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

REASSESSMENT OF THE RESPONSE TO RAIL RECOMMENDATION R09-03

CN's SMS requirements

Background

On 29 June 2006, at about 1650 Pacific daylight time, Canadian National freight train L-567-51-29, travelling southward on the Lillooet Subdivision, derailed a locomotive and a loaded car of lumber after losing control while descending the grade near Lillooet, British Columbia. The lumber car came to rest at Mile 184.8 approximately 1000 feet below the right-of-way. The locomotive came to rest at Mile 182.5, approximately 800 feet below the right-of-way. Two of the three crew members sustained fatal injuries. The third crew member was taken to hospital with serious injuries.

The effective management of safety requires an organization to have a culture, structures, and processes in place to allow for proactive identification and mitigation of risks. This was highlighted in two recent investigations where CN did not identify the risks involved as required by its own safety management system (SMS):

- In the Cheakamus investigation (TSB investigation report R05V0141), the TSB determined that no formal risk assessment was performed before CN resumed operating distributed power trains on the steep mountain grade.

- In the Prince George investigation (TSB investigation report R07V0123), the TSB found that the risk assessment conducted before the accident was inadequate in identifying the hazards and mitigating the risks involved in switching long, heavy cuts of cars on the descending grade.

In this investigation, the failure to identify and mitigate risks through effective SMS has again emerged as a safety deficiency. Although CN had prepared a Safety Integration Plan before acquiring the British Columbia Railway (BCR) territory, non-dynamic brake–equipped locomotive operations were implemented without a formal risk assessment being made to identify potential operational hazards in this challenging physical environment.

In aggregate, these three accidents strongly suggest that CN's overall safety management practices do not ensure safe train operations on its network before operational changes are implemented. Therefore, the Board recommends that:

> Canadian National take effective action to identify and mitigate risks to safety as required by its safety management system, and the Department of Transport require Canadian National to do so.
>
> R09-03

Canada

Canadian National's response to R09-03 (June 2009)

CN responded as follows:

> CN has reviewed the TSB's report on the Lillooet runaway and derailment (R06V0136) released on May 28, 2009 and its associated recommendation TSB R09-03.
>
> We are pleased to provide the following response, which addresses the recommendation only, and not the contents of the report itself.
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> We note that the three accidents on which the recommendation is based occurred in August 2005, June 2006 and July 2007. In the latter case (Prince George R07V0123), a full risk assessment of the operational changes was carried out. The identified risk control strategies were also communicated to those handling the assignment.
>
> Since these accidents occurred, CN has continued to foster and strengthen its safety culture while making many improvements to its safety management system, and its risk mitigation processes. Among these initiatives:
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> - Translated the components of the SMS Regulations into concrete actions that CN Field Officers can put into daily practice as the foundation of their safety plan. Of significance is that Risk Assessment and Risk Control are cornerstones of this Safety Management Framework document. Also of note, the multi-party working group tasked with addressing the Railway Safety Act Review Committee's recommendations concerning SMS has adopted the CN Safety Management Framework as a recommended practice.
> - Fostered improved employee involvement through initiatives such as Health and Safety Committee evaluations and training, and the Safety for Everyone (SaFE) program, which encourages peer to peer feedback.
> - Cooperated fully with Transport Canada on a number of SMS audits including a system wide operations audit in late 2008, for which CN received generally positive results on both the initial audit and on CN's follow up action plans.
> - Developed a detailed internal audit program of CN's field operations to assess adherence to SMS as well as rules compliance. Audit results are communicated to Executive management. Ten such audits have been performed to date, with audit locations and areas of focus based on the results of trend analysis.
> - Developed and implemented an Intranet based interactive Risk Assessment course. To date over 1,000 managers and employees have been trained using this resource.
> - Developed a Hazard Prevention Program including tools for carrying out field level risk assessments.
> - Revised and reissued our Customer Safety Handbook with additional emphasis on customer owned track condition and customer car handling. Trend analysis indicates these are major causes of non-main track accidents on the CN system.
> - Developed the "4 Second Focus" program to communicate the importance of reviewing hazards and risk mitigation prior to performing any task.

- Continued to perform trend analysis on safety performance and to develop action plans making use of investment, technology and training to address the results.
- Actively participating in the Railway Safety Act Review's Advisory Council on Railway Safety (ACRS) and its six associated working groups tasked with addressing the review's recommendations, including the very important Safety Management System working group.
- Created the position of VP and Chief Safety Officer.
- Hired the recognized railway industry leading expert in emergency response and incident command and developed and resourced a system wide protection plan, including dedicated resources to provide both emergency response and systems audit capacity.

CN firmly believes that these initiatives have helped strengthen our Safety Management System and have helped CN identify and mitigate risks to safety as referenced in the recommendation.

