Application Note

COBHAM

Recording and Playing Trajectory Routes on the GPSG-1000 Portable Positional Simulator

Trajectory files recorded by GPS receivers, or the GPSG-1000, and saved in the .gdt or .nme format may be played back on the GPSG-1000 for simulation and testing of GPS receivers. This Application Note will detail the steps required to record a trajectory route in the GPSG-1000 GPS RX and playback the file for simulation.

Files saved from other GPS receivers may have an .nmea file extension. When transferred to the GPSG-1000 for playback, they must be renamed with an .nme file extension. See Application Note, *An Explanation of File Formats That Can be Exported From and Imported To the GPSG-1000.* Once renamed and transferred to the GPSG-1000, they may then be played in the same manner as files recorded by the GPSG-1000.

Steps to Record and Play Back Trajectory Routes

The GPSG-1000 GPS RX will record its position and route. Attach the included GPS RX antenna. From the Main Menu, select the down arrow. See Figure 1.
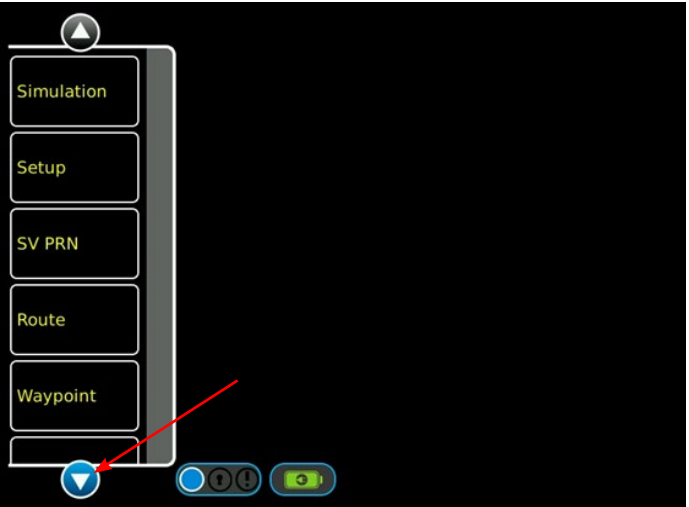

Figure 1, Main Menu

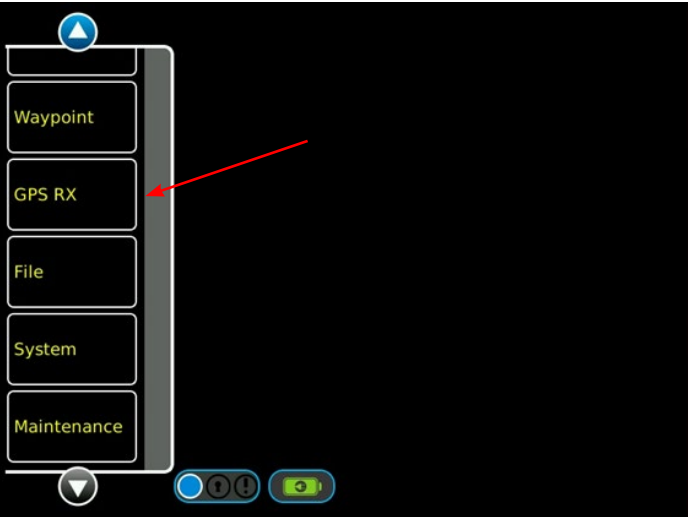From the lower portion of the Main Menu, select GPS RX. See Figure 2

Figure 2, Main Menu, lower section

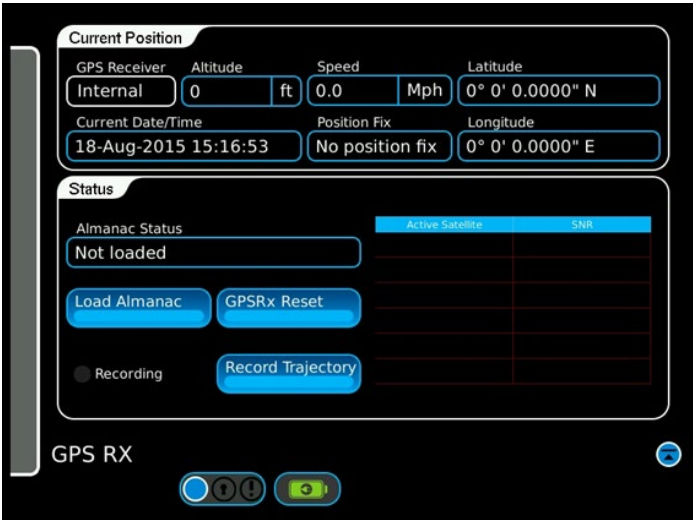The GPS RX page will display the current GPS position fix and the visible satellite. See Figure 3

