



Australian Government
Australian Transport Safety Bureau

Collision between *Kota Wajar* and the yacht *Blazing Keel*

Moreton Bay, Queensland | 6 July 2014



Investigation

ATSB Transport Safety Report
Marine Occurrence Investigation
311-MO-2014-006
Final – 30 July 2015

Cover photo: Australian Transport Safety Bureau (ATSB)

Released in accordance with section 25 of the *Transport Safety Investigation Act 2003*

Publishing information

Published by: Australian Transport Safety Bureau
Postal address: PO Box 967, Civic Square ACT 2608
Office: 62 Northbourne Avenue Canberra, Australian Capital Territory 2601
Telephone: 1800 020 616, from overseas +61 2 6257 4150 (24 hours)
Accident and incident notification: 1800 011 034 (24 hours)
Facsimile: 02 6247 3117, from overseas +61 2 6247 3117
Email: atsbinfo@atsb.gov.au
Internet: www.atsb.gov.au

© Commonwealth of Australia 2015



Ownership of intellectual property rights in this publication

Unless otherwise noted, copyright (and any other intellectual property rights, if any) in this publication is owned by the Commonwealth of Australia.

Creative Commons licence

With the exception of the Coat of Arms, ATSB logo, and photos and graphics in which a third party holds copyright, this publication is licensed under a Creative Commons Attribution 3.0 Australia licence.

Creative Commons Attribution 3.0 Australia Licence is a standard form license agreement that allows you to copy, distribute, transmit and adapt this publication provided that you attribute the work.

The ATSB's preference is that you attribute this publication (and any material sourced from it) using the following wording: *Source:* Australian Transport Safety Bureau

Copyright in material obtained from other agencies, private individuals or organisations, belongs to those agencies, individuals or organisations. Where you want to use their material you will need to contact them directly.

Addendum

| Page | Change | Date |
|------|--------|------|
| | | |
| | | |

Safety summary

What happened

At about 0419 on 6 July 2014, in clear visibility, the container ship *Kota Wajar* collided with the yacht *Blazing Keel* in Moreton Bay. The ship was southbound in the shipping channel while the yacht was crossing the channel in a southwest direction.

The yacht suffered extensive collision damage but its watertight integrity was maintained. The two persons on board were not injured and the yacht safely returned to its marina.

What the ATSB found

The ATSB found that no one on board either *Kota Wajar* or *Blazing Keel* saw or otherwise detected the other vessel before the collision. Neither vessel had maintained a proper lookout in accordance with the international regulations for preventing collisions at sea (COLREGS).

The investigation found that *Kota Wajar's* safety management system (SMS) procedures requiring a dedicated lookout were not effectively implemented and a lookout was not posted. In addition, radar was not appropriately used. The high workload of the ship's bridge team and local conditions, such as background lights ashore, were factors in not detecting the yacht.

The investigation identified that the visual lookout kept by *Blazing Keel's* crew was ineffective. Furthermore, the yacht's night passage was undertaken without radar (which had been inoperational for 18 months) and its diving trip was not properly planned or executed.

It was also found that Brisbane Marine Pilots' standard passage plan and master-pilot exchange does not ensure that the ship's bridge team is provided adequate information with respect to local traffic and areas where attention should be paid to small craft.

What's been done as a result

Kota Wajar's managers, Pacific International Lines, Singapore advised the ATSB that action to better implement SMS procedures with regard to posting a lookout was being taken. Monitoring and verification of compliance with the procedures would be enhanced through unannounced audits, including the retrieval and playback of voyage data recordings. In addition, records of bridge activities, including attendance logs, would be reviewed in detail during routine audits.

Brisbane Marine Pilots (BMP) advised the ATSB that its standard passage plan has been amended to clarify responsibility for maintaining a good lookout by sight and radar. Bridge team engagement and communicating small craft interaction will be emphasised through the master-pilot-bridge team exchange and monitored through BMP's check pilot system. The pilotage company has also decided to review and amend its pre-arrival information for masters, to emphasise the small vessel interaction risk.

In response to the continuing safety issue around maintaining an effective and proper lookout when navigating in Australian waters, the ATSB has issued a safety advisory notice (SAN) to the masters, owners, operators and skippers of all vessels. Consistent with COLREGS requirements, the SAN reinforces the importance of taking all necessary measures to ensure that a proper lookout is kept at all times, and early avoiding action is taken to prevent collision.

Safety message

Across the past 26 years, investigations into 41 collisions between trading ships and small vessels on the Australian coast have identified that maintaining a proper lookout, using all available means in accordance with the COLREGS, is paramount to preventing collisions. In pilotage waters, pilots have a role in highlighting local traffic areas, patterns and conditions to the ship's bridge team.

Contents

| | |
|---|-----------|
| The occurrence | 1 |
| Context | 5 |
| <i>Kota Wajar</i> | 5 |
| <i>Blazing Keel</i> | 5 |
| Navigation lights | 5 |
| Port of Brisbane | 6 |
| Safety analysis | 7 |
| The collision | 7 |
| Keeping a lookout | 7 |
| <i>Kota Wajar's</i> lookout | 8 |
| <i>Blazing Keel's</i> lookout | 12 |
| Passage planning | 13 |
| Collisions between ships and small vessels | 15 |
| Findings | 17 |
| Contributing factors | 17 |
| Other factors that increased risk | 17 |
| Other findings | 17 |
| Safety issues and actions | 18 |
| Proper lookout | 18 |
| Safety issue description: | 18 |
| Passage planning | 18 |
| Safety issue description: | 19 |
| Collisions between ships and small vessels | 19 |
| Safety issue description: | 19 |
| General details | 20 |
| Occurrence details | 20 |
| Ship details | 20 |
| Sources and submissions | 22 |
| Sources of information | 22 |
| References | 22 |
| Submissions | 22 |
| Australian Transport Safety Bureau | 23 |
| Purpose of safety investigations | 23 |
| Developing safety action | 23 |

The occurrence

At 1300¹ on 5 July 2014, the 185 m long container ship, *Kota Wajar* (cover), anchored off the Port of Brisbane, Queensland, after a sea passage from Tauranga, New Zealand. The ship was scheduled to embark a harbour pilot on the following day to berth in Brisbane.

At that time, the 44 foot (13.4 m) yacht, *Blazing Keel* (Figure 1) was making its way east across Moreton Bay (Figure 2). The yacht, a single-masted cutter equipped with a diesel engine, had left Newport Marina in the Redcliffe area about 2 hours earlier. The yacht's skipper (and owner) and his wife were on board. They had planned to dive on Curtin Artificial Reef off Moreton Island on the following day (Sunday) as they had many times in the past.

Figure 1: *Blazing Keel*



Source: Queensland Police Service

Figure 2: Moreton Bay, Port of Brisbane



Source: Port of Brisbane Corporation (annotated by ATSB)

At about 1700, the yacht arrived near the diving destination north of Cowan Cowan Point, where it was then anchored. Weather conditions were good with a light (5 knots)² northerly wind, partly cloudy sky and clear visibility. By 1900, the skipper and his wife had turned in for the night.

At about 0030 on 6 July, the skipper awoke and went out on *Blazing Keel's* deck. The wind was now from the west-southwest at about 10 knots. Over the next hour, the skipper felt that the sea was becoming rougher in the strengthening wind. By 0130, the wind was gusting to 14 knots.

Meanwhile *Kota Wajar's* crew were weighing anchor in preparation to embark its scheduled pilot. The anchor was aweigh at 0200 and, at 0224, the pilot boarded the ship from a pilot boat.

At 0226, the pilot arrived on the ship's navigation bridge, exchanged information with the master and took over the conduct (con) of the ship. He also provided the master the standard passage plan for the 48 mile³ pilotage to the ship's berth at Fisherman Islands, near the entrance to the Brisbane

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.

³ A nautical mile of 1,852 m.

River. The second mate (the officer of the watch) and the duty seaman, who was hand steering the ship, were the other members of the bridge team. The fourth mate, the junior-most deck officer on board, who had been on the bridge since 0130 in preparation for pilot boarding, then left the bridge to rest.

By 0230, *Kota Wajar* was on a heading⁴ of 200° towards the entrance of the shipping channel. The ship's speed⁵ was 11 knots and increasing. At 0250, it passed the NW Fairway beacon and entered the North West Channel (Figure 2).

At 0315, the ship passed NW6 beacon making good 17 knots (as per its passage plan for the Moreton Bay transit). The pilotage was progressing as planned and there were no other ships in the channel nearby. At about this time, the master left the bridge.

Meanwhile, *Blazing Keel's* anchor chain started to pay out in the now westerly, 15 knot wind gusts and increasingly rough seas. The skipper decided to weigh anchor and return to Newport Marina under power using the yacht's engine rather than setting its sails in the windy conditions.

