



Australian Government

Australian Transport Safety Bureau



ATSB TRANSPORT SAFETY INVESTIGATION REPORT
Marine Occurrence Investigation No. 242
Final

Independent investigation into the near collision
between the bulk carrier

Ormiston

and the roll-on/roll-off general cargo ship

Searoad Mersey

in Port Phillip, Victoria
16 May 2007



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ISBN and formal report title: see 'Document retrieval information' on page v.

CONTENTS

DOCUMENT RETRIEVAL INFORMATION	v
THE AUSTRALIAN TRANSPORT SAFETY BUREAU	vii
TERMINOLOGY USED IN THIS REPORT	ix
EXECUTIVE SUMMARY	xi
1 FACTUAL INFORMATION	1
1.1 <i>Searoad Mersey</i>	1
1.2 <i>Ormiston</i>	2
1.3 Port Phillip	3
1.3.1 Vessel Traffic Service	5
1.4 The incident	6
2 ANALYSIS	11
2.1 Evidence	11
2.2 The incident	11
2.3 Effective lookout	12
2.3.1 Visual limitations	12
2.3.2 Utilisation of personnel	13
2.3.3 Utilisation of all resources	14
2.4 Complacency	15
2.5 Bridge resource management (BRM)	16
2.5.1 Situational awareness	17
2.5.2 Bridge procedures and passage planning	18
2.5.3 Challenge and response	19
2.6 Ship to ship communications	20
2.7 Vessel Traffic Service (VTS)	21
3 FINDINGS	23
3.1 Context	23
3.2 Contributing safety factors	23
4 SAFETY ACTIONS	25
4.1 Safety action taken by ASP Ship Management	25
4.2 Safety action taken by the Port of Melbourne Corporation	25
4.3 ATSB recommendations	26
4.4 ATSB safety advisory notices	26

APPENDIX A : EVENTS AND CONDITIONS	27
APPENDIX B : SHIP INFORMATION.....	29
APPENDIX C : SOURCES AND SUBMISSIONS.....	31

DOCUMENT RETRIEVAL INFORMATION

Report No.	Publication Date	No. of pages	ISBN	ISSN
242	July 2008	44	978-1-921490-51-4	1447-087X

Publication Title

Independent investigation into the near collision between the bulk carrier *Ormiston* and the roll-on/roll-off general cargo ship *Searoad Mersey* in Port Phillip, Victoria on 16 May 2007.

Prepared by

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Reference No.

Jul2008/Infrastructure 08202

Acknowledgements

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Abstract

At about 0230 on 16 May 2007, the bulk carrier *Ormiston* sailed from Melbourne, Victoria, bound for Thevenard, South Australia. At about 0512, the ship rounded the Hovell Pile beacon and entered the South Channel in Port Phillip. At about 0521, *Ormiston* entered 'The Cut', the narrowest part of the channel, from the east making good about 15 knots.

At about 0230, the second mate on board the roll-on/roll-off general cargo ship *Searoad Mersey* contacted Point Lonsdale vessel traffic service (VTS) to provide an estimated time of arrival at the entrance to Port Phillip and was advised of the traffic movements within the port. At about 0420, *Searoad Mersey's* master, who also held a pilotage exemption for Port Phillip and had conducted over 1300 transits of the port, contacted VTS and received updated traffic information, including *Ormiston's* estimated movements.

At about 0435, *Searoad Mersey* passed Point Lonsdale lighthouse and entered Port Phillip. At about 0521, when the ship entered 'The Cut' from the west making good about 15 knots, the master had forgotten that *Ormiston* was approaching and did not see the approaching ship until immediately before the two ships passed. At about 0523, *Searoad Mersey* and *Ormiston* passed within 20 metres of each other in 'The Cut' at a combined speed of about 30 knots.

The ATSB investigation found that *Searoad Mersey's* bridge team members had not effectively implemented bridge resource management principles, were not keeping an adequate lookout and had lost situational awareness. The investigation also found that the ships did not communicate with each other until after the incident and that the Point Lonsdale VTS was not aware of the incident until after it had occurred.

The ATSB has issued four recommendations and one safety advisory notice to address the safety issues identified in the report.

THE AUSTRALIAN TRANSPORT SAFETY BUREAU

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.

TERMINOLOGY USED IN THIS REPORT

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: the occurrence would probably not have occurred; or 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.

EXECUTIVE SUMMARY

At about 0230¹ on 16 May 2007, the Australian registered bulk carrier *Ormiston* sailed from number five berth at Yarraville in Melbourne, Victoria, bound for Thevenard, South Australia. The ship's master, who had held a pilotage exemption for the port for the previous eight years, had the conduct of the ship.

At about the same time, the second mate on board the Australian registered roll-on/roll-off general cargo ship *Searoad Mersey* contacted Point Lonsdale vessel traffic service (VTS) to provide the ship's estimated time of arrival at the entrance to Port Phillip and was advised of the traffic movements within the port. At about 0420, *Searoad Mersey*'s master, who also held a pilotage exemption for Port Phillip and had conducted over 1300 transits of the port, again contacted VTS and received updated traffic information, including *Ormiston*'s estimated movements.

At about 0435, *Searoad Mersey* passed the Point Lonsdale lighthouse and entered Port Phillip with the master, chief mate and one integrated rating on the bridge. Shortly thereafter, *Searoad Mersey* was overtaken by *Spirit of Tasmania 1*. The integrated rating was dismissed from the bridge to begin unlash cargo before the ship entered the South Channel. During *Searoad Mersey*'s transit of the South Channel, several other ships contacted Point Lonsdale VTS by VHF radio and received traffic information, including *Ormiston*'s estimated transit times of the South Channel. At about 0521, *Searoad Mersey* entered 'The Cut', the narrowest part of the South Channel, from the west.

At about 0512, *Ormiston* rounded the Hovell Pile beacon and entered the South Channel with the master, chief mate and one integrated rating on the bridge. At about 0517, the ship passed the inbound *Spirit of Tasmania 1* and, at about 0521, it passed number 14 beacon and entered 'The Cut' from the east.

Searoad Mersey's master had forgotten that *Ormiston* was approaching and did not see the approaching ship until immediately before the ships passed. *Ormiston*'s master saw *Searoad Mersey* approaching along the centreline of the channel and took his ship further to starboard to avoid a collision. At about 0523½, *Searoad Mersey* and *Ormiston* passed within 20 metres of each other in 'The Cut' at a combined speed of almost 30 knots².

Ormiston continued its transit of the South Channel and, at 0605, it passed Point Lonsdale and exited Port Phillip. *Searoad Mersey* continued its transit of the channel and Port Phillip before berthing at Webb Dock at about 0748.

The investigation report identifies the following safety issues and issues four recommendations and one safety advisory notice to address them:

- The execution of bridge resource management on board *Searoad Mersey* was inadequate because single person errors, such as the loss of situational awareness and the failure to keep an effective lookout, went unchecked. Furthermore, both members of the bridge team operated under erroneous assumptions about their role within the team, believing that the other was keeping an effective lookout when, in fact, neither was.

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

² One knot, or one nautical mile per hour, equals 1.852 kilometres per hour.

- Neither *Searoad Mersey* nor *Ormiston* had adequate bridge procedures or an adequate passage plan, with respect to identifying, monitoring and managing traffic.
- The lack of effective radio communication between the two ships meant that *Searoad Mersey* was not alerted to the presence of the oncoming *Ormiston*. By not using the radio, *Ormiston*'s master did not take all available measures to reduce the risk of collision.
- The operating procedures for the vessel traffic service (VTS) covering the South Channel did not define any operations that had an increased level of risk and which may have required greater vigilance. Furthermore, the procedures did not define any operating limits to provide guidance for the VTS operators to determine when they should intervene.

1.1 *Searoad Mersey*

Searoad Mersey (Figure 1) is a roll-on/roll-off general cargo ship that operates a liner service between Devonport, northern Tasmania, and Melbourne, Victoria. The ship also calls at King Island, Tasmania once each week.

Figure 1: *Searoad Mersey*



Searoad Mersey was built in 1990 by Singmarine Dockyard and Engineering and was lengthened in 1996. The ship has an overall length of 118.80 m, a moulded breadth of 18.50 m and a moulded depth of 13.60 m. It has a deadweight of 4824 tonnes at its summer draught of 5.512 m.

At the time of the incident, *Searoad Mersey* was registered in Australia, classed with Det Norske Veritas (DNV), owned by Patrick Shipping, Australia, and managed by Searoad Shipping, Melbourne.

