

MARINE OCCURRENCE REPORT

M98L0120

COLLISION

BETWEEN

THE FERRY "ANIK"

AND

AN OPEN BOAT

OTTAWA RIVER OFF CARILLON, QUEBEC

29 AUGUST 1998

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.

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Summary

On 29 August 1998 three sport fishermen rented a boat from an outfitter to go fishing near the Carillon dam. When they returned from their outing that night, they had to row back to shore as the outboard motor which they had rented with the boat had been removed by the outfitter before sunset. At the same time the Carillon-to-Pointe-Fortune ferry “ANIK” was crossing the Ottawa River in heavy rain. The occupants of the boat shouted and waved their arms in an attempt to draw the attention of the ferry operator but they were unsuccessful. They jumped over the side without any flotation devices only seconds before the collision. Two of the three occupants managed to swim close to shore where they were rescued; the third person drowned, and divers retrieved his body from the water the next day.

Ce rapport est également disponible en français.

Other Factual Information

	"ANIK"	Rental Boat
Port of Registry	Ottawa, Ontario	-
Flag	Canada	-
Registry Number	313122	-
Type	Ferry	Open boat
Gross Tons ¹	59.13	-
Length	21.3 m	4.9 m
Draught	1.7 m	-
Built	1959, rebuilt in 1992	1998
Propulsion	Two Detroit diesel, 104 brake horsepower	One outboard motor and two wooden oars
Number of Crew	2	-
Number of Passengers/Renters	Unknown	3
Registered Owner	Le Traversier Passeur Inc. Carillon, Quebec	Les Embarcations P.L.P. Carillon, Quebec

Description of Vessels

Rental Boat

The rental boat was a 4.9 m wooden, flat-bottomed boat of open construction, square at both ends; it was constructed of plywood over timber frames, and it had a raked stem. The boat was rented with the following equipment: an outboard motor (4 kW or less); an anchor with line attached; two oars; one personal flotation device (PFD) for each person on board; one bailer; and a hand-held whistle. In this instance, as the boat was being operated between sunset and sunrise, the *Collision Regulations* required that a flashlight be carried on board. At the time of the accident, however, the boat was not equipped with an outboard motor, nor a flashlight, and the PFDs carried on board were approved in the United States but did not have a seal of approval from Transport Canada. The boat had no pyrotechnics, and none were required by regulations.

The "ANIK"

The "ANIK" is a privately operated double-ended ferry serving Carillon and Pointe-Fortune, Quebec, on the Ottawa River. The main deck extends beyond the ship's side to accommodate more vehicles. The navigation

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.

bridge is positioned at about mid-length and offset to one side of the ferry. The navigational instruments and the main engine controls are positioned on the inboard side such that they are at right angles to the direction of the vessel's travel. The navigation equipment includes a radar. A citizen's band (C.B.) radio provided a means of communication between the ferry and the owner. The ferry was not equipped with a very high frequency (VHF) radio, nor was such equipment required by regulations.

Ferry Operation

The ferry operates from April to December between the hours of 0600 and 2400 on an "as-needed" basis.² The ferry employs a crew of two, who work a nine-hour shift over the weekend. Each crew consists of a master, who has the conduct of the ferry navigating from the bridge, and a deck-hand, positioned on the main deck, in charge of loading and offloading vehicles and passengers.

Rental Boat Operation

The boat rental office is open from 0700 to 1900. A client wishing to rent a boat has to fill a rental contract form and provide basic information such as name, address, telephone number and driver's license number. The client signs the contract below the waiver clause and receives a receipt when returning the boat. The outfitter then places a small outboard motor (of 7.3 kW or less) and safety equipment on board and provides basic information to the renters on how to operate the motor and don the lifejackets. The weather is not normally monitored by the outfitter and normally no weather forecast is provided to clients.

Events Leading to the Occurrence

On August 29 three men rented a boat from an outfitter to go fishing. At 1000, after completing the usual formalities, the men proceeded to the fishing area below the hydroelectric dam at Carillon.

Before sunset, at approximately 1915, the outfitter went to the fishing area to advise the men that the rental period was over and to return the boat for the night. The clients then asked the outfitter to allow them to stay longer. As the rental outlet was unattended at night and nobody would be there to secure the equipment for the night, the outfitter, with the consent of the clients, took the outboard motor off the boat and returned to the dock. The three men agreed to use the oars to propel the boat back to shore.