At about 0330, the yacht's anchor was aweigh and the skipper started its engine. He turned on the yacht's navigation lights, checked that they were lit and set a southerly course towards Cowan Cowan Point. The yacht made good about 4.5 knots and the skipper and his wife remained in its cabin from where they could look out through the cabin windows.

At 0400, *Kota Wajar* was transiting the Main Channel (Figure 3) when the routine change of bridge watch took place. The chief mate took over the watch from the second mate. The fourth mate had returned to the bridge to gain watchkeeping experience and assist the chief mate. The helmsman (duty seaman) had also changed.

The pilot was using visual cues, the ship's radar and his portable pilotage unit (PPU) to conduct the pilotage. He stood on the starboard side of the bridge near the radar and his PPU, and had a clear view out of the bridge front windows. When a course alteration was needed, he moved to a conning position near the centreline gyro compass repeater. The chief mate stood near the radar and, from time to time, checked the ship's position being plotted on the navigational chart by the fourth mate. The fourth mate was also assisting with the keeping of a visual lookout.

The ship was on a heading of 162° after an uneventful passage through the North West and Spitfire Channels. It was a dark night (the moon had set before midnight) and the visibility remained good. The nearest ship, the dredger *Charles Darwin*, about 8 miles away, was dredging in the East Channel.

By 0400, *Kota Wajar's* radar was consistently displaying *Blazing Keel's* radar echo. The yacht was about 30 degrees on the ship's port bow and 4.5 miles away. No one on the bridge had detected the yacht visually or by radar.

By 0410, the distance between *Kota Wajar* and *Blazing Keel* had closed to 2.2 miles. The ship's heading was now 139° with Cowan Cowan Point lighthouse directly ahead, M6 beacon to port and the yacht fine on its port bow. The bridge team remained unaware of the approaching yacht.

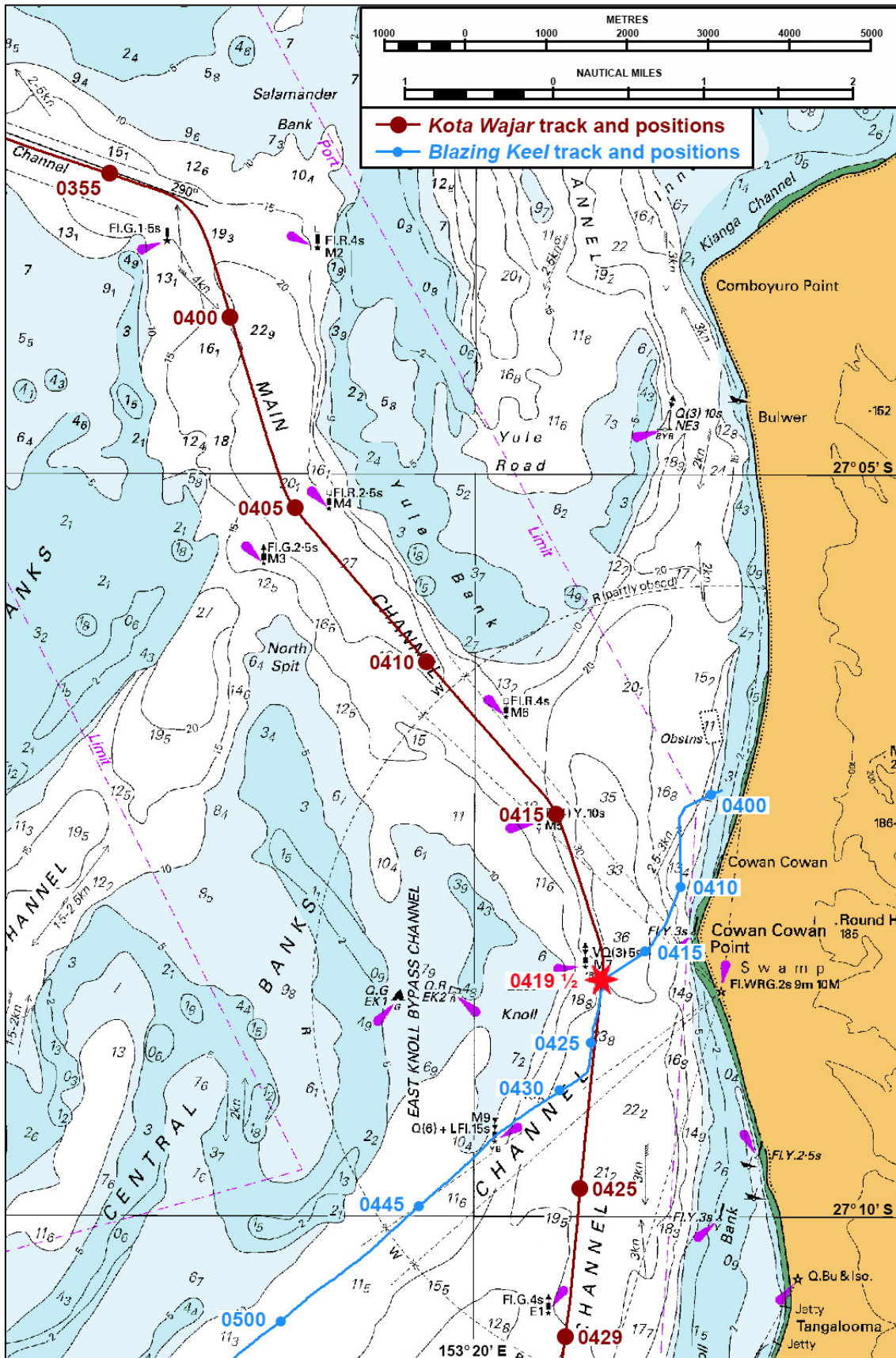
At 0413, *Blazing Keel* crossed 1.6 miles ahead of the ship (that is, from the ship's port bow to its starboard bow). The skipper and his wife did not see any ships in the channel and he decided to cross it near M7 beacon. By 0415, the yacht was on a south-westerly course at 4.5 knots.

Meanwhile, *Kota Wajar* arrived off M5 beacon and, at 0415, its course was altered. By 0416, the ship was on a heading of 162° towards M7 beacon. The brightly lit *Charles Darwin* was conspicuous about 5 miles away, 22 degrees on the ship's starboard bow. *Blazing Keel* was once again on the ship's port bow (12 degrees) and about 0.8 of a mile away. The ship and yacht were on a collision course. No one on board either vessel was aware of the close-quarters situation.

⁴ All ship's headings in this report are in degrees by gyro compass with negligible error.

⁵ All speeds referred to in this report are 'made good/over the ground'.

Figure 3: Section of navigational chart Aus 236 showing the tracks of both vessels



Source: Australian Hydrographic Service (annotated by ATSB using electronically recorded data)

The distance between *Kota Wajar* and *Blazing Keel* rapidly closed as they approached M7 beacon. At 0418½, when the ship was near the beacon, the pilot began conning to alter course in order to follow the channel on a 185° heading. By 0419, the ship's heading was 177° with the undetected yacht less than 100 m away on its port bow and closing.

Blazing Keel's skipper and his wife had not seen the rapidly approaching ship.

At 0419½, as *Kota Wajar* was steadied on a heading of 185° in a position immediately east of M7 beacon, it collided with *Blazing Keel*. The port side of the ship's bulbous bow first made contact with the starboard side of the yacht, which was on a heading of about 225°.

Blazing Keel's skipper only realised what had happened when he saw the ship's dark hull illuminated by the yacht's aft cabin and galley lights. He quickly put the rudder over to port and the engine throttle to full in an attempt to get clear of the ship. The yacht remained alongside the ship for about 30 seconds, bumping and scraping against its hull, until the curve of the ship's stern had passed.

Once the yacht was astern of *Kota Wajar*, the skipper saw bright lights at its stern but could not read the ship's name. He reduced the yacht's speed to about 4 knots, checked that its steering was working and confirmed that he and his wife had not been injured. He then asked his wife to check the yacht for damage and leaks.

No one on board *Kota Wajar* saw or heard the collision or become aware of the yacht nearby. As the ship was steadied on a heading of 185°, the bright lights of *Charles Darwin* were now fine on the starboard bow (bearing 189°). The dredger was returning to port with an expected entry time earlier than the ship.

The ship continued its passage along the channel as planned.

By 0421, *Blazing Keel's* skipper had set a southerly course along the channel while his wife was checking for damage. The skipper attempted to call Redcliffe coastguard using a handheld VHF radio but got no response. He then broadcast an urgency message to all stations on channel 16 and again received no response.

