



Report on the investigation of the collision between

Paula C

and

Darya Gayatri

In the south-west lane of the Dover Strait Traffic Separation
Scheme

on 11 December 2013



Extract from
The United Kingdom Merchant Shipping
(Accident Reporting and Investigation)
Regulations 2012 – Regulation 5:

“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 investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame.”

NOTE

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

AB	-	Able Seaman
AIS	-	Automatic Identification System
ARPA	-	Automatic Radar and Plotting Aid
BNWAS	-	Bridge Navigational Watch Alarm System
CALDOVREP	-	A mandatory reporting system for ships in the Dover Strait
CEC	-	Certificate of Equivalent Competency
CNIS	-	Channel Navigation Information Service
CoC	-	Certificate of Competency
COG	-	Course Over the Ground
COLREGS	-	International Regulations for the Prevention of Collisions at Sea 1972 (as amended)
CPA	-	Closest Point of Approach
DSC	-	Digital Selective Calling
GMDSS	-	Global Maritime Distress and Safety System
GPS	-	Global Positioning System
gt	-	gross tonnage
IALA	-	International Association of Marine Aids to Navigation and Lighthouse Authorities
ICS	-	International Chamber of Shipping
IMO	-	International Maritime Organization
kt	-	knot
MCA	-	Maritime and Coastguard Agency
MGN	-	Marine Guidance Note
MNTB	-	Merchant Navy Training Board
MSN	-	Merchant Shipping Notice
NUC	-	Not under command
OOW	-	Officer of the Watch

rpm	-	revolutions per minute
SMS	-	Safety Management System
SOG	-	Speed Over the Ground
SOLAS	-	International Convention for the Safety of Life at Sea 1974, as amended
STCW	-	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978, as amended (STCW Convention)
TSS	-	Traffic Separation Scheme
UTC	-	Universal Co-ordinated Time
VHF	-	Very High Frequency
VTS	-	Vessel Traffic Services

TIMES: All times used in this report are UTC unless otherwise stated

SYNOPSIS

At 0027 on 11 December 2013, the general cargo vessel *Paula C* and the bulk carrier *Darya Gayatri* collided in the south-west lane of the Dover Strait Traffic Separation Scheme. Both vessels were damaged but there were no injuries and there was no pollution. The collision occurred as a result of *Paula C* turning into the path of *Darya Gayatri* after the action taken by the general cargo ship's officer of the watch to avoid the Belgium registered beam trawler *Raquel* had not gone as intended.

The contributing factors identified by the MAIB investigation included:

- *Paula C*'s officer of the watch did not effectively use the electronic aids available to maintain a proper lookout. After taking action to avoid the fishing vessel, he was uncertain as to the action he should take next and he lost situational awareness.
- An intervention on the radio by Dover Coastguard was timely and well-intended but, inadvertently, it almost certainly influenced *Paula C*'s officer of the watch into taking action, which resulted in *Paula C* turning towards *Darya Gayatri*.
- *Paula C*'s officer of the watch was very inexperienced and he had not yet developed sufficient competency to keep a bridge watch in the Dover Strait at night by himself.
- Although it was dark, *Paula C*'s officer of the watch was not supported by an additional lookout.
- The master's decision to allow an inexperienced officer to keep the bridge watch by himself in the Dover Strait at night was ill-judged and contrary to international requirements.

Following the accident, Carisbrooke Shipping Ltd, *Paula C*'s ship manager, adopted a more structured approach to the training and development of its junior officers. It also issued instructions to its fleet regarding the use of an additional lookout and electronic aids for collision avoidance. The Merchant Navy Training Board has started to prepare guidance for companies and seagoing officers covering junior officer development and confidence building. In addition, the Maritime and Coastguard Agency has taken action which is aimed at improving the vessel traffic services provided by Dover Coastguard.

In view of the actions already taken, no recommendations have been made.

SECTION 1 - FACTUAL INFORMATION

1.1 PARTICULARS OF PAULA C, DARYA GAYATRI AND ACCIDENT

SHIP PARTICULARS		
Vessel's name	<i>Paula C</i>	<i>Darya Gayatri</i>
Flag	United Kingdom	China (Hong Kong)
Classification society	Lloyd's Register	Lloyd's Register
IMO number	9373553	9591686
Type	General cargo	Bulk carrier
Registered owner	Carisbrooke Shipping 636 Ltd	Gayatri Shipping
Manager(s)	Carisbrooke Shipping Ltd	Anglo-Eastern Ship Management Ltd
Construction	2008	2012
Length overall	89.90	229.0
Gross tonnage	2998	44325
Minimum safe manning	7	14
Authorised cargo	No	No
VOYAGE PARTICULARS		
Port of departure	Brake, Germany	Ijmuiden, Netherlands
Port of arrival	Poole, England	Baltimore, United States of America
Type of voyage	Ballast	Ballast
Manning	8	20
MARINE CASUALTY INFORMATION		
Date and time	11 December 2013 at 0027 UTC	
Type of marine casualty or incident	Serious Marine Casualty	
Location of incident	Dover Strait	
Place on board	Port bridge wing and port quarter	Port bow
Injuries/fatalities	None	None
Damage/environmental impact	Significant damage to port bridge wing and accommodation block; port liferaft davit removed; port quarter indented and holed	Port bow holed and dented in way of forepeak void space.
Ship operation	On passage	On passage
Voyage segment	Mid-water	Mid-water
External & internal environment	Wind SE Force 3, clear skies, calm seas, with good visibility. The predicted tidal stream was 225° at a rate of 2kts. It was dark.	
Persons on board	8	20

Image courtesy of Sangrin/Marine Traffic



Paula C

Image courtesy of Anton Bergstrom/Marine Traffic



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Darya Gayatri

Image courtesy of Guido Jansen/Marine Traffic



Raquel

1.2 NARRATIVE

1.2.1 Events leading to the collision

On 10 December 2013 at 2245 UTC¹, the general cargo vessel *Paula C* was on passage in the south-west traffic lane of the Dover Strait traffic separation scheme (TSS). The vessel was following an autopilot-controlled heading of 221° at a speed over the ground (SOG)² of 11.9 knots (kts) (**Figure 1**). *Paula C* was in ballast and its destination was Poole, England. It was a dark, clear night and the visibility was good.

Paula C's master was keeping the navigational watch. As the master completed his night orders, the second officer arrived on the bridge to take over as the officer of the watch (OOV). In preparation for the watch handover, the second officer checked the settings on the port 'X-band' radar display. As he did so, he noticed a number of radar targets following the south-west traffic lane. In particular, the second officer saw a target on *Paula C*'s starboard quarter at a range of 1.9nm. From the Automatic Identification System (AIS) data³ shown on the radar display, the second officer identified the radar target as *Darya Gayatri*, a bulk carrier in ballast on passage to Baltimore, USA. He also identified that *Darya Gayatri* was making good

¹ i.e local time in the UK. The time zone kept on board *Paula C* and *Darya Gayatri* was UTC+1.

² All speeds referred to in this report are SOG unless otherwise stated.

³ The information provided by AIS is divided into: static information, including the ship's call sign and name; dynamic information, including position, course and speed over the ground and status; voyage related information, including destination, draught, and hazardous cargoes; and short safety related messages. Static and voyage related information is transmitted every 6 minutes, or on request. The reporting interval for dynamic information is dependent on a ship's speed and whether or not it is changing course. The reporting interval for a ship at a speed of between 0 and 14kts and changing course is 4 seconds.

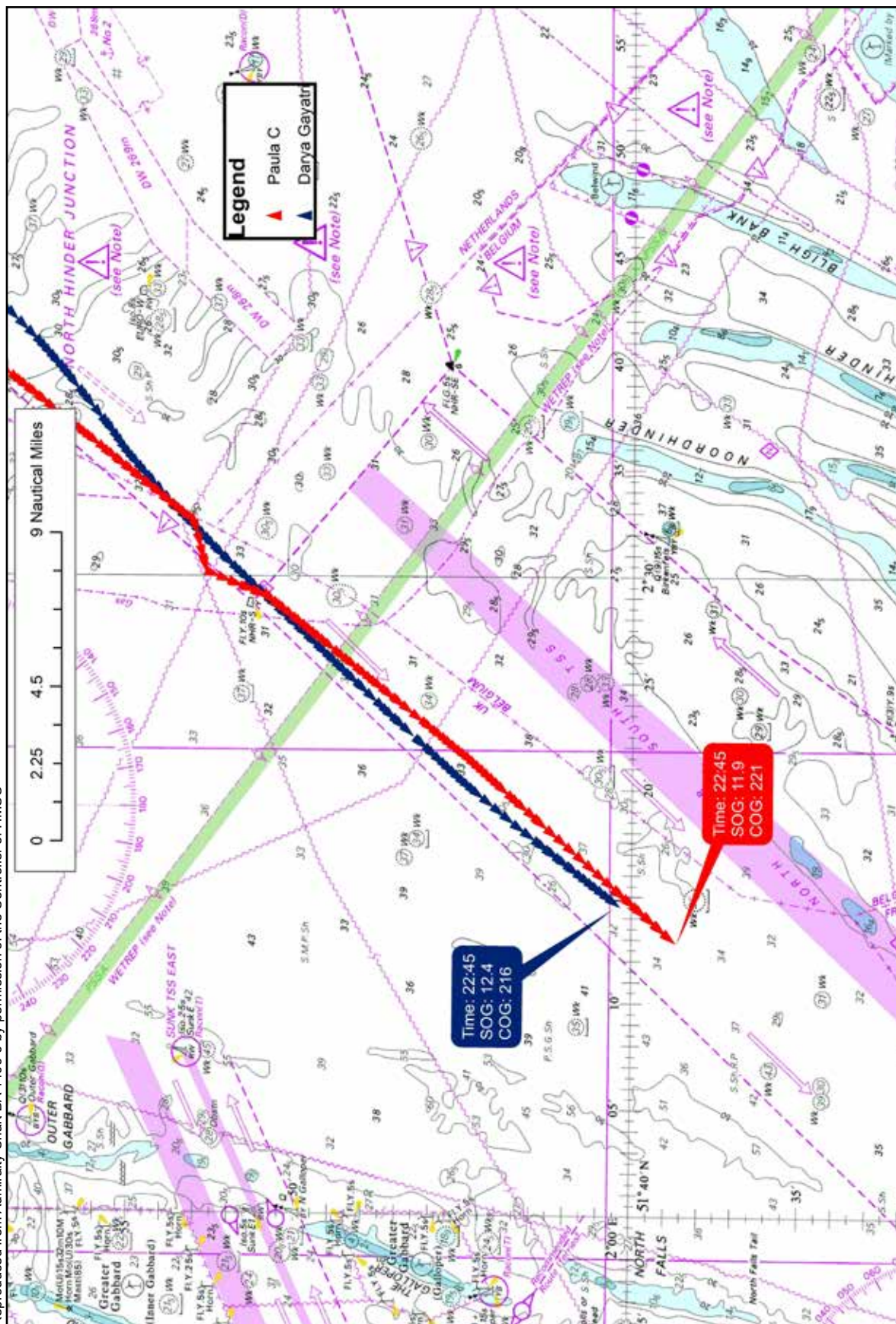


Figure 1: Positions of Paula C and Darya Gayatri at 22:45

a course over the ground (COG) of 216° at a speed of 12.4kts and was overtaking *Paula C*. The closest point of approach (CPA) between the vessels was 0.5nm in 88 minutes time.

At approximately 2300, *Paula C*'s master finished his night orders and advised the second officer to keep to the passage plan and to call him if in any doubt. The master left the bridge at 2305. By that time, *Darya Gayatri*'s heading had been altered to 227° and the bulk carrier was 79° abaft *Paula C*'s starboard beam at a distance of 1.7nm.

The second officer monitored *Paula C*'s position using the cross track error facility on the Global Positioning System (GPS) receiver. The vessel remained on track. At 2345, *Paula C* arrived at a navigational waypoint indicating a planned course alteration. Accordingly, the OOW altered the vessel's heading to follow a track of 212°.

At 0000, *Paula C*'s OOW plotted the vessel's position on the paper chart; it remained on the planned track. At 0011, he saw a vessel 20° off the starboard bow. Through binoculars, the OOW was able to see the vessel's port side light and its deck lights. He also correlated the unidentified vessel with a radar target. From the target's AIS data shown on the port radar display, the OOW saw that the vessel was at a range of 3.9nm and had a CPA of 0.1nm. The second officer did not acquire the vessel on the ARPA or use the AIS data to determine the vessel's name or status. The OOW assessed that the vessel was crossing *Paula C*'s bow from starboard to port. He also assessed that *Paula C* was the give way vessel.

The vessel ahead of *Paula C* was the Belgium registered beam trawler *Raquel*, which was towing its nets on a COG of 153° at a speed of 4.8kts (**Figure 2**). *Raquel* was displaying the appropriate lights for a power-driven vessel underway and engaged in trawling⁴; the vessel's deck lights were also switched on. The beam trawler's AIS was transmitting static and dynamic information, including its status (engaged in fishing), SOG and COG. However, no heading information was broadcast.

Raquel's skipper was on watch in the wheelhouse and he was monitoring other vessels in the area visually, by radar and by AIS. The skipper had seen *Paula C* and *Darya Gayatri* following the traffic lane and he was aware that he needed to take action in order to keep out of their way. Accordingly, at approximately 0013, with *Paula C* 3.4nm off the trawler's port bow, *Raquel*'s skipper began the first of several alterations to port, which were intended to eventually turn the fishing vessel onto a north-westerly heading (**Figure 3**). A single, broad alteration was not possible because *Raquel*'s manoeuvrability was limited by its fishing gear.

Raquel's changes in heading were not seen by *Paula C*'s OOW, who was also still unaware of the identity of the vessel ahead of him, or that it was engaged in fishing. At approximately 0018, when *Raquel* and *Paula C* were 1.82nm apart, the OOW adjusted the heading set on the autopilot to 230°. No sound signal was made and the second officer did not look over the starboard quarter to make sure that there were no vessels in close proximity. The OOW also did not use the ARPA's trial manoeuvre facility to determine the effect of the intended alteration on the CPA's of the other vessels in the area.

⁴ The International Regulations for the Prevention of Collisions at Sea 1972 (as amended) (COLREGs) require that a vessel engaged in trawling, in addition to the lights prescribed for its length, should display two all-round lights in a vertical line. The upper light is green and the lower light is white.

