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COLLISION (III 5)

Very serious casualty: Collision between two ships with foundering of one ship

What happened?

The 40,000 GT bulk carrier was on her way to the next loading port. Around midnight the bridge was manned with the officer of the watch (OOW) and one lookout. At the same time the 240 GT fishing vessel sailed from the fishing grounds to her home port with a crew of 15.

In a distance of about 6 nm the fishing vessel appeared on the radar screen of the bulk carrier and it was optically visible on the starboard bow. There were about 25 fishing vessels in the vicinity. During this time the bulk carrier ran with a speed of about 14 knots, the fishing vessel with a speed of about 9 knots. The OOW of the bulk carrier detected that the fishing vessel would pass the bow from starboard to port side. Both vessels met in a crossing situation in which the bulk carrier was the give-way vessel.

During the approach of both vessels the closest point of approach (CPA) decreased, although the bulk carrier had started a small course alteration to starboard. The bulk carrier continued with a bigger course alteration to starboard. Shortly afterwards the fishing vessel made a course alteration to port which led to the collision of both ships.

The fishing vessel was struck by the bulbous bow of the bulk carrier on the starboard side amidships and suffered severe damage with a massive intake of sea water. This caused the foundering of the fishing vessel shortly thereafter. Only two crew members of this vessel survived. None of the bridge team was rescued.

The bulk carrier continued her voyage without any activities as they thought nothing had happened.

Why did it happen?

The OOW of the bulk carrier accepted a small CPA for too long. The bulk carrier as the give-way vessel did not take early and substantial action to avoid a close quarter situation. The OOW of the fishing vessel did not use appropriate sound signals or other means to alert the other ship. The OOW of the fishing vessel altered the course too late for avoiding the collision and also to the wrong side.

What can we learn?

- All vessels should act in accordance with COLREGs and should take early and substantial action to avoid a collision.

Who may benefit?

Seafarers and ship operators.

COLLISION (III 5)

Very serious casualty: Collision between two ships in a fairway

What happened?

The 3,000 GT cargo ship was leaving the port through a dredged fairway during the early hours of the night. At the same time the 960 GT dredger was entering from the opposite side. The visibility was good. The wind was moderate.

The bridge of the cargo ship was manned with the captain and an AB as helmsman. After finishing the aft mooring station, the second officer also went to the bridge. There he switched on the AIS device and was responsible for the engine telegraph. Therefore the AIS signal was only available 1.5 minutes before the collision.

The bridge of the dredger was only manned with the master. After entering the dredged fairway, the captain checked the situation ahead by radar, which was switched to the 2.5 miles range. He did not detect any radar target. During the approach of the only bend in the channel, the dredger neared the middle of the fairway and then cut the corner at the bend and sailed on the wrong side. In the meantime, the attention of the captain was distracted by a small boat which crossed his way from starboard to port.

The captain of the cargo ship was aware of the dredger and his approach to the wrong side of the fairway from the beginning. The captain assumed that the dredger would alter the course to the right side in time. As he noticed the top lights of the dredger in a line, the captain of the cargo ship became aware of the danger of collision. He used the whistle and he flashed with the daytime signal lights. In the meantime a VHF call was made to the dredger. But there was no reaction. Then the captain ordered to let go the laid out anchor and to take full astern.

The captain of the dredger started to turn the ship shortly before the bend. During the course alteration he realized the close quarter situation of the cargo ship. The captain of the dredger neither noticed the whistle blasts nor the light signals. Assuming the cargo ship would turn to the port side, he switched to manual steering, put the rudder hard to port and the engine to full astern.

Both ships collided shortly afterwards. The cargo ship struck the dredger on the starboard side midships. This resulted in a bigger hole in the cargo hold of the dredger and he capsized subsequently. Later on, the dredger was declared a total loss. The cargo ship suffered only minor damages to the bow and the bulbous bow.

The crews remained unharmed. An oil spill damaged a seaweed farm in the vicinity.

Why did it happen?

The ship's command of the cargo ship assumed for too long that the dredger would alter its course to the right side of the fairway. Therefore they neither altered the course to the outer right side of the fairway nor reduced the speed or gave signals or made VHF calls in good time.

The captain of the dredger was alone on the bridge. His attention was neither appropriate to the radar nor to the fairway in front of the ship. The ship sailed on the wrong side of the fairway.

What can we learn?

- All vessels should act in accordance with COLREGs and should take early and substantial action to avoid a collision.

- It is essential during the navigational watch to make use of all available means in order to maintain situational awareness.

- Keeping on the right side of the fairway is one step to minimize any risk of collision.

Who may benefit?

Seafarers, ship operators.

COLLISION (III 5)

Very serious casualty: Collision between passenger ferry and assisting tug – resulting in the tug capsizing and the loss of two crew

What happened?

The tug had been engaged to assist the ro-ro passenger ferry to berth in high winds. There was no harbour pilot on board the ferry because the master held a pilot exemption for the port. The tug was manoeuvring close to the port bow of the ferry while attempting to establish the tow, when the stern of the tug collided with the ferry's bulbous bow. As a result of the collision the tug became broadside on in front of the ship, heeled dangerously to port and took on water. The tug capsized and two of its crew died.

Why did it happen?

The tug was forced to leave the "safe zone" and manoeuvre close to the bow of the ferry in order to establish the tow, whereupon hydrodynamic interaction between the hulls of the ferry and tug drew the tug inwards to collide with the ferry's bulbous bow.

The speed of the ferry through the water at the time was too fast to safely establish the tow. The relatively high speed through the water meant the "safe zone" in which the tug must remain was further away from the ferry, making it more difficult to establish the tow.

The relatively high speed through the water also meant the tug was using a high percentage of its available engine power to match the speed of the ship, leaving minimal reserve power to manoeuvre.

The pilot-exempt master of the ferry was not required to have undergone additional training for tug assistance, which was usually requested during adverse and difficult weather conditions.

Water down-flooded through an open door and open engine-room ventilation duct when the tug turned broadside on and heeled over. This allowed down-flooding to occur, further reducing stability and ultimately leading to the capsizing.

The tug crew were unable to close the engine-room ventilation duct during operations because it was required to be open in order to supply air for the tug's engines.

The tug did not comply with stability requirements, which meant it was prone to excessive heeling during operations and early down-flooding.

What can we learn?

- Establishing a tow between a tug and ship should be conducted at as low speed as practicable in the circumstances and conditions in order to give the tug greater manoeuvrability and avoid it having to depart from the "safe zone" where dynamic interaction is less likely to occur.

- Ship masters (especially pilot exempt masters) and tug masters must have a thorough understanding of both the theoretical and practical aspects of safe tug/ship operations.

- Tugs should be fit for the purpose they are being used, with sufficient power and manoeuvrability for the intended operation, and comply with stability requirements at all times.

- Down-flooding will quickly erode any reserves of stability and will be a major factor contributing to a capsizing. During critical or high-risk operations all doors and other openings that need not be open should be securely closed.

Who may benefit?

Seafarers, shipowners and operators, designers and operators of vessels engaged in towing and providers of safe ship management systems.

COLLISION (III 5)

Very serious casualty: Collision between tug boat and general cargo vessel, resulting in the sinking of the tug boat

What happened?

A 3,200 GT general cargo vessel, travelling at about 8 knots under mandatory pilotage and hand-steered by the master, collided with a 115 GT tug boat travelling at a speed of about 7 knots, steered by its AB under the command of its skipper.

The collision occurred at night, in a fairway, after both vessels had reported their respective positions and passage at the reporting point.

The master of the general cargo vessel, in accordance with his passage plan, altered his vessel's course, first by gradually moving to the centre of the fairway and then to its eastern side.

Some minutes later, the general cargo vessel's bulbous bow struck the port side midship hull of the tug boat causing the latter to lose its buoyancy and sink. Four crew and one passenger of the tug boat found themselves in the water, where after several minutes they were rescued by a pilot boat and a rescue boat launched from a SAR vessel in the vicinity.

Why did it happen?

1 The Collision

The general cargo vessel was manned only by the master who had not arranged for a proper lookout. Its radar had detected the echo of the tug boat on the starboard side at a distance of about 8 cables, but no action had been taken to determine the passing manoeuvres or to move to starboard to the outer limit of the fairway.

The master had altered his vessel's course following the planned course as laid in his electronic chart, unknowingly positioning his vessel at the wrong side of the fairway.

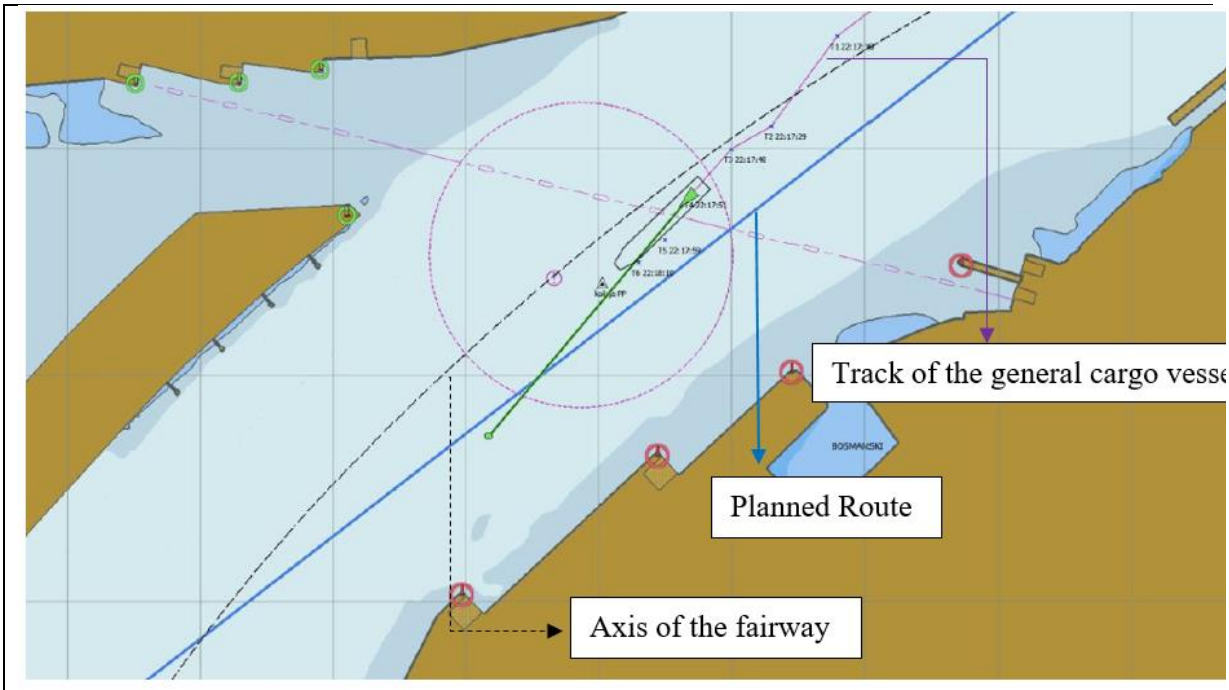

Photo 1 – The vessel's track (magenta line), the planned route (blue line), axis of the fairway (dashed black line) in the vicinity of the place of collision.

