



Australian Government

Australian Transport Safety Bureau



ATSB TRANSPORT SAFETY INVESTIGATION REPORT
Marine Occurrence Investigation No. 255
Final

Independent investigation into the grounding of the
Greek registered bulk carrier

Atlantic Eagle

at Maude Reef, off Albany, Western Australia
15 July 2008



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Abstract

At 0710 on 15 July 2008, the Greek registered bulk carrier *Atlantic Eagle* sailed from Albany, Western Australia, partly loaded with a cargo of grain. At 0815, the ship was just outside port limits and its speed had been increased to 14 knots for the voyage to Fremantle, Western Australia.

During the next 10 minutes, the master made two significant course alterations and then set the ship on a heading of 235°, an allowance of five degrees to port of the ship's planned course. At 0835, he left the bridge, instructing the second mate to keep the ship on the set heading and clear of islands.

The second mate maintained the ship on a heading of 235° but did not monitor the ship's progress or establish its position. At 0856½, *Atlantic Eagle* grounded on Maude Reef, seriously damaging its hull, rudder and steering gear before moving clear of the reef. The grounding did not result in any pollution.

On 24 August, after completing temporary repairs, the ship was towed from Albany, bound for Jakarta, Indonesia, to discharge its cargo in preparation for undergoing permanent repairs in Vietnam.

The investigation found that *Atlantic Eagle*'s safety management system procedures for navigation and record keeping had not been effectively implemented on board the ship. The report issues two recommendations to address these safety issues.

THE AUSTRALIAN TRANSPORT SAFETY BUREAU

The Australian Transport Safety Bureau (ATSB) is an operationally independent multi-modal Bureau within the Australian Government Department of Infrastructure, Transport, Regional Development and Local Government. ATSB investigations are independent of regulatory, operator or other external bodies.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia that fall within Commonwealth jurisdiction, as well as participating in overseas investigations involving Australian registered aircraft and ships. A primary concern is the safety of commercial transport, with particular regard to fare-paying passenger operations.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, relevant international agreements.

Purpose of safety investigations

The object of a safety investigation is to enhance safety. To reduce safety-related risk, ATSB investigations determine and communicate the safety factors related to the transport safety matter being investigated.

It is not the object of an investigation to determine blame or liability. However, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

Developing safety action

Central to the ATSB's investigation of transport safety matters is the early identification of safety issues in the transport environment. The ATSB prefers to encourage the relevant organisation(s) to proactively initiate safety action rather than release formal recommendations. However, depending on the level of risk associated with a safety issue and the extent of corrective action undertaken by the relevant organisation, a recommendation may be issued either during or at the end of an investigation.

The ATSB has decided that when safety recommendations are issued, they will focus on clearly describing the safety issue of concern, rather than providing instructions or opinions on the method of corrective action. As with equivalent overseas organisations, the ATSB has no power to implement its recommendations. It is a matter for the body to which an ATSB recommendation is directed (for example the relevant regulator in consultation with industry) to assess the costs and benefits of any particular means of addressing a safety issue.

TERMINOLOGY USED IN THIS REPORT

Occurrence: accident or incident.

Safety factor: an event or condition that increases safety risk. In other words, it is something that, if it occurred in the future, would increase the likelihood of an occurrence, and/or the severity of the adverse consequences associated with an occurrence. Safety factors include the occurrence events (e.g. engine failure, signal passed at danger, grounding), individual actions (e.g. errors and violations), local conditions, risk controls and organisational influences.

Contributing safety factor: a safety factor that, if it had not occurred or existed at the relevant time, then either: (a) the occurrence would probably not have occurred; or (b) the adverse consequences associated with the occurrence would probably not have occurred or have been as serious; or (c) another contributing safety factor would probably not have occurred or existed.

Other safety factor: a safety factor identified during an occurrence investigation which did not meet the definition of contributing safety factor but was still considered to be important to communicate in an investigation report.

Other key finding: any finding, other than that associated with safety factors, considered important to include in an investigation report. Such findings may resolve ambiguity or controversy, describe possible scenarios or safety factors when firm safety factor findings were not able to be made, or note events or conditions which ‘saved the day’ or played an important role in reducing the risk associated with an occurrence.

Safety issue: a safety factor that (a) can reasonably be regarded as having the potential to adversely affect the safety of future operations, and (b) is a characteristic of an organisation or a system, rather than a characteristic of a specific individual, or characteristic of an operational environment at a specific point in time.

Safety issues can broadly be classified in terms of their level of risk as follows:

Critical safety issue: associated with an intolerable level of risk.

Significant safety issue: associated with a risk level regarded as acceptable only if it is kept as low as reasonably practicable.

Minor safety issue: associated with a broadly acceptable level of risk.

EXECUTIVE SUMMARY

At 0710¹ on 15 July 2008, the Greek registered bulk carrier *Atlantic Eagle* sailed from Albany, Western Australia, partly loaded with a cargo of grain. At 0815, when the ship's position was plotted on the chart, it was just outside port limits and its speed had been increased to 14 knots² for the voyage to Fremantle, Western Australia. The master, the second mate and a helmsman were on the bridge.

During the next 10 minutes, the master made two significant course alterations and then set the ship on a heading of 235°, an allowance of five degrees to port of the ship's planned course. He then dismissed the helmsman. The ship's position had not been plotted on the chart since 0815 and no member of the bridge team was monitoring its progress. No account had been taken of the prevailing wind and current or the risk posed by Maude Reef which lay ahead and near the planned track.

At 0835, the master left the bridge, instructing the second mate to keep the ship on the set heading and clear of islands. The instructions were inconsistent with the passage plan and, instead of clarifying them; the second mate maintained the ship on a heading of 235°.

During the next 20 minutes or so, the second mate did not establish the ship's position nor did he monitor the ship's progress and so he had little appreciation of where the ship was or would be with respect to navigational dangers ahead. His poor situational awareness and low workload probably led to boredom and inattention as the ship moved towards Maude Reef.

At 0856½, *Atlantic Eagle* grounded on Maude Reef, seriously damaging its hull, rudder and steering gear. The ship's momentum carried it clear of the reef and the master then anchored the ship nearby. While there was no pollution, Australian authorities rapidly put in place their plan to manage any potential pollution and other risks.

On 17 July, *Atlantic Eagle* was towed to a place of refuge off Albany. Over the next five weeks, temporary repairs to the ship were completed.

On 24 August, the ship was towed from Albany bound for Jakarta, Indonesia, to discharge its cargo in preparation for undergoing permanent repairs in Vietnam.

The investigation found that *Atlantic Eagle*'s safety management system procedures for navigation and record keeping had not been effectively implemented on board the ship. On 15 July, procedures for navigation aimed at ensuring the ship's safe progress and safeguarding against single person errors were not followed. With regard to the grounding, record keeping procedures were also not followed and no attempt was made by the ship's managers to correct the situation. The report issues two recommendations to address these safety issues.

The investigation also found that the incident response by national, state and local authorities was timely and well managed. The response ensured that the risks, particularly those due to potential pollution, were addressed throughout the relevant period.

1 All times referred to in this report are local time, Coordinated Universal Time (UTC) + 8 hours.

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

1.1 *Atlantic Eagle*

Atlantic Eagle is a Greek registered 'Panamax'³ bulk carrier (Figure 1). The ship is owned by Atlantic Eagle Special Maritime Enterprise, Greece, managed by Atlantic Bulk Carriers Management, Marshall Islands (Atlantic Bulk Carriers) and classed with Lloyd's Register (LR).

The ship was built in 2001 by Daewoo Shipbuilding and Marine Engineering Company, Geoje, Korea. It has an overall length of 224.91 m, a moulded breadth of 32.26 m and a depth of 19.40 m. At a summer draught of 14.12 m, the ship has a deadweight of 74 086 tonnes.

Figure 1: *Atlantic Eagle* anchored off Albany



Atlantic Eagle has four deck cranes which service seven cargo holds, all located forward of the accommodation superstructure. An area for helicopter operations is provided on the hatch covers of the aftermost cargo hold. The ship has a flush deck forecastle and poop where all of its mooring equipment is located.

