

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

May 9, 2017

Global Positioning System (GPS) Device

Specialist's Factual Report
By Sean Payne

1. EVENT SUMMARY

Location: Alapaha, Georgia
Date: September 16, 2016
Aircraft: Cessna A188
Registration: N3547Q
Operator: Redacted¹
NTSB Number: ERA16FA316

On September 16, 2016, about 0915 eastern daylight time, a Cessna A188, N3547Q, was destroyed when it impacted terrain while maneuvering near Alapaha, Georgia. The commercial pilot was fatally injured. Visual meteorological conditions prevailed and no flight plan was filed for the aerial application flight. The flight originated at Berrien County Airport (4J2), Nashville, Georgia, and was conducted under the provisions of 14 *Code of Federal Regulations* Part 137.

2. DETAILS OF INVESTIGATION

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

Device Manufacturer/Model:	Trimble Trim Flight 3
Serial Number:	Unknown

2.1. Device Description

The Trimble TrimFlight 3 is a GPS device for use in agricultural application. The device is designed to be mounted in the aircraft's cockpit and has a small electronic display. The device works in conjunction with Trimble's AgGPS 132 FlightBar which provides visual guidance to the pilot during agricultural application. The device has the capability to store agricultural guidance routines, field boundaries, mapped features as well as store user tracklogs. The system records flight data directly onto a CompactFlash (CF) data card using the ESRI shapefile format. The data is designed to be read in Geographic

¹ The pilot's Part 137 operation was registered in his name.

Information System (GIS) software that allows the user to generate custom plots and reports.

2.2. Device Condition

Upon arrival at the Vehicle Recorder Laboratory, an examination revealed the unit had not sustained extensive impact damage. The unit is shown in figure 1 with the device's cover that holds the unit's CF card open as well as the backside of the unit, as recovered. The CF card is seen in place and circled in red.



Figure 1. Photo of damaged unit

The CF card was removed. Upon removal from the unit, the CF card flaked apart and memory chips fell from the device. The type of damage associated with the CF card is associated with high temperature exposure. Figure 2 shows the condition of the CF card and associated non-volatile memory² (NVM) chips after removal from the unit.

² Non-volatile memory – NVM – semiconductor memory that does not require power be applied to retain data.

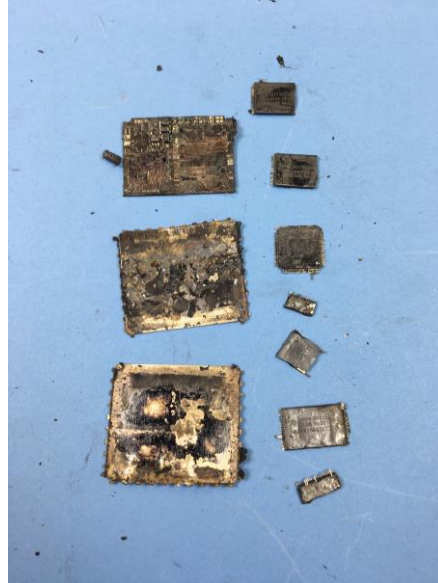


Figure 2. Photo of damaged CF card and associated chips.

Figures 3 through 9 show the condition of each individual chip associated with the CF card. The photographs were taken using a digital stereoscope. Each chip exhibited fire and impact damage. Most chips were cracked in the silicon die which preclude data recovery. Other chips exhibited thermal bubbling along the surface which is indicative of high temperature exposure from fire and renders the chip unreadable.

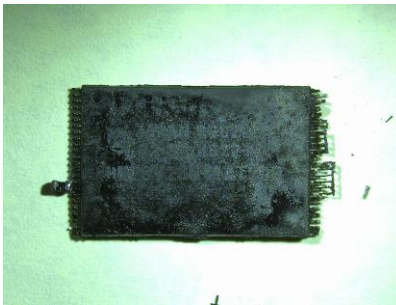


Figure 3. Photo of damaged CF card NVM chip.

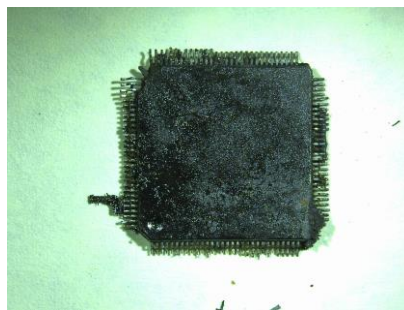


Figure 4. Photo of damaged CF card NVM chip.