The pilot, during the transit in the fairway, also did not intervene when the general cargo vessel's course was altered to port so as to navigate the vessel on the wrong side of the fairway.

On board the tug boat, the radar was not switched on and investigation revealed that its crew were busy talking in the wheelhouse about non-navigation related matters while operating the tug boat under the influence of alcohol. This condition may have impaired their ability to assess the risk of collision with the general cargo vessel. Additionally, although not contributory to the collision, the tug boat was carrying a passenger who was not on the tug boat's manifest.

2 The Sinking

After the collision, the master of the general cargo vessel operated full astern disengaging his vessel from the tug boat, causing water to flood the tug boat's engine-room.

What can we learn?

- The incident highlighted the importance of:
  - proper passage planning (passage planning error), especially taking COLREGs into account;
  - effective Bridge Resource Management under all circumstances; and
  - implementing proper watchkeeping and lookout.
- The incident highlighted the importance of the role of pilots in advising masters of piloted vessels to keep as near to the outer limit of the channel or fairway which

lies on the vessel's starboard side as is safe and practicable in accordance with COLREGs; and of the use of approved charts for navigation provided by the pilot company and the importance of taking early and effective measures to determine risk of collision.

- The incident also offered lessons on the importance of having adequate oversight of the supervision of the crew such as to ensure that the vessel is not operated while under the influence of alcohol and/or of the carriage of alcohol on board.

- It also underlined the importance of declaring passenger(s) in the manifest and complying with the vessel's Safety Certificate when carrying passenger(s) on board.

- Crew having sufficient observation and attention to the surrounding (situational awareness) and the ill effects of distraction (inaction, distraction) on the vessel's bridge.

Who may benefit?

Seafarers, shipowners and operators, pilots and flag Administrators.

CONTACT (III 4)

Very serious marine casualty: Engine-room fire and subsequent contact

What happened?

As a result of a severe engine-room fire, this passenger/ro-ro ship lost all main and auxiliary power and had to be taken under tow to a nearby berth. The stabilizer fins remained extended and, when coming up against the quay, the ship's side was penetrated by the starboard fin. The hull damage led to water ingress in No.2 Cargo Hold. The water also entered No.1 Cargo Hold, probably through the watertight doorway between the cargo holds. The door was not watertight due to a worn seal along the underside of the door. It took quite some time to locate and temporarily repair the hull damage, and to establish sufficient pumping capacity. The situation escalated and became critical in that the ship was close to capsizing alongside the quay.

Why did it happen?

1 Normally, the stabilizer fins retracted automatically when the bow thrusters were started. Since the bow thrusters could not be used on this occasion (no power), this did not happen.

2 There was a checklist to be used when approaching port and this included retraction of the fins. Various means of retracting the fins were provided, including the provision of a manual hydraulic pump, but none of the systems were used. It is not clear from the casualty report whether the checklist was referred to during the berthing operation or whether an attempt was made to retract the fins using the emergency manual pump. The seal on the underside of the watertight door between No.1 and No.2 Cargo Holds was found to be severely worn, leaving a gap of 8-10 mm across the width of the door, an opening of about 200 cm^2.

What can we learn?

1 When working under duress – e.g. trying to berth a dead ship while there is a fire in the engine-room – it is particularly important to stand back and be sure that all appropriate steps are taken to achieve a safe berthing. It is under such circumstances that checklists have particular value.

2 The owners of this ship have since had dry tanks built around the stabilizer fins so that if there is a major leakage it will be contained within the dry tank.

3 Watertight doors should be examined periodically to ensure that they function correctly and the seals are in good order.

Who may benefit?

Seafarers, shipowners, ship managers.

COLLISION (III 4)

Very serious marine casualty: Collision between car carrier and fishing vessel

What happened?

A 60,000 GT car carrier was on passage in open sea with the officer on watch alone on the bridge. A 20 GT fishing vessel with a sole deckhand on watch was ahead of the ship, but was not observed by the officer on the car carrier. Heavy rain showers reduced visibility and affected the radars, but neither the officer on the car carrier nor the deckhand on the fishing vessel found any reason to call for assistance. They did not find any reason to start the fog signal. The officer on the car carrier observed no AIS tracks in the vicinity (the fishing vessel had no AIS).

The deckhand on the fishing vessel was not allowed to operate the radar, but merely checked the radar display and observed the car carrier 6 miles away on the fishing vessel's starboard quarter. He then went back to the watch room, which was just a tiny compartment above the steering room. From where he was sitting, there was a blind sector on starboard quarter.

The ship subsequently collided with the fishing vessel, causing it to sink. One man was lost out of a crew of eight. The officer on the car carrier did not notice any collision.

Why did it happen?

1 Heavy rain showers reduced visibility and adversely affected the ship's radar displays, preventing the officer on the car carrier to detect the fishing vessel.

2 The officer of the car carrier relied on all other vessels having operational AIS, so he couldn't identify the fishing vessel, which had no AIS.

3 The fishing vessel's deckhand was unable to monitor the car carrier's approach from his seated position in the watch compartment.

4 Neither vessel sounded fog signals.

5 The ship's officer on watch and the fishing vessel's deckhand had both noticed that the visibility had reduced. However, neither of them called for assistance prior to the collision.

What can we learn?

1 More than one person on watch is required in restricted visibility.

2 Watchkeepers should be trained in the use of available equipment.

3 Watchkeepers should not rely on vessels having operational AIS which may prevent vessels without operational AIS from being detected.

4 Blind sectors should be taken into consideration when maintaining a proper lookout and may require a watchkeeper to continually move about.

5 Sound signals should always be made in restricted visibility, even in open sea to provide an additional means for identifying a risk of collision.

Who may benefit?

Seafarers, shipowners, ship operators.

COLLISION (III 4)

Very serious marine casualty: Collision between container ship and ro-ro car carrier

What happened?

A close-quarters situation developed in an area with heavy traffic. A 25,000 GT car carrier, which was the stand-on vessel in a crossing situation, called a 6,000 GT containership, which was the give-way vessel, to suggest that the car carrier turn to port and pass astern of the containership. This was agreed, but as the situation developed further, the container ship turned to starboard and finally ran into the starboard side of the car carrier. The bulbous bow caused sufficient damage to cause the car carrier to sink within 15 minutes. 11 seafarers were lost.

Why did it happen?

1 The vessels did not maneuver as agreed.

2 The officers on both vessels relied solely on ARPA radar data. A lack of visual monitoring resulted in a delayed recognition of the actual situation.

3 No lookout was posted on the container ship. The officer was alone on the bridge despite the heavy traffic and darkness.

4 The car carrier did not take early avoiding action. Neither vessel took bold and definitive action in time to avoid collision.

5 Immersion suits were difficult to reach on the car carrier due to the vessels list and only two persons wore them.

What can we learn?

1 The most effective way to avoid a collision is to maneuver in accordance with the COLREGs. However, if other arrangements are made, they should be made in ample time, with due regard to observance of good seamanship and should be clear, followed and closely monitored by all vessels involved.

2 A proper lookout should be kept visually, not only with instruments, at all times.

3 Early and definitive action avoids dangerous situations from developing.

4 Survival equipment should be sited where it is most likely to be reached.

Who may benefit?

Seafarers, shipowners, ship operators.

COLLISION (III 4)

Very Serious marine casualty: Collision of a bulk carrier with a coaster moored alongside a jetty

What happened?

A 25,000 GT bulk carrier was proceeding to a jetty with a pilot on board. The ship used its anchor and a tug to turn around and berth alongside a jetty. In doing so, the ship's bow collided with the port side of a coaster, which was moored alongside the jetty, breaching the hull of the coaster severely. The coaster left the jetty and was beached in shallow water to prevent it from sinking.

There was no pollution and no one was injured. The damage to the bulk carrier was minor.

Why did it happen?

1 The speed of the bulk carrier was too high to turn it around at the turning basin.

2 After the engine was stopped, there was a delay in executing the engine astern order to further reducing the ship's speed.

3 There was no detailed discussion between the master and pilot about maneuvering the vessel and the master was not aware of what the pilot intended to do.

4 The ship's passage plan to the jetty did not take the starboard turn at the basin into consideration.

5 The pilot was tired and not feeling well. Fatigue might have adversely affected his performance.

What can we learn?

1 The speed should be lowered to the minimum necessary to manoeuvre the ship while approaching a jetty.

2 The passage plan should be detailed from berth to berth, taking into consideration the vessel's manoeuvring characteristics and the local conditions.
3 The master and pilot should fully discuss the passage plan and have the same understanding on what they intend to do.

4 Bridge Resource Management (BRM) should be effective to facilitate coordination and information exchange between the bridge team and the pilot. Crew members and pilots should be well trained in BRM.

Who may benefit?

Seafarers, shipowners, ship managers, pilots.

COLLISION (III 4)

Very serious marine casualty: Capsize of a tug while assisting a ship

What happened?

A tug had been engaged to assist a passenger/ro-ro ship to berth in high winds. There was no harbour pilot on board the ship because the master held a pilot exemption certificate for the port. The tug was manoeuvring close to the port bow of the ship while attempting to establish the tow, when the stern of the tug collided with the ship's bulbous bow. As a result of the collision the tug came broadside on in front of the ship, heeled dangerously to port and took on water. The tug capsized and two of its crew died.

Why did it happen?

1 The tug was forced to leave the "safe zone" and manoeuvre close to the bow of the ship in order to establish the tow, whereupon hydrodynamic interaction between the hulls of the ship and tug drew the tug inwards to collide with the ship's bulbous bow.

2 The speed of the ship through the water at the time was too fast to safely establish the tow. The relatively high speed through the water meant the "safe zone" in which the tug must remain was further away from the ship, making it more difficult to establish the tow.

3 The relatively high speed through the water also meant the tug was using a high percentage of its available engine power to match the speed of the ship, leaving minimal reserve power to manoeuvre.

4 The pilot-exempt master of the ship was not required to have undergone additional training for tug assistance. Tug assistance was usually requested during adverse and difficult weather conditions.

5 Water entered the tug through an open door and open engine-room ventilation duct when the tug turned broadside on and heeled over. This allowed down-flooding to occur, further reducing stability and ultimately causing the capsize.

6 The tug crew were unable to close the engine-room ventilation duct during operations because it was required to be open in order to supply air for the tug's engines.

7 The tug did not comply with the required stability parameters, which meant it was prone to excessive heeling during operations and down-flooding.

What can we learn?

1 Establishing a tow between a tug and ship should be conducted at safe speed in order to give the tug greater manoeuvrability and avoid it having to depart from the "safe zone" where dynamic interaction is less likely to occur.

2 Ship masters (especially those holding a pilot exemption certificate) and tug masters must have a thorough understanding of both the theoretical and practical aspects of safe tug/ship operations.

3 Tugs should be fit for the purpose they are being used. They require good stability and sufficient power and manoeuvrability for the intended operation.

4 Down-flooding will quickly erode any reserves of stability and will be a major factor contributing to a capsize. During critical or high-risk operations all doors and other openings that need not be open should be securely closed.

Who may benefit?

