Safety summary

What happened

On 3 October 2013, immediately before *HC Rubina* sailed from Beira, Mozambique, the control system for its controllable pitch propeller failed. The ship subsequently made its voyage to Brisbane, Australia, with the propeller's pitch manually operated from the local control station.

On the afternoon of 29 October 2013, a pilot boarded *HC Rubina* for its passage in to Brisbane. While the ship was being manoeuvred off its berth, a flexible coupling for the shaft alternator that was providing power to the bow thruster, suddenly failed. The aft end of the engine room rapidly filled with smoke, forcing the engineer controlling the propeller pitch to leave the local station. Consequently, the ship's propulsion was no longer being controlled and the ship made contact with the wharf, sustaining minor damage.

What the ATSB found

The ATSB found that *HC Rubina*'s shipboard planned maintenance system provided no guidance for the maintenance of the shaft alternator's flexible coupling.

The ATSB investigation also identified a number of other safety factors. The ship's managers did not ensure that the defective propeller pitch control system was reported as required to relevant organisations to allow them to consider the risks arising from the defect. Further, the method used by the ship's agent, in Brisbane, to collect information for the port's online booking system did not ensure that such defects were captured.

The increased risk arising from the ship's defect and the weather conditions leading up to the incident were factors that should have been considered to determine whether the pre-prepared passage plan remained appropriate.

Although it did not directly contribute to the incident the ATSB investigation did note that at a critical time during the incident, the crew communicated in Russian instead of English, the mandated working language for all ship's bridges. As a result, the pilot was left out of the communication loop and his ability to make informed decisions was limited.

What's been done as a result

Maritime Safety Queensland (MSQ), Queensland's maritime regulator, has updated the training that it provides to the state's ship agents to raise awareness regarding the gathering of information and reporting of ship defects. Further, MSQ, in conjunction with Brisbane Marine Pilots, has revised the procedure used to exchange information between vessel traffic services (VTS) and the pilot. Specific emphasis was placed on the reporting of defects that could affect the safe navigation of the ship.

HC Rubina's agent in Brisbane has revised the method used for collecting information, from ship masters, by including a question that specifically asks if the ship has any defects.

Safety message

The incident highlights the importance that needs to be given to the maintenance of critical items of ship equipment and the reporting of their operational condition. Doing so can ensure that pilotage and other high risk operations can be appropriately pre-planned and managed to reduce the likelihood of an incident.

Contents

The occurrence

On 3 November 2013, the crew of the 127 m general cargo ship *HC Rubina* (Figure 1) tested the ship's equipment before departing the port of Beira, Mozambique. During the tests, they found that the controllable pitch propeller (CPP) would not respond to bridge or engine control room commands. The CPP could only be controlled using the local station manual controls which were located at the aft end of the engine room, near the main engine flywheel.

Figure 1: *HC Rubina*

Source: ATSB

The port authority would not allow *HC Rubina* to remain alongside its berth while the ship's engineers investigated the defect so the ship sailed, as scheduled, with the CPP controlled manually from the local station.

Once clear of the port, fault-finding by the ship's engineers did not identify the cause of the defect. The master and the chief engineer discussed the defect and decided to continue the voyage to Brisbane, Australia, with the engine room manned on a 24 hour basis. The ship's managers were advised of the defect and a technician was arranged for the ship's arrival at Brisbane.

The voyage was uneventful and on the morning of the 27 October, *HC Rubina* anchored about 8 miles[1] due east of Caloundra, near the Brisbane pilot boarding ground (Figure 3).

On the afternoon of 29 October, the crew prepared the ship for entry into Brisbane. As part of the preparations, the ship's equipment was tested and the second, diesel engine driven alternator was started and coupled to the switchboard. The ship's main engine driven shaft alternator was to be directly connected to the bow thruster when the ship neared the berth.

HC Rubina weighed anchor and the ship proceeded from the anchorage to the pilot boarding ground. At 1610[2], a Brisbane pilot boarded the ship and was escorted to the bridge.

The pilot and master conducted an information exchange and discussed the passage plan. The pilot was informed that the CPP was on local control and that pitch orders were to be relayed via telephone to the local station. He was advised that control of the CPP from the local station had been tested and was working well. The passage plan was agreed and the pilot took the conduct of

