



Transportation  
Safety Board  
of Canada

Bureau de la sécurité  
des transports  
du Canada

# MARINE INVESTIGATION REPORT

## M16A0140



### **Capsizing and loss of life**

Small fishing vessel C19496NB  
Salmon Beach, New Brunswick  
16 June 2016

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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.

## Marine Investigation Report M16A0140

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### *Summary*

On 16 June 2016, at approximately 0445 Atlantic Daylight Time, the small fishing vessel C19496NB was lobster fishing with 3 people on board approximately 0.5 nautical miles from Miller Brook Wharf, Salmon Beach, New Brunswick, when one of the trap lines became entangled. The heavy strain on the line reduced the vessel's aft freeboard on its starboard side. In combination with the quartering seas that struck the same area of the vessel, this led to the vessel rapidly taking on water and capsizing. The 3 crew members were recovered by the fishing vessel *Marie Eliser 1*. One crew member received medical assistance for hypothermia, while the other 2 were pronounced dead by paramedics.

*Le présent rapport est également disponible en français.*



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## 1.0 Factual information

### 1.1 Particulars of the vessel

Table 1. Particulars of the vessel

Name of vessel	Unnamed
Vessel registration number	150985
Official number	C19496NB
Type	Small fishing vessel
Estimated gross tonnage	2.7
Length overall	7.1 m
Width	2.44 m
Built	Royal Sea Boats
Propulsion	90 hp 4-stroke 2012 Mercury outboard motor
Cargo	Crates, tote boxes, lobsters, gasoline fuel, bait, fishing gear
Crew	3
Registered owner	Private owner, Salmon Beach, New Brunswick*

\* The owner of the vessel was also the master of the vessel.

### 1.2 Description of the vessel

C19496NB (Figures 1 and 2) was a 7.1 m open speedboat built of fibreglass with a small open wheelhouse near the bow. It was powered by a 90 hp 4-stroke outboard motor and equipped with a magnetic compass, a citizens band (CB) radio, and an on-board electronic sounder. There was a radar reflector, a 7-inch LED rear deck light, and navigation lights mounted on top of the wheelhouse, and a handheld search light on the console. The vessel had 3 lifejackets, flares, a steel fire bucket, a handheld aerosol horn, and a dry chemical fire extinguisher located in the forward cuddy (Appendix A). A lifebuoy and a steel trawl anchor were located aft of the cuddy.

Figure 1. Vessel C19496NB (profile view)



At the time of the occurrence, the vessel had two portable 23 L fuel tanks near the port stern, one portable 20 L fuel tank and two 20 L gasoline jugs forward, and an electric bilge pump in the forward bilge. It was carrying 8 plastic lobster crates (double-stacked), a single crate, 4 plastic tote boxes (double-stacked), a single tote on top of the stacked crates, and 125 kg of bait in stacked totes. Gaffs and 2 marine batteries were also on board.

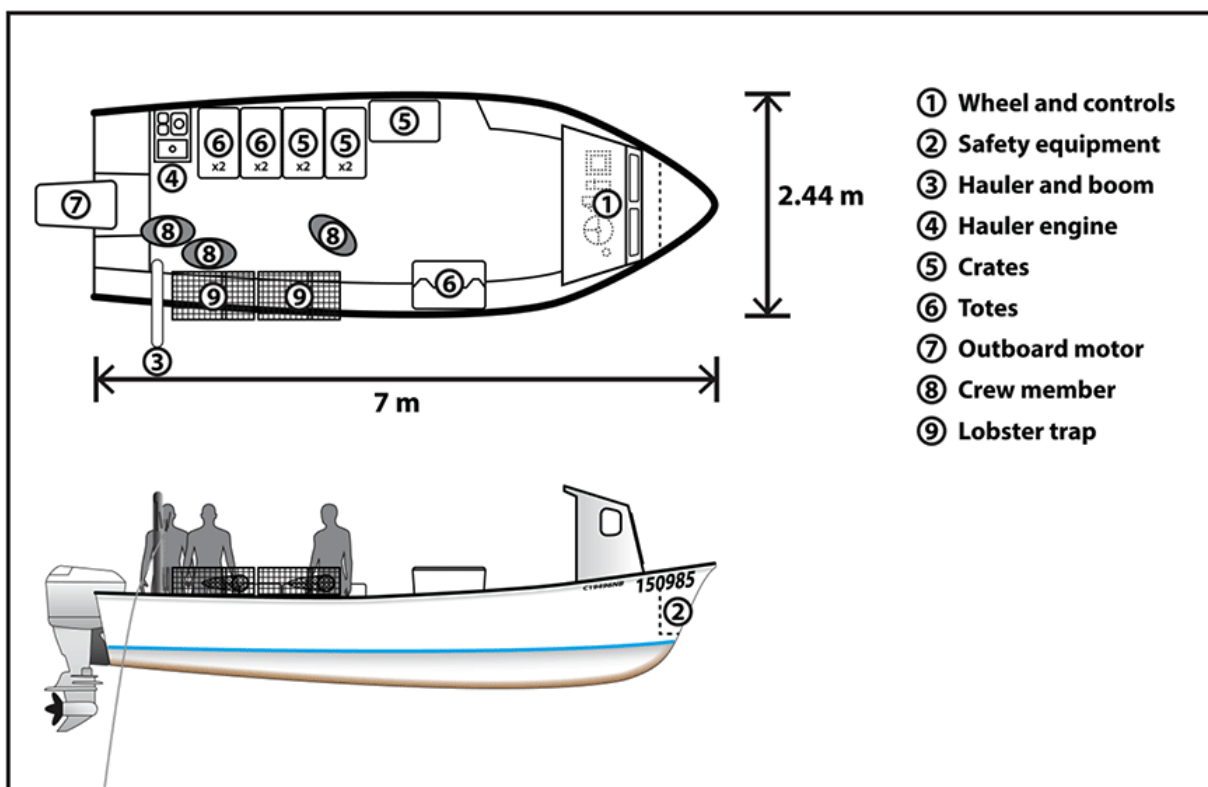
The vessel had a watertight raised fibreglass deck. A small console with steering and engine controls was fitted in the wheelhouse, and a gasoline-operated hydraulic hauler was fitted at

the stern. A steel lobster trap boom fitted with a 10-inch plate hauler and 2 rollers (Appendix B) was mounted on the starboard side approximately 0.5 m from the stern.

When the strings of lobster traps were hauled, the main trawl line with attached lobster traps would pass over the block hanging from the boom approximately 6 feet above the vessel's deck, and then pass around the vertical hauler head plates mounted against the starboard aft gunwale.

Two stern scupper plugs were secured in the hull. It was common for wave spray and water running off the gear to cause water to accumulate on the vessel's deck to a depth of up to several inches. When too much water accumulated, the master would remove a scupper plug and manoeuvre the vessel in a continuous turn towards the side that the plug was on. Once the water had drained out into the ocean, the master would reinsert the plug.

