



## REASSESSMENT OF THE RESPONSE TO TSB RECOMMENDATION R15-01

### Distracted driving guidelines

#### Background

On 18 September 2013, at about 0832 Eastern Daylight Time, westward VIA Rail Canada Inc. (VIA) passenger train No. 51 departed from the VIA Ottawa Station on time and proceeded enroute to Toronto. At 0847:27, OC Transpo double-decker bus No. 8017 departed from the Fallowfield Station on the OC Transpo bus Transitway. At 0848:06, while proceeding at about 43 mph, the train entered the OC Transpo Transitway crossing, located at Mile 3.30 of VIA's Smiths Falls Subdivision. At the time, the crossing lights, bells and gates were activated. The northbound bus was travelling at about 5 mph with the brakes applied when it struck the train. As a result of the collision, the front of the bus was torn off. The train, comprising 1 locomotive and 4 passenger cars, derailed but remained upright. Among the bus occupants, there were 6 fatalities and 9 serious injuries, and about 25 minor injuries were reported. No VIA crew members or VIA passengers were injured.

The Board concluded its investigation and released report R13T0192 on 2 December 2015.

#### TSB Recommendation R15-01 (December 2015)

All Alexander Dennis Limited (ADL) double-decker buses are equipped with a video monitor that provides the driver with interior views and exterior views of the bus. Within the driver workstation, the video monitor is located on the left side of a forward panel above the driver seat. The video monitor measures 6 inches (15.2 cm) wide by 3<sup>3</sup>/<sub>4</sub> inches (9.5 cm) high. The monitor is divided into 4 quadrants, each measuring 3 inches (7.6 cm) wide by 1<sup>7</sup>/<sub>8</sub> inches (5 cm) high. Each quadrant shows a view from 1 of 4 on-board video cameras and the 4 views are continuously displayed. The location and angle of the video monitor are not adjustable and the driver is not able to turn the display off or change the camera views. The location of the video monitor creates a significant upward viewing angle for the driver (i.e. 30 to 40 degrees from the horizontal). The screen's position, far away (22 inches or 56 cm) from the driver seat, makes the image appear very small to the driver.

At station stops and while in service, OC Transpo drivers were required to view the monitor to ensure that upper deck passengers were seated. If passengers were seen to be standing on the upper deck, drivers were required to make an announcement to inform the passengers that standing was not permitted on the upper deck or in the stairwell. However, to find available seating after boarding a double-decker bus, some passengers would remain moving or standing on the upper deck after the bus was in motion. OC Transpo administrative procedures indicate

that drivers should not stare at the video monitor while the bus is in motion even though the video display remains active. But, it is human nature for a driver to periodically glance at the screen while the bus is in motion to monitor the small image displaying the upper level.

In this occurrence, there were 2 types of driver distraction that likely contributed to the accident:

- Visual distraction arising from the use of the in-vehicle video monitor;
- Cognitive distraction arising from
  - a requirement to monitor the upper deck for standing passengers even when the bus was in motion;
  - a conversation between the driver and a passenger about seating availability prior to the bus departing from the OC Transpo Fallowfield Station; and
  - conversations regarding available seating on the upper deck among lower deck passengers who were near the driver following departure from the OC Transpo Fallowfield Station.

Following the accident, the City engaged expert traffic safety engineering and ergonomic consultants from MMM Group Limited (MMM) and their subcontractor Human Factors North (HFN) to review driver workload and other ergonomic aspects of OC Transpo bus operations. Subsequently, HFN recommended that

- the video monitor within the driver's station of all OC Transpo ADL E500 buses be reconfigured to display only the interior view of the upper deck of the bus at all times;
- the video monitor within the driver workstation be relocated to the left of the large rear-view mirror located to the right of the driver.

While these changes may improve monitoring of the video display, there would still be an upward viewing angle to the right of the driver and the potential for distraction would still exist as the single image of the upper deck is constantly displayed even when the bus is in forward motion. Furthermore, since these suggested changes only apply to OC Transpo buses, other transit authorities that operate ADL double-decker buses would then have different configurations of the video monitor, which could present other risks for distraction.

