

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

July 24, 2018

Electronic Devices

Specialist's Factual Report
by Sean Payne

1. EVENT

Location: Benecia, California
Date: September 09, 2017
Aircraft: Raytheon G36
Registration: N7215J
Operator: Private
NTSB Number: WPR17FA200

On September 9, 2017, about 1413 Pacific daylight time, a Raytheon Aircraft Company G36, N7215J, sustained substantial damage when it impacted terrain about 9 miles northwest of the Buchanan Field Airport (CCR) Concord, California. The private pilot and passenger were fatally injured. The airplane was registered to Vallee Development Corporation and operated by the pilot under the provisions of 14 *Code of Federal Regulations* Part 91 as a personal flight. Visual meteorological conditions prevailed, and no flight plan had been filed for the cross-country flight. The flight departed CCR about 1408, and was destined for Arcata Airport, Arcata/Eureka, California.

2. DETAILS OF INVESTIGATION

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

Device 1: JP Instruments (JPI) Slim-Line TIT Display
Device 1 Serial Number: N/A
Device 2: SD Cards (qty 6)
Device 2 Serial Number: N/A

2.1. JPI Slimline Device Description

The JPI Slim-Line is a line of small numerical digital display units that can be configured to display a variety of engine related parameters. Each unit only has the ability to display one engine parameter. The unit can be configured to show an alert of the displayed parameter. The alert consists only of a flashing numerical display. The unit cannot record data.

2.1.1. JPI Slimline Data Recovery

The device is pictured in figure 1. This device was configured to display Turbine Inlet Temperature (TIT). The device is not capable of recording data.

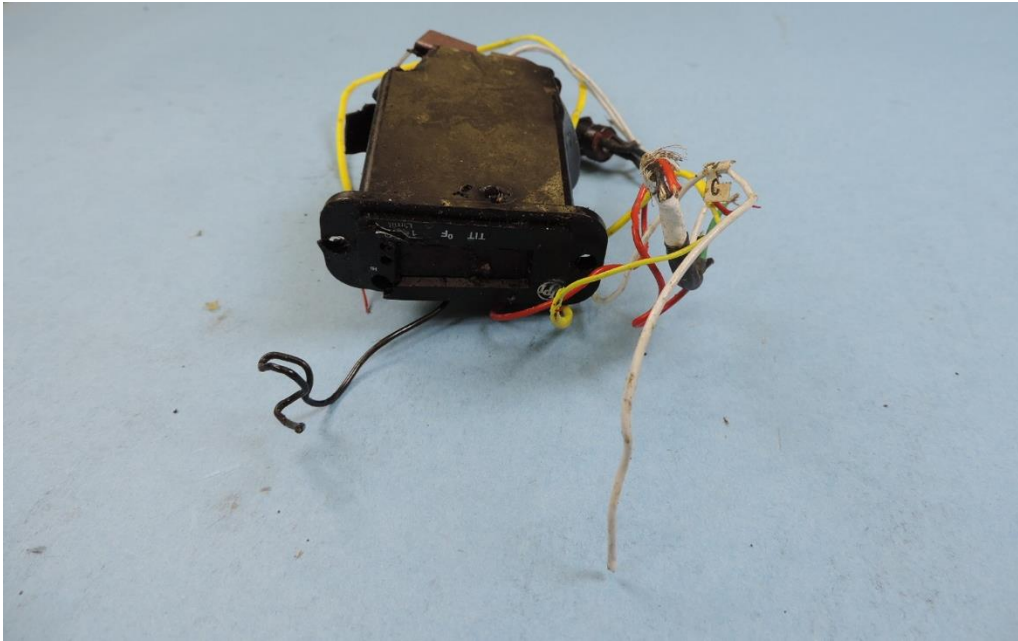


Figure 1. The JPI Slim-Line TIT probe.

2.1.2. JPI Slimline Data Description

No data was recovered from the device.

2.2. Garmin G1000 Device Description

The Garmin G1000 Integrated Flight Deck is a collection of multiple avionics units which include flight displays, air data computers, attitude/heading reference system (AHRS), communications and other systems. A typical installation includes a primary flight display (PFD) and a multi-function display (MFD). Each display includes two SD card slots, an upper and a lower slot. The lower SD card slot is used by the system for software updates and various databases¹.

Depending on the display unit software, the aircraft can include a data logging feature. The data logging feature must be enabled by the aircraft operator. If the data logging feature is available and enabled, a SD card has to be installed in the upper slot of the MFD. Depending on the airframe and engine combination as many as 64 parameters can be stored at a rate of one sample per second (1Hz). According to the manufacturer of the display unit, one flight hour can be stored in approximately 2 MB. The SD card typically used is 2 GB in size and can store over 1,00 flight hours.

