MARINE INVESTIGATION REPORT
M99L0099

PILOT OVERBOARD

WHILE DISEMBARKING FROM THE
CONTAINER SHIP “CANMAR VALOUR”
APPROACHING THE
LES ESCOUMINS PILOT STATION, QUEBEC
25 SEPTEMBER 1999

Marine Investigation Report

Pilot Overboard

While Disembarking from the Container Ship "CANMAR VALOUR" Approaching the Les Escoumins Pilot Station, Quebec 25 September 1999

Report Number M99L0099

Summary

On 25 September 1999, the "CANMAR VALOUR" approached the pilot station at Les Escoumins, Quebec, to allow the pilot to disembark before setting out to sea. As he started down the pilot ladder rigged on the "CANMAR VALOUR", the pilot lost his footing and fell in the water. The pilot was in the water for some eight minutes before being hoisted aboard by the crew of the pilot boat "CHARLEVOIX".

Ce rapport est également disponible en français.

Other Factual Information

Particulars of the Vessel

	"CANMAR VALOUR"
Official Number	7718644
Port of Registry	Hamilton, Bermuda
Flag	Great Britain
Type	Container Ship
Gross Tonnage[1]	15,145
Length	177.02 m
Draught	Forward: 10.35 m Aft: 10.35 m
Cargo	Containers
Crew	22
Built	1979, Japan
Propulsion	One Sulzer engine developing 11,799 kW
Owners	Canada Marine Ltd. (CANMAR) Hamilton, Bermuda

Around 1155, on 25 September 1999, the "CANMAR VALOUR" was approaching the pilot station at Les Escoumins and preparing to allow the pilot to disembark. The pilot ladder was put out on the starboard side. The pilot boat "CHARLEVOIX"was on duty. A pilot who was finishing his assignment on the "ALGOEAST" had just embarked the "CHARLEVOIX" which remained close by to allow the pilot from the "CANMAR VALOUR" to embark. The "CANMAR VALOUR" slowed its engine to about two knots in preparation for the disembarkation. The pilot came onto the deck accompanied by an officer. However, the pilot boat was having mechanical problems that prevented it from moving into position alongside the "CANMAR VALOUR". According to the capacity plan, the freeboard of the "CANMAR VALOUR" is 3.8 m.

Since there is no way for the pilot boat operator to communicate with the pilot waiting to disembark, the pilot went back up to the wheelhouse to find out why his disembarkation was delayed. Without giving any details on the cause of the delay, the operator of the "CHARLEVOIX" informed the pilot that they were now ready for him to board. The pilot returned to the vessel's main deck. The pilot boat started to come alongside, and on the first attempt, it squeezed the pilot ladder between the ship side and the fender, causing the ladder to swing forward. The seaman on the "CHARLEVOIX", assisted by the pilot who had just disembarked from the "ALGOEAST", repositioned the ladder vertically and placed the bottom steps on the deck of the pilot boat. The pilot boat again took up a position alongside with its stern angled away from the vessel. The pilot was asked to hurry because the pilot boat still had mechanical problems.
As he started down the ladder, the pilot attempted to place his right hand on the bulwark stay but did not grasp

[1] Units of measurement in this report conform to International Maritime Organization (IMO) standards or, where there is no such standard, are expressed in the International System (SI) of units.

it securely. He lost his balance and tried to hold on with his left hand, but he could not get back on the ladder. He could not hold on any longer, and he let go and fell about three metres into the water between the vessel and pilot boat. The "CANMAR VALOUR" initiated a right turn and the pilot boat moved astern and away from the pilot in the water. Since the "CHARLEVOIX" could not manoeuvre normally due to mechanical problems, the seaman and the pilot on board were able to throw a rescue buoy in the direction of the pilot, who was still in the water and conscious. Because the line had not been prepared for throwing, the buoy landed short of the pilot. The crew of the "CANMAR VALOUR" then threw another buoy.