Figure 3, GPS RX Page

Wait for the GPS RX to acquire a 3D position fix. See Figure 4.
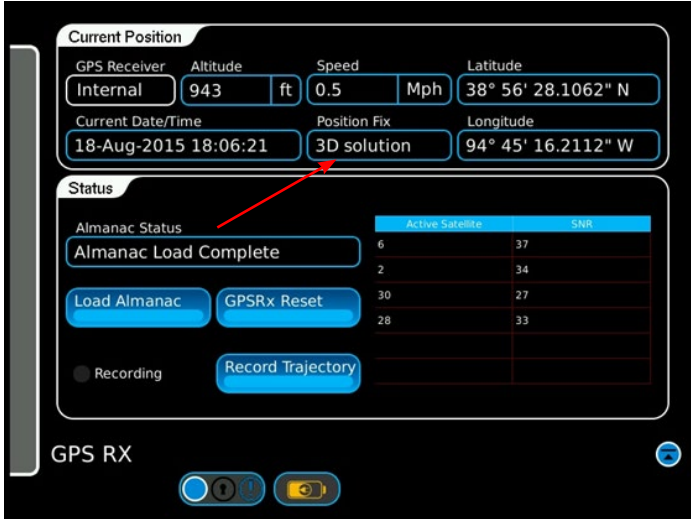

Figure 4, GPS RX Page w/ 3d Fix

Press the Record Trajectory button to start recording. The GPSG-1000 will continue to record until the Stop Recording button is pressed. Note the Current Date/Time field, the time is displayed as GMT. See Figure 5
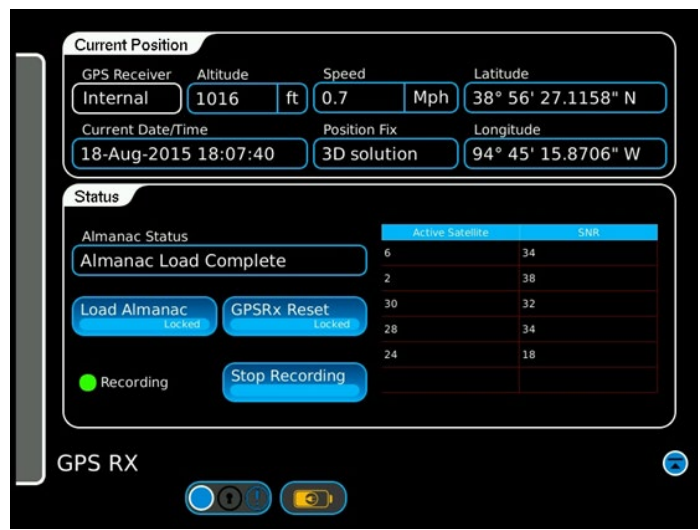

Figure 5, *GPS RX Page, recording trajectory*

The data will be stored in a file with the following naming convention: MMDDYYYY_HHMMSS.nme. The time recorded for the file name is the time the recording is stopped. To load the new Trajectory File for playback, select File from the Main Menu and then Trajectory from the tabs at the top of the page. Press the Load button and select the new .nme file, press Open. See Figure 6
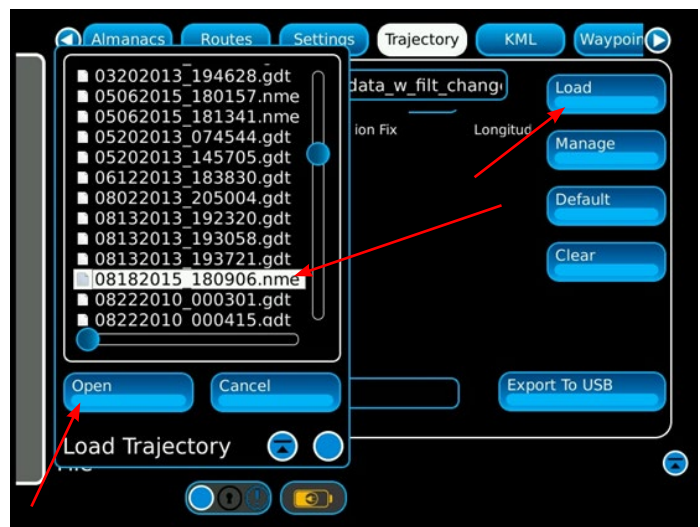

