Transportation Safety Board of Canada
Bureau de la sécurité des transports du Canada

Marine Transportation Safety Investigation Report M19A0090

CAPSIZING AND LOSS OF LIFE

Unregistered fishing vessel
Mackenna Point, Nova Scotia
08 April 2019

History of the occurrence

On 08 April 2019, the Paqtnkek Mi'kmaw Nation oyster project management team[1] met at its band office and discussed the beginning of the oyster season. The team decided to launch its 7.3 m aluminium shallow-draft vessel at Bayfield boat ramp and proceed to the oyster aquaculture site near Summerside in Pomquet Harbour, Nova Scotia (Figure 1).

The 4.4 nautical-mile route from the Bayfield boat ramp to the oyster aquaculture site along the shoreline would take 30 to 45 minutes. A 1.4 nautical mile portion of the route, between Pomquet Point and the entrance to Pomquet Harbour, is exposed to the sea conditions of St. Georges Bay. This portion of the route is susceptible to breaking waves caused by shoaling.[2]

At approximately 1400, the crew, consisting of the supervisor (who was in charge of the daily operations of the vessel), vessel operator, and deckhand, departed the Bayfield boat ramp. Each crew member held a Small Vessel Operator Proficiency training certificate; 2 held Marine Emergency Duties A-1 training certificates; 2 held valid first aid certificates and 1 held a Domestic Vessel Safety training certificate. The supervisor had 4 years' experience as a deckhand—the occurrence voyage was his first day as supervisor. The vessel operator had 1 year of experience. The deckhand had 4 years' experience with the oyster project.

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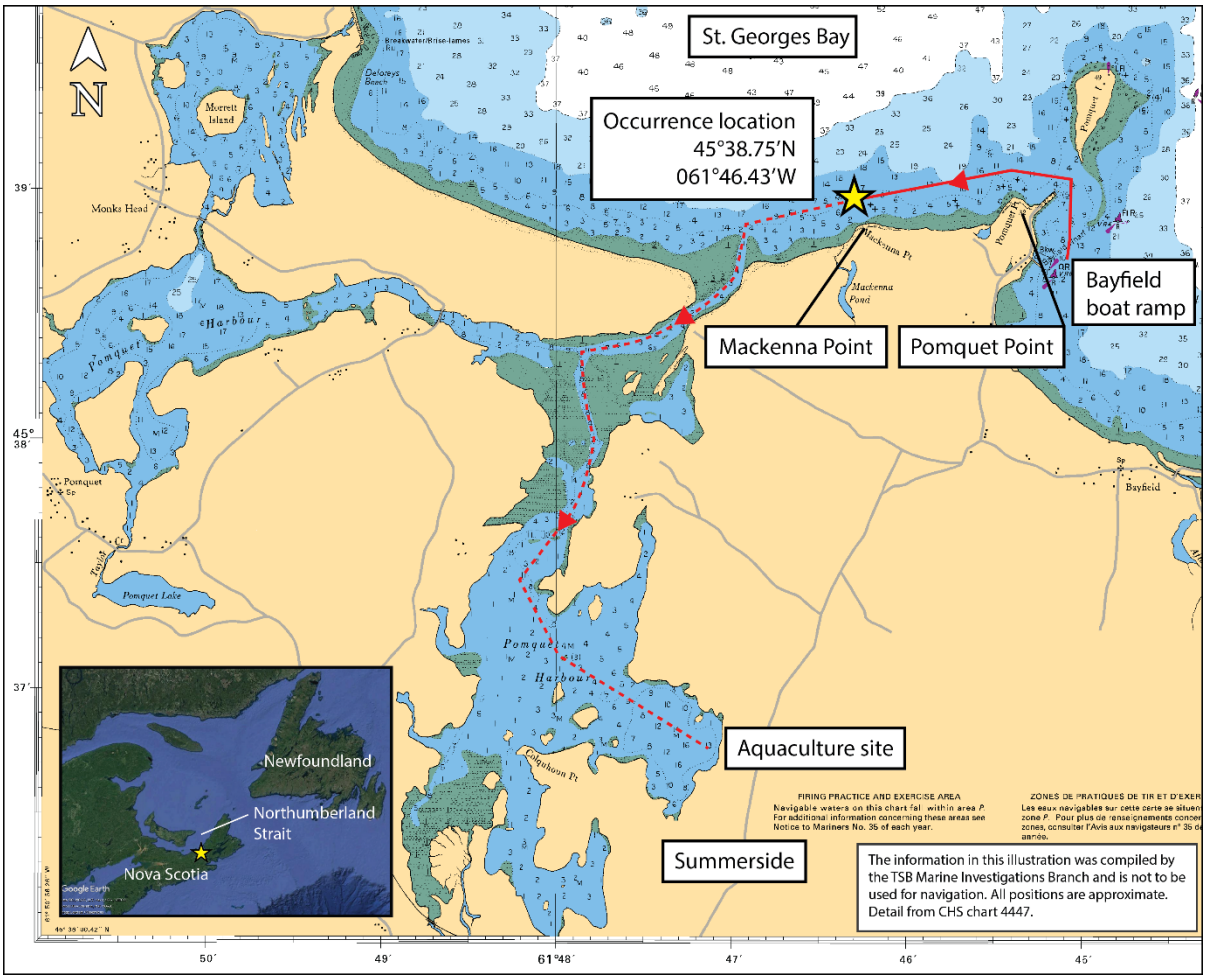
1 The project management team consisted of representatives from the Paqtnkek Mi'kmaw Nation, an oyster consultant, project manager, and crew (supervisor, vessel operators, deckhands).