At about 2030, the sky became overcast and heavy rain moved in with winds from the south-southwest at 10 km/h. With the weather deteriorating, the three men decided to return to the dock. They rowed along the south shore of the river, as the water seemed to be calmer there. When opposite the rental outlet, they cut across towards the north shore. The weather had deteriorated further and the waves had started to build up due to stronger winds. The current in the area was estimated to be easterly at two knots. The load in the boat was redistributed: two persons sat on the middle seat and rowed together, the third person sat on the forward seat.

Meanwhile, around 2038, the ferry "ANIK" departed the Carillon ferry landing for the one in Pointe-Fortune, a distance of about 600 m. The ferry was making approximately six knots and the crossing time was estimated at

² All times are EDT (coordinated universal time (UTC) minus four hours) unless otherwise stated.

four to six minutes. The master was engaged in conducting navigation, steering and manoeuvring the ferry and maintaining a look-out. When the occupants of the boat saw the ferry heading towards them, they waved their arms and shouted to attract attention but the hand-held whistle was not used.

Upon realizing that a collision was imminent and that the boat could not get out of the way of the ferry despite their efforts, the three occupants jumped into the water to avoid being injured; the men did not wear any PFDs. As the ferry maintained her course and speed, the two vessels collided. The starboard side of the boat came in contact with the port side of the ferry. The overhang of the ferry's deck caused the boat to heel to starboard and ship water because of the low freeboard of the boat—about 48 cm—and the forward momentum of the “ANIK” caused the boat to slide along the ferry's hull. The boat ended up in the wake of the ferry, partly submerged. No one on the ferry was aware of the striking as no impact was felt.

The collision occurred southeast of buoy H197, near Fortune Reef, at about 2045. The three occupants tried to rally together but they were unable to regroup. Given the circumstances, all three attempted to swim to shore, two of them together and the other on his own. The elder one from the group of two succumbed to exhaustion and drowned. The other two made it to shore but not without some difficulty. The water temperature at the time of the occurrence was about 22°C and the air temperature was 15°C.

A passerby on the wharf at Carillon heard cries for help and he alerted persons in the ferry owner's house some 140 m away. They rushed down to the dock with a life buoy, and from there saw the outline of a person in the water about 30 m from shore. They encouraged him to continue swimming (for several minutes) until he was able to grab the life buoy, and they slowly hauled him to shore.

Search and Rescue (SAR)

Meanwhile, the ferry owner called the dispatcher of the Sûreté du Québec (SQ) in Montreal, Quebec. The master of the ferry was immediately alerted by C.B. radio. Under instructions from the SQ, the ferry, which was manoeuvring to depart Pointe-Fortune, turned on the searchlights to help locate other survivors and the boat. The ferry proceeded toward Carillon at reduced speed. Upon arrival, the ferry disembarked passengers and vehicles. The ferry owner and one additional person joined in the search on board the ferry. Meanwhile, the second survivor had reached the shore.

An ambulance called by the SQ arrived at the scene. First aid was rendered and both survivors were taken to a local hospital at Lachute, Quebec, where, following examination, they were released from the hospital the following day.

The next day, the body of the victim was found along the north shore of the Ottawa River, two kilometres downstream.

Local Emergency Arrangement

The 9-1-1 emergency service is not available in the Carillon area. When an emergency occurs outside the regular office hours of the local SQ detachment, calls are relayed to a dispatcher at SQ headquarters in

Montreal. According to established procedures, when a marine incident is reported to the SQ, it promptly notifies the Marine Rescue Sub-Centre (MRSC) in Québec, Quebec.³ This was done only several hours later.

The ferry operator did not have in place an emergency procedure for SAR operations. Neither the Coast Guard Radio Station (CGRS), nor the Vessel Traffic Services (VTS) Centre, nor MRSC Québec were notified immediately when the ferry owner became aware of the occurrence. It was not until several hours after the search by local authorities had been launched that MRSC became aware of the accident through the VTS Centre. In this instance, prompt action by local authorities to initiate the search mitigated the consequences of not alerting the MRSC.

