Transport Accident Investigation Commission

Watchlist

Navigation in pilotage waters

What is the problem?

The Transport Accident Investigation Commission has inquired into several incidents in pilotage waters* that have resulted in groundings or contact with objects. Deficiencies in bridge resource management, an international standard for ensuring safe navigation of a ship, have been a feature of these incidents. Errors in navigation in pilotage waters have the potential to have serious consequences for people, the environment, and commerce.

What is the solution?

Safe conduct of a ship through pilotage waters depends on high standards of passage planning. Pilots and the bridge team must share an understanding of the navigation plan, and know where the ship is allowed to go. If the ship deviates into unsafe waters, members of the bridge team must be able to challenge those in charge. Also essential is a high standard of bridge resource management and adherence to best practice, as set out in international standards.

Safe navigation of a ship through pilotage waters requires every part of a ship's passage to be planned, and for all members of the bridge team to have a common understanding of the plan. In our inquiries, the Commission found that bridge resource management did not meet international standards. These inquiries featured miscommunication and a lack of common understanding among the bridge management team, and poor integration of pilots into the bridge team. The Commission has made recommendations about improving standards of pilotage, improving standards of passage planning, bridge resource management, and about the training and use of electronic chart display and information systems. International agencies have also identified pilotage as a safety issue.

* Pilotage waters are those areas in which a ship is usually required to use the services of a maritime pilot (there are sometimes exemptions). A maritime pilot is an experienced and highly skilled seafarer who has detailed knowledge of a particular waterway.

Background

Bridge resource managment

The maritime industry adopted 'bridge resource management' as a safety and error management tool in the early 1990s. It has since become an integral part of crew training and is included in the International Convention on Standards of Training, Certification and Watchkeeping. The convention, developed by the International Maritime Organization, came into effect in 2012. Bridge resource management training for ships' crew involved in navigation became mandatory under the convention in 2017.

Bridge resource management is the bridge team's effective management and utilisation of all available resources, human and technical, to help ensure the safe completion of the ship's voyage. Bridge resource management includes, for example, the use of communication techniques designed to avoid misunderstandings, participants sharing the same understanding of a planned passage, and maintaining situational awareness.

The objective of bridge resource management is to ensure that the best decisions are made and any errors or malfunction of equipment are identified and corrected before an incident can develop. To achieve this objective and navigate a ship safely, every part of a ship's passage must be planned, and all members of the bridge team must be fully familiar with and agree to the plan. This means they can monitor and challenge the pilot's actions effectively – good bridge resource management relies on a culture where challenge is welcomed and responded to, regardless of rank, personality or nationality.[†]

Commission findings and recommendations

Miscommunication and a lack of common understanding among the bridge management team under pilotage have featured in five inquiries completed by the Commission since November 2017. In July 2018, we published the report of an inquiry into the grounding of a passenger ship in Milford Sound.[1] The pilot lost situational awareness while the ship was turning, and it deviated well off the planned track. The Commission found that the bridge team was not making full use of the ship's electronic navigation systems to ensure that the ship stayed on track. We further found that, although the ship's crew on the bridge noticed the ship was off its planned track, they did not bring this to the pilot's attention until it was too late. The Commission made a recommendation to Environment Southland about its risk assessment for safe navigation within Fiordland. This recommendation was implemented. We also repeated recommendations previously made to the operator of the vessel about standards of bridge resource management, and training and support for the use of electronic navigational equipment.

The repeated recommendations to the operator had first arisen from an inquiry involving the same ship when it contacted a submerged object near Snares Island in January 2017 (the report to this inquiry was published in April 2018).[2] As with the later occurrence, the Commission found the standard of bridge resource management did not meet good

[†] This description of bridge resource management is taken from the Commission's report into inquiry MO-2016-202, which is referenced at the end of this document. Refer to the inquiry report (section 4.3) for further information.

industry practice. (No pilot was required in the waters where this occurrence took place.) The operation of the ship's electronic chart display and information system did not meet good practice as defined in the International Maritime Organization guidance or the standards set out in the operator's safety management system. The electronic chart display and information system was the primary means of navigation, yet the crew was not fully familiar with the capabilities and the limitations of the equipment. The Commission made two recommendations to the operator regarding the standards of voyage planning, the bridge resource management, and the training and use of electronic chart display and information systems.

In May 2018, we published the report of our inquiry into the contact of a passenger ship with Wheki Rock in Tory Channel in early 2016.[3] The Commission found that the standard of bridge resource management on board the ship did not meet the requirements of the company's safety management system, or the standards in the various International Maritime Organization publications. The bridge team and the pilot had no common (agreed) understanding of the plan for the ship to make the turn into Tory Channel. With no agreed plan, the bridge team failed to properly monitor the ship's progress through the turn. The Commission made two urgent recommendations: one to Maritime New Zealand related to pilot training; and one to the Marlborough District Council with respect to its risk assessment for the safe navigation of cruise ships through Tory Channel.

