



REASSESSMENT OF THE RESPONSE TO TSB RECOMMENDATION R13-02

In-cab locomotive video cameras

Background

On 26 February 2012, VIA Rail Canada Inc. passenger train No. 92 (VIA 92) was proceeding eastward from Niagara Falls to Toronto, Ontario, on track 2 of the Canadian National Oakville Subdivision near Burlington, Ontario. VIA 92, which was operated by 2 locomotive engineers and a locomotive engineer trainee, was carrying 70 passengers and a VIA service manager. After a stop at the station at Aldershot, Ontario (Mile 34.30), the train departed on track 2. The track switches were lined to route the train from track 2 to track 3, through crossover No. 5 at Mile 33.23, which had an authorized speed of 15 mph. At 1525:43 Eastern Standard Time, VIA 92 entered crossover No. 5 while travelling at about 67 mph. Subsequently, the locomotive and all 5 coaches derailed. The locomotive rolled onto its side and struck the foundation of a building adjacent to the track. The operating crew was fatally injured and 45 people (44 passengers and the service manager) sustained various injuries. The locomotive fuel tank was punctured and approximately 4300 litres of diesel fuel was released.

The Board concluded its investigation and released report R12T0038 on 10 June 2013.

TSB Recommendation R13-02 (June 2013)

In the absence of an automatic train control system, the need to understand cab crew dynamics becomes more acute. Action is required today to implement voice recorders, but there is also a need for forward-facing and in-cab video cameras. In the absence of voice and video recordings, the investigation team encountered significant challenges in confirming the signal indications displayed to the crew. It was also difficult to identify all the human factors that may have contributed to the inappropriate crew response to the signal indications displayed.

The dynamics and interaction between the 3 VIA crew members could not be accurately determined because there was no in-cab voice or video recording. Had this information been available, a more precise determination of causal factors could have been made allowing accident investigators to more quickly identify key safety issues and eliminate extraneous factors that did not play a role in the accident. The absence of this valuable information left a number of questions unanswered and represents a lost opportunity to mitigate potentially serious crew resource management issues in the industry. A number of rail accident investigations in North America have led to findings or other communications identifying human factors as an underlying condition. However, many of these investigations would have

further benefitted from additional video recordings captured from the lead locomotive immediately prior to the accident.

While there has been progress on forward-facing video cameras, no railway in Canada has installed in-cab video cameras to record crew actions in the cab. The benefits of voice recordings to safety investigations have long been demonstrated. The addition of video recorders is the next logical step. Together, this technology will allow better understanding of the events leading to an accident including how the crew communicated, what took place in the cab and whether existing defences are robust enough.

To advance safety, accident investigation agencies rely on efficient, timely and accurate collection, assimilation and analysis of information in order to provide timely communication of safety deficiencies and accident reports to industry, regulators and the public. In addition, there may be potential for companies to use voice and video recordings proactively in a non-punitive way in order to enhance their Safety Management Systems, which could reduce risk and improve safety before an accident occurs. This is particularly important in an environment that depends on administrative defences alone to ensure safety and where there are no physical fail-safe train control systems. Therefore, the Board recommends that:

The Department of Transport require that all controlling locomotives in main line operation be equipped with in-cab video cameras.

TSB Recommendation R13-02

Railway Association of Canada's response to Recommendation R13-02 (June 2013)

The only way to get a clear picture of what is transpiring inside the cab of the locomotive is to have both voice and video recorders installed inside the cab. Train crews are identified under the Railway Safety Act as Safety Critical positions. Monitoring the cab of a locomotive with audio and video surveillance for rule compliance should be done to optimize safety. The Railway Association of Canada (RAC) feels the Federal Government should take an active and public position that specifically encourages and permits the use of such technology for both post-accident investigation and company managed safety performance monitoring.

