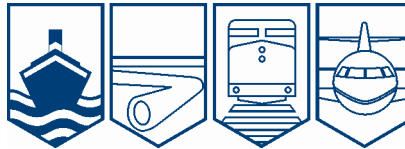


Transportation Safety Board
of Canada



Bureau de la sécurité des transports
du Canada

**MARINE INVESTIGATION REPORT
M05L0192**



COLLISION

**BETWEEN OIL TANKER *MARIA DESGAGNÉS*
AND SAILING VESSEL *EL TIO*
OFF ÎLE D'ORLÉANS, QUEBEC
12 SEPTEMBER 2005**

Canada

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

Collision

Between Oil Tanker *Maria Desgagnés*
and Sailing Vessel *El Tio*
off Île d'Orléans, Quebec
12 September 2005

Report Number M05L0192

Summary

On the evening of 12 September 2005, off Île d'Orléans on the Saint Lawrence River, the sailing vessel *El Tio* was bound for Repentigny, Quebec, under engine power. It followed the green buoys that mark the navigable waterway of the northern channel between Cap Gribane and Point Saint-Jean, Île d'Orléans, Quebec.

At about 2300, the oil tanker *Maria Desgagnés* and the sailing vessel *El Tio* were moving towards each other. Having been informed of near-collisions between the sailboat and two other vessels a little earlier in the evening, the *Maria Desgagnés*' bridge crew took steps to avoid a collision by trying to communicate with the sailboat and whistling warning signals. Nevertheless, the ships' paths crossed upstream from the Saint-François quay. Despite the steps taken by the two vessels, the *El Tio* and the *Maria Desgagnés* collided.

The oil tanker *Maria Desgagnés* was not damaged. The hull of the sailboat *El Tio* was, however, dented on the port quarter and its sails collapsed; the captain/owner was not injured.

Ce rapport est également disponible en français.

Other Factual Information

Vessel Name	<i>Maria Desgagnés</i>	<i>El Tio</i>
IMO and Official Number	9163752	818384
Port of Registry	Québec, Quebec	Montréal, Quebec
Flag	Canada	Canada
Type	Oil tanker	Sailboat, Hunter 30
Deadweight Tonnage ¹	14 335 tonnes	
Length	120 metres (m)	9.18 m
Draught	Fore: 8.70 m Aft: 9.80 m	
Construction	Qiuxin Shipyard, Shanghai, China	Plastic construction by Hunter Marine Corp.
Power Plant	6150 kW B&W diesel engine	11 kW diesel engine
Cargo	10 962 tonnes of gasoline and diesel	
Crew	17 persons	1 boater
Owner	Transport Desgagnés	Individual

History of the Voyage

On 12 September 2005, at about 1245, ² the sailboat *El Tio* left the Pointe-au-Pic quay, Quebec, and set course for its home port, the Repentigny marina, Quebec. The stopover at Pointe-au-Pic was part of the return trip from Baie des Chaleurs. Alone on the vessel and awake since 0200, the captain/owner planned to stop later in the day at the Saint-Lawrence marina, Île d'Orléans, Quebec. At about 1730, the captain decided to lower the sails and carry on under engine power. The trip down the Saint-Laurent River was without incident.

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

² All times are Eastern Daylight Time (Coordinated Universal Time minus four hours).

At about 2130, the sailboat was located just off Anse aux Bardeaux, roughly 10 miles downstream from the eastern point of Île d'Orléans. A few minutes earlier, the dredger *Port Méchins*, which was dredging in the marked navigable channel off the Cap Brûlé riverbank, had left the dredging area for a dumping area off Sault-au-Cochon. The dredger first noticed the sailboat *El Tio* when it was located slightly upstream from Cap Gribane, between buoys K91 and K95. As the two ships approached each other just off Cap Rouge, the *Port Méchins'* crew realized that the two ships' paths would cross and that there was a risk of collision. The dredger reduced speed to a minimum, whistled a warning signal and switched on a searchlight. Seeing no noticeable change in the situation, the dredger *Port Méchins* tried unsuccessfully to reach the sailboat *El Tio* by radio on VHF channels 12 and 16. When the sailboat was about 100 m off its bow, the dredger took evasive action, veering to starboard to avoid a collision.

A few minutes later, the dredger forwarded an account of the event to the Maritime Communications and Traffic Services (MCTS) Centre in Québec on VHF channel 12. The MCTS Centre relayed the information to three downbound ships that were approaching the area: the large sailboat *Sedna IV*, the oil tanker *Maria Desgagnés* and the bulk carrier *Canadian Progress*.

