



REASSESSMENT OF THE RESPONSE TO TSB RECOMMENDATION M17-03

Automatic distress alerting

Background

On 25 October 2015, at approximately 1500 Pacific Daylight Time, the passenger vessel *Leviathan II* was on a whale-watching excursion with 27 people on board when it capsized off Plover Reefs in Clayoquot Sound, British Columbia. The subsequent rescue operation recovered 21 survivors, which included 18 passengers and 3 crew members. There were 6 fatalities. As a result of the capsizing, approximately 2000 litres of fuel leaked into the water.

The Board concluded its investigation and released report M15P0347 on 14 June 2017.

TSB Recommendation M17-03 (June 2017)

In an emergency situation in which a vessel rapidly capsizes or sinks, the survival of passengers and crew often depends on the successful transmission of a distress signal to search-and-rescue (SAR) resources. Although passenger vessels are required to carry distress-alerting equipment such as very high frequency (VHF) radio transceivers, VHF radiotelephones with digital selective calling, and pyrotechnics, this equipment relies on manual activation by a crew member to initiate the distress signal.

As previous investigations have shown, crew members may not be able to manually transmit a distress signal in an emergency situation for a number of reasons:

- they may not have enough time;
- they may be preoccupied with any number of urgent tasks and not transmit a signal when the opportunity exists; or
- they may find themselves unable to access the distress-alerting device when they are able to signal distress.

In recognition of these shortcomings, some vessels are required to carry an emergency position-indication radio beacon (EPIRB) that deploys automatically when immersed in water and emits a continuous signal to alert SAR resources. An EPIRB that is programmed and registered provides SAR resources with the vessel's position and an identifier that gives the SAR controller valuable information about the vessel and the owner. As SAR resources travel to the occurrence site, the EPIRB continues to transmit its position, allowing SAR resources to home in on the location, thus substantially reducing search time and improving the probability of survival. This is a critical feature that is not available with manually activated distress equipment, such as a VHF/digital selective calling radiotelephone, which could become inaccessible or non-operational if a vessel capsizes or sinks, making it impossible for the crew to provide ongoing position information to SAR resources.

Current Canadian regulations do not require all passenger vessels to be equipped with an EPIRB. A passenger vessel such as the *Leviathan II*, for example, which is limited to home trade, Class III voyages, is not required to carry an EPIRB. Only those vessels engaged in voyages beyond home trade, Class III (those travelling more than 20 nautical miles from shore) are required to carry one.

The TSB has issued 2 previous recommendations following occurrences in which vessels carrying passengers were in an emergency situation but were unable to transmit a distress signal.

The first recommendation was issued as a result of an occurrence involving the charter boat 25K6527, which was overturned by a large breaking wave near Barkley Sound, British Columbia, while on a whale-watching trip in April 1992. The occurrence resulted in 2 fatalities. There was no distress call from the vessel, and rescue efforts began only after the vessel was reported as overdue by the company. Following this occurrence, the Board recommended that

The Department of Transport encourage all charter vessel operators to equip their vessels with life-saving and emergency communication and/or signalling equipment suitable for the type of operation.

TSB Recommendation M94-03

The second recommendation was issued with regard to the passenger vessel *True North II*, which was swamped by a series of waves while operating in inland waters on 16 June 2000. The vessel took on water, downflooded, and sank in Georgian Bay, Ontario, resulting in 2 fatalities. Although the vessel was equipped with a VHF radiotelephone, the speed with which the vessel sank prevented a distress transmission. The rescue effort began only when SAR authorities were informed of the accident by a passing vessel. Following this occurrence, the Board recommended that

The Department of Transport require small passenger vessels to provide pre-departure briefings, and to be equipped with a life raft that is readily deployable, lifesaving equipment that is easily accessible, and the means to immediately alert others of an emergency situation.

TSB Recommendation M01-03

TC subsequently amended regulations to require all passenger vessels to be equipped with a VHF radiotelephone and for those carrying more than 6 passengers operating beyond sheltered waters to carry a VHF radiotelephone equipped with digital selective calling. The assessment of the response to these recommendations is Fully Satisfactory.

The 2013 *Spring Report of the Auditor General of Canada* noted that emergency beacons help identify the location of a marine incident and reduce the time for SAR crews to find survivors. It therefore made the following recommendation:

Transport Canada should consider whether requirements for the use of digital emergency beacons should be applied to additional classes of boats and airplanes.

Additionally, coroners have recommended that an EPIRB be carried following the fatalities that resulted after the swamping of the passenger vessel *Ocean Thunder* and the fishing vessel

Brier Mist. Despite the coroner's recommendations, some passenger vessels (those travelling less than 20 nautical miles from shore) are still not required to carry EPIRBs.

