National Transportation Safety Board
Office of Research and Engineering
Washington, DC 20594

RRD22MR007

ONBOARD IMAGE RECORDERS

Specialist's Factual Report

September 14, 2022

A. ACCIDENT

Location: San Bruno, California
Date: March 10, 2022
Time: 10:33 Pacific standard time (PST)
Train: Caltrain 506

B. ONBOARD IMAGE RECORDERS SPECIALIST

Specialist: Michael Portman
Aerospace Engineer – Recorder Specialist
National Transportation Safety Board (NTSB)

C. DETAILS OF THE INVESTIGATION

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

The NTSB Vehicle Recorder Division received the following video files via electronic file transfer:

Video File #1: JPBX 908 Locomotive Railhead.avi

Video File #2: Locomotive919 Railhead.avi

1.1 Video Files Description

The first video file, entitled "JPBX 908 Locomotive Railhead.avi" contains video from the forward-facing camera aboard the lead locomotive from the train preceding the accident train. The video was 31-minutes and 1-second in duration. The second file, entitled "Locomotive919 Railhead.avi" contains video from the forward-facing camera aboard the accident train's lead locomotive. The video was 1-hour and 1-second in duration.

Each video was recorded at 30 frames per second with a resolution of 320x240 pixels in total. No audio information was included in either video. Each video was timestamped on screen and was split into four video quadrants. However, only the top left quadrant contained video information; the other three quadrants were black throughout the duration of the recordings.

2.0 Timing and Correlation

Although each video contained timestamps on screen, the accuracy of these timestamps could not be determined. There was no independent source of verification for the preceding train's timestamps, therefore, timing of this video was left in the timestamped time. Timing of the accident train's video was aligned with the approximate local accident time as provided by the Investigator-in-Charge by adding 8 minutes and 57 seconds to the timestamps on the video. Therefore, the summary of the second video is presented in approximate PST.

3.0 Summary of Recording Contents

Sections 3.1.1 and 3.1.2 provide general summaries of the video file #1 (preceding train locomotive forward-facing video) and video file #2 (accident train locomotive forward-facing video) respectively.

3.1.1 Summary of Onboard Image Recorder File #1

The recording began at approximately 9:35:00 when the train departed Caltrain Depot station at 4th and King streets in downtown San Francisco, as seen in figure 1. The train proceeded south uneventfully and transitioned onto the parallel main track 1 at 09:51:15. The train then passed the working crew located on the parallel main track 2 at approximately 09:59:40, as seen in figures 2 and 3.

Figure 1. Beginning frame of the preceding train.

Figure 2. View of the work convoy on the parallel track.

Figure 3. View of the rear of the work convoy on the parallel track.

3.1.2 Summary of Onboard Image Recorder File #2

The recording began at approximately 10:14:57 with the train departing Caltrain Depot station at 4th and King streets in downtown San Francisco, as seen in figure 4. The train proceeded south uneventfully and transitioned onto the parallel main track 1 at 10:28:05, as seen in figure 5. At 10:31:23, the train transitioned back onto main track 2, as seen in figure 6.

At 10:32:44, the convoy became barely visible on the far left of the video frame, highlighted in red in figure 7. As seen in figure 8, at 10:32:51, the convoy became increasingly visible as the train continued to round the corner, approaching the point of impact. The moment before impact is shown in figure 9. The train impacted the convoy at 10:33:00. The train quickly stopped at 10:33:13, in the position shown in figure 10, and remained there for the rest of the recording. The video subsequently showed fire and various emergency response activities, and ended at 11:14:58.

Figure 4. Beginning frame of the accident train's video.

Figure 5. The view from the accident train approaching the crossover onto main track 1.