Transport Canada's response to R09-03 (September 2009)

Transport Canada (TC) accepts the recommendation directed at both Canadian National (CN) and TC. The Department has noted the action taken in the response from CN dated 16 June 2009. TC believes the action taken will improve CN's Safety Management System (SMS) and related risk mitigation processes.

Further in this regard, to enhance the regulatory regime for the broader rail industry, a Ministerial Order on "Railway Locomotive Inspection and Safety Rules" was issued on 08 May 2009. Another Ministerial Order on "Railway Freight and Passenger Train Brake Inspection and Safety Rules" was issued on 07 July 2009 to all federally regulated railway companies to formulate specific rules requiring dynamic braking on locomotives in certain geographical areas.

In addition, the Department has assigned additional resources internally to advance the integration of SMS and audits of the industry at large.

Board assessment of response to R09-03 (September 2009)

TC has accepted the Board's recommendation and indicated that the department believes that the action noted in CN's response to the recommendation will improve CN's Safety Management System and related risk mitigation processes. TC has also issued two Ministerial Orders to federally regulated railways requiring revisions to the "Railway Locomotive Inspection and Safety Rules" and the "Railway Freight and Passenger Train Brake Inspection and Safety Rules". These revisions are to include requirements for operations use of dynamic braking as it pertains to gradient and territory and to include requirements for locomotives to be equipped with the dynamic brake holding feature. TC has assigned additional resources internally to advance the integration of SMS and audits of the industry.

The safety actions taken by CN to improve their risk assessment practices may substantially reduce the risks associated with the safety deficiency. Transport Canada has taken significant steps with the Ministerial Orders issued. However, given that the effect of CN's actions and the

additional TC resources to SMS integration will not be known immediately, the Board assesses the response to Recommendation R09-03 as having **Satisfactory Intent**.

TC's Additional response to R09-03 (February 2010)

The "Railway Locomotive Inspection and Safety Rules" have been approved and the "Railway Freight and Passenger Train Brake Inspection and Safety Rules" have been submitted but have not yet been approved. The Railway Locomotive Inspection and Safety Rules require that railway companies must file with the Department, all territories on which locomotives with dynamic brake are required, as well as related instructions. The Railway Freight and Passenger Train Brake Inspection and Safety Rules propose that railways shall notify operating employees which territories require the use of dynamic brake.

Board reassessment of response to R09-03 (16 September 2010)

The "Railway Locomotive Inspection and Safety Rules" were approved on 04 February 2010 and the "Railway Freight and Passenger Train Brake Inspection and Safety Rules" were submitted on 08 March 2010. Although some risks will be mitigated through the implementation of these rules, the result of Canadian National's overall approach to identify and mitigate risks to safety, as required by its safety management system, will not be known immediately. The Board reassesses the response to Recommendation R09-03 to remain as having **Satisfactory Intent**.

TC's additional response to R09-03 (October 2011)

TC and the rail industry have developed guidelines and tools to assist railway companies in implementing and improving their safety management systems. Also, TC has completed staffing technical positions and is providing training for the new Audit, Enforcement and Risk Evaluation Division to provide leadership and functional direction to the industry. For TC this issue is completed.

CN's response to R09-03 (January 2012)

CN's SMS program and efforts have evolved considerably since the 2006 accident. In addition to continuing with all of the initiatives identified in our response of June 2009, CN has made great efforts to address the important Safety Culture aspects of SMS. CN is the only railway in all of Canada (and very likely all of North America) that has developed and implemented a process to measure Safety Culture. CN's efforts have been so successful that many of our practices (such as integrated audits and safety culture assessment) have been identified as best practices in the recently published TC Guide to SMS. A good overview of our current position with respect to SMS can be found in CN's SMS Overview 2011.

Board reassessment of response to R09-03 (February 2012)

Since this recommendation was issued CN has reported improvements to its risk assessment practices and advancements in its overall safety culture. There has been a decrease in CN non main track derailments, employee injuries, and crossing accidents since this recommendation, although a direct correlation to mitigation of risks under an SMS cannot be made. TC has revised its SMS guidelines and developed additional tools to help railways improve their SMS. TC now has its Audit, Enforcement and Risk Evaluation Division staffed and operational. Given the steps that CN has taken to improve its SMS and the action taken by TC to continuously evaluate safety management, the Board reassesses the response to Recommendation R09-03 as **Fully Satisfactory**.

TC's additional response to R09-03 (January 2013)

TC and the rail industry have developed guidelines and tools to assist railway companies in implementing and improving their safety management systems.

Board reassessment of response to R09-03 (07 March 2013)

The Board acknowledges the action taken by Transport Canada in advancing the SMS program. CN has taken steps to identify and integrate risks as required by its SMS but the Board believes that it can take time to fully implement the SMS throughout all levels of the company. The Board reassesses the response to Recommendation R09-03 to remain as **Fully Satisfactory.**

Next TSB action

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