

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division

Washington, D.C. 20594

October 23, 2017

Global Positioning System Device

Specialist's Factual Report

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1. EVENT SUMMARY

Location: Wishek, North Dakota
Date: June 9, 2016
Aircraft: Piper PA-28-140
Registration: N6223W
Operator: Private
NTSB Number: CEN16FA212

On June 9, 2016, about 1527 central daylight time, a Piper PA-28-140 airplane, N6223W, impacted a lake while departing from Wishek Municipal Airport (6L5), Wishek, North Dakota. The pilot and two passengers were fatally injured and the airplane was destroyed. The airplane was registered to and operated by Cherokee Flying Club under the provisions of 14 *Code of Federal Regulations* Part 91 as a personal flight. Day visual meteorological conditions existed at the time of the accident. The flight departed without a flight plan and was destined for Bismarck Municipal Airport (BIS), Bismarck, North Dakota.

2. GROUP

A group was not convened.

3. DETAILS OF INVESTIGATION

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

Device Manufacturer/Model:	Garmin Aera 560
Serial Number:	1QV004993

3.1. Device Description

The Garmin Aera 560 is a portable GPS navigation device with a 4.3-inch touch-screen and color moving map display. The Aera is capable of storing track logs in non-volatile

memory that contain GPS position information.¹ The data is stored internally in an industry-standard format and may be exported using the mini-USB port on the device. 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. Track log storage may be activated or de-activated at user discretion.

3.2. Data Recovery

The device did not appear to be damaged and data was recovered using the manufacturer's recommended procedures. Figure 1 shows the device, as received.



Figure 1. Photo of Aera 560 as received.

3.3. Data Description

The data extracted included 34 logs from February 20, 2016, through June 9, 2016. The accident flight was recorded, starting 1518 CDT and ending 1520 CDT on June 9, 2016. A previous flight on June 8, 2016, from 2154 CDT to 2230 CDT, was also recorded.

3.4. 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 and Track are derived from the recorded parameters.

¹ Non-volatile memory is semiconductor memory that does not require power to retain information.

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 GPS Altitude (feet)
Groundspeed	Average derived groundspeed (knots)
Track	Average derived true course (degrees)

3.5. OVERLAYS AND TABULAR DATA

Google Earth was used to create graphical overlays of the accident flight. The weather and lighting conditions in Google Earth are not necessarily the weather and lighting conditions present at the time of the recording. Figure 2 shows an overhead view (north up), and figure 3 shows an oblique perspective (north up).

Tabular data used to generate figures 2 and 3 are included as Attachment 1. This attachment is provided in electronic comma-delimited (.CSV) format.

