

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

December 20, 2012

17 – Electronic Devices Factual Report

Specialist's Factual Report
by Bill Tuccio

1. EVENT

Location: Hooksett, New Hampshire
Date: October 25, 2012
Aircraft: Hawker Beechcraft A36
Registration: N4325W
Operator: Private
NTSB Number: ERA13FA039

On October 25, 2012, approximately 1306 eastern daylight time, a Beechcraft A36, N4325W, was substantially damaged during impact with a light stanchion and terrain near Hooksett, New Hampshire. The certificated private pilot/owner and passenger were fatally injured. Visual meteorological conditions prevailed, and no flight plan was filed for the flight, which departed Boire Field (ASH), Nashua, New Hampshire, with a planned destination of Laconia Municipal Airport (LCI), Laconia, New Hampshire. The personal flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91.

2. DETAILS OF DEVICE INVESTIGATION

The Safety Board's Vehicle Recorder Division received the following devices:

Device 1: Insight GEM-610
Device 1 Serial Number: 2820

Device 2: Apple iPad 2
Device 2 Serial Number: DLXFM20CDJHG

2.1. Insight GEM-610 Device Description

The Insight Avionics GEM-610 engine monitor provides the crew with exhaust gas and cylinder head temperatures from each of the engine cylinders. The instrument can display, depending on the installation and engine type, up to 13 engine temperatures in a bar graph or digital display. Temperatures include exhaust gas temperature (EGT), cylinder head temperature (CHT) and turbine inlet temperature (TIT). The unit also operates in two modes, "Lean Mode" and "Monitor Mode". Depending on the firmware

version, the unit can record historical information. Historical and configuration information are retrieved and decoded using proprietary GEMCOM software and an infrared, wireless connection using a Hewlett Packard 200LX handheld device.

2.1.1. Insight GEM-610 Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, an exterior examination revealed the unit had sustained significant impact damage, as shown in figure 1. An internal inspection revealed damage to electronic components on the display subassembly, as shown in figure 2. The display subassembly was replaced with an NTSB surrogate, external power applied, and information extracted normally using the manufacturer's software.

Figure 1. Insight GEM-610.



Figure 2. Internal damage.



2.1.2.2.1. Insight GEM-610 Data Description

Configuration information read from the device indicated the internal clock was accurately set to within 15 minutes of eastern standard time. Furthermore, the configuration information indicated the device was serial number 2820 and was configured for fuel-injected, 6-cylinder engine. The data extracted from the device consisted of three 3 flights on July 30, 2012 and July 31, 2012. Each flight was about 30 minutes in duration. The extracted data was not pertinent to the investigation.

2.2. Apple iPad 2 Device Description

The Apple iPad is a tablet computer with a high-resolution color touch-screen interface. All iPad devices support WiFi and Bluetooth connectivity, and use either 16, 32, or 64 GB of non-volatile memory for storage (depending on model). Some devices also support data connectivity via existing cell-phone networks. The iPad 2 and later versions also include front and back cameras. The iPad implements its functionality by running programs called “Apps” capable of supporting web-browsing, email, audio/video playback, contact and calendar management, and numerous other specialized functions. User-installed Apps can be used to support functionality for electronic flight bags, flight planning and filing, aviation weather depiction, and electronic flight charts. Application data is stored in non-volatile memory and may include image, video, and position location information. Specialized application data may be stored in a proprietary file structure using numerous proprietary file formats. The amount and type of data stored varies based on the software version and configuration of the specific device.

2.2.1. Apple iPad 2 Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, an exterior examination revealed the unit had sustained significant impact damage, as shown in figure 3. An internal inspection revealed the main A5 processor chip had been damaged, as shown in figure 4. Other chips were also damaged. Due to the damage, no further recovery was attempted and no data was retrieved.

Figure 3. Apple iPad 2.



Figure 4. Apple iPad 2 chip damage.