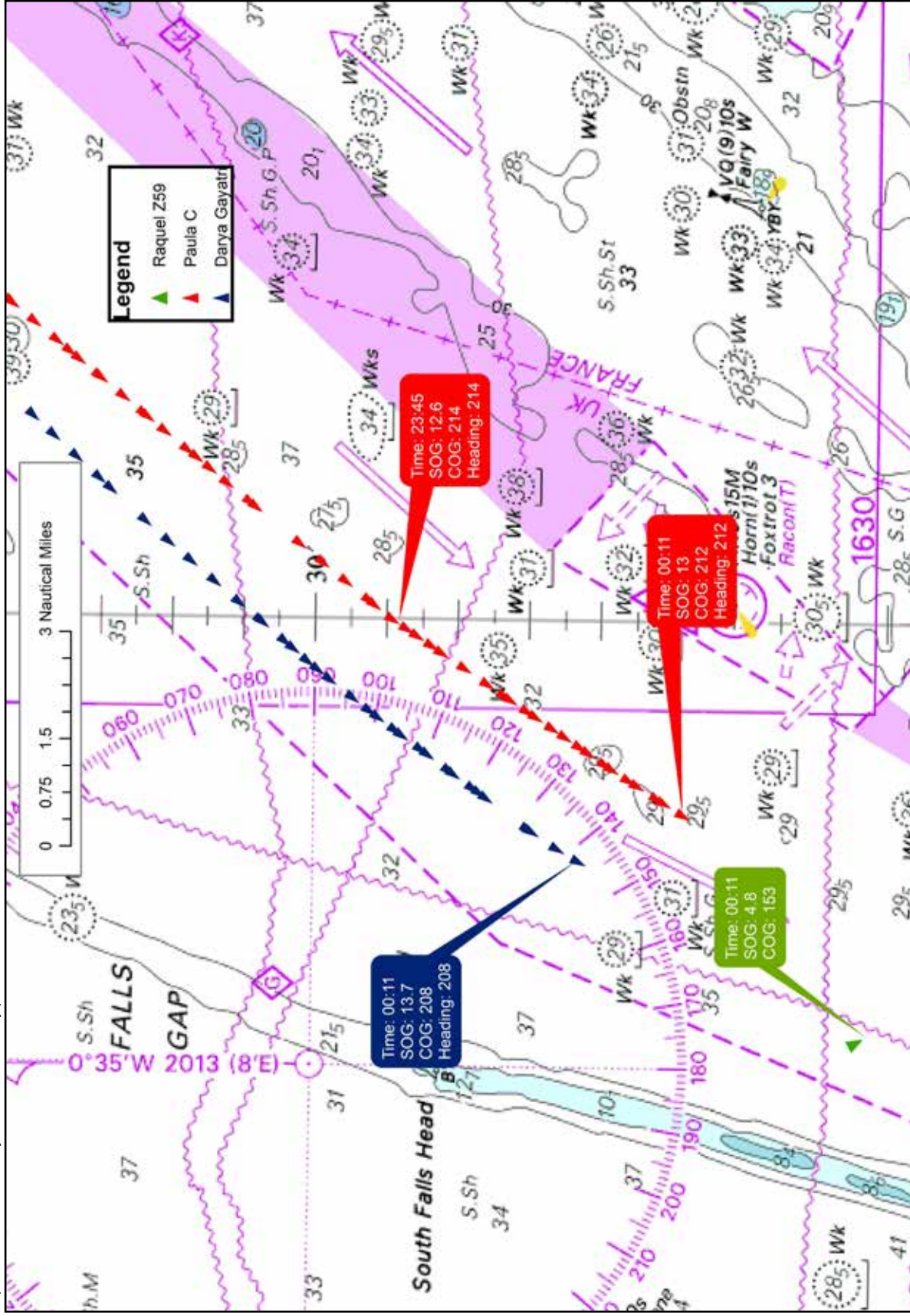


Figure 2: Positions of vessels at 0011

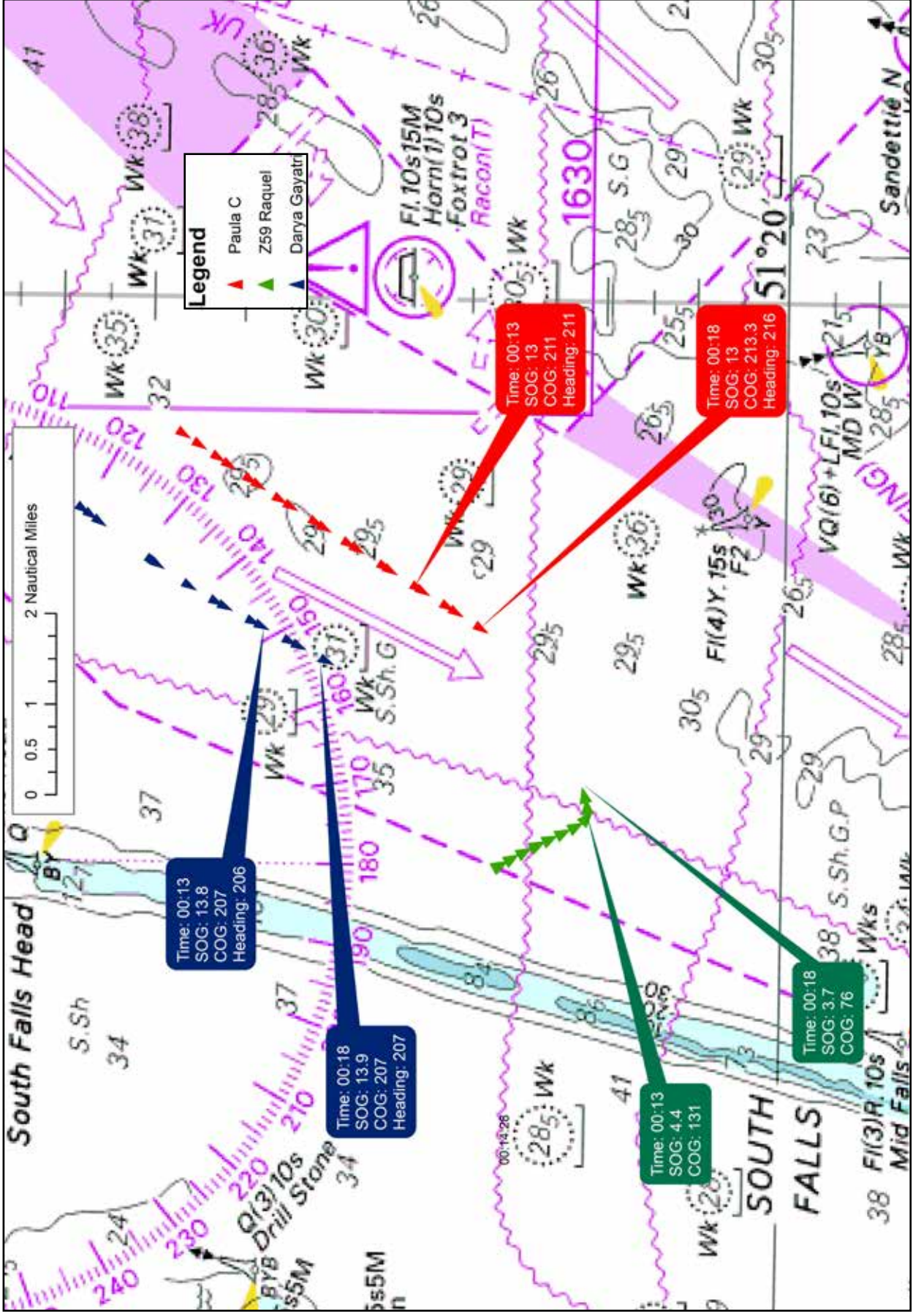


Figure 3: Positions of vessels at 0013 and 0018

As *Paula C* steadied onto its new heading, the second officer noticed that the heading of *Raquel*, which was now almost directly ahead, had changed to the north-east. In response, the OOW adjusted *Paula C*'s heading further to starboard. By 0022 *Paula C*'s heading was 266° and the fishing vessel was about 30° off *Paula C*'s port bow at a distance of 1.1nm; *Darya Gayatri* was on the cargo ship's starboard beam at a distance of 0.98nm.

Over the next 2 minutes, *Paula C*'s OOW adjusted the autopilot to alter the vessel's heading to port and then to starboard. The vessel's changes in heading between 0022:06 and 0023:35 are detailed at **Table 1**.

Time	Heading (°)
0022:06	266
0022:23	263
0022:54	255
0023:04	253
0023:15	259
0023:24	273
0023:30	282
0023:35	287

Table 1: *Paula C*'s heading between 0022:06 and 0023:35

Paula C's manoeuvring was seen by *Darya Gayatri*'s OOW, who determined that the cargo ship would now pass about 2 cables ahead of his vessel. *Darya Gayatri*'s OOW was also aware that *Raquel* was ahead of him and was engaged in fishing. He was closely monitoring both vessels. *Darya Gayatri*'s OOW was the second officer and he was accompanied on the bridge by an able seaman (AB) lookout.

Paula C's movements were also seen on radar (**Figure 4**) by the duty Dover Coastguard watch officer. He called *Paula C* via very high frequency (VHF) radio channel 11 in order to clarify the OOW's intentions. The transcript of the resulting conversation is at **Table 2**.

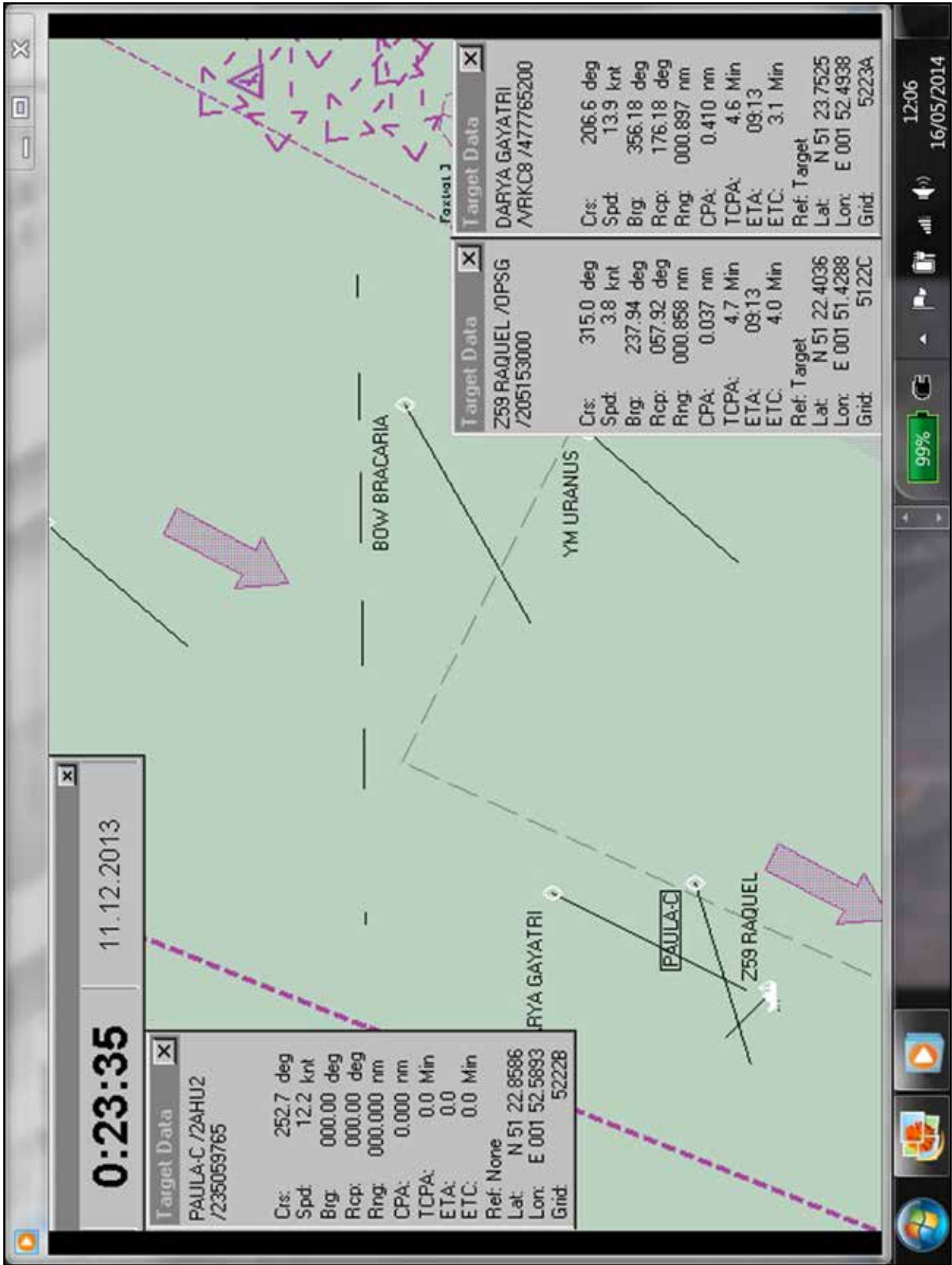


Figure 4: Dover Coastguard radar plot

Time	Station	Dialogue
0023:34	Dover Coastguard	<i>Paula C, Paula C, this is Dover Coastguard channel 11.</i>
0023:41	<i>Paula C</i>	<i>This is Paula C, go ahead over.</i>
0023:43	Dover Coastguard	<i>Yep, I see the situation there sir, er, can you tell me why you have gone hard to starboard?</i>
0023:48	<i>Paula C</i>	<i>Yeah, I've got a vessel ...um... crossing my bowand I, I've started giving way but he has altered his course, over.</i>
0024:01	Dover Coastguard	<i>Is that the fishing vessel on your port bow now sir?</i>
0024:06	<i>Paula C</i>	<i>Right, that's errrr right, over.</i>
0024:10	Dover Coastguard	<i>What's your intention now? Are you going to do a three sixty?</i>
0024:16	<i>Paula C</i>	<i>Errrr, my intention now is to, err, do a three sixty, over. Yeah, to starboard.</i>
0024:25	Dover Coastguard	<i>Have you spoken to the vessel that is south-west bound, the Darya Gayatri?</i>
0024:31	<i>Paula C</i>	<i>No, not yet I'm ehhhh still making my manoeuvre. I haven't had a chance.</i>
0024:34	Dover Coastguard	<i>Roger.</i>

Table 2: Transcript of VHF exchange between Dover Coastguard and *Paula C*

During the VHF conversation, *Paula C*'s OOW adjusted the cargo ship's heading from 287° to 253°. Immediately after the VHF exchange, he selected hand-steering and applied 35° of starboard helm. *Paula C* started to turn quickly to starboard (**Figure 5**). The OOW did not check visually or by radar that the intended manoeuvre was safe or make a sound signal to indicate he was turning to starboard. He was unaware that *Darya Gayatri* was 511m off *Paula C*'s starboard beam.

Paula C's headings between 0024:40 and 0025:57 are shown at **Table 3** below.

