Transportation Safety Board of Canada

Bureau de la sécurité des transports du Canada

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617-06/15
R15W0088

22 May 2015

Ms. Brigitte Diogo (ASR)
Director General, Rail Safety
Transport Canada
14th Floor, Enterprise Building
427 Laurier Avenue
Ottawa, Ontario
K1A 0N5

Dear Ms. Diogo:

SUBJECT: RAIL SAFETY ADVISORY LETTER - 06/15
Communicating Changes to Work Plans during Yard Switching Operations

On 09 April 2015, a conductor on westbound CN freight train Q10531-07 (Q105) was performing switching operations on track 1 at the west end of Saskatoon Yard near Mile 191.90 of the CN Watrous Subdivision. At approximately 2335,[1] the conductor was struck by eastbound CN freight train M31451-09 (M314) which was travelling at 31 mph on the adjacent north main track. The conductor was transported to hospital in Saskatoon where the conductor succumbed to injuries (TSB Occurrence No. R15W0088).

Q105 was a westbound intermodal train consisting of 178 loaded cars, weighing 6768 tons and measuring 11 113 feet long. The train crew, based out of Melville, Saskatchewan, consisted of a locomotive engineer with 30 years of service and the conductor with 27 years of service. Both crew members were fit for duty, rested, and familiar with the territory. Train Q105 had departed Melville at 1405 on 09 April 2015 and was enroute to Saskatoon.

The Yard Traffic Coordinator (YTC) at Saskatoon Yard controls all train movements within the yard. At about 2300, Q105 arrived at Saskatoon and was advised by the YTC to enter the east end of track 1 to prepare for setting off cars into track 6, near the west end of track 1. At about the same time, CN freight train Q11451-08 (Q114), an eastbound intermodal train, was arriving into track 2 via the west end of the yard. The Q105 crew was advised by the YTC that the set off into track 6 could commence once Q114 arrived into track 2.

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1 All times are Central Standard Time.

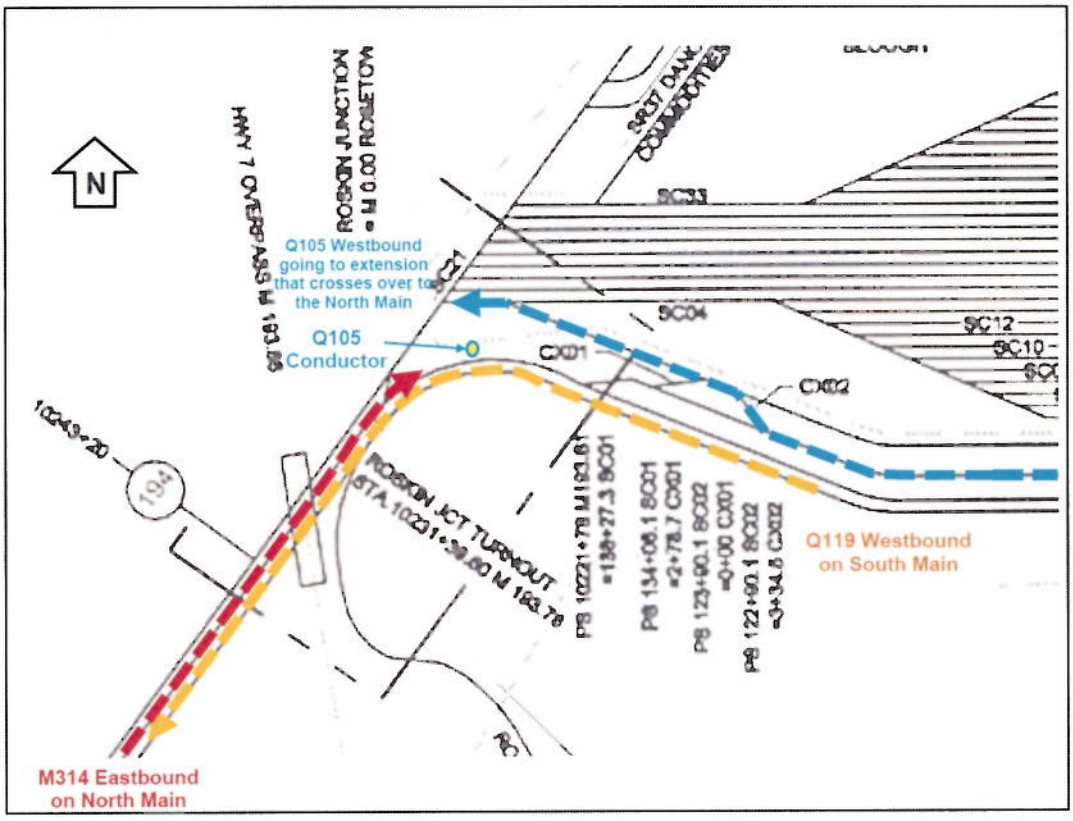
Due to the length of Q105, a permissive Centralized Traffic Control (CTC) signal onto the north main track extension was required. The YTC further advised the Q105 crew that they would be getting the permissive CTC signal, providing authority to make a reverse movement to complete the set off into track 6. The YTC also informed the Q105 crew that eastbound M314 was to be held on the north main track at Farley West (Mile 195.80) until Q105 completed the switching.

