

NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division

June 17, 2022

Video Files

Specialist's Factual Report By W. Deven Chen

1. EVENT

Location: Denver, Colorado
Date: February 9, 2022
Company: BNSF
Train No.: YDEN1152-09i
Locomotive ID: BNSF 1961
NTSB Number: RRD22FR006

2. GROUP

A video group was not convened.

3. DETAILS OF INVESTIGATION

On February 13, 2022, the NTSB Vehicle Recorder Division received electronically the following video files:

Video File #1:	BNSF 1961 Video.mp4
Video File #2:	One Spot Tower E PTZ.avi
Video File #3:	MyExport_Platte Tower W PTZ V039_09Feb2022_105500_09Feb2022_110000_0 9Feb2022_105459_09Feb2022_110000.avi

3.1. Video Files Information

All three video files were five minutes in length and had a frame rate of 30 frames per second. The video file #1 was recorded from a forward-facing camera mounted on the event locomotive. It came with audio and a resolution of 704 x 240 pixels. The video files #2 and #3 were recorded from security cameras at the vicinity of the event site and did not come with audio. The video file #2 had a resolution of 1920 x 1080 pixels, and the video file #3 had a resolution of 704 x 480 pixels. Figure 1 shows the field of view of the security camera recorded video file #3. As shown in the

figure, the resolution of the video file #3 was poor, and the event train locomotive was far away from the camera. In addition, the video file #3 did not provide any details other than what the other two video files provided, thus the video file #3 is not included in this report besides figure 1.



Figure 1. Field of view of the security camera recorded video file #3.

3.2. Timing and Correlation

The time of the video files were aligned based on video file #2, which was recorded from 10:55:00 to 11:00:00 local time. The event occurred at around 10:57:00 local time.

3.3. Summary of Recording Contents

Sections 3.3.1 and 3.3.2 provide general summaries of the video file #1 (locomotive forward-facing video) and video file #2 (security video) respectively. Section 3.3.3 is a detailed summary of both videos in the recorded time sequence.

3.3.1. General Summary of Locomotive Forward-Facing Video - Video File #1

An operator stands on the side of a track controlling a train with a remote-controller. The train initially moves in backward direction, then it comes to a stop and moves forward. As the train continues to move forward, the operator steps up to the

front of the train from the side. As the operator moves sideways at the front of the train, from the side towards the center, the operator falls forward. Figure 2 is a screenshot at this time; the operator is blurred on the figure. A few seconds later, the train brakes, and about another 10 seconds later, the train comes to a stop.



Figure 2. Screenshot at the moment the deceased operator fell forward.

3.3.2. General Summary of Security Video - Video File #2

A train (its locomotive is not in the view for this whole video) moves backward on a track towards a series of boxcars. Figure 3 shows the field of view of the security camera. After the train picks up the series of boxcars, it moves forward. As the train is moving forward, slack actions are observed. At one point, the boxcar in the very front stops, but immediately after gets pushed forward by the boxcars in the back. Not long after this occurred, the train slowly comes to a stop.