1 A nautical mile is 1,852 m.

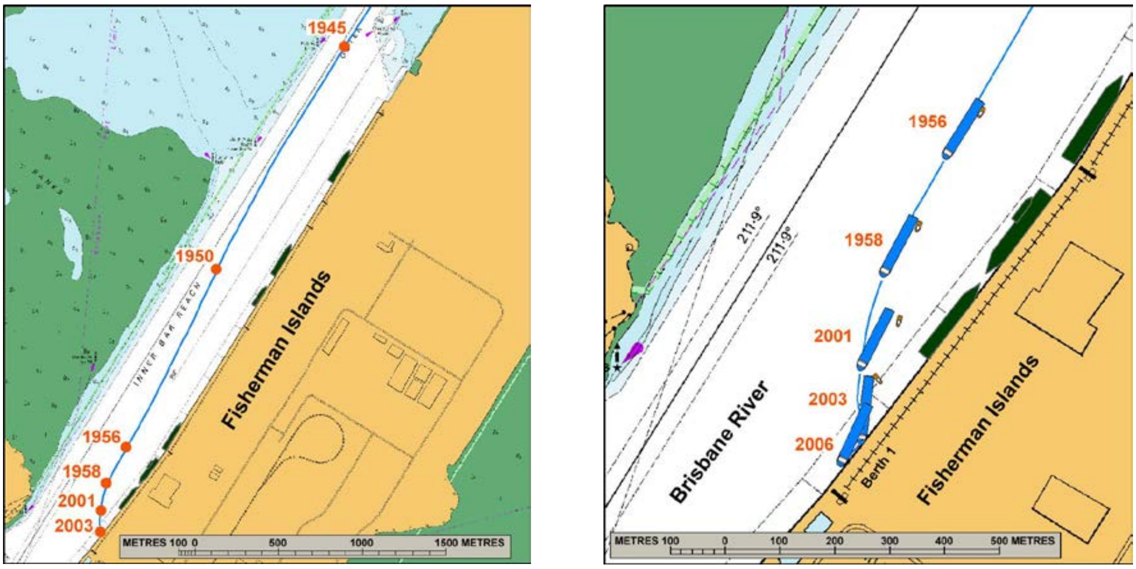
2 All times referred to in this report are local time, Coordinated Universal Time (UTC) + 10 hours.

the ship from the master. The master then left the bridge, leaving the chief mate in charge of the watch.

The passage across Moreton Bay went as anticipated with the pilot directly controlling the ship's steering via the autopilot.

At about 1945, *HC Rubina* entered the Brisbane River (Figure 2) and the pilot began to slow the ship. At about this time, the shaft alternator was set up to supply power directly to the bow thruster.

Figure 2: Section of navigational chart Aus 237 showing *HC Rubina'*s track



Source: Australian Hydrographic Service (annotated by ATSB)

At 1950, a tug was made fast on the ship's port quarter, to assist with the planned swing to port and subsequent starboard side-to berthing. At about this time, a seaman arrived on the bridge to act as the helmsman.

At 1956, the pilot asked the tug master to lay back[3] in order to further reduce the ship's speed, in readiness for turning the ship once off the berth. As the ship slowed, its bow began to swing to port. The pilot countered the swing with the use of the rudder and bow thruster.

However, the ship's bow continued to swing to port even with the rudder hard to starboard. The pilot then asked for the bow thruster's power to be increased from setting 2 to 3.[4]

At about 1958, the shaft alternator flexible coupling catastrophically failed. The aft end of the engine room quickly filled with smoke and power to the bow thruster was lost. The second engineer ran from the CPP local control station, which was about 3 m from the flexible coupling, to the forward end of the main engine to escape the smoke. The propeller pitch setting was left between 3 and 5 per cent ahead.

In the engine control room, the chief engineer heard the bow thruster circuit breaker trip. He looked aft through the control room window into the engine room and could see smoke rising from the lower level of the engine room. He left the control room and ran down one level to check on the second engineer. Finding him safe near the main engine, the chief engineer returned to the control room.

3 The tug is effectively being towed by the ship and is using its own weight and drag, rather than thrust, to slow the ship.

4 The bow thruster's three power level settings in either direction were: 1 – 70 %, 2 – 85 % and 3 – 100 %.

Meanwhile on the bridge, the master realised that the bow thruster was not responding and tried to reset it by turning the control power off then on. When it did not reset, he telephoned the chief engineer and spoke to him in Russian. The master was informed that the bow thruster circuit breaker had tripped and the aft end of the engine room was full of smoke that was now clearing.

The pilot was still unaware of what had happened and the increase in power from the bow thruster was ineffective in countering the swing of the bow. He queried the master as to the power setting but received no answer.

At 2001, the pilot realised that the bow thruster was not working and ordered the tug master to 'square up and push half[5] as we have no bow thruster'. In the following minutes, various other orders were given to the tug master in an effort to stop the ship from contacting the wharf.

The pilot also asked for the starboard anchor to be let go and full astern pitch. When the ship did not slow down as expected the pilot queried the full astern movement. He received no answer and the master, chief mate and chief engineer continued speaking to each other in Russian.