Searoad Mersey is fitted with two four-stroke, single-acting, Wartsila 8R32E main engines, each with a maximum continuous rating of 3278 kW at 750 rpm. Each engine is clutched into a reduction gearbox which, in turn, drives a controllable pitch propeller. Together the engines give the ship a service speed of about 15 knots.

The navigation bridge and accommodation superstructure are located at the forward end of the ship. The main cargo deck and vehicle deck are located aft of it. Cargo for the main deck and the vehicle deck is loaded through a stern door and access ramps between the cargo decks.

Searoad Mersey's chartroom is at the after end of the navigation bridge and is partitioned from the wheelhouse by curtains. The navigation bridge is equipped with navigational equipment consistent with SOLAS³ requirements. This included two Sperry Marine BridgeMaster radars, each fitted with an automatic radar plotting aid (ARPA). The bridge was also equipped with an echo sounder, a global

3 The International Convention for the Safety of Life at Sea, 1974, as amended.

positioning system unit (GPS), a Skanti automatic identification system (AIS) and global maritime distress and safety system (GMDSS) communications equipment.

At the time of the incident, *Searoad Mersey* had a crew of 13 Australian nationals.

Searoad Mersey's master held an Australian certificate of competency as master. He had 28 years of seagoing experience and had been master on the Melbourne to Devonport service for the previous nine years. He held a current pilotage exemption for Melbourne and had completed over 1300 transits of Port Phillip. He completed bridge resource management training in 1996 and an advanced marine pilots training course in 2001.

The chief mate first went to sea in 1974 and had worked ashore in a number of different industries for several years since then. He returned to sea and had worked for the ship's manager for the last five years. He held an Australian certificate of competency as master. He had been chief mate on board *Searoad Mersey* for the previous seven months.

1.2 **Ormiston**

Ormiston (Figure 2) is a conventional, four hold, gearless, handysize⁴ bulk carrier that operates on coastal voyages around Australia and regularly calls at Melbourne.

Figure 2: *Ormiston*



Ormiston was built in 1979 by Tsuneishi Shipbuilding, Japan. The ship has an overall length of 160.03 m, a moulded breadth of 24.01 m and a moulded depth of 12.02 m. It has a deadweight of 16 602 tonnes at its summer draught of 8.719 m.

At the time of the incident, *Ormiston* was registered in Australia, classed with Lloyd's Register (LR) and managed by ASP Ship Management, Melbourne.

Propulsion is provided by a single Sulzer 7RND68 single acting, direct reversing, slow speed diesel engine that develops 8250 kW at 150 RPM. The engine drives a single, fixed pitch propeller to give the ship a service speed of about 15 knots.

The ship is equipped with navigational equipment consistent with SOLAS requirements. This included two Sperry Marine BridgeMaster radars equipped with

⁴ A ship with a deadweight of between 15,000 and 50,000 tonnes.

ARPA. The bridge was also equipped with an echo sounder, a Skanti AIS, GPS and GMDSS communications equipment.

At the time of the incident, *Ormiston* had a crew of 17 Australian nationals.

Ormiston's master held an Australian certificate of competency as master. He started his career in the Royal Australian Navy and, after 10 years of naval service, spent a further 30 years on merchant ships. He had been master on the ship for the previous 10 years. He had held a pilotage exemption for Melbourne for the past eight years.

The chief mate had 24 years of seagoing experience and held an Australian certificate of competency as master. He had been *Ormiston*'s chief mate for the previous four and a half years and had acted as relieving master on board *Ormiston* for a total of about five weeks during that period.

1.3 Port Phillip

Port Phillip is an extensive bay, over 30 miles⁵ long from its entrance in the south to its northern end (Figure 3). The western arm of Port Phillip forms Corio Bay, which contains the port of Geelong. The northern end of Port Phillip forms Hobson's Bay. The port of Melbourne is situated at the head of the bay.

Figure 3: Port Phillip



⁵ A nautical mile of 1852 m.

Melbourne is Australia's busiest container port. In June 2007, it became the first Australian port to have handled two million containers in a twelve month period. 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 commercial ship visits per year with nearby Geelong having a further 500.

The main route into Port Phillip leads east-northeast through the heads, known as 'The Rip', between Point Lonsdale and Point Nepean and thence along the South Channel on a course of about 102° (T). The channel is about 500 m wide for most of its length and has a maintained depth of 13.1 m.

Between number 12 and number 14 beacons (Figure 4), ships pass through the narrowest section of the South Channel, know as 'The Cut', on a course of 106° (T). This section of the channel has been dredged from the surrounding seabed and is about 375 m wide.

After transiting the South Channel, inbound ships round the Hovell Pile beacon, to port before either continuing up the bay to Melbourne or crossing the bay towards Geelong.

1.3.1 Vessel Traffic Service

According to the Port Waters of Melbourne Operations Handbook:

All shipping movements within port waters are controlled by the harbour master through the Melbourne Shipping Management Centre (Harbour Control) and the Point Lonsdale Signal Station, providing a 24 hour service to ensure safe and efficient port operations. This includes all necessary coordination of port services and dissemination of relevant information.

The Point Lonsdale Signal Station (Point Lonsdale), located at the base of the Point Lonsdale lighthouse, provides a vessel traffic service (VTS) for ship movements in the entrance to Port Phillip and in the South Channel, encompassing the southern end of Port Phillip, south of latitude 38°05'S. Point Lonsdale also provides the regular scheduled broadcasts for Coast Radio Melbourne.

Harbour Control provides a VTS for vessels operating within the port limits and the northern half of Port Phillip. Harbour Control and Point Lonsdale continually exchange information to provide a VTS that covers all of Port Phillip. At the time of the incident, traffic within Port Phillip was monitored using radar, AIS and VHF radio and this information was automatically recorded.

Melbourne's VTS system provides ships operating within Port Phillip and Melbourne with 'quality and timely' information regarding traffic, tugs, berthing and any hazards or obstructions that may affect their operations within the port.

Communication between ships, Point Lonsdale and Harbour Control normally takes place on VHF channel 12. Ships are required to report to VTS at particular points using VHF channel 12 and are required monitor this channel while they are within Port Phillip.

Ships departing Melbourne, such as *Ormiston*, are required to report when:

- Passing under the Westgate Bridge.
- Passing the Williamstown Breakwater near the entrance to the river.

- Passing the Fawkner Beacon. (At this time, an ETA for the Hovell Pile beacon and for clearing ‘The Rip’ is provided to VTS as well as the ship’s type, draught and any circumstances that may affect its ability to manoeuvre.)
- Passing number six beacon in the South Channel to obtain a clearance for ‘The Rip’ and to advise which channel within the fairway through ‘The Rip’ the ship will use.
- Once they are all clear of ‘The Rip’.

Similarly, inbound ships, such as *Searoad Mersey*, report to VTS:

- About two hours before ‘The Rip’ to advise VTS of their ETA, their vessel type, maximum draught and any circumstances that may affect the ship’s ability to manoeuvre. They are provided with traffic information, both inbound and outbound, at this time.
- At three miles from ‘The Rip’ to request permission to enter the port and to advise VTS which channel the ship will use through ‘The Rip’. They again receive a traffic update.
- When passing Point Lonsdale when they provide VTS with their ETA for the Hovell Pile and Fawkner Beacons. They also receive a traffic update.
- Half an hour before the Fawkner Beacon to obtain permission to pass north of Fawkner Beacon.
- Passing Fawkner Beacon.
- Passing the Williamstown Breakwater at the entrance to the River Yarra.

All inbound and outbound ships are provided with traffic information and updates as necessary by VTS.

1.4 The incident

At 0130 on 16 May, *Ormiston*’s navigational equipment was tested prior to departure from Yarraville number five berth. The master, the second mate and an integrated rating (IR) were on the bridge. The master had the conduct of the ship.

‘Standby engines’ was rung at 0236 and *Ormiston* left the wharf at 0242. The ship’s maximum draught was 6.30 m aft. The ship’s pilotage from Melbourne proceeded normally with the IR steering the ship in hand steering mode.

At 0339, as *Ormiston* passed the Fawkner Beacon, the master informed Harbour Control that he expected the ship to round the Hovell Pile beacon at 0515 and to be clear of ‘The Rip’ at about 0610. After the ship had passed the Fawkner Beacon, the ship’s steering was placed on autopilot and the master left the bridge.

On the morning of 16 May, *Searoad Mersey* was on a scheduled voyage from Devonport to Melbourne.