All provinces have some form of distracted driving legislation in place. With the rapid development of technology and in-vehicle displays, distracted driving is an emerging safety issue. For example, the Ontario Provincial Police (OPP) notes that distracted driving is the number one killer on roads, and statistics show that more people in Ontario died in distracted driving-related crashes in 2013 than in any other type of crash.<sup>1</sup>

At the time of the accident, the location of the video monitor on OC Transpo's ADL E500 buses and OC Transpo's use of the video monitor within the driver station were not consistent with driver distraction guidelines published by the American Public Transportation Association (APTA) in 2009 and the United States Department of Transportation (DOT) National Highway Traffic Safety Administration (NHTSA) in 2013. These guidelines were based on the fundamental principle that a driver's eyes should be looking at the road ahead rather than at an

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<sup>1</sup> CBCnews (on line), *OPP calls distracted driving 'number one killer on roads'*, March 2014, available at: <http://www.cbc.ca/news/canada/kitchener-waterloo/opp-calls-distracted-driving-number-one-killer-on-roads-1.2557892> (last accessed 28 September 2015).

in-vehicle device. In particular, the NHTSA guidelines encouraged automakers to forego in-vehicle systems that require the manual input of data while a vehicle is in motion, or that require unreasonably long glances away from the forward visual scene. The NHTSA guidelines recommended

- disabling certain in-vehicle system operations unless the vehicle is stopped and in “PARK”;
- locking out video displays and making them inaccessible to the driver while driving; and
- positioning any active displays as close as practicable to the driver’s forward line of sight, with a maximum viewing angle of 30 degrees downward from horizontal.

Many jurisdictions, including the Province of Ontario, also have laws in place to limit the potential for driver distraction. However, for the OC Transpo double-decker bus, the video monitor was deemed to be necessary for the safe operation of the bus and was therefore exempt from the *Ontario Highway Traffic Act* (OHTA) restricting the use of display screens.

In Canada and the United States, the federal government is responsible for establishing, maintaining and enforcing minimum motor vehicle safety standards. The placement of in-vehicle displays, which are included as original equipment by the manufacturer, would fall under the *Canada Motor Vehicle Safety Standards* (CMVSS) in Canada and the *Federal Motor Vehicle Safety Standards* (FMVSS) in the United States. Vehicle/driver licensing and enforcement falls under provincial and state jurisdiction, respectively. Vehicles must therefore meet the federal safety standards in addition to any provincial or state requirements for a province or state to license the vehicles. Activities related to distracted driving fall under provincial or state jurisdiction and as such can vary between provinces and/or states.

The United States has recognized the importance of federal guidelines to provide a consistent framework to assist the federally regulated industry as well as state regulators in addressing the emerging issues related to distracted driving. When all is considered, there is no similar or consistent guidance with regards to the installation and use of video monitors in motor vehicles operated in Canada.

Despite jurisdictional issues, it is important for Transport Canada (TC) to take a leadership role and develop a framework that provides consistent guidance to both the industry and provinces to address the emerging issues related to distracted driving. The Board considers this framework to be an important element in mitigating the associated risks, particularly with regards to railway crossing safety. In order to minimize any potential distraction while driving a vehicle, the Board recommends that

The Department of Transport, in consultation with the provinces, develop comprehensive guidelines for the installation and use of in-vehicle video monitor displays to reduce the risk of driver distraction.

**TSB Recommendation R15-01**

### **Transport Canada’s response to Recommendation R15-01 (February 2016)**

Transport Canada accepts this recommendation.

The Canadian Council of Motor Transport Administrators (CCMTA) has a Distracted Driving Working Group developing strategies to support jurisdictional efforts to reduce fatalities and

serious injuries due to driver distraction. This group has representatives from the provinces and territories and is co-chaired by Transport Canada.

Transport Canada will request the CCMTA Distracted Driving Working Group to consider developing guidelines for the installation and use of in-vehicle video monitor displays to reduce the risk of driver distraction. Transport Canada will suggest to the CCMTA Distracted Driving Working Group to review international research to determine the best-available human factors information on driver distraction in both passenger and commercial vehicles.

Transport Canada will also suggest that the working group consult with experts and industry stakeholders to identify challenges and effective strategies for limiting distracted driving from video displays.

