

Inquiry 13-201: Accommodation fire on board the log-carrier,
Taokas Wisdom, Nelson, 11 July 2013

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Final Report

Marine inquiry RO-2013-201

Accommodation fire on board the log-carrier, *Taokas Wisdom*,
Nelson, 11 July 2013

Approved for publication: June 2014

Transport Accident Investigation Commission

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The Transport Accident Investigation Commission (Commission) is an independent Crown entity responsible for inquiring into maritime, aviation and rail accidents and incidents for New Zealand, and co-ordinating and co-operating with other accident investigation organisations overseas. The principal purpose of its inquiries is to determine the circumstances and causes of occurrences with a view to avoiding similar occurrences in the future. Its purpose is not to ascribe blame to any person or agency or to pursue (or to assist an agency to pursue) criminal, civil or regulatory action against a person or agency. The Commission carries out its purpose by informing members of the transport sector, both domestically and internationally, of the lessons that can be learnt from transport accidents and incidents.

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Citations and referencing

Information derived from interviews during the Commission's inquiry into the occurrence is not cited in this final report. Documents that would normally be accessible to industry participants only and not discoverable under the Official Information Act 1980 have been referenced as footnotes only. Other documents referred to during the Commission's inquiry that are publicly available are cited.

Photographs, diagrams, pictures

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photo courtesy Eric Stewart

The *Taokas Wisdom* manoeuvring into Port Nelson

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Abbreviations

SOLAS	International Convention for the Safety of Life at Sea, 1974
AB-3	able-bodied seaman-3
ISM Code	International Safety Management Code

Glossary

B-0 Fire door	The fire door's average unexposed-face temperature rise shall not be more than 140 degrees Celsius for a period of zero minutes
NK class	Nippon Kaiji Kyokai, ship classification society

Data summary

Vehicle particulars

Name:	<i>Taokas Wisdom</i>
Type:	bulk carrier modified
Class:	Nippon Kaiji Kyokai
Limits:	SOLAS ship
Classification:	NS* MNS*
Length:	175.53 metres
Breadth:	29.40 metres
Gross tonnage:	19 822 tonnes
Built:	2008, The Hakodate Dock Company Limited, Hakodate, Japan
Propulsion:	one direct-drive reversible crosshead diesel engine: Mitsubishi 6UEC52LA. Maximum continuous rating: 6840 kilowatts at 129 revolutions per minute through a fixed-pitch, 5-bladed, 4.950-metre propeller
Service speed:	13.50 knots
Owner/operator:	Well Ship Management and Maritime Consultant Co. Limited
Port of registry:	Panama
Minimum crew:	14

Date and time 11 July 2013 at about 0550¹

Location Nelson, New Zealand

Injuries nil

Damage significant heat damage in 2 cabins and smoke damage to other spaces on B-deck

¹ Times in this report are New Zealand Daylight Time (co-ordinated universal time + 12 hours), and are expressed in the 24-hour format.

1. Executive summary

- 1.1. On 11 July 2013, the bulk log carrier *Taokas Wisdom* was loading a cargo of logs at the Port of Nelson, New Zealand when fire broke out in one of the crew member's cabins. The fire was detected by the automatic fire detection system, which activated the ship's general alarm.
- 1.2. While the crew were responding to the fire alarm, the Port Nelson security officer saw smoke emitting from the ship and notified the Nelson Fire Service.
- 1.3. The ship's crew were able to bring the fire under control within about 25 minutes, after which firefighters from the Nelson Fire Service boarded the ship and used thermal imaging equipment to identify and extinguish any remaining hotspots.
- 1.4. The cabin where the fire started was extensively damaged. Other adjoining spaces suffered heat and smoke damage. Nobody was injured during the fire.
- 1.5. The Transport Accident Investigation Commission (Commission) was unable to identify the cause of the fire definitively, partly because some evidence had been disturbed when the crew began cleaning the cabin before a scene examination could be conducted.
- 1.6. A safety issue identified was that the monthly fire drills that were held on board the *Taokas Wisdom* did not ensure that all crew members were fully conversant with their duties and responsibilities, and did not result in the firefighting procedures being followed. The Commission made a safety recommendation to the ship operator to address this safety issue.
- 1.7. Notwithstanding that the crew brought the fire under control within 25 minutes, the Commission identified a number of **safety lessons** arising from the crew's firefighting performance, which were:
 - establishing a command centre as a focal point for maintaining a management overview of a firefighting response will increase the chances of controlling a fire and minimising the damage it causes
 - enclosing the space that is on fire (or leaving it enclosed) will help prevent the spread of the fire and minimise the damage it causes
 - closing down the air supply to a space that is on fire is essential to extinguishing the fire.

2. Conduct of the inquiry

- 2.1. At about 1030 on 11 July 2013, the Commission was notified by Maritime New Zealand of a fire on board the bulk carrier *Taokas Wisdom*. The fire had occurred at about 0555 on the same day, while the ship was loading logs at Port Nelson.
- 2.2. The Commission opened an inquiry under section 13(1) of the Transport Accident Investigation Commission Act 1990, and appointed an investigator in charge.
- 2.3. The investigators made immediate contact with the ship to secure the scene. At that time the fire had been extinguished for about 4 hours and the ship's crew had already begun cleaning out the cabin where the fire had started. Consequently much of the evidence as to the cause of the fire had been disturbed or lost.
- 2.4. Two investigators from the Commission travelled to Nelson on 11 July 2013 to gather evidence and inspect the fire damage on the ship. The master, third officer, able-bodied seaman-3 (AB-3) and a senior firefighter from the Nelson Fire Service were interviewed during the next 2 days. Investigators also gathered information from the marine services supervisor at Port Nelson, including footage from the port security cameras.
- 2.5. The following day, specialists in fire investigation from the New Zealand Fire Service were engaged to help determine the cause of the fire.
- 2.6. The ship was again visited by 2 investigators on 19 July 2013 at Wellington, to gather further evidence for the inquiry and conduct further interviews with the master, chief officer and second officer of the *Taokas Wisdom*.
- 2.7. The Commission received a fire investigation report from the fire specialists who inspected the ship in Nelson, which is referred to in, and appended to, this report.
- 2.8. On 15 April 2014 the Commission approved a draft final report for circulation to interested persons.
- 2.9. The draft final report was sent to seven interested persons with a request that submissions, if any, be forwarded to the Commission. Written submissions were received from Maritime New Zealand, Well Ship Management and the Panama Maritime Authority.
- 2.10. On 25 June 2014 the Commission approved the final report for publication.