The pilot, who was wearing a waterproof coat and a jacket, managed to swim to the buoy and grab it. As the crew of the pilot boat was trying to initiate manoeuvres in the engine compartment, the pilot who was in the water asked for another buoy so he would be more stable. He was not wearing a personal flotation device (PFD). The master of the "CANMAR VALOUR" broadcast a PAN PAN message on channel 16 of the very high frequency (VHF) radiotelephone, and advised Marine Communications and Traffic Services (MCTS) of the incident. The "CHARLEVOIX" also advised the Les Escoumins radio station.

A Jason's cradle (articulated ladder) was installed on the deck of the "CHARLEVOIX", and the manoeuvres to rescue the pilot began. Since the pilot boat operator cannot execute the manoeuvres by himself from the bridge, engine orders were given to the engineer by headphone, and he executed them manually from the engine compartment. The pilot boat was able to get close to the pilot. A boat hook was used to reach out to the pilot and pull him in close to the aft port side. Since he could not be held in place because of the tide current, combined with the thrust of the propellers, he was moved to the starboard side and the Jason's cradle was rigged on the quarter. The device was rigged so that the lines that are normally at the bottom of the ladder can be used to secure the ladder to the mooring bitts at the middle of the aft deck (see Appendix A).

Since the pilot boat has a freeboard of 1.5 m, the end of the cradle reached only the surface of the water. The pilot tried to grab the cradle but was unable to hoist himself high enough to get a foot-hold on it. Since the hull is tilted, climbing to the deck is difficult and requires considerable effort. In light of this situation, and of the pilot being exhausted, the engineer on the deck was asked to help the others rescue the pilot. It was still difficult to hoist the pilot. The operator then came to help the others on the afterdeck. A mooring line was slipped under the pilot's arms and, after several attempts, the pilot was hoisted onto the deck after several minutes.

After spending eight minutes in the water at an estimated temperature of 2°C, the pilot removed his wet clothing and was wrapped in a sleeping bag. He then went into the accommodation on the pilot boat. At the time of the occurrence, a second pilot boat, the "ABRAHAM MARTIN", which was assigned to another operation, approached the "CHARLEVOIX" to assist in rescuing the pilot. When the "ABRAHAM MARTIN" arrived at the scene, it was asked to take the pilot aboard because the "CHARLEVOIX" was still having mechanical problems. The pilot boat "ABRAHAM MARTIN" proceeded to the Les Escoumins pilot station where an ambulance was waiting for the pilot.

The pilot was taken to the Centre local de services communautaires[2] in Les Escoumins, where he was examined. He was released a few hours later. He sustained a few bruises and a stiff right arm and hand.

Bridge Control System on "CHARLEVOIX"

[2] Refers to the local community services centre.

The pilot boat "CHARLEVOIX" is 22.9 m long and 5.5 m wide, and has a draught of 1.8 m and a gross tonnage of 79. The boat, which is reinforced for ice navigation, has been in service since 1996 at the Les Escoumins pilot station. It is owned by the Laurentian Pilotage Authority (LPA) of Canada.

The propulsion system of the "CHARLEVOIX" is combined with two Cummins diesel engines of 522 kW, each of which runs at 2100 rotations per minute (rpm), and the electrical system consists of two generators, each of which produces 60 kW.

The bridge control and engine compartment system is managed by an electrical servo that controls the engine rpm and clutch. The system is powered by a 110-volt ac / 12-volt dc power supply and by the boat's emergency batteries. At the time of the occurrence, there was a loss of main power to the propulsion motor control system.

After the occurrence, it was observed that the power supply unit was in the shut-off position, and the power supply unit compartment was hot. It was also noted that the power supply unit compartment was equipped with a 10-cm fan, but there was no grille to allow air flow.

It is very likely that the power supply unit overheated and, consequently, ceased to operate. The battery then became the power supply for the engine control system. When the battery died, no source of power was available for the system, resulting in a loss of engine compartment and bridge controls.

