



Company: Noble Energy
 Lease / Well: Hamilton / 25-13B
 API#: 05-123-15393
 Rig Name: Production / Lightning Wireline
 State / County: Colorado / Weld County
 Latitude: 40.364, Longitude: -104.618
 GRID North is 0.570 Degrees East of True North
 VS-Azi: 0.000 Degrees



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : RKB = Ground Level

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: inrun_ed.ut
 Minimum Curvature Method
 Report Date/Time: 8/31/2011 / 11:29

Vaughn Energy Services
 Henderson, CO
 303-853-4976
 Robert Davis

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	0.507	21.199	99.999	0.412	0.160	0.412	0.442	21.199	0.507
200.000	0.131	129.813	199.997	0.752	0.408	0.752	0.855	28.461	0.562
300.000	0.268	138.669	299.997	0.503	0.650	0.503	0.822	52.235	0.140
400.000	0.353	80.463	399.996	0.379	1.108	0.379	1.171	71.128	0.311
500.000	0.680	219.138	499.993	-0.031	1.037	-0.031	1.038	91.698	0.974
600.000	0.481	282.000	599.989	-0.404	0.252	-0.404	0.476	148.054	0.629
700.000	0.715	233.094	699.984	-0.692	-0.658	-0.692	0.954	223.556	0.539
800.000	0.231	177.284	799.981	-1.268	-1.147	-1.268	1.710	222.139	0.616
900.000	0.392	308.654	899.980	-1.255	-1.405	-1.255	1.884	228.215	0.572
1000.000	0.710	222.164	999.977	-1.501	-2.088	-1.501	2.571	234.293	0.790
1100.000	0.088	246.768	1099.974	-1.990	-2.574	-1.990	3.254	232.293	0.631
1200.000	0.174	246.089	1199.974	-2.082	-2.784	-2.082	3.476	233.206	0.086
1300.000	0.227	244.849	1299.973	-2.228	-3.102	-2.228	3.819	234.315	0.054
1400.000	0.609	250.531	1399.970	-2.489	-3.783	-2.489	4.528	236.653	0.384
1500.000	0.354	286.791	1499.967	-2.577	-4.580	-2.577	5.255	240.629	0.386
1600.000	0.676	249.162	1599.963	-2.698	-5.426	-2.698	6.060	243.562	0.451
1700.000	0.400	269.005	1699.958	-2.914	-6.326	-2.914	6.965	245.270	0.328
1800.000	0.893	245.549	1799.952	-3.242	-7.385	-3.242	8.066	246.296	0.550
1900.000	0.676	221.236	1899.943	-4.009	-8.484	-4.009	9.383	244.707	0.393
2000.000	1.146	234.752	1999.930	-5.030	-9.690	-5.030	10.918	242.566	0.513
2100.000	1.382	242.771	2099.906	-6.159	-11.579	-6.159	13.115	241.990	0.294
2200.000	1.713	227.797	2199.869	-7.715	-13.759	-7.715	15.774	240.719	0.520
2300.000	1.550	234.069	2299.829	-9.513	-15.961	-9.513	18.581	239.205	0.242
2400.000	1.691	235.148	2399.789	-11.149	-18.266	-11.149	21.400	238.601	0.145
2500.000	2.213	231.431	2499.731	-13.196	-20.987	-13.196	24.791	237.839	0.537
2600.000	1.673	249.371	2599.674	-14.914	-23.862	-14.914	28.140	237.994	0.807
2700.000	2.376	230.749	2699.612	-16.740	-26.834	-16.740	31.627	238.042	0.954
2800.000	2.317	230.364	2799.528	-19.341	-29.996	-19.341	35.691	237.186	0.061
2900.000	2.090	228.530	2899.454	-21.839	-32.919	-21.839	39.505	236.440	0.237
3000.000	2.043	227.550	2999.389	-24.249	-35.601	-24.249	43.075	235.740	0.059
3100.000	1.514	246.631	3099.341	-25.976	-38.129	-25.976	46.136	235.734	0.787
3200.000	0.734	233.870	3199.321	-26.878	-39.859	-26.878	48.074	236.007	0.814
3300.000	0.322	258.946	3299.317	-27.310	-40.652	-27.310	48.973	236.107	0.463
3400.000	0.563	277.669	3399.314	-27.298	-41.415	-27.298	49.602	236.610	0.278

