

Marconi Processing Report

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March 2000

Introduction

This report describes a series of kinematic GPS surveys performed using the Canadian Marconi ALL-STAR 12 channel receiver with 1-10 Hz carrier phase output. The data was collected and processed with Waypoint's GrafNav GPS post-processing package.

All the surveys were performed with a fixed static initialization of 700 - 1800 seconds. Following the static initialization, kinematic surveys were performed by placing the GPS antenna on the roof of a car. The car was driven at highway speeds to various pre-surveyed points known to centimetre level precision. The antenna was held on the survey point for 10 seconds and then moved back to the roof of the car for continuation of the survey.

The results clearly indicate robust phase tracking capabilities in both static and kinematic modes, as illustrated by the error tables accompanying each GrafNav bitmap of the various surveys.

The short baseline fixed static initialization with 500 seconds of data was followed by a 20 km kinematic run in a car. The baseline tied into 9 points with 10 second occupation at each point, and the scale is indicated on the diagram attached.

Point	DE	DN	DH
111a	-0.003	-0.014	0.017
102a	-0.003	0.008	0.000
103	0.003	-0.026	-0.008
105	-0.005	-0.021	0.003
106	0.011	-0.036	0.004
107	0.033	-0.020	-0.004
109	-0.019	-0.026	0.009

Table 1: Errors in Kinematic Survey #1

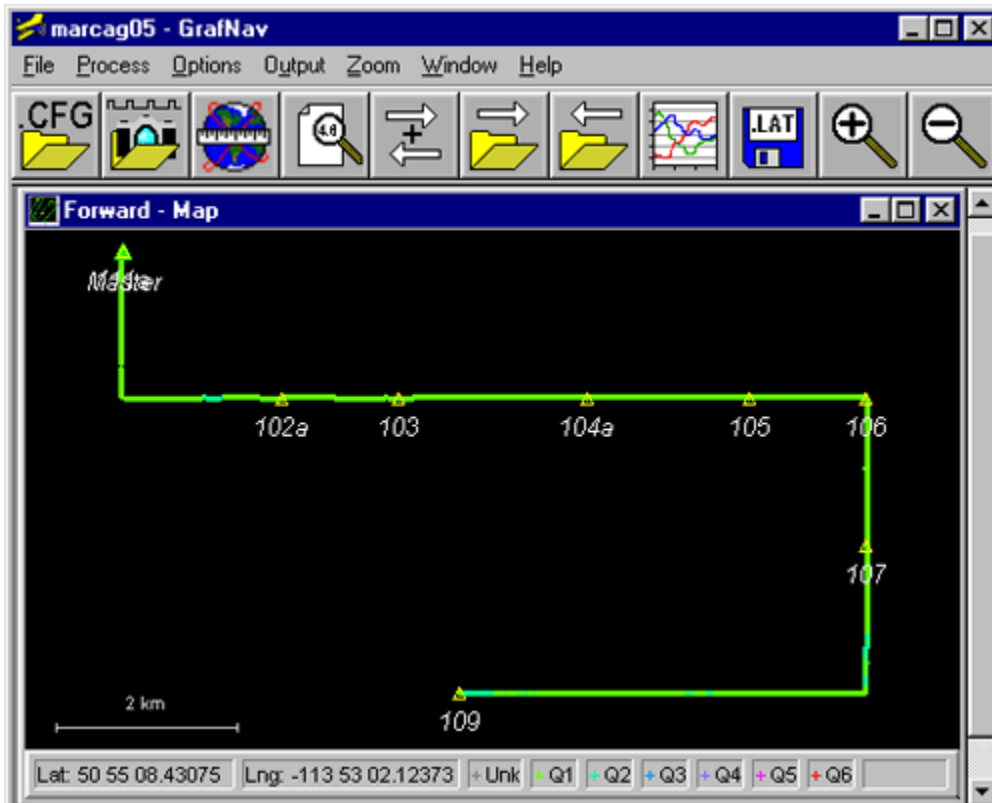


Figure 1: GrafNav Display of Survey #1

The survey uses 12 km fixed static baseline with 1800 seconds of data was followed by a 20 km kinematic run, and it consisted of ties to 2 endpoints of the kinematic traverse with 10 sec of occupation at the kinematic tie points.

