

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

March 29, 2016

Electronic Devices

Specialist's Factual Report By Jane Foster

1. EVENT SUMMARY

Location: Orlando, Florida
Date: November 20, 2015
Aircraft: Beech A36TC
Registration: N7FG
Operator: Private
NTSB Number: ERA16FA043

On November 20, 2015, about 1127 eastern standard time (EST), a Beech A36TC, N7FG, descended into Clear Lake, Orlando, Florida. The private pilot and one passenger were fatally injured, and the airplane was destroyed. The airplane was registered to and operated by Kavak Aviation, LLC, under the provisions of 14 *Code of Federal Regulations* (CFR) Part 91 as a personal flight. Visual meteorological conditions prevailed at the time, and a visual flight rules flight plan was filed. The flight originated from Orlando Executive Airport (ORL), Orlando, Florida, about 1115 EST, and was destined for Gainesville Municipal Airport (GLE), Gainesville, Texas.

2. GROUP

A group was not convened.

3. DETAILS OF INVESTIGATION

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

Device Manufacturer/Model:	JPI EDM-700
Serial Number:	25768

Device Manufacturer/Model:	Delorme inReach
Serial Number:	Unknown

Device Manufacturer/Model:	SD Card
Serial Number:	Unknown

3.1. Device Descriptions

3.1.1. JPI EDM-700 Description

The J. P. Instruments EDM-700 is a panel mounted gauge that the operator can monitor and record up to 24 parameters related to engine operations. Depending on the installation, engine parameters monitored can include: Exhaust Gas Temperature (EGT), Cylinder Head Temperature (CHT), Oil Pressure and Temperature Manifold Pressure, Outside Air Temperature, Turbine inlet Temperature, Engine Revolutions per Minute, Compressor Discharge Temperature, Fuel Flow Carburetor Temperature, and Battery Voltage. The unit can also calculate, in real-time, horsepower, fuel used, shock cooling rate, and EGT differentials between the highest and lowest cylinder temperatures. The calculations are based on the aircraft installation. The unit contains non-volatile memory for data storage of the parameters recorded and calculated. The rate at which the data is stored is selectable by the operator from 2 to 500 seconds per sample. The memory can store up to 20 hours of data at a 6 second sample rate. The data can then be downloaded by the operator using the J.P. Instruments software.

3.1.2. Delorme inReach Description

The Delorme inReach uses a subscription based service that can contain limited GPS data if tracking is enabled. Depending on the model, data can be stored locally on the device or on Delorme's cloud.

3.1.3. SD Card Description

The SD card was taken from a digital camera and was used to store photos taken on the camera.

3.2. Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, it was determined that the JPI EDM-700, the Delorme inReach, and the SD card had water damage. An exterior examination revealed that the JPI EDM-700 had sustained moderate physical damage. Figure 1 shows the JPI EDM-700 as received. Figure 2 shows the front and back of the Delorme inReach as received. Figure 3 shows the SD card as received.



Figure 1. JPI EDM-700 after examination.



Figure 2. Delorme inReach as received.



Figure 3. SD Card as received.

4. DEVICE INVESTIGATIONS

4.1. JPI EDM-700

The device JPI EDM-700 was water damaged and physically damaged upon arrival to the laboratory. The circuit boards were removed, cleaned, and dried in a vacuum drying oven. The chips containing the unit's non-volatile memory (NVM) were identified and these chips were removed from the board. The chips were found to be in good condition after removal and data could be extracted. The chip read out normally using an adapter socket appropriate for the type and model of chip. The read out resulted in a binary file which was converted to engineering units using laboratory software. The binary readout and subsequent conversion produced files consistent with a normally operating JPI device. However, the data from the JPI EDM-700 could not be verified. The flight length (about 4 hours) was not consistent with information from other data sources pointing to about a 15 minute flight.

4.2. Delorme inReach

The device was powered up normally and no data was stored on the device. A follow up with the manufacturer was conducted and data recording was not turned on during the month of the accident. No data was able to be recovered from the manufacturer's database.

4.3. SD Card

The SD card was read out normally and the contents were examined to find no accident related data. No pictures from the day of the flight or of the airplane were recorded.