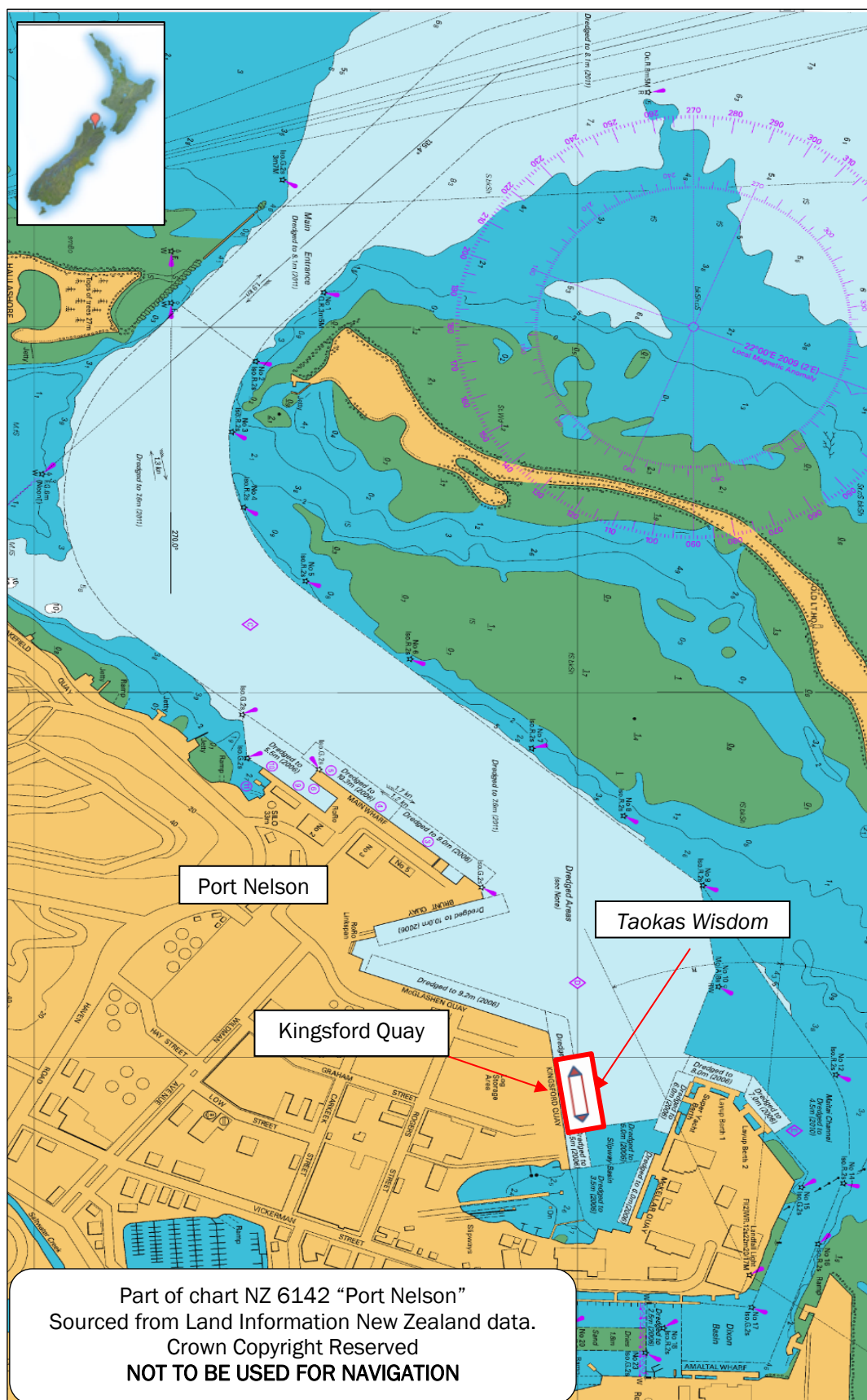


Figure 1
Part of chart NZ 6142 showing Port Nelson

3. Factual information

3.1. Narrative

- 3.1.1. At about 1200 on 10 July 2013, the *Taokas Wisdom* arrived at Port Nelson, New Zealand to load a part shipment of logs. Cargo loading commenced at about 1500.
- 3.1.2. At about 0400 the next day, 11 July 2013, AB-3 was to begin his deck cargo watch. He left his cabin and shut the cabin door, but did not lock it. AB-3 recalled that he had left an electric water-heating jug² and cabin lights switched on. He also recalled leaving his MP4 player³ on his bed, but it was not connected to a charging socket.
- 3.1.3. Meanwhile the second officer was coming to the end of his cargo watch. At about 0545 he handed over watch-keeping duty to the third officer. The third officer then conducted a routine inspection of the upper deck and was walking towards the accommodation when he heard the fire alarm ringing in the ship's accommodation.
- 3.1.4. The third officer decided to inspect the fire alarm panel on the bridge and was climbing up the stairs through the accommodation space when he noticed smoke near AB-3's cabin. The cabin was located on the aft starboard side of the B-deck alleyway.
- 3.1.5. The third officer used his radio to speak with the chief officer, who was in his cabin on the C-deck (the deck above the B-deck). He then started knocking on the nearby cabins to wake up any sleeping crew, in case they had not been woken by the ship's fire alarm. Cargo loading operations were suspended at about 0600, at which time the port security gate operator noticed smoke coming from the ship's accommodation and alerted the Fire Service. The port surveillance cameras were directed towards the ship to monitor the situation.



Figure 2
Location of the fire on board the *Taokas Wisdom*

² A type of water heater that automatically switches on and off to maintain hot water.

³ A portable device for viewing digital movies and listening to music.

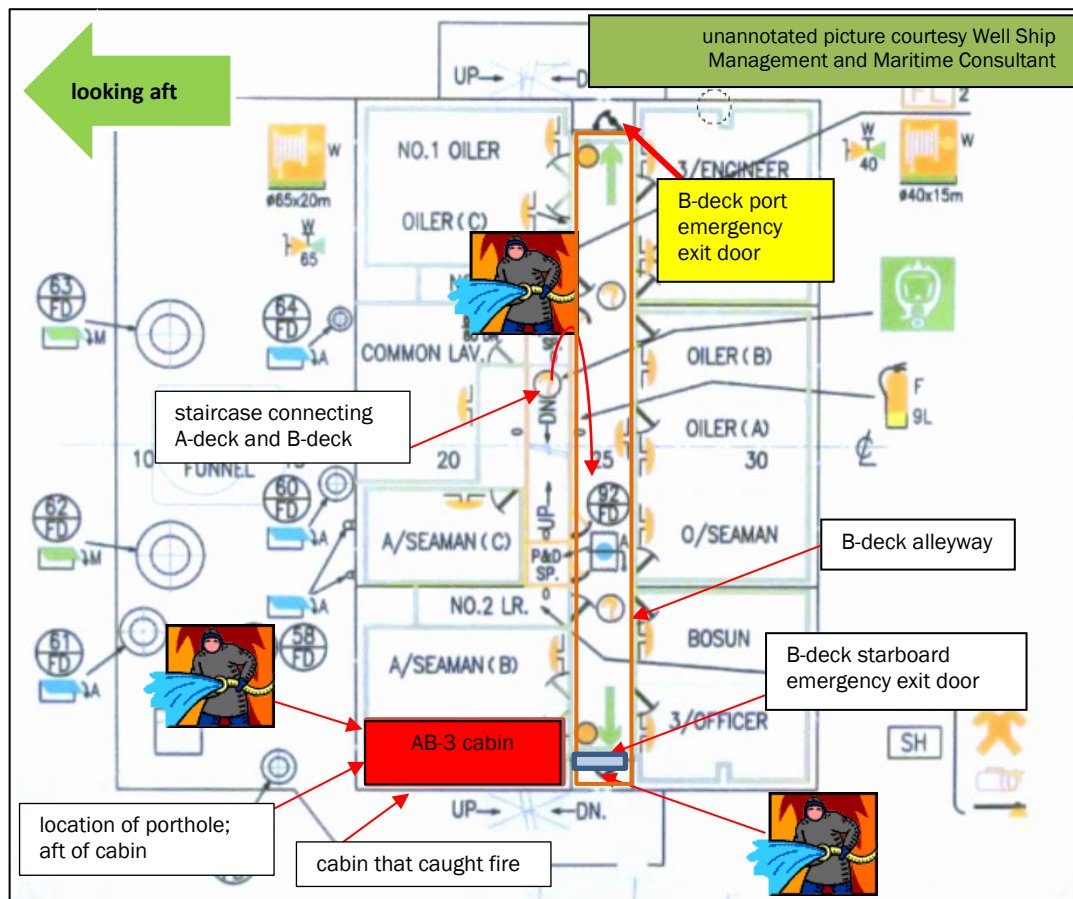


Figure 3
B-deck accommodation plan

- 3.1.6. The second officer, who was also in his cabin, heard the radio conversation between the chief officer and the third officer on his handheld radio. He immediately proceeded to the bridge to broadcast on the ship's loudspeaker that there was a fire on board.
- 3.1.7. The chief engineer had heard the fire alarm. He also made an announcement on the loudspeaker, and proceeded to the upper deck to instruct his team to isolate the power supply to the B-deck and to start the fire pumps.
- 3.1.8. The master was in his cabin when he heard the announcements on the loudspeaker. Instead of proceeding to his designated position on the bridge, he joined the crew who were assembling on the B-deck.
- 3.1.9. The chief officer first proceeded to the bridge, then made his way down to the B-deck. He instructed the third officer to fetch a portable foam extinguisher that was located on the B-deck alleyway bulkhead. A crew member opened AB-3's cabin door and the chief officer used the portable foam extinguisher to try to extinguish the fire. He was unsuccessful. Once the cabin door was opened the B-deck alleyway quickly filled with smoke and the crew were forced to retreat. They could not recall closing the cabin door behind them.
- 3.1.10. Some crew members retreated down the internal stairwell to the A-deck, and others retreated outside via the B-deck emergency exit door located on the port side, leaving this door open as they did so (see location of door in Figure 3). Figure 4 shows smoke billowing out from this door.



Figure 4
Smoke billowing from the port-side emergency exit door on the B-deck

- 3.1.11. The ship's crew subsequently split up into 2 firefighting teams. One team attempted to fight the fire using fire hoses connected to hydrants located in the A-deck alleyway (the deck below), but the crew found it difficult to reach AB-3's cabin through the smoke-filled B-deck alleyway (see Figure 3).
- 3.1.12. The second team gathered outside the locked starboard emergency exit door on the B-deck. The door was forced open with a crowbar and an attempt was made to fight the fire using fire hoses connected to an upper-deck fire hydrant.
- 3.1.13. While the starboard emergency exit door was being forced open, other crew members used a sledgehammer to break the porthole to AB-3's cabin. They then sprayed water into the cabin, which succeeded in bring the fire under control.
- 3.1.14. At about 0610 two fire engines arrived on the scene, followed soon afterwards by 2 ambulances.
- 3.1.15. At about 0619 two firefighters boarded the ship, donning firefighting gear and thermal imaging cameras. Armed with the ship's fire hoses, the firefighters made an entry to the B-deck through the starboard emergency exit. The firefighters used the thermal imaging cameras to identify and extinguish any remaining hotspots.
- 3.1.16. The shore firefighters then ventilated the B-deck spaces by opening the portholes of the cabins located on the forward side of the B-deck alleyway. A petrol-powered fan was used to assist in ventilating the space.
- 3.1.17. At about 0700 the fire service confirmed that the fire was out. Cargo operations were resumed at about 0720.
- 3.1.18. On 12 July 2013 the ship was inspected by an NK class surveyor and issued with a "Conditional Safety Construction" certificate on behalf of the ship's Flag State, Panama, with recommendations to repair the accommodation B-deck by 10 September 2013.
- 3.1.19. The ship was permitted to complete its voyage from Nelson to China, via other New Zealand loading ports, while holding the "Conditional Safety Construction" certificate.

