



Australian Government

Australian Transport Safety Bureau



ATSB TRANSPORT SAFETY INVESTIGATION REPORT  
Marine Occurrence Investigation No. 254  
Final

Independent investigation into the grounding of the  
Antigua and Barbuda registered container ship

# Francoise Gilot

in Port Phillip, Victoria  
9 May 2008



**Australian Government**  

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InterDynamics' Fatigue Audit InterDyne (FAID)

Figure 3 is reproduced from the Port Phillip Sea Pilots' web page.

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### Abstract

At 0541 on 9 May 2008, the Antigua and Barbuda registered container ship *Francoise Gilot* grounded while transiting the South Channel, Port Phillip, Victoria. The ship had sailed from Melbourne earlier that morning and was departing Port Phillip bound for Sydney.

The ship grounded between beacons 18 and 20 of the South Channel during a starboard turn around the Hovell Pile beacon at the entrance to the Channel. The ship was refloated at 0755 using its main engine following a water ballast transfer operation and it then returned to Melbourne where an underwater inspection of its hull revealed that it had not been damaged during the grounding.

The ATSB investigation found that the helmsman had put the helm to starboard instead of port during the turn around the Hovell Pile beacon and that he was probably affected by fatigue at the time. The investigation also found that neither the Port Phillip pilot nor the ship's master discussed the allocation of roles and responsibilities of the bridge team before the ship left the berth. Consequently, no one was actively monitoring the helmsman's actions when he was executing the pilot's orders and as a result, the helmsman's error was not detected until it was too late to avoid the grounding.

The report identifies a number of safety issues and the ATSB acknowledges the safety actions which have been taken by Reederei Alnwick Harmstorf and the Port Phillip Sea Pilots to address them. The ATSB makes two recommendations associated with two outstanding safety issues.

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# THE AUSTRALIAN TRANSPORT SAFETY BUREAU

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The Australian Transport Safety Bureau (ATSB) is an operationally independent multi-modal bureau within the Australian Government Department of Infrastructure, Transport, Regional Development and Local Government. ATSB investigations are independent of regulatory, operator or other external bodies.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia that fall within Commonwealth jurisdiction, as well as participating in overseas investigations involving Australian registered aircraft and ships. A primary concern is the safety of commercial transport, with particular regard to fare-paying passenger operations.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, relevant international agreements.

## **Purpose of safety investigations**

The object of a safety investigation is to enhance safety. To reduce safety-related risk, ATSB investigations determine and communicate the safety factors related to the transport safety matter being investigated.

It is not the object of an investigation to determine blame or liability. However, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

## **Developing safety action**

Central to the ATSB's investigation of transport safety matters is the early identification of safety issues in the transport environment. The ATSB prefers to encourage the relevant organisation(s) to proactively initiate safety action rather than release formal recommendations. However, depending on the level of risk associated with a safety issue and the extent of corrective action undertaken by the relevant organisation, a recommendation may be issued either during or at the end of an investigation.

The ATSB has decided that when safety recommendations are issued, they will focus on clearly describing the safety issue of concern, rather than providing instructions or opinions on the method of corrective action. As with equivalent overseas organisations, the ATSB has no power to implement its recommendations. It is a matter for the body to which an ATSB recommendation is directed (for example the relevant regulator in consultation with industry) to assess the costs and benefits of any particular means of addressing a safety issue.



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## TERMINOLOGY USED IN THIS REPORT

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**Occurrence:** accident or incident.

**Safety factor:** an event or condition that increases safety risk. In other words, it is something that, if it occurred in the future, would increase the likelihood of an occurrence, and/or the severity of the adverse consequences associated with an occurrence. Safety factors include the occurrence events (e.g. engine failure, signal passed at danger, grounding), individual actions (e.g. errors and violations), local conditions, risk controls and organisational influences.

**Contributing safety factor:** a safety factor that, if it had not occurred or existed at the relevant time, then either: (a) the occurrence would probably not have occurred; or (b) the adverse consequences associated with the occurrence would probably not have occurred or have been as serious; or (c) another contributing safety factor would probably not have occurred or existed.

**Other safety factor:** a safety factor identified during an occurrence investigation which did not meet the definition of contributing safety factor but was still considered to be important to communicate in an investigation report.

**Other key finding:** any finding, other than that associated with safety factors, considered important to include in an investigation report. Such findings may resolve ambiguity or controversy, describe possible scenarios or safety factors when firm safety factor findings were not able to be made, or note events or conditions which ‘saved the day’ or played an important role in reducing the risk associated with an occurrence.

**Safety issue:** a safety factor that (a) can reasonably be regarded as having the potential to adversely affect the safety of future operations, and (b) is a characteristic of an organisation or a system, rather than a characteristic of a specific individual, or characteristic of an operational environment at a specific point in time.

Safety issues can broadly be classified in terms of their level of risk as follows:

**Critical safety issue:** associated with an intolerable level of risk.

**Significant safety issue:** associated with a risk level regarded as acceptable only if it is kept as low as reasonably practicable.

**Minor safety issue:** associated with a broadly acceptable level of risk.



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## EXECUTIVE SUMMARY

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On the afternoon of 8 May 2008, the Antigua and Barbuda registered container ship *Francoise Gilot* berthed in Melbourne, Victoria. The ship was on its first call to Australia and Melbourne was its first port of call.

At 0235<sup>1</sup> on 9 May, a Port Phillip pilot boarded the ship for its departure. The pilot and master discussed the plan to leave the berth and the transit down the River Yarra. At 0305, cargo operations were completed and the departure draughts were 7.1 m forward and 8.3 m aft. At 0314, the last mooring line was let go. The ship then started its outbound passage on an ebb tide.

At 0403, *Francoise Gilot* entered the Western By-pass Channel and began the transit of Port Phillip towards the Hovell Pile beacon, where the ship would be required to complete a starboard turn to enter the South Channel. At 0425, the ship passed the Fawkner Beacon and at 0430, the master stood the chief mate down, to complete some dangerous goods paperwork. At 0438, the autopilot was engaged.

At 0531, the pilot ordered that the ship be returned to hand steering and the helmsman, who had been engaged in various tasks on board since midnight, took the helm. At about 0537, as the ship approached the Hovell Pile beacon with the Rosebud Jetty about 1.6 miles<sup>2</sup> ahead, the pilot started the 90° turn to starboard by ordering 5° starboard rudder.

The pilot, who was conning the ship from the bridge front, was monitoring the ship's progress through the turn using his electronic charting system and visual observation of beacons 18 and 20 out to starboard. The master was monitoring the turn using the ship's radar and electronic charting display information system. However, with no one else on the bridge, the actions of the helmsman went unmonitored.

At 0539½, in order to slow the rate of starboard turn, the pilot ordered 5° port rudder. However, the rate of turn to starboard increased so he ordered 10° port rudder, and then 20° port rudder. This was followed by an order of hard-to-port. On each occasion, the helmsman correctly repeated the pilot's orders but applied starboard helm. Consequently, the ship's rate of turn to starboard rapidly increased. At 0540, when they realised that the rudder was at hard-to-starboard, both the master and pilot yelled 'hard-to-port' to the helmsman. The helmsman then applied the correct helm.

By 0540½, the rudder had reached its hard-to-port position, the ship's speed had decreased to 14.6 knots<sup>3</sup> and the ship's rate of turn to starboard was decreasing. The ship, however, was still turning to starboard and grounding was imminent.

At about 0541, despite various engine and rudder movements, *Francoise Gilot* grounded between beacons 18 and 20; about half the ship's length passed over the toe line<sup>4</sup> of the channel before it came to a complete stop.

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1 All times referred to in this report are local time, Coordinated Universal Time (UTC) + 10 hours.

2 A nautical mile of 1852 m.

3 One knot, or one nautical mile per hour equals 1.852 kilometres per hour.

4 The transition line between the charted depth of a channel and the bank.

At 0754½, the master's efforts to refloat the ship by transferring water ballast and using the main engine were successful and the ship began to slide stern first off the bank.

Following the refloating, the pilot and the master carried out a number of checks on the ship's engine and steering gear to ensure that they were functioning correctly. With the ship's departure from Port Phillip now cancelled, *Francoise Gilot* sailed back to Melbourne without further incident.

The ship was not damaged during the grounding and no pollution resulted.

The investigation found that the helmsman was probably affected by fatigue at the time of the grounding and that the pre-departure information exchange between the master and the pilot did not include the allocation of roles and responsibilities. In addition, it was found that *Francoise Gilot's* safety management system gave no guidance to the master regarding the minimum level of bridge manning during periods of pilotage and consequentially, *Francoise Gilot's* bridge was inadequately manned to enable effective monitoring of the helmsman's actions.

The report identifies a number of safety issues and the ATSB acknowledges the safety actions which have been taken by Reederei Alnwick Harmstorf and the Port Phillip Sea Pilots to address them. The ATSB makes two recommendations associated with two outstanding safety issues.

## 1.1 *Francoise Gilot*

*Francoise Gilot* (Figure 1) is an Antigua and Barbuda registered cellular container ship. It is owned by MS Francoise Gilot Schiffahrts, Germany and managed by Reederei Alnwick Harmstorf, Germany. It was built by Yangzijiang Shipbuilding, China in 2005 and, at the time of the incident, was classed with Germanischer Lloyd (GL).

**Figure 1:** *Francoise Gilot*



*Francoise Gilot* has an overall length of 161.3 m, a breadth of 25.0 m and a deadweight of 17 350 tonnes at its summer draught of 9.5 m.

The ship has four cargo holds located forward of the accommodation which are serviced by seven hatches. Two cargo cranes are located on the port side between container bays 07/09 and 23/25. The ship's total cargo capacity is 1338 TEU<sup>5</sup>, 470 of which can be refrigerated.

