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“The sole objective of the investigation of an accident under the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012 shall be the prevention of future accidents through the ascertainment of its causes and circumstances. It shall not be the purpose of an such investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame.”

NOTE

This report is not written with litigation in mind and, pursuant to Regulation 14(14) of the Merchant Shipping (Accident Reporting and Investigation) Regulations 2012, shall be inadmissible in any judicial proceedings whose purpose, or one of whose purposes is to attribute or apportion liability or blame.

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Grounding of the general cargo ship

Vectis Eagle

Gijon, Spain

30 November 2014

SUMMARY

On 30 November 2014, the UK registered general cargo vessel *Vectis Eagle* grounded while entering Gijon, Spain. The vessel refloated under its own power 2 minutes later. There were no injuries and there was no pollution. The forward section of the vessel's hull was damaged below the waterline.

The grounding occurred shortly after *Vectis Eagle* had started a broad turn to starboard in order to round the end of an inner breakwater. The vessel was close to the breakwater and the turn was started too early. The pilot was trying to check the vessel's swing with port helm when directional control was lost. The loss of directional control was reportedly due to a steering system failure but this cannot be verified.

As *Vectis Eagle* approached the breakwater, the engine was put to full astern, the port anchor was let go and the bow thrust was set to maximum thrust. These actions did not prevent the vessel from grounding very close to the breakwater but they undoubtedly prevented more significant damage.

Image courtesy of Shipspotting.com/Simon de Jong 2014



Vectis Eagle

It is of concern that *Vectis Eagle*'s master did not immediately report the grounding. Instead he attempted to conceal its occurrence. In addition, the master did not save the information recorded on the voyage data recorder. Six days earlier, *Vectis Eagle* had struck and caused significant damage to a lock gate in the Kiel Canal. This accident influenced the master's decision-making and actions in Gijon.

A recommendation has been made to Carisbrooke Shipping Limited designed to ensure that the lessons learned from the investigation of the causes and circumstances of this accident are promulgated to its crews.

FACTUAL INFORMATION

Narrative

During the morning of 30 November 2014, the general cargo vessel *Vectis Eagle* was approaching Gijon, Spain on an autopilot controlled heading of 174° at 10.5 knots¹. The vessel was carrying coal in bulk and had a mean draught of 7.7m (7.64m forward). The chief officer was the officer of the watch; he was accompanied on the bridge by an ordinary seaman (OS).

At 0515² the chief officer called Gijon port control via very high frequency (VHF) radio, channel 16 and confirmed that *Vectis Eagle*'s expected time of arrival (ETA) at the pilot station was 0740. At 0640, the chief officer called Gijon pilots, also on VHF radio. The duty pilot advised the chief officer that the pilot ladder should be rigged on *Vectis Eagle*'s starboard side, 1m above the waterline.

By 0700, *Vectis Eagle*'s master had arrived on the bridge and the OS had been released to rig the pilot ladder. Soon afterwards, the chief officer started a second steering pump, selected manual control of the steering system and checked the steering was operating satisfactorily by moving the helm 5° to port and to starboard. Autopilot steering was then re-selected.

At 0745, the pilot boarded *Vectis Eagle* near the charted boarding position 1.5nm north of Gijon (**Figure 1**). The master informed the pilot of the vessel's engine settings and associated speeds. Manual steering was selected and the chief officer took the helm.

For the entry, the pilot had the conn and generally stood at the front of the bridge, forward of the console (**Figure 2**). The master stood to port of the ship's helm, adjacent to the engine and the bow thruster controls and the VHF radio. He could see the ECDIS³ from this position. The master and the pilot continued to exchange information regarding the ship's characteristics and local conditions. Neither the pilot's nor the ship's plan for the vessel's passage to its berth were discussed.

At 0754, *Vectis Eagle* passed approximately 200m east of No1 breakwater⁴ (**Figure 3a**). The master asked the pilot if he could test the vessel's engines operating astern. The pilot replied that it would be safer to test them between No2 and No3 breakwaters where there was more safe water.

¹ Speeds in this report are speeds over the ground.

² Times referred to in this report are UTC+1.

³ ECDIS – Electronic Chart Display and Information System. The primary means of navigation on board *Vectis Eagle* was paper charts but the vessel was also fitted with ECDIS. Passage plans were drawn on paper charts but they were also input to the ECDIS and the global positioning system (GPS) receiver.

⁴ For ease of reference, the breakwaters in Gijon are numbered 1, 2, 3 and 4. See **Figure 1**

Reproduced from Admiralty Chart BA 1153-0 by permission of the Controller of HMSO and the UK Hydrographic Office.