4. Analysis

4.1. Introduction

- 4.1.1. A fire on board a ship is a serious occurrence. The presence of machinery spaces and cargo holds adjoining accommodation blocks of modular construction means the risk of a fire spreading quickly is high. The risk is mitigated by using fire-resistant construction methods, early fire detection systems and robust crew training in, and procedures for, responding to fires.
- 4.1.2. The system for preventing, detecting and extinguishing fires on ships is designed around ships needing to be self-sufficient, rather than relying on integration with shore-based fire services, because fires can occur any time while at sea. The crew's knowledge on how to respond to fires is, therefore, paramount. The International Maritime Organization conventions require crews to be trained in firefighting⁴, and to participate in fire drills at least once each month⁵.
- 4.1.3. The Commission was unable to identify a definitive cause for this fire, mainly due to the clean-up efforts of the crew once the fire was extinguished, which resulted in a disturbance of the evidence before investigators from the Commission and the New Zealand Fire Service were able to conduct their scene examinations. A number of possible causes are discussed in section 4.2.
- 4.1.4. In this case the crew were able to bring the fire under control through their actions alone. The shore fire personnel followed up to extinguish the fire fully. Because of the importance of shipboard systems for detecting and responding to fires, those systems were examined to identify lessons that could be drawn to help reduce the number and severity of shipboard fires in future. These lessons are discussed in section 4.3.
- 4.1.5. Section 4.4 discusses circumstances of a broader nature that contributed to the fire – the effectiveness of fire drills and training on board the *Taokas Wisdom*.

4.2. Potential causes of the fire

- 4.2.1. For a fire to develop there must be a source of fuel, a source of heat (ignition) and an ample supply of air (oxygen). In order to determine the cause of a fire, investigators look for evidence of how all 3 sides of what is called the fire triangle (heat, fuel and oxygen) were present.
- 4.2.2. As the cabin was cleaned prior to investigators boarding the ship, it was not possible to identify the cause of the fire definitively. The Commission relied on the fire investigation report appended to this report, which discussed several potential ignition sources examined by the specialist fire investigators (see Appendix 1 for the full fire investigation report).

⁴ International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, Chapter VI, Regulation VI/3.

⁵ International Convention for the Safety of Life at Sea (SOLAS), Chapter III, Regulation 19.

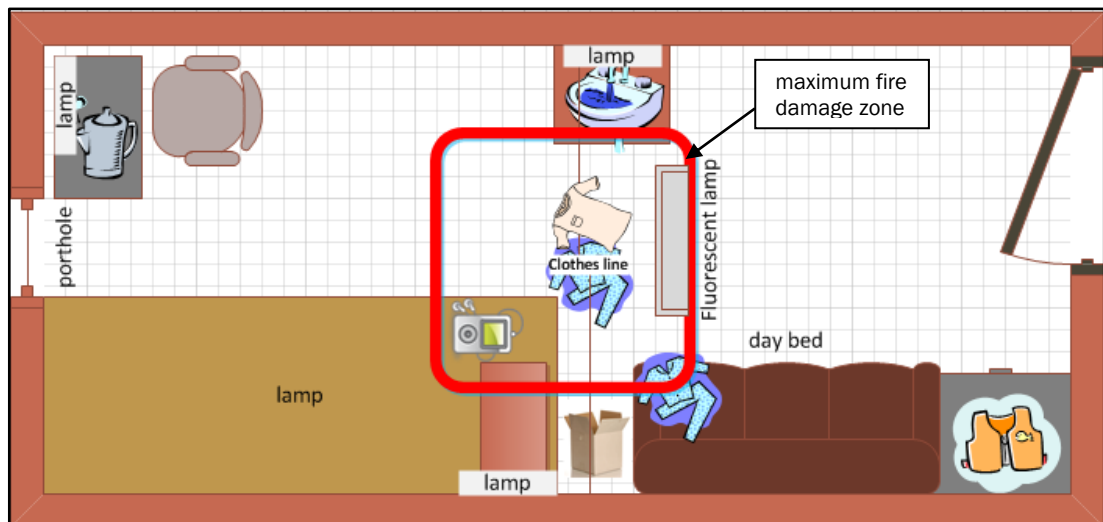


Figure 5
Schematic diagram of AB-3's cabin

Layout of the cabin and its contents

- 4.2.3. The cabin was 2 metres wide and 5 metres long. The layout of the cabin and the location of the main contents are shown in Figure 5.
- 4.2.4. On the table was an automatic water-heating jug. There were some books on the table and some papers on the shelf directly above the table. The chair in the cabin was a plastic swivel type, and was located close to the table. The bed was located in the starboard aft corner of the cabin. According to AB-3, he left his MP4 player on the forward side of the bed close to the pillow. Two cardboard boxes were placed between the bed and the day bed. Inside the cardboard boxes were an old duvet and a raincoat.
- 4.2.5. A steel locker was located in the forward starboard corner of the cabin. AB-3 stored his lifejacket and survival suit on top of the locker.



Figure 6
Smoke damage to the B-deck alleyway

Post-fire inspection

- 4.2.6. The fire damage was restricted to AB-3's cabin, the B-deck alleyway and the common bulkhead between AB-3's cabin and the adjacent cabin. There was extensive smoke damage to the alleyway and to other cabins where their doors had been left open.
- 4.2.7. The corner of the bed, closest to the centre of the cabin, showed extensive fire damage (see Figure 7). The mattress, duvet and pillow were all severely burnt. The day bed showed signs of fire damage, particularly at the end closest to the centre of the cabin.
- 4.2.8. AB-3's cabin bulkhead had suffered significant heat damage, resulting in the buckling of the bulkhead lining. The buckling was greatest at the centre of the cabin. The common bulkhead of the adjoining cabin also showed signs of surface damage (see Figure 8).



Figure 7
An undamaged cabin and the fire-damaged cabin on the B-deck



Figure 8
Heat damage on the common bulkhead of the adjoining cabin

- 4.2.9. Heat damage to the floor in the centre of the cabin had lifted the floor coating, revealing the sheet-steel floor beneath.
- 4.2.10. The metal cabin desk situated in the aft corner of the cabin (see Figure 7) was heat damaged and the charred remains of a water heater and some books were found on top of the desk. An electric socket was located on the aft wall and the remains of a book shelf containing books and various papers were present. The remains of a hand basin were found on the port bulkhead of the cabin. The light fittings in the cabin were damaged and only the bare frame of the central overhead fluorescent lamp remained.
- 4.2.11. The water-heating jug situated on the metal desk had been plugged in to the power source when AB-3 left his cabin about 2 hours before the fire. AB-3 had not had any trouble with the water heater prior to this incident and he considered it to have been in good working order. The specialist fire investigators observed that the fire damage in the rest of the cabin was not consistent with the fire starting in the water heater. Moreover, no electrical fault alarm was registered on the ship's alarm panel. If a fault in the water heater had developed, it is likely that this would have either tripped an electrical circuit breaker or shown as an earth fault. The water heater is therefore not considered a probable cause of the fire.

Light fitting

- 4.2.12. The centre light in the cabin was a fluorescent lamp with a diffuser cover. AB-3 confirmed that this light had been left on when he left his cabin about 2 hours before the fire. This light fitting was in the centre of the room above where the seat of the fire was located, and it was extensively damaged. As with the water heater, the ship's alarm system had not registered any electrical fault prior to the incident. No previous issues had been recorded with the lighting system in the cabin. For these reasons, it is not likely that the light was the cause of the fire, but given the amount of damage it sustained and its location directly over the seat of the fire, the possibility could not be excluded.

MP4 player

- 4.2.13. The MP4 player had been on the bed when AB-3 left his cabin, but not connected to its electric charger. The remains of the MP4 player were found next to the pillow at the head of the bed on the side closest to the centre of the cabin. There was no evidence to promote or discount the notion that the MP4 player was the source of ignition.

Incendiarism⁶

- 4.2.14. When AB-3, a confirmed non-smoker, left his cabin on the day of the incident, the cabin door was shut but not locked. The mattress on the bed was a polyurethane foam squab. A portion in the centre of the mattress burnt through to the wooden base. The fire investigation report stated that the unusual burn pattern damage to the mattress was not consistent with the fire damage to the rest of the mattress. The heat damage on the floor towards the centre of the cabin separated the coating from the steel deck. The resulting irregular-shaped pattern on the floor indicated that this area of the deck had been subjected to a greater heat source than others. The fire investigation report also stated that in the reported absence of any combustible materials in this area that could produce this kind of damage, the possibility of a flammable liquid fuel being used cannot be discounted.
- 4.2.15. If, however, there had been some form of combustible material in the centre of the floor, or if burning materials had dropped from above onto this area, this could be one explanation for the observed fire pattern.

Finding

1. The cause of the fire could not be conclusively identified due to the cabin having been cleaned before a scene investigation could be conducted.

4.3. Firefighting on board the *Taokas Wisdom*

- 4.3.1. When a fire occurs on board a ship, no matter how small it might at first appear, the key elements of the response are to report the fire, then contain it to prevent it spreading and extinguish it. It is important to set up an efficient command and control system to ensure that this is done efficiently with the aim of preserving life and preventing damage to the ship, whilst minimising the risk to the ship's crew.
- 4.3.2. In this case the crew succeeded in bringing the fire under control. However, there are some lessons that can be taken from their response that could have limited the amount of damage to the ship and resulted in the fire being extinguished sooner.

