

# National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



ANC24FA008

## **ELECTRONIC DEVICES**

Specialist's Factual Report

March 12, 2024

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## **A. ACCIDENT**

Location: Anchor Point, Alaska  
Date: December 8, 2023  
Time: 1311 Alaska standard time (AKST)  
2211 coordinated universal time (UTC)  
Airplane: Piper PA-18-150, N1880P

## **B. ELECTRONIC DEVICES SPECIALIST**

Specialist: Gerald Kawamoto  
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 aera 500      |
| Recorder Serial Number:      | 1QN009814            |
| Recorder Manufacturer/Model: | Apple iPad Mini 2    |
| Part Number:                 | A1490                |
| Serial Number:               | F9FRG11KFLMJ         |
| Recorder Manufacturer/Model: | Apple iPad Mini      |
| Part Number:                 | A1454                |
| Serial Number:               | F4KK39CJF19C         |
| Recorder Manufacturer/Model: | Apple iPhone 6S Plus |
| Part Number:                 | A1634                |
| IMEI:                        | 353333076172806      |
| Recorder Manufacturer/Model: | iPhone XS            |
| Part Number:                 | A1920                |
| IMEI:                        | 356168091377973      |

### **1.0 Garmin aera 500 Description**

The Garmin aera 500 is a portable GPS navigation device with a 4.3-inch touchscreen and color moving map display. The aera is capable of storing track logs in non-volatile memory (NVM) that contain GPS position information.<sup>1</sup> This data is

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

stored internally in an industry-standard format and may be exported using the mini-USB port on the device. Once the current track log memory becomes full, new information either overwrites the oldest information or recording stops, depending on how the unit is configured. Track log storage may be activated or de-activated at user discretion.

## 1.1 Garmin aera 500 Data Recovery

The device sustained impact damage to its display, as shown in figure 1. The device was able to power on, however, the touchscreen was not functional. The damaged touchscreen was replaced with a functional lab surrogate and data were extracted normally using the manufacturer's procedures.



**Figure 1.** Front and back of the Garmin aera 500 as received.

## 1.2 Garmin aera 500 Data Description

The data extracted included 10 sessions recorded from November 2, 2023, through December 8, 2023. The final session corresponded to the accident flight and started at 20:16:56 UTC and ended at 22:11:14 UTC. Due to data buffering in the device, the end of the session may not have been recorded.

Table 1 describes data parameters provided by the device. Date, Time, Latitude, Longitude, and GPS Altitude are recorded by the device. Groundspeed and Track are derived from the recorded parameters.

**Table 1.** Garmin aera 500 Parameters.

| Parameter Name (unit) | Parameter Description (unit)                  |
|-----------------------|-----------------------------------------------|
| Date                  | Date for recorded data point (mm/dd/yyyy)     |
| Time                  | Time (UTC) for recorded data point (hh:mm:ss) |
| Latitude (deg)        | Recorded Latitude (degrees)                   |
| Longitude (deg)       | Recorded Longitude (degrees)                  |
| GPS Alt (ft)          | Recorded GPS Altitude (feet)                  |
| Groundspeed (kts)     | Average derived groundspeed (knots)           |
| Track (deg)           | Average derived true course (degrees)         |

## **2.0 Personal Electronic Devices (PEDs) Description**

PEDs are a category of devices comprised primarily of portable computing devices and mobile phones. Portable computing devices are typically capable of internet access, email, messaging services, and can run user-installed applications to perform specific tasks. Depending on the model, mobile phones can perform many of the same tasks as portable computing devices, plus have voice call and text messaging capabilities. PED user and system data is typically stored on non-volatile memory and can be accessed through manufacturer-provided interfaces.

### **2.1 Personal Electronic Devices (PEDs) Data Recovery**

The condition of the 4 PED devices (Apple iPad Mini 2, Apple iPad Mini, Apple iPhone 6S Plus, and iPhone XS) as received at the Vehicle Recorder Laboratory is shown in figure 2 through figure 5. Both iPads sustained damage rendering them inoperable. The internal motherboards were removed from each iPad and installed in functioning lab surrogates. The iPad Mini 2 powered on normally in the lab surrogate. No relevant accident data were present upon review of its contents. The iPad Mini was unable to power on normally in a lab surrogate due to damage sustained to the motherboard, thus no data were recovered. Both iPhones powered on normally and were protected by 4-digit numeric passcodes. The devices were unable to be unlocked, therefore, no data were recovered.



**Figure 2.** iPad Mini 2 as received.



**Figure 3.** iPad Mini as received.



**Figure 4.** iPhone 6S Plus as received.



**Figure 5.** iPhone XS as received.

#### **D. FIGURES AND TABULAR DATA**

Figures 6 through 8 contain data from the Garmin aera 500 recorded during the event on December 8, 2023. Figures 6 and 7 are graphical overlays generated in Google Earth. The weather and lighting conditions in Google Earth are not necessarily the weather and lighting conditions present at the time of the accident flight.

