



Company: Noble Energy
Rig: Production/VES
API # 05-123-24561

Date: 10/24/2013

Surveyor: Nick Kula

VS: 0.000

Lat : 40.519

Long: -104.466

Well: Foss USX AA 5-19

Location: Weld County, Colorado

North Reference: GRID

Convergence: GRID North is 0.670 Degrees East

Declination: 8.4

Depth Reference: Ground Level

Elevation: 4714'

Total Depth as Drilled: 6996'

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	1.588	39.573	1.068	0.883	99.987	1.588	1.068	1.386	39.573
200.000	1.418	45.550	3.003	2.649	199.953	0.231	3.003	4.004	41.416
300.000	1.377	62.350	4.427	4.596	299.924	0.410	4.427	6.381	46.075
400.000	1.574	72.468	5.398	6.970	399.890	0.326	5.398	8.815	52.243
500.000	2.207	83.139	6.042	10.191	499.836	0.722	6.042	11.847	59.339
600.000	2.149	88.940	6.306	13.977	599.764	0.228	6.306	15.334	65.716
700.000	1.707	101.235	6.051	17.312	699.707	0.603	6.051	18.339	70.735
800.000	1.938	110.440	5.170	20.358	799.657	0.372	5.170	21.004	75.751
900.000	2.096	111.778	3.901	23.641	899.595	0.165	3.901	23.961	80.631
1000.000	2.306	105.959	2.669	27.273	999.521	0.306	2.669	27.404	84.411
1100.000	2.234	96.366	1.900	31.145	1099.443	0.386	1.900	31.203	86.509
1200.000	2.070	107.155	1.151	34.808	1199.373	0.436	1.151	34.827	88.106
1300.000	1.988	97.643	0.388	38.253	1299.310	0.346	0.388	38.255	89.419
1400.000	2.140	102.737	-0.255	41.794	1399.246	0.238	-0.255	41.794	90.349
1500.000	1.964	104.426	-1.093	45.275	1499.181	0.186	-1.093	45.288	91.383
1600.000	1.840	87.190	-1.442	48.538	1599.127	0.583	-1.442	48.560	91.701
1700.000	1.782	89.036	-1.337	51.697	1699.077	0.083	-1.337	51.714	91.481
1800.000	1.169	98.441	-1.460	54.260	1799.044	0.657	-1.460	54.279	91.542
1900.000	1.172	81.188	-1.453	56.279	1899.023	0.351	-1.453	56.298	91.479
2000.000	0.494	70.090	-1.150	57.695	1999.012	0.693	-1.150	57.706	91.142
2100.000	0.691	83.593	-0.936	58.700	2099.007	0.240	-0.936	58.707	90.913
2200.000	0.579	80.539	-0.785	59.798	2199.001	0.117	-0.785	59.803	90.752
2300.000	0.522	26.129	-0.293	60.497	2298.997	0.506	-0.293	60.497	90.278
2400.000	0.816	36.551	0.688	61.121	2398.990	0.317	0.688	61.125	89.355
2500.000	0.680	31.592	1.766	61.856	2498.981	0.151	1.766	61.882	88.365
2600.000	0.935	30.669	2.973	62.584	2598.971	0.256	2.973	62.654	87.280
2700.000	0.849	36.494	4.271	63.441	2698.959	0.125	4.271	63.584	86.149
2800.000	0.576	16.680	5.348	64.026	2798.951	0.364	5.348	64.249	85.225
2900.000	0.830	7.584	6.547	64.265	2898.944	0.276	6.547	64.598	84.183
3000.000	0.708	356.622	7.881	64.325	2998.935	0.191	7.881	64.805	83.015
3100.000	0.587	353.217	9.005	64.228	3098.928	0.127	9.005	64.856	82.019
3200.000	0.468	3.338	9.921	64.191	3198.924	0.150	9.921	64.953	81.214
3300.000	0.226	24.013	10.509	64.295	3298.922	0.269	10.509	65.148	80.717
3400.000	0.334	128.950	10.506	64.602	3398.922	0.449	10.506	65.451	80.763
3500.000	0.930	130.520	9.795	65.446	3498.915	0.596	9.795	66.175	81.488