Command and control

Safety lesson – Establishing a command centre as a focal point for maintaining a management overview of a firefighting response will increase the chances of controlling a fire and minimising the damage it causes.

- 4.3.3. In the event of a fire, the master's designated location was the ship's bridge, where he was required to establish a command centre from where he could co-ordinate and communicate with the ship's firefighting teams. From there he would have access to the communication equipment to alert the shore-based authorities to the fire.
- 4.3.4. When the fire alarm rings, an important task is for the crew to muster at the muster station, so that the master can establish the whereabouts of all the crew. This helps to establish what resources are available and whether anyone is unaccounted for. This task is made more

⁶ The act or practice of illegal burning (arson).

difficult when a ship is in port because not all crew will necessarily be on board, and there will highly likely be shore-based persons on board as well.

- 4.3.5. In this case the master did not report to the bridge and take control from there. No crew muster was conducted and no-one from the ship alerted the shore authorities to the fire.
- 4.3.6. Not all of the crew reported to the muster station. Instead, they generally congregated around the location of the fire, and firefighting teams were assembled on an ad-hoc basis.
- 4.3.7. Had the fire not been brought under control, this lack of structure and delays in getting all available resources to fight the fire could have resulted in a more serious outcome.

Containment of the fire

Safety lesson – Enclosing the space that is on fire (or leaving it enclosed) will help prevent the spread of the fire and minimise the damage it causes.

- 4.3.8. The containment of a fire is important. In this case the fire was initially contained within a single cabin. The cabin door was classified as a B-0 fire-retardant door, which meant it was designed to resist fire as far as practical to the same standard as the B-Class bulkhead in which it was situated. The International Code for the Application of Fire Test Procedures, 2010 stated that a B-class bulkhead must be able to contain a fire for a minimum duration of 30 minutes.
- 4.3.9. The chief officer was in charge of the deck firefighting team. Having first reported to the bridge he went to the scene of the fire. There he ordered that the cabin door be opened so that he could tackle the fire with a portable fire extinguisher. He was not wearing self-contained breathing apparatus and was quickly overcome by the thick smoke and heat from the cabin and had to retreat, most likely leaving the door open as the alleyway was soon engulfed in smoke. The fire was then no longer contained and began to spread across the alleyway.
- 4.3.10. There are cases when a fire is obviously small and can realistically be tackled immediately by the first responders, but this was not one of them. Entry to a burning cabin should generally not be attempted until sufficient firefighting resources are ready to combat the fire. In this case, crew wearing self-contained breathing apparatus ready with fully charged fire hoses would have been an effective solution.

Denying oxygen to the fire

Safety lesson – Closing down the air supply to a space that is on fire is essential to extinguishing the fire.

- 4.3.11. One method of containing a fire is to starve it of oxygen. Leaving the room enclosed is one method of achieving this, but sources of airflow into the space should be considered as well. Most accommodation blocks on ships are enclosed, controlled environments. On board the *Taokas Wisdom*, the supply of fresh air to the cabins could be stopped by closing appropriate ventilation dampers fitted within the ventilation ducting.

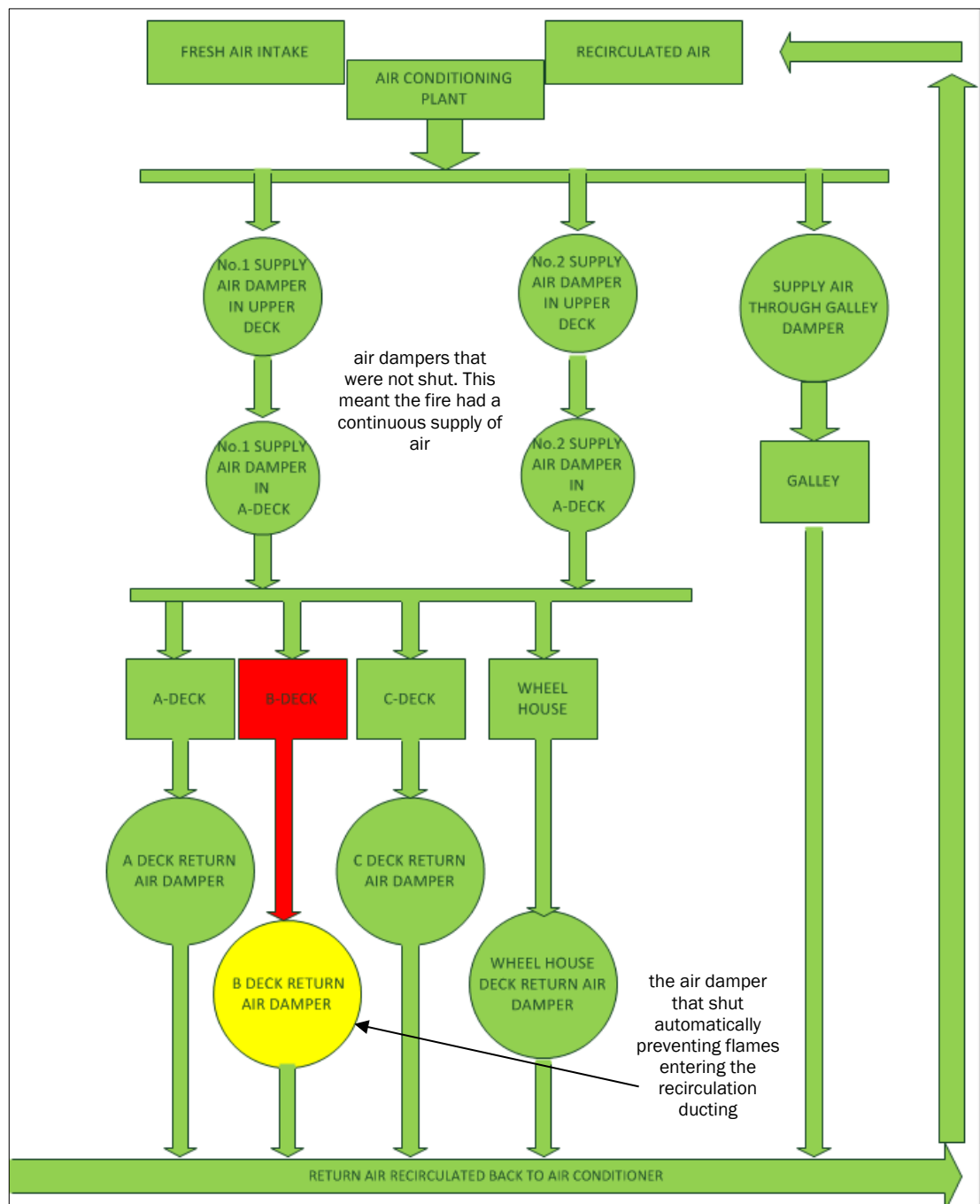


Figure 9
Air circulation flow chart showing locations of automatic dampers

- 4.3.12. Figure 9 is an air circulation flow chart showing the direction of airflow (green arrows) from the air-conditioning plant, through the accommodation spaces and back to the air-conditioning unit through the recirculation ducting. The air ducts had 9 automatic fire dampers, each fitted with fuses that would trigger a damper-closing mechanism once the temperature of the fuses reached 72 degrees Celsius. It was also possible to close these automatic fire dampers manually.
- 4.3.13. On the day of the incident, the heat from the fire caused the fuse on the B-deck return-air damper to break. The damper automatically closed, isolating the fire from the return-air ducting (see the yellow circle in Figure 9). However, the nearest supply-air damper was located on the A-deck, where the temperature rise was not sufficient to close the damper automatically.

- 4.3.14. Closing down ventilation systems is a critical aspect of shipboard firefighting. Most ships have dedicated fire parties whose task is to achieve this. There were 70 manually operated and 9 automatic fire dampers on board the *Taokas Wisdom*. The ship's fire muster plan identified a dedicated ventilation and first aid team, led by the second officer. However, the second officer was not aware that he was supposed to be in charge of the ventilation team. Consequently no fire dampers were closed manually, which meant the fire in AB-3's cabin was being force fed air. The automatic closing of the recirculation air damper would have restricted the supply of air to some extent, but not totally. Once the cabin door was opened and remained open, any restriction of the airflow would have been removed, and the fire would have naturally spread out through the open door into the alleyway.
- 4.3.15. The fact that the second officer was not aware of his responsibilities for a firefighting response is discussed in the following section.

Finding

2. The following factors were likely to have reduced the effectiveness of the shipboard firefighting response:
- the lack of an effective command and control of the firefighting response
 - the fire was not contained within the cabin until the firefighting teams were fully ready to engage
 - the supply of air to the cabin where the fire was located had not been shut down.

4.4. On-board training and procedures for firefighting

Safety issue: The firefighting drills held on board the Taokas Wisdom were not effective in ensuring that all crew were familiar with their tasks and responsibilities in the event of a fire.

