

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division

Washington, D.C. 20594

November 1, 2018

Global Positioning System Device

Specialist's Factual Report

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1. EVENT SUMMARY

Location: Helenwood, Tennessee
Date: January 30, 2018
Aircraft: Beech 35-A33
Registration: N9378Y
Operator: Private
NTSB Number: ANC18FA022

On January 30, 2018, at about 1345 eastern standard time, a Beech 35-A33 retractable gear airplane, N9378Y, sustained substantial damage during a forced landing following a total loss of engine power while in level cruise flight near Helenwood, Tennessee. The private pilot sustained serious injuries and the passenger sustained fatal injuries. The airplane was registered to and operated by the pilot as a 14 *Code of Federal Regulations* Part 91 visual flight rules flight when the accident occurred. Visual meteorological conditions prevailed, and no flight plan had been filed. The flight had departed from Venice, Florida at about 0800 destined for Urbana, Ohio with a planned intermediate fuel stop.

2. GROUP

A group was not convened.

3. DETAILS OF INVESTIGATION

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

Device Manufacturer/Model: Garmin Aera 796
Serial Number: 2CZ000575

3.1. Garmin aera 796 Device Description

The Garmin aera 796 is a battery-powered multi-function display and GPS receiver with a 7-inch diagonal high resolution touch screen. The unit includes a built-in Jeppesen database and can receive XM satellite radio for flight information including NEXRAD Radar, lightning, METARs, and TFRs. The unit can also perform and store weight and balance calculations. A built-in AOPA Airport Directory and SafeTaxi airport diagrams are included for selected airfields. With appropriate subscriptions, the unit can store and display geo-referenced VFR and IFR navigation charts, including IFR approach charts. The unit also has a “scratch pad” feature, allowing the user to hand write electronic notes.

The unit stores date, route-of-flight, and flight-time information for up to 50 flights. A detailed track log – including latitude, longitude, date, time, and GPS altitude information for an unspecified number of points – is stored within the unit whenever the receiver has a lock on the GPS navigation signal. Position is updated within the track log as a function of time or distance moved, depending on how the unit has been configured. The current track log can be saved to long-term memory. Track log storage may be activated or deactivated at user discretion. All recorded data is stored in non-volatile memory.

The unit contains hardware and software permitting the download of recorded waypoint, route, and track log information to a PC via a built-in USB port. An internal button-battery is used to back up power to the internal memory and real-time clock during those periods when main power is removed.

3.2. Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, an exterior examination revealed the unit had sustained impact damage resulting in cracks on the screen as shown in Figure 1. The memory content of the device was downloaded via a PC by standard procedures using the manufacturer’s software.



Figure 1. Photo of damaged Garmin aera 796.

3.3. Data Description

The data extracted included 25 track logs from August 13, 2017¹ through January 31, 2018. The 20th track log was the first leg of the flight originating in Venice, Florida starting at 12:47:52 UTC on January 30, 2018 and ending 16:46:45 UTC. The accident flight was recorded as the 21st track log starting at 17:05:30 UTC on January 30, 2018 and ending 18:45:22 UTC.

3.4. 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 and Track are derived from the recorded parameters.

¹ All dates and times are referenced to [Coordinated Universal Time (UTC)].

Table 1: GPS Data Parameters

Parameter Name	Parameter Description
Date	Date for recorded data point (MM/DD/YYYY)
Time	Time (UTC) for recorded data point (HH:MM:SS)
Latitude	Recorded Latitude (degrees)
Longitude	Recorded Longitude (degrees)
GPS Alt	Recorded GPS Altitude (feet)
Groundspeed	Average derived groundspeed (knots)
Track	Average derived true course (degrees)

3.5. OVERLAYS AND TABULAR DATA

Figure 2 is a graphical overlay generated using Google Earth showing the first leg of the flight originating in Venice, Florida at 12:47:52 UTC January 30, 2018 until the final accident event point at 18:45:22 UTC. The weather and lighting conditions in Google Earth are not necessarily the weather and lighting conditions present at the time of the recording.

