

Company: NOBLE ENERGY

Lease/Well: AMIGO/ #1

Location:

Rig Name: PRODUCTION

State/County: COLORADO/WELD

Latitude: 40.334, Longitude: -104.500

GRID North is 0.650 Degrees East of True North

VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : GL

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: run1-01\_ed.ut

Minimum Curvature Method

Report Date/Time: 8/13/2011 / 11:28

Vaughn Energy Services

Rifle, Colorado

866-835-8333

Jay Hinman

Amigo 1/ 05-123-12633

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	****
100.000	0.270	197.002	100.000	-0.225	-0.069	-0.225	0.235	197.002	0.270
200.000	0.346	248.837	199.998	-0.559	-0.419	-0.559	0.699	216.845	0.278
300.000	0.314	226.455	299.997	-0.857	-0.899	-0.857	1.242	226.373	0.132
400.000	0.262	143.630	399.996	-1.230	-0.963	-1.230	1.562	218.049	0.383
500.000	0.425	163.641	499.994	-1.769	-0.723	-1.769	1.911	202.219	0.200
600.000	0.409	159.399	599.991	-2.459	-0.493	-2.459	2.508	191.334	0.035
700.000	0.412	151.278	699.989	-3.108	-0.195	-3.108	3.114	183.585	0.058
800.000	0.521	160.508	799.986	-3.852	0.130	-3.852	3.854	178.070	0.133
900.000	0.519	176.925	899.981	-4.733	0.306	-4.733	4.743	176.301	0.149
1000.000	0.483	184.612	999.978	-5.606	0.296	-5.606	5.614	176.974	0.076
1100.000	0.517	165.551	1099.974	-6.463	0.375	-6.463	6.474	176.680	0.169
1200.000	0.363	203.820	1199.971	-7.189	0.360	-7.189	7.198	177.137	0.323
1300.000	0.350	176.296	1299.969	-7.784	0.251	-7.784	7.788	178.150	0.170
1400.000	0.267	188.884	1399.968	-8.319	0.235	-8.319	8.322	178.382	0.106
1500.000	0.230	212.833	1499.967	-8.718	0.090	-8.718	8.719	179.407	0.110
1600.000	0.343	243.669	1599.966	-9.020	-0.287	-9.020	9.024	181.820	0.187
1700.000	0.424	306.392	1699.964	-8.933	-0.852	-8.933	8.973	185.450	0.405
1800.000	0.541	326.418	1799.960	-8.320	-1.411	-8.320	8.439	189.625	0.203
1900.000	0.576	350.394	1899.956	-7.432	-1.756	-7.432	7.636	193.293	0.235
2000.000	0.519	338.123	1999.951	-6.515	-2.009	-6.515	6.818	197.133	0.130
2100.000	0.422	342.827	2099.948	-5.743	-2.286	-5.743	6.181	201.706	0.104
2200.000	0.524	356.204	2199.944	-4.935	-2.425	-4.935	5.499	206.171	0.149
2300.000	0.493	353.975	2299.941	-4.051	-2.501	-4.051	4.761	211.683	0.037
2400.000	0.329	355.124	2399.938	-3.337	-2.570	-3.337	4.212	217.599	0.164
2500.000	0.301	341.789	2499.936	-2.801	-2.677	-2.801	3.874	223.699	0.078
2600.000	0.338	53.065	2599.935	-2.374	-2.523	-2.374	3.464	226.745	0.374
2700.000	0.305	358.700	2699.934	-1.930	-2.293	-1.930	2.998	229.912	0.295
2800.000	0.366	338.295	2799.932	-1.367	-2.417	-1.367	2.777	240.506	0.133
2900.000	0.403	330.061	2899.930	-0.766	-2.711	-0.766	2.817	254.219	0.066
3000.000	0.355	338.798	2999.928	-0.173	-2.998	-0.173	3.003	266.696	0.075