At about 0425, the skipper's wife reported damage on *Blazing Keel's* starboard side, including its mast and rigging, but no water ingress. The skipper shone a torch out on the rigging and noted significant damage. He then checked the yacht's bilges and found them dry. Satisfied that the hull was watertight, he decided to resume the passage to the marina. By 0427, he had set a south-westerly course.

Shortly after 0500, *Kota Wajar's* master returned to the bridge. At about 0518, the ship's speed was reduced as it approached the port. By 0612, the ship had been secured alongside its berth and the pilot left shortly afterwards.

At 0630, *Blazing Keel's* skipper established radio contact with Redcliffe coastguard and reported the collision. By 0730, the yacht had berthed in Newport Marina and the skipper then completed a thorough inspection of the yacht. There was extensive hull damage on its starboard side, both above and below the waterline, and the ship's red boot-topping paint marks were clearly visible. The handrails, rigging and a number of mast stays and spreaders were damaged.

Shortly thereafter, the skipper and his wife attended the local water police station to provide their statements to the police. The time, location and other details of the collision were then passed on by the police to the port authority and others to follow up with involved parties.

At about 0800, *Kota Wajar's* pilot was advised by the pilot office that the ship had collided with a yacht at about 0430 off Cowan Cowan Point. The ship's master was also advised of the collision. The yacht's blue and white paint marks were clearly visible near the waterline on the ship's bulbous bow and along the port side in a number of places.

Context

Kota Wajar

The fully cellular, 1,550 TEU⁶ *Kota Wajar* was fitted with navigational equipment required for a ship of its size under SOLAS.⁷ The two Kelvin Hughes radars, an x-band MK 5 and an s-band MK 7, had automatic radar plotting aid (ARPA) and other target tracking functions. Both radars also had data input from the ship's automatic identification system (AIS) transceiver and global positioning system (GPS) receiver unit.

At the time of the collision, *Kota Wajar* was managed by Pacific International Lines, Singapore (PIL) which operates a large fleet of container ships. The container ship was on a regular service between ports in Asia and Australia and had called in Brisbane about once a month during the last 6 months. Its crew of 22 comprised nationals of China, Ghana, India, Indonesia, Myanmar, Poland and Sri Lanka.

The master was from Poland and held a Polish master's certificate of competency. He had been at sea for 32 years of which the last 12 had been as master. He had been sailing on PIL container ships for 18 years. He had joined *Kota Wajar* about 5 months before the incident.

The chief mate was from Myanmar, where his master's certificate of competency was issued, and had been at sea for 10 years. He had sailed as chief mate for 5 years, the last 1 year of which had been on PIL container ships. He had been on board *Kota Wajar* for about 2 months.

The Chinese fourth mate held a Class 3 certificate of competency for a watch keeping officer. He started his seagoing career with PIL about 14 months before the incident. He had been on board *Kota Wajar* for about 2 months and it was his first assignment as fourth mate.

The duty seaman at the time of collision was Indonesian. He had been at sea for 12 years, all of which had been on board PIL container ships. He had been on board *Kota Wajar* for 9 months.

Blazing Keel

Blazing Keel, a single-masted cutter with a steel hull, was registered in Queensland at the time of the collision. The yacht was equipped with an 85 horsepower diesel engine. Its principal means of navigation was a GME G-Combo G142CFD electronic chart plotter (incorporating a GPS receiver) and a compass. The yacht was fitted with a Koden MD-3000 radar but it had not been operational for about 18 months.⁸

Blazing Keel's skipper and his wife were residents of Brisbane. Both had held a Queensland recreational marine driver licence (RMDL) for about 10 years. They had also held powerboat licences (to operate a ski boat) for about 25 years. In 2008, the skipper had attended a training course to obtain a skipper's licence for inshore waters.

The skipper had owned *Blazing Keel* for about 3 years. His experience of sailing a yacht in Moreton Bay was limited to this period. The experience of his wife, who routinely sailed with him, was similar.

Navigation lights

The International Regulations for the Prevention of Collisions at Sea, 1972, as amended (COLREGS) require all vessels to exhibit specific lights (commonly known as navigation lights) from sunset to sunrise.

⁶ Twenty-foot Equivalent Unit, a standard shipping container. The nominal size of ships in TEU refers to the number of standard containers that it can carry.

⁷ The International Convention for the Safety of Life at Sea, 1974, as amended.

⁸ The yacht was not required by regulations to be equipped with radar.

The navigation lights of a power-driven vessel underway consist of a masthead light⁹ forward, a second masthead light abaft of, and higher than the forward one (mandatory for vessels 50 m or more in length), sidelights¹⁰ and a sternlight.¹¹ *Kota Wajar* was required to exhibit all of these lights. At the time of the collision, the working lights along the ship's cargo hold hatch coamings and flood lights at its stern were also on.

When the collision occurred, *Blazing Keel* was being powered by its engine and its sails were not set. As a power-driven vessel that was not less than 12 m in length, it was required to exhibit a masthead light, sidelights and a sternlight. The yacht was fitted with a masthead light, sidelights near its bow and a sternlight aft. In addition to these lights, the skipper stated that he had turned on the 'tricolour' light on the mast. He was referring to the combined lantern that is permitted for a sailing vessel of less than 20 m in length.¹²

Port of Brisbane

The Port of Brisbane is Queensland's largest multi-cargo port and one of Australia's fastest growing container ports. At present, more than 2,600 ships call in Brisbane each year. The port is approached through Moreton Bay and the container terminal is located at Fisherman Islands at the mouth of the Brisbane River.

The shipping channels in Moreton Bay are dredged to maintain depths and are marked by beacons and buoys (fitted with lights). Frequent changes to the shoals, channels and navigation marks (aids) make local knowledge essential for safe navigation. Ships of 50 m or more in length (unless exempted) are required to take a pilot.

Pilotage is provided by Brisbane Marine Pilots (BMP) under the regulatory regime of Maritime Safety Queensland. Ships can transit Moreton Bay at their sea speed (and often do) if the master and pilot agree after considering the prevailing conditions, under-keel clearance, scheduling and traffic. Traffic in the bay regularly includes fishing and recreational craft from a number of marinas and small boat harbours the area. Moreton Island and the waters of its western shores are popular recreational areas.

Kota Wajar's pilot first went to sea in 1980. His seagoing career as a deck officer included experience as a ship's master. He began piloting in the late 1990s and, in 2003, joined BMP. At the time of the incident, he had held an unrestricted pilot's licence for Brisbane for about 9 years.

⁹ COLREGS Rule 21 (a) states: 'Masthead light means a white light placed over the fore and aft centreline of the vessel and showing an unbroken light over an arc of the horizon of 225° and so fixed as to show the light from right ahead to 22.5° abaft the beam on either side of the vessel'.

¹⁰ COLREGS Rule 21 (b) states: 'Sidelights means a green light on the starboard side and a red light on its port side each showing an unbroken light over an arc of the horizon of 112.5° and so fixed as to show the light from right ahead to 22.5° abaft the beam on its respective side. In a vessel of less than 20 m in length, the sidelights may be combined in one lantern carried on the fore and aft centreline of the vessel'.

¹¹ COLREGS Rule 21 (c) states: 'Sternlight means a white light placed as nearly as practicable at the stern showing an unbroken light over an arc of the horizon of 135° and so fixed as to show the light 67.5° from right aft on each side of the vessel'.

¹² Under COLREGS Rule 25 (b), a sailing vessel of less than 20 metres in length is permitted to combine the prescribed sidelights and sternlight in one lantern carried at or near the top of the mast where it can best be seen.

Safety analysis

The collision

At 0419½ on 6 July 2014, in clear visibility, the container ship *Kota Wajar* collided with the yacht, *Blazing Keel* in Moreton Bay. The ship was southbound in the shipping channel while the yacht, powered by its engine, was crossing the channel in a southwest direction. The yacht suffered extensive damage but maintained its watertight integrity. The two persons on board were not injured and the yacht safely returned to its marina.

No one on board either vessel saw or otherwise detected the other before the collision.

Keeping a lookout

The COLREGS provide internationally agreed rules and measures to prevent collisions at sea. In general, the regulations apply to all vessels and in all waters. Both *Kota Wajar* and *Blazing Keel* had to comply with these regulations while navigating Moreton Bay. As the vessels did not sight each other, the matter of applying rules for taking action to avoid collision did not arise. The key requirement to keep a lookout, however, did apply and was a focus of the ATSB investigation.

With respect to keeping a lookout, COLREGS Rule 5 - *Look-out*, states:

Every vessel shall at all times maintain a proper look-out 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 of the risk of collision.

Rule 5 clearly states the purpose of maintaining a lookout and summarises how a lookout should be kept. Effective compliance with the rule relies on a complete and thorough understanding of the COLREGS to ensure that all relevant matters are taken into account. This understanding should be a core competency for those in charge of a navigational watch on ships – something their seagoing qualifications aim to ensure. Similarly, qualifications to operate small recreational craft, including yachts, aim to ensure a sound understanding of the COLREGS to prevent collisions.