Seafarers, shipowners and operators, designers and operators of vessels engaged in towing.

COLLISION (III 1)

Very Serious Marine Casualty: Collision between a containership and a general cargo vessel

What happened?

A containership and a general cargo vessel approached each other in dense fog. One turned to port towards the other, while the other turned to starboard. The latter reduced speed, but not until the very last moment. After the collision, the latter vessel sank and everyone was lost.

Why did it happen?

- It was dense fog at the time of the collision.
- Actions taken by the officers on both vessels were inadequate or too late.
- There was a lack of understanding of how to act in restricted visibility.

What can we learn?

- Restricted visibility needs special attention, and appropriate actions in accordance with the Collision Regulations.
- The officers of both vessels realized very late that a dangerous situation was developing. They might have acted differently with better training and understanding of how to act in restricted visibility and other potentially dangerous situations.

Who may benefit?

Flag States, training institutions, and shipowners, operators and crews.

COLLISION (III 1)

Very Serious Marine Casualty: Collision between a cargo ship and a fishing vessel

What happened?

A cargo ship was on passage with the second officer alone on watch. At 1500 local time, the second officer noticed a fishing vessel at 30 degrees on the ship's port bow at about 8 to 9 nautical miles range. He then started to fill in the bridge log book. On completing the log book at 1530, he checked visually for possible traffic and noted no vessels on the ship's port or starboard side. At 1535, he saw a fishing vessel on the port side after the ship had collided with its starboard bow. The master ordered the rescue boat to be lowered, and 14 crew members were rescued from the fishing vessel, including one injured man and one fatality.

Why did it happen?

There was no additional watchman on the bridge from 1300 until the time of the collision. The OOW was distracted from keeping a proper lookout and was not using navigation equipment, such as radar, to perform adequate watchkeeping. The OOW did not detect the imminent danger.

What can we learn?

- Crew members should understand that, while they are watch, they need to perform fully their watchkeeping duties without being distracted by other activities like paperwork.
- Crew members should maintain a proper lookout throughout the watch, including the use of navigation equipment.

Who may benefit?

Shipowners, operators and crews.

COLLISION (III 1)

Very Serious Marine Casualty: Collision between a bulk carrier and a fishing vessel berthed in a port

What happened?

A bulk carrier hit a moored fishing vessel when the ship's main engine went ahead and not astern as ordered by the pilot. The fishing vessel was crushed against the wharf and sank when the ship pulled clear. There was nobody on board the fishing vessel at the time. The bulk carrier sustained several small holes in its bow shell plating.

The collision occurred as the pilot was manoeuvring the ship in a turn following an uneventful passage from the pilot boarding ground. The ship's main engine was in engine-room control mode, with the ship's electrical engineer acknowledging the bridge telegraph movements on the engine-room control telegraph. The chief engineer was controlling the main engine start/fuel lever to action the bridge orders.

In order to stop the ship's movement towards the wharf, the pilot ordered a number of successive astern main engine movements and tug orders. However, the ship did not respond as he expected it to. Despite the fact that the main engine was not going astern, no one on the ship's bridge or in the engine control room were aware of the fact.

Why did it happen?

The chief engineer did not allow sufficient time for the starting air to brake the main engine before re-admitting fuel. Consequently, the main engine, which was still turning ahead, started the "wrong way" and ran in the ahead direction rather than astern.

When the main engine was operated in engine-room control mode, the only system protections to warn the crew of "wrong way" running of the engine were the bridge and engine control room console-mounted flashing light indicators. There was no automatic interlock to prevent 'wrong way' operation of the engine and no audible alarm to indicate when it was running the "wrong way".

The ship manager had not implemented any procedures or guidance to inform the crew that extra vigilance was required when operating the main engine in engine-room control mode.

The passage plan for the port contained general information, such as depths and navigation/channel marks, but it did not contain actual passage specific information, such as courses and speeds to be followed.

The port operator had not undertaken a risk assessment, or developed contingency plans for this specific ship handling manoeuvre in the port. Consequently, the pilot had no guidance regarding what actions to take if the berthing manoeuvre did not progress as he had planned.

The participation of the two tug masters in the pilotage process was not actively encouraged. Consequently, it was not until after the collision that one of the tug masters advised the pilot that the ship's main engine was still running ahead.

What can we learn?

- The crew should be actively monitoring the main engine movement indicators in order to rapidly detect any differences between the telegraphed engine order and the actual engine movement.
- To help the crew to be at their most vigilant, some form of guidance and/or instructions should have been provided in the ship's safety management system.
- Having a passage plan for pilotage is critical for effective BRM to avoid a situation that none of the bridge team knows when to alert the pilot if any limits are being reached or if any error is being made.
- The ship's speed approaching the wharf may not allow enough time to implement any contingency plan. The issue of speed during pilotages should form an important part of any port risk assessment and associated control measure.
- Tug masters can be part of a pilot's early warning system and form a valuable defence against a single-person error.

Who may benefit?

Shipowners, operators and crews, pilots, port operators and tug masters.

COLLISION (FSI 21)

Very serious casualty: Collision between chemical tanker and cargo ship

What happened?

A northbound (course 322^0) 11,100 gross tonnage chemical ship collided with a southbound (course 162^0) 2250 gross ton general cargo ship off the coast in good visibility. Initially the two ships were going to pass clear of each other with the chemical carrier passing ahead of the cargo ship, but when the ships were 0.8 miles apart, the chemical carrier made a late and bold alteration of course to starboard and towards the cargo ship.

The cargo ship, loaded with scrap iron, then altered her course to port, away from the chemical carrier, but this was insufficient to avoid collision.

The chemical carrier struck the cargo ship almost amidships, holing her. The chemical carrier applied full astern and pulled away from the cargo ship.

The cargo ship, with both holds holed, sank within a very few minutes. Five members of the 10-man crew of the cargo ship perished.

Why did it happen?

There was a failure to comply with International Regulations for Preventing Collisions at Sea on both ships: no early and clear alteration by both ships; and, there was a failure to assess the risk of collision.

An inappropriate alteration of course by the chemical carrier when it was too close to another ship.
Both ships were still at full ahead at the time of the collision.
The chemical ship pulled out of the holed cargo ship allowing flooding.

There were indications of fatigue on the part of both OOWs, who were near the end of their 6-hour watches.

What can we learn?

The importance of:

- keeping a good lookout, maintaining vigilance and complying with Collision Regulations;
- ensuring OOWs are well rested and alert;
- taking remedial action once a collision is unavoidable (stopping the engine, going astern); and
- not pulling out of a ship once a collision has occurred.

Who may benefit?

Seafarers.

CONTACT (FSI 21)

Serious casualty: Contact with a quay along a river

What happened?

A containership of about 18,000 gross tonnage left a berth on a river with a tug and was heading towards the south side of the river. As the ship's bow entered the main flood tidal stream, the bow unexpectedly paid off to starboard after the pilot ordered the helm to port. The pilot then ordered the helm to hard-a-port but the bow continued to pay off to starboard. The master and the pilot agreed to abort the manoeuvre and set the engine to full astern. The pilot also ordered the tug to return immediately to assist the ship, but the ship made contact with a quay on the opposite side of the river. The quay sustained superficial damage but the ship suffered significant damage to her bow with her forepeak tank punctured. There was no pollution and no one was hurt.

Why did it happen?

The flood tide acting on the port bow, coupled with the wind and the outward flow of water creating a counter-flow off the berth acting on the starboard quarter, was sufficient to overcome the turning effect of the applied port helm.

The margin for error in achieving the intended manoeuvre was small and the pilot had unintentionally not applied port helm until after the ship's bow had entered the flood tidal stream. The engine was set to full astern, but the ship's stopping distance exceeded the available space ahead.

It was the pilot's usual practice to release the tug after clearing the berth and establishing steerage. In his experience, he did not feel the need to retain the tug for a ship of this size. The port authority relies on the judgment of the pilot to determine to what extent tug assistance is required.

The pilot had conducted the same manoeuvre, under similar tidal conditions, on a number of occasions without incident. The Information exchanged between the master and the pilot was limited to the condition and readiness of the ship. Both the master and the pilot considered the departure to be a routine operation which did not require any further discussion or elaboration.

Similar accidents had happened before, but the port authority had no means for ensuring that the identified lessons had been effectively promulgated to its pilots.

What can we learn?

It is essential that the masters and the pilots should exchange information regarding hazards they may encounter and its control measures to be taken before commencing the navigation.

Hazard identification and risk assessment regarding the effect of tidal stream on ships manoeuvre should be carried out appropriately.

Procedures for ships to use a tug when a strong tidal flow is anticipated should be established.

An effective way to disseminate lessons learnt to the pilots should be developed.

Communication among the pilots and the bridge team should be encouraged for the pilots to be able to draw the best decision-making.

Who may benefit?

Seafarers, pilots, and port authorities.

COLLISION (FSI 20)

Very serious casualty: collision between a fishing vessel and a passenger ship

What happened?

At night and with visibility at about three nautical miles, a 28-metre long, 80 gt wooden-hull passenger ship was proceeding south along the lane of a traffic separation scheme. Approaching from the south was a 44-metre long, 370 gt steel-hulled fishing vessel. As the two vessels approached each other, the fishing vessel having crossed into and proceeding against the direction of the traffic of the southbound lane, failed to manoeuvre to keep well clear of the passenger ship. The passenger ship was participating in the traffic separation scheme. The passenger ship altered hard to starboard, but collided with the fishing vessel which was not fishing. The passenger vessel sank about five minutes later with many persons on board.

Why did it happen?

The fishing vessel did not have on board a chart depicting the traffic separation scheme and failed to keep well clear of the passenger vessel that was participating in the traffic separation scheme.

The passenger vessel did not make the appropriate warning signals with her whistle or light and the evasive action taken was not early enough to avoid the collision.

Both vessels failed to have an effective lookout posted on the bridge.

What can we learn?

- The importance of maintaining an effective lookout at all times.

- When doubt exists as to the action initiated by the give-way vessel, the stand-on vessel should sound warning signals and take such action as is necessary to avert collision, in accordance with COLREGs.

COLLISION (FSI 20)

Very serious casualty: collision between a fishing vessel and a general cargo ship, and subsequent sinking of the fishing vessel

What happened?

A 6,000 gt general cargo vessel had collided with a fishing vessel in restricted visibility. The fishing boat sank and only two of its seven crew were able to be rescued. The remaining five crew members are missing, presumed dead.

The crew of the cargo ship launched a lifeboat and were able to pick up two of the fishing boat crew, but the lifeboat propeller then became entangled in fishing nets floating in the water. The crew launched a second lifeboat but the engine would not start so further rescue attempts were not possible.

Why did it happen?

Both vessels had operational radar but neither crew were using it to keep a proper lookout.

Neither vessel was sounding a fog signal nor did they have a dedicated lookout.

The general cargo vessel was at full speed and did not have its engine ready for immediate manoeuvring.

The crew were not well practiced in techniques for retrieving persons from the water and the rescue attempts were constrained by the fact that some of the rescue craft were not in a good state of readiness and not in a good state of repair.

What can we learn?

- If crew members end up in the water due to an accident their chances of survival will depend on the speed of the crew response, and how well the response has been planned.