Propulsive power is provided by a B&W 6S60MC two stroke, single acting diesel engine that develops 10 952 kW at 94 rpm. The main engine drives a single, fixed-pitch propeller which gives the ship a service speed of 14.5 knots.

The ship's navigation bridge is equipped with navigational equipment consistent with SOLAS⁴ requirements. The equipment includes two JRC JMA-9000 series radars, both equipped with automatic radar plotting aids (ARPA) and a global positioning system (GPS) input. The radars are mounted on either side of the steering stand in a centrally located main control console. Equipment in the console includes a Furuno FA-100 automatic identification system (AIS) and a JRC JLR-7700 GPS unit. A second, identical GPS unit is mounted on the chart table located aft of the console. Other bridge equipment includes a course recorder and an echo sounder.

³ A ship that is limited in size to the dimensions of the Panama Canal.

⁴ The International Convention for the Safety of Life at Sea, 1974, as amended.

At the time of the incident, *Atlantic Eagle*'s crew of 23 comprised nine Greek and 14 Filipino nationals. The deck department included the master, chief mate and two second mates. At sea, the mates kept a watch-keeping routine of four hours on and eight hours off. In port, the second mates had a watch routine of six hours on and six hours off with the chief mate on call at all times.

The master started his seagoing career in 1983 and joined Atlantic Bulk Carriers as a deck cadet in 1985. He progressed through the various ranks and in 1995, after obtaining Greek qualifications for a master, was promoted to that rank. He had sailed as master on a number of ships, including three of *Atlantic Eagle*'s sister ships, and had been on board *Atlantic Eagle* for three weeks. This was his first visit to Albany.

The second mate on watch at the time of the incident first went to sea in 1989. He sailed as a seaman until 2000 when he was promoted to third mate after obtaining qualifications for that rank in the Philippines. In 2003, after upgrading his qualifications, he was promoted to second mate. Since joining Atlantic Bulk Carriers in 2004, he had mainly sailed on Panamax ships. He joined *Atlantic Eagle* two months before the incident and it was his first visit to Albany. He kept the 8-12 watches at sea and the 6-12 watches in port. He was also responsible for preparing passage plans for the master's approval.

1.2 The Port of Albany and its approaches

The Port of Albany, Western Australia, stands on the northern shore of Princess Royal Harbour (Figure 2). For the financial year ending 30 June 2008, Albany had 148 ship visits, including 129 cargo ships. A total of 3.67 million tonnes of cargo passed through the port, of which 97 per cent was exported. Grain and woodchips are the main exports and Albany is Australia's largest woodchip port.

The Albany Port Authority (APA) manages the port which has six ship berths. Pilotage is compulsory for all ships over 500 gross tons and Albany has two harbour tugs. The maximum ship size handled in the port is at the harbour master's discretion and is generally restricted to Panamax ships (about 225 m long and 33 m beam) which are piloted only during daylight hours. Albany's port limits include all of the waters of King George Sound.

The port's shipping channel is marked with buoys and beacons and leads into Princess Royal Harbour from King George Sound on an alignment of 252° (T). The minimum depth in the channel is 12.2 m and a maximum ship draught of 11.5 m is permitted. The channel entrance lies 1.5 miles⁵ northwest of the pilot boarding ground in King George Sound in which there are seven charted anchorages.

King George Sound can be entered from seaward through the North, Middle or South Channel. The widest of these, South Channel, is used by ship's approaching from, or proceeding to the south or west. The Australia Pilot⁶, a nautical publication that is required to be carried by all ships for their intended voyage to Australia, provides navigational guidance. This includes directions to safely navigate past each of the charted dangers of Maude Reef, Vancouver Rock and East Shoal in the approaches to South Channel.

⁵ A nautical mile of 1852 m.

⁶ *Admiralty Sailing Directions*, Australia Pilot, Volume I, NP 13, First Edition 2005.

This is a detailed nautical chart of George Town Harbour and surrounding areas in Tasmania, Australia. The chart shows the coastline of Albany, King George Sound, and the Princess Royal Harbour. Key features include Mount Martin, Mount Taylor, Michaelmas Island, Breaksea Island, and various smaller islands like Seal Island, Stony Island, and Eclipse Island. The chart includes depth soundings in fathoms and metres, and a compass rose indicating magnetic variation. An inset map shows the location of George Town relative to Western Australia and Albany.

At 0430 on 10 July 2008, *Atlantic Eagle* was anchored in King George Sound. The ship had arrived from Singapore in ballast and was waiting to load a cargo of about 20 000 tonnes of grain in Albany.

At 1320 on 13 July, an Albany pilot boarded *Atlantic Eagle* using the port's pilot boat. By 1500, the ship was all fast at number three berth and, at 1810, loading of the cargo began.

At 1855 on 14 July, loading was completed and *Atlantic Eagle*'s departure time was confirmed for daylight the next morning. The ship had draughts of 7.0 m forward and 10.5 m aft and 20 530 tonnes of cargo had been loaded in numbers three and seven cargo holds. More grain was to be loaded in Fremantle, Western Australia, for the ship's intended voyage to Indonesia.

At 0640 on 15 July, the Albany pilot boarded *Atlantic Eagle* and was escorted to the bridge where the master, second mate and helmsman were ready for the ship's departure. The tide was flooding and a high water of 1.2 m was predicted for 0847.

The sky was cloudy with clear visibility and a northerly wind at force⁷ four (11-16 knots). A gale warning had been issued and northerly winds of 30 to 40 knots were expected offshore later that morning before a westerly change during the afternoon.

Atlantic Eagle's planned courses for the voyage to Fremantle were marked on the charts (Figure 3). Each course alteration position (waypoint) had been entered into the GPS units which then indicated the bearing and distance to the next waypoint as well as the distance that the ship was to either side of its planned course-line (cross track error). The waypoints were also entered into both radars and their displays graphically indicated the bearing and distance to the next waypoint.

At 0710, *Atlantic Eagle* sailed from the berth. By 0725, the ship had exited Princess Royal Harbour and the assisting tugs were cast off. At 0737, when approaching the end of the shipping channel, the pilot handed over the conduct of the ship to the master. The second mate then escorted the pilot to the ship's main deck and the pilot disembarked into the pilot boat.

Shortly after, *Atlantic Eagle* exited the channel. The ship was turned to the southeast to follow the charted course-line (track) of 139° (T) with the helmsman steering gyro headings to the master's orders.

At 0744, after returning to the bridge, the second mate plotted *Atlantic Eagle's* GPS position on the chart. The ship was 1.5 cables⁸ to port of the charted or planned track. By 0750, the ship's course had been altered to a heading⁹ of 123° and it was about four cables to port of the planned track. At 0800, when the ship was in South Channel, the master ordered the main engine rpm to be increased to sea speed.

At 0815, *Atlantic Eagle's* position was plotted on the chart and the ship was five cables from the next waypoint. At 0817½, the master started the course alteration to 180° (T) and by 0820; the heading was steadied on 185° with the ship about four cables to port of the planned track. The main engine was now at its usual sea speed of 85 rpm and the ship's speed¹⁰ was about 14 knots.

At 0822½, the master started the next course alteration and by 0827½, the heading was steadied on 235°. The planned track was 240° (T). Soon after, the master set the auto-pilot to steer 235° and dismissed the helmsman from the bridge.

The northerly wind had strengthened to force six (22 to 27 knots) with gusts of up to 33 knots. The sea was moderate with waves of up to 1.5 m. The prevailing moderate south-westerly swell was long with a height of about 2.5 m. The sky was now overcast but the visibility remained clear.

At about 0835, the master left the bridge after instructing the second mate to 'keep 235° and clear of islands'. The auto-pilot setting was unchanged on 235°.

The second mate stood on the port side of the bridge, near the control console from where the port radar display and the GPS unit on the console were visible. The position also offered a clear view out of the bridge front windows. There were no

7 The Beaufort scale of wind force, developed in 1805 by Admiral Sir Francis Beaufort, enables sailors to estimate wind speeds through visual observations of sea states.