Watchkeeping Practices

The *Collision Regulations* require that a proper look-out be maintained by sight and hearing as well as all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and the risk of collision. The *Recommended Code of Nautical Procedures and Practices*, 1985, TP1018, and established navigational practices provide guidance to personnel in charge of navigation.⁴ They emphasize that the composition of the watch should be such that the vessel can be navigated safely, in that the workload associated with navigation activity takes into consideration weather, visibility, time of day, navigation hazards, traffic, ergonomics, etc.

In this instance, despite reduced visibility, no dedicated look-out was posted on board the ferry. The small open boat was not fitted with a radar reflector, nor did it carry a flashlight.

Qualification and Experience of Personnel

The master of the ferry had a Master, Short Run Ferry Certificate of Competency issued in 1997. She had two years' experience on the ferry; the last year in the capacity of deck-hand/relief master.

The occupants of the rented boat had no formal training in boat operations nor was such training required by regulations. Their experience was limited to that gained during times they had rented out a boat on a few occasions.

Other Safety Initiatives

At the time of the occurrence, discussions were ongoing between industry representatives and the Office of Boating Safety (OBS) of the Canadian Coast Guard (CCG) with respect to establishing guidelines for rental

³ A memorandum of understanding between the Sûreté du Québec (SQ) and Marine Rescue Sub-Centre (MRSC) Québec provides guidance and clarification, and defines responsibilities for SAR operations in the province of Quebec.

⁴ The Transport Canada publication is based on the International Maritime Organization (IMO) *Code of Nautical Procedures and Practices* adopted by the *International Convention on Standards of Training, Certification and Watchkeeping for Seafarers* (STCW), 1978, as amended in 1995.

boat safety. The aim is to establish a common level of safe boating knowledge for operators of rented craft fitted with a motor. These include, among other things, the knowledge of safe boating principles and awareness of the obligation to comply with acts, regulations and codes. Further, the *Contraventions Act*, which was passed by Parliament in 1992, provides a streamlined means of addressing regulatory offences. The OBS has availed itself of the ease of enforcement afforded by the *Contraventions Act* by ensuring that the provisions of its legislation are designated as a contravention to regulations as covered by the Act.

Fishing Near the Carillon Dam

The investigation revealed an additional safety deficiency which, although it is not directly connected to the occurrence, has the potential to compromise transportation safety if left unaddressed. Anglers fish below the Carillon dam because fish are plentiful due to the barrier made by the hydroelectric dam and the associated high level of oxygen in the water flowing through the turbines. Warning signs posted by the operator of the dam state that boats should not be tied or anchored close to the dam. The warning signs are not always obeyed and there is no means to warn the controllers at the dam of the presence of boats in the vicinity of the dam. Further, the procedures established by Hydro-Québec do not call for visual examination of the dam area before the turbines are operated.

Passenger Count

In case of an emergency, information respecting the number of passengers on board the ferry or the number of persons in the rental boat is not readily available for prompt and effective deployment of SAR resources; this could jeopardize the success of a SAR mission.

Safety Action Taken by Transport Canada

In a separate accident that occurred on 12 September 1995 off the northwest coast of Hippi Island, Queen Charlotte Islands, British Columbia, the small open boat "CHARLOTTE EXPLORER 4" capsized with the subsequent death of two persons (TSB Report No. M95W0140). In its report on that occurrence, the Board expressed concern and noted that given the safety issues identified in tourist charter operations in Canada, practices within the wilderness fishing industry as a whole should be reviewed further. The Board believes that Transport Canada, the Canadian Coast Guard and the industry are those best placed to cooperate in an examination of current practices and to consider the best means of mitigating the risks resulting from identified safety deficiencies such as those contained in the report. Possible options could include regulatory requirements, an industry code of practice monitored by Transport Canada, or voluntary standards set and monitored by the industry itself.

In response, Transport Canada issued a Ship Safety Bulletin (SSB No. 01/99) regarding sport fishing. The bulletin recommends that operators adopt five basic standard procedures, as follows:

- (1) Ensure that all craft, rented, loaned or chartered, comply with the requirements of the *Small Vessel Regulations* made pursuant to the *Canada Shipping Act*.