- Survival craft and equipment must be in a state of readiness and in good working order if it is going to be effective in saving lives.

- When a vessel sinks or capsizes flotsam and debris are likely to be floating in the water, particularly when a fishing boat sinks because it almost always has nets and lines on deck that can float free and hinder rescue attempts.

COLLISION (FSI 20)

Very Serious Marine Casualty: collision between an oil tanker and a small aggregates carrier, and subsequent sinking of the small vessel

What happened?

A 4,000 gt oil/chemical tanker was outbound from a port, travelling at 10 knots in less than 1 mile visibility. It was early morning, and still dark, when the tanker's watchkeeper detected another vessel on radar, 10 degrees on the port bow at a range of 1.5 miles. Three minutes later, the other vessel's mast head and port hand navigation lights were sighted and it was determined that she was on a near reciprocal heading, and would pass port-to-port. The tanker's master altered his vessel's course 10 degrees to starboard to increase the passing distance, and ordered the Aldis lamp be flashed at the other vessel. When the distance between the two vessels had reduced to 1.5 cables, the other vessel altered course to port and was struck by the tanker's bulbous bow. The other vessel, a small aggregates carrier, sank very quickly but fortunately its four crew members were rescued.

Why did it happen?

The main contributing factors were poor visibility, and that both vessels' bridge teams took inadequate actions in these circumstances. There was no proper lookout in poor visibility and the ships were proceeding at too high a speed, given the prevailing visibility. The action taken to avoid a collision was insufficient as to be readily apparent to the other vessel. A too close passing distance was accepted, that left little time to react to a changing situation. It was assumed that the other vessel would also react appropriately. And, eventually, the action taken to avoid the collision did not comply with COLREGs.

What can we learn?

- Masters should not accept passing distances that are too close, as the risk of collision is high if the other vessel fails to react as anticipated.

- Vessels should always react appropriately to restricted visibility. This includes navigating at a safe speed and keeping a good lookout and, once a close-quarters situation is detected, taking the correct actions such as slowing down or taking all way off, and navigating with caution until the other vessel is past and clear.

COLLISION (FSI 20)

Serious casualty: collision between a Ro-Ro ferry and a sailing yacht

What happened?

A ferry of about 15,000 gt, which operates regularly between two ports, was on a north-easterly course after departing from a port at night, while the yacht of about 20 gt was proceeding under sail on a westerly course crossing the ferry route. It was not until just before the collision that the yacht was identified visually by the ferry. The ferry crew heard the yacht asking an east-bound vessel on VHF if she could see the yacht, but there was no answer and the ferry also had no idea where the yacht was. Suddenly, a high red light was detected at a distance of about 200 metres.

The crew of the yacht observed the departure of the ferry. They thought the ferry would give way to the yacht seeing only her green sidelight and did not realize both vessels were on a collision course until a few seconds before the collision.

The fore section of the port side of the yacht was hit by the bow of the ferry with considerable force. The yacht heeled heavily to starboard and took on a large amount of water, but the crew did not suffer any injuries. There was no environmental pollution.

Why did it happen?

Vessels were coming from both the east and the west. In addition, a drilling platform together with auxiliary vessels was in close proximity to the ferry. The yacht approached the ferry in the shadow of the drilling platform.

It can be assumed that the ferry crew focused primarily on other vessels, and the yacht's tricolour light was apparently overlooked.

The echo of the yacht was hardly distinguishable from radar interference on both the X-band radar and the S-band radar on the ferry, and no attention was paid to the weak echo on the displays. None of the radar settings on the ferry were changed apart from the range.

The yacht gave no information about her own position when asking other vessels on VHF if she could be seen.

What can we learn?

- An effective visual loockout and appropriate radar observations are the best defences against collisions.
- Watchkeeper should never assume they understood another vessels assessment to a possible collision situation.
- Watcheepers should be aware of the consequential risk of their passing near to large ships.
- The detectability of small vessels would be enhanced by correctly providing information by VHF, AIS or radar reflector.

COLLISION (FSI 20)

Less serious casualty: collision between a general cargo vessel and a chemical tanker in a traffic lane

What happened?

A general cargo vessel of about 1,800 gt departed a berth at night. When the cargo vessel was entering the fairway, a chemical tanker of about 12,000 gt was sailing along the traffic lane with tug assistance. The chemical tanker attempted to contact the approaching cargo vessel on her starboard side on VHF, but the master of the cargo vessel could not respond to it because of a technical failure with the VHF device. On finding the chemical tanker about 500 m ahead, he set his engine to full astern, but the engine stopped and could not be restarted until it was too late to avoid the collision.

Both vessels suffered only minor damage of dents and scratches. There was no injury to the crew or pollution.

Why did it happen?

The master of the cargo vessel was the only person on the bridge without a dedicated lookout while departing from a very busy port at night even though the vessel was properly manned and procedures were in place as to how the bridge should be staffed upon departure. As the situation developed, he became overwhelmed as he remained focused on attempting to gain back propulsion control.

The pre-departure check on board the cargo vessel under the company SMS manuals was not properly carried out. The VHF was not tested and the malfunction was later found at a critical moment.

The cause of the engine failure could not be found despite a thorough examination of the engine components.

What can we learn?

- Importance of developing a safety culture and raising safety awareness.
- The safety management system must be adhered to at all times.
- The bridge must be properly manned at all times. Arriving or leaving berth is one of several critical operations requiring full safety attention.
- Communication equipment on the bridge should be tested prior to departure.

CONTACT (FSI 20)

Serious casualty: heavy contact with the linkspan of a ferry terminal

What happened?

A 85 m long, 3,300 gt short sea ferry – with only a few passengers and vehicles loaded – was in process of berthing at a terminal on a routine run. During the approach to the berth, the master, who was conning the vessel from the bridge wing realized that although he had reduced the setting of the combination lever. The starboard pitch was still at full ahead and the ferry was not slowing down. This malfunction of the starboard pitch could not be solved immediately. The engine stopped too late and the executed emergency manoeuvre did not prevent the vessel from making heavy contact with linkspan. There was no warning announcement prior the crash. Both the ferry's bow and the linkspan sustained heavy damage.

Why did it happen?

The malfunction of a vital component of the ship's propulsion system had caused the starboard propeller to remain operating on full ahead pitch with no reaction on the lever setting. The vulnerability of the component involved was known to the engineers on the vessel and shoreside management. The repair history was long. Parts replaced and shortly thereafter adjusted and repaired again only some months prior to the incident were not all original and should have prompted permanent monitoring and control. The failure of the starboard pitch was not fully investigated. A defect report was not issued and system function tests were not part of the operational routine. Long lasting seniority within the ferry company and over familiarization with the vessel had fostered complacency and the deterioration of safety awareness.

A not stringent and conclusive communication between the bridge team and the engine control room has impacted the emergency response.

The impact of the contact could have been mitigated with less speed upon approach.

What can we learn?

- Keep vital operation components under permanent control and function test if their vulnerability is known.

- Review the Safety Management System and make sure that critical defects are assessed, reported and conclusions circulated with the intention to ensure a pre-determined course of action when dealing with these defects.

- If propulsion systems can be controlled and operated from the bridge as well as from the vessel wings make sure that control is properly transferred and command regularly tested.

- Use original and manufacturer's spare parts only.

- Exercise stringent and conclusive language while communicating among each other on command level in general and on emergencies in particular.

- Place particular emphasis on the prevention of complacency during routine and repetitive operations.

- Warning announcements are to be made to alert passengers and crew about forthcoming emergencies.

COLLISION (FSI 19)

Serious casualty: engine control failure leading to collision with quay and moored vessel

What happened?

When the about 8,000 gt container ship passed in a canal, the mate was about to switch the CPP from centre control to the bridge wing. To do that he had to press one button on a set out of five. The mate by mistake pressed the button for back up control instead of the button for response change. The CPP then turned to full astern and the ship collided with the quay and a moored ship (which started to drift) before the ship was under control again.

Why did it happen?

Since the press buttons looked the same (same design and colour, placed close to each other) it was possible to mix the buttons up without realizing that until it was too late. Also, a short circuit on bridge wing due to moisture made the electrical system fail, causing the CPP to go astern. Confusion delayed the correct action to regain control.

What can we learn?

- It is important to know the technical systems very well if you use them. When the time comes and you need to take correct action, it is too late to learn.
- Sometimes, the systems are not very well designed for operators and there might be reason to consider if it is possible for the crew to make arrangements to prevent unintentional use.
- Electrical systems need good maintenance to work appropriately.

COLLISION (FSI 19)

Very serious casualty: collision between a sport fishing vessel and a drifting pleasure craft

What happened?

An about 70 gt sport fishing vessel sailing for a deep sea fishing trip collided with a 8.4 m long pleasure craft which was stopped for temporary repair work on a cooling water leak in the engine compartment. The skipper of the sport fishing vessel, who was alone on the bridge, did not notice the pleasure craft until it was too late to avoid the collision. The crew of the pleasure craft saw the sport fishing vessel and tried to draw its attention by shouting, waving and sounding a signal horn, but were unsuccessful. They jumped overboard just before the support fishing vessel struck the craft causing the aft section to split apart. The crew of the pleasure craft were rescued by the sport fishing vessel.

Why did it happen?

The skipper of the sport fishing vessel decided to release the deckhand from his task of lookout despite visibility being restricted to 300 m.
The skipper of the sport fishing vessel was using a radar, but did not detect the pleasure craft.
The navigation lights of the pleasure craft were off.
The signal horn of the pleasure craft was barely audible.

What can we learn?

- Proper lookout, by all means available, specially under conditions of restricted visibility is essential for collision avoidance.
- That radar reflectors can enhance the radar echo of small craft.

COLLISION (FSI 19)

Serious casualty: collision between disabled ship and salvage tug

What happened?

The about 2,000 gt salvage tug was attempting to connect a tow to the disabled 8,896 gt reefer carrier on a river estuary anchorage during heavy weather conditions. The reefer had regained limited use of its main engine shortly before the tow was to be connected. The ship dropped one anchor to slow its rate of drift and was still using its main engine when it was occasionally available to arrest the rate of drift.

The master of the salvage tug was unsure of the status of the reefer's main engine and was unaware that the ship was still steaming ahead in spite of having one anchor down. When the salvage tug made a second approach to establish the tow, the bow of the ship collided with the port side stern region of the tug.

The tug sustained heavy damage to its bulwarks, and a fuel tank and a store room were breached. Thirty cubic metres of diesel oil were lost overboard and seawater entered the storeroom with the consequent loss of the automatic steering function. The reefer's forepeak tank was breached with consequent loss of ballast water. Two crew members on the salvage tug were injured by seas breaking over the deck while trying to establish the tow.

Why did it happen?

The master of the salvage tug was not aware that the reefer was steaming ahead on its engine while the salvage tug closed with its bow to establish the tow. The ship, the vessel traffic control, and salvage tug were not engaged in closed-loop communication and did not share the same mental concept of how the tow would be established.

