

Railway Investigation Report R95D0081

The Transportation Safety Board of Canada (TSB) investigated this occurrence for the purpose of advancing transportation safety. It is not the function of the Board to assign fault or determine civil or criminal liability.

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Crossing Collision

Canadian National

CN Yard Assignment No. 9

Mile 135.28, Saint-Laurent Subdivision

Mile 0.7, Langelier Spur

Saint-Léonard, Quebec

06 June 1995

Summary

At approximately 1350 eastern standard time (EST) on 06 June 1995, Canadian National (CN) freight train yard assignment No. 9 struck a tractor-trailer on a public crossing equipped with standard reflectorized crossing signs at Mile 0.7 of the Langelier Spur, near Saint-Léonard, Quebec.

One crew member was fatally injured.

Ce rapport est également disponible en français.

Other Factual Information

Yard assignment No. 9 was shoving southward on the Langelier Spur toward the Couture Boulevard public crossing with tank car UTLX 641138 leading and locomotive 7052 trailing when the train contacted an eastbound tractor-trailer. The conductor and trainman were riding on the platform at the leading end of the tank car. The conductor was positioned on the west side of the tank car with his back to eastbound traffic. The trainman was positioned on the east side of the tank car with his back to westbound traffic. From this orientation, the locomotive engineer, who was at the controls on the east side of the locomotive, could see the trainman but could not see the conductor or approaching eastbound traffic. As the train approached the crossing, the trainman observed a tractor-trailer approaching from the west travelling in an easterly direction. The trainman stated that he had made some hand gestures as they approached the crossing, but was unable to recall the specific gesture. The conductor was communicating movement instructions to the locomotive engineer by portable radio.

Eyewitnesses to the occurrence maintained that neither the conductor nor the trainman detraind to stop traffic on Couture Boulevard. The train was not stopped before entering the crossing or slowed sufficiently for any period of time to allow a person to detrain.

- As the tractor-trailer approached the crossing, the driver and a passenger observed the trainman's gestures. The driver interpreted the gestures as permission to proceed across the crossing in advance of the train although he could not recall the exact nature of the trainman's gestures. The passenger interpreted the gestures as a signal to stop the tractor-trailer west of the crossing to allow the

approaching train to proceed. The passenger communicated his interpretation of the gestures to the driver. The passenger did not recall the exact nature of the trainman's gestures.

The tractor-trailer continued east, without stopping, over the crossing ahead of the advancing train. The rear of the trailer was struck by the tank car. The conductor was caught between the two impact surfaces and was fatally injured. The trainman detrained and moved to a position of safety. Neither the driver of the truck nor the passenger were injured.

Section 411 of the *Quebec Highway Traffic Code* requires the driver of a vehicle to stop five metres in advance of a public crossing protected by a flagman who is signalling the approach of a vehicle on the rails. Furthermore, if a vehicle operator sees or hears the approach of a train, the operator must stop.

The Couture Boulevard public crossing is protected by standard reflectorized crossing signs. Its surface is asphalt divided into two lanes by a broken yellow line. Traffic flow is east/west. The crossing intersects the Langelier Spur at near right angles. Sight-lines for eastbound vehicles in the northwest quadrant were unobstructed for a distance of approximately 100 metres from the crossing.

Canadian Rail Operating Rules (CROR) rule 103(b) states:

- When cars not headed by an engine, snow plow or other equipment equipped with a whistle and headlight, are moving over a public crossing at grade not protected by a watchman or gates, a crew member must provide manual protection of the crossing.

CROR rule 103(g) states:

- When providing manual protection of a crossing, a crew member must be on the ground ahead of the train or engine, in a position to stop vehicular and pedestrian traffic before the train or engine enters the crossing. A hand signal by day, and a red light or a lighted red fusee by night, will be used to give a signal to stop the movement of vehicular and pedestrian traffic over such crossing. The train or engine must not enter the crossing until a signal to enter the crossing has been received from the crew member providing the manual protection.

CN special instructions further state: "A crew member must not give a Proceed signal to vehicles to pass over a crossing."

The conductor and trainman were not wearing any clothing that would have identified them to motorists as potential flagmen.

The CROR and CN's company instructions do not describe how a signal to stop vehicular or pedestrian traffic shall be given. There is, however, a rule pertaining to stopping a train or engine movement by hand signal. CROR rule 12, HAND SIGNALS, recommends the use of the hand, a flag or a lantern and describes a stop signal for train or engine movements as: "Swung from side to side at right angle to the track."

Railway training regarding flagging vehicular traffic had specifically emphasized that employees were not to stand in front of vehicles or in any way endanger themselves in efforts to stop vehicular traffic.

