

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division

Washington, D.C. 20594

June 26, 2018

Global Positioning System Device

Specialist's Factual Report

By Alice Park

1. EVENT SUMMARY

Location: Whiteville, North Carolina
Date: October 31, 2017
Aircraft: Beech 35-C33
Registration: N293GC
Operator: Private
NTSB Number: ERA18FA012

On October 31, 2017, at 1005 eastern daylight time, a Beech 35-C33, N293GC, was substantially damaged when it impacted trees and terrain after a loss of engine power during approach to Columbus County Municipal Airport (CPC), Whiteville, North Carolina. The private pilot was fatally injured, and the pilot-rated passenger sustained minor injuries. Visual meteorological conditions prevailed, and no flight plan was filed for the personal flight, conducted under the provisions of 14 *Code of Federal Regulations* Part 91. The accident flight departed from Cannon Creek Airport (15FL), Lake City, Florida about 0735 to its destination of Westerly State Airport (WST), Westerly, Rhode Island.

2. DETAILS OF INVESTIGATION

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

Device Manufacturer/Model: Garmin GPSMAP 396
Serial Number: 28216048

Figure 1. Undamaged exterior of Garmin GPSMAP 396 (front side)



Figure 2. Undamaged exterior of Garmin GPSMAP 396 (back side)



2.1. Garmin GPSMAP 396 Device Description

The Garmin GPSMAP 396 is a battery-powered portable 12-channel GPS receiver with a 256-color TFT LCD display screen. The unit includes a built-in Jeppesen database and can receive XM satellite radio for flight information including NEXRAD radar, lightning, METARs, TAFs, and TFRs. The unit stores date, route-of-flight, and flight-time information for up to 50 flights. A flight record is triggered when groundspeed exceeds 30 knots and altitude exceeds 500 feet and ends when groundspeed drops below 30 knots for 10 minutes or more. A detailed tracklog – 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. Once the current tracklog memory becomes full, new information either overwrites the oldest information or recording stops, depending on how the unit is configured.¹ The current tracklog can be saved to long-term memory and 15 saved tracklogs can be maintained in addition to the current tracklog. Tracklog storage may be activated or de-activated at user discretion. All recorded data is stored in *non-volatile*² memory. The unit contains hardware and software permitting the download of recorded waypoint, route, and tracklog information to a PC. The unit can also communicate with external devices such as a computer using 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.

2.2. Data Recovery

The unit was in good condition and data was downloaded successfully. Figures 1 and 2 show the device as received.

2.3. Data Description

Track log data from May 28, 2017, to October 25, 2017 was recovered from the unit. No track log data was identified that correlated with the date of the accident.

¹ A third “Resolution setting” is available which records a new track point when the direction and speed have changed significantly. In this mode the unit examines current 2-D position, velocity, and ground track once per-second, and calculates a projected position. If the unit’s actual position 1-second later differs from the projected position by a set value (25 meters or 82 feet by default) or if the ground track changes by more than 5°, a new track point is recorded. This saves memory during non-maneuvering flight.

² Non-volatile memory is semiconductor memory that does not require external power for data retention.