

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



RRD24MR002

ONBOARD VIDEO RECORDER

Specialist's Factual Report

May 15, 2024

A. ACCIDENT SUMMARY

Location: Chicago, Illinois
Date: November 16, 2023
Time: 10:31 a.m. central daylight time (CDT)
Vehicle: Chicago Transit Authority (CTA) train #593

B. ONBOARD VIDEO RECORDER SPECIALIST

Specialist W. Deven Chen
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C. DETAILS OF THE INVESTIGATION

The NTSB Vehicle Recorder Division received three video files: one forward-facing and two inward-facing video files from the CTA train #593 (hereinafter referred to as accident train) that captured the accident event.

In agreement with the Investigator-In-Charge (IIC), a video group was not conducted, and a summary report was prepared.

1.1 Onboard Video Recorder Description

No details were obtained as to the make and model of the train's onboard video recording system. The onboard inward-facing and forward-facing video files were submitted to the NTSB Vehicle Recorder Laboratory electronically.

1.2 Recording Files Description

None of the three videos had audio. The videos files were approximately 12 minutes in length, in .asf (Advanced Systems Format) format, recorded with a resolution of 704 x 480 pixels at a frame rate of 10 frames per second (fps).

One of the two inward-facing videos provided a field-of-view (FoV) on the right side¹ of the motor cab (hereinafter referred to as inward-facing cab-right video), and the other provided a FoV on the left side of the motor cab (hereinafter referred to as inward-facing cab-left video). For this report, the motor cab is defined as the room in the very front of the locomotive, and the operator's compartment is defined as the smaller room with the controlling equipment within the motor cab, on the right side. Figures Figure 1 to Figure 3 depict the FoVs of the forward-facing and two inward-facing cameras.

¹ The right-hand side when looking forward on the motor cab.



Figure 1. A screenshot shows the field-of-view of the onboard forward-facing video.



Figure 2. A screenshot shows the field-of-view of the onboard inward-facing cab-right video.



Figure 3. A screenshot shows the field-of-view of the onboard inward-facing cab-left video.

1.3 Time Correlation

The videos were recorded in the local time of the accident, CDT, and no conversion were required for this report.

D. SUMMARY OF THE VIDEO FILES

There were no distractions of the train operator observed right before the collision. There were no warning signals in the vicinity of the accident site observed prior to the collision. Below is the detailed summary of the three onboard videos.

Local Time (CDT)	Forward-Facing Video	Inward-Facing Cab-Right Video	Inward-Facing Cab-Left Video
10:19:00.07	The videos began. The accident train was stationary.		
10:19:41.95			The operator appeared in the camera FoV. The operator opened a door and entered the motor cab.
10:19:47.26		The operator entered the operator's compartment. The operator wore a yellow and orange safety vest, a hat, and a pair of sunglasses.	
10:19:55.92		The operator opened the right-side window.	
10:20:21.49	The accident train started moving forward.	The operator input a series of controls and the train started moving.	
10:20:31.30	The accident train stopped before a stop sign.	The operator appeared to be checking for traffic.	
10:20:34.10	The accident train started moving forward.		
10:20:52.32	The accident train came to a stop at a station.		
10:20:54.12		The operator leaned out the right-side window and looked back to check on boarding passengers.	
10:20:59.53		The operator finished checking outside the right-side window. The operator pulled out a radio communication device out of his	

Local Time (CDT)	Forward-Facing Video	Inward-Facing Cab-Right Video	Inward-Facing Cab-Left Video
		pocket and put it on the control panel. The operator then picked up a pair of gloves and put them on.	
10:21:18.35		The operator leaned out the right-side window to and looked back to check again.	
10:21:24.15		The operator finished checking outside the right-side window and closed the right-side window. The operator then sat down on the operator's seat.	
10:21:26.36	The accident train started moving forward.		
10:21:32.19		The operator picked up a paper and looked down at it.	
10:21:57.99	From 10:21:32.19 up to this time, there were no anomalies observed as the accident train moving forward on the track.	From 10:21:32.19 up to this time, the operator looked down at the paper, and looked up to check for the traffic a couple of times, briefly. At this point, the operator put down the paper. The operator then stood up and looked forward checking for traffic.	
10:22:10.80	The accident train approached a grade crossing. The signal indicated a green aspect.	The operator continued looking forward.	
10:22:18.47	The accident train passed the grade crossing.		

