

Transportation Safety Board
of Canada



Bureau de la sécurité des transports
du Canada

**MARINE INVESTIGATION REPORT
M15A0189**



**LOSS OF VESSEL AT SEA WITH 3 FATALITIES
SMALL FISHING VESSEL *CFV 130214*
PLACENTIA BAY, NEWFOUNDLAND AND LABRADOR
16 JUNE 2015**

Canada

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Le présent rapport est également disponible en français.

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 M15A0189

Loss of vessel at sea with 3 fatalities

Small fishing vessel *CFV 130214*

Placentia Bay, Newfoundland and Labrador

16 June 2015

Summary

On 16 June 2015, at approximately 1923 Newfoundland and Labrador Daylight Time, the small fishing vessel *CFV 130214*, with 3 people on board, was reported overdue from a fishing trip in Placentia Bay, Newfoundland and Labrador. Joint Rescue Coordination Centre Halifax initiated a search of the area. The next day, search and rescue personnel recovered the 3 deceased crew members on Bar Haven Island. The vessel was not found and is believed to have sunk.

Le présent rapport est également disponible en français.

Factual information

Particulars of the vessel

Table 1. Particulars of the vessel

Name of vessel	Unnamed*
Department of Fisheries and Oceans (DFO) vessel registration number	130214
Official number	C18847QC**
Type	Small fishing vessel
Estimated gross tonnage	3.38
Length overall	7.1 m
Width	2.54 m
Built	Unknown***
Propulsion	115 hp 4-stroke outboard motor
Cargo	Ice, bait, fishing gear
Crew	3
Owner	Private owner/master, Southern Harbour, NL****

Notes:

* The occurrence vessel did not have a registered name.

** The official number was assigned to the vessel when it was owned by the previous owner. This number has now been suspended.

*** The exact year built is unknown; however, the vessel was first registered in 1986.

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

Description of the vessel

The CFV 130214 was a 7.1 m open boat built of fibreglass. It was powered by a 115 hp 4-stroke outboard motor and was equipped with an on-board electronic chart/plotter global positioning system (GPS).

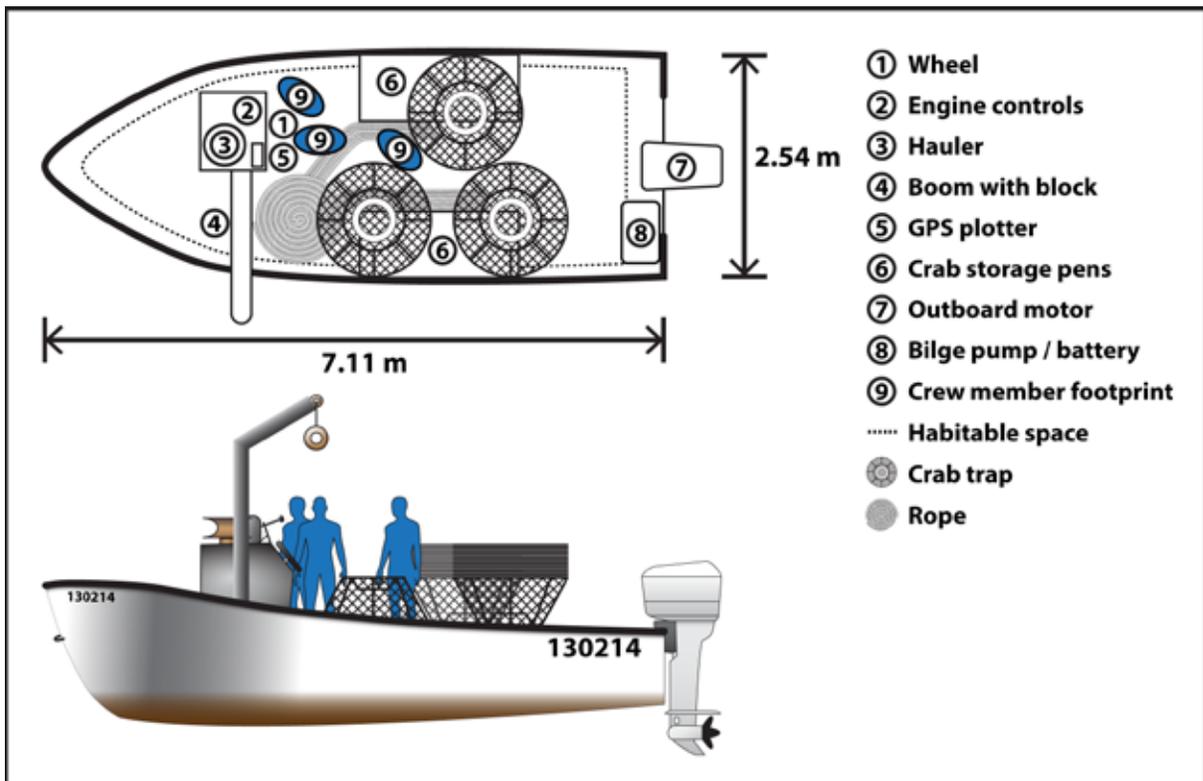
The open boat was purchased on 17 January 2015 and registered with the Department of Fisheries and Oceans (DFO) as a secondary vessel of the master's independent core enterprise.¹

At the time of the occurrence, the open boat had a portable 23-litre fuel tank on the stern, two 20-litre gasoline jugs, an electric bilge pump with automatic float switch, gaffs, and a marine battery. There were 3 personal flotation devices (PFDs) on board.