Figure 3 is a graphical overlay generated using Google Earth for the accident flight. The flight departed the Barrow County Airport (WDR), Winder, Georgia at approximately 17:05:30 UTC. The last recorded parameter from the flight was at 18:45:22 UTC on January 30, 2018 with a GPS altitude of 2,418 feet above Mean Sea Level (MSL) and a ground speed of 74 knots. Due to data buffering on the GPS unit, the data recording may have ended before the accident flight.

Figure 4 is a graphical overlay generated using Google Earth zoomed in on the last portion of the accident flight and the next recorded parameter at 22:21:37 UTC on January 30, 2018 with a GPS altitude of 1,378 feet above MSL and a ground speed of 0 knots.

Tabular data used to generate figures 2 through 4 are included as Attachment 1. This attachment is provided in electronic comma-delimited (.CSV) format.

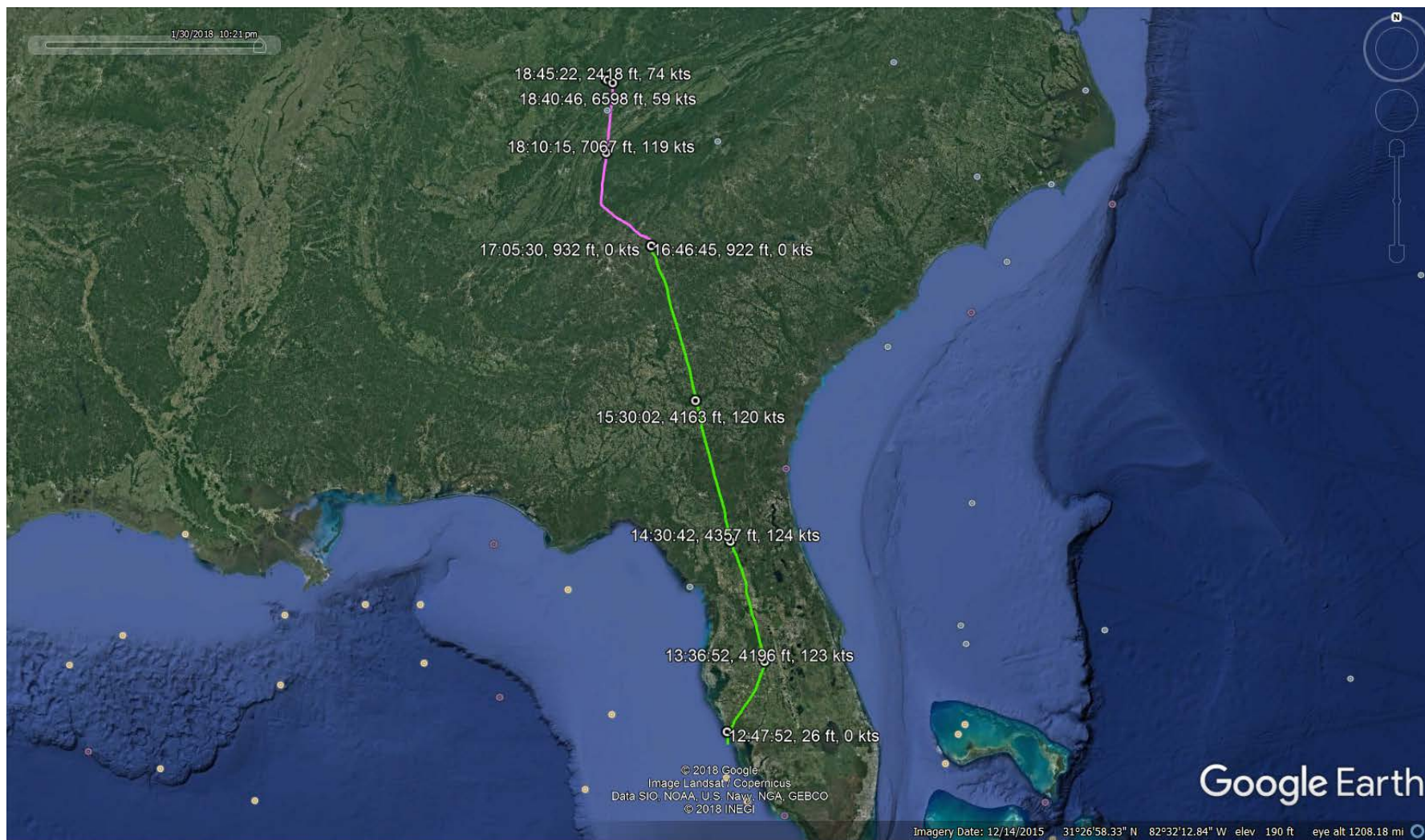


Figure 2. Google Earth overlay showing the first leg of the flight originating in Venice, Florida through the final accident point near Helenwood, Tennessee.