*Francoise Gilot*'s navigation bridge is equipped with a range of navigational equipment in accordance with SOLAS<sup>6</sup> requirements. This includes two Raytheon Marine automatic radar plotting aid (ARPA) radars, a Raytheon Marine Pathfinder electronic charting display information system (ECDIS), two Furuno GP-90 global position system (GPS) units, a Furuno FE700 echo sounder and a Furuno VR-5000 voyage data recorder (VDR).

Propulsive power is provided by a single MAN B&W 8S50MC-C diesel engine producing 12 640 kW. The engine drives a single, right handed, fixed-pitch propeller which gives the ship a service speed of 19.3 knots.

The ship has a single Kawasaki 800 kW bow thruster and a single semi-balanced spade rudder. The rudder is hydraulically actuated and has a maximum, or hard over, angle of 35°. When both of the ship's steering pumps are running, it takes

<sup>5</sup> Twenty-foot Equivalent Unit, a standard shipping container. The nominal size of a ship in TEU refers to the number of standard containers that it can carry.

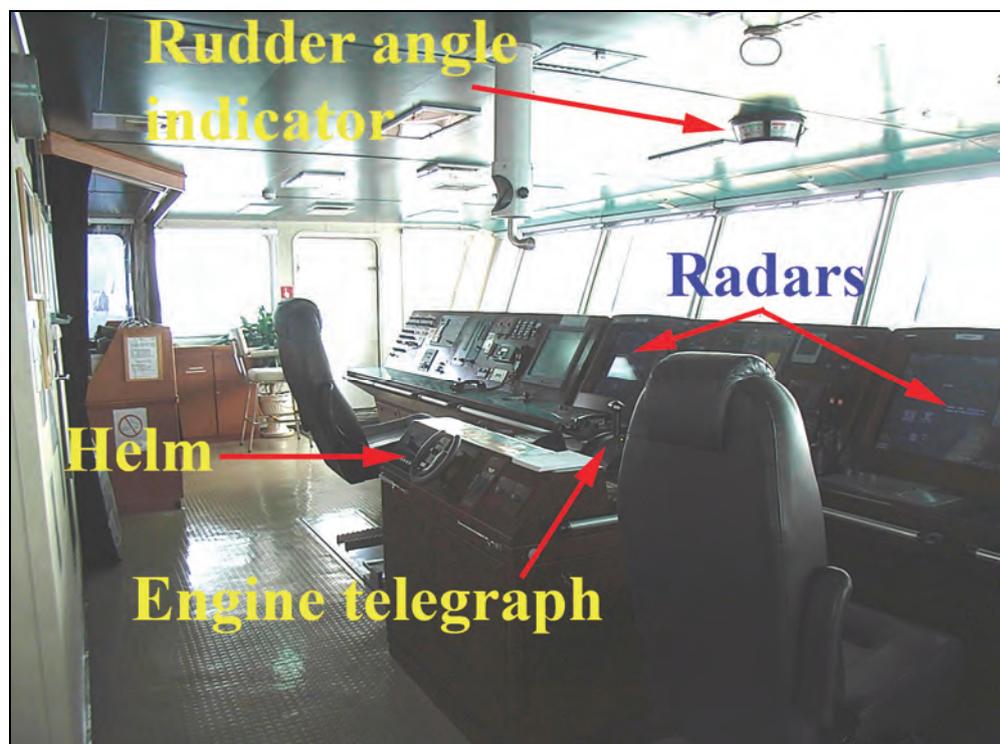
<sup>6</sup> The International Convention for the Safety of Life at Sea, 1974, as amended.

12.8 seconds for the rudder to move from hard-to-port to hard-to-starboard. Without the propeller turning, a minimum speed of 2.1 knots through the water is required for the ship to maintain steerage.

*Francoise Gilot* is a ship which can be considered ‘directionally unstable’. When the ship is turning at a steady rate of turn (RoT) and the rudder is returned to midships, the ship will maintain the turn as a residual RoT persists. This differs from a ‘directionally stable’ ship where, when the rudder is returned to midships, the RoT gradually reduces to zero and the ship takes up a new straight path<sup>7</sup>.

The ship’s helm is located behind the engine and associated machinery control panels in the wheelhouse (Figure 2). This position is between the ship’s radar displays and has a clear view of the three-faced rudder angle indicator, which is mounted on the centreline of the wheelhouse deckhead.

**Figures 2: Steering position and location of rudder angle indicator**



At the time of the incident, *Francoise Gilot*’s crew comprised five Ukrainian and 14 Filipino nationals. All the mates and engineers held the necessary qualifications to sail on the ship.

The master held a Ukrainian master’s certificate of competency and had 26 years of seagoing experience. He had served on various ship types, including extensive experience on ice breaking ships in Russian waters. He had sailed as master since 2004 and had been on board *Francoise Gilot* since the ship’s owners acquired it on 31 January 2008.

The seaman at the helm at the time of the incident had joined the ship on 31 January 2008. He had been at sea since 2001 and held a deck rating certificate of

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<sup>7</sup> Rawson, K. & Tupper, E. *Basic Ship Theory*, Butterworth Heinemann, fifth edition, 2001, p537.

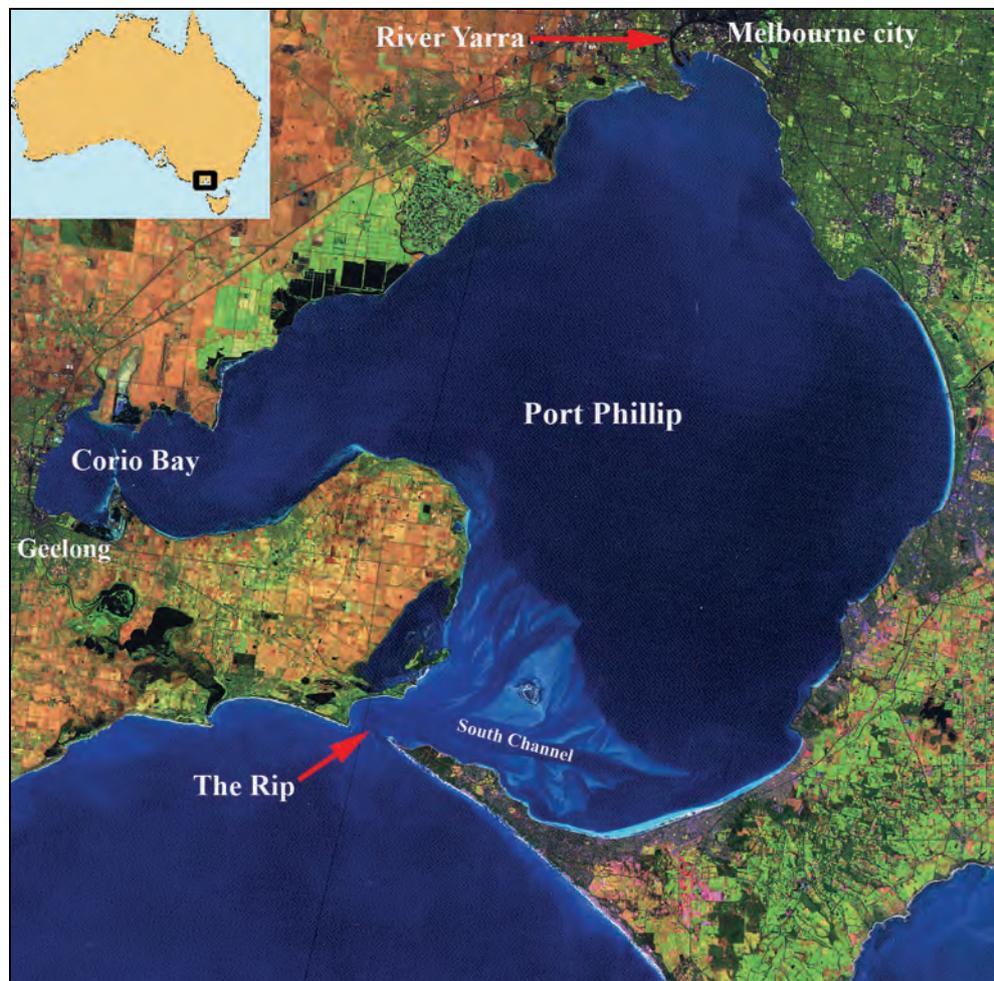
competency issued in the Philippines in October 2005. *Francoise Gilot* was the third ship he had served on with the company.

The Port Phillip pilot on board the ship for its departure from Melbourne began his seagoing career in 1984 when he joined the Royal Australian Navy (RAN). He left the RAN in 1996 and obtained an Australian second mate's certificate of competency after a period of study at the Australian Maritime College. He worked on various types of ships around the Australian coast and obtained his master's certificate of competency in 2002. Prior to joining the Port Phillip Sea Pilots in February 2007, he had sailed as master on a number of different ship types.

## 1.2 Port Phillip

Port Phillip is located in Victoria, Australia and is an extensive bay which is over 30 miles long from its entrance in the south to its northern end (Figure 3).

**Figure 3: Port Phillip**



The port of Melbourne is situated at the head of the bay and the port of Geelong is located on Corio Bay, which forms the western arm of Port Phillip.