¹ A "core enterprise" is a fishing unit composed of a fisherman (the head of the enterprise), the registered vessel(s), and the licences held by the fisherman, and which has been designated as a core enterprise under approved criteria. (Source: *DFO Commercial Fisheries Licensing Policy for Eastern Canada – 1996*, Chapter 2, Section 9, paragraph 6)

The master's primary fishing vessel, the *KSL Enterprises*, had been undergoing modifications that were taking longer than expected. As the scheduled closure of the crab fishing season was in 4 weeks,² the crew hastily modified the secondary vessel, the open boat, during the 2 weeks prior to the occurrence in order to fish the full quota in time. They fitted plywood crab/ice storage pens, measuring 183 cm long by 76 cm wide, near midships on either side of the vessel (Figure 1). A small console with steering/engine controls and a gasoline-operated hydraulic hauler was fitted in the forward part of the vessel, including an aluminum crab boom on the port side. The main trawl line with the crab traps attached would pass over the block hanging from the boom and then around the vertical hauler gurdy mounted on the forward part of the console when hauling the strings of crab traps.

Figure 1. The open boat, overhead and profile views with 25 crab traps on board



² The harvest dates for the 2015 crab fishery in Placentia Bay were from 06 April to 30 June. The Department of Fisheries and Oceans subsequently issued 3 extensions, starting on 19 June 2015, that extended the fishing season to 17 July.

KSL Enterprises Limited

On 01 April 2011, the master established KSL Enterprises Limited as a family-owned and operated commercial fishing business in Newfoundland and Labrador.

The company owned 2 vessels: the *KSL Enterprises* and the *Samantha D. Patrick*, both of which were 13.7 metres in length overall and carried the required equipment and lifesaving appliances for vessels of this length.

Both of the fishing vessels were owned by a family corporation and attached to separate enterprises. Each vessel was held by a member of that family. According to DFO policies, fish harvesters operate as individual enterprises and not as a fishing company with multiple vessels.

Independent core enterprises held by the family

The *KSL Enterprises* was the vessel registered with DFO for the master's independent core enterprise and the *Samantha D. Patrick* was the vessel registered with DFO for the master's spouse's independent core enterprise. Each of these enterprises held multi-species licences and included quotas for snow crab. Under the area 10A snow crab licence condition, 150 traps could be used to fish crab. They also each had an open boat registered with DFO as a secondary fishing vessel. The master's open boat was the only vessel readily available within DFO policy for the master to fish in order to catch his crab quota for the season.

The master and spouse were both licensed to fish crab in area 10A. Each held 2 individual quotas for crab, one of which was associated with the licence and the second one that was acquired through the enterprise combining provisions. The spouse had a buddy-up arrangement with an independent core fish harvester, resulting in a total of 3 individual quotas for crab on that enterprise. Up to 3 individual quotas could be fished on an enterprise in 10A. When additional quota is acquired in area 10A, the 150 trap limit remains in place.

For the 2015 season, the master began fishing with the *Samantha D. Patrick* in early May, with the first crab landing on 12 May. The spouse's allowable individual quota was 23 550 lb and by 12 June the *Samantha D. Patrick* had caught 8657 lb of snow crab. The master's allowable individual quota was 15 700 lb. On 12 June, the master landed the first 1324 lb of snow crab from the open boat.

Photo 1. *KSL Enterprises*



Photo 2. *Samantha D. Patrick*



The catch per unit effort (CPUE) of the *Samantha D. Patrick* 2015 landings prior to the occurrence indicated that the master's 150 traps would also need to be fished in order to catch his 2 quotas and his spouse's 3 quotas before the crab season ended.

History of the voyage

Two days prior to the occurrence, on 14 June 2015, the master and 2 deckhands departed Southern Harbour, Newfoundland and Labrador on the *Samantha D. Patrick* with the open boat in tow. The *Samantha D. Patrick* had bait and ice on board for use by both vessels. They arrived at Davis Cove, Newfoundland and Labrador, at approximately 2100³ that evening.

On 15 June, the crew took the open boat out from Davis Cove and returned with 500 kg of snow crab. The crew then used the *Samantha D. Patrick* to haul the master's spouse's traps, which had been set north of Bar Haven Island, and arrived back in Davis Cove with about 680 kg of crab. The catches remained on board the *Samantha D. Patrick* and the open boat.⁴

Although the master was known to check the local and marine weather forecasts by cell phone prior to sailing on any fishing trip, it is not known if he checked the forecast the morning of the 16 June. At about 0430, the open boat departed Davis Cove with the master and 2 crew members on board. The vessel proceeded towards a position about 2.5 nautical miles (nm) east, to the crab fishing grounds.

In late afternoon, the master's brother, realizing that the open boat had not returned, sent a vessel out to look for them, without success. At 1923, he advised Marine Communications and Traffic Services (MCTS) Placentia Bay that the open boat, with 3 people on board, was overdue and would normally be home around 1500. At the time of the call, the winds were 20 to 30 knots from the southwest.

Search and rescue

At 1924 MCTS Placentia Bay started a Mayday relay broadcast. At 1942, the Joint Rescue Coordination Centre (JRCC) Halifax began tasking air and water resources from the Canadian Coast Guard (CCG), the Department of National Defence, and Fisheries and Oceans Canada to search for the vessel. The first resources to arrive on scene were the CCG auxiliary vessel *Linda Marie III* and the Cormorant R910 at approximately 2000. The search continued throughout the night and covered an area extending approximately 20 miles by 15 miles, north and south of Bar Haven Island, including the areas where the traps belonging to both enterprises were set (Appendix A).

³ All times are Newfoundland Daylight Time (Coordinated Universal Time minus 2.5 hours).

⁴ A buyer was normally only contacted when the crab catch was more than 1800 kg. Offloading catch from 2 vessels would also have incurred 2 sets of costs for dockside monitors, weighmasters, and graders. Fish harvesters are not allowed to transfer catches from one boat to another for storage or hold catches at a wharf while making another crab trip.

The next day, JRCC Halifax tasked HMCS *Shawinigan* at 0038 and a DFO fast rescue craft at 1000. At around 1200, the bodies of the 3 crew members were found deceased on Bar Haven Island and transported to Argentia, Newfoundland and Labrador. None were wearing PFDs.