At about 2003, the ship made contact with the wharf's fenders at an angle of about 45 degrees and about 1.5 knots.[6] The fenders were compressed and the ship's port shoulder gently scraped along the wharf face over a distance of about 40 m.

At about 2006, the second engineer returned to the CPP control station. When he re-established communications with the bridge, the full astern movement that the pilot had previously given was passed on and applied.

To the pilot's surprise, the ship started to move astern. As there was a ship berthed astern, he called the tug master and asked him to push on the stern as 'we are now shooting astern'.

By 2007, the tug was in position and pushing with half power. The propeller pitch was soon reduced to zero and about 30 seconds later, the tug was ordered to stop pushing.

At 2011, the pilot advised the stevedores that the ship would be made fast where it was. By 2030, *HC Rubina* was all fast. Damage was limited to chipping of the concrete wharf edge and paint abrasion to the hull.

5 The tug is required to move to, or as close as possible to, right angles to the side of the ship and push with half power.
6 One knot, or one nautical mile per hour, equals 1.85 kilometres per hour.

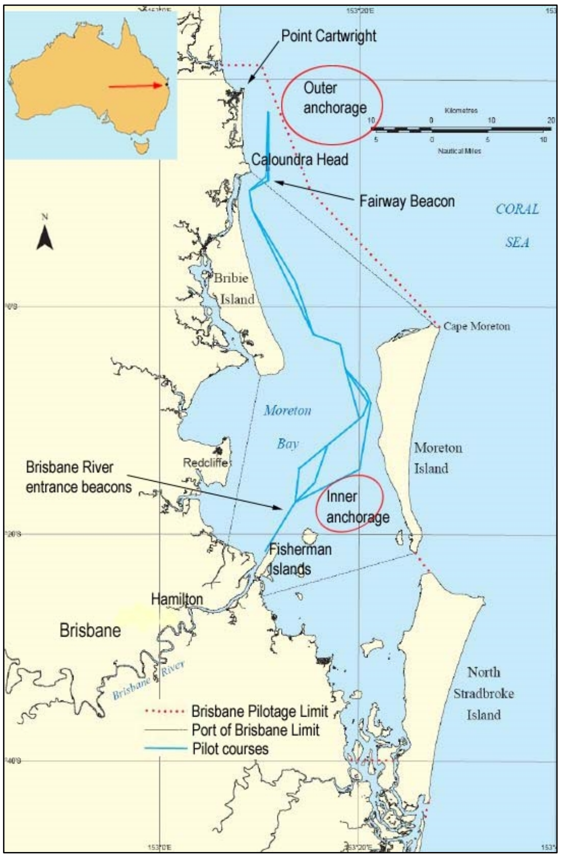
Context

Port of Brisbane

The city of Brisbane lies on Australia's east coast and is the capital and principal port of Queensland. The city is located in the south-east corner of Queensland on the Brisbane River as it enters Moreton Bay. The port (Figure 3) extends on both banks of the river for about 12 miles[7] upstream from the entrance beacons. All berths in the port are located in the Brisbane River or at its mouth.

Brisbane port limits extend from the lower reaches of the Brisbane River, across Moreton Bay and north to Point Cartwright. Ships enter Moreton Bay and the shipping channel southeast of Caloundra Head and then navigate through the bay for about 40 miles, from the fairway beacon to the Brisbane River Entrance beacons, with the Inner Bar Reach beacons a further 8.5 miles. The Brisbane River entrance is to the north of Fisherman Islands.

Figure 3: Port of Brisbane



Source: Maritime Safety Queensland and ATSB

Source: Australian Hydrographic Service

Pilotage

Pilotage in Brisbane is compulsory for all ships 50 m or more in length, unless the master holds a pilotage exemption certificate, and any ship directed by the harbour master. Pilotage services are provided Brisbane Marine Pilots (BMP).

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7 A nautical mile is 1852 m.

HC Rubina's pilot

The pilot had 13 years of seagoing experience before becoming a pilot in 1987. Since that time he had worked as a pilot in Queensland and South Australia. In 2000, he joined BMP.

HC Rubina

At the time of the incident, *HC Rubina* was registered in Antigua & Barbuda, classed with Germanischer Lloyd (GL) and managed by IMM Shipping, Germany.

The ship had a forward accommodation block and the navigation bridge was 8 m abaft the bow. The engine room was in the aft part of the ship, with two funnels located at the aft corners of the main deck on either side of the stern ramp. It was also fitted with a flap rudder[8] and a 500 kW electrically driven bow thruster.

Crew

HC Rubina had a crew of 15 Ukrainian, Russian, Kiribati and Philippines nationals.