Transport Canada's response to Recommendation R13-02 (September 2013)

Transport Canada (TC) accepts the recommendation. Following this occurrence, TC referred the issue of locomotive voice recorders to the Advisory Council on Railway Safety (ACRS) for consideration.

The ACRS established a working group with representatives from the railways, the unions and TC to study the issue of both voice and video recorders on-board locomotives and to provide TC with options and recommendations as to how to address this issue in a written report by December 31, 2012. The working group finalized its report and provided it to TC for consideration.

On June 7, 2013, the study by the ACRS's Working Group on Locomotive Voice and Video Recorders was released. The study calls for the voluntary installation of voice and video recording devices on locomotives by railway companies. At the same time, TC also wrote to the Railway Association of Canada (RAC) and individual railway companies to strongly encourage the voluntary installation of recording devices. VIA Rail and Rocky Mountaineer railway have committed to installing voice recorders on their entire fleet of locomotives.

TC is currently looking at encouraging the rail industry to voluntarily install locomotive voice and video recorders as a tool to monitor their safety management systems (SMS) in a non-punitive manner. Regulation of such an SMS requirement may require legislative change.

TSB assessment of the responses to Recommendation R13-02 (October 2013)

This recommendation is related to the TSB Watchlist issue “On-board video and voice recorders”. Accident investigation agencies rely on efficient, timely and accurate collection, assimilation and analysis of information in order to provide timely communication of safety deficiencies and accident reports to industry, regulators and the public. As well, company use of recorded information as part of a robust SMS can help organizations pro-actively identify and mitigate hazards before they lead to accidents.

TC has accepted the TSB recommendation. However, TC supports the Advisory Council on Railway Safety (ACRS) Working Group’s recommendation to install voice and video recording devices on a voluntary basis only, and has written letters to individual railway companies and the Railway Association of Canada urging the voluntary installation of recorders. The Board notes the actions of VIA Rail and Rocky Mountaineer railway and commends them for their proactive actions.

Furthermore, the Board is pleased that TC has committed to the use of voice and video recorders in a non-punitive manner in the context of SMS programs. This will require legislative change, but at this time, there is no specific plan of action in this regard. However, this initiative falls short of mandating a clear plan of action to fully address the safety issue.

Therefore, the Board assesses the response to Recommendation R13-02 as **Satisfactory in Part**.

Transport Canada’s response to Recommendation R13-02 (January 2014)

On 7 June 2013, the study by the ACRS’s Working Group on Locomotive Voice and Video Recorders was released. The study calls for the voluntary installation of voice and video recording devices on locomotives by railway companies. At the same time, Transport Canada also wrote to the Railway Association of Canada and individual railway companies to strongly encourage the voluntary installation of recording devices. VIA Rail and Rocky Mountaineer railway have committed to installing voice recorders on their entire fleet of locomotives.

Transport Canada is currently looking at encouraging the rail industry to voluntarily install locomotive voice and video recorders as a tool to monitor their safety management systems (SMS) in a non-punitive manner. Regulation of such an SMS requirement may require legislative change.

Teamsters Canada Rail Conference’s response to Recommendation R13-02 (March 2014)

The Teamsters Canada Rail Conference (TCRC), representing the on-board trains operating crews, appreciates the TSB recommendation concerning installation of voice and video recording devices (LVVRs) on locomotives. Notwithstanding privacy issues and individual rights, the LVVR may have value for safety in the industry. The TCRC is reviewing the proposal for LVVRs at their next meeting and expects to develop a position and policy on the matter in the near future.

Rocky Mountaineer's response to Recommendation R13-02 (March 2014)

Rocky Mountaineer railway fully supports the TSB recommendation on LVVRs. We firmly believe that LVVR devices provide powerful safety benefits. All locomotives will have fully functional forward-facing cameras and microphones for exterior recording for April 2014. The in-cab wiring and infrastructure will also be installed for interior recording, but interior cameras and microphones will not be in place pending issues to be settled with the on-board train crews.

