

MARINE OCCURRENCE REPORT

DANGEROUS OCCURRENCE

PASSENGER-CAR FERRY "WOLFE ISLANDER III"
LEAVING THE FERRY TERMINAL AT
MARYSVILLE, ONTARIO
29 MAY 1996

REPORT NUMBER M96C0032

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

At 0745 on 29 May 1996, the "WOLFE ISLANDER III" was embarking passengers and vehicles at Marysville, Wolfe Island. The master had left the wheel-house unattended and the ferry was not secured to the terminal by moorings. While the master was below deck, the emergency steering override system of the ferry's propulsion units failed. As a result, two of the units released from the locked position and turned slowly from the direction in which they had been set. The ferry moved about 45 m off the terminal before control was regained. No one was injured and there was no pollution as a result of this occurrence.

Ce rapport est également disponible en français.

OTHER FACTUAL INFORMATION

Particulars of the Vessel

Name	"WOLFE ISLANDER III"
Port of Registry	Kingston, Ont.
Flag	Canada
Official Number	197730
Type	Passenger-car ferry
Gross Tonnage	985
Length	51.5 m
Built	1975, Thunder Bay, Ont.
Propulsion	Four 410 HP "Aquamaster" power units
Crew	6
Owners	Transportation and Communications (MTO), Queen's Park, Ont.

At 0745 on 29 May 1996, having completed several return journeys between Kingston and Marysville, the ferry was embarking passengers and vehicles at the Marysville terminal on Wolfe Island. The master had set the emergency override control to lock the propulsion units in the position in which they would keep the ferry alongside. The mooring ropes (double-eyed short snubs) were not made fast to secure the ferry to the terminal. The master then shouted to the mate on deck to come to the wheel-house to replace him while he went to the washroom. The master did not wait for the mate to arrive on the bridge before he went below. The mate had not heard the master calling to him and went about his duties at the ferry ramp. The master had other means of communication from the wheelhouse to the deck, by two way portable radio and by the ship's PA system. However, neither of these means was used.

While the master was below deck, the emergency steering override system of the ferry's propulsion units failed. As a result, two of the units released from the locked position and turned slowly from the direction in which they had been set. The duty engineer in the engine-room was not aware of what was happening. As the vessel's stern began to turn, the ferry started to leave the terminal by herself. Witnesses estimated that the traffic was from 0.5 m to 7 m from the open apron on the shore side when the mate, positioned on the ferry's ramp, directed the embarking traffic to stop. Two minutes

¹ The Aquamaster propulsion unit is an azimuthing thruster driven by a medium-speed prime mover. In normal use, the unit may be turned through 360 degrees and maintain the direction to which it has been set to within a few degrees on either side of the setting. The unit may be positively locked in direction by the emergency steering override system. There are about 2,000 of these units in service worldwide.

² All times are EDT (Coordinated Universal Time (UTC) minus four hours) unless otherwise stated.

previously, several cars and two school buses filled with school children had embarked.

From the main deck, the mate could not determine if the master or anyone else was in the wheel-house. After making a telephone call to the bridge and not receiving a reply, the mate ran to the wheel-house, which he found unattended. On arrival, the mate switched the emergency override to normal steering and began to bring the ferry back to the terminal which was now about 45 m away. Shortly afterward, the master returned to the bridge, unhurriedly, according to some witnesses. The master took over the controls from the mate and redocked the ferry at the terminal. Embarkation resumed.

After the occurrence, it was found that several turns of the valve handle were required to close the main steering by-pass distribution valve for units 3 and 4.

The previous day, 28 May, the master had found the steering sluggish. Although the problem was not serious, he had asked the engineer on duty to check the system when the ferry was alongside. The engineer partly opened the main steering by-pass distribution valve for units 3 and 4 as part of his check. He had not completed his examination of the system when he was advised to prepare the ferry for departure. When he reactivated the steering component of the units, he forgot about the partly open valve and did not close it.

According to the Ministry of Transportation of Ontario (MTO) operations standing orders for the ferry, the person on watch must be relieved on the bridge before leaving his post. The standing orders also require that the ferry be secured by mooring ropes when at the terminal. Neither of these safety rules was followed. In addition to the Ministry of Transportation Standing Orders, a letter was sent to all ferry operators in the Kingston District attaching Ship Safety Bulletin 10/92, and an audit was conducted by Marine Safety.

In June 1996, the MTO received information from two members of the travelling public that a similar incident had occurred on 25 February. The MTO internal audit section investigated these reports with a view to disciplinary action but the section was unable to substantiate them.

It was also determined that reports to the effect that the master was "moonlighting" as master for another company in addition to his duties as master with the MTO were unsubstantiated.

The master, mate and engineer all had joined the "WOLFE ISLANDER III" in October 1989. All held the appropriate certification for the vessel.

On 22 April 1996, the MTO had revised the work schedule for the shift crew of the "WOLFE ISLANDER III", and three positions had been

eliminated. As a result, the normal number of hours worked daily by the deck crew increased from 8 to 10 over the four-day work period. The change did not affect the ferry's engineers.