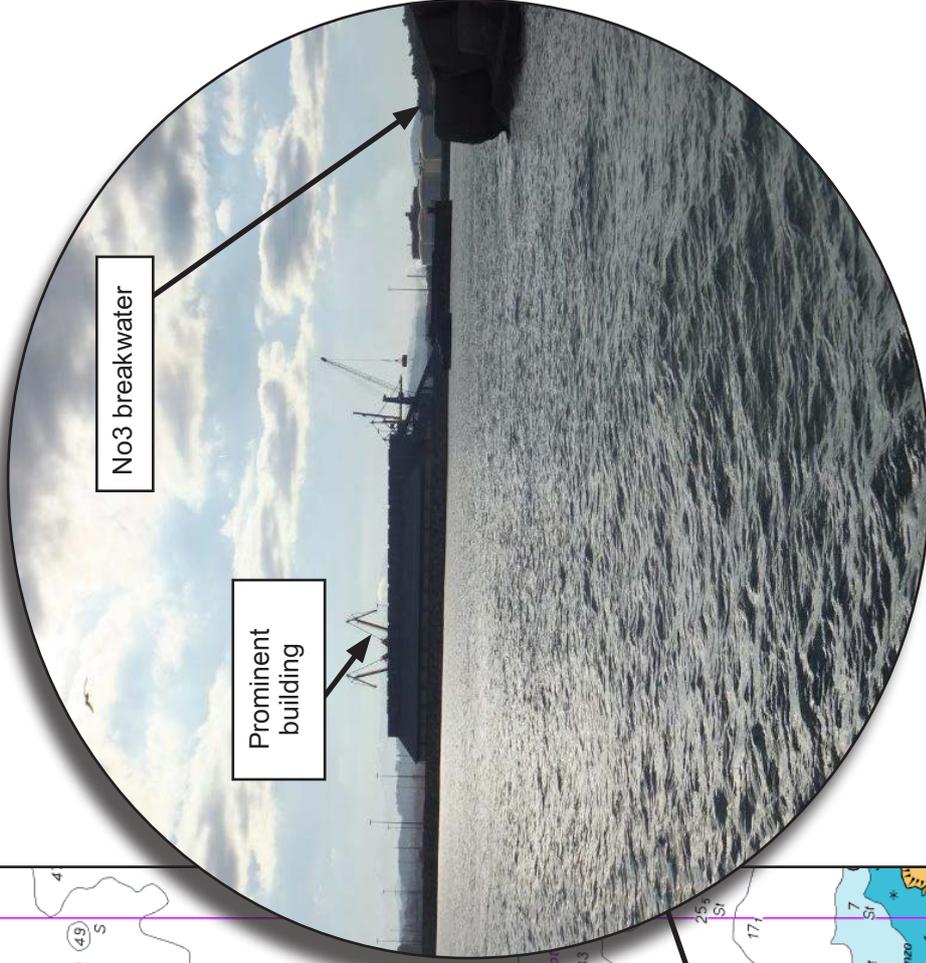
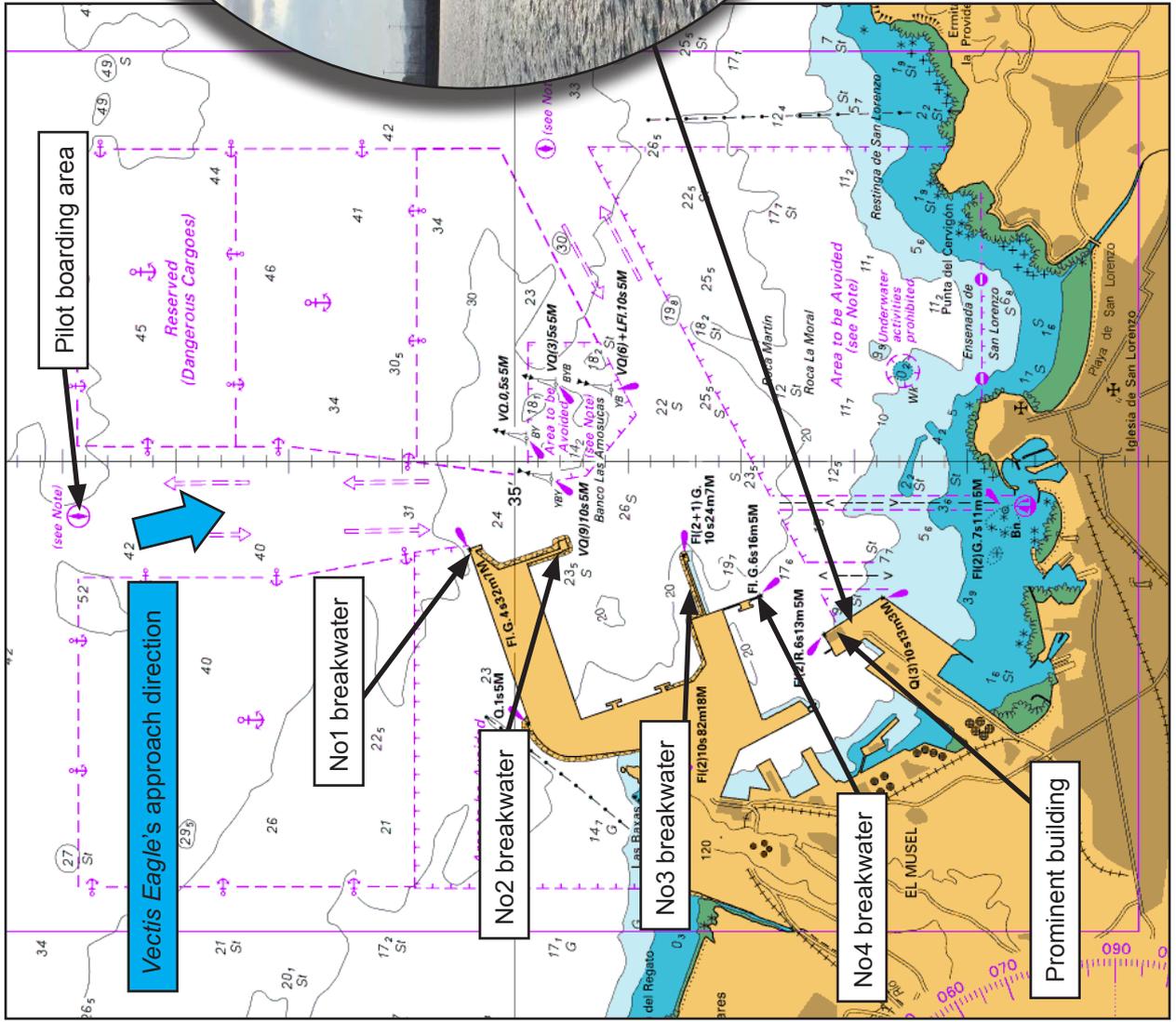