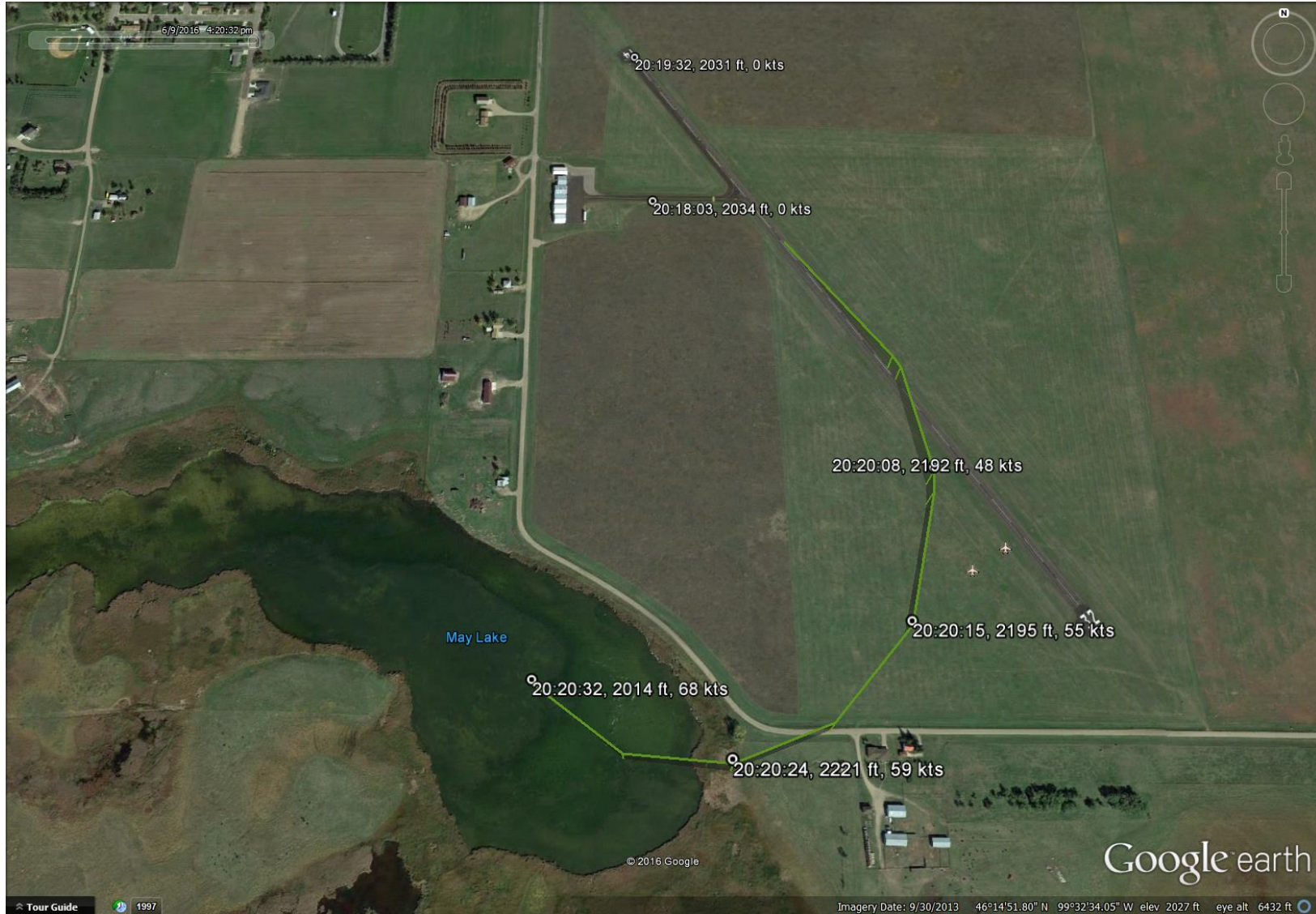


Figure 2. Google Earth overlay of accident flight track, overhead view. Annotated timestamps are in UTC (as-recorded).

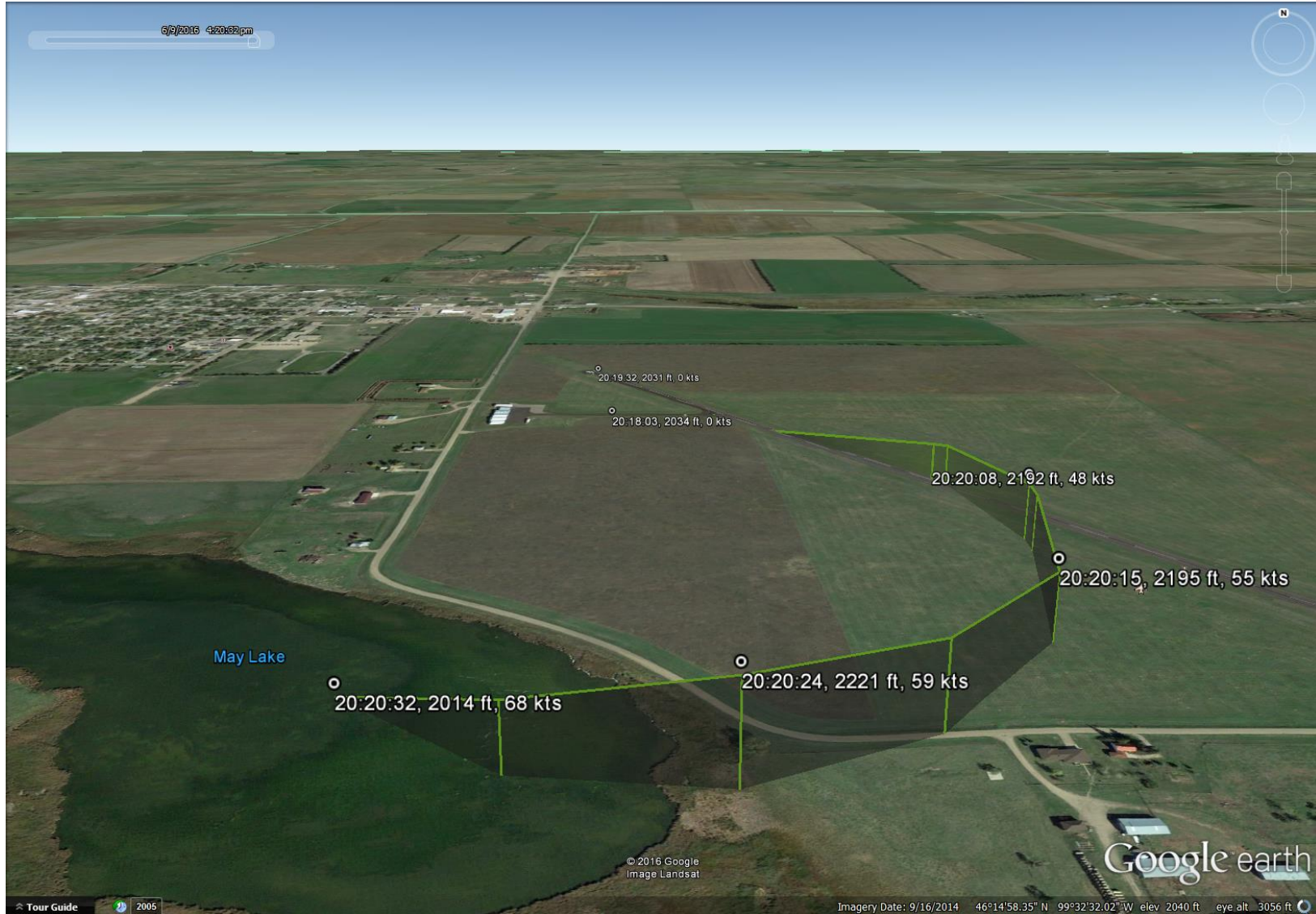


Figure 3. Google Earth overlay of accident flight track, oblique view. Annotated timestamps are in UTC (as-recorded).