Fatalities

All 3 crew members were recovered but had drowned.

Damage to the vessel

The vessel has not been found and is believed to have sunk.

Environmental conditions

Environment Canada forecasts for the area of the occurrence on 16 June were available throughout the day. The 0300 forecast called for winds from the southwest at 15 knots, backing to the south at 20 knots in the evening and increasing to 25 knots overnight. The 1000 forecast called for winds from the southwest between 10 and 15 knots, backing to the south at 20 knots in the afternoon and increasing to 30 knots late overnight. The 1530 forecast had a gale warning in effect, with winds from the southwest at 15 knots, backing to the south at 20 knots late overnight and increasing to 30 knots at around 1200 on 17 June.

Environment Canada hourly reported data for the periods covered by these forecasts indicate that wind speed was 21 km/h (11 knots) at 0530, 32 km/h (17 knots) at 1130, 37 km/h (20 knots) at 1230, eventually peaking at 40 km/h (22 knots) at 1530. The significant wave heights were around 0.5 metre in the morning, increasing to more than 1.8 metres by the early afternoon with maximum seas of 2.2 m. The average sea temperature was 8 °C.

Personnel certification and experience

The master held a Certificate of service as master of a fishing vessel of less than 60 gross tonnage and a Certificate of service as watchkeeping mate of a fishing vessel of less than 24 metres in length overall. He also held a Marine Emergency Duties (MED) Certificate, a Restricted Operator's Certificate – Maritime Commercial (ROC-MC) radio operator's certificate, and a Marine Basic First Aid certificate. The master fished commercially for more than 20 years and had been certified with the Professional Fish Harvesters Certification Board (PFHCB) as a Professional Fish Harvester Level II since the board's inception in 1997.

The mate on the occurrence vessel was also the designated operator⁵ on the *Samantha D. Patrick*. He had over 30 years of fishing experience, mainly operating his own multi-species inshore fishing enterprise. He had sold his enterprise 2 years earlier and then fished for crab, capelin, and herring on a 16.7 m fishing vessel. He joined KSL Enterprises Ltd.

⁵ A designated operator is an individual who has been authorized by the Department of Fisheries and Oceans to replace the licence holder on the enterprise owner's vessel in order to continue normal fishing operations in the absence of the enterprise owner.

approximately 1 month prior to the occurrence. He also held an MED A3 certificate and a Marine Advanced First Aid certificate. He had completed a Basic Safety Course for Fish Harvesters and an Introduction to Navigation and Safety Course. The mate had been certified with the PFHCB as a Professional Fish Harvester Level II since the board's inception in 1997.

The deckhand held an MED A3 certificate and a Marine Advanced First Aid certificate. He had completed a Basic Safety Course for Fish Harvesters. The deckhand had been certified with the PFHCB as an Apprentice Fish Harvester and fished commercially since 2005.

Vessel certification

As a small fishing vessel not exceeding 15 gross tonnage, the open boat was subject to the *Small Fishing Vessel Inspection Regulations, Part II (SFVIR)*. As such, it was not required to undergo periodic inspections by Transport Canada (TC). The master/owner had not registered the vessel with TC, but had registered it as a commercial fishing vessel with DFO on 27 January 2015.

Small fishing vessels

Loading and stability

A vessel's ability to remain afloat and upright in all loading and operating conditions is fundamental to safety. To this end, it is essential that the vessel has sufficient reserve buoyancy and stability, as well as the means to prevent water from accumulating on deck or from entering the hull. Freeboard, sufficient downflooding height, and adequate drainage must also be maintained. To ensure safety at sea, these factors must be taken into consideration when designing, constructing, and operating undecked vessels.

The open boat in this occurrence was an undecked vessel. Buoyancy and stability on an undecked vessel is provided by the watertight hull, which extends to the top of the gunwale. This type of vessel is vulnerable to swamping as a result of water coming over the sides, especially if the vessel is loaded heavily. The risk of swamping may be mitigated by limiting operations to relatively calm waters, by incorporating built-in flotation to improve survivability, and by providing means to efficiently remove any water that is shipped over the side. Reducing the freeboard or the height of the downflooding point reduces the reserve buoyancy and stability, decreasing the margin of safety.

Statistics

Multiple reviews and studies have been conducted into incidents involving small fishing vessels. In 2000, the CCG Maritime Search and Rescue Branch, Newfoundland Region,⁶

⁶ Following reorganization of the Canadian Coast Guard (CCG) in 2012, CCG Newfoundland Region is now known as the CCG Atlantic Region. CCG's 3 operational regions are distinct from the Department of Fisheries and Oceans' regional organization structure.

completed a safety review of fishing vessels of less than 19.8 m. The review covered search and rescue incidents involving commercial fishing vessels registered in Newfoundland and Labrador over the period from 1993 to 1999 (Table 2).

Table 2. Canadian Coast Guard review of commercial fishing vessels of less than 19.8 m registered in Newfoundland and Labrador, 1993–1999

Length	Number of registered vessels (1999)	Fatalities
7.6 m or less	6137	29
Greater than 7.6 m	3436	17
Total	9573	46

Table 3 shows more recent statistics from the TSB regarding accidents and fatalities involving fishing vessels registered in Newfoundland and Labrador.

Table 3. TSB accident and fatality statistics for commercial fishing vessels registered in Newfoundland and Labrador, 2000–2015

Length	Number of registered vessels (2014)	Accidents* reported to the TSB (2000–2015)	Fatalities
7.6 m or less	3982	11	19
Greater than 7.6 m	2670	56	12
Total	6652	67	31

* For the purposes of this table, accidents include sinkings, capsizings, and missing vessels.