Figure 1: Port of Gijón

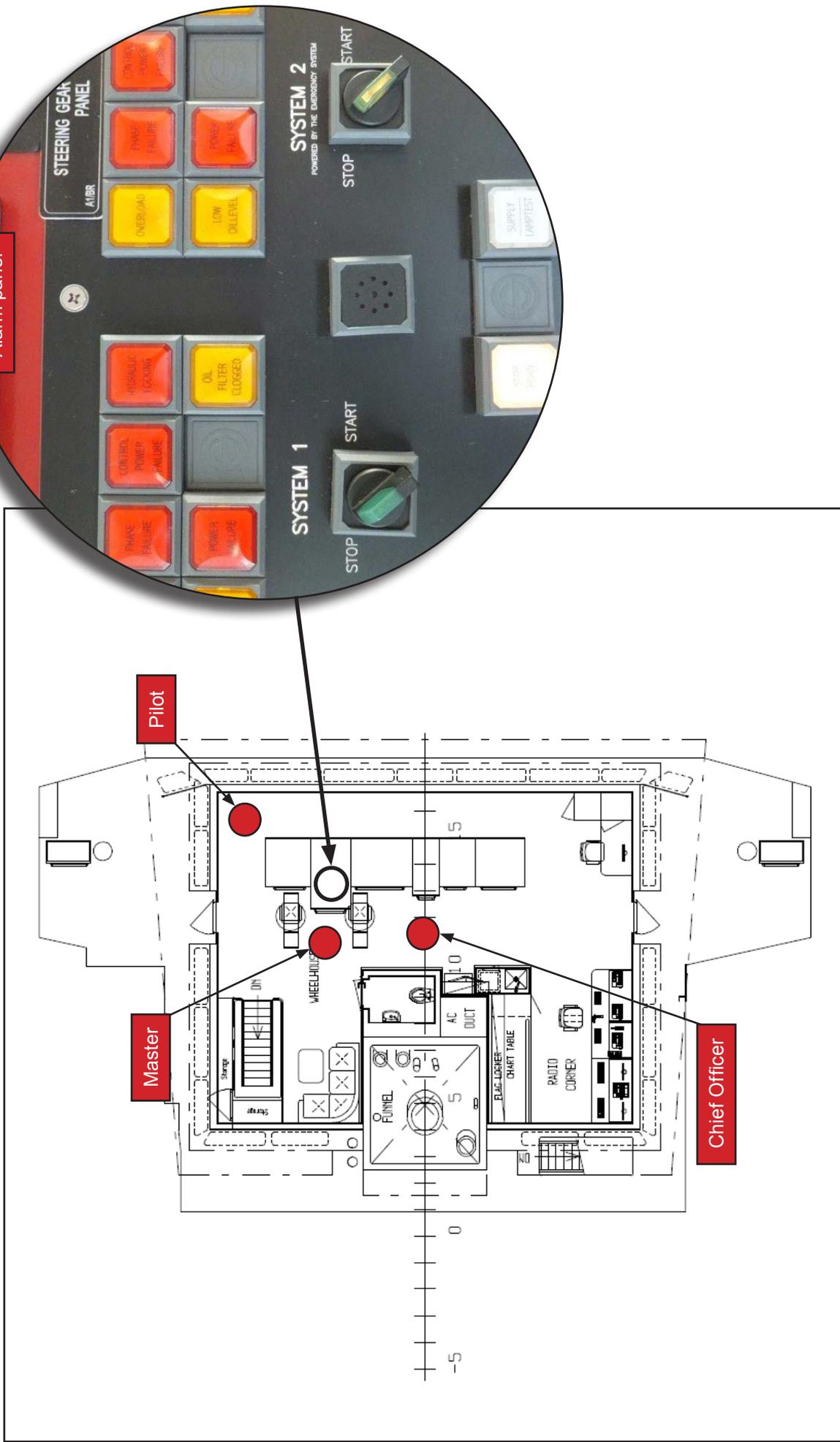


Figure 2: Bridge layout

By this time, the forward mooring party comprising the second officer, an able seaman (AB) and an OS were on the forecastle. The aft mooring party comprising the OS mate⁵, deck cadet and an OS were on the poop deck. The chief engineer, third engineer and an oiler were in the vicinity of the engine room.

At 0756, *Vectis Eagle* passed 110m east of No2 breakwater heading 180° at 10kts (**Figure 3b**). The pilot informed the master that he could now test the engines astern. Accordingly, the master moved the engine control lever from 'full ahead' to 'full astern'. The vessel's speed rapidly reduced and its heading sheered to port.

The master was satisfied that the engine control system was functioning correctly and set the engine combinator to 'half ahead'. The pilot assessed that the vessel was now to the east of his intended track and gave the chief officer a starboard helm order. Thereafter, the pilot gave the chief officer helm orders rather than courses to steer.