<i>Measured Depth FT</i>	<i>Incl Angle Deg</i>	<i>Drift Direction Deg</i>	<i>TVD FT</i>	<i>+N/-S FT</i>	<i>+E/-W FT</i>	<i>Vertical Section FT</i>	<i>Closure Distance FT</i>	<i>Closure Direction Deg</i>	<i>Dogleg Severity Deg/100</i>
3100.000	0.439	328.872	3099.925	0.443	-3.308	0.443	3.338	277.635	0.109
3200.000	0.752	319.846	3199.920	1.273	-3.930	1.273	4.131	287.954	0.326
3300.000	0.799	319.601	3299.911	2.306	-4.805	2.306	5.330	295.640	0.047
3400.000	1.127	327.749	3399.896	3.670	-5.782	3.670	6.848	302.401	0.355
3500.000	0.799	333.306	3499.882	5.124	-6.620	5.124	8.372	307.741	0.341
3600.000	1.044	322.130	3599.869	6.466	-7.492	6.466	9.897	310.793	0.303
3700.000	0.885	332.782	3699.855	7.872	-8.405	7.872	11.515	313.124	0.238
3800.000	0.851	346.703	3799.844	9.282	-8.929	9.282	12.879	316.110	0.213
3900.000	0.966	347.552	3899.831	10.828	-9.282	10.828	14.262	319.398	0.116
4000.000	0.982	352.580	3999.817	12.502	-9.574	12.502	15.747	322.554	0.087
4100.000	1.061	8.532	4099.801	14.268	-9.547	14.268	17.167	326.211	0.294
4200.000	1.379	17.244	4199.778	16.333	-9.053	16.333	18.674	331.000	0.367
4300.000	1.359	12.217	4299.750	18.641	-8.446	18.641	20.465	335.626	0.122
4400.000	1.637	21.945	4399.716	21.124	-7.661	21.124	22.470	340.066	0.376
4500.000	1.455	38.918	4499.680	23.436	-6.330	23.436	24.276	344.886	0.490
4600.000	1.833	47.895	4599.639	25.496	-4.346	25.496	25.864	350.327	0.456
4700.000	1.442	53.489	4699.598	27.317	-2.148	27.317	27.401	355.503	0.422
4800.000	1.468	72.944	4799.566	28.441	0.087	28.441	28.441	0.176	0.492
4900.000	1.147	73.373	4899.540	29.103	2.271	29.103	29.192	4.462	0.321
5000.000	1.206	62.449	4999.519	29.877	4.164	29.877	30.165	7.933	0.232
5100.000	1.380	69.861	5099.493	30.778	6.227	30.778	31.402	11.438	0.241
5200.000	1.501	77.053	5199.462	31.486	8.634	31.486	32.648	15.334	0.217
5300.000	2.115	95.371	5299.413	31.607	11.747	31.607	33.719	20.388	0.836
5400.000	2.736	110.627	5399.323	30.593	15.818	30.593	34.441	27.341	0.891
5500.000	3.454	123.092	5499.178	28.107	20.576	28.107	34.834	36.207	0.980
5600.000	3.490	134.322	5598.996	24.336	25.278	24.336	35.088	46.088	0.680
5700.000	3.843	145.982	5698.792	19.431	29.330	19.431	35.183	56.476	0.823
5800.000	4.035	138.561	5798.557	14.016	33.534	14.016	36.345	67.317	0.544
5900.000	4.816	145.282	5898.258	7.927	38.254	7.927	39.066	78.292	0.936
6000.000	5.266	153.807	5997.873	0.359	42.670	0.359	42.672	89.518	0.873
6100.000	3.609	151.853	6097.569	-6.534	46.180	-6.534	46.640	98.054	1.664
6200.000	2.412	152.233	6197.430	-11.172	48.646	-11.172	49.912	102.934	1.196
6300.000	1.398	148.071	6297.373	-14.069	50.271	-14.069	52.203	105.635	1.023
6350.000	0.810	135.795	6347.364	-14.840	50.840	-14.840	52.962	106.272	1.261

HORIZONTAL DISPLACEMENT IS  
52.962 FEET AT 106.272 DEGREES