

MARINE OCCURRENCE REPORT

INCIDENT

INVOLVING THE FERRY "WOODSIDE I" and the
TUG/SUPPLY VESSEL "MAGDELAN SEA" in

HALIFAX HARBOUR, NOVA SCOTIA

26 APRIL 1996

REPORT NUMBER M96M0038

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 1001 on 26 April 1996, the "MAGDELAN SEA", inbound in Halifax Harbour under the conduct of a pilot, was approaching the normal route followed by the Halifax/Dartmouth ferries. At approximately 1003, the ferry "WOODSIDE I" departed the Dartmouth Ferry Terminal, bound for Halifax. The "WOODSIDE I" crossed ahead of the "MAGDELAN SEA" at about 1006, with

approximately 93 metres between the vessels. The pilot of the "MAGDELAN SEA" considered that a dangerous situation had been created by the "WOODSIDE I"

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Other Factual Information

Particulars of the Vessels

Name	"MAGDELAN SEA"	"WOODSIDE I"
Port of Registry	Nassau, Bahamas	Halifax, N.S.
Official Number	720801	805165
Flag	Bahamian	Canadian
Type	Tug/Supply vessel	Passenger ferry
Gross Tonnage	1,328	256
Propulsion	SACM, 9,600 kW	Two Voith-Schneider, 362 kW
Built	1977, Belgium	1986, Pictou, N.S.
Owners	Secunda Marine Dartmouth, N.S.	Metro Transit Halifax, N.S.

On the morning of 26 April, weather conditions in Halifax Harbour were good, with visibility of 8 to 10 miles, a light southerly breeze, and a smooth sea.

The "MAGDELAN SEA" was inbound with a licensed pilot on board who had the conduct of the vessel. After the pilot had boarded the vessel, some information was exchanged between himself and the master. The master had no formal card with the vessel's characteristics, but he did advise the pilot of the vessel's extremely good manoeuvring ability. The pilot had previous experience on this type of vessel.

The pilot had declined the services of a helmsman and was altering course himself using the automatic steering device, whose control is mounted on the steering-position gyrocompass repeater. In addition to steering the vessel, the pilot was also keeping a look-out and operating the very high frequency radiotelephone (VHF R/T).

The master was in the wheel-house, mainly at the main engine controls, and the officer of the watch (OOV) was sometimes in the wheel-house and sometimes below performing other duties.

The vessel's two radars were switched on, but they were not being used by the bridge team.

One VHF R/T was dedicated to channel 12, the calling and working frequency required to be used in the Halifax Harbour area. This frequency is monitored, recorded and timed continuously by the Vessel Traffic Services (VTS).

The VTS also monitor by radar vessel movements, which are videotaped and timed. Some of the information in this report was derived from both VTS audio and video recordings.

There was no large-scale chart of Halifax Harbour on display in the wheel-house of the "MAGDELAN SEA". The officers were not monitoring the vessel's progress other than by eye. At approximately 1001, the pilot of the "MAGDELAN SEA" advised another vessel that he was approaching the ferry track and would keep to the Dartmouth side. About nine seconds later, the pilot reported to Halifax Traffic that his vessel was at the ferry track. According to VTS videotapes, the vessel was about 0.55 mile south-east of the ferry track at 1001.

The pilot later remembered that, at that time, the course was probably 315°(T) and the speed approximately five knots. The course of the vessel, as recorded on videotape, was between 314° and 318°.

At peak periods, ferry departures between Halifax and Dartmouth are every 15 minutes, commencing on the hour. Because another ferry was out of service, the "WOODSIDE I" was operating on the Dartmouth/Halifax run and not on her normal Woodside/Halifax run.

At approximately 1003, the "WOODSIDE I" called on VHF channel 12 to say that she was departing Dartmouth. The call from the "WOODSIDE I" was recorded by VTS and heard by the master of the "MAGDELAN SEA", but not by her pilot. The OOW did not hear the broadcast but, as he was attending to other duties, he may not have been in the wheel-house at the time.

At approximately 1006, the pilot of the "MAGDELAN SEA" called the "Ferry Dartmouth Three" on VHF. The OOW of the ferry responded by indicating that the ferry's name was "WOODSIDE I".

According to VTS audio recordings, the pilot of the "MAGDELAN SEA" called the ferry by VHF to let the ferry know that she was going across his vessel's bow and causing a dangerous situation. The OOW of the "WOODSIDE I" replied: "I don't think so, I'm on the right side". This message, conveyed in non-standard vocabulary, was intended to mean that the ferry was on the starboard bow of the "MAGDELAN SEA".

At 1006, the pilot of the "MAGDELAN SEA" broadcast that, as the ferry had passengers on board and was crossing close ahead of his vessel, she should pay close attention to what she was doing. The "WOODSIDE I" crossed ahead of the "MAGDELAN SEA" at a distance of about 93 m.