A little later in the evening, around 2240, the *Sedna IV* encountered conditions and circumstances similar to those experienced by the dredger *Port Méchins*. Downstream from Saint-François quay, Île d'Orléans, between buoys K115 and K119, the *Sedna IV's* crew took similar steps to avert a collision. This time, the ship moved to the port side to clear the sailboat *El Tio*. After avoiding the collision, they reported this second event to the MCTS Centre in Québec.

In addition to the pilot who oversaw operations aboard the *Maria Desgagnés*, the bridge crew also included an apprentice pilot, the captain, the watchkeeping officer and a helmsman. All crew members took careful note of the transmitted reports and messages concerning the sailboat that was moving upstream and navigating dangerously. In response to the request to reduce speed off Saint-François quay, the *Maria Desgagnés* reduced power for the first time at about 2245. Consistent with the earlier ships' reports, the *Maria Desgagnés'* bridge crew noticed that the sailboat *El Tio* was zigzagging in the channel, adjoining the green buoys.

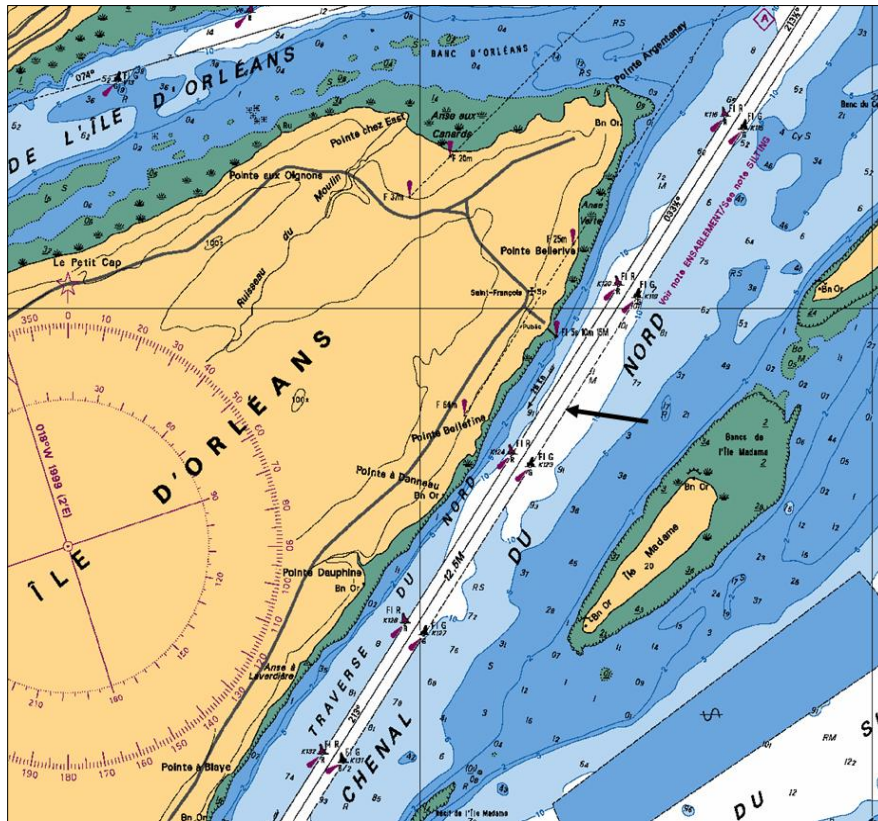


Figure 1. The *El Tio* and the *Maria Desgagnés* collided at about 2300 in the centre of the channel between buoys K119 and K123, one-half mile south of Saint-François quay.

At that point, the crew did everything possible to ensure that the ships crossed paths safely. The *Maria Desgagnés*, already in the middle of the channel, moved to the starboard side of the channel to give the *El Tio* more room to manoeuvre and reduced speed a second time. The *Maria Desgagnés* whistled a warning signal and used the spotlight twice to confirm the *El Tio*'s position as well as signal its presence to the captain of the *El Tio*. At one point, they saw a reflection, which they interpreted as a light signal from *El Tio*'s cockpit. The *Maria Desgagnés*' bridge crew interpreted the signal as confirmation that it had been seen. They continued at reduced speed while still observing the *El Tio*.

When the sailboat *El Tio* was less than 100 m off the starboard bow of the oil tanker *Maria Desgagnés*, the sailboat quickly veered to starboard and crossed the oil tanker's path. The two ships collided at about 2300 in the middle of the channel, between buoys K119 and K123, one-half mile south of Saint-François quay (see Figure 1).

