

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

August 14, 2017

ADDENDUM 2 – Electronic Devices - Passengers

Specialist's Factual Report By Sean Payne

1. EVENT SUMMARY

Location: Lockhart, TX
Date: July 30, 2016
Aircraft: Balony Kubicek BB85Z
Registration: N2469L
Operator: Heart of Texas Hot Air Balloons, LLC.
NTSB Number: DCA16MA204

2. DETAILS OF INVESTIGATION

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

Device Manufacturer/Model:	Apple iPhone 6s
IMEI Number:	Unknown¹
Medical Examiner Record:	ME4

Device Manufacturer/Model:	Canon EOS Rebel T5
Serial Number:	062072006892
Record:	S1²

2.1. Device Description

PED (Apple iPhone 6s)

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. Depending on the model, mobile phones can perform many of the same tasks as portable computing devices, plus have voice call and text messaging capabilities. PED

¹ This device's IMEI is stored electronically. The IMEI is not printed on the device. The device, when recovered, was passcode locked. The device's IMEI number was unable to be discovered.

² S – Code for salvager. An evidence item discovered by the aircraft salvager and examined by the NTSB.

user and system data is typically stored on non-volatile memory³ and can be accessed through manufacturer-provided interfaces.

Canon EOS Rebel T5

The Canon EOS Rebel T5 is a consumer grade 18 megapixel DSLR camera. It contains an APS-C4 CMOS image sensor with an extended ISO range of up to 12,800. It has a sophisticated autofocus system and can accept a wide range of lenses designed for the EOS camera family. It can record full HD video up to 30 fps at 1920 x 1080 pixels. Still images can be captured at a rate up to 10 fps.

2.2. Data Recovery

Apple iPhone 6s

The Apple iPhone 6s arrived to the laboratory showing signs of thermal damage. The device's case was melted and the device's screen showed evidence of thermal damage. Figure 1 shows the device in its arrival condition at the laboratory.

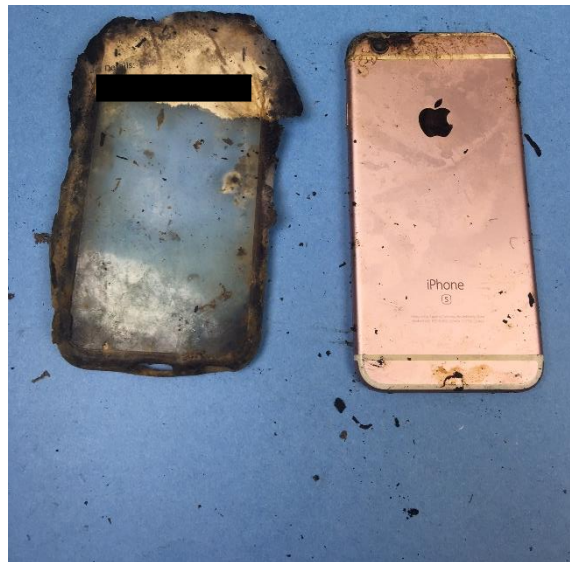


Figure 1. The device in its arrival state. Some personal information has been redacted.

The device's main board was removed and placed into a surrogate device (figure 2). The device was able to power, but was passcode locked.

³ Non-volatile memory is semiconductor memory that does not require external power for data retention.

⁴ APS-C – Advanced Photo System – type C – A “cropped” image sensor format.



Figure 2. The device working in a surrogate.

Although after the accident a third party company had developed a method to determine the device's passcode, evidence had already been recovered from other devices including photos taken just moments before the accident. In agreement with the Investigator in Charge, unlocking the device was not pursued.

Canon EOS Rebel T5

The Canon EOS Rebel T5 arrived to the laboratory showing signs of thermal damage. The device's screen was destroyed. All electronic control mechanisms and buttons were either melted or physically damaged. The device's externally removable lens was melted to the camera. Figure 3 shows the device's arrival condition. Figure 4 shows the bottom of the device. The battery and memory card door was intact, but physically displaced and melted. The serial number was read from the underside of the device.



Figure 3. The device's arrival condition.



Figure 4. The underside of the device, including the battery and memory card door.

The memory card and battery door were removed. The battery was intact and melted. Melted remnants of an SD card were present. Figure 5 shows the battery door area with the battery and SD card in place.



Figure 5. The device's battery and memory card door removed.

The area around the SD card and battery was cut away. The battery was removed, exposing the SD card (figure 6). The SD card was removed (figure 7).



Figure 6. The area around the SD card was removed.



Figure 7. The SD card was removed.

The SD card showed signs of heavy thermal and physical damage. The SD card was X-rayed. The X-ray did not reveal any obvious damage to the SD card's silicon chip (figure 8).

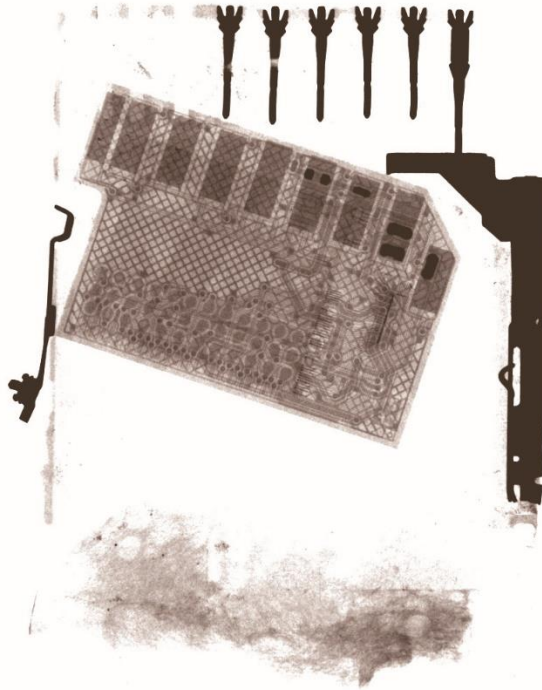


Figure 8. An x-ray image of the SD card.

The silicon memory chip was removed from the SD card plastic package using a file and razor blade (figure 9).



Figure 9. The SD card's associated silicon chip removed.

The silicon chip was inserted into a surrogate SD card package. The silicon chip/SD surrogate package combination was then interfaced with a PC (figure 10). Using a variety of different SD card readers, the silicon chip/SD surrogate package was not recognized by the PC. No data was recovered from the silicon chip.



Figure 10. The silicon memory chip interfaced with a SD card package prior to a readout attempt.

3. DEVICE INVESTIGATIONS

Neither the Apple iPhone 6s or the Canon EOS Rebel T5 produced any digital evidence.