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

December 7, 2016

Electronic Devices - Passengers

Specialist's Factual Report
By Sean Payne

1. EVENT SUMMARY

Location:	Lockhart, Texas
Date:	July 30, 2016
Aircraft:	Balony Kubicek BB85Z
Registration:	N2469L
Operator:	Heart of Texas Hot Air Balloon Rides
NTSB Number:	DCA16MA204

On July 30, 2016, about 0742 central daylight time, a Balony Kubicek BB85Z hot air balloon, registration N2469L, crashed into a field after striking high voltage powerlines near Lockhart, Texas. The 15 passengers and pilot onboard were fatally injured and the balloon was substantially damaged due to impact forces and post-crash fire. The flight was operating under 14 *Code of Federal Regulations* Part 91 as a sightseeing passenger flight.

2. DETAILS OF INVESTIGATION

Personal Electronic Devices (PEDs) and imaging devices (cameras) were collected by the Federal Bureau of Investigation (FBI) Evidence Response Team (ERT) prior to the National Transportation Safety Board (NTSB) arrival. The PEDs and cameras collected by the FBI ERT team were labeled as E#, where "E" stands for electronic device and "**#**" stands for the number in which the device was logged. Items E2, E4, E5 E6, E7, E8, E9, E10 E11 and E13 were not associated with a particular individual. The medical examiner also collected items and were labeled as ME**#** where "ME" stands for medical examiner and "**#**" stands for the number in which the device was logged. Items ME1, ME2, ME3, and ME4 were associated with an individual. Additionally, one more imaging device was recovered lodged in the wreckage by the salvager. This item is listed as S1 and was not associated with a particular individual.

Other devices collected both on scene and from the medical examiner that were associated with the pilot are covered in a separate factual report, "Electronic Devices – Pilot," which can be found in the public docket for this accident.

The NTSB Electronics Division received the following PEDs associated with passengers:

Device Manufacturer/Model:	Samsung Galaxy S III
Serial Number:	R21C94550CB (SN)
FBI Evidence Number:	E2

Device Manufacturer/Model:	Apple iPhone 6
Serial Number:	359233060353376 (IMEI)
FBI Evidence Number:	E4

Device Manufacturer/Model:	Apple iPhone 6 (A1549)
Serial Number:	352013075162799 (IMEI)
FBI Evidence Number:	E6

Device Manufacturer/Model:	iPhone 6
Serial Number:	Unknown
FBI Evidence Number:	E7

Device Manufacturer/Model:	iPhone 6s
Serial Number:	Unknown
FBI Evidence Number:	E8

Device Manufacturer/Model:	iPhone 6 Plus or 6s Plus[1]
Serial Number:	Unknown
FBI Evidence Number:	E9

Device Manufacturer/Model:	Unknown Android Device
Serial Number:	Unknown
FBI Evidence Number:	E11

Device Manufacturer/Model:	Apple iPhone (5, 5s or 5se)
Serial Number:	Unknown
FBI Evidence Number:	E13

Device Manufacturer/Model:	Apple iPhone 5s
Serial Number:	013972003458440 (IMEI)
Medical Examiner Record:	ME1

Device Manufacturer/Model:	Samsung Galaxy S7
Serial Number:	357754702284376 (IMEI)
Medical Examiner Record:	ME2

Device Manufacturer/Model:	Samsung Galaxy S7
Serial Number:	355301074795140 (IMEI)
Medical Examiner Record:	ME3

[1] Due to extensive damage it could not be determined the specific model of the device.

Device Manufacturer/Model:	Apple iPhone 6s
Serial Number:	Unknown[2]
Medical Examiner Record:	ME4

The NTSB Electronics Division received the following cameras associated with passengers:

Device Manufacturer/Model:	Unknown Compact[3] Camera
Serial Number:	Unknown
FBI Evidence Number:	E5

Device Manufacturer/Model:	Unknown DSLR[4] Type Camera
Serial Number:	Unknown
FBI Evidence Number:	E10

Device Manufacturer/Model:	Canon EOS Rebel T5
Serial Number:	06207200689
Record Number:	S1

2.1. Device Description

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 user and system data is typically stored on non-volatile memory[5] and can be accessed through manufacturer-provided interfaces.