Time	Heading (°)
0024:40	253
0024:54	258
0025:11	286
0025:24	297
0025:48	338
0025:52	347
0025:57	000

Table 3: *Paula C*'s heading between 0024:40 and 0025:57

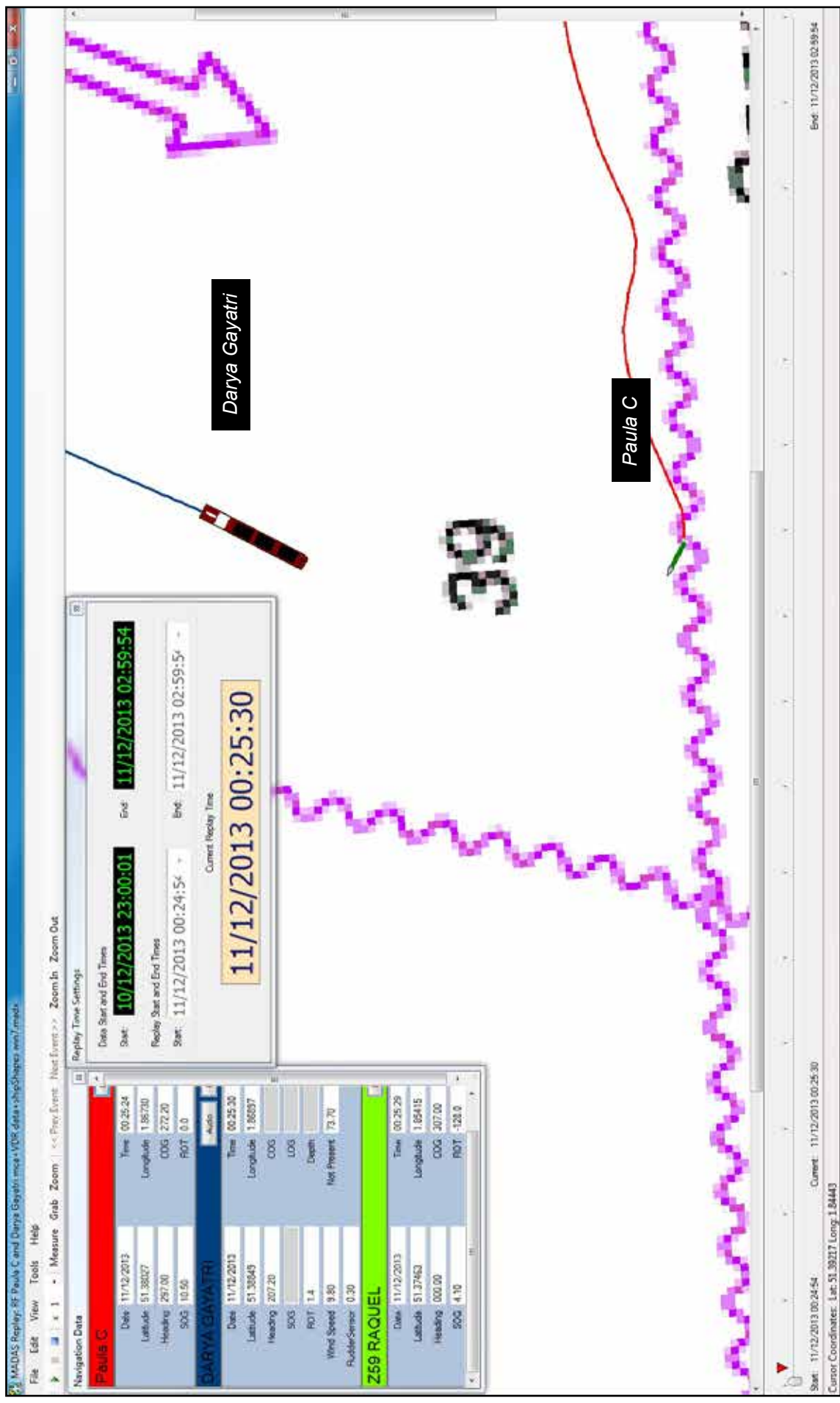


Figure 5: Paula C turning to starboard

As *Paula C* turned to starboard, the coastguard watch officer called *Darya Gayatri* via VHF radio, channel 11. The transcript of the conversation between Dover Coastguard and *Darya Gayatri* is at **Table 4**.

Time	Station	Dialogue
0024:45	Dover Coastguard	<i>This is Dover Coastguard calling the Darya Gayatri. This is Dover Coastguard calling you channel 11.</i>
0024:49	<i>Darya Gayatri</i>	<i>Dover Coastguard, Darya Gayatri, I did copy your conversation ah about he will be doing a three sixty ahhh I'll be coming to port, over.</i>
0025:03	Dover Coastguard	<i>Are you aware of the situation, you can actually see the fishing vessel ahead of you? Is that correct?</i>
0025:08	<i>Darya Gayatri</i>	<i>Yes, Dover Coastguard, I can see the fishing vessel ahead of me. She altered her course north-west of me now over.</i>
0025:21	Dover Coastguard	<i>Roger. Thank you sir. As long as you are aware. Many thanks</i>
0025:24	<i>Darya Gayatri</i>	<i>Okay, thank you.</i>

Table 4: Transcript of the VHF exchange between Dover Coastguard and *Darya Gayatri*

1.2.2 The collision

Immediately after *Darya Gayatri*'s OOW had finished talking to Dover Coastguard, he changed to hand-steering and instructed his lookout to take the helm. He then ordered the helm hard to port; no sound signal was made. By now, *Paula C* was turning through a heading of 297° at an increasing rate. *Darya Gayatri*'s OOW was not aware that the cargo ship was under helm to starboard. He assumed that *Paula C* would pass ahead of the bulk carrier before starting to manoeuvre to the north; he expected the vessels to pass starboard to starboard.

At 0026, 18 seconds after port helm was applied, *Darya Gayatri* started to turn to port. At the same time, the second officer noticed that *Paula C* was turning towards the bulk carrier. He immediately ordered the lookout to put the helm hard-to-starboard and then telephoned the master in his cabin to inform him that there was another ship "very close". The OOW also put the engine telegraph astern for several seconds. He soon returned the telegraph to full ahead after he assessed that there was no time for an astern movement to take effect.

Darya Gayatri's master arrived on the bridge just as *Paula C*'s port bridge wing collided with *Darya Gayatri*'s port anchor. At the point of contact, which was at 0026:52, *Darya Gayatri* was heading 198° at 12.9kts; *Paula C* was heading 070° at 6.2kts (**Figure 6**).

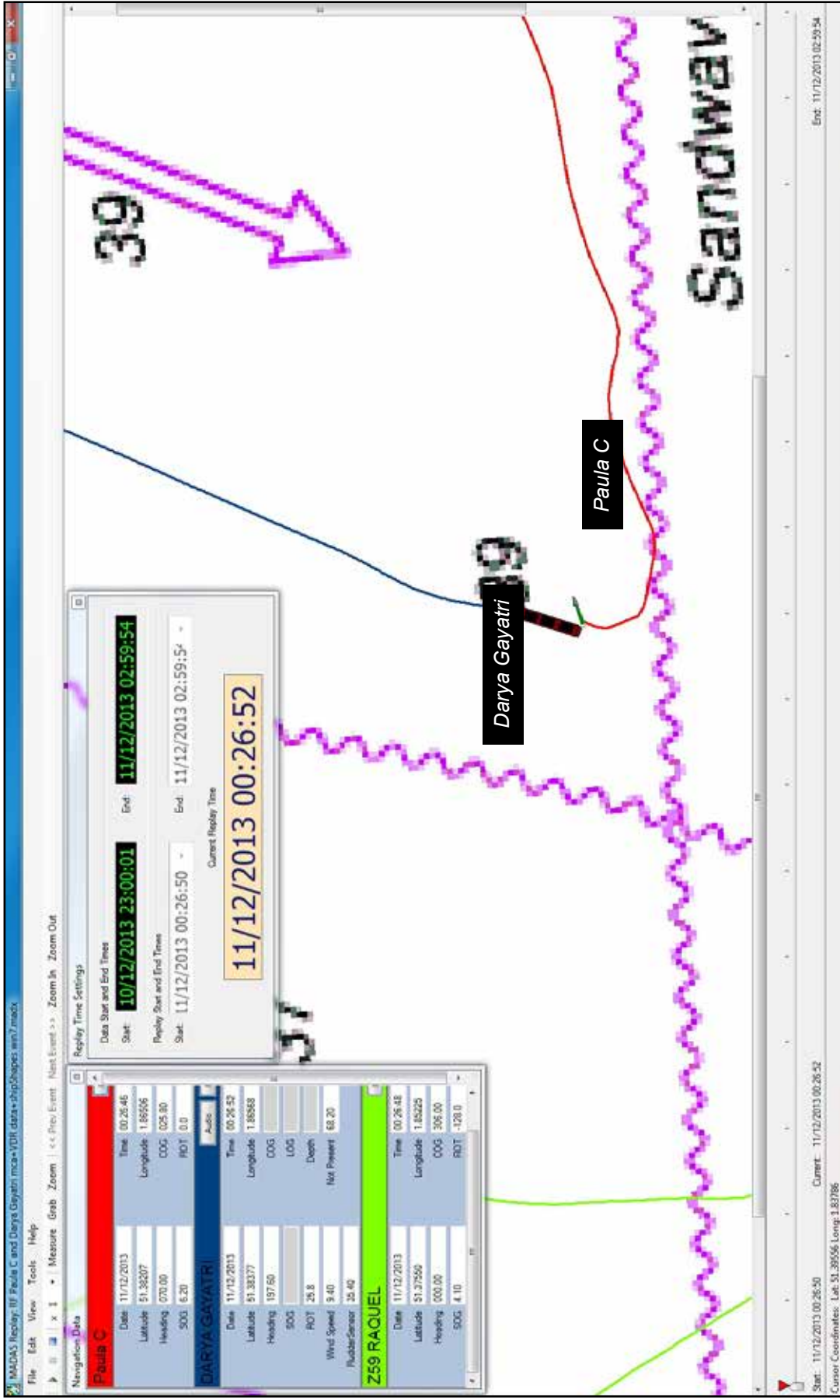


Figure 6: The collision

1.2.3 Actions following the collision

Paula C

Immediately after the collision, *Paula C*'s second officer sounded the general alarm and pressed the Digital Selective Calling (DSC) alert button⁵. The OOW then intended to stop the vessel's engines, but he accidentally placed the engine telegraph to 40% ahead instead of to "stop". After waiting a minute or two, and fearing the worst when no-one arrived on the bridge, the second officer left the bridge to knock on the master's cabin door. When the master responded to his shouts, the second officer returned to the bridge.

Shortly afterwards, the master and the vessel's crew joined the second officer on the bridge. The master immediately saw that the port bridge wing was badly damaged. He instructed the chief engineer and the chief officer to check the engine room and the accommodation block respectively. The second officer remained on the bridge and continued VHF communication with both Dover Coastguard and *Darya Gayatri*. By 0130, it had been confirmed that the vessel's hull was not breached below the waterline. *Paula C* then continued on passage towards Poole but was later diverted to Southampton for repairs. The vessel arrived in Southampton at about 1500.

Darya Gayatri

Immediately after the collision, *Darya Gayatri*'s master ordered the helm hard to port. The second officer sounded the general alarm and informed Dover Coastguard of the collision. The master then informed the ship's crew that the vessel had been involved in a collision and instructed them to muster. The vessel's speed was reduced and its 'not under command' (NUC) lights were switched on. The second officer then broadcast a safety information message on VHF channel 16 advising ships in the area of the situation.

Darya Gayatri continued on passage at slow speed while its crew checked for damage; there was no evidence of water ingress. Dover Coastguard instructed the master to proceed to a UK port for inspection. After daybreak, the ship's crew found damage to *Darya Gayatri*'s bow in way of the vessel's forward void space. The ship arrived in Falmouth, England for repairs on 12 December 2013.

1.3 DAMAGE

Paula C suffered significant damage to her port bridge wing and port side accommodation and port quarter (**Figure 7**). In particular:

- The port bridge wing was crushed.
- The chief officer's cabin, which was on the forward port side of the accommodation block, was indented and holed.
- The port liferaft davit was almost entirely removed.

⁵ The second officer pressed the DSC button for 4 seconds, which initiated the transmission of an undesignated alert.

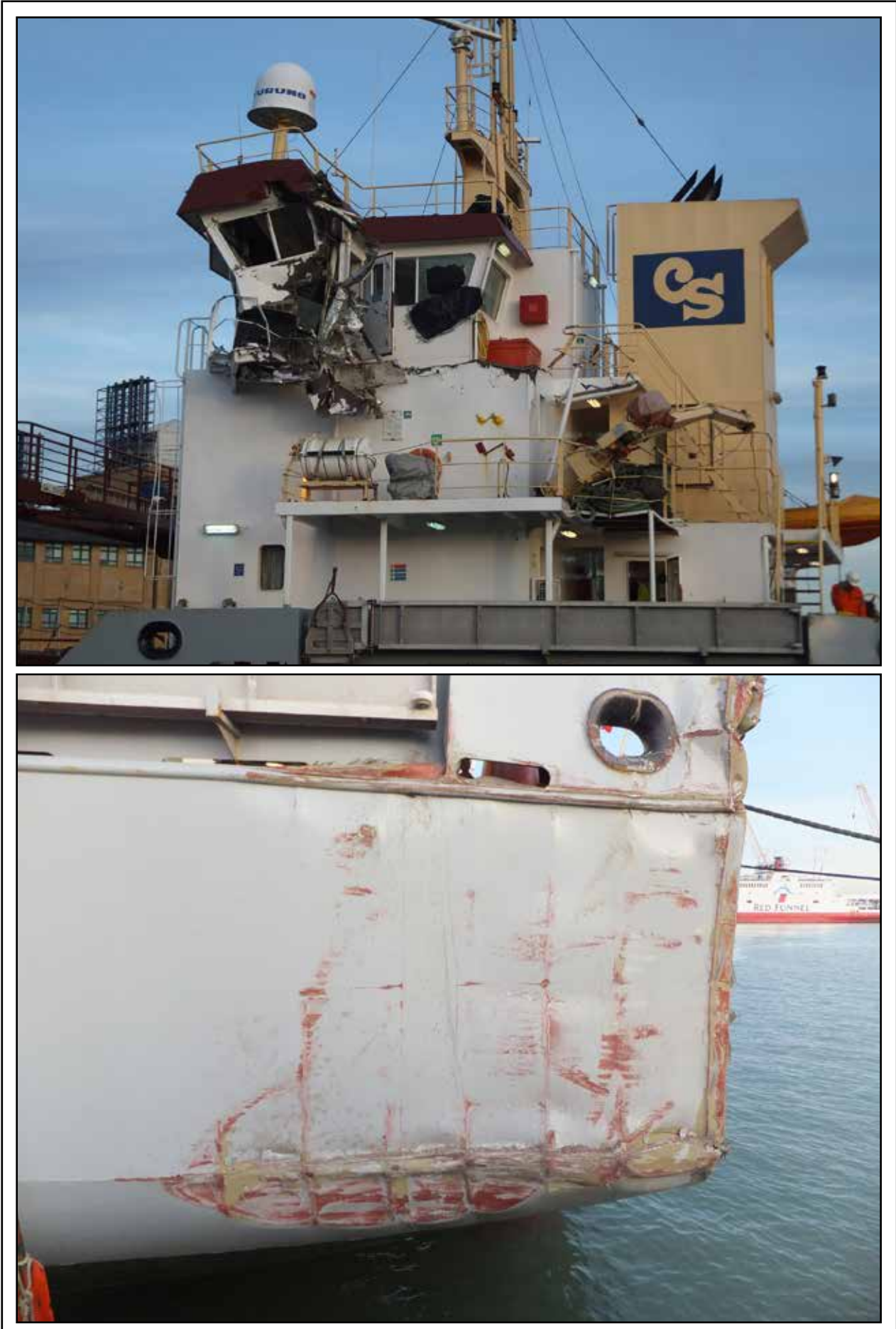


Figure 7: Damage to *Paula C*

- The railings on the port side of the accommodation were dented and partially removed.
- The port quarter poop deck and shell plating was dented and holed.