In the case of the *Leviathan II*, it was largely due to fortunate circumstances that the crew were able to retrieve a flare from the water and use it as a distress signal, which was subsequently observed by a vessel fishing in the area; otherwise, the number of fatalities could have been greater.

In addition to the occurrence involving the *Leviathan II*, the TSB is aware of 11 other occurrences involving fatalities in which vessels were in distress within 20 nautical miles of shore and were unable to transmit a distress alert promptly. As a result, SAR efforts were delayed or not initiated.

At the national Canadian Marine Advisory Council meeting in April 2016, TC updated industry on the proposed *Navigation Safety Regulations*, which are expected to be completed by 2018. If put into effect, the revised regulations will consolidate the *Ship Station (Radio) Regulations 1999*, among others, and require that vessels carry EPIRBs when operating outside of sheltered waters if more than 8 m in length; when carrying more than 6 passengers; or if the vessel is a tug/tow boat.

In the meantime, passengers travelling on vessels not equipped with EPIRBs continue to be exposed to additional risk, even when the vessels operate close to the shore, and would benefit from the requirement for vessels to have a distress-alerting capability that does not rely on human intervention to be activated. Furthermore, in capsizing or sinking situations, passengers forced into the water or onto a survival craft should have the capability to continuously update SAR resources on their position, as the effects of the wind and current may cause them to drift. The proposed amendments by TC fall short of addressing the risk to passenger vessels less than 8 m carrying up to 6 passengers while operating beyond sheltered waters, as observed in the 2 occurrences in which no distress signal was received.

Therefore, the Board recommended that

The Department of Transport expedite the proposed changes to the *Navigation Safety Regulations* and expand its current emergency position-indicating radio beacon (EPIRB) carriage requirements to require that all commercial passenger vessels operating beyond sheltered waters carry an EPIRB, or other appropriate equipment that floats free, automatically activates, alerts search-and-rescue resources, and provides continuous position updates and homing-in capabilities.

TSB Recommendation M17-03

Transport Canada's response to Recommendation M17-03 (March 2018)

Transport Canada agrees in part with this recommendation. The new, consolidated *Navigation Safety Regulations* (ten existing regulations will become one) are in development and a consultation with stakeholders is already underway. They will incorporate the updated requirements of chapter IV and V of the Safety of Life at Sea (SOLAS) Convention, and propose an expanded domestic emergency beacon and Automatic Identification System (AIS) requirement.

Under the current proposal, commercial vessels operating outside sheltered waters will have to carry some means of secondary distress alerting equipment; however, it is TC’s view that EPIRB or other float free systems may not always be the appropriate technology.

TC has proposed the carriage of float-free 406 MHz EPIRBs onboard all commercial vessels more than 15 tons (12 metres in length or more) when operating beyond sheltered waters. For commercial vessels less than 15 tons operating beyond sheltered waters, TC has proposed a more flexible approach which includes float-free EPIRBs, manually-activated EPIRB or 406 MHz Personal Locator Beacons (PLBs).

There a number of issues associated with the use of Float-Free EPIRBs on smaller vessels that were taken into consideration:

Theft: Smaller open construction vessels often have to be emptied when alongside to prevent the theft of equipment onboard. Float-free EPIRBs are not designed to be removed and reinstalled daily, increasing the risk that the EPIRB will not be reinstalled properly in the bracket and will not float-free during an emergency.

Activation: A float-free EPIRB has to release itself from its enclosure before it reaches a depth of 4 metres (IMO RESOLUTION A.810(19)). In order to do so when a vessel has capsized, the EPIRB has to be strategically mounted to avoid it being stuck under the vessel in case the vessel remains afloat upside down. The EPIRB must also be protected from accidental damage (from crew, passenger traffic or other equipment and machinery) during normal work operations onboard, which makes it difficult to find a suitable location on smaller vessels. Based on the size of the vessel and the requirement for 4 metres of depth release, the amount of time necessary for the EPIRB to release from its enclosure and self-activate must also be taken into consideration.

Small crews: For small vessels with only 1 or 2 crew it often takes quite some time before it is noticed that someone fell overboard. An EPIRB would not be effective in this scenario, whereas a PLB or a portable VHF radio with DSC worn on an individual would be a safer, more effective choice of device.

Cost: Float free EPIRBs are expensive to buy and maintain when compared to other possible devices. The hydrostatic release unit for a Category I EPIRB (float-free) has to be replaced every 2 years and the battery every ~5 years by the manufacturer. Category II EPIRBs (manual) and PLBs often have user-replaceable batteries and do not have a hydrostatic release.

