

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

June 18, 2019

Global Positioning System

Specialist's Factual Report by Alice Park

1. EVENT

Location: Uvalde, Texas
Date: November 04, 2018
Aircraft: Bell 206
Registration: N417WT
Operator: W T Byler company
NTSB Number: CEN19FA024

On November 4, 2018, about 0001 Central Standard Time (CST), a Bell 206B helicopter, N417WT, impacted terrain near Uvalde, Texas. The helicopter was registered to and operated by W T Byler company, Inc. as a *14 Code of Federal Regulations Part 91* personal flight. The flight departed a private ranch about 2345 CST en route to San Antonio.

The Uvalde The Uvalde County Sheriff's Office was notified of a possible downed aircraft northwest of Uvalde, Texas. A search effort of authorities and local volunteers found the wreckage about daybreak. The helicopter had collided with the side of a 1,450 ft hill, located about 5 miles east of the ranch the helicopter had departed from, and about 71 miles west of the San Antonio International airport.

2. DETAILS OF DEVICE INVESTIGATION

The National Transportation Safety Board Vehicle Recorder Division received the following Global Positioning System (GPS) device:

Device: Garmin Aera 796
Device S/N: 2CY014435

2.1. Garmin Aera 796 Device Description

The Garmin GPSMAP 796 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 is capable of receiving XM satellite radio for flight information including NEXRAD radar, lightning, METARs, TAFs, and TFRs. A built-in AOPA Airport Directory and Safe Taxi Airport Diagrams are included for selected fields. 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 250 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. 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 built-in serial port using the NMEA 0183 version 2.0 protocol. 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.

2.1.1. Garmin Aera 796 Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, an exterior examination revealed that the unit was severely damaged during the accident and would not power on (Figures 1 and 2). It was disassembled for further examination.

Data was recovered by removing the motherboard and powering up it from test points located on the board as shown in figure 3. Data was downloaded using Garmin BaseCamp software application, and track data shows that it did not contain accident flight data.

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

Figure 1. External view of the Garmin Area 796 - front (s/n 2CY014435).