The Ukrainian master had graduated from a maritime academy in Ukraine in 1987. He then sailed on different ship types and in 1998, he was promoted to master. He had been on board *HC Rubina* for three months.

The Russian chief engineer and second engineer had both joined the ship for the first time four months previously. The first engineer first went to sea in 1999 and worked his way through the ranks from motorman to second engineer. He had been sailing as second engineer for 3 years.

Machinery systems

Propeller pitch control

The CPP had multiple methods of control, to allow for redundancy and continued operation. It was normally operated from the bridge in follow-up[9] mode using the engine telegraph. It could also be operated from the engine control room (ECR) in follow-up mode using the telegraph, or non-follow up[10] mode using push buttons. The local control station, near the main engine flywheel, also had manually operated non-follow up controls that did not use any part of the electronic control system.

At the time of the incident, the pitch was being operated from the local control station (Figure 4) following a complete failure of the pitch control system. The pitch order was being relayed from the bridge via telephone to the second engineer, who was manually operating the ahead and astern pitch control hydraulic valves until the required pitch was achieved.

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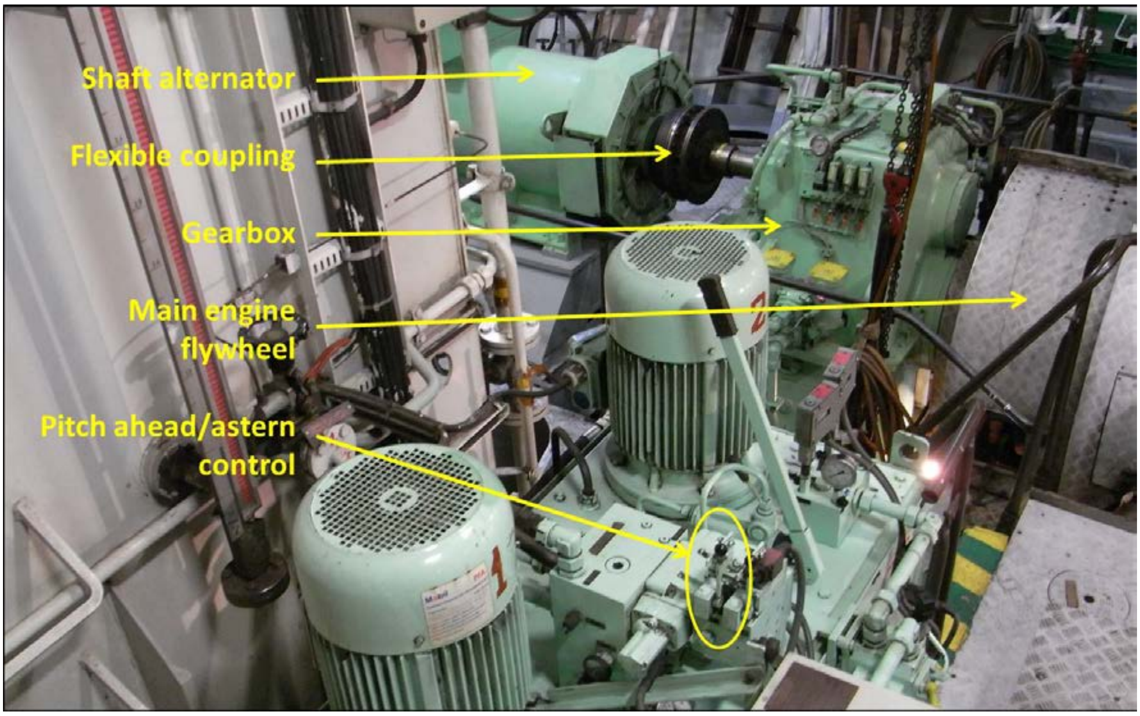
8 A rudder that has a flap on the trailing edge of the main rudder blade. It generates greater lift (steering effort) at low speeds, in much the same way as a flap on an aircraft wing.

9 Follow-up is a closed loop control system that uses a feedback signal to constantly compare the actual pitch to the required pitch and adjusts the output of the control system, as required, so that the two stay matched.

10 Non follow-up is an open loop control system where the pitch change signal is generated manually and there is no feedback for monitoring and automatic adjustment.

Figure 4: Photograph with the local control station and flexible coupling (guard removed)



Source: ATSB

Gearbox

The main engine gearbox had a 750 rpm input from the main engine and two outputs. Its primary function was to reduce the input speed from the main engine to 195 rpm to drive the propeller. It also provided the drive for an 1,800 rpm power take-off (PTO) which drove the shaft alternator through a flexible coupling.