An all-round lookout by sight and hearing (inside and outside the bridge) is necessary at all times. Other available means to maintain and enhance keeping a lookout usually include radar, AIS and traffic information from other sources, such as radio broadcasts and ship to ship calls. An effective lookout can ensure the early detection of targets, making possible a full and timely appraisal of the situation and of the risk of collision.

The prevailing circumstances and conditions include the factors that should be considered to keep an effective lookout. Many of these factors are identifiable within the COLREGS; for example Rule 6 - *Safe speed*, lists several factors that are also relevant to keeping a lookout. Other matters that should be taken into account rely on the practice of good seamanship and an appropriate level of nautical knowledge. Factors relevant to keeping an effective lookout include the:

- state of visibility (and using radar to better assess it when restricted by fog, rain or other cause)
- time of day (day, night or twilight)
- background lights (shore lights or back scatter from own lights)
- expected traffic in the area (open sea, coastal passage, port or harbour)
- traffic density, including concentrations of fishing and other vessels, including small craft
- manoeuvrability of the vessel (including stopping distance and turning ability) and its draught
- state of the wind, sea and current, and the proximity of hazards such as shoals and reefs
- characteristics, efficiency and limitations of radar (including its range and any interference)
- type, capability and limitations of the AIS unit (and features of other vessels' AIS units)
- available local knowledge and information (sailing directions, pilot and other sources)
- traffic information via radio (ship to ship calls, all ship broadcasts and schedules).

It is worth noting here that a number of the factors listed above are interrelated. For example, radar significantly enhances keeping a lookout, particularly when visibility is restricted by fog, rain or other conditions, and during darkness. Equally, the lack of radar as an available means to keep a lookout on some small vessels needs to be taken into account.

The COLREGS are supported by a number of other requirements and guidelines for mariners. The STCW Code¹³ provides mandatory watchkeeping standards applicable to 'seagoing ships', which includes all commercial vessels in domestic or international trade but not recreational craft. The Code requires that a proper lookout is maintained at all times in compliance with Rule 5 of the COLREGS, and comprehensively covers the subject, including the factors discussed above.¹⁴

The Code requires that the lookout be able to give full attention to lookout duties and not be assigned or undertake any duties which could interfere with that task. It clarifies that the duties of a lookout and helmsperson on a ship are separate. The Code permits the officer of the watch (OOW) to be the sole lookout in daylight (in good conditions) which implies that another person should be posted as a lookout in darkness. It also states that the master and the OOW, when arranging lookout duty for the hours of darkness, shall have due regard to the bridge equipment and navigation aids available, their limitations, procedures and safeguards implemented.

The Bridge Procedures Guide¹⁵ brings together the good practice of seafarers with the aim of improving navigational safety and protecting the environment. The publication is acknowledged as the principal industry guidance on the subject and is widely used internationally to support shipboard safety management systems (SMS). It refers to both the COLREGS and the STCW Code and covers all the relevant subjects, including keeping a lookout. The guide is consistent with the requirements of both in terms of what constitutes a proper lookout and the factors to be considered, including restrictions with respect to a sole lookout.

In essence, keeping a lookout in accordance with the COLREGS is mandatory, and fundamental to preventing collisions. The STCW Code provides watchkeeping standards for seagoing ships, including keeping a proper lookout. In addition to other available means of keeping watch, posting a dedicated visual lookout (that is, by sight) during the hours of darkness, in restricted visibility and when warranted by other circumstances or conditions, is necessary.

Kota Wajar's lookout

Kota Wajar's SMS procedures¹⁶ quoted extensively from the COLREGS and the STCW Code with respect to bridge watchkeeping and maintaining a lookout. The procedures were consistent with the Code with regard to the OOW being the sole lookout in daylight. The standard watchkeeping arrangement included a seaman as the dedicated lookout on each navigational watch. It was clearly stated that 'the duties of the person on lookout and helmsman were separate and the helmsman should not be considered the person on lookout while steering'.¹⁷

The shipboard procedures required the OOW to comply with the COLREGS at all times, including ensuring that a good lookout was maintained. Detailed guidance on the proper use of radar was included. The OOW was required to 'give watchkeeping personnel all appropriate instructions and information necessary for maintaining a safe watch, including a proper lookout'.¹⁸ This instruction, when appropriately applied, should result in the dedicated visual lookout being given relevant information, particularly in relation to checking for targets detected by radar or AIS but not yet sighted.

¹³ International Maritime Organization (IMO), London, 2011, Standards of Training, Certification and Watchkeeping for Seafarers (STCW) Code.

¹⁴ *ibid.* Chapter VIII, Part 4-1 – *Principles to be observed in keeping a navigational watch*, Lookout, Paragraphs 14 to 17.

¹⁵ International Chamber of Shipping (ICS), London, 2007, Bridge Procedures Guide, Fourth Edition 2007.

¹⁶ Pacific International Lines (PIL), Safety Management Procedure Manual, Chapter 15, Key Shipboard Operation Procedures, Rev 00, 1 May 2004.

¹⁷ *ibid.* Section (D) – Lookout, Page 4 of 43.

¹⁸ *ibid.* Section (N) – Watch-keeping Personnel, Page 13 of 43.

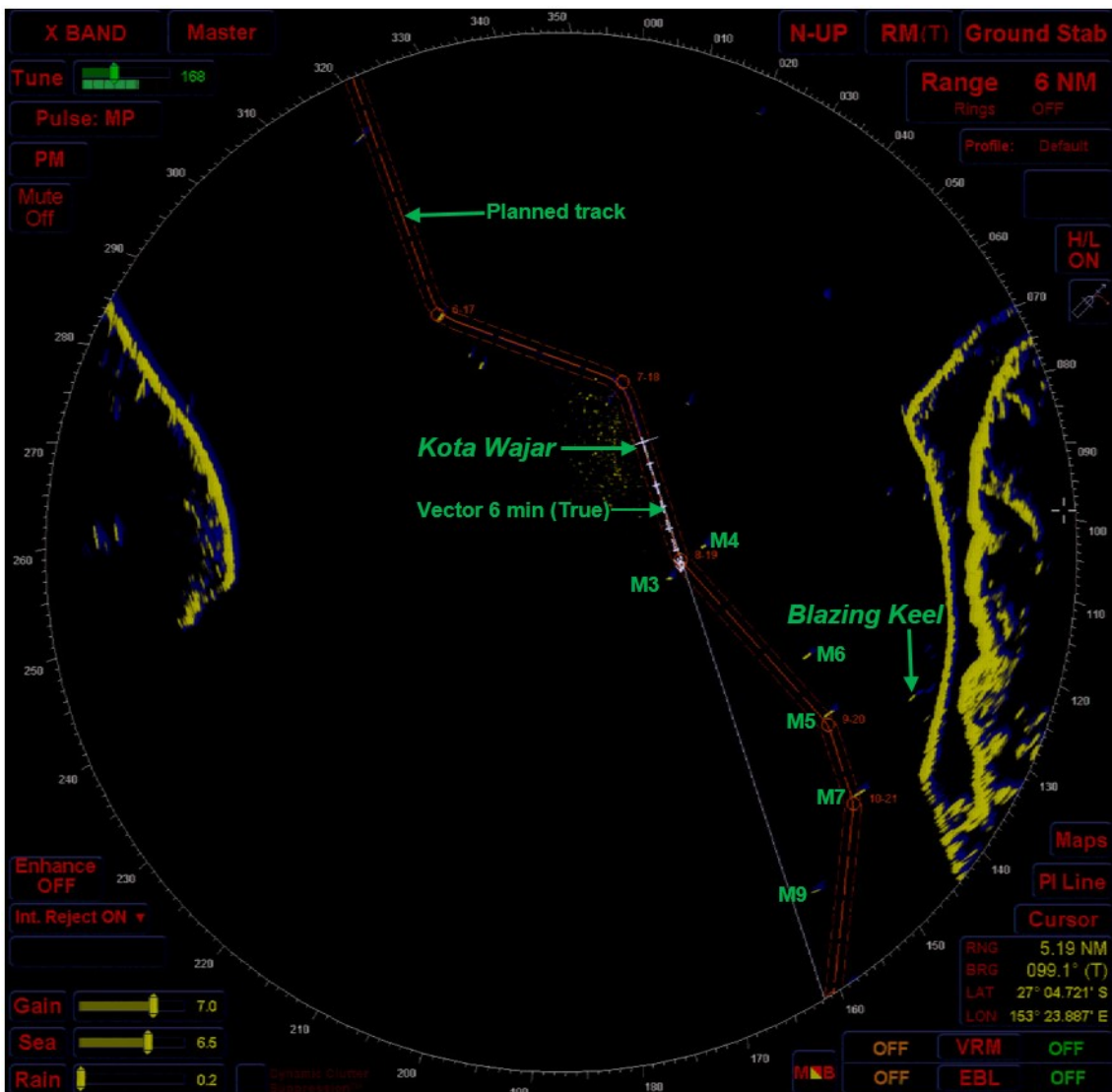
Events and conditions on 6 July 2014

At the time of the collision, *Kota Wajar's* bridge team comprised the pilot, chief mate, helmsman and the fourth mate, whose main task was to assist the chief mate. As the OOW, the chief mate was responsible for ensuring that a proper lookout was kept in the prevailing circumstances and conditions. The ship was navigating the approaches to the Port of Brisbane during the hours of darkness under the conduct of a pilot. Those conditions warranted posting a dedicated visual lookout and using other available means to maintain a lookout, including radar and AIS.

