



AVIATION



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PIPELINE

Issued: September 17, 2024

Railroad Investigation Report: RIR-24-08

CSX Transportation Employee Fatality

Cumberland, Maryland

August 6, 2023

1 Factual Information

1.1 Accident Description

On August 6, 2023, about 11:42 p.m. local time, a CSX Transportation (CSX) conductor trainee was fatally injured during switching operations at the CSX railyard in Cumberland, Maryland.¹ The conductor trainee was riding on the side of a railcar on CSX train I13706 during an eastbound shoving movement when he struck the handrail of a locomotive parked on an adjacent track.² (See figure 1.) He was taken to a nearby hospital, where he later died. Visibility conditions at the time of the accident were dark and clear (the yard was illuminated by artificial light), and the temperature was 73°F.

¹ (a) Visit [ntsb.gov](https://www.ntsb.gov) to find additional information in the [public docket](#) for this NTSB accident investigation (case number RRD23FR016). Use the [CAROL Query](#) to search safety recommendations and investigations. (b) All times in this report are local times.

² *Shoving* is the process of using a locomotive to push railcars or a train from the rear.

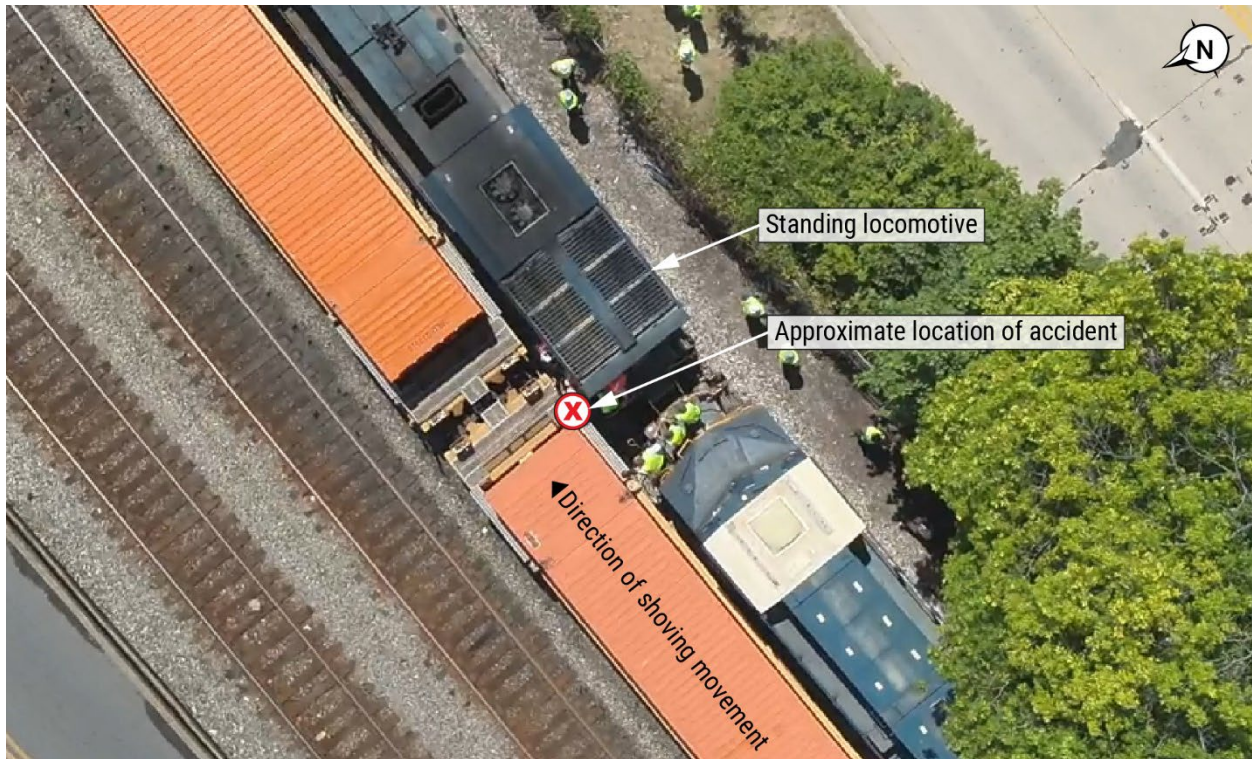


Figure 1. Aerial view of the accident scene. (Source: CSX.)