In this report, PEDs are broadly referenced to include cameras, as such devices are listed as items E5, E10 and S1.

2.2. Data Recovery

First, all passenger PEDs are listed, then passenger cameras are listed. The devices appear in the order listed in section 2 of this report. The devices were examined in the NTSB Electronics Laboratory. The examinations of the devices are listed below; referencing the original FBI evidence number.

[2] Unlike other iOS devices, this device did not have the IMEI written on the rear metal casing. At the time of writing a surrogate was not available to power the phone to read the IMEI number electronically.
[3] Compact Camera – A point and shoot style camera
[4] DSLR – Digital Single-lens Reflex camera
[5] Non-volatile memory is semiconductor memory that does not require external power for data retention.

PEDs

E2 – Samsung Galaxy S III - SN R21C94550CB

The device was powered at the time of transfer from the FBI. The NTSB specialist on scene determined the phone was not password protected. The phone was set to airplane mode[6] and powered off for transport to the NTSB Electronics Laboratory.

Later, the device was examined in the lab. The soft rubber case was removed and phone was examined. Figure 1 shows the front of the device and the case. Figure 2 shows the rear of the device and the rear of the case.

Figure 1. Photo of front of device.

Figure 2. Photo of rear of device.

The phone was connected to a PC and a forensic read out of the device was performed successfully. The results of this read out are discussed below in section 3.1. of this report.

[6] Airplane Mode – A setting available on most models of smart phones that suspends radio frequency transmission by the device.

E4 – Apple iPhone 6 - 359233060353376 (IMEI)

The condition of the device is shown in figure 3. The device's screen fell free from the phone's chassis. The rear of the device is shown in figure 4. The area containing the IMEI number was cleaned and the IMEI number was visible. The device was opened and examined (figure 5). The memory board was removed (figure 6). It was determined that data recovery with a surrogate device would not be possible due to extensive thermal damage.

Figure 3. Photo of front of device.

Figure 4. Photo of rear of device.

Figure 5. Photo after device was opened in laboratory.

Figure 6. Photo with memory board and SIM chassis removed.

E6 – Apple iPhone 6 - 352013075162799 (IMEI)

The iPhone was received in a hardened plastic case that showed evidence of fire damage (figure 7). The hardened plastic case was removed and the device was found to be in functional condition (figure 8). Power was applied to the device and the device began to function. The device was found to be password protected with a six digit pin. At the time of writing, the PED could not be accessed due to the password and no data was retrieved from the device.

Figure 7. The iPhone 6 as received.

Figure 8. The iPhone after being removed from the case and cleaned.

E7 – Apple iPhone 6 – Unknown IMEI

The device was covered in an unknown material that was melted to the exterior of the device (figure 9 – front, figure 10 - rear). The melted structure was removed. The device was cleaned in an attempt to recover the device's IMEI number. The IMEI number could not be identified. The device was opened and was determined to be an iPhone 6 (figure 11). The internal memory board was inspected and was determined to be thermally destroyed. Due to extensive thermal damage, the device could not be recovered using a surrogate.

Figure 9. The front of the iPhone as received.

Figure 10. The rear of the iPhone as received.

Figure 11. The iPhone after being opened. The internal memory board was thermally destroyed.

E8 – Apple iPhone 6s – Unknown SN/IMEI

The device exhibited severe thermal damage (figure 12). The device was opened and the internal memory was determined to be thermally destroyed (figure 13). The internal memory board indicated the device was an iPhone 6s. Due to extensive thermal damage, the device was unable to be recovered using a surrogate. The IMEI number was unable to be read from the device.

Figure 12. The iPhone 6s as received in the laboratory.

Figure 13. The iPhone after being opened. The internal memory board was thermally destroyed.