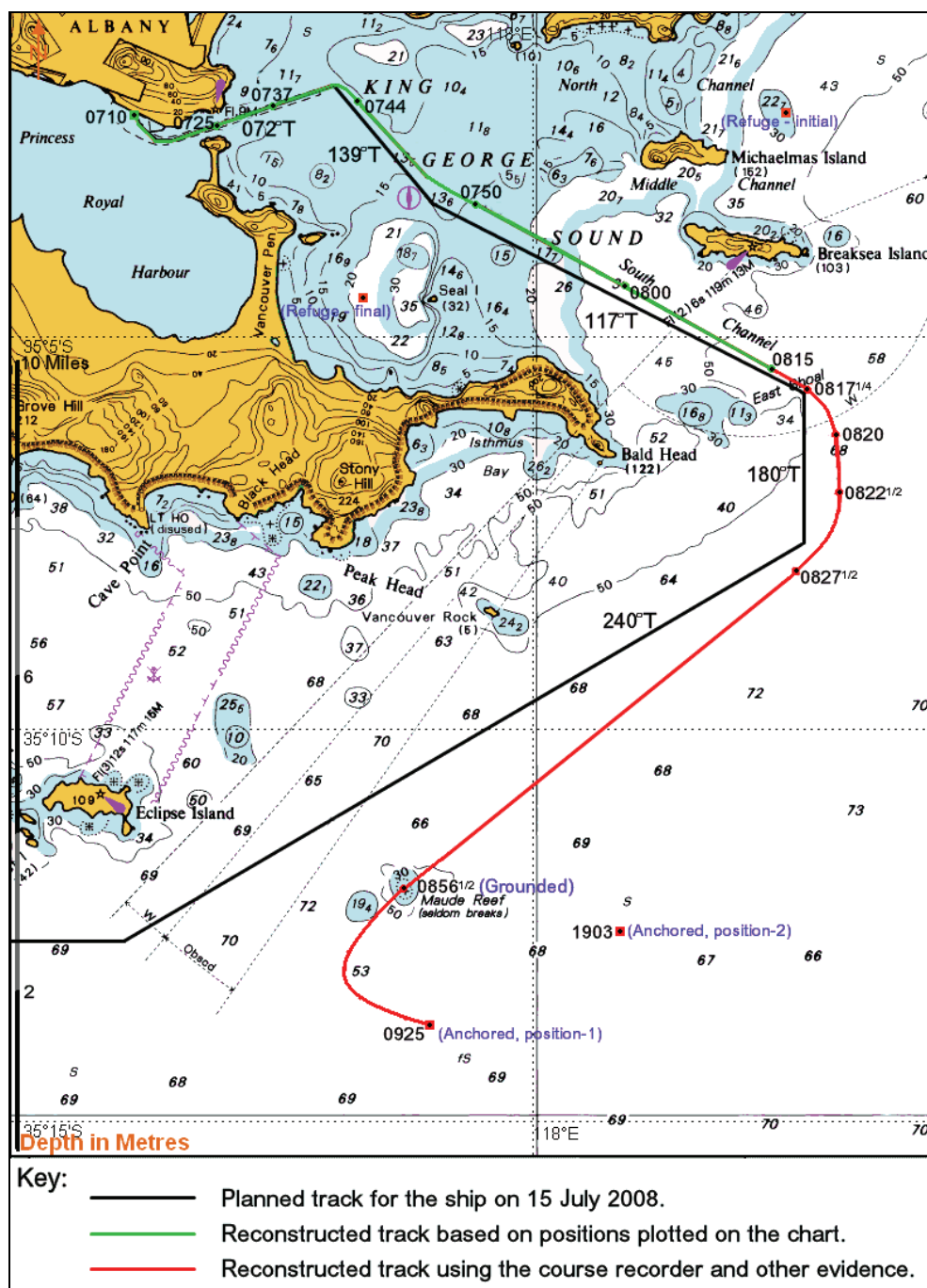
8 One cable equals one tenth of a nautical mile or 185.2 m.

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

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

ships nearby but the coast and the islands could be seen. In the weather conditions at the time, Maude Reef, which seldom breaks, could not be seen. For the following 20 minutes or so, the second mate remained in that position and maintained the set heading of 235°.

Figure 3: Section of navigational chart Aus 759 showing *Atlantic Eagle's* track



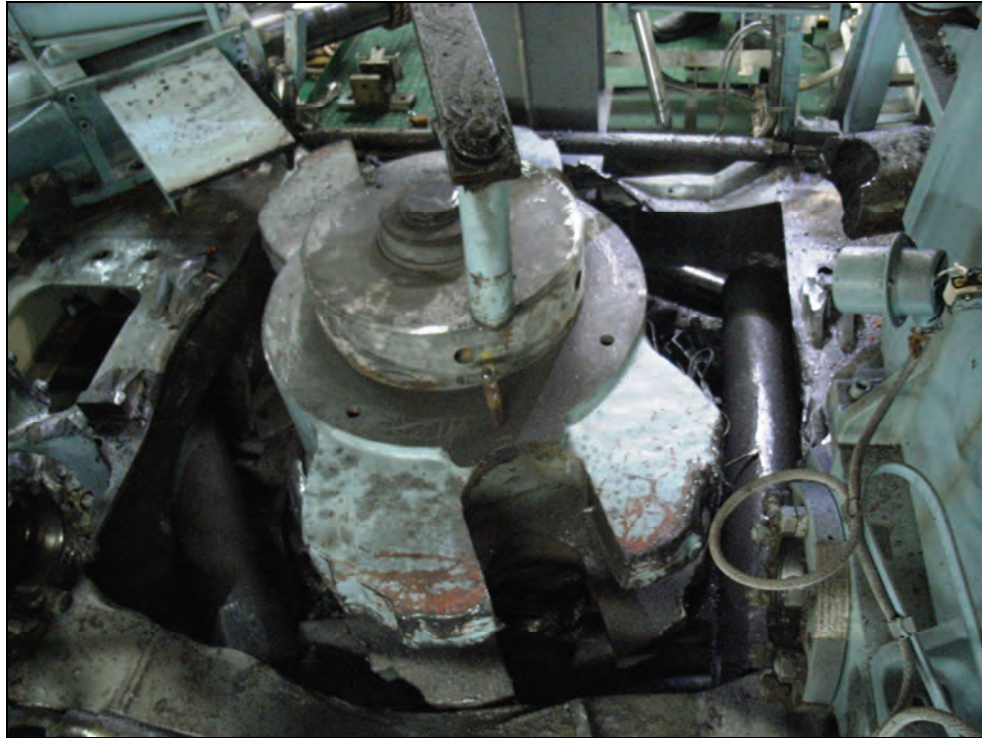
At 0856½, *Atlantic Eagle* grounded on Maude Reef, in position 35°12.03'S 117°58.00'E. The ship shuddered violently for a few seconds before its heading rapidly swung to port as the ship moved clear of the reef.

Soon afterwards, the steering gear alarm on the bridge control console sounded and the rudder angle indicator showed 10 degrees to port. The second mate changed to 'hand' steering and attempted, unsuccessfully, to steer the ship.

The master was in his cabin sending email messages when he felt the ship ‘jump’ and shudder. He hurried to the bridge and found that the ship was turning to port and could not be steered. He telephoned the chief engineer and asked him to go to the steering gear room, telling him that he would start reducing the main engine rpm from the bridge.

At about 0900, the chief engineer reported from the steering gear room. All of the steering gear’s hydraulic rams and tiller arms were smashed and broken (Figure 4). The master called the chief mate to standby the anchors and told the second mate to call the necessary crew to go forward.

Figure 4: Damaged steering gear with rudder stock and tiller in view



At 0917, after the main engine had been stopped, *Atlantic Eagle*’s heading was northeast after swinging through 180 degrees to port. The ship was nearly stopped in the water and it had started to list to port.

