



Federal Railroad Administration, Office of Railroad Safety

Accident Investigation Summary Report FE-2023-04

Norfolk Southern Railway Company (NS) Fatality
Cleveland, Ohio
March 6, 2023

1. EXECUTIVE SUMMARY

On March 7, 2023, at 1:08 a.m., EST, Norfolk Southern Railway Company (NS) train C75B106 was in the process of shoving 12 railcars 6,000 feet on the NS Cleveland Branch Line in Cleveland, Ohio, when it collided with a dump truck that entered a private road crossing at a steel mill owned by Cleveland-Cliffs Inc. (Cleveland-Cliffs), resulting in the fatal injury of the conductor.

On the same day, the Federal Railroad Administration (FRA) began an investigation of the accident. The investigation determined that the primary cause of the accident and fatality was the conductor's failure to comply with NS Operating Rule 120, which required him to stop his train and flag the crossing from a point on the ground until the leading end had passed over the crossing. FRA further determined that a contributing cause was the limited sight distance down the track in the direction of the approaching train, meaning that the dump truck driver did not see the approaching train before proceeding past the stop sign. FRA also determined that drug or alcohol use, fatigue, and qualifications of the crew were not factors in the accident.

2. ACCIDENT DESCRIPTION

On Monday, March 6, 2023, the NS crew assigned to C75B106 (Train 1) reported for duty at 6:30 p.m., EST, at NS' Campbell Road Yard, located in Cleveland, Ohio. The crew consisted of a locomotive engineer and conductor. Upon going on-duty, the engineer and conductor performed a job briefing on the work to be performed. This was the normal assignment for this crew and the regular planned work for the assignment. At approximately 12:00 a.m., EST, the crew departed Campbell Road Yard and performed switching duties at two locations: St. Mary's Cement and Chemtrade Logistics Inc. Upon completing their work, the crew performed an air test and shoved their train back towards Campbell Road Yard.

At approximately 1:08 a.m., EST, on March 7, 2023, the crew of Train 1 was in the process of shoving the train, consisting of 12 empty railcars, down the NS Cleveland Branch Line in a southward direction. The conductor was riding the leading end of the shove movement while giving the engineer car counts. While the train was shoving south, the dump truck stopped at a private grade crossing and then proceeded to cross the railroad track. The conductor was unable

to have the engineer stop the train movement prior to striking the dump truck. This collision resulted in the conductor being fatally injured.

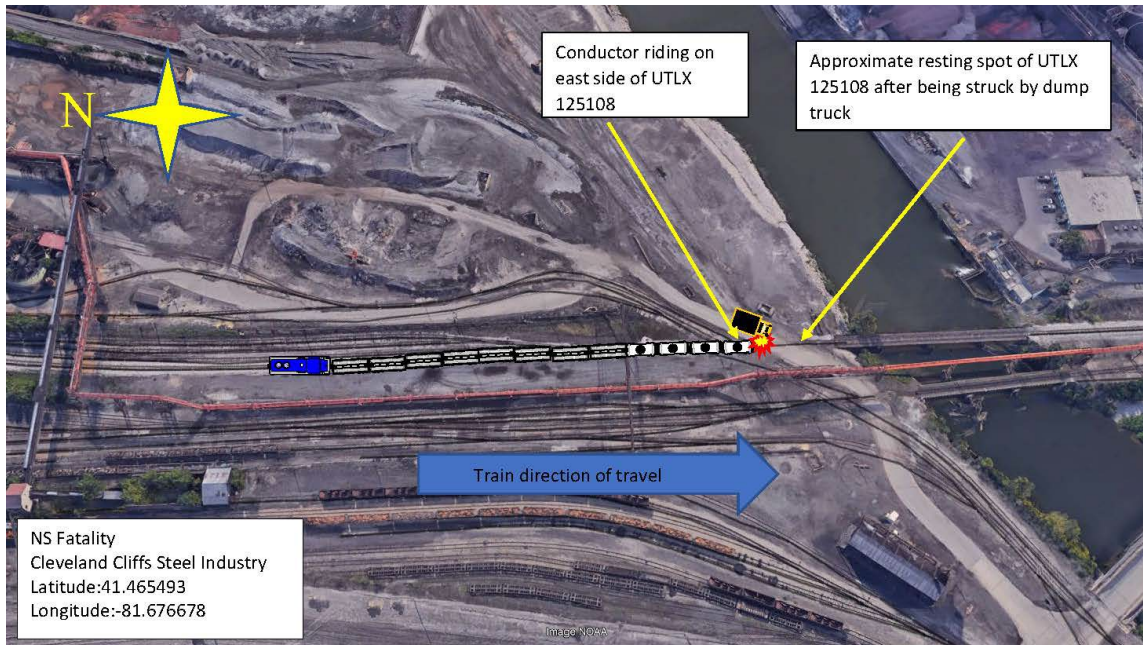


Figure 1 - Diagram of Accident location

3. INVESTIGATION AND ANALYSIS

FRA determined that the primary cause of the accident and fatality was the conductor's failure to comply with NS Operating Rule 120, and that a contributing cause was the limited sight distance down the track in the direction of the approaching train, meaning that the dump truck driver did not see the train before proceeding past the stop sign.

FRA's investigation included evaluation of each crew member's qualification, certification, and testing records, as well as the crew's actions. FRA took no exception to the crew's training, qualification, and testing records, or to the crew's hours of service records.

FRA also conducted a fatigue analysis of each crew member's relevant work/rest schedule and found no excessive fatigue risk. In addition, the results of each crew member's FRA Post-Accident Toxicological Testing were negative, indicating that neither drugs nor alcohol contributed to the cause of the accident.

