



Company: Noble Energy
 Rig: Production/Coretech
 API # 05-123-27050
 Date: 4/3/2014
 Surveyor: Randy Holcomb
 VS: 0.000
 Lat : 40.466
 Long: -104.483

Well: Thrall USX AA 19-14
 Location: Weld County, Colorado
 North Reference: GRID
 Convergence: Grid north is 0.66 East of True North
 Declination: 8.34
 Depth Reference: Ground Level
 Elevation: 4648 Feet
 Total Depth as Drilled: 6911 Feet

Lat & Long obtained by handheld GPS at wellhead

MS 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	0.180	2.333	0.157	0.006	100.000	0.180	0.157	0.158	2.333
200.000	0.435	158.335	-0.038	0.153	199.999	0.605	-0.038	0.158	104.077
300.000	0.417	141.099	-0.675	0.522	299.996	0.129	-0.675	0.853	142.278
400.000	0.344	180.063	-1.258	0.750	399.994	0.263	-1.258	1.464	149.196
500.000	0.927	211.001	-2.252	0.333	499.988	0.657	-2.252	2.276	171.590
600.000	1.210	229.721	-3.627	-0.889	599.971	0.445	-3.627	3.735	193.772
700.000	1.645	227.722	-5.275	-2.756	699.939	0.438	-5.275	5.952	207.587
800.000	1.451	230.612	-7.045	-4.797	799.903	0.209	-7.045	8.523	214.253
900.000	1.522	236.052	-8.590	-6.877	899.869	0.158	-8.590	11.004	218.682
1000.000	1.576	235.391	-10.112	-9.110	999.833	0.057	-10.112	13.611	222.016
1100.000	1.417	231.761	-11.658	-11.213	1099.799	0.185	-11.658	16.175	223.885
1200.000	1.352	234.563	-13.108	-13.145	1199.770	0.094	-13.108	18.564	225.082
1300.000	1.094	240.545	-14.261	-14.938	1299.747	0.288	-14.261	20.652	226.328
1400.000	0.839	241.131	-15.084	-16.410	1399.732	0.255	-15.084	22.289	227.411
1500.000	0.532	234.025	-15.710	-17.426	1499.725	0.318	-15.710	23.462	227.966
1600.000	0.369	213.803	-16.250	-17.981	1599.722	0.225	-16.250	24.236	227.895
1700.000	0.270	173.732	-16.752	-18.135	1699.721	0.238	-16.752	24.688	227.269
1800.000	0.295	163.788	-17.234	-18.037	1799.719	0.055	-17.234	24.947	226.304
1900.000	0.065	49.377	-17.445	-17.922	1899.719	0.327	-17.445	25.011	225.774
2000.000	0.174	41.816	-17.295	-17.778	1999.719	0.110	-17.295	24.803	225.790
2100.000	0.200	28.755	-17.029	-17.593	2099.718	0.050	-17.029	24.485	225.934
2200.000	0.308	66.398	-16.768	-17.263	2199.717	0.193	-16.768	24.066	225.833
2300.000	0.490	75.413	-16.553	-16.603	2299.715	0.192	-16.553	23.445	225.087
2400.000	0.392	65.679	-16.304	-15.877	2399.712	0.123	-16.304	22.758	224.240
2500.000	0.615	90.084	-16.164	-15.029	2499.708	0.305	-16.164	22.072	222.916
2600.000	0.618	90.644	-16.171	-13.953	2599.702	0.006	-16.171	21.359	220.789
2700.000	0.340	91.085	-16.183	-13.118	2699.699	0.278	-16.183	20.832	219.028
2800.000	0.344	70.317	-16.087	-12.539	2799.697	0.123	-16.087	20.397	217.933
2900.000	0.345	84.381	-15.957	-11.956	2899.695	0.084	-15.957	19.939	216.843
3000.000	0.355	43.275	-15.702	-11.444	2999.693	0.246	-15.702	19.429	216.085
3100.000	0.381	93.459	-15.496	-10.899	3099.692	0.313	-15.496	18.945	215.120
3200.000	0.769	133.205	-15.976	-10.078	3199.687	0.534	-15.976	18.889	212.245
3300.000	1.071	141.853	-17.170	-9.012	3299.674	0.331	-17.170	19.391	207.693
3400.000	1.633	152.206	-19.165	-7.770	3399.646	0.611	-19.165	20.680	202.070
3500.000	2.041	150.406	-21.973	-6.227	3499.594	0.412	-21.973	22.838	195.821
3600.000	2.050	151.236	-25.089	-4.487	3599.530	0.031	-25.089	25.487	190.139
3700.000	2.066	149.799	-28.215	-2.719	3699.466	0.054	-28.215	28.345	185.505