These statistics mirror the current fatality trends above indicating a higher number of fatalities in vessels of 7.6 metres in length or less. The Fishing Vessel Review of 2000 stated:

Most of the 46 fatalities in the less than 65-foot [19.8 m] fishing fleet since 1993 occurred in vessels less than 25 feet [7.6 m], indicating serious problems in even smaller vessels fishing closer to shore. There are concerns that many other types of incidents in these smaller classes of vessels go unreported and therefore the existing information may not fully indicate the full scope of the problem.⁷

Lifesaving equipment

Vessels subject to Part I of the SFVIR and exceeding 12.2 metres in length are required to carry the following lifesaving equipment on board:

- one approved lifejacket for each person on board;
- two approved lifebuoys;

⁷ Fishing Vessel Safety Review (less than 65 feet), Maritime Search and Rescue, Newfoundland Region, November 2000, p. ii.

- enough boats, dories, skiffs, and life rafts to accommodate 1.5 times the number of people on board;⁸ and
- one watertight can containing 12 approved self-igniting red flares.⁹

Vessels subject to Part II of the SFVIR and measuring less than 12.2 metres 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 metres of line; and
- one watertight can containing six approved self-igniting flares.¹⁰

In 2012, TC issued a Ship Safety Bulletin allowing PFDs to be used as an alternative to carrying approved lifejackets in small non-pleasure craft and small commercial fishing vessels.¹¹ The bulletin specifies that if PFDs are used, they must be worn at all times when in an open vessel.

The *Newfoundland and Labrador Occupational Health and Safety Regulations, 2012*, state that workers employed under conditions where there is a risk of drowning “shall wear a personal flotation device appropriate to the work environment and hazards.”¹²

In Canada, falling overboard is the second highest cause of fatality in the fishing industry.¹³ Falling into cold water involves an initial cold shock, which is the most dangerous and potentially lethal when a person is suddenly immersed in water below 15 °C.¹⁴ 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 this can eventually lead to the person’s death. A rapid recovery of the person in the water is critical to increase the chances of survival.

Emergency communications equipment

Emergency position-indicating radio beacons (EPIRB) are required for vessels of 8 metres or more in length engaged on a home-trade voyage, Class I, a home-trade voyage, Class II, or a

⁸ *Small Fishing Vessel Inspection Regulations*, Part I, section 30.

⁹ *Ibid.*, Part I, subsection 32(c).

¹⁰ *Ibid.*, Part II, section 53.

¹¹ Transport Canada SSB No. 06/2012, *WEARING AND USING FLOTATION DEVICES Small Non-pleasure Craft & Small Commercial Fishing Vessels*.

¹² *Newfoundland and Labrador Occupational Health and Safety Regulations, 2012* (Newfoundland and Labrador Regulation 5/12), subsection 466(1).

¹³ TSB Marine Investigation Report M09Z0001 (*Safety Issues Investigation into Fishing Safety in Canada*), p. 31.

¹⁴ Dr. C.J. Brooks, K.A. Howard, et.al., “Chapter 10 – Drowning is Not a Helpful Diagnosis Written on the Death Certificate,” *Survival at Sea for Mariners, Aviators and Search and Rescue Personnel*, North Atlantic Treaty Organization and Research and Technology Organization (February 2008), available at: [http://ftp.rta.nato.int/public//PubFullText/RTO/AG/RTO-AG-HFM-152//\\$\\$AG-HFM-152-ALL.pdf](http://ftp.rta.nato.int/public//PubFullText/RTO/AG/RTO-AG-HFM-152//$$AG-HFM-152-ALL.pdf) (Last accessed on 22 December 2014).

foreign voyage.¹⁵ An EPIRB transmits an emergency signal, either automatically or upon activation by the crew, to immediately alert search and rescue (SAR) resources and initiate rescue efforts.

There is no requirement for a fishing vessel of open construction of any length or of closed construction of 8 metres or less in length to be equipped with a very high frequency (VHF) radiotelephone.¹⁶ The open boat did not have an EPIRB or a VHF radiotelephone on board nor was it required to carry either of them. The only communications equipment on board was a cell phone stored in a watertight plastic bucket.

Commercial fisheries in eastern Canada

In Canada, DFO manages and regulates commercial fisheries in accordance with the roles and responsibilities defined in the *Fisheries Act* in 6 separate regions, each with their own region-specific policies to address sustainability, economic viability, and stakeholder input. In the Newfoundland and Labrador region, stakeholders for commercial fisheries include the Fish Food and Allied Workers Union (FFAW),¹⁷ the Association of Seafood Producers (ASP)¹⁸, the Seafood Producers of Newfoundland and Labrador (SPNL), the provincial government, harvester committees representing the various sectors of the fishing industry, and fish harvesters. The DFO regional headquarters for Newfoundland and Labrador is located in St. John's, and there are 2 area offices, 11 detachment offices, and 22 satellite offices across the province.¹⁹ Information on commercial fisheries can be obtained by contacting an office or via the DFO website. The up-to-date DFO Fisheries Licensing Policy for the Newfoundland and Labrador Region is not published or proactively issued to all fishermen.

Vessel registration and licensing

A fishing licence grants permission to a licence holder to harvest a fish species subject to the conditions attached to the licence. These can include an individual quota, which is a fixed amount of catch assigned to the individual fish harvester, and/or designate a particular fishing vessel that must be used to operate under that fishing licence.

A fishing vessel must be registered with DFO in the name of the licence holder (the owner of the independent core enterprise) and may be registered in the name of only 1 licence holder at a given time. This is the primary vessel for an enterprise and has a maximum allowable length overall (LOA) of up to 27.4 m, depending on the most restrictive licence held. In

¹⁵ *Ship Station (Radio) Regulations, 1999 (SOR/2000-260)*, paragraph 13(1)(c).

¹⁶ *Ibid.*, paragraph 7(1)(a).

¹⁷ The Fish, Food and Allied Workers Union (FFAW-Unifor) represents over 12 000 working women and men throughout Newfoundland and Labrador, most of whom are employed in the fishing industry (Source: FFAW).