At 0800, *Vectis Eagle* passed No3 breakwater at a distance of 134m (**Figure 3c**). The vessel's heading was 207° and its speed was 7.9kts. By 0802, *Vectis Eagle* was approaching No4 breakwater, heading 214° at 6.7kts (**Figure 4a**). At this point, the pilot ordered "starboard 20°" with the aim of turning the vessel around the breakwater, towards the inner harbour. The chief officer applied 20° of starboard rudder and *Vectis Eagle* started to turn. However, the vessel turned more quickly than the pilot had expected so he ordered "midships" quickly followed by "port 10" and "hard to port" to check the swing.

It is reported that the chief officer put the helm hard over to port but that the rudder angle indicator showed that 20° of starboard rudder was still set. The master and chief officer discussed the problem in Russian and the master then informed the pilot that the vessel was not responding to the helm. The pilot saw that *Vectis Eagle* was rapidly closing the breakwater and ordered the engines to "full astern".

The master followed the pilot's instructions. He also set the bow thrust on maximum thrust to starboard and ordered the second officer via VHF radio to let go an anchor. At the same time, the pilot informed the port control of the situation and requested immediate assistance. The duty officer acknowledged the request and alerted two harbour tugs to assist.

Vectis Eagle's heading was still swinging to starboard (**Figure 4b**) when the forward mooring party let go the port anchor with approximately 15m of chain cable. By 0804, *Vectis Eagle* was virtually stopped with its bow close to the breakwater (**Figure 4c**). Although the engine continued to run at 'full astern', the vessel remained stationary for about 2 minutes on a heading of 304°. During this period, the forward mooring party felt the vessel touch the base of the breakwater.

Immediate actions

Shortly after 0806, *Vectis Eagle* gathered sternway. As it did so, the second officer and an OS recovered the port anchor. At the same time, on instruction from the master, the AB in the forward mooring party sounded the forward tanks; no water ingress was detected.

The steering system now appeared to be functioning correctly with the rudder and ship responding to the helm. *Vectis Eagle* continued running astern into safe water. The engine room was not informed of the apparent steering failure or the reason for the prolonged period at 'full astern'.

Two harbour tugs arrived to assist. The tugs were made fast and the vessel proceeded to its berth. Periodic soundings of the forward tanks continued but no water ingress was detected. By 0900, *Vectis Eagle* was secured alongside. The information recorded on the vessel's voyage data recorder (VDR) was not saved.

⁵ OS mate – the senior deck rating who performs some duties normally assigned to a certified third officer

