

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



CEN22FA424

ONBOARD IMAGE RECORDER

Specialist's Factual Report

January 26, 2023

A. ACCIDENT

Location: Longmont, CO
Date: September 17, 2022
Time: 08:53 mountain daylight time (MDT)
Aircraft: Sonex Aircraft Xenos, N255BF

B. ONBOARD IMAGE RECORDER

A group was not convened.

Specialist: Sean Payne
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C. DETAILS OF THE INVESTIGATION

The NTSB Vehicle Recorder Division received the following device from the Sonex Xenos, N255BF:

Recorder Manufacturer/Model: GoPro HERO
Recorder Serial Number: C3121124594561

1.0 GoPro HERO Device Description

The GoPro HERO is a compact, lightweight, POV digital camera enclosed in a ruggedized housing that allows the camera to be mounted in a variety of positions using an array of supported accessories.¹ Depending on the model, the camera supports 4K HD at 60 fps as well as other lower quality recording resolutions at higher frame rates.² The camera can be set to record still images simultaneously or independently of a video stream. The camera includes a wide-angle aspherical f/2.8 glass lens that provides a maximum of 170 degrees viewing angle. The camera supports recording to microSD cards.³ A built in Wi-Fi module allows users to connect to the camera either via an accessory remote control or via a smart phone app that permits camera control and image transfer.

¹ POV - Point of View Shot - A photography technique that records the character's viewpoint from a singular camera location mounted in a manner that represents the character's field of view.

² HD - High Definition - A resolution generally consisting of greater than 480 lines of horizontal resolution.

³ SD - Secure Digital - a standard for nonvolatile memory card used in portable devices.

2.0 Data Recovery

The GoPro microSD card contained video files corresponding to seven flights. Additionally, a forensic search was conducted that produced video files from two more flights. These were likely older files that had been deleted by the user.

The timestamp on the files was found to be incorrect. This was likely a result of the user either improperly or not setting the camera's time. The camera was functional in the laboratory and the timestamp was examined. A time offset was created based on the camera's current time setting and the time of the examination. This offset produced a time offset that was unreasonable. No timing information was available for any of the files. Instead, files summarized in this report appear in order of their filename (sequential order).

Cameras subject to high impact scenarios often prohibit the filesystem on the device's removable memory card from behaving normally. A high impact can cause corruption or hidden files. A file carving method is used to examine the device's removable memory. This process can produce a playable file of the accident sequence (if the camera was recording at the time of impact) and can recover a number of deleted files. This process only recovered deleted files and no recording of the accident sequence was produced.

Recovered Deleted Files

The deleted files showed two separate flights, neither of which were consistent with the accident sequence. The GNS-430 was installed in the Sonex Xeno's panel. There were no abnormal annunciations displayed on the aircraft's transponder while in flight.

Native Files

The following files were found natively on the device's memory card. The files are listed below by their filename. Though no timing information was available, the numerical order of the filenames are representative of being presented in chronological order, with the oldest files listed first, and the newest files (closest in time to the accident flight) listed last.

GOPR0423 - GOPR0424 - The GNS-430 was installed in the Sonex Xeno's panel. There were no abnormal annunciations displayed on the aircraft's transponder while in flight.

GOPR0425 - The GNS-430 was installed in the Sonex Xeno's panel. There were no abnormal annunciations displayed on the aircraft's transponder while in flight.

GOPR0426 - The GNS-430 was installed in the Sonex Xeno's panel. There were no abnormal annunciations displayed on the aircraft's transponder while in flight.

GOPR0427 - GOPR0428 - The GNS-430 was installed in the Sonex Xeno's panel. There were no abnormal annunciations displayed on the aircraft's transponder while in flight.

GOPR0429 - GOPR0431- The GNS-430 was installed in the Sonex Xeno's panel. There were no abnormal annunciations displayed on the aircraft's transponder while in flight.

GOPR0432 - The GNS-430 was installed in the Sonex Xeno's panel. There were no abnormal annunciations displayed on the aircraft's transponder while in flight.

GOPR0433 + GP010433 - The GNS-430 was NOT installed in the Sonex Xenos's panel. There was an area of dark pixels in the upper left corner of the aircraft's transponder while in flight. This area of darkened pixels was consistent with the location of where the "NO-ADS-B" message would be displayed. For additional information on the functionality of the Sonex Xeno's transponder (Garmin GTX-330), see the GPS and Transponder - Group Chairman's Factual Report, which can be found in the public docket for this accident.

Submitted by:

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