Based on the information provided by the YTC, the Q105 crew developed a work plan to complete the switching operation. Following Q114's arrival into track 2, the Q105 conductor got off the locomotive and commenced lining switches westward in front of train Q105 in preparation for the set off. Communications between the Q105 conductor and the locomotive engineer was being performed by radio on Channel 1.

As the CTC signal had continued to display a stop indication, the Q105 locomotive engineer called the YTC on radio Channel 4 to inquire about the delay. The YTC advised the Q105 locomotive engineer that due to the excessive time it had taken for train Q114 to arrive into track 2, the work plan had changed and that eastbound train M314 was now to arrive via the north main track before Q105 could commence its set off.

At about the same time, the Q105 conductor had crossed over to the north main track and was walking eastward on the north end of the ties with his jacket hood up, adjacent to Q105. The conductor was foul of the north main track with his back to M314, unaware that the work plan had changed and that the north main track was now occupied by M314 (Figure 1).

Figure 1. West end of CN Saskatoon Yard



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As M314 approached the west end of Saskatoon Yard, the headlight on the lead locomotive was dimmed which is standard procedure when approaching yards so as to not blind opposing movements. At this location, there is a right-hand curve which restricts forward vision for eastbound trains. In addition, as eastbound M314 approached, a westbound intermodal train Q11991-06 (Q119) was departing on the south main track further restricting the forward view.

As M314 rounded the curve, the crew observed the Q105 conductor walking foul of their track about 300 feet ahead. The locomotive engineer sounded the horn on full, continuously for 6 seconds and placed the train in emergency. The conductor did not initially acknowledge the locomotive horn but turned just before being struck by the M314 lead locomotive.

The locomotive horn on the M314 lead locomotive was mounted behind the exhaust stack. The horn was subsequently tested and met all requirements.

In 2003, Transport Canada (TC) analyzed sound measurement data from various locomotives with different horn configurations at a variety of speeds.[2] TC documented the speed related attenuation[3] of mid-mounted locomotive horns and determined that:

- Attenuation is greatest at the front of the locomotive and drops off towards the sides. The locomotive horn will be less audible at the front of the locomotive.
- Attenuation is related to speed, beginning at approximately 30 mph and increasing at speeds beyond 65 mph.
- Locating the horn behind the exhaust hood reduces the clarity of the sound with the effect that it will sound like the sound source is further away than it actually is.

In this occurrence, there were other factors that may have affected the audibility of the locomotive horn, including:

- At the time of the accident, the employee was located immediately adjacent to Q105's locomotives. Even with the locomotives in idle, there would have been significant ambient noise from the diesel engines and the air compressors.
- The Q105 conductor was wearing a jacket with the hood up covering the conductor's head and ears.
- The Q105 conductor was facing away from the approaching M314.
- Q119 was departing westward on the south main track, producing additional ambient noise.

As the Q105 conductor was not aware that the initial work plan had changed, the conductor likely expected that Q105 would have exclusive access to the north main track once they received the permissive signal.

The change in work plan by the YTC was not initially communicated to the Q105 crew, nor was it required by rule or CN Instructions. This work plan change was only communicated when the Q105 locomotive engineer called the YTC to ask why they had not yet received the permissive CTC signal. The conductor was struck by M314 before the Q105 locomotive engineer could advise the conductor of the change.

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2 English, G.W. et al. (2003). Locomotive Horn Evaluation: Effectiveness at Operating Speeds. Transport Canada, TP14103E. pp. 78-79

3 Attenuation is a general term that refers to a reduction in the strength of any signal.

Given the importance of employee safety, Transport Canada may wish to review CN's procedures and protocols for communicating work plans during yard switching operations, especially in situations when the plans are changed.

Yours sincerely,

Kirby Jang
Director
Investigations Operations Rail/Pipeline

Cc: Don Watts
Senior Manager Regulatory Affairs
Canadian National Railways