

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division

Washington, DC 20594

June 2, 2022

Onboard Image Recorder

Specialist's Factual Report

By Sean Payne

1. EVENT

Location: Ravendale, CA
Date: January 28, 2022
Aircraft: Textron TTX T240, N420WT
Operator: Private
NTSB Number: WPR22LA090

2. GROUP

A group was not convened.

3. DETAILS OF INVESTIGATION

The National Transportation Safety Board (NTSB) Vehicle Recorder Division received the following video file:

Recorder Manufacturer/Model: **Unknown**
Filename: **"front view.MP4"**

3.1. Recorder Description

The video file was generated from a point of view (POV) camera. The exact model of POV camera was not noted as it was not recovered in the accident.

3.2. Video Files

The video was provided at a resolution of 3840 x 2160 pixels and at a frame rate of 23.98 frames per second (fps). The video file appeared to have been cropped, as the activation and shutdown of the camera was not visible in the recording.

3.3. Timing and Correlation

The timestamps used in this report are expressed as video elapsed time. A correlation to local time was not attempted. The timing format is given in MM:SS, where MM stands for the number of elapsed minutes and SS stands for the number of elapsed seconds.

3.4. Summary of Recording Contents

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

3.4.1. “front view.MP4” Summary

The video recording provided an over the shoulder view of both front seat occupants of the aircraft. The video included recorded intercom audio that contained the voices of both front seat occupants. The audio and the hand motions of the left seat pilot (LSP) were consistent with giving instruction. The right seat pilot (RSP) was the pilot flying as the video recording began. The view included the view out of the front windscreen of the aircraft, the left and right side sticks, the MFD and PFD and the throttle, propellor and mixture controls. Other control panels were not visible. The aircraft was lined up on the runway and was stationary.

The two pilots verbally agreed that rotation speed would be 65 knots. The LSP stated, “I’m going to set your power here you got the brakes” while the right seat pilot (RSP) keyed the right side stick mic and announced the aircraft would be departing runway 17. The LSP set the power. The power came up through 28 inches of manifold pressure and 2360 rpm when the LSP asked the RSP to release the brakes. The aircraft began rolling at 00:20 as the left seat pilot handled the throttle and continued to increase power using Vernier-assist screw operation of the aircraft’s throttle.

The aircraft continued rolling, indicated airspeed increased. At 00:26, the RSP stated, “gauges in the green airspeed alive.” The aircraft continued to gain speed as it tracked centerline. At 00:35, the LSP called out “fifty” and then stated, “lower the nose a little bit,” as the aircraft began to pitch nose up slightly. The RSP had a firm grip on the right side stick, while the LSP appeared to be guarding the left side stick. The RSP called, “rotate.” Indicated airspeed was 66 knots at this time.

The aircraft pitched nose up, the LSP stated, “yeah pull it off come on.” As the LSP called for rotation, the PFD displayed a yellow caution message and a tone was audible. The PFD annunciated in yellow: *STALL WARN COLD PITOT COLD*. This occurred at 00:42 elapsed. The yellow caution remained for the rest of the recording until the camera’s view was changed at impact. Figure 1 is a screenshot of the PFD at this time.



Figure 1. The PFD at 00:42 elapsed which shows the yellow caution annunciation.

The aircraft established into a more nose up attitude and began climbing. There were no anomalies noted on the engine page display of the aircraft's MFD. Airspeed increased through 80 knots, the LSP continued encouraging the RSP to "pull it up, pull it up, up, up, up, up, up." The aircraft continued to climb and accelerate.

As the aircraft climbed, the RSP was on the right-side stick and his hand was guarding the throttle and prop controls. The PFD showed the pitch attitude as approximately 14 degrees nose up, at an airspeed of 85 indicated and an altitude of 5300 feet MSL. Figure 2 is a screenshot at this time (00:48 elapsed).



Figure 2. The MFD at 00:48.

Within the next second, manifold pressure, RPM and EGTs for all cylinders began to rapidly decrease. Almost immediately the LSP's right hand appeared in the camera's field of view and pushed the right seater's left hand from guarding the throttle and prop controls. The RSP remained on the right side stick for the next few seconds as the left seater actively manipulated the controls (both the left side stick and throttle and prop control area). As the left seater non-verbally took the aircraft controls, his hands touched the throttle, prop and mixture control in a manner that confirmed maximum power, maximum prop rpm and maximum rich settings. The LSP stated, "really?" Within a few seconds the RSP was completely off of all controls¹.

Figure 3 is a screenshot of the MFD at 00:48.5 which shows a decrease in manifold pressure, RPM and EGT values. At this time, airspeed was approximately 87 knots, and the aircraft's pitch attitude was approximately 12.5 degrees nose up.

¹ The rudder pedals were not visible.



Figure 3. The MFD at 00:48.5.

Figure 4 is the MFD approximately 0.5 seconds later. The engine page was displayed as shown in figure 3.



Figure 4. The MFD at 00:49. At this time the left seater had non-verbally took control of the aircraft.

Figure 5 is a screenshot of the MFD at 00:50, approximately 1 second after figure 4. The engine page was displayed as shown in figure 5 at 00:50.



Figure 5. A screenshot at 00:50.

Figure 6 is a screenshot of the MFD at 00:52. The engine page was displayed as shown in figure 5 at 00:50.



Figure 6. A screenshot at 00:52.

In the seven seconds after the loss of RPM, manifold pressure and EGT indications, the aircraft continued to climb in a pitch up attitude. At 00:53, the LSP

entered a left bank and began pointing the aircraft toward a gravel road off the end of the runway. One second later, the stall horn activated. The PFD at this time showed the aircraft was approximately 10 degrees nose up, in an approximate 25 degree left bank, at an airspeed of 74.5 knots indicated and an altitude of 5370 feet MSL. In the next second, the LSP pitched nose down, the airspeed indicated 73 knots at the time the aircraft's nose was brought level with the horizon. The aircraft continued in a left bank toward the gravel road. The pilot brought the aircraft to wings level as the aircraft approached the gravel road and flared the aircraft. Touchdown occurred at approximately 01:01. The PFD showed the aircraft was at 71 knots indicated and 5280 feet MSL, approximately wings level with a slight nose up attitude.

The force of the touchdown changed the camera's view. The camera recorded gravel and dirt being broadcast across the wind screen. Intercom audio of the pilot's voices ceased; no audio filters were used to attempt to detect the crew's voice from this point forward. The ELT was audible intermittently through the intercom. The video ended at 01:35, the LSP had just shut off the avionics master switch and selected the cross tie to "OFF."