Point	DN	DE	DH
112	0.001	0.007	-0.009
108	-0.015	-0.002	-0.016
102a	0.013	0.005	-0.013

Table 2: Errors in Kinematic Survey #2

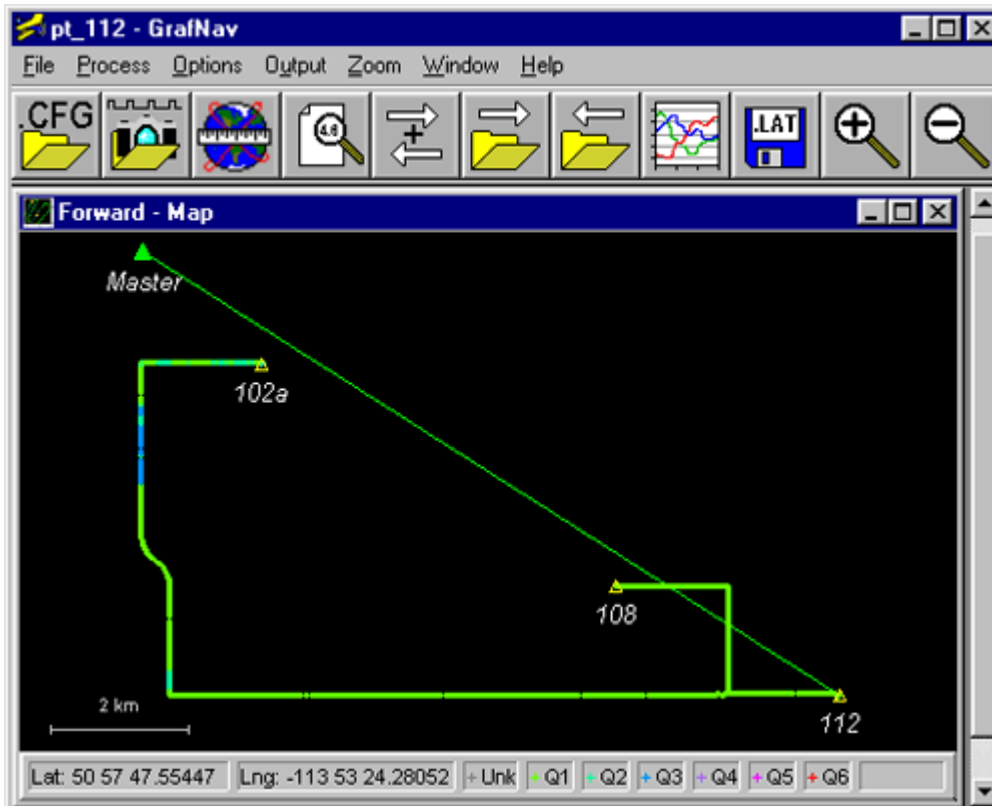


Figure 2: GrafNav Display of Survey #2

900 sec of fixed static initialization on a short baseline was followed by a 20 km kinematic traverse with 5 tie points, each occupied for 10 seconds.

Point	DN	DE	DH
102a	-0.018	0.049	-0.016
103	0.011	-0.041	-0.002
105	0.004	-0.004	-0.022
106	0.029	-0.073	-0.002
102a	0.007	0.053	0.080