VIA Rail's response to Recommendation R13-02 (March 2014)

VIA has voluntarily begun testing the installation of in-cab voice recorders. While this testing nears completion, VIA continues to actively discuss usage terms with its locomotive engineer union. VIA plans to begin installation later this year.

TSB reassessment of the responses to Recommendation R13-02 (March 2014)

While Transport Canada is promoting voluntary installation of locomotive voice and video recorders as a tool to monitor railway operations in a non-punitive manner, the railways wish to use this technology to monitor employee compliance with rules and to take corrective measures. The railways may not agree to the expense of this technology if there are any restrictions on its use. The railways also have challenges with respect to acceptance of this technology by their employees. Transport Canada has facilitated bringing the LVVR issue to the forefront with all stakeholders. There has been moderate success with the passenger service railways.

However, until additional definitive safety action is initiated, the Board reassesses the response to Recommendation R03-02 to remain as **Satisfactory in Part**.

Teamsters Canada Rail Conference's response to Recommendation R13-02 (May 2014)

The TCRC supports the implementation of LVVR on certain conditions. Where LVVR is clearly and demonstrably necessary and has probative value to enhance Canada's rail safety system, the TCRC will support its implementation on the condition that access to any data is controlled and restricted to the TSB.

Further and in addition, the TCRC will support its implementation on the condition that the implementation of LVVR provides the necessary correct and required balance between the probative value of LVVR to enhance rail safety and the rights of the TCRC and its members such as, *inter alia*, the right of privacy and freedom from workplace harassment, intimidation, and discipline.

Transport Canada's response to Recommendation R13-02 (February 2015)

TC will continue to look at encouraging the rail industry to voluntarily install locomotive video and voice recorders and will explore the possibility of developing mandatory requirements with stakeholders.

Moreover, a joint TSB/TC safety study, in conjunction with key stakeholders, on locomotive voice and video recorders (LVVR) has been initiated.

The locomotive video and voice recorders study is planned as two phases:

- Phase 1: Assess the technological and operational aspects of on-board video and voice recordings; identify best practices; and evaluate implementation issues and collect information for future legislative, regulatory and/or rule changes. This phase is scheduled to begin in March 2015 and be completed by the fall 2015.
- Phase 2: Initiate legislative, regulatory and/or rule changes to reflect use of LVVR. The timing will be based on the results of the Phase 1 study.

Railway Association of Canada's response to Recommendation R13-02 (February 2015)

RAC has completed consultation on rules addressing the handling of LVVR if the system is used by industry. The rules governing locomotive inward-facing video and/or in-cab voice recording have been filed with TC. The purpose of these rules is to ensure railways with LVVR systems have appropriate controls in place. The rules do not mandate the use of LVVR. Industry and RAC are in discussion about guiding principles in order to participate in the LVVR Safety Study Project with the TSB and TC. CP, CN and VIA continue to evaluate opportunities to implement this technology. RAC and industry are calling for TSB/TC to change the current legislation to permit the expanded use of this technology.

Rocky Mountaineer's response to Recommendation R13-02 (March 2015)

The Rocky Mountaineer (RM) has installed LVVR (inward and outward) on its 5 lead locomotives. RM is waiting for guidance from the industry prior to activating this equipment.

TSB reassessment of the responses to Recommendation R13-02 (March 2015)

This recommendation is related to the TSB Watchlist issue of on-board video and voice recorders. Without a requirement for on-board video and voice recorders on locomotives, key information to advance railway safety may not always be available. It is also related to recommendation R03-02, in which the Board recommended that the Department of Transport, in conjunction with the railway industry, establish comprehensive national standards for locomotive data recorders that include a requirement for an on-board cab voice recording interfaced with on-board communications systems.

The Board acknowledges the participation of the stakeholders in working on studies that will lead towards addressing this safety deficiency. The Board is particularly pleased that Transport Canada and industry stakeholders have agreed to work collaboratively with the TSB on a joint study that will provide valuable information for the review of the legislative and regulatory framework governing on-board recorders.

