



REASSESSMENT OF THE RESPONSE FROM TRANSPORT CANADA TO RAIL SAFETY RECOMMENDATION R92-23

MAIN LINE RAIL TESTING

Background

At approximately 0243 mountain daylight time on 24 October 1990, Canadian Pacific Limited (CP) train No. 990/23, travelling at a speed of 45 mph derailed four locomotives, the next 21 cars and the 23rd car at Mile 10.43 of the Aldersyde Subdivision, near Nobleford, Alberta. There were no injuries as a result of this occurrence.

Investigation revealed that the cause of the occurrence was a break in the high rail of a three-degree curve at a pre-existing defect. The 40 year old rail had been in place for 10 years after it had been in service at another location

The Board concluded its investigation and released report R90C0124 in January 1993.

Board Recommendation R92-23 (19 January 1993)

The Board found, through a review of rail testing results conducted more than 6 months previous to the occurrence, that there were indications of possible internal rail defects at the occurrence site which had not been previously detected. Therefore, the Board recommended that:

The Department of Transport reassess the adequacy of Canadian railway requirements for main line rail testing, taking into account the age of the rail and the nature of the traffic.

R92-23

Response to R92-23 (21 April 1993)

Transport Canada advised that they had assessed the adequacy of the requirements established in the Canadian Track Safety Rules and compared these requirements with the Track Safety Standards established by the U.S. Federal Railroad Administration, as well as current U.S. and Canadian railway industry rules. While the standards enacted by Transport Canada are consistent with other U.S. and industry standards, continuing research on track safety is being monitored by the Railway Safety Directorate for potential improvements.

Board Assessment of Response to R92-23 (17 May 1993)

The response indicates that TC has assessed the rules for consistency with other U.S. and Canadian industry standards and advised that they will continue to monitor research into track safety. However, TC does not elaborate on what research is being monitored or give any

indication what the research has indicated to date, that will affect track safety rules and standards. The response reveals little as to TC's planned action to correct the underlying safety deficiency. TC has not been moved to any new commitment to resolving the underlying quality issues in rail testing as a result of this recommendation. Therefore, the Board assessed the response as **Unsatisfactory**.

Additional Response to R92-23 (August 1994)

Transport Canada submitted an additional response advising that the railways have examined their current procedures and equipment for identifying rail defects on curved track and also evaluated the training and suitability of operators of rail test vehicles. TC advises that these initiatives have improved reliability of detection of sizeable vertical split head (VSH) defects in track. The railway industry has also increased the frequency of ultrasonic testing and has improved operator qualifications so they can better interpret indications.

Board Reassessment of Response to R92-23 (September 1994)

This recommendation sought a reassessment of the adequacy of the Canadian railway requirements for main track rail testing, taking account the age of the rail and the nature of the traffic. This additional response adds no new information with respect to specific research being conducted by TC in assessing this adequacy. However, the underlying safety deficiency is being addressed by increasing the frequency of ultrasonic testing and provision of continuous evaluations of rail conditions for timely replacement. Therefore the Board reassesses the response to this recommendation as **Satisfactory in Part**.

Board Action (20 September 1994)

After assessing the additional response from TC, the Board sent a letter of concern to the Minister of Transport, noting that the incidence of main track derailments due to track defects was not improving.

Additional Response to R92-23 (April 2001)

Transport Canada submitted an additional response in 2001 advising that TC's TDC initiated a study with the industry which has been completed regarding the development of a Mobile Inspection System for Rail Integrity (TP 13611E). The objective was to develop a rail test vehicle with an electromagnetic acoustic transducer (EMAT) probe carriage designed for real-time testing of rails. An inspection procedure was also developed coupled to the system hardware and software. The resulting RailPro system can detect, locate and validate rail defects, thus helping to prevent catastrophic events and reduce maintenance time. The results indicated that the system, together with inspection procedures, EMAT sensors and automated interpretation techniques, is an efficient and reliable inspection approach. The project was successful in addressing all the theoretical, mechanical, software and detectability problems.

Additional Response to R92-23 (June 2004)

Transport Canada submitted an additional response in 2004 advising that the Track Safety Rules, which became effective on September 23, 1992, include requirements with respect to the inspection of rail for internal defects, in Part II, F.IV. These inspections requirements are based upon class of track, annual gross tonnage, whether or not its new rail, and if passenger trains operate on that track.

Additionally, the detector cars for internal defects have evolved and improved considerably since that time. Research is continuing in the lab and in the field in order to improve detection results. TC continues to play a role in this development through TDC.

TC recently obtained the complete results of CN and CP rail testing for the year 2003 which will be closely examined. This information will be evaluated for the number and types of defects, preventive measures to reduce or eliminate serious defects, as well as the adequacy of current TSR requirements.

Board Reassessment of Response to R92-23 (22 December 2005)

More accurate laser technology has been introduced in rail testing. However, problems between detection and timing of corrective action remain. As use of improved technology has commenced, but the outcome is not known, the Board maintains the assessment of response to this recommendation as **Satisfactory in Part**.

Additional Response to R92-23 (July 2006)

Transport Canada submitted an additional response in 2006 advising that since this recommendation has been made, research is continuing in the lab and in the field in order to improve detection results. TC continues to play a role in this development through the TC Transportation Development Centre (TDC).

Detector cars for testing for internal defects have evolved and improved considerably since that time. A Track Safety Rules Symposium to develop a strategy to modernize the Track Safety Rules is being held in September 2006. Rail inspection is one of the rules that will be addressed.

Board Reassessment of Response to R92-23 (August 2006)

Given the continuous and ongoing efforts to improve detection technology and the recent symposium to review, among other things, the requirements for main track testing, the Board therefore reassesses the response to recommendation R92-23 as **Fully Satisfactory**.

Next TSB Action (October 2006)

Because Transport Canada and the industry are actively addressing the safety deficiency associated with Recommendation R92-23, and are taking action which will substantially reduce or eliminate the deficiency, no further TSB action is necessary.

Technology has improved, and, as the risks have been substantially mitigated, this file is assigned a **Closed** status.