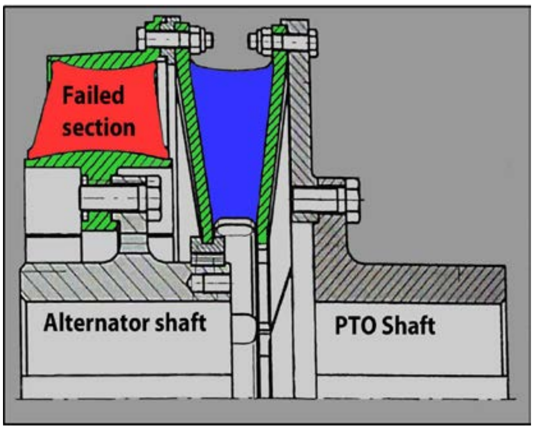
Shaft alternator flexible coupling

The three functions of the shaft alternator flexible coupling were to:

- transmit power from the PTO to the alternator
- allow for minor misalignment between the alternator and gearbox output shafts
- dampen any vibrations transferred through the driveline.

The coupling (Figure 5) transmitted the output power to the shaft alternator through an annulus rubber ring (red). The annulus ring was bonded to steel plates (green) and radial rubber segments (blue) which were also bonded to steel plates (green).

Figure 5: Shaft alternator flexible coupling



Source: ATSB

Safety analysis

On 29 October 2013, at about 2000, as *HC Rubina* approached the berth, the shaft alternator flexible coupling failed and the second engineer was forced to leave the controllable pitch propeller local control station.

The complete loss of bow thruster power and momentary loss of propeller pitch control resulted in the ship's port shoulder making minor contact with the face of the wharf.

Failure of the shaft alternator flexible coupling

According to the manufacturer, the condition of the flexible coupling deteriorated as a result of loading and age. Therefore, they recommended it be replaced every 12 years.

At the time of this incident, *HC Rubina* was 14 years old and there were no available records to indicate that the coupling had ever been replaced. Further, no electronic job histories could be found for this task, or any task, prior to the middle of 2008. No other records were available relating to the maintenance of the coupling. Therefore, the ATSB concluded that the coupling was probably the original installed item and had exceeded its prescribed service life, being 14 years old.

While the nature of the damage sustained prevented the ATSB from specifically identifying the coupling failure mechanism, it was likely that the failure arose because it had deteriorated through age, to a point where it was no longer capable of carrying its rated load.

Shaft alternator coupling planned maintenance

HC Rubina's electronic planned maintenance system (PMS) did not contain any instructions relating to the shaft alternator flexible coupling. Therefore, the PMS could not produce a notification to ensure the shaft alternator flexible coupling was replaced at 12-year intervals in accordance with the manufacturer's instructions.

Notifications

For a classification society to issue a ship its SOLAS[11] certificates on behalf of the flag state, it has to verify that the ship complies with, and is being maintained to, the required standards for its design and purpose. Any change to the operation or integrity of the ship requires an immediate notification to the classification society and flag State by the ship's master or its managers. Similarly, notification to the administration of the country, the coastal State, whose waters it sails in is also required.

Statutory notifications

Operating the CPP from the local control station was a defect that changed the manner in which *HC Rubina* had been certified to operate. The defect was reported by the master to the ship's managers so that a technician could be arranged. However, the defect was not reported to the ship's flag State (Antigua & Barbuda), the coastal State (Australia) or its classification society (Germanischer Lloyd).

Further, the defect directly impacted the safe navigation of the ship, particularly in Brisbane's confined pilotage waters where safety margins are reduced. The ship's agents and Maritime Safety Queensland (MSQ), which could provide information to the pilot company, had no knowledge of the CPP defect. Consequently, the pilot company and the pilot could not consider the increased risk to pre-plan the ship's pilotage well in advance.

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[11] The International Convention for the Safety of Life at Sea, 1974, as amended.

Booking and Port Movements

QSHIPS, an online booking and port movement information website operated by MSQ, commenced operating in April 2008. This allowed the shipping agents to enter information such as the ship's arrival details, berthing information and tug requirements directly into the booking system.

To assist with transition to the new QSHIPS system, three trainers visited the shipping agents around the state to give on-site training. The guidance material[12] provided to the agents as part of the training did not include any information on the 'defect' section of the booking system form. It also did not specifically define what a 'defect' was, and therefore, what was or was not required to be entered into the form.

To book an entry time into the Port of Brisbane, the agent had to complete the QSHIPS booking form. The booking form's 'defect' data field was a compulsory field and the form could not be lodged if the field was not completed. It also prompted the user for more information if 'yes' was selected.

The pre-arrival information questionnaire, sent by the ship's agent to the master, did not ask about defects and the master did not volunteer the information regarding the CPP control system failure. As such, the agent, as he had no information to the contrary, completed the 'defect' section of the QSHIPS booking form by choosing 'no'.

