



TSB Recommendation M24-02

A validation and approval process for passenger vessel evacuation procedures

The Transportation Safety Board of Canada recommends that the Department of Transport implement a formal validation and approval process for passenger vessel evacuation procedures.

Marine transportation safety investigation report	M22C0231
Date the recommendation was issued	19 August 2024
Date of the latest response	November 2024
Date of the latest assessment	March 2025
Rating of the latest response	Satisfactory Intent
File status	Active

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Summary of the occurrence

On 20 August 2022, at around 1700 Eastern Daylight Time, the passenger ferry *Sam McBride*, with 6 crew members and approximately 910 passengers on board, struck the dock while berthing at the Jack Layton Ferry Terminal in Toronto, Ontario. Twenty passengers were reported injured. Emergency services responded to the occurrence and 6 of the injured passengers were taken to hospital. The vessel and dock sustained damage. No pollution was reported.

The *Sam McBride* is a double-ended ferry, meaning that it has propellers at both the forward and aft ends. The TSB's analysis of security footage from the occurrence voyage determined that the vessel was travelling at 5 knots when it passed the first mooring dolphin on its way to the dock, while the speed of approach on other transits that day had been approximately 3 knots. The footage also showed that only the aft propeller was turning as the *Sam McBride* approached the dock. The aft propeller alone was not enough to stop the *Sam McBride* from striking the dock, given the vessel's speed and distance from the dock.

Post-occurrence sea trials indicated that both the forward and aft engines and their control systems were in good working order. As well, the engine control modules for the forward and aft engines did not show any fault codes or events for the day of the occurrence. The investigation was unable to determine why the forward engine and propeller did not engage to slow the vessel on the occurrence voyage.

On the day of the occurrence, the *Sam McBride* had made 8 runs, 6 of which were at full capacity, and was behind its published schedule. When many people were waiting for the ferry and it was behind schedule, as in this case, crews on City of Toronto ferries expedited crossings to address passenger backlog by transiting faster and/or reducing the time it took to dock by approaching at higher speeds and slowing down at a faster rate. The City of Toronto did not have written procedures that defined a safe speed of approach during docking, which meant that decisions around docking speed were at the discretion of masters and might be influenced by operational pressure. The City of Toronto has since put in place documented procedures for docking.

The Board concluded its investigation and released report M22C0231 on 19 August 2024.

Rationale for the recommendation

The *Life Saving Equipment Regulations* require all passenger vessels to have an evacuation procedure that dictates how all passengers and crew members will be evacuated from the vessel within 30 minutes of the abandon ship signal being given. Although this regulatory requirement is in place, TC has no formal procedure to assess if this requirement is being met. Operators who develop evacuation procedures have no approval process to confirm their procedure meets the requirement or to obtain approval from the regulator. Presently, each TC inspector or recognized organization surveyor is left to individually determine how this requirement is assessed; the requirement is most frequently assessed by the inspector or surveyor witnessing a drill on board the vessel.

For vessels, emergency drills are an opportunity to validate the evacuation procedures; the *Fire and Boat Drills Regulations* require that the master of a vessel ensure that drills are carried out as if they were a real emergency, in so far as is feasible. For a passenger vessel, realistic drills require a large number of people acting as passengers, as indicated in TC's Ship Safety Bulletin 04/2022. However, due to the logistical challenges of finding and managing a large number of volunteers, "in so far as is feasible" often means that drills are conducted without passenger involvement, which means the drill cannot evaluate the crew's ability to evacuate passengers from the vessel.

As is the case for many other vessels, drills on the *Sam McBride* were typically carried out without passengers on board, which meant that they did not provide an opportunity to realistically validate the feasibility of the vessel's evacuation procedure. The investigation determined that the evacuation procedures for the *Sam McBride* were not sufficient to support the evacuation of a large number of passengers, as they required crew members to be in multiple places simultaneously, assist an unreasonably large number of passengers, potentially

complete multiple tasks at once, and move quickly within the vessel even if it was crowded. If passenger evacuation procedures are not validated through a realistic exercise with a representative number of participants, a vessel's crew will be insufficiently prepared for an emergency and passengers will be at an elevated risk of injury or death.

