

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

January 3, 2020

Non-Volatile Memory Devices

Specialist's Factual Report Marie Moler

1. Event

Location: LaBelle, Florida
Date: April 14, 2018
Aircraft/ID: S.Z.D. SZD 48 JANTAR STD 2 / N456RM
Operator: Private
NTSB Number: ERA18FA128

2. Event Summary

On April 14, 2018, about 1540 eastern daylight time, an SZD-48 Jantar Standard 2 glider, N456RM, was substantially damaged when it entered a descent and collided with the ground during the initial climb from La Belle Municipal Airport (X14), La Belle, Florida. The private pilot was fatally injured. The airplane was registered to and operated by the private pilot under the provisions of Title 14 *Code of Federal Regulations* Part 91 as a personal flight. Visual meteorological conditions prevailed, and no flight plan was filed for the local flight.

3. Details of Device Investigation

The NTSB Vehicle Recorder Division received the following devices:

Device: Nano Flight Data Recorder
Device Serial Number: 1NH(02141)

The Nano Flight Data Recorder was sent the Vehicle Recorder Division for data download. Upon arrival at the Vehicle Recorder Division, an exterior examination revealed the device had sustained minor damage, as shown in Figure 1. Data files were downloaded from the device and read using SeeYou software from Naviter.

3.1. Nano Flight Data Recorder Device Description

Nano devices consist of a GPS receiver with built-in antenna, an altitude sensor, an environmental noise level (ENL) sensor, Bluetooth module, and a 1700mAh battery. The device records time, latitude, longitude, and altitude. Data is stored on an SD¹ card that also holds the NanoConfig program, which is used for uploading flight declarations and

¹ Secure Digital, officially abbreviated as SD, is a non-volatile memory card format developed by the SD Card Association (SDA) for use in portable devices.

changing the settings of the Nano device. The device records the data during the flight to be downloaded later via a USB² connector or a Bluetooth³ connection.

3.1.1. Nano Flight Data Recorder Parameters Provided

Table 1 describes data parameters provided by the Hemisphere SATLOC G-4 device.

Table 1: Data Parameters

Parameter Name	Parameter Description
Date	Date for recorded data point (MM/DD/YYYY)
Time	Time for recorded data point (HH:MM:SS)
Latitude	Recorded Latitude (degrees)
Longitude	Recorded Longitude (degrees)
Altitude	Recorded Altitude (feet)

3.1.2. Nano Flight Data Recorder Data Description

The device recorded 99 seconds of data, beginning when the aircraft was on runway 14 and ending about 3,700 ft past the paved surface. The time data recorded by the device was not consistent with either local or UTC time and appeared to be unique to the device. Three hours and 36 minutes was subtracted from the recorded time for the time to be consistent with the local time. Additionally, the latitude and longitude parameter placed the aircraft 90 feet to the right of the runway centerline during the take-off roll. The data was shifted to be consistent with take-off from the runway centerline. Altitude was not altered.

Groundspeed was calculated using the position and time data. Equivalent airspeed was calculated using weather data at the time – winds from 160° at 11 kts and an altimeter setting of 29.98 inHg.

4. OVERLAYS AND TABULAR DATA

Figure 2 shows the as-recorded flight path (orange) and the adjusted flight path (blue) as a Google Earth overlay. Figure 3 shows the adjusted flight path with time and altitude noted. Figure 4 shows the calculated groundspeed and equivalent airspeed with altitude.

Tabular data used to generate Figure 2 through Figure 4 are included as Attachment 1. These attachments are provided in electronic comma-separated value (.CSV) format.

² USB (abbreviation of Universal Serial Bus) is an industry standard that establishes specifications for cables, connectors and protocols for connection, communication and power supply between personal computers and their peripheral devices.

³ Bluetooth is a wireless technology standard for exchanging data between fixed and mobile devices over short distances using short-wavelength UHF radio waves in the industrial, scientific and medical radio bands, from 2.400 to 2.485 GHz, and building personal area networks (PANs).



Figure 1: Nano Flight Data Recorder S/N: 1NH(02141).

