

NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division
Washington, DC 20594

November 3, 2021

Onboard Image & Security Camera

Specialist's Factual Report
By Sean Payne

1. EVENT

Location:	Provincetown, MA
Date:	September 9, 2021
Aircraft:	Cessna 402C, N88833
Operator:	Cape Air
NTSB Number:	ERA21FA354

2. DETAILS OF INVESTIGATION

On June 10, 20202, the National Transportation Safety Board (NTSB) Vehicle Recorder Division received the following video file:

Recorder Manufacturer/Model:	Unknown Personal Electronic Device (PED)
Filename(s):	passenger N88833 photo landing 1.jpg passenger photo landing 2.jpg

Recorder Manufacturer/Model:	Avigilon (brand) (unknown Model name)
Filename(s):	File1.avi, File2.avi, File3.avi

2.1. Recorder Description

PED

The image files was generated from a portable electronic device (PED). The exact model of PED was not noted as it was not recovered in the accident.

A PED is any piece of lightweight, electrically-powered equipment. These devices are typically consumer electronic devices capable of communications, data processing and/or utility. Examples range from handheld, lightweight electronic devices such as tablets, e-readers, and smartphones to small devices such as MP3 players and electronic toys.

Security Camera

The security video recordings were from an Avigilon brand digital video recorder (DVR) device. No further details from the system were noted by the provider of the recordings.

2.2. Files

PED

Two files were received from a passenger. The two files were both 3024 x 4032 pixels in resolution, in color, with a bit depth of 24 bits.

Security Camera

Three files were received from three camera locations on the airport property. The recordings' metadata show the video files were recorded at a resolution of 2048 x 1358 pixels, in color. A forensic security footage interpretation program was utilized to determine the frame rate. It is possible the recording system was using a variable recording frame rate schema, however, during the pertinent portion of the recording, the forensic software indicated that the first two recordings were recorded at 12 frames per second (fps) and the third recording was recorded at 10 fps.

2.3. Timing and Correlation

PED

The nature of the filenames (they were renamed) indicated that the photos sent to the NTSB were not the original images. As such the metadata for the time the photos were captured was not possible to be determined.

Security Camera

The security camera system stamped the imagery with a timestamp. Typically this timestamp is set by the user of the DVR. In this case, the timestamp shown on the recording appears to be approximately 1 hour different from the recorded accident time provided by the investigator-in-charge (IIC). No attempt at offsetting the DVR timestamps were made.

2.4. Summary of Recording Contents

In agreement with the Investigator-In-Charge, a video group was not convened, and a summary report was prepared.

2.4.1. PED Images

Figure 1 is the first image taken by the passenger. The occupants of the aircraft have been redacted. The manifold pressure for both engines is shown around 17 inches Mercury (inHg), the RPM for both propellers is shown as around 2,400 RPM. Visible engine instruments appear to have nominal values. Control levers for throttle and propeller are observed as shown in the image. The resolution of the image did not provide enough clarity to resolve the settings on the Garmin GPS navigation device.

The Precision Approach Path Indicator (PAPI) is visible through the windscreen to the right of the runway. The PAPI shows four white lights, indicating the aircraft was above glidepath for runway 7 at KPVC. The altitude and airspeed indicators are not visible and thus a determination of the aircraft's energy state at this time was not possible.



Figure 1. The first photo provided by the passenger.

Figure 2 is the second image taken by the passenger. The occupants of the aircraft have been redacted. The manifold pressure for both engines indicated around 17 inHg, the RPM for both propellers indicated around 2,400 RPM. Visible engine instruments appear to have nominal values. Control levers for throttle and propeller are observed as shown in the image. The resolution of the image did not provide enough clarity to resolve the settings on the Garmin GPS navigation device.

The Precision Approach Path Indicator (PAPI) is visible through the windscreen. The PAPI shows two white lights, the other two lights of the PAPI are obscured by the center

post of the windscreen. The PAPI indicates the aircraft is either at or above glidepath for runway 7 at KPVC. The altitude and airspeed indicators are not visible and thus a determination of the aircraft's energy state at this time was not possible.



Figure 2. The second photo provided by the passenger.

2.4.2. Security Camera Recordings

Approximation of Touchdown Point

Security footage was reviewed from the camera pointed toward the arrival end of runway 7. The point at which the aircraft touched down was approximated. Figure 3 is a screen capture of the aircraft touching down on runway 7 at KPVC from the recording. Post-accident, a measurement was taken from the beginning edge of the threshold from the

arrival end of runway 7. The measurement was taken by driving a vehicle into a location that matched the accident aircraft's touchdown point on the security recording. The measurement from touchdown point to the beginning of the edge of the threshold was approximately 650 feet. Figure 4 approximates this position on Google Earth.

2021-Sep-09 09:02:51.925 PM



Figure 3. The aircraft's approximate touchdown point as shown in the screen capture from the security camera. A red reticle highlights the accident aircraft.

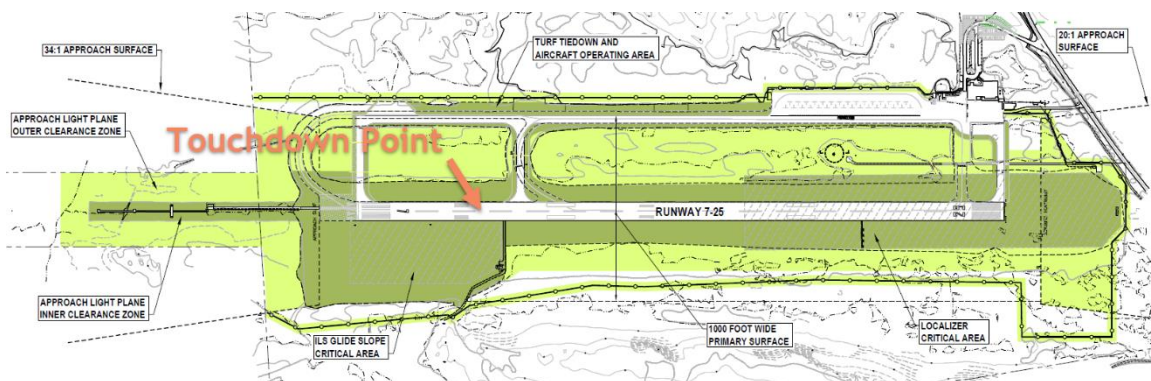


Figure 4. The approximated touch down position using Google Earth.

Reel of Security Footage

Attachment 1 to this report is a reel of all three camera's footage that captured the accident. The three recordings have been edited together with a graphic depicting each camera's approximate location. In the last portion of the reel, a zoom feature was used to show the aircraft's impact with terrain.

Attachment 1 is .mp4 format and can be found in the public docket for this accident.