2 A breaking wave is a type of wave that rises up, pitches forward, and breaks into surf. Breaking waves can be caused by shoaling, which occurs when deep-water waves approach a shallow area or shoal.

All crew members were wearing auto inflating personal flotation devices (PFDs), and the supervisor and operator were wearing hip waders as well. The weather forecast was for moderate sea conditions and winds of 20 knots from northwest. The water temperature was 1 °C. The crew had no pre-departure checklist or any guidance documents on weather or sea condition restrictions.

After the vessel completed ⅔ of the exposed portion of the route, the water depth shallowed to 0.6 to 1.8 m and the wave height increased to about 1.25 m. The crew briefly discussed whether to continue the voyage or return to the departure point.

Figure 1. Area of the occurrence (Source: Canadian Hydrographic Service and Google Earth, with TSB annotations)



Since it was not much further to the Pomquet Harbour entrance and there was a risk of the vessel capsizing while turning around, the voyage continued. The vessel capsized at approximately 1425, about 50 m from the shore, near Mackenna Point, at 45°38.75'N, 061°46.43'W. No distress call was initiated.

All crew members ended up in the water and managed to climb onto the hull of the overturned vessel. A few minutes later, the crew abandoned the vessel and swam towards shore.

At approximately 1445, the deckhand and supervisor reached the shore. A local resident spotted them, provided assistance, and called 911. The deckhand and supervisor were transported to the local

hospital, where the supervisor was declared dead, and the deckhand was treated for hypothermia and later released. At approximately 1610, the body of the vessel operator washed ashore and was recovered by local emergency health services.

Vessel

The Paqtnkek Mi'kmaw Nation commissioned Acadian Bay Enterprises Inc. to build a type of aquaculture vessel that is commonly used in the Atlantic provinces of Prince Edward Island and New Brunswick for oyster growing and harvesting operations.

The vessel was not built to any standard;[3] it was constructed without a lines plan or engineering drawings, its stability was not assessed, and its stability limits were not known.[4] The 2018 bill of sale included a disclaimer indicating that the purchaser was responsible for understanding the limitations of the vessel's custom design.

There were no freeing ports on the main deck, but the main deck was fitted with a drain plug. The vessel was equipped with an automatic bilge pump for the main deck and a small gasoline engine driving a hydraulic-power pack, which powered an oyster cage hauler and a deck hose. The vessel was also equipped with a 60 hp outboard motor and was capable of reaching speeds of approximately 25 knots (Figure 2).

Figure 2. The fishing vessel (Source: Paqtnkek Mi'kmaw Nation)

Before the vessel was put into operation, the fabricator from Acadian Bay Enterprises Inc. had shown the project manager (also the vessel's authorized representative (AR)) and the occurrence crew the operational features of the vessel.