¹⁸ The Association of Seafood Producers is a not-for-profit corporation representing the interests of seafood producers generally in the Province of Newfoundland and Labrador, Canada.

¹⁹ Fisheries and Oceans Canada, Newfoundland and Labrador Region, available at: <http://www.nfl.dfo-mpo.gc.ca/e0004341> (Last accessed on 26 January 2016).

addition to the primary vessel, independent core enterprises are permitted to register 2 secondary vessels. The first secondary vessel has a maximum allowable LOA of 8.5 metres and the next secondary vessel has a maximum allowable LOA of 6.1 m. Vessel registrations may be issued only to persons who hold at least 1 commercial fishing licence. Registered vessels are registered in a licence holder's name for a minimum period of 12 months in the Newfoundland and Labrador Region. Information regarding these registration details is available on the DFO website²⁰ or by contacting DFO by phone.

The master had previous experience with registering another owner's vessel on his enterprise. On 22 May 2012, the master registered a fishing vessel from Nova Scotia as the primary vessel for his independent core enterprise. As per policy, the registration was for a minimum period of 12 months. However, the vessel returned to Nova Scotia within 2 weeks. This left the master without a primary vessel to fish his licences until the 12-month period for the registration expired. It is not known why the master did not submit a policy exemption request to register the *KSL Enterprises* back on his enterprise licence in 2012, nor whether he fully understood the availability and process of acquiring a policy exemption.

In May 2015, because the *KSL Enterprises* was attached to the master's enterprise for more than 12 months, he had the option to acquire a vessel from another owner and register it with DFO. This option has disadvantages such as a high cost and a minimum registration period of 12 months. This option was not chosen by the master.

Vessel leasing

If licence holders cannot use their primary vessel for reasons that are beyond their immediate control (for example, mechanical or structural malfunction, or loss of vessel – not general maintenance) they may lease another vessel that is within their LOA eligibility. However, the leased vessel must be registered with DFO in the Newfoundland and Labrador region. In order to lease a vessel, the licence holder must have fished and had verified landings²¹ on the disabled vessel in the month prior to the lease request. If the request is made at the beginning of the fishing season, the licence holder must have fished and had verified landings on the disabled vessel during the previous fishing season. The lease will be for a maximum period of 30 days. Requests for extensions must be accompanied with the appropriate certified documentation (e.g., statements from mechanics). A fisherman allowing the lease of their vessel must bank (make dormant) all of his/her fishing licences for the duration of the lease. Information regarding vessel leasing options is available to fishermen through a printed brochure and through contacting DFO by phone.

The master had the option to lease a vessel. But because the master voluntarily undertook the repairs on the *KSL Enterprises*, this option would have required a policy exemption from DFO. The master did not submit an exemption request.

²⁰ Fisheries and Oceans Canada, Commercial Fisheries Licensing Policy For Eastern Canada – 1996, Section 12: Vessel Registration, available at: <http://www.dfo-mpo.gc.ca/fm-gp/policies-politiques/licences-permis/ch3-eng.htm#TWELVE> (Last accessed on 16 March 2016).

²¹ A verified landing is when the catch has been recorded by a dockside monitor.

Buddy-up arrangements

A buddy-up is a DFO-approved arrangement between 2 fish harvesters who hold licences for the same species, fishing area, and gear type. It is carried out from a vessel registered by either of the fish harvesters in the arrangement.

There are several conditions which need to be fulfilled for a buddy-up arrangement to be approved, including the following:

- Licence holders are permitted to engage in only 1 buddy-up arrangement each season.
- The arrangement must be requested, approved, and in place before fishing begins.
- A maximum of 2 licence holders are permitted to partake in this type of arrangement.
- The maximum amount of gear to be used in the Placentia Bay area is the same as permitted for a single enterprise.

In previous years the master had made buddy-up arrangements, but not for the 2015 season. Information regarding buddy-up arrangements is available through contacting DFO by phone.

Policy exemptions

When a harvester cannot meet the requirements of the area licensing policy, a policy exemption request can be submitted in writing to DFO Newfoundland and Labrador and must include background information, rationale, and associated documentation.²² The request is then reviewed, with consideration to the extenuating circumstances and what other options may be available within policy. DFO Newfoundland and Labrador Region receives 50 to 80 written requests for policy exemptions per year, and a majority of these are approved. DFO does not proactively disseminate information on policy exemptions to fishermen.

Due to the circumstances in this occurrence, the master did have the option to request an exemption from the DFO policy²³ so that he could use the second company vessel *Samantha D. Patrick* (his spouse's primary vessel); lease another vessel for up to thirty days; or make a buddy-up arrangement with another vessel owner. The master did not formally request a policy exemption.

Safety Issues Investigation into Fishing Safety

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 was released in June 2012. The SII identified several safety significant issues requiring attention: stability, lifesaving appliances, fisheries resource management, the cost of safety,

²² Department of Fisheries and Oceans Canada, Fisheries Licensing Policy for Newfoundland and Labrador Region, June 2010 (not available on line).

²³ *Ibid.*

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. It is also noted that lifesaving appliances²⁴ that are not properly designed, carried, fitted, used or maintained for fishing operations put lives at risk.

Outstanding recommendations

Emergency position-indicating radio beacons

The open boat did not carry any distress communications devices. Previous TSB investigations²⁵ have found that carrying an EPIRB can contribute to the saving of lives, because it automatically sends a distress signal once it is immersed in water, thus allowing SAR efforts to be initiated sooner.

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 of March 2014 to this recommendation indicated that the proposed new Fishing Vessel Safety Regulations would extend the requirement to carry an EPIRB on fishing vessels more than 12 metres in length and operating less than 25 nm from shore. Fishing vessels not more than 12 metres would have the option to carry a 406 MHz EPIRB in lieu of carrying a life raft or other survival craft. However, in opting to carry the EPIRB, the vessel would have to carry immersion or anti-exposure work suits if the water temperature is less than 15 °C. Fishing vessels of any length, but operating in sheltered waters or in waters within 2 miles from shore, would have the similar option afforded to vessels not more than 12 metres to carry an EPIRB or an effective means of 2-way communications.

