

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



ERA22LA274

ONBOARD IMAGE RECORDER

Specialist's Factual Report

October 6, 2022

ACCIDENT

Location: Brevard, NC
Date: June 16, 2022
Time: 17:45 EDT
Airplane: Cessna 172M, N5064H

Onboard Image Recorder Specialist

Specialist Sean Payne
Branch Chief - Vehicle Recorder Division
National Transportation Safety Board (NTSB)

DETAILS OF THE INVESTIGATION

In agreement with the Investigator-In-Charge, an Onboard Image Recorder group was not convened, and a summary was prepared.

The NTSB Vehicle Recorder Division received the following onboard recorder:

Device Manufacturer/Model: GoPro Hero
Device Serial Number: C3221360005203

1.0 Device Condition

The device was in good condition and the data were downloaded using a USB adapter to read out the associated microSD card.



Figure 1. Device as received by the lab.

2.0 Image/Video File(s) Information

The recovered microSD card contained a number of video and still image files consistent with the accident airplane, the accident occupants, and the accident flight. Some of these files may have been from other flights. The files not containing the accident sequence are not discussed in this report.

The accident sequence was recorded as a series of still images (.JPEG files) in 4:3 format, in color. There was no audio information associated with the accident sequence. These files appeared to have been taken at a rate of 4 Hz using the camera intervalometer feature of the GoPro Hero. The still images were stitched together in a video timeline using a non-linear video editor at a playback speed that represented real time. This video timeline was used to review the accident still images as a motion video file.

The point of view of the GoPro camera at the time it recorded the accident sequence is shown below in figure 2. Occupants of the accident aircraft have been redacted. This camera position remained unchanged until the aircraft's impact with terrain.



Figure 2. Image showing camera view with the occupants redacted.

3.0 Timing and Correlation

No time correlation was conducted for this recording. Timing of the transcript is expressed as Video Elapsed Time, which is time from the beginning of the recording. The timing is expressed as MM:SS, where MM stands for the number of elapsed minutes and SS stands for the number of elapsed seconds.

4.0 Summary of Recording Contents

In general, the entirety of the 8 minute and 42 second stitch of the accident image sequence showed the aircraft maneuvering at low level and at high bank angles. The pilot appeared to be maneuvering the aircraft to make multiple passes over a clearing in the tree canopy so the right front passenger could make motions consistent with dropping objects out of the aircraft over the clearing. The pilot continued to maneuver the aircraft at high bank angles and low altitude until the aircraft's subsequent impact with terrain around 08:35 elapsed.

The recording began at 00:00, the rear seat occupant was facing backward and turned on the camera. The aircraft at this time was in a steep left bank, with the tree canopy visible below the aircraft. Shortly thereafter, the aircraft made a low pass over a clearing and performed a right bank turn. Figure 3 is a redacted screenshot at this time, the horizon is annotated for clarity.



Figure 3. Image showing an example of the aircraft's bank angle at 00:16 elapsed. The horizon is annotated.

The pilot continued to maneuver the aircraft using high bank angles while relatively low to the tree canopy which was visible close below the aircraft. Often, when the pilot maneuvered the aircraft, his head was turned toward the front right seat passenger. Around 00:34, the front right seat passenger opened the right window and made a motion with his hand consistent with tossing objects out of the aircraft. The pilot continued to maneuver the aircraft at high bank angles low to the tree canopy. Attention of the pilot and passengers were often toward the open right window.

The following two figures are exemplar of the type of bank angles and altitudes that were present throughout the recording.

Figure 4 is a screenshot taken at 00:49 which shows the aircraft's bank angle and relative height to the tree canopy at this time.



Figure 4. Image showing the aircraft's bank angle at 00:49 elapsed.

Figure 5 is a screenshot taken at 01:00 which shows the aircraft maneuvering close to the level of the tree canopy. The front right seat passenger opened the right window and made a motion with his hand consistent with tossing objects out of the aircraft.



Figure 5. Image showing the aircraft maneuvering at 01:00 elapsed.

The pilot continued to maneuver the aircraft at low levels and high bank angles for the next approximately 7 minutes. For the majority of the recording the right window was open and at times, the right front seat passenger made motion with his hands consistent with tossing objects out of the aircraft.

Around 08:00 the pilot began to make a pass over the clearing which resulted in the accident sequence. The aircraft appeared to be a lower level than previously noted earlier in the recording. Around 08:11, the right front passenger and the rear passenger made a motion with their heads consistent with looking at the small clearing in the tree canopy which the aircraft just passed. Moments after, the pilot appeared to increase the pitch of the aircraft briefly. In the next few seconds, the pitch angle became lower, and more level. The right passenger and the rear passenger then diverted their attention forward. The aircraft continued traveling near the tree canopy level at a more level attitude, but still slightly positive pitch angle. The rear passenger grabbed the right front seat back in a brace-like manner. The aircraft continued to travel forward at a low level over the tree canopy. Around 08:33, the pilot banked the aircraft right, the tree canopy level appeared to be level with the aircraft. In the next few seconds, the aircraft made an abrupt nose down pitching motion. It is possible this negative pitching motion was related to the aircraft striking trees, however, evidence of a tree strike was not visible on the recorded images. The rear passenger then braced with both hands on the right front seat back. Figure 6 is a screenshot at this time. The next few frames showed the aircraft impacting trees, the angle of the camera abruptly changed and only the baggage area was visible. The

subsequent images suggested the aircraft continued impacting trees and terrain for the next few seconds. The camera images suggested the aircraft came to rest around 08:41. The image sequence constructed for the review of the accident sequence ended at 8:45.



Figure 6. Image showing the aircraft's position around the time of impact with trees.

The camera continued recording .JPEG files as black images. The last files in the image sequence were of one of the occupants of the accident aircraft turning the camera on in a hospital bed.

Submitted by:

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