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[3] TSB marine transportation safety investigation reports M15P0035, M16A0327, and M16A0115 found risks in conducting repairs, building vessels, or maintaining equipment without the use of standards.

[4] TSB marine transportation safety investigation reports M15P0286 and M16A0327 have highlighted the importance of knowing a vessel's stability limitations. Also see TSB Marine Transportation Safety Recommendation M16-03: Stability assessments and adequate stability information for all small fishing vessels (issued December 2016), at https://www.tsb.gc.ca/eng/recommandations-recommendations/marine/2016/rec-m1603.html (last accessed 01 October 2020).

According to Transport Canada (TC), the vessel was a fishing vessel and as such was subject to the *Fishing Vessel Safety Regulations*.[5] Because the vessel had an engine of 10 hp (7.5 kW) or more, it was required to be registered with TC.[6] According to the *Fishing Vessel Safety Regulations*, the stability of a new vessel between 6 and 9 m in length,[7] such as the occurrence vessel, is required to "conform to recommended practices and standards that are appropriate to the type of vessel and that take into account its intended operations."[8]

Regulations applicable to this type of vessel also include requirements for safe operation, safety equipment, maintenance, lifesaving appliances, records of maintenance and modifications, and written operational procedures. It is the responsibility of the master and the AR to ensure that the vessel is compliant with applicable regulatory and safety requirements. TC ensures compliance with these regulations by conducting random or periodic vessel inspections and/or requiring the AR to demonstrate that a vessel has adequate stability.[9] Despite the requirements, the aquaculture vessel was not registered with TC,[10] and the AR was not aware that the vessel and its operations were subject to the *Fishing Vessel Safety Regulations*.

Paqtnkek Mi'kmaw Nation oyster project operations

The Paqtnkek Fisheries Enterprise manages a communal commercial fishing fleet of 5 vessels, all of which are registered with TC and are licensed to harvest lobster, snow crab, and herring. The Paqtnkek Mi'kmaw Nation oyster project is not managed by the Paqtnkek Fisheries Enterprise.

The Paqtnkek Mi'kmaw Nation oyster project has been operating since 2015. The operation involves oyster seed (spat) collection, as well as growing and harvesting the spat for commercial sale. The oyster project season begins shortly after Pomquet Harbour is free of ice and ends in the late fall.

For the first 4 years of the operation, the crew used a pontoon boat that could be launched from a small cove in the protected waters of Pomquet Harbour. The vessel in this occurrence could not be launched in the harbour because there was nowhere with a suitable slope and deep enough water for a boat ramp. The vessel was launched for the first time in the summer of 2018 at the Bayfield boat

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[5] Transport Canada's *Fishing Vessel Safety Regulations*, C.R.C., c.1486 (last amended 13 July 2017), defines a fishing vessel as "a vessel that is used or is to be used for commercially catching, harvesting, or transporting fish or other living marine resources."

[6] Transport Canada, SOR/2007-126, *Vessel Registration and Tonnage Regulations* (last amended 01 May 2015), Part 1: Registration, Paragraph 1.1(1)(a). Application for registry includes physical characteristics of the vessel, nature of its operation, and an AR.

[7] A new vessel means that construction of the vessel started more than one year after the day on which the *Fishing Vessel Safety Regulations* come into force (13 July 2017).

[8] Transport Canada, *Fishing Vessel Safety Regulations* C.R.C., 1486 (last amended 13 July 2017), Subsection 3.46(1).

[9] Transport Canada, *Fishing Vessel Safety Regulations*, C.R.C., c.1486 (last amended 13 July 2017), Subsections 3.03(1) and 3.03(2).

[10] TSB Marine Transportation Safety Investigation Report M16A0327 found that if commercial fishing vessels are not registered with TC, there is a risk that vessel masters or operators will not be aware of, or will not comply with, safety regulations intended to increase the safety of fishing vessels and fishermen.

ramp and moved to Pomquet Harbour where the vessel was anchored when not in use. The vessel was taken out of the water at the Bayfield boat ramp in late fall.