- 4.4.1. Chapter 3, Regulation 19 of the International Convention for the Safety of Life at Sea, 1974 (SOLAS) states that "crew members of all ships shall participate in at least one abandon ship drill and one fire drill every month". Regulation 19 also states that the "details of the drills conducted must be recorded in a logbook prescribed by the government of the state whose flag the ship is entitled to fly".
- 4.4.2. The records on board the *Taokas Wisdom* showed that firefighting drills were conducted every month in accordance with the SOLAS Convention. A firefighting checklist (see Appendix 3) was completed following each drill, and signed by the master, stating that the standard of the drill was satisfactory.
- 4.4.3. To be effective, drills should aim to be as close to realistic as possible, and should over time test all aspects of firefighting on board using several scenarios. The more often a procedure is practised, the more likely it is that the crew will respond in the correct way when under the added pressure of a real event. The crew response to this fire, and interviews with crew following the fire, indicated that the fire drills on board the *Taokas Wisdom* might not have achieved this aim.
- 4.4.4. The second officer had been on board the *Taokas Wisdom* for 9 months, which meant he had attended at least 9 firefighting drills. However, he was still unaware that his team was responsible for controlling ventilation in the event of a fire. The master was unsure of which officer was in charge of which fire party. Instead of assuming control of the firefighting response from the bridge, the master immersed himself in managing the event from near the scene of the fire.
- 4.4.5. The International Safety Management Code (ISM Code) requires a ship owner or any person who assumes responsibility for a ship to develop and establish a safety management system that meets the objectives of the Code. Safety management systems are developed to foster a

culture of safety on board a ship and within the company that operates that ship. This is achieved by assigning responsibility and accountability for safety at all levels, and in particular at the senior management level.

- 4.4.6. The safety management system on board the *Taokas Wisdom* had procedures and instructions for emergency shipboard operations, including lifesaving and firefighting. The firefighting checklists appeared to be generic in nature, but they covered essential routines that needed to be performed in the event of a fire.
- 4.4.7. The ISM Code requires an organisation responsible for the operation of a ship to conduct mandatory internal audits at intervals generally not exceeding 12 months. On 16 June 2013 a company auditor had boarded the ship and conducted an internal ISM audit. The audit was completed on the same day and covered 60 “key auditing items” (see Appendix 5). The auditor found that 59 out of the 60 audited items were complying with the requirements of the ISM Code and the ship’s safety management system, including that “each crew member understands his emergency responsibilities and duties as assigned in [the] muster list”.
- 4.4.8. The findings of this report show that this was not necessarily the case, and that the company’s safety management system would want to target this specific item in more detail in future audits.

Finding

- 3. The firefighting drills held on board the *Taokas Wisdom* were not effective in ensuring that all crew members were familiar with their tasks and responsibilities in the event of a fire.

5. Findings

- 5.1. The cause of the fire could not be conclusively identified due to the cabin having been cleaned before a scene investigation could be conducted.
- 5.2. The following factors were likely to have reduced the effectiveness of the shipboard firefighting response:
 - the lack of an effective command and control of the firefighting response
 - the fire was not contained within the cabin until the firefighting teams were fully ready to engage
 - the supply of air to the cabin where the fire was located had not been shut down.
- 5.3. The firefighting drills held on board the *Taokas Wisdom* were not effective in ensuring that all crew members were familiar with their tasks and responsibilities in the event of a fire.

6. Safety actions

General

- 6.1. The Commission classifies safety actions by 2 types:
- (a) safety actions taken by the regulator or an operator to address safety issues identified by the Commission during an inquiry that would otherwise result in the Commission issuing a recommendation
 - (b) safety actions taken by the regulator or an operator to address other safety issues that would not normally result in the Commission issuing a recommendation.

Safety actions addressing safety issues identified during an inquiry

- 6.2. None identified.

Safety actions addressing other safety issues

- 6.3. None identified.

7. Recommendations

General

- 7.1. The Commission may issue, or give notice of, recommendations to any person or organisation that it considers the most appropriate to address the identified safety issues, depending on whether these safety issues are applicable to a single operator only or to the wider transport sector. In this case, recommendations have been issued to Designated Person Ashore of the Wisdom Marine Group.
- 7.2. In the interests of transport safety it is important that these recommendations are implemented without delay to help prevent similar accidents or incidents occurring in the future.

Recommendations

- 7.3. The safety management system on board the *Taokas Wisdom* had procedures and instructions for emergency shipboard operations, including lifesaving and firefighting. The firefighting checklists appeared to be generic in nature, but they covered routines that needed to be performed in the event of a fire.

However, the firefighting drills held on board the *Taokas Wisdom* were not effective in ensuring that all crew were familiar with their tasks and responsibilities in the event of a fire.

On 25 June 2014 the Commission recommended that the operating company for the *Taokas Wisdom* focus in more detail on the effectiveness of the emergency-response training on board all ships under its management. (O17/14)

The Designated-Person-Ashore of Wisdom Marine international Inc. replied:

According to above-mentioned safety lessons, I consider it's important to issue a circular to educate crew related to skills in fire extinguishing

- Shut off air ventilation in enclosed space onboard ships which is on fire
- Contain the fire in this enclosed space
- Bridge Team (Control Center) shall be organized and Master shall make command to effectively response [sic]
- Fireman outfits and sufficient appliances shall be prepared prior to entering fire scene to extinguish fire.
- When fire in port, immediate report to port authority shall be done for more resources

8. Key lessons

- 8.1. Establishing a command centre as a focal point for maintaining a management overview of a firefighting response will increase the chances of controlling a fire and minimising the damage it causes.
- 8.2. Enclosing the space that is on fire (or leaving it enclosed) will help prevent the spread of the fire and minimise the damage it causes.
- 8.3. Closing down the air supply to a space that is on fire is essential to extinguishing the fire.

9. Citations

New Zealand Fire Service. (2013). Fire onboard the *Taokas Wisdom*. *Fire Investigation Report F1422888*.



Incident Information:

F1422888

OIC unable to Determine Cause

6:10 a.m. 11 July 2013

Report completed by:

Craig Piner, Fire Risk Management Officer
New Zealand Fire Service,

Conclusions

Supposed Cause

Based on the evidence available at the time of this investigation, the cause of this incident has been recorded as Undetermined.

This is due to most of the cabin contents being removed prior to fire investigators attendance, resulting in no evidence of the source of ignition being found to adequately enable the investigators to discover a cause.

Elimination of Other Possible Causes

Water heater.

The water heater was situated on the metal desk and Witness 1 advised that it was plugged in to the power source and operating at the time he left the cabin. Witness 1 advised he topped up the water heater the previous night. The remains of the water heater were found on the desk, lying on its side. It was not possible to confirm that the water heater was plugged in to the power socket due to the extensive fire damage to the wiring and wall socket. The fire damage to the rest of the cabin is not consistent with the fire starting in the water heater on the metal desk and spreading to the rest of the contents of the cabin.



Water heater.

MP4 Player.

Witness 1 advised that he left his MP4 player on the bed when he left the cabin to start his shift and that the charger for the MP4 player was plugged into the wall socket above the metal desk. The MP4 player was not plugged into the charger as the charging cable was not long enough to reach the bed. The remains of what was thought to be the MP4 player were found next to the pillow at the head of the bed on the side closest to the centre of the room.

There was no evidence to suggest that the MP4 player played any part in the cause of this fire.



E: Remains of what is thought to be the MP4 player.

Light Fitting.

The centre light in the cabin was a florescent light with a diffuser cover. This fitting was consistent throughout the rest of the ships cabins. Witness 1 confirmed that when he left the cabin to start his shift this light was left switched on. There was a rope hung from each end of the light fitting which was used to hang clothes for drying. There was no indication on the light fitting remains that indicated a possible electrical fault had occurred causing a fire.

Incendiary.

When Witness 1 left his cabin, the door was closed but not locked. The fire damage to the room indicated extensive heat damage to the centre area of the cabin. This was indicated by spalling damage to the plaster flooring, the buckling to the metal cabin walls, damage to the bench seat and corner of the bed.

The heat damage on the floor had separated the floor coating from the steel deck. The resulting irregular shaped pattern on the floor indicates that this area of the deck has been subjected to a greater heat source. As there was a lack of any combustible materials in this area which could produce this kind of damage, the possibility of the use of a flammable liquid creating the heat required to cause this kind of damage cannot be discounted.

The buckling of the cabin walls was greatest toward the centre of the room except where cabin fixtures had been fastened to the walls where the extra bracing providing by those

fixtures had mostly kept part of the wall sheet in place, indicating that the area of greatest heat was towards the centre of the room.

The corner of the bench seat closest to the centre of the room had almost burnt away indicating the fire had been concentrated in this area.

A "V" burn pattern to the corner of the bed pointed towards the centre of the room possibly indicating the point of fire origin.

The cabin had been cleaned prior to the arrival of the NZ Fire Service SFIs so no evidence was found that could confirm the centre of the room as the point of fire origin. Witness advised that there was no combustible material stored in the centre of the room that could account for these indicators pointing to the centre of the room as the point of fire origin.

The mattress on the bed was a polyurethane foam squab. A portion in the centre of the mattress had burnt through to the wooden base although there was a section of the base that had been protected by an unknown object which had been removed prior to the fire investigators attendance. This was indicated by a clean patch on the wooden base and also a door lock striker plate which did not show any signs of fire damage. The unusual burn pattern damage to the polyurethane foam squab mattress is not consistent with the fire damage to the rest of the mattress.



F: Area of spalling on the cabin floor. G: Buckling to the metal walls. H: Bench seat showing fire damage to the corner.



V burn pattern damage to corner of the cabin bed.



Cabin bed showing clean/protected bed base with door lock striker plate. 1: Unusual burn pattern on bed base.