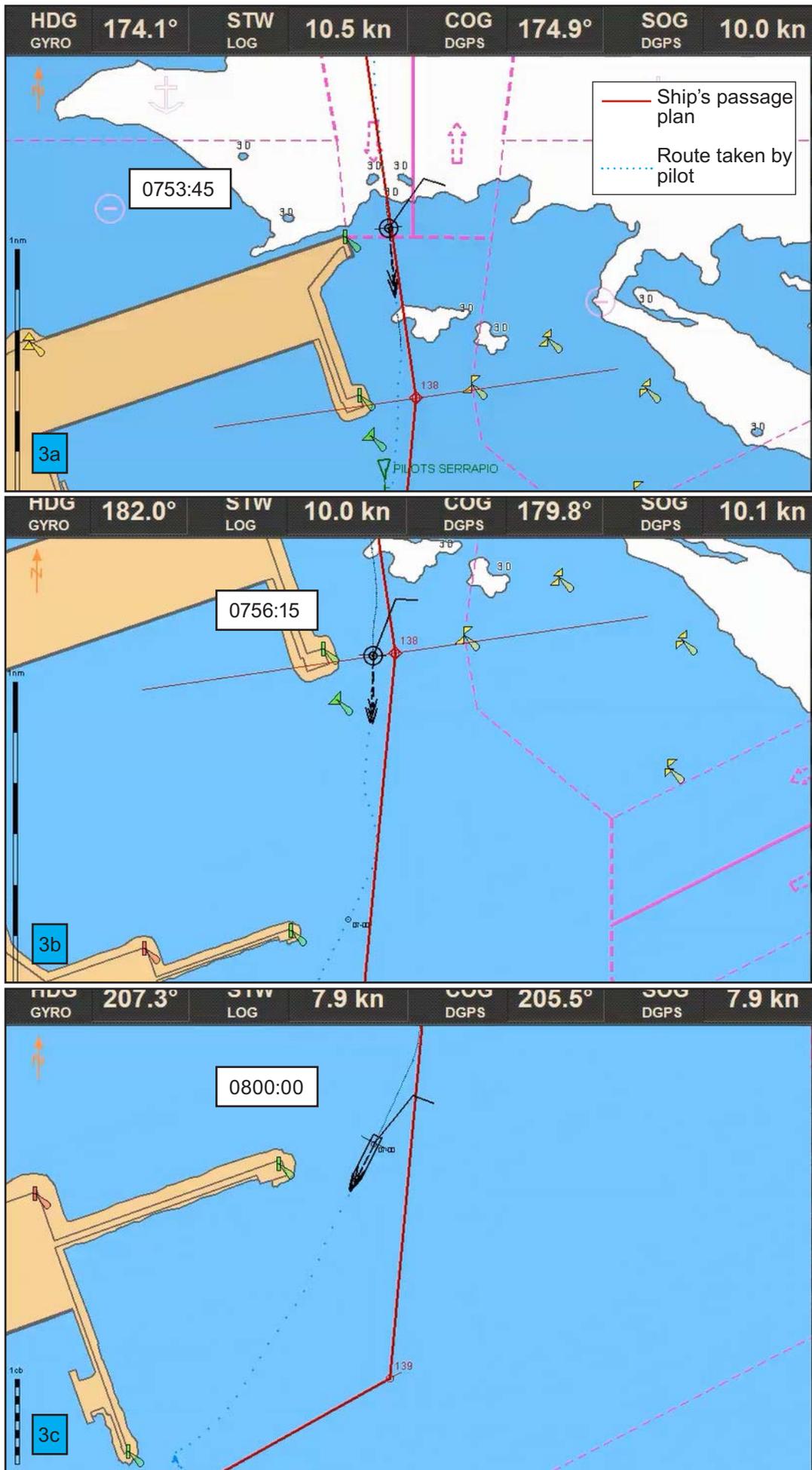


Figure 3: Screenshots from ECDIS replay 0753 - 0800



Figure 4: Screenshots from ECDIS replay 0802 - 0804:21

Actions alongside

As soon as *Vectis Eagle* had moored and the tugs were released, the pilot and the chief officer disembarked onto the pilot boat and inspected *Vectis Eagle*'s hull; no damage was seen. The pilot informed the harbourmaster that directional control of *Vectis Eagle* appeared to have been lost during the vessel's entry into Gijon and that it might have grounded momentarily near to No4 breakwater. He also advised the harbourmaster that there did not appear to be any damage or water ingress. The harbourmaster arranged for a port state inspection of the vessel to be carried out the following day.

Vectis Eagle's master asked the chief officer not to report the incident. He also instructed the second officer to tell persons visiting the ship that *Vectis Eagle* had not hit the breakwater. The second officer relayed the master's instruction to the Filipino crew on board.

During the afternoon, cargo operations were commenced. As the coal was discharged, the forepeak tank was ballasted to control the vessel's trim. At 2220, a bilge alarm indicated that there was water in the pipe tunnel⁶. Water was found at the forward end of the tunnel but its source could not be established; cargo operations continued.

The master notified *Vectis Eagle*'s designated person and technical manager that there was water ingress into the pipe tunnel and that the cause was unknown. He did not mention that the vessel might have grounded during the entry into Gijon.

At 0830 the following morning (1 December) two Bureau Veritas (BV) surveyors boarded *Vectis Eagle* to complete a number of pre-arranged annual surveys and inspections. Port state inspectors boarded 20 minutes later. The pilot also returned to *Vectis Eagle* during the morning. The master did not inform the surveyors, inspectors or the pilot of the water ingress in the pipe tunnel. At the master's request the pilot signed a statement documenting that the vessel had suffered a steering gear failure, but that it had not grounded.

While the BV surveyors were on board *Vectis Eagle*, the vessel's technical manager informed them of the water in the pipe tunnel. The surveyors' resulting investigation identified substantial damage to bottom plating near the forepeak tank and internal damage between the forepeak tank and the pipe tunnel. The surveyors and the ship managers assumed that the damage had been caused by the vessel's contact with a lock gate in the Kiel Canal less than 1 week earlier.

The surveyors issued a condition of class that required *Vectis Eagle* to proceed to dry dock for repairs. *Vectis Eagle* sailed that evening and arrived at the dry dock in Ferrol, Spain at 1407 the following afternoon (2 December) where significant damage to the forward section of the hull was discovered.

Damage

Vectis Eagle suffered damage to its bottom structure and framing in way of the forepeak tank and speed log void space. Additionally, hull plating on the bow section, and both sides of the forward bilge keels had been set in (**Figure 5**).

Environmental conditions

At the time of the accident the wind was a north-easterly moderate breeze (Beaufort force 4) and the weather was fine and clear with good visibility. Civil twilight occurred at 0744, and sunrise was at 0834. The predicted time of high water at Gijon was at 1114 with a height of 3.7m; the predicted height of tide at 0800 was 2.7m. The tidal stream was negligible. The charted depths close to the eastern side of No4 breakwater are at **Figure 6**.

⁶ The pipe tunnel is a duct between ballast tanks that houses ballast system pipework

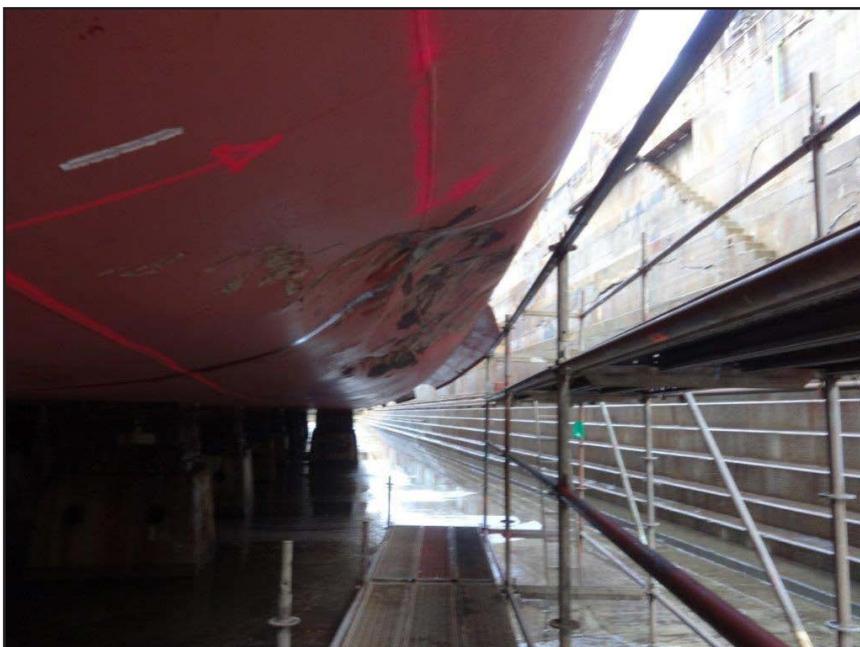


Figure 5: Damaged bow section below the waterline

Reproduced from Admiralty Chart BA 1154-0 by permission of the Controller of HMSO and the UK Hydrographic Office.