To control the engines without a power supply, the chief engineer had to disconnect the control cables from the throttle and fuel pump and operate them by hand. Since the two engines are mounted about two metres apart, it was difficult for the chief engineer to control them manually. Under the circumstances, he was compelled to operate the pilot boat with only one engine.

The TSB investigation revealed several deficiencies related to the mechanical operation of the pilot boat, lifesaving equipment, and first aid and hypothermia gear.

It was established that when the pilot boat is operated via the bridge control, there can be an eight-second delay when changing from moving forward to moving astern. This delay was observed by the TSB, but it was not a factor in the occurrence. However, some operators reported that this delay could have an impact when executing delicate manoeuvres or in an emergency.

It was also observed that the electronic controls for the variable-speed fans on the air vent and air intake for the engine compartment caused interference with the operation of the engines in the engine compartment.

Man Overboard Recovery and Related Equipment

The publication *Standards for Pilot Vessels*[3] (TP 10531) contains a list of onboard equipment, individual equipment, and requirements relating to man overboard recovery. The section on man overboard recovery states that every pilot boat crew must be capable of recovering an unconscious person from the water in a safe and expeditious manner. Since pilot boats are lightly manned, effective means must be made available to the crew to safely perform all functions related to search and rescue.

On the booms on either side of the accommodation, the manual winches used to hoist the person aboard are not

[3] Refers to the standards used by steamship inspectors for inspections.

fitted with a locking device that prevents the cable attached to the lower end of the cradle from unreeling. Tension on the crank is maintained by hand when hoisting the rescued person. It is difficult and risky for one person to operate the cradle alone in foul weather or to help the rescued person to climb aboard.

The Jason's cradle (recovery ladder) on the "CHARLEVOIX" is stowed in a compartment on the main deck. Thus, it must be retrieved from the compartment, opened, and rigged by hooking two snap links through the eyes provided on the deck edge. To deploy the device in the shape of a cradle, the bottom of the ladder must be held in place by the line coming from the boom winch.

The investigation focussed on the recovery devices for this type of operation, and some were found more effective than others. However, training and practice are essential to the success of rescue and recovery operations. Crew members who are likely to perform these operations must train regularly, as should those who will be using the equipment.

Corrective measures have been taken in other continents following occurrences similar to the occurrence at Les Escoumins. As a result of similar occurrences that had more tragic consequences, the European Maritime Pilots' Association (EMPA) consulted its members and developed strategies that led to recommendations requiring that pilots and pilot boats be protected against hazards to which they are exposed on a daily basis.

Use of Personal Flotation Device (PFD)

The *Standards for Pilot Vessels* (TP 10531) states that, when pilots are transshipping, they must wear a marine suit or a PFD fitted with a personal locator light and whistle, and which incorporates a means of attachment for retrieval, in lieu of a life jacket.

Analysis

The work performed by pilots is complex and involves considerable risks. Some of these risks are inherent to pilots embarking on and disembarking from vessels. Since these operations are performed in daylight or darkness and/or in difficult conditions such as rough and icy water, it is essential that pilot boat and vessel crews work together. All crew members involved in these operations are responsible for the location of devices designed to ensure the safety of the operation and to minimize the risk of accident, since recovering a person overboard is a difficult and risky operation for everyone.

Wearing a PFD improves survival chances for pilots and rescuers, in the event of a man overboard. By wearing a PFD, the person overboard can be located in daylight or in darkness, and the effects of hypothermia are reduced until he or she is retrieved. The PFD is also fitted with a harness for hoisting the person aboard. As man overboard rescue and recovery operations are known to be difficult and risky, seamen who are exposed to such risks must be prepared to wear a PFD to improve their chances of survival in the water.