The master of the salvage tug was operating from a second aft-facing bridge while trying to connect the tow, and had the use of only one VHF radio set, with most of the communications equipment being located on the main bridge. The officer-of-the-watch on the salvage tug had a high work load and was not able to relay to the master all information coming from the ship and vessel traffic control. The ergonomics of the communications system on the salvage tug made effective communication difficult.

The salvage tug was not ideally suited to manoeuvring close to a ship in the weather conditions at the time. The view of the aft deck from the salvage tug's aft facing bridge was restricted by the deck crane.

The deck crew members on the salvage tug not wearing protective helmets contributed to their injuries.

What can we learn?

- Effective planning for salvage operations, as well as any other operational task, is essential so that everyone involved shares the same mental concept of the plan.
- Good communications between all parties involved in salvage operations, or any other operational task, are essential for the successful implementation of the plan.
- The ergonomics of bridge design should be compatible with the purpose of the vessel.
- Personal safety equipment such as head protection should be worn at all times in designated work areas.

COLLISION (FSI 19)

Serious casualty: collision between ro-ro passenger ship and fishing boat

What happened?

The about 24,000 gt ro-ro passenger ferry collided with the 16.7 m long fishing boat that, because of a failure of the main engine, had anchored 13 nm offshore. The anchorage was close to a ferry route that was marked on a chart.

Why did it happen?

Watchkeeping personnel on both ships did not observe several COLREG '72 rules applicable to lookouts, use of anchor lights, appropriate use of the radar, and communication between vessels.

What can we learn?

- Even when not expecting to encounter traffic on a marked route, the need to maintain an effective lookout by all means available is of the utmost importance.
- The crew of the fishing boat was not aware that they had anchored close to the marked ferry route.
- It would be appropriate to attract the attention of another vessel by flashing lights (Aldis), radio communications and/or sounding the whistle.

COLLISION (FSI 19)

Less serious casualty: Collision; between salvage tug and suction dredger

What happened?

The about 2,000 gt salvage tug was leaving port and about to enter the river fairway. The master of the tug held the con for casting off from its berth. A river pilot was on board for the river transit. At the time of the tug's departure, a 5,339 gt suction dredger was working the channel close downriver from the point of exit into the river. The dredger was heading slowly upstream towards the exit.

The pilot and master agreed on a plan to exit the harbour ahead of the dredger, then turn upstream to maintain adequate distance to cross ahead of the dredger before turning downriver and passing the dredger port-to-port. The river pilot discussed the plan with the master of the dredger, who indicated that his dredger was working and travelling upriver at about 0.8 knots.

As the salvage tug entered the river she was affected by the river flow and did not achieve the rate of turn planned by the bridge team. The river pilot was surprised by the forward progress of the dredger, and all the bridge team soon realized that a collision was possible.

From that point on there was a divergence of views between the pilot and the master of the tug as to the best course of action to take. As a result, the pilot's engine orders and the master's application of engine movements were dissimilar.

The bow of the dredger collided with the port stern area of the salvage tug. The dredger was holed above the waterline at the bow and the salvage tug sustained damage to its bulwarks. There were no injuries and no pollution.

Why did it happen?

The pilot made a decision to enter the river fairway ahead of the dredger without first discussing with the bridge team the manoeuvrability of the tug, the effect of the tide on turning performance and the speed of the dredger.
The members of the bridge team did not all have the same mental concept of the plan and did not challenge the pilot when the possibility of a collision became known.
The master of the tug made engine movements in an attempt to improve the turning performance without the knowledge of the pilot.

What have we learned?

Effective crew resource management means the entire bridge team taking part in the planning and pre-departure briefing so that they all understand the plan and openly challenge any deviation from the plan using a closed-loop form of communication.
The importance of ensuring good communication of all activities among bridge team members.

COLLISION (FSI 18)

Collision between a ro-ro vessel and a fishing trawler

What happened?

At night, a ro-ro vessel and a trawler were approaching on reciprocal but parallel courses. The ro-ro vessel made a small alteration to port in order to pass clear of the trawler. When the two vessels were about three miles apart, the ro-ro vessel returned to its original heading and the trawler altered to starboard. The ro-ro vessel then used light and sound signals to warn the trawler. When the vessels were one mile apart, the ro-ro vessel's helm was put on manual steering and hard-a-port was ordered. The vessels collided and the crew of the trawler were recovered before it sank.

Why did it happen?

The ro-ro vessel made a small alteration to port that was not readily apparent to the trawler. The radar on the trawler was not working and there was only one person on watch, who was navigating visually. Neither vessel made their intentions known in a timely manner.

What can we learn?

- It is important to follow the COLREG and use all applicable navigation equipment
- Lack of training and certification for fishing vessel personnel on basic principles to be observed in keeping a navigational watch on boar fishing vessels are one of the main problems contributing to collisions between ships and fishing vessels.
- It is important to train fishing vessel personnel on watchkeeping duties. Administrations shall direct the attention of owners and operators of fishing vessels, skippers and watchkeeping personnel to the basic principles, which shall be observed to ensure that a safe navigational watch is maintained at all times.

CONTACT (FSI 18)

Controllable pitch propeller malfunction leading to contact with dock

What happened?

In good weather, a ro-ro ferry had turned and the master was backing the ship into the link-span. As he did so, the starboard controllable pitch propeller (CPP) alarm activated, but this went unnoticed. The master moved both CPP controls to take the way off, but the starboard CPP did not respond and continued to drive astern. The asymmetric thrust caused the stern to sheer to port, initially making contact with the pile fenders on the port side. Six minutes after the original alarm sounded, the master regained control of the starboard CPP at the centreline consol, but not early enough to prevent the vessel making heavy contact with the link-span. The vessel suffered damage to the shell plating and the stern ramp was blocked by bent steel. Ashore, damage occurred to the pile fender and the loading ramp of the link span.

Why did it happen?

- The CPP failure alarm was heard on the bridge, but the bridge team could not identify which alarm was sounding.
- The engine-room staff saw the alarm had activated and had not been reset, but did not contact the bridge to check that they were taking action.
- The bridge team was not familiar with the propulsion system's emergency procedures and time was lost while they determined the appropriate action.
- The bridge CPP alarm only sounded briefly and the flashing light on the panel reverted to steady illumination after a short time. Therefore the audio and visual triggers as to which alarm was activating were too transient.
- Despite intensive investigations, the cause of the CPP failure was not found.

What can we learn?

- The value of continually monitoring engine control feedback indicators.
- The value of understanding all alarm indicators prior to an emergency situation.

COLLISION (FSI 18)

Collision during overtaking situation in confined waterway

What happened?

A small dry bulk cargo vessel, while proceeding down a river fairway under good weather and visibility conditions, collided with a large container vessel, also proceeding down the river in the same direction.

The large container vessel had the smaller dry cargo ship on her starboard side and was approaching to overtake her. At the same time, she had another large containership, proceeding in the opposite direction, on her port side in the narrow fairway. When the two large containerships met, both of which were sailing under pilot's advice, the distance between them was only approximately 38 m. In this area the fairway was 220 m wide. When the three ships were almost abreast, the propulsion system of the dry cargo ship suddenly failed. After losing her forward propulsion and manoeuvrability, the smaller ship, which had kept to the right side of the fairway, was unable to undertake effective measures to counter the hydrodynamic

forces generated during the bigger ship's subsequent overtaking. The dry cargo ship turned to port towards the overtaking vessel, ultimately colliding with it at an angle of almost 80°.

The bow of the dry cargo ship was significantly dented when it tore the starboard side hull plating of the big containership over a length of eight metres above the waterline. Both vessels retained buoyancy and were able to proceed without assistance. There were no personal injuries and no environmentally harmful substances were released as a result of the casualty.

Why did it happen?

- The main contributing factor in this accident was the main engine failure of the smaller vessel. Also the section of the river on which the triple encounter and the collision took place provided very little scope for potential evasion manoeuvres.

- By reason of her relative speed and the corresponding displacement effect, the big containership generated a low pressure area that exposed the smaller ship to strong and changing suction effects, which might have at the same time overloaded her main engine.

What can we learn?

- The risk potential of multiple ship encounter situations in narrow fairways and rivers should be taken into account during voyage planning and when navigating in such areas.

- Hydrodynamic effect of fast, large and deep draught ships, especially in shallow waters, should be well understood by pilots, officers and ship masters sailing in fairways and channels.

- All close-quarters overtaking situations are dangerous.

- Overtaking situations in narrow channels are particularly dangerous due to the amplified nature of hydrodynamic forces.

COLLISION (FSI 18)

Collision between vessels at pilot station

What happened?

A tanker collided with a dry cargo vessel at a river entrance. The tanker was outbound and approaching the pilot station to disembark the pilot, while the dry cargo ship had just picked up a pilot a few minutes before the collision. It was daylight but dense fog reduced the visibility to about 120 metres. Both vessels were preoccupied with pilot embarkation/disembarkation preparations. There were only the pilot and the master on the bridge of the tanker. The master was distracted with manual steering and the pilot was occupied with disembarkation arrangements. Due to circumstances of traffic and tidal current, the dry cargo ship was about 0.4 miles in the way of the outgoing channel. The vessels were aware of each other's presence 6-7 minutes prior to the accident. The pilot of the tanker tried to contact the dry cargo ship for several minutes in vain. Later, the pilots had communicated their intentions and agreed that the tanker would head southerly and pass from the port side of the cargo ship. But the pilot of the tanker was again distracted with disembarkation arrangements and did not make the agreed manoeuvre. The last attempts of communication were unsuccessful due to radio interference. Shortly afterwards, both ships came in sight of each other and it was realized that a collision was imminent. The pilots advised to put the helm midship and to go full astern,

however, the two vessels collided. There was a VTS in operation in the region but VTS operators were passive during the development of dangerous situations.

The tanker suffered damage to her bow. The dry cargo ship suffered damage on the port side under the forecastle area in way of the forepeak store, forepeak tank, anchor hawsepipe, and indentation under the water line in way of forepeak tank and bulbous bow. There were no injuries or pollution.

Why did it happen?

- The visibility was very poor due to dense fog and several inbound vessels and an outbound tanker were in the same area nearly at the same time, many of which were converging on the pilot boarding area.

- The vessels were distracted and preoccupied with embarkation/ disembarkation arrangements. The vessels did not monitor, track or communicate with each other and did not learn each other's intentions well in advance of the accident.

- The dry cargo ship drifted too much southward, well in way of the outbound traffic due to strong tidal current. Her speed was reduced considerably as she was getting ready to pick up the pilot, and this increased her drift and she landed in way of the outbound traffic lane. The bridge team of the dry cargo ship and the pilot were late to realize the developing danger caused by the ship's position.

- The tanker did not execute the agreed avoidance action due to distraction of the pilot.

- VTS took a passive approach. It only acknowledged messages but did not warn either vessel of the other's intention, despite the very poor visibility and the position of the dry cargo ship which had drifted southwards in way of the outbound traffic lane.

- The pilots and bridge teams on both vessels did not make a full assessment of the risk of collision.

- ARPA was not used effectively on either vessel to assess the risk of collision. By the time the ARPA was used on the dry cargo ship, it was too late for it to provide reliable information.

