

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

May 2, 2017

Electronic Devices

Specialist's Factual Report By James Cash

1. EVENT SUMMARY

Location: Weston, Florida
Date: July 03, 2016
Aircraft: Vans RV-7A
Registration: N1075F
Operator: Private
NTSB Number: ERA16FA238

2. GROUP

A group was not convened.

3. DETAILS OF INVESTIGATION

The National Transportation Safety Board (NTSB) Vehicle Recorder Division received the following devices:

Device Manufacturer/Model:	Dynon SV-D1000
Serial Number:	Unknown
Device Manufacturer/Model:	Garmin Aera 560
Serial Number:	Unknown
Device Manufacturer/Model:	Apple iPad
Serial Number:	Unknown

3.1. Device Description Dynon SV-1000 Cockpit Display

The Dynon Electronic Flight Information System (EFIS) SV-D1000 is a 10" wide screen display mounted in the cockpit of non-type certificated aircraft. The instrument integrates multiple flight instruments including airspeed, altitude, gyro-stabilized magnetic compass, turn rate, slip/skid ball, bank angle, pitch angle and vertical speed. The unit also has other functions that include a clock/timer, g-meter, voltmeter and a

density altitude/true airspeed calculator. The unit contains an Air Data, Attitude and Heading Reference System (ADAHRS) to provide air data, attitude and heading information to the display. Additionally the unit has an internal Global Positioning System (GPS) receiver which provides position, groundspeed and GPS altitude information.

Depending on the software version on the unit, the ability to log data to internal memory exists. According to the manufacturer, software versions 5.1 and later contain the capability for the pilots to download the flight logs. The prior versions of the operating software, recorded data to an internal memory device but the pilots do not have the ability to download the memory from the unit. With the assistance of the manufacturer, the stored flight data from the older software version of the unit can be recovered and decoded. When the recording limit in the internal memory is reached, the oldest record is dropped and a new record is added.

3.2. Device Description Garmin Aera 560 GPS Receiver

The Garmin Aera 560 GPS is a battery-powered portable 12-channel GPS receiver with a color touch screen display. The unit stores date, route-of-flight, and flight-time information for up to 9,999 points. A flight record is triggered when groundspeed exceeds 30 knots and altitude exceeds 500 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 up to 9,999 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. Tracklog storage may be activated or de-activated at user discretion. All recorded data is stored in non-volatile memory¹. The unit contains hardware and software permitting the download of recorded waypoint, route, and tracklog information to a PC via a built-in USB port using the NMEA 0183 version 2.0 protocol. 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.

3.3. Device Description Apple iPad

Personal Electronic Devices (PEDs) are a category of devices comprised primarily of portable computing devices and mobile phones. Portable computing devices are typically capable of internet access, email, messaging services, and can run user-installed applications to perform specific tasks. Depending on the model, mobile phones can perform many of the same tasks as portable computing devices, plus have voice call and text messaging capabilities. PED user and system data is typically stored on non-volatile memory and can be accessed through manufacturer-provided interfaces.

¹ Type of solid state memory that does not require electrical power to retain information

4.0 Condition of Devices

Upon arrival at the Vehicle Recorder Laboratory, an examination revealed that all three units had sustained significant physical impact damage and any stored information could not be extracted.

4.1 Data Description

All three devices are capable of storing data in non-volatile memory (NVM). The extent of the damage precluded normal recovery and additional attempts were unsuccessful in yielding usable data. Therefore, no data pertinent to the event were recovered.