At about 0350, *Searoad Mersey*’s chief mate went to the bridge to take over the watch from the second mate. The second mate handed over the watch and apprised the chief mate of the traffic situation, which he had received earlier from Point Lonsdale VTS and recorded in the movement book. At 0400, after the second mate had left the bridge, the chief mate called the master on the telephone, as he had been requested to, and informed him that the ship would be three miles from Point Lonsdale in about 30 minutes.

Searoad Mersey's master arrived on the bridge at about 0420 and the chief mate briefed him about the tides and the expected traffic. At 0426, the master called Point Lonsdale VTS on VHF channel 12 and reported that the ship was three miles from the entrance to Port Phillip and its maximum draught was 5.0 m. He was advised that *Ormiston* was outbound and was expected to round the Hovell Pile beacon at about 0515. At 0430, 'Standby engines' was rung.

At about 0430, the master on board the inbound passenger ferry *Spirit of Tasmania 1* also called Point Lonsdale VTS when the ship was three miles from 'The Rip' and he was notified of *Ormiston*'s passage.

At 0435, *Searoad Mersey* passed abeam of Point Lonsdale. On the ship's bridge were the master, the chief mate and an IR. The steering was on autopilot so the IR stood by the wheel and maintained a lookout.

At about 0437, *Spirit of Tasmania 1*'s master called *Searoad Mersey*'s master on VHF channel 12 to discuss an overtaking manoeuvre. At about 0448, *Spirit of Tasmania 1* overtook *Searoad Mersey*. After *Spirit of Tasmania 1* had overtaken and before the ships entered the South Channel, *Searoad Mersey*'s master dismissed the IR from the bridge to begin unlash the cargo.

At about 0500, the master of the inbound container ship *ANL Bass Trader* called Point Lonsdale VTS when the ship was three miles from 'The Rip'. He was provided with and acknowledged *Ormiston*'s transit times.

At about 0455, *Ormiston*'s chief mate telephoned the master and informed him that the ship was about 20 minutes away from the Hovell Pile beacon. At about 0500, *Ormiston*'s master returned to the bridge. At about 0506, after his eyesight had adjusted to the darkness, he took over the conduct of the ship from the chief mate and ordered the duty IR to engage hand steering.

At 0512, *Ormiston* rounded the Hovell Pile beacon and entered the South Channel from the east. The tide was ebbing, giving *Ormiston* a speed over the ground of about 15 knots. It was dark; sunrise was not until 0716 and moonrise was not until 0622. Visibility was good and *Ormiston*'s master could easily see the lights of both *Searoad Mersey* and *Spirit of Tasmania 1* ahead in the channel.

As *Ormiston* was rounding the Hovell Pile beacon, the pilot on board the container ship *MSC Immacolata* called Point Lonsdale VTS on VHF channel 12. He was given a clearance for entry and was informed that *Ormiston* was just rounding the Hovell Pile beacon.

Meanwhile, *Searoad Mersey* had continued its transit of the South Channel according to the ship's passage plan. The ship passed number six beacon at 0504, number eight beacon at 0509 and number ten beacon at 0516. *Searoad Mersey* was south of its intended approach to 'The Cut' so the master steered the ship more towards the north to correct its approach.

At 0517, the westbound *Ormiston* passed the eastbound *Spirit of Tasmania 1* in the South Channel, close to number 16 beacon. *Ormiston*'s master then looked ahead and saw *Searoad Mersey* in the channel. The ship appeared to him to be almost directly ahead and was showing its green starboard sidelight. *Ormiston*'s master commented to the chief mate that *Searoad Mersey*'s aspect was 'shocking'.

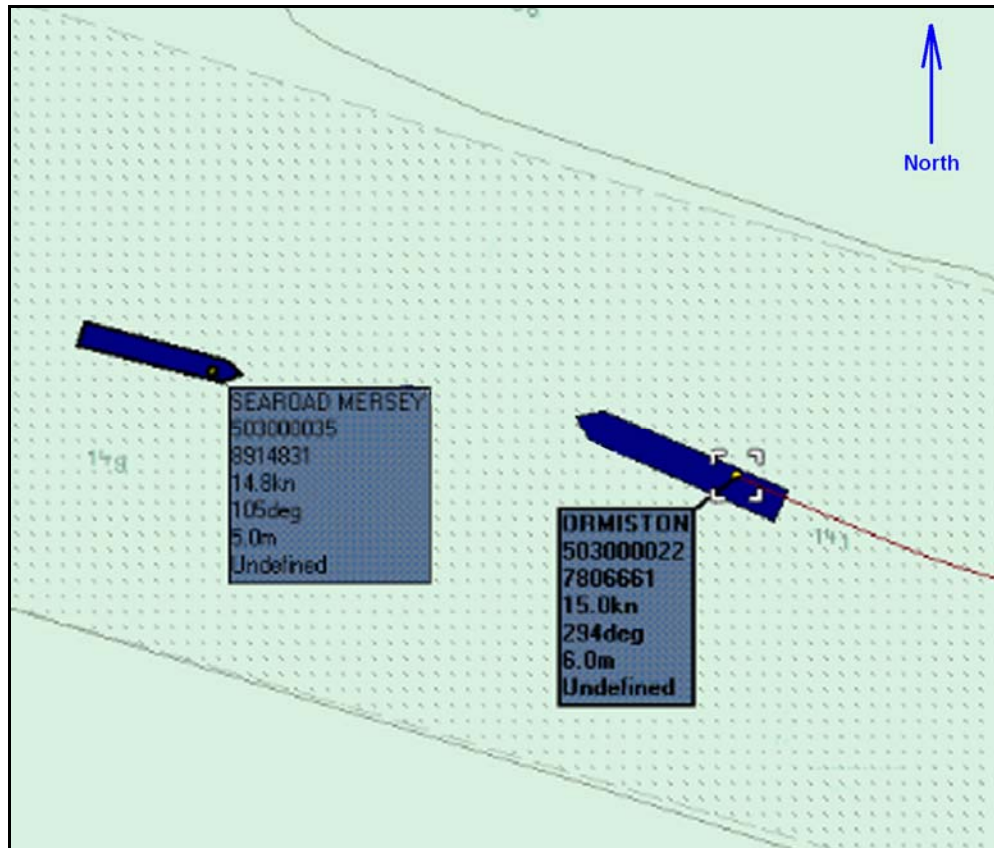
Shortly afterwards, *Searoad Mersey*'s aspect changed. First it showed both side lights before showing its red port sidelight in addition to its masthead lights as

Searoad Mersey's master altered course to starboard after number 11 and 13 beacons were in transit in order to enter 'The Cut'.

At about 0521, *Searoad Mersey* passed number 12 beacon and entered 'The Cut' from the west. Before passing number 12 beacon, the ship had been making good a course of 101° (T) at a speed of about 14.4 knots. As it passed the beacon, the ship's course was altered to 106° (T).

At about 0521, *Ormiston* passed number 14 beacon and entered 'The Cut' from the east on a course of 286° (T). *Ormiston*'s chief mate confirmed to the master that the ship was still to the north of the centreline of the channel but suggested that the ship could go further north in the channel to provide a greater clearance from *Searoad Mersey*. *Ormiston*'s master thought that *Searoad Mersey* appeared to be coming down the centreline of 'The Cut' (Figure 5) so he directed the helmsman to alter course to 290° (T). He continued to stand near the steering console with the helmsman and visually monitored the ship's proximity to the northern edge of the channel and guided the ship as far to starboard as he considered possible, while still remaining in the channel.

Figure 5: VTS AIS image of the both ships near the centreline of the channel at about 0523



Shortly afterwards, *Ormiston*'s helmsman reported to the master that he had gone further to starboard than the ordered course of 290° (T). The master told him not to come back to port.