At 0925, *Atlantic Eagle* was anchored in position 35°13.77’S 117°58.43’E, about two miles south of Maude Reef. The master deployed 10 shackles¹¹ of cable on the starboard anchor. He then ordered all of the ship’s tanks and compartments to be sounded and reported the incident, by telephone, to the ship’s managers.

By 0950, *Atlantic Eagle*’s list had increased to about 10 degrees. The tank soundings indicated a reducing water level in a number of water ballast tanks on the starboard side but no change to oil tank soundings or pollution was observed.

At 1000, after consultation with the managers who in turn had contacted the ship’s classification society, LR, the master started de-ballasting the ship’s port side water ballast tanks to control the list.

¹¹ One shackle equals 90 feet or 27.43 m.

The master then telephoned *Atlantic Eagle*'s agents in Albany and advised that the ship had been anchored off Maude Reef after contacting a 'submerged object'. He requested that the authorities be informed and provided the ship's anchor position. The agents notified the Australian Maritime Safety Authority (AMSA) and Albany Port Authority (APA).

At 1106, AMSA notified the Marine Safety Business Unit of the Western Australia Department for Planning and Infrastructure (WA DPI). At 1320, WA DPI assumed management and control for potential pollution working with APA and AMSA, with the latter coordinating overall incident response. Pollution response personnel and equipment were prepared for deployment if required.

During the afternoon, the weather worsened as forecast with westerly gale force winds. As the sea and swell built, *Atlantic Eagle* began to drag its anchor in an east-northeast direction. At 1824, the anchor was weighed and at 1903, the ship re-anchored about three miles from the first anchor position using its port anchor.

1.3.1 Incident management

While at anchor, *Atlantic Eagle*'s managers, on behalf of its owners, had progressed negotiations for the ship's salvage with Svitzer Salvage Australasia (Svitzer).

By 2300 on 15 July, a Lloyd's Open Form of Salvage Agreement (LOF 2000) had been signed. Svitzer's Fremantle-based salvage tug *Wambiri* was prepared with an estimated time of arrival of 0200 on 17 July off Albany. In the meantime, an Albany harbour tug was despatched and, by midnight, was standing by *Atlantic Eagle*. The ship maintained its position in improving weather during the night.

At 0710 on 16 July, a representative of *Atlantic Eagle*'s Protection and Indemnity (P & I) Club boarded the ship by boat to assess the situation and assist the master.

At 1420, an AMSA casualty coordinator also boarded the ship and inspected the ship including its severely damaged steering gear. At 1600, a detention order was placed on the ship by AMSA and, as a precaution; the master was directed to transfer fuel oil from the ship's double bottom tanks to higher fuel oil tanks.

The authorities managing the response agreed that *Atlantic Eagle* required a place of refuge. A suitable 'position of refuge' off King George Sound's North Channel was identified and WA DPI issued a 'Directions Notice' to the ship's owners, master and salvors requiring the ship to be towed to that position.

At 1236 on 17 July, a salvage team boarded *Atlantic Eagle* by helicopter and prepared for the tow. At 1530, the tug *Wambiri* arrived and by 1725, it had the ship in tow with an Albany harbour tug made fast on each quarter. By 2228, the ship was anchored in position 35°02.12'S 118°03.90'E, off North Channel.

Shortly after *Atlantic Eagle* was anchored, three superintendents, including the DPA¹², from the ship's managers boarded the ship.

On the morning of 18 July, Svitzer divers began an underwater inspection of *Atlantic Eagle*'s hull to better assess damage to the ship. At 1000, overall

12 The International Safety Management (ISM) Code requires a ship's managers to have a Designated Person Ashore (DPA) who should aim to ensure the ship's safe operation and provide a link between all those on board and the highest level of management ashore.

coordination of the incident response was taken over by WA DPI because the ship's place of refuge was in Western Australian state waters.

On 19 July, the weather worsened and the underwater inspection, which had progressed slowly due to strong currents in the area, was suspended. The tug *Wambiri*, which had remained in attendance, assisted the ship to maintain a safe position in the adverse weather.

On 20 July, the underwater inspection was completed. The inspection revealed serious damage along *Atlantic Eagle*'s starboard side. There were a number of tears and ruptures, the largest being 1.5 m x 0.5 m. Numbers one, three and four starboard water ballast tanks and the engine room cofferdam were breached. There was also heavy buckling near the turn of the bilge in a number of areas with approximately 5 m of the bilge keel torn off. The damaged, freely swinging, rudder had holed the after peak tank and further damaged the propeller. A LR surveyor boarded the ship and carried out the first of a number of surveys that would follow.

On 22 July, the ship was moved to a more sheltered position of refuge in King George Sound to facilitate the temporary repairs that had been agreed by its managers, LR, AMSA and Svitzer. After the ship was anchored in King George Sound, the repair work was started. Pollution response personnel and equipment continued to remain on standby.

On 22 August, the tug *Pacific Worker* arrived from Singapore, via Fremantle, to tow *Atlantic Eagle* to Jakarta, Indonesia, to discharge its cargo and then to Vietnam, where it was to undergo permanent repairs in dry dock. The ship was to be permitted by LR to make a single, towed voyage subject to the conditions of class imposed after completing temporary repairs to its hull. The repairs were completed that day; the rudder having been removed earlier and placed on the sea bed.

Later that day, the ship was released from court-ordered arrest following the resolution of a dispute between the owners of the ship and the owners of its cargo.

At 1200 on 23 August, the LOF 2000 was terminated and Svitzer re-delivered *Atlantic Eagle* to its owners. Six conditions of class had been imposed on the ship by LR based on the damage and repair surveys. At 1500, AMSA, who had consulted the flag State authority, released the ship from detention.

At 1225 on 24 August, the ship departed Albany's port limits under tow, bound for Jakarta.

2.1 Evidence

From 16 to 19 July 2008, two investigators from the Australian Transport Safety Bureau (ATSB) collected evidence in Albany. The investigators initially obtained information at the Albany Port Authority (APA) office and interviewed the Albany pilot. On 18 July, the master, second mate and duty seaman were interviewed on board *Atlantic Eagle*. The navigational chart in use at the time of the incident, copies of the course recorder chart, bell book, log books, safety management system (SMS) procedures and other relevant documents were obtained.

The investigators verified that the ship's gyro compass, radars and global position system (GPS) units were in good working order. The time and the gyro heading indicated by the course recorder, which had run continuously from 0750 on 15 July, was also checked and found to be accurate.

During the investigation, additional information was obtained from the Australian Maritime Safety Authority (AMSA), the Marine Safety Business Unit of the Western Australia Department for Planning and Infrastructure (WA DPI), the Australian Hydrographic Office (AHO), the Australian Federal Police (AFP), the Australian Bureau of Meteorology (BoM), Lloyds Register (LR) and Svitzer Salvage Australasia (Svitzer).

The ATSB also recovered physical evidence from Maude Reef and, on 19 August, two investigators again attended the ship to obtain further information.

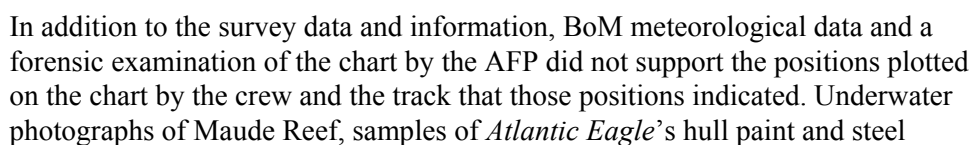
2.1.1 Resolving inconsistencies in evidence

Significant inconsistencies existed in the evidence, the navigational chart in particular, obtained from *Atlantic Eagle*. The ship was not fitted with a VDR (voyage data recorder) or an electronic charting system that could have recorded its position and, at the time of the incident, the area was not covered by an AIS (Automatic Identification System) base station. Therefore, the positions plotted on the chart by the crew could not be independently verified.