Train I13706 (the accident train) arrived at Cumberland Yard at 11:18 p.m. on main track 1 from Baltimore, Maryland, where its crew had reported for duty earlier that day. The train consisted of two head-end locomotives and three intermodal railcars.³ The crew comprised a conductor, a conductor trainee, and an engineer.

In Cumberland Yard, the crew received instructions to pick up railcars from a yard track, an operation that would involve a shoving movement on the freight track. (See figure 2.) The parked locomotive involved in the accident was one of three positioned on the city track, which was roughly parallel to the main tracks and separated from them by the freight track. None of these locomotives were relevant to the crew's assignment.

³ An *intermodal railcar* is designed to carry shipping containers used in intermodal freight transportation. Intermodal railcars are typically made up of several smaller units semi-permanently coupled together; each unit is designed to carry one or more shipper containers and has its own ladders, trucks, and other features common on freight cars.

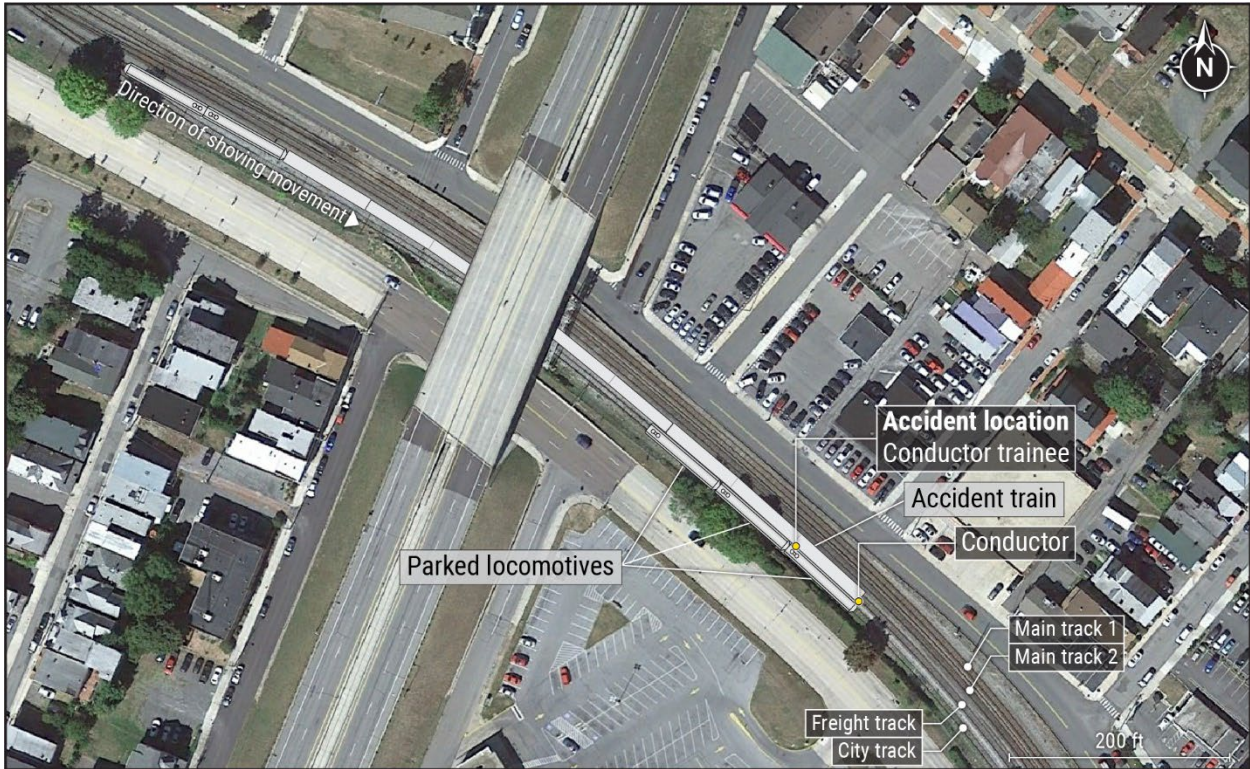


Figure 2. Expanded overhead view of the accident scene. (Source: Google Earth.)