Although the radars on both vessels were operational, they were not used between 1000 and 1006.

No whistle warning signals were sounded by either vessel as they approached each other.

The certificates of both vessels were in order, and the qualifications of the officers involved were adequate or in excess of regulatory requirements.

The officers of both vessels had years of experience in the positions held, and the pilot holds a Class A licence issued by the Atlantic Pilotage Authority (APA).

Neither the master nor the OOW of the "MAGDELAN SEA" had attended a recognized Bridge Resource Management (BRM) course. While there is no regulatory requirement for pilots to have BRM training, the APA, in conjunction with the Marine Division of the Community College at Port Hawkesbury, prepared a BRM course designed specifically for pilots. The pilot on board the "MAGDELAN SEA" had not attended such a course.

All Metro Transit ferry officers attended a bridge procedure course in 1993. This course, which has not been repeated, was specially adapted to the requirements of the ferry operation and incorporated some aspects of BRM.

On the "WOODSIDE I", the OOW had the conduct as well as the steering of the vessel during the passage from Dartmouth to Halifax. Both hands are necessary to control the two-directional propulsion units. After departure from the terminal, the master joined the OOW in the wheel-house where he played a passive role. Metro Transit upholds the concept that whoever has the conduct of the vessel steers the vessel, handles the VHF and, in fine weather, also acts as look-out.

The International Regulations for Preventing Collisions at Sea (COLREGS) state, in part:

"When two power-driven vessels are crossing so as to involve risk of collision, the vessel which has the other on her own starboard side shall keep out of the way and shall, if the circumstances of the case admit, avoid crossing ahead of the other vessel."

"Every vessel which is directed to keep out of the way of another vessel shall, so far as possible, take early and substantial action to keep well clear."

"Where one of two vessels is to keep out of the way the other shall keep her course and speed."

"The latter vessel may however take action to avoid collision by her manoeuvre alone, as soon as it becomes apparent to her that the vessel required to keep out of the way is not taking appropriate action in compliance with these Rules."

In 1995, the Board conducted *A Safety Study of the Operational Relationship Between Ship Masters/Watchkeeping Officers and Marine Pilots* to identify safety deficiencies in communication and teamwork among pilots and ship personnel, and made several recommendations. In view of the chronic absence of effective communications on the bridge, the Board recommended that:

The Department of Transport require that, when a pilot commences duty in compulsory pilotage waters, there be a formal exchange of information between the master and the pilot with mandatory briefing elements for planned navigational procedures, local conditions and ship's characteristics.

(M95-06, issued October 1995)

Transport Canada (TC) indicated that, in conjunction with pilotage authorities, it will promote procedures for the formal exchange of information between masters and pilots. TC also intends to promote the inclusion of relevant training during Simulated Electronic Navigation (SEN) and Bridge Resource Management (BRM) training courses.

Further, in view of safety deficiencies in the effectiveness of current bridge team management practices in compulsory pilotage areas, the Board recommended that:

The Department of Transport require that all pilots demonstrate skills in Bridge Resource Management before the issuance and/or renewal of a pilotage licence; and

(M95-11, issued October 1995)

The Department of Transport, through the International Maritime Organization, actively promote the provision of formal training in Bridge Resource Management to all ship officers and marine pilots and the benefits of such training.

(M95-12, issued October 1995)

TC indicated that it intends to promote the development and the provision of BRM training courses, and plans to phase in such requirements starting with higher-level certificates.

It was also indicated that TC and pilotage authorities intend to promote the inclusion of a BRM training course for applicants and holders of pilot licences and pilotage certificates. So far, TC prefers to include such a requirement in the certificates of competency and continued proficiency endorsements.

Analysis

The master of the "MAGDELAN SEA" heard the "WOODSIDE I" broadcast by VHF R/T as she was leaving the Dartmouth Ferry Terminal, and he assumed that the pilot had also heard it, but he had not. This may have been due to the fact that the pilot was preoccupied with navigating, steering, and making collision avoidance arrangements with another vessel by VHF. Because there was no pre-established regime to ensure that all the members of the bridge team were kept informed, communication between the pilot, the master and the OOW broke down in this regard. The available bridge resources were not optimized.

The pilot of the "MAGDELAN SEA" maintained that the "WOODSIDE I" should have altered course to port to pass astern of the "MAGDELAN SEA", and he considered that the ferry had created a dangerous close-quarters situation by crossing ahead of his vessel. However, as the vessels were approaching each other, the "MAGDELAN SEA" had the "WOODSIDE I" on her starboard bow. The "MAGDELAN SEA" was the give-way vessel and was required by the COLREGS to keep out of the way.