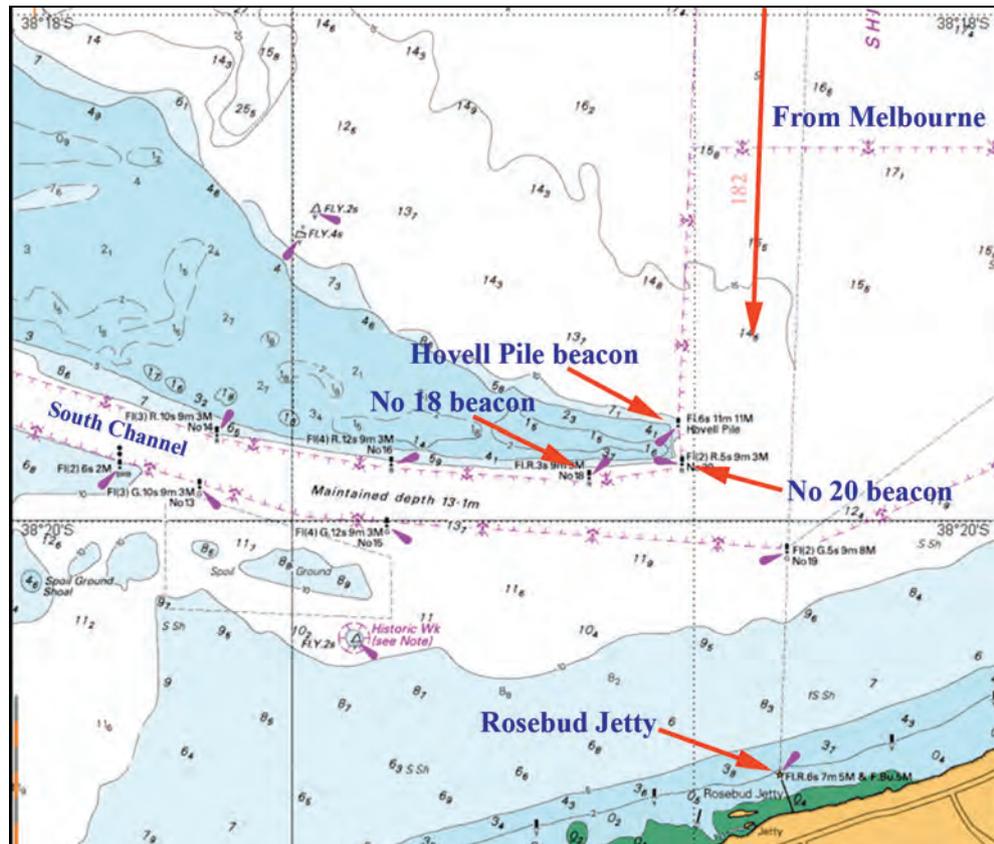
Melbourne is Australia's busiest container port, handling 2.256 million TEUs between July 2007 and June 2008<sup>8</sup>. At the time of the incident, Melbourne handled about 38 per cent of Australia's container trade. Overall, including bulk and tanker cargoes, Melbourne has about 3500 merchant ship visits per year, with Geelong having a further 500.

Ships departing the port of Melbourne generally follow a course of 182° (T) after passing the Fawkner Beacon, near the northern end of Port Phillip (Figure 5). When approaching the South Channel, ships turn to starboard through about 90° around the Hovell Pile beacon and number 20 beacon (Figure 4). They then enter and transit the South Channel before leaving Port Phillip through the heads, known as 'The Rip', between Point Lonsdale and Point Nepean (Figure 3).

The South Channel has a maintained depth of 13.1 m between beacons 14 and 20. The seabed to the west of the Hovell Pile beacon (Figure 4) and to the north of the toe line between beacons 14 and 20 is made up of sand and shoals quickly.

Pilotage within Port Phillip is compulsory for ships over 35 m in length which do not have pilotage exempt masters.

**Figure 4: Section of navigational chart Aus 158**



<sup>8</sup> Port of Melbourne Corporation Annual Report 2007-08.

## 1.3 The incident

In the early hours of 9 May 2008, *Francoise Gilot* was berthed starboard side alongside Number Two East Swanson Dock in Melbourne, Victoria. The ship's next ports of call were scheduled to be Sydney, New South Wales and then Brisbane, Queensland.

At 0200, preparations for departure began and the ship's navigational equipment was tested in accordance with shipboard procedures. All equipment was found to be operational and the ship's two steering pumps were started in preparation for departure. The tide in Port Phillip that morning was ebbing, with the predicted low water at 0730 being 0.08 m above chart datum.

At 0235, the Port Phillip pilot boarded the ship and was escorted to the bridge. At about 0240, he met the master and they began the pre-departure information exchange.

The pilot completed his standard departure plan documentation. He and the master then discussed where the tug would be made fast aft, how the pilot would manoeuvre the ship off the berth, swing it in the basin and the speeds that would be required as the ship proceeded down the River Yarra. He advised the master that, because a dredge was operating in the main Port Melbourne Channel that morning, *Francoise Gilot* would be proceeding down the Western By-pass Channel (Figure 5). He also told the master to challenge any order or direction that was given, should the master feel the necessity to do so.

As cargo operations were not completed at this time, only the master and pilot were present for the pre-departure information exchange.

By 0305, cargo operations, including the lashing of the deck containers by the ship's crew, were completed. The ship's draughts on departure were 7.1 m forward and 8.3 m aft. The weather was fine and clear, with light winds experienced in the river and Port Phillip.

At 0312, when all shore personnel had left the ship, the gangway was raised and the tug was made fast aft. By 0314, all the ship's lines had been let go and the pilot began to manoeuvre the ship off the berth and into the centre of Swanson Dock. He then manoeuvred the ship astern into the swing basin and began to swing the ship. By 0330, the swing had been completed and the tug was released. The pilot then began to con<sup>9</sup> the ship out of the river.

At 0359, *Francoise Gilot* passed the Williamstown Breakwater and at 0403, the ship entered the Western By-pass Channel, at a speed<sup>10</sup> of about 11 knots.

At 0403, the helmsman was changed. The relieving helmsman had been on duty since midnight and, following the completion of cargo lashing operations, had been on the aft deck for departure, where he had assisted in preparing the ship for sea.

At about 0405, the boatswain was stood down from the forecastle and informed that he would be required to go forward after about 90 minutes. Shortly afterwards, the pilot ordered a course of 182° (T) to be steered. At 0423, the pilot advised the master that he could begin to increase the ship's speed to full sea speed. He then

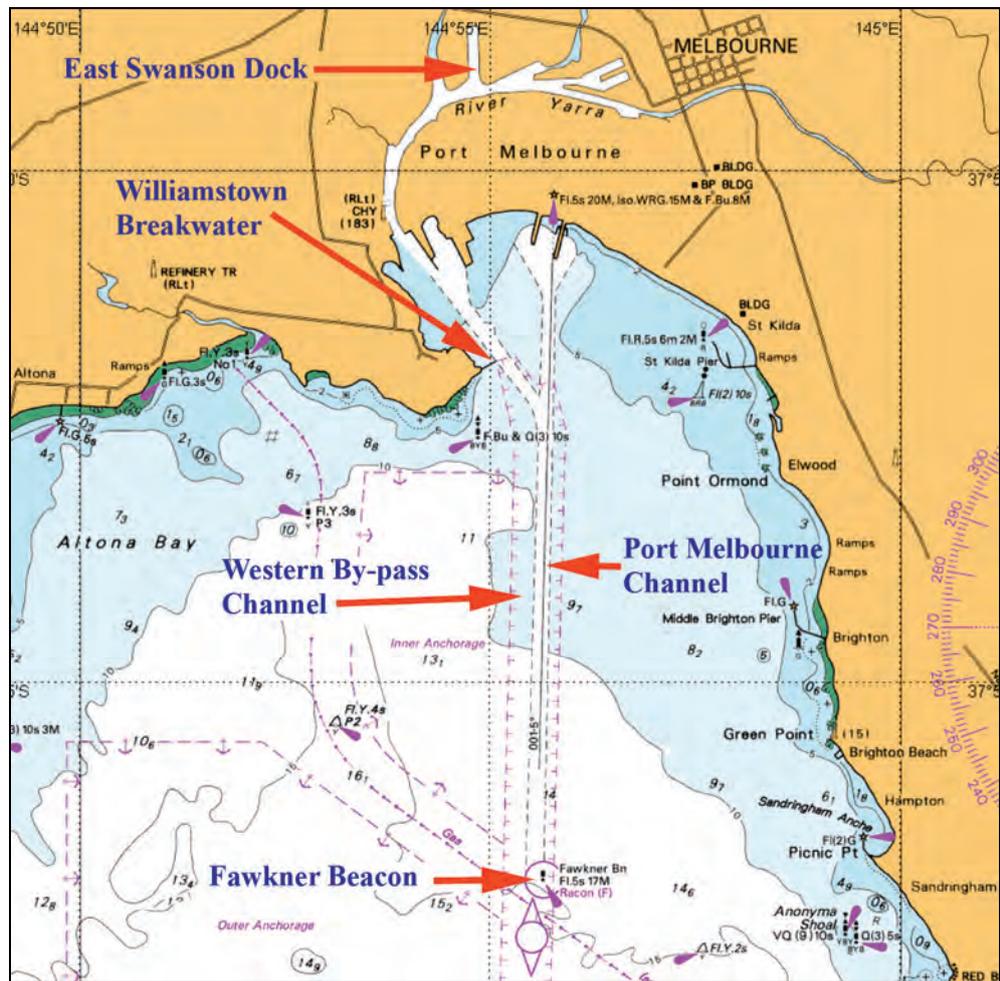
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9 To guide or direct a ship by giving orders to the helmsman.

10 All speeds referred to in this report are 'made good / over the ground'.

adjusted the course to 180° (T). At 0425, *Francoise Gilot* passed the Fawkner Beacon.

**Figure 5: Section of navigational chart Aus 143**



At about 0430, the master allowed the chief mate to leave the bridge for the passage between the Fawkner and Hovell Pile beacons so that he could deal with some dangerous goods documentation. This left the master, the pilot and the helmsman on the bridge.

At 0437½, after the ship had passed the transit buoys in the Port Phillip shipping fairway, the pilot advised the master that the ship could be put into automatic steering, on a course of 182° (T).

At 0515, the ship was in position 38°12.3'S 144°54.7'E. Its speed was 19.1 knots and it was making good a course of 182° (T). At 0520, the pilot began to discuss his plan for the ship's passage through 'The Rip' with the master.

That morning, there were two inbound ships which *Francoise Gilot* would pass during its passage out of Port Phillip. However, only one, *MSC Edith*, would be passed in the South Channel, as *Searoad Mersey* had rounded the Hovell Pile beacon and was making its way up the bay towards Melbourne.

