

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



CEN23FA142

ELECTRONIC DEVICES

Specialist's Factual Report

March 5, 2024

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A. ACCIDENT

Location: Port Allen, Louisiana
Date: March 26, 2023
Time: 02:38 central daylight time (CDT)
Helicopter: Robinson R44 II, Baton Rouge Police Department, N441PD

B. ELECTRONIC DEVICES SPECIALIST

Specialist: Kyle Garner
Sr. Aerospace Engineer – Recorder Specialist
National Transportation Safety Board (NTSB)

C. DETAILS OF THE INVESTIGATION

A group was not convened.

The NTSB Vehicle Recorder Division received the following electronic devices:

Recorder Manufacturer/Model: Garmin GTN 750Xi¹
Part Number: 011-04634-00
Recorder Serial Number: 5FR0075776

Recorder Manufacturer/Model: AeroComputers UC-5300
Part Number: UC-5300
Recorder Serial Number: 53038

1.0 Garmin GTN 750Xi Description

The Garmin GTN 750Xi is a panel-mounted GPS receiver and advanced avionics system featuring a 6.9-inch touchscreen display. The device integrates GPS/SBAS navigation, communication, and flight management capabilities into a single unit.

Up to 100 hours of flight data is logged in the unit's internal memory. In normal operation, the data logs can be exported to an SD card via an SD card slot on the front of the unit.

¹ The Garmin GTN 750Xi did not arrive with a display attached, only the rack-mounted computer unit.

1.1 Garmin GTN 750Xi Data Recovery

The Garmin GTN 750Xi arrived without a display and minor exterior damage, as shown in figure 1. The device was opened, the circuit boards were examined, and it was determined that the device did not contain an internally mounted SD card.

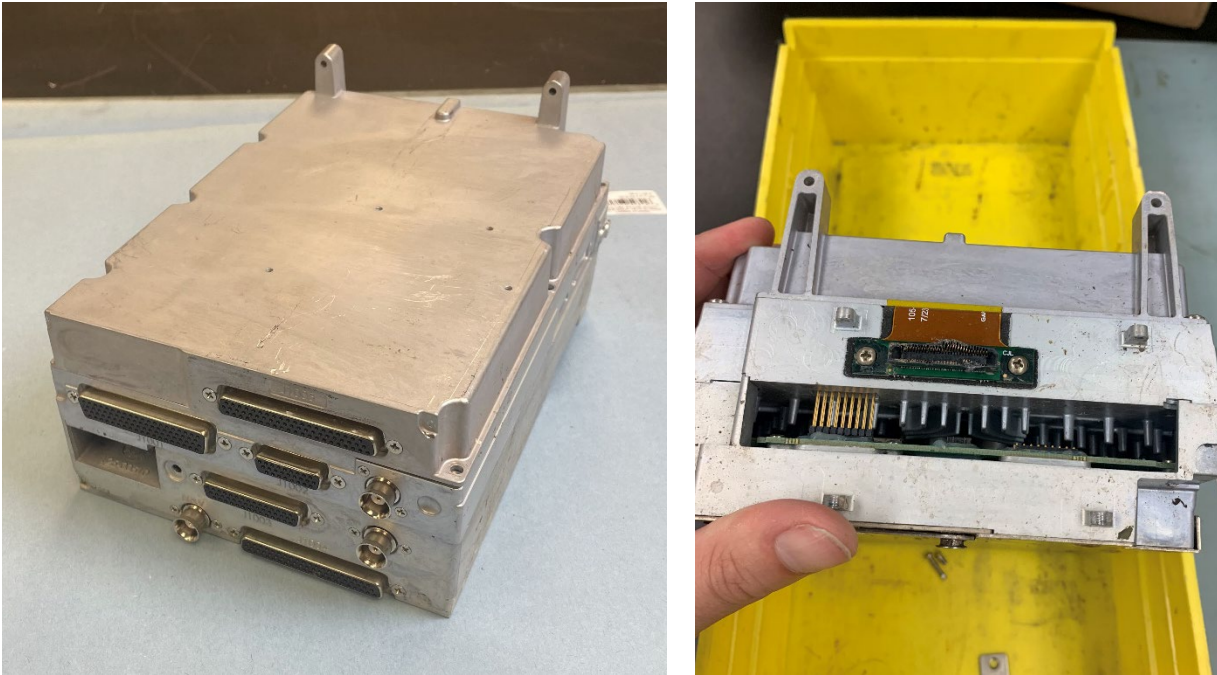


Figure 1. Garmin GTN 750Xi, as received. Rack-mounted computer unit (left) and damage to display connector (right).

Due to the minor damage, missing display, and lack of an internally mounted SD card, the manufacturer was contacted for additional support. The manufacturer indicated that the GTN 750Xi has an eMMC chip on the main circuit board that stores limited GPS data, but no AHRS or ADC data.²

After consultation with the Investigator-in-Charge, it was determined that due to the existence of ADS-B data for the accident, further recovery attempts of the data contained on the GTN 750Xi would not be pursued. No data were recovered from the device.

2.0 AeroComputers UC-5300 Description

The AeroComputers UC-5300 is a tactical mapping system designed primarily for law enforcement. The unit integrates onboard camera/IR sensors and other aircraft systems to collect video and geo-reference information in real time during flight. The unit can drive an on-board display depicting the video information along

² eMMC = embedded multi-media card, AHRS = attitude and heading reference system, ADC = air data computer.

with mapping indicating the location on the ground of the video being imaged. The unit stores latitude and longitude information corresponding to aircraft position on an internal solid-state drive.

2.1 AeroComputers UC-5300 Data Recovery

The AeroComputers UC-5300 was damaged in the accident. The extent of the damage is shown in figure 2.



Figure 2. AeroComputers UC-5300 device, as received.

The outer casing was opened, and the internal SSD was located as shown in figure 3.



Figure 3. AeroComputers UC-5300 internal SSD, as received.

The SSD had signs of impact damage. When attached to a lab computer via a write blocker device, the SSD did not have a recognizable filesystem.

Due to the extent of the damage, the SSD was sent to a third-party lab that specializes in recovering data from solid-state memory devices. The third-party lab indicated that their recovery attempts were also unsuccessful. Techniques employed by the third-party lab can include but are not limited to board rework and reading of individual memory chips, and the use of virtual NAND³ reconstruction software.

Despite multiple recovery attempts by the NTSB and a third-party lab, no data were recovered from the device.

Submitted by:

Kyle Garner
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³ NAND - Not AND, a type of logic gate operating memory for solid-state memory devices.