The pilot stated that, as the vessels closed, he altered the course of the "MAGDELAN SEA" 10 to 15 degrees to starboard to give the "WOODSIDE I" a wider berth. On the VTS videotape, the course of the "MAGDELAN SEA", while approaching the ferry track, varies between 314° and 318°. The VTS video recording of the vessel's automatic radar plotting aid (ARPA) vector does not indicate that course was altered to starboard. However, because the vectors displayed on ARPA radar are derived from historical data, a course alteration made by a target vessel may not be displayed immediately after course is altered.

Because performance standards for ARPA radars require that a tracked target present, in a period of not more than one minute (from the alteration), an indication of the target's motion trend, it is not considered likely that an alteration of 10 to 15 degrees would have gone undetected and unrecorded by VTS radar.

The difference in headings between 314° and 318° recorded by VTS radar is most likely due to a 2° yaw on either side of the course steered. A yaw of this magnitude is not unusual for a vessel proceeding at slow speed and being steered automatically.

Knowing the ferry schedule, the pilot must have been aware that a ferry was scheduled to depart the Dartmouth Ferry Terminal for Halifax at 1000, but he would not necessarily have known of the substitution of one ferry for another. The presence of a ferry in the area was to be expected at the time of the incident.

The close-quarters situation developed about three to four minutes after the ferry's departure from the terminal. The incident could have been avoided if the "WOODSIDE I" had contacted the "MAGDELAN SEA" by VHF immediately after she had cleared the Dartmouth Ferry Terminal. Then there would have been ample time to establish an order of crossing. The ferry did not do so.

Both the master and the OOW of the "WOODSIDE I" were aware of the approaching "MAGDELAN SEA" because both vessels were in full sight of each other immediately after the ferry cleared the terminal. The OOW was of the opinion that the "MAGDELAN SEA" had increased speed by approximately three knots in the minutes before the "WOODSIDE I" crossed ahead of her. There is no evidence to support this opinion. The VTS videotape indicates a reduction in speed by the "MAGDELAN SEA" from 5.5 to 4.6 knots, and the master and pilot of the "MAGDELAN SEA" also confirmed that the speed of the vessel had not been increased.

Apart from the slight reduction in speed of the "MAGDELAN SEA" detected on the VTS ARPA video playback, no detected alteration of course or change of speed was made by either vessel.

Both vessels are very manoeuvrable; however, although the bow thruster on the "MAGDELAN SEA" was ready for use, its effectiveness at five knots would have been minimal.

Findings

1. On the "MAGDELAN SEA", the master heard the departure message broadcast by the "WOODSIDE I" on VHF R/T, and he assumed that the pilot had heard it also and understood its implication. He did not direct the pilot's attention to the message.
2. The pilot was preoccupied performing multiple tasks to the extent that he did not hear the "WOODSIDE I" informing VTS of her departure.
3. The available bridge resources were not optimized, especially with regard to communication and the division of tasks.
4. The pilot became aware of the "WOODSIDE I" approximately two minutes after the ferry had departed the Dartmouth Ferry Terminal and was approaching his vessel in such a way that the "MAGDELAN SEA" was the give-way vessel.
5. The pilot of the "MAGDELAN SEA" believed that a close-quarters situation and a risk of collision existed when the vessels passed each other, but this opinion was not shared by the officers of both vessels.
6. Neither the "WOODSIDE I" nor the "MAGDELAN SEA" contacted the other in good time to establish a passing or crossing precedence to eliminate any doubt on both vessels.
7. The master of the "WOODSIDE I" did not discuss the traffic pattern with the OOW, or issue any order regarding the course and/or speed of the vessel, and he did not take charge of the VHF conversation with the "MAGDELAN SEA".

8. Metro Transit considers that the ferry officer who is steering has the conduct of the vessel and is expected to perform the duties related to this task. The other officer in the wheel-house not only plays a passive role but, in fine weather, does little or nothing to assist the helmsman.
9. Although the ferry officers attended a modified bridge resource management course three years ago, BRM principles on the division of tasks were not being implemented on the "WOODSIDE I" at the time of the incident.
10. The small-scale chart of Halifax Harbour displayed in the wheel-house of the "MAGDELAN SEA" was not suitable for accurate plotting and monitoring of the vessel's progress.

Causes and Contributing Factors

This incident occurred because the pilot of the "MAGDELAN SEA" did not hear the departure broadcast by the "WOODSIDE I" as he was assuming multiple responsibilities and had not maximized the deployment of officers and crew available to him. The fact that the master of the "MAGDELAN SEA" did not alert the pilot to the VHF R/T departure message from the "WOODSIDE I" contributed to this occurrence. A further contributing factor was that the "WOODSIDE I" did not make her intentions clear by calling the "MAGDELAN SEA" on VHF channel 12 after departing the berth, and assumed that any action necessary would be taken by the "MAGDELAN SEA".

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 23 July 1997.