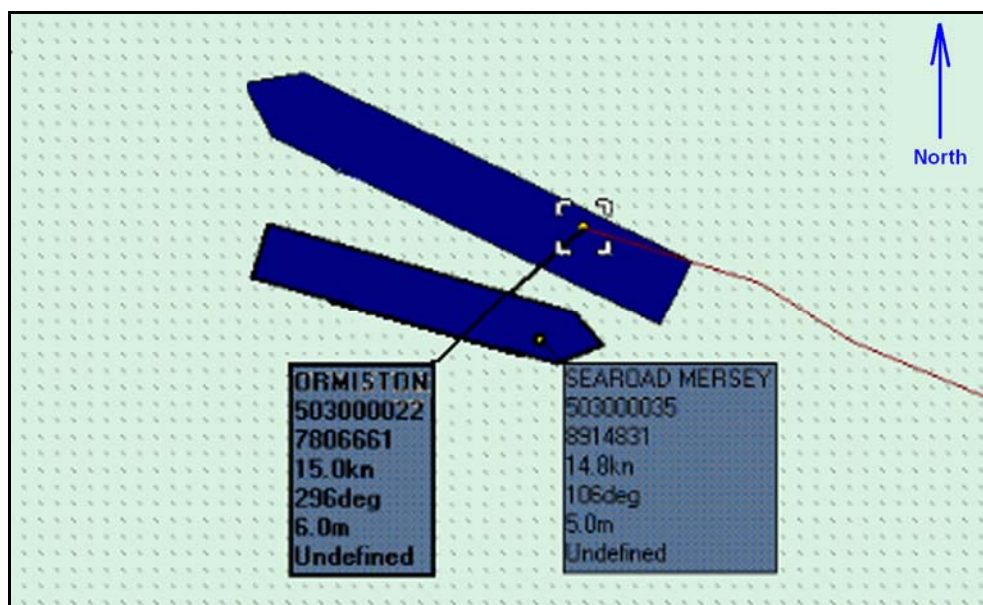
At about this time, *Searoad Mersey*'s chief mate left his position near the radar and went into the chartroom to look for a marine notice about channel lights. After searching for about three minutes, he found it hanging above the chart table. When he exited the chart room, he saw lights ahead and realised it was another ship. At

the same moment, the master also realised that the light he had thought was a shore light was actually the masthead light of a ship, *Ormiston*, which was only about two cables⁶ away.

At about 0523, Point Lonsdale VTS called *Ormiston* to inform the master of the inbound traffic but received no response.

According to AIS data, at about 0523½, *Ormiston* and *Searoad Mersey* passed each other less than 20 m apart in ‘The Cut’ (Figure 6).

Figure 6: VTS AIS image of the ships passing at about 0523½



Immediately following the near collision, *Ormiston*'s master called *Searoad Mersey* on VHF channel 12 and asked, ‘Did you see me?’ *Searoad Mersey*'s master responded, ‘Yes. Absolutely, sir.’

Soon after the ships had passed each other, *Ormiston*'s chief mate went out to the ship's port bridge wing and looked astern. He saw *Searoad Mersey* passing through *Ormiston*'s wake.

At 0524, *Ormiston*'s master called Point Lonsdale VTS to acknowledge the traffic information and stated, ‘I hope they don't go as close as the *Searoad Mersey*.’

Ormiston's master then contacted Point Lonsdale VTS using a mobile telephone and reported the incident.

At 0533, *Searoad Mersey* rounded the Hovell Pile beacon and continued north up the bay towards Melbourne. At 0703, the ship passed the Fawkner Beacon and entered the Port Melbourne ship channel. By 0748, *Searoad Mersey* was all fast alongside its berth at Webb Dock.

Ormiston continued its transit of the South Channel, clearing Port Phillip at 0605.

⁶ One cable equals one tenth of a nautical mile or 185.2 m.

2.1 Evidence

On 22 May 2007, investigators from the Australian Transport Safety Bureau (ATSB) attended the Port of Melbourne control tower. The harbour master and the vessel traffic service (VTS) manager were interviewed and copies of the AIS recordings, VHF radio recordings and relevant documents were obtained.

On 23 May, the ATSB investigators attended *Searoad Mersey* while the ship was berthed at Webb Dock, Melbourne. The master and directly involved crew members were interviewed and they provided accounts of the incident. Copies of relevant documents were obtained including log book entries, statutory certificates and procedures.

On 26 May, the ATSB investigators attended *Ormiston* while the ship was berthed at Yarraville, Melbourne. The master and directly involved crew members were interviewed and they provided accounts of the incident. Copies of relevant documents were obtained including log book entries, statutory certificates and procedures. However, the course recorder trace was not available because the duty mate had not switched on the gyro compass repeater for the course recorder before the ship departed Melbourne on 16 May 2007.

The data that was transmitted by each of the ships' AIS units relied upon the accuracy of their GPS units. The ATSB investigators confirmed the accuracy of the GPS units and, hence the AIS data, when they attended each of the ships.

The investigation considered whether fatigue may have been a factor in the incident. The near collision between *Ormiston* and *Searoad Mersey* occurred at about 0523, at a normally low point of the human circadian rhythm⁷ cycle. None of the bridge crew on either ship stated that they felt fatigued and an analysis of the work and rest hours of the crew members indicated that fatigue was unlikely to have contributed to the incident. All of the involved crew members had had adequate rest when the incident occurred and had been awake for at least one and a half hours, indicating that sleep inertia⁸ was unlikely to be a factor.

2.2 The incident

Based upon VTS AIS data and information gathered from both ships, it was determined that at about 0523 ½ on 16 May 2007, *Ormiston* and *Searoad Mersey* passed in 'The Cut' in the Port Phillip South Channel, less than 20 m apart, whilst travelling at a combined speed of almost 30 knots. If the ships had collided, there would have been very significant damage to the ships and they may have blocked the main channel into Melbourne and probably caused significant pollution.

⁷ The rhythm produced by an internal biological clock that regulates some biological processes according to an approximate 24-hour period, including the sleep - wake cycle.

⁸ Sleep inertia refers to impaired performance upon waking from sleep and can result in reduced alertness and a feeling of disorientation. The typical duration of sleep inertia is from 15 to 30 minutes but it can range from a few seconds to more than one hour.

Searoad Mersey was inbound and very close to the channel's centreline. The master admitted that he had forgotten that *Ormiston* was approaching on a reciprocal course and he did not see the ship until immediately before it passed. Furthermore, he took no action to avoid it.

Ormiston was outbound and also very close to the channel's centreline. *Ormiston's* master believed that the ship was much further north than it actually was. The master saw *Searoad Mersey* and took *Ormiston* further north in the channel to avoid colliding with *Searoad Mersey*. However, *Ormiston* could have moved further north to avoid the near collision.

2.3 Effective lookout

As *Searoad Mersey* transited the South Channel, the bridge team comprised the master and chief mate; the ship's steering was on autopilot and the integrated rating (IR) had left the bridge earlier to start unlash cargo. The two men were responsible for navigating the ship and maintaining an effective lookout.

Rule 5 of the International Regulations for the Prevention of Collisions at Sea, 1972 as amended (COLREGS) contains the requirements for keeping a lookout:

Every vessel shall at all times maintain a proper lookout by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and the risk of collision.

Searoad Mersey's master considered that his role was conning the ship within the channel and attending to all VHF communications. While he was looking out through the bridge windows as he navigated the ship, he did not maintain an active lookout for the purposes of collision avoidance and thought that the chief mate was keeping an active lookout for collision avoidance. The chief mate considered that his role was to monitor the ship's progress during the pilotage and assist the master. He believed that the master looked after collision avoidance.

The master had forgotten that *Ormiston* was approaching in the South Channel and the chief mate believed that collision avoidance was the master's duty. However, had they been keeping an effective lookout using all available means, both visual and electronic, they should have seen the outbound ship early enough to take necessary evasive action. The fact that *Ormiston* was not seen until the ships had almost collided indicates that *Searoad Mersey's* bridge team did not maintain an effective lookout.

2.3.1 Visual limitations

There are a number of human performance factors which may have reduced the ability of the bridge team on board *Searoad Mersey* to visually detect *Ormiston*; the contrast of the ship against its background, lack of relative motion and narrowing of the visual field.

The Bureau of Air Safety Investigation (BASI), a forerunner of the ATSB⁹, stated in an investigation report into visual limitations that¹⁰:

⁹ BASI was incorporated into the new, multi-modal ATSB on 1 July 1999.

Contrast is the difference between the brightness of a target and the brightness of its background and is one of the major determinants of detectability.

The human visual system is particularly attuned to detecting movement but is less effective at detecting stationary objects.

The limited mental processing capacity of the human operator can present problems when there is a requirement to fully attend to two sources of information at the same time. An additional task such as radio work, performed during a traffic scan can reduce the effectiveness of the search, even to the extent of reducing the pilot's eye movements and effectively narrowing the field of view.

Ormiston was westbound in the South Channel. To the eastbound *Searoad Mersey*, the ship would have been visually presented against a dark background that contained many small shore lights. There would have been little contrast between the dark hull of the ship showing only its navigation lights and the background with its dark shore and small lights.