- (2) Ensure that clients using these craft are made aware of, and are familiar with, the requirements of the *Recreational Vessel Operator Proficiency Regulations* of the *Canada Shipping Act*, and are familiar with radio and distress procedures.
- (3) Ensure clients are either aware of inherent dangers presented by local sub-surface geography, weather and sea conditions, or only participate under the close supervision of experienced persons or fishing masters.
- (4) Ensure regular radio contact and/or physical checks are made with clients at frequent intervals.
- (5) Implement a buddy system, where possible, between clients while fishing.

Analysis

Decision to Remove the Outboard Motor

Boat rental is a seasonal business, and customer service and satisfaction are essential for the success of a small business such as this one. There is an expectation on the part of clients to have their needs met. Two of the three men were repeat clients, having rented a boat earlier in the season. Although the men were aware of the hours of operation of the outfitter, they decided to prolong their stay. The outfitter may have felt obliged to meet his clients' expectations to ensure their satisfaction.

As the rental office is unattended at night, the boat and the outboard motor would have remained unattended after the renters had returned. As some of the motors had been stolen in the past, the outfitter was reluctant to take a chance this time. Hence, following discussion and agreement with the renters, the outfitter removed the outboard motor with the understanding that the clients were satisfied that they could row the boat ashore. Neither the renters nor the outfitter had monitored the weather. Consequently, none of them was aware of the heavy rain forecast for that evening. It is therefore unlikely that the decision to remove the outboard motor had taken into account the potential for change in weather conditions.

Factors Affecting Navigation

Because the boat was not equipped with a flashlight and was not required to carry pyrotechnics, the renters had no means to visually attract the attention of passing traffic at night. Given the environment in which the ferry personnel were operating, it is unlikely that the use of a hand-held whistle would have been successful in alerting them.

Because the boat was primarily intended for operation during daylight hours and in good weather conditions, it was not fitted with a radar reflector, nor was it required to be by regulations. The boat was, therefore, a poor radar target. This, in conjunction with the clutter generated by the wavelets, could account for the echo of the boat not being sighted on the radar screen. Further, as the visibility was reduced by heavy rain, darkness and

overcast skies, no one on the ferry saw anything. Additionally, the noise from the ferry engine and the fact that the wheel-house windows were closed meant that the cries for help from the boat occupants were not heard in the wheel-house.

The combined effect of the prevailing winds, the direction of the waves, and the current estimated at two knots in this area caused the boat to set eastward of the rental outlet. As oars were the only means of propulsion, the set towards the ferry could not be stopped despite the boat occupants' best efforts.

Ergonomics of the Navigation Bridge on the "ANIK"

On the bridge of a ship, the human-machine interface is a critical element in the work environment and the goal of ergonomics is to optimize the functioning of the vessel's control system by adapting it to human capabilities and limitations.⁵ Optimization is achieved by ensuring that the layout of the instrumentation takes into consideration its importance and frequency and sequence of use. Each component is positioned so as to minimize the workload of the operator and facilitate a safe, smooth and efficient operation.

To monitor the navigational instruments and to operate the main engine controls, the master of the ferry would have to face the inboard side, which is at right angles to the direction of the vessel's travel. Consequently, there would be periods when the back of the master would be towards the outboard side. Further, as the traffic in the area includes small boats which are poor radar targets, more effort would be required to maintain an efficient look-out. This would suggest that the bridge layout is such that it is not optimal for a single-person operation, especially while operating in restricted visibility at night.

Emergency Communication Equipment

In this instance, because neither the ferry nor the rental boat was fitted with a VHF radiotelephone, there was no way of raising an alert through a marine system in case of an emergency. There was no regime in place to ensure that the precise number of persons aboard the rental boat was readily available ashore for use in case of an emergency. Such information, together with instructions to contact MRSC Québec, was not displayed at rental boat sites. Consequently, it could not be used effectively in case of an emergency.

The rental boat was not equipped with pyrotechnics, nor was there an effective means of communicating an emergency and alerting SAR authorities. The success of a SAR mission depends upon the prompt notification of SAR authorities and the prompt tasking of SAR resources. The lack of emergency communication equipment could result in the loss of valuable time and adversely affect the success of a SAR mission.

