



Transportation  
Safety Board  
of Canada

Bureau de la sécurité  
des transports  
du Canada

# Rail Transportation Safety Investigation Report R19Q0092

## PASSENGER INJURY

VIA Rail Canada Inc.  
Passenger train VIA 600  
Mile 199.24, Canadian National Railway Company Lac St-Jean Subdivision  
Jonquière, Quebec  
28 May 2019

The Transportation Safety Board of Canada (TSB) investigated this occurrence for the purpose of advancing transportation safety. It is not the function of the Board to assign fault or determine civil or criminal liability. **This report is not created for use in the context of legal, disciplinary or other proceedings.** See the Terms of use at the end of the report.

### The occurrence

On 28 May 2019, at about 0810,<sup>1</sup> VIA Rail Canada Inc. (VIA) passenger train VIA 600, with 29 passengers on board, departed from Jonquière, Quebec, bound for Central Station in downtown Montréal, Quebec. The train consisted of head-end locomotive VIA 6433, baggage car VIA 8619, and passenger car VIA 8147, which was an HEP 1-type (head-end power) Economy Class car. The train weighed approximately 250 tons and was about 225 feet long.

The train crew consisted of an operating locomotive engineer and an in-charge locomotive engineer. Both crew members were qualified for their respective positions, met rest and fitness requirements, and were familiar with the territory. An on-board service manager was in the passenger car.

Shortly after departing Jonquière at Mile 200.8, while the train was proceeding southward on the Canadian National Railway Company (CN) Lac St-Jean Subdivision, the on-board service manager notified the train crew that there was a medical emergency on board. A passenger had sustained an injury while trying to deploy her seat's stowable legrest. The locomotive engineers made the necessary arrangements to obtain assistance from emergency services, and the train came to a stop at about 0820, near the de la Faïence Street public crossing in Jonquière, located at Mile 199.24. Ambulance attendants arrived on site at approximately 0830, took charge of the passenger, and took her to the local hospital for treatment. The train then continued on its journey.

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<sup>1</sup> All times are Eastern Daylight Time.

## Train information

Passenger train VIA 600 travels from Jonquière to Montréal twice a week, on Tuesdays and Thursdays. The train makes stops along the way as needed to take on more passengers. The travel time is usually a little over 9 hours.

## VIA HEP 1-type Economy Class passenger car information

The VIA fleet includes 43 HEP 1-type Economy Class passenger cars (Figure 1). Most of these cars were built in the 1950s and were purchased by VIA in 1978. The oldest of the cars (cars 8130 to 8147), built in 1946 and 1947, were put into service by VIA in the early 1990s, after undergoing major upgrades. Since then, no changes have been made to the interior layout of these cars.

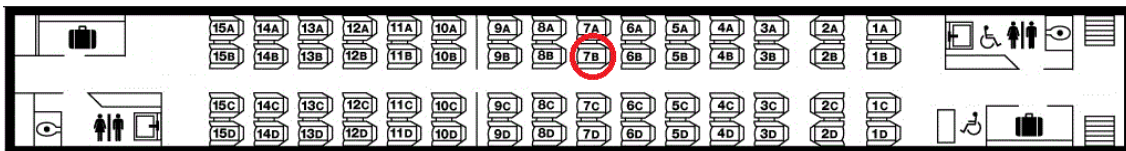
Figure 1. VIA HEP 1-type Economy Class passenger car (Source: Marc G. Vallières)



## Passenger car VIA 8147

Passenger car VIA 8147 has 60 identical seats, configured in 15 rows of 4 seats, with 2 seats on each side of the centre aisle. Each group of 2 seats can be turned around to face the opposite direction. The passenger who sustained the injury was in seat 7B (Figure 2),<sup>2</sup>

Figure 2. Interior layout of car VIA 8147, with seat 7B circled (Source: VIA Rail Canada Inc., with TSB annotations)



Seat 7B (as well all other seats in the car) was equipped with a stowable legrest. When the legrest is in its normal (undeployed) position, it is folded over double and stowed between the underside of the seat and the floor (Figure 3).

<sup>2</sup> The seats are identified as A, B, C, or D depending on whether they are located next to the external windows (A or D) or next to the centre aisle (B or C).

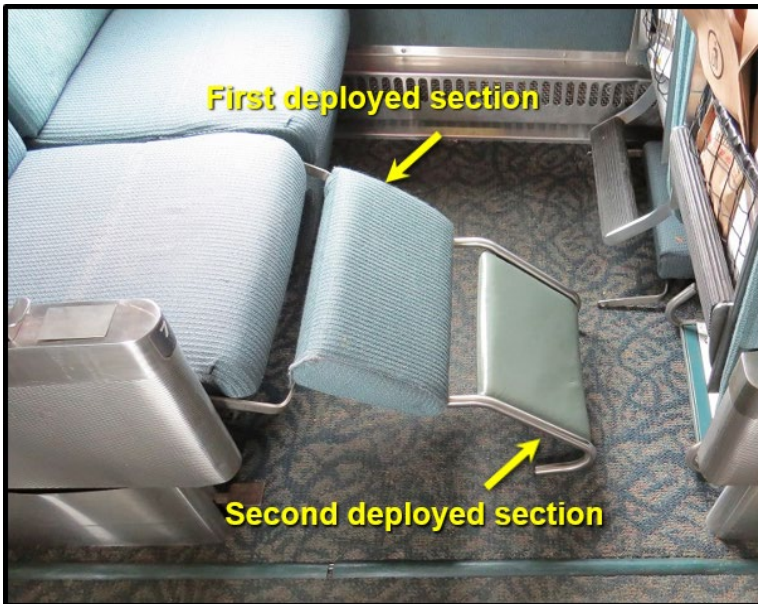
Figure 3. Seat 7B of car VIA 8147, with the legrest in the stowed position (Source: TSB)



