

NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division
Washington, D.C. 20594

September 16, 2014

Multiple Devices Factual Report

**Specialist's Factual Report
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1. EVENT SUMMARY

Location: Northglenn, CO
Date: May 05, 2014
Aircraft: Piper PA-24-235
Registration: N4519Y
Operator: Drag 'N' Fly Banners
NTSB Number: CEN14FA230

On May 5, 2014, at 1544 mountain daylight time, a Piper model PA-25-235 airplane, N4519Y, was destroyed when it impacted a residential structure and caught fire in Northglenn, Colorado. The commercial pilot was not injured. The airplane was registered to Airspeed Enterprises LLC and operated by Drag 'N' Fly Banners, under the provisions of 14 Code of Federal Regulations Part 91, without a flight plan. Day visual meteorological conditions prevailed for the local banner-tow flight that departed Platte Valley Airpark (18V), Hudson, Colorado, about 1500.

2. DETAILS OF INVESTIGATION

The NTSB Vehicle Recorder Laboratory received the following devices:

GPS Manufacturer/Model:	Garmin GPSMAP 96C
Serial Number:	98831422
Device Manufacturer/Model:	Apple iPad
Serial Number:	N/A
Device Manufacturer/Model:	JPI Engine Data Monitor
Serial Number:	N/A
Device Manufacturer/Model:	Unknown SATLOC
Serial Number:	N/A

2.1 Condition of Other Devices

Upon arrival at the Vehicle Recorder Laboratory, an exterior and interior examination of the Apple iPad, JPI Engine Data Monitor, and SATLOC was performed. It was determined for all three devices that recovery of data was not possible due to prolonged heat and fire exposure (figures 1 through 3). Device information from data plates and labels such as serial numbers, could not be determined due the damage.

Figure 1. Photo of iPad as received



Figure 2. Photo of JPI as received



Figure 3. Photo of SATLOC as received



2.2 Garmin GPSMAP 96 Device Description

The Garmin GPSMAP 96 is a portable GPS unit capable of storing date, route of flight, and flight time information for up to 50 individual flights in the form of a flight log. A detailed tracklog – including latitude, longitude, date, time, GPS altitude, and groundspeed information – is stored within the unit whenever the receiver has a lock on the GPS navigation signal. All recorded data is stored in non-volatile memory (NVM). The unit contains hardware and software permitting the download of recorded waypoint, route, and tracklog information to a PC via a built-in serial port. 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.

2.3 Garmin GPSMAP 96 Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, an exterior examination revealed the unit sustained prolonged heat and fire exposure (figure 4). The unit's casing was removed and an internal inspection revealed that the circuit board containing the unit's NVM was not affected by the external heat and fire exposure. The NVM memory chip was removed and the data were successfully extracted using forensic equipment.

Figure 4. Photo of Garmin GPSMAP 96 unit as received



2.4 Garmin GPSMAP 96 Data Description

The data extracted from the Garmin GPS included 2 sessions, one on May 3, 2014 and the event flight, May 5, 2014¹. The flights consisted of 89 total data points. The event flight was identified from the recorded date and time starting at 20:57:49 UTC and ending 21:48:49 UTC on May 5, 2014, consisting of 18 data points.

2.5 GPS Parameters Provided

Table 1 describes the data parameters provided by the GPS device. Date, Time, Latitude, Longitude, and GPS Altitude are recorded by the device. Course and Groundspeed are derived from the recorded 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	Derived Groundspeed (knots)
Course	Derived Course (degrees)

Table 1: GPS Data Parameters

¹ All dates and times are referenced to Coordinated Universal Time (UTC).

3. OVERLAYS AND TABULAR DATA

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

Figure 5 shows an overview of the event flight on May 5, 2014. The aircraft track is shown in red with the first and last data points.

The tabular data used to generate these overlays is included as Attachment 1. This attachment is provided in electronic comma-separated value (CSV) format.

Figure 5. Overview of the event flight on May 5, 2014.