Based on the results of this work, the group could draft guidelines for the design, installation and use of in-vehicle video monitor displays to reduce the risk of driver distraction.

Transport Canada does not have direct control over the CCMTA or whether the provinces and territories choose to address this issue or follow guidelines once developed. However, guidelines can make a significant safety contribution.

### **TSB assessment of Transport Canada's response to Recommendation R15-01 (March 2016)**

TC has accepted this recommendation. TC believes that having guidelines for the design, installation and use of in-vehicle video monitor displays can make a significant safety contribution.

TC will request that the CCMTA Distracted Driver Working Group consider developing guidelines for the installation and use of in-vehicle video monitor displays to reduce the risk of driver distraction. As co-chair of this group, TC will also suggest that experts and industry stakeholders be consulted to identify the challenges and effective strategies for limiting distracted driving due to video displays. Although meaningful results from the planned action will not likely occur in the short term, the Board is encouraged that TC has accepted the recommendation and will be taking a leadership role in the development of the guidelines.

Therefore, the Board assesses the response to Recommendation R15-01 as having **Satisfactory Intent**.

### **Transport Canada's response to Recommendation R15-01 (February 2017)**

There are 3 phases for the work in response to this recommendation.

**Phase 1:** Review and assessment of guidelines, standards, best practices with respect to the safe use and installation of in-vehicle monitors. Work includes relevant regulations, legislation and policies as well as an overview of new technological trends and distraction mitigation technologies.

- Status: This phase of the work will be carried out by a contractor. CCMTA has also been engaged in this work. The Request for Proposal (RFP) was posted and closed on 06 December 2016.
- The contract has been awarded and a kick off meeting has been held.

- The scope of later phases are contingent on the outcome of Phase 1 work and will be conducted during 2017-2019.

**Phase 2:** Consultations with experts, government and industry stakeholders on the most effective strategies to reduce distraction from video monitor displays and other technologies.

**Phase 3:** TC will publish the results and share them with other key stakeholders.

### **TSB reassessment of Transport Canada's response to Recommendation R15-01 (March 2017)**

TC has initiated a 3-phase project to identify and develop strategies for the installation and use of in-vehicle video monitor displays. These strategies will consider how to reduce the risk of driver distraction.

The Phase 1 work was started in February 2017. This work includes the review and assessment of relevant regulations, legislation and policies, as well as an overview of new technological trends and distraction mitigation technologies. The follow-up work during Phase 2 will include stakeholder consultations with experts, government and industry on effective strategies to reduce distraction from video monitor displays and other technologies. TC will then disseminate the study results to key stakeholders and publish the study report. Although the scope of the follow-up work is contingent on the Phase 1 results, the project is expected to be completed by 2019.

Meaningful results from the planned action will not likely occur in the short term. However, the Board is encouraged that TC has taken a leadership role in the development of the guidelines. The Board assesses the response to the recommendation as having **Satisfactory Intent**.

### **Transport Canada's response to Recommendation R15-01 (February 2018)**

There are three phases of work in response to the TSB recommendation concerning driver distraction.

**Phase 1:** Review and assessment of guidelines, standards, best practices with respect to the safe use and installation of in-vehicle monitors. Work includes relevant regulations, legislation and policies as well as an overview of new technological trends and distraction mitigation technologies.

- Status of Phase 1: The Phase 1 work has been completed and the contractor (Virginia Tech Transportation Institute) has delivered their extensive review. It addresses specific considerations that affect distraction in visual displays (VD) including system functionality, message complexity, sensory modality, safety-related messages, location for placement, use of colour in messages, character height, text legibility, temporal characteristics, glare from a VD, information entry on VDs, and other special considerations (e.g., indirect camera monitoring systems and heads-up displays [HUDs]). Relevant regulations and legislation are also included in the review.

**Phase 2:** Consultations with experts, government and industry stakeholders on most effective strategies to reduce distraction from video monitor displays and other technologies.

- Status of Phase 2: This work is underway. The Canadian Council of Motor Transport Administrators (CCMTA) has been engaged so that the Provinces and Territories can provide comments and any issues that are raised can be addressed. Draft distraction guidelines are being prepared. This work will continue in early 2018. The target for

completing the draft guidelines is May 2018 and February 2019 for completing the provincial/territorial/ industry stakeholder consultation.

