

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

December 31, 2020

Electronic Devices

Specialist's Factual Report By Gerald Kawamoto

1. EVENT SUMMARY

Location: Hemet, California
Date: April 30, 2020
Aircraft: Piper PA-23-250
Registration: N6521Y
Operator: Private
NTSB Number: WPR20LA135

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:	Apple iPad Mini 4
Serial Number:	F9FWD1MKGHKJ
Device Manufacturer/Model:	Bad Elf GPS Pro
Serial Number:	151513

3.1. Apple iPad Mini 4 Description

Personal Electronic Devices (PEDs) are a category of devices comprised primarily of portable computing devices and mobile phones. Portable computing devices are typically capable of internet access, email, messaging services, and can run user-installed applications to perform specific tasks. PED user and system data is typically stored on non-volatile memory¹ and can be accessed through manufacturer-provided interfaces.

3.1.1. Apple iPad Mini 4 Condition and Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, an examination revealed the unit had sustained impact damage, as shown in Figure 1, rendering the device inoperable. The logic board was removed and examined. The board was bent and components were dislodged. The extent of the damage precluded normal recovery procedures and

¹ Non-volatile memory (NVM) is semiconductor memory that does not require external power for data retention.

additional attempts were unsuccessful in yielding usable data, thus no data were recovered.



Figure 1. Front and back of the iPad Mini 4 as received.

3.2. Bad Elf GPS Pro Description

The Bad Elf GPS Pro is a handheld GPS receiver and datalogger. The device is capable of connecting via Bluetooth to PEDs such as phones or tablets to display real-time GPS data acquired on the device.

3.2.1. Bad Elf GPS Pro Condition and Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, an examination revealed the unit had sustained damage to the display, as shown in Figure 2. The display was not functional, however the device successfully connected to a lab iOS device to examine the device's contents.

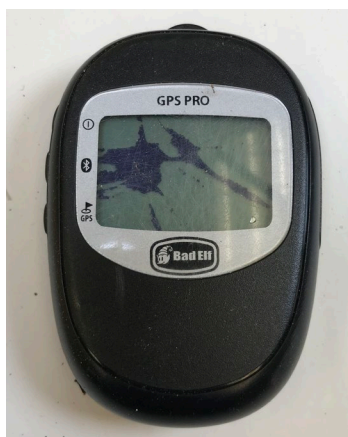


Figure 2. Bad Elf GPS Pro as received.

This device is capable of storing data in the non-volatile memory. This feature can be activated or deactivated by the user. An examination of the device contents using the Bad Elf iOS application revealed that the datalogging function was turned off and no trips were stored in the non-volatile memory, as shown in Figure 3, thus no data were recovered.

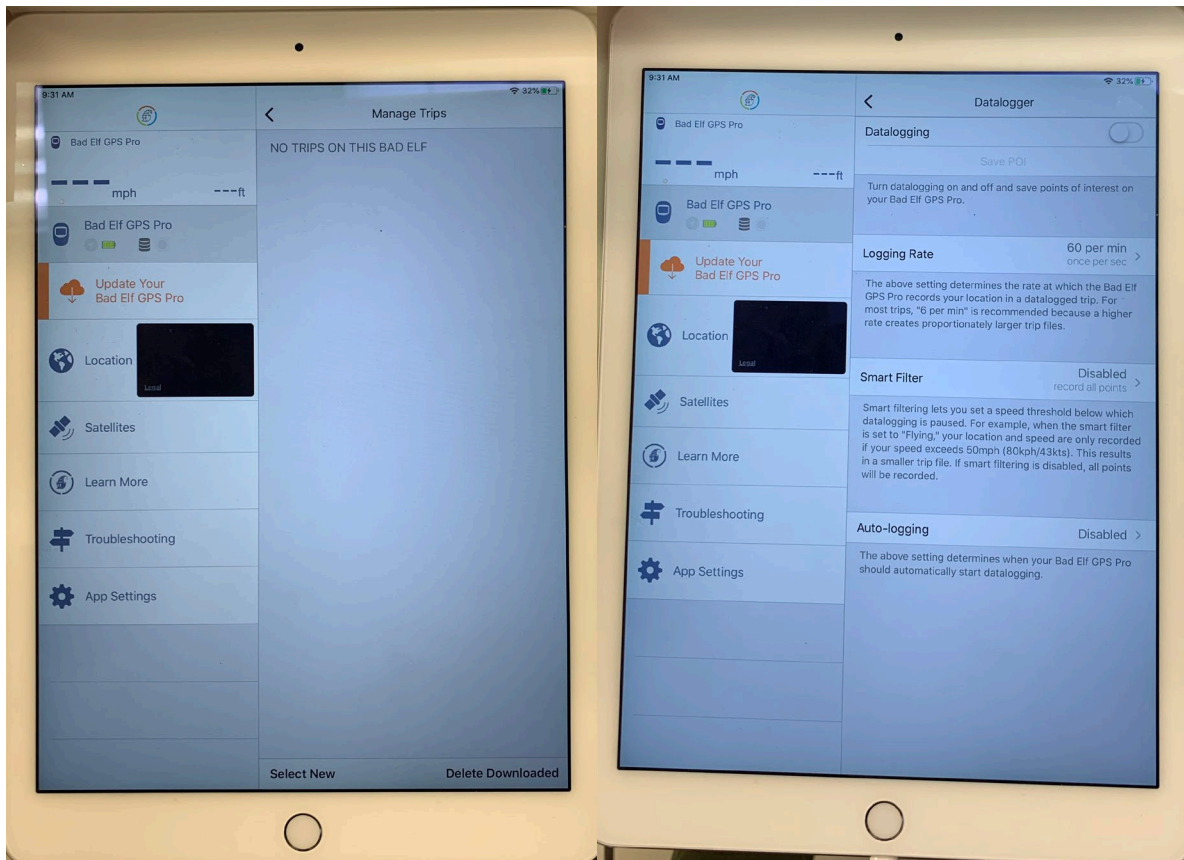


Figure 3. Datalogger and Trips screens from the lab iOS device connected to the Bad Elf via Bluetooth.