E9 – Apple iPhone 6 Plus or 6s Plus – Unknown SN/IMEI

The device exhibited severe thermal damage (figure 14). The device was opened and the internal memory was determined to be thermally destroyed (figure 15). The SIM card was removed and examined (figure 15). The SIM card was destroyed and the network service provider could not be determined. It could not be determined whether the device was an iPhone 6 Plus or iPhone 6s Plus. Due to extensive thermal damage, the device was unable to be recovered using a surrogate. The IMEI number was unable to be read from the device.

Figure 14. The iPhone after being opened. The internal memory board was thermally destroyed.

Figure 15. The iPhone after being opened. The internal memory board was thermally destroyed.

E11 – Unknown Android Device – Unknown SN/IMEI

The device exhibited thermal destruction and was covered in mold (figure 16). The device was opened and inspected (figure 17). The internal board was determined to be thermally destroyed and a recovery with a surrogate was not attempted. No serial numbers or identification markings were able to be read from the device. The device contained an inductive charging unit.[7] The type of device could not be determined.

[7] A device to facilitate wireless charging.

Figure 16. The device before being opened.

Figure 17. The device's internal components after being opened.

E13 – Apple iPhone (5s or 5se) – Unknown IMEI/SN

The device was enclosed in a hardened plastic case (figure 18). The hardened plastic case was removed and the device was exposed. The device was found to be thermally damaged. The device was opened (figure 20). The device's internal memory board was determined to be thermally destroyed. The IMEI number could not be determined.

Figure 18. The device enclosed in a hardened plastic case.

Figure 19. The device after being opened.

ME1 – Apple iPhone 5s – 013972003458400 (IMEI)

The device was not enclosed in a case. The screen was cracked throughout the front face of the device. The alumnium chassis of the device was slightly bent. Figure 20 shows the device as received. The device was opened and the main board was removed and inspected (figure 21). The main board appeared to be undamaged after a visual inspection. The main board was placed in a surrogate device. The surrogate device was able to power and the device booted (figure 22). The phone was locked with a four digit passcode. At the time of writing, the PED could not be accessed due to the password and no data was retrieved from the device.

Figure 20. The device as received.

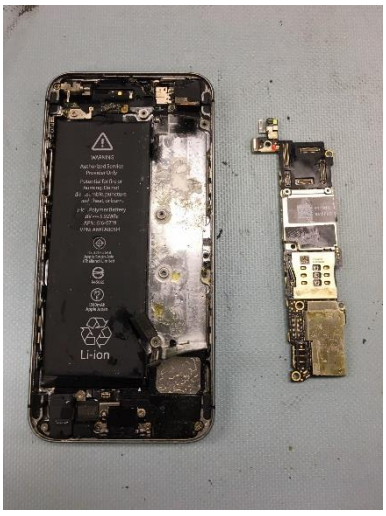

Figure 21. The device opened with the main board removed.

Figure 22. The device powered with a surrogate.

ME2 – Samsung Galaxy S7 – 357754702284376 (IMEI)

The device was received in a soft rubberized pink case. The device showed signs of significant thermal damage throughout (figure 23). The case was removed and the device was opened (figure 24). The SIM card and microSD card chassis initially could not be removed due to the device's metal chassis being thermally affected in that area. The main board could not be removed without first removing the SIM/SD card chassis. The main board had to be damaged in order to remove the SIM/SD card chassis. The main board was lifted and the SIM/SD card chassis was removed. The SIM and microSD card appeared undamaged (figure 25). The microSD card was read normally using a forensic write blocker.

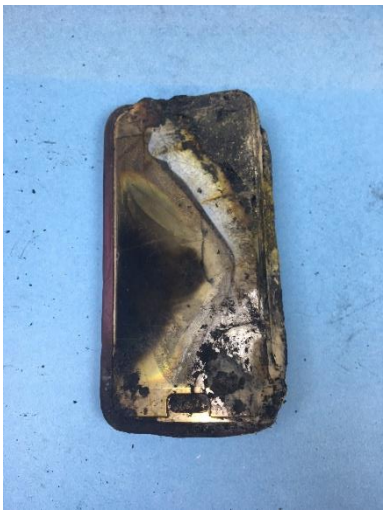

Figure 23. The device as received.

