



## REASSESSMENT OF THE RESPONSE TO RAIL SAFETY RECOMMENDATION R03-01

### ELIMINATION OF UNDESIRED EMERGENCY BRAKE APPLICATIONS

#### Background

At 0354, on 20 June 2000, near Mile 1.7 of the North Bay Subdivision, a train-initiated undesired emergency brake application (UDE) occurred. After conducting the necessary emergency procedures, the train crew determined that 13 cars had derailed, including 2 unoccupied passenger cars and 11 freight cars. The cars were positioned 8th to 20th behind the locomotives. The two passenger cars remained upright and coupled to the front portion of the train. They came to rest approximately 68 m east of the other 11 derailed cars. The remaining derailed cars came to rest either on their sides or upright, and were jack knifed on the right-of-way. No dangerous goods were involved in the derailment. Two of the cars, loaded with lumber, came to rest on their sides over a TransCanada PipeLines Limited natural gas underground pipeline crossing. The train crew members had not noticed any unusual track conditions as they approached the derailment area.

The Board concluded its investigation and released report R00H0004 on 25 February 2003.

#### Board Recommendation R03-01 (25 February 2003)

Continuous operation of UDE problematic trains has been recognized as presenting an increased level of risk of excessive in-train forces and possible derailment. CP's General Operating Instructions governing train brake tests have been amended to prescribe that a service application and release of the train air brakes must be obtained without a UDE occurrence. The testing is considered successful once the air brake test does not result in a UDE. Subsequent to any one successful train air brake test, the occurrence of a UDE may be dismissed without taking any steps to identify and eliminate the source of the UDE. As a result, there is no restriction on the operation of a UDE problematic train. It is clear that; if a UDE prone car in a train can be readily found, it would be in the best interests of safety and traffic expedition, to identify and eliminate the problem. The Board is concerned that the increased risk associated with operating a UDE problematic train has not been adequately mitigated by the industry. Therefore the Board recommended that:

The Department of Transport, in co-operation with the industry, research the issue of continuous operation of UDE problematic trains and establish policies and procedures to resolve this issue.

R03-01



## **Response to R03-01 (09 May 2003)**

A response from the Minister stated that, as evidenced by the latest TSB occurrence statistics, the total number of main track derailments has been declining since 1997. There has been a 38% decline in main track derailments from 1996 through 2002. In 2002, the frequency of main track derailments was 10% below the five-year average of 129.4 (1997-2002). The number of reported air brake related derailments in the last 5 years represents less than 1% of total derailments, with only one reported occurrence attributable to an undesired emergency brake failure. The Department will work with the TSB, the Railway Association of Canada and the Canadian rail industry to assist in assessing the risk level of this issue by utilizing an integrated risk management process. Upon the completion of the risk management process, should it be determined that the issue of UDEs is a high risk priority, appropriate action will be taken by the Department with the railways to address any identified threats to safe railway operations. The process is expected to be completed by September 2003.

## **Additional Response to R03-01 (30 September 2003)**

TC updated the response, as follows: Transport Canada committed to work with the Transportation Safety Board, the Railway Association of Canada and the Canadian rail industry to assist in assessing the risk level of this issue by utilizing an integrated risk management process. After a review of the 10-year rail accident data, the TC Rail Safety Equipment and Operations Branch determined that the adverse consequences from this issue were continuing to decrease. It also revealed that over this period, only this occurrence resulted in a TSB reported derailment.

Furthermore, the component that failed and triggered the sequence of events leading to the derailment was of an older design that was being phased out. Canadian National and Canadian Pacific Railway have advised TC, that since 1990, there has been a significant reduction in the frequency of undesired emergency brake applications. Other than the occurrence identified by the TSB in its final report, none of the suspected UDEs resulted in a derailment. This reduction is being credited to the air brake industry's ongoing introduction of "stabilized" brake valves and the railway's modification of existing brake valves with anti-vibration rings when brake valves are removed from service for inspection/maintenance.

Even with this level of success, the industry continues to work towards further reducing this frequency with on-going programs designed to improve train marshalling and train handling in conjunction with improved control valve designs. These programs have shown to be very effective at reducing the frequency of UDEs even further.

TC's assessment, completed in September 2003, concluded that the risk level of this type of derailment is low given the current probability. The continued industry action to further lower the frequency will help maintain the current level of risk. Given this information, TC has determined that a further comprehensive analysis of this issue is not warranted at this time. However, TC Rail Safety will continue to monitor UDE events to ensure that the trend of reduced frequency of UDEs continues.

## **Board Assessment of the Response to R03-01 (October 2003)**

In his response, the Minister informed the TSB that Transport Canada (TC) has taken action by completing their integrated risk management process in cooperation with the industry. The resultant determination was that a further comprehensive analysis of this issue is not warranted at this time.

The safety deficiency of continuing to operate a UDE problematic train, with a known risk of possible derailment subsequent to an UDE, has not been resolved. UDE problematic trains will still be allowed to depart from a train repair terminal if only one of multiple attempts at an air brake test succeeds. There is still a high probability that the offending air brake component will cause another UDE en route and create the risk of significantly high in-train forces that can lead to a derailment.

While the ABDW valve is dated and no longer being applied to new cars, the actual component which failed, the rubber diaphragm, is used in almost all freight car air brake valves.

TC have completed the research as recommended and performed an integrated risk management process in cooperation with the industry. However, there have been no policies or procedures established to resolve the issue of UDE prone trains continuing operation, and therefore, the response to Recommendation R03-01 is assessed as **Satisfactory in Part**.

## **Board Reassessment of Response to R03-01 (December 2005)**

Staff has noted that CPR now requires in their General Operating Instructions that a brake test must be completed without occurrence of an emergency brake application to be considered successful. However, other railways do not specify that requirement. In consideration that part of industry has taken safety action to eliminate the risks associated with continuous operation of UDE prone trains, the Board maintains the assessment of response to this recommendation as **Satisfactory in Part**.

## **Board Reassessment of Response to R03-01 (August 2006)**

Transport Canada advised TSB, in June 2004, that they considered this recommendation closed. In their most recent response to TSB recommendations, (July 2006), TC advises that they do not have any update at this time, and that this recommendation remains open for TC. While TC continues to monitor UDE events, it is now clear that significant action has been taken to reduce the risks. Therefore, the Board reassesses the response to this recommendation as **Fully Satisfactory**.

## **Next TSB Action**

No further action required.

This file is assigned **Closed** status.