

**NATIONAL TRANSPORTATION SAFETY BOARD**  
**Office of Research and Engineering**  
**Vehicle Recorder Division**  
**Washington, D.C. 20594**



**GROUP CHAIRMAN'S FACTUAL REPORT OF  
INVESTIGATION**

**RRD21LR005**

**By**

**W. Deven Chen**

**WARNING**

The reader of this report is cautioned that the transcription of an onboard image recording is not a precise science but is the best product possible from a Safety Board group investigative effort. The transcript or parts thereof, if taken out of context, could be misleading. The transcript should be viewed as an accident investigation tool to be used in conjunction with other evidence gathered during the investigation. Conclusions or interpretations should not be made using the transcript as the sole source of information.

**NATIONAL TRANSPORTATION SAFETY BOARD**  
Vehicle Recorder Division  
Washington, DC 20594

June 9, 2022

## **Onboard Image Recorder**

**Group Chairman's Factual Report**  
**By W. Deven Chen**

### **1. EVENT**

Location: Prichard, Alabama  
Date: November 17, 2020  
Vehicle: FRA regulated freight A-MEMOB1-16  
Operator: Alabama Export Railroad (ALE)  
NTSB Number: RRD21LR005

### **2. GROUP**

A group was convened on March 31, 2021 at the NTSB's Vehicle Recorder Laboratory in Washington, D.C.

Chairman: W. Deven Chen  
Recorder Specialist  
National Transportation Safety Board (NTSB)

Member: David Bucher  
Railroad Accident Investigator Division Chief  
NTSB

### **3. DETAILS OF INVESTIGATION**

On January 6, 2021, the National Transportation Safety Board (NTSB) Vehicle Recorder Division received the following onboard image recordings electronically:

Image Recording #1: **Inward-facing image recording**  
File Type: MP4

Image Recording #2: **Outward-facing image recording**  
File Type: MP4

#### **3.1. Image Recording Description**

The locomotive contained both inward-facing and outward-facing image recorders. They were both 60 minutes in length, and only the outward-facing image recording contained audio.

## 3.2. Timing and Correlation

The inward-facing and outward-facing image recordings were synchronized in time. Timing of the summary is expressed as Video Elapsed Time, which is the time from the beginning of the recording and is represented in the format MM:SS, where MM stands for the number of elapsed minutes and SS is the number of elapsed seconds.

## 3.3. Summary of Recording Contents

In agreement with the Investigator-In-Charge, a video group was convened, and the following summary was developed.

The first section of the summary, section 3.3.1., contains information obtained from the inward-facing image recorder. The second section of the summary, section 3.3.2, contains information obtained from the outward-facing image recorder.

### 3.3.1. Inward-Facing Image Recording

The recording began with the view of the control stand and engineer seat of the lead locomotive. Figure 1 is a screenshot of the camera view prior to the engineer's arrival to the cab area. Figure 2 shows the view with annotations on the control stand. The names of the image recording owner appeared on the top left corner of screenshots are redacted.



Figure 1: Camera view of the control stand and engineer seat of the lead locomotive.



**Figure 2: Camera view of the control stand and engineer seat of lead locomotive with annotations on the control stand.**

The summary of the inward-facing recording contents is below. The first event summarized began at 07:00 elapsed time.

- 07:00** The engineer was wearing a cap and a safety vest. The engineer entered the control area with a cellphone in hand. The engineer appeared to be manipulating the cellphone in a manner consistent with entering text.
- 07:14** The engineer put down the cellphone on the control stand and appeared to make a visual check of the control stand.
- 07:20** The engineer took off his safety vest, then removed a device consistent with a vaporization device out of his pocket. The engineer sat down in the engineer's seat.
- 07:40 – 12:18** The engineer put the vaporization device back to his pocket and picked up the cellphone he had placed previously from the control stand. The engineer was holding the cellphone in an orientation that suggested he was on a video call. At one moment the screen of the cellphone was visible and a woman's picture was present on the cellphone. During the time the engineer was manipulating the cellphone in a manner so that different portions of the

cab would have been visible to the recipient of the video call. This action appeared consistent with showing the individual on the call an overview of the locomotive's cab.

- 12:19 – 12:50** The engineer put the cellphone down, and the cellphone was out of the camera's view. The engineer took out the vaporization device from his pocket, opened the cab window and started vaping. The engineer then released the locomotive's automatic brake. During this time, the engineer was vaping and appeared to be monitoring on the radio.
- 12:51** The engineer made an adjustment to the independent brake.
- 13:01** The engineer took a control key out of his pocket and inserted the key into the control stand.
- 13:06** The engineer released the independent brake and the train started moving.
- 13:15** The engineer sounded the horn and activated the alerter lever.
- 13:16 – 14:01** The engineer was observing the vehicle traffic as the train moved forward. During this time, the engineer was vaping.
- 14:02** The engineer controlled the independent brake while he continued to observe the traffic.
- 14:16** The engineer left the engineer's seat and appeared to observe the vehicle traffic.
- 14:22** The engineer returned to his seat.
- 14:28** The engineer applied the locomotive's horn for crossing.
- 14:29 – 15:04** The engineer had his hand on the horn lever and was observing the vehicle traffic.
- 15:05** The engineer hit the alerter lever.
- 15:30** The engineer made an adjustment to the independent brake while vaping.
- 15:31 – 16:10** The engineer's eye and head motion were consistent with observing the locomotive's controls and the track ahead while vaping.
- 16:11** The engineer took off his cap and covered up the camera. Under the cap's brim, the area near the engineer's abdomen was still visible, while the cap covered most of the rest of the camera's view. The engineer was holding his cellphone and appeared to be manipulating the cellphone in a manner consistent with entering text. Figure 3 is a screenshot at this time.