Due to the unusual burn patterns to the mattress squab, the irregular shaped pattern on the deck, the bed and bench seat indicators pointing towards the centre of the cabin being the point of fire origin, and the insecure cabin, incendiarism cannot be discounted as a supposed cause.

3 Implementing Matters for Onboard Fire-Extinguishing Work

It is recommendable that implementation of fire-extinguishing work on board the ship shall be done in order of the word "FIRE" as initials.

It is necessary to materialize these enumerated items actually in the ship. This is called a disaster-preventive plan or a precautionary plan, which may be useful for the first time when these are actually done and handled and revised. However, as the actual fire is living and varies in its aspects on all such occasions, it is required to grasp the phenomenon to judge the situation, by which the actual work is so corrected to attain the aim at the respective stages. Please understand that this is a task and the responsibility of the commanding officer at the fire station.

3 - 1 Fire-Extinguishing Work (General)

Work shall be implemented in order of alphabetism of FIRE as initials.

(1) FIND Find the sort and the place of a fire, and enter it in the ship's plan.

(2) INFORM Inform all crew of occurrence of a fire.

Ring an emergency alarm.

Inform everybody on board of the place of the fire by public address

Command the fire station to start fire-fighting.

(Prepare self-contained air breathing apparatuses for the crew)

Life-saving (supporting work for search and rescue is necessary)

Make a roll call

Actuate the water discharge fire-extinguishing system.

Stand by for actuating the fixed fire-extinguishing systems. (Foam, Co₂, Halon, sprinkler).

Ensure a command system.

Establish a communication system between the bridge and the fire station.

Inform nearby ships or the relevant onshore administrations of :

- Sort of the fire
- Extent of damage
- Extent of the required rescue
- Required appliances and materials.

(3) RESTRICT Restrict the fire and prevent the spread of fire to suppress damage to the minimum.

Determine the damaged subdivision (six directions)

Make an entry of the damaged subdivision in the ship's plan.

Post the crew around the circumstance of the damaged subdivision.

Stop or close ventilation, electric power, doors and hatches and machinery in operation.

(4) EXTINGUISH fire-extinguishing station

Protecting work (to prevent damage by smoke, flame, heat)

Work after putting out the fire (investigation of the cause, disposal of combustibles, restoration of the fire spot, prevention of rekindling).

(Notes) Entering into the damaged section after fire extinction is very dangerous for the crew depending on the condition of the fire.

3 - 2 Fire-Extinguishing Work in all Parts of Ship

(1) Accommodation spaces

Life-saving

Put out the fire by using extinguishing agents proper to the space or available agents.

(Notes) This is Class A or C fires. Relatively a great deal of smoke is generated, but there is few danger of an electric shock.

(2) Galley

Life-saving

Put out the fire by using extinguishing agents proper to the space or available agents.

(Notes) This is Class A, B or C fires, otherwise a combined fire of these. Use water-spraying for cooling the space.

(3) Navigation bridge and deckhouse

Life-saving

Ensure the command and communication systems among the appointed positions (Bridge, captain's room, radio office).

Put out the fire by the fire-extinguishing agent proper to the space or available agents.

Use foam monitor.

Cool decks in the surroundings.

Maneuver the ship to ensure fire-extinguishing work for the crew.

(Notes) Do not discharge water into foam on the deck.

(10) Precautions during ship's stay in port.

① Shipboard fires on the berth.

Life-saving.

Report the fire to the surrounding ships.

Report the fire to onshore facilities (Terminals, Maritime safety department, Fire station, Police, etc.).

Stop cargo operation.

Stand by for leaving the port.

Support the fire-fighters at work of fire-extinguishing.

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② Fires at the terminal or in another ship

Life-saving.

Stop cargo operation.

Cool main decks, the hull and the superstructure.

Close ullage hatches, vents, breathing valves and doors.

Stand by for leaving the port or stand by to be taken in tow.

Support the fire-fighters at work of fire-extinguishing on shore.

③ A shipboard fire during maneuvering in the port

Life-saving

Maneuver the ship to get separated from adjacent ships.

Cast anchor or run aground at a place avoiding the waterway.

(11) Abandoning Ship

Before abandoning ship, the following matters shall be implemented.

Stop the main engine and close the doors in the machinery spaces.

Ease the helm of the ship.

Leave the fire-extinguishing systems put into operation (avoid the ship to be flooded.).

Appendix 3: Fire drill checklist

Well Shipmanagement and Maritime Consultant Co., Ltd.
惠航船舶管理股份有限公司
FIRE DRILLS REPORT 每月救火演習報告

SHIP NAME(船名) M.V.TAOKAS WISDOM P.I.C(紀錄): 3/OLIU MING
 DATE(日期) 23-MAY-2013 TIME(時間) 1400-1420 LOCATION(船舶位置) TAURANGA ANCH

MARK THE BLOCK WITH [✓] SYMBOL IF THE ITEM WAS CARRIED OUT IN THIS DRILL as indicated in DRILL PLAN (WMP-SA-07). (請勾選已按照年度演習計劃(WMP-SA-07)執行項目)

1. Simulated fire location : ☐ fore-castle ☐ cargo hold ☐ S/G room ☒ engine room ☐ accommodation
 (假設火災位置) (船艙) (貨艙) (舵機艙) (機艙) (住艙)

2. Simulated type of fire : ☒ oil油類 ☐ paint油漆 ☐ rope/rags 繩索、破布(假設火災)

✓ 3. Sounded the signals with the fire alarm. (啟動火警之信號聲)

✓ 4. Sounded the signals with ship's whistle / air horn. (啟動船笛/氣笛之信號聲)

✓ 5. Noticed crew [Fire! Fire! At STEERING ROOM] through the broadcast with public addresser. (經廣播通知火災位置)

✓ 6. Portable foam fire extinguishers were brought to fire scene. (手提式泡沫滅火器已帶至火災發生地點)

✓ 7. Portable CO2 fire extinguishers were brought to fire scene. (手提式二氧化碳滅火器已帶至火災發生地點)

✓ 8. Ventilation and fire dampers to fire scene were closed, related electricity switches were turned off to prevent electrical shock. (火災發生地點之通風系統已停止以防助長火勢及電路系統已關閉以防止觸電)

✓ 9. Fire blankets were brought to fire scene. (防火毯已帶至火災發生地點)

✓ 10. Two crew personnel wore firemen's outfit correctly and prepare to enter fire location to identify type of fire. (二位船員已正確穿好防火衣裝備, 進入火災地點確認火災類別)

Total time used from signal sounded : 2M 由發出信號到救火人員趕抵火災地點所需時間

✓ 11. Starting a main and emergency fire pump in turn, and discharging test using the two jets of water, reaching distance 12m or over. Sufficient delivery pressure 6000 GT and over : 0.27 N/mm² under 6000 GT : 0.25 N/mm²
 輪流起主動消防泵和應急消防泵, 並用兩股水柱進行出水量試驗, 達到 12m 及以上水柱高度, 有效的排出壓力 : 6000總噸及以上船舶 : 0.27N/mm²; 6000 總噸以下船舶 : 0.25N/mm²

✓ 12. Checking fireman's outfits and other personal equipment, including fitting on crew member in turn.
 檢查消防員裝備和其他個人救火設備, 包括讓船員輪流試穿

✓ 13. Isolation valves operable. 各隔離筏可操作

✓ 14. No leakage of fire lines. 消防管路無洩漏

✓ 15. Confirmation of F.O. tank level for emergency fire pump engine. 應急消防泵發動機用燃油液位確認。

✓ 16. Ease of operation by crew. 船員易於操作

✓ 17. Checking the communication equipment. 檢查通信設備

✓ 18. Checking the operation of fire door, watertight door, fire dampers and main inlets/outlets of ventilation system. 檢查防火門、水密門、防火閘和通風系統主要進/出口的工作情況。

✓ 19. Operating shut-off valves of F.O. tanks and emergency stop of fans. 檢查風油切斷操作

✓ 20. Instructions in use of fire-extinguisher has been given to crew members

☐ 21. Any faults or defects discovered during drill have been noted for remedy. If it did, please specify details in WMP-M-07

✓ 22. Equipment used in drill has been brought back to fully operational condition.

In case of fire in engine room, please use engine room fire drill checklist WMC-34

✓ 23. The officers in charge of the engineering watch understand how to use water-based local fire extinguishing systems in machinery spaces (Hyper-Mist Fire Fighting System)

✓ 24. The above Local Application Fire Fighting functions and alarm panel are checked in working order.