Phase 3: TC anticipates publishing the distraction guidelines, which will provide specific recommendations such as limiting moving images by the fourth quarter of 2019. These will be shared with TSB, CCMTA and disseminated to other stakeholders.

### **TSB reassessment of Transport Canada's response to Recommendation R15-01 (March 2018)**

TC has been working on a 3-phase project to identify and develop strategies for the installation and use of in-vehicle video monitor displays in order to reduce the risk of driver distraction.

TC has continued to make good progress on this project:

- Phase 1 has been completed. This phase consisted of a review and assessment of guidelines, standards, and best practices with respect to the safe use and installation of in-vehicle monitors.
- Phase 2, which has started, consists of consultations with experts, government and industry stakeholders on the most effective strategies to reduce distraction from video monitor displays and other technologies. Draft guidelines are expected to be available in May 2018. Follow-up consultation with stakeholders on the draft guidelines is expected to be completed by February 2019.
- Phase 3 involves the publishing of the distraction guidelines. Although this work has not yet started, the guidelines are expected to be published by late 2019.

The Board is encouraged that TC has taken a leadership role in the development of the guidelines and that good progress has been made. The Board assesses the response to the recommendation as having **Satisfactory Intent**.

### **Transport Canada's response to Recommendation R15-01 (February 2019)**

In February 2019, Transport Canada published *Guidelines to Limit Distraction from Visual Displays in Vehicles*, which completed the Department's three-phased project to identify and develop strategies for the design, installation and use of in-vehicle video monitor displays to reduce the risk of driver distraction. Specific project milestones included:

- Phase 1 (completed May 2017) - This phase consisted of a review and assessment of guidelines, standards, and best practices with respect to the safe use and installation of in-vehicle monitors.
- Phase 2 (completed June 2018) - This phase consisted of consultations with experts, government and industry stakeholders on the most effective strategies to reduce distraction from video monitor displays and other technologies. Draft guidelines were developed according to the latest research and taking into account stakeholder comments.
- Phase 3 (final phase, completed February 2019) - This phase involved the publication of Transport Canada's distraction guidelines, entitled *Transport Canada Guidelines to Limit Distraction from Visual Displays in Vehicles*. The guidelines address distraction arising specifically from interactions with visual displays in vehicles (i.e., passenger vehicles, trucks, motor coaches and transit buses), and provide evidence-based guidance to limit

those distractions. This includes guidance on the safe design, installation, and use of in-vehicle visual displays (i.e. all displays that are visible to the driver whether provided as original equipment by manufacturers, permanently installed aftermarket devices or devices carried into the vehicle). The guidelines apply to visual displays that are intended for use by drivers while the vehicle is in motion. In some instances it is recommended that certain interactions be locked out entirely while the vehicle is in motion, and in other cases interactions and tasks are controlled or modified so as to reduce distraction. The guidelines were publically released in February 2019, ahead of the “late 2019” timeline communicated previously.

### **TSB reassessment of Transport Canada’s response to Recommendation R15-01 (March 2019)**

In February 2019, Transport Canada published *Guidelines to Limit Distraction from Visual Displays in Vehicles*, which completed the Department’s three-phased project to identify and develop strategies for the design, installation and use of in-vehicle video monitor displays to reduce the risk of driver distraction. The guidelines apply to visual displays that are intended for use by drivers while the vehicle is in motion.

The guidelines address distraction arising specifically from interactions with visual displays in vehicles (i.e. passenger vehicles, trucks, motor coaches and transit buses), and provide evidence-based guidance to limit those distractions. The guidance includes the safe design, installation, and use of in-vehicle visual displays. In some instances, the guidance indicates that certain interactions should be locked out entirely while the vehicle is in motion, and in other cases, interactions and tasks should be controlled or modified to reduce distraction.

With the completion of comprehensive guidelines for the installation and use of in-vehicle video monitor displays to reduce the risk of driver distraction, the Board considers the response to Recommendation R15-01 to be **Fully Satisfactory**.

This deficiency file is **Closed**.