Figure 2. Arrangement of the occurrence vessel



### 1.3 Lobster fishery off Miller Brook Wharf

In the Salmon Beach area, lobsters are normally fished within 4 nautical miles from shore. Fish harvesters are permitted to fish 300 traps when using a class A lobster licence. Two of the traps that were used in this occurrence are shown in Appendix C.

The practice in the Salmon Beach area was to fish with 3 lobster traps connected together on a rope trawl marked by a floating buoy. The crew normally hauled the 300 lobster traps within a timeframe of 5 to 8 hours. In previous years, local fishermen fished during daylight



hours. In 2016, they began to fish during the hours of darkness, some starting as early as 0300, because the wind is normally lighter at the beginning and end of daylight hours.

## 1.4 *History of the voyage*

On 12 June 2016, the master hauled and reset 300 lobster traps. From 13 to 15 June, the master chose not to fish because there were strong winds of up to 35 knots and rough seas.

At around 0415 on 16 June, the vessel departed Miller Brook Harbour with the master, a deckhand and senior deckhand on board. The vessel proceeded towards a position about 0.5 nautical miles west of the wharf and 0.13 nautical miles off the shoreline where the first string of 3 lobster traps had been set (Appendix D). Because it was dark, the master used a handheld searchlight to find the buoy marking the lobster trap trawl. At about 0425, the vessel arrived at the buoy, and the first string of 3 traps was hauled, cleaned out, rebaited, and reset without incident.

The vessel then proceeded to the second lobster trap buoy. At around 0443, the second buoy was gaffed and the trap rope was run through the lobster boom block and over the hauler. The senior deckhand operated the hydraulic hauler control handle and heaved the first lobster trap up to the starboard aft gunwale, at which point the deckhand pulled it onto the rail.

The deckhand, who was positioned close in front of the hauler boom, told the master that one of the trap's snoods<sup>1</sup> was broken and began removing dirt, old bait, and lobsters from the trap. The master moved aft to the trap to repair the broken snood. The deckhand rebaited the first trap and closed the trap door so that it could be reset later.

By then the second trap had been hauled up to the gunwale, so the deckhand pulled it onto the rail and began removing dirt, old bait, and lobsters from the trap. Meanwhile, the master continued to repair the broken snood.

The senior deckhand started to haul the third lobster trap but found that it was tangled in another fisherman's trawl. As the hauler attempted to haul up the trap and the strain on the line increased, the starboard aft gunwale of the vessel was pulled down, lowering the vessel's freeboard in that area.

A wave broke onto the vessel, adding several inches of sea water onto the deck. The strain on the hauler eased and the vessel rolled to port, raising the starboard aft gunwale closer to its previous position. A second attempt was made to haul up the third trap, and again the starboard aft gunwale was pulled down. Another wave broke onto the vessel in this area, where the freeboard was lowest.

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<sup>1</sup> Snoods are pieces of rope, usually short, that attach a lobster trap to the main fishing line, or trawl. Each lobster trap on the occurrence vessel had 2 snoods on its hauling end that formed a bridle. The bridle was then attached to a becket (a short line with a grommet or eye at one end and a knot at the other end) that was tied to the rope used to haul the trawl of lobster traps.

The senior deckhand stopped hauling the trap line, left it in the hauler under tension, and went to the rail to attempt to untangle the trap. At that time there was more than a foot of water in the stern of the vessel. The crew members were all working near the starboard aft side of the vessel while attempting to untangle the trap, and the senior deckhand reached out over the gunwale. This shift in weight further reduced the freeboard in that area, and more water came onto the deck. The master ordered the trap line to be released from the hauler.

Before the line could be released, a third wave broke onto the vessel. The vessel rolled to starboard and capsized, throwing the 3 crew members into the sea.

The deckhand surfaced around amidships of the vessel, kicked off his steel-toed rubber boots, and held onto the side of the vessel. He then pulled himself closer to the stern, where there was less freeboard, and crawled onto the overturned vessel. The senior deckhand surfaced about 2 m away from the vessel and began to call for help, before becoming unresponsive. Although the master surfaced near the vessel, he was unresponsive and drifted further away.

The deckhand straddled the keel of the upside-down boat and shimmied forward to about 2 m aft of the bow. For approximately 30 minutes, he yelled for help. Another lobster vessel, the *Marie Eliser 1*, happened to be headed for its second trap buoy when its spotlight revealed the capsized vessel about 0.4 nautical miles west of the *Marie Eliser 1*. The *Marie Eliser 1* proceeded towards the capsized vessel, and the master called all stations on very high frequency (VHF) radiotelephone to report the situation and ask all vessels in the area to assist in the rescue.

The master and crew member of the *Marie Eliser 1* helped the deckhand on board. The deckhand then helped the master and crew member recover the senior deckhand and the master of the capsized vessel.

The master of the *Marie Eliser 1* called 9-1-1 by cellphone to notify them of the situation. At approximately 0525, the *Marie Eliser 1* arrived at Miller Brook Wharf. Fire department responders arrived shortly afterward and treated the surviving deckhand for hypothermia. Paramedics arrived about 10 minutes later, and the deckhand was brought to the hospital. At 0550, the paramedics pronounced the other 2 crew members dead.

## 1.5 *Injuries to persons*

The master and senior deckhand were pronounced dead; in both cases, the cause of death was determined to be drowning. The surviving deckhand was treated for hypothermia at the local hospital and released later that morning.

## 1.6 *Environmental conditions*

At the time of the occurrence, the wind was coming from the northwest at 15 km/h. The seas were 0.5 m. The water temperature was 12.3 °C, and the sea water appeared dirty due to silt stirred up by the rough onshore seas that had been experienced during the previous few

days. The tide was running to the south. Nautical twilight was at 0347, and sunrise was at 0524.

### 1.7 *Personnel certification and experience*

The master held a Certificate of Service as Master of a Fishing Vessel of Less Than 60 Gross Tonnage issued on 29 December 2010.<sup>2</sup> He also held a Marine Emergency Duties A1 Certificate issued in April 2003. The master held a Class A lobster fishing license. The master had fished commercially for more than 40 years and had been owner and master of the occurrence vessel since purchasing it new more than 20 years before the occurrence.

The senior deckhand had over 4 years of fishing experience on the occurrence vessel.

The deckhand had been fishing on the occurrence vessel since the lobster season began on 01 May, but had worked on the vessel with the master in the past (approximately 13 years before the occurrence, for a period of several years).

### 1.8 *Vessel certification*

As a small fishing vessel not exceeding 15 gross tonnage, the occurrence vessel was subject to the *Small Fishing Vessel Inspection Regulations, Part II* (the SFVIR). It was not required to undergo periodic inspections by Transport Canada (TC). The master/owner had registered the vessel with TC and had also registered it with the Department of Fisheries and Oceans as a commercial fishing vessel when he had purchased it 20 years before the occurrence.

### 1.9 *Damage to the vessel*

The vessel's small open wheelhouse, aft port gunwale, lobster trap hauler, and boom were torn off when the overturned vessel was being towed in to Miller Brook Wharf (Figure 3). The outboard motor, hydraulic hauler engine, and electronic equipment were contaminated by saltwater.

