



Company: Noble Energy
Lease/Well: State Farm/36-7
Location: S-36 T-5N R-65W
Rig Name: Production
State/County: Colorado/Weld
Latitude: 40.357, Longitude: -104.609
GRID North is 0.580 Degrees East of True North
VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Service Company : Vaughn Energy Services

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: msgyro_run01-01_ed.ut

Minimum Curvature Method

Report Date/Time: 7/12/2011 / 07:38

Vaughn Energy Service

Henderson Colorado

Nick Campbell

866-835-8333

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	0.453	260.604	99.999	-0.065	-0.390	-0.065	0.395	260.604	0.453
200.000	0.469	254.762	199.996	-0.237	-1.175	-0.237	1.198	258.613	0.050
300.000	0.402	289.692	299.993	-0.226	-1.900	-0.226	1.913	263.221	0.269
400.000	0.611	301.653	399.989	0.172	-2.684	0.172	2.690	273.674	0.233
500.000	0.600	292.295	499.984	0.651	-3.623	0.651	3.681	280.186	0.099
600.000	0.545	298.799	599.979	1.079	-4.524	1.079	4.651	283.412	0.085
700.000	0.518	303.809	699.974	1.559	-5.317	1.559	5.541	286.347	0.054
800.000	0.453	288.724	799.971	1.938	-6.066	1.938	6.368	287.714	0.143
900.000	0.510	286.199	899.967	2.189	-6.868	2.189	7.208	287.676	0.061
1000.000	0.359	281.667	999.964	2.376	-7.602	2.376	7.965	287.358	0.155
1100.000	0.391	303.108	1099.962	2.626	-8.195	2.626	8.605	287.767	0.143
1200.000	0.557	305.263	1199.959	3.093	-8.877	3.093	9.401	289.208	0.167
1300.000	0.612	309.681	1299.953	3.715	-9.686	3.715	10.374	290.984	0.071
1400.000	0.715	310.265	1399.947	4.459	-10.573	4.459	11.475	292.868	0.103
1500.000	0.740	320.208	1499.939	5.359	-11.463	5.359	12.654	295.057	0.129
1600.000	0.737	323.336	1599.930	6.371	-12.260	6.371	13.817	297.460	0.040
1700.000	0.671	325.518	1699.923	7.370	-12.976	7.370	14.923	299.596	0.072
1800.000	0.714	326.059	1799.916	8.370	-13.655	8.370	16.016	301.505	0.044
1900.000	0.633	307.026	1899.909	9.220	-14.445	9.220	17.136	302.549	0.237
2000.000	0.435	294.722	1999.904	9.711	-15.231	9.711	18.063	302.522	0.228
2100.000	0.596	323.349	2099.900	10.287	-15.886	10.287	18.926	302.926	0.299
2200.000	0.390	359.462	2199.897	11.045	-16.200	11.045	19.607	304.287	0.363
2300.000	0.294	28.916	2299.895	11.610	-16.079	11.610	19.833	305.832	0.198
2400.000	0.213	126.704	2399.895	11.724	-15.806	11.724	19.680	306.565	0.385
2500.000	0.099	205.458	2499.894	11.535	-15.695	11.535	19.478	306.313	0.216
2600.000	0.221	258.997	2599.894	11.420	-15.921	11.420	19.593	305.650	0.180
2700.000	0.289	228.496	2699.893	11.216	-16.299	11.216	19.785	304.532	0.150
2800.000	0.331	194.389	2799.892	10.769	-16.560	10.769	19.753	303.036	0.186
2900.000	0.274	231.008	2899.890	10.339	-16.817	10.339	19.741	301.582	0.197

