

National Transportation Safety Board

Railroad Accident Brief

CSX Transportation Employee Fatality

Estill, South Carolina

November 30, 2018



The Accident

Accident Synopsis

On November 30, 2018, at 10:20 a.m. local time, CSX Transportation (CSX) northbound freight train F-794-30, traveling about 50 mph, struck and killed a CSX track welder. The accident occurred at the North End Estill Siding switch, milepost (MP) S-449.7, on the CSX Columbia subdivision in Estill, South Carolina. The welder was occupying the track as the train approached. An additional roadway worker, a trackman, was at the work location and had been assigned to serve as a watchman, which involved watching for approaching trains and providing a warning to the welder.¹ The crewmembers of train F-794-30 told National Transportation Safety Board (NTSB) investigators that they did not realize that a person was on the track until moments before impact. The crew of train F-794-30 sounded the train horn and bell; however, there was no response from the roadway work group.²

Accident Overview

The roadway work group, based in Yemassee, South Carolina, went on duty at 7:00 a.m. on the morning of the accident. During that morning's job briefing, the CSX roadmaster gave the work crewmembers their job assignments and changed the regular assignment of the trackman from working with the section gang to working as a watchman under train approach warning (TAW) rules.³ The welder had been tasked to repair the surface of a track frog in the switch at the North End Estill Siding switch and serve as the roadway worker-in-charge.⁴ (See figure 1.)

¹ A *watchman/lookout* is a railroad employee designated to provide warning to roadway workers of approaching trains or on-track equipment. For the remainder of this report, the watchman/lookout will be referred to as the watchman.

² Visit [ntsb.gov](https://www.ntsb.gov) to find additional information in the [public docket](#) for this NTSB accident investigation (case number RRD19FR002). Use the [CAROL Query](#) to search safety recommendations and investigations.

³ (a) A *roadmaster* is the engineering department supervisor, a *section gang* is a local track maintenance work group, and a *trackman* is a laborer within that work group. (b) *Train approach warning* is a method of establishing on-track safety to warn roadway workers of the approach of trains in ample time for them to move to or to remain in a place of safety in accordance with the requirements of Title 49 *Code of Federal Regulations (CFR)* Part 214 and CSX rules.

⁴ A *frog* is a track structure used at the intersection of two running rails to provide support for wheels and passageways for their flanges, thus permitting wheels on either rail to cross the other.

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Figure. Photograph of track frog at the accident location.

Upon arrival at the work location, the welder informed the watchman that TAW would be the method of on-track safety protection; the welder started grinding on the frog of the switch. In a postaccident interview with NTSB investigators, the watchman said that the welder had followed the safety requirements of moving to a predetermined place of safety prior to the accident when a southbound train had traversed the track through the work location at a speed of 48 mph. However, when discussing what personal protective equipment was used, the watchman told NTSB investigators that he was wearing a yellow shirt with reflective stripes. He said that the welder was wearing a “yellow jacket” (welding jacket) while he was on the track welding, but that he removed his jacket once he had finished welding and was just wearing a black T-shirt.” In addition, the watchman said that the welder had at least one telephone ear bud in his ear and explained that neither he nor the welder were wearing hearing protection.⁵ NTSB investigators were unable to definitively determine if the welder was listening to music or some other source of distraction at the time of the accident.

The watchman said that once the welder was through with his work, he asked the watchman to help him clean up the materials. “He had told me that we were done, to roll up the welding leads, and I turned around and was facing the truck rolling up the leads on the side of the truck, and that’s where I was standing. And I—something caught the side of my eye, and when I turned around, he was still in the track and it hit him.” The watchman said that he did not hear

⁵ *Ear buds* are small earphones that are inserted into the ear.

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any warning from the approaching train, including the train's bell or horn. NTSB investigators asked the watchman if he thought that he was done performing his duties as a watchman when the welder instructed him to roll up the leads. The watchman replied, "I mean, he was still in the track. I just turned and (did) what I was told to do."

Train F-794-30

The engineer and conductor went on duty at 7:00 a.m. November 30, 2018, in Savannah, Georgia. They had a job briefing and prepared the train for departure. They departed Savannah traveling northbound and met one train at the Garnett Siding. The engineer recalled there were about eight or nine highway-railroad grade crossings just prior to the accident location. According to Title 49 *Code of Federal Regulations (CFR)* Part 222 and CSX Operating Rule 203.2, the engineer is required to sound the locomotive's horn as it approaches and traverses highway-railroad grade crossings.⁶ The engineer said that he was operating the train at speeds between 45 and 48 mph, and the train's last signal indication was a clear signal. The engineer said that when the train arrived at the south end of the town of Estill there were multiple public crossings leading up to the accident location, he sounded the horn and bell continuously as they traversed over each public crossing.

The engineer said when the train traversed the second or third crossing, he and the conductor noticed something on the track. However, they were not able to initially determine what was on the track; in fact, they told NTSB investigators that, at first, they thought it might be some kind of debris such as a trash bag that was stuck on the track. As the train got closer, the engineer and conductor noticed that there was a CSX truck next to the right of the track and a person standing next to the truck wearing a high-visibility vest. The engineer explained the person with the high-visibility vest was facing the CSX truck and had his back turned against the approaching train. The engineer then looked forward toward the track and realized that a person wearing dark clothing was on the track. He immediately applied the brakes. According to the engineer the struck welder was squatted in a bent-over position with his head down and never looked up. The engineer further explained that neither the watchman nor the welder reacted or acknowledged the sounding of the locomotive train horn and bell.