The conductor and conductor trainee completed a job briefing as they prepared for a shoving movement from main track 1 into the freight track. When interviewed by the National Transportation Safety Board (NTSB), the conductor said that he discussed the movement with the conductor trainee and assessed that he was hesitant to ride a railcar during the shove. The conductor trainee still chose to ride the railcar rather than remain in the locomotive cab.

Before the shoving movement, the conductor mounted the ladder on the north side of the railcar near the leading end (the northeast corner). The conductor trainee mounted the next available ladder on the north side, nearer the center of the railcar. The conductor told the NTSB that he rode on the north side of the railcar to position himself away from the main tracks and rode in the typical position: both hands on the ladder with his foot or feet on the bottom rung.⁴ He said that the conductor trainee may have been riding on a higher rung, but he was uncertain about the conductor trainee's exact position.

According to locomotive event recorder data from the accident train, the shoving movement into the freight track began at 11:39 p.m. The conductor directed this

⁴ CSX rules require riding away from main and active tracks. See section 1.8.

movement with radio instructions to the engineer. At 11:41 p.m., the conductor radioed the engineer to come back another 20 railcar lengths; this was the last radio instruction before the accident train began to pass the parked locomotives. When interviewed by the NTSB, the conductor said that he was focused on the movement itself and the conductor trainee and was not sure how close he came to the locomotives.

The NTSB reviewed external audio and image recorder data from all three parked locomotives (western, middle, and eastern). At 11:42:16 p.m., as the lead railcar of the accident train was passing the eastern locomotive, the middle locomotive's external audio recorder captured the conductor trainee in distress. Image data showed that the eastern locomotive rocked slightly. Four seconds later, the conductor radioed the engineer to stop. The engineer applied the brakes and brought the train to a stop from a speed of 9.5 mph. The NTSB's review of event recorder data did not identify any erratic or unusual control inputs by the engineer.

After the train stopped, the conductor radioed for help, and the yardmaster called 911. The conductor trainee died after being transported to a local hospital.

1.2 Personnel

Following a CSX employee fatality during switching operations in Baltimore, Maryland, in 2023, all three members of the accident crew participated in a July 26, 2023, company-wide briefing on close clearances and proper riding technique.⁵

1.2.1 Conductor

CSX hired the conductor in August 2022. He was certified as a conductor in January 2023. When interviewed by the NTSB, the conductor said that he had participated in shoving movements in the area of the accident but never with equipment staged on adjacent tracks. He was not aware of any previous problems with close clearances near the accident location. He did not recall undergoing training specific to

⁵ The CSX Employee Manual (effective February 1, 2023) defines a close clearance as "[a] permanent or temporary object or structure that prevents the safe passage of an employee riding the side of the equipment." This accident involved a temporary close clearance—a close clearance created by the position of moveable objects or equipment.

identifying close clearances, though when prompted, he mentioned the “arm length” rule, a method of determining whether equipment is fouling a track near a switch.⁶

When the NTSB asked him about his experience training new employees, the conductor estimated that he had worked with 5-10 trainees. He noted that he had not received instruction in how to train other employees.

1.2.2 Conductor Trainee

CSX hired the conductor trainee in June 2023. He completed his terminal orientation for Cumberland Yard on July 10, 2023, and made his first trip on July 11, 2023.

1.2.3 Engineer

Employee records indicated the engineer was certified as required by Title 49 *Code of Federal Regulations* Part 240 and qualified to operate on the Cumberland Terminal Subdivision.

1.3 Medical and Toxicology

1.3.1 Conductor and Engineer

The conductor and engineer both underwent Federal Railroad Administration (FRA) postaccident toxicological testing. The testing did not identify any tested-for substances.⁷

1.3.2 Conductor Trainee

The conductor trainee underwent a pre-employment medical exam on May 5, 2023. At that time, he reported having high blood pressure and using the prescription

⁶ Under Title 49 *Code of Federal Regulations* 218.93, *fouling a track* means “rolling equipment or on-track maintenance-of-way equipment is located such that the end of the equipment is between the clearance point and the switch points leading to the track on which the equipment is standing.”