As the ship made its way down Port Phillip, the helmsman, who had been working since midnight, was feeling tired and asked the master if he could make himself a

cup of coffee. After making the coffee, the helmsman returned to stand near the steering console.

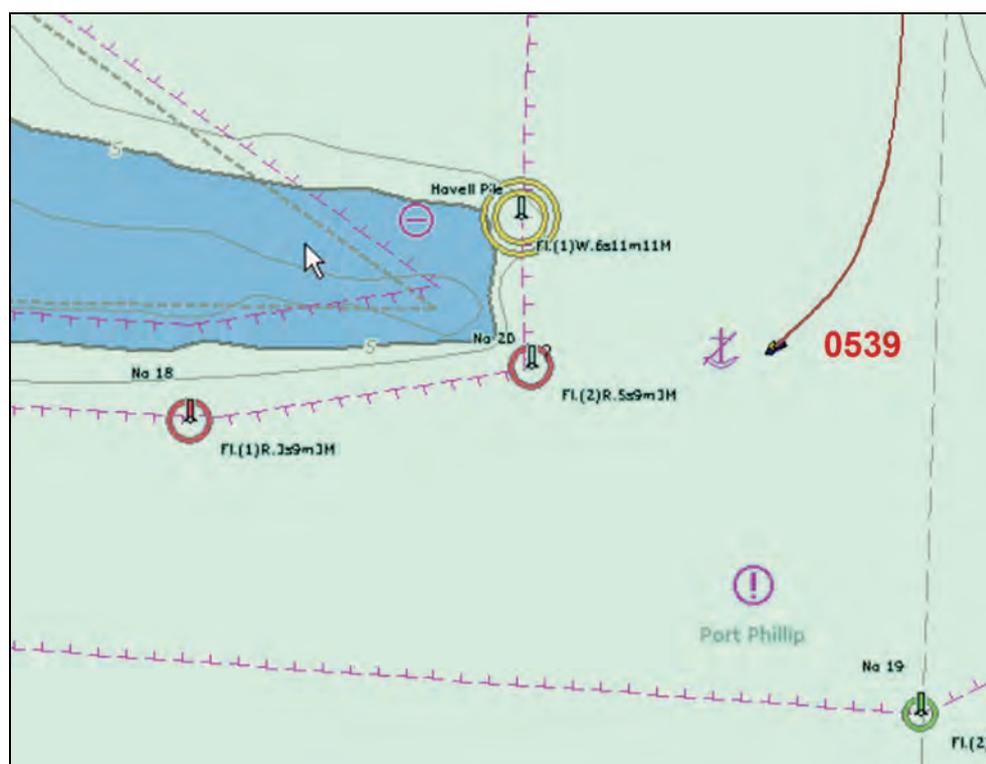
At about 0530, *Searoad Mersey* passed to port.

At 0531½, the pilot ordered that the ship be returned to hand steering. The helmsman took the wheel and he was instructed to steer a course of 180° (T).

At about 0532, the pilot asked the master to set the radar's variable range marker (VRM) to 1.6 miles. He advised the master that when the VRM indicated that the Rosebud Jetty, on the shore ahead (Figure 4), was 1.6 miles off, he would begin to turn the ship to starboard through about 90° to bring it around beacon 20 and into the South Channel. He also advised the master that he would be visually checking the wheel over position; when the Hovell Pile beacon and beacon 18 were in transit<sup>11</sup>, the ship would be 1.6 miles off the jetty. He further advised the master that he would be using 5° of starboard rudder during the turn and that he would be taking it 'nice and slowly'. The master agreed with this course of action.

At 0534, the master, following consultation with the pilot, began to reduce the ship's speed in preparation for the turn and the transit through the South Channel. Shortly afterwards, the master asked the boatswain to prepare the pilot ladder on his way forward.

**Figure 6: Port of Melbourne's AIS image of *Francoise Gilot's* position at 0539 (ship-shape not to scale)**



At 0537½, with the Rosebud Jetty 1.6 miles ahead, the pilot ordered 'starboard five'. At 0538, the ship's RoT to starboard was 44 degrees per minute and in order to slow the starboard RoT, the pilot ordered 'midships', then 'port five' and shortly

<sup>11</sup> When two or more fixed objects are observed to be in line.

afterwards, 'port ten'. At 0539<sup>1</sup>/<sub>4</sub>, with the ship turning to starboard at a rate he was satisfied with, the pilot ordered 'midships' (Figure 6). The ship continued to turn to starboard and he maintained a visual check on the turn by observing the ship's position relative to beacons 18 and 20. The master was checking the turn by observing the ship's position on the ECDIS display and radar.

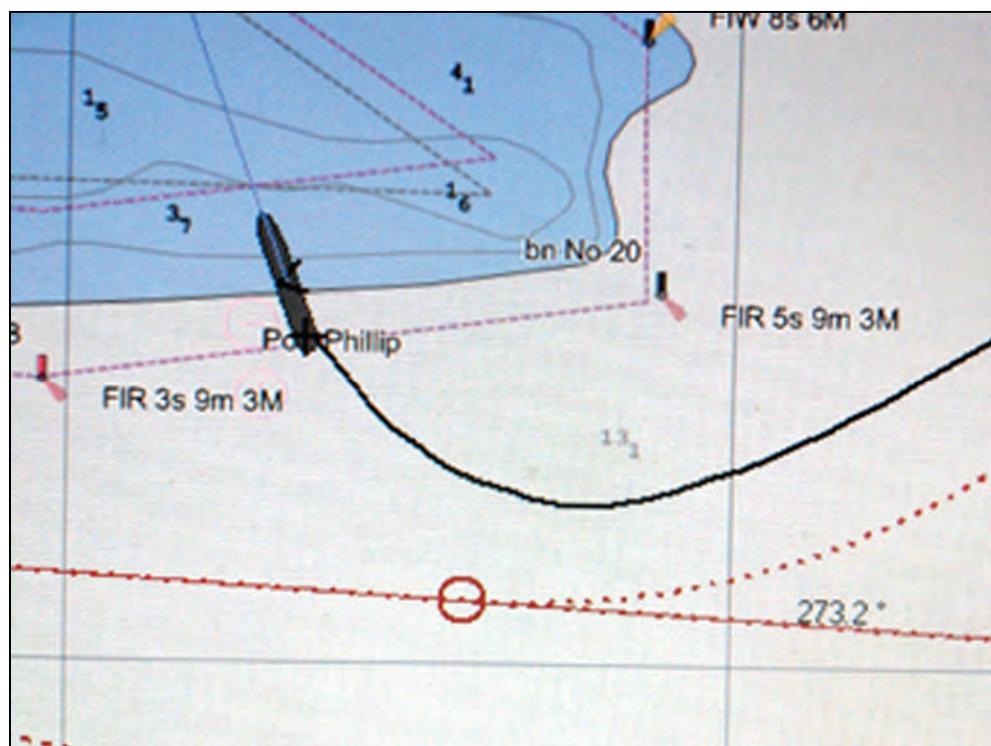
At 0539<sup>1</sup>/<sub>2</sub>, in order to slow the starboard turn, the pilot ordered 'port five'. However, the swing to starboard continued. Soon afterwards, he ordered 'port ten' and then immediately 'port 20'. This was followed by an order of 'hard-to-port'. On each occasion, the helmsman correctly repeated the pilot's orders but the ship continued to turn to starboard. At 0540, with the ship's RoT at 75° degrees per minute to starboard, both the master and pilot realised that the rudder was at hard-to-starboard. They then yelled 'hard-to-port' to the helmsman, who immediately put the helm hard-to-port.

With the rudder now moving to port, the pilot ordered full astern on the engine. By this time, the ship was turning to starboard at a rate in excess of 100° degrees per minute.

By 0540<sup>1</sup>/<sub>2</sub>, the rudder had reached its hard-to-port position, the ship's speed had decreased to 14.6 knots and the RoT to starboard had reduced to 77° degrees per minute.

By 0540<sup>3</sup>/<sub>4</sub>, the RoT had reduced further to 36° degrees per minute and the speed had decreased to 10.5 knots. The ship, however, was still turning to starboard and grounding was imminent.

**Figure 7: Pilot's electronic chart image showing ship's track and final grounding position (ship-shape to scale)**



At about 0541, despite a number of engine and rudder movements, *Francoise Gilot* grounded between beacons 18 and 20 in position 38°19.8'S 144°53.7'E, on a

heading of about 340° (T) (Figure 7). About half the ship's length had passed over the toe line of the channel before the ship came to a complete stop.

At 0544, the pilot notified Port of Melbourne Harbour Control of the grounding.

The master then took over the conduct of the ship from the pilot and attempted to move the ship off the bank using the ship's engines, bow thruster and various rudder movements. This had no effect and the ship remained aground.

Soundings around the ship were taken, as were soundings of the ship's forward compartments. The soundings confirmed that the ship was aground over half its length, the hull had not been breached and that there was no pollution.

The pilot continued to notify relevant parties and monitor communications. He also assisted the master in his endeavours to refloat the ship.

Following notification of the grounding, the duty officers in the Port of Melbourne control tower activated the port's Emergency and Incident Notification and Response Activation (EINRA) plan. At 0600, the harbour master and the Australian Maritime Safety Authority (AMSA) were notified and, at 0609, the ship's local agent was informed of the grounding.

In an attempt to refloat the ship before the tide had finished ebbing, *Francoise Gilot*'s master ordered that water ballast be discharged from the ship's forward ballast tanks. When this was done, he ordered the chief mate to transfer water ballast from one side of the ship to the other, using the ship's port and starboard heeling tanks, in an effort to break the suction effect of the bank on the ship's hull by using a slight 'rocking' motion. While this was being done, the master used dead slow astern and full astern movements on the ship's engine in an attempt to move the ship astern.