However, in the absence of definitive commitments and plans to install on-board cab video and voice recorders that would be available for accident investigation purposes, the Board considers the response to the recommendation as **Satisfactory in Part**.

Transport Canada's response to Recommendation R13-02 (January 2016)

TC supports the ACRS Working Group's recommendation to install voice/video recording devices on a voluntary basis, and has written letters to individual railway companies and the Railway Association of Canada (RAC) urging the voluntary installation of recorders.

TC will continue to look at encouraging the rail industry to voluntarily install locomotive video and voice recorders and will explore the possibility of developing mandatory requirements with stakeholders.

A joint Transportation Safety Board of Canada (TSB) and Transport Canada (TC) project on Locomotive Voice and Video Recorders (LVVR) was initiated in May 2015.

The LVVR project consists of two phases:

- Phase 1: Assess the technological and operational aspects of on-board video and voice recordings; identify best practices; evaluate implementation issues and collect information for future legislative, regulatory and/or rule changes. This phase is scheduled to be completed by spring 2016.
- Phase 2: Initiate legislative, regulatory and/or rule changes to reflect use of LVVR. The timing for this phase will be based on the results of the Phase 1 study.

Railway Association of Canada's response to Recommendation R13-02 (January 2016)

The RAC and industry propose that LVVR be used for both post-accident investigation and company managed prevention monitoring offering great safety benefits. CP and CN have been using this technology effectively in the United States. VIA continues to evaluate opportunities to implement this technology and has equipped over 20 locomotives with on-board voice recorders. In addition, GO Transit has developed and installed voice and video recorders on 4 locomotives as part of a pilot project. These recorders are planned to be installed on the rest of the GO Transit locomotive fleet later this year. The RAC and industry are calling for TSB/TC to change the current legislation.

TSB reassessment of the responses to Recommendation R13-02 (March 2016)

This recommendation is related to the TSB Watchlist issue of "On-board video and voice recorders". Without a requirement for on-board video and voice recorders on locomotives, key information to advance railway safety may not always be available. It is also related to Recommendation R03-02, in which the Board recommended that the Department of Transport, in conjunction with the railway industry, establish comprehensive national standards for locomotive data recorders that include a requirement for an on-board cab voice recording interfaced with on-board communications systems.

The views of the railways and Transport Canada have not changed since last year. However, VIA and GO Transit have started to equip their locomotive fleets with on-board recorders. In addition, Transport Canada and industry stakeholders have been working collaboratively with the TSB on the joint LVVR study. This study will provide valuable information for the review of the legislative and regulatory framework governing on-board recorders. The LVVR study is progressing well and a draft report will be completed in spring 2016.

However, in the absence of definitive commitments and plans to install on-board cab video and voice recorders on a widespread basis, the Board considers the response to the recommendation as **Satisfactory in Part**.

Transport Canada's response to Recommendation R13-02 (February 2017)

This recommendation is linked to TSB Recommendation R03-02.

On 03 November 2016, the Minister of Transport publicly announced a commitment to mandate in Canada the installation and use of voice and video recorders in locomotive cabs as part of Transportation 2030 - A Strategic Plan for the Future of Transportation in Canada. This commitment is aligned with recommendations stemming from the recent review of the Canada Transportation Act, as well as the Standing Committee on Transport, Infrastructure and Communities Report “An Update on Rail Safety”.

In addition, in September 2016, the Transportation Safety Board released its report on the results of a joint study with Transport Canada on the safety benefits and technical requirements for LVVR. The report summarized that LVVR would support proactive safety management by railway companies, as well as post-accident investigations. TC is currently developing legislation and regulations to not only require installation and use, but to protect the privacy of employees to the extent possible.

