

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

March 20, 2018

Global Positioning System (GPS)

Specialist's Factual Report By Christopher Babcock

1. EVENT SUMMARY

Location: Ventura, California
Date: June 1, 2017
Aircraft: Cessna 180
Registration: N3683C
Operator: Private
NTSB Number: WPR17FA117

2. GROUP

A group was not convened.

3. DETAILS OF INVESTIGATION

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

Device Manufacturer/Model:	Garmin Aera 660
Serial Number:	4NN002571

3.1. Device Description

The Garmin Aera 660 presents GPS-derived analog flight instrumentation, position, navigation, and hazard avoidance information to the pilot using a 5-inch display with a capacitive touch screen.

3.2. Device Condition

Upon arrival at the Vehicle Recorder Laboratory, an examination revealed the unit had sustained severe impact damage. The extent of the damage is shown in figure 1. The extraction of the data was performed by using a surrogate unit.



Figure 1. Front of Aera 660.



Figure 2. Rear of Aera 660.

3.3. Data Description

This device can store data in non-volatile memory (NVM) that may be downloaded by manufacturer's software.¹ This feature can be activated or deactivated by the user. Due to damage sustained in the accident, the manufacturer's software did not recognize the device after connecting to the computer. A chip-off data recovery was attempted by removing the memory device and directly reading the binary data from the device in the chip reader (Figure 3). After examination of the binary data, it appeared that no data was recorded on the device.

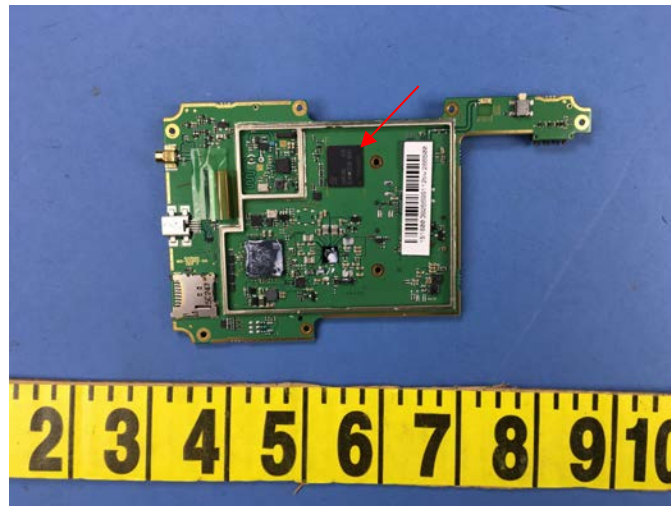


Figure 3. Internal printed circuit board with memory device (shown by arrow).

¹ Non-volatile memory is semiconductor memory that does not require external power for data retention.