In this instance however, no one was assigned the duties of a dedicated visual lookout. The pilot and the chief mate were stationed just aft of the bridge front windows near the x-band radar. The s-band radar inside the chartroom was mainly used for position fixing by the fourth mate. The helmsman was steering the ship as per the pilot's helm and course (heading) orders.

The x-band radar's main display was set to its north-up, relative motion mode on a 6 mile range scale (Figure 4). The display was set up to show the planned tracks and track limits (in red). The 'trail' function was set to indicate the true motion of targets over the past 10 minutes (so moving targets left trails on the display). Trails make a target more conspicuous and distinguish it from sea clutter. The electronic bearing line (EBL) and variable range marker (VRM) were not switched on. The cursor had been placed near the edge of the display on a 099° bearing.

Figure 4: *Kota Wajar's* x-band radar's main display at 0400 on 6 July 2014



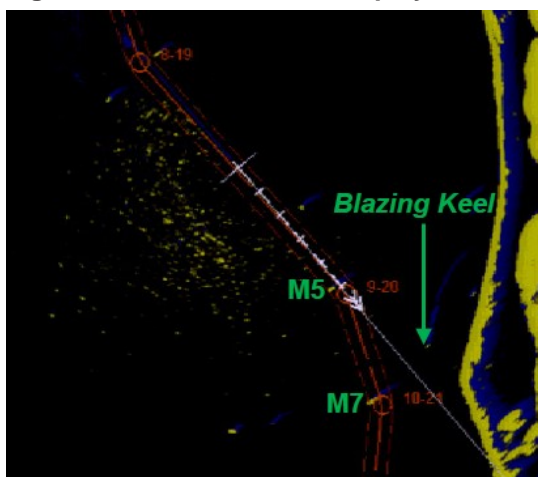
Source: *Kota Wajar's* voyage data recorder (VDR) with ATSB annotations

Over a 5 minute period around 0400 on 6 July, the second mate handed over the watch to the chief mate. The duty helmsman had changed some time earlier. Between 0357 and 0358, *Kota Wajar's* course was altered from 109° to 162° and its position at 0358 was plotted on the chart. By 0400, about 20 minutes before the collision, *Blazing Keel's* radar echo was consistently appearing on the x-band radar's display, about 30 degrees on the port bow at a range of 4.5 miles. None of the three mates or the pilot saw the yacht's echo or, if they did, paid any attention to it.

Between 0404 and 0405, after the second mate had left the bridge, the ship's course was altered from 162° to 139°. Its position at 0405 was plotted on the chart by the fourth mate. On its 139° heading, the flashing white light of Cowan Cowan Point lighthouse was nearly ahead. The chief mate remained near the x-band radar, from where he could monitor, amongst other things, the pilot's helm orders and the ship's progress along the planned track.

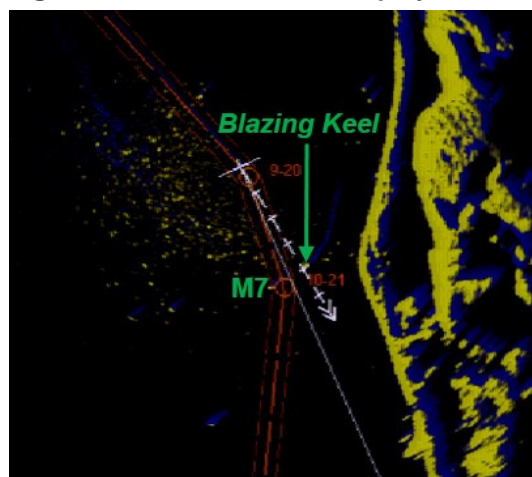
By 0410, *Blazing Keel* was fine on the ship's port bow and 2.2 miles away (Figure 5). At 0413, the yacht was right ahead of *Kota Wajar*, crossing to its starboard bow. Shortly before 0415, the pilot began conning the ship to its next course of 162°. As the ship's heading changed to starboard, the yacht was once again on its port bow. At 0415, the yacht was 1.1 miles away, fine on the port bow (Figure 6). Its radar echo and trail remained readily discernible, distinct from sea clutter.

Figure 5: Section of radar display at 0410



Source: *Kota Wajar's* VDR (annotated by ATSB)

Figure 6: Section of radar display at 0415



Source: *Kota Wajar's* VDR (annotated by ATSB)

Rule 22 of the COLREGS - Visibility of lights, specifies the minimum visibility ranges for a vessel's navigation lights, depending on its length. *Blazing Keel's* masthead light was required to be visible at least 3 miles off, and its sidelights and sternlight at least 2 miles off. Therefore, by 0410, when the yacht was about 2 miles off, its navigation lights should have been visible from *Kota Wajar's* bridge. By 0415, when the yacht was about 1 mile off, its lights should have been readily visible.

However, no one on the ship's bridge said that they saw the yacht's lights. By 0416, the pilot had ordered the helmsman to steady the ship on a 162° heading. The fourth mate had plotted the position at 0412 and remained occupied with his position fixing tasks. The chief mate remained near the x-band radar. Information recorded by the ship's voyage data recorder (VDR) indicates that the radar's EBL, VRM, cursor and its ARPA function were not used in the time leading up to the collision. This suggests that the radar was not actively used to monitor any detected targets.

As its distance closed, *Blazing Keel's* echo continued to appear on the x-band radar. At 0418, it was 0.3 of a mile off, fine on the ship's port bow with its bearing closing. Shortly afterwards, the pilot began conning the ship to its next course of 185°. At 0419½, just as the ship was steadied on a 185° heading, it collided with the yacht. No one on the bridge saw anything to suggest that a collision had occurred. The bridge wing doors were open but nothing was heard.

Why Blazing Keel went undetected

While the chief mate and the pilot had opportunities to sight the yacht out of the bridge windows or see its echo on the x-band radar, they did not. From the ATSB's analysis, the main reasons and factors why they did not detect the yacht (some applicable to other bridge team members) were:

- a dedicated visual lookout was not posted
- background shore lights on Moreton Island
- distraction from *Charles Darwin's* bright lights
- focus on navigation aid lights (beacons and others)
- relatively low visual and radar detection range of the yacht
- yacht was relatively less conspicuous visually and on radar
- yacht's radar echo was not identified and actively monitored
- bridge team workload (four course changes in 22 minutes before collision and watch change)
- change in relative bearing of the yacht (and other lights) after each course change
- bridge team members' focus on individual tasks during that period of high workload
- inattentive lookout for small craft that could reasonably be expected off Moreton Island.

In the time leading up to the collision, the pilot was busy conning the ship. His attention was probably focused on navigation aids, other visual cues, and the ship's heading and rudder indicator. The helmsman would have been concentrating on executing the pilot's helm and course orders. The fourth mate was occupied in fixing the ship's position. The chief mate was probably focused on monitoring the helm orders, their execution, and the ship's progress in the channel.

While *Blazing Keel* was not fitted with an AIS unit or a radar reflector to improve detectability (both optional for the yacht), its radar echo and trail were consistently visible after 0400. Therefore, it is reasonable to expect the chief mate (standing beside the radar) to have identified the approaching target. Its lights would also have been visible until less than a minute before the collision (a blind sector existed within a narrow arc of the horizon up to about 150 m ahead of *Kota Wajar's* bow).

While a dedicated visual lookout may not have necessarily seen the yacht in those conditions, posting one would have ensured that that person could give their full and undivided attention to the task, including using binoculars. Furthermore, such a dedicated lookout was a requirement of the applicable international rules and standards, and of the ship's procedures.

Kota Wajar's bridge team that night for the 3 hour pilotage essentially comprised the pilot, OOW and helmsman. Another seaman to act as a lookout/relief helmsman was not assigned. The fourth mate left the bridge once the pilot boarded and, about 45 minutes later, the master also left.