The oyster project team met monthly to discuss operations. In 2018, the team discussed the need for a boat ramp within the protected waters of Pomquet Harbour to accommodate the occurrence vessel, as well as the need for calm sea conditions when transiting between Bayfield and Summerside. In 2019, the project team planned to build a boat ramp in Pomquet Harbour, develop written safety procedures, conduct safety drills and toolbox meetings,[11] and initiate crew drug testing.

Dissemination of safety information

TC is the federal regulatory authority responsible for crew and vessel safety. TC is also responsible for outreach, which includes promoting safety and security. TC's primary method of distributing safety information, such as guidance documents and amendments to regulations, is through ship safety bulletins (SSB). SSBs are published on TC's website or sent directly to subscribers by email.

In 2018, TC published a guidance document entitled *Adequate Stability and Safety Guidelines for Fishing Vessels*.[12] The document provides technical information and guidance to fish harvesters and promotes safe on-board practices. Also in 2018, TC initiated the voluntary small vessel compliance program for fishing vessels for registered vessels, which provides information material to help small vessel operators understand and meet safety and environmental requirements.

The Nova Scotia Fisheries Sector Council and Fisheries Safety Association of Nova Scotia also promote safety by providing guidance to the commercial fishing and aquaculture industry, including checklists for vessel familiarization and training requirements. These checklists encourage harvesters to complete pre-departure checks, conduct drills, ensure vessels' seaworthiness, equip vessels with the required lifesaving equipment, and use vessel-specific safe working procedures.

None of the oyster project team members were aware of the safety bulletins, compliance program, or guidance documents. At the time of the occurrence, the vessel was not equipped with safety equipment as per regulatory requirements.[13,14]

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[11] TSB Marine Transportation Safety Investigation Report M15A0348 found if fishing vessel operations do not have a system for on-board risk management, such as safety or toolbox meetings, there is a risk that crew members will not mitigate on-board hazards effectively.

[12] Transport Canada, TP 15393 E, *Adequate Stability and Safety Guidelines for Fishing Vessels* (First Edition: July 2018).

[13] Transport Canada, *Fishing Vessel Safety Regulations*, C.R.C., c.1486 (last amended 13 July 2017), Subsections 3.26(1) and 3.28(1). The following lifesaving equipment was required: a re-boarding device, a buoyant heaving line or a lifebuoy, a life raft or recovery boat, an emergency position-indicating radio beacon (or two-way radio) an immersion or anti-exposure suit.

[14] Previous TSB marine transportation safety investigation reports (M16A0140, M16A0327, M15A0189, M14A0289, M09Z0001, and M98L0149) have found that if fishing vessels do not carry an emergency position indicating radio beacon, there is a risk of search and rescue efforts being delayed or not initiated. The TSB has also issued a recommendation relating to this issue (TSB Recommendation M00-09: Emergency position indicating radio beacons [issued March 2001], at https://www.tsb.gc.ca/eng/recommandations-recommendations/marine/2000/rec-m0009.html [last accessed 07 October 2020]).

Personal flotation devices

The Paqtnkek Mi'kmaw Nation oyster project crew consistently wore auto-inflating PFDs during operations. The crew's PFDs were manufactured in 2015. The manufacturer's manual recommends performing an air leak test every 6 months and to record the test dates on the label provided on the back flap of the PFD. All the Paqtnkek Mi'kmaw Nation oyster project's PFD auto-inflation units had been replaced and had an expiry date of 2022. According to the manufacturer's instructions, once a new auto-inflation unit is installed, the PFD should be orally inflated and left overnight to check for potential pressure loss. When the body of the vessel operator was located following the capsizing, the PFD was intact and had activated, but it was not fully inflated. TC subsequently inspected the operator's PFD and identified that air was leaking from a gap in the seal around the auto-inflation unit. None of the PFD labels indicated that an air leak test had been performed.