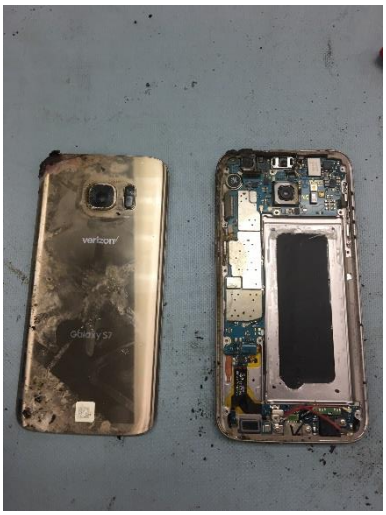

Figure 24. The device after being opened.

Figure 25. The device and the associated microSD card.

ME3 – Samsung Galaxy S7 – 355301074795140 (IMEI)

The device was received in a soft rubberized black case. The device showed signs of significant thermal damage throughout (figure 26). The case was removed and the device was opened. The device's internal components appeared undamaged. The device's SIM/microSD card chassis was then removed. The main board could then be removed. The SIM and microSD card appeared undamaged. Figure 27 shows the device with the above internal components extracted. The microSD card was read normally using a forensic write blocker.

Figure 26. The device as received.

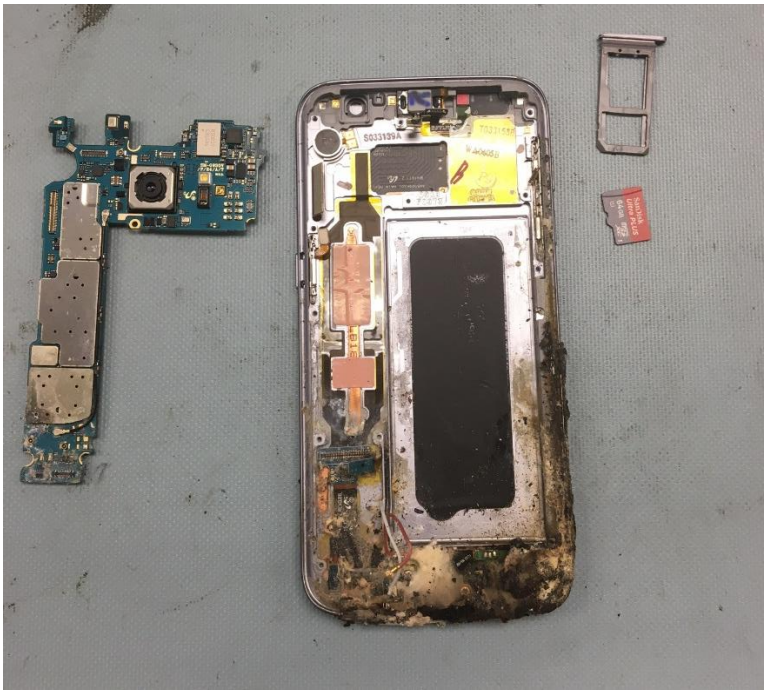

Figure 27. The device after being opened with the main board and SIM/microSD chassis removed. The removed SIM card is not pictured.

ME4 – Apple iPhone 6s – Not Available[8] (IMEI)

The device arrived to the lab in a rubberized case. The rubberized case was removed and the device was inspected (figure 28). The device showed evidence of light thermal damage. The device was opened and its internal components were inspected. The main

[8] Unlike other iOS devices, this device did not have the IMEI written on the rear metal casing. At the time of writing a surrogate was not available to power the phone to read the IMEI number electronically.

board was removed (figure 29). At the time of writing, a surrogate device had been ordered in an attempt to power the phone.