Figure 3. Detail of the damage to C19496NB



<sup>2</sup> Transport Canada, SOR/2007-115, *Marine Personnel Regulations* (last amended 03 February 2017), subsection 143(1).

## 1.10 Lifesaving equipment

Vessels subject to Part II of the SFVIR and measuring less than 12.2 m in length, such as the occurrence vessel, are required to carry the following lifesaving equipment on board:

- one approved lifejacket for each person on board;
- one approved lifebuoy fitted with 27 m of line; and
- one watertight can containing 6 approved self-igniting flares.<sup>3</sup>

The occurrence vessel carried 3 lifejackets, a lifebuoy, and self-igniting flares as required by regulation, and no personal flotation devices (PFDs).

## 1.11 Requirements for personal flotation devices

In Canada, 84% of all fishing-related fatalities recorded between 1999 and 2010 occurred when vessels capsized, foundered, or sank, or when persons fell overboard.<sup>4</sup> The Transportation Safety Board of Canada's (TSB's) *Safety Issues Investigation into Fishing Safety in Canada* (SII), released in 2012, identified falling overboard as the second highest cause of death in the fishing industry.<sup>5</sup> Between 1999 and 2010, there were 41 fatalities (3.4 per year) resulting from fishermen falling overboard, which accounts for 27% of the total fatalities for that same time period. From 2011 to 2015, there were 26 fatalities (5.2 per year) resulting from fishermen falling overboard, which accounts for 53% of the total fatalities for that same time period. This represents a significant increase in the number of fatalities from fishermen falling overboard each year.

Falling into cold water involves an initial cold shock, which is most dangerous and potentially lethal when a person is suddenly immersed in water below 15 °C.<sup>6</sup> This can be quickly followed by exhaustion while the person attempts to stay afloat. This exhaustion increases rapidly without the assistance of a PFD. Hypothermia can occur within 35 minutes in cold water; bodily functions slow down and can eventually lead to death. A rapid recovery of the person in the water is critical to increase the person's chances of survival. The SII showed that many fishermen still resist wearing a PFD, citing issues such as discomfort and the risk of entanglement.

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<sup>3</sup> Ibid., Part II, section 53.

<sup>4</sup> TSB Marine Investigation Report M09Z0001, *Safety Issues Investigation into Fishing Safety in Canada*, p. 31.

<sup>5</sup> These statistics include only incidents of fishermen falling overboard and do not include drowning deaths caused by fishermen going overboard in accidents such as capsizings, floodings, or sinkings.

<sup>6</sup> Dr. C.J. Brooks, K.A. Howard, et.al., *Survival at Sea for Mariners, Aviators and Search and Rescue Personnel*, Chapter 10: Drowning is Not a Helpful Diagnosis Written on the Death Certificate (North Atlantic Treaty Organization and Research and Technology Organization, February 2008), at [https://www.sto.nato.int/publications/STO%20Technical%20Reports/RTO-AG-HFM-152/\\$\\$AG-HFM-152-ALL.pdf](https://www.sto.nato.int/publications/STO%20Technical%20Reports/RTO-AG-HFM-152/$$AG-HFM-152-ALL.pdf). (last accessed on 19 June 2017).

There are several education and awareness programs and initiatives within the fishing community that attempt to change behaviours and promote the use of PFDs. In British Columbia, Fish Safe's "Real Fishermen" campaign uses promotional materials that feature fishermen wearing PFDs. In Nova Scotia, a fishing safety working group, in consultation with fishermen and suppliers, uses initiatives such as wharf visits, family pledges, an elementary school poster contest, advertising, and design testing to increase awareness of the importance of wearing PFDs. As well, in Nova Scotia, the Safe at Sea Alliance has developed a plan for the province's fishing industry through the collaboration of industry and government representatives. The plan includes several recommendations to improve safety through education, awareness, and enforcement. One such recommendation is the development of an enhanced program that includes safety drills and demonstrates PFDs in action.

### 1.11.1 Federal regulations

With regard to large and small fishing vessels, TC's minimum requirement for personal flotation is the carriage of standard lifejackets.

In 2012, TC issued a Ship Safety Bulletin that allowed PFDs to be used as an alternative to carrying approved lifejackets in small non-pleasure craft and small commercial fishing vessels.<sup>7</sup> Within the scope of vessels operating within Near Coastal Voyages, Class 2, the bulletin specifies that if PFDs are used instead of lifejackets, "they must be worn at all times when the vessel is operating."<sup>8</sup>

In July 2017, TC's *Fishing Vessel Safety Regulations* will come into force and will apply to small fishing vessels up to 24.4 m in length and with a gross tonnage of no more than 150. These regulations state that

No person shall operate, or permit another person to operate, a fishing vessel in environmental conditions or circumstances that could jeopardize the safety of persons on board unless a lifejacket required by this Part, or a personal flotation device that meets the requirements of section 3.2 is worn

- (a) by all persons on board, in the case of a fishing vessel that has no deck or deck structure; or
- (b) by all persons on the deck or in the cockpit, in the case of a fishing vessel that has a deck or deck structure.<sup>9</sup>

<sup>7</sup> Transport Canada, Ship Safety Bulletin 06/2012: Wearing and Using Flotation Devices Small Non-pleasure Craft and Small Commercial Fishing Vessels, at <https://www.tc.gc.ca/eng/marinesafety/bulletins-2012-06-eng.htm> (last accessed on 14 June 2017).

<sup>8</sup> Ibid.

<sup>9</sup> Government of Canada, *Canada Gazette*, Part II, Vol. 150, No. 14 (13 July 2016) *Regulations Amending the Small Fishing Vessel Inspection Regulations*, section 3.09, at <http://gazette.gc.ca/rp-pr/p2/2016/2016-07-13/html/sor-dors163-eng.php> (last accessed on 21 June 2017).

There is no requirement to ensure that fishermen carry PFDs on board or wear them at all times. Although a fishing master can determine that a risk is present and decide to require the crew to wear PFDs, the assessment of risk is subjective. This means that many masters may not perceive the need to acquire PFDs. Also, even if PFDs are carried on board, if they are not worn at all times, crew members may not have enough time to don them in an emergency.

### 1.11.2 Provincial regulations

#### 1.11.2.1 Quebec

Since 2001, Quebec's Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST) has been enforcing the *Act respecting occupational health and safety*, which states, "Every employer must take the necessary measures to protect the health and ensure the safety and physical well-being of [its] worker[s]."<sup>10</sup> As defined in the associated *Regulation respecting occupational health and safety*, wearing a flotation device is mandatory for all workers who work over water, and where

- (1) No other safety measure may provide efficient protection;
- (2) The depth of the water is adequate to allow for efficient usage.<sup>11</sup>

Although the regulation refers to "all workers who work over water," it is directed towards construction industry operations and does not apply in practice to all fishing vessels.

