

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, DC 20594

June 23, 2015

Global Positioning System Factual Report

Specialist's Factual Report
By Christopher Babcock

1. EVENT SUMMARY

Location: The Woodlands, Texas
Date: January 16, 2015
Aircraft: Safari Helicopter
Registration: N416JB
Operator: Private
NTSB Number: CEN15LA104

2. GROUP

A group was not convened.

3. DETAILS OF INVESTIGATION

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

Device Manufacturer/Model:	Garmin GPSMAP 296
Serial Number:	67109871

3.1. Device Description

The Garmin GPSMAP 296 is a hand-held Global Positioning System (GPS) device equipped with an antenna, a 256 color LCD display, built in base map, and an internal Jeppesen aviation database. The unit employs a parallel 12-channel receiver and can be operated using external power, or alternatively by using an internal rechargeable battery. The GPSMAP 296 is capable of storing date, route of flight, and flight time information for up to 50 individual flights in the form of a flight log. Flight logging begins when the GPS unit senses a speed increase to greater than 30 knots together with an altitude gain of greater than 500 feet. The record is saved when the speed is sensed to decrease to below 30 knots, and a new log will be started if more than 10 minutes passes from this time.

A detailed tracklog – including latitude, longitude, date, time, and GPS altitude information for an unspecified number of points – can be stored within the unit whenever the receiver has a lock on the GPS signal. Position is updated within the

tracklog as a function of time or distance moved, depending on how the unit has been configured. Once the current tracklog memory becomes full, new information either overwrites the oldest information or recording stops, depending on how the unit is configured. 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 memory.¹ The unit contains hardware and software permitting the download of recorded waypoint, route, and tracklog information to a PC via a 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. Device Condition

Upon arrival at the Vehicle Recorder Laboratory, an examination revealed the unit had sustained minor impact damage. The device's screen was not functional, but the device was able to communicate with Garmin mapping software installed on a PC. Information was downloaded using the manufacturer's software. Figures 1 and 2 show the front and rear of the GPS unit, as received in the lab.



Figure 1. Front of GPS unit as received.



Figure 2. Rear of GPS unit as received.

3.3. Data Description

No tracklog information was present on the device after download using the manufacturer procedures. This feature can be activated or deactivated by the user. Due to the damage to the screen, the state of the recording functionality could not be determined.

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