3600.000	1.178	147.297	8.403	66.618	3598.898	0.393	8.403	67.146	82.811
3700.000	1.381	137.799	6.646	67.983	3698.873	0.293	6.646	68.307	84.417
3800.000	1.426	153.506	4.640	69.347	3798.844	0.386	4.640	69.502	86.172
3900.000	1.624	133.318	2.554	70.933	3898.809	0.569	2.554	70.979	87.938
4000.000	2.073	151.517	-0.008	72.826	3998.758	0.734	-0.008	72.826	90.006
4100.000	2.013	154.117	-3.177	74.456	4098.694	0.111	-3.177	74.523	92.443
4200.000	1.435	173.721	-6.002	75.359	4198.649	0.817	-6.002	75.598	94.554
4300.000	0.883	177.269	-8.016	75.533	4298.628	0.557	-8.016	75.957	96.058
4400.000	0.834	160.518	-9.472	75.812	4398.617	0.255	-9.472	76.401	97.122
4500.000	0.728	184.902	-10.791	76.000	4498.608	0.346	-10.791	76.763	98.081
4600.000	1.387	212.566	-12.444	75.295	4598.591	0.815	-12.444	76.316	99.385
4700.000	1.857	231.582	-14.471	73.373	4698.552	0.709	-14.471	74.787	101.157
4800.000	2.350	229.227	-16.817	70.551	4798.484	0.500	-16.817	72.527	103.407
4900.000	2.543	239.302	-19.289	67.090	4898.393	0.471	-19.289	69.808	106.040
5000.000	2.819	246.829	-21.389	62.922	4998.284	0.447	-21.389	66.458	108.775
5100.000	2.348	233.741	-23.568	59.009	5098.183	0.752	-23.568	63.542	111.772
5200.000	2.091	224.989	-26.070	56.068	5198.108	0.424	-26.070	61.832	114.937
5300.000	1.842	205.836	-28.807	54.077	5298.050	0.699	-28.807	61.272	118.044
5400.000	1.384	198.176	-31.401	53.000	5398.010	0.505	-31.401	61.604	120.646
5500.000	1.144	214.523	-33.372	52.057	5497.986	0.431	-33.372	61.836	122.662
5600.000	0.971	220.678	-34.837	50.939	5597.969	0.207	-34.837	61.712	124.368
5700.000	0.873	196.316	-36.211	50.173	5697.957	0.401	-36.211	61.875	125.819
5800.000	0.437	194.878	-37.311	49.861	5797.950	0.437	-37.311	62.275	126.807
5900.000	0.356	202.862	-37.965	49.642	5897.948	0.098	-37.965	62.496	127.408
6000.000	0.072	191.009	-38.313	49.510	5997.947	0.286	-38.313	62.603	127.735
6100.000	0.334	122.500	-38.531	49.744	6097.946	0.315	-38.531	62.921	127.761
6200.000	0.596	48.177	-38.341	50.378	6197.943	0.600	-38.341	63.308	127.274
6300.000	0.760	49.750	-37.565	51.272	6297.936	0.165	-37.565	63.561	126.229
6400.000	0.881	75.052	-36.938	52.521	6397.926	0.378	-36.938	64.210	125.119
6500.000	0.821	63.216	-36.417	53.903	6497.916	0.186	-36.417	65.052	124.043
6600.000	0.668	21.296	-35.551	54.754	6597.908	0.551	-35.551	65.284	122.995
6700.000	1.012	58.119	-34.542	55.716	6697.898	0.623	-34.542	65.555	121.797
6750.000	0.864	53.174	-34.082	56.393	6747.891	0.338	-34.082	65.892	121.148

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