The evidence indicates that the lack of a dedicated lookout on 6 July was probably usual for that situation. The ship had regularly called at Brisbane and the master had sailed on PIL-managed ships for many years. It is likely that when the duty seaman was the helmsman (day or night) no other person was necessarily assigned lookout duties. The accounts of the bridge team members did not indicate that anyone thought there was no dedicated lookout that night. It is possible that it was considered that the OOW and pilot would sight and detect any traffic.

Conclusion

Key matters with respect to the lookout kept on board *Kota Wajar* were:

- In the time leading up to the collision, a proper lookout by sight, hearing and all available means, including radar, in accordance with the COLREGS, was not maintained.
- The lack of a dedicated visual lookout, high bridge team workload and local conditions, such as background lights ashore, were factors in the yacht not being detected by sight or radar.
- The ship's SMS procedures with regard to posting a dedicated visual lookout, consistent with international regulations and standards, were not effectively implemented.

Blazing Keel's lookout

Blazing Keel's skipper and his wife both held a Queensland recreational marine driver licence (RMDL). The competency standards¹⁹ for the RMDL include the application of the COLREGS to ensure safe navigation. The standards pay particular attention to key COLREGS, including Rule 5. Therefore, the skipper and his wife should have been aware of the importance of keeping a proper lookout and how to effectively do so.

On 6 July, the yacht's radar was not operational and it was not fitted with an AIS unit. The means of keeping a lookout were, therefore, limited to sight and hearing. The skipper and his wife kept a lookout from the yacht's cabin from where it was not possible to keep an all-round lookout. The cabin's roof restricted vision in an upward direction and its windows limited visibility. While red lights were being used at the helm position to avoid impacting night vision, the lights in the aft cabin and galley were being clearly reflected by the water.

Blazing Keel's skipper was navigating using only the electronic chart plotter. The plotter provided a perspective of the yacht's location with respect to beacons and channels in real time. However, it was of little use in keeping a lookout. With no radar and the self-imposed limitations of keeping a visual lookout from the yacht's cabin, navigating in darkness inherently involved a higher risk of collision. Further, the skipper was not experienced in navigating the yacht at night. Therefore, in the prevailing circumstances and conditions, a proper lookout was not being kept.

In accordance with COLREGS Rule 22, *Kota Wajar's* masthead lights were required to be visible at least 6 miles off, and its sidelights and sternlight at least 3 miles off. Therefore, by about 0355, the ship's masthead lights should have been visible from *Blazing Keel's* location. By 0405, its sidelights should also have been visible. As the yacht's heading was about 220°, the ship's relative bearing was nearly abeam to starboard.

By 0410, the ship's navigation and deck lights should have been clearly visible from the yacht. The ship was 2.2 miles off, just abaft the starboard beam. By 0413, when it was 1.6 miles and abeam, the skipper decided to cross the shipping channel near M7 beacon. At interview, he stated that he and his wife looked but saw no ships in the channel. Therefore, either they could not see *Kota Wajar's* lights from their positions in the yacht's cabin or they did not look in its direction.

By 0415, *Blazing Keel* was crossing the channel on a south-westerly course. *Kota Wajar* was about 1 mile off near M5 beacon. Had the skipper or his wife focussed their attention, they would have seen the ship's lights nearly on the starboard beam. The lights would have become more conspicuous as the ship closed.

By about 0418, the ship's lights were probably above the line of sight from the yacht's cabin due to its roof and their considerable height in relation to the yacht. Therefore, it was not unexpected that the skipper and his wife heard the impact of the collision but sighted nothing until the skipper saw 'the lights of the aft cabin illuminate the hull of a ship'. It was only after the yacht was astern of the ship that the skipper saw the lights at its stern.

The possible reasons why *Blazing Keel's* skipper and his wife did not detect *Kota Wajar* were:

- inadequate visual lookout
- low height of eye (about 2 m)
- backscatter from the yacht's own lights
- sea spray on the yacht's cabin windows
- cabin limitations (windows, structures, roof)
- traffic in channel not checked from outside cabin
- ship's bearing close to abeam (likely focus ahead)

¹⁹ Department of Transport and Main Roads, Queensland, August 2014, BoatSafe Competency Standard.

- lack of experience navigating at night (in darkness)
- inexperience identifying a ship's navigation lights
- not equipped with AIS receiver unit to detect ships
- navigating in darkness without radar (inoperational)
- effects of the time of day (night) and/or reduced sleep
- focus on chart plotter for navigation (passive monitoring)
- focus on crossing channel and course change before the collision
- no active monitoring and visual identification of navigation aids (beacons).

Immediately after the collision, the skipper thought that the yacht had collided with a beacon. Had he been actively monitoring (including visually) the passage, he would have known that his yacht was clear of M7 beacon, the only one in its vicinity. The skipper and his wife's accounts of the incident indicate that most of the above reasons were relevant that night - it is evident that a proper and effective lookout was not kept.

In summary, a proper lookout by sight, hearing and other means, in accordance with the COLREGS, was not maintained on board *Blazing Keel*. Undertaking the night passage across Moreton Bay without radar increased collision risk, and was inappropriate. The risk increased further due to the ineffective visual lookout - a significant contributing factor to the incident.

Passage planning

Adequate appraisal and planning for a passage can ensure its safe execution and completion. Planning for a passage, including the proper allocation and use of resources, is a part of bridge resource management (BRM). Effective BRM is the product of a sufficient number of bridge team members with appropriate abilities and skills utilising available navigational aids and tools to carry out planned tasks in accordance with their defined roles and responsibilities. Ideally, this should always be the case but it is particularly important during a pilotage due to the higher risks.

Some important matters applicable to the respective passages of *Blazing Keel* and *Kota Wajar* through Moreton Bay on 6 July 2014 appear to have not been properly planned or considered.

Blazing Keel

Blazing Keel's skipper's planning focused mainly on arriving off Curtin Artificial Reef in daylight on 5 July, resting overnight and diving on the reef on the following day. He intended to follow the usual tracks to and from the reef, which were saved on the yacht's chart plotter.

The fact that the yacht's radar had not been operational for more than a year indicates that the skipper had not planned for contingencies, such as navigating in darkness. Nor had the weather and wind conditions that could be expected been properly considered.

The skipper believed that the easterly winds as the yacht sailed to Moreton Island on 5 July (Saturday) would continue over the weekend. However, by sunset, westerly winds had set in across the bay as could be expected in the evening and night. When *Blazing Keel's* anchor chain began paying out as the clutch began slipping under load in the early hours of 6 July, the skipper decided to return to the marina. No other options, such as using more anchor chain to reduce the load, re-anchoring in another position, waiting for daylight or seeking a more sheltered place, were considered.

The long passage across Moreton Bay in darkness without radar involved a high risk to the yacht and its crew. Considering other options would have been prudent, primarily in terms of making an informed decision on whether taking the risks associated with the night passage across Moreton Bay was appropriate. As it happened, the weather conditions remained much the same and, by mid-morning, had moderated.

The skipper turned on *Blazing Keels*'s combined lantern in addition to other navigation lights. The combined lantern indicated a sailing vessel, whereas the yacht was a power-driven vessel at the time. While the skipper might have intended to make the yacht more readily visible, it was not displaying the lights as required by the COLREGS. Had the yacht been sighted by *Kota Wajar*'s bridge team, there would have been confusion in correctly identifying it as a power-driven vessel.

It is evident that there was no intention to keep a visual lookout from outside the cabin that night, including when approaching and crossing the shipping channel. Had the skipper and his wife properly checked for ships in the channel, they would have seen *Kota Wajar* about 1 mile off.

After the collision, the skipper used the handheld VHF radio to make an all-ships broadcast. The limited range of the radio probably contributed to the broadcast not being heard.

The evidence generally indicates that *Blazing Keel*'s trip was not properly planned nor were contingencies considered. Navigating at night without radar involved a particularly high risk. Proper and complete planning would have reduced risk and might have prevented the collision.

Kota Wajar

A berth-to-berth passage plan had been prepared for *Kota Wajar*'s voyage to Brisbane, where it had called regularly. The plan was documented using the standard forms in the shipboard SMS. The detailed plan covered many subjects and had been signed by the master and all the mates.

The plan did not include any specific reference to the composition of the bridge team. The standard 'Pre-voyage passage plan checklist' included two checks that could be considered to indirectly refer to precautions related to this subject. Check item 05 stated 'Day/night passing of dangerous points considered' and item 09 stated 'Traffic – Area of congested water and narrow channel identified'. The checklist for the passage indicated that these checks were completed.