**Figure 3: Screenshot at 16:11.**

- 16:45** The engineer put down the cellphone and used the vaporization device seen earlier.
- 16:52** The engineer removed his cap from the camera. He placed it on head briefly and put it back over camera the same way. He then immediately removed cellphone from an area outside of the camera's view. The engineer appeared to be manipulating the cellphone in a manner consistent with entering text.
- 17:52** The engineer put down the cellphone and used the vaporization device. He then picked up the cellphone again and appeared to be manipulating the cellphone in a manner consistent with entering text.
- 18:27** The engineer put down the cellphone and started vaping.
- 18:50 – 20:27** Between the times noted, the engineer picked up the cellphone again and was manipulating on the cellphone.
- 20:27** The engineer put down the cellphone and appeared to make an adjustment to the train's controls.
- 20:33** The engineer picked up the cellphone and appeared to be manipulating the cellphone in a manner consistent with entering text.

- 20:35** The engineer put down the cellphone and appeared to be making adjustments to the train's controls.
- 21:15 – 21:52** The engineer picked up the cellphone and was manipulating on the cellphone. At 21:32, the engineer briefly hit the alerter level.
- 21:53** The engineer put down the cellphone and made adjustments to the train controls.
- 22:03** The engineer used the vaporization device.
- 22:25** The engineer hit the alerter lever.
- 22:27** The engineer picked up the cellphone and appeared to be manipulating the cellphone in a manner consistent with entering text.
- 23:08** The engineer put down the cellphone, used the vaporization device and appeared to make an adjustment to the train's control.
- 23:46** The engineer picked up the cellphone and appeared to be manipulating the cellphone in a manner consistent with entering text.
- 24:16** The engineer put the cellphone down.
- 24:52** The engineer appeared to make an adjustment to the train's control.
- 25:33 – 26:39** The engineer picked up the cellphone and appeared to be manipulating the cellphone in a manner consistent with entering text. During this time, the engineer was actively manipulating on the cellphone.
- 26:39** The impact occurred. Upon impact, the engineer was jostled, and the cellphone was dropped. The engineer applied the automatic brake. The engineer took his cap off the camera and put it on his head. He stood briefly, put the vaporization device into his pocket, then pick up the cellphone from the floor.
- 26:51** The engineer, while holding the cellphone on his left hand, fully applied the independent brake, then applied the automatic brake which was fully applied earlier by him upon impact. The engineer then stood and put the cellphone into his pocket. Figure 4 is a screenshot at this time. The engineer is redacted on the image.





**Figure 4: Screenshot at 26:51. The engineer re-applied the automatic brake while holding the cellphone on the left hand.**

- 27:04** The train fully stopped. The engineer exited the locomotive's cab.
- 32:34** The engineer returned to the locomotive's cab and picked up the radio. The engineer appeared to make a radio call.
- 60:00** The inward-facing recording ended.

### **3.3.2. Outward-Facing Image Recording**

The recording started by showing a view of the train stationary at Belt Junction.

- 04:50** The engineer was dropped off at Belt Junction by a car. The engineer was wearing a safety vest and a cap.
- 13:18** The train started moving and the horn was sounded.
- 14:25** The horn was sounded.
- 14:30** The bell was activated.
- 14:48** The train was passing a grade crossing at a divided main road.
- 15:15** The train passed the grade crossing, and the bell was turned off.
- 20:08** The train passed a whistle sign.



**20:50** The horn was sounded, and the bell was activated as the train was approaching a grade crossing.

**21:15** The train passed a grade crossing.

**21:42** The bell was turned off.

**22:05** The horn was sounded, and the bell was activated as the train was approaching a grade crossing.

**22:20** The train passed a grade crossing.

**22:25** The bell was turned off.

**22:33** The train passed a whistle sign.

**23:00** The train operated through a track switch.

**23:24** The horn was sounded, and the bell was activated as the train was approaching a grade crossing.

**23:36** The train passed a grade crossing.

**23:44** The bell was turned off.

**25:16** The horn was sounded, and the bell was activated as the train was approaching a grade crossing.

**25:30** The train passed a grade crossing.

**25:35** The bell was turned off.

**26:12** The train entered the curve in vicinity of the accident site.

**26:33** Rail track work equipment became visible to the outward facing camera. Figure 5 is a screenshot at this time.



**Figure 5: Screenshot at 26:33.**

**26:41**

Just prior to the collision, as the train approaching, there was no advance warning sign visible. Figure 6 is a screenshot at this time. A person was visible standing next a truck on the right side of the rail track. The person is redacted on the image.



**Figure 6: Screenshot at 26:41.**

- 26:43** The impact occurred. The striking locomotive began to push the work truck on the track forward toward a void space between the struck work truck on the rail and the manned backhoe in the gauge. Immediately following the impact, a figure consistent with a worker in a fluorescence yellow vest was seen rapidly moving from the void space to the left of the track.
- 26:57** The worker in the backhoe cab was visible moving within the backhoe cab for the first time after the impact.
- 27:06** The train and track work equipment came to rest.
- 38:50** First responders arrived.
- 60:00** The recording ended.