Ormiston and *Searoad Mersey* were approaching on near reciprocal courses. While each ship would have appeared to grow in size relative to the other, there would have been very little relative motion, making visual detection of each other more difficult.

Searoad Mersey's master was concentrating on the task of navigating the ship. He was talking to the chief mate and visually monitoring the ship's position within the South Channel. While these were routine tasks, they may have reduced the ability of the master to effectively lookout for the purpose of collision avoidance.

Ormiston may have been difficult to detect because there was little contrast between the ship and its background, it had little movement relative to its background and *Searoad Mersey's* master was probably distracted from collision avoidance by performing other tasks.

2.3.2 Utilisation of personnel

Searoad Mersey is normally in port during daylight hours and at sea overnight. The normal routine, while at sea, was for the bridge to be manned by the duty mate and an IR during the hours of darkness. The IR on watch at night keeps a lookout and is available to steer the ship by hand if necessary.

Searoad Mersey's bridge, as the ship passed through 'The Rip', was manned by the master, the chief mate and an IR. The IR stood by the wheel and acted as a lookout.

Searoad Mersey's deck crew consists of three IRs and a boatswain and they are required, amongst other tasks, to lash and unlash the cargo. The ship's normal practice was to allow the duty IR to leave the bridge to start unlash cargo once the ship had cleared the 'The Rip', unless otherwise required by the master, such as in restricted visibility. On 16 May, the master followed the normal practice and allowed the IR to leave the bridge at about 0450.

10 BASI (1991), 'Limitations of the see-and-avoid Principle', reprinted by the ATSB in 2004, p 14-15.

Without an IR on the bridge, *Searoad Mersey*'s bridge team comprised only the master and the chief mate and all lookout duties had to be performed by the two men in addition to their other tasks.

The normal practice of allowing the IR to leave the bridge during pilotage has evolved on board *Searoad Mersey* to meet the requirements of unlash cargo using a small deck crew. This practice means that the master and chief mate must cope with the additional workload of maintaining a proper lookout during a pilotage passage. Furthermore, the bridge team operated under erroneous assumptions about their roles within the team with respect to lookout and collision avoidance. Consequently, both men believed that the other was keeping an effective lookout when, in fact, neither was keeping an active lookout for the purposes of collision avoidance.

2.3.3 Utilisation of all resources

Searoad Mersey's bridge was equipped with two BridgeMaster radars and an AIS unit. Both of the radars were set on the three mile range to assist with navigating the ship. At a three mile range, with a closing speed of about 30 knots, *Ormiston* would only have appeared on *Searoad Mersey*'s radar screen about six minutes before the near collision.

Searoad Mersey's chief mate was monitoring the ship's progress in the channel and recording the time that the ship passed each beacon in the movement book. His normal practice, when the visibility was poor, was to use the starboard radar to determine the time that the ship passed each beacon. When visibility was good, he used visual observation rather than the radar. On 16 May, the visibility was good so the chief mate was not consistently monitoring the ship's progress using the radar. Consequently, he did not see *Ormiston* on the radar screen in the six minutes prior to the near collision.

Searoad Mersey's master was navigating the ship by visual, rather than radar, observations. Consequently, he also did not look at a radar screen during the six minutes before *Ormiston* passed and was therefore not alerted to its presence. Had the radar been set at a greater range, the master would have had a longer opportunity to detect *Ormiston* on the radar and he may have been alerted to the hazard and been able to follow *Ormiston*'s passage using radar.

Rule 7 of the COLREGS provides information for determining the risk of collision and states:

- (a) Every vessel shall use all available means appropriate to the prevailing circumstances and conditions to determine if risk of collision exists. If there is any doubt such risk shall be deemed to exist.
- (b) Proper use shall be made of radar equipment if fitted and operational, including long-range scanning to obtain early warning of risk of collision and radar plotting or equivalent systematic observation of detected objects.

Importantly, Rule 7 (b) specifically refers to the proper use of radar. Neither of *Searoad Mersey*'s radars was set at, or occasionally switched to, a long range to enable the presence of oncoming ships to be ascertained as early as possible. Furthermore, neither ARPA nor AIS was used by the master or chief mate to monitor the outbound *Ormiston*'s approach.

Searoad Mersey's master had been informed by VTS that *Ormiston* was outbound. The bridge team were further reminded of the fact when VTS informed the other ships entering Port Phillip that morning of *Ormiston*'s presence. However, both the master and the chief mate forgot about it and did not think it necessary to use radars to check for the presence of other vessels.

Searoad Mersey was fitted with an AIS unit located adjacent to the starboard radar. The unit was switched on and operating normally but the screen was covered due to the brightness of the display. The bridge team could not access any AIS information unless they lifted the cover to look. The bridge team did not actively monitor the AIS display and did not lift the cover before the near collision. Consequently, the bridge team was not alerted to the presence of the oncoming *Ormiston* by the AIS unit.

Searoad Mersey's AIS unit also provided to data feed to the radars so that ship information could be attached to a radar target when it was acquired using ARPA. This system was not used because, apparently, the system gave intermittent alarms if the target's AIS radio signal was lost.

Visibility was good and *Searoad Mersey* was not presented against a background of shore lights so the ship was readily visible. *Ormiston*'s bridge team effectively monitored *Searoad Mersey*'s approach both visually and using radar and *Ormiston*'s master was able to notice that *Searoad Mersey*'s aspect was 'shocking'.

While the lack of contrast between *Ormiston* and the shore and its minimal relative movement against the background may have made a visual lookout less effective, these limitations did not affect the radar or AIS. *Searoad Mersey*'s bridge team did not adequately use all of the bridge equipment to maintain an effective lookout in accordance with Rule 7 (b) of the COLREGS, thereby increasing the risk of collision.

2.4 Complacency

Searoad Mersey's master had undertaken the pilotage of the South Channel about 1300 times. While there were variations in the details of each passage, he had performed essentially the same functions and experienced similar stimuli almost every time. He was highly experienced at the task and was very comfortable undertaking it.

While repetitive experience can increase technical skills, it can also have a detrimental effect and lead to complacency. Schager explains the impact of repetitive experience¹¹:

Some repetitive experience can also be detrimental, as it induces a sense of routine, safety and normality in an otherwise risky environment. Over time, an officer's respect for what he or she is doing might decrease while the skills and quantity of experience increase.

¹¹ Schager, B. (2008), *Human Error in the Maritime Industry*, Sweden, p 100.

Schager defines complacency as¹²:

... a state of mind. It is an unconcerned attitude, e.g. in connection with the presence of danger and risk, where individuals behave and think in a routine-like mode, anticipating an uneventful and ordinary development of the present situation.

Complacency can lead to such things as disbelief when something unexpected happens. It can lead to a false sense of security as well as a false sense that the situation is under control when it isn't. It can furthermore lead to deficient risk assessment or to repress risks and not paying proper attention to what one is engaged in.

When a task is new, the operator concentrates on the task at hand and is aware of the consequences of failure. By the time it has been done many times, the degree of stimulation is reduced and there is a higher degree of confidence that nothing will go wrong. The act of repeating the same pilotage 1300 times probably resulted in *Searoad Mersey*'s master becoming very familiar with a similar sequence of events or actions so that he did not need to consciously think about piloting the ship. It is likely that *Searoad Mersey*'s master had become complacent through familiarity with the task and was running on 'autopilot'.

Consequently, he may have allowed his mind to wander and his vigilance in looking for *Ormiston* was probably reduced. Furthermore, he may have become desensitised to the radio traffic that could be heard in the background and was probably not alerted to *Ormiston*'s presence by it.

In submission, *Searoad Mersey*'s master stated:

After passing No 6 beacon in the South Channel my audio attention is drawn to vessels reporting to Harbour control not Point Lonsdale, as outward bound vessels reporting to harbour control are the vessels I will encounter during the passage. Vessels reporting to Lonsdale are astern of me and pose no immediate navigation threat. The words "Harbour Control" on the VHF draw greater attention from me rather than the word "Lonsdale".

While ships calling Point Lonsdale are behind him, they are informed of the outbound ships, such as *Ormiston*, which are approaching. The master not actively processing these radio transmissions represents a missed opportunity to reinforce vital information that could reduce the risk of a collision.

2.5 Bridge resource management (BRM)

With regards to BRM, the Australian Maritime Safety Authority (AMSA) states, in Marine Notice 09/2006, that:

Analysis of maritime incidents suggests that up to 80% are caused by human error and not by mechanical breakdown or lack of competency. Many incidents are attributed to "single person" error, where a mistake made by one person was not noticed or corrected by other members of the bridge team in time to prevent an incident from occurring...