While the ship's log books and accounts of the incident were fairly consistent with positions plotted on the chart, evidence from the course recorder was contradictory. On a heading of 235° in the prevailing east-going current and the strong northerly wind, the set and leeway should have pushed the ship to the southeast, or to port of its course. However, positions plotted on the chart by the crew indicated that, from 0826 to 0851 on 15 July, the ship was apparently pushed to starboard and made good a course of 240° (T) to follow its planned track well clear of Maude Reef (Figure 5). Furthermore, during this period, despite its sea speed of 14 knots, the ship had apparently made good 17 knots and, for short intervals, even 30 knots. Even after striking the 'submerged object' and rapidly swinging to port while the main engine speed was being reduced, the ship barely slowed down and, in the eight minutes before anchoring, still averaged 13 knots.

Original AHO chart survey data indicates no shoaling near the 0851 position plotted on the chart where reliably charted depths of about 70 m exist. With the lines of soundings in the area 200 m apart and all existing shoals extending across at least

Figure 5: Section of navigational chart Aus 118 used at the time of the incident



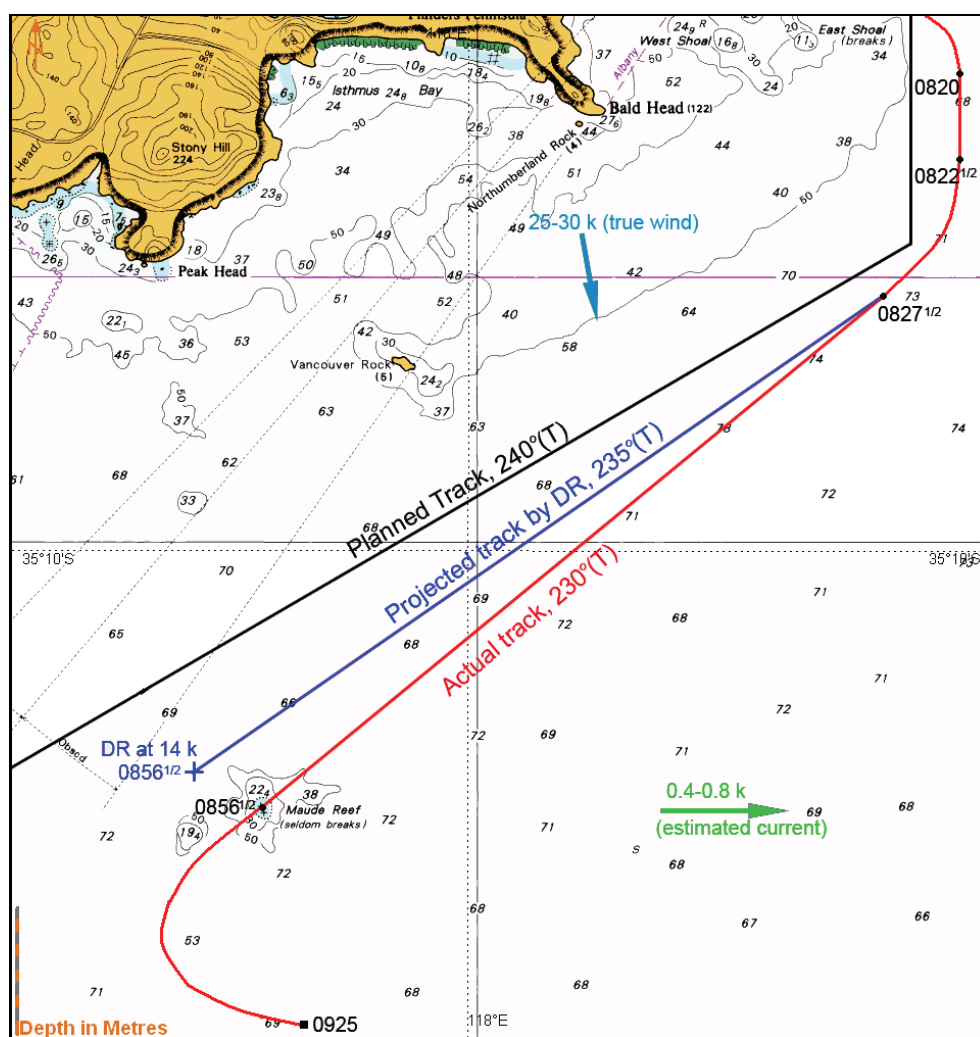
together with pieces of rock recovered from the reef conclusively proved that the ship had grounded there.

On 19 August, ATSB investigators presented the additional evidence and re-interviewed the master and second mate. Both men recanted their earlier accounts and confirmed that the ship had grounded on Maude Reef and that, after the grounding, a number of 'false' positions had been plotted on the chart while actual positions plotted just after the grounding were erased.

2.2 The grounding

Atlantic Eagle's grounding was the direct result of the ship being put, and kept, on a heading of 235° that, in the prevailing current and weather conditions, took it directly over Maude Reef (Figure 6).

Figure 6: Section of chart Aus 118 with *Atlantic Eagle's* track superimposed



At 0827½ on 15 July, when *Atlantic Eagle's* heading was steadied on 235°, the ship was about 2.5 cables to port of its 240° (T) planned track. The ship's track by dead reckoning, with no allowance for wind and current, would have taken it 5.5 cables northwest of Maude Reef. However, on a heading of 235°, the ship experienced five degrees of combined set and leeway and made good a course of about 230° (T) over the following 29 minutes, until it struck the reef.

At the time, the direction of the wind was from 350° (T) at 25 to 30 knots and the current¹³ is estimated to have been east-going at 0.4 to 0.8 knots. With the wind just abaft *Atlantic Eagle*'s starboard beam and the current on its starboard bow, the combined set and leeway the ship experienced at the time was not unusual. The ship could have been expected to be pushed to leeward, or to port of its heading, making an appropriate allowance to windward, or to starboard, necessary to follow the planned track. This allowance could have been relatively easily determined by the second mate had the ship's past track been adequately monitored. Instead, steering a heading of 235°, an allowance of five degrees to port, took the ship even further to port and directly over Maude Reef.

Maude Reef lies in a roughly circular shoal area that is less than one cable across. The 50 m depth contour that surrounds the area is of a similar shape and is between 1200 and 1500 m across. The parts of the reef that the ship struck are two distinct granite formations that sit atop a granite base. These rock formations extend in an east-west direction, nearly parallel to each other and are only about 15 m apart. The northernmost formation, at its highest point, is about 8 m under the surface of the water while the other one, at its highest point, is about 10.5 m from the surface. As a result, Maude Reef can only be seen breaking when the weather is very rough.

The reef's northernmost formation, near its highest point, was struck first by the starboard side of the ship's hull near the turn of the bilge and abaft the collision bulkhead. The hull damage from the glancing impact was restricted to an area near the turn of the bilge which extended aft about 150 m along the ship's length. The propeller and rudder then made contact with the other formation at its highest point before the ship moved clear of the reef. Had contact with the reef been direct and along the ship's underside nearer to the keel, much more serious damage, including holing the cargo holds, fuel oil tanks and engine room, could have resulted.

Atlantic Eagle's grounding was the result of an appropriate allowance for set and leeway not being determined and applied in order to maintain the ship on the track set out in its passage plan.

2.3 Passage plan

Atlantic Eagle's passage plan for the voyage from Albany was prepared by the second mate in the standard format specified in the ship's safety management system (SMS). The plan, dated 14 July, was signed by the master as having been checked.

The ship's planned track passed 1.2 miles northwest of Maude Reef and then south of Eclipse Island. This route is not one recommended by the Australia Pilot, suggesting that this important reference was not consulted in deciding the route. Instead, the passage plan noted that the 'shortest route to destination, as safe navigation permits, was chosen as no reason for alternatives'. Deep water exists along the planned track past Maude Reef and the ship had followed the same track without incident on 10 July when it arrived in Albany. Although the 'no go area' marked on the chart for Maude Reef allowed no margin for safety, it did indicate that the danger had been identified.

13 The prevailing current is the eastward propagating South Australian Current. On 15 July 2008, BoM data indicates an east-going current at 0.8 knots in the area well offshore. Closer to the coast, influences including the coastline, weather and tides can interact and affect the current.