The LPA is of the view that its responsibility to pilots is limited to transporting pilots to and from their assignments. As soon as the pilot steps onto the pilot ladder, that responsibility ends. And yet, the most critical periods of a pilot's assignment are embarkation and disembarkation.

The LPA encourages pilots to wear a PFD, but currently it is not a requirement under the terms of the contractual agreement between the LPA and pilot corporations.

The LPA considers that, since pilots are self-employed, they are not subject to the *Canada Labour Code* and the requirements of the Commission de la santé et de la sécurité du travail du Québec (CSST).[4] Consequently, pilots cannot be required to wear a PFD. Although most pilots in the Laurentian region wear a PFD, some do not, and they run the risk of being involved in an occurrence like the one at issue. Life jackets are available on the "CHARLEVOIX", but pilots do not like wearing them because they are cumbersome. Even though PFDs are optional for pilots, they must accept responsibility for their decisions and avoid endangering, through their decisions, the lives of those who help them do their job. As required by the *Standards for Pilot Vessels*, the "CHARLEVOIX" should have had PFDs on board for all occupants; it was not in compliance with that requirement at the time of the occurrence.

A malfunction of the bridge control system can create a safety hazard when coming alongside for embarkation or disembarkation.

Embarkation and disembarkation must take place quickly, is sometimes carried out in harsh weather and sea conditions, and/or in daylight or darkness, and often involves only one person.

Executing the coming alongside manoeuvre from the bridge requires a very steady hand and considerable skill. The task is even more delicate if the person being hoisted aboard is unconscious.

---

[4] Refers to the worker's compensation board of Quebec.

Such occurrences generate a great deal of interest and concern among pilotage authorities. The EMPA approved the following recommendations to enhance awareness of pilots employed by European pilotage authorities:[5]

- the importance of wearing a PFD while in transit to assignments;
- the role that pilots can play by encouraging colleagues to wear a PFD and making them realize that they should wear one while embarking and disembarking; and
- the importance of encouraging pilots to take part in practice drills in using recovery devices on pilot boats.

The International Maritime Pilots' Association (IMPA), under the International Maritime Organization (IMO), has no international equivalency system with respect to pilots wearing PFDs and to awareness of recovery devices available for assisting pilots in an emergency.

Findings

1. The pilot lost his footing when starting down the ladder to the pilot boat "CHARLEVOIX".

2. The pilot fell about three metres into the water, and he was not wearing a personal flotation device (PFD) at the time of the occurrence.

3. The pilot spent about eight minutes in the water, at an estimated temperature of 2°C.

4. The investigation revealed that the crew and pilot were not properly trained in the use of the recovery device; such training is essential to maximize chances of survival.

5. The recovery device was not permanently installed to allow rapid deployment in an emergency.

6. Practice drills in man overboard recovery are not part of a regular training program on the "CHARLEVOIX".

7. There is no contractual agreement between the Laurentian Pilotage Authority (LPA) and pilot corporations requiring pilots to wear a PFD when on assignment.

8. According to the LPA, its responsibility to pilots is limited to transporting pilots to and from their assignments, and as soon as the pilot steps onto the pilot ladder, that responsibility ends.

9. The "CHARLEVOIX" had mechanical problems when coming alongside the "CANMAR VALOUR".

---

[5] EMPA Recommendation 13 – *Recommendations on Minimum Demands to Life-Saving Equipment on High-Sided Pilot Cutters* (1983);
EMPA Recommendation 22 – *Protective Clothing & Safety Equipment for the Marine Pilot* (1992);
EMPA Recommendation 24 – *Safety Awareness and Self-Discipline among Pilots* (1995); EMPA Recommendation 25 – *Recovery Equipment in Pilot Boats* (1995).

10. The 12-volt dc power supply unit and the battery supplying power to the bridge control system failed at the same time, making the system unserviceable.