Navigation Procedures on the El Tio

The cabin of the sailboat *El Tio* was equipped with several navigation aids. On the chart table, there was an Electronic Chart System (ECS) programmed on a laptop, a global positioning system (GPS) and a very high frequency (VHF) radiotelephone. The sailboat's cockpit was equipped with a magnetic compass and a second GPS, located on the rudder column. The sailboat was not equipped with radar.

Before leaving Repentigny for Baie des Chaleurs, the captain of the *El Tio* had used the ECS and GPS to select trip routes. To avoid bothering commercial traffic, he had chosen waypoints (WPs) located along the port buoys. The coordinates of these WPs had then been programmed into the cockpit GPS.

On the return trip, the captain did not have a printed navigation chart aboard, nor had the ECS been turned on. He navigated the ship through visual observation with assistance from the cockpit GPS and the VHF radiotelephone, which was tuned to channel 16. Given that the cockpit GPS and the ECS in the cabin were not linked, the captain was unable to immediately determine his sailboat's position without leaving the wheelhouse and consulting the ECS in the cabin.

Due to the fact that the captain had failed to re-program the GPS, the graphic image had not changed and was still based on the WPs along the port buoys. Consequently, when the sailboat began moving back upriver, off Anse aux Bardeaux, it travelled in the navigable channel along the port buoys on the side used by ships moving downstream. However, Rule 9, Narrow Channels, of the *International Regulations for Preventing Collisions at Sea (1972)* stipulates that ships shall keep as near to the outer limit of the fairway, which lies on their starboard side, as is safe and practicable. It also stipulates that ships of less than 20 m in length shall not impede the passage of a ship, which can safely navigate only within the fairway.

Perspective on the El Tio

The calls from the dredger *Port Méchins* on the VHF channel were not heard, as they were drowned out by the *El Tio's* engine noise. The *El Tio's* captain saw the dredger *Port Méchins* approaching, but was unable to determine the distance separating them. At one point, the *El Tio's* captain decided to turn to starboard, thereby crossing the dredger's path.

A short time later, off Saint-François, the *El Tio's* captain failed to hear calls from the large sailboat *Sedna IV* on the VHF channel. With his view impeded by background light from coast lights, the *El Tio's* captain failed to see the *Sedna IV* approaching. A situation similar to that described earlier occurred again, this time involving the large sailing vessel *Sedna IV* and the *El Tio*.

Similarly, the oil tanker *Maria Desgagnés* was only noticed at the last minute and its calls on the VHF channel were not heard. When the oil tanker's powerful searchlight was turned on, the *El Tio*'s captain was blinded and had difficulty assessing the situation as well as the oil tanker's position relative to his sailboat. He did not try to communicate via light signals. Knowing that he was on the port side of the navigable channel, he quickly veered to starboard to pass the oil tanker on the port side. The collision took place a few moments later.

Rescue Operation

The sailboat remained afloat following the collision. The engine and rudder were still operational, but the captain was distraught and feared that his vessel was taking on water. Seeking assistance, he sent out an emergency message (PAN PAN) on the VHF 16 channel. The Canadian Coast Guard Ship *Cap Tourmente* set out at about 2320 and reached the *El Tio* at about 0010 on 13 September 2005. The sailboat was taken in tow at that time and brought to the Saint-Laurent marina, where it arrived at about 0135.

Training and Experience

The Maria Desgagnés

The captain and the watchkeeping officer each held a Master Certificate, Intermediate Voyage, which they earned in 2001 and 2005, respectively. The captain had 16 years of experience as a navigation officer, while the watchkeeping officer had two years of experience.

The pilot obtained his first navigation certificate in 1982 and holds a Pilot's License, class B1, which he earned in 1998. The apprentice pilot, who is in his first year of apprenticeship, earned his first navigation certificate in 1997.

The El Tio

The captain purchased his first sailboat in the early 1990s. He has owned the *El Tio* since 1996. Although his first sailboat was mostly used to shuttle between Québec and Montréal on the Saint Lawrence, the *El Tio* was used to sail along the eastern seaboard of the United States, in the Gulf of Mexico and in the Caribbean. He holds a Pleasure Craft Operators Card (PCOC), which he received in May 2002 after passing a Canadian Coast Guard certified exam.

Pleasure Craft Operator Card

The *Competency of Operators of Pleasure Craft Regulations* provides for a risk-mitigation mechanism that requires operators to complete a personal study program and examination before obtaining a PCOC.³

³ Regulation under the *Canada Shipping Act*, Transport Canada, SOR 99-53.