The 'no' answer would later lead other parties, such as BMP, which relied on the QSHIPS website information, to assume that the ship was defect free and that there was no reason to take further action such as a risk analysis or a review of the passage plan.

Risk assessment

Operation of *HC Rubina*

Risk is inherent in all operations and when there is a change to the operation there can also be a change to the type and severity of the risk. Therefore, the strategies used to minimise the risk must also be reassessed.

The risks identified with sailing the ship from Mozambique to Brisbane had been considered and accepted by the master and crew. However, the risks brought about by the change from an open water passage to conducting an extended pilotage in confined waters while reliant upon CPP local pitch control had not been fully appreciated by the master.

Therefore, risk mitigation measures, such as a technician repairing the CPP control system while the ship waited at anchor, or using an extra tug for berthing, were either not considered or implemented. Had a technician attended the ship at anchor, it would have allowed repairs to be made and the ship to enter the Port of Brisbane with the CPP control system operational.

Pilotage and passage planning

Traditionally, a pilot has been engaged as a local knowledge expert with ship handling skills to provide advice to the master on the navigation and conduct of the ship. However, pilotage is increasingly seen as a risk management tool by port authorities, safety regulators and others.

Successful risk mitigation in pilotage relies on accurate, complete and timely information being available to the pilot for preparation of the passage plan. This allows the possible variables and scenarios to be fully considered and places the bridge team in a better position to deal with the unexpected.

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12 'Agents User Guide' and 'Overview and Navigation guide'.

As there was no prior notification given to, or asked for by BMP about defects affecting *HC Rubina*, the pilot had to make an on-the-spot decision about the CPP control issues after boarding. In making the decision, the pilot did not consider it necessary to notify or consult BMP's duty pilot or the harbour master. Consequently, the opportunity for a better considered decision through group discussion and consensus was lost and so the possibility of a single person human error remained.

Weather

The prevailing weather can have a significant impact on a ship's berthing manoeuvres. The risks involved with a port's weather therefore need to be considered when planning any ship movements. BMP had identified weather as a risk and had addressed it in their procedures. Amongst other guidance, BMP's pilot procedure manual included weather conditions (10 knot wind speed from the north) under which the effectiveness of a ship's bow thruster would begin to be limited. Under such conditions, the manual suggested the pilot should consider altering where and how a single tug was to be used, or using a second tug.

The pilot had checked the weather prior to boarding *HC Rubina* and continued to monitor it as the pilotage progressed. The wind direction and speed remained steady, though the gust strength did increase during the pilotage. At 2000, the wind speed at the monitoring station was 20 knots gusting to 26 knots from the north. Immediately after the contact with the wharf, the chief mate measured the wind speed at force 7 (28-33 knots). At this time, the conditions were outside the wind speed limits provided in the guidance.

The pilot procedure manual was based on ship types with aft accommodations. *HC Rubina* had a forward mounted accommodation and so it was likely that the bow thruster effectiveness would have been reduced at a lower wind speed than that given in the manual.

The use of a second tug had been considered by the master before the pilot boarded but he did not discuss it with the pilot. As the master had not been to Brisbane before and the pilot did not mention the need of a second tug, he deferred to the pilot's judgement.

The pilot and master did not identify an increase in risk from the combination of weather and ship factors and did not alter the predetermined passage plan.

Bridge resource management

Bridge resource management has been defined as 'the use and coordination of all the skills and resources available to the bridge team to achieve the established goal of optimum safety and efficiency'.[13]

For a bridge team to function at its best, the roles and responsibilities of its various members need to be defined and the passage plan needs to be made known to all members. Information needs to flow between the members of the bridge team, as well as between the bridge team and the pilot.

During the master – pilot information exchange, the pilot was advised that the propeller pitch control was being operated from the local station in the engine room. The pilot's pre-prepared passage plan was also discussed. At the conclusion of the exchange, the master left the bridge. Although the chief mate was present during the exchange, he was not included in the discussion about the passage plan nor did anyone brief him later.

The pilot reported that as the ship was considerably smaller than what the pilot was used to handling, it seemed to handle well. The pilot adjusted the ship's course by directly operating the autopilot, rather than giving helm orders to the duty mate or asking for a helmsman to be present throughout.

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13 *Nijjer, R. (2000) Bridge Resource Management: The Missing Link, Sea Australia 2000, Sydney*.

It is likely that the chief mate did not see himself to be part of the bridge team as he was not briefed on the passage plan and the pilot continually adjusted the autopilot himself. Therefore, when critical events occurred, the chief mate, master and chief engineer reverted to a familiar team and discussed the problems between themselves in Russian.

The pilot was subsequently given a translation of what the ship's team considered important, at a time that the team considered opportune.