⁷ The FRA toxicology report listed tested-for substances in urine as amphetamine, barbiturates, benzodiazepines, cannabinoids, cocaine, MDMA/MDA, methadone, opiates/opioids, phencyclidine, tramadol, sedating antihistamines (brompheniramine, chlorpheniramine, diphenhydramine, doxylamine, and pheniramine), and ethanol.

blood pressure medication lisinopril. Lisinopril is not generally considered impairing. He was released to work on July 7, 2023.

The Office of the Chief Medical Examiner for the state of Maryland performed toxicological testing of postmortem specimens from the conductor trainee. Ethanol was detected at 0.05 g/dL in heart blood and was not detected in urine or vitreous fluid.⁸ No other tested-for substances were detected. The conductor trainee also underwent FRA postaccident toxicological testing. This testing revealed ethanol at 0.031 g/dL in blood. Ethanol was not detected in urine.

1.4 Track

1.4.1 Measurements

FRA postaccident inspections of main track 1, the freight track, and the city track did not identify defects. The FRA also measured the distance between track centerlines for two pairs of tracks:

- City track and freight track (11 feet, 3.75 inches)
- Freight track and main track 2 (12 feet, 6.25 inches)

During postaccident examinations, the NTSB measured 7 inches of clearance between the ladder the conductor trainee was riding and the closest point on the eastern locomotive parked on the city track. (See figure 3.) The location was not included in CSX's list of close clearances or marked with signage.

⁸ Ethanol can be produced in the body postmortem by microbial activity. The detection of small amounts does not always indicate ingestion.