However, lobster fishermen were addressed specifically in 2012 after it was found that

In Québec, from 2008 to 2012, there were six deaths at sea, with two fatal accidents involving lobster fishers. In both cases, these were falls overboard and they occurred in two consecutive years, 2010 and 2011.<sup>12</sup>

In response to those 2 accidents, the CNESST enacted new safety regulations for lobster fishermen, including requiring deckhands to wear a PFD at all times on deck.<sup>13</sup> To ensure that lobster fishermen were aware of the new regulations and understood them, the CNESST sent information letters to the fishermen and conducted 150 vessel visits to verify compliance. Since the regulations were implemented, there have been no reported deaths of lobster fishermen.

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<sup>10</sup> Government of Quebec, *Act respecting occupational health and safety*, Chapter S-2.1, Division II, Subsection 2-51.

<sup>11</sup> Government of Quebec, *Regulation Respecting Occupational Health and Safety*, chapter S-2.1, r. 13, (updated to 1 May 2017), section 355

<sup>12</sup> S. Montreuil, F. Coulombe, Jean-Guy Richard, et al., Report R-869, *Overboard Falls of Crew Members on Québec Lobster Boats: Risk Analysis and Prevention Solutions* (Institut de recherche Robert-Sauvé en santé et en sécurité du travail), p. 6.

<sup>13</sup> Ibid.

### 1.11.2.2 *New Brunswick*

New Brunswick's WorkSafeNB is a Crown corporation charged with overseeing the implementation and application of New Brunswick's *Occupational Health and Safety Act*; *Workers' Compensation Act*; *Workplace Health, Safety and Compensation Commission and Workers' Compensation Appeals Tribunal Act*; and *Firefighters' Compensation Act*.<sup>14</sup> Its mission is to be a partner in promoting a safe and healthy work environment for the workers and employers of New Brunswick and efficiently provide quality services and fair administration of the legislation.

New Brunswick's *Occupational Health and Safety Act* requires the following safety precautions when working in an area where there is a risk of drowning:

- 51(2) If an employee is exposed to a risk of drowning, an owner of a place of employment, an employer and a contractor shall each ensure the employee uses one of the following:
- (a) a fall-protection system;
  - (b) a life jacket that conforms to CGSB standard CAN/CGSB-65.7-M88, "Life Jackets, Inherently Buoyant Type";
  - (c) a personal flotation device that conforms to CGSB standard CAN/CGSB-65.11-M88, "Personal Flotation Devices";
  - (d) an automatically inflatable personal flotation device that meets UL1180-95, "Fully Inflatable Recreational Personal Flotation Devices"; or
  - (e) a personal safety net that conforms to the requirements of section 49.8.
- 51(4) Despite subsection (2), an employee shall wear a life jacket when
- (a) working alone, or
  - (b) there are insufficient resources to provide a quick and effective rescue.
- 51(5) An employer and a contractor shall each ensure that an employee wears a life jacket or flotation device referred to in paragraphs (2)(b) to (d) when being transported in a boat.<sup>15</sup>

The New Brunswick commercial fishing industry is not included under the province's *Occupational Health and Safety Act*, nor is it included in the WorkSafeNB safety program. The New Brunswick *Occupational Health and Safety Act* does not require commercial fishermen or fish harvesters to wear PFDs during fishing operations.

<sup>14</sup> WorkSafeNB, "Who we are," at <http://www.worksafenb.ca/who-we-are> (last accessed on 14 June 2017).

<sup>15</sup> Government of New Brunswick, *Occupational Health and Safety Act*, subsections 51(2), 51(4), and 51(5), at <http://laws.gnb.ca/en/ShowPdf/cr/91-191.pdf> (last accessed 14 June 2017).

Over the past 15 years, several attempts have been made in New Brunswick to address the occupational health and safety legislative gap in the commercial fishing sector. In general, industry stakeholders have not supported the idea of additional health and safety regulations for commercial fishing vessels.

In April 2013, the Government of New Brunswick announced a comprehensive legislative review of workers' compensation that would be done in collaboration with WorkSafeNB and would include an examination of the areas that were excluded by workers' compensation legislation, such as fishing vessels and small business owners. As of 2017, the issue of fishing vessel safety had not been addressed by the review.

### 1.11.3 TSB recommendations on personal flotation devices

Previous TSB investigations have determined that wearing a PFD increases the chance of survival when fishermen go overboard.<sup>16</sup> Neither TC nor any provincial workplace safety regulator other than the Quebec CNESST has requirements to ensure that fishermen wear PFDs at all times. Despite risk-based regulations and industry initiatives to change behaviours and create awareness about the importance of wearing PFDs, as well as design improvements by PFD manufacturers to address fishermen's concerns about comfort and constant wear, many fishermen continue to work on deck without wearing a PFD.

On 05 September 2015, the large fishing vessel *Caledonian* capsized 20 nautical miles west of Nootka Sound, British Columbia.<sup>17</sup> At the time, the vessel was trawling for hake with 4 crew members on board. The vessel sank and 3 of the crew members lost their lives. The one crew member who survived had been wearing a PFD. The Board considered that the implementation of explicit requirements for fishermen to wear PFDs, along with appropriate education and enforcement measures, would significantly reduce the loss of life associated with going overboard. Therefore, in 2016, following the *Caledonian* occurrence, the Board issued the following 2 recommendations:

WorkSafeBC require persons to wear suitable personal flotation devices at all times when on the deck of a commercial fishing vessel or when on board a commercial fishing vessel without a deck or deck structure and that WorkSafeBC ensure programs are developed to confirm compliance.

**TSB Recommendation M16-04**

The Department of Transport require persons to wear suitable personal flotation devices at all times when on the deck of a commercial fishing vessel or when on board a commercial fishing vessel without a deck or deck structure and that the Department of Transport ensure programs are developed to confirm compliance.

**TSB Recommendation M16-05**

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<sup>16</sup> TSB marine investigation reports M01C0029, M05N0072, and M07N0117.

<sup>17</sup> TSB Marine Investigation Report M15P0286.



## 1.12 *Emergency communications equipment*

Emergency position-indicating radio beacons (EPIRB) are required for vessels over 8 m in length travelling outside Near Coastal Voyages, Class 2.<sup>18</sup> An EPIRB may, either automatically or when manually activated by the crew, transmit an emergency signal to alert search and rescue resources and initiate rescue efforts immediately.

There is no requirement for a fishing vessel of open construction of any length or of closed construction less than 8 m in length, such as the occurrence vessel, to be equipped with an EPIRB<sup>19</sup> or a VHF radiotelephone.<sup>20</sup>

The occurrence vessel did not carry an EPIRB or a VHF radiotelephone on board. The only communications equipment on board were 2 cellphones kept in the pockets of the master and deckhand, as well as a CB radio.

## 1.13 *Safety Issues Investigation into Fishing Safety in Canada*

In August 2009, the TSB undertook an in-depth safety issues investigation into fishing vessel safety in Canada. The *Safety Issues Investigation into Fishing Safety in Canada* (SII) report, released in June 2012, identified several safety significant issues requiring attention: stability, lifesaving appliances, inconsistent provincial oversight, the cost of safety, safety information, safe work practices, the regulatory approach to safety, fatigue, training, and fishing industry statistics. The SII cites 2 TSB reports identifying that fisheries management has indirect and direct effects on fishing safety, and concludes that fishermen are put at risk when fisheries resource management measures do not consider safety at all levels, from policy through to practice. The SII notes that lifesaving appliances<sup>21</sup> that are not properly designed, carried, fitted, used or maintained for fishing operations put lives at risk.