Local Time (CDT)	Forward-Facing Video	Inward-Facing Cab-Right Video	Inward-Facing Cab-Left Video
10:22:43.00	The accident train approached a grade crossing. The signal indicated a green aspect.	The operator continued looking forward.	
10:22:49.84	The accident train passed the grade crossing.		
10:23:30.88	The accident train came to a stop at a station. A signal in front of the train indicated a red aspect.	The operator walked out of the operator's compartment and out of the FoV.	The operator walked towards the left-side window. The operator opened the window, leaned out, and looked back to check on boarding passengers.
10:23:34.49	The signal in front of the accident train turned from a red aspect to a green aspect.		
10:24:01.06			The operator finished checking outside the left-side window and closed the window. The operator then walked towards the operator's compartment.
10:24:02.42		The operator returned to the operator's compartment.	
10:24:04.12	The accident train started moving forward.		
10:24:15.32	The accident train passed a grade crossing.		
10:24:17.54		The operator sat down on the operator's seat and looked forward checking for the traffic.	

Local Time (CDT)	Forward-Facing Video	Inward-Facing Cab-Right Video	Inward-Facing Cab-Left Video
10:25:07.18	The accident train approached a grade crossing. The signal indicated a green aspect.	The operator stood up and continued checking for traffic.	
10:25:18.28	The accident train passed the grade crossing.	The operator sat down on the operator's seat and continued looking forward.	
10:25:51.96	The accident train approached a grade crossing. The signal indicated a green aspect.	The operator opened the right-side window. The operator then stood up and leaned out to look.	
10:26:10.82	The accident train passed the grade crossing. Another grade crossing was visible ahead with the signal indicating a green aspect.	The operator continued leaning out to check for traffic.	
10:26:21.09	The accident train passed the grade crossing.	The operator finished checking outside the right-side window and looked forward.	
10:26:38.11		The operator sat down on the operator's seat.	
10:27:09.93		The operator stood up and continued looking forward.	
10:27:42.43	Two railway workers were visible standing on the right side of the track. One of them was waving their hand signaling the train operator to move forward.	The operator leaned out the right-side window to look.	

Local Time (CDT)	Forward-Facing Video	Inward-Facing Cab-Right Video	Inward-Facing Cab-Left Video
10:28:01.56		The operator finished checking outside the right-side window, sat down, and closed the window.	
10:28:11.75		The operator yawned.	
10:28:33.54	From this point forward, the accident train entered areas with more trees on both sides of the rail tracks.		
10:29:18.59		The operator yawned.	
10:30:19.92	The accident train passed a signal on the left side of the track. The signal had no light indications on it.		
10:30:31.10	The accident train entered a curve in vicinity of the accident site. There were not any warning signals observed.	The operator was looking forward.	
10:30:41.71	Snow removal equipment on the track appeared in the FoV. Figure 4 below shows a screenshot at this time.	The operator remained seated and looking forward. The operator's right hand was holding the control stick, and the left hand was outside of the operator's compartment and out of the camera FoV.	The operator's left hand was holding the outside wall of the operator's compartment.
10:30:44.14		The operator made an abrupt facial expression. The operator's right hand made a rapid movement on the control stick, and the left hand appeared in the camera FoV and was reaching forward.	
10:30:45.15		The operator's left hand reached on the track brake.	

Local Time (CDT)	Forward-Facing Video	Inward-Facing Cab-Right Video	Inward-Facing Cab-Left Video
10:30:50.38	Two personnel were visible on the snow removal equipment. One of them was leaning to jump out of the snow removal equipment. Prior to impact with the snow removal equipment, there were not any warning signals observed as the accident train approached.	Prior to impact with the snow removal equipment, the operator's body leaned back, with his right hand holding the control stick. The left half side of the operator's body was outside of the operator's compartment and out of the camera FoV.	Prior to impact with the snow removal equipment, the operator's left hand was holding the outside wall of the operator's compartment.
10:30:50.72	The impact occurred. The FoV of the camera changed to facing down toward the ground after the impact.	The impact occurred. The camera lost signal.	The impact occurred. The camera lost signal.
10:30:59.13	Nothing pertinent was observed after the impact until the videos ended. The videos ended at this time.		



Figure 4. A screenshot at 10:30:41.71 shows the snow removal equipment became visible to the forward-facing camera.

Submitted by:

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