¹² Ibid., p 101.

Effectively implemented BRM provides tools to defend against single person errors through a shared mental model, open and interactive communication that encourages challenge and response and an optimal 'state of the bridge'.

Marine Notice 09/2006 also states that:

Vessels engaged in regular short voyages where the nature of the trade is such that they are frequently under some form of pilotage are of concern. In these circumstances, there may be a tendency to ignore (through familiarity) the need to constantly review and revise the passage plan.

Searoad Mersey was regularly trading across Bass Strait and was conducting pilotage twice daily. The master and mate, having regularly conducted this pilotage together, believed that they were effectively implementing BRM principles because each was comfortable with what the other was doing. In practice, the execution of BRM was inadequate because single person errors, such as a loss of situational awareness and the failure of either member of the bridge team to keep an effective lookout, went undetected.

Ormiston's application of BRM principles encouraged challenge and response by all members of the bridge team but the passage plan, and its associated limits, was not sufficiently detailed with respect to collision avoidance and situational awareness to be completely effective.

2.5.1 Situational awareness

Proper situational awareness can be defined as the process of using cognitive processes to develop and maintain a mental model upon which decisions are made. The processes can be simply described as¹³:

... situation assessment and plan formation are not distinct sequential stages, but rather they are closely interwoven processes with partial and provisional plan development and feedback leading to revised situation assessments.

Situational awareness requires that the accurate and timely perception of the current status of the ship and its environment and this information is integrated into the existing mental model. This information is then projected forward in time to determine the future status of the ship.

When *Searoad Mersey's* master arrived on the bridge to conduct the pilotage, he was using a pre-established mental model that was based upon his familiarity with the task. His assessment of the situation was that *Spirit of Tasmania 1* would be overtaking just after entering the port. He allowed for that and, after discussing the overtaking manoeuvre with *Spirit of Tasmania 1's* master, he adjusted his plan. He was told that *Ormiston* was outbound but he would not encounter *Ormiston* for more than one hour and he effectively put this information to the back of his mind and failed to integrate it into his mental model because of the more immediately pressing concerns with the passing manoeuvre.

13 Woods DD, Cook RI., (1999), 'Perspectives on human error: Hindsight biases and local rationality', in Durso FT, Nickerson RS, Schvaneveldt JD, (eds.) *Handbook of Applied Cognition*. New York, p17.

Normally, when there was no outbound traffic, the master would keep the ship close to the centreline of the channel but would stay closer to the starboard side to allow passing room if there was a ship approaching.

Spirit of Tasmania 1 passed *Searoad Mersey* successfully but *Searoad Mersey*'s master did not recall that *Ormiston* was approaching and so its presence did not influence his mental passage plan for the pilotage. Despite several other ships being advised using the VHF radio that *Ormiston* was outbound, *Searoad Mersey*'s master missed these cues and did not adjust his mental plan to allow passing room for the outbound ship. Consequently, he kept the ship close to the centre of the channel in accordance with his usual plan.

Similarly, *Ormiston*'s master was conducting the pilotage according to his own mental plan and updating it with radar information provided by the chief mate and with his own visual observations. His observations, from the ship's centreline, suggested that the ship was following his plan and was on the starboard side of the channel to allow passing room.

As the close quarters situation developed, *Ormiston*'s master believed that his ship was closer to the starboard side of the channel than it actually was. The chief mate reported that the ship was in the northern side of the channel but advised the master that he could take the ship further north. The ship was on a course of 296° (T) and the number 12 channel beacon would have appeared to the master, standing near the ship's centreline, to be very close to the ship's bow. This observation may have suggested to the master that the ship was close to leaving the channel or running over the beacon. He did not move from the centreline to alter his viewpoint or use the radars to confirm the ship's position. *Ormiston*'s actual position within the channel did not match its position in the master's mind.

Both ships' masters appear to have lost situational awareness during the passage through the South Channel in that their respective mental models were not effectively updated to reflect the actual circumstances as they evolved. *Searoad Mersey*'s master did not recollect the presence of an oncoming ship despite a number of cues and thus provide adequate passing room and *Ormiston*'s master had lost awareness of his ship's position in the channel.

2.5.2 Bridge procedures and passage planning

All ships are required to prepare a berth to berth passage plan for their intended voyage. According to the Bridge Procedures Guide¹⁴:

Passage planning is necessary to support the bridge team and ensure that the ship can be navigated safely between ports from berth to berth through risk assessment of hazards and waypoint selection. The passage plan should cover ocean, coastal and pilotage waters.

The passage plan should also take into account the need to monitor the ship's position along the route, identify contingency actions at waypoints and allow for collision avoidance in line with the COLREGS.

14 International Chamber of Shipping, Bridge Procedures Guide, Fourth Edition 2007, p 23 and 25.

Searoad Mersey had a passage plan that had been developed in accordance with the company's procedures. The plan provided navigation information including waypoints and courses and included a procedure for 'The Cut' that stated:

Line up for Cut transit. A/C when No. 11 beacon abeam x 0.09' keeping No. 15 beacon fine on Stbd bow. Adjust track to allow for passing vessels.

Although the passage plan for 'The Cut' included adjusting the track to allow for passing vessels, the ship's procedures did not provide adequate guidance for identifying, tracking or monitoring the traffic that may be encountered within Port Phillip so that the ship's track could be altered to accommodate it.

When the duty mate contacted VTS at about 0230 and advised them of the ship's expected arrival time, he was informed of the expected traffic. The names of all outbound ships and their expected times for passing the Hovell Pile beacon and Point Lonsdale were recorded in the bridge movement book. Similarly, the names and times for inbound ships were also recorded. On 16 May, three inbound ships and one outbound ship, *Ormiston*, were recorded in the movement book.

At about 0420, when *Searoad Mersey*'s master arrived on the bridge, he and the chief mate had a brief discussion about the tide and the traffic, as listed in the movement book, before the master took over the conduct of the ship. The pre-arrival briefing normally included discussion about variations from the passage plan but did not include details about traffic management or the expected times and locations for passing the outbound ships. Neither the master nor the chief mate referred to the information recorded in the movement book about outbound traffic following the pre-arrival briefing.

The master and chief mate followed the ship's procedures and passage plan but the ship's procedures did not provide sufficient guidance for the bridge team about managing expected traffic.

Similarly, *Ormiston*'s passage plan for its outbound transit of Port Phillip provided detailed navigational information for the transit, such as waypoints and courses, but the ship's procedures and the passage plan did not contain any guidance regarding traffic patterns, monitoring or management.

Neither ship had adequate procedures to provide guidance to properly monitor or manage traffic for their transit of the Port Phillip South Channel.

2.5.3 Challenge and response

Challenge and response is a concept that establishes an open and effective communication between members of the bridge team irrespective of their rank. Once a briefing is complete and all the bridge team members have a shared mental model of the passage plan and its limits, they are free to issue a challenge if the circumstances go beyond any pre-determined limits.

Searoad Mersey entered Port Phillip by way of the South Channel three times per week using the same passage plan. The passage plan was not discussed at length before each pilotage and both the master and chief mate believed that there was no need to do so because of their familiarity with the plan and with each other.

Searoad Mersey's passage plan, with regard to collision avoidance and traffic management, was largely in the master's mind and the bridge team did not have a shared mental model of the plan with clear limits. While the master expected the

chief mate to speak out if he needed to, the chief mate did not have any limits on which to determine that need. Furthermore, each was operating under assumptions about the other's role. Consequently, there was a gap in the mental model where no limits were defined.

Searoad Mersey's chief mate believed that he would alert the master to an approaching ship if he felt that the need was there. However, he did not routinely provide the master with traffic information because he believed that the master looked after collision avoidance.

Similarly, *Ormiston's* master and chief mate were familiar with each other and with the ship's passage plan for Port Phillip. When the close quarter's situation started to develop, *Ormiston's* chief mate spoke out to the master and suggested that the ship be taken further to starboard. Both the master and the chief mate communicated freely.

While *Searoad Mersey's* bridge team believed it had established an effective BRM system with good communications, the bridge team had incorrectly assumed that each team member understood the limits of the passage plan and that each would issue a challenge if the limits were exceeded.

2.6 Ship to ship communications

Ships transiting the South Channel do not usually communicate with other ships using the VHF radio unless they wish to discuss a specific issue, such as overtaking. Generally, ships approaching each other on reciprocal courses in the channel do not contact each other but rely on their compliance with the COLREGS and the usual practice of good seamanship to avoid a collision.

