

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



ERA24LA152

COCKPIT DISPLAY - RECORDED FLIGHT DATA

Specialist's Factual Report

December 19, 2024

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A. ACCIDENT

Location: Opelika, Alabama
Date: March 24, 2024
Time: 1330 central daylight time (CDT)
1730 coordinated universal time (UTC)
Airplane: Cessna 172, Private, N863AU

B. COCKPIT DISPLAY - RECORDED FLIGHT DATA SPECIALIST

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National Transportation Safety Board (NTSB)

C. DETAILS OF THE INVESTIGATION

A cockpit display - recorded flight data group was not convened. The NTSB Vehicle Recorder Division received the following electronic devices:

Recorder Manufacturer/Model:	Garmin G1000
Part Number:	011-03470-70
Recorder Serial Number:	494705284

Recorder Manufacturer/Model:	Garmin G1000
Part Number:	011-03470-70
Recorder Serial Number:	494705320

1.0 Device Description

The Garmin G1000 Integrated Flight Deck is a collection of multiple avionics units which include flight displays, air data computers, Attitude/Heading Reference System (AHRS), communications and other systems. A typical installation includes a Primary Flight Display (PFD) and a Multi-Function Display (MFD). Each display includes two Secure Digital (SD) card slots, an upper and a lower slot. The lower SD card slot is used by the system for software updates and various databases.¹

Depending on the display unit software, the aircraft can include a data logging feature. The data logging feature must be enabled by the aircraft operator. If the data logging feature is available and enabled, a SD card has to be installed in the upper slot of the MFD. Depending on the airframe and engine combination as many as 64 parameters can be stored at a rate of one sample per second (1Hz). According to the

¹ Databases can include terrain data, obstacle data, SafeTaxi charts, flight charts, and airport terrain databases

manufacturer of the display unit, one flight hour can be stored in approximately 2 megabytes (MB). The SD card typically used is 2 gigabytes (GB) in size and can store over 1,000 flight hours.

1.1 Data Recovery

The two Garmin G1000's were slightly bent and showed signs of impact damage, as shown in figure 1. The devices were unable to power on, and there were no SD cards in either of the SD slots. Garmin G1000 serial number 494705284 was opened and the circuit board was removed, as shown in figure 2. Identified on figure 2 is a memory chip that was removed (figure 3) and a micro-SD card. The micro-SD card and removed memory chip contained only chart related information. As a result of the data review on Garmin G1000 serial number 494705284, Garmin G1000 serial number 494705320 was not opened and the data was not analyzed. The same data information obtained from Garmin G1000 serial number 494705284 would be found on Garmin G1000 serial number 494705320. There were no data pertinent to the event were recorded on the device.



Figure 1. Garmin G1000 serial number 494705284 (top) and serial number 494705320 (bottom) as received by the NTSB Vehicle Recorder Laboratory.

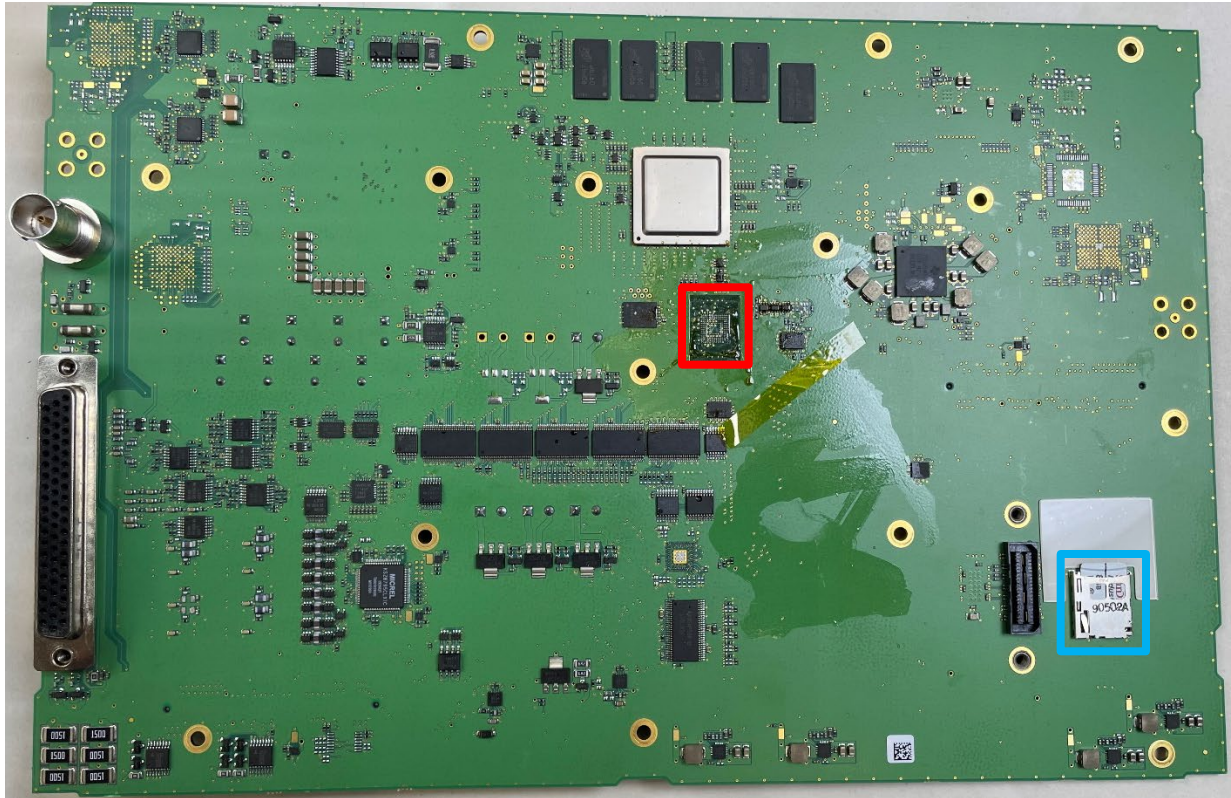


Figure 2. Garmin G1000 serial number 494705284 circuit board. The red box is the location of the removed memory chip and the cyan box is the location of the micro-SD card.

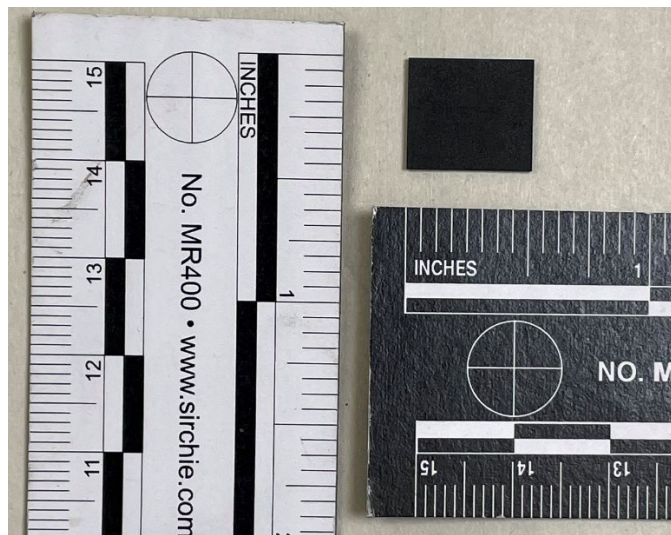


Figure 3. Memory card removed from Garmin G1000 serial number 494705284.

Submitted by:

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