Railway Association of Canada’s response to Recommendation R13-02 (March 2017)

The RAC feels the federal government should continue to take an active and public position that permits the use of such technology for both post-accident investigation and company managed safety performance monitoring. The RAC and industry are calling for TSB/TC to change the current regulations.

Railway companies need access to locomotive voice and video recorder data to help identify and mitigate risks before accidents occur. The RAC and industry will put robust rules and procedures in place to protect the data and ensure LVVR systems have appropriate controls.

TSB reassessment of the responses to Recommendation R13-02 (March 2017)

This recommendation is related to the TSB Watchlist issue of “On-board voice and video recorders”. Without a requirement for on-board voice and video recorders on locomotives, key information to advance railway safety may not always be available. It is also related to Recommendation R03-02, in which the Board recommended that the Department of Transport, in conjunction with the railway industry, establish comprehensive national standards for locomotive data recorders that include a requirement for an on-board cab voice recording interfaced with on-board communications systems.

In September 2016, the Transportation Safety Board released its safety study report on LVVR. This safety study, which included participation from TC and key rail stakeholders (i.e., railways and unions), identified some best practices, identified and evaluated implementation issues, examined potential safety benefits of the expanded use of on-board recorders, and collected background information for the development of an action plan to implement LVVR. The report also highlighted that LVVR could support proactive safety management by railway companies, as well as post-accident investigations.

On 03 November 2016, the Minister of Transport publicly announced a commitment to mandate in Canada the installation and use of voice and video recorders in locomotive cabs. Following this announcement, TC is developing legislation and regulations to not only require installation and use of this technology for proactive safety management, but to protect the privacy of employees to the extent possible.

The Board considers the response to the recommendation to have **Satisfactory Intent**.

Transport Canada's response to Recommendation R13-02 (February 2018)

On November 3, 2016, the Minister of Transport publicly announced a commitment to mandate in Canada the installation and use of voice and video recorders in locomotive cabs as part of Transportation 2030 - A Strategic Plan for the Future of Transportation in Canada. This commitment is aligned with recommendations stemming from the recent review of the *Canada Transportation Act*, as well as the Standing Committee on Transport, Infrastructure and Communities Report "An Update on Rail Safety". In addition, in September 2016, the Transportation Safety Board released their report on the results of a joint study with Transport Canada on the safety benefits and technical requirements for Locomotive Voice and Video Recorders (LVVR). The report summarized that LVVR would support proactive safety management by railway companies, as well as post-accident investigations.

Bill C-49, the *Transportation Modernization Act*, is currently in the Senate and contains amendments to the *Railway Safety Act*, as well as consequential amendments to other Acts, that would require installation and use of LVVR, including limitations on the use of LVVR data to protect employee privacy. TC is in the process of developing policy options for LVVR regulations that would be developed subsequent to Royal Assent of the Bill. The regulations would contain further technical requirements respecting the LVVR equipment and would further enhance privacy protections for employees.

Railway Association of Canada's response to Recommendation R13-02 (January 2018)

The RAC and industry are prepared to put robust rules and procedures in place to ensure LVVR systems have appropriate controls in order to protect LVVR data and employee privacy. The RAC affirms that company access to locomotive voice and video recorder data as part of Safety Management Systems, along with post-accident data, will offer great safety benefits. The RAC encourages the federal government to continue to progress the necessary legislation and regulation changes to permit the use of this safety technology for proactive safety management.

TSB reassessment of the responses to Recommendation R13-02 (March 2018)

This recommendation is related to the TSB Watchlist issue of "On-board voice and video recorders." Without a requirement for on-board voice and video recorders on locomotives, key information to advance railway safety may not always be available. It is also related to Recommendation R03-02, in which the Board recommended that "the Department of Transport, in conjunction with the railway industry, establish comprehensive national standards for locomotive data recorders that include a requirement for an on-board cab voice recording interfaced with on-board communications systems."