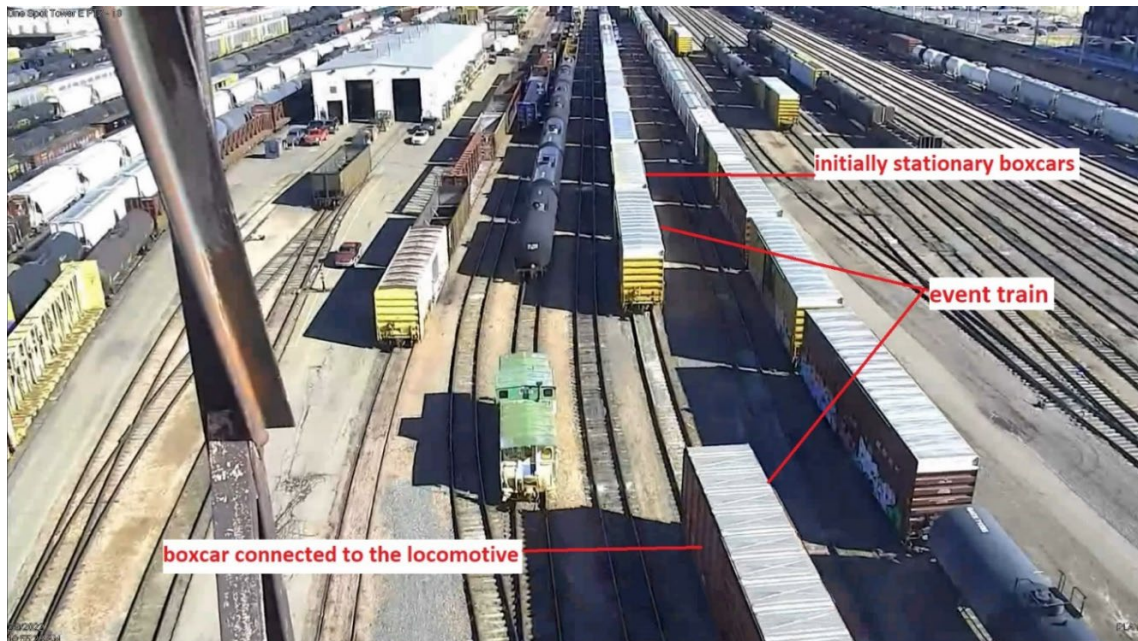


Figure 3. Field of view of the security camera recorded video file #2.

3.3.3. Detailed Time Sequence Summary of Both Videos

Time	Locomotive Forward-Facing Video (with audio)	Security Video
10:55:00 ~ 10:55:23	The event train moves slowly backward on the camera view.	View of a train track yard.
10:55:23	The remote-controller operator appears on the right side of the track as the train keeps moving backward.	
10:55:24		A boxcar of the event train comes into view.
10:55:24 ~ 10:55:42		The event train with a boxcar on lead moves on a track towards a series of stationary boxcars. (See figure 2)
10:55:43	The event train stops moving backward.	The lead boxcar of the event train connects with the series of boxcars and stops.
10:55:47	The bell sound of the event train is on.	
10:55:53	The event train starts moving forward with the remote-controller operator on the right side of the track.	The event train starts moving slowly in the opposite direction after having the series of boxcars connected on the end.
10:55:56	The bell sound of the event train is off.	
10:56:13	The event train slows down to a near stop, and the remote-controller operator walks towards the locomotive of the event train.	
10:56:14 ~ 10:56:21		The event train slows down. As the boxcars in the front come to a near stop, bunched motions among the boxcars are observed - the boxcars in the back push forwards into the boxcars in the front.
10:56:22	The remote-controller operator stops walking and manipulates the controller.	All boxcars on the camera view of the event train stop moving.

10:56:25	The bell sound of the event train is on, and the train starts moving forward again.	
10:56:33		The event train starts moving forward slowly again.
10:56:34	The bell sound of the event train is off.	
10:56:37	The remote-controller operator walks towards the locomotive of the moving event train.	
10:56:42	The remote-controller operator is out of sight as the train continues moving forwards.	
10:56:51		The boxcars in the front stop moving momentarily and move forwards again right after as if being pushed by the boxcars from the back. The event train continues moving forward slowly.
10:56:55	As the event train continues moving, the remote-controller operator comes into the camera view and steps up to the front of the event train from the right side.	
10:56:58	As the remote-controller operator moves sideways on the front of the event train, from the right side towards the center, the remote-controller operator falls forward abruptly; immediately thereafter, the remote-controller operator's feet were visible up in the air.	
10:57:03	Train brake sounds are audible.	
10:57:15	The event train comes to a full stop.	
10:57:16		The boxcars of the event train come to a stop.
11:00:00	The video ends.	The video ends.