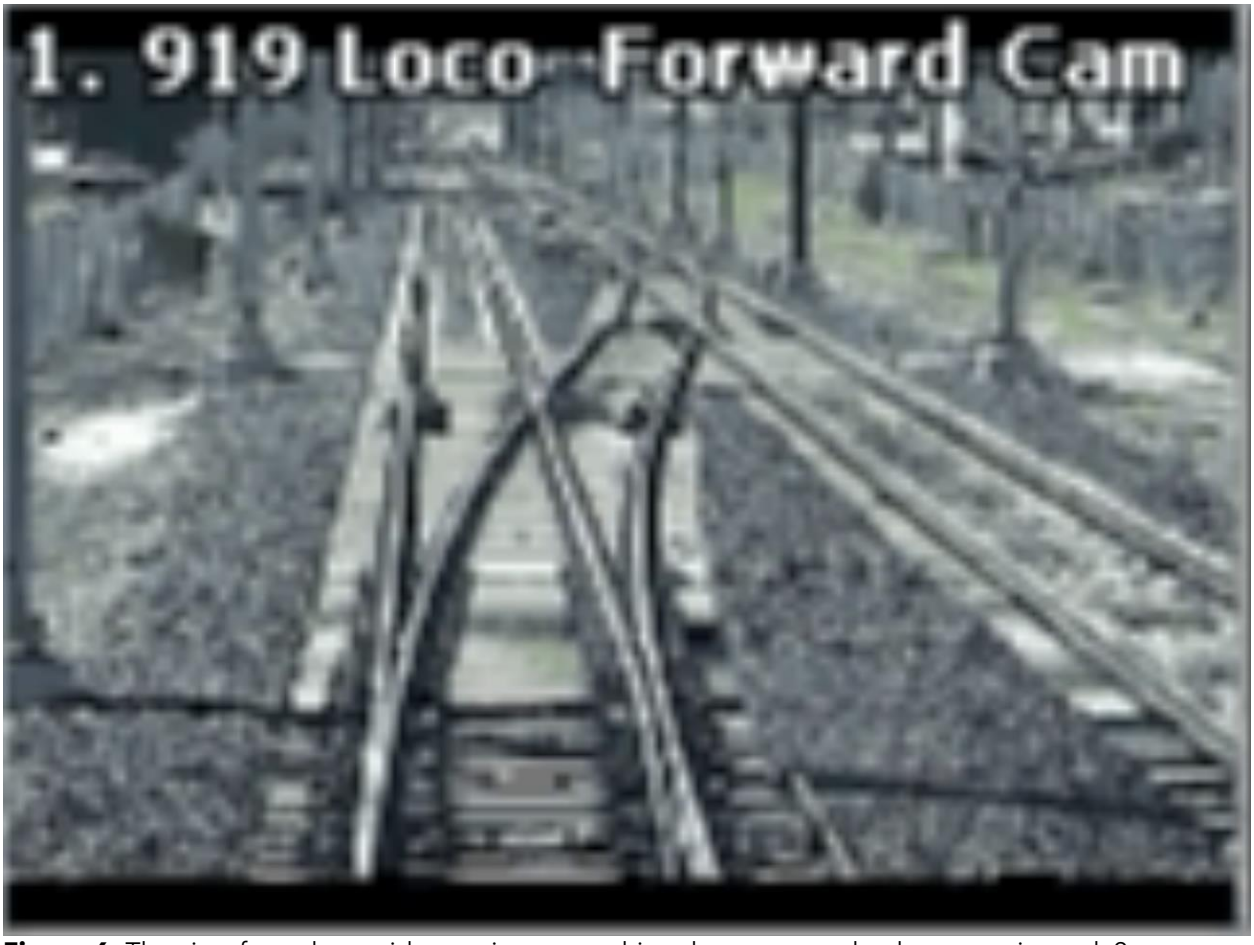

Figure 6. The view from the accident train approaching the crossover back onto main track 2.

Figure 7. View of the convoy as it first becomes visible, as highlighted in red.

Figure 8. View as the train approached the convoy.

Figure 9. View moments before impact with the convoy.

Figure 10. View of the final position of the train.

Submitted by:

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