## 1.14 *Outstanding recommendations*

### 1.14.1 *Emergency position-indicating radio beacons*

The occurrence vessel did not carry any distress communications device. Between February 2010 and August 2016, there were 9 accidents,<sup>22</sup> including this occurrence, involving fishing vessels that measured less than 12 m and were not equipped with an

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<sup>18</sup> Transport Canada, SOR/2007-31, *Vessel Certificates Regulations* (last amended on 01 July 2007), Interpretation.

<sup>19</sup> *Ship Station (Radio) Regulations, 1999*, SOR/2000-260 (last amended on 01 July 2007), subsection 13(1)

<sup>20</sup> *Ibid.*, paragraph 7(1)(a)

<sup>21</sup> Examples include lifejackets, PFDs, immersion suits, life rafts, EPIRBs, and digital selective calling (DSC).

<sup>22</sup> TSB marine occurrences M10M0007, M10M0042, M11M0057, and M12M0046, and TSB marine investigation reports M12W0062, M14P0121, M14A0289, M15A0189, and M16A0140.

EPIRB or means of transmitting a distress message. These occurrences involved 24 crew members, 15 of whom lost their lives.

In 1998, while crossing from Les Escoumins to Rimouski, Quebec, the scallop dragger *Brier Mist* swamped and sank approximately 10 miles offshore.<sup>23</sup> The wreck was never found. Two people were recovered deceased, and the other 3 crew members went missing. The Board considered that all fishermen should have distress alerting capability that should not rely on human intervention. It was further considered that fishermen forced into the water or survival craft should be able to continuously update their location to search and rescue coordinators for more rapid rescue. Therefore, in 2000, the TSB recommended that

The Department of Transport require small fishing vessels engaging in coastal voyages to carry an emergency position indicating radio beacon or other appropriate equipment that floats free, automatically activates, alerts the search and rescue system, and provides position updates and homing-in capabilities.

**TSB Recommendation M00-09**

TC's response to this recommendation indicated that the proposed new *Fishing Vessel Safety Regulations*, which would come into force on 13 July 2017, would extend the requirement to carry an EPIRB to fishing vessels that are more than 12 m in length and operate less than 25 nautical miles from shore.

Fishing vessels of less than 12 m would have the option to carry a 406 MHz EPIRB in lieu of carrying a life raft or other survival craft. However, opting to carry the EPIRB would require the vessel to carry immersion or anti-exposure work suits if the water temperature is less than 15 °C. Fishing vessels of less than 12 m operating less than 25 nautical miles from shore may also opt to carry a means of two-way communication in lieu of an EPIRB: for example, a cellphone. This option is also available to fishing vessels of any length operating in sheltered waters or in waters within 2 miles from shore.<sup>24</sup>

The proposed new *Fishing Vessel Safety Regulations* do not mitigate the risk identified in TSB Recommendation M00-09. In March 2016, the Board reassessed the response to this recommendation as Unsatisfactory, as the regulations did not include the requirement for all fishing vessels to carry an EPIRB or other appropriate equipment that floats free, automatically activates, alerts the search and rescue system, and provides position updates and homing-in capabilities. In June 2017, the Board again reassessed the rating as Unsatisfactory. The TSB continues to record fatalities and occurrences on board fishing

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<sup>23</sup> TSB Marine Investigation Report M98L0149.

<sup>24</sup> Government of Canada, *Canada Gazette*, Part I, Vol. 150., No. 6 (06 February 2017), *Regulations Amending the Small Fishing Vessel Inspection Regulations*, section 3.29(1), item 4, <http://gazette.gc.ca/rp-pr/p1/2016/2016-02-06/html/reg1-eng.php>. (last accessed on 14 June 2017).

vessels that are less than 12 m and not equipped with an EPIRB, and that were either unable to or did not use any other means of signalling distress.<sup>25</sup>

#### 1.14.2 Clarity of workplace legislation

Provincial governments have the responsibility to ensure that the “business of fishing” is conducted in a safe manner. However, provincial regulatory frameworks as applicable to fishing vessel safety are not consistent across the country, and some provinces still do not have adequate fishing-sector-specific provisions in place. The TSB has an active recommendation on this safety deficiency; the recommendation was made following an investigation into an occurrence involving the *S.S. Brothers*.<sup>26</sup>

On 08 October 1996, the crew of the *S.S. Brothers* was hauling in the scallop rake in good weather conditions. While one of the deckhands was attempting to climb over the winch to reach the winch controls, his right leg was drawn into the winch and crushed between the incoming wire and the winch barrel. The Board determined that factors contributing to the accident were that the deck winch had not been inspected and had not been fitted with a machinery guard, the deckhand was operating the winch alone, and the deck and the surfaces of the winch were slippery. It is also likely that the deckhand’s ability to make a reasoned decision on the safe operation of the winch was adversely affected by fatigue caused by his work/rest schedule.

Following that occurrence, the Board determined that the enhancement of workplace safety and overall operational safety of fishing vessels could be better achieved through an approach that is coordinated and harmonized between the federal and provincial authorities. The provinces’ generic labour legislation is complex and may not be easily understood by those to whom it applies. Given that the provinces rely heavily on self-enforcement, the Board is concerned that the complexity of the legislation hinders effective compliance by fishermen to achieve the legislation’s intended safety objectives. Therefore, in 1999, the Board recommended that:

The provinces review their workplace legislation with a view to presenting it in a manner that will be readily understood by those to whom it applies, to help ensure that the enforcement mechanism and the regulatory regime complement each other.

#### **TSB Recommendation M99-02**

The Board last reassessed the provinces’ responses to Recommendation M99-02 in October 2016. It found that 8 of the 10 provinces have workplace legislation that is applicable to fishing vessels. The provinces that do not are New Brunswick and Prince Edward Island, where workplace legislation continues to define workplaces in such a way that the provinces

<sup>25</sup> Detailed information regarding TSB Recommendation M00-09, responses, and reassessments, is available at [http://www.tsb.gc.ca/eng/recommendations-recommendations/marine/2000/rec\\_m0009.asp](http://www.tsb.gc.ca/eng/recommendations-recommendations/marine/2000/rec_m0009.asp) (last accessed on 14 June 2017).

<sup>26</sup> TSB Marine Investigation Report M96M0144.

are not enforcing their jurisdiction over fishing vessels. New Brunswick is planning a review in 2017 to clarify its jurisdictional responsibility for fishing safety.

Only 2 provinces, British Columbia and Newfoundland and Labrador, have workplace legislation that is specific to fishing vessels. For the remaining provinces, workplace legislation is, for the most part, more general, and not specific to fishing vessels. Consequently, it may not adequately address the dangers unique to working on a fishing vessel.