MASTER'S REMARKS OR COMMENTS (船長評語):
Satisfactory

MASTER (船長) [Signature] C/O (大副) [Signature]

Version : 2.3 / 2012.06.01 WSR-Q-07

Appendix 4: Muster list

慧洋國際企業股份有限公司 消防應變部署表 FIRE FIGHTING				
組別 Team	編號 No.	職務 Rank N Name	職責 Duties	攜帶物品 Articles to be carried
駕駛台組 Bridge Team	1	船長 Master	總指揮 當船長不在大副代行其責 General Commander. C/O in charge when Master absent.	防火控制圖 Fire control plan
	4	三副 3/O	協助船長，接管值班，做記錄。 Assist To Master, Take Over Watch, Make Record.	雙向 VHF Two-way VHF
	10	幹練水手 AB(1)	操舵。 Steering Operation.	手電筒 Torch lamp
機艙組 Engine Team	5	輪機長 C/E	機艙指揮，當輪機長不在大管輪代行其責 Engine room Commander. 1/E in charge when C/E absent.	手電筒，防火控制圖 Torch, Fire control plan
	6	大管輪 1/E	協助輪機長，注意機艙機器，做記錄。 Assist C/E, Attend Engines, Make Records	手電筒，工具 Torch lamp, tools
	7	二管輪 2/E	負責應急發電機和切斷相關電源 EMG Generator operation, Switch off Power.	電器工具 Electric tools
	8	三管輪 3/E	負責應急消防泵和 CO2 系統 Emergency fire-pump & CO2-sys. Operation	手電筒，工具 Torch lamp, tools
	17	加油 Oiler (B)	協助輪機員 Assistance of Engineer	手電筒，工具 Torch lamp, tools
現場滅火組 Fire Fighting Team	2	大副 C/O	現場指揮 當大副不在三副代行其責 On-scene Commander 3/O in charge when C/O absent.	雙向 VHF Two-way VHF.
	9	水手長 Bosun	滅火 Fire fighting	著穿消防服裝 Wear Fireman's outfit
	15	加油長 No.1 Oiler	滅火 Fire fighting	著穿消防服裝 Wear Fireman's outfit
	11	幹練水手 AB(2)	負責皮龍 Fire fighting, carry Fire hose	工具，可變式消防水槍 Tools, various nozzle
	12	幹練水手 AB(3)	負責皮龍 Fire fighting, carry Fire hose	工具，可變式消防水槍 Tools, various nozzle
	13	幹練水手 AB(4)	最初的滅火器滅火，協助皮龍組 Fire fighting, Fire-Extinguishing Initial operation.	手提式滅火器 Portable fire extinguisher
	14	水手 OS	最初的滅火器滅火，協助皮龍組 Fire fighting, Fire-Extinguishing Initial operation.	手提式滅火器 Portable fire extinguisher
	16	加油 Oiler(A)	最初的滅火器滅火，協助皮龍組 Fire fighting, Fire-Extinguishing Initial operation.	手提式滅火器 Portable fire extinguisher
控制通風和救護隊 Ventilator & First Aid Team	3	二副 2/O	指揮關閉通風和防火門，指揮救護組。當二副不在三副代行其責 The Commander of Shut off Ventilator & Fire doors, and First Aid Team. 3/O in charge when 2/O absent.	雙向 VHF，醫療保健箱 Two-way VHF, Fire-Aid
	19	實習生 D/CDT	關閉通風和防火門，救護組負責擔架 Shut off Ventilator and Fire doors, First Aid Team Stretcher Operation	工具，擔架 Tools, Stretcher
	18	大廚 C/CK	關閉通風和防火門，救護組負責擔架 Shut off Ventilator and Fire doors, First Aid Team Stretcher Operation	工具，擔架 Tools, Stretcher
	20	實習生 E/CDT	關閉通風和防火門，救護組負責擔架 Shut off Ventilator and Fire doors, First Aid Team Stretcher Operation	工具，擔架 Tools, Stretcher

Remark: 1. 集合地點: 右舷梯甲板。
Muster Station: Deck of Starboard Side Accommodation Ladder.

2. 消防信號: 警鈴汽笛響達一分鐘，繼以廣播器廣播「全船人員就消防部署」。
On fire: Short blast on the ship's whistle and same on the general alarm at least 1 minute & Notice Each Crewmember on Fire Station by Broadcast.

3. 三副(3/O)負責維護保養船上的救生及救火設備，並受安全官大副的指揮
Third officer (3/O) takes responsibility of maintenance of LAS & FFA equipment under C/O command.

MASTER: [REDACTED]

Appendix 5: Internal audit

Well Shipmanagement and Maritime Consultant Co., Ltd.
惠航船舶管理股份有限公司

CHECKLIST OF COMPANY INTERNAL AUDIT ON SHIPBOARD OPERATIONS
公司內稽船上作業查核表

SHIP NAME M.V. Taokas Wisdom PORT Changsu, China DATE 16 June 2013






NOTE: To evaluate the performance listed items and mark as follows:
"S" is complying with the requirements of ISM Code and SMS, "N" is Non-conformity.
The internal auditing should be carried out at least once a year.

Grade	NO.	Key Auditing Items
S	1	WSM Safety and Prevent Pollution Policy, WSM Security Policy, Emergency Communication List, DP & CSO Poster, Fleet Vessel Drill Plan (WSR-SA-07), Company Training Plan (WSR-SA-08), and Muster List have been posted at 6 locations (Bridge, ECR, Master Cabin, Deck Office, Officer Mess Room and Crew Mess Room.) 惠航船舶管理股份有限公司之安全環保政策、保全政策、緊急連絡電話、指派人員及公司保全員公告、船隊年度演習計畫(WSR-SA-07)、船隊年度訓練計畫(WSR-SA-08)及應變佈署表已確實張貼於六個位置(駕駛台、機艙控制室、船長室、甲板辦公室、大台及二台)
S	2	Standing Orders of Master and Chief Engineer are posted at appropriate locations and signed by on watch officers/engineers. Night Orders are used as deemed necessary. 船長之政令已張貼於駕駛台及輪機長之政令已張貼於機艙控制室。當值船副/管輪已簽署知悉。夜令簿於必要時機適時運用且當值船副/管輪已簽署知悉。 註：船長政令內應含括駕駛室值班守則；輪機長政令內應含括機艙值班守則。
S	3	Handing over procedure for master, chief engineer, and other officers/engineers and ratings are properly maintained as described in WSP-05-01. 船長、輪機長、船副/管輪及各級船員交接程序須依照程序書WSP-05-01之規定確實執行。 船長：WSR-OT-11, WSR-OT-11-01 ~03 輪機長：WSR-OT-12, WSR-OT-12-01 ~05；船副/管輪及各級船員：WSR-OT-13, 15, 16
S	4	Trading Certificates and Equipment Inspection Certificates have been properly filed and controlled by means of WSC-03. 船舶證書及設備檢驗證書已使用WSC-03確實歸檔及控管。 註：務須查核WSC-03 第四頁OUTSTANDING 及 PSC, ASI, P&I 是否填寫完整。
S	5	Seafarer's Certificates of Competence and Proficiency (WSR-OT-27, WSR-OT-28) and health certificates are kept on board in good order as stipulated in WSP-06-01. No overdue situation is observed. 船員適任證書、專業培訓證書(WSR-OT-27, WSR-OT-28)及健康檢查證書已根據程序書WSP-06-01之規定完整保存於船上，並且無過期之情形。
S	6	Seafarer Manning Agency List is kept by master. (WSP-06-02) 船員仲介公司聯絡清單由船長妥善保管(WSP-06-02)
S	7	Crew Evaluation (WSR-OT-08) is conducted as required as WSP-06-03. 船員評估 (WSR-OT-08) 依照程序書WSP-06-03之規定執行。
S	8	Crew Familiarization is complied with WSP-06-06. The training records of WSR-OT-20, WSR-OT-07, WSR-OT-23, WSR-OT-06 for each crew are properly maintained on board. Each crew understands his emergency responsibilities and duties as assigned in MUSTER LIST. 船員熟悉訓練符合程序書WSP-06-06之規定。每位船員之訓練紀錄 WSR-OT-20, WSR-OT-07, WSR-OT-23, WSR-OT-06妥善保管於船上。每位船員充分了解MUSTER LIST上所指派之緊急應變職責。
S	9	Medicine Application (WSR-OT-05), Alcohol and Drug Control (WSR-OT-34), Quarterly Medicine Inventory List (WSR-OT-37) and Crew Rest Hour Record (WSR-OT-33) are kept as required by WSP-06-07. 藥品使用紀錄(WSR-OT-05)、酒類及禁藥管制表(WSR-OT-34)、每季藥品盤存紀錄(WSR-OT-37)及船員休息時間紀錄(WSR-OT-33)依照程序書WSP-06-07之規定保管於船上。
S	10	Each crew understands his Routine responsibilities and duties listed in WSP-06-08. 每位船員充分了解程序書WSP-06-08上所列述的一般工作職責。
S	11	Pilot Card (WSR-OT-42) and Master / Pilot Exchange (WSR-OT-41) are well used for exchanging ship information during berthing. 船舶特性(WSR-OT-42)及船長/領港資訊交換卡(WSR-OT-41)於靠港作業時有效使用以利資訊交換。
S	12	Shipboard Management and Safety Navigation Procedure (WSP-07-01) are complied all the times. WSR-V-08, WSR-OT-14, WSR-OT-18, WSC-23 are kept in place. 任何時候都能確實遵守船舶管理及航行安全操作程序書(WSP-07-01)。WSR-V-08, WSR-OT-14, WSR-OT-18, WSC-23 皆妥善使用、保管於適當位置。
S	13	Pre-Arrival and Pre-Departure Checklist (WSC-09, WSC-10) are used as required by WSP-07-02 到、離港前裝備查核表(WSC-09, WSC-10)依照程序書WSP-07-02之規定確實執行。
S	14	Ship Reports are submitted as required by WSP-07-03. 船上報告依據程序書WSP-07-03之規定確實按時提報。
S	15	Cargo Handling Procedure is observed as WSP-07-04. C/O has followed WSC-06 for inspection of cargo loading/unloading and operational gears. 貨物裝載程序依據程序書WSP-07-04之規定執行。大副依據WSC-06檢查貨物裝卸及起重機鋼纜操作。
S	16	Loading Manual or Loading Instrument is properly used for calculation of ship structural stress and develop stowage plan. 有效使用裝貨手冊和裝貨儀器計算船舶結構應力及建立裝貨計畫。 Last Loading Plan date:

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Grade	NO.	Key Auditing Items	
S	17	Oil Record Book is properly entered (WSP-07-03). 油水紀錄簿確實登錄(WSP-07-03)	Last residue record date (C 11):
S	18	Garbage Management Plan is kept on board. Garbage Disposal Record (WSR-M-15) is entered correctly as required by WSP-07-06. Garbage Segregation Posters (Appendix 1/4 to 4/4) from WSP-07-06 have been posted at designated locations. 垃圾處理計畫妥善保管於船上。垃圾拋棄紀錄(WSR-M-15)依據程序書WSP-07-06之規定正確地登錄。程序書WSP-07-06附件的垃圾分類規定(Appendix 1/4 to 4/4)已於指定地點張貼公布。	Last date of discharge to reception:
S	19	Bunker Delivery Note and Samples are kept in good order. Bunkering plan and Meeting record (WSR-OT-24) and Prevention of Oil Pollution (WSC-12) are maintained as required by WSP-07-07. 加油單據及樣本妥善保管於船上。加油會議紀錄(WSR-OT-24)及防止油污檢查表依據程序書WSP-07-07之規定執行。	Last meeting date of WSR-OT-24
S	20	On watch officers understand the meaning of Critical Operation Procedure (WSP-07-08) and WSC-24 is used as deemed necessary. 當值船副充分了解極重要操作程序(WSP-07-08)及WSC-24的使用	
S	21	Ballast Water Management Plan is placed on board. Record WSR-OC-12 is entered as stipulated in WSP-07-09 壓艙水管理計畫妥善保管於船上。壓艙水報告(WSR-OC-12)依據程序書WSP-07-09之規定確實登錄	
S	22	Critical operation for Enclosed Spaces Entry is complied with WSP-07-10. Checklist WSC-01 is maintained properly on board. 進入密閉空間操作須符合程序書WSP-07-10之規定。WSC-01妥善保管於船上	
S	23	Critical operation for Hot Work is complied with WSP-07-11. Checklist WSC-02 is maintained properly on board. 危險工作操作須符合程序書WSP-07-11之規定。WSC-02妥善保管於船上	
S	24	Emergency Report Procedure (WSP-08-03) is followed by master in case of accident/incident or urgent situations. 船長於意外事件或緊急狀況時依照緊急通報程序(WSP-08-03)向公司進行報告	
S	25	Emergency Preparedness Plan (WSP-08-05) is referred during ship drilling activities. 船上演習演練參照緊急應變計畫(WSP-08-05)進行	
S	26	Drilling Records (WSR-Q-03, WSR-Q-06, WSR-Q-07) and Officer/Crew Training Records (WSR-OT-06) are recorded in good order as schedule shown in WSP-08-06. 每月演練紀錄(WSR-Q-03, WSR-Q-06, WSR-Q-07)及船員訓練紀錄(WSR-OT-06)依據程序書WSP-08-06之規定記錄及保管	Last Drilling Date Fire: Abandon ship:
S	27	SOPEP is well maintained with updated ANNEX 1 and ANNEX 2. Emergency Treatment of Accidental Oil Spills (WSP-08-07) is understood by crew. 船舶油污緊急應變計劃之ANNEX I及ANNEX II應定期確實更新。船員充分了解緊急意外溢油處理程序(WSP-08-07)	
S	28	Accident and Casualty Report (WSR-OC-01), Cargo Damage Report (WSR-OC-02), Sea Protest (WSR-OC-09), and Stevedore Damage Report (WSR-OC-10) are followed after oral urgent report to Company as indicated in WSP-09-01. 船舶/人員意外事件報告(WSR-OC-01)、貨損報告(WSR-OC-02)、海事聲明書(WSR-OC-09)及碼頭工人損壞報告(WSR-OC-10)依據程序書WSP-09-01之規定於口頭報告後遞交公司	
S	29	PSC Inspection Reports are kept in good order and all deficiencies have been corrected within limited dates. PSC檢查報告妥善保管於船上，且所有缺失已於限期內改正	Last PSC inspection date:
S	30	Non-Conformities found on board during past audits had been completely corrected 外部檢驗缺失(Non-Conformities)已完全矯正	
S	31	Corrective Actions and Preventive Measures are presented by means of WSR-OC-05 and kept in specific files as required by WSP-09-02. 矯正行動及預防措施應依據程序書WSP-09-02之規定，以表格WSR-OC-05呈遞，並用專案管理	
S	32	Annual Maintenance Plan (WSR-OT-10) is developed in place and approved by Company as required by WSP-10-01. 年度保養計畫(WSR-OT-10)依據程序書WSP-10-01之規定保管於船上，並且通過公司核准	
S	33	Monthly Planned Maintenance Items are listed by WSR-M-05, WSR-M-06 and are posted in W/H and ECR three months ahead of their planned maintenance schedule for preparation purposes. 每月保養計畫以WSR-M-05, WSR-M-06詳列清單並於實施保養計劃三個月前張貼於駕駛台及機艙控制室以作事前準備	
S	34	Monthly Maintenance Records (WSR-M-01, WSR-M-02) are correctly recorded. If any maintenance work is conducted in high locations on board, the Working Aloft Checklist (WSC-22) being applied. 每月保養紀錄(WSR-M-01, WSR-M-02)應確實登錄。如保養工作須在較高的位置進行，均已採用高空作業檢查表(WSC-22)	
S	35	Maintenance Record (WSR-OT-43) and Spare Parts Records (WSR-OT-40) are properly used during equipment maintenance. 保養紀錄(WSR-OT-43)及配件更換紀錄(WSR-OT-40)於進行設備保養期間確實記錄	

Audit Date: 16 June 17 Duration: From: 10:00 To: 19:00

Name of Company Auditor		Ship Name	M.V. Taokas Wisdom
		Master sign-on board date:	
Auditor Signature		Master Signature	
		Chief Engineer sign-on board	
		C/E Signature	
		Chief Officer sign-on board	
		C/O Signature	

Version : 1.4/ 2013.01.01

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WSC-08

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Summary of Audit Findings or Deficiencies:

obv.

- Company policy poster not up-to-date
- obsolete document should discarded ex. obsolete SMS forms
- Golas Training manual ~~not~~ ship specific
- ~~Within~~ within 12 hrs before departure, steering gear and auto ~~gear~~ pilot system ^{checked} should be entered in deck log.
- DT-41 (Master / Pilot exchange) should be used according to company's SMS.



**Recent Marine Occurrence Reports published by
the Transport Accident Investigation Commission**

13-202	Bulk carrier, <i>IDAS Bulker</i> , pilotage incident Napier, Hawke's Bay, 8 August 2013
12-202	Fishing vessel <i>Torea</i> , collision with uncharted rock, Foveaux Strait, 24 August 2012
09-210	Bulk carrier, <i>Taharoa Express</i> , cargo shift, Port Taharoa, 16 December 2009
10-204	Inquiry 10-204: Bulk carrier <i>Hanjin Bombay</i> , grounding, Mount Maunganui, 21 June 2010
10-202	<i>M.V. Anatoki</i> , grounding, off Rangihaeata Head, Golden Bay, South Island, 6 May 2010
11-204	Interim Report Marine inquiry 11-204 Containership MV <i>Rena</i> grounding on Astrolabe Reef 5 October 2011
09-202	Marine Inquiry 09-202: Passenger vessel <i>Oceanic Discoverer</i> Fatal injury, Port of Napier 19 February 2009
11-201	Passenger vessel <i>Volendam</i> , lifeboat fatality, Port of Lyttelton, New Zealand, 8 January 2011
10-203	<i>Marsol Pride</i> , uncontrolled release of fire-extinguishing gas into engine room, Tui oil and gas field, 27 May 2010
09-204 and 09-207	Coastguard rescue vessel <i>Dive! Tutukaka Rescue</i> collision with rocks, Taiharuru River entrance Northland, 4 March 2009; Coastguard rescue vessel Trusts Rescue, heavy weather encounter, Manukau Bar, 31 May 2009
10-201	Bulk carrier <i>TPC Wellington</i> , double fatality resulting from enclosed space entry, Port Marsden, Northland, 3 May 2010
09-201	Collision: private jet-boat/private watercraft, Kawarau River, Queenstown, 5 January 2009
08-209	Loss of the rigid inflatable boat <i>Mugwop</i> , off the entrance to Lyttelton Harbour, 28 October 2008
11-201	Interim Factual report - Passenger vessel <i>Volendam</i> , lifeboat fatality, port of Lyttelton, New Zealand, 8 January 2011
08-205	Fishing vessel, <i>San Cuvier</i> , dragged anchor and grounded, Tarakeha Point, Bay of Plenty, 27 July 2008
08-206	Passenger ferry <i>Monte Stello</i> , collisions with wharfs, Picton and Wellington, 8 and 9 August 2008
09-205	Stern trawler <i>Pantas No.1</i> , fatality while working cargo, No.5 berth, Island Harbour, Bluff, 22 April 2009

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