

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

May 4, 2017

Global Positioning System

Specialist's Factual Report By Sean Payne

1. EVENT SUMMARY

Location: Hawthorne, California
Date: June 10, 2016
Aircraft: Grumman AA-1B
Registration: N4SU
Operator: Private
NTSB Number: WPR16FA124

On June 10, 2016, at 1710 Pacific daylight time, a Grumman American Aviation Corporation AA-1B, N4SU, was destroyed when it impacted a residence after takeoff from Jack Northrop Field/Hawthorne Municipal Airport (HHR), Hawthorne, California. The private pilot/owner and flight instructor were fatally injured. There were no ground injuries. Visual meteorological conditions prevailed, and no flight plan was filed for the instructional flight, which was conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91.

2. DETAILS OF INVESTIGATION

The National Transportation Safety Board (NTSB) Vehicle Recorder Division received the following device:

Device Manufacturer/Model:	Garmin GPS III Pilot
Serial Number:	unknown

2.1. Device Description

The Garmin GPS III Pilot is a battery operated, portable 12-channel GPS receiver equipped with a 16 color LCD display. An external antenna, attached via a BNC-style connector, is required for reliable satellite reception. The GPS III Pilot is capable of storing position and altitude information for up to 500 waypoints in volatile¹ memory. Twenty routes, each representing a linked list of up to 30 waypoints, may also be stored in memory. A detailed tracklog - composed of latitude, longitude, date, time, and altitude information sampled at intervals while the unit is powered up and receiving satellite

¹ Volatile Memory – Memory that requires power remain applied to retain data.

signals - can also be stored. The unit contains hardware and software permitting the download of recorded waypoint, route, and track log information via a Garmin proprietary interface. The unit communicates with other electronic devices via a serial port employing the NMEA 0183 protocol. An internal button-battery is used to back-up power to the internal memory and real-time clock during those periods when main power is removed.

2.2. Device Condition

Upon arrival at the Vehicle Recorder Laboratory, an examination revealed the unit had sustained significant thermal and impact damage. The extent of the damage is shown in figure 1. The device was opened and the main board was mostly undamaged with the exception of moderate thermal marking near one corner of the board (figure 2). The backup battery was tested for power and displayed no voltage (figure 3).



Figure 1. Photo of damaged unit.



Figure 2. Photo of unit's main board.

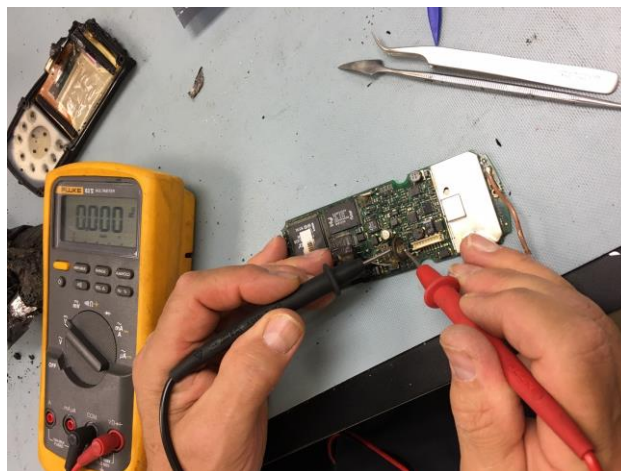


Figure 3. Photo of examination of the unit's backup battery.

2.3. Data Description

The device stores tracklog history in volatile memory. In this case, the battery supplying the device's main power was damaged. Additionally, the internal back up battery had zero voltage. As a result, no data were recovered from the device.