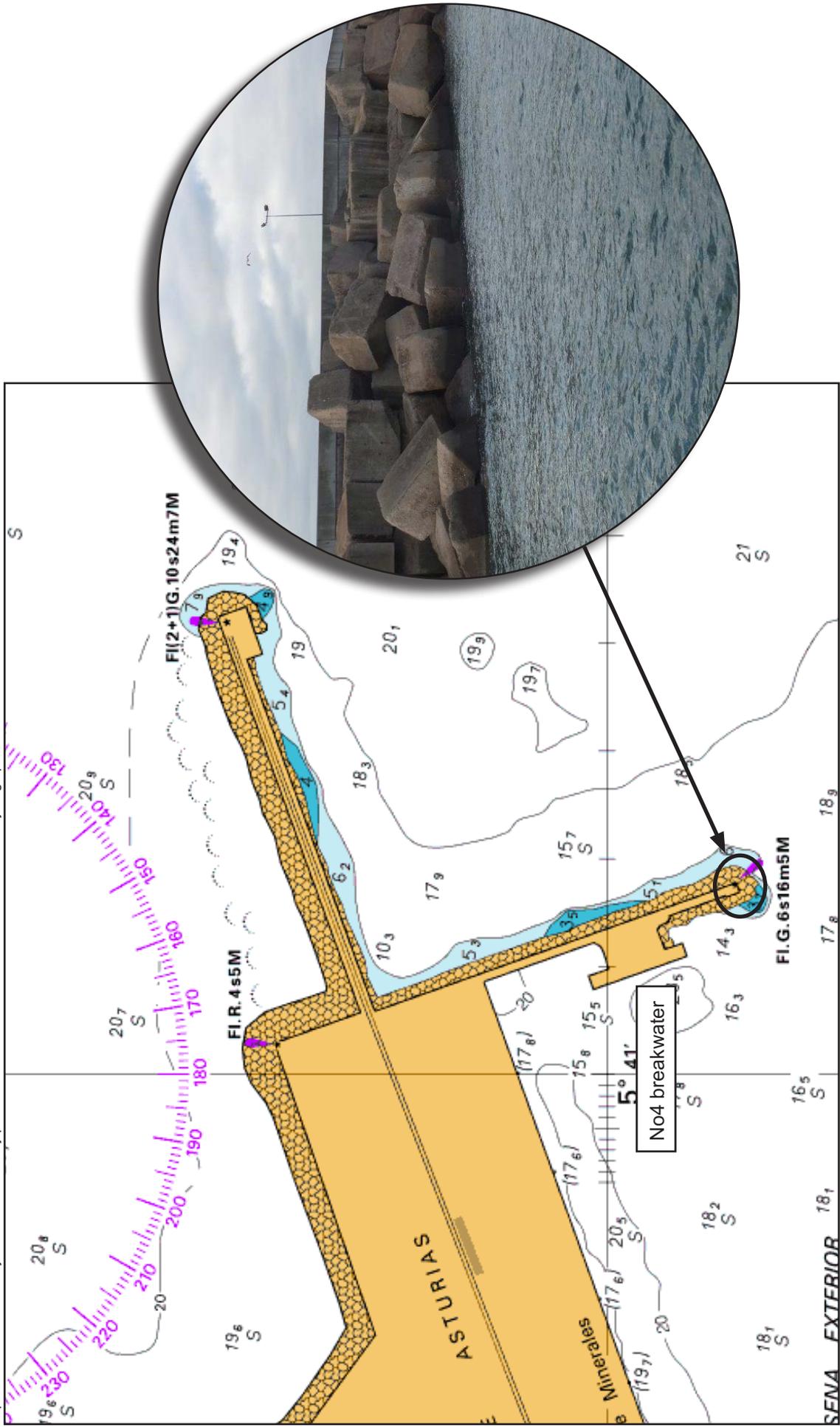


Figure 6: Chart of area where vessel grounded

Manoeuvrability and steering

Vectis Eagle was ice-classed and was fitted with a fixed propeller nozzle, a single controllable pitch propeller and a spade rudder. The vessel's steering system comprised a Van der Velden rotary vane steering gear system with two hydraulic motors operated by Raytheon controls. The steering system could be operated remotely from the bridge using either the helm or the tiller override (joystick), or manually from the steering flat.

The hydraulic steering motors were controlled independently and each system was fitted with seven alarms that sounded and were displayed on the bridge (**Figure 2**). Steering alarms were recorded on an electronic alarm log in the engine control room, which showed that no system alarms had been activated during the vessel's entry into Gijon.

The steering system was examined and tested by an independent system engineer while the vessel was in dry dock after the grounding; no defects were identified.

Crew

Vectis Eagle had 12 crew. The master was Russian and the chief officer was Ukrainian; the remaining crew were Filipino. All crew held UK certificates of equivalent competency. The working language on board *Vectis Eagle* was English.

The master was 50 years old and held an STCW II/2 unlimited master's certificate of competency (CoC). Since going to sea in 1981, he had served on board oil tankers, container ships and general cargo vessels, and first served as master in 2009. The master had completed a bridge resource management course in 2011.

