NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division
Washington, D.C. 20594

January 19, 2022

Global Positioning System Device

Specialist's Factual Report
By Ben Hsu

1. EVENT

Location: Chitina, Alaska
Date: February 4, 2021
Aircraft/ID: Cessna 185 / N9725Z
Operator: Copper Valley Air Service
NTSB Number: ANC21FA015

2. EVENT SUMMARY

On February 4, 2021, about 1051 Alaska standard time, a Cessna A185E, N9725Z, sustained substantial damage when it was involved in an accident about 14 miles northeast of Chitina, Alaska. The commercial pilot and the passenger were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 135 scheduled passenger flight.

3. DETAILS OF DEVICE INVESTIGATION

The National Transportation Safety Board's (NTSB) Vehicle Recorder Division received the following global positioning system (GPS) device:

    Device: Garmin GPSMAP 696
    Device Serial Number: 1H6003898

Figures 1 and 2 show the condition of the device as it arrived in the laboratory. The device exhibited substantial damage due to impact forces. The device's internal memory component was removed, imaged, and decoded using laboratory hardware and software.

Figure 1. Front of GPS device

Figure 2. Back of GPS device

3.1. GPS Device Detailed Description

The Garmin GPSMAP 696 is a portable GPS receiver capable of storing date, route-of-flight, and flight-time information. A detailed tracklog – including latitude, longitude, date, time, and groundspeed information – is stored within the unit whenever the receiver has a lock on the GPS navigation signal. All recorded data is stored in non-volatile memory.[1] The unit can communicate with external devices such as a computer using a built in USB port. An internal battery is used as back-up power to the internal memory and real-time clock during those periods when main power is removed.

3.2. GPS Data Description

The last session recorded on the device was determined to be the accident flight and is included in this report. All times included are Coordinated Universal Time (UTC).

3.3. Parameters Provided

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

Table 1. GPS Data Parameters

Parameter Name	Parameter Description
Time	Time (UTC) for recorded data point (HH:MM:SS)
Latitude	Recorded Latitude (degrees)
Longitude	Recorded Longitude (degrees)
GPS Alt	Recorded Altitude (feet)
Groundspeed	Average groundspeed between current and previous data point (knots)

4. OVERLAYS AND TABULAR DATA

Figures 3 and 4 are graphical overlays generated using Google Earth showing an overview of and the end of the recorded session, respectively.

Attachment 1 is the tabular data corresponding to the recorded session. The attachment is provided in electronic comma-separated value (CSV) format.

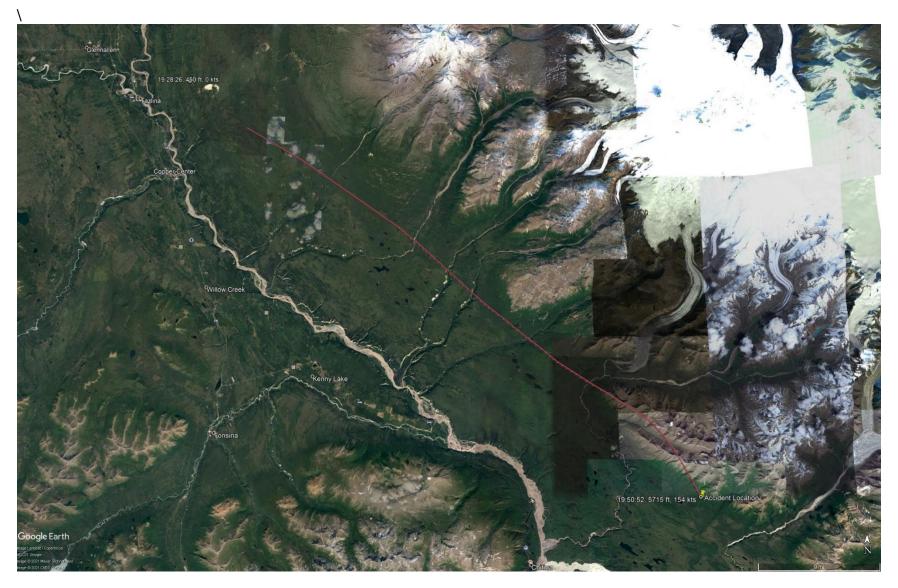[1] Non-volatile memory is semiconductor memory that does not require external power for data retention.

Figure 3. Overview of accident flight

°19:45:58, 7496 ft, 135 kts

19:46:52, 7505 ft, 128 kts °

°19:47:51, 7544 ft, 127 kts

°19:49:19, 7295 ft, 140 kts

19:50:06, 6521 ft, 151 kts

Accident Location °19:50:52, 5715 ft, 154 kts

Google Earth

Figure 4. Detail view of end of accident flight