The passage plan noted ‘GPS, radar and visual’ as the preferred position fixing methods and all these methods could have been readily used in the area. A passing distance off Vancouver Rock for parallel indexing was marked on the chart. The radars and GPS units were programmed with the waypoints to assist with monitoring of the passage. The GPS units were set to sound the waypoint arrival alarm when the ship was two cables from each waypoint. The cross track error alarm on the units was not set but they continuously indicated the cross track error.

Therefore, it was possible to safely navigate past Maude Reef along the planned track and the passage plan could have been safely executed using the equipment and resources available on the ship.

2.3.1 Execution and monitoring

While the preparation of a passage plan is essential, appropriately executing the plan and monitoring the passage is critical to the safe completion of the voyage. *Atlantic Eagle*’s grounding was a consequence of the poor execution and a lack of effective monitoring of the passage combined with unsound navigational practices.

The ship’s SMS provided guidance to assist the master and crew in preparing and executing passage plans. Various aspects of navigation were dealt with by specific procedures. With regard to safe navigation, the ship’s position and single person errors, the following was stated:

Safe progress of vessel shall be ensured by proper use of all navigational aids and equipment to frequently determine position of vessel when underway. ...

The bridge is organized as a team in order to minimize risk [and] safeguard against one man errors. ...

... position shall be fixed at frequent intervals, in order to ensure that planned track is being maintained.

The guidance is consistent with the key elements of bridge resource management (BRM). Also referred to as bridge team management, BRM can be defined as the effective management and utilisation of all resources, human and technical, available to the bridge team to ensure the safe completion of the vessel’s voyage¹⁴.

A copy of the bridge team management guide¹⁵ was provided on the bridge. The ship’s procedures did not directly refer to the guide but were consistent with its internationally recognised and comprehensive guidance for passage planning and bridge teamwork. Practical aspects of navigation, including passage plan execution and monitoring, are a particular focus in the guide which identifies the ‘failure to adequately monitor the vessel’s progress along the planned track’ as a ‘noticeable’ cause in many groundings. According to the guide¹⁶, it is necessary to regularly fix the ship’s position at an established frequency and, in this regard, states:

As a guideline, it is suggested that fixing should be at a time period such that it is not possible for a ship to get into danger between fixes.

The frequency for fixing *Atlantic Eagle*’s position was not defined in the passage plan. The master’s standing orders required positions every 10-15 minutes in

¹⁴ *Focus on Bridge Resource Management*. Washington State Department of Ecology, 2007.

¹⁵ *Bridge Team Management, A practical guide*, Second Edition, The Nautical Institute, 2004.

¹⁶ *ibid.* p. 30.

congested waters and channels and every 30 minutes during coastal navigation. At interview, the second mate stated that while navigating past Maude Reef, he should have fixed the ship's position at 10 minute intervals but he had not done so. Had he considered this necessary and done so, it would have been sufficient to indicate that the ship was moving towards the reef and standing into danger.

Departure from the plan

After 0815 on 15 July, *Atlantic Eagle*'s position was not plotted on the chart until after the grounding. Therefore, for more than 40 minutes, no bridge team member knew exactly where the ship was, the effect that the wind and current were having and the ship's progress in relation to safe water and navigational hazards. The lack of monitoring contributed significantly to the ship not remaining on its planned track.

The course alteration to 180° (T) was started at 0817¼ when the ship was already at the waypoint. The late alteration suggests that it may have been prompted by the waypoint arrival alarm. By the time the alteration was completed at 0820, the ship was well to port of the planned track. The ship's heading, though, was steadied on 185°, an allowance of five degrees to starboard.

At 0822½, when the next alteration to 240° (T) was started, *Atlantic Eagle* was about eight cables from the waypoint southeast of Bald Head. This suggests that either the master was altering course early because he thought the ship was to port of the planned track or that he had decided to cut the corner and steer a heading of 235°, directly towards the waypoint off Eclipse Island. In either case, the passage plan was not being followed.

When the waypoint arrival alarm again sounded, the ship was probably two cables southeast of the waypoint off Bald Head. The second mate noted a time of 0826 on the chart near the waypoint instead of fixing the ship's position. At the time, the heading was 225° and by the time it was steadied on 235° at 0827½, the ship was even further to port of the planned track. Despite two significant course alterations within 10 minutes, during which the ship's heading had changed by 112 degrees, its position was not fixed. Furthermore, no reliable position monitoring method, such as parallel indexing, was in use.

At interview, the master stated that at about 0826, he put *Atlantic Eagle* on a heading of 235° because he expected the wind and swell to 'push' the ship to the north. However, the ship was making leeway to the south in the northerly wind, which should have been expected. The second mate recalled that, at the time, the cross track error being displayed on the GPS unit indicated the ship to be a few cables south of the planned track. However, he did not inform the master or plot the ship's position and the cross track error alarm had, in any case, not been set.

With regard to monitoring a ship's progress, the bridge team management guide¹⁷ states:

Monitoring is ensuring that the ship is following the pre-determined passage plan and is a primary function of the Officer of the Watch. ...

Monitoring consists of following a series of functions, analysing the results and taking action based upon such analysis.

¹⁷ ibid. p. 41.

During the following half-hour period, *Atlantic Eagle*'s progress was not monitored and, in the prevailing conditions, the ship moved further from its planned track towards Maude Reef, which could not be seen. At 0856½, when the ship grounded, it was 1.2 miles to port of the track, a significant and critical departure from the passage plan.

While the second mate may have been able to see the GPS display and the view from the windows, he was not monitoring the ship's progress. He was merely physically present and, at best, could be described as an observer. His observations, if any, did not result in a single monitoring action. Had the ship's passage plan been followed, its progress monitored and safe navigational practices observed the grounding would not have occurred.

2.4 Safety management system (SMS)

Atlantic Eagle's SMS included documented¹⁸ procedures to assist with the system's implementation on board the ship. The master and the second mate had sailed on Atlantic Bulk Carriers' ships for many years and should have been familiar with those procedures. The master also had a responsibility to implement the system, motivate the crew to follow its procedures and issue appropriate instructions in a clear and simple manner. However, with regard to the incident, a number of procedures were not followed.

Procedures in a SMS are measures intended to reduce risk. They are defences against incidents and can reduce the chances of human error occurring and, when it does occur, mitigate the consequences. 'Human error is both universal and inevitable'¹⁹ and, hence, an effective SMS must rely on procedures and, importantly, compliance with them. If a SMS is not effectively implemented, the likelihood of intentional deviations from procedures, or violations, is high. Violations often involve or are associated with, but not limited to, cutting corners to reduce effort, a low perception of risk, a lack of enforcement of procedures or tolerance by management and inappropriate or unsound procedures.

'Violations are a significant safety issue as they undermine a basic assumption of a safety management system - procedures will be followed'²⁰. The 'intention to comply' is very important as it is the key distinction between errors and violations.

2.4.1 Navigation procedures

Atlantic Eagle's navigation procedures were detailed in chapter four of the ship's safety operations manual and required that the ship's position be fixed frequently to ensure its safe progress along the planned track. A specific procedure required the officer of the watch (OOW) to advise the master if the ship was 'off-track' and not assume that the master was aware of everything. Another procedure required the master to ensure that the OOW carried out his 'duties in an adequate and

18 Atlantic Bulk Carriers Management, *Atlantic Eagle, Safety Operations Manual* - Issue 2.

19 Reason, J & Hobbs, A 2003, *Managing Maintenance Error: A practical guide*, p. 96, Ashgate, Aldershot, United Kingdom.

20 Hudson, P 2000, *Non-adherence to procedures: Distinguishing errors and violations*, Proceedings of the 11th Airbus Human factors Symposium, Melbourne.

professional manner' (including frequently fixing the ship's position). A further procedure required that, amongst other items, the ship's position and navigational hazards be confirmed when handing, or taking over the watch.

All of the above procedures were consistent with recognised standard practice for safe navigation. In fact, they involved completing relatively simple tasks which could be considered routine for navigators. However, on 15 July, these procedures were not followed.

