

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

July 24, 2018

Global Positioning System Device

Specialist's Factual Report Marie Moler

1. EVENT

Location: Ancho, New Mexico
Date: September 16, 2017
Aircraft/ID: Bell 206L 3, N213TV
Operator: WQRE, TV 13
NTSB Number: CEN17FA355

2. ACCIDENT SUMMARY

On September 16, 2017 about 1630 mountain daylight time (MDT), a Bell 206L-3 helicopter N213TV, impacted terrain near Ancho, New Mexico. The commercial rated pilot was fatally injured and the helicopter was destroyed. The helicopter was registered to LIN Television Corporation, Providence, Rhode Island, and operated by WQRE, TV 13, Albuquerque, New Mexico, under the provisions of 14 Code of Federal Regulations Part 91 as a business flight. Visual meteorological conditions prevailed.

3. DETAILS OF DEVICE INVESTIGATION

The National Transportation Safety Board's Vehicle Recorder Division received the following device:

Device: Garmin aera 796
Device Serial Number: unknown

The Garmin aera 796 was found damaged (Figure 1 and Figure 2). The chip containing the unit's non-volatile memory (NVM¹) was identified. The NVM chip was removed from the board. The chip was found to be in good condition after removal and was restored to working condition, so data could be extracted. The chip read out normally using an adapter socket appropriate for the type and model of chip. The read out resulted in a binary file which was converted to engineering units using laboratory software. The binary readout and subsequent conversion produced files consistent with a normally operating GPS device.

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

3.1. Garmin aera 796 Device Description

The Garmin aera 796 is a battery-powered portable touch screen display and GPS receiver with a 7-inch diagonal high resolution LCD display screen. 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 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. Once the current track log memory becomes full, new information either overwrites the oldest information or recording stops, depending on how the unit is configured. The current track log can be saved to long-term memory and 15 saved track logs can be maintained in addition to the current track log. Track log storage may be activated or de-activated at user discretion. All recorded data is stored in non-volatile memory.

3.2. GPS Data Description

The data extracted included 27 sessions from August 8, 2017² through September 16, 2017. The last recorded session on September 16, 2017 was determined to be related to the accident and is included in this report. The recording began at 21:53:31 UTC (15:53:31 MDT) and ended at 22:34:52 (16:34:52) and included the aircraft's take-off from Roswell International Air Center (KROW) and flight.

3.3. GPS 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, Track, and Distance are 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)
Track	Average course between current and previous data point (degrees)

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

4. OVERLAYS AND TABULAR DATA

Graphical overlays were generated using Google Earth for the accident flight.

Figure 3 is a Google Earth overlay of the entire last recorded session. Times are shown in MDT.

Figure 4 is a 3D detail view of the end of the last recorded session. Times are shown in MDT. The elevation in the area is between 6,000 and 6,200 ft.

The tabular data used to create Figures 3 and 4 are included as Attachment 1. This attachment is provided in electronic comma separated value (CSV) format.



Figure 1: Garmin aera 796 (S/N unknown)



Figure 2: Garmin aera 796 (S/N unknown)