The remarks included in the plan for each leg of the passage were probably intended to adequately address items 05 and 09. The remarks for the legs of the pilotage where the collision occurred were identical and stated:

Narrow channel-Echo sounder on, when passing each buoy posn mark on chart and note down time in bell book or echo sounder log book. Keep clear reef & rock & Nogo area as marked on the charts. ISM checklist B08, & (B07, B09 as req.) (Vsl. under pilotage, D.off to assist pilot and master)

While the passage plan did not refer to the bridge team's composition or a dedicated lookout, the ship's procedures for watchkeeping arrangements (discussed earlier) were clear on this subject. However, a dedicated lookout was not posted. Specific remarks in the passage plan about traffic and keeping a lookout may have prompted greater vigilance during the pilotage. Similarly, taking into account the guidance for masters and mates of ships operating in Australian waters as per Marine Notice 17/2014, titled 'Sound navigational practices',²⁰ may have helped. The notice also lists their responsibilities when a pilot is on board, the first of which is to maintain a good lookout and situational awareness.

Brisbane Marine Pilots

The pilot used the standard BMP passage plan for *Kota Wajar*. The standard plan listed a number of OOW responsibilities. The first of these stated 'Keep a good look out visually and on radar. Use ARPA and report targets to pilot including small fishing boats and yachts'. Excluding this general statement, the plan did not refer to traffic or areas where vessels, including small craft, were likely to be encountered. Neither was the subject discussed in the master-pilot information exchange.

While there are a number of reasons why the yacht went undetected, the pilot's passage plan and local knowledge input may have increased the bridge team's awareness of traffic in certain areas. The passage off Moreton Island is one such area where a greater number of small craft can be

²⁰ Australian Maritime Safety Authority (AMSA), Marine Notice 17/2014, Sound navigational practices, AMSA, Dec 2014.

encountered. The island is a popular recreational area and activities include camping, fishing, parasailing, snorkelling and diving. The waters to the north of Cowan Cowan Point include Curtin Artificial Reef and those south of it include the Tangalooma wrecks. A number of suggested routes for small craft lie adjacent to, or cross, the shipping channel off the island. The area is also one where background lights can affect the visibility of targets in the foreground. Furthermore, the course changes required in the shipping channel increase the bridge team workload.

Although the master is responsible for ensuring a proper lookout is kept, the pilot jointly manages risk during pilotage. Given the pilot's primary role is providing local knowledge, it then follows that information with respect to local traffic to better manage associated risks should be a priority.

In submission to the draft of this investigation report, BMP advised that interaction with other vessels, particularly small craft, was discussed amongst its pilots and reviewed by its risk management team. The team concluded that such interactions occur throughout the pilotage and, therefore, highlighting any particular area in its passage plan would not effectively address the risk. However, BMP stated that it would consider a range of other measures to address the risk.

In this occurrence, BMP's standard passage plan and the master-pilot information exchange did not draw attention to any areas of higher risk of collision or prompt *Kota Wajar's* bridge team to keep a proper lookout. The passage plan and the information exchange did not ensure that the ship's bridge team was provided with adequate information on local traffic and areas where attention must be paid to other vessels, including small craft.

Collisions between ships and small vessels

In the past 26 years, 63 collisions between trading ships and small vessels have been reported to the ATSB or its predecessor. Of these, 41 have been investigated,²¹ and the failure to keep a proper and effective lookout has been identified as one of the recurrent contributing factors.

While there is no substitute for a proper lookout, small vessels can improve their detectability with aids such as AIS transceivers and radar reflectors. An AIS transceiver can also assist small vessel crews in the early detection of ships and provide important dynamic and static ship information.

Collisions can also be prevented if navigators on ships and small vessels exercise greater caution in areas where they are likely to encounter each other. In addition to ports, harbours and coastal waters in general, it is important to be particularly vigilant in specific areas. For example, ships should be expected in charted shipping channels, recommended routes, two-way routes, deep water routes, preferred tracks, traffic separation schemes and other similar fairways. On the other hand, small vessels are more likely to be encountered near the shore and in recreational areas, such as reefs, diving areas and fishing grounds.

Navigators today have comparatively easy access to information. For example, electronic chart plotters are common even on small craft and provide accurate information such as the locations of shipping channels. A small vessel that avoids a shipping channel significantly reduces the risk of collision with a ship.

While measures to prevent collisions might appear straightforward, the recurrent contributing factors in collisions between ships and small vessels indicate that implementing such measures is not. The contributing factors invariably include a failure to keep a proper lookout on board one or both vessels and the absence of early and appropriate action to avoid collision.

The past 26 years of safety investigations into collisions between trading ships and small vessels on the Australian coast have consistently shown that keeping a proper lookout and taking early avoiding action in accordance with the COLREGS could have effectively prevented those collisions in almost every instance.

²¹ ATSB investigation 320-MO-2015-003 started on 25 June 2015 was ongoing at the time of finalising this report.

The safety lessons from those investigations have been published in ATSB investigation reports. A number of ATSB safety bulletins also highlight these risks to educate seafarers and mariners. These documents and other safety information about marine safety issues are available on the ATSB website www.atsb.gov.au/marine.aspx.

Findings

At about 0419 on 6 July 2014, in clear visibility at night, the container ship *Kota Wajar* collided with the yacht *Blazing Keel* in Moreton Bay. The ship was southbound in the shipping channel while the yacht was crossing it. The yacht suffered damage but its watertight integrity was maintained and the two persons on board were not injured.

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

Safety issues, or system problems, are highlighted in bold to emphasise their importance. A safety issue is an event or condition that increases safety risk and (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 operating environment at a specific point in time.

Contributing factors

- A proper lookout, in accordance with the international regulations for preventing collisions at sea (COLREGS), was not maintained on board *Kota Wajar*. A dedicated visual lookout was not posted and radar was not appropriately used.
- ***Kota Wajar's* safety management system procedures with regard to posting a dedicated lookout were not effectively implemented. [Safety issue]**
- The high workload of *Kota Wajar's* bridge team and local conditions, such as background lights ashore, were factors in *Blazing Keel* not being detected by sight or radar.
- A proper lookout, in accordance with the COLREGS, was not maintained on board *Blazing Keel*. The yacht was navigating at night without radar and the lookout kept by sight was ineffective.
- *Blazing Keel's* diving trip was not properly planned, contingencies were not considered and the night passage was undertaken without radar since the equipment had been inoperational for more than a year.

Other factors that increased risk

- All of *Blazing Keel's* available navigation lights, including the combined lantern permitted by the COLREGS for sailing vessels, were turned on. As the 13.4 m yacht was a power-driven vessel at the time, the lights displayed were not in accordance with the rules and confusing.
- The inclusion of specific remarks in *Kota Wajar's* passage plan with regard to traffic and keeping a proper lookout may have prompted greater vigilance during the pilotage.
- **Brisbane Marine Pilots' standard passage plan and master-pilot exchange did not ensure that a ship's bridge team is provided adequate information with respect to local traffic and areas where attention must be paid to other vessels, including small craft. [Safety issue]**
- **Over the past 26 years, investigations into 41 collisions between trading ships and small vessels on the Australian coast have identified that not maintaining a proper lookout and taking early avoiding action, in accordance with the collision regulations, has been a consistent and continuing contributor to such collisions. [Safety issue]**

Other findings

- Fitting *Blazing Keel* with an automatic identification system (AIS) transceiver would have improved its detectability and detection range while allowing those on board the yacht to detect and identify ships at long ranges.

Safety issues and actions

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

Depending on the level of risk of the safety issue, the extent of corrective action taken by the relevant organisation, or the desirability of directing a broad safety message to the marine industry, the ATSB may issue safety recommendations or safety advisory notices as part of the final report.

Proper lookout

| | |
|---------------------|--|
| Number: | MO-2014-006-SI-01 |
| Issue owner: | Pacific International Lines, Singapore |
| Operation affected: | Marine: Shipboard operations |
| Who it affects: | All persons responsible for navigation |

Safety issue description:

Kota Wajar's safety management system procedures with regard to posting a dedicated lookout were not effectively implemented.

Proactive safety action by Pacific International Lines, Singapore

Action number: MO-2014-006-NSA-017

Action status: Closed

Pacific International Lines (PIL) advised the ATSB that *Kota Wajar's* bridge team on 6 July 2014 should have comprised the master, two mates and two seamen, with one of the seamen posted as a lookout. The company advised that the bridge team's composition and their specific duties and functions are clearly stated in shipboard safety management system (SMS) procedures.

The company advised that, in order to address the safety issue, monitoring and verification of compliance with SMS procedures will be enhanced through unannounced navigational audits, including the retrieval and playback of voyage data recordings. In addition, records of wheelhouse activities, including bridge attendance logs will be subject to detailed reviews by PIL during routine shipboard safety audits. These enhanced procedures and processes are scheduled for implementation in August 2015.

