

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



WPR22FA350

ONBOARD IMAGE RECORDER

Specialist's Factual Report

December 1, 2022

A. ACCIDENT

Location: Reno, NV
Date: September 18, 2022
Time: 15:44 Pacific daylight time (PDT)
Airplane: Aerovodochody L-29 Delfin

B. ONBOARD IMAGE RECORDER SPECIALIST

Specialist: Sean Payne
Sr. Engineer
National Transportation Safety Board (NTSB)

C. DETAILS OF THE INVESTIGATION

The NTSB Vehicle Recorder Division received the following devices:

Device Manufacturer/Model: GoPro Hero
Device Serial Number: C3281328440357

Device Manufacturer/Model: SanDisk 128GB MicroSD Card
Recorder Serial Number: 1175YXFPA12L

1.0 Device Condition

GoPro Hero

The device was damaged in the event. The device was located separately from the SanDisk 128 GB microSD card which is discussed below in this report. The extent of the damage to the GoPro is shown in Figure 1. The device's battery compartment was heavily damaged in the accident and the remnants of the compartment were opened. The battery compartment contains the chassis to hold the device's removable memory device. In this case, the internal memory device is a microSD card. Figure 2 shows the GoPro's microSD card chassis. The chassis was empty. No data was recovered from the device.



Figure 1. GoPro Hero, as recovered.



Figure 2. Inside the camera's battery compartment. The silver chassis which holds the microSD card. The chassis was empty.

SanDisk 128 GB microSD Card

The device is pictured in Figure 3. The device appeared undamaged upon an initial visual inspection. The device was then examined with a digital stereoscopic microscope. An image from the stereoscopic microscope is shown in Figure 4. The device contained a crack along the length of the entire microSD card. Figure 5 shows a portion of the same crack at a greater magnification.

Typically, a crack in a microSD card indicates that the card sustained a flexure event. When this occurs, the device's internal silicon die can be damaged.

The microSD card was inserted in a forensic write blocking device and was attempted to be read out using a PC. The microSD card failed to mount and no data could be accessed.

The microSD card was sent to a third-party data recovery lab. The third-party lab explored accessing the device's memory through the device's test pins. The third-party lab determined that data could not be recovered from the device.

No data was recovered from the device.



Figure 3. The microSD card, as received.

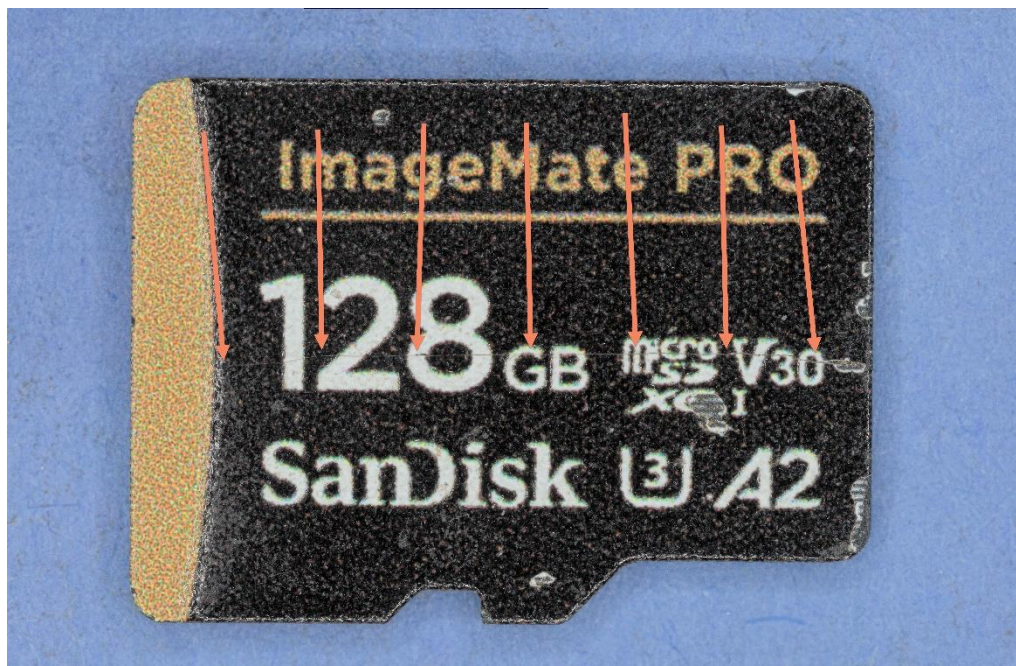


Figure 4. A stereoscopic microscopy image showing a longitudinal crack on the device. Orange arrows show the region of the crack.



Figure 5. A higher magnification of a portion of the same crack.

Summary

The operator of the aircraft stated there were two GoPros in the cockpit on the day of the accident. One damaged GoPro was received and was found to have no microSD card. Separately, a loose microSD card (the SanDisk 128 GB microSD card discussed in this report) was found at the crash site. The loose SanDisk card contained a crack which precluded the recovery of any GoPro data.

The second GoPro and second microSD card were not located in the wreckage or at the crash site at the time this report was published.

Submitted by:

Sean Payne
Sr. Engineer