The issues found in the *Sam McBride's* evacuation procedure are the latest example pointing to a need for TC to validate passenger vessels' evacuation procedures. In 2020, following the occurrence on board the passenger vessel *Island Queen III*, the Board issued a safety concern regarding the risk to passengers if evacuation procedures are not validated. More than 4 years later, the safety deficiency still exists and the risk to passengers remains high.

Therefore, the Board recommended that

the Department of Transport implement a formal validation and approval process for passenger vessel evacuation procedures.

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Previous responses and assessments

N/A

Latest response and assessment

November 2024: response from Transport Canada

Transport Canada agrees with Recommendation M24-02. While requirements are in place under Transport Canada's *Life Saving Equipment Regulations*, which require every passenger ship to have an evacuation procedure in place that allows for the full complement of the vessel to evacuate the ship within 30 minutes, consistent validation of these procedures is necessary to help ensure they appropriately address safety considerations. It is particularly important that standard passenger loads and operating conditions are being accounted for while validating these procedures.

In June 2024, Transport Canada's *Marine Safety Management System Regulations* entered into force. These regulations require that the authorized representatives of passenger vessels have an approved safety management system in place on board their vessels, which must include formalized evacuation procedures. These procedures must align with the vessel's intended operating conditions, which include accounting for the expected number of passengers on board during a given voyage. Under these regulations, all operators of passenger vessels must have these procedures in place by 2026. The implementation of these regulations strengthens Transport Canada's existing processes for verifying evacuation procedures, and in order for a vessel's authorized representative to have their safety management system certified, Transport Canada inspectors will review their procedures in a consistent, standardized manner to validate they appropriately account for the scope of the vessel's intended operations. For passenger vessels similar in size and carriage capacity to the *Sam McBride*, these procedures will be endorsed by Transport Canada on an annual basis.

In response to this recommendation, Transport Canada will also undertake a full review of all work instructions, tools, and verification procedures it has in place related to evaluating a vessel's passenger evacuation procedures to help ensure a strong level of consistency is maintained between vessel inspections and the validation of a vessel's safety management systems. This review will also incorporate references to the newly published *Vessel Construction and Equipment Regulations* into the tools, where required, which bring into force lifesaving arrangement provisions outlined in the *International Convention for the Safety of Life at Sea* for vessels greater than 24 metres in length.

Further, Transport Canada will conduct a review of all training materials for marine safety inspectors and recognized organizations to ensure they make reference to the necessity for inspectors to specifically evaluate a vessel's evacuation procedures against the described planned procedures outlined in its safety management system. Transport Canada will confirm that all materials make clear that inspectors need to confirm these procedures continue to match the scope of the specific passenger vessel's operation in order for it to pass its inspection.

March 2025: TSB assessment of the response (Satisfactory Intent)

The response from Transport Canada (TC) is promising as it indicates that the Department has already taken steps to expand on the requirement for an evacuation procedure in the *Life Saving Equipment Regulations* by including a requirement under the new *Marine Safety Management System Regulations*. This means that, by 2026, passenger vessel operators will be required to have a formalized evacuation procedure that aligns with the vessel's intended operating conditions. TC has stated that departmental inspectors will review the procedures with the intent of validating that they appropriately account for the scope of a vessel's intended operations.

The Board appreciates that TC plans to review and update all of its training materials for marine safety inspectors and recognized organizations. However, without simulating the presence of the passenger complement during an evaluation, it may be difficult to evaluate whether the evacuation procedures will meet the regulatory requirements, as physical conditions can vary greatly from vessel to vessel. The Board looks forward to understanding the details of this training material.

The Board considers the response to Recommendation M24-02 to be **Satisfactory Intent**.

File status

This deficiency file is **Active**.