During the summer of 2018, TC conducted a concentrated inspection campaign, which included collecting information related to PFD maintenance. This information, along with this occurrence, prompted TC to issue SSB 12/2019, Inspection and Maintenance of Inflatable Lifejackets and Personal Flotation Devices, in December 2019. The purpose of the SSB is to remind users that it is important to inspect and service inflatable lifejackets and PFDs according to manufacturer's instructions.[15]

Effects of cannabis use

In December 2018, following the legalization of cannabis, TC issued SSB 12/2018, Legalization of cannabis in Canada and vessel operation.[16] The purpose of this SSB is to remind ARs and seafarers of their responsibility to operate vessels safely, and of the effects of tetrahydrocannabinol (THC) on human performance. THC is the principal psychoactive component of cannabis and cause of impairment. The SSB suggests reviewing the *Cannabis Act*, *Criminal Code*, *Canada Labour Code*, *Safe Working Practices Regulations*, *Marine Personnel Regulations* and the *Canada Shipping Act*, *2001* to remind seafarers of their legal obligations related to cannabis use.[17] It is illegal for an individual to operate a vessel if that individual's blood drug concentration for THC is ≥ 2 ng/ml.[18]

A post-mortem blood drug screen for the 2 crew members indicated THC levels of 16 ng/ml and > 50 ng/ml.[19] The time at which cannabis was last used by the 2 crew members could not be determined. The Paqtnkek Mi'kmaw Nation oyster project had no drug and alcohol policy at the time of the occurrence.

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[15] Transport Canada, Ship Safety Bulletin 12/2019: Inspection and Maintenance of Inflatable Lifejackets and Personal Flotation Devices (24 October 2019), at https://tc.canada.ca/en/marine-transportation/marine-safety/ship-safety-bulletins/inspection-maintenance-inflatable-lifejackets-personal-flotation-devices-ssb-no-12-2019 (last accessed 02 October 2020).

[16] Transport Canada, Ship Safety Bulletin 12/2018: Legalization of cannabis in Canada and vessel operation (12 October 2018), at https://tc.canada.ca/en/marine-transportation/marine-safety/ship-safety-bulletins/legalization-cannabis-canada-vessel-operation-ssb-no-12-2018 (last accessed 02 October 2020).

[17] Ibid.

[18] Department of Justice, *Criminal Code* (R.S.C., 1985, c. C-46), subsection 320.14(1).

[19] TSB Investigation M09Z0001, for which a report was released in 2012, determined that the use of drugs and alcohol was widespread in the fishing industry.

The TSB investigation into the fatal collision between fishing vessels *Viking Storm* and *Maverick*, in which a crew member on watch had elevated THC levels, found that if individuals are not free from the performance effects of recreational drugs, there is an increased risk that accidents will occur.[20]

TSB Watchlist

The Watchlist identifies the key safety issues that need to be addressed to make Canada's transportation system safer. In 2009, the TSB initiated a Safety Issue Investigation into Fishing Safety (SII) and, in 2010, commercial fishing safety was included on the Watchlist. The SII identified that, despite many safety initiatives, unsafe practices continue. As seen in this occurrence, gaps remain with respect to accessing safety information, knowledge of regulatory requirements, conducting drills, carriage of essential lifesaving equipment, and knowledge of the vessel stability limitations.[21]

Safety action taken

The following safety actions were taken as a result of this occurrence:

- Nova Scotia Community College, the Nova Scotia Fisheries Sector Council, and a safety consultant developed a voluntary training course to address gaps in training for small aquaculture vessel operators. The training focuses on vessel maintenance and operations, and creates awareness about regulatory requirements and the benefits of conducting drills and safety procedures. Participants review vessel stability and safe working practices for loading and handling the traps and cages used in the aquaculture industry.
- TC conducted outreach to local First Nations aquaculture operations.
- The AR arranged to have the vessel's stability assessed.

Safety messages

It is important for ARs, vessel operators/masters and crew members, to inform themselves of any regulations and any safety guidance information that applies to their vessels.

Mariners must regularly check lifesaving equipment, including PFDs, and follow manufacturers guidance for maintenance and inspections to ensure that it is capable of functioning as intended in an emergency.

Mariners, particularly fish harvesters, must be aware of the effects of impairment by drugs on human performance and safety, and of their legal obligations when operating vessels.

This report concludes the Transportation Safety Board of Canada's investigation into this occurrence. The Board authorized the release of this report on 07 October 2020. It was officially released on 15 October 2020.

[20] TSB Marine Investigation Report M12F0011.

[21] TSB Marine Investigation Report M09Z0001 and 2018 Watchlist.

Visit the Transportation Safety Board of Canada's website (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

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