Until the other 8 provinces ensure that their workplace legislation and its application to fishermen is readily understood and enforced, the reassessment of their responses remains Satisfactory in Part.<sup>27</sup>

### 1.15 TSB Watchlist

The TSB Watchlist identifies the key safety issues that need to be addressed to make Canada's transportation system even safer.

**Commercial fishing safety is a 2016 Watchlist issue.** As this occurrence demonstrates, despite many safety initiatives, unsafe practices continue in the fishing industry.

As seen in this occurrence, gaps remain with respect to the carriage of EPIRBs on board vessels as well as the donning of PFDs while operating where there is a chance of falling overboard.

#### **Commercial fishing safety will remain on the TSB Watchlist until**

- new regulations are implemented for commercial fishing vessels of all sizes;
- user-friendly guidelines regarding vessel stability are developed and implemented to reduce unsafe practices;
- there is evidence of behavioural changes among fishermen regarding the use of PFDs, EPIRBs, and survival suits, as well as of on-board safety drills and risk assessments being carried out; and
- there is concerted and coordinated action by federal and provincial authorities, leaders within the fishing community, and fishermen themselves to put in place strong regional initiatives and develop a sound safety culture in the fishing community.

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<sup>27</sup> A Satisfactory in Part rating is assigned if the planned action or the action taken will reduce but not substantially reduce or eliminate the deficiency, and meaningful progress has been made since the recommendation was issued. The TSB will follow up with the respondent as to options that could further mitigate the risks associated with the deficiency. The TSB will reassess the deficiency on an annual basis or when otherwise warranted.

## 2.0 Analysis

### 2.1 Factors leading to the capsizing and loss of life

While the crew members were hauling up the second string of lobster traps, the third lobster trap line became entangled in another fisherman's trawl. Traps occasionally become entangled during lobster fishing, especially after a period of rough weather, and heaving on the line is a common practice to clear the gear, which the crew attempted to do.

However, in this case the entangled trap was not hauling up to the vessel; instead, it was acting like an anchor on a short rode.<sup>28</sup> The strain caused by the entangled trap line in the hauler drew the starboard aft gunwale of the vessel downwards, lowering the freeboard on that part of the vessel. The vessel began taking on water.

Although it was common practice on the vessel for the master to dewater the vessel by removing the scupper plug, the water accumulated too fast in this occurrence for the master to do this.

As the crew tried to haul up the trap and untangle the line, they were working near the starboard aft side of the vessel when the senior deckhand reached out over the gunwale, which further reduced the freeboard in that area and more water came on deck.

Although the master ordered the line to be released, it was too late, and the vessel rolled to starboard and capsized, throwing the 3 crew members into the water.

The crew members were not wearing personal flotation devices (PFDs) when they entered the water, which diminished their chances of survival. No distress communications were issued. In the darkness, it was some time before the overturned vessel was sighted and the *Marie Eliser 1* came to the aid of the 3 crew members. The master and senior deckhand were unresponsive when taken on board and were later declared deceased by paramedics. The deckhand recovered after being treated for hypothermia.

### 2.2 Commercial fishing safety oversight in New Brunswick

Although provincial governments have the responsibility to ensure that the "business of fishing" is conducted in a safe manner, some provinces still do not have adequate fishing-sector-specific provisions in place to protect fishermen.

WorkSafeNB is a Crown corporation charged with implementing various acts, including the *Occupational Health and Safety Act*, as well as serving as a partner to promote a safe and healthy work environment for the workers and employers of New Brunswick.

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<sup>28</sup> A "rode" is another term for ropes or chain used in anchoring. When a vessel is attached to an anchor by a short rode, the vessel is more likely to be pulled downward by it and take on water, especially when the rode is attached to the stern as opposed to the bow of the vessel.

However, the commercial fishing industry is not included under the province's *Occupational Health and Safety Act*, and is therefore not included in the WorkSafeNB safety program.

If the commercial fishing industry is not included under the New Brunswick *Occupational Health and Safety Act* and the WorkSafeNB safety program, there is an increased risk that fishermen may not follow safe operating practices.

### 2.3 *Personal flotation devices*

Not wearing flotation devices on a fishing vessel is an unsafe practice that has been identified by the Transportation Safety Board of Canada (TSB) over the years. While lifejackets are effective at providing flotation, many fishermen consider them to be bulky and so they are not worn at all times on board a vessel. PFDs are designed to be worn at all times, but many fishermen are resistant to purchasing them for their vessels and also to wearing them as is recommended, citing issues such as discomfort, the risk of entanglement, and the perception that it is not practical or normal to do so. Furthermore, it has been shown that fishermen often underestimate the risk of falling overboard.

In this occurrence, the crew members were not wearing PFDs or lifejackets when the vessel capsized, and PFDs were not carried on board the vessel. Since the capsizing occurred quickly, there was no time for the crew members to access and don the lifejackets stowed on board. Although the sea temperature of 12.3 °C would have caused a cold shock effect and hypothermia in a relatively short time, had PFDs or lifejackets been worn, the crew members would have been provided with flotation and an increased chance of survival.

If fishermen do not wear personal flotation devices or lifejackets while working on deck, despite the industry awareness initiatives promoting their use, there is an increased risk that fishermen will not survive in the event that they fall overboard.

The current *Small Fishing Vessel Inspection Regulations* require that lifejackets be carried on board, but there is no mandatory requirement to wear them. As demonstrated in this occurrence, capsizing can happen quickly, thus preventing access and donning of lifejackets. Transport Canada (TC) Ship Safety Bulletin 06/2012 states that PFDs can be substituted for approved lifejackets, but if they are, they must be worn at all times when the vessel is operating. TC does not mandate the wearing of PFDs on board fishing vessels when lifejackets are carried.

As of 13 July 2017, the new *Fishing Vessel Safety Regulations* require persons on board fishing vessels to wear a lifejacket or a PFD only in environmental conditions or circumstances that could jeopardize their safety. While a fishing master can determine that a risk is present and decide to require the crew to wear PFDs, the assessment of risk is subjective. This means that many masters may not perceive the need to acquire PFDs. Furthermore, even if PFDs are carried, if they are not worn at all times, crew members may not have adequate time to don them in an emergency. If TC does not require fishermen to wear personal flotation devices for their personal protection at all times when on the deck of a commercial fishing vessel, there is an increased risk of fatalities when fishermen fall overboard.

Despite risk-based regulations and industry initiatives to change behaviours and create awareness about the importance of wearing PFDs, as well as design improvements by PFD manufacturers to address fishermen's concerns about comfort and constant wear, there has not been a significant change in the behaviour of fishermen, and many continue to work on deck without wearing a PFD, even in circumstances where one is available. In this occurrence, no PFDs were available to the crew members and they were unable to don a lifejacket before going overboard, diminishing their chances of survival.

At the provincial level, only the Quebec Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST) has a requirement, which has been in place since 2012, for some fishermen (specifically lobster fishermen) to wear PFDs at all times. In contrast, the *Occupational Health and Safety Act* in New Brunswick does not have a similar requirement.

