

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

December 6, 2017

Global Positioning System Device

Specialist's Factual Report

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1. EVENT

Location: Price, Texas
Date: January 31, 2017
Aircraft/ID: Cessna 177
Registration: N2810X
Operator: Private
NTSB Number: CEN17FA095

2. EVENT SUMMARY

On January 31, 2017, at 1540 central standard time, a Cessna 177 single-engine airplane, N2810X, impacted wooded terrain after striking a cellular tower guy-wire near Price, Texas. The commercial pilot, who was the sole occupant, sustained fatal injuries, and the airplane was destroyed. The airplane was registered to and operated by Eagle Sky Patrol, Deadwood, South Dakota, as a 14 *Code of Federal Regulations* Part 91 aerial observation flight. Visual meteorological conditions prevailed at the time of the accident and a flight plan was not filed. The flight departed an unknown location at an unknown time.

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 396
Device Serial Number: Unknown

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 and fire. The device's internal memory component was removed, imaged, and decoded using laboratory hardware and software.

3.1. GPS Device Description

The Garmin GPSMAP 396 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

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

The unit contains hardware and software permitting the download of recorded waypoint, route, and tracklog information to a PC via a built-in serial port. The unit can also 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 data extracted from the Garmin GPSMAP 396 included one session from January 31, 2017.² This session was determined to be related to the accident and is included in this report.

The session recorded begins at 15:23:21 UTC with the aircraft located at Houston Southwest Airport (AXH). The aircraft proceeds to and lands at Athens Municipal Airport (F44) where it remains from approximately 20:49 UTC to 21:09 UTC. The aircraft then takes off and proceeds northeast until the recording ends at 21:39:24 UTC. The total duration of the recording was 6 hours, 16 minutes, 3 seconds.

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
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 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, respectively, an overview of and the end of the recorded session.

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

² All dates and times are referenced to Coordinated Universal Time (UTC) unless otherwise specified.



Figure 1. Photo of Garmin GPSMAP 396 (Front)



Figure 2. Photo of Garmin GPSMAP 396 (Back)



Figure 3. Overview of the recorded session on January 31, 2017



Figure 4. Detail view of the end of the recorded session, including locations for the cellular tower and the accident wreckage