Language

As a ship's crew can be comprised of different nationalities, SOLAS states that English is to be used as the working language for all bridge-to-bridge and bridge-to-shore communications. However, crew members not in charge of a navigation watch (including engineers) are not required to communicate in, or have any level of proficiency in English.

The English language skills of *HC Rubina*'s master and chief mate allowed for an easily understood conversation between themselves and the pilot. The chief engineer's English language skills were more limited, meaning that an efficient discussion of technical issues, in a high stress, time critical situation, had to be in Russian. While the use of a language other than English allowed for more efficient communications between the crew members, it also had the unintentional result of excluding the pilot from the conversation.

Ideally, all communications on the bridge should be conducted in English. However, it is unrealistic to expect that this will always be possible. Bridge teams must consider the requirement to ensure the timely translation of information to critical team members, including the pilot.

At a critical time during the incident, the crew used Russian instead of English - the required working language for the ship's bridge. As a result, the pilot was left out of the communication loop and his ability to make informed decisions at those times was limited.

Findings

From the evidence obtained, the following findings are made with respect to the machinery failure on board HC Rubina and its subsequent contact with the wharf. The 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

- ***HC Rubina*'s electronic planned maintenance system did not contain any instructions to ensure that the shaft alternator flexible coupling was maintained in accordance with the manufacturer's requirements. [Safety issue]**
- The failure of the controllable pitch propeller control system meant that the pitch could only be controlled by an engineer, from the local control station in the engine room.
- The failure of the shaft alternator flexible coupling lead to the loss of bow thruster power and a subsequent loss of manoeuvrability.
- The smoke generated by the coupling failure forced the engineer controlling the propeller pitch to leave the local control station, resulting in the temporary loss of pitch and manoeuvring control.

Other factors that increase risk

- **The ship's managers did not have effective systems to ensure that the defective control system for the controllable pitch propeller was reported to the relevant organisations as required. Consequently, Brisbane's vessel traffic services, pilotage provider and the pilot remained unaware of the defect and could not consider it in their risk assessments before the pilotage started. [Safety issue]**
- **The ship's agent's information questionnaire did not ask for all of the information required to complete the QSHIPS booking form and ensure that defects were reported. [Safety issue]**
- The pilot and master did not identify an increase in risk, due to the combination of weather and the ship's defect, and did not confirm that the predetermined passage plan remained appropriate.
- At a critical time during the incident, the crew communicated in Russian instead of English, the working language for the ship's bridge. As a result, the pilot was left out of the communication loop and this limited his ability to make informed decisions at those times.

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.

All of the directly involved parties were provided with a draft report and invited to provide submissions. As part of that process, each organisation was asked to communicate what safety actions, if any, they had carried out or were planning to carry out in relation to each safety issue relevant to their organisation.

Planned maintenance

Number:	MO-2013-012-SI-01
Issue owner:	IMM Shipping
Operation affected:	Marine: Shipboard operations
Who it affects:	All ships

Safety issue description:

HC Rubina’s electronic planned maintenance system did not contain any instructions to ensure that the shaft alternator flexible coupling was maintained in accordance with the manufacturer’s requirements.

Response to safety issue taken by IMM Shipping

IMM Shipping did not respond to this safety action.

ATSB safety recommendation to IMM Shipping

Action number: MO-2013-012-SR-028

Action status: Released

The Australian Transport Safety Bureau recommends that IMM Shipping takes action to address the lack of instructions in the planned maintenance systems of its managed ships, to ensure that ship equipment is maintained in accordance with manufacturers' requirements.

Current status of the safety issue:

Issue status: Not addressed.

Justification: No action taken at this time.

Defect reporting

Number:	MO-2013-012-SI-02
Issue owner:	IMM Shipping
Operation affected:	Marine: Shipboard operations
Who it affects:	All ships

Safety issue description:

The ship’s managers did not have effective systems to ensure that the defective control system for the controllable pitch propeller was reported to the relevant organisations as required.

Consequently, Brisbane's vessel traffic services, pilotage provider and the pilot remained unaware of the defect and could not consider it in their risk assessments before the pilotage started.

Response to safety issue taken by IMM Shipping

IMM Shipping did not respond to this safety action.

ATSB safety recommendation to IMM Shipping

Action number: MO-2013-012-SR-029

Action status: Released

The Australian Transport Safety Bureau recommends that IMM Shipping takes safety action to ensure that defects are reported as required.

Current status of the safety issue:

Issue status: Not addressed.

Justification: No action taken at this time.

Port entry procedures – Defect notification

Number:	MO-2013-012-SI-03
Issue owner:	Asiaworld Shipping Services and Maritime Safety Queensland
Operation affected:	Marine: Shore-based operations
Who it affects:	Port operations and vessel's under pilotage

Safety issue description:

The ship's agent's information questionnaire did not ask for all of the information required to complete the QSHIPS booking form and ensure that defects were reported.