The train crew operated the train at the maximum authorized speed (MAS) of 50 mph and told investigators that they did not have any prior knowledge of the roadway workers at that location. The last signal indication the train crew passed prior to the accident was a clear (green) signal indication giving them the authority to move at MAS.

⁶ CSX Operating Rule 203.2, "Approaching public highway grade crossings" states the following: "Sound the horn for at least 15 seconds, but no more than 20 seconds, before the lead locomotive enters the crossing. Trains or locomotives traveling at speeds greater than 45 mph shall begin sounding the horn at or about, but not more than, one-quarter mile in advance of the nearest public crossing, even if the advance warning provided by the horn will be less than 15 seconds in duration. This signal is to be prolonged or repeated until the train or locomotive occupies the crossing or, where multiple crossings are involved, until the last crossing is occupied."

Personnel Information

Welder

The welder was hired by CSX on December 8, 2008. His most recent training on roadway worker protection and the operating rules of the railroad were on January 11, 2018. According to the welder's operational testing records, railroad supervisors observed him while he performed his duties 89 times in the previous 12 months. In the records of those observations, there were no entries for noncompliance with CSX rules and procedures.

Watchman

The watchman was hired by CSX on January 19, 2015. The watchman's most recent training on roadway worker protection and the operating rules of the railroad were on January 10, 2018. According to his operational testing records, railroad supervisors observed him while he performed his duties 100 times in the previous 12 months. In the records of those observations, there were no entries for noncompliance with CSX rules and procedures.

Postaccident Toxicological Testing

The train's crewmembers and the watchman submitted blood and urine samples for postaccident toxicological testing as required by 49 *CFR* Part 219. Postmortem samples from the welder were also obtained. All employees involved in this accident tested negative for alcohol and other tested-for drugs.

Postaccident Action

On December 17, 2018, CSX issued new operating Rule 702, "Requirements when welding frogs and switch points on controlled tracks." This new rule requires the employee in charge to:

1. Contact the train dispatcher and hold a job briefing that must include:
 - a. The milepost of work
 - b. The amount of time needed to complete the work
 - c. The lineup of trains that may approach or traverse the work location
2. Obtain an EC-1E Line 1 Authority, if possible⁷
3. Place a 10 mph temporary speed restriction at the work location from before the work begins until the work is completed
4. If necessary to use the watchman/lookout method of protection, the watchman must:
 - a. Remain in position so they can physically touch the employee being protected
 - b. Use the maximum authorized timetable speed for the purpose of sight distance

The purpose of this rule change was to require that the roadway worker-in-charge contact the train dispatcher and attempt to establish working limits. If working limits cannot be

⁷ The *EC-1-E Line 1 Authority* is a method of authorizing movements or protecting employees or on-track equipment by establishing working limits on controlled track.

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established, the speed of trains traveling in the work location is to be reduced to 10 mph. This is intended to give the watchman more time to detect approaching trains, provide warning, and for all members of the work group to move into the predetermined place of safety. As an added measure of safety, CSX now requires that the watchman continue to base the required sight preview distance on the MAS for trains, not the temporary 10 mph speed restriction.⁸

Bowie, Maryland, Accident Report

The use of TAW to protect roadway workers was also examined in another recent NTSB investigation. On April 24, 2018, about 8:58 a.m. local time, northbound Amtrak (National Railroad Passenger Company) train 86 struck and killed an Amtrak rail gang watchman near the Bowie State Train Station in Bowie, Maryland. Three watchmen were protecting the roadway workers and watching for trains moving on adjacent tracks to warn workers of approaching trains. One watchman was positioned near the boarding platform, another was positioned in a nearby curve, and the third watchman was positioned toward the end of the curve, near a work gang of welders. The third watchman was the employee struck by the train. No passengers or crewmembers on Amtrak train 86 were injured.

One of the safety issues examined in the investigation of the Bowie, Maryland, accident was the use of TAW to protect roadway workers. On September 27, 2021, the NTSB adopted the report on the Bowie, Maryland, accident investigation. In that report, the NTSB made the following safety recommendation to the Federal Railroad Administration:

Modify Title 49 *Code of Federal Regulations* Part 214 to prohibit the use of train approach warning in controlled track territory during planned maintenance and inspection activities. (R-21-3)

In addition, the NTSB made the following safety recommendation to Amtrak and the Class I Railroads:

Eliminate the use of train approach warning protection in controlled track territory during planned maintenance and inspection activities. (R-21-5)

Probable Cause

The National Transportation Safety Board determines that the probable cause of the roadway worker fatality in Estill, South Carolina, was the failed implementation of train approach warning. Contributing to the accident were: (1) the decision by CSX Transportation management to use train approach warning instead of establishing working limits, (2) the decision by the watchman to cease his train detection and warning efforts to engage in other work while the welder was still working on an active track, and (3) the decision of the welder to remove his high-visibility safety apparel before leaving the work site.

For more details about this accident, visit the NTSB Docket and search for NTSB accident ID RRD19FR002.

⁸ With *sight preview distance*, the employee estimates sight distance based on the MAS.

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Report Date: September 28, 2021

The NTSB has authority to investigate and establish the facts, circumstances, and cause or probable cause of a pipeline accident in which there is a fatality or substantial property damage, or significant injury to the environment. (49 U.S. Code, Section 1131 - *General authority*)

The NTSB does not assign fault or blame for an accident or incident: rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties...and are not conducted for the purpose of determining the rights or liabilities of any person.” Title 49 *Code of Federal Regulations*, Section 831.4. Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report. 49 U.S. Code, Section 1154(b).