Conductor's Non-Compliance with NS Operating Rule 120

Before Train 1 entered the grade crossing, the conductor was riding the leading end of the shove movement while giving the engineer car counts.

The conductor's actions did not comply with NS Operating Rule 120 (Rule 120), which provides that when cars, not headed by an occupied engine, move over a grade crossing (including a private grade crossing outside the physical confines of a rail yard), a crew member must be on the ground to warn traffic until the leading end of the cars passes over the crossing. Rule 120 does provide

that, for grade crossings equipped with a stop sign, these actions are not required if the crossing is clear and it is clearly seen that no traffic is approaching or stopped at the crossing, and the leading end of the movement over the crossing does not exceed 15 MPH. This exception did not apply at the time of the accident, however, because the dump truck was stopped at the crossing, meaning that it was not clearly seen that no traffic was approaching or stopped at the crossing.

The FRA investigation determined the truck was stopped at the crossing as the train was approaching, meaning the conductor could not have clearly seen that no traffic was approaching or stopped at the crossing. The conductor therefore failed to stop and provide protection at the crossing, as required by Rule 120.

FRA determined that the primary cause of the accident was the conductor’s failure to comply with Rule 120, which required him to stop his train and flag the crossing from a point on the ground until the leading end had passed over the crossing.

Security Camera Footage

The investigation team observed the security camera footage obtained from Cleveland-Cliffs. A timeline of the events was established (figure 2).

Time	Event
1:07:59	Train moving at 10 mph
1:08:27	Truck stops at stop sign
1:08:32	Truck begins movement from stop sign toward the private crossing
1:08:35	Truck entering the crossing causes train traveling about 9 mph to strike truck
1:08:40	Train comes to a stop. Note that train traveled about 50 feet after the collision with the truck before it stopped

Figure 2 - Timeline of events

Train Crew Training and Qualifications

The NS conductor was hired on October 21, 2004. His most recent performance evaluation and knowledge assessment test evaluation occurred on March 29, 2022, with a passing score. The conductor’s training records showed that between 2020 and 2023 he received training on a variety of topics including switches and derails, safety rules, hazardous materials, and slips, trips, and falls. The conductor’s discipline report from NS included multiple incidents in the five years prior to the accident that were noted as serious, though none pertained to grade crossing safety. The conductor’s recent efficiency test records revealed an assortment of testing occurred between September 13, 2022, and January 18, 2023, described as “Monitor Compliance for Switch/Derail Flag Test.” There were eight tests on January 18, 2023, including authorized speed, shove moves, handling switches and derails, and train movement. All efficiency tests were recorded as passed.

FRA was provided with documentation of the locomotive engineer’s training and qualification records by NS. The records indicate that the engineer was hired on April 15, 1999. His most recent performance evaluation and knowledge assessment test evaluation occurred on September 9, 2021, which he passed (as required for recertification). The engineer’s training records showed that between 2020 and 2023 he received training pertaining to a variety of topics, including switches and derails, hazardous materials, signals, distributed power, and operating rules. The engineer’s discipline report from NS was reviewed, and no serious safety issues were found in the five years

prior to the accident. The engineer's recent efficiency test records showed an assortment of testing occurred between September 13, 2022, and February 1, 2023. The engineer was found to be compliant with all test criteria. There were eight tests on February 1, 2023, including train movement, stop signals, shove moves, restricted speed, alcohol and drugs, communications, blue signals, and authorized speed. All efficiency tests were recorded as passed.

FRA determined that the training, experience, and qualifications of the crew did not contribute to the cause of this accident.

Event Recorder Data

On March 8, 2023, FRA reviewed the event recorder data from the lead locomotive. The event recorder data indicated that at 1:08:36, the train line was compromised, as indicated by a loss of brake pipe pressure and the subsequent opening of the Pneumatic Control Switch (PCS). At 1:08:41, the engineer placed the automatic brake handle into the emergency position.

FRA determined that the train handling method utilized was consistent with normal train handling methods utilized during switching operations and not a causal or a contributing factor in this accident.

Sight Distance Evaluation

FRA conducted a sight distance analysis and partial reenactment. During the sight distance analysis/partial reenactment, a member of the FRA's investigation team climbed into the cab of the dump truck involved in the accident. The private road crossed the tracks on a 45-degree angle to the left (southwest) resulting in 135 degree viewing angle to the right (northeast) for the driver. In addition to the 135-degree viewing angle, the driver's view was partially restricted due to the truck's exhaust pipe and muffler. Overall, FRA determined that the dump truck driver had a sight distance of approximately 38 feet down the track towards the direction of the approaching train. The dump truck driver stated in his interview that did not see the approaching train, and therefore proceeded across the tracks after stopping at the stop sign.

FRA determined that the limited sight distance of the dump truck driver, down the track towards the direction of the approaching train contributed to the accident.

4. CONCLUSION

FRA's investigation and analysis concluded that this accident was caused by the conductor failing to stop the train and flag the crossing from a point on the ground when a vehicle was at the crossing.

FRA also determined the dump truck driver's limited sight distance down the track in the direction of the train approaching the private grade crossing at the Cleveland-Cliffs steel mill contributed to the accident.

In response to this accident FRA issued Safety Bulletin 2023-02, reminding railroads of the need to ensure all individuals involved in pushing or shoving movements are: (1) properly trained and qualified on how to conduct those operations safely; and (2) understand what "track is clear"

means related to a highway-rail grade crossing.

NS also issued a safety notice to all operating employees following the accident. Additionally, Cleveland-Cliffs and Stein, LLC (the dump truck driver's employer) barricaded the crossing with concrete barriers and reconfigured the direction of traffic to allow vehicles to cross at a 90-degree angle. This gives drivers the ability to have greater sight distance down the track, when approaching from either side of the crossing.