At about 0640, two harbour tugs departed their Melbourne berths for *Francoise Gilot*, with an estimated time of arrival at the grounding position of between 0920 and 0930.

At 0750, a second Port Phillip pilot boarded *Francoise Gilot* by launch to relieve the first pilot, who left the ship about 30 minutes later.

At 0754½, the master's efforts to refloat the ship were successful and it began to slide stern first off the bank. Following the refloating, the pilot and the master carried out a number of checks on the ship's engine and steering gear to ensure that they were functioning correctly. With the ship's departure from Port Phillip now cancelled, *Francoise Gilot* sailed back to Melbourne without further incident, escorted by one of the tugs, which had rendezvoused with the ship en route.

At 1000, *Francoise Gilot* was anchored in the northern anchorage until a suitable berth became available. The ship was detained by AMSA pending confirmation from the ship's classification society, GL, that it was seaworthy.

At 0833 on 10 May, *Francoise Gilot* berthed at Station Pier, where an underwater inspection of its hull was carried out. The inspection revealed that the ship had not been damaged by the grounding. Following advice from GL, AMSA released the ship from detention and it departed for Sydney at about 1600 on 10 May.



## 2.1 Evidence

On 9 May 2008, two investigators from the Australian Transport Safety Bureau (ATSB) attended the Port of Melbourne Harbour Control tower and took copies of the port's voice and radar/automatic identification system (AIS) recordings pertaining to the grounding.

On 10 May, the ATSB investigators attended *Francoise Gilot* after the ship berthed in Melbourne. The ship's master and the helmsman were interviewed and copies of relevant documents and records were taken. The evidence included copies of the navigational chart used, the log books, bell books, passage plans, running check lists and various procedures.

On 11 May, the investigators interviewed the pilot and obtained a copy of his electronic chart system (ECS) replay.

On 14 May, an ATSB investigator attended *Francoise Gilot* when it berthed in Brisbane, Queensland and data from the ship's voyage data recorder (VDR) was taken.

Additional information was provided by *Francoise Gilot*'s operators and the Port Phillip Sea Pilots.

## 2.2 The grounding

*Francoise Gilot* grounded during a starboard turn around the Hovell Pile beacon. The pilot had the conduct of the ship, and the master and the helmsman were the only other people on the bridge at the time.

The pilot was aware of the ship's directional instability so he ordered a small starboard rudder movement of 5° to start the turn. Once the ship was turning to starboard, he quickly brought the rudder back to midships and in order to maintain a starboard RoT that he was comfortable with. His subsequent helm orders to port were initiated with the ship's directional instability in mind.

Prior to the turn, the pilot was expecting to have to apply counter helm several times during the turn to stop the ship's RoT to starboard from increasing. This expectation might have resulted in him being slower to realise that the ship was not responding to his initial orders for port rudder at about 0538.

As the ship progressed through the turn, the helmsman correctly repeated the pilot's helm orders but applied the opposite helm. It was not until 0540, when the master looked at the helmsman and saw that the helm was hard-to-starboard that the master realised why the ship was not responding to the port helm order and was still turning to starboard. At this time, the pilot also realised that something was wrong and both he and the master yelled 'hard-to-port'.

The helm was then put to port and the rudder began to move to port and the very large RoT to starboard began to reduce. The pilot ordered full astern on the main engine but by 0540½, in the confined waters in the vicinity of the Hovell Pile

beacon, grounding was imminent. Although the ship's speed was reducing, the pilot and master were not able to do anything further to prevent the ship from grounding.

The Port of Melbourne traffic management officers monitor vessel movements within Port Phillip using radar and AIS information. By the time that the duty officer was aware that *Francoise Gilot* was turning too rapidly to starboard during the turn, there was insufficient time for him to bring it to the attention of the pilot before the ship grounded.

The helmsman had been working on deck since coming on duty just before midnight and was feeling tired when he came onto the bridge at about 0400. His initial error in putting the helm to starboard instead of port was not observed by the pilot or the master, the only other people on the bridge at the time, as they were preoccupied with monitoring the ship's starboard turn. There was no officer of the watch (OOV) present on the bridge for the turn into the South Channel and no member of the bridge team had been allocated the task of monitoring the helmsman's actions, in accordance with proper bridge resource management (BRM) principles.

A simple error on the part of the helmsman resulted in the ship running aground. Had the task of monitoring his actions, in accordance with BRM principles, been carried out, the error would have been picked up immediately and corrective action applied. This type of error is not uncommon during pilotage and the ATSB has investigated several groundings which were the result of the helm being applied in the wrong direction (Marine Safety Investigation Reports 227 - *Crimson Mars* and 190 - *Tauranga Chief*).

## 2.3 Allocation of bridge tasks

The pilot and master conducted an information exchange prior to departing Melbourne. As a result of the ongoing cargo operations, no other member of the bridge team was present for the exchange. The pilot completed the standard Port Phillip passage plan and explained his intentions with regard to moving the ship off the berth, swinging it and then its passage down the River Yarra. However, neither he nor the master discussed the roles and responsibilities of members of the bridge team for the passage.

There are several international publications available to ship operators and pilotage authorities which provide guidance on what information should be covered during the master/pilot exchange. Those publications specifically discuss the importance of allocating clearly defined roles and responsibilities for members of a bridge team while a ship is under pilotage.

With regard to the master/pilot exchange, section 6.3 of the International Chamber of Shipping's (ICS) *Bridge Procedures Guide* states that:

The exchange of information regarding pilotage and the passage plan should include clarification of:

- roles and responsibilities of the master, pilot and other members of the bridge management team.

In December 2003, the International Maritime Organization (IMO) adopted Resolution A.960(23) which contains recommendations on operational procedures for maritime pilots (other than deep-sea pilots). This document states that:

Despite the duties and obligations of a pilot, the pilot's presence on board does not relieve the master or officer in charge of the navigational watch from their duties and obligations for the safety of the ship. It is important that, upon the pilot boarding the ship and before the pilotage commences, the pilot, the master and the bridge personnel are aware of their respective roles in the safe passage of the ship.

When roles and responsibilities are allocated, all members of a bridge team can be confident that critical tasks will be undertaken by a responsible person. Therefore, the risk of somebody assuming that another person is undertaking a particular role is greatly reduced.

The allocation of roles and responsibilities was discussed in the BRM section in the ship's bridge log book which, apart from generically referring to the *Bridge Procedures Guide* for assistance in preparing guidance, stated:

Companies should also issue guidance to masters and officers in charge of the navigational watch on each ship concerning the need for continuously reassessing how bridge-watch resources are being allocated and used, based on bridge resource management principles such as the following:

- Duties should be clearly and unambiguously assigned to specific individuals who should confirm that they understand their responsibilities.

However, the master of *Francoise Gilot* was not provided with any further guidance as there was no requirement in the ship's safety management system (SMS) regarding the allocation of roles and responsibilities of bridge team members during pilotage.

When a pilot joins a ship, the pilot becomes a senior member of the bridge team and should work with the master to ensure that roles and responsibilities are appropriately allocated to other members of the team.

At the time of the grounding, the Port Phillip Sea Pilots' SMS provided guidance to their pilots in regard to the information which was to be covered during a pilot/master information exchange. The relevant procedure emphasises the need for the pilot to be:

part of the bridge team and to promote a team approach by fostering a good bridge team/pilot relationship, emphasising good communications and use of bridge resource management and efficient watchkeeping techniques.

The procedure also refers to the 'exchange of relevant information regarding the intended passage as per the requirements set out in the latest edition of the ICS *Bridge Procedures Guide*'. However, no specific mention was made of the need to ensure that roles and responsibilities are allocated to members of the bridge team, in accordance with shipboard practices and procedures, for the pilotage.

Furthermore, the passage plan completed by the pilot after he boarded the ship on 9 May did not mention the need to ensure that roles and responsibilities were allocated. Therefore, the pilot was not reminded that this important aspect of the task needed to be covered.

The pilot and the master conducted the information exchange in a manner that satisfied all the requirements of the Port Phillip Sea Pilots' SMS and they had a shared understanding, or a 'shared mental model', of how the passage out of Port Phillip would be conducted. However, had the two men discussed the allocation of

specific roles and responsibilities for members of the bridge team, it would have been apparent to both of them that several critical roles, including that of monitoring the helmsman, were not assigned to a particular officer and might not be adequately carried out when there was no officer of the watch on the bridge.

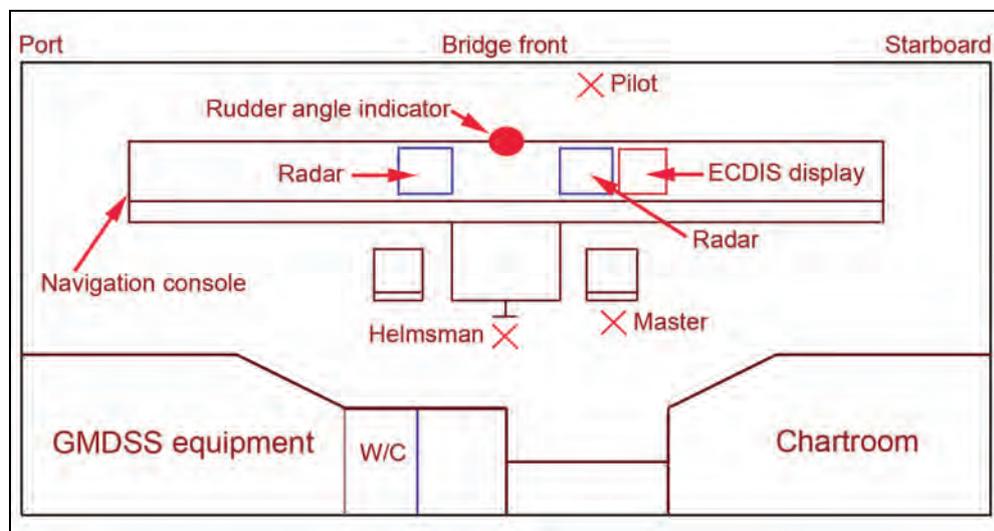
## 2.4 Monitoring the helmsman

The pilot and master were actively monitoring each other and the ship's position as it approached and entered the turn around the Hovell Pile beacon into the South Channel.