In a fourth report, published in November 2017 and which related to the grounding of a bulk carrier,[4] the Commission found that the incident occurred because the bridge team lost situational awareness. The bridge team was not adequately monitoring its progress using all available means, and did not realise that the vessel had deviated so far from the intended track. The Commission also found that: there was no formal shared understanding between the pilot and the vessel's crew on what passage plan would be used, the vessel's navigation equipment was not correctly configured for navigating in a narrow channel, and the standard of bridge resource management on the bridge leading up to the grounding did not meet good industry practice. One of the recommendations from this inquiry was to Maritime New Zealand to provide a common official website for harbour authorities' passage plans. Shipping companies and vessel masters could then access them before planning their voyages. This recommendation was implemented.

The Commission published a report in October 2019 into the grounding of a container ship in Otago Lower Harbour.[5] During the hours of darkness, the ship was rounding the final bend in the channel before reaching its berth, when a combination of factors caused it to deviate from the planned track in the centre of the channel, and ground on the left channel bank. The Commission made findings similar to previous inquiries: neither the harbour pilot nor the ship's bridge team fully used the ship's electronic navigation aids, which showed the vessel deviating from the centre of the channel; the standard of bridge resource management fell short of good industry practice; and the ship's bridge team were not fully following the company policies and procedures for navigating in pilotage waters. In addition, the port operator's policies, procedures and compliance monitoring of pilotage operations fell short of industry standards. The Commission recommended the operator ensure all crews across its fleet achieve a high standard of navigation and pilotage; and recommended that Port Otago note the findings of the report to determine where pilotage operations could be improved.

Pilotage is an issue for international agencies as well. Our peer organisation, the Australian Transport Safety Bureau has placed maritime pilotage on their SafetyWatch, the equivalent publication to the Watchlist.[6]

Progress in improving safety

The series of recurring incidents involving standards of bridge management that do not meet industry standards, and the presence of the problem in other jurisdictions, suggests that this is a safety issue that needs attention from the regulator, operators, and training providers. We acknowledge the work of the Port and Harbour Marine Safety Code Steering Group in working to implement the recommendation to make passage plans readily available, noted above as implemented. (The Steering Group is a partnership between Maritime New Zealand, regional councils and port companies. Its primary responsibility is to implement the New Zealand Port and Harbour Marine Safety Code.) In July 2021, the New Zealand Port and Harbour Marine Safety Code members advised that it had published *Key Principles for Marine Safety Risk Management*, guidance for port companies and regional councils on managing maritime risks including navigation in pilotage waters.

The NZ Maritime Pilots Association advises they have initiated projects and discussions in response to the safety issues raised in the Watchlist.[7] We welcome the publication, in October 2020, of the New Zealand Maritime Pilots Association's Good Practice Guide to Pilotage Planning.[8]

Maritime New Zealand and the Ministry of Transport advise that a preliminary systems analysis has been completed and established a foundation for a first principles policy review of the systems that influence navigational safety in pilotage waters. The review will cover elements such as pilot training, maintaining currency of competence, bridge resource management, the setting of pilotage areas, and how to deal with isolated ports. In the interim some changes have been made to some pilotage requirements.

The Commission acknowledges these initiatives and looks forward to the outcome of the work.

References

[1] Transport Accident Investigation Commission *Report MO-2017-202: Passenger vessel,* L'Austral*, grounding, Milford Sound, Fiordland, 9 February 2017*
http://www.taic.org.nz/inquiry/mo-2017-202
Safety recommendation 017/18

[2] Transport Accident Investigation Commission *Report MO-2017-201: Passenger vessel* L'Austral *contact with rock Snares Islands, 9 January 2017*
http://www.taic.org.nz/inquiry/mo-2017-201
Safety recommendation 002/18

[3] Transport Accident Investigation Commission *Report MO-2016-202: Passenger ship,* Azamara Quest*, contact with Wheki Rock, Tory Channel, 27 January 2016*
http://www.taic.org.nz/inquiry/mo-2016-202
Safety recommendations 016/16 and 017/16

[4] Transport Accident Investigation Commission *Report MO-2016-204: Bulk carrier,* Molly Manx*, grounding, Otago Harbour, 19 August 2016*
http://www.taic.org.nz/inquiry/mo-2016-204
Safety recommendations 029/17, 030/17, and 031/17

[5] Transport Accident Investigation Commission *Report MO-2018-203: Grounding of container ship* Leda Maersk*, Otago Lower Harbour, 10 June 2018*
https://www.taic.org.nz/inquiry/mo-2018-203
Safety recommendations 005/19 and 006/19

[6] The Australian Transport Safety Bureau's SafetyWatch item on maritime pilotage can be found here:
https://www.atsb.gov.au/safetywatch/sw_marine-pilotage/

[7] Correspondence received 12 July 2019

[8] The document can be found on Maritime NZ's website:
New Zealand Port and Harbour Marine Safety Code - Maritime NZ

Version history

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Te Kōmihana Tirotiro Aituā Waka
Transport Accident Investigation Commission
www.taic.org.nz

The Transport Accident Investigation Commission is an independent Crown entity established to determine the circumstances and causes of accidents and incidents with a view to avoiding similar occurrences in the future.