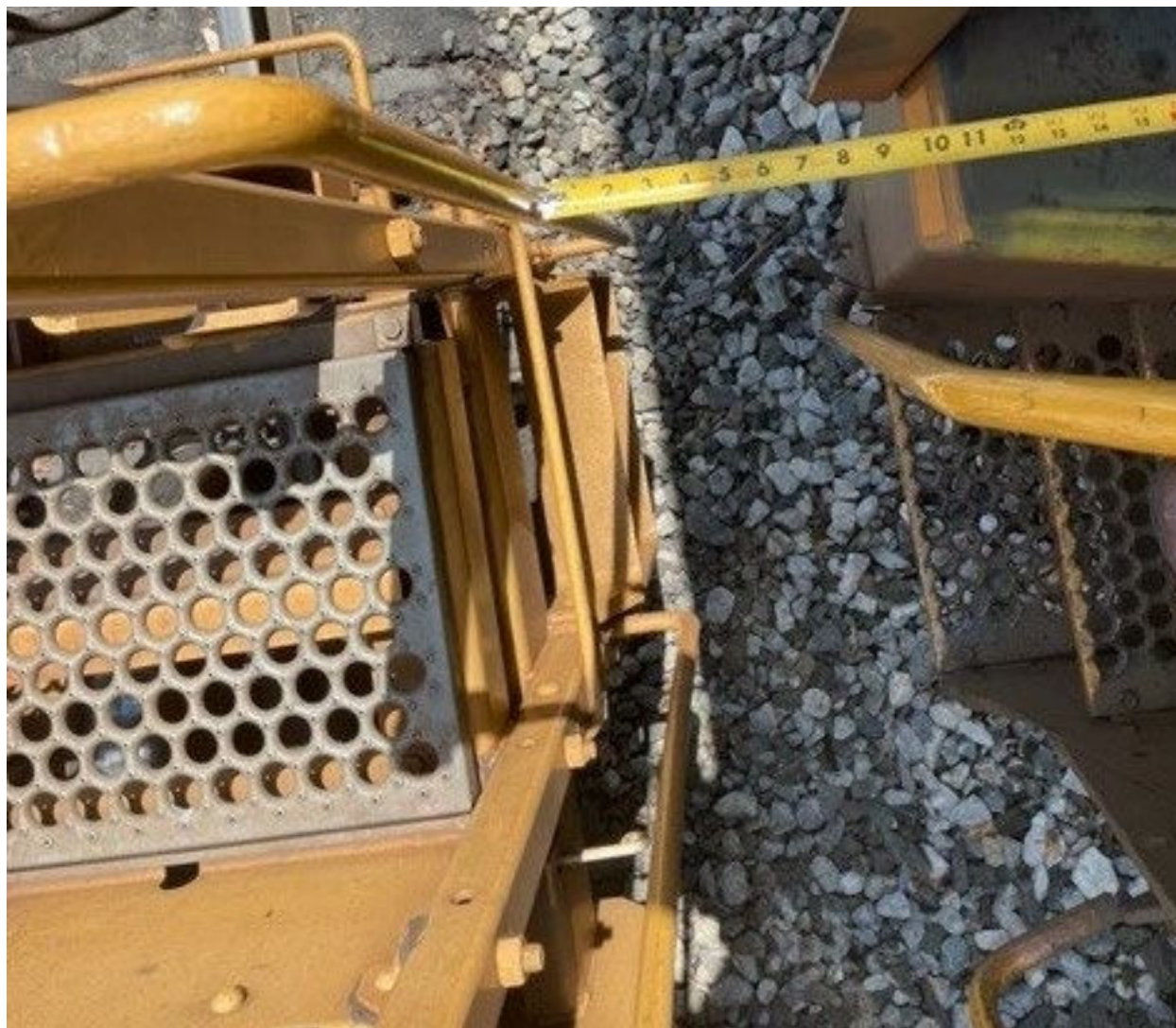


Figure 3. Clearance between railcar (left) and parked locomotive (right).

1.4.2 Centerline Standards and Regulations

CSX requires that non-main tracks constructed, reconstructed, or altered after July 19, 1996, have centerlines at least 14 feet apart. CSX has no centerline requirements for pre-existing track that has not been reconstructed or altered.

Current American Railway Engineering and Maintenance-of-Way Association (AREMA) guidance in the Manual for Railway Engineering states that track centerlines should be at least 14 feet apart.⁹

⁹ AREMA, 2019 Manual for Railway Engineering. Lanham, Maryland: AREMA.

The FRA does not have requirements for distances between track centerlines; however, it does have rules against positioning equipment in the foul near switches—that is, positioning equipment so close to a switch that an employee cannot safely ride through the resulting gap—when switches are lined toward adjacent track.¹⁰

1.5 Rules for Riding Equipment

CSX's general rules are contained in the CSX Employee Manual (effective February 1, 2023), which includes Operating Rules and Safe Way Rules. Under CSX Safe Way Rule 2102.1, employees riding equipment must:

- Ride the side of railcars or the trailing end of a cut of railcars equipped with an end platform.
- Ride the steps or front or rear locomotive platforms when positioned on the outside of a moving locomotive.
- Dismount before passing a close clearance sign or reaching a close clearance.
- Ride on the side of equipment away from live tracks, main tracks, sidings, close clearances, or other hazards.

1.6 Postaccident Actions

Following the accident, CSX:

- Removed the city track from service immediately after the accident; as of this report, it remains out of service and is scheduled for removal.
- Issued safety alert with a safety briefing on temporary close clearances on August 10, 2023.
- Revised rules for field training such that when an employee with less than 1 year of service is assigned a trainee, a supervisor must be contacted prior to performing any work.
- Used geographic information system data to identify track centerlines 12 feet 6 inches apart or closer, flagged these tracks, and put in the existing close clearance index.¹¹

¹⁰ See 49 CFR 218.101.

¹¹ The *close clearance index* is a reference document containing the milepost locations of close clearances.

- Issued a system bulletin on October 1, 2023, about the close clearance index; employees are required to have this document available while on-duty.
- Lengthened both classroom training (4 weeks to 5 weeks) and field training (variable by location) for conductors.
- Hired four more managers to oversee mentors during conductors' field training.