Between February 2010 and June 2014, there were several accidents²⁶ involving fishing vessels that measured less than 12 metres and were not equipped with an EPIRB or other

²⁴ Examples include lifejackets, personal flotation devices (PFD), immersion suits, life rafts, emergency position-indicating radio beacons (EPIRB), and digital selective calling (DSC).

²⁵ TSB marine investigation reports M93M0004 (*Cape Aspy*), M97W0236 (*Pacific Charmer*), M98N0064 (*Atlantic Prize*), M98F0009 (*Twin J*), and M14A0289 (*Sea Serpent*).

²⁶ TSB marine occurrences M10M0007 (*Whole Family*), M10M0042 (*R.L.J.*), M11M0057 (*Wendy and Michael*), M12M0046 (*Arctic*), M12W0062 (*Pacific Siren*), M14P0121 (*Five Star*), M14A0289 (*Sea Serpent*).

appropriate equipment that floats free, automatically activates, alerts the search and rescue system, and provides position updates and homing-in capabilities. These occurrences resulted in a total of 16 crew members having to abandon their vessels, and only 7 crew members surviving.

The proposed new Fishing Vessel Safety Regulations published in the *Canada Gazette*, Part I, on 06 February 2016 would extend the requirement to carry an EPIRB on fishing vessels, but not to the full extent indicated in TSB Recommendation M00-09. Furthermore, the lifesaving equipment proposed do not have a means to float free, for automatically alerting search and rescue authorities, and for homing-in capabilities as the recommendation requires. Neither the proposed measures in the new Fishing Vessel Safety Regulations nor the protracted delay in putting the regulations into force is satisfactory to mitigate the risk identified in TSB Recommendation M00-09. Until such time as the regulations 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, the reassessment of this rating will remain unsatisfactory.

TSB Watchlist

Loss of life on fishing vessels is a 2014 Watchlist issue

The Watchlist is a list of issues posing the greatest risk to Canada's transportation system; the TSB publishes it to focus the attention of industry and regulators on the problems that need addressing today.

As this occurrence demonstrates, the number of accidents involving loss of life on fishing vessels remains too high. The Board remains concerned about issues such as vessel modifications and their impact on stability; the use and availability of lifesaving equipment; regulatory oversight; and the impact of fishery resource management plans and practices on the overall safety of fishing vessels.

The Watchlist says that although regulations have been proposed to address several of the safety deficiencies, there have been significant delays in the implementation of some of these initiatives.

Furthermore, new regulations alone are not enough. Concerted and coordinated action is required by federal and provincial authorities and by leaders in the fishing community to improve the safety culture in fishing operations, recognizing the interaction of safety deficiencies.

Analysis

Events leading to the loss of vessel and fatalities

As the open boat vessel was lost at sea and there were no witnesses or survivors, the investigation could not determine with certainty the primary cause(s) of the occurrence.

However, several factors may have contributed to the occurrence. None of the master's quota had been fished before 12 June 2015, so the master faced increased pressure to fish. As the primary vessel was undergoing repairs, the master decided to use the secondary vessel, the small open boat. It was the only registered vessel readily available to him under the Department of Fisheries and Oceans (DFO) policy as the other vessel the master owned, the *Samantha D. Patrick*, was licensed to his spouse and was limited to fishing her quota of crab and 150 traps.

The open boat was not intended for crab fishing, nor had it ever been used for that purpose. Because of the time constraints, the master modified it for crab fishing during the 2 weeks prior to the occurrence. However, the added weight from the modifications would have decreased the vessel's freeboard, making it more susceptible to taking on water, with a negative impact on the vessel's stability. These modifications had not been assessed or tested for their effects on the vessel's stability. In addition, the weight of the crew members, bait, ice, and the catch from the previous day would have further reduced the vessel's freeboard. As the weather and sea conditions had deteriorated, the loaded vessel was further at risk of taking on water.

No distress communication was issued and the search and rescue response was initiated only when the vessel and crew were reported overdue by several hours. When the crew members were recovered the following day, they were found to not be wearing the personal flotation devices (PFD) that were on board the vessel; this would have further reduced their chances of survival.

Commercial fisheries policy in Newfoundland and Labrador

The development of fishing policy must take into consideration a variety of factors, some of which may conflict with each other: the sustainability of the fishery, the economic viability of the enterprises using the fishery, and input from stakeholders. Consequently, having a policy exemption is useful for accommodating special circumstances.

The master had 3 other alternatives to using the smaller, less suited vessel that could have been established prior to the occurrence voyage. First, the master could have acquired a vessel from another owner and registered it with DFO. This option, however, represented significant costs, a registration for a minimum of 12 months, and possible time delays in finding and registering such a vessel.

The master could also have made a buddy-up arrangement with another vessel owner holding only 1 crab quota in 10A. This solution would have required the approval of DFO.

Although the master had arranged this in previous years, he made no such arrangement for the 2015 season. This late in the season, the master would have been unlikely to find another vessel owner with only 1 crab quota.

Finally, the master could have formally requested a policy exemption from DFO. It could not be determined why such a request was not submitted by the master, nor whether it would have been approved. It also could not be determined whether the master fully understood the availability and process of acquiring a policy exemption. Unlike the other 2 options available to the master, information concerning this exemption was not available on the DFO website or in a published brochure. Instead, fishermen must inquire directly to DFO to learn about this option.

In order to get his 150 traps in the water and catch his quota in accordance with DFO policy before the end of the fishing season, the master chose to use the open boat. He used a vessel that was not ideally suited for fishing the crabs in the area of the occurrence, with its minimized freeboard due to its smaller size and loaded condition.