This was the master's first contract with Carisbrooke Shipping Ltd. He joined *Vectis Eagle* on 19 July 2014 and took command 8 days later. The entry into Gijon during the morning of 30 November was the first occasion the master had been to the port.

The chief officer was 37 years old and held an STCW II/2 unlimited CoC (chief mate). The chief officer first went to sea in 2000 and had joined *Vectis Eagle* on 23 August 2014. This was his first time on board the vessel but it was his fifth contract with Carisbrooke Shipping Ltd.

On 23 November 2014 the master and the chief officer took part in steering gear training, which was overseen by a technical superintendent from Carisbrooke Shipping. During the training, both remote and manual operation of the system were drilled.

Vessel management

Vectis Eagle was operated by Carisbrooke Shipping Ltd, which managed over 50 vessels worldwide. The ship manager provided a generic safety management system (SMS) to each of its vessels which included information, guidance and instructions.

The SMS specified that, at harbour stations, "*A qualified navigation officer shall be on the bridge to assist the Master*". It also stated that the chief officer should be in charge of the forward mooring party and that a deck officer should be in charge of the aft mooring party when released from the bridge.

The SMS also included checklists showing the actions to be taken in emergencies, including steering failure and grounding. The steering failure checklist required the engine room to be informed of the situation; it also prompted the saving of data from the VDR. The grounding checklist required the sounding of the general alarm and for data from the VDR to be saved.

Pilotage

Pilotage was compulsory in Gijon for all vessels over 500 tons. The pilotage service was provided by the Gijon Pilot Port Corporation, a private company under contract to the port authority. There were six authorised pilots at Gijon, each undertaking the role of the duty pilot for a 24 hour period every 5 days. The pilots were accommodated in the port during their period of duty.

Vectis Eagle's pilot was 57 years old and had been a pilot for 15 years, 12 of which had been in Gijon. He was a Spanish national and held an unlimited masters licence. He was authorised to provide pilotage services on any size of vessel within the port limits. During the evening of 29 November, the pilot had piloted two bulk carriers (one in and one out). He was resting when he received the VHF call from *Vectis Eagle* at 0640. The pilot was not tired.

The pilot navigated primarily by eye and routinely used a prominent building sited on the southern side of the port (**Figure 1**) as a visual reference. It was the pilot's usual practice on passing breakwater No3 to keep the western side of the building open from the end of breakwater No4. The distance the pilot planned to pass off No4 breakwater took into account the draught and size of the relevant vessel; the larger the ship, the greater the distance. He routinely piloted smaller cargo vessels within 50m of the breakwater ends. The pilot did not document his passage plan.

Contact in the Kiel Canal

On 24 November 2014, *Vectis Eagle* suffered an engine control failure in a lock in the Kiel Canal. As a result, the master was unable to stop the vessel's headway and its bow made contact with the lock gate. The lock gate was severely damaged; the damage to *Vectis Eagle's* bow was superficial.

ANALYSIS

The grounding

The nature of the damage (**Figure 5**), the accounts from the forward mooring station crew and the ECDIS replay (**Figures 3 and 4**), show that *Vectis Eagle* grounded adjacent to No4 breakwater. The charted depth of water immediately off the breakwater was 5.1m (**Figure 6**). Given a predicted height of tide of 2.7m, the depth of water at *Vectis Eagle's* bow (7.8m) was very close to the vessel's forward draught of 7.64m.

The grounding occurred following a loss of directional control soon after the pilot started to manoeuvre the vessel to starboard towards the inner harbour. The vessel turned towards the breakwater and, when the turn could not be checked, the master and pilot attempted to stop the vessel by putting the engine to 'full astern' and letting go an anchor. They also tried to avoid the breakwater by increasing the vessel's rate of turn to starboard by using the bow thrust. Although these actions undoubtedly prevented the vessel sustaining far more serious damage, they did not prevent *Vectis Eagle* from grounding.

Loss of directional control

The reported failure of the steering system with 20° of starboard rudder set cannot be verified. Records show that none of the 14 alarms associated with the steering system were triggered and the VDR data was not saved. The steering system functioned as expected immediately before and after the incident and no defects were found during subsequent testing. Although it is possible that the loss of directional control was caused by an intermittent fault on the steering system, it is also possible that the apparent failure of the system and loss of directional control resulted from unidentified human errors or actions.

Execution of pilotage

Pilotage in Gijon is relatively straightforward and 'navigation by eye' in good visibility is routine. However, on this occasion, although the pilot was experienced and very familiar with the port, he navigated *Vectis Eagle* unnecessarily close to the breakwaters.

The pilot also started to turn the vessel around the southern end of No4 breakwater too early. It is not clear why he made this error of judgment, although his use of the prominent building (**Figure 1**) as a visual reference was prone to inaccuracy, and his view of the breakwater was possibly obscured by *Vectis Eagle*'s deck cranes (**Figure 1**). It is also possible that the pilot had not fully appreciated the manoeuvring characteristics of the vessel.

Passing so close to No4 breakwater left little margin for error or mechanical breakdown. Although there would have been time to rectify the premature turn to starboard had port rudder been applied when ordered by the pilot, there was insufficient time for the master and chief officer to identify, diagnose and rectify the loss of directional control, despite them having participated in steering drills only 1 week earlier.