- Effectively, no one held the con on the bridge of the tanker because both the master and pilot had deferred to the other, there was no discussion or questioning of the intentions of the dry cargo ship, and at a critical time they involved themselves with tasks that were inappropriate given the impending close quarters situation.

- The bridge on the tanker was insufficiently manned in the circumstances and conditions. It did not comply with company requirements or port authority instructions to pilots, however, no additional resources were requested by the pilot.

- The communication between all parties involved was unclear and prone to misunderstanding, and use of standard marine phrases was not practised.

What can we learn?

- The availability of VTS, having a pilot on board or approaching to pick up a pilot must not be a reason to relax or defer taking timely and efficient collision avoidance action.

- The collision avoidance action should have been taken in ample time as per Rule 8 and 19 of the Collision Avoidance Rules.

COLLISION (FSI 18)

Dragging anchor leading to collision

What happened?

A vessel dragging its anchor (without the use of its main engine) touched twice another vessel, then moved further through the anchorage and hit a *second* ship.

Why did it happen?

- The deteriorating weather caused the vessel to drag its anchor. The ship did not have its engines available to assist it to manoeuvre clear of other ships in the anchorage.

- The master of the vessel that was struck first probably did not appreciate the risk the weather posed to his ship and to those around it. Consequently, he did not allow sufficient time in which to heave his anchor up in the prevailing circumstances and conditions.

What can we learn?

- The importance of having main engines ready for immediate use in deteriorating weather conditions.

- The importance of having an appreciation of the risk posed to a ship by others in an anchorage area.

- The importance of good anchoring practice, including:

    - the amount of cable to put out;

    - the numbers of anchors to use;

    - the need to ballast down ships if possible; and

    - the importance to head for open sea before the weather conditions become too bad.

COLLISION (FSI 18)

Collision caused by fatigue

What happened?

The two vessels collided almost head-on after neither watchkeeper took action to avoid the collision. Vessel 1 sank as a result of the collision and its chief engineer was lost.

Why did it happen?

- The watchkeeper on board vessel 1 fell asleep in the bridge reclining chair.

- Consequently, he did not maintain a look-out and did not see the approaching ship until it was too late.

- The watchkeeper on board vessel 2 assumed that the other ship would take avoiding action so did nothing despite the fact that the two ships were approaching each other on an almost reciprocal heading so as to involve a risk of collision.

What can we learn?

- The importance of managing fatigue both in port and at sea following time in port.

- The importance of keeping a proper and effective look-out.

- The importance of not making assumptions that the other ship in a risk of collision situation will take action to avoid the collision.

COLLISION (FSI 17)

What happened?

A trawler suffered a mechanical failure and the master requested a tow. While setting up the tow arrangement in winds of force 8-9 on the Beaufort scale and seas of 8-9 metres, the vessel providing assistance and the disabled trawler collided. A crew member on the assisting vessel was crushed to death between the bulwark and the side of the wheelhouse.

Why did it happen?

- The assisting vessel was upwind from the trawler when two successive waves caused the vessels to collide with each other. The crew member handling the towline on board the assisting vessel was unable to move quickly out of the way before the collision. A line throwing apparatus was available on board both vessels, but was not used.

What can we learn?

- Rendering assistance in adverse weather can be a high-risk situation, requiring sound preparation and rigorous execution.

- Appliances and methods, such as line throwing apparatuses and drift buoys, can be used to reduce the risk of collisions and contacts between vessels setting up towing arrangements in adverse weather.

NEAR COLLISION CLOSE-QUARTERS BETWEEN A TANKER AND A FISHING VESSEL (FSI 17)

What happened?

A: The first round of close-quarters between the tanker and a passenger ship.

At 2020 hours a tanker was proceeding northwards through Cook Strait. A fishing vessel was engaged in trawling in the strait while her heading was 130º (true) at a speed of 3.5 knots. The fishing vessel attempted to attract the attention of the tanker by VHF and flashing light since her ARPA showed a CPA of 0.3 miles. The attempt resulted in failure and therefore the fishing vessel commenced hauling her net, which reduced her speed to 1 knot. Consequently the tanker passed ahead of the fishing vessel with a CPA of 0.4 miles.

B: The second round of close-quarters between the tanker and a passenger ship.

After the first round of close-quarters the tanker was still proceeding northwards through the strait. A passenger ship was proceeding northwest through the strait at a speed of 19.1 knots. The passenger ship called the tanker on VHF to advise of a CPA of 0.3 miles and to request intentions when the distance between the two ships was about 2.9 miles. The tanker replied that she would alter course. But she did not alter course. Three minutes later, when the distance between the two ships was about 2.1 miles, ARPA of the passenger ship indicated a CPA of 0.1 miles in 7.9 minutes. The passenger ship called the tanker again to advise of the CPA and request intentions of the tanker, which replied that she would alter course to port (across the bow of the passenger ship). Actually she altered course 26 degrees to port, which did not significantly increase the distance of the CPA and therefore the passenger ship stopped both her engines. Consequently the tanker passed ahead of the passenger ship with a CPA of 0.9 miles.

Why did it happen?

A: The first round of close-quarters between the tanker and the fishing vessel occurred because the OOW of the tanker failed to comply with COLREG Rule 8 (action to avoid a collision) and Rule 18 (a) (a power-driven vessel shall keep out of the way of a vessel engaged in fishing) due to the following reasons:

A-1: The master of the tanker was not on the bridge while proceeding in Cook Strait, a narrow channel, where the vessel was likely to encounter significant other traffic including fishing vessels and a crossing passenger ship.

A-2: Although there was another watchman (lookout) on the bridge, the OOW of the tanker did not seem to have noticed the VHF radio call and flashing light by the fishing vessel that had a significant concern about a CPA with the tanker.

B: The second round of close-quarters between the tanker and the passenger ship occurred because the OOW of the tanker failed to comply with COLREG Rule 8 (action to avoid a collision) and Rule 15 (action by give-way vessel) although he understood that his ship was a give-way vessel and he could reduce speed or take a turn out of the vessel due to the following reasons:

B-1: The master of the tanker was not on the bridge while proceeding in Cook Strait, a narrow channel, where the vessel was likely to encounter significant other traffic including fishing vessels and a crossing passenger ship. (As the second officer had made a large notation on the chart, the area was a “Ferry cruising area”.)

B-2: Although the experience of the OOW of the tanker was not stated in this incident report, considering the description indicating that it was the first time for the master to visit New Zealand, the OOW seemed unfamiliar with Cook Strait.

B-3: The OOW of the tanker did not notify the master of the close-quarters situation with the passenger ship in Cook Strait.

B-4: The OOW of the tanker misunderstood the voluntary code on chart NZ46 stating “vessels laden with oil in bulk are to keep at least five miles off the land” and he was preoccupied with it when he was requested to alter course to starboard (toward the land) by the passenger ship.

B-5 It was difficult for the OOW of the tanker to identify the navigational lights of the passenger ship from a safe distance due to the bright line of deck lights of the passenger ship that merged with the bright shore lights that camouflaged the sidelight of the vessel.

B-6: The OOW of the tanker did not carry out a trial manoeuvre on the ARPA to ascertain if his action of altering course 26 degrees to port would be effective, although he appeared to be able to demonstrate his ability to use the ARPA.

What can we learn?

1) The master of the tanker proceeding in the narrow channel should have been on the bridge and in command of the ship, as a good practice of seamen because there was a need for extra vigilance while proceeding in the narrow channel.

2) The OOW of the tanker should have notified the master of the close-quarters situation with the passenger ship in Cook Strait.

3) The vessel, even though she was proceeding in a narrow channel, should have taken action to avoid a close-quarters situation positively in ample time if she was a give-way vessel.

4) The voluntary code on chart NZ46 stating “vessels laden with oil in bulk are to keep at least five miles off the land” should have been understood properly by the deck officers (including the master) of the give-way vessel proceeding in Cook Strait, in order to prevent needless confusion which might preoccupy the mind of the OOW of the tanker who would alter course toward the land to avoid a close-quarters situation with the stand-on vessel.

5) The OOW of the tanker, who replied that he would alter course by VHF radio to the stand-on vessel, should have altered course positively in ample time (or should have stopped engine) to avoid a close-quarters situation with the stand-on vessel in order not to give anxiety to it.

6) The OOW of the tanker should have carried out a trial manoeuvre on the ARPA to ascertain if his action of altering course 26 degrees to port would be effective.

7) On a positive note, both the fishing vessel and the passenger ship took measures to avoid a close-quarters situation with the tanker in accordance with the COLREGs.

8) It seemed admirable that the OOW of the passenger ship called the tanker to clarify the intentions twice and notified the master when doubt still existed and finally took the necessary action (to slow down) in order to avoid a close-quarters situation before the master arrived at the bridge.

COLLISION (FSI 16)

What happened?

A double hull crude oil carrier was NE bound in a busy traffic area. At the same time a bulk carrier was proceeding on a SW’erly course to enter the traffic lane. It was early morning. The weather was fine with a light breeze, slight sea, good visibility. The tanker saw the bulk carrier on her starboard bow. Although the bulk carrier was crossing the bow of the tanker, the officer on watch of the tanker predicted, relying on the radar information that it would pass clear on the starboard side. Both ships were following each other’s movements, but none of the ships made any evasive action until last moment. There were no acknowledged visual or audible communications between the vessels. They collided at about 06:55 hours. Although there were no injuries and no pollution, structural damage occurred on both ships.

Why did it happen?

The tanker's officer on watch relied on radar information to conclude that the bulk carrier would safely pass from starboard side. He apparently did not assume that the bulk carrier would cross his bow. The bulk carrier attempted to cross the bow of the tanker from close distance. The officer on watch was apparently relying that he had right of way but the alteration of course (more to starboard) by bulk carrier was not large enough to be easily recognized by the tanker. The tanker was not sure of the intention of the bulk carrier, but still none of the ships made any action to avoid collision until last moment. In the last moment, the tanker made a hard turn to port, which actually resulted in the collision.

What can we learn?

Both vessels could have applied the COLREGs better. In this case, the best solution would have been for the vessels involved to take avoiding action in good time, such that their actions were readily apparent to the other vessel.
Notwithstanding the narrow crossing angle, one vessel considered itself to be the stand-on vessel. However, it made no attempt to establish the intentions of the other vessel, or to indicate concern about the other vessel's apparent lack of action. Where doubt exists, Rule 17 allows for the stand-on vessel to take action to avoid a collision – such action would have been appropriate here.

COLLISION (FSI 16)

What happened?

A ro-ro passenger vessel was en route with about 90 passengers on board. The weather was calm with intermittent fog. At about 04:30 hours in the morning, a dry cargo vessel approached from port side and crossed the bow of the ro-ro ship from a close distance. Both ships tracked each other with radar. There was no visual sight as visibility was down to about 0,1 M. Right after crossing the bows, the dry cargo vessel made a violent turn to her starboard and collided with the ro-ro ship. The stem of the dry cargo vessel penetrated the plating of the ro-ro ship and tore a hole in the cargo deck space and engine rooms.

Water poured into the engine rooms of the ro-ro ship and since many watertight doors were open, large parts of the engine area were filled with water. Her power supply and propulsion machinery were put out of action. Passengers and the majority of the crew abandoned the ship by master's orders.