Temporary repairs were made to *Paula C* in Southampton. Permanent repairs were subsequently completed in Rotterdam, Netherlands.

Damage to *Darya Gayatri's* port bow comprised indentations and a 5m gash above the waterline in way of the forward void space (**Figure 8**). Permanent repairs were completed in Falmouth.

1.4 PAULA C

1.4.1 Ship management

Paula C was a UK registered general cargo ship. The vessel was managed by Carisbrooke Shipping Ltd, a privately owned shipping company based in Cowes, England. Carisbrooke Shipping Ltd managed a fleet of over 50 general cargo vessels which ranged in size from 3000gt to 20000gt. *Paula C* was one of its nine 3000gt vessels.

1.4.2 Key personnel

The master was 43 years old and a Russian national. He held a Russian STCW⁶ II/2 Certificate of Competency (CoC) and a Certificate of Equivalent Competency (CEC) issued by the United Kingdom's Maritime and Coastguard Agency (MCA) on 2 December 2013. He had sailed as master for 7 years and had completed four previous contracts with Carisbrooke Shipping Ltd on *Paula C* or vessels of the same class. He joined *Paula C* on 26 November 2013 for his second contract on board.

The second officer was 20 years old and a British national. He joined Carisbrooke Shipping Ltd in 2010 and served on board four of its vessels (*Andrea Anon*; *Paula C*; *Michelle C*; and *Klazina C*) as a cadet. During the second officer's sea time on board these vessels he completed a Merchant Navy Training Board (MNTB) training record book⁷ and accumulated 229 days of watchkeeping service. His sea time as a cadet was spent mainly in coastal waters or on short international trading routes. The second officer completed the shore elements of his cadetship at the Warsash Maritime Academy in the UK.

The second officer gained a UK STCW II/1 CoC (OOW unlimited) on 27 June 2013 after completing an oral assessment conducted by the MCA⁸. He joined *Paula C* as a supernumerary junior officer in August 2013 and had accompanied the vessel's second officer during his bridge watches. He did not keep any bridge watches by himself until after being promoted to second officer on 2 December 2013. Before

⁶ STCW - International Convention on Standards of Training, Certification for Watchkeeping for Seafarers 1995, as amended

⁷ MNTB guidance for cadets and ship managers on the use and completion of the training record book and on MCA qualification requirements is at **Annex A**.

⁸ To qualify as an OOW (STCW II/I) in the UK, deck cadets must complete the MNTB training record book to a satisfactory standard, pass the required academic examinations and have a record of their time at sea, which must include 6 months' bridge watchkeeping experience. Finally, a cadet must pass an oral examination with an authorised MCA examiner.



Image courtesy of Anglo Eastern Ship Management



Figure 8: Damage to *Darya Gayatri*

the accident, the second officer had kept ten 4 hour bridge watches as the sole watchkeeper, most of which were during *Paula C*'s passage from Spain to Germany. None of these watches occurred in the Dover Strait.

1.4.3 Bridge equipment

Paula C's bridge was fully enclosed (**Figure 9**). The controls for hand-steering, autopilot, steering pumps and the engine telegraph were located on a forward control console on the centreline. The navigational and communications equipment fitted on the bridge included two X-band radars with ARPA, an AIS and a GPS receiver. A Bridge Navigational Watch Alarm System (BNWAS) was also fitted, which was required to be reset every 12 minutes. The BNWAS was not connected to any navigational aids.

The AIS was adjacent to the port radar display and had a minimum keyboard display which showed the names, ranges and bearings of the nearest five vessels transmitting on AIS. The AIS was interfaced with both radar displays, which enabled AIS information transmitted by operator-selected vessels to be shown (**Figure 10**). It was the usual practice for *Paula C*'s OOWs to use the AIS data shown on the radar displays for collision avoidance. There were no onboard instructions or guidance regarding the use of AIS.

During the second officer's bridge watch on 11 December, the port radar display was set to north-up, in relative motion, and was showing target vectors and trails. The second officer set the range scale to 6nm and off-centred the display to the north-east in order to extend the area displayed ahead of the vessel. The starboard radar display was also switched on but was not used by the second officer; this display tended to be for the master's sole use.

A global maritime distress and safety system (GMDSS) station was located at the rear of the bridge on the starboard side. The station had numerous illuminated lamps. Blinds fitted to the aft bridge windows on the starboard side were kept closed in order to prevent the lights from the GMDSS equipment reflecting off the windows into the bridge.

1.4.4 Bridge watchkeeping routine

The master, second officer and the chief officer kept the 8 to 12, 12 to 4 and the 4 to 8 bridge watches respectively. The master was also available to assist either deck officer if required. In port, the chief officer and second officer worked 6 hours on duty, followed by 6 hours off duty in a two watch system; again the master was available as required.

The onboard safety management system (SMS) required that assistance be immediately available to the OOW. Section 3.9 of the SMS also specified that the crew's work and rest schedules should be adjusted to enable a lookout to be available for duties on the bridge during hours of darkness. In addition, Section 8.3 of the SMS also required that:

A lookout shall be posted during hours of darkness, when poor visibility is encountered, when in pilotage or confined waters and when high traffic density is encountered. Lookouts should be given sufficient instruction and information to enable them to keep a proper lookout. [sic]

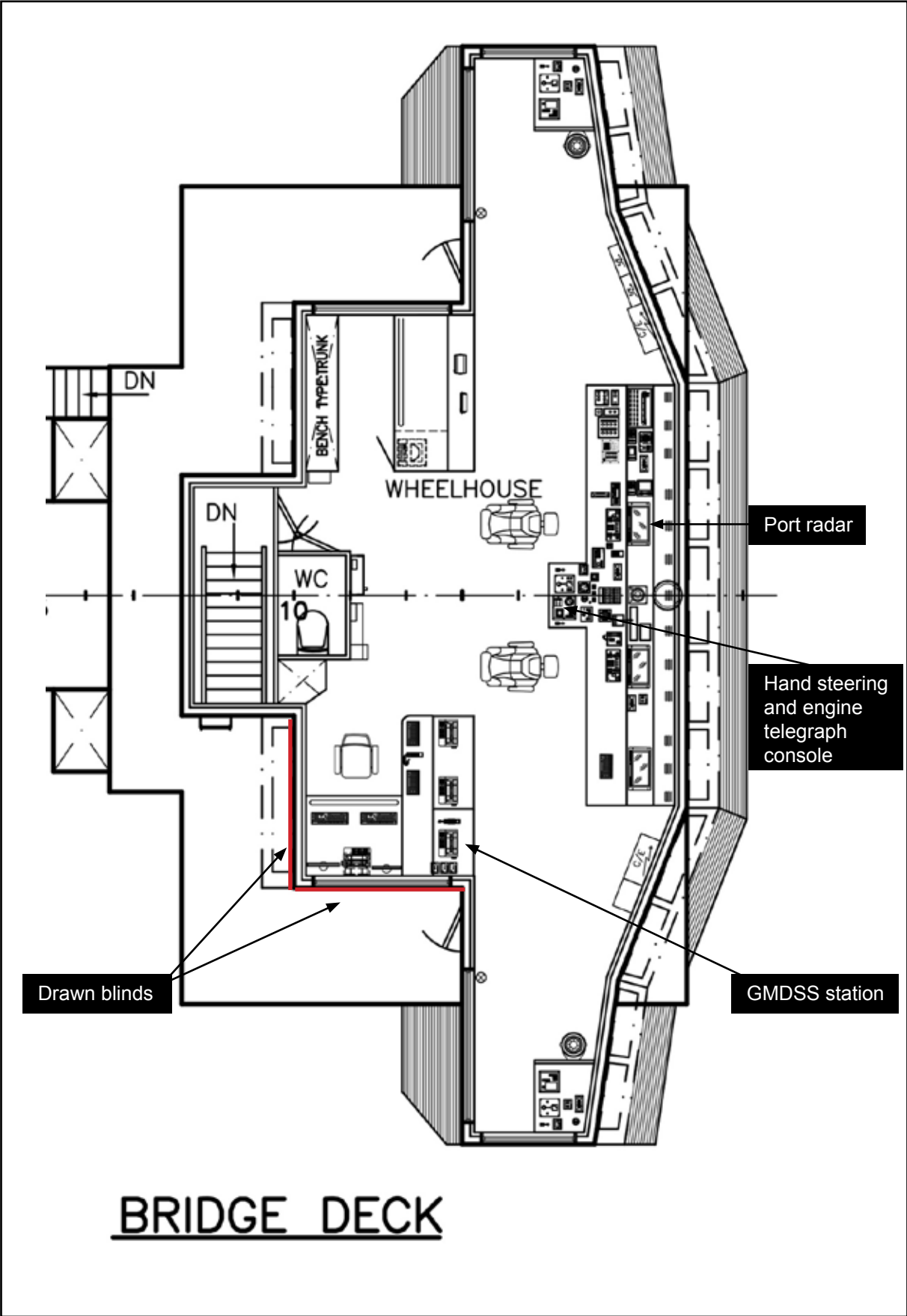


Figure 9: Paula C - bridge layout



Figure 10: AIS information on *Paula C*'s port radar display

Paula C's crew included three able seamen (AB), none of whom were allocated lookout duties. It was usual practice on board *Paula C* for the OOW to be the sole lookout during both daylight and darkness.

1.4.5 Manoeuvrability

Paula C was fitted with a high-lift rudder with a maximum angle of 45° to port or starboard. It was also equipped with two steering pumps. Both pumps were usually used in coastal waters or rivers, but only one pump was switched on when the vessel was in open water. At the time of the collision only one steering pump was in use.

Paula C's manoeuvring data was displayed on the bridge on a manoeuvring diagram. The information shown on the diagram illustrated the manoeuvring characteristics of the vessel using maximum helm to port and to starboard in both the loaded and ballast conditions.

The manoeuvring diagram showed that when *Paula C* was in ballast at a speed of 13.3kts, the vessel would advance 154m and transfer 195m during a 360° turn to starboard. The time taken to complete a 360° turn was 2 minutes and 15 seconds.

The manoeuvring diagram also provided data for a crash stop. The diagram indicated that from full sea speed to stop would take 3 minutes, during which time *Paula C* would travel 610m.

1.4.6 Master's orders

The orders written by *Paula C*'s master on the night of 10 December 2013 were:

10th December 2013

To follow MSO⁹, passage plan, COLREG¹⁰, to keep sharp lookout and hearing (Rule 5) The safe progress of the ship as planned should be monitored closely at all times. Report to the "Dover Coastguard" on VHF channel 11 when enter to VTS monitoring area. Take care for crossing traffic between "Sandettie SW" LB and "MPC" LB. If any doubt call the master immediately (B.13 BRG). Taken whatever action is necessary before the master arrives. Good Watch. [sic]

The master's standing orders specified that:

When altering course for another vessel do so boldly and in sufficient time to let any other vessel be in no doubt as to your intentions. If you are in any doubt as to another vessel's intentions on the port side with a steady bearing. Call the Master in sufficient time to assess the situation and if so required to take the necessary action. [sic]

1.5 DARYA GAYATRI

1.5.1 Ship management

Darya Gayatri was a Hong Kong registered bulk carrier. The vessel was managed by Anglo Eastern Ship Management based in Hong Kong, China. The company had numerous offices worldwide and managed more than 450 vessels.

1.5.2 Key personnel

The master was 43 years old and was an Indian national. He held an Indian STCW II/2 CoC and a CEC issued by Hong Kong's Marine Department on 20 December 2012. He had served as a master since 2005.

⁹ MAIB explanatory note: MSO – Master's Standing Orders

¹⁰ MAIB explanatory note: COLREGS - International Regulations for Preventing Collisions at Sea 1972, as amended

The second officer was 26 years old and an Indian national. He held an Indian STCW II/1 CoC issued in 2010 and had joined Anglo Eastern Ship Management as a third officer in 2010. He had served as a second officer on board bulk carriers for 13 months before he joined *Darya Gayatri* in August 2013 for a 6 month contract. This was his first time on board the vessel. The second officer had previously transited the Dover Strait on three or four occasions when in charge of a navigational watch.

1.5.3 Bridge equipment

Darya Gayatri's bridge was fitted with an integrated navigation and control system which included X and S band radar displays fitted with ARPA, an AIS and a BNWAS. The AIS was interfaced with both radar displays which enabled AIS information for operator-selected vessels to be shown on the displays, similar to the display on *Paula C* (**Figure 10**). *Darya Gayatri*'s second officer routinely used AIS data for collision avoidance. The onboard instructions for the use of AIS included "*There is no provision in the COLREGS for use of AIS information therefore decision should be taken based primarily on visual and/or radar information.*" [sic] The guidance also noted that AIS information may be useful in making decisions for collision avoidance but should be used with caution.

During the morning of 11 December 2013, the X-band and the S-band radar displays were set on the 6nm and 12nm range scales respectively. Both displays were north-up and off-centred to the north-east in order to increase the area of the radar coverage displayed ahead of the vessel. A 'C-Map' electronic chart system was carried for evaluation purposes, but the primary means of navigation was paper charts.

1.5.4 Bridge watchkeeping routine

The chief officer, the third officer and the second officer kept the 4 to 8, 8 to 12 and the 12 to 4 bridge watches respectively. In port, the second and third officers worked 6 hours on duty, followed by 6 hours off in a two watch system. The chief officer worked as required while the vessel was in port and the master was available to assist when necessary both at sea and alongside.

1.5.5 Manoeuvrability

Darya Gayatri was fitted with a spade rudder with a maximum angle of 35° to port or starboard. Onboard instructions specified that two steering pumps must be operated when the vessel was navigating in restricted waters. On the morning of 11 December 2013, one steering pump was in use.

Darya Gayatri's manoeuvring data was displayed on the bridge on a manoeuvring diagram. The diagram represented the turning characteristics of the vessel with maximum helm to port and starboard in both the loaded and ballast conditions.

The manoeuvring diagram showed that when proceeding in ballast at 15.6kts, *Darya Gayatri* would advance 709m and transfer 613m during a 360° turn to starboard. The time taken to turn a full circle was 9 minutes and 4 seconds.

The manoeuvring diagram also provided data for a crash stop. The diagram indicated that from full sea speed to stop would take 11 minutes and 30 seconds, during which the vessel would travel 2395m.

