



REASSESSMENT OF THE RESPONSE TO TSB RECOMMENDATION R95-02

Speed on other than main track

Background

On 03 December 1993, a head-on collision between a Canadian National (CN) yard assignment and a Canadian Pacific Railway (CPR) yard assignment occurred on an industrial lead track. The impact derailed two locomotives and injured three employees.

The Board determined that the two yard assignments collided because the respective crews did not provide adequate vigilance under conditions which provided marginal protection from a normally suitable speed restriction.

The Board concluded its investigation and released report R93C0103 on 25 July 1995.

TSB Recommendation R95-02 (July 1995)

Canadian Rail Operating Rules (CROR) Rule 105 governs train speed as a function of range of vision and stopping capability. To be in compliance with CROR Rule 105, crew members must assess the changing variables upon which range of vision and stopping capability depend. For example, range of vision is affected by physical layout and obstructions, weather, and ambient lighting. The stopping distance for a train depends on track characteristics, weight of the train, braking efficiency, and crew reaction time. Consequently, with many of these variables in play at any one time, the possibility of misjudging the speed from which a safe stop can be achieved is significant.

Safe operating practices dictate that a safety factor should be built into the required stopping distance. To ensure a safe stopping distance between a moving unit and a stationary object, CROR Rule 105 has a safety factor of two (that is, a speed that permits stopping within one-half the range of vision). However, when calculating the distance required by two moving units which unexpectedly meet head-on, as happened in this occurrence, the safety margin can be non-existent. In other words, if each moving unit utilizes the entire distance as permitted by its speed (one-half its range of vision), there could be virtually no space left between the two units after they brake to a stop. The Board does not question the validity of CROR Rule 105 with respect to its safety buffer between a moving unit and a stationary object. However, the Board is concerned that, in an opposing traffic situation, even the most competent crews may have difficulty assessing the variables to effectively comply with CROR Rule 105.

The rail industry is a competitive commercial environment. There are pressures, both real and perceived, to complete work schedules in a timely manner. Hence, rail crews tend to operate their units at the maximum authorized speeds. Also, with concurrent movements being conducted on joint trackage, at times without formal procedures to ensure that there are no

conflicting movements, there will continue to be unexpected encounters of opposing traffic and the potential for head-on collisions. Given that the application of CROR Rule 105 does not provide any real margin of safety to avert collisions between opposing movements, the Board recommended that

The Department of Transport review the application of CROR Rule 105 with a view to ensuring that an appropriate safety factor is maintained with opposing movements.

TSB Recommendation R95-02

Transport Canada's response to Recommendation R95-02 (October 1995)

Transport Canada (TC) indicated that it initiated a review of the adequacy of CROR Rule 105. All similar occurrences for rail lines under federal jurisdiction were identified, and the operating rules and procedures in effect at these locations were evaluated. None were found to be deficient in terms of safety.

TC noted that thousands of movements are safely made each day in Rule 105 territory without incident. TC indicated that compliance with this rule is believed to be straightforward. Crew members must either be positioned and in control of the movement to observe the track in the direction of movement, or speed must be reduced consistent with sight-lines available to the employee controlling the movement. TC believed that the issue is one of non-compliance with the rules of railway operations, and not with the adequacy of the rule. In this regard, TC indicated that railways are focusing on alertness and ergonomics research to provide solutions to problems in the area of employee operating performance.

Additionally, TC discussed (with CN and CPR) the development of a computer-based simulation to assess the ability of locomotive engineers to comply with the reduced speed requirement of CROR Rule 105 when opposing movements are involved. This simulation may heighten general awareness of Rule 105 and the requirements for reduced speed when there are opposing movements.

TSB assessment of Transport Canada's response to Recommendation R95-02 (June 1995)

TC does not accept that Rule 105 is inadequate, notwithstanding that this rule does not allow for a safe margin of error in situations of opposing traffic. TC maintained that, because there are thousands of rail movements per day without incident, CROR Rule 105 is appropriate. However, TC did not indicate how many of these movements encountered unexpected opposing traffic, requiring the units to stop in the distance dictated by CROR Rule 105.

Through Recommendation R95-02, the Board attempted to bring focus to why competent and qualified crews fail to stop their trains in time to avoid head-on collisions. It was pointed out that the rail industry is a competitive commercial environment and that there are pressures, both real and perceived, to complete work in a timely manner. Hence, crews tend to operate at the maximum authorized speeds. However, to TC, failure to stop in time is solely an issue of non-compliance.

Given that no concrete steps were taken regarding CROR Rule 105 to mitigate the potential for head-on collisions, TC's response was assessed as **Unsatisfactory**.

Transport Canada's response to Recommendation R95-02 (June 2004)

TC indicated that it considers this recommendation closed.

TSB reassessment of the response to Recommendation R95-02 (September 2005)

While TC considered the recommendation closed, some segments of the industry have voluntarily adopted more restrictive measures in Rule 105 territory. For example, on CPR, a maximum speed of 10 mph has been applied, and improved awareness procedures in joint territory have been implemented. Based on these changes, the response was reassessed as **Satisfactory in Part**.

