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

January 22, 2014

17 – Electronic Devices Factual Report

Specialist's Factual Report
by Joe Gregor

1. EVENT

Location:	Maxwell, Nebraska
Date:	August 11, 2012
Aircraft:	Beech V35B
Registration:	N11JK
Operator:	Private
NTSB Number:	ERA12LA500

On August 11, 2012, about 1310 eastern daylight time, a Beech V35B, N11JK, was substantially damaged during a forced landing following a loss of engine power near Effingham, South Carolina. The flight departed Manassas Regional Airport (HEF), Manassas, Virginia at 1052, and was destined for Flagler County Airport (XFL), Palm Coast, Florida.

2. DETAILS OF DEVICE INVESTIGATION

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

Device 1:	Garmin GDU 620
Device 1 Serial Number:	165200472
Device 2:	Garmin GDL 69
Device 2 Serial Number:	47702706
Device 3:	Garmin GRS 77
Device 3 Serial Number:	42018597 (s/w ver 3.02)

2.1. Garmin GDU-620 Device Description

The Garmin GDU-620 is a panel-mounted primary flight / multi-function display (PFD/MFD) utilizing two side-by-side color displays. The PFD function of this unit is designed to display flight performance data such as airspeed, altitude, vertical speed, aircraft attitude, and navigation data. The GDU-620 can also as an option support the display of Garmin Synthetic Vision Technology. The MFD function of this unit can display data stored on data-cards inserted in the front panel, and from other sources, including: custom maps, IFR charts, VFR charts, terrain, traffic information, lighting,

weather radar, and Jeppessen Chartview products. According to the manufacturer, this unit is a display only, and does not record any information. The GDU-620 is subject to recent Garmin Service Advisories including:

Software Service Bulletin NO.: 1142 Rev A (September 11, 2011) software version 5.02 adding support for S-TEC 1500/2100 autopilots.

2.1.1. Garmin GDU-620 Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, an exterior examination revealed the unit had no visible damage. According to the manufacturer, this unit only records internal fault codes. Multiple requests for manufucaturer support in downloading and interpreting these fault codes ultmately met with no response.

2.1.2. Garmin GRS-77 Data Description

No data was recovered from the GRS-77.

2.2. Garmin GDL-69 Device Description

The Garmin GDL-69 is a remote datalink receiver designed to receive and distribute data from an XM WX Satellite Weather subscription to a compatible PFD / MFD.

2.2.1. Garmin GDL-69 Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, an exterior examination revealed the unit had no visible damage. According to the manufacturer, this unit only records internal fault codes. Multiple requests for manufucaturer support in downloading and interpreting these fault codes ultmately met with no response.

2.2.2. Garmin GDL-69 Data Description

No data was recovered from the Garmin GDL-69.

2.3. Garmin GRS-77 Device Description

The Garmin GRS-77 is an Attitude Heading and Reference System (AHRS) designed to provide attitude and heading information to Garmin Integrated Flight Decks (G1000, G1000H, G950, G900X, G500, G500H, G600). The GRS-77 employs accelerometers and rate sensors, together with GPS data from the Garmin GIA63, to compute aircraft heading and attitude, and sends this information to the flight display using an ARINC 429 digital interface. The GRS-77 is subject to recent Garmin Service Advisories including:

Service Advisory NO.: 1129 Revision A (May 19, 2011) s/w rev 3.01 or earlier for a condition that can cause momentary interruption of GRS 77/77H AHRS air data operation.

Software Service Bulletin NO.: 1142 Rev A (September 11, 2011) s/w rev 3.02 for an issue that can cause a temporary loss of heading/attittude information following extended power-on stall maneuvers, and an issue related to momentary loss of GRS 77 function.

Software Advisory NO.: 1156 Rev A (December 2, 2011) software versions 2.10 through 3.02 for an issue that can the GRS 77 to reset during sustained bank turns when operating in regions where the earth's magnetic field vector is close to the vertical.

2.3.1. Garmin GRS-77 Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, an exterior examination revealed the unit had no visible damage. According to the manufacturer, this unit only records internal fault codes. Multiple requests for manufucaturer support in downloading and interpreting these fault codes ultmately met with no response.

2.3.2. Garmin GRS-77 Data Description

No data was recovered from the Garmin GRS-77.

Figure 1. External view of the Garmin GDU-620 primary-flight / multi-function display (PFD/MFD).

Figure 2. External view of the Garmin GDL-69 XM satellite weather receiver.

Figure 3. External view of the Garmin GRS-77 attitude heading and reference system (AHRS).

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