1.5.6 Master's orders

The orders written by the master during the evening of 10 December 2013 were:

10th Dec 2013 @2110hrs (UTC+1)

1. *Observe standing orders*
2. *Give wide berth to all traffic, min CPA 01'¹¹*
3. *Maintain proper lookout at all times*
4. *Course 220° (T) BA 1630*

A/C to 222°(T) in position 51°53.8'N 002°34.4E BA 1630, 2449

A/C to 204°(T) in position 51°26.6'N 001°55.0E BA 2449, 323

A/C to 225°(T) in position 51°12.8'N 002°45.0E BA 323

1. Call master as marked on BA 323
2. Report to dover coast guard as marked BA 323
3. Monitor/ plot EGC message and Navtex message
4. Maintain fire patrol
5. Call or consult me any time

Have a safe watch [sic]

The master noted on the vessel's chart BA 323 the positions at which the OOW was to call him. His standing orders also required that the OOW call him:

- *If in any doubt whatsoever;*
- *If the traffic conditions or the movements of other ships are causing concern;*
- *Any time a give way vessel on a constant or near constant compass bearing closes within fifteen minutes of established C.P.A [sic]*

1.6 CHANNEL NAVIGATION INFORMATION SERVICE

1.6.1 Purpose

The Channel Navigation Information Service (CNIS) was introduced in 1972 and provides a 24 hour radio and radar safety service for shipping within the Dover Strait. By collecting, recording and disseminating maritime information, the CNIS aims to provide the latest safety information to shipping in the CNIS area. CNIS is

¹¹MAIB explanatory note – 01' = 1nm

jointly provided by the UK and French Maritime authorities in Dover and Gris Nez respectively. In the UK, the MCA is responsible for the operation of CNIS, which it delegates to Dover Coastguard. The CNIS area is shown at **Figure 11**.

1.6.2 Mandatory reporting

A mandatory reporting system (CALDOVREP) for vessels over 300gt was introduced in the Dover Strait TSS in July 1999. This was in accordance with the requirements of Regulation 8-1 of Chapter V of the Safety of Life at Sea (SOLAS) Convention 1974. Under the scheme, all south-west bound vessels are required to report to Dover Coastguard no later than when crossing a line drawn from North Foreland Light (51°23'N;001°27'E) to the Belgian and French borders (51°05'N;002°33'E). The radar coverage of CNIS extends further than the reporting area and CNIS operators routinely monitor vessels in the area's approaches.

1.6.3 Vessel traffic service designation

Merchant Shipping Notice (MSN) 1796, issued by the MCA in April 2006, designated vessel traffic services (VTS) stations in the UK in accordance with the Merchant Shipping (VTS Reporting Requirements) Regulations 2004. This notice defined the level of service available to shipping operating in designated VTS areas. Annex A of MSN 1796 designated the CNIS as an 'information service' which it defined as:

- *'A service to ensure that essential information becomes available in time for on-board navigational decision making'*

1.6.4 V103 standard – message markers

The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) Recommendation V-103 sets the international standard for the training and certification for VTS personnel. Dover Coastguard watch officers complete mandatory training which includes the correct use of message markers and message formats. A message marker is a single word used by the operator to indicate to the officer on the vessel what the content of the following message will be. There are eight approved message markers, which are: Answer; Intention; Question; Warning; Advice; Information; Instruction; and Request.

1.6.5 Watch officer

The watch officer who called *Paula C* and *Darya Gayatri* via VHF radio before the vessels collided joined Dover Coastguard in 2006. He had previously worked in the coastal marine sector and was familiar with the Dover Strait. He had completed the mandatory VTS training courses in 2006.

1.7 JUNIOR OFFICER TRAINING AND ASSESSMENT

As part of its fleet manning strategy, Carisbrooke Shipping Ltd sponsored approximately 100 trainee officers (cadets) of differing nationalities including British, Ukrainian, Filipino, Polish, and Romanian. Once its deck cadets were qualified as OOWs, they were usually employed on board Carisbrooke Shipping Ltd's vessels as junior officers. The junior officers were initially placed on the same watch as a more experienced deck officer, usually the second officer, in order to gain more bridge watchkeeping and cargo experience. After a period of assessment, and with the

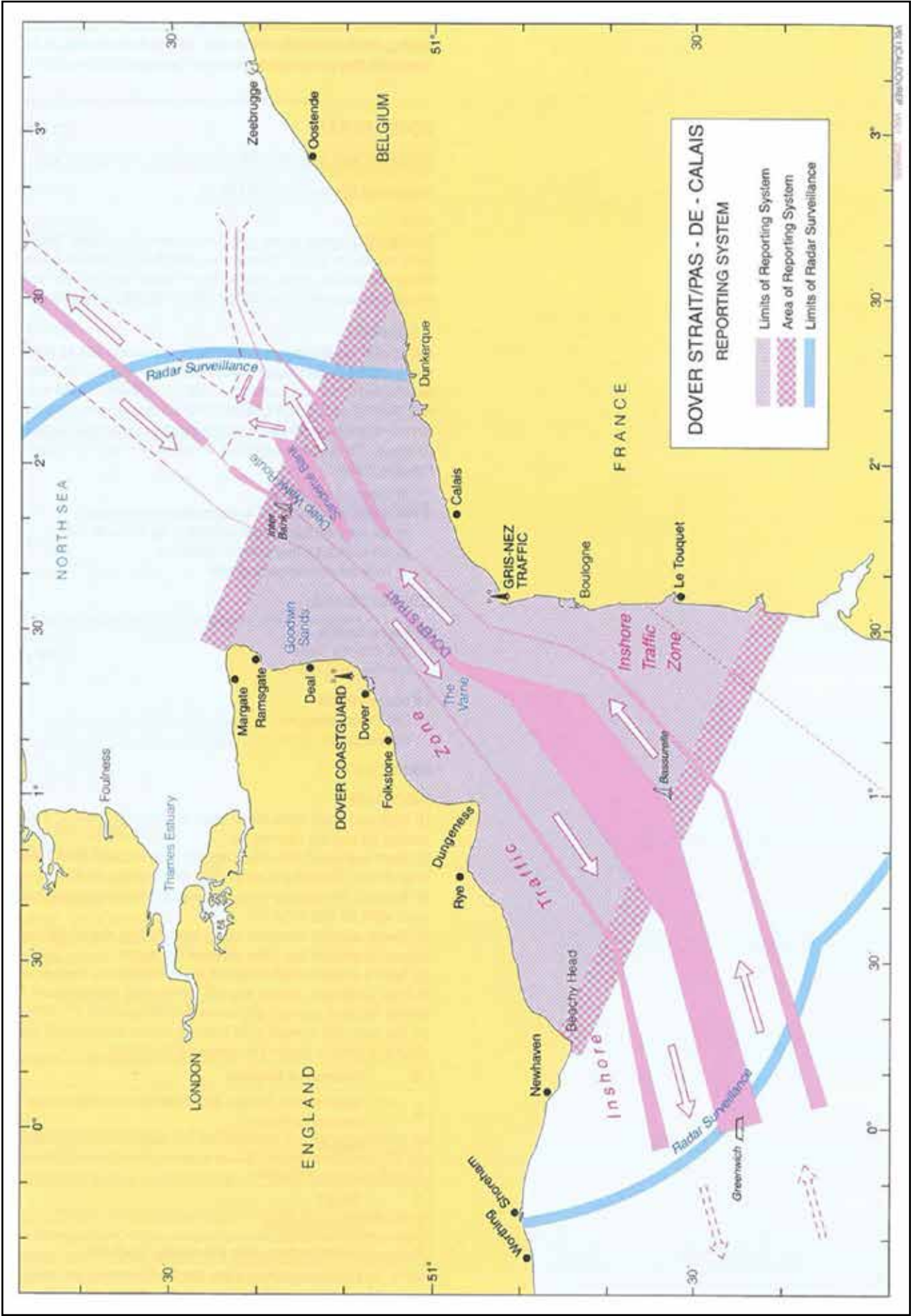


Figure 11: CNIS coverage

master's approval, the junior officer was promoted to second officer. Carisbrooke Shipping Ltd did not provide any guidance or procedures for its masters with regard to the training and assessment of newly qualified officers.

1.8 STCW 95 REQUIREMENTS

The STCW 95 states, inter alia:

- Chapter 1, Regulation I/14, Responsibilities of companies
 - 1 Each Administration shall, in accordance with the provisions of section A-I/14, hold companies responsible for the assignment of seafarers for service on their ships in accordance with the provisions of the present Convention, and shall require every such company to ensure that:*
 - .4 documentation and data relevant to all seafarers employed on its ships are maintained and readily accessible, and include, without being limited to, documentation and data on their experience, training, medical fitness and competency in assigned duties*
- Part A, Chapter VIII, - Watchkeeping, Part 4-1 - Principles to be observed in keeping a navigational watch
 - 17 In determining that the composition of the navigational watch is adequate to ensure that a proper lookout can continuously be maintained, the master shall take into account all relevant factors, including those described in this section of the Code, as well as the following factors:*
 - .1 visibility, state of weather and sea;*
 - .2 traffic density, and other activities occurring in the area in which the vessel is navigating;*
 - .3 the attention necessary when navigating in or near traffic separation schemes or other routeing measures;*
 - .4 the additional workload caused by nature of the ship's functions, immediate operating requirements and anticipated manoeuvres;*
 - .5 the fitness for duty of any crew members on call who are assigned as members of the watch;*
 - .6 knowledge of, and confidence in, the professional competence of the ship's officers and crew;*
 - .7 the experience of each officer of the navigational watch, and the familiarity of that officer with the ship's equipment, procedures, and manoeuvring capability.*

1.9 GUIDANCE

1.9.1 International Maritime Organization

The International Maritime Organization (IMO) provided guidelines for the use of AIS in its Resolution A.917 (22). These included, inter alia:

USE OF AIS IN COLLISION AVOIDANCE SITUATIONS

- 39. The potential of AIS as an anti collision device is recognised and AIS may be recommended as such a device in due time.*
- 40. Nevertheless, AIS information may be used to assist collision avoidance decision making. When using the AIS in the ship to ship mode for anti collision purposes, the following precautionary points should be borne in mind:*
 - a. AIS is an additional source of navigational information. It does not replace, but supports, navigational systems such as radar target tracking and VTS; and*
 - b. The use of AIS does not negate the responsibility of the OOW to comply at all times with the Collision Regulations*
- 41. The user should not rely on AIS as the sole information system, but should make use of all safety relevant information available.*
- 42. The use of AIS on board ship is not intended to have any special impact on the composition of the navigational watch, which should continue to be determined in accordance with the STCW Convention.*
- 43. Once a ship has been detected, AIS can assist tracking it as a target. By monitoring the information broadcast by that target, its actions can also be monitored. Changes in heading and course are, for example, immediately apparent, and many of the problems common to tracking targets by radar, namely clutter, target swap as ships pass close by and target loss following a fast manoeuvre, do not affect AIS. AIS can also assist in the identification of targets, by name or call sign and by ship type and navigational status.*

1.9.2 Maritime and Coastguard Agency

Marine Guidance Note (MGN) 324 (M+F) – Radio: Operational Guidance on the Use of VHF Radio and Automatic Identification Systems (AIS at Sea), published in 2006, includes the IMO guidelines contained in Resolution A917(22) above.

MGN 364 (M+F) Navigation: Traffic Separation Schemes – Application of Rule 10 and Navigation in the Dover Strait draws attention to the mandatory reporting scheme in the Dover Strait and makes recommendations to vessels operating in the TSS.

The MGN includes:

2.8 Vessels fishing within a Scheme are considered to be using the Scheme, and must comply with the general requirements set out in Rules 10(b) and (c), however, when fishing in a separation zone they may follow any course.

2.9 The requirement that vessels fishing must not impede the passage of traffic passing through a TSS, means that they must not operate in such a manner that neither they, nor their gear, seriously restricts the sea room available to other vessels within a lane, and must take early and substantial action to avoid any risk of collision developing. [sic]

2.10 Rule 10(f) places further obligations upon fishing vessels, with regard to their responsibility not to impede the passage of any vessel following a traffic lane, and fishing vessels are not relieved from this obligation in a developing situation where risk of collision may exist. When taking any action they must, however, take account of the possible manoeuvres of the vessel which is not to be impeded.

MGN 315 (M) Keeping a Safe Navigational Watch on Merchant Vessels, provides guidance for masters and officers in charge of a navigational watch, and specifies:

- *In certain circumstances of clear daylight conditions the Master may consider that the OOW may be the sole look-out.*
- *The officer of the watch should notify the master when in any doubt as to what action to take in the interests of safety.*

1.9.3 International Chamber of Shipping

The International Chamber of Shipping (ICS) Bridge Procedures Guide provides advice to the master and officers on safe navigation. Section 3.2.7 details the circumstances when the OOW should call the master. It states:

The OOW should notify the master, in accordance with standing orders or the bridge order book, when in any doubt as to what actions to take in the interests of safety

1.10 COLLISION REGULATIONS

The following COLREGS (**Annex B**) are particularly relevant to this accident and are summarised as follows:

- Rule 2 – Responsibility. This rule allows a departure from the collision prevention regulations when following the rules will not avoid immediate danger.
- Rule 5 – Lookout. This rule states that a lookout should be kept by all available means, visual and electronic, to assess the risk of collision.

- Rule 7 – Risk of Collision. This rule requires that all means possible, including radar, should be used to assess if a risk of collision exists as early as possible. Risk of collision is primarily determined by monitoring the compass bearing of an approaching vessel.
- Rule 8 – Action to Avoid Collision. This rule requires that any action taken to avoid a collision is positive, clear and made in ample time. Such action should not result in another close quarters situation.
- Rule 10 – Traffic Separation Schemes. This rule specifies the responsibilities between vessels operating in a traffic separation scheme.
- Rule 13 – Overtaking. This rule states that the overtaking vessel must keep out of the way of the vessel being overtaken.
- Rule 15 – Crossing Situation. When two power-driven vessels are crossing each other and there is risk of collision, the vessel which has the other on its own starboard side shall keep out of the way of the other and, if possible, avoid crossing ahead of the other vessel.
- Rule 16 – Action by the give-way vessel. Every vessel required to give way must take early and substantial action to keep well clear.
- Rule 17 – Action by the stand-on vessel. Where one of two vessels is to keep out of the way, the other vessel should maintain its course and speed. The stand-on vessel may take action to avoid collision as soon as it is apparent that the give-way vessel is not taking the required actions. When taking such action, a stand-on vessel should try to avoid altering course to port for a vessel on its own port side.
- Rule 34 – Manoeuvring and warning signals. Vessels in sight of one another are to warn other vessels of their intended movement by the use of sound and light signals.

1.11 SIMILAR ACCIDENTS

The number of collisions and hazardous incidents (which resulted in a HAZREP report being issued)¹² in the south-west traffic lane of the Dover Strait TSS recorded by Dover Coastguard between 2009 and 2013 is at **Table 3**. **Table 3** also shows the number of vessels that reported to CNIS on entering the area of the south-west traffic lane for which CNIS has responsibility.

¹² A HAZREP is a notification of an apparent breach of COLREGs other than rule 10. The data in the table represents both reported and unreported incidents. A reported incident is where a vessel makes a complaint about the conduct of another. An unreported incident is one in which two vessels are involved in an apparent close quarters situation where neither vessel makes a complaint about the other.