DFO does not proactively provide any information on the availability of policy exemption requests to fishermen. Making this information available may encourage the use of these requests to improve the safety of fishing operations. Otherwise, fishermen may not seek information on the options available to them, and then may make decisions on the basis of inaccurate or incomplete information.

If information about fisheries licensing policy, such as policy exemption requests and approvals, is not disseminated proactively to fishermen, they may not seek approval to use the safest means available to them to go fishing, increasing the risk to safe fishing operations.

Small fishing vessels

Data for Newfoundland and Labrador fishing vessels from the past 25 years, gathered from the Canadian Coast Guard (CCG) review of incidents involving vessels under 19.8 metres and the Transportation Safety Board of Canada (TSB)'s reported incident database, have demonstrated that commercial fishing vessels measuring 7.6 metres or less experience a higher proportion of fatalities per reported incident. A clear pattern that would indicate a root cause has not emerged;²⁷ however, the following factors may play a role in this trend: emergency communications equipment and lifesaving equipment.

Emergency communications

In this occurrence, no distress communication was issued; the search and rescue response was initiated only when the vessel and crew were reported overdue by several hours. In incidents involving fishing vessels of 8.5 metres in length or less, there is rarely, if ever, a distress call. Emergency situations on board small fishing vessels may unfold so rapidly that

²⁷ Fishing Vessel Safety Review (less than 65 feet), Maritime Search and Rescue, Newfoundland Region, November 2000, p. 6.

there is little or no time to verbally or manually transmit a distress call. The first indication that something is wrong is when the vessel is reported overdue by someone on shore. This is usually hours after the vessel is expected back in port, which delays the initiation of search and rescue (SAR) efforts and decreases the chances of survival. Because vessels of this size are not required to carry very high frequency digital selective calling radios (VHF DSC) or emergency position-indicating radio beacons (EPIRBs), there may not be a means available to alert SAR personnel immediately that an emergency situation has arisen.

The open boat did not have a VHF radio or EPIRB. Although a cell phone was found in a watertight container that drifted ashore following the occurrence, because the cell phone was found in the container, it is likely that the crew did not have the opportunity to use it when the emergency situation arose. In the absence of other distress communications equipment such as an EPIRB, the SAR response was not initiated until the master's brother reported the boat and crew overdue.

Recently, 7 incidents involving small fishing vessels have been reported to the TSB, with a total of 10 fatalities. None of these vessels were equipped with an EPIRB, and no distress signals were communicated.

In reported incidents involving fishing vessels where the crew was unable to make a distress call, an EPIRB may either automatically or upon activation by the crew transmit an emergency signal to alert SAR resources of the situation and to initiate the rescue effort immediately instead of waiting for the report of an overdue vessel. This greatly reduces the time people are in the water before help arrives.

If fishing vessels less than 8 metres in length 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 injury or death.

Lifesaving equipment

Fishing vessels exceeding 12.2 metres are required to carry a lifeboat or life raft able to accommodate the entire crew should they be required to abandon their vessel. This provides the crew with some protection while they wait for rescue.

Vessels of 12.2 metres in length or less are not required to carry, and likely could not physically accommodate, a life raft or lifeboat on board. Thus, the crew would have no protection from the ocean should their vessel sink. Immersion suits provide a similar level of protection but are not required on fishing vessels less than 24.4 metres in length or 150 tons, gross tonnage. These suits could be accommodated on a small vessel; however, emergency situations can evolve at a speed that prevents the crew from donning the suits before leaving the vessel. Survival craft and immersion suits extend the window of opportunity for safe recovery.

Lifejackets are required to be carried on board, but there is no requirement to wear them. TC Ship Safety Bulletin 06/2012 states that personal flotation devices (PFDs) can be substituted for approved lifejackets, but they must be worn at all times when the vessel is operating. The

deceased crew members were found without PFDs. It is therefore likely that they were not being worn on the vessel, despite the fact that their use was mandatory on the occurrence vessel.

Notwithstanding that the sea temperature would have caused a cold shock effect and the possibility of hypothermia in a relatively short time, PFDs would have provided for flotation. PFDs provide additional flotation when users enter the water; without them, the crew's chances of survival and rescue were reduced. Personal flotation devices were the only lifesaving equipment on board of the occurrence vessel and were not worn by the crew, reducing their chances of survival and rescue.

Various initiatives across Canada have been gaining traction to promote the use of wearing PFDs and their use is becoming more common in Newfoundland and Labrador. Fishing safety associations, in conjunction with various fishing associations and nautical training schools across Canada, heavily promote the wearing of PFDs through advertising, campaigns, and regular promotional visits to ports. Despite these initiatives, many fishermen still choose not to wear a PFD while at sea. This is recognized as a widespread safety concern in the Canadian fishing community.²⁸

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

Safety issues in the fishing industry

The 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.²⁹ In this occurrence, at least 3 of these 10 safety significant issues were present. The following practices and procedures relating to these safety significant issues identified in the SII were evident in this occurrence:

Lifesaving appliances

Safety issues investigation findings	Relationship to this occurrence
Fishermen resist wearing PFDs because many have accepted the risk.	The PFDs were not being worn.

²⁸ TSB Report No. M09Z0001, Safety Issues Investigation into Fishing Safety in Canada.

²⁹ *Ibid.*

Safe work practices

Safety issues investigation finding	Relationship to this occurrence
Fishermen do not always emphasize the importance of safety in work practices.	It was not a standard work practice to wear a PFD during fishing operations.

Fisheries resource management:

Safety issues investigation finding	Relationship to this occurrence
Fishermen are put at risk when fisheries resource management measures do not consider safety at all levels, from policy through to practice.	Although options were available to the owner/master to fish safely by obtaining an exemption from the DFO licensing policy, DFO does not advertise their policy exemption request procedure, and the owner/master did not use that option.