¹ Databases can include terrain data, obstacle data, SafeTaxi charts, flight charts and airport terrain databases

2.2.1. Garmin G1000 Data Recovery

The Garmin G1000 system is capable of recording data if the top SD card slot of the MFD display unit is populated with an SD card and if the unit contains software of version 563.18 or later. Figure 2 shows the SD cards collected from the accident aircraft. The SD cards in this photo are numbered for further reference in this report.

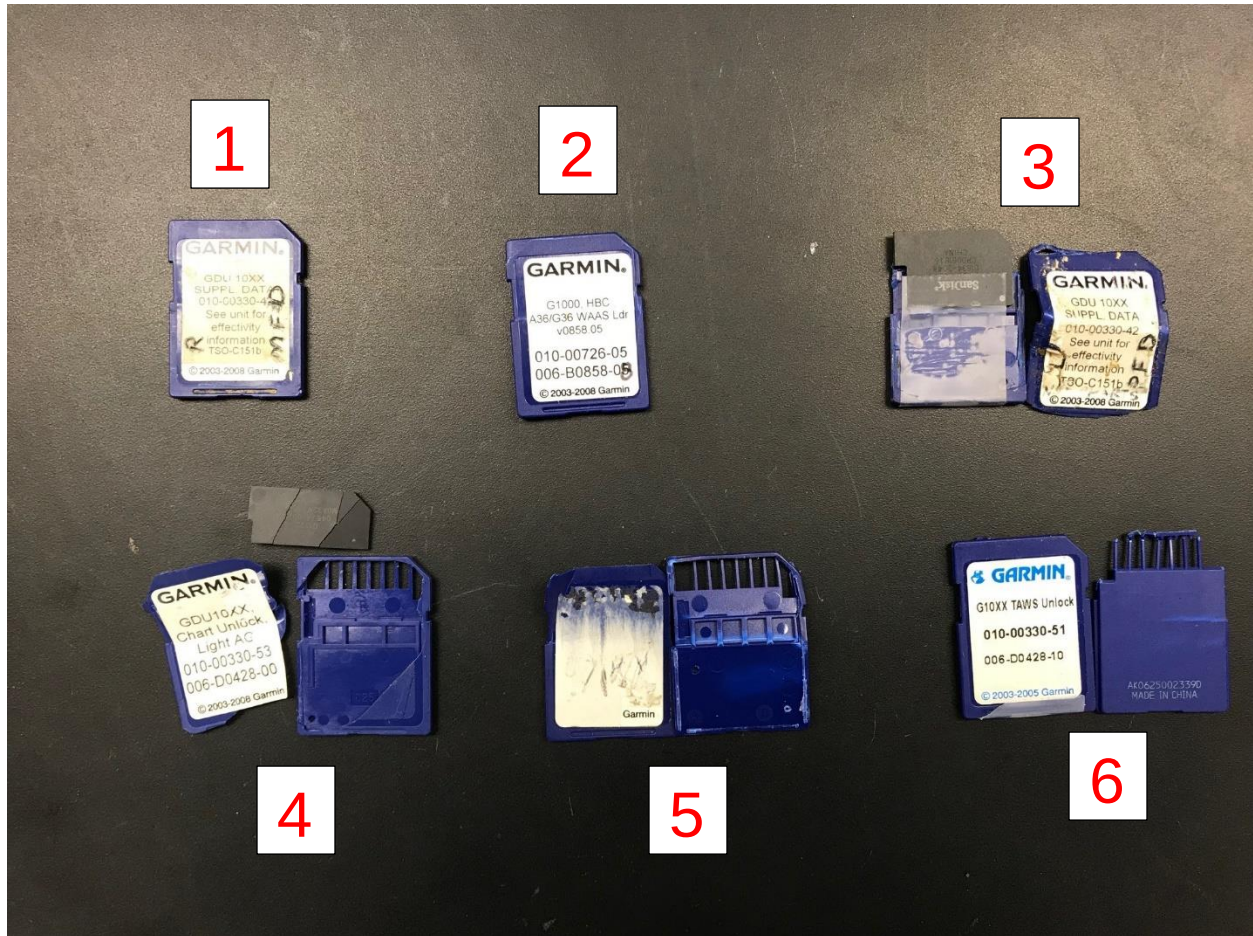


Figure 2. SD cards associated with the accident aircraft.

Card 1 was undamaged and was read normally. Card 1 contained chart databases.

Card 2's plastic packaging was cracked. When opened, the silicon memory chip was cracked. The card could not be read.

Card 3's silicon memory chip was broken free its plastic packaging. The silicon memory chip was reinserted in the plastic packaging. The card read but contained only chart databases.

Card 4's silicon memory chip was broken free from its plastic packaging. The silicon memory chip was cracked in multiple areas. The card could not be read.

Card 5 only consisted of plastic packaging. The silicon memory chip associated with the plastic packaging was missing.

Card 6's plastic packaging was cracked and the silicon memory chip was loose from the card. The silicon memory chip was reinserted in the plastic packaging. The card was read but contained only chart databases.

2.2.2. Garmin G1000 Data Description

No flight data was recovered from any of the functioning SD cards.