	2009	2010	2011	2012	2013
Hazardous Incident Reports	49	54	39	28	29
Collisions	0	1	2	1	2
Total of reporting vessels	39096	39125	39074	36804	35551

Table 5: Collisions and hazardous incidents in the south-west traffic lane of the Dover Straits TSS (Source: Dover Coastguard 2014)

The collision data has been collected from incidents involving merchant and/or fishing vessels. The total volume of reporting vessels include those vessels that are required to observe the CALDOVREP mandatory reporting system. The figures do not include fishing vessels and yachts which are not required to report to Dover Coastguard due to their size.

SECTION 2 - ANALYSIS

2.1 AIM

The purpose of the analysis is to determine the contributory causes and circumstances of the accident as a basis for making recommendations to prevent similar accidents occurring in the future.

2.2 THE COLLISION

2.2.1 Initial assessment

Paula C and *Darya Gayatri* were on passage in the south-west traffic lane of the Dover Strait TSS. At the start of his bridge watch, *Paula C*'s second officer was aware that *Darya Gayatri* was overtaking; he was expecting the bulk carrier to eventually pass down *Paula C*'s starboard side. Except for a planned course alteration at 2345, the second officer's watch had been uneventful until 0011, when he saw *Raquel* 20° off his vessel's starboard bow.

Paula C's second officer only saw the fishing vessel's port side light and its deck lights. Significantly, he did not see its green over white trawling lights at its masthead, which was possibly due to glare from the deck lights. Consequently, *Paula C*'s OOW categorised the vessel as a power-driven vessel rather than a vessel engaged in fishing.

It is evident that the OOW's categorisation of *Raquel* led him to assume that this was a crossing situation in which *Paula C* was the 'give way' vessel, and that *Raquel* was required to 'stand on' (COLREGs rules 15 and 16). In isolation, the OOW's incorrect assessment was not dangerous. The usual options of a course alteration to starboard and/or a reduction of speed were both viable. However, because the OOW did not monitor the situation closely, he did not realise that *Raquel* had already turned to the north-east when he altered *Paula C* to starboard towards a heading of 230° shortly after 0018.

Raquel had started to alter course to port at 0013. However, it is evident that over the next 5 minutes *Paula C*'s OOW did not see the trawler's heading change either visually, or by radar, ARPA or AIS. Therefore, the OOW was neither keeping a proper visual lookout, nor was he effectively using the electronic aids available. Although *Raquel*'s rate of turn was slow due to its fishing gear, given the time the fishing vessel was turning and the extent of the turn, the change of heading and/or COG would have been apparent on both the radar display and the AIS. Indeed, the fishing vessel's COG would potentially have been updated almost immediately on the AIS display.

2.2.2 The failure of the plan

It was only as *Paula C* steadied on a heading of 230°, that *Paula C*'s OOW saw that *Raquel* had altered course towards the north-east. This made no sense to the OOW. He did not understand why a power-driven vessel that had been crossing the traffic lane would manoeuvre in this way. Instead of *Raquel*'s bearing drawing to port and its CPA increasing, the CPA was still very close. The OOW's plan had not worked.

The subsequent significant fluctuations in *Paula C*'s heading between 0022:06 and 0023:35 (**Table 1**) and during the OOW's exchange with Dover Coastguard, strongly indicate that the OOW was not coping with the demands of the situation and that he did not know what to do. Therefore, when Dover Coastguard called *Paula C* on VHF radio and asked the OOW 'are you going to do a three sixty?' the OOW quickly interpreted this question as a suggestion, which he then readily adopted as his solution to the problem. It is highly unlikely that the OOW was considering such action before Dover Coastguard asked the question. It is also unlikely that, until the VHF exchange, the OOW was aware that the vessel that he was trying to avoid was a fishing vessel.

2.2.3 Loss of situational awareness

After *Paula C*'s OOW had finished his conversation with Dover Coastguard, he immediately applied 35° of starboard helm. The OOW clearly thought that it was safe to do so, possibly because the broadcast on VHF radio of his intention to turn to starboard was not challenged. He was oblivious to the proximity of *Darya Gayatri*, which was less than 600m off his vessel's starboard beam. The closed blinds on the aft starboard side of the wheelhouse also hampered the OOW's ability to keep an affective all round lookout.

It is evident that *Paula C*'s OOW's focus was on getting his vessel clear of the fishing vessel. In the process, he did not absorb or assimilate the information provided to him, such as the inference by Dover Coastguard that he should consider the proximity of *Darya Gayatri* or, subsequently, the stated intention of the bulk carrier's OOW to turn to port (**see Table 2**). By now, the OOW was probably not referring to the radar or AIS information and had suffered a complete loss of situational awareness such that he was unaware that *Paula C* was turning into the path of the bulk carrier. Indeed, it is apparent that he remained unaware of *Darya Gayatri*'s presence until the vessels collided.

2.2.4 Actions on board *Darya Gayatri*

Darya Gayatri's OOW was a relatively experienced second officer who was aware that his vessel was overtaking *Paula C* and that he was obliged to keep clear. It is also evident from his conversation with Dover Coastguard (**Table 3**) that he was also aware that *Raquel* was engaged in fishing and had altered course to clear the traffic lane.

When *Paula C* altered course to starboard shortly after 0018, *Darya Gayatri*'s OOW saw that the cargo ship would pass ahead of the bulk carrier at a distance of about 2 cables. However, although a CPA of 2 cables was considerably less than the minimum CPA of 1nm required by the master's night orders, the OOW neither took any action to increase the CPA, nor informed the master of the situation. Consequently, the OOW denied himself the benefit of the master's knowledge and experience at an early stage.

Nonetheless, it is evident that *Darya Gayatri*'s OOW was alert to the potential dangers as the distances between the bulk carrier, *Paula C* and *Raquel* quickly reduced. He listened to the VHF conversation between *Paula C* and Dover Coastguard and then responded quickly and stated his intention to turn to port when

he was called on the VHF radio. However, it is evident that the OOW's use of port helm was based on the assumption that *Paula C* would only start a round turn to starboard after passing ahead of his own vessel.

Given that the cargo ship was less than 600m off his port bow (approximately 240m off the bulk carrier's intended track), this was not an unreasonable assumption. Even though the cargo ship was highly manoeuvrable, any attempt to have turned inside the bulk carrier was unsafe. Therefore, although the alteration of course to port by *Darya Gayatri's* OOW was possibly imprudent as the vessels were so close, it was well intended; he did not know that *Paula C* was already turning quickly to starboard.

When *Darya Gayatri's* OOW eventually saw the cargo ship turning directly towards the bulk carrier, he immediately reversed the helm to starboard and momentarily put the engine telegraph 'astern'. Only then did the OOW call the master. By that time, given the manoeuvring characteristics of *Darya Gayatri*, the vessels were too close for collision to be avoided.

2.3 ACTIONS ON BOARD RAQUEL

MGN 364 (M+F) (**Paragraph 1.9**) read in conjunction with Rule 10 of the COLREGS (**Annex B**) makes it clear that a vessel fishing in the south-west lane of the Dover Strait TSS should either follow the general direction of the traffic flow in the lane, or cross the lane as near as practicable at right angles to the traffic flow. In this case, *Raquel* was fishing while crossing the lane with a COG of 153° when the predicted tidal stream was 225° at 2kts. Consequently, the fishing vessel would have been on a heading of approximately 129°. As the axis of the south-west lane where *Raquel* was fishing was 211°, *Raquel's* heading was within 8° of being at right angles to the flow of traffic.

The MGN also makes it clear that fishing vessels must take early and substantial action to avoid any risk of collision developing, taking into account the possible manoeuvres made by vessels transiting the traffic lane. As *Raquel* started to manoeuvre to the north-east at 0013 when *Paula C* was still at a distance of 3.4nm, the action was taken in reasonable time. Indeed, when *Paula C's* OOW altered course to starboard 5 minutes later, the fishing vessel had already turned 50° to port and was passing well clear. As a risk of collision no longer existed, there was no need for *Paula C* to take any avoiding action. Therefore, *Paula C's* alteration to starboard could not have been anticipated by *Raquel's* skipper.

2.4 OOW COMPETENCY

Competence is the ability to undertake responsibilities and to perform activities to a recognised standard on a regular basis. It is a combination of practical and thinking skills, experience and knowledge. In this case, although *Paula C's* OOW held an STCW II/I CoC, it is apparent from his actions during this accident that he was still very inexperienced and had not yet developed sufficient competency to keep a bridge watch in the Dover Strait at night by himself.

In particular, *Paula C's* OOW did not fully utilise the navigational equipment available. The AIS was not used to determine *Raquel's* identity or that it was engaged in fishing. Similarly, the ARPA's 'trial manoeuvre' function was not used

prior to the initial alteration of course to 230°. In addition, the OOW did not complete basic checks such as ensuring that the vessel's starboard side was clear before altering course, or ensuring that the next intended heading was clear.

More importantly, however, was the inability of *Paula C*'s OOW to accurately assess the situation after detecting *Raquel*. Although *Raquel*'s speed was less than 5kts, the OOW lacked the experience to consider the possibility that, as the vessel also had bright deck lights, it was a fishing vessel. He also did not take into account that fishing vessels are sometimes slow to take action when they are required to keep out of the way of other vessels. Consequently, when *Raquel* started to manoeuvre out of the traffic lane, the OOW was taken completely by surprise.

2.5 BRIDGE WATCHKEEPING ARRANGEMENTS

2.5.1 OOW

Since qualifying as an OOW in June 2013 and joining *Paula C* in August 2013, the second officer had been in charge of only 10 bridge watches. Therefore, he had not been tested in a variety of shipping situations. As the master had only known the second officer for about 2 weeks, it is astonishing that he was sufficiently confident of the OOW's abilities to entrust him with the bridge watch in the Dover Strait, one of the busiest shipping lanes in the world, at night and without a lookout for support.

The master's decision-making in this respect was contrary to the requirement of STCW 95 (**Paragraph 1.8**), regarding the principles to be observed in keeping a navigational watch. In particular, in deciding that the second officer should be the OOW while *Paula C* transited the Dover Strait, the master paid insufficient attention to the potential traffic density, the vessel's passage in a traffic lane, his limited knowledge of the second officer's professional competence, or the second officer's inexperience. In the circumstances, a revision of the bridge watchkeeping routine was warranted to ensure that the inexperienced second officer was supported by the master or the chief officer. Instead, the master treated the passage through the Dover Strait as if it were a passage in open water.

2.5.2 Additional lookout

It is implicit in MGN 315 (**Paragraph 1.9.2**) and clear in *Paula C*'s SMS (**Paragraph 1.4.4**) that an OOW should not be the sole lookout during the hours of darkness. However, it is evident that an additional lookout was rarely, if ever, employed on board *Paula C*, regardless of the circumstances.

Many masters and bridge watchkeepers interviewed by the MAIB in recent years have considered the employment of deck ratings on the bridge as an additional lookout to be a waste of time, even during darkness or in busy shipping areas. In many cases where they are used, their presence is seen as a token gesture aimed at meeting regulatory requirements at the expense of deck maintenance and other tasks. Others simply prefer to keep watches alone.

In this case, had one of *Paula C*'s three ABs accompanied the second officer on the bridge as an additional lookout, he could possibly have helped him to identify that *Raquel* was turning, check the starboard side was clear before altering course, monitor *Darya Gayatri* and take the helm when required. In short, an additional

lookout could have assisted the OOW in his duties and helped him to maintain his situational awareness. After the collision, the OOW could also have sent the lookout to make sure that the master was safe rather than leave the bridge unattended.

2.6 INTERVENTION BY DOVER COASTGUARD

It is evident from the Dover Coastguard watch officer's VHF call at 0023 (**Table 2**) that he had seen *Paula C*'s alteration of course to starboard at 0018, and that he was alert to the erratic nature of the cargo ship's movements (**Table 1**). Although *Paula C*, *Darya Gayatri* and *Raquel* were outside the CNIS area of responsibility (**Figure 11**), the watch officer's intervention was timely and appropriate given the uncertainty of the situation.

However, the question addressed to *Paula C*'s OOW, of 'are you going to do a three sixty?' was extremely influential. Although the coastguard intervention was well intended, it almost certainly prompted *Paula C*'s OOW to alter into the path of *Darya Gayatri* when he did.

On most occasions, the terms used by the watch officer would not normally be so influential. More experienced OOWs would not only have had a plan of action of their own, but they would also have been likely to have better situational awareness. Nonetheless, the possibility of ambiguity and loss of meaning in VHF exchanges always exists and, while the use of message markers by VTS operators can be rather formal and impersonal, they undoubtedly help to ensure accuracy. Had the watch officer simply asked *Paula C*'s OOW 'what is your *intention*' it is likely that the OOW's reply would have made his uncertainty apparent to both the watch officer and *Darya Gayatri*'s OOW.

2.7 JUNIOR OFFICER DEVELOPMENT

When *Paula C*'s second officer joined the ship in August 2013, he had recently finished his cadetship and had been awarded an STCW II/I CoC. During his cadetship, he had accumulated 229 hours of bridge watchkeeping experience, completed an MNTB training record book (**Annex A**) and he had successfully met the academic requirements of his training at Warsash Maritime Academy. The award of an STCW II/1 CoC also required the officer to successfully pass an oral examination administered by the MCA. Therefore, by the time the second officer joined *Paula C*, he was qualified and adequately prepared to start his career as an OOW.

Nonetheless, the second officer was still only 20 years old. Carisbrooke Shipping Ltd recognised his inexperience and initially appointed him to *Paula C* as a supernumerary junior officer. This was intended to enable the young officer to gain more bridge watchkeeping experience before taking over as the ship's navigator. However, although the newly qualified officer spent 3 months watchkeeping on board, during this period he was not given the conn. The 3 months he spent watchkeeping on board *Paula C* were probably little different to the time he had spent understudying bridge watchkeepers during his cadetship, which did not prepare him effectively to stand a watch alone.

Significantly, because the newly qualified officer kept his watches alongside the second officer, another relatively junior officer on board, it is unlikely that the second officer would have sufficient confidence to allow the supernumerary officer to 'take

the watch'. Moreover, there would have been few opportunities for the master or chief officer to pass on the benefits of their greater experience, or for the master to oversee and assess the progress of the junior officer.

Although Carisbrooke Shipping Ltd did not provide any onboard guidance covering the junior officer's development or assessment, it is evident from the circumstances of this case that the ship manager's training and development of its junior officers warrants a more structured approach. The provision of, among other things, instructions and guidance on employment, continuation training, methods of assessment, and feedback on junior officers would not only provide ship's masters and junior officers with a common benchmark, but it would also help to satisfy some aspects of the requirements of STW 95 regarding the maintenance of records of training and competency (**Paragraph 1.8**).