Figure 6 shows the entire accident flight.

Figure 7 shows the end of the accident flight and the reported wreckage location shown with a red dot.

Figure 8 is a plot of parameters of the entire accident flight. The time displayed is 20:15:00 to 22:15:00 UTC.

The corresponding tabular data used to create figures 6 to 8 are provided in electronic comma-separated value (CSV) format as attachment 1 to this report.

Submitted by:

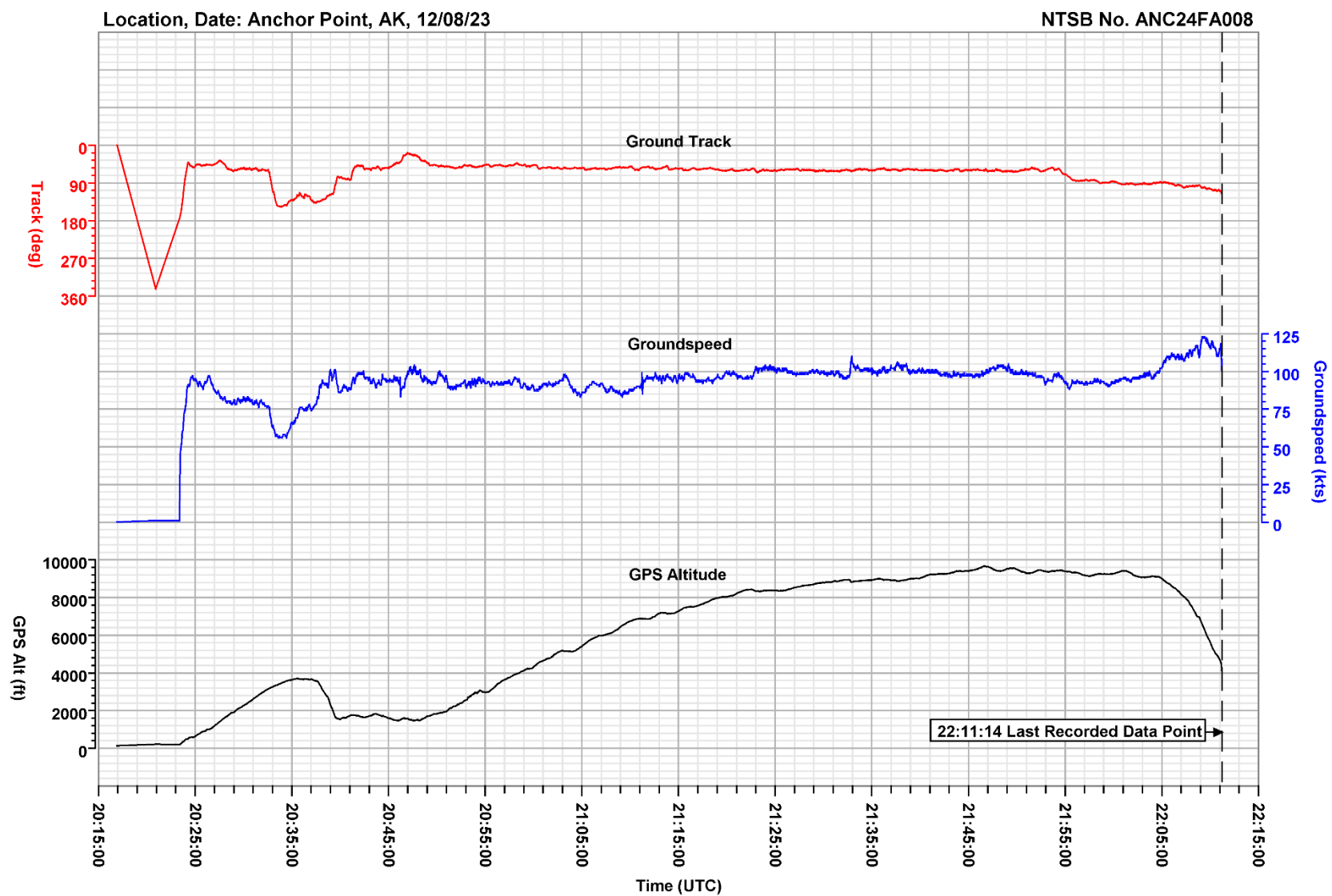
Gerald Kawamoto  
Recorder Specialist



**Figure 6.** Google Earth overlay of the accident session.



**Figure 7.** Google Earth overlay of the end of the accident session and the reported wreckage location.



**Figure 8.** Plot of parameters from the Garmin aera 500.