Current status of the safety issue

Issue status: Adequately addressed

Justification: Proactive safety action taken.

Passage planning

| | |
|---------------------|--|
| Number: | MO-2014-006-SI-02 |
| Issue owner: | Brisbane Marine Pilots |
| Operation affected: | Marine: Shipboard operations |
| Who it affects: | All persons responsible for navigation |

Safety issue description:

Brisbane Marine Pilots' standard passage plan and master-pilot exchange did not ensure that a ship's bridge team is provided adequate information with respect to local traffic and areas where attention must be paid to other vessels, including small craft.

Proactive safety action by Brisbane Marine Pilots

Action number: MO-2014-006-NSA-018

Action status: Closed

Brisbane Marine Pilots (BMP) advised the ATSB that its standard passage plan has been amended to clarify that the officer of the watch (OOV) is responsible for ensuring that a good lookout by sight and radar is maintained. In addition, BMP will place greater emphasis on bridge team engagement and communicating small craft interaction risks on a case by case basis through the master-pilot-bridge team exchange processes. The company's training and development team will maintain focus on this aspect through its check pilot system.

The company has decided to review and amend its pre-arrival information for masters to emphasise the small vessel interaction risk. In progressing this review, BMP has contacted representatives from the commercial fishing industry to identify seasonal increases in activity. Publicly available information for recreational boat owners will also be considered for inclusion in the pre-arrival information. The review was scheduled for completion by 31 July 2015.

Current status of the safety issue

Issue status: Adequately addressed

Justification: Proactive safety action taken.

Collisions between ships and small vessels

| | |
|---------------------|---|
| Number: | MO-2014-006-SI-03 |
| Issue owner: | Master, owners, operators and skippers of all vessels |
| Operation affected: | Marine: Shipboard operations |
| Who it affects: | All persons responsible for navigation |

Safety issue description:

Over the past 26 years, investigations into 41 collisions between trading ships and small vessels on the Australian coast have identified that not maintaining a proper lookout and taking early avoiding action, in accordance with the collision regulations, has been a consistent and continuing contributor to such collisions.

ATSB safety advisory notice to Masters, owners, operators and skippers of all vessels

Action number: MO-2014-006-SAN-019

Action status: Released

The Australian Transport Safety Bureau reinforces to masters, owners, operators and skippers of all vessels, the importance of taking all necessary measures to ensure that a proper and effective lookout, in accordance with the collision regulations, is kept at all times and early avoiding action in accordance with those regulations is taken to prevent collision.

General details

Occurrence details

| | | |
|--------------------------|--|--------------------------|
| Date and time: | 6 July 2014 – 0419:28 (UTC + 10 hours) | |
| Occurrence category: | Serious incident | |
| Primary occurrence type: | Collision | |
| Location: | Off Beacon M7, Main Channel, Moreton Bay, Brisbane, Queensland | |
| | Latitude: 27° 08.39' S | Longitude: 153° 20.97' E |

Ship details

| | |
|-------------------------|--|
| Name: | <i>Kota Wajar</i> |
| IMO number: | 9157399 |
| Call sign: | S6BT |
| Flag: | Singapore |
| Classification society: | Nippon Kaiji Kyokai (Class NK) |
| Ship type: | Container ship (Fully cellular) |
| Builder: | Kanasashi Heavy Industries Company, Shizuoka, Japan |
| Year built: | 1997 |
| Owner(s): | Pacific International Lines, Singapore |
| Operator: | Pacific International Lines, Singapore |
| Manager: | Pacific International Lines, Singapore |
| Gross tonnage: | 16,772 |
| Deadweight (summer): | 24,637 t |
| Summer draught: | 10.028 m |
| Length overall: | 184.51 m |
| Moulded breadth: | 27.60 m |
| Moulded depth: | 14.00 m |
| Main engine(s): | Mitsubishi 6UEC60LS, two stroke, single acting, in-line diesel |
| Total power: | 10,592 kW |
| Speed: | 19.0 knots |
| Injuries: | Nil |
| Damage: | Nil |

| | |
|--------------------------|--|
| Name: | <i>Blazing Keel</i> |
| Registration number: | QA899Q |
| Flag: | Queensland, Australia |
| Vessel type: | Yacht - Sailing vessel (Cutter) |
| Builder: | Roberts |
| Year built: | 1988 |
| Owner: | Private |
| Length: | 13.41 m |
| Breadth: | 4.40 m |
| Draught (approximate): | 1.80 m |
| Sail area (approximate): | 88.5 m ² (Total – Fore and Main sails) |
| Motor propulsion: | Inboard diesel |
| Total power: | 85 horsepower |
| Speed (approximate): | 9.0 knots (power-driven) |
| Injuries: | Nil |
| Damage: | Significant damage to hull, rigging, mast, stays and interior of yacht |

Sources and submissions

Sources of information

On 6 July 2014, ATSB investigators attended *Kota Wajar* while the ship was berthed in Brisbane. The master and directly involved crew members each provided their accounts of the time of the collision. Photographs of the ship and copies of relevant documents, including log books, reports, records, manuals and procedures were obtained. The voyage data recorder was downloaded.

The pilot provided his account of the time of the incident at the offices of Brisbane Marine Pilots (BMP). The investigators also attended *Blazing Keel*, where the skipper and his wife provided their accounts of the collision. Photographs and relevant information was obtained. Further evidence was provided by the Queensland Police Service (QPS) and Maritime Safety Queensland (MSQ).

References

Australian Maritime Safety Authority (AMSA), Marine Notice 17/2014, Sound navigational practices, AMSA, Dec 2014.

Australian Transport Safety Bureau (ATSB), Safety Bulletin 1, *Ships and fishing vessels*

ATSB, Safety Bulletin 2, *Ships and fishing vessels, an open letter to all masters and bridge watchkeepers*

ATSB, Safety Bulletin 5, *Fisherman and Safety Awareness at Sea*

Department of Transport and Main Roads, Queensland, August 2014, BoatSafe Competency Standard.

International Chamber of Shipping (ICS), London, 2007, Bridge Procedures Guide, Fourth Edition 2007.

International Maritime Organization (IMO), London, 2011, Standards of Training, Certification and Watchkeeping for Seafarers (STCW) Code.

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

IMO, The International Regulations for the Prevention of Collisions at Sea, 1972, as amended (COLREGS).

Submissions

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

A draft of this report was provided to *Kota Wajar's* master, chief mate, fourth mate, helmsman, its managers, Pacific International Line (PIL), the pilot, BMP, *Blazing Keel's* skipper, the Australian Maritime Safety Authority (AMSA), QPS, MSQ and the Maritime and Port Authority of Singapore (MPA).

Submissions were received from *Kota Wajar's* master, PIL, the pilot, BMP, *Blazing Keel's* skipper, AMSA, MSQ and MPA. The submissions were reviewed and where considered appropriate, the text of the report was amended accordingly.

Australian Transport Safety Bureau

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The ATSB is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in: independent investigation of transport accidents and other safety occurrences; safety data recording, analysis and research; fostering safety awareness, knowledge and action.

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 identify and reduce safety-related risk. ATSB investigations determine and communicate the factors related to the transport safety matter being investigated.

It is not a function of the ATSB to apportion blame or determine liability. At the same time, 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 initiate proactive safety action that addresses safety issues. Nevertheless, the ATSB may use its power to make a formal safety recommendation either during or at the end of an investigation, depending on the level of risk associated with a safety issue and the extent of corrective action undertaken by the relevant organisation.

When safety recommendations are issued, they focus on clearly describing the safety issue of concern, rather than providing instructions or opinions on a preferred method of corrective action. As with equivalent overseas organisations, the ATSB has no power to enforce the implementation of its recommendations. It is a matter for the body to which an ATSB recommendation is directed to assess the costs and benefits of any particular means of addressing a safety issue.

When the ATSB issues a safety recommendation to a person, organisation or agency, they must provide a written response within 90 days. That response must indicate whether they accept the recommendation, any reasons for not accepting part or all of the recommendation, and details of any proposed safety action to give effect to the recommendation.

The ATSB can also issue safety advisory notices suggesting that an organisation or an industry sector consider a safety issue and take action where it believes it appropriate. There is no requirement for a formal response to an advisory notice, although the ATSB will publish any response it receives.

Australian Transport Safety Bureau

Enquiries 1800 020 616

Notifications 1800 011 034

REPCON 1800 011 034

Web www.atsb.gov.au

Twitter @ATSBinfo

Email atsbinfo@atsb.gov.au

Investigation

ATSB Transport Safety Report

Collision between *Kota Wajar* and the yacht *Blazing Keel*
Moreton Bay, Queensland, 6 July 2014

311-MO-2014-006

Final – 30 July 2015