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 – PFDs were not worn and there was no EPIRB on board.
- Unsafe work practices – the risks of not wearing a PFD were accepted.
- Fisheries resource management – DFO does not advertise its fisheries licensing policy exemption options to fishermen.

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.

Findings

Findings as to cause and contributing factors

1. As there were no witnesses or survivors, the Transportation Safety Board of Canada cannot determine with certainty the primary cause(s) of the occurrence.
2. With none of the master's quota fished before 12 June 2015 and with only weeks remaining in the fishing season, there was increased pressure on the master to fish.
3. The master chose to use his secondary vessel, a smaller 7.1 m open boat that had not been used for fishing crab, as his primary vessel was being repaired. He was not permitted to use the other vessel he owned, the *Samantha D. Patrick*, because that vessel was licensed by his spouse and could only be used to fish her quota and 150 traps.
4. Given the time constraints, the master modified the secondary vessel for fishing. These modifications were not assessed or tested for stability.
5. The increased load on the small vessel caused by its modifications, the weight of the crew members, additional equipment, and cargo, would have lowered the freeboard and made it more challenging to operate in the weather and sea conditions present on the day of the occurrence.
6. No distress communication was issued and the search and rescue response was initiated only when the vessel and crew were reported overdue by several hours.
7. The vessel was never found and the deceased crew were recovered the next day. Although personal flotation devices were on board, none were found to be wearing them.

Findings as to risk

1. If information about fisheries licensing policy, such as policy exemption requests and approvals, is not disseminated proactively to fishermen, they may not seek approval to use the safest means available to them to go fishing, increasing the risk to safe fishing operations.
2. If fishing vessels less than 8 metres in length 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 injury or death.
3. If fishermen do not wear personal flotation devices or lifejackets while working on deck, despite the industry awareness initiatives and regulations requiring their use, there is an increased risk that fishermen will not survive in the event they fall overboard.

4. The safety of fishermen will be compromised until the complex relationship and interdependency among safety issues is recognized and addressed by the fishing community.

Other findings

1. The only communications equipment on board was a cell phone, which was found in a watertight bucket that had drifted ashore, suggesting that the crew did not have the opportunity to use it.
2. Fishing vessels less than 7.6 m, such as the occurrence vessel, experience a higher rate of fatalities in reported incidents than fishing vessels greater than 7.6 m.

This report concludes the Transportation Safety Board's investigation into this occurrence. The Board authorized the release of this report on 27 July 2016. It was first released on 02 August 2016.

Clarification

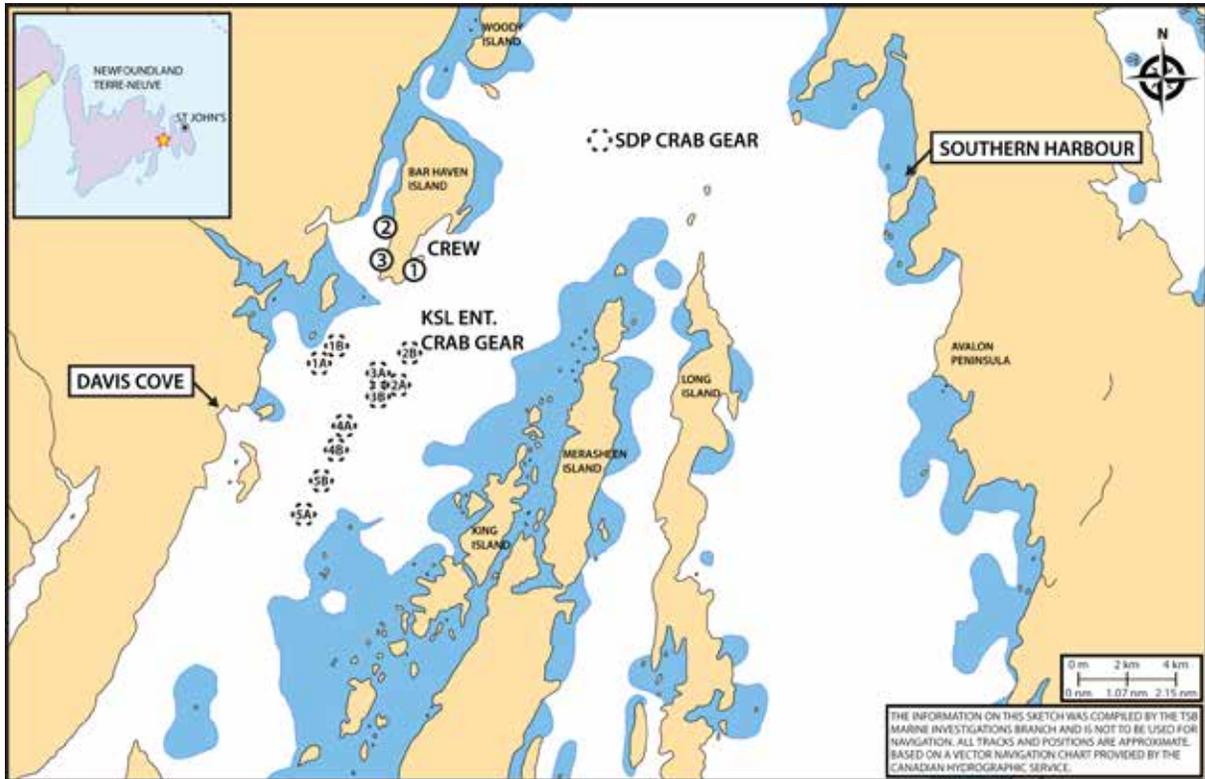
The information "registered in Newfoundland and Labrador" has been added to the captions of tables 2 and 3 and to the paragraph preceding Table 3 in order to clarify the regional scope of the statistics presented in the tables.

The corrected version of the report was released on 5 August 2016.

Visit the Transportation Safety Board'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 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 – Area of the occurrence



Appendix B – Stack of 25 snow crab traps