When *Ormiston's* master saw *Searoad Mersey* ahead in the channel and judged that its aspect was 'shocking', he did not call *Searoad Mersey* using the VHF radio to alert the master to *Ormiston's* approach or enquire about *Searoad Mersey's* master's intentions. When *Searoad Mersey's* aspect changed, he assumed that *Ormiston* had been seen and hence that he did not need to contact the ship.

As the two ships approached each other in 'The Cut' and a potential collision situation became apparent to *Ormiston's* master, he still chose not to contact *Searoad Mersey's* master by VHF radio. The assumption remained that his ship had been seen by the other master and he did not want to make radio communications that may have led to any confusion on the part of *Searoad Mersey's* master.

If *Ormiston's* master had contacted *Searoad Mersey's* master using the VHF radio when he believed that *Searoad Mersey's* aspect was not correct, *Searoad Mersey's* master could have taken corrective action to increase the passing distance between the two ships, thus avoiding the near collision.

Ormiston's master did not take all of the available measures to reduce the risk of collision. If *Ormiston's* master had used the VHF radio to contact *Searoad Mersey's* master to alert him of the ship's presence, *Searoad Mersey's* master would have had sufficient time to take action to prevent the near collision.

2.7 Vessel Traffic Service (VTS)

The stated role of the VTS in Port Phillip is to ensure safe and efficient port operations, including all necessary coordination of port services and the dissemination of relevant information. To achieve this objective, VTS states that it provides 'timely and accurate information' and direction to vessels operating within Port Phillip regarding traffic, tugs, berthing and any hazards or obstructions that may affect their operations within the port. As such, VTS is a vessel traffic information service not a vessel traffic control service although VTS states that it will intervene in ships' operations if it considers it is necessary.

The principal function of VTS should be to enhance safety and to reduce, as far as possible, the structural, environmental and financial risks associated with ships operating within the port limits. While Point Lonsdale VTS acts as a gatekeeper for Port Phillip, and grants permission for ships to enter the port depending upon shipping movements and prevailing conditions, its primary function is to provide relevant navigational and traffic information to ships.

A close quarters situation presents an increased risk of collision. In order to reduce that risk, limits or boundaries need to be defined which can be used by the VTS operators to assist in determining if the ships involved are at risk of a collision. Two ships approaching each other along the centreline of a channel on reciprocal headings represents a greater collision risk and they must move away from the centreline early enough to safely allow passing room. In this instance, both ships were close to the centreline until the near collision and, had they been alerted to that fact earlier, the near collision could have been avoided. The VTS operating procedures did not define limits to provide the VTS operators with guidance as to when intervention may be required in close quarters situations.

A passing situation in the channel increases risk of collision in the confines of the channel that could, potentially, close the port. Passing situations occur several times each day and would not be considered to be an unusual occurrence. However, the VTS operating procedures do not require the VTS operators to pay special attention to these situations. Usually, the ships will observe each other and alter course according to the COLREGS. Consequently, VTS does not closely monitor or intervene in a passing situation unless they consider that a need exists and, without defined limits or boundaries, the VTS operators do not have any guidance to determine if the need exists. In this instance, the VTS operators did not closely monitor the situation and were not aware of the near collision between *Ormiston* and *Searoad Mersey* until they were contacted afterwards by *Ormiston's* master.

The VTS operating procedures did not define any operations that have an increased risk and which may require greater vigilance. Furthermore, the procedures did not define any operating limits to provide guidance for the VTS operators to determine when intervention may be required. Consequently, VTS had not monitored the passing manoeuvre between *Ormiston* and *Searoad Mersey*, were not aware of the near collision until afterwards and thus had not taken any action to prevent it.

3.1 Context

At about 0523 on 16 May 2007, *Searoad Mersey* and *Ormiston* passed each other, about 20 m apart, in the South Channel in Port Phillip, Victoria, at a combined speed of nearly 30 knots. *Searoad Mersey*'s master had forgotten that *Ormiston* was approaching and did not see *Ormiston* until immediately before the ships passed.

From the evidence available, the following findings are made with respect to the close-quarters situation between *Ormiston* and *Searoad Mersey* and should not be read as apportioning blame or liability to any particular organisation or individual.

3.2 Contributing safety factors

- *Searoad Mersey*'s master had forgotten that *Ormiston* was approaching his ship in the South Channel and the bridge team was not maintaining an effective lookout using all available resources. Consequently *Searoad Mersey*'s master did not see *Ormiston* until the ships nearly collided in the channel.
- *Ormiston* may have been difficult for *Searoad Mersey*'s bridge team to detect visually in the conditions at the time because the ship had little contrast against its background and, as it was on a reciprocal course, there was little relative movement against the background shore lights.
- The masters of both ships had lost situational awareness during the passage through the South Channel and neither ship was positioned where its master thought it was or where it should have been in the circumstances.
- *Searoad Mersey*'s master had completed the same pilotage more than 1300 times and was very familiar with a particular sequence of events or actions. Consequently, he may have allowed his mind to wander and his vigilance in looking for *Ormiston* was probably reduced and he had probably become desensitised to normal radio traffic and was probably not alerted by it to *Ormiston*'s presence.
- The normal practice of allowing the integrated rating to leave *Searoad Mersey*'s bridge during the transit of the South Channel meant that the master and chief mate must cope with the additional workload of maintaining a lookout during the pilotage passage.
- The execution of bridge resource management on board *Searoad Mersey* was inadequate because single person errors, such as a loss of situational awareness and the failure to keep an effective lookout, went unchecked. Furthermore, both members of the bridge team operated under erroneous assumptions about their role within the team, believing that the other was keeping an effective lookout when, in fact, neither was. [Safety issue]
- Neither *Searoad Mersey* nor *Ormiston* had adequate bridge procedures or an adequate passage plan, with respect to identifying, monitoring and managing traffic. [Safety issue]
- The lack of effective radio communication between the two ships meant that *Searoad Mersey* was not alerted to the presence of the oncoming *Ormiston*. By

not using the radio, *Ormiston's* master did not take all available measures to reduce the risk of collision. *[Safety issue]*

- The operating procedures for the vessel traffic service (VTS) covering the South Channel did not define any operations that had an increased level of risk and which may have required greater vigilance. Furthermore, the procedures did not define any operating limits to provide guidance for the VTS operators to determine when they should intervene. *[Safety issue]*

4.1 Safety action taken by ASP Ship Management

The ATSB has been advised that the following safety actions have been taken by ASP Ship Management following the near collision between *Ormiston* and *Searoad Mersey*.

We have also been carrying out a number of sea staff seminars where case studies from past incidents have been conducted. These are particularly useful as they have covered a wide range of incidents to a wide range of ranks and departments which in turn has created much discussion and comment. Furthermore, as a result of this and other incidents we are conducting third party navigation audits on a twice yearly basis where forensic investigation is a major factor of the audit.

4.2 Safety action taken by the Port of Melbourne Corporation

The ATSB has been advised that the following safety action has been taken by the Port of Melbourne Corporation (PoMC) following the near collision between *Ormiston* and *Searoad Mersey*.

At the time of the incident the Port of Melbourne offered an information only service for vessels transiting Port Phillip Bay and a recommended sequence service in the Yarra River and approaches to the port. These services were provided by Point Lonsdale Signal Station and Melbourne Harbour Control. Prior to May 2006 the Corporation had embarked on an improvement programme through its commitment to adopting international best practice as set out by the International Association of Lighthouse Authorities (IALA) to meet the demands of the increased traffic levels over the coming years. A Port of Melbourne Marine Risk Assessment was completed in July 2006.

More recently, Maritime Safety Victoria as the competent Authority for VTS is in the process of introducing a VTS determination which is expected in late 2008. This determination will set out the requirements for the provision of VTS Authorities within the state of Victoria. Subsequently, international standards of operation of the VTS will be set which will include the promulgation of VTS service levels and operator training.

PoMC is continuing to work towards meeting this standard by January 2009 which will result in an improved VTS service offering both traffic information and traffic organisation laying down standards of communication with and monitoring of vessels transiting its waters.

In summary, at the time of the incident an international level of VTS service was not being provided, merely an on demand information service to vessels. This is currently being addressed and a more proactive level of service is to be introduced in January 2009 following the introduction of improved monitoring and operator standards.