Table 3: Errors in Kinematic Survey #3

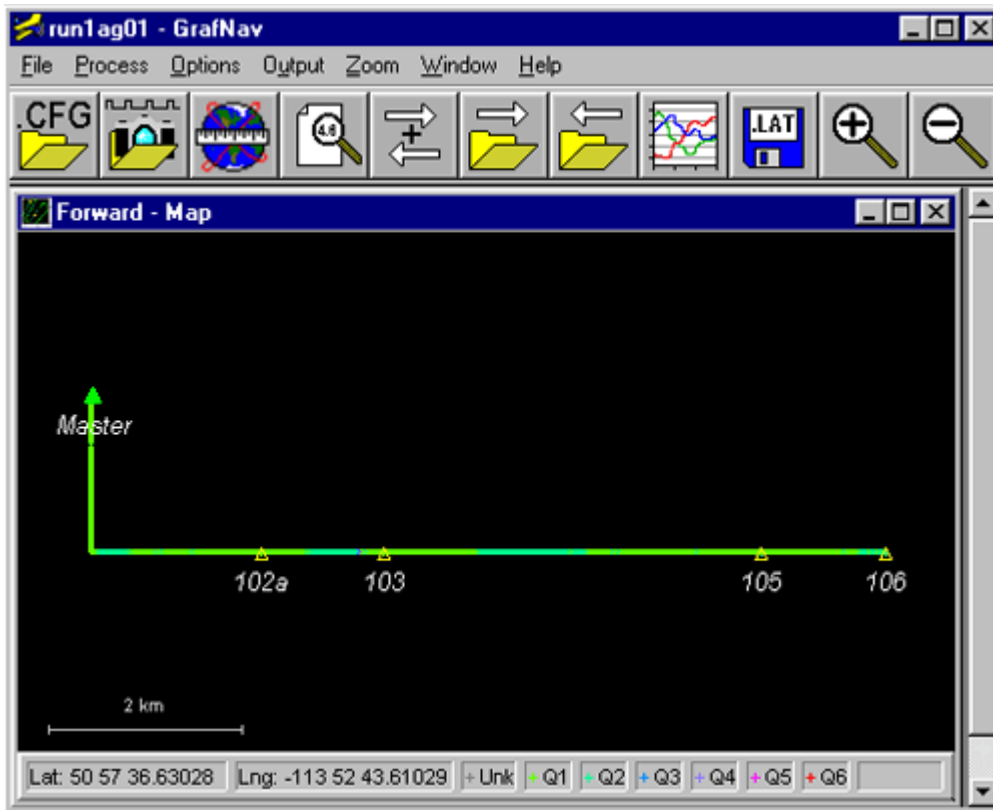


Figure 3: GrafNav Display of Survey #3

A 700 sec fixed static initialization was followed by a 30 km kinematic run tying to end points of the traverse with 10 second occupation.

Point	DN	DE	DH
111a	0.002	-0.021	0.004
112	-0.005	0.011	-0.048
111a	0.009	-0.018	0.018

Table 4: Errors in Kinematic Survey #4

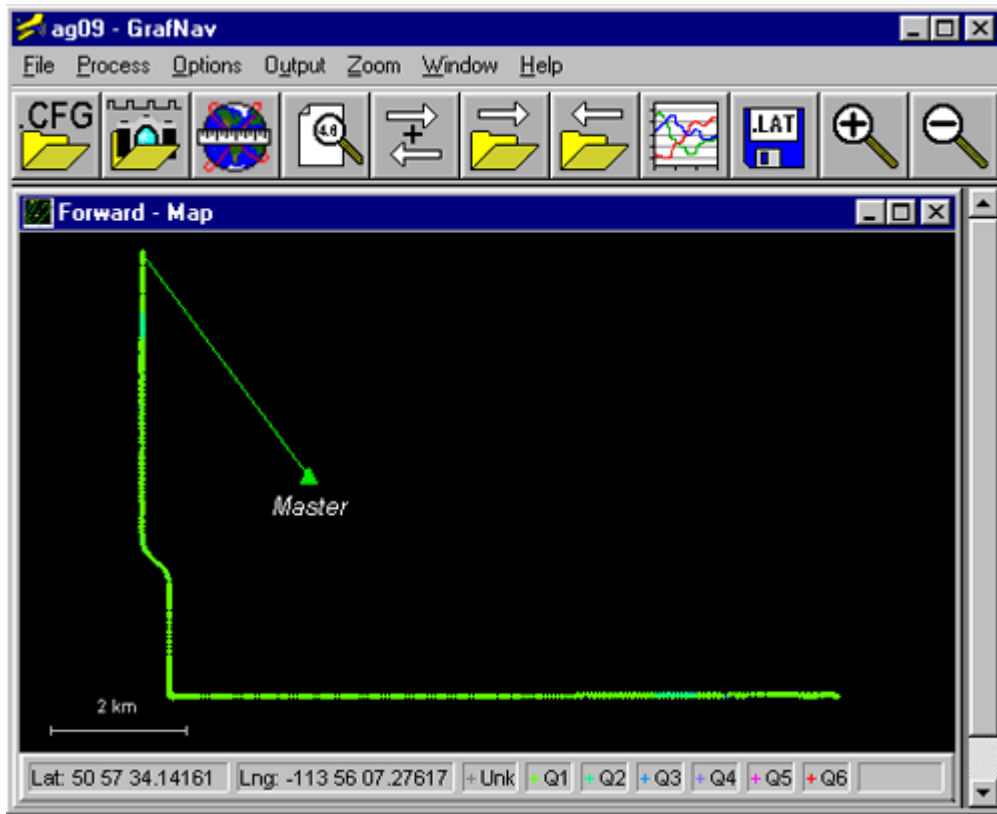


Figure 4: GrafNav Display of Survey #4

Conclusion

The 12 channel Canadian Marconi Allstar receiver has been shown to be a robust and highly accurate low cost OEM GPS product. The CMC receivers were used here in conjunction with Waypoint's GrafNav post processing package and demonstrated accuracies, both in static and kinematic mode, normally associated with higher end products in the GPS market.