3800.000	2.119	148.597	-31.350	-0.850	3799.399	0.069	-31.350	31.362	181.552
3900.000	1.841	147.287	-34.279	0.982	3899.339	0.282	-34.279	34.293	178.360
4000.000	1.507	147.269	-36.737	2.560	3999.297	0.334	-36.737	36.826	176.013
4100.000	1.047	138.256	-38.524	3.880	4099.272	0.501	-38.524	38.719	174.249
4200.000	0.568	122.446	-39.472	4.906	4199.262	0.524	-39.472	39.776	172.915
4300.000	0.301	15.964	-39.485	5.396	4299.260	0.714	-39.485	39.853	172.218
4400.000	0.448	351.593	-38.846	5.411	4399.258	0.214	-38.846	39.221	172.069
4500.000	0.602	338.194	-37.971	5.159	4499.253	0.196	-37.971	38.320	172.263
4600.000	0.432	104.326	-37.577	5.329	4599.251	0.925	-37.577	37.953	171.928
4700.000	0.766	47.856	-37.222	6.190	4699.247	0.638	-37.222	37.733	170.558
4800.000	0.659	25.452	-36.254	6.933	4799.239	0.296	-36.254	36.911	169.174
4900.000	0.547	27.226	-35.311	7.398	4899.233	0.114	-35.311	36.077	168.167
5000.000	0.613	31.931	-34.433	7.899	4999.228	0.082	-34.433	35.327	167.079
5100.000	0.664	36.668	-33.513	8.528	5099.222	0.073	-33.513	34.582	165.722
5200.000	0.568	44.988	-32.698	9.225	5199.216	0.131	-32.698	33.974	164.244
5300.000	0.648	61.040	-32.074	10.070	5299.211	0.187	-32.074	33.617	162.569
5400.000	0.447	83.844	-31.758	10.953	5399.206	0.293	-31.758	33.594	160.972
5500.000	0.551	111.453	-31.892	11.788	5499.203	0.259	-31.892	34.001	159.715
5600.000	0.413	118.084	-32.238	12.553	5599.199	0.148	-32.238	34.595	158.724
5700.000	0.466	118.704	-32.603	13.228	5699.196	0.053	-32.603	35.184	157.916
5800.000	0.508	106.616	-32.925	14.010	5799.193	0.111	-32.925	35.782	156.950
5900.000	0.484	109.909	-33.195	14.832	5899.189	0.038	-33.195	36.358	155.925
6000.000	0.455	114.037	-33.501	15.591	5999.185	0.044	-33.501	36.951	155.043
6100.000	0.496	118.805	-33.871	16.333	6099.182	0.057	-33.871	37.603	154.257
6200.000	0.427	109.664	-34.205	17.062	6199.179	0.101	-34.205	38.224	153.489
6300.000	0.773	115.400	-34.619	18.023	6299.173	0.352	-34.619	39.030	152.499
6400.000	2.976	125.578	-36.419	20.743	6399.114	2.219	-36.419	41.912	150.335
6500.000	2.384	126.535	-39.167	24.525	6499.004	0.594	-39.167	46.212	147.947
6600.000	0.872	130.418	-40.899	26.775	6598.961	1.515	-40.899	48.884	146.788