At about 0835, when the master decided to leave the bridge, he felt it was 'safe' to do so despite the ship's position not having been plotted for 20 minutes, during which time two significant course alterations had been made. His instructions to the second mate to 'keep 235° and clear of islands' were ambiguous and defeated the purpose of having a passage plan. The planned track was 240° (T), clear of dangers and could easily have been followed.

By this time, lack of monitoring of the passage meant that no member of the bridge team knew exactly where the ship was, how the prevailing current and weather were affecting its progress and where it would be in the ensuing period. In effect, they had lost situational awareness.

After the master left the bridge, the second mate, with little appreciation of where the ship would be with regard to dangers in the ensuing period, blindly followed the instructions to 'keep 235°'. He maintained the heading until the ship grounded about 20 minutes later. He did not fix the ship's position and, at interview, stated that this was a 'mistake' because he had been 'inattentive'. He stated that he had not been tired or had any other problems or distractions.

The second mate remained near the port side of the control console. Both the port radar and GPS unit were visible from that position as were the coast and the islands through the windows. Having decided to only maintain the ship's heading, his low workload, combined with already poor situational awareness, probably led to boredom and inattention. He ignored all the readily available cues, such as the cross track error and the bearing to the next waypoint indicated by the GPS unit and the radar, which could have warned him of the danger. In essence, the bridge watch was clearly inadequate.

Not following procedures, particularly the lack of position and track monitoring, had occurred even when both the master and second mate were present on the bridge. Neither man challenged the other, despite there being a number of violations with regard to the required position fixing, track monitoring, cross checking team members and handing over the watch. These violations suggest that the relevant procedures detailing these basic navigational practices had not been effectively implemented on board the ship.

In submission Atlantic Bulk Carriers stated:

... there is no evidence whatsoever to support the fact [sic] that the procedures had not been effectively implemented on board the ship.

... the grounding occurred ... as [a result of] a series of isolated errors.

Indeed, the "boredom" and "inattention" of the Second mate is the only conclusion that can be drawn from the present evidence as to the cause of this incident.

The evidence showed that during the 40 minutes preceding the grounding, there were a number of violations of navigational procedures. No bridge team member noticed the violations, or took corrective action, suggesting that they did not

consider them unusual, probably because such violations had occurred in the past. The poor navigational practices evident before the grounding were acceptable to the bridge team, including the master who was responsible for implementing the SMS.

Therefore, the grounding was the result of multiple violations, unusual only because they occurred at the same time, and not a series of 'isolated errors'. Even the most basic of navigational procedures, regularly fixing the ship's position, was ignored and the second mate's boredom and inattention was a consequence.

On 15 July, all of the ship's safety management system's defences were negated and its primary objective, to ensure the ship's safe progress and safeguard against single person errors, was not achieved.

2.4.2 Record keeping procedures

Atlantic Eagle's record keeping procedures, contained in chapter 16 of the ship's safety operations manual, included the keeping of log books and the reporting and on board investigation of serious incidents.

With regard to log books, the following specific guidance was provided:

Entries in Log Books and other documents, whether official or not, must be accurate, factual and indisputable.

All Log Books and documents are to be completed in ink and legible writing.

The procedures stated that the only 'acceptable' method of amending an incorrect entry was to rule through it, make the correct entry and initial the amendment.

However, all entries in the ship's bridge log book were made in pencil and included erasures. The official deck log book was completed in pen by the master at a later time. The log books did not record either the position of the incident or the weather conditions at the time. Furthermore, positions on the chart were falsified and log books and records were then completed in a manner aimed at ensuring consistency with the chart rather than being accurate, factual and indisputable as required.

The record keeping procedures were not followed with regard to the incident and the violations continued despite the presence on board the ship of the designated person ashore (DPA), who had authored the procedures. This indicates that the practice was accepted by senior management and that the level of commitment to the system was inadequate.

In submission Atlantic Bulk Carriers stated:

The procedure on board the ship whereby a rough log was completed in pencil from which the entries were completed in the official deck log book in pen, complies with the Greek Flag State Regulations which requires all Greek flag vessels to keep on board an official log which is sealed, stamped and with numbered pages. ...

The ship's managers ... and the DPA ... took a conscious decision not to require any changes to be made to the entries in the records that had been made prior to the casualty, as they constituted original evidence for investigations by the appropriate authorities.

The ship's procedures required all log books to be completed in ink and reinforced this by stating that 'the bridge log book shall be retained as a permanent vessel record'. The official log book requirements stated above do not imply that the

bridge log book should have been maintained in pencil. The making of entries in pencil in the bridge log book was contrary to the procedures, a violation that was known to, and accepted by, the managers and this had become the usual practice.

The chart, log books and records did not constitute ‘original evidence’ because of the actions of the crew after the grounding. The ship’s managers and DPA could have taken this into account when making decisions. The inconsistencies described earlier (Section 2.1.1) should have become increasingly evident to the ship’s management, particularly from copies of the chart with falsified positions. Eight days after the incident, after requests by authorities for the incident report that is required within three days, the master finally submitted one stating contact with a ‘submerged object’ at 0851 on 15 July in the falsified position. Procedures in relation to the reporting and the on board investigation of serious incidents had failed to prompt those responsible to report facts to authorities. Even after the ATSB investigators had again attended the ship more than a month later, the facts of the grounding were not reported.

Atlantic Eagle’s SMS had not been effectively implemented on board the ship with respect to navigation and record keeping procedures.

2.5 Incident response from ashore

If the location of *Atlantic Eagle*’s hull damage had been different, the consequences of its grounding could have been very severe and included pollution or the loss of the ship. As it was, the badly damaged ship was disabled in a weather exposed location, close to the coast. An appropriate response by authorities ashore was necessary to reduce the risks to the ship, its crew and the environment.

On 15 July, within 30 minutes of being notified of the incident, authorities began coordinating their response. Each agency involved assisted in completing a risk assessment and formulating the joint response plan. The plan was then implemented and regularly reviewed until its successful completion. Necessary precautions were taken and appropriate resources, including personnel, oil spill response equipment, aircraft and tugs, remained on standby throughout the incident response.

The incident was never reported as a grounding to authorities by the master. It was only on the evening of 23 July that he submitted the required written report and provided the falsified 0851 position as the incident location. On 24 July, despite original chart survey data indicating the existence of an isolated pinnacle in the area being highly improbable, authorities undertook their aerial survey. Based on their findings, and the chart survey data, they decided not to promulgate any maritime safety information.

On 23 August, after post repair surveys and inspections were completed, AMSA released *Atlantic Eagle* from detention in consultation with other interested parties. On 24 August, the ship was safely towed from Albany and its progress was monitored by AMSA while it remained in the Australian search and rescue area.

The response by various Australian authorities, at the national, state and local level, to coordinate the aftermath of *Atlantic Eagle*’s grounding was timely and well managed. Their response ensured that the risks, particularly those due to potential pollution, were addressed throughout the relevant period.

3.1 Context

At 0710 on 15 July 2008, *Atlantic Eagle* sailed from Albany partly loaded with a cargo of grain. At 0815, the ship was just outside port limits and its speed had been increased to 14 knots for the voyage to Fremantle.

During the next 10 minutes, the master made two significant course alterations and then set the ship on a heading of 235°, an allowance of five degrees to port of the ship's planned course. At 0835, he left the bridge instructing the second mate to keep the ship on the set heading and clear of islands.

At 0856½, *Atlantic Eagle* grounded on Maude Reef, seriously damaging its hull, rudder and steering gear before its momentum carried it clear of the reef. The grounding did not result in any pollution.

