



Company: Noble Energy, Inc.
Rig: Production/Lightning
Latitude: 40.220
Longitude: N/A
API # 05-123-29244
Date: 3/28/12

Well: Gutteresen State D 16-15X
Location: Weld , Colorado
North Reference: Grid Corr = -0.61
Depth Reference: RKB = Ground Level
Surveyor: Jason Kinchelow
VS: 0.000

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	0.335	289.531	0.098	-0.275	99.999	0.335	0.098	0.292	289.531
200.000	0.093	103.139	0.177	-0.471	199.999	0.427	0.177	0.503	290.561
300.000	0.185	37.808	0.286	-0.293	299.999	0.169	0.286	0.409	314.313
400.000	0.117	35.828	0.497	-0.134	399.998	0.068	0.497	0.514	344.911
500.000	0.109	10.782	0.673	-0.056	499.998	0.050	0.673	0.675	355.228
600.000	0.133	3.821	0.882	-0.031	599.998	0.028	0.882	0.883	358.010
700.000	0.319	204.153	0.744	-0.137	699.998	0.446	0.744	0.757	349.579
800.000	0.488	193.459	0.076	-0.350	799.995	0.184	0.076	0.358	282.219
900.000	0.433	192.747	-0.707	-0.533	899.992	0.055	-0.707	0.885	216.975
1000.000	0.911	227.497	-1.614	-1.202	999.985	0.608	-1.614	2.012	216.692
1100.000	0.881	221.294	-2.729	-2.296	1099.973	0.102	-2.729	3.566	220.081
1200.000	1.082	248.195	-3.658	-3.681	1199.959	0.497	-3.658	5.189	225.182
1300.000	0.740	262.967	-4.088	-5.199	1299.946	0.412	-4.088	6.614	231.825
1400.000	1.187	283.626	-3.923	-6.847	1399.932	0.559	-3.923	7.891	240.189
1500.000	1.553	290.193	-3.211	-9.125	1499.903	0.398	-3.211	9.673	250.612
1600.000	1.625	304.403	-1.942	-11.566	1599.865	0.399	-1.942	11.728	260.467
1700.000	1.294	298.331	-0.605	-13.730	1699.833	0.365	-0.605	13.743	267.475
1800.000	1.668	302.852	0.720	-15.946	1799.799	0.392	0.720	15.963	272.586
1900.000	0.911	289.112	1.770	-17.921	1899.773	0.813	1.770	18.008	275.641
2000.000	0.400	247.412	1.896	-18.994	1999.767	0.668	1.896	19.088	275.701
2100.000	0.745	132.699	1.321	-18.838	2099.764	0.982	1.321	18.884	274.012
2200.000	1.277	124.302	0.252	-17.440	2199.748	0.551	0.252	17.442	270.829
2300.000	1.357	140.459	-1.289	-15.765	2299.722	0.379	-1.289	15.818	265.326
2400.000	1.089	171.674	-3.143	-14.874	2399.700	0.707	-3.143	15.202	258.069
2500.000	0.320	203.889	-4.339	-14.849	2499.692	0.836	-4.339	15.470	253.712
2600.000	0.641	193.120	-5.139	-15.089	2599.688	0.332	-5.139	15.940	251.192
2700.000	0.631	181.045	-6.234	-15.226	2699.682	0.134	-6.234	16.453	247.735
2800.000	0.659	171.469	-7.353	-15.151	2799.676	0.111	-7.353	16.841	244.112
2900.000	0.537	157.084	-8.353	-14.883	2899.670	0.193	-8.353	17.067	240.697
3000.000	0.374	163.435	-9.098	-14.608	2999.667	0.170	-9.098	17.209	238.086
3100.000	0.845	183.691	-10.146	-14.562	3099.661	0.511	-10.146	17.748	235.133
3200.000	0.632	220.090	-11.304	-14.965	3199.654	0.504	-11.304	18.755	232.934
3300.000	1.136	274.351	-11.651	-16.309	3299.643	0.923	-11.651	20.043	234.459
3400.000	1.093	312.870	-10.927	-17.997	3399.625	0.736	-10.927	21.054	238.736
3500.000	1.653	314.953	-9.259	-19.717	3499.596	0.562	-9.259	21.782	244.846
3600.000	2.127	316.843	-6.886	-22.007	3599.542	0.478	-6.886	23.059	252.626
3700.000	1.440	321.465	-4.549	-24.059	3699.493	0.701	-4.549	24.486	259.293

