



REASSESSMENT OF THE RESPONSE TO RAIL SAFETY RECOMMENDATION R01-01 – R99H0007

BACKGROUND

On 23 April 1999, at approximately 1200 eastern daylight time, VIA Rail Canada Inc. train No. 74, travelling eastward on the north main track of the Canadian National Chatham Subdivision, at Thamesville, Ontario, encountered a reversed switch, crossed over to the south main track and derailed at Mile 46.7. The derailed train collided with stationary rail cars on an adjacent yard track. The three cars that were struck were loaded with ammonium nitrate. All four passenger cars and the locomotive of the passenger train derailed as well as four of the stationary cars on the adjacent yard track. The two train crew members in the locomotive cab were fatally injured. Seventy-seven of the 186 passengers and crew on board were treated at hospital. Four people were admitted with serious injuries. Numerous others received first aid on site. Approximately 50 m of main track and 100 m of the adjacent yard track were destroyed. The locomotive was damaged beyond repair and the leading two passenger cars sustained substantial damage.

The Board has identified safety deficiencies relating to the level of defences associated with the Occupancy Control System method of train control, particularly in “dark territory,” where trains are not always provided with sufficient advance warning of reversed main track switches. The Board determined that, in OCS outside ABS, the existing safeguards were inadequate to prevent the unauthorized reversed main track switches from leading to the occurrence. Unauthorized reversed main track switches are most often the result of inadvertent errors by railway employees. Past safety actions relating to unauthorized reversed main track switches have focussed primarily on eliminating errors through improved procedural compliance. On 14 November 2000, TC imposed temporary speed restrictions through an Emergency Directive to all federally regulated railways in Canada. Irrespective of TC taking the first step; confirming an understanding of the effects of human errors on a safety critical system, the necessity to develop permanent mitigating strategies remained. Therefore, the Board recommended that:

The Department of Transport require the development of additional permanent system defences that permit a means to help ensure safety when trains approach main track switches in Occupancy Control System outside Automatic Block Signal System territory.

R01-01

Transport Canada’s Response to TSB Recommendation R01-01 (July 2001)

A response from the Minister has been received and in his response, the Minister informs that TC issued an Emergency Directive which mandated a slower speed when approaching a facing point main track switch in non-signalled territory. TC has been researching new technologies available to provide an additional system defence through advanced indication of the position of hand operated track switches in non-signalled territory. TC retained the assistance of the

Transportation Group of the University of New Brunswick to conduct a study to identify the existence and availability of such technologies. In November 2001, the study was released in which there were ten technologies identified, that appeared to have potential for application to the study objective. One technology of the five considered to have the highest probability of successful application is under test by Canadian National Railway. The study indicated that cost-effective and reliable systems could be installed to indicate the position of a hand-operated switch on non-signalled rail lines.

Board Assessment of Response to R01-01

Transport Canada (TC) supports the intent of this recommendation. TC's Emergency Directive provides a temporary administrative safety barrier to avoid high speed divergence of train movement, by slowing the speed of the trains approaching a facing point switch. This will allow more reaction time to initiate stopping the train in the event of unexpectedly encountering a reversed main track switch. This may provide sufficient time to stop the train or significantly reduce the speed of an unplanned divergence from the main track. However, this action has not provided an advance indication of the position of the switch, to allow for a planned stop to avoid an emergency stopping situation. The final effectiveness of the Board's recommendation and the response cannot be ascertained until the chosen means of defence is finally developed by the railways. In consideration that TC has taken the aforementioned regulatory action, and provided the motivation towards appropriate action to guarantee a reliable indication of the position of main track switches in non-signalled territory, the response to Recommendation R01-01 is assessed as being "*Partially Satisfactory*".

Additional Response to Recommendation R01-01

Transport Canada issued a Directive ordering all of the federally regulated railways to revise Rule 104 of the Canadian Rail Operating Rules and to file the revised rule submission within 150 days. Industry responded by revising CROR Rule 104 with the addition of Rule 104(p) which prescribes;

Main Track Switches in OCS Territory

(p) unless or until the switch is seen to be in normal position, movements approaching a main track hand operated switch in a facing point direction in OCS territory, must not exceed the following speeds from ¼ mile of the switch;

PASSENGER	50MPH
FREIGHT	45 MPH
FREIGHT handling Special Dangerous Commodities	40 MPH

Board Reassessment of Response to R01-01

The added CROR Rule 104(p) prescribes a speed restriction at all MT switches in non-signalled territory. This constitutes an additional administrative system defence. In consideration that a permanent additional administrative defence has been implemented, the Board reassesses the response to Recommendation R01-01 to be "*Fully Satisfactory*".