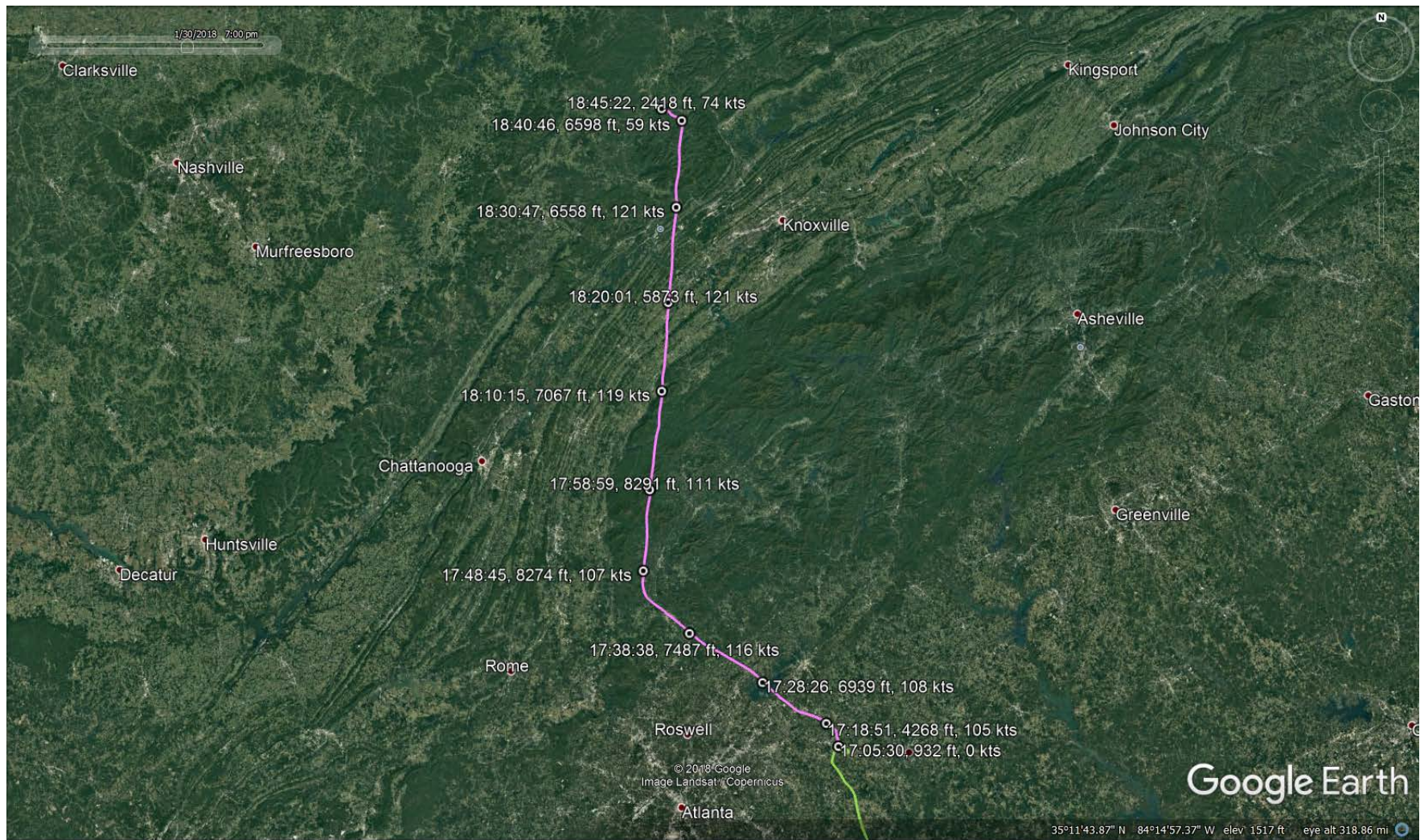


Figure 3. Google Earth overlay showing the entire accident flight recording.