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

3.2 Contributing safety factors

- *Atlantic Eagle*'s grounding was the direct result of the ship being put, and kept, on a heading of 235° that, in the prevailing current and weather conditions, took it over Maude Reef.
- During a period of more than 40 minutes preceding the grounding, the ship's position was not established by any member of the bridge team.
- The master's situational awareness was poor when he put the ship on its final heading of 235°. He did not know exactly where the ship was in relation to the planned track or take into account the prevailing wind and current or the risk posed by Maude Reef near the planned track.
- The master's instructions to the second mate to maintain a heading of 235° and keep clear of the islands were ambiguous and inconsistent with the passage plan.
- The second mate's situational awareness was poor and he had little appreciation of where the ship was, or would be, in relation to navigational dangers.
- The second mate maintained the ship on a heading of 235° and did not monitor the ship's progress or establish its position until after the grounding.
- The second mate's low workload and poor situational awareness probably led to boredom and inattention; and effectively made the bridge watch inadequate.
- *Atlantic Eagle*'s safety management system procedures for navigation, aimed at ensuring the ship's safe progress and safeguarding against single person errors, had not been effectively implemented on board the ship and were not followed on 15 July 2008. [Safety issue]

3.3 Other safety factors

- *Atlantic Eagle's* safety management system procedures for record keeping had not been effectively implemented on board the ship, were not followed with regard to the grounding and its aftermath and no attempt was made by the ship's managers to correct the situation. *[Safety issue]*

3.4 Other key findings

- The incident response by national, state and local authorities in Australia was timely and well managed. The response ensured that the risks, particularly those due to potential pollution, were addressed throughout the relevant period.

The safety issues identified during this investigation are listed in the Findings and Safety 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.

4.1 Atlantic Bulk Carriers Management, Marshall Islands

4.1.1 Safety management system procedures for navigation

Safety Issue

Atlantic Eagle's safety management system procedures for navigation, aimed at ensuring the ship's safe progress and safeguarding against single person errors, had not been effectively implemented on board the ship and were not followed on 15 July 2008.

ATSB safety recommendation MO-2008-007-SR-023

The Australian Transport Safety Bureau recommends that Atlantic Bulk Carriers Management takes safety action to address this safety issue.

4.1.2 Safety management system procedures for record keeping

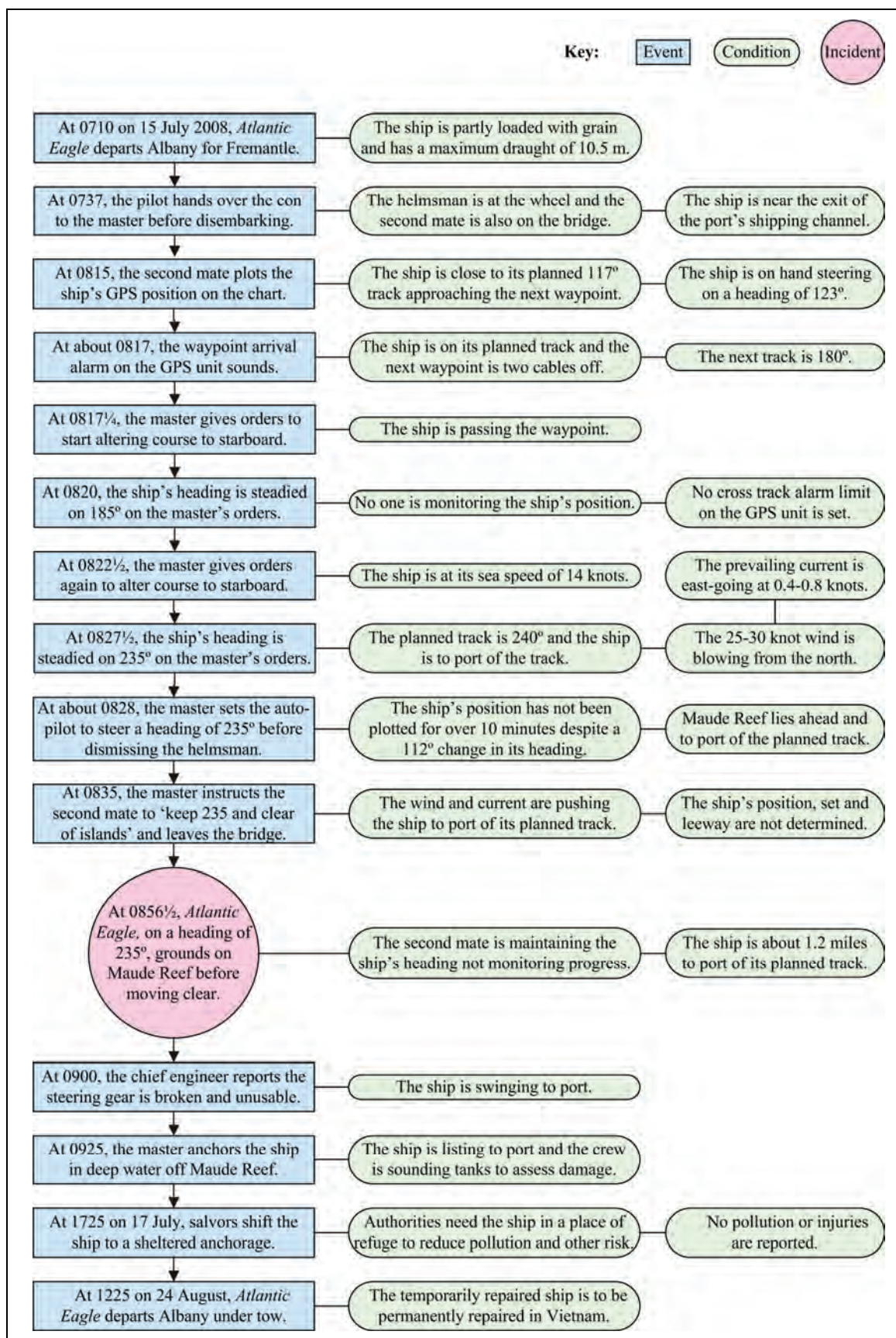
Safety Issue

Atlantic Eagle's safety management system procedures for record keeping had not been effectively implemented on board the ship, were not followed with regard to the grounding and its aftermath and no attempt was made by the ship's managers to correct the situation.

ATSB safety recommendation MO-2008-007-SR-024

The Australian Transport Safety Bureau recommends that Atlantic Bulk Carriers Management takes safety action to address this safety issue.

APPENDIX A: EVENTS AND CONDITIONS



APPENDIX B: SHIP INFORMATION

Atlantic Eagle

IMO Number	9216212
Call sign	SZRU
Flag	Greek
Port of Registry	Piraeus
Classification society	Lloyd's Register (LR)
Ship Type	Bulk Carrier
Builder	Daewoo Shipbuilding and Marine Engineering Company, Geogje, Korea
Year built	2001
Owners	Atlantic Eagle Special Maritime Enterprise, Greece
Ship managers	Atlantic Bulk Carriers Management, Marshall Islands
Gross tonnage	39 973
Net tonnage	25 838
Deadweight (summer)	74 086 tonnes
Summer draught	14.12 m
Length overall	224.91 m
Length between perpendiculars	217.00 m
Moulded breadth	32.26 m
Moulded depth	19.40 m
Engine	B&W 6S60MC
Total power	10 952 kW
Crew	23

APPENDIX C: SOURCES AND SUBMISSIONS

Sources of information

Master and crew of *Atlantic Eagle*

Albany Port Authority

Australian Maritime Safety Authority

Marine Safety Business Unit, Western Australia Department for Planning and Infrastructure

Australian Hydrographic Office

Australian Federal Police

Australian Bureau of Meteorology

Lloyds Register

Svitzer Salvage Australasia

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Submissions

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

The final draft of this report was sent to the master and second mate of *Atlantic Eagle*, the owners and managers of *Atlantic Eagle*, the Australian Maritime Safety Authority (AMSA), the Albany Port Authority (APA), the Marine Safety Business Unit of the Western Australia Department for Planning and Infrastructure (WA DPI), the Ministry of Merchant Marine in Greece, Lloyds Register (LR) and Svitzer Salvage Australasia.

Submissions were received from the second mate of *Atlantic Eagle*, the legal representatives of *Atlantic Eagle*'s owners, managers and designated person ashore, the Ministry of Merchant Marine in Greece, AMSA, APA, WA DPI and LR. The submissions have been included and/or the text of the report was amended where appropriate.

Independent investigation into the grounding of the Greek registered bulk carrier
Atlantic Eagle at Maude Reef, off Albany, Western Australia on 15 July 2008.