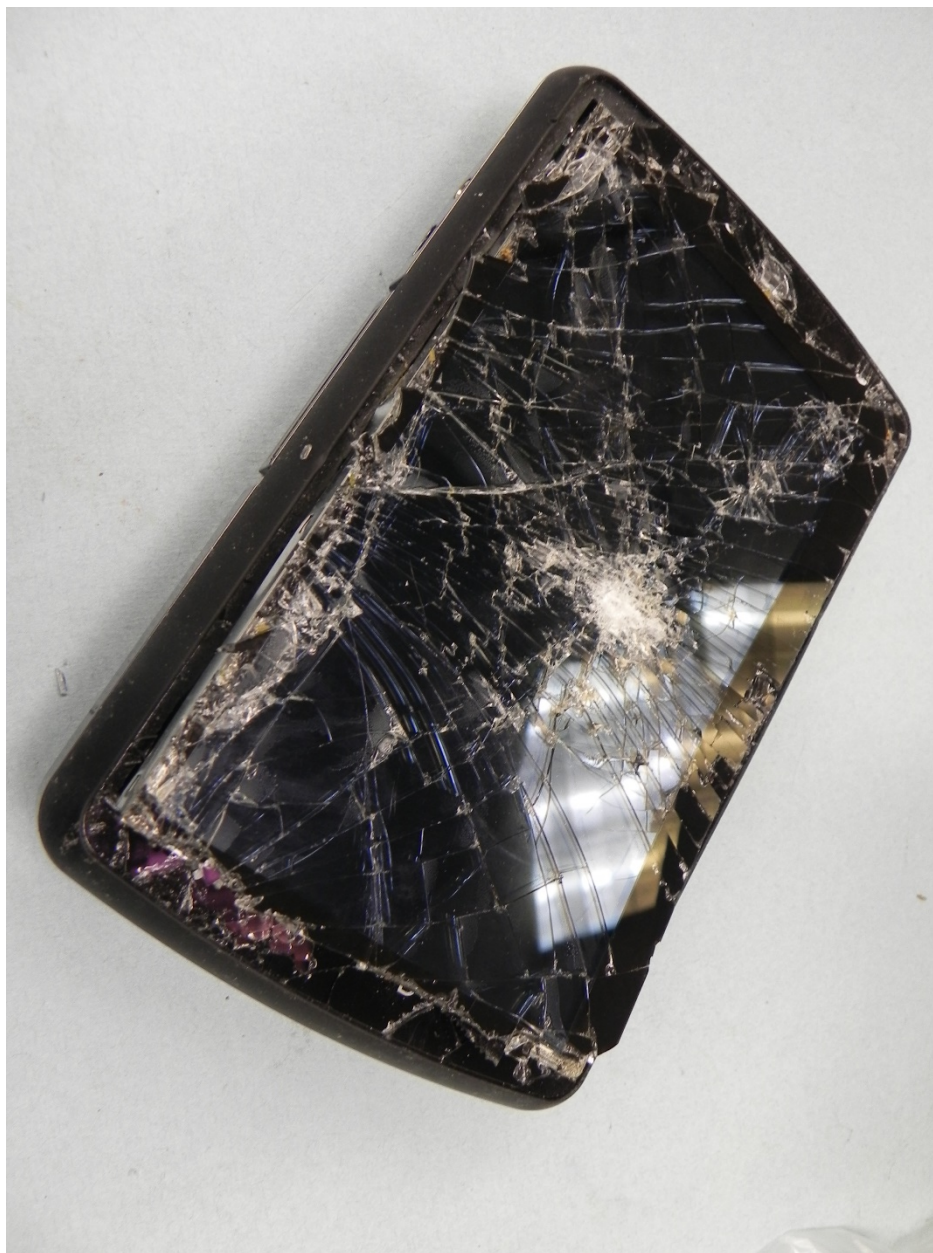
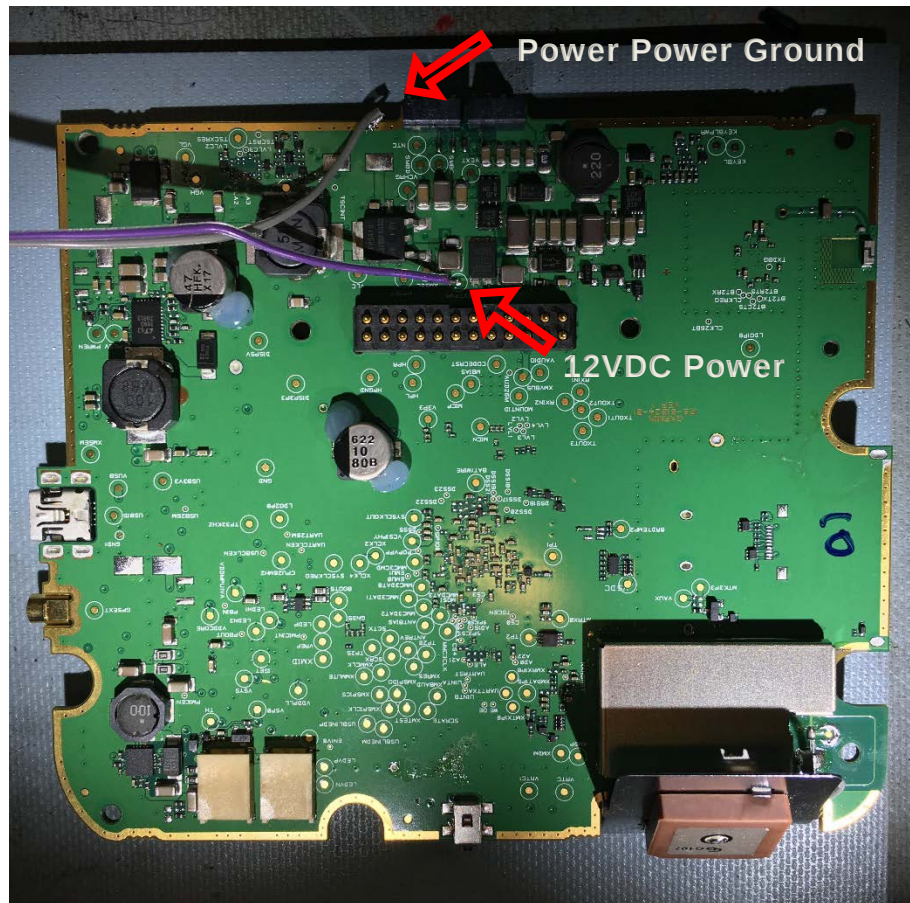


Figure 2. External view of the Garmin Area 796 - back (s/n 2CY014435).



Figure 3. Internal view of the Garmin Aera 796 main Printed Circuit Board.



2.1.2. Garmin Area 796 Data Description

The device did not contain accident flight data.