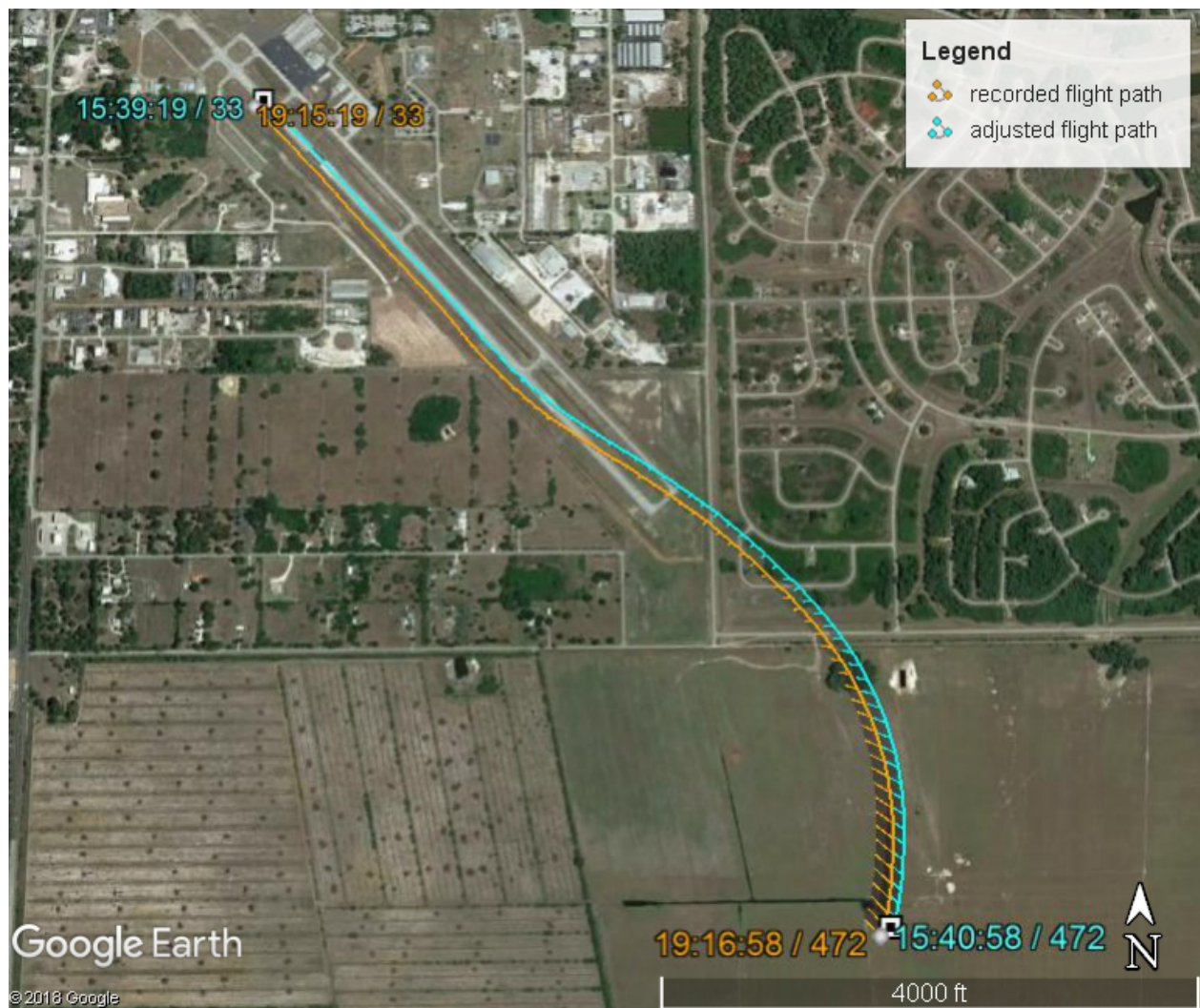


Figure 2: As recorded flight path (orange) and adjusted flight path (blue) for the accident flight.