Figure 28. The device as received.

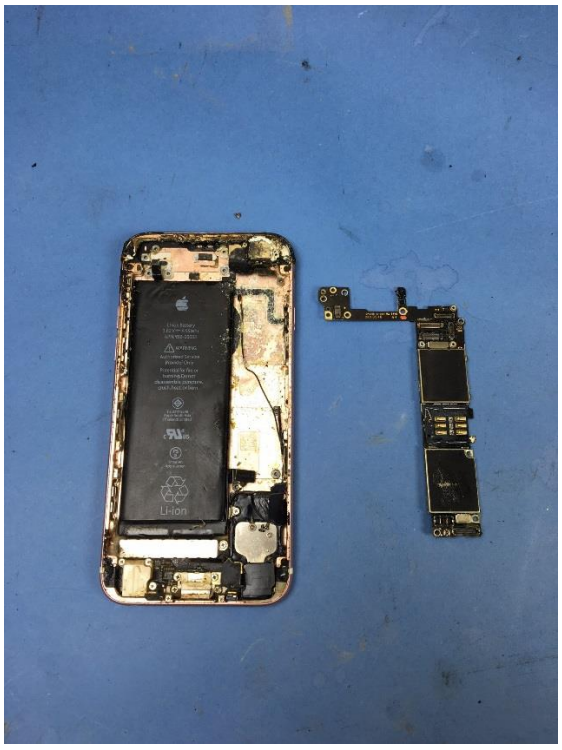

Figure 29. The device opened with the main board removed.

IMAGING DEVICES

E5 – Unknown Compact Camera – Unknown SN

The device exhibited extensive thermal damage (figure 31). Pieces of material were flaking off the device as it was handled. The device's microSD card was located (figure 32). The device's microSD card was removed and determined to be unrecoverable due to thermal damage. Figure 33 shows the microSD card. The card was nonfunctional.

Figure 31. The device as received.

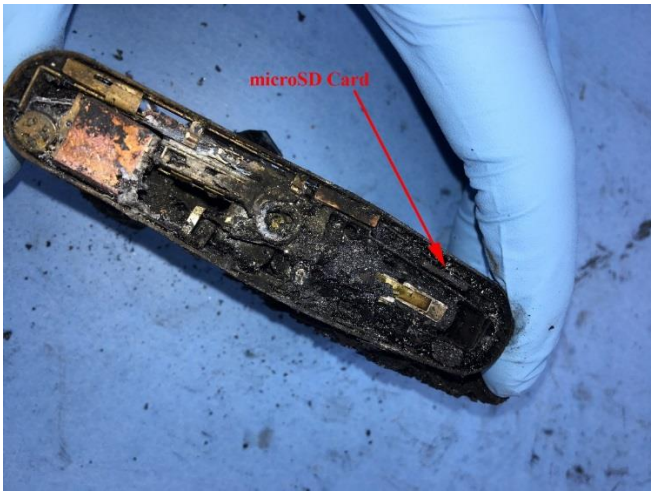

Figure 32. The device shown with an arrow indicating the microSD card's position.

Figure 33. The device's microSD card.

E10 – Unknown DSLR Camera – Unknown SN

The device exhibited extensive thermal damage (figure 34). The device's SD card was located (figure 35). The device's SD card was removed and determined to be unrecoverable due to thermal damage. Figure 36 shows the SD card. The card was nonfunctional.

Figure 34. The device as received.