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	0.469	341.268	3499.310	-26.844	-42.033	-26.844	49.874	237.436	0.550
3600.000	0.552	2.121	3599.307	-25.975	-42.147	-25.975	49.508	238.354	0.202
3700.000	0.201	350.265	3699.304	-25.322	-42.158	-25.322	49.178	239.010	0.358
3800.000	0.210	16.922	3799.304	-24.974	-42.135	-24.974	48.980	239.344	0.095
3900.000	0.055	78.731	3899.303	-24.789	-42.034	-24.789	48.799	239.470	0.190
4000.000	0.271	213.700	3999.303	-24.977	-42.118	-24.977	48.967	239.331	0.313
4100.000	0.945	162.725	4099.297	-25.961	-42.005	-25.961	49.380	238.281	0.802
4200.000	1.300	171.504	4199.278	-27.870	-41.592	-27.870	50.067	236.174	0.393
4300.000	1.120	169.726	4299.256	-29.953	-41.250	-29.953	50.978	234.015	0.184
4400.000	0.877	199.709	4399.241	-31.635	-41.334	-31.635	52.051	232.571	0.567
4500.000	1.064	179.324	4499.227	-33.284	-41.581	-33.284	53.262	231.324	0.390
4600.000	1.260	182.526	4599.206	-35.311	-41.619	-35.311	54.580	229.687	0.207
4700.000	1.745	191.335	4699.172	-37.903	-41.967	-37.903	56.549	227.912	0.535
4800.000	1.028	188.960	4799.142	-40.282	-42.405	-40.282	58.488	226.471	0.719
4900.000	1.301	208.136	4899.122	-42.169	-43.080	-42.169	60.284	225.613	0.472
5000.000	0.732	209.655	4999.105	-43.725	-43.932	-43.725	61.983	225.135	0.570
5100.000	0.854	214.528	5099.096	-44.894	-44.670	-44.894	63.332	224.857	0.140
5200.000	0.900	221.505	5199.084	-46.096	-45.613	-46.096	64.849	224.698	0.116
5300.000	0.796	233.186	5299.073	-47.100	-46.689	-47.100	66.320	224.749	0.201
5400.000	0.628	231.418	5399.066	-47.858	-47.673	-47.858	67.551	224.889	0.169
5500.000	0.780	202.897	5499.058	-48.826	-48.367	-48.826	68.727	224.729	0.377
5600.000	0.705	221.211	5599.050	-49.916	-49.037	-49.916	69.973	224.491	0.248
5700.000	0.646	207.409	5699.043	-50.880	-49.702	-50.880	71.127	224.329	0.173
5800.000	0.625	217.030	5799.037	-51.815	-50.290	-51.815	72.207	224.144	0.109
5900.000	0.500	192.206	5899.032	-52.677	-50.710	-52.677	73.119	223.910	0.271
6000.000	0.953	143.097	5999.025	-53.768	-50.303	-53.768	73.630	223.093	0.731
6100.000	1.254	128.674	6099.006	-55.117	-48.949	-55.117	73.715	221.608	0.407
6200.000	1.504	92.993	6198.979	-55.870	-46.784	-55.870	72.871	219.942	0.878
6300.000	1.574	83.738	6298.943	-55.788	-44.107	-55.788	71.118	218.331	0.258
6400.000	1.977	85.438	6398.895	-55.501	-41.023	-55.501	69.016	216.469	0.406
6500.000	2.194	80.802	6498.829	-55.058	-37.414	-55.058	66.567	214.197	0.275
6600.000	2.681	86.677	6598.738	-54.617	-33.189	-54.617	63.910	211.286	0.547
6700.000	3.414	87.965	6698.596	-54.375	-27.878	-54.375	61.105	207.144	0.735
6800.000	3.137	93.661	6798.433	-54.444	-22.172	-54.444	58.786	202.158	0.427
6900.000	2.397	104.878	6898.316	-55.156	-17.421	-55.156	57.842	197.529	0.914
6970.000	1.793	110.639	6968.269	-55.918	-14.981	-55.918	57.890	194.998	0.912
HORIZONTAL DISPLACEMENT IS 57.890 FEET AT 194.998 DEGREES									