Prior to the turn around the Hovell Pile beacon, the pilot had set up his laptop computer, on which his electronic charting program was running, immediately behind the bridge windows (Figure 8). From there he could easily see the Hovell Pile beacon and number 18 and 20 beacons to starboard. It was from this position that he conned the ship into the turn, monitoring the electronic chart and the beacons. However, from this conning position, he could not see the rudder angle indicator without stepping back from the bridge front and looking up and over his left shoulder.

The pilot used closed-loop communications<sup>12</sup> when he gave his helm orders and used hand signals to enhance his verbal orders. However, the helmsman was concentrating mainly on the ship's heading and did not take any notice of the hand signals. Had he done so, he may have been prompted to follow the hand signals and this, combined with the pilot's verbal orders, should have resulted in him putting the helm in the correct direction.

**Figure 8: Diagram showing general bridge layout and the positions of the pilot, the master and the helmsman (drawing not to scale)**



The master was standing to starboard of the helmsman looking at the ship's radar and electronic charting display information system (ECDIS) displays (Figure 8) and from there he could easily see the rudder angle indicator and the helm. However, he

<sup>12</sup> A form of communication aimed at providing a defence against a misunderstanding between the sender and receiver. It consists of three steps: the sender sends a message, the receiver repeats the keywords of the message and the sender confirms that the repeated message is correct.

was focused on monitoring the ship's position and the pilot's actions during the turn and did not look at either the rudder angle indicator or the helmsman at any time in the minutes leading up to the turn or when the ship started to turn to starboard.

The role of monitoring the helmsman had not been discussed before the ship left the berth. Consequently, neither the pilot nor the master was actively monitoring the helmsman during the critical turn to starboard around the Hovell Pile beacon. As a result, the helmsman's simple, initial error went unnoticed and uncorrected until it was too late to stop the ship from grounding.

## 2.5 Bridge manning

When a pilot has the conduct of a ship, it is the role of the bridge team to monitor the pilot's actions, in addition to performing their own duties, with the aim of practicing effective BRM. The bridge team should endeavour to ensure that 'single-person errors' are not made, or if they are, that they are identified as quickly as possible and corrective action is applied.

Despite the fact that the BRM section of *Francoise Gilot's* bridge log book contained a statement highlighting that watch manning should be sufficient to ensure that all duties can be performed effectively, the ship's SMS provided no guidance to the master regarding the minimum level of bridge manning during periods of pilotage. However, it is usual and good navigational practice on ships under pilotage for the pilot and master to be assisted by an OOW and a helmsman. This gives the bridge team sufficient numbers to be able to properly carry out all the tasks necessary to ensure the ship's safe navigation.

This is particularly important in areas of restricted navigation and manoeuvrability, such as a narrow channel or port approaches. Having an OOW on the bridge with a ship's master is an important consideration for the ship's safe navigation. The presence of an OOW enables the master to maintain oversight of all of the bridge activities, including the important task of monitoring the actions and orders of a pilot on board. The master's oversight role is critical in that he or she is in the unique position of being able to comfortably 'manage up' (for the pilot) and 'manage down' (for the rest of the bridge team) and therefore reduce the risk of 'single-person errors' occurring at all levels of bridge organisation.

However, in these circumstances, if the master is also carrying out the role of the OOW, his or her ability to effectively carry out the oversight function is severely reduced.

*Francoise Gilot* was on its first visit to Australia and this was the crew's first departure from Melbourne. As a result, there should have been a heightened level of vigilance by the master and his officers during the passage out of Port Phillip.

At 0430, when the master stood the chief mate down, only the pilot, the master and the helmsman were left on the bridge, with the master also undertaking the duties of the OOW in addition to his own.

In submission, the ship's managers stated that the master's decision to release the chief mate from his OOW duties were the result of the master believing that, given the chief mate's workload while the ship was berthed in Melbourne and his subsequent level of fatigue, it would be difficult for the chief mate to discharge all his duties while keeping the full 0400 to 0800 watch.

The weather was clear and the level of traffic in Port Phillip that morning was light. Therefore it was not unreasonable for the master to stand the chief mate down for the passage down Port Phillip as the master could have easily undertaken both his and the OOW duties while the ship was steering a southerly heading, on autopilot, and in relatively open water.

However, the turn into, and the transit of, the South Channel was a critical phase of *Francoise Gilot's* passage. Bridge manning, at that time, should have been sufficient to enable effective monitoring of the ship's position and usual navigational activities being undertaken by members of the bridge team, including monitoring the helmsman's actions.

Although the master told the boatswain to go forward as the ship approached the Hovell Pile beacon, this action did not prompt him to recall the chief mate to the bridge in preparation for the passage through the South Channel.

The pilot was not aware that the chief mate had not been recalled to the bridge. The pilot had conducted many pilotages in Port Phillip and was aware of the usual roles of bridge team members during the transit of the South Channel, especially for the critical initial turn. Therefore, the pilot was in a position to suggest that extra personnel be on the bridge if he felt that they would be required. Therefore, as the ship approached the Hovell Pile beacon, it would have been reasonable for the pilot to remind the master that if the chief mate was not on the bridge, the master may wish to recall him if he felt the need to do so, before the ship entered the South Channel.

As the ship approached the Hovell Pile beacon, the bridge was effectively one person short. The important duties that the chief mate, in his role as the OOW, would have normally carried out, were to be done by the master or not done at all.

Overall bridge manning on *Francoise Gilot* in the period leading up to and during the turn into the South Channel, was insufficient to ensure that all the necessary functions, including that of monitoring the actions of the helmsman, were being performed on the bridge. Had there been a dedicated OOW present, the actions of the helmsman may have been properly overseen and the initial error of putting the helm to starboard may have been identified and corrected, well before the ship was in a situation where nothing could be done to prevent the grounding.

## 2.6 The helmsman

*Francoise Gilot's* grounding was the direct result of the helmsman applying starboard instead of port helm. The helmsman, who had been on the ship for a little over three months, was usually reliable and the master had not had any concerns about his ability or performance in the past.

On 8 May, the day before the grounding, the helmsman worked from 0600 hours to 1800 hours. He then had a meal and telephoned his family in the Philippines. He went to bed at about 2130 and awoke at 2340 to prepare for starting work at midnight. From midnight until going to the bridge at about 0400, he was engaged in several tasks that required physical exertion, such as lashing containers on deck prior to the ship departing the berth.

Towards the end of the turn around the Hovell Pile beacon, after the pilot gave his orders, the helmsman correctly repeated them. However, he put the helm the opposite way. At interview, he stated that he had blanked out momentarily but

thought that he was applying port helm. He also stated that he was feeling tired when he came onto the bridge to relieve the previous helmsman and had felt the need to have an 'energy drink'<sup>13</sup>. At 0531½, just before taking the helm, he was feeling tired and asked the master if he could make himself a cup of coffee.

However, the helmsman did not mention to the master that he was feeling tired. The master did not ask him how he was feeling as it is commonplace on ships for crew members to make themselves a cup of coffee during a watch. Consequently, no one on the bridge was aware that the helmsman was tired when he took the helm.

## 2.7 Fatigue and alertness

The helmsman indicated that he was tired when he came onto the bridge at 0400. At best, he had slept, in two sessions, for only four of the previous 24 hours. Although he did have a couple of hours sleep before he came on duty at midnight, the quality of that sleep cannot be accurately determined. However, the operational environment of a container ship in port means that there is significant noise associated with loading and discharging containers and it is likely that his sleep was interrupted to some degree.

Having had at best two hours sleep before duty, he then undertook four hours of manual labour. When he subsequently came to the bridge, he was feeling tired and still had at least two hours of helmsman duty ahead of him. This feeling of tiredness would only have been exacerbated by the fact that he stood in the darkened wheelhouse and while there, the only stimuli he had to keep his mind active was the helm and the gyro display as he observed them during the ship's transit between the Fawkner and Hovell Pile beacons.

Fatigue is an important consideration in an operational environment because it can significantly impair human cognitive and physical performance and erode the safety margin of operations. Fatigue can have a detrimental effect on attention, reaction time and memory. Tasks requiring sustained attention and rapid reaction times are particularly affected by fatigue.

The IMO's A.21/Resolution 884 (Guidelines for the investigation of human factors in marine casualties and incidents) defines fatigue as:

A reduction in physical and/or mental capability as the result of physical, mental or emotional exertion, which may impair nearly all physical abilities, including: strength; speed; reaction time; coordination; decision making, or balance.

Fatigue is the result of the combined interaction of the body's natural circadian rhythm<sup>14</sup> in alertness/sleepiness and the effects of inadequate sleep. Alertness follows a 24 hour cycle, with 'peak alertness' typically occurring near the middle part of the day, and 'low alertness' occurring between 0300 and 0500.

As fatigue increases, a person becomes more susceptible to 'microsleeps'. A microsleep is a brief episode of sleep which may last for a fraction of a second or up to 30 seconds. Microsleeps are associated with events such as a blank stare, head snapping and prolonged eye closure, and with automatic behaviour, such as some

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13 Cold beverage containing a high level of caffeine or some other stimulant used to boost energy.

14 The regular recurrence, in cycles of about 24 hours, of biological processes or activities, such as hormone secretion, sleeping, eating, sensitivity to drugs and stimuli etc.

production line tasks. The likelihood of a microsleep is increased when a fatigued person is performing a task that is monotonous and that demands sustained attention (like maintaining a watch on board a ship at night).

