

# NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division  
Washington, D.C. 20594

October 31, 2019

## Global Positioning System Device

Specialist's Factual Report  
By Deven Chen

### 1. EVENT SUMMARY

Location: Springfield Township, New Jersey  
Date: June 13, 2018  
Aircraft: Beach 58  
Registration: N218BL  
Operator: Private  
NTSB Number: ERA18FA167

On June 13, 2018, about 0907 eastern daylight time, a Beech 58, N218BL, impacted a field near Springfield Township, New Jersey. The private pilot and pilot-rated passenger were fatally injured, and the airplane was destroyed by impact forces. The airplane was privately owned and operated under the provisions of Title 14 *Code of Federal Regulations* (CFR) Part 91. Day instrument meteorological conditions (IMC) prevailed, and an instrument flight rules (IFR) flight plan was filed for the charitable, medical positioning flight. The three-minute flight originated from South Jersey Regional Airport (VAY), Mount Holly, New Jersey, just before 0904, and was destined for Barnstable Municipal Airport-Boardman/Polando Field (HYA), Hyannis, MA.

### 2. GROUP

A group was not convened.

### 3. DETAILS OF INVESTIGATION

The National Transportation Safety Board (NTSB) Vehicle Recorder Division received the following Global Positioning System (GPS) Device:

**Device Manufacturer/Model:**            **Garmin GNS 530**  
**Serial Number:**                            **78405574**

#### 3.1. Device Description

The Garmin Model GNS 530 is a panel-mounted GPS receiver featuring a 5-inch color liquid crystal (LCD) display and offering navigation and communication data, along with precision and non-precision approach certification in the IFR environment. The unit has

a slot for a Jeppesen database (front-loading data card) containing all airports, VORs, NDBs, intersections, Approach, STAR/SIDs and SUA information. A flight plan composed of multiple waypoints, including user-defined waypoints, can be programmed in the unit. However, the unit has no capability of recording and storing position information. Data related to last known communication frequency and navigation frequency settings is stored in NVM<sup>1</sup> and may be read from the front panel display upon power-up. There are no provisions for downloading stored data to a PC. 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.

### **3.2. Data Recovery**

Upon arrival at the Vehicle Recorder Division, an exterior examination revealed impact damage to the device, as shown in Figure 1. Figure 2 shows part of the circuit boards inside the device were covered by dirt. The internal backup battery was still attached and providing power to the circuit board, as shown in Figure 3. The circuit boards were cleaned up. A functioning surrogate screen was installed onto the device. However, the device could not power up. Further examination revealed that a portion of circuit board was not functional when the device was supplied with power, as shown in Figure 4. A formal request was sent to the manufacturer on September 10, 2019 for assistance on repairing the unit. As of October 21, 2019, the manufacturer has been non-responsive to the request for assistance. No data were recovered from the device.

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<sup>1</sup> NVM – Non-Volatile Memory, computer memory that holds saved data even if the power is turned off



Figure 1. Front, back and body of Garmin GNS 530 as received



**Figure 2. Interior of Garmin GNS 530 as received**



**Figure 3. Internal backup battery attached and provided power**

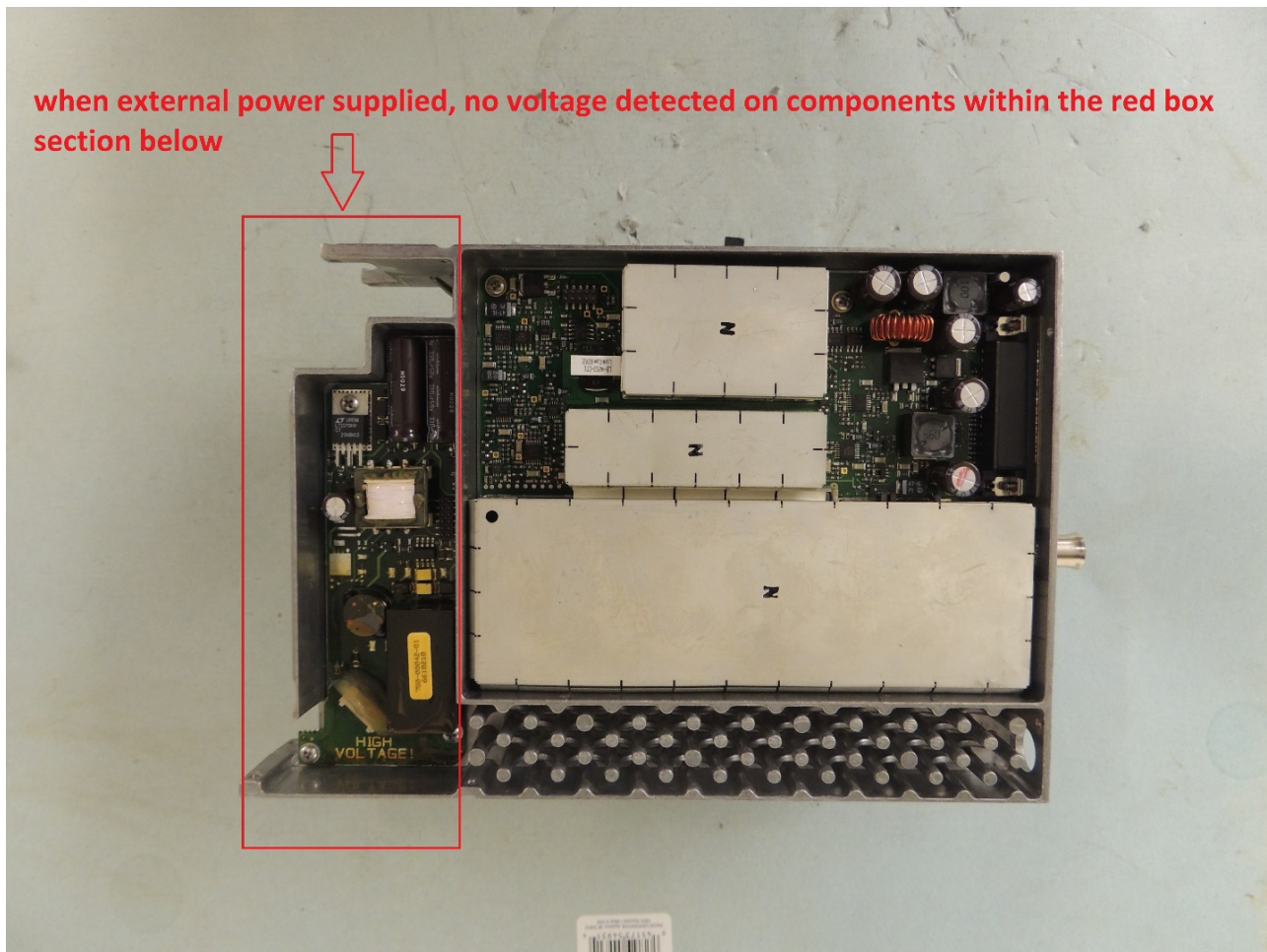


Figure 4. Malfunctional portion of the circuit board on the device