In May 2017, the Minister of Transport tabled the proposed *Transportation Modernization Act*, (Bill C-49) in the House of Commons, which includes provisions for on-board recorders in locomotive cabs. Specifically, Bill C-49 contains amendments to the *Railway Safety Act*, as well as consequential amendments to other acts, that would require installation and use of LVVR, including limitations on the use of LVVR data to protect employee privacy. While Bill C-49 was being reviewed in the House of Commons and the Senate, TC started its review of policy options for LVVR regulations that would be developed subsequent to royal assent of the Bill.

The RAC and industry confirmed that they are prepared to put robust rules and procedures in place to ensure LVVR systems have appropriate controls in order to protect LVVR data and employee privacy.

The Board considers the response to the recommendation as having **Satisfactory Intent**.

Transport Canada's response to Recommendation R13-02 (February 2019)

Bill C-49, the *Transportation Modernization Act*, received Royal Assent on May 23, 2018. The Bill amended the *Railway Safety Act* (RSA) to mandate locomotive voice and video recording equipment in the locomotive cabs of Canada's federally regulated railways. TC is in the process of developing proposed LVVR regulations which would contain further technical requirements respecting the LVVR equipment, and would further enhance privacy protections for employees.

Formal stakeholder consultations were held in November and December 2018 with railway companies, unions, manufacturers, the Office of the Privacy Commissioner and the TSB. Proposed regulations would address recommendations made by the *Canada Transportation Act* Review Panel, and the House of Commons Standing Committee on Transport, Infrastructure and Communities. The proposed regulations are planned for pre-publication in the *Canada Gazette*, Part I, in June 2019 followed by a public comment period. Current plans for final publication are slated for Spring 2020.

Railway Association of Canada's response to Recommendation R13-02 (February 2019)

The Railway Association of Canada (RAC) and industry were pleased to see the passage of Bill C-49 in May 2018 which will require that LVVR systems be installed on controlling locomotives in Canada and require that railways use LVVR data as part of Safety Management Systems. RAC and the rail industry are of the opinion that this will provide important safety benefits if the regulations remain sufficiently flexible to allow for effective use under SMS; evolution of technology and cost-effective systems.

RAC is currently involved in communication with Transport Canada on the specific requirements to be included in the regulation.

TSB reassessment of the responses to Recommendation R13-02 (March 2019)

This recommendation is related to Recommendation R03-02, in which the Board recommended that "the Department of Transport, in conjunction with the railway industry, establish comprehensive national standards for locomotive data recorders that include a requirement for an on-board cab voice recording interfaced with on-board communications systems."

With royal assent of Bill C-49, the *Transportation Modernization Act*, in May 2018, the *Railway Safety Act* (RSA) was amended to mandate the installation of locomotive voice and video recorders in the locomotive cabs of Canada's federally regulated railways. Bill C-49 also amended the *Canadian Transportation Accident Investigation and Safety Board Act* to permit the use of on-board recorders by Transport Canada (TC) and operators for proactive safety management purposes. Following this amendment, TC has been developing proposed LVVR regulations which will identify the technical requirements for the LVVR equipment and the privacy protections for employees. The proposed regulations will also address the related recommendations made by the *Canada Transportation Act* Review Panel and the House of Commons Standing Committee on Transport, Infrastructure and Communities.

Formal consultations with key stakeholders were held in November and December 2018. The proposed regulations are planned for pre-publication in the *Canada Gazette*, Part I, in June 2019.

Following a public comment period, final publication of the regulations is planned for spring 2020.

The Railway Association of Canada continues to remain engaged with TC regarding the specific requirements to be included in the regulations.

The Board considers the response to Recommendation R13-02 as having **Satisfactory Intent**.

Next TSB action

The TSB will continue to monitor progress on the development and implementation of the LVVR regulations. The TSB is committed to working with the regulator and the railway industry to ensure that LVVR technology is appropriately implemented within an updated legislative framework that balances enhancements to railway safety and the rights of the workers.

This deficiency file is **Active**.