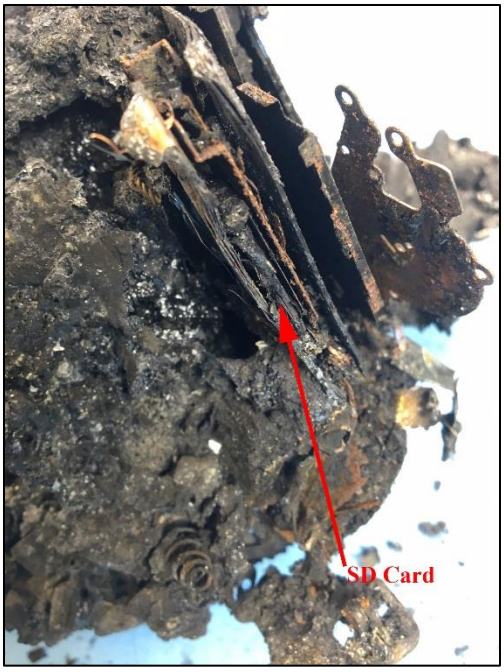

Figure 35. The device shown with an arrow indicating the SD card's position.

Figure 36. The device's SD card.

S1 – Canon EOS Rebel T5 – SN 06207200689

The device exhibited extensive thermal damage (figure 37). The device's SD card was located (figure 38). The SD card was melted to the camera's battery compartment area. The area around the battery compartment was cut away and the SD card was extracted. The device's SD card was removed and determined to be unrecoverable due to thermal damage. Figure 39 shows the SD card. The card was nonfunctional.

Figure 37. The device as recovered.

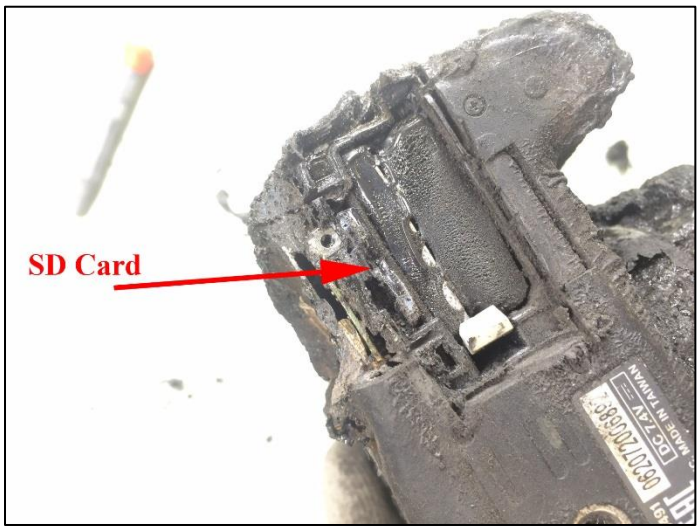

Figure 38. The device's SD card located in the camera.

Figure 39. The device's SD card.

3. DEVICE INVESTIGATIONS

3.1. E2 - Samsung Galaxy S III - R21C94550CB (SN)

The device was determined to have no content relevant to the accident investigation. The content was examined to determine ownership.

3.2. E6 – Apple iPhone 6 - 352013075162799 (IMEI)

Upon power up, the device was locked with a six digit pin. At the time of writing, the NTSB is working with cellular providers to determine the device's owner. Upon positive identification of the device's owner, the NTSB will attempt to access the device with assistance from the owner's family regarding the passcode.

3.3. ME1 – Apple iPhone 5s – 013972003458440 (IMEI)

Upon power up, the device was locked with a four digit pin. At the time of writing the NTSB is attempting to access the device with assistance from the owner's family regarding the passcode.

3.4. ME2 – Samsung Galaxy S7 – 357754702284376 (IMEI)

The device's microSD card was downloaded and produced 79 images and 9 video files taken on the day of the accident. These files are discussed in detail in the "Onboard Image Recorder Factual Report" available in the public docket for this accident investigation.

3.5. ME3 – Samsung Galaxy S7 – 355301074795140 (IMEI)

The device's microSD card was downloaded and produced 14 images and 2 video files taken on the day of the accident. These files are discussed in detail in the "Onboard

Image Recorder Factual Report” available in the public docket for this accident investigation.

3.6. ME4 – Apple iPhone 6s – N/A (IMEI)

At the time of writing, the laboratory was awaiting a surrogate device to insert the device’s main board to attempt to retrieve data from the device. No conclusion as to data recovery can be made at this time.