If the New Brunswick *Occupational Health and Safety Act* does not require fishermen to wear personal flotation devices for their personal protection at all times when on the deck of a commercial fishing vessel, there is an increased risk of fatalities when fishermen fall overboard.

As was asserted in previously issued recommendations M16-04 and M16-05, the TSB believes that the implementation of explicit requirements for fishermen to wear PFDs, along with appropriate education and enforcement measures, will significantly reduce the loss of life associated with going overboard.

## 2.4 *Emergency communications*

In incidents involving fishing vessels of 8.5 m in length or less, there is rarely, if ever, a distress call. Emergency situations may unfold so rapidly that there is little or no time to verbally or manually transmit a distress call, which delays the initiation of search and rescue efforts and decreases the chances of survival. When vessels carry emergency position indicating radio beacons (EPIRB) that are either manually activated by crew or automatically activated when they enter the water and continually transmit the vessel's location, this can greatly reduce the time people are in the water before help arrives.

In this occurrence, 2 of the crew members had personal cell phones but there was no time for them to issue a distress call before going overboard. This meant that the search and rescue response was delayed; it was initiated only when the master of the *Marie Eliser 1* saw the deckhand on top of the capsized vessel, yelling for help. The occurrence vessel did not carry a very high frequency digital selective calling (VHF-DSC) radiotelephone or an EPIRB and was not required to do so by regulation.

Previous TSB investigations have found that carrying an EPIRB can contribute to the saving of lives due to its ability to automatically send a distress signal that also indicates the location of the distress. Between February 2010 and August 2016, 9 accidents, including this occurrence, involving small fishing vessels of less than 12 m have been reported to the TSB, with a total of 15 fatalities. None of these vessels were equipped with an EPIRB and no distress signals were issued.

If fishing vessels do not carry communications equipment that is capable of sending an automatic distress signal, such as an EPIRB, search and rescue efforts may be delayed or not initiated, increasing the risk of fatalities.

## 2.5 Safety issues in the fishing industry

The TSB's *Safety Issues Investigation into Fishing Safety in Canada* (SII) categorized actions impacting safety into 10 significant safety issues and found that there are complex relationships and interdependencies among them. These safety significant issues are further analyzed in the SII.<sup>29</sup> In this occurrence, the issues related to lifesaving appliances and regulatory approach to safety were present.

### *Lifesaving appliances*

<b>Safety issues investigation findings</b>	<b>Relationship to this occurrence</b>
Fishermen resist wearing PFDs because many have accepted the risk.	PFDs were not being worn.
Not all fishing vessels are equipped with EPIRBs despite TSB recommendation M00-09.	The occurrence vessel was not equipped with an EPIRB.
Fishermen may fit their vessels with lifesaving appliances only for regulatory compliance.	The vessel carried only the lifesaving appliances that were required by regulation.

### *Regulatory approach to safety*

<b>Safety issues investigation findings</b>	<b>Relationship to this occurrence</b>
Transport Canada does not require mandatory carrying or wearing of PFDs on commercial fishing vessels when lifejackets are carried.	PFDs were not available to the crew members in this occurrence.
Some provinces have workers' compensation board policies that apply specifically to fishermen.	WorkSafeNB <i>Occupational Health and Safety Act</i> excludes fishing vessels as places of employment and is not involved in fishing safety-related matters.

### *Interdependency of safety issues*

The safety of fishermen is compromised by numerous issues which are interconnected. The following safety issues share a complex relationship and contributed to this occurrence:

- Lifesaving appliances – there were no PFDs and no EPIRB on board, nor were they required by regulation.
- Regulatory approach to safety – Wearing of PFDs is not mandatory.

<sup>29</sup> TSB Marine Investigation Report M09Z0001, *Safety Issues Investigation into Fishing Safety in Canada*.



Past attempts to address these safety issues on an issue-by-issue basis have not led to the intended result: a safer environment for fishermen. The SII emphasizes that in order to obtain real and lasting improvement in fishing safety, change must address not just one of the safety issues involved in an accident, but all of them, recognizing that there is a complex relationship and interdependency among those issues. Removing a single unsafe condition may prevent an accident, but only slightly reduces the risk of others. The safety of fishermen will be compromised until the complex relationship and interdependency among safety issues is recognized and addressed by the fishing community.

## 3.0 Findings

### 3.1 Findings as to cause and contributing factors

1. While the crew were hauling the second string of lobster traps, the third lobster trap line became entangled in another fisherman's trawl.
2. The strain of the entangled trap line on the hauler pulled the starboard aft gunwale downward; the freeboard on that part of the vessel decreased and the vessel took on water.
3. As the crew tried to haul up the trap and untangle the line, they were working near the starboard aft side of the vessel when the senior deckhand reached out over the gunwale. This compounded the reduction of freeboard in that area and more water came onto the deck of the vessel.
4. Although the master ordered the trap line to be released, it was too late and the vessel rolled to starboard and capsized, throwing the 3 crew members into the water.
5. The crew members were not wearing personal flotation devices when they entered the water, which diminished their chance of survival.
6. No distress communications were issued. In the darkness, it was some time before the overturned vessel was sighted and the *Marie Eliser 1* came to the aid of the 3 crew members.
7. The master and senior deckhand were unresponsive when brought on board the *Marie Eliser 1* and were later declared deceased by paramedics, while the deckhand recovered after being treated for hypothermia.

### 3.2 Findings as to risk

1. If the commercial fishing industry is not included under the New Brunswick *Occupational Health and Safety Act* and the WorkSafeNB safety program, there is an increased risk that fishermen may not follow safe operating practices.
2. If fishermen do not wear personal flotation devices or lifejackets while working on deck, despite the industry awareness initiatives promoting their use, there is an increased risk that fishermen will not survive in the event that they fall overboard.
3. If Transport Canada does not require fishermen to wear personal flotation devices for their personal protection at all times when on the deck of a commercial fishing vessel, there is an increased risk of fatalities when fishermen fall overboard.
4. If the New Brunswick *Occupational Health and Safety Act* does not require fishermen to wear personal flotation devices for their personal protection at all times when on the

deck of a commercial fishing vessel, there is an increased risk of fatalities when fishermen fall overboard.

5. If fishing vessels do not carry communications equipment that is capable of sending an automatic distress signal, such as an emergency position-indicating radio beacon, search and rescue efforts may be delayed or not initiated, increasing the risk of fatalities.
6. The safety of fishermen will be compromised until the complex relationship and interdependency among safety issues is recognized and addressed by the fishing community.

### 3.3 *Other findings*

1. A citizens band radio and 2 cellphones were the only communications equipment on board, and the crew did not have the opportunity to use them because the vessel capsized so quickly.

## 4.0 *Safety action*

### 4.1 *Safety action taken*

The Transportation Safety Board of Canada (TSB) is not aware of any safety action taken following this occurrence.

### 4.2 *Safety action required*

#### 4.2.1 *Requirements for personal flotation devices*

Fishermen often operate in harsh physical and environmental conditions. They harvest, load, transfer, and store their catch while the vessel is in various sea conditions, and the risk of going overboard is high. If a fisherman ends up in the water, the consequences can be fatal: among other things, cold shock, hypothermia, and exhaustion<sup>30</sup> can quickly lead to death, especially without the assistance of a personal flotation device (PFD).

