525	88.750	114.288	3421.218	6993.378	1.689	114.288	3423.126

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