### **Examination of the stowable legrest assembly**

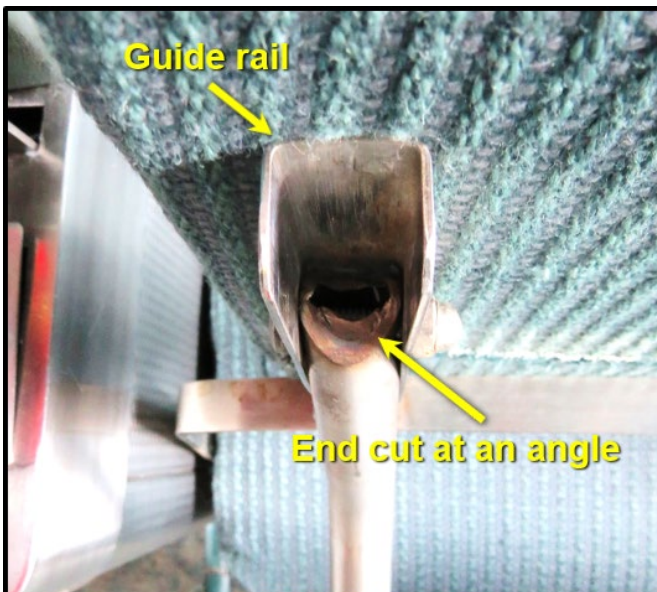
The stowable legrest assembly is composed of 2 sections attached to each other that support the full length of the passenger's legs (Figure 4). The legrest assembly is deployed in 2 separate steps. First, the legrest assembly is pulled out of its stowed position under the seat and moved forward. Second, the bottom section of the assembly is unfolded forward and brought to rest on the floor. The legrest assembly weighs about 5 kg.

Figure 4. Seat 7B with its stowable legrest deployed (Source: TSB)



The first section of the legrest is attached to each side of the seat by 2 pivoting metal arms. The second, smaller section unfolds with 2 pivoting arms made of metal tubing that slide into guide rails attached to the bottom of the first section. The ends of the metal tubes are cut at an angle to allow them to pivot freely from front to back and vice versa within the metal guide rails (Figure 5).

Figure 5. Metal tube on the second section of the legrest assembly (Source: TSB)



### **Injury sustained by the passenger**

The passenger was trying to deploy her seat's stowable legrest assembly to familiarize herself with its operation so that she could help another passenger travelling with her. While the passenger was raising the sections of the assembly, the tip of her right ring finger got stuck between the end of the metal tube and the guide rail. When the second section of the legrest assembly fell forward, the



passenger felt a sharp pain in her right hand. The tip of her finger, starting at the base of the fingernail, had been severed by the tapered end of the metal tube. She immediately informed the person responsible for the group she was travelling with that she had been injured and needed emergency medical care.

### **Instructions and warnings regarding the deployment of the legrest**

The Transportation Safety Board of Canada (TSB) performed a reconstruction of the accident using the same seat. This reconstruction showed that little protection is provided for a passenger's hands and fingers when operating of the legrest assembly. Furthermore, no signs were posted near the seats instructing passengers on how to deploy the stowable legrest assembly or warning them of the risks involved in its operation.

### **Other similar occurrences**

Since 2011, VIA has recorded 20 incidents involving the stowable legrest/footrest systems on seats in HEP 1-type Economy Class passenger cars. In each of the previous incidents, only minor injuries were sustained (cuts, pinches, broken nails, etc.). This occurrence was the first time that a passenger sustained a serious injury when deploying the legrest assembly.

### **Action taken**

In 2018, VIA launched the Heritage Program in order to renovate and modernize a large portion of its fleet, including 25 of the 43 VIA HEP 1-type Economy Class passenger cars. The renovation of the first cars is expected to be completed in early 2020. As part of this program, VIA had already started to modify the stowable legrests in these cars by removing the sharp edges of the metal tubes and installing a plastic tip.

VIA will continue to examine the stowable legrest assembly and will assess if other modifications are necessary.

### **Safety message**

Train passengers need to be able to adjust their seat settings, including legrest assemblies, to make themselves comfortable, particularly during longer train journeys. Although train seats can normally be adjusted easily and safely, instructions should be posted to explain how to adjust legrest assemblies and avoid potential injury.

This report concludes the Transportation Safety Board of Canada's investigation into this occurrence. The Board authorized the release of this report on 08 January 2020. It was officially released on 11 February 2020.

Visit the Transportation Safety Board of Canada's website ([www.tsb.gc.ca](http://www.tsb.gc.ca)) for information about the TSB and its products and services. You will also find the Watchlist, which identifies the key safety issues that need to be addressed to make Canada's transportation system even safer. In each case, the TSB has found that actions taken to date are inadequate, and that industry and regulators need to take additional concrete measures to eliminate the risks.

## ABOUT THIS INVESTIGATION REPORT

This report is the result of an investigation into a class 4 occurrence. For more information, see the Policy on Occurrence Classification at [www.tsb.gc.ca](http://www.tsb.gc.ca)

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