*Francoise Gilot* grounded at about 0541, near the point of the circadian cycle when the alertness of the helmsman was probably at its lowest. The time of day, combined with his lack of sleep, his earlier physical exertions and the darkness probably set in train the events which contributed to him 'blinking out' for a few seconds during the turn.

The helmsman provided his hours of work and rest for a period of seven days prior to the grounding to enable the ATSB to assess his potential level of fatigue at the time of the grounding.

Before *Francoise Gilot* departed Melbourne on 9 May, the helmsman had worked on deck as a 'day worker' for about 12 hours each day, whether the ship was at sea or in port. However, when the ship departed Melbourne, his role on board changed. He started duties as a 'rating performing part of a watch' and went on to the watchkeeping roster as the 0400 to 0800 rating.

The helmsman's hours of work were analysed using InterDynamics' Fatigue Audit InterDyne (FAID) software developed in conjunction with the Centre for Sleep Research at the University of South Australia.

The FAID software is primarily a rostering tool which calculates a 'score' for an individual's level of potential fatigue at a given time, based on their rostered hours of duty. The program takes into consideration the following factors that have emerged from research into shiftwork and fatigue over several decades:

1. the timing and duration of work and breaks;
2. work history in the preceding seven days; and
3. the biological limits on recovery of sleep.

The FAID program assumes that any period for which an operator is not rostered for duty, provided it is long enough, allows them the opportunity for rest. The actual quantity and quality of sleep that an operator receives is not an input in the FAID model. The program does not make allowance for environmental factors such as noise, light, vibration, or the age and/or the medical condition of the crew member. In addition, no allowance is made for any activity outside work hours such as domestic tasks.

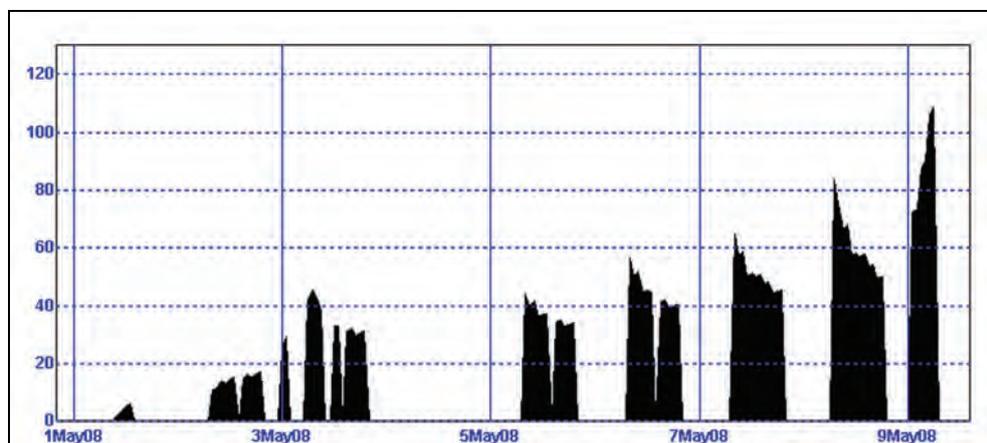
Studies undertaken by the Centre for Sleep Research have found that a fatigue score of 40 to 80 is indicative of a moderate level of fatigue, a score between 80 to 100 is indicative of a high level of fatigue and a score over 100 is indicative of a very high level of fatigue.

Following the development of the FAID program, the Centre for Sleep Research conducted a study which concluded that:

the impairment observed in an individual working with a fatigue score between 80 and 100 is comparable to the impairment of an individual intoxicated with alcohol to a blood alcohol content of 0.05% or greater. Such a level of alcohol related impairment would not be acceptable at work.

The FAID analysis for the helmsman (Figure 9) shows a score of 108.5 immediately prior to the grounding. This score is considered to be in the very high range.

**Figure 9: FAID graph showing the helmsman's fatigue scores during period leading up to the grounding**



Based on the helmsman's working routine and his time awake, it is reasonable to conclude that he was affected by fatigue at the time of the grounding. As such, it is likely that he was operating at a level of alertness below that necessary to properly carry out his duties as helmsman.

### 2.7.1 Fatigue management

Chapter VIII of the Seafarer's Training, Certification and Watchkeeping Code (STCW Code) deals with watchkeeping standards. Section A-VIII/1 (Fitness for duty) provides guidance for the hours of rest that any person assigned duty as an officer in charge of a watch or as a rating performing part of a watch shall have. It states that such persons shall be provided with a minimum of 10 hours of rest in any 24 hours period. The rest may be divided into no more than two periods, one of which shall be of at least six hours duration.

This requirement reflects the International Labour Organization's (ILO) Convention 180, which deals with seafarers' hours of work and the manning of ships. Article 5 of this convention deals with the maximum hours per day a crew member, regardless of duties and not including emergency situations, is permitted to work and states:

1. The limits on hours of work or rest shall be as follows:

(a) maximum hours of work shall not exceed:

- (i) 14 hours in any 24-hour period; and
- (ii) 72 hours in any seven-day period;

or

(b) minimum hours of rest shall not be less than:

- (i) ten hours in any 24-hour period; and
- (ii) 77 hours in any seven-day period.

2. Hours of rest may be divided into no more than two periods, one of which shall be at least six hours in length, and the interval between consecutive periods of rest shall not exceed 14 hours.

There is, however, a provision within Section A-VIII/1 of the STCW Code (paragraph 4) that states:

The minimum period of ten hours may be reduced to not less than six consecutive hours provided that any such reduction shall not extend beyond two days and not less than 70 hours of rest are provided each seven-day period.

*Francoise Gilot's* SMS procedures dealing with the crew's hours of work and rest referenced Section A-VIII/1 and stated:

... all persons who are assigned duty as OOW or as a rating forming part of the watch the minimum rest periods are to be observed. For each crew member the record of working hours will be documented on a special form, also featuring the periods of rest hours.

The records kept on board *Francoise Gilot* for the helmsman, in accordance with the SMS, for the month of May 2008, up until the day before the grounding, indicated that his hours of work and rest were within the limits set down by the STCW Code and the ILO Convention as a non-watchkeeping crew member.

However, changing his duties in Melbourne resulted in him being caught between the working hours kept by a day working rating, where he worked on deck during the day before departure and again from midnight to 0400, and those of a rating performing part of a watch, duties which he assumed when he went to the bridge just after 0400.

While the helmsman's hours of rest in the 24 hours immediately before the grounding were within the limits prescribed by the ILO Convention and by Section A-VIII/1 of the STCW Code, it is probable that the change in his roles resulted in him not being sufficiently rested to enable him to effectively perform his duties on the bridge as *Francoise Gilot* departed Melbourne.

### 3.1 Context

At 0541 on 9 May 2008, the Antigua and Barbuda registered container ship, *Francoise Gilot*, grounded while transiting the South Channel, Port Phillip, Victoria. The ship had sailed from Melbourne earlier that morning and was departing Port Phillip bound for Sydney.

The ship grounded between beacons 18 and 20 of the South Channel during a starboard turn around the Hovell Pile beacon. The master's successful movement of ballast and his use of the main engine resulted in the ship refloating under its own power at about 0755. The ship returned to Melbourne where an underwater inspection of its hull revealed that it had not been damaged during the grounding.

From the evidence available, the following findings are made with respect to the grounding and should not be read as apportioning blame or liability to any particular organisation or individual.

### 3.2 Contributing safety factors

- *Francoise Gilot's* helmsman, while correctly repeating the pilot's orders for port rudder movements, incorrectly applied starboard helm. By the time the error was identified, the ship's rate of turn to starboard was too high for the pilot to be able to take corrective action to prevent the grounding.
- It is likely that the helmsman was operating at a level of alertness below that necessary to properly carry out his duties because he was affected by fatigue.
- The helmsman was not sufficiently rested to enable him to be able to effectively perform his duties on the bridge as *Francoise Gilot* departed Melbourne because of the change in his work duties on board. [Safety issue]
- The pilot could not see the rudder angle indicator from his conning position and the master was too preoccupied monitoring the ship's position and the actions of the pilot to adequately monitor the actions of the helmsman. Consequently, the helmsman's error went unnoticed for a critical period of time.
- Overall bridge manning on *Francoise Gilot* in the period leading up to and during the turn into the South Channel was insufficient to ensure that all the necessary functions were being performed on the bridge in the time leading up to the grounding.
- The ship's safety management system provided no guidance to the master or crew regarding the minimum level of bridge manning during periods of pilotage. [Safety issue]
- Specific roles and responsibilities of the bridge team members, including that of monitoring the helmsman, were not discussed during the pilot/master information exchange.
- The Port Phillip Sea Pilots safety management system and standard pilotage passage plan did not contain information to remind the pilot of the need to ensure that roles and responsibilities are allocated to members of the bridge

team, in accordance with shipboard practices and procedures, during the pilot/master information exchange. *[Safety issue]*

- The ship's safety management system did not contain any requirement regarding the allocation of roles and responsibilities of bridge team members during pilotage. *[Safety issue]*

The safety issues identified during this investigation are listed in the Findings and Safety Actions sections of this report. The Australian Transport Safety Bureau (ATSB) expects that all safety issues identified by the investigation should be addressed by the relevant organisation(s). In addressing those issues, the ATSB prefers to encourage relevant organisation(s) to proactively initiate safety action, rather than to issue formal safety recommendations or safety advisory notices.

All of the responsible organisations for the safety issues identified during this investigation were given a draft report and invited to provide submissions. As part of that process, each organisation was asked to communicate what safety actions, if any, they had carried out or were planning to carry out in relation to each safety issue relevant to their organisation.

## **4.1 Reederei Alnwick Harmstorf**

### **4.1.1 Fatigue management**

#### ***Safety issue***

The helmsman was not sufficiently rested to enable him to be able to effectively perform his duties on the bridge as *Francoise Gilot* departed Melbourne because of the change in his work duties on board.

