



Company: Noble Energy
Well: Geis 5-12
API #: 05-123-15353
Rig Name: Production/Lightning
State/County: Colorado/Weld
Latitude: 40.340, Longitude: -104.694
GRID North is 0.520 Degrees East of True North
VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : Ground Level

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: geis5-12-01_ed.ut
Minimum Curvature Method
Report Date/Time: 12/7/2011 / 16:24

Vaughn Energy Services
Henderson, Colorado
866-835-8333
James Proulx

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	0.106	60.852	100.000	0.045	0.081	0.045	0.092	60.852	0.106
200.000	0.352	38.054	199.999	0.332	0.351	0.332	0.483	46.569	0.258
300.000	0.216	338.536	299.998	0.750	0.471	0.750	0.885	32.140	0.306
400.000	0.126	65.489	399.998	0.971	0.502	0.971	1.093	27.346	0.245
500.000	0.297	65.603	499.997	1.124	0.839	1.124	1.402	36.729	0.171
600.000	0.478	59.023	599.995	1.446	1.432	1.446	2.035	44.735	0.186
700.000	0.329	20.046	699.992	1.930	1.888	1.930	2.700	44.376	0.304
800.000	0.437	67.345	799.990	2.346	2.338	2.346	3.312	44.902	0.322
900.000	0.328	46.769	899.988	2.689	2.898	2.689	3.953	47.145	0.173
1000.000	0.348	349.239	999.987	3.183	3.050	3.183	4.408	43.775	0.326
1100.000	0.299	116.961	1099.986	3.363	3.225	3.363	4.660	43.801	0.581
1200.000	0.551	171.518	1199.983	2.769	3.529	2.769	4.486	51.874	0.450
1300.000	0.569	176.178	1299.979	1.798	3.633	1.798	4.054	63.662	0.049
1400.000	0.733	191.543	1399.972	0.676	3.538	0.676	3.602	79.181	0.239
1500.000	0.529	172.016	1499.966	-0.408	3.474	-0.408	3.498	96.704	0.294
1600.000	0.661	209.422	1599.961	-1.368	3.255	-1.368	3.531	112.799	0.402
1700.000	0.675	202.017	1699.954	-2.417	2.750	-2.417	3.661	131.306	0.087
1800.000	0.431	217.683	1799.950	-3.261	2.300	-3.261	3.990	144.808	0.285
1900.000	0.270	239.072	1899.948	-3.680	1.867	-3.680	4.126	153.092	0.205
2000.000	0.311	321.701	1999.947	-3.588	1.497	-3.588	3.887	157.352	0.385
2100.000	0.810	335.531	2099.942	-2.731	1.036	-2.731	2.921	159.230	0.513
2200.000	0.875	354.734	2199.931	-1.327	0.673	-1.327	1.488	153.114	0.288
2300.000	1.127	2.042	2299.916	0.416	0.638	0.416	0.761	56.888	0.282
2400.000	0.850	16.976	2399.901	2.108	0.889	2.108	2.288	22.875	0.376
2500.000	0.860	85.988	2499.892	2.870	1.855	2.870	3.417	32.868	0.969
2600.000	0.788	79.301	2599.882	3.050	3.279	3.050	4.478	47.065	0.120
2700.000	0.611	71.948	2699.875	3.343	4.461	3.343	5.575	53.152	0.198
2800.000	0.850	62.080	2799.866	3.856	5.624	3.856	6.819	55.564	0.269
2900.000	0.640	37.531	2899.858	4.647	6.620	4.647	8.088	54.935	0.377
3000.000	0.371	55.495	2999.854	5.273	7.227	5.273	8.946	53.885	0.310
3100.000	0.283	60.112	3099.853	5.579	7.707	5.579	9.515	54.101	0.092
3200.000	0.045	66.314	3199.852	5.718	7.957	5.718	9.798	54.300	0.238
3300.000	0.247	78.740	3299.852	5.776	8.204	5.776	10.033	54.855	0.203
3400.000	0.432	115.337	3399.850	5.656	8.756	5.656	10.424	57.140	0.277