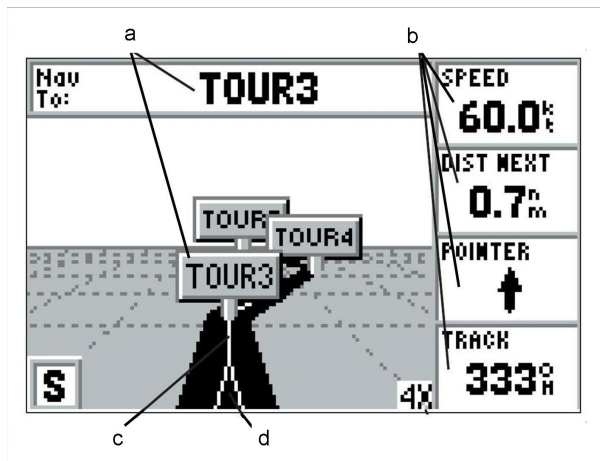
Transport Canada, however, recommends that operators seeking to obtain a PCOC complete a boating safety course offered by one of its certified providers. The Boating Safety Course Standard is used to certify boating safety courses. It calls upon course providers to prepare candidates so that they are able to display an adequate knowledge of boating laws, codes, and regulations required to practice the sport.

The Boating Safety Course Standard is aimed at course providers; it is not designed to develop competency in navigation or the use of navigation instruments. Operators are, however, encouraged to refine their skills in these areas by taking appropriate courses.

Global Positioning System (GPS)

The two GPS systems aboard the *El Tio* offered the user several options to help navigate. To plan trips, users could enter the positions of multiple WPs, enabling them to calculate true courses, the distance between WPs, ground speed and the time needed to reach the next WP. The GPS can calculate up to 28 parameters and display them on a liquid crystal screen.

To help navigate, this type of GPS offers two graphic displays, known as “pages”. The “compass page” indicates, for example, the route to take from one WP to the next or from any other position to a particular WP. The “highway page” offers a graphic display of a public waterway with an icon representing the vessel (see Figure 2). The GPS indicates the vessel’s position (icon) relative to the planned route (path). In other words, it indicates whether the operator should maintain or alter course in order to move towards the path to be taken.



- a) Representation of next WP.
- b) Display of 4 of the 28 settings calculated by the GPS.
- c) The black band and the white line represent the path to be taken between WPs.
- d) The icon representing the vessel. The vessel icon is located in the centre of the path on this display, the route to be taken between the preceding WP and WP 3 (TOUR 3).

Figure 2.

The sailboat captain was using the “highway page” to navigate from one WP to another (Figure 2). Following the collision, the captain decided to head for the Saint-Laurent marina, located about 12 miles upstream from his position, rather than for the Saint-François quay, less than half a mile away. This was because he was disoriented and had no means of confirming his position.

Findings as to Causes and Contributing Factors

1. Although he could have safely navigated outside the marked navigable waterway, the sailboat *El Tio* returned up the Saint Lawrence River within the navigable channel, along the port buoys on the side of the ships moving downstream.
2. The *El Tio*'s captain lacked a full understanding of the situation, i.e., his position relative to the waterway and his sailboat's movements relative to the ships he encountered. His lack of knowledge of the Collision Regulations led to a situation where the *El Tio* very nearly collided with the dredger *Port Méchins* and the large sailboat *Sedna IV* and, ultimately, collided with the oil tanker *Maria Desgagnés*.
3. By neglecting to activate the electronic chart system and to adequately monitor the radio, in addition to being unable to consult a navigation chart and depending solely on the graphic display of a global positioning system in navigating from one waypoint to the next, the *El Tio*'s captain showed an inability to navigate in restricted waters at night in the presence of commercial traffic.

Finding as to Risk

1. Although the process prescribed by the *Competency of Operators of Pleasure Craft Regulations* for the acquisition of a Pleasure Craft Operators Card (PCOC) calls upon candidates to achieve a certain degree of knowledge of pleasure craft operations, it cannot be assumed that the holder of such a card has the necessary skills to pilot this type of craft in complete safety.

Other Finding

1. The reflection off the *El Tio*'s cockpit, which was seen from the bridge of the oil tanker *Maria Desgagnés*, was most likely the reflection of the beam from the *Maria Desgagnés*' searchlight.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board authorized the release of this report on 12 July 2007.

Visit the Transportation Safety Board's website (www.bst-tsb.gc.ca) for information about the Transportation Safety Board and its products and services. There you will also find links to other safety organizations and related sites.