3800.000	1.314	346.371	-2.451	-25.112	3799.465	0.606	-2.451	25.232	264.424
3900.000	1.083	353.043	-0.399	-25.497	3899.443	0.270	-0.399	25.500	269.105
4000.000	0.751	12.609	1.179	-25.468	3999.430	0.452	1.179	25.496	272.651
4100.000	1.393	52.472	2.560	-24.361	4099.413	0.948	2.560	24.495	275.998
4200.000	1.996	78.363	3.652	-21.691	4199.370	0.960	3.652	21.996	279.556
4300.000	2.017	62.655	4.811	-18.421	4299.310	0.549	4.811	19.039	284.638
4400.000	2.908	72.423	6.386	-14.440	4399.217	0.982	6.386	15.789	293.857
4500.000	3.118	79.729	7.637	-9.346	4499.079	0.437	7.637	12.069	309.253
4600.000	3.767	85.870	8.358	-3.394	4598.898	0.746	8.358	9.021	337.900
4700.000	4.763	86.178	8.872	4.025	4698.620	0.996	8.872	9.742	24.404
4800.000	5.302	90.151	9.136	12.788	4798.235	0.642	9.136	15.716	54.457
4900.000	4.324	88.223	9.241	21.176	4897.881	0.991	9.241	23.105	66.425
5000.000	3.694	79.449	9.948	28.111	4997.637	0.877	9.948	29.820	70.513
5100.000	2.805	79.990	10.963	33.689	5097.475	0.890	10.963	35.428	71.974
5200.000	1.723	88.626	11.424	37.601	5197.396	1.132	11.424	39.299	73.100
5300.000	0.835	110.603	11.204	39.786	5297.370	0.999	11.204	41.333	74.272
5400.000	0.686	134.166	10.531	40.897	5397.362	0.343	10.531	42.231	75.560
5500.000	0.433	142.550	9.814	41.556	5497.357	0.265	9.814	42.699	76.712
5600.000	0.620	193.777	8.989	41.657	5597.353	0.485	8.989	42.615	77.822
5700.000	0.018	143.878	8.452	41.537	5697.351	0.608	8.452	42.388	78.498
5800.000	0.251	349.295	8.654	41.505	5797.351	0.267	8.654	42.398	78.222
5900.000	0.093	25.541	8.942	41.500	5897.350	0.184	8.942	42.452	77.840
6000.000	0.295	45.608	9.196	41.718	5997.350	0.210	9.196	42.720	77.570
6100.000	0.654	356.581	9.945	41.868	6097.346	0.512	9.945	43.033	76.638
6200.000	0.250	263.798	10.492	41.617	6197.344	0.712	10.492	42.919	75.851
6300.000	0.507	327.834	10.842	41.165	6297.342	0.456	10.842	42.569	75.244
6400.000	0.362	313.049	11.432	40.699	6397.339	0.182	11.432	42.274	74.310
6500.000	0.147	44.119	11.740	40.557	6497.338	0.393	11.740	42.222	73.856
6600.000	0.373	133.249	11.609	40.884	6597.338	0.399	11.609	42.500	74.148
6700.000	0.432	160.679	11.031	41.246	6697.335	0.199	11.031	42.695	75.027
6800.000	0.264	249.883	10.595	41.154	6797.334	0.503	10.595	42.496	75.562
6900.000	0.198	41.701	10.645	41.052	6897.334	0.448	10.645	42.410	75.463
7000.000	0.435	163.988	10.409	41.271	6997.333	0.566	10.409	42.564	75.845
7100.000	0.642	140.283	9.613	41.734	7097.328	0.300	9.613	42.827	77.029
7200.000	0.574	50.126	9.504	42.476	7197.325	0.862	9.504	43.527	77.388
7300.000	0.161	25.668	9.951	42.922	7297.322	0.433	9.951	44.060	76.947
7400.000	1.282	11.880	11.173	43.213	7397.313	1.126	11.173	44.634	75.503