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
3500.000	0.807	135.085	3499.844	4.996	9.594	4.996	10.817	62.493	0.426
3600.000	1.401	141.443	3599.825	3.542	10.853	3.542	11.417	71.927	0.605
3700.000	0.997	157.330	3699.803	1.783	11.950	1.783	12.083	81.512	0.519
3800.000	0.558	155.171	3799.794	0.539	12.490	0.539	12.502	87.529	0.440
3900.000	0.486	149.028	3899.790	-0.266	12.913	-0.266	12.915	91.181	0.091
4000.000	0.853	150.613	3999.783	-1.278	13.496	-1.278	13.556	95.411	0.368
4100.000	0.736	132.328	4099.773	-2.360	14.336	-2.360	14.529	99.348	0.278
4200.000	0.695	129.271	4199.765	-3.176	15.281	-3.176	15.607	101.742	0.056
4300.000	0.835	152.391	4299.757	-4.206	16.088	-4.206	16.629	104.652	0.336
4400.000	0.652	194.830	4399.749	-5.402	16.280	-5.402	17.153	108.357	0.565
4500.000	0.647	162.479	4499.743	-6.490	16.304	-6.490	17.549	111.707	0.362
4600.000	0.734	160.428	4599.736	-7.632	16.689	-7.632	18.351	114.576	0.091
4700.000	0.774	193.239	4699.727	-8.894	16.749	-8.894	18.964	117.969	0.428
4800.000	1.339	232.324	4799.711	-10.266	15.669	-10.266	18.733	123.232	0.885
4900.000	1.006	270.468	4899.692	-10.973	13.866	-10.973	17.683	128.356	0.829
5000.000	0.709	272.231	4999.680	-10.942	12.370	-10.942	16.515	131.494	0.298
5100.000	0.315	61.984	5099.678	-10.789	11.994	-10.789	16.133	131.970	0.994
5200.000	0.855	66.908	5199.673	-10.367	12.923	-10.367	16.568	128.736	0.542
5300.000	1.037	70.309	5299.659	-9.770	14.461	-9.770	17.452	124.042	0.190
5400.000	1.265	72.415	5399.639	-9.131	16.365	-9.131	18.740	119.160	0.232
5500.000	1.782	91.375	5499.604	-8.835	18.972	-8.835	20.928	114.971	0.715
5600.000	1.211	97.111	5599.569	-9.003	21.574	-9.003	23.377	112.651	0.590
5700.000	1.005	78.041	5699.551	-8.952	23.480	-8.952	25.129	110.870	0.419
5800.000	0.249	87.550	5799.544	-8.761	24.555	-8.761	26.071	109.637	0.761
5900.000	0.235	81.071	5899.543	-8.720	24.974	-8.720	26.453	109.248	0.031
6000.000	0.051	41.594	5999.543	-8.655	25.206	-8.655	26.650	108.951	0.198
6100.000	0.847	349.901	6099.539	-7.894	25.106	-7.894	26.318	107.454	0.816
6200.000	0.971	2.962	6199.527	-6.319	25.020	-6.319	25.806	104.175	0.241
6300.000	1.422	16.239	6299.505	-4.282	25.411	-4.282	25.769	99.565	0.526
6400.000	1.135	356.955	6399.480	-2.102	25.705	-2.102	25.791	94.675	0.513
6500.000	1.424	12.463	6499.455	0.101	25.921	0.101	25.921	89.778	0.449
6600.000	1.272	26.831	6599.428	2.305	26.690	2.305	26.790	85.064	0.369
6700.000	0.985	66.128	6699.410	3.643	27.978	3.643	28.214	82.580	0.806
6800.000	1.059	84.706	6799.394	4.077	29.684	4.077	29.963	82.180	0.338
6900.000	1.371	107.103	6899.372	3.810	31.748	3.810	31.976	83.156	0.562
7000.000	0.850	121.017	6999.353	3.076	33.527	3.076	33.668	84.757	0.583
7050.000	0.844	108.609	7049.348	2.768	34.193	2.768	34.305	85.372	0.366
HORIZONTAL DISPLACEMENT IS 34.305 FEET AT 85.372 DEGREES									