Hydroelectric Dam Hazard

Despite the presence of signs warning boaters of the danger of approaching the hydroelectric dam, some boaters venture dangerously close to the turbine outlets. The dam control room is equipped with a closed-circuit video system to meet its operational needs, but none exists to warn the controller of the presence of boats in the

⁵ D. O'Hare and S. Roscoe, *Flightdeck Performance - The Human Factor*, Iowa State University Press (1990).

vicinity of the dam. As the operation procedures do not call for the visual examination of the dam, the controller does not have the means to ensure that boats are clear of the outlets when the turbines are operated.

Findings

6. The rental boat did not have the required safety equipment to operate at night and in adverse weather conditions.
7. The outfitter's decision to allow the renters to operate the boat past the closing time of the rental office was, in part, influenced by his desire to ensure customer satisfaction.
8. The outboard motor (4 kW or less) was removed from the boat by mutual consent between the outfitter and his clients.
9. The ferry was operated in restricted visibility at night by a single person and the on-board ergonomics were not optimal for a single-person operation. A dedicated look-out was not posted on board the ferry.
10. The wooden boat was a poor radar target. The clutter associated with sea state and the absence of a radar reflector on the boat could account for the echo not being sighted on the radar screen of the ferry.
11. Without a flashlight or pyrotechnics, the renters had no means to attract attention of the passing traffic at night, and the boat was not sighted by personnel aboard the ferry.
12. The noise of the main engine and the closed wheel-house windows could account for the cries for help from the boat occupants not being heard on the navigation bridge of the ferry. The crew of the ferry was not aware of the collision with the small boat.
13. Despite hard rowing by the renters, the boat continued to set towards the ferry, and the absence of the outboard motor reduced their ability to clear the ferry.
14. The ferry and the boat collided in restricted visibility at night and during, or shortly after, heavy rain showers.
15. The occupants did not wear any PFDs. The keyhole-type PFDs provided by the outfitter were not approved in Canada. The developing situation precluded them from donning the lifejackets prior to abandonment.
16. Two of the three occupants of the boat swam to the shore and were rescued; the third succumbed to exhaustion and drowned.
17. Valuable time was lost as there was no emergency communication equipment on board the boat. The SAR response was initiated after a passerby heard cries for help from one of the boat occupants.

18. Information on the number of passengers on the ferry and the number of persons on board the rented boat was not readily available for prompt and effective deployment of SAR resources.
19. The danger associated with boats operating close to the hydroelectric dam is not fully appreciated by some boaters. There was no means of alerting the hydroelectric dam controllers of the presence of boats below the dam before the turbines were operated.

Causes and Contributing Factors

The ferry "ANIK" and a small open boat collided in restricted visibility because the rental boat was operated at night without an outboard motor, with no flashlight, and the wooden boat was not fitted with a radar reflector. Due to heavy rain, the boat was not sighted either visually or by radar by the navigating personnel on board the ferry. Factors contributing to the occurrence were: the layout of the navigation bridge of the ferry was not optimal for single-person operation; the lack of a dedicated look-out on the ferry; and the lack of seamanship and navigational skills of the renters.

Safety Action

Safety Action Taken by the Office of Boating Safety

The Office of Boating Safety of the Canadian Coast Guard has now completed the *Rental Boat Safety Check List Standard*. The aim of this standard is to improve the knowledge of operators of rental motor boats by: promoting the safe use of navigable waters; developing a safety attitude towards pleasure boating; providing a means for pleasure craft operators to demonstrate their competency; and taking knowledge content from the safe boating course. All outfitters must develop a check list of operator skills and competency as set forth in the standard.

Safety Action Taken by the Outfitter

Subsequent to this occurrence, the outfitter has obtained information on the *Rental Boat Safety Check List Standard* with a view to implementing the standard in the boat rental operations.

Safety Action Taken by the Owner of the Dam

The Executive level of Hydro-Québec is aware of the dangers associated with fishing close to the dam and is making efforts to make the public aware of these dangers.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board, consisting of Chairperson Benôt Bouchard, and members Jonathan Seymour, Charles Simpson, W.A. Tadros and Henry Wright authorized the release of this report on 16 November 1999.

Appendix A - Photographs