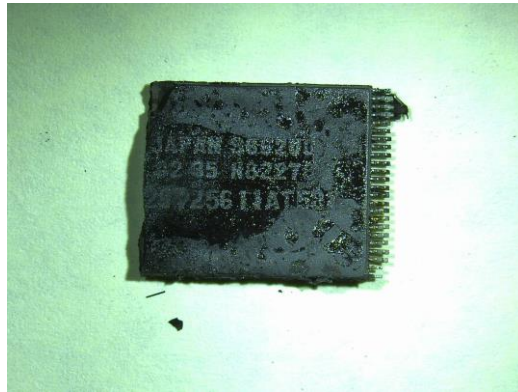


Figure 5. Photo of damaged CF card NVM chip.

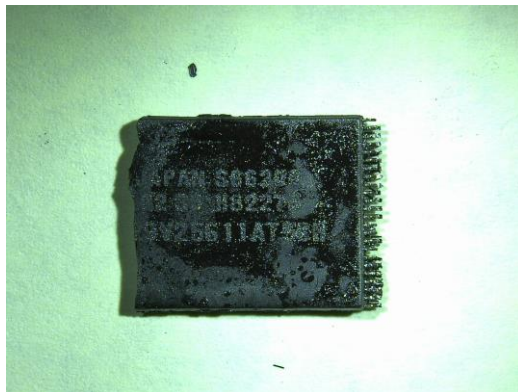


Figure 6. Photo of damaged CF card NVM chip.

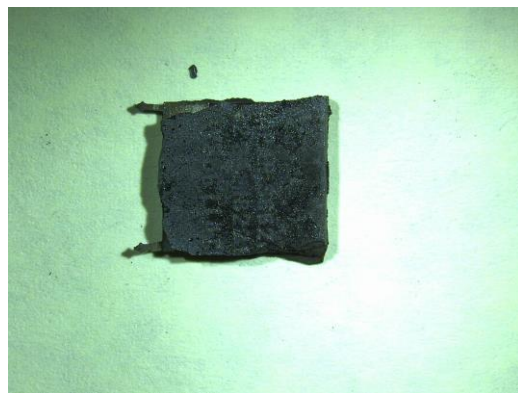


Figure 7. Photo of damaged CF card NVM chip.

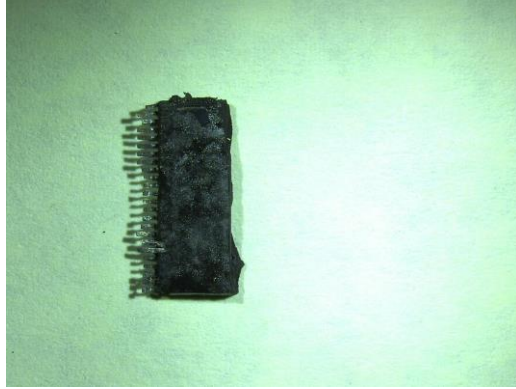


Figure 8. Photo of damaged CF card NVM chip.

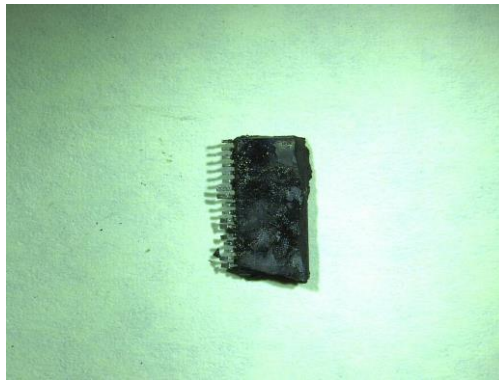


Figure 9. Photo of damaged CF card NVM chip.

2.3. Data Description

This device is capable of storing data in NVM via the device's CF card. The extent of the damage to the CF card and associated chips precluded normal recovery procedures and additional attempts were unsuccessful in yielding usable data. An internal inspection of the device's interior circuitry revealed the entire device was destroyed by fire. Therefore, no data pertinent to the event were recovered.