2.8 WATCHKEEPING PRACTICES

2.8.1 Calling the master

The requirement for an OOW to call the master '*when in any doubt*' is ubiquitous in masters' orders. Indeed, both *Paula C's* and *Darya Gayatri's* masters wrote the requirement in their night orders before going to bed prior to the collision. Calling the master when in any doubt is also included in the guidance and instructions given in numerous references including STCW, MGN 315 (M) and the ICS Bridge Procedures Guide. However, as in this case, OOWs frequently do not call the master until it is too late for their presence to be effective, if they call them at all.

Paula C's OOW was clearly 'in doubt' when he saw that *Raquel* had unexpectedly manoeuvred and remained on a near-steady bearing. It is possible that he did not call the master because he was newly qualified and was keen to impress. However, it is also possible that *Paula C's* OOW did not want to disturb the master, who was also a watchkeeper and had recently gone to bed, or that he simply forgot when under pressure in the heat of the moment.

Similarly, *Darya Gayatri's* OOW must have been uncertain about *Paula C's* movements after its CPA reduced to about 2 cables ahead of the bulk carrier. However, he also did not call his master until a collision was imminent, despite the fact that the master clearly expected to be on the bridge for part of the Dover Strait transit as indicated by his notes on the paper chart. Although *Paula C's* CPA was relatively small and was within the 1nm minimum CPA specified by the master in his night orders, *Darya Gayatri's* OOW had been confident that he had the situation under control.

With hindsight, had both OOWs called their masters as they were instructed, it is highly likely that they would have intervened, and the collision between *Paula C* and *Darya Gayatri* would have been avoided. To be effective, a master's order to call 'if in any doubt' needs to be meaningful and followed, not just written.

2.8.2 AIS in collision avoidance

Both *Paula C's* and *Darya Gayatri's* OOWs used AIS rather than ARPA for collision avoidance. However, the system was not used to its full potential. In particular, *Paula C's* OOW did not use AIS to identify *Raquel* or that *Raquel* was engaged in fishing. Had he done so, his assessment of the situation might have been different.

It is also evident that *Paula C*'s OOW did not use the AIS information available to closely monitor the fishing vessel's heading before he took avoiding action. As soon as the fishing vessel started to alter course, albeit in incremental steps, it would have transmitted dynamic AIS data every 4 seconds. Consequently, changes in the fishing vessel's heading would have been reflected and updated faster on the AIS display than by ARPA due to the time taken to process the radar data.

The guidance issued by the IMO and the MCA regarding the use of AIS in collision avoidance (**Paragraph 1.9**) highlights its advantages and disadvantages. As OOWs will inevitably use AIS to some degree, a balance needs to be struck between over-reliance and effective use. To achieve such a balance, it is important that OOWs are fully aware of the system's capabilities and limitations. It is also important that ship owners and managers provide clear instructions on the use of AIS and that such instructions are followed.

2.8.3 Sound signals

In recent years, the use of sound signals by masters and OOWs, to indicate their intentions and actions when manoeuvring in close proximity to other vessels, has reduced significantly. Frequently, the use of sound signals is now limited to pilotage waters. The advent of enclosed bridges, VHF radio, radar, ARPA and AIS have all impacted on the use of ships' whistles/sirens, and many OOWs now appear reluctant to make a sound signal for fear of disturbing the crew on board or people ashore.

Given that *Paula C* and *Darya Gayatri* were within 600m of each other when *Paula C* turned towards *Darya Gayatri*, and when *Darya Gayatri* started to turn to port, the vessels were sufficiently close for sound signals to be heard. It cannot be certain whether the use of sound signals by either *Paula C* or *Darya Gayatri* or both would have alerted either OOW in sufficient time for successful avoiding action to have been taken. Nonetheless, had the OOW on *Darya Gayatri* sounded two short blasts on his vessel's whistle/siren when he altered the vessel's course to port, or five or more short blasts once he became uncertain as to the intentions of *Paula C*'s OOW, the latter might well have been alerted to the impending danger in time to take effective action.

SECTION 3 - CONCLUSIONS

3.1 SAFETY ISSUES DIRECTLY CONTRIBUTING TO THE ACCIDENT THAT HAVE BEEN ADDRESSED OR RESULTED IN RECOMMENDATIONS

1. After sighting the beam trawler *Raquel* at 0011, *Paula C*'s OOW assessed the vessel to be a power-driven vessel rather than a vessel engaged in fishing. He also assessed that *Paula C* was the 'give way' vessel. [2.2.1]
2. Although *Raquel* had started to alter course at 0013 in order to clear the traffic lane and avoid impeding the safe passage of *Paula C* and *Darya Gayatri*, this alteration was not seen by *Paula C*'s OOW for over 5 minutes. [2.2.1]
3. *Paula C*'s OOW was neither keeping a proper visual lookout, nor effectively using the electronic aids available. [2.2.1]
4. Only after *Paula C* had altered course to starboard shortly after 0018 in order to avoid *Raquel*, did its OOW see that the trawler had also altered course. The OOW's plan had not worked and he was unable to cope. [2.2.2]
5. The intervention on VHF radio by the CNIS watch officer was timely, appropriate and well-intended. However, because of the language used, it unintentionally influenced the decision-making of *Paula C*'s OOW and prompted him to turn towards *Darya Gayatri*. [2.2.2, 2.6]
6. *Paula C*'s OOW suffered a complete loss of situational awareness. He was unaware of the proximity of *Darya Gayatri* until the vessels collided. [2.2.3]
7. It is apparent from the inability of *Paula C*'s OOW to make sense of *Raquel*'s actions and his total loss of situational awareness, that he was still very inexperienced and that he had not yet developed sufficient competency to keep a bridge watch in the Dover Strait at night by himself. [2.4]
8. *Paula C*'s OOW had been in charge of only 10 bridge watches and the master had only known him for about 2 weeks. Therefore, it is astonishing that the master was sufficiently confident of the OOW's abilities to entrust him with the bridge watch in the Dover Strait. [2.5.1]
9. A revision of the bridge watchkeeping routine was warranted on board *Paula C* to ensure that the inexperienced OOW was supported by the master or the chief officer. Instead, the master treated the passage through the Dover Strait no differently than a passage in open water. [2.5.1]
10. Although it was dark, *Paula C*'s OOW was the sole lookout. An additional lookout was rarely, if ever, employed on board the vessel. [2.5.2]
11. Although the newly qualified OOW on board *Paula C* spent 3 months watchkeeping on board before being promoted to second officer, during this period he was not given the conn, which did not prepare him effectively to stand a watch alone. Therefore, his time on board was probably little different to the time he had spent understudying bridge watchkeepers during his cadetship. [2.7]

12. *Paula C's* ship manager's training and development of its junior officers warrants a more structured approach. [2.7]
13. Neither *Paula C's* nor *Darya Gayatri's* OOW called their masters as they had been instructed. Had they done so, it is highly likely that they would have intervened and the collision between *Paula C* and *Darya Gayatri* would have been avoided. [2.2.4, 2.8.1]

3.2 OTHER SAFETY ISSUES DIRECTLY CONTRIBUTING TO THE ACCIDENT

1. *Paula C's* OOW did not use AIS to its full potential. As OOWs use AIS for collision avoidance to varying degrees, there is an onus on ship managers and masters to ensure that their bridge watchkeepers are fully aware of both the capabilities and limitations of the system. [2.1, 2.8.2]
2. Neither *Paula C's* nor *Darya Gayatri's* OOW made any sound signals when manoeuvring when their vessels were in close proximity. [2.8.3]

SECTION 4 – ACTION TAKEN

4.1 ACTIONS TAKEN BY OTHER ORGANISATIONS

Carisbrooke Shipping Ltd has:

- Reviewed its training system and has adopted a more structured approach to the training and development of junior officers which requires, inter alia:
 - A progress assessment to be forwarded to the company's personnel manager each month.
 - The junior officer to 'take charge' of the watch with the master or other more senior officer remaining in the background to monitor and provide guidance and further training where necessary.
 - The junior officer to keep bridge watches with the master (8 weeks), the chief officer (4 weeks) and the second officer (4 weeks).
 - Priority to be given to bridge and cargo watches over other work.
- Issued instructions on the use of additional lookout, AIS and VHF for collision avoidance.

Anglo Eastern Ship Management has:

- *"Arranged for the second officer to complete a bridge watchkeeping and collision course". [sic]*

The Merchant Navy Training Board has:

- Started to prepare draft guidance for companies and seagoing officers covering junior officer development and confidence building. The document will be aimed at companies employing newly qualified officers and it is intended to outline suitable and appropriate planned experiences during the first few months a junior officer is at sea. It is anticipated that the guidance will be available by March 2015.

The Maritime and Coastguard Agency has, inter alia:

- Reminded all CNIS operators of the requirement to make use of the approved vocabulary contained in the CNIS instructions and Standard Marine Communications Phrases.
- Initiated a series of VTS based exercises which are being conducted at Dover on a regular basis by all watches to ensure that VTS operators are exposed to a range of simulated situations.
- Implemented a system to review all VTS incidents and hazardous occurrences.

SECTION 5 - RECOMMENDATIONS

In view of the actions already taken, no recommendations have been made.

Guidance for use and completion of the MNTB training record book and
on the Maritime and Coastguard Agency requirements

Section 1

Guidance for the use and completion of the Training Record Book and on Maritime and Coastguard Agency requirements

1.1 The Training Record Book and On-board training

Purpose of the Training Record Book

This Training Record Book (TRB) is published by the Merchant Navy Training Board (MNTB) and approved by the Maritime and Coastguard Agency (MCA) for use by officer trainees undertaking on-board training required as part of MNTB/MCA approved national training programmes or schemes leading to a deck officer of the watch certificate of competency.

Properly used during the required periods of qualifying sea service the TRB will ensure that the officer trainee receives systematic practical training and experience in the tasks, duties and responsibilities of an officer in charge of a navigational watch, and enable a comprehensive record of practical training and experience to be maintained. Duly completed it will provide unique evidence that a structured programme of on-board training meeting MCA requirements has been undertaken, which will be taken into account by the MCA in the process of evaluating competence for the issue of a certificate of competency.

On-Board Training

A properly planned and supervised programme of on-board training is of prime importance in the development of the skills, knowledge and experience needed by future officers.

The quality and effectiveness of on-board training depends in large measure on the extent to which it is planned, structured and supervised to make best use of the time available, and to make it as productive and enjoyable as possible. In other words, successful training does not just depend on time but is measured by what is achieved in that time. Appropriate periods should be set aside for on-board training and learning within the normal operational requirements of the ship.

Training Programmes and Schemes

On-board training is an integral part of a wider structured training programme or scheme, which includes university/college based studies, ancillary training or short courses in safety and technical subjects, and a minimum sea service requirement, which together meet MCA requirements for certification.

The employing or sponsoring company or organisation (hereinafter referred to as the 'company') will provide each officer trainee with details of the programme or scheme being followed, which should be placed in the TRB at the end of Section 2. These will include the sea service requirement for the particular programme or scheme, and any variations to the requirements of the TRB arising from previous qualifications or experience that the officer trainee may have.

On-board training should be progressive and matched to the level of study, training and experience already reached, both at university/college and in relation to the number and range of TRB tasks previously completed.

Use of the Training Record Book

A range of tasks is contained in Section 4 to give direction to the training and experience gained on board and to guide the officer trainee in gathering the evidence of performance required by the MCA for certification.

Subject to any variations to the requirements of the TRB arising from previous qualifications or experience which the officer trainee may have, on-board training should generally start with those tasks where the normal level of responsibility is associated with working under the direction of qualified personnel (i.e. 'contribute' to operations). As experience is gained tasks and duties should be undertaken where the level of responsibility is associated with serving as officer in charge of a watch and maintaining direct control of activities in accordance with proper procedures under the direction of a senior officer or Master (i.e. 'control' operations).

After the early stages of sea service it will be necessary for the officer trainee to undertake sufficient bridge watchkeeping duties to enable the development of navigational knowledge and skills, and completion of related tasks. At least 6 months of the last 12 months sea service must be spent on duties associated with navigational bridge watchkeeping under the supervision of a certificated deck officer.

The ship should issue a steering certificate, which is required for the EDH certificate, to officer trainees completing the task relating to steering (B01.4).

Completion of on-board training

Officer trainees should complete all tasks by the end of their training programme or scheme, unless the ship type on which sea service is completed or the nature of the trade in which the ship is engaged prevent this. As part of the TRB, a Navigation and Operations Workbook must be kept, to record relevant aspects and events arising from day to day duties. This will provide supporting evidence to the MCA for Notice of Eligibility purposes. Any omissions to the TRB will have to be justified to the MCA before entry to the examination for deck officer of the watch certification. In exceptional circumstances the MCA may require additional sea service to be undertaken to complete outstanding tasks.

National Occupational Standards

National Occupational Standards (NOS) define in generic terms the levels of knowledge and performance required for a particular occupational function, role or activity, and are used as the basis for developing detailed knowledge, training and qualification requirements. As the same function, role or activity may be performed in a number of different situations (e.g. merchant vessels, fishing vessels, vessels of limited size and power and area of operation) the detailed knowledge, training and qualification requirements will vary according to the particular application, although the generic standard applies to all applications. Marine NOS relevant to the deck officer of the watch function are contained in Section 5 for information and reference. Their use in relation to the TRB is explained elsewhere in the section Guidance for Masters, Officers and Company Training Officers.

Responsibilities

It is the responsibility of the officer trainee to ensure that the TRB is properly maintained and completed.

It is the responsibility of the Master and other staff on board, as described elsewhere in the TRB, to manage and supervise the on-board training, sign off tasks when they have been properly completed, and maintain reports on the trainee officer's progress.

As well as meeting MCA requirements, the TRB will assist companies and universities/colleges in monitoring that the progress expected at different stages of the programme has been achieved.

1.2 Guidance for the Officer Trainee

Responsibilities and Support

The TRB is an important document. You are personally responsible for its upkeep and safekeeping during the entire period of training.

If you have any difficulty completing the TRB you should contact the Master, Designated Shipboard Training Officer (DSTO), or Company Training Officer (CTO) for advice and guidance at an early stage. You must avoid getting into a situation where your on-board training falls behind schedule as this may lead to you being required to undertake additional sea service to complete outstanding tasks.

Training Programmes and Schemes

You will be provided by the company with details of the training programme or scheme being followed, which should be placed in the TRB at the end of Section 2. These will include any variations to the requirements of the TRB arising from previous qualifications or experience that you may have.

Training Record Book (TRB) Task Planning

Throughout your training you should be aware of two identifiable individuals who are immediately responsible for the management of your training, i.e. the DSTO and the CTO. In some circumstances the Master may also be the DSTO, and the job title of the person responsible in the company shore office may be different from that of CTO. Where signatures and reports are required from both the Master and DSTO in the TRB, only one signature or report is required in each case if the Master is also the DSTO. References to the CTO in the TRB include any other persons with different job titles in the company shore office who are responsible for your training.

Specific guidance for Masters, Officers and CTO's who will be involved in your training on board, and who will sign or complete various parts of the TRB, is contained elsewhere in this section.

Tasks include the Main Tasks in Section 4, the Priority, familiarisation and safety Tasks in Section 3.1, and the International Regulations for Preventing Collisions at Sea as listed in Section 2.6.