11. The power supply system was in the shut-off position, and the power supply unit compartment was hot.

12. The power supply unit compartment was equipped with a 10-cm fan, but there was no grille to allow air flow.

13. The *Standards for Pilot Vessels* do not reflect the current reality regarding embarkation and disembarkation operations for marine pilots.

Causes and Contributing Factors

The manoeuvre of coming alongside the "CANMAR VALOUR" was hampered by mechanical problems on the "CHARLEVOIX". To reduce waiting time alongside the "CANMAR VALOUR", the pilot started down the ladder with more than usual haste. In his hurry, reduced concentration may have affected the way he stepped onto the pilot ladder. He did not succeed in grasping the right bulwark stay and fell into the water. All members of the pilot boat crew and a pilot who was on board at that time took part in the recovery operation.

The pilot was not wearing a personal flotation device and the pilot boat was having mechanical problems; this made the recovery more delicate. The lack of training and skill in the use of the recovery device did not make the operation any easier.

Safety Action

Further to this occurrence, the TSB forwarded Marine Safety Advisory (MSA) No. 05/00 to Transport Canada, emphasizing the need for pilots to wear a PFD when embarking and disembarking their assignment vessel, and the need for a review of current practices, policies, and requirements set out in the *Standards for Pilot Vessels* (TP 10531).

To date, the situation is unchanged, as no action has been taken to require pilots to wear a PFD and the *Standards for Pilot Vessels* have not been amended.

Action Taken

By the Laurentian Pilotage Authority (LPA):

- The Jason's cradle will be installed permanently on the "CHARLEVOIX" when it next goes into dry dock.

- The hand winches were modified in the days following the occurrence.

- An exercise program and calendar were prepared, and a chart posted on the boat must be signed by the master after each exercise.

- The crew received training on the use of recovery equipment, and all personnel assigned to pilot boats should receive Marine Emergency Duties II (MED II) by the end of winter 2000.

- The LPA has made a commitment to take correction action on the pilot boats at Les Escoumins and upgrade its crew training program.

- The LPA also plans to urge the companies providing pilot boat services on the St. Lawrence to comply with the above requirements.

By Transport Canada

The following modifications have been made to the "CHARLEVOIX":

- The 110-volt ac / 12-volt dc power supply unit was replaced with a more powerful unit equipped with a built-in fan.

- The relay for switching power sources was relocated.

- A voltmeter for the emergency battery was installed.

- An isolation switch for the emergency battery was installed.

- A trickle charger was installed for the emergency battery.

Transport Canada, Marine Safety has taken the following action in collaboration with the functional directors of the pilotage authorities:

- Establish a Canadian code of good practices and safe methods for embarking/disembarking pilots for assignments. The code will serve as a user guide to safe transportation methods for pilots and the use of personal flotation devices to increase their chances of survival when transferring between vessels. The Canadian code will be similar to the existing code in the United Kingdom.

The Laurentian Pilotage Authority and the Corporation of the Lower St. Lawrence Pilots agreed on a contract clause requiring that PFDs be worn. The clause is included in the pilotage services contract signed by the parties on 31 January 2000 and reads as follows:

> Be advised that the LAURENTIAN PILOTAGE AUTHORITY requires that all pilots wear a personal flotation device (PFD) when embarking or disembarking from a vessel or a pilot boat in district 2, and that it reserves the right to refuse to transfer any pilot not wearing a PFD.
>
> This notice constitutes a mandatory requirement for pilots wishing to transfer, and by boarding a pilot boat the pilot signifies their agreement to comply with this requirement. If for any reason whatsoever a pilot is not wearing a PFD, the pilot is aware of the risks thereby incurred; consequently, the AUTHORITY shall be held harmless and shall not be held liable for any accident or incident resulting specifically from failure, for whatever reason, to wear a PFD (letter of intention (service contract 2000-01-01, page 1) [translation].

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board authorized the release of this report on 7 March 2001.

Appendix A – Photographs


2 10 '99


'99 10 2


'99 10 1


1 01 66