The TSB has determined that, in Canada, from 2006 to 2016, an average of 9 deaths per year occurred in the commercial fishing industry. Over the same period there were approximately 46 000 commercial fishermen employed per year. The TSB's *Safety Issues Investigation into Fishing Safety in Canada* identified drowning, after a fisherman falls overboard or enters the water due to a vessel capsizing, foundering, flooding, or sinking, as the primary cause of death in Canada's fishing industry.<sup>31</sup>

In this occurrence, the crew members were not wearing PFDs or lifejackets when the vessel capsized, and PFDs were not carried on board. Because the capsizing occurred quickly, there was no time for the crew members to access and don the lifejackets stowed on board. The sea temperature of 12.3 °C would have caused a cold shock effect and hypothermia in a relatively short period of time. However, had PFDs or lifejackets been worn, the crew members would have been provided with flotation and an increased chance of survival.

There are several education and awareness programs and initiatives within the fishing community that attempt to change behaviours and promote the use of PFDs. In British Columbia, Fish Safe's "Real Fishermen" campaign uses promotional materials featuring fishermen wearing PFDs. In Nova Scotia, the Fisheries Safety Association of Nova Scotia has consulted with fishermen and suppliers to develop and implement initiatives such as wharf visits, family pledges, an elementary school poster contest, advertising, and design testing to increase awareness of the importance of wearing PFDs. In addition, the Safe at Sea Alliance

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<sup>30</sup> Dr. C. J. Brooks, K. A. Howard, et.al., *Survival at Sea for Mariners, Aviators and Search and Rescue Personnel*, Chapter 10: Drowning is Not a Helpful Diagnosis Written on the Death Certificate (North Atlantic Treaty Organization and Research and Technology Organization, February 2008), at [https://www.sto.nato.int/publications/STO%20Technical%20Reports/RTO-AG-HFM-152/\\$\\$AG-HFM-152-ALL.pdf](https://www.sto.nato.int/publications/STO%20Technical%20Reports/RTO-AG-HFM-152/$$AG-HFM-152-ALL.pdf) (last accessed on 19 June 2017).

<sup>31</sup> TSB Marine Investigation Report M09Z0001, *Safety Issues Investigation into Fishing Safety in Canada*, p. 31.

of Nova Scotia has collaborated with industry and government representatives to develop a plan for the province's fishing industry. The plan includes several recommendations to improve safety through education, awareness, and enforcement. One such recommendation is the development of an enhanced program that includes safety drills and demonstrates PFDs in action. Despite these initiatives, there has not been a significant change in the behaviour of fishermen and many continue to be resistant to wearing a PFD.

Apart from the Quebec Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST), neither Transport Canada (TC) nor any other provincial workplace safety regulator has requirements to ensure that fishermen wear PFDs at all times. Despite risk-based regulations and industry initiatives to change behaviours and create awareness about the importance of wearing PFDs, as well as design improvements by PFD manufacturers to address fishermen's concerns about comfort and constant wear, many fishermen continue to work on deck without wearing a PFD.

Because they are lightweight and wearable, fishermen can wear PFDs at all times on a vessel to ensure that they are wearing them if they go overboard, which can often happen very suddenly. If fishermen do not wear PFDs or lifejackets while working on deck, despite the industry awareness initiatives promoting their use, there is an increased risk that fishermen will not survive in the event that they fall overboard.

In this occurrence, the lobster fishing vessel C19496NB capsized off Salmon Beach, New Brunswick; none of the vessel's 3 crew members were wearing PFDs, and 2 of the 3 crew members perished in the sea. The New Brunswick commercial fishing industry is not included under the province's *Occupational Health and Safety Act*, nor is it included in the WorkSafeNB safety program. The New Brunswick *Occupational Health and Safety Act* does not require commercial fishermen or fish harvesters to wear PFDs during fishing operations.

The TSB considers that the implementation of explicit requirements for fishermen to wear PFDs would significantly reduce the loss of life associated with going overboard, and has already made similar recommendations to TC and WorkSafeBC.<sup>32</sup> Therefore, the Board recommends that

The government of New Brunswick and WorkSafeNB require persons to wear suitable personal flotation devices at all times when on the deck of a commercial fishing vessel or on board a commercial fishing vessel without a deck or deck structure and that WorkSafeNB ensure that programs are developed to confirm compliance.

**TSB Recommendation M17-04**

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<sup>32</sup> TSB Marine Investigation Report M15P0286, section 4.2.2.

*This report concludes the Transportation Safety Board's investigation into this occurrence. The Board authorized the release of this report on 27 June 2017. It was officially released on 26 July 2017.*

*Visit the Transportation Safety Board'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 transportation safety issues that pose the greatest risk to Canadians. 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.*

## *Appendices*

### *Appendix A – Safety equipment stored in forward cuddy*



*Appendix B – Lobster trap hauler and boom*

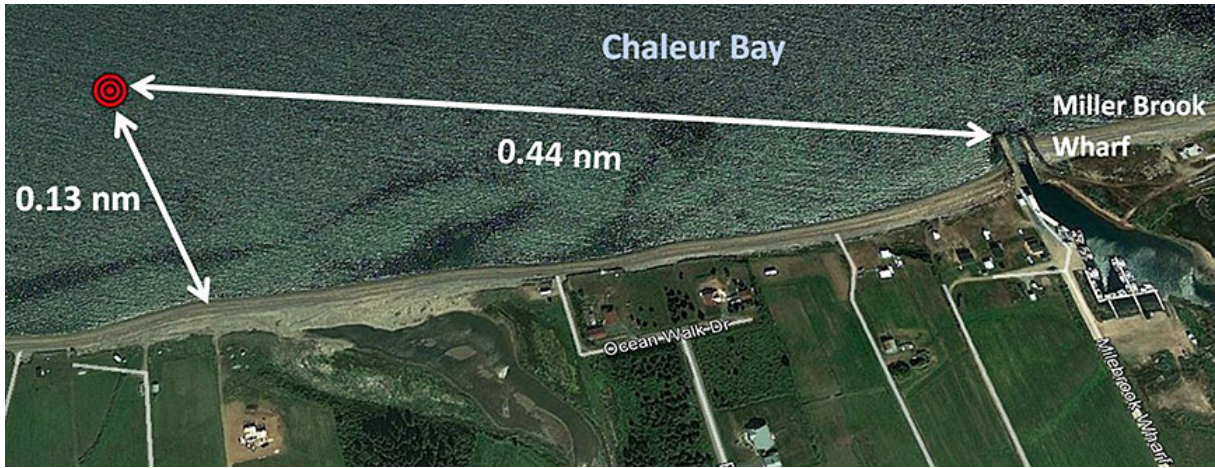




*Appendix C – Two of the lobster traps used on the occurrence vessel*



*Appendix D – Area of the occurrence*



Source: Google Earth, with TSB annotations