#### ***Action taken by Reederei Alnwick Harmstorf MO-2008-006-NSA-016***

Reederei Alnwick Harmstorf has issued a fleet wide circular informing all crews that:

- it is prohibited to carry out any lashing or unlashng work prior to taking up the duties of helmsman;
- each watch keeping officer or helmsman has to report to the master immediately upon taking up duty if they are feeling tired or not fit for duty;
- all crew are reminded that it is their responsibility to take their rest hours seriously.

#### ***ATSB assessment of response***

The Australian Transport Safety Bureau acknowledges the actions taken by the company to address this safety issue.

### **4.1.2 Minimum bridge manning levels during pilotage**

#### ***Safety issue***

The ship's safety management system provided no guidance to the master or crew regarding the minimum level of bridge manning during periods of pilotage.

***Action taken by Reederei Alnwick Harmstorf MO-2008-006-NSA-017***

Reederei Alnwick Harmstorf has advised the Australian Transport Safety Bureau that consideration will be given to addressing this safety issue.

***ATSB safety recommendation MO-2008-006-SR-021***

The Australian Transport Safety Bureau recommends that Reederei Alnwick Harmstorf takes action to address this safety issue.

#### **4.1.3 Allocation of roles and responsibilities during pilotage**

***Safety issue***

The ship's safety management system did not contain information to remind the master of the importance in ensuring that roles and responsibilities were allocated to members of the bridge team during the pilot/master information exchange.

***Action taken by Reederei Alnwick Harmstorf MO-2008-006-NSA-019***

Reederei Alnwick Harmstorf has advised the Australian Transport Safety Bureau that the company believes that guidance provided within the company's safety management system sufficiently addresses this safety issue.

***ATSB assessment of the response***

The Australian Transport Safety Bureau believes that the company's response does not adequately address this safety issue.

***ATSB safety recommendation MO-2008-006-SR-022***

The Australian Transport Safety Bureau recommends that Reederei Alnwick Harmstorf takes action to address this safety issue.

## **4.2 Port Phillip Sea Pilots**

#### **4.2.1 Allocation of roles and responsibilities during pilotage**

***Safety issue***

The Port Phillip Sea Pilots safety management system and standard pilotage passage plan did not contain information to remind the pilot of the need to ensure that roles and responsibilities are allocated to members of the bridge team, in accordance with shipboard practices and procedures, during the pilot/master information exchange.

***Response from the Port Phillip Sea Pilots MO-2008-006-NSA-018***

The pilotage company has advised the Australian Transport Safety Bureau that it is understood that the overriding recommendation for effective bridge resource management coming from this report is the need for roles and responsibilities to be

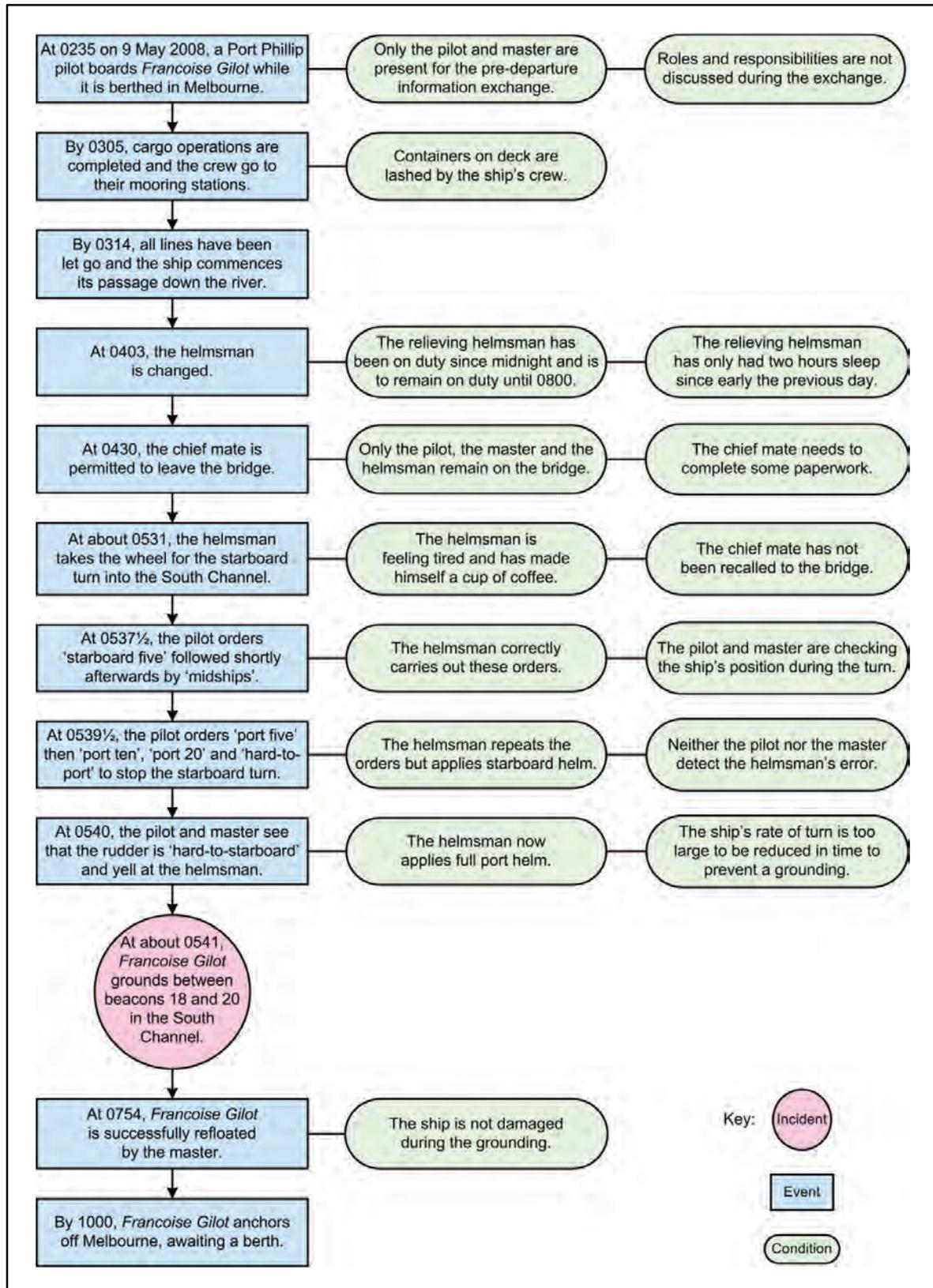
clearly understood on the bridge. Port Phillip Sea Pilots agrees with this recommendation and is planning to include such requirements in the SMS in the near future.

***ATSB assessment of the response***

The Australian Transport Safety Bureau acknowledges the actions undertaken by the company to address this safety issue.



# APPENDIX A : EVENTS AND CONDITIONS CHART





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## APPENDIX B : SHIP INFORMATION

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### ***Francoise Gilot***

IMO Number	9295517
Call sign	V2DH3
Flag	Antigua and Barbuda
Port of Registry	Saint John's
Classification society	Germanischer Lloyd (GL)
Ship Type	Cellular container ship
Builder	Yangzijiang Shipbuilding, China
Year built	2005
Owners	MS Francoise Gilot Schiffahrts, Germany
Ship managers	Reederei Alnwick Harmstorf, Germany
Gross tonnage	16 162
Net tonnage	6128
Deadweight (summer)	17 350 tonnes
Summer draught	9.5 m
Length overall	161.3 m
Length between perpendiculars	149.6 m
Moulded breadth	25.0 m
Moulded depth	14.9 m
Engine	HHM MAN B&W 8S50MC-C
Total power	12 640 kW
Speed	19.3 knots
Crew	19



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## APPENDIX C : SOURCES AND SUBMISSIONS

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### Sources of information

Master, crew and managers of *Francoise Gilot*

Port of Melbourne Corporation

Port Phillip Sea Pilots

### References

Parliament of the Commonwealth of Australia, *Beyond the Midnight Oil: An inquiry into managing fatigue in transport*. House of Representatives Standing Committee on Communications, Transport and the Arts, Canberra, 2000.

International Chamber of Shipping, *Bridge Procedures Guide*, fourth edition, 2007.

Joint MSC/MEPC working group on the Human Element and Formal Safety Assessment, *MSC 70/13 Annex 1 – Fatigue*. International Maritime Organization, London, 1998.

Port of Melbourne Corporation Annual Report 2007-08.

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Rawson, K. & Tupper, E. *Basic Ship Theory*, Butterworth Heinemann, fifth edition, 2001.

Resolution A.960(23) *Recommendations on training and certification and on operational procedures for maritime pilots other than deep-sea pilots*, International Maritime Organization, London, 2003.

Swift, A. J. *Bridge team management: A practical guide*. The Nautical Institute, second edition, 2004.

The Seafarer's Training, Certification and Watchkeeping Code (STCW Code).

The International Labour Organization's (ILO) Convention 180 concerning Seafarers' Hours of Work and the Manning of Ships.

### Submissions

Under Part 4, Division 2 (Investigation Reports), Section 26 of the *Transport Safety Investigation Act 2003*, the Executive Director may provide a draft report, on a confidential basis, to any person whom the Executive Director considers appropriate. Section 26 (1) (a) of the Act allows a person receiving a draft report to make submissions to the Executive Director about the draft report

A draft of this report was provided to *Francoise Gilot's* master and managers, the pilot, Port Phillip Sea Pilots, the Australian Maritime Safety Authority (AMSA) and the Antigua and Barbuda Department of Marine Services and Merchant Shipping.

Submissions were received from *Francoise Gilot's* managers, the pilot, Port Phillip Sea Pilots, AMSA and the Antigua and Barbuda Department of Marine Services and Merchant Shipping. The submissions were reviewed and where considered appropriate, the text of the report was amended accordingly.

Independent investigation into the grounding of the Antigua and Barbuda registered container ship *Francoise Gilot* in Port Phillip, Victoria, on 9 May 2008.