You should discuss your training with the DSTO at an early stage of each voyage. The practical training undertaken at sea must be planned and structured in a way that enables you to acquire and practise skills and to demonstrate your proficiency in a range of tasks as contained in Section 4. An important factor is that this should be on a progressive basis, each task building on those that have already been completed, both on previous ships and during the current voyage. You should be given full information and guidance as to what is expected of you and how the training is to be organised.

Navigation and Operations Workbook

You will need to keep a Navigation and Operations Workbook in which you should record all calculations, observations, events and activities arising from your duties on the vessel, with the date, time and context in which they are made. The navigation and operations workbook is an integral part of the TRB. General guidance is provided in Section 6 and your programme or training scheme will identify specific

detail and guidance for completion. Ensure you take the detail from your training provider (college/university) with you when you set off for your first sea voyage.

Maintaining the Training Record Book (TRB)

- **Section 2 – Personal and Contact Details and Records of Progress and Achievement**

This section contains provision for recording –

- Personal details
- Company details
- Ancillary or additional training certificates achieved
- Sea service completed
- Training tasks completed
- Progress in learning the International Regulations for Preventing Collisions At Sea
- Training programme or scheme being followed

Upon receipt of the TRB you should complete as much as possible of the information required, keeping it up to date as your training progresses and not wait until the end of a voyage to do so.

In particular, you should update the task summary chart on a weekly basis, to provide an overview of your progress and experience achieved to date. This applies equally to the progress made with learning the Regulations for Preventing Collisions at Sea.

- **Section 3 – Ship and Voyage Details, Requirements and Records**

This section contains provision for recording –

- Completion of Priority, Familiarisation and Safety Tasks
- Particulars of ships
- Designated Shipboard Training Officer's (DSTO) reviews of progress
- Master's reviews of progress
- Company Training Officer's (CTO) inspections of progress
- Sea service testimonials
- Specimen signatures of officers and other experienced staff authorised to sign off tasks

Priority, familiarisation and safety tasks should be signed off as soon as possible after joining each ship.

You should complete the ship's particulars early on in the voyage for each ship.

The Master and DSTO will review your progress on a monthly basis. It is advised that set times should be agreed when you prepare and hand in the TRB for inspection. Establishing a routine will save time and ensure an efficient process.

The CTO's inspections of the TRB will usually take place during ship visits, during university/college phases, at company offices, or elsewhere as advised by the CTO.

Before leaving a vessel it is imperative that you obtain signed sea service testimonials for the voyage from the Master(s). It is usually difficult, and sometimes impossible, to obtain testimonials after personnel have left a ship.

Details and specimen signatures of those signing off your tasks must be entered. The MCA examiner will not be able to accept any signed off tasks for which this information has not been provided.

The various summary sheets and records in this section provide essential evidence for MCA certification. They must be completed for each ship. You have been provided with 3 sets of these ship details, two of which you can use for completion purposes and one that you can photocopy, as required, depending on the number of ships which you will actually be on during your sea service throughout your training.

- **Section 4 – Training Tasks**

You should familiarise yourself with the tasks and duties which are to be undertaken during the voyage as discussed with the DSTO.

Tasks are signed off at two levels. The first is that progress is being made towards proficiency, and the other is that proficiency has been achieved. You should present tasks for signature to the appropriate person when either of the two stages has been reached.

On completion of the task relating to steering (B01.4) you should be issued with a steering certificate by the ship, which is required for the EDH certificate.

You should complete all tasks by the end of your training programme or scheme, unless the ship type on which you complete sea service or the nature of the trade in which the ships are engaged prevent this. Any omissions will have to be justified to the MCA before entry to the examination for deck officer of the watch certification. In exceptional circumstances the MCA may require additional sea service to be undertaken to complete outstanding tasks.

- **General**

You will need to present your TRB for final signatures and updating in good time before leaving the vessel and well before arrival at the last port, otherwise the opportunity to record training completed during the later stages of a voyage may be lost. When those personnel who sign off tasks leave a ship during the course of a voyage you should ensure any outstanding signatures and reports from those personnel are obtained before they leave the ship.

1.3 Guidance for Masters, Officers and Company Training Officers

General

Please refer to the guidance at the start of this section about the importance of properly planned and structured on-board training, documented in the Training Record Book, as an essential and integral part of a wider training programme or scheme, which includes university/college based studies, ancillary training or short courses in safety and technical subjects as well as a minimum sea service requirement that together meet MCA requirements for certification.

General guidance on the use of the TRB and completion of on-board training can also be found at the start of this section.

Planning and Supervision of On-Board Training

Officer trainees should be aware of two identifiable individuals who are immediately responsible for the management of their training on board. The first of these is a qualified seagoing officer referred to as the Designated Shipboard Training Officer (DSTO) who, under the authority of the Master, should organise and supervise the programme of training for the duration of each voyage. The second is a person nominated by the company referred to as the Company Training Officer (CTO) who should have overall responsibility for the training scheme and for co-ordination with shore-based educational and training establishments.

As soon as possible after officer trainees join a new ship –

- detailed information and guidance should be given to them as to what is expected of them, how their training on board is to be organised, and who is immediately responsible for it;

and

- the Task Summary Chart and details of the programme or scheme being followed, both contained in Section 2 of the TRB, should be inspected to gain an overview of progress to date and to facilitate the arrangements for an officer trainee's duties, so that experience can be developed and tasks completed within the operational requirements of the vessel.

Training Programmes and Schemes

Before officer trainees join their first ship whilst following a training programme or scheme, the CTO should have provided each officer trainee with details of the programme or scheme being followed, which should be placed by the officer trainee in the TRB at the end of Section 2. This information should include at least:

- Programme or scheme title
- Main qualifications to be achieved
- Sea service requirement
- University or college providing the college phases

Extracts from the International Regulations for Preventing Collisions at Sea 1972, as amended

Rule 2

Responsibility

(a) Nothing in these Rules shall exonerate any vessel, or the owner, master or crew thereof, from the consequences of any neglect to comply with these Rules or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.

(b) In construing and complying with these Rules due regard shall be had to all dangers of navigation and collision and to any special circumstances, including the limitations of the vessels involved, which may make a departure from these Rules necessary to avoid immediate danger

Rule 5

Look-out

Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision.

Rule 7

Risk of collision

(a) Every vessel shall use all available means appropriate to the prevailing circumstances and conditions to determine if risk of collision exists. If there is any doubt such risk shall be deemed to exist.

(b) Proper use shall be made of radar equipment if fitted and operational, including long-range scanning to obtain early warning of risk of collision and radar plotting or equivalent systematic observation of detected objects.

(c) Assumptions shall not be made on the basis of scanty information, especially scanty radar information.

(d) In determining if risk of collision exists the following considerations shall be among those taken into account:

(i) Such risk shall be deemed to exist if the compass bearing of an approaching vessel does not appreciably change;

(ii) Such risk may sometimes exist even when an appreciable bearing change is evident, particularly when approaching a very large vessel or a tow or when approaching a vessel at close range.

Rule 8

Action to avoid collision

(a) Any action taken to avoid collision shall be taken in accordance with the Rules of this Part and shall, if the circumstances of the case admit, be positive, made in ample time and with due regard to the observance of good seamanship.

(b) Any alteration of course and/or speed to avoid collision shall, if the circumstances of the case admit, be large enough to be readily apparent to another vessel observing visually or by radar; a succession of small alterations of course and/or speed should be avoided.

(c) If there is sufficient sea-room, alteration of course alone may be the most effective action to avoid a close-quarters situation provided that it is made in good time, is substantial and does not result in another close-quarters situation.

(d) Action taken to avoid collision with another vessel shall be such as to result in passing at a safe distance. The effectiveness of the action shall be carefully checked until the other vessel is finally past and clear.

(e) If necessary to avoid collision or allow more time to assess the situation, a vessel shall slacken her speed or take all way off by stopping or reversing her means of propulsion.

(f) (i) A vessel which, by any of these Rules, is required not to impede the passage or safe passage of another vessel shall, when required by the circumstances of the case, take early action to allow sufficient sea-room for the safe passage of the other vessel.

(ii) A vessel required not to impede the passage or safe passage of another vessel is not relieved of this obligation if approaching the other vessel so as to involve risk of collision and shall, when taking action, have full regard to the action which may be required by the Rules of this Part.

(iii) A vessel the passage of which is not to be impeded remains fully obliged to comply with the Rules of this Part when the two vessels are approaching one another so as to involve risk of collision.

Rule 10

Traffic separation schemes

(a) This Rule applies to traffic separation schemes adopted by the Organization and does not relieve any vessel of her obligation under any other Rule.

(b) A vessel using a traffic separation scheme shall:

(i) proceed in the appropriate traffic lane in the general direction of traffic flow for that lane;

(ii) so far as practicable keep clear of a traffic separation line or separation zone;

(iii) normally join or leave a traffic lane at the termination of the lane, but when joining or leaving from either side shall do so at as small an angle to the general direction of traffic flow as practicable.

(c) A vessel shall, so far as practicable, avoid crossing traffic lanes but if obliged to do so shall cross on a heading as nearly as practicable at right angles to the general direction of traffic flow.

(d) (i) A vessel shall not use an inshore traffic zone when she can safely use the appropriate traffic lane within the adjacent traffic separation scheme. However, vessels of less than 20 metres in length, sailing vessels and vessels engaged in fishing may use the inshore traffic zone.

(ii) Notwithstanding sub-paragraph (d) (i), a vessel may use an inshore traffic zone when enroute to or from a port, offshore installation or structure, pilot station or any other place situated within the inshore traffic zone, or to avoid immediate danger.

(e) A vessel other than a crossing vessel or a vessel joining or leaving a lane shall not normally enter a separation zone or cross a separation line except:

(i) in cases of emergency to avoid immediate danger;

(ii) to engage in fishing within a separation zone.

(f) A vessel navigating in areas near the terminations of traffic separation schemes shall do so with particular caution.

(g) A vessel shall so far as practicable avoid anchoring in a traffic separation scheme or in areas near its terminations.

(h) A vessel not using a traffic separation scheme shall avoid it by as wide a margin as is practicable.

(i) A vessel engaged in fishing shall not impede the passage of any vessel following a traffic lane.

(j) A vessel of less than 20 metres in length or a sailing vessel shall not impede the safe passage of a power-driven vessel following a traffic lane.

(k) A vessel restricted in her ability to manoeuvre when engaged in an operation for the maintenance of safety of navigation in a traffic separation scheme is exempted from complying with this Rule to the extent necessary to carry out the operation.

(l) A vessel restricted in her ability to manoeuvre when engaged in an operation for the laying, servicing or picking up of a submarine cable, within a traffic separation scheme, is exempted from complying with this Rule to the extent necessary to carry out the operation.

Rule 13

Overtaking

(a) Notwithstanding anything contained in the Rules of Part B, Sections I and II, any vessel overtaking any other shall keep out of the way of the vessel being overtaken.

(b) A vessel shall be deemed to be overtaking when coming up with another vessel from a direction more than 22.5 degrees abaft her beam, that is, in such a position with reference to the vessel she is overtaking, that at night she would be able to see only the stern light of that vessel but neither of her sidelights.

(c) When a vessel is in any doubt as to whether she is overtaking another, she shall assume that this is the case and act accordingly.

(d) Any subsequent alteration of the bearing between the two vessels shall not make the overtaking vessel a crossing vessel within the meaning of these Rules or relieve her of the duty of keeping clear of the overtaken vessel until she is finally past and clear

Rule 15

Crossing situation

When two power-driven vessels are crossing so as to involve risk of collision, the vessel which has the other on her own starboard side shall keep out of the way and shall, if the circumstances of the case admit, avoid crossing ahead of the other vessel.

Rule 16

Action by give-way vessel

Every vessel which is directed to keep out of the way of another vessel shall, so far as possible, take early and substantial action to keep well clear.

Rule 17

Action by stand-on vessel

(a) (i) *Where one of two vessels is to keep out of the way the other shall keep her course and speed.*

(ii) *The latter vessel may however take action to avoid collision by her manoeuvre alone, as soon as it becomes apparent to her that the vessel required to keep out of the way is not taking appropriate action in compliance with these Rules.*

(b) *When, from any cause, the vessel required to keep her course and speed finds herself so close that collision cannot be avoided by the action of the give-way vessel alone, she shall take such action as will best aid to avoid collision.*

(c) *A power-driven vessel which takes action in a crossing situation in accordance with subparagraph (a)(ii) of this Rule to avoid collision with another power-driven vessel shall, if the circumstances of the case admit, not alter course to port for a vessel on her own port side.*

(d) *This Rule does not relieve the give-way vessel of her obligation to keep out of the way*

Rule 34

Manoeuvring and warning signals

(a) *When vessels are in sight of one another, a power-driven vessel underway, when manoeuvring as authorized or required by these Rules, shall indicate that manoeuvre by the following signals on her whistle:*

- *one short blast to mean "I am altering my course to starboard".*
- *two short blasts to mean "I am altering my course to port".*
- *three short blasts to mean "I am operating astern propulsion".*

(b) *(b Any vessel may supplement the whistle signals prescribed in paragraph (a) of this Rule by light signals, repeated as appropriate, whilst the manoeuvre is being carried out:*

(i) *these light signals shall have the following significance:*

- *one flash to mean "I am altering my course to starboard"*
- *two flashes to mean "I am altering my course to port".*
- *three flashes to mean "I am operating astern propulsion".*

(ii) *the duration of each flash shall be about one second, the interval between flashes shall be about one second, and the interval between successive signals shall be not less than ten seconds;*

(iii) *the light used for this signal shall, if fitted, be an all-round white light, visible at a minimum range of 5 miles, and shall comply with the provisions of Annex I to these Regulations.*

(c) *When in sight of one another in a narrow channel or fairway.*

(i) a vessel intending to overtake another shall in compliance with Rule 9(e)(i) indicate her intention by the following signals on her whistle:

- two prolonged blasts followed by one short blast to mean "I intend to overtake you on your starboard side".

- two prolonged blasts followed by two short blasts to mean "I intend to overtake you on your port side".

(ii) the vessel about to be overtaken when acting in accordance with Rule 9(e)(i) shall indicate her agreement by the following signal on her whistle:

- one prolonged, one short, one prolonged and one short blast, in that order.

(d) When vessels in sight of one another are approaching each other and from any cause either vessel fails to understand the intentions or actions of the other, or is in doubt whether sufficient action is being taken by the other to avoid collision, the vessel in doubt shall immediately indicate such doubt by giving at least five short and rapid blasts on the whistle. Such signal may be supplemented by a light signal of at least five short and rapid flashes.

(e) A vessel nearing a bend or an area of a channel or fairway where other vessels may be obscured by an intervening obstruction shall sound one prolonged blast. Such signal shall be answered with a prolonged blast by any approaching vessel that may be within hearing around the bend or behind the intervening obstruction.

(f) If whistles are fitted on a vessel at a distance apart of more than 100 metres, one whistle only shall be used for giving manoeuvring and warning signals.