Figure 6, *File Page, trajectory file saved*

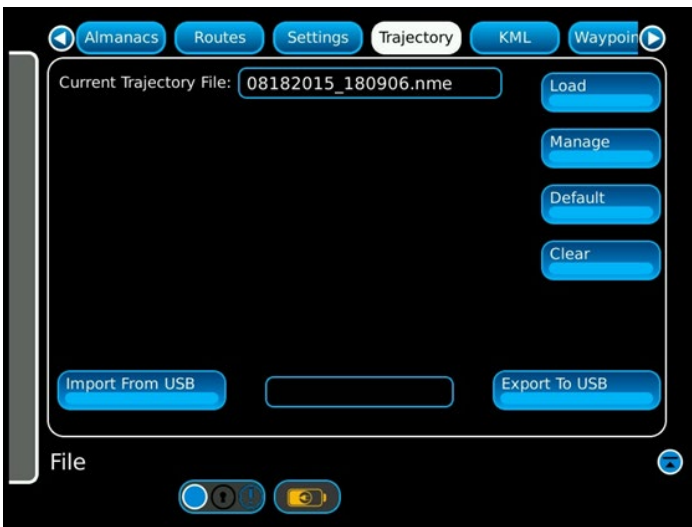The new Trajectory file will appear in the Current Trajectory File window. See Figure 7.

Figure 7, *File Page, trajectory file loaded*

To run the Trajectory File simulation, select Setup from the Main Menu. In the GNSS window in the Simulation field select Trajectory. In the PRN Signal field, select Traj File. Set the RF Level in the RF Output window to the desired level. See Figure 8.

The Trajectory File records the Signal to Noise Ratio (S:N) of the received GPS signal. During playback the GPSG-1000 will adjust the RF Power Level, based upon the Power Level the user selects in the RF Output window, to simulate the recorded variances to S:N. To make proper use of this function, the user should set the RF Level on the GPSG-1000 to reproduce the S:N for the receiver under test. The GPSG-1000 Trajectory File playback will then simulate the actual recorded conditions of SV drop out or S:N variances. For this feature to work the simulation must be played back with the same Almanac with which the recording was made. If the Trajectory File is played with a different Almanac the positional simulation will run, but the Simulation screen will show a "Red" indicator for Traj Power and the RF Level will remain at the set level.
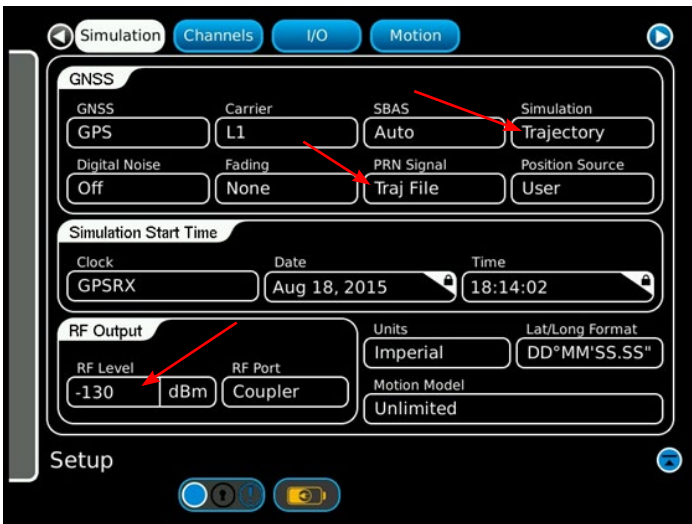

Figure 8, *Setup Page, trajectory setup*

Close the Setup page and select Simulation from the Main Menu. Press Run and the Trajectory Simulation will start. See Figure 9.
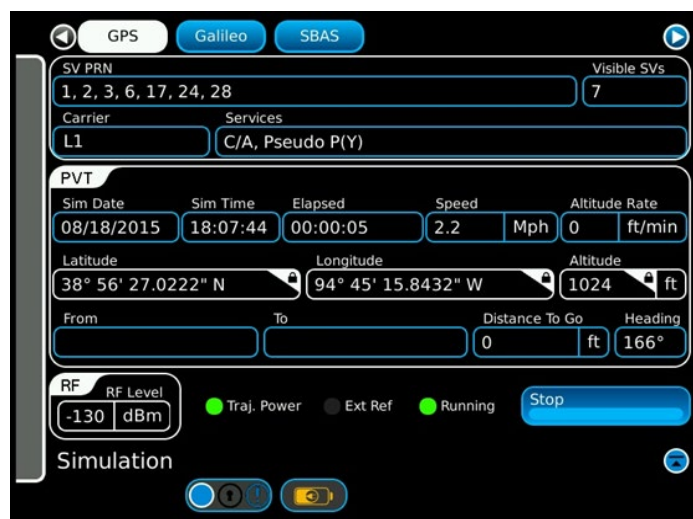

Figure 9, *Simulation Page, trajectory file running*

The simulation will run until the end of the Trajectory File. See Figure 10.

Figure 10, *Trajectory simulation complete*