4.3 ATSB recommendations

MR20080026

The execution of bridge resource management on board *Searoad Mersey* was inadequate because single person errors, such as a loss of situational awareness and the failure to keep an effective lookout, went unchecked. Furthermore, both members of the bridge team operated under erroneous assumptions about their role within the team, believing that the other was keeping an effective lookout when, in fact, neither was. [Safety issue]

The Australian Transport Safety Bureau recommends that Searoad Shipping takes safety action to address this safety issue.

MR20080027

Neither *Searoad Mersey* nor *Ormiston* had adequate bridge procedures or an adequate passage plan, with respect to identifying, monitoring and managing traffic. [Safety issue]

The Australian Transport Safety Bureau recommends that Searoad Shipping takes safety action to address this safety issue.

MR20080028

Neither *Searoad Mersey* nor *Ormiston* had adequate bridge procedures or an adequate passage plan, with respect to identifying, monitoring and managing traffic. [Safety issue]

The Australian Transport Safety Bureau recommends that ASP Ship Management takes safety action to address this safety issue.

MR20080029

The operating procedures for the vessel traffic service (VTS) covering the South Channel did not define any operations that had an increased level of risk and which may have required greater vigilance. Furthermore, the procedures did not define any operating limits to provide guidance for the VTS operators to determine when they should intervene. [Safety issue]

The Australian Transport Safety Bureau recommends that the Port of Melbourne Corporation takes safety action to address this safety issue.

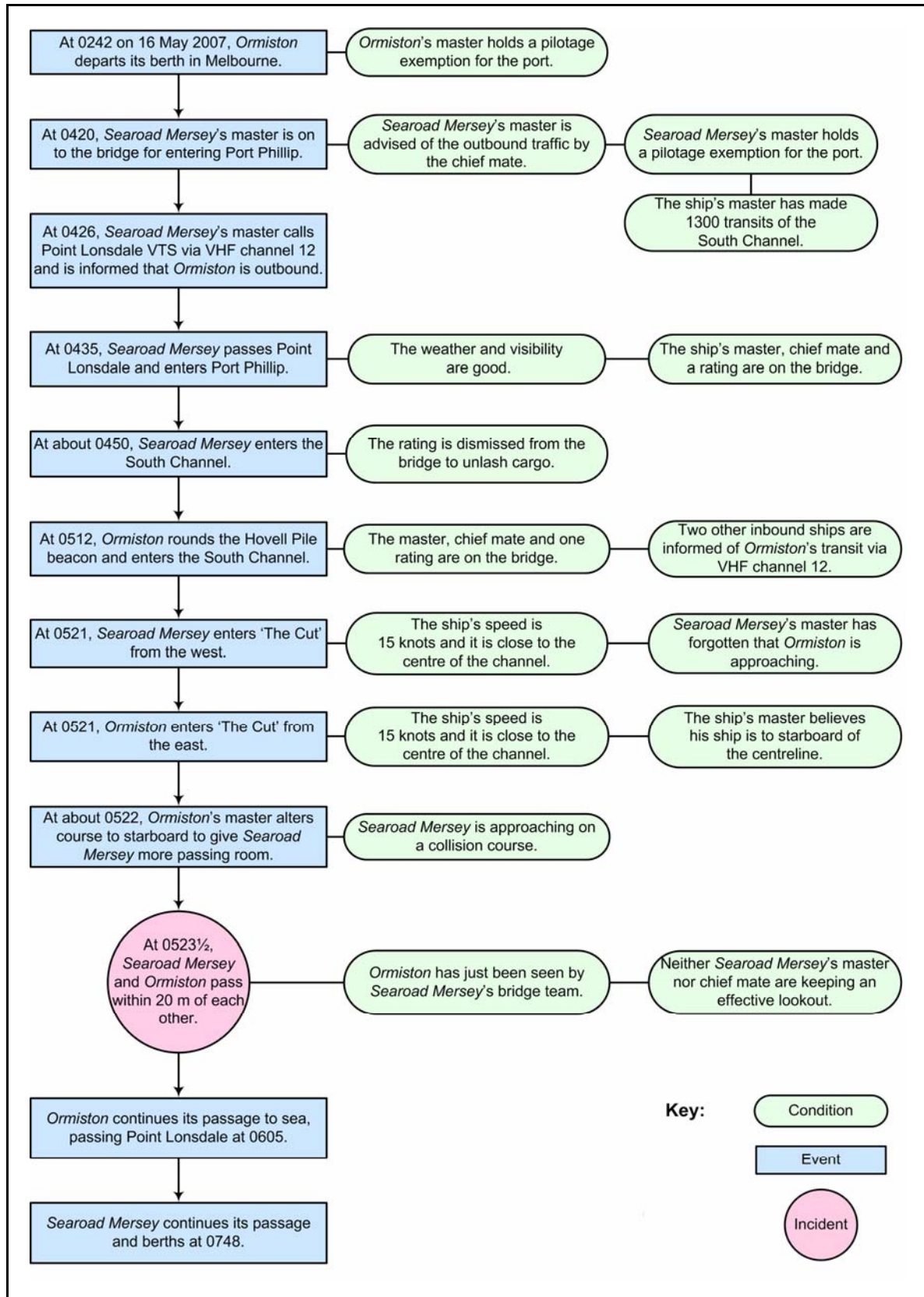
4.4 ATSB safety advisory notices

MS20080026

The lack of effective radio communication between the two ships meant that *Searoad Mersey* was not alerted to the presence of the oncoming *Ormiston*. By not using the radio, *Ormiston*'s master did not take all available measures to reduce the risk of collision. [Safety issue]

The Australian Transport Safety Bureau advises that ship owners, operators and masters should consider the safety implications of this safety issue and take action where considered appropriate.

APPENDIX A : EVENTS AND CONDITIONS



APPENDIX B : SHIP INFORMATION

Searoad Mersey

IMO Number	8914831
Call sign	VJBA
Flag	Australia
Port of Registry	Devonport
Classification society	Det Norske Veritas (DNV)
Ship Type	Roll on/roll off general cargo
Builder	Singmarine Dockyard and Engineering, Singapore
Year built	1990
Owners	Patrick Shipping, Australia
Ship managers	SeaRoad Shipping, Australia
Gross tonnage	7928
Net tonnage	2378
Deadweight (summer)	4824 tonnes
Summer draught	5.512 m
Length overall	118.80 m
Length between perpendiculars	109.35 m
Moulded breadth	18.50 m
Moulded depth	13.60 m
Engine	2 x Wartsila Vasa 8R32E
Total power	2 x 3278 kW
Crew	13

Ormiston

IMO Number	7806661
Call sign	VJIK
Flag	Australia
Port of Registry	Sydney
Classification society	Lloyd's Register (LR)
Ship Type	Bulk carrier
Builder	Tsuneishi Shipbuilding, Japan
Year built	1979
Owners	CSR Shipping, Australia
Ship managers	ASP Ship Management, Australia
Gross tonnage	13 909
Net tonnage	6671
Deadweight (summer)	16 602
Summer draught	8.719 m
Length overall	160.03 m
Length between perpendiculars	149.99 m
Moulded breadth	24.21 m
Moulded depth	12.02 m
Engine	1 x Sulzer 7RND68
Total power	8250 kW
Crew	17

APPENDIX C : SOURCES AND SUBMISSIONS

Sources of information

ASP Ship Management

Australian Maritime Safety Authority

Port of Melbourne Corporation.

Searoad Shipping

References

BASI (1991), '*Limitations of the see-and-avoid Principle*', reprinted by the ATSB in 2004, p 14-15.

International Chamber of Shipping, *Bridge Procedures Guide*, Fourth Edition, 2007.

Marine Notice 9/2006, Australian Maritime Safety Authority.

Port of Melbourne Corporation (2006), '*Port Waters of Melbourne Operations Handbook including harbour masters directions*'.

Schager, B. (2008), *Human Error in the Maritime Industry*, Sweden.

Woods DD, Cook RI., (1999), 'Perspectives on human error: Hindsight biases and local rationality', in Durso FT, Nickerson RS, Schvaneveldt JD, (eds.) *Handbook of Applied Cognition*. New York.

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.

The final draft of this report was sent to the master, chief mate and helmsman on board *Ormiston*, ASP Ship Management, the master and chief mate on board *Searoad Mersey*, Searoad Shipping, the Port of Melbourne harbour master and the Port of Melbourne VTS Manager and AMSA.

Submissions were received from *Searoad Mersey*'s master, *Ormiston*'s master and chief mate, the Port of Melbourne General Manager Marine & Navigation Services, Searoad Shipping, AMSA and ASP Ship Management. Submissions were included and/or the text of the report was amended where appropriate.