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
3000.000	0.393	209.462	2999.889	9.890	-17.172	9.890	19.816	299.940	0.171
3100.000	0.342	221.714	3099.887	9.369	-17.539	9.369	19.884	298.110	0.093
3200.000	0.419	209.016	3199.884	8.827	-17.915	8.827	19.971	296.229	0.113
3300.000	0.302	230.222	3299.882	8.338	-18.295	8.338	20.105	294.503	0.175
3400.000	0.368	233.719	3399.881	7.980	-18.756	7.980	20.383	293.047	0.069
3500.000	0.099	32.766	3499.880	7.862	-18.969	7.862	20.533	292.513	0.462
3600.000	0.401	65.976	3599.879	8.077	-18.602	8.077	20.280	293.470	0.323
3700.000	0.469	79.930	3699.876	8.291	-17.880	8.291	19.709	294.877	0.125
3800.000	0.454	70.016	3799.873	8.498	-17.105	8.498	19.099	296.418	0.081
3900.000	0.526	65.066	3899.869	8.826	-16.317	8.826	18.551	298.410	0.084
4000.000	0.563	79.935	3999.865	9.106	-15.417	9.106	17.905	300.567	0.146
4100.000	0.430	54.026	4099.861	9.412	-14.629	9.412	17.396	302.756	0.257
4200.000	0.499	83.551	4199.858	9.682	-13.893	9.682	16.934	304.872	0.246
4300.000	0.088	59.576	4299.857	9.769	-13.394	9.769	16.578	306.107	0.420
4400.000	0.241	1.464	4399.856	10.018	-13.323	10.018	16.669	306.942	0.208
4500.000	0.609	319.718	4499.853	10.633	-13.661	10.633	17.311	307.896	0.458
4600.000	0.899	319.756	4599.845	11.637	-14.511	11.637	18.601	308.728	0.290
4700.000	0.870	320.639	4699.833	12.823	-15.499	12.823	20.116	309.602	0.032
4800.000	0.554	322.851	4799.825	13.795	-16.272	13.795	21.333	310.290	0.317
4900.000	0.470	308.355	4899.821	14.435	-16.886	14.435	22.215	310.525	0.154
5000.000	0.975	270.801	4999.813	14.701	-18.058	14.701	23.286	309.149	0.668
5100.000	1.225	271.826	5099.795	14.747	-19.977	14.747	24.831	306.434	0.250
5200.000	2.025	293.311	5199.755	15.480	-22.668	15.480	27.449	304.330	0.993
5300.000	1.863	311.854	5299.698	17.264	-25.501	17.264	30.795	304.097	0.646
5400.000	1.331	330.461	5399.659	19.359	-27.284	19.359	33.454	305.356	0.736
5500.000	0.882	326.149	5499.641	21.008	-28.286	21.008	35.234	306.602	0.456
5600.000	1.151	321.945	5599.625	22.438	-29.333	22.438	36.931	307.414	0.279
5700.000	0.713	323.982	5699.611	23.732	-30.318	23.732	38.502	308.053	0.439
5800.000	0.416	10.852	5799.607	24.592	-30.615	24.592	39.269	308.773	0.525
5900.000	0.191	40.981	5899.605	25.074	-30.438	25.074	39.436	309.482	0.269
6000.000	0.697	45.981	5999.602	25.623	-29.891	25.623	39.370	310.604	0.507
6100.000	0.781	55.300	6099.594	26.434	-28.893	26.434	39.161	312.455	0.146
6200.000	0.703	74.397	6199.586	26.987	-27.742	26.987	38.703	314.210	0.258
6300.000	0.537	68.591	6299.580	27.323	-26.714	27.323	38.213	315.645	0.178
6400.000	0.704	68.621	6399.574	27.718	-25.706	27.718	37.803	317.156	0.167
6500.000	0.612	65.773	6499.567	28.161	-24.647	28.161	37.424	318.807	0.097
6600.000	0.600	74.577	6599.562	28.520	-23.655	28.520	37.053	320.327	0.094
6700.000	0.613	51.809	6699.556	28.990	-22.729	28.990	36.838	321.902	0.240
6800.000	0.379	82.838	6799.552	29.361	-21.981	29.361	36.678	323.181	0.348
6900.000	0.271	86.010	6899.551	29.419	-21.416	29.419	36.389	323.947	0.109
6950.000	0.459	153.281	6949.550	29.249	-21.208	29.249	36.128	324.055	0.868
HORIZONTAL DISPLACEMENT IS 36.128 FEET AT 324.055 DEGREES									