Proactive safety action taken by Asiaworld Shipping Service

Action number: MO-2013-012-NSA-030

Asiaworld Shipping Service has updated its questionnaire to the masters of arriving ships to include the statement

> Please advise if your good vessel currently has any deficiency or other problem that may affect safe navigation, cargo operations or some other aspect of your port call at [port name], as we must declare all deficiencies to the Regional Harbour Master's office.

Proactive safety action taken by Maritime Safety Queensland

Action number: MO-2013-012-NSA-031

Maritime Safety Queensland has advised that

> Face to face training will take place from the QSHIP support team to the agents and service providers in the first two weeks of June for the rollout of the upgraded version of QSHIPS on 18 June 2014.
>
> During this training, it will be emphasised to agents that they are obligated to ask the master of a ship whether there are any ship defects before the agent makes that declaration in the defect module of QSHIPS when entering the ship's movement into the programme.
>
> VTS and pilots are to positively exchange vessel defect information during the initial VHF reporting, prior to commencing entry or departure.
>
> VTS and BMP documented procedures (Port Procedures Manual, VTS Standard Operating Procedures and BMP Safety Management System) are being amended to fully reflect the requirement to positively exchange ship defect information during VHF reporting.
>
> The master, owner and agents of the HC RUBINA were reminded of their statutory obligations to report a ship's defects prior to a ship's arrival at, or departure from a pilotage

area. *Section 181 of the Transport Operations Marine Safety Regulations 2004* refers to that report being made in the approved form. That obligation is met by accurately completing the mandatory ship defect field when making a booking through QSHIPS.

Proactive safety action taken by Brisbane Marine Pilots

Action number: MO-2013-012-NSA-032

Brisbane Marine Pilots has advised that:

- Since the incident, in co-operation with MSQ, positive reporting of declared defects occurs between pilots and VTS.
- On the 28th May 2014 the incident and defect reporting requirements were discussed at our monthly pilots meeting.
- On the 4th June 2014 the incident and reporting requirements were discussed with the RHM's office at our quarterly meeting.
- On the 3rd July 2014 the reporting requirement was communicated to all pilots via email.
- On the 30th July 2014 the incident and defect reporting requirements were again reinforced in discussions at our monthly pilots meeting.
- On the 15th August 2014 a safety notice was issued, to confirm the defect reporting requirement, was issued to all pilots

Current status of the safety issue:

Issue status: Adequately addressed

Justification: The ongoing actions being taken by Asiaworld Shipping Service and Maritime Safety Queensland in conjunction with Brisbane Marine Pilots, will better ensure that the ship condition information sourced is accurate and the downstream users will be better placed to use it as a base for a risk analysis.

General details

Occurrence details

Date and time:	29 October 2013, 2000 hrs. (UTC +10)	
Occurrence category:	Incident	
Primary occurrence type:	Machinery failure	
Location:	Brisbane River, Brisbane, Queensland, Australia	
	27^{O} 22.85' S	153^{O} 9.83' E

Vessel details

Name	*HC Rubina*
IMO number	9198226
Call sign	V2FW9
Flag	Antigua & Barbuda
Classification society	Germanischer Lloyd
Ship type	Ro-Ro Heavy lift – 2 x 150 t SWL cranes
Builder	Peene-Werft
Year built	1999
Owner(s)	IMM Rubina
Ship Manager	IMM Shipping
Technical Manager	IMM Shipping
Operators:	IMM Shipping
Number of crew	13
Gross tonnage	8,821
Deadweight	7,100 t
Draught	6.65 m
Length overall	126.85 m
Moulded breadth	20.0 m
Main engine(s)	12V32/40 MAN B&W
Total power	5,760 kW
Speed	14.5 knots
Damage:	Failed shaft alternator flexible coupling

Sources and submissions

Sources of information

On 31 October and 1 November 2013, investigators from the Australian Transport safety Bureau attended *HC Rubina* while the ship was berthed in Brisbane. The pilot, master and crew members directly involved with the navigation and control of the machinery were interviewed. Photographs and copies of relevant documents were obtained.

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 the master, chief mate, chief engineer and second engineer of *HC Rubina*, the ship's managers, IMM Shipping, Maritime Safety Queensland, the Australian Maritime Safety Authority, Asiaworld Shipping and Brisbane Marine Pilots.

Submissions were received from the Australian Maritime Authority, Maritime Safety Queensland, Asiaworld Shipping, Brisbane Marine Pilots and the second engineer. The submissions were reviewed and where considered appropriate, the text of the draft 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.