Bridge teamwork

The 9 minute transit from the pilot's boarding to the vicinity of No1 breakwater was sufficient time for the master and pilot to exchange information. However, their discussion was mainly limited to engine settings and speeds, and it did not include the passage plan to the berth. Although the master had checked and approved the vessel's plan, which allowed greater clearances off the breakwaters (notably No3 and No 4) than the route followed by the pilot (**Figures 3 and 4**), it is evident that he relied solely on the pilot to keep the vessel clear from navigational dangers.

The master's reliance on the pilot was probably influenced to some extent by anxiety resulting from the accident in the Kiel Canal 6 days earlier and that this was to be his first visit to Gijon. Nonetheless, as the master retained the responsibility for the safety of his vessel, his failure to sufficiently challenge both the vessel's proximity to the breakwaters and the pilot's premature initiation of the turn to starboard were significant omissions.

The effectiveness of the bridge team was also limited by the employment of the chief officer as the helmsman. This was at variance with the vessel's SMS and prevented the chief officer from supporting the master adequately during the pilotage. Given the vessel's manning levels, an OS could have been used as a helmsman instead of the chief officer. Amongst other things, this would have enabled the chief officer to closely supervise the actions of the helmsman and he would have been immediately able to manage the loss of directional control in accordance with the emergency checklist provided.

Reporting

As *Vectis Eagle* remained stationary next to No4 breakwater between 0804 and 0806 (**Figure 4c**), apparently neither the master nor the pilot was certain that *Vectis Eagle* had grounded. The noise and vibration of the engine running astern, the noise of the anchor cable paying out and the movement of the vessel would have masked the occurrence to some degree. Nonetheless, it is evident from the rapid checking of the forward tanks, followed by the pilot's external inspection of the hull once the vessel was alongside, that the master and the pilot were aware that *Vectis Eagle* might have been damaged.

Both the reported loss of directional control and the length of time the vessel was stationary despite its engine set to 'full astern' warranted investigation. Instead, the master neither informed the chief engineer, who was in the engine room at the time, of the apparent steering failure nor saved data from the VDR when the vessel was alongside. Moreover, he took steps to conceal the possibility that the vessel

had grounded. This included influencing the behaviour of the vessel's crew. Furthermore, following the discovery of water and damage in the pipe tunnel, the master did not inform the pilot or report the possibility of the vessel grounding to the ship's manager or the embarked surveyors and inspectors.

The master's attempt to conceal the grounding showed a lack of integrity and misled the ship's manager to believe that the damage had resulted from the contact with the lock gate in the Kiel Canal. It was only when *Vectis Eagle* entered dry dock that the ship manager realised that this was not the case. By then, the opportunity to save the VDR data was lost.

Following *Vectis Eagle*'s contact with a lockgate in the Kiel Canal the master was probably anxious about the vessel's handling, and his insistence on testing the main engines during the pilotage in Gijon indicates that he was keen to avoid a similar occurrence. The grounding on entering Gijon, the second of two accidents in quick succession, would therefore have caused the master considerable concern about the likely reaction of his employers. However, the failure to report the accident was potentially dangerous. *Vectis Eagle*'s next scheduled port was in Venezuela and, had the damage not been found and the vessel sailed as planned, its passage across the North Atlantic Ocean in winter with a weakened hull would have put the vessel and its crew at unnecessary risk.

CONCLUSIONS

- *Vectis Eagle* grounded soon after directional control was lost as the vessel turned to starboard in order to approach the inner harbour at Gijon.
- The loss of directional control was reportedly due to a steering failure, but this cannot be verified.
- The vessel passed unnecessarily close to the breakwaters and the vessel's turn to starboard was started too early.
- The pilot's 'navigation by eye' was not sufficiently challenged by the master.
- The actions taken to reduce speed and avoid hitting the breakwater prevented the damage to the vessel from being more serious.
- The master did not save the VDR data and tried to conceal that the vessel had grounded even after significant hull damage was identified.

RECOMMENDATIONS

Carisbrooke Shipping Ltd is recommended to:

2015/139 Bring to the attention of its crews the circumstances of this accident, highlighting the lessons learned, including the importance of, inter alia:

- The master/pilot information exchange and challenging pilots when necessary.
- The support provided to masters on the bridge during pilotage.
- Ensuring that information on the voyage data recorder is saved following every accident and incident.
- Honesty in reporting accidents and incidents.

Safety recommendations shall in no case create a presumption of blame or liability

SHIP PARTICULARS

Vessel's name	<i>Vectis Eagle</i>
Flag	United Kingdom
Classification society	Bureau Veritas
IMO number/fishing numbers	9594286
Type	General cargo ship
Registered owner	Super Greenship BV
Manager(s)	Carisbrooke Shipping Ltd
Year of build	2012
Construction	Steel
Length overall	109.95m
Gross tonnage	6190gt
Minimum safe manning	8
Authorised cargo	General cargo

VOYAGE PARTICULARS

Port of departure	Muuga, Estonia
Port of arrival	Gijon, Spain
Type of voyage	Short international
Cargo information	Loaded with 7522t coal in bulk
Manning	12

MARINE CASUALTY INFORMATION

Date and time	30 November 2014, 0804 UTC+1
Type of marine casualty or incident	Serious Marine Casualty
Location of incident	Gijon Harbour, Gijon, Spain
Place on board	Hull
Injuries/fatalities	None
Damage/environmental impact	Damage below the waterline in way of the bow. Internal framing distorted and fractured in the forepeak tank. No pollution
Ship operation	Under pilotage
Voyage segment	Transit
External & internal environment	Wind: North-easterly, force 4 Weather: Fine and clear Visibility : Good Twilight
Persons on board	13