	<8 metres	8 metres (to 15 tons)	>12 metres (15 tons)
NC 1 and beyond	Float Free EPIRB	Float Free EPIRB (currently manual EPIRB is allowed)	Float Free EPIRB (already required)
NC 2	Float-Free EPIRB; or Manual EPIRB; or 406 MHz PLB; or Portable VHF-DSC/GPS	Float Free EPIRB; or Manual EPIRB; or 406 MHz PLB	Float Free EPIRB (already required if >20 m)

TSB assessment of Transport Canada's response to Recommendation M17-03 (March 2018)

Transport Canada's consolidation of the *Navigation Safety Regulations*, which proposes expanded carriage requirements for EPIRBs is encouraging. However, the proposed *Navigation Safety Regulations* give all small commercial vessels in Near Coastal 2 waters (outside sheltered waters up to 25 nautical miles from shore in waters contiguous to Canada), the option to choose one of the following types of distress alerting equipment as an alternative to carrying an automatic float-free EPIRB:

- Vessels of 8 m in length to a gross tonnage of 15 have the option of carrying a manual EPIRB or a personal locator beacon (PLB).
- Vessels of less than 8 m in length have the option of carrying a manual EPIRB, or a PLB, or a portable VHF-DSC/GPS.

The Board notes TC's concerns associated with the carriage of float-free EPIRBs on such vessels, particularly those related to theft and activation. While the proposed regulations would not ensure carriage of a float-free device that can send an automatic distress signal on vessels less than 15 GT, they do expand the requirements for this class of vessels. The proposed regulations could substantially reduce the safety deficiency.

Because the proposed regulations have not yet been implemented, the response to the recommendation is considered to be **Satisfactory Intent**.

Transport Canada's response to Recommendation M17-03 (January 2019)

Transport Canada (TC) agrees in principle with this recommendation. In 2018, the Department has focused on drafting the new *Navigation Safety Regulations*, which are expected to be published in the *Canada Gazette*, Part I, in spring 2019.

TSB reassessment of Transport Canada's response to Recommendation M17-03 (March 2019)

The Board notes that TC is in the process of drafting the new *Navigation Safety Regulations* which are expected to be published in the *Canada Gazette*, Part I, in spring 2019.

While the proposed regulations would not ensure carriage of a float-free device that can send an automatic distress signal on vessels less than 15 GT, they do expand the requirements for this class of vessels. The proposed regulations could substantially reduce the safety deficiency.

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

Transport Canada's response to Recommendation M17-03 (January 2020)

Transport Canada agrees with this recommendation. In 2018/19, the Department focused on drafting the new *Navigation Safety Regulations*, which were published in the *Canada Gazette*, Part I, in June 2019, with a 90-day comment period. The proposed regulations are expected to be published in the *Canada Gazette*, Part II, in spring 2020.

TSB reassessment of Transport Canada's response to Recommendation M17-03 (March 2020)

The Board notes that the new Navigation Safety Regulations were published in the *Canada Gazette*, Part I, in spring 2019, and that they are anticipated to be published in the *Canada Gazette*, Part II, in spring 2020. Once the proposed Navigation Safety Regulations are published, these regulations will substantially reduce the safety deficiency identified in this recommendation.

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

Transport Canada's response to Recommendation M17-03 (February 2021)

Transport Canada agrees with this recommendation. The *Navigation Safety Regulations, 2020* were published in *Canada Gazette*, Part II on October 2020. These regulations, which require vessels that are 12m or less and engaged on Near Coastal, Class 2 voyages to carry a float-free emergency position indicating radio beacon (EPIRB), a manually-activated emergency position indicating radio beacon (EPIRB), a 406 MHz personal locator beacon (PLB), or a portable VHF-DSC/GPS radio. These regulations should address the risk identified and satisfy the Transportation Safety Board's recommendation.

TSB reassessment of Transport Canada's response to Recommendation M17-03 (March 2021)

The *Navigation Safety Regulations, 2020* were published in October 2020 and require a float free EPIRB on all vessels that are engaged on a near coastal voyage, Class 1; unlimited voyage; or on a near coastal voyage, Class 2 if greater than 12 m in length. For vessels that are 12 m or less and engaged on near coastal, Class 2 voyages, the regulations require the carriage of a float-free EPIRB, a manually-activated EPIRB, a 406 MHz PLB, or a portable VHF-DSC/GPS radio.

Accordingly, the regulations require that all commercial passenger vessels operating beyond sheltered waters carry equipment that provides continuous position updates and homing-in capabilities. Although vessels under 12 m on near coastal, Class 2 voyages, have been given a choice that includes float-free or manually-activated EPIRBs, the regulations have significantly expanded the emergency signalling requirements for this class of vessel and has substantially reduced the safety deficiency identified in this recommendation.

The regulations therefore fulfill the intent of the recommendation and thus, the Board considers the response to Recommendation M17-03 to be **Fully Satisfactory**.

Next TSB action

This deficiency file is **Closed**.