

# NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division  
Washington, D.C. 20594

November 24, 2017

## Electronic Devices

Specialist's Factual Report  
by Bill Tuccio, Ph.D.

### 1. EVENT

Location: Bartow, Florida  
Date: July 11, 2016  
Aircraft: Cessna 310Q  
Registration: N100CP  
Operator: Private  
NTSB Number: ERA16LA252

On July 11, 2016, about 1100 eastern daylight time, a Cessna 310Q, N100CP, was substantially damaged during a forced landing near Bartow, Florida. The commercial pilot sustained minor injuries. Visual meteorological conditions prevailed, and no flight plan had been filed for the local photographic imaging flight that departed from Bartow Municipal Airport (BOW), Bartow, Florida. The flight was conducted under the provisions of 14 *Code of Federal Regulations* Part 91.

### 2. DETAILS OF INVESTIGATION

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

Device 1: Shadin Fuel Flow Indicator  
Device 1 Serial Number: 3118

Device 2: Electronics International EE-1P  
Device 2 Serial Number: 20568

#### 2.1. Shadin Fuel Flow Indicator Device Description

The Shadin Fuel Flow Indicator is a digital fuel management system designed to provide fuel management information under real-time flight conditions to the flight crew. The unit is connected to engine fuel flow transducers. The unit is capable of transmitting fuel information to certain GPS receivers for additional calculations and display of fuel management data. The unit can display engine fuel flow, fuel used, fuel remaining, and endurance. The unit does not interface with an aircraft's fuel quantity indicating system. The unit requires the flight crew to enter the initial fuel on board the aircraft. All calculations and data provided by the unit are based on fuel flow. Between power cycles, the unit retains the last fuel used and fuel remaining.

### 2.1.1. Shadin Fuel Flow Indicator Data Recovery

Upon arrival at the Vehicle Recorder Division, an exterior examination revealed the unit had not sustained any damage and the unit powered on normally.

### 2.1.2. Shadin Fuel Flow Indicator Data Description

After power up, photos of the display were taken, as follows.

- **Gallons remaining (figure 1).** 115.0 gallons displayed.
- **Gallons used (figure 2).** 62.3 gallons displayed.

After these fuel values were retrieved, the test function was initiated, and photos were taken as follows:

- **Test completion (figure 3).** Good.
- **K values (figure 4).** 85.0 left, 85.0 right. K values are calibration constants that should match the fuel sensor K value.
- **Message (figure 5).** LoFF. Means the Loran or GPS is off; this message is expected when started not installed in the aircraft with no Loran or GPS connected.
- **Version (figure 6).** 51.01.
- **Error message (figure 7).** Err1. This is an error message, the meaning of which was unclear from the manual and may have been due to the unit operating not installed in the aircraft.

Figure 1. Gallons remaining.



Figure 2. Gallons used.



Figure 3. Test message: "Good".



Figure 4. Test message: K factors.



Figure 5. Test message: "LoFF".



Figure 6. Test message: version.



Figure 7. Test message: "Err1".



## 2.2. Electronics International EE-1P Device Description

The Electronics International EE-1P is an exhaust gas temperature gauge designed for twin engine, piston aircraft. The unit does not record any information.

### 2.2.1. Electronics International EE-1P Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, an exterior examination revealed the unit had not sustained any damage. An internal inspection confirmed no non-volatile memory<sup>1</sup> existed on the device.

<sup>1</sup> Non-volatile memory is semiconductor memory that does not require external power for data retention.

### **2.2.2. Electronics International EE-1P Data Description**

No information existed and thus none was recovered.