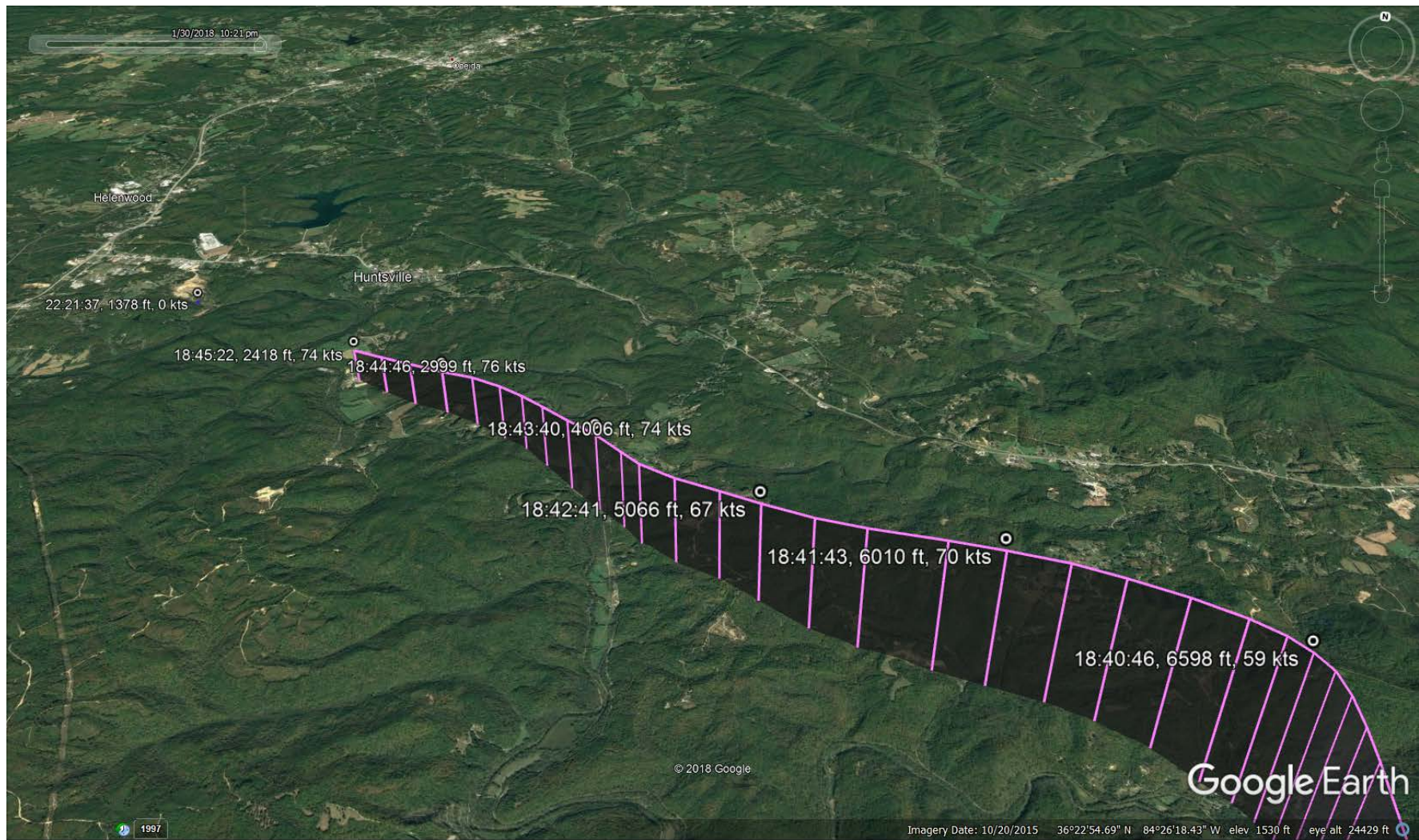


Figure 4. Google Earth overlay showing the last portion of the accident event and the next recorded parameter.