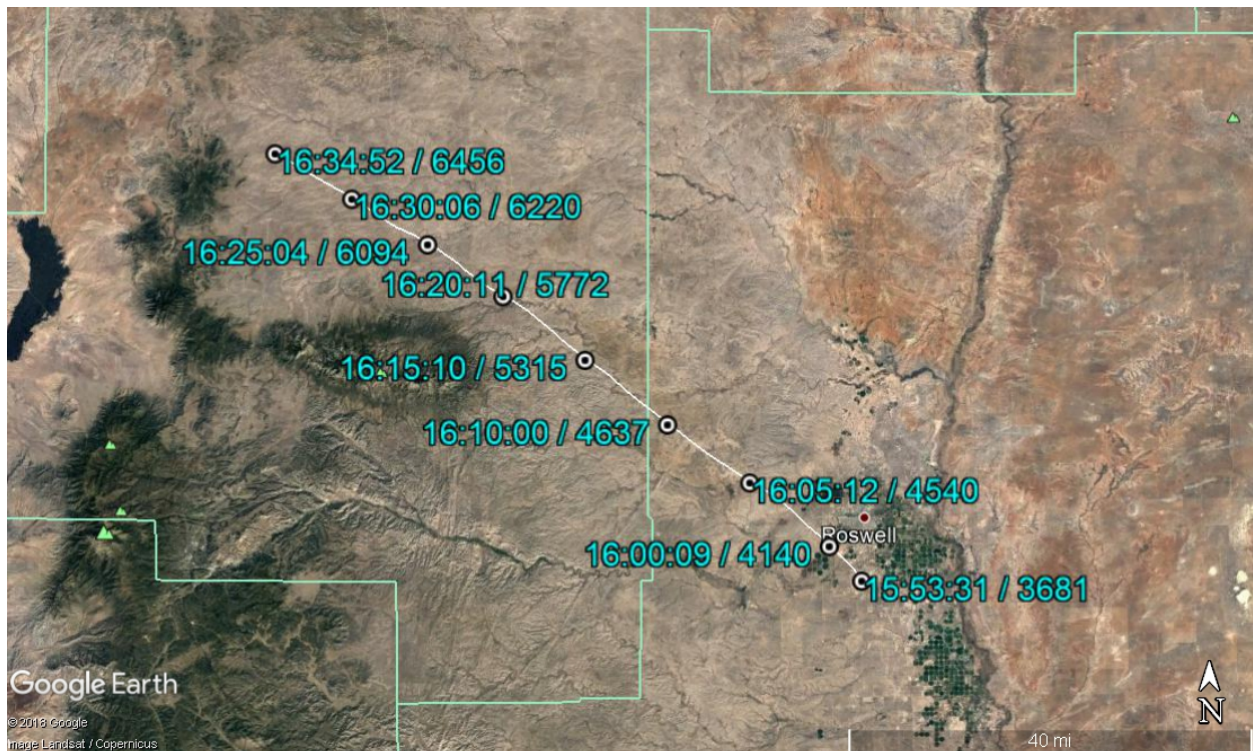


Figure 3: Google Earth overlay of last recorded session on September 16, 2017. Points are labeled in UTC time, GPS altitude, and groundspeed. The recording began at 15:53:31 MDT and ended at 16:34:52.

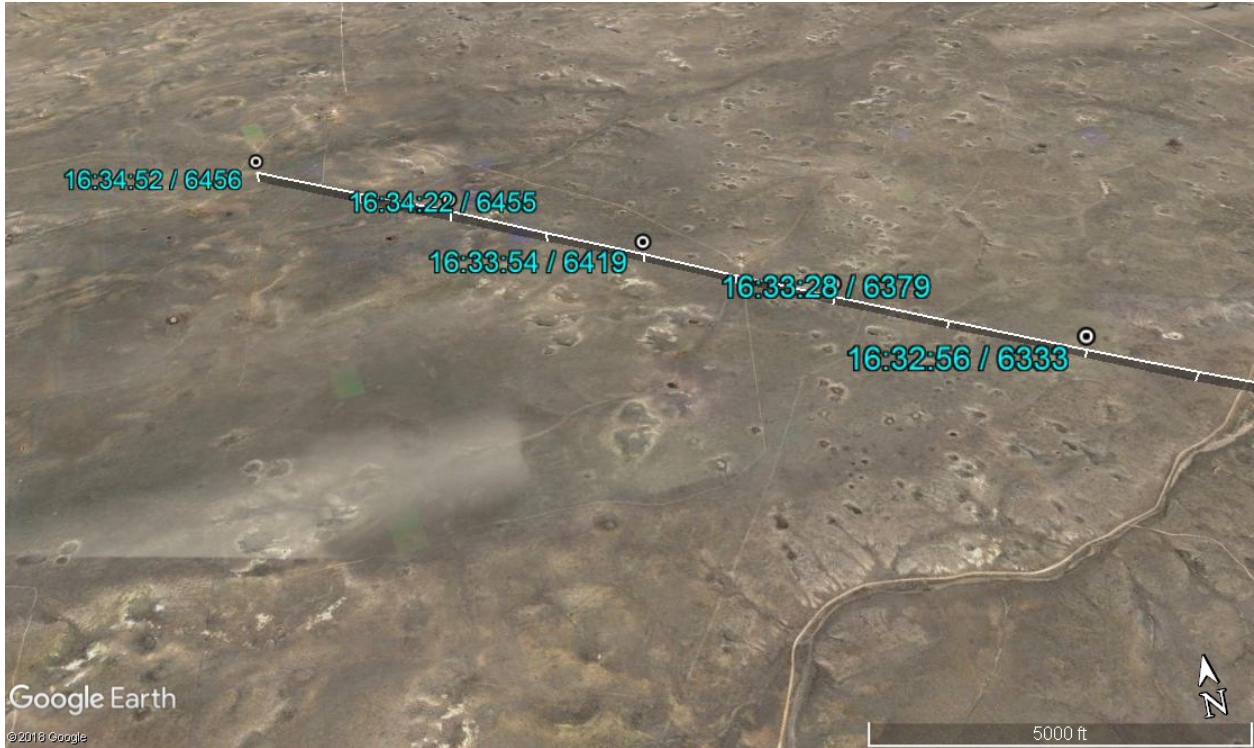


Figure 4: 3D detail view of end of last recorded session on September 16, 2017. Points are labeled in UTC time, GPS altitude, and groundspeed.