The FRA, Switching Operations Analysis Working Group (SOFA), and the International Association of Sheet Metal, Air, Rail and Transportation Workers (SMART) all issued alerts:

- An FRA Safety Bulletin 2023-05 (August 16, 2023) advising railroads to review the adequacy of their training programs; railroads to identify yard and main track close clearances and include this information in operating rules, special instructions, and timetables; and employees to ride equipment only when necessary, only after a job briefing, and only after determining that riding is safe.¹²
- A SOFA Alert (August 11, 2023) regarding the importance of job briefings and vigilance when mentoring new employees.¹³
- A SMART Safety Advisory (August 23, 2023) describing actions employees can take to protect trainees and recognize dangerous situations involving shoving movements and close clearances.¹⁴

2 Analysis

In this accident, a conductor trainee was fatally injured when he rode a shoving movement through a close clearance—a 7-inch gap—between his train and a series of parked locomotives. The conductor, riding a different ladder on the same railcar through the same gap, was not injured.

¹² The full text of the FRA Safety Bulletin is available here:

https://railroads.dot.gov/sites/fra.dot.gov/files/2023-08/Safety%20Bulletin%202023-05_.pdf

¹³ The full text of the SOFA Alert is available here: <https://railroads.dot.gov/sites/fra.dot.gov/files/2023-08/SOFA%20Safety%20Alert%20August%202023.pdf>

¹⁴ The full text of the SMART Safety Advisory is available here: https://www.smart-union.org/wp-content/uploads/2023/08/2023.08.23_SMART-TD_Safety_Alert-Training-Trainees-Close-Clearance.pdf

Ethanol was detected in two blood specimens from the conductor trainee but was not detected in urine or vitreous fluid. These results are most consistent with postmortem ethanol production. It is unlikely that ethanol contributed to the accident.

CSX operating rules prohibit employees from riding equipment through close clearances. However, the accident location was not marked or otherwise identified as a close clearance location. The conductor rode the side of a railcar past the parked locomotives and gave no instructions to the engineer to slow or stop until after the trainee was struck. This indicates that the conductor did not see that the parked locomotives had created a close clearance even as he rode through the gap. Similarly, the conductor trainee made no radio communications during the shove, indicating that he was either unaware of the danger until he was struck or did not know how to react to the approaching close clearance.

The parked locomotives created a close clearance location because the city track where they were positioned was unusually close to the freight track being used by the accident train. The distance between the track centerlines was slightly more than 11 feet—or 3 feet less than both the current AREMA standard and the CSX standard for new or reconstructed track. Based on NTSB measurements on the scene, an additional 3 feet of clearance would have prevented the accident.

There is no evidence that the conductor realized that parked equipment on roughly parallel adjacent track could create a close clearance situation. In his interviews, the conductor stressed paying attention to his trainee and to the shoving movement itself, and close clearances did not come up during the job briefing immediately before the accident. He was concerned that his trainee might not be comfortable with riding on the lead railcar, but he did not recall ever noticing that the locomotives were unusually close to the freight track. Though he could recall a method for identifying a close clearance near a switch point, he did not recall any guidance or rule for identifying a close clearance between parallel tracks far from a switch, and the NTSB's investigation has not identified any such guidance or rule at CSX other than general familiarization with a yard. The danger posed by unusually close-set parallel tracks was not effectively accounted for in CSX training, operating rules, or yard signage.

Because the conductor did not see that the parked locomotives had created a temporary close clearance, and CSX did not provide signage or other tools to help him identify the hazard posed by track centerlines that do not meet modern standards, he and his trainee rode through the close clearance, resulting in the trainee's death.

Since the accident, CSX has identified close clearances between track centerlines and added them to its close clearance list, closed the city track in Cumberland Yard, and made changes to its training program intended to improve the safety of field training. The FRA, SOFA, and SMART have issued alerts about hazards related to this accident.

3 Probable Cause

The NTSB determines that the probable cause of the CSX Transportation employee fatality was the accident train's movement through an unidentified and unmitigated close clearance location that resulted in the employee being caught between the side of the railcar he was riding and equipment parked on an adjacent track.

The NTSB is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in the other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

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 (Title 49 *United States Code* section 1154(b)).

For more detailed background information on this report, visit the [NTSB Case Analysis and Reporting Online \(CAROL\) website](#) and search for NTSB accident ID RRD23FR016. Recent publications are available in their entirety on the [NTSB website](#). Other information about available publications also may be obtained from the website or by contacting –

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