

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



ERA23FA023

ONBOARD IMAGE RECORDER

Specialist's Factual Report

March 6, 2023

TABLE OF CONTENTS

A. ACCIDENT.....	2
B. ONBOARD IMAGE RECORDER SPECIALIST	2
C. DETAILS OF THE INVESTIGATION	2
1.0 DEVICE DESCRIPTIONS	2
2.0 DEVICE CONDITIONS	3
3.0 DEVICE RECORDING DESCRIPTIONS	3
4.0 VIDEO FILE INFORMATION	3
4.1 Video Timing	3
5.0 RECORDING CONTENTS	4
5.1.1 Summary of recording - October 11, 2022.....	4
5.1.2 Summary of recording - October 17, 2022.....	5

A. ACCIDENT

Location: Miramar, Florida
Date: October 17, 2022
Time: About 12:41 eastern daylight time (EDT)
Airplane: AVENTURA II, Private, N32856

B. ONBOARD IMAGE RECORDER SPECIALIST

Specialist Kyle Garner
Aerospace Engineer – Recorder Specialist
National Transportation Safety Board (NTSB)

C. DETAILS OF THE INVESTIGATION

An onboard image recorder group was not convened.

The NTSB Vehicle Recorder Division received the following devices:

Device Manufacturer/Model: GoPro MAX
Device Serial Number: C3351324649412
microSD card: 64GB SanDisk Extreme

Device Manufacturer/Model: GoPro HERO7 Black
Recorder Serial Number: C3281326670531
microSD card: 128GB SanDisk Extreme

1.0 Device Descriptions

The GoPro MAX is a compact digital camera designed for capturing 360-degree video footage. The camera can record up to 5.6K video at 30 frames per second, as well as lower-quality recording resolutions at higher frame rates. The camera can also capture still images at a resolution of up to 16.6 megapixels.

The GoPro HERO7 is a compact digital camera designed for capturing video and photos in extreme environments. The camera can record up to 4K video at 60 frames per second, as well as lower-quality recording resolutions at higher frame rates. The camera can also capture still images at a resolution of up to 12 megapixels.

Both cameras also feature built-in GPS and Wi-Fi capabilities. Data on both devices are saved to an internal microSD card.

2.0 Device Conditions

The GoPro MAX and GoPro HERO7 arrived in good condition at the Vehicle Recorder Division's laboratory. A handwritten note on the outside of the packaging for the GoPro MAX read, "Format error. 10/21/22, FTK¹ negative results." A 64GB and a 128GB microSD card were found intact and seated securely in the GoPro MAX and GoPro HERO7, respectively.

3.0 Device Recording Descriptions

The microSD card from the GoPro MAX was inserted into a write blocker and interrogated using forensic imaging software, however, the software did not recognize the card and no filesystem was found. The only option presented was to format the device, which would have resulted in the loss of any accident flight data. After discussion with the investigator in charge, no additional data recovery techniques were attempted, and the GoPro MAX is not discussed further in this report.

The microSD card from the GoPro HERO7 was successfully imaged and searched forensically for traces of corrupted and unplayable video files. In total, the microSD card contained 56 photos, in JPEG format, and 169 videos, in LRV² and MP4 format.

4.0 Video File Information

All videos and photos contained on the microSD card were reviewed, and it was determined that the accident flight departure and impact were not captured. However, two videos of previous flights were of interest to the investigation: one recorded on October 11, 2022, and one recorded on the morning of the accident date, October 17, 2022.

Both videos were recorded at a resolution of 3840x2160 pixels and a frame rate of 29.97 frames per second. An audio track was also recorded from the camera's internal microphone. The camera was mounted in the cockpit and was oriented to show a forward-facing field of view that included the instrument panel.

4.1 Video Timing

The video files contained metadata with date and time information, however, it could not be verified.

During both videos, while the aircraft was stationary on the ground, one of the occupants removed a cellular device from their pocket to capture videos and send

¹ FTK = Forensic Toolkit Imager = a commercially available forensic disk imaging program.

² LRV = low-resolution video format = a video file format used by GoPro for video previews.

text messages. After the cellular device was removed from their pocket and before it was unlocked, the current time and date were visible on the recording. The time from the cellular device visible in the video was used to convert video elapsed time to local time, eastern standard time (EST), which is used in the summary section of this report.

5.0 Recording Contents

In agreement with the investigator in charge, a summary report was prepared. Section 5.1.1 summarizes the recording from October 11, 2022, which was six days before the accident flight. Section 5.1.2 summarizes the recording from a previous flight on the morning of the accident date, October 17, 2022.

In both recordings, the instrument panel was visible, which included switches labeled Fuel 1, Fuel 2, Battery 1, Battery 2, and Computer above the throttle lever. The position of each switch, up/on or down/off, is noted in the summary for each recording. A Viking View Engine Information System (EIS) display was also installed, however, the values displayed on the screen were not visible in either recording. The occupants were wearing headsets, however, their dialogue was not audible on the recording because of ambient noise.

5.1.1 Summary of recording - October 11, 2022

The recording began at approximately 12:24:30 EST and lasted 6 minutes and 3 seconds. The aircraft was airborne and in the traffic pattern for a landing on runway 10R at North Perry Airport (HWO), in Pembroke Pines, Florida.

Two occupants were visible. The person in the left seat was the pilot flying (PF) and the person in the right seat was the pilot monitoring (PM). All five switches above the throttle lever were in the up/on position. The engine sounded nominal.

At 12:25:04, the aircraft started a turn to the base leg for runway 10R.

At 12:25:30, the aircraft started a turn for the final leg for runway 10R.

While on final for runway 10R, at 12:25:54, a sudden loss of engine power without throttle lever movement was noted. The PF briefly moved the throttle lever to the idle position, then began to move the throttle lever forward again. As the throttle lever moved out of the idle position, the engine power returned, and the aircraft stabilized. The total duration of engine power loss was about 4 seconds.

At 12:26:21, the PM appeared to reach for the Fuel 1 switch. The PF pushed the PM's hand away from the switch.

At 12:27:25, the aircraft landed on runway 10R at HWO.

At 12:27:45, before turning off the runway, the PF switched the Fuel 2 switch to down/off.

At 12:27:58, the aircraft was clear of runway 10R.

At 12:30:40, as the aircraft was taxiing, the video ended.

5.1.2 Summary of recording - October 17, 2022

The recording began at approximately 11:28 EST and lasted 7 minutes and 50 seconds. The aircraft was airborne and on final approach for runway 10R at HWO. A red light to the left of the Viking View EIS was flashing for the duration of the recording, but the label for the light was not legible.

Two occupants were visible. The person in the left seat was the pilot flying (PF) and the person in the right seat was the pilot monitoring (PM). All five switches above the throttle lever were in the up/on position. The engine sounded nominal.

At about 11:29, the PF reduced the engine power to near idle as the aircraft approached the runway threshold. The PM then reached over and pushed the throttle lever forward to increase engine power. The engine appeared to respond appropriately to the throttle lever movement.

At 11:29:30, the aircraft landed on runway 10R at HWO.

At about 11:30, the aircraft was clear of runway 10R. The PF and PM stopped on the taxiway and had a discussion for about two minutes as they both pointed at the Viking View EIS. Their conversation was not audible due to the ambient engine noise.

At 11:31:45, the PF started to taxi back to runway 10R for departure.

At 11:33:55, the aircraft was holding short of runway 10R.

At 11:35:43, the PF reached back and turned off the GoPro. The video ended.

Submitted by:

Kyle Garner
Aerospace Engineer - Recorder Specialist