Transportation Safety Board of Canada
Bureau de la sécurité des transports du Canada

# REASSESSMENT OF THE RESPONSE TO RAIL RECOMMENDATION R08-02

## Tracking railcar wheel sets

## Background

On 31 January 2006, at approximately 0750 Eastern Standard Time, southward Canadian Pacific Railway freight train 230-30 derailed one car at Mile 114.65 of the MacTier Subdivision. The train continued at 45 mph to Mile 103.48 near Buckskin, Ontario, where it experienced an undesired emergency train brake application and 11 additional cars derailed. Approximately 400 feet of track, including the Buckskin Siding north turnout and signal structures, were destroyed and the preceding 11 miles of track was heavily damaged. There were no dangerous goods involved and no injuries.

The investigation determined that there were gaps in the initial industry recalls of EW 5183 and MA 74 that did not include approximately 17 000 suspect Transcona wheel shop wheel sets assembled between January 2000 and February 2001. Aside from CN, the industry as a whole did not target the full population of suspect wheel sets for removal until July 2006. As a result, many wheel sets were permitted to remain in service or, as in this occurrence, were removed from the original car, reconditioned and placed under a second car.

This was not the first time that a wheel population with a known manufacturing defect had caused multiple derailments and been subjected to an industry recall. In 2004, a Southern wheel failure on a Canadian Pacific Railway train resulted in two fatalities in Whitby, Ontario (TSB investigation report R04T0008). The AAR had previously issued recalls of wheels that contained known manufacturing defects produced by Southern Wheel, by Mafersa, and by Edgewater. In each of these cases, industry was aware of these wheels' susceptibility to failure, and had initiated recalls, but had been unable to track, locate, and remove all of them before failure.

When wheel sets are installed under freight cars, wheel set information such as month and year of manufacture, manufacturer code, heat treatment class, wheel flange and tread thickness is recorded. However, there is no requirement to record wheel mount date and wheel serial numbers even though the information is readily available. The absence of wheel serial numbers and mounting dates presented fundamental difficulties during the Transcona wheel shop wheel set recall process. Had this information been available, it would have provided an alternate method for locating the defective wheel sets. An industry-wide search of databases would have located the suspect Transcona wheel shop wheel sets, regardless of which car they were under at the time of the recall. In addition, databases could have been flagged to produce a warning before the installation of suspect Transcona wheel shop wheel sets.

The testing of radio frequency identification tags to track rail car components is a positive step towards solving the tracking problem. However, when compared to the aviation industry, the rail industry falls short in its ability to locate and remove defective components. Specifically, the *Canadian Aviation Regulations* require that, whenever components are installed into an airframe, the components and the procedures used for their installation are uniquely identified and permanently recorded. In this manner, components can be easily located if a problem develops at a later date with either the component or the installation procedure. With the transition to a more global supply network for the North American rail industry, the need for a system that has the ability to effectively and quickly locate potentially defective wheel set components in freight cars is essential.

Because the industry has no effective way to track wheel sets once they are removed from their original car, wheel sets with potentially defective components cannot be easily located and removed from service before failure. The inability to quickly locate defective wheel set components increases the risk of a failure, which can lead to a derailment.

Therefore, the Board recommended that:

> The Department of Transport ensure that railways adopt procedures and technologies to track all wheel sets.
>
> R08-02

## Response to R08-02 (July 2008)

TC accepts the Recommendation R08-02. On 13 June 2008, TC issued an Emergency Directive to CN pursuant to Section 33 of the RSA, whereby CN has been directed to put in place a system to record and track major components such as, but not limited to, wheels, wheel sets, axles, roller bearings, draft gears, and couplers throughout their service life, by no later than 13 December 2008.

## Board assessment of response to R08-02 (July 2008)

TC has acknowledged the deficiency and followed up with an Emergency Directive (copy attached) to Canadian National (CN) pursuant to Section 33 of the RSA, whereby CN has been directed to put in place a system to record and track major components such as, but not limited to, wheels, wheel sets, axles, roller bearings, draft gears, and couplers throughout their service life, by no later than 13 December 2008. As it is too soon to evaluate the outcome of the efforts of CN and the other North American railways, the Board assesses the response to Board Recommendation R08-02 as having **Satisfactory Intent**.