The ro-ro ship was towed into the port. She continued taking in water and was hardly saved from capsizing and sinking with extensive work, which took several days. The ro-ro ship sustained extensive damage resulting both from the collision and the flooding afterwards. There were no injuries and no long-term or permanent pollution. All her cargo was saved.

The dry cargo vessel was able to continue her voyage with a fairly small leak in the stem. She had comparatively minor damage.

Why did it happen?

Although there was fog, none of the ships took steps to avoid development of a close quarters situation in time. The master of the dry cargo vessel misjudged the ro-ro ship's position, course and speed and changed course far too late. Actually this change resulted in the collision. Nothing would have happened if he simply kept his course and speed. The officer on watch of the ro-ro ship apparently did not assume that the dry cargo vessel would make the turn. He

was apparently relying that he had right of way and therefore did not feel the need to keep well clear. Moreover, the officer on watch of the ro-ro ship was grown used to accepting meetings in close quarters situations. It is found that he did not receive special instructions regarding minimum distances allowed. By neglecting to avoid a close quarters situation, the officer on watch faced a situation from which he could not escape by his own action when the dry cargo vessel made the unexpected manoeuvre.

The reason that the ro-ro ship became flooded and nearly sunk was because several watertight (WT) doors were open beforehand and were not closed in time after the collision. In this aspect, the shipping company lacked a sufficiently thought-out and implemented safety policy. Electrical systems for closing of WT doors were not watertight and became inoperational during flooding. The crew's skills in closing the watertight doors in a dangerous situation were not sufficiently increased with drills.

What can we learn?

In this case, the master of the dry cargo vessel made a mistake, which resulted in a collision. However, both vessels took insufficient action to avoid a close quarters situation. Remember, Rule 19 applies in restricted visibility and not the rules for vessels in sight of one another. Both vessels therefore had an obligation to avoid the close quarters situation.

Watertight (W/T) subdivision of compartments exist to increase the survivability of a vessel in the event of flooding, however it is caused. W/T integrity should be maintained at all times.

COLLISION (FSI 16)

What happened?

At late afternoon, an inland motor tanker was proceeding in the main navigational channel with 960 T of sulphuric acid and turning into a secondary channel in a busy port. She was going to proceed further inwards to her discharge port. At the same time, a big container vessel left its berth and she was departing from the secondary channel to enter into the main navigational channel. Visibility was good. Wind was from West 6 to 7 Beauforts.

The two vessels collided in the area where the secondary channel opened into the main channel.

The container carrier suffered only minor damage from the collision. The inland tanker was damaged on her port side. The outer plating in the foreship was deformed, water flooded into the forward port wing tank at the same time, one of her two propulsion units was damaged and became inoperational. However, she remained floating and was able to continue her voyage with only one propulsion unit. She reached her berth and tied up with a slight list to port side. The fire brigade tried to keep the inland tanker floating, but its list to port increased swiftly. About 45 minutes after the collision, the inland tanker capsized and floated keel upwards in the basin. Nearly all the cargo of sulphuric acid was released into the port waters. The rapid dilution of cargo prevented a major environmental pollution. The inland tanker was re-floated after 5 days.

Why did it happen?

Upon the test made right after the accident, the master of the tanker was found to be under the influence of alcohol. The tanker was fully loaded and was very low in the water. The view from the main channel to the secondary channel and vice versa was partly blocked by another berth and cargo/port machinery on the berth. None of the ships were able to see each other in advance until last moment due to this optical barrier. Both ships relied on VHF communications

and radar for manoeuvres. Both ships transmitted their compulsory reports to VTS. But when the ships made their reports, there were a number of misunderstandings and reporting mistakes. In some reports the calling vessels' name was not mentioned. In others, it was not clear to whom the message was addressed to. So the ships did not perceive the messages accordingly.

The tanker had her radar turned off. She was unable to detect the big ship in advance. Also the container ship did not use radar for evaluation of the situation.

Due to strong winds, the container ship had to increase its speed to 7 knots right after casting off to ensure steerability. As she was a large vessel, the command directed their concentration to other ships, to tightness of channel, to tugboats, etc. (preoccupied with other work).

The tanker did not take its turn into secondary channel in accordance with the applicable rules. Rules stipulate that; manoeuvre for crossing the main navigational channel and subsequent running into the secondary navigation channel must be designed in such a way that the vessel crosses as close as possible at right angles to the direction of main channel and must take a position to enter that allows subsequent entry into the right hand side of the secondary channel. If the tanker planned and executed its entry manoeuvre in this fashion, both vessels would have seen each other well in advance. But the tanker started its turn too early and thus remained hidden from visual contact by the wharf until the last 400 metres. In the last moment, it did not make any collision avoidance action.

After the accident, the tanker did not start the drainage pump to pump the incoming water. (The master refrained from using the pump. The deckhand did not have any knowledge about the pump.)

What can we learn?

- Due regard should be paid to standard collision avoidance procedures. Proper lookout during sailing in dense traffic areas is at superior importance. Every vessel should at all times maintain a proper look-out by sight and hearing (including listening of the radio communications) 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.

- Every vessel should at all times proceed at a safe speed so that she can take proper and effective action to avoid collision and be stopped within a distance appropriate to the prevailing circumstances and conditions.

- Every vessel should 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 should be deemed to exist.

- Use of radar facilities on board when visual sight is hampered is an indispensable navigational aid. Proper use should be made of radar equipment if fitted and operational, to obtain early warning of risk of collision and radar plotting or equivalent systematic observation of detected objects.

- Alcohol at the work place endangers not only the person himself, but also all other persons, ships and the environment substantially. Consumption of alcohol on board, although decreasing, continues to be a problem issue. Alcohol may reduce judgment capacity, and may lead persons to act boldly and irresponsible. The master of the tanker did several mistakes in a short time. (He did not report his vessels name, did not apprehend the incoming warnings, did not follow the local traffic regulations regarding turning into secondary channels, did not make room for the much larger

vessel, did not make last minute collision avoidance action and after the collision did not utilize the drainage pump on board.)

- All local traffic navigational rules should be closely adhered to in order to avoid close quarters situations. If it becomes necessary to deviate from the regulations due to traffic situations, VTS/other ships should be informed beforehand.

- Clear individual traffic agreements should be made with other vessels at an early stage and unambiguously.

- Clear and open language should be used for VHF communications. All announcements should include the vessels names.

- VTS advisory services and land based radar advice should be sought for getting navigational information, especially during limited visual coverage when entering/exiting navigational channels.

- All crew members should know the presence and operation of drainage pumps on board. Routine training on safety equipment is a very important safety requirement and should not be put aside even for a small vessel working within the port.

COLLISION (FSI 16)

What happened?

A tug and tow were steaming on location around awaiting passage through some straits. Another vessel collided with the towed vessel.

Why did it happen?

The approaching vessel was keeping poor lookout, and did not alter course or answer radio calls or acknowledge flashing aldis, etc.

The towing vessel did not take any avoiding action. Increased traffic as ships waited near straits entrance. Ships manoeuvring rather than steaming en route (less predicable).

What can we learn?

Tug and tow needed to be aware of the change in their reactions required by their restricted manoeuvrability. Increased traffic density and reduced predictability as ships ‘steam around’ waiting increases risk of collision. The lookouts task is crucial to avoid accidents.

COLLISION (FSI 16)

What happened?

The fishing vessel, with the captain alone on the bridge and under the influence of alcohol, left berth for going out with the tide after receiving traffic information and clearance from the VTS. The visibility was restricted. Instead of turning starboard and follow the north, starboard, side of the main channel, she crossed the channel while passing very close (15 m) in front of an inbound ship. After crossing the bow of the other ship, there was not room enough to turn, so she collided with the jetty on the opposite side of the channel, viewed from her on berth.

During that time, both of the two VTS operators were distracted by other duties and did not notice the deviation and up-coming dangerous situation until it was too late.

After the collision, the fishing vessel headed to the north side of the channel and shortly after, passed slowly a tanker with a distance of 9 m. The fishing vessel was later escorted back to the berth.

The VTS did not follow own procedures regarding informing other traffic via VHF about the vessel.

There was some minor damage on the vessel's bow and on the jetty.

Why did it happen?

- The captain was under the influence of alcohol.
- The visibility was restricted.
- There was no lookout on the vessel.
- The captain did not use the radars, though they were switched on.
- The captain neither had a passage plan nor a proper chart available.
- The VTS operators were distracted by other duties and did not survey the radar screens.

What can we learn?

Legislations and procedures should be followed even in known waters, especially when visibility is restricted. Lookout and navigational aids should be in place and used efficiently.

COLLISION (FSI 16)

What happened?

A stern trawler, which had been fishing in a traffic separation scheme, was heaving in its trawl while proceeding at about two knots to other fishing grounds. Visibility had been reduced because of fog. A container ship was heading in relatively the same general direction as the stern trawler, but at a speed of 16 knots. The container ship struck the after end and starboard side of the trawler.

Why did it happen?

The trawler's radar reflectors were not deployed on the trawler when visibility was reduced. The officer of the watch on board the container ship was inexperienced. No lookout was posted and the speed of the containership was not reduced while in restricted visibility.

What can we learn?

The composition of the watch should include experienced personnel when proceeding in difficult areas of navigation.

Collision avoidance practices should include a greater use of the radar and ARPA, in combination with the use of helm and the main engine.

Closely monitor vessel traffic in the vicinity to enable the early identification of developing collision situations.

A COLLISION LEAVING PORT (FSI 15)

What happened?

A ship left port in the late evening with a pilot onboard. Just before passing the harbour entrance, the pilot left and the ship proceeded full ahead. On the starboard bow was another ship, approaching the pilot pick-up area.

The pilot to the approaching ship was still in the pilot boat and delayed. He saw that a close-quarter situation was coming up and called the outgoing ship via VHF, asking for intentions. He was answered that the outgoing ship was keeping course, due to obstructions. He therefore advised the incoming ship to go to port, which it did. However, it was too late and a collision occurred.

The outgoing ship had damage in the hull and took in water. The anchors were dropped, but with assistance of tug-boats and after the anchor chains were cut, the ship was beached close by. The approaching ship could berth without assistance.

Why did it happen?

If the pilot on the outgoing vessel had stayed a little longer, the accident may have been prevented. Both ships claim that they did not hear the conversation of the other ship. The outgoing ship did not apply to the COLREGs, claiming obstructions. The investigation shows however, that there was space and water enough for her to change course.

What can we learn?

- Keeping a VHF-traffic listening watch help you to keep up to date with what is happening around you.
- Follow the COLREGs and keep to standard procedure. It may reduce confusion.
- Pilots should stay on board until their task is completed.

COLLISION BETWEEN AN OIL TANKER AND RO-RO VESSEL (FSI 15)

What happened?