Locomotive event recorder data indicated that the throttle was advanced from the No. 3 position to the No. 8 position between a recorded time of 1748:11 and 1748:17. Speed increased from 2 mph to 8 mph over the same interval. Throttle was then decreased from the No. 8 position to idle at a recorded time of 1748:17. An emergency brake application occurred at 1748:18, at a recorded speed of 8 mph. The locomotive whistle was activated at a recorded time of 1748:11 and 1748:15. The locomotive bell was rung continuously commencing at a recorded time of 1748:12, until the recorded train speed was 0 mph at a recorded time of 1748:33.

The weather was sunny and skies were clear with a temperature of 24 degrees Celsius.

Analysis

When the locomotive engineer was apprised by the conductor that the train was clear to traverse the crossing, he opened the throttle to accelerate the train towards the crossing. Locomotive event recorder data indicate the train was indeed accelerated towards the crossing as throttle was increased from the No. 3 position to the No. 8 position and speed increased from 2 mph to 8 mph over a four-second interval. The crew believed that the tractor-trailer was slowing to stop. As the train entered the crossing, the locomotive engineer saw the tractor-trailer emerge immediately in front of the tank car. The throttle was reduced to idle and simultaneously the train brakes were placed in emergency. The train contacted the trailer and the conductor was fatally injured.

The train crew, by not stopping and providing manual protection of the crossing, circumvented safety procedures established to prevent such an occurrence. The tractor-trailer driver was put in a situation where he was tasked with simultaneously interpreting the meaning of an ambiguous gesture from a railway employee located on the side of a rail car and deciding how to act upon it. Had a flagman been positioned on the ground, he and his intended signals may have been more visible.

Railway teaching of flagging responsibilities are intended to stress employee safety first and foremost. Consequently, the teaching may offer some relief from the rigidity of the rule in recognizing that, in some circumstances, remaining on the side of a rail car while traversing a crossing is a safer place for an employee to be, than on the ground in proximity to moving road vehicles. The CROR is quite clear on the requirement for a flagman to be on the ground when providing manual protection of a crossing not equipped with automatic warning devices; however, the actual position taken seems to rest with the employee at the time. It is arguable that stopping a train immediately before a crossing creates a standoff between the train and road vehicles at the crossing that in itself can compromise safety. What is clear in this case is the fact that the train crew elected not to stop and flag from a position on the ground.

There is no approved hand signal specific to stopping vehicular or pedestrian traffic in the CROR nor in railway instructions. It is quite possible that, in the absence of such a signal, a railway employee may use a signal intended to stop train traffic when confronted with a need to stop highway vehicles. The approved hand signal for stopping train movements, the hand flag or light "Swung from side to side at right angle to the track" could be misinterpreted by the driver of a vehicle. Since the exact nature of the gestures made by the trainman cannot be identified, it is possible that he gave a railway stop signal to stop the tractor-trailer.

In most circumstances where people are required to direct vehicular traffic, such as a police officer at an intersection, reflective clothing is worn and a glove or flashlight is used to enhance the visibility of the hands. These measures serve several purposes: to specifically identify the flagman to motorists as someone liable to be directing traffic and to make that person more visible for the effective delivery of hand signals and for his/her personal safety. The conductor and trainman were not wearing anything that would have specifically identified them as flagmen. Flagging traffic is a common part of the duties of a trainman/conductor. Even though the portion of their entire duties that involve flagging traffic is sometimes very small, wearing highly visible clothing could only enhance safety in other aspects of their duties as well.

Findings

1. The train crew did not stop and position themselves on the ground to provide manual protection of the crossing before occupying the crossing with the train.
2. Hand gestures of the trainman were interpreted by the truck driver as an indication that the vehicle was clear to proceed over the railway crossing.

3. Government rules and company instructions require train crews to stop vehicular or pedestrian traffic yet there is no specified hand signal to be used for this purpose and no requirement for employees to wear reflective safety clothing when flagging traffic.

Cause and Contributing Factors

The collision resulted when the train crew elected not to stop and flag traffic from the ground. The absence of a flagman at the crossing permitted the tractor-trailer to approach the crossing without stopping. Ambiguous hand gestures from the trainman interpreted by the tractor-trailer driver as an indication to proceed rather than stop also contributed to the accident.

Safety Action Taken

Following this occurrence, CN issued a circular emphasizing the proper application of CROR Rule 103. In addition, the CN District responsible for railway operations in this area issued reflective vests to employees to wear when safeguarding a public crossing. Also, at this particular crossing, CN has installed stop signs for trains to stop before entering the crossing.

Transport Canada has forwarded a letter to the Railway Association of Canada (RAC) indicating that the provincial signalling instructions are to be followed when conveying information to vehicle drivers. In addition, Transport Canada has recommended to the RAC that a manual be developed to instruct employees in the proper methods of signalling vehicles.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board, consisting of Chairperson, Benoît Bouchard, and members Maurice Harquail, Charles Simpson and W.A. Tadros, authorized the release of this report on 12 December 1996.

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