ANALYSIS

The emergency steering override system failed because the operating pressure in its hydraulic control line was lowered by the partly open main steering by-pass distribution valve. Operating at the lowered pressure, the system failed to fully maintain the lock on the direction of propulsion units 3 and 4, which rotated slowly from the direction in which they had been set.

All four units were initially set to turn ahead. However, as units 3 and 4 were at the offshore end of the ferry, they were able to draw more water than units 1 and 2. The flow of water to the latter units was restricted by the terminal. Therefore, the thrust from the less restricted offshore units (3 and 4) was greater than the thrust generated by units 1 and 2. When units 3 and 4 rotated from their setting, the after end of the ferry started to turn away from the terminal.

It would appear that the safety rules regarding making the vessel fast by moorings when alongside were not observed. This may have been due to a lack of discipline on the part of the crew whose job it was to make the vessel fast, and to a lack of supervision by the vessel's officers. Although officers and crew are fully occupied at this time, the fundamental and simple standard task of making the vessel fast should not have been overlooked.

It would also appear that it was ship's practice not to make the vessel fast when alongside and that this practice went undetected before this occurrence because the vessel's shoreside managers did not carry out safety audits to ensure that standard safety rules were observed.

Because the moorings had not been made fast, the ferry, while slowly turning, departed the terminal, fortuitously at a time when no passenger or vehicle was embarking. If either the master or mate had been in the wheel-house at this time, the propulsion unit-induced movement of the ferry would have become apparent sooner and could have been corrected.

The mate did not hear the master's call to come to the bridge to relieve him, probably because of ambient noise levels on the main loading deck. At the time, he was attending to his duties at the loading ramp, and had he responded to the master's call, he would not have been in a position to stop further passenger and vehicle traffic from embarking.

The master had been on an altered work shift schedule since 22 April 1996, and his daily work period had increased from 8 to 10 hours.

Unfortunately, the master lived on the mainland and the ferry overnighted on Wolfe Island. As a result, the master needed to join the ferry at 0100 on the mainland to travel to Wolfe Island to begin his 10-hour shift there at 0530. Thus, there was little remaining time at the end of each work shift for rest and sleep. At midnight, this work cycle would repeat itself.

Analysis by the TSB found that this schedule, for persons working and travelling similar hours to the master, would not allow for adequate sleep. Over the four-day work period, a significant sleep deficit would accumulate. A sleep deficit can cause a reduced attention span and forgetfulness; a tendency to make riskier decisions; and a general decline in performance.

The master's performance in this instance is consistent with the effects of fatigue in that he did not ensure that the bridge was crewed during his absence and he did not return to the bridge urgently. The vessel was not made fast to the terminal and was left unattended with the engines running, and with the wheel-house and engine controls accessible to the public.

FINDINGS

1. The day before the occurrence, the engineer on duty did not completely close the distribution valve controlling the hydraulic pressure for the emergency steering override for propulsion/steering units 3 and 4.
2. The effect of the incompletely closed valve was that units 3 and 4 could not be reliably locked in the emergency steering override position.
3. While the "WOLFE ISLANDER III" was embarking passengers and vehicles at the Marysville terminal, the master locked units 3 and 4 in override and left the wheel-house unattended.
4. The ferry was not secured to the terminal by moorings.
5. During the master's absence from the wheel-house, propulsion/steering units 3 and 4 rotated from the locked position, causing the ferry to move slowly off the terminal.
6. The mate acted quickly to stop passengers and vehicles from embarking. By the time he also regained control of the ferry, she was about 45 m off the terminal.
7. On 22 April 1996, the MTO had revised the work schedule for the shift crews, and three positions had been eliminated, increasing the normal number of hours worked daily from 8 to 10.

8. During the four-day work period of the new schedule, a crew member living on the mainland is required to catch the 0100 ferry to Marysville to be ready to begin his 10-hour shift at 0530, leaving little time for rest and sleep.
9. It is likely that the master was suffering from fatigue which may have adversely affected his judgement and performance.

CAUSES AND CONTRIBUTING FACTORS

The "WOLFE ISLANDER III" accidentally departed from the terminal because the emergency steering override system failed due to an incompletely closed valve in the engine-room. Propulsion/steering units 3 and 4 turned slowly from the direction in which they had been set, causing the ferry to swing off the terminal.

Contributing to the occurrence was the fact that the ferry was not secured to the terminal, the wheel-house was not crewed, and the master's judgement may have been affected by an accumulated sleep deficit caused by recent changes in his work schedule.

ACTION TAKEN

Following the occurrence, ferry masters were reminded of safe operating practices and the MTO internal audit branch reviewed the operation and looked at mechanical means to prevent a reoccurrence of this nature. It was also reported that as of February 1997, the work schedule returned to the 8-hour shift.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board, consisting of Chairperson Benoît Bouchard, and members Maurice Harquail, Charles Simpson and W.A. Tadros, authorized the release of this report on 7 October 1997.