## Additional response to R08-02 (November 2009)

TC indicated that a Ministerial Order under Section 19 of the *Railway Safety Act* will be issued to expand the scope of the Emergency Directive that was issued to CN pursuant to Section 33 of the *Railway Safety Act,* to include all federally regulated railways. In consultation with the AAR,

the railways are looking at an industry wide AAR rule which will cover all AAR member railways.

## Additional response to R08-02 (January 2010)

TC will be issuing an order under Section 19 of the RSA to the industry to require:

- The recording and tracking of wheels, wheel sets, axles, and roller bearings, throughout their service life, and for the immediate reporting of the systemic failure of a major component that is the result of a manufacturer or maintenance deficiency.
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- The railways maintain a record of major components throughout their service life.

## Board reassessment of response to R08-02 (January 2010)

TC described proposed safety action that, if implemented in full, will substantially reduce or eliminate the risks inherent with not being able to track components. The Board reassesses the response to recommendation R08-02 to remain **Satisfactory Intent.**

## Additional response to R08-02 (June 2010)

TC has not issued the Order because the AAR has commenced a component tracking initiative which will establish industry rules for reporting component details and application to equipment. The industry rules will track components from the manufacturers, wheel shops and repair shops through the current Railinc systems. The component tracking initiative is in the development stages with implementation industry wide to begin in 2012.

## Board reassessment of response to R08-02 (16 September 2010)

The AAR has initiated safety action that could greatly improve the railway industry's ability to track wheel sets and other critical car components. However, as this action is not yet in effect, the Board reassesses the response to recommendation R08-02 to remain **Satisfactory Intent.**

## Additional TC response to R08-02 (October 2011)

The North American railroad industry under the direction of the AAR is making excellent progress on developing, the Comprehensive Equipment Performance Monitoring program (CEPM) to monitor and track the fabrication, installation and performance of specific railroad components. Through a staged implementation program, the industry expects the full reporting of individual freight car wheel sets to be in place in 2013.

## Additional information on R08-02 (January 2012)

The AAR is progressing with implementation of the component tracking system with member railways and the railway supply industry. The AAR has issued S-920, AAR COMPONENT IDENTIFICATION (CID) BAR CODE STANDARD. Implementation of the first stage of bar

code requirements is scheduled for 01 April 2012. The requirement for full implementation at the wheel shops is scheduled for 01 July 2012. The AAR indicates that it does not want to push out deadlines, and states that a strict plan is necessary to elicit the proper actions.

## Additional information on R08-02 (February 2012)

The Railway Association of Canada has advised that all new wheel set components are having component ID tags applied at the manufacturers. Effective July 2012, all new wheel sets must be physically tagged with an AAR Component ID and registered in UMLER. As of July 2013 all wheel set changes must be reported to the system using the component ID tags.

## Board reassessment of response to R08-02 (February 2012)

The railway industry has taken action which will substantially reduce or eliminate the safety deficiency of not being able to track all wheel sets. The present stock of wheel sets that are not tagged has six months to deplete through normal consumption at repair facilities. The tracking of components by the railway industry is progressing as planned over recent years. The complete implementation is imminent. Therefore, the Board reassesses the response to recommendation R08-02 as **Fully Satisfactory**.

## Additional information on R08-02 (January 2013)

The 2013 Association of American Railroads (AAR) Field Manual of the AAR Interchange Rules prescribe (in part):

> Rule 44 – WHEEL SETS
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> B. 5. Effective 01 January 2013, all wheel set replacements/transfers must be reported by the repairing party along with the applied wheel set AAR Component ID to Railinc (see Office Manual Rule 93), reporting should be within 24 hours of the repair event…

## Board reassessment of response to R08-02 (07 March 2013)

The component tracking system for AAR member railways and the railway supply industry has been fully implemented. In consideration of this full implementation, which minimizes the risk arising from non-tracked wheel sets, the Board confirms the assessment of the response to Recommendation R08-02 as **Fully Satisfactory**.

## Next TSB action

This deficiency file is assigned **Closed** status.