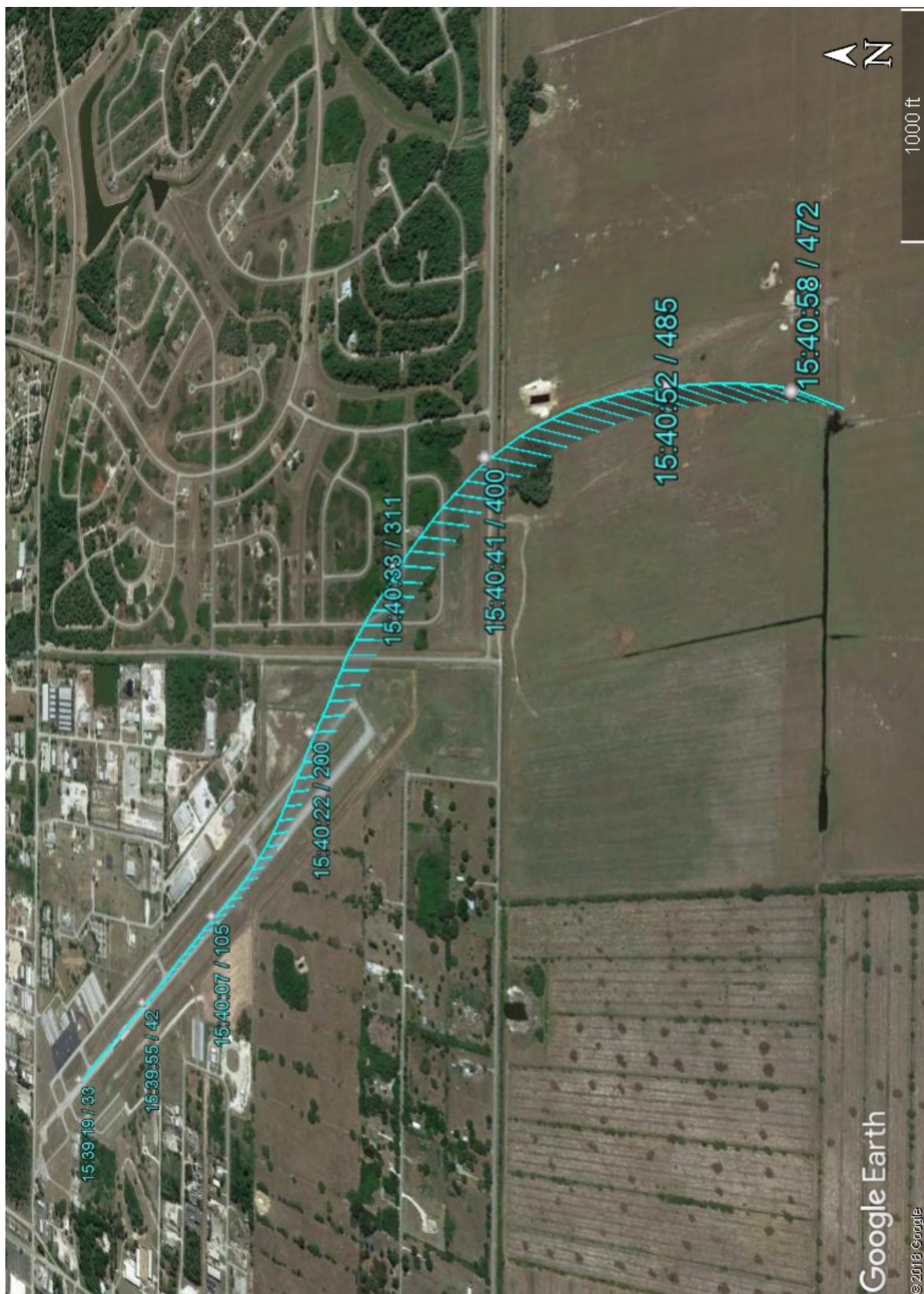


Figure 3: Accident flight with time and altitude noted.

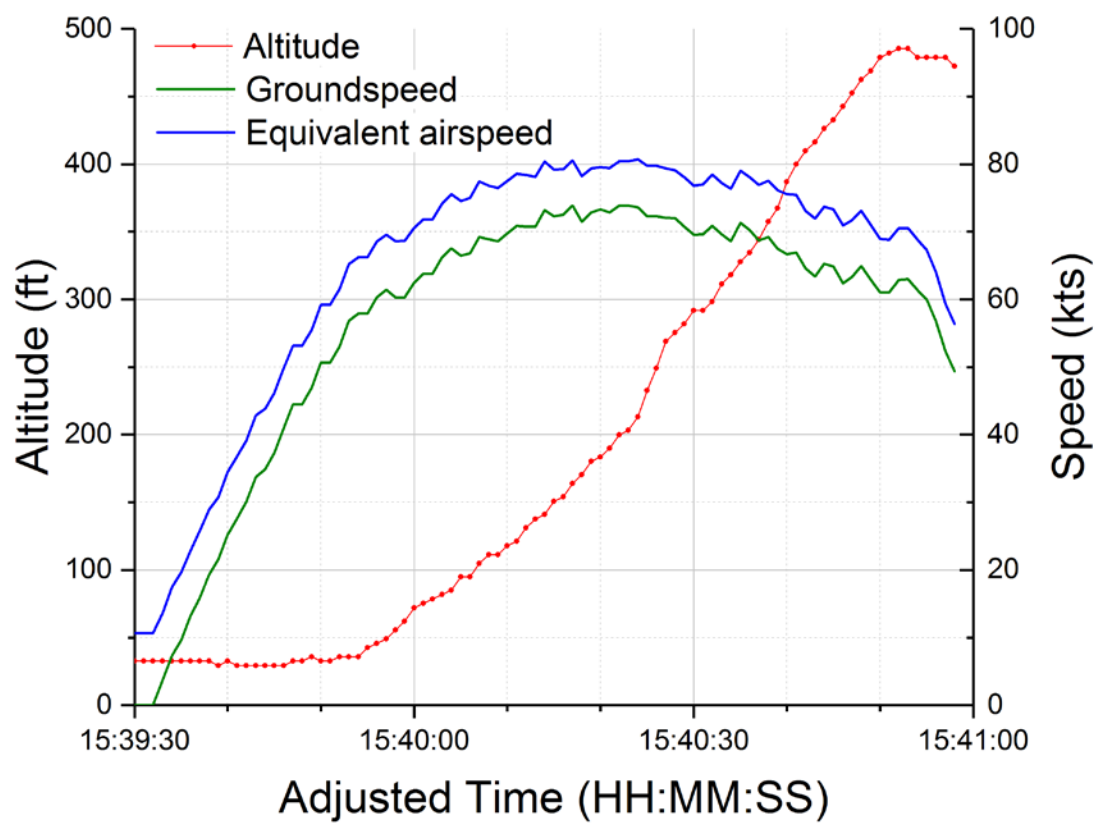


Figure 4: Altitude and speed versus time for accident flight.