Transport Canada's response to Recommendation R95-02 (July 2006)

Although TC had no update at this time, TC indicated it now considers this recommendation open. However, there is no plan to deal with the risk. Given the length of time that has elapsed, and the willingness of the industry to accept the risks associated with operating in Rule 105 territory, the Board will not monitor this deficiency file.

TSB reassessment of the response to Recommendation R95-02 (August 2006)

As no updates were provided, the assessment of TC's response remains as **Satisfactory in Part**.

TSB reassessment of the response to Recommendation R95-02 (September 2010)

As no updates were provided, the assessment of TC's response remains as **Satisfactory in Part**.

The deficiency file is assigned a **Dormant** status.

TSB review of Recommendation R95-02 deficiency file status (May 2017)

The Board requested that Recommendation R95-02 be reviewed to determine if the deficiency file status was appropriate. After an initial evaluation, it was determined that the safety deficiency addressed by Recommendation R95-02 still needed to be re-assessed.

A request for further information was sent to Transport Canada and a re-assessment will be conducted upon receipt of Transport Canada's response.

Consequently, the status of Recommendation R95-02 was changed to **Active**.

Transport Canada's response to Recommendation R95-02 (March 2018)

TC is not planning to look at this recommendation at this time.

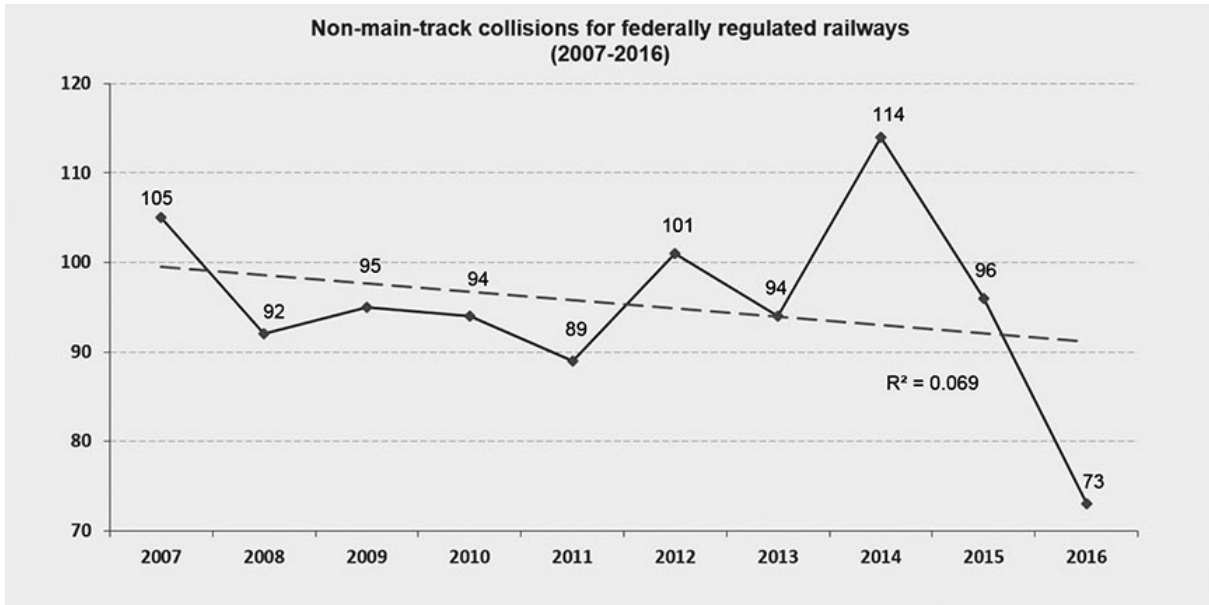
TSB reassessment of the response to Recommendation R95-02 (March 2018)

Since 2009, there have been two TSB investigations¹ involving a tail-end collision and derailment on non-main-track. During the most recent investigation (i.e., the 2016 collision and

¹ R09W0259, R16C0065.

derailment of two CP freight trains near Alyth Yard in Calgary, Alberta - R16C0065), it was determined that:

From 2007 to 2016, there was a slight, but non-statistically significant, decrease each year in the number of non-main track collisions – including head-end, tail-end, and side collisions – on federally regulated railways.



The Board believes that TC and the railways must continue to review how Rule 105 is applied with a view to ensuring that appropriate safety margins are maintained. These reviews should be part of on-going risk assessments, audits and safety management initiatives to identify actions that will further mitigate the residual risks when operating trains in Rule 105 territory.

As TC has no plans to pursue additional work on this safety deficiency, the assessment of TC's response to the recommendation remains **Satisfactory in Part**.

Next TSB action

In consideration that no further action is planned to be taken and continued reassessment will not likely yield further results, the TSB will not request updates from TC on a regular basis. This deficiency file remains **Dormant**. However, the TSB will continue to monitor this safety deficiency as part of future investigations involving this issue.