

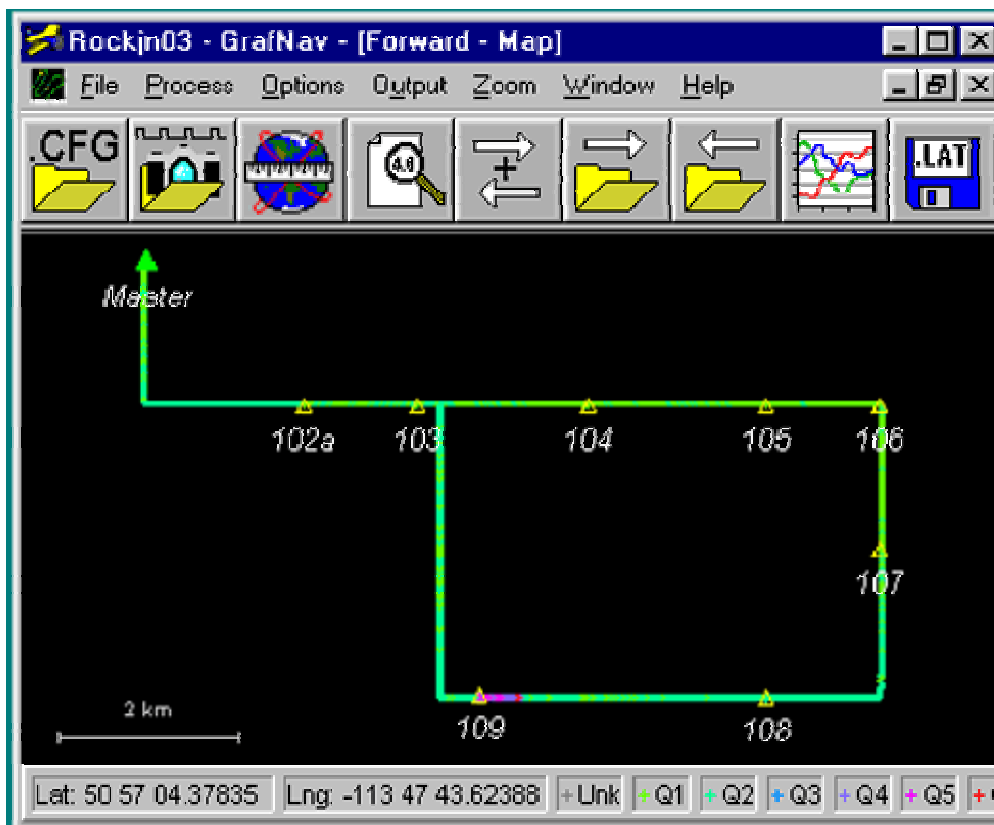
# Rockwell Plugger Surveys

Waypoint Consulting Inc.

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This is a summary of the results from three surveys conducted with two Rockwell PLGR-S 5-channel GPS receivers in kinematic mode. Each data set was collected along the same route, and the procedures were very similar.

The distance from base to remote ranged from 0-10 km and the remote station was initialized statically for 15 minutes. The remote antenna was driven along a route while stopping at known survey points at approximately 1-mile intervals. Ties were made to these points which had known coordinates. Each point was occupied for no more than 10 seconds.



**GrafNav Screen displaying the Survey Site**

During the May 30 survey, a complete loss of lock was experienced by the remote station 30 seconds prior to point 109. This explains the relatively poor results at tie points 109 and 102a. However, it should be noted that the PLGR was able to recover to sub-meter accuracy almost immediately and 30 centimeter accuracies within 10 minutes without static initialization.

**Table 1: Rockwell Plugger Survey Results from May 30, 1997**

Station	DN (m)	DE (m)	DZ (m)	Dist Traversed (m)
15 min static initialization on 20m baseline				
102a	-0.07	0.03	-0.15	3340
103	-0.17	-0.01	0.26	4620
104	-0.03	0.03	0.01	6560
106	-0.04	0.09	-0.04	9880
107	-0.12	0.15	-0.69	11380
108	0.02	0.13	0.05	14310
Total loss of lock 30 seconds prior to point 109				
109	-0.55	0.35	-1.24	17590
102a	0.31	-0.39	0.32	22720

**Table 2: Rockwell Plugger Survey Results from June 02, 1997**

Station	DN (m)	DE (m)	DZ (m)	Dist Traversed (m)
15 min static initialization on 20m baseline				
102a	-0.10	0.06	0.30	3340
103	-0.12	-0.09	0.30	4620
105	-0.09	-0.04	0.13	7240
106	-0.14	-0.03	-0.05	9880
107	-0.08	-0.03	-0.05	11380
108	-0.02	-0.05	0.01	14310
102a	-0.09	0.01	0.14	22720

**Table 3: Rockwell Plugger Survey Results from June 03, 1997**

Station	DN (m)	DE (m)	DZ (m)	Dist Traversed (m)
15 min static initialization on 20m baseline				
102a	0.12	0.20	0.24	3340
103	0.10	0.10	0.26	4620
104	0.08	0.18	0.29	6560
105	0.09	0.14	0.35	7240
106	0.06	0.10	0.36	9880
107	0.11	0.08	0.34	11380
108	0.15	0.01	0.33	14310

109	0.13	0.08	0.17	17590
102a	0.15	0.08	0.15	22720

## Conclusion

The 5-Channel Rockwell PLGR, with the added survey options, can readily be used for kinematic GPS Surveys in the 10-30 cm range over baselines of up to 25 km in length. The Plugger shows robust behavior under loss of lock conditions and excellent tracking characteristics in a dynamic environment.