An oil tanker was proceeding in a westerly direction. Visibility was good. The OOW of the oil tanker saw a ro-ro vessel ahead, proceeding in an easterly direction. The oil tanker made a number of small alterations to starboard with the intention to pass ahead of the ro-ro vessel. When the two vessels were about one-half mile apart, the oil tanker called the ro-ro vessel. The ro-ro vessel proposed a “green-to-green” passing. Realizing that it would have to make a large course alteration to port, the oil tanker proposed a “red-to-red” passing and, because it was not permitted to be closer than two miles from shore, it would maintain its course and speed. Two minutes before the collision, the ro-ro vessel indicated that it would manoeuvre toward the oil tanker. The ro-ro vessel struck the port side of the oil tanker. Both vessels sustained damage, but there was no release of pollution. Escorted by a tug, the vessels proceeded to port under their own power.

Why did it happen?

Neither vessel monitored the developing situation involving a risk of collision and did not take frequent relative bearings. The arrangement for passing was made only a few minutes prior to the vessels colliding with each other. Furthermore, the OOW on board the ro-ro vessel became perceptually confused by the discussion with the oil tanker to make passing arrangements. The OOW only called the master when the oil tanker was about one mile away.

What can we learn?

- Closely monitor vessel traffic in the vicinity to enable the early identification of developing collision situations.

- Take early and substantial action to keep well clear of vessels. A succession of small alterations of course is to be avoided. Avoid taking action that does not conform to International Regulations for Preventing Collisions at Sea.

- If in any doubt as to the other vessel's actions or intentions, the OOW should seek clarification from the vessel and, if doubt still exists, notify the master immediately and take whatever action is necessary before the master arrives.

COLLISIONS IN THE PORT APPROACHES (FSI 15)

COLLISION 1

What happened?

Two small tankers (no pilots required), one inbound, one outbound, collided in the port approaches, in a confined section of the main channel. The ships had to pass in an area that was restricted due to long term dredging activities. Both ships suffered significant damage.

Why did it happen?

- The reduced width of the channel in the area of the dredging.
- Poor promulgation of information by the port.
- VTS allowed ships to make their own arrangements.
- There was a blind sector in the VTS coverage.
- Glare from shore lights affected inbound ship.
- Unsafe speed by both ships.
- Inadequate communications between the two masters.

What can we learn?

- Any communications involving collision avoidance need to be unambiguous and need to be made early.
- Uncertainty needs to be resolved before continuing into close quarters. The faster the ships travel to earlier decisions need to be made.

- Higher speeds reduce the chance of correcting mistakes and increase the consequences.

COLLISION 2 (FSI 15)

What happened?

A collision occurred between two large container ships in the approaches to a high traffic port.

Why did it happen?

- A high traffic volume of both larger high speed ships and small fishing vessels.
- Ships proceeding at high speeds, and changing speeds, as they approach and depart the port area making risk assessment and collision avoidance more difficult.
- Failure of the AIS signal on one ship may have distracted the watchkeepers on the other as they tried to communicate.
- Voyage plan did not identify the high risk imposed by the area of high traffic density.
- Fishing vessels complicated the manoeuvres of the larger ships.

What can we learn?

- Higher ship speeds require longer range risk assessment and continuous monitoring. A safe speed needs to take into account the traffic types and density.
- Voyage planning should identify areas of increased risk from traffic.
- Higher speeds reduce the chance of correcting mistakes.

CONTACT WITH A BRIDGE BUTTRESS (FSI 14)

What happened?

A sailing vessel was on a passage that involved passing through a bridge on a strong flood tide. Forty-eight persons were on board including 17 physically disabled persons. The passage depended upon the bridge roadway being lifted. The sailing vessel was navigating under power using its starboard engine. The use of the port main engine was restricted. The pilot assumed that arrangements had been made to lift the bridge and after a number of attempts to contact the bridge. He responded to a weak VHF call believing it to be the bridge. It was not. A subsequent mobile phone message confirmed that no bridge lift had been ordered. Between about 400 m and 500 m from the bridge the decision was made to abort passage and turn the sailing vessel. The operation was hampered by adjacent mooring buoys, a passing tug and tow and a flood tide of 2.5 knots. The pilot did not use the anchor to snub the ship round and delayed starting the port engine.

The sailing ship was carried broadside and contacted the southern buttress of the bridge.

Why did it happen?

1 A lack of understanding by the operators meant that a lift of the bridge roadway had not been ordered as required by the port procedures.

2 The master/pilot briefing was inadequate and no check was made to ensure that the port procedures had been followed.

3 No contingency planning had been undertaken by either the master or pilot to plan for an aborted passage.

4 The true nature of the restriction on the port engine was not understood, its use was delayed and then only used at half power.

5 Decisions were delayed beyond the 'no-go' point so that the anchor was not used and the outcome was inevitable.

What can we learn?

Passage planning, contingency planning and realistic risk assessments are essential in ensuring a safe passage.

POOR LOOK OUT (FSI 14)

What happened?

A large fishing vessel with 24 crew members ran aground just outside a compulsory pilotage area with the fishing master and mate on the bridge. The fishing master was acting as master, but was not qualified to do so. The vessel was on auto-helm steering with a known five degree gyro error, the engine was on full ahead. The fishing master and mate were discussing ship business and did not notice the vessel deviate from its course.

Why did it happen?

1 Failure to keep a proper lookout.

2 Allowing those on the bridge to be distracted from the primary task.

3 There was no proper use of the human resources on the bridge.

What can we learn?

There is absolutely no substitute for keeping a proper navigational watch and focusing on the primary task of safe navigation. Bridge resource management reduces risk.

DRAGGING OF ANCHOR (FSI 14)

What happened?

A large, sophisticated yacht was at anchor close to the shore in a position convenient for boat transfer to a local port. The yacht was at anchor for a number of days in good weather and light winds. No anchor watch was kept. The wind subsequently increased in strength and the yacht was at anchor on a lee shore with a short scope of chain deployed. The period of yaw decreased with the increasing force of the wind and the design of the yacht. The master decided to get underway but before the engine could be brought into effect the anchor broke out of its holding ground. The yacht dragged anchor rapidly over 300 m and grounded.

Why did it happen?

1 Decision to get underway was delayed.

2 Lack of contingency planning.

3 Anchorage chosen and maintained for ‘convenience’ rather than safety.

What can we learn?

Risks should be recognized and contingencies planned for and understood by crew. Decisions to minimize risks should be made in good time without regard to less important considerations.

CONTACT WITH A JETTY (FSI 14)

What happened?

An inbound liquefied petroleum gas (LPG) tanker was under pilotage to berth starboard side to a jetty on the south side of a narrow channel. The vessel was approaching the jetty from the east in reduced visibility (2 miles) and keeping to the starboard (north) side of the channel. The tanker was making eleven knots with a flood tide. At about this time a petroleum tanker sailed from the jetty. Another LPG tanker transiting the area had been notified that a petroleum tanker was leaving the jetty. The two LPG tankers saw each other and agreed to pass green to green to avoid collision. The transiting LPG tanker thought that the ship it was avoiding was the product tanker leaving the jetty. The passing manoeuvre forced the inbound LPG tanker to the south. In attempting to turn to go alongside the berth the tanker ran out of room and contacted the jetty.

Why did it happen?

1 Transiting LPG tanker on wrong side of narrow channel.

2 Insufficient sea room to undertake a ‘running’ turn.

3 Excessive speed and possibly a miscalculation of effect of following tide.

4 Loss of visual perspective in restricted visibility.

5 Possibly there was no plan or if there was one, the plan was not flexible.

6 There was no evidence that anyone, other than the pilot, was involved in manoeuvring the ship.

7 This was a routine manoeuvre that had been modified by external influences.

What can we learn?

Proper planning and bridge resource management can reduce the risk of accidents.

COLLISION IN FOG (FSI 14)

What happened?

A roll-on, roll-off (ro-ro) ship leaving port with a local pilot entered a narrow channel at about 6 knots and collided with a dredger in fog (visibility about 200 m). The pilot had boarded the ro-ro ship ten minutes before sailing and had been engaged because of the reduced visibility. The dredger had just deposited its spoil and was on passage to an adjacent harbour making about 5 knots. At the same time a small pleasure craft was known to be on passage through the area and in a VHF contact confirmed it would stay out of the channel. Both the ro-

ro ship and the dredger were operating radar on 0.75 mile range. Port Control had radar coverage of the area and gave the ro-ro ship clearance to leave. VHF conversation between the pilot of the ro-ro ship and dredger agreed that the dredger would keep to the extreme edge of the channel. The conversation was conducted in Danish, a language which the ro-ro master did not understand. The dredger was set by the tide into the channel and although the master realized this he delayed correcting the course. As the ro-ro ship left the berth, a vessel was detected by the ship's radar and the pilot initially assumed it was the pleasure craft. When the ro-ro ship had cleared the harbour entrance and was turning to starboard a vessel was seen close ahead. The closing speed was about 5.7 m/s. Both vessels went full astern, but collided.

Why did it happen?

1 The ro-ro ship was given permission to sail when there was a potential risk of collision with the dredger. A delay of a few minutes in leaving the berth would have removed the risk.

2 The radars of both vessels were on an inappropriate range and longer distance scanning was not used.

3 At a range of 0.75 miles the approaching vessels would have been in radar contact for only four minutes.

4 In fog, perspective is changed, and unless planned and blind pilotage techniques are used, course alterations can be delayed.

5 The use of the local language to communicate between the three vessels meant that the master and other ro-ro ship's bridge personnel were unaware of critical information.

What can we learn?

Planning is vital in reducing risk. Blind pilotage techniques and bridge resource management reduce the risk of accidents.

COLLISION (FSI 14)

What happened?

While proceeding in the traffic separation scheme, under conditions of restricted visibility, the master of a container ship altered course to starboard to pass ahead of a crossing ship and collided with an overtaking vessel to starboard. The speed of the container ship was 16 knots.

Why did it happen?

1. The bridge watch arrangement, consisting of the master and a wheelsman, was not adequate for the prevailing conditions.

2. The conditions of restricted visibility aggravated an already stressful situation for the bridge team.

3. The master was not fully aware of the situation and did not communicate with the other vessels to determine their intentions. There was no consideration to reduce the speed of the ship.

What can we learn?

An effective lookout that ensures that the bridge team is always aware of shipping movements round his vessel is an essential feature of good resource management and safe navigation. Masters need to assess carefully all the developing hazards and risks that could affect the safety of navigation and set a safe speed accordingly.

CONTACT AND COLLISIONS (FSI 13)

What happened?

The refrigerated cargo ship collided with the general cargo ship, off the Varne in the SW bound lane of the Dover Strait traffic separation scheme. The accident resulted in the damage to the starboard side of stand-on vessel and the slight injuries of one seaman, and bow damage of the overtaking vessel.

Why did it happen?

The major cause of the collision was that the overtaking vessel failed to observe the presence of the stand-on vessel which failed to take avoiding action.
Further contributing factors of the collision have been identified as follows:
• The deck officer and master of the overtaking vessel overlooked the blind area ahead of the bow due to possibly spending a large proportion of their time at a particular position obscuring other vessels because of own deck cranes.
• The master and deck officer of the refrigerated cargo ship might have been less vigilant because the vessel had passed through the busiest and narrowest part of the Dover Strait, and also because the traffic around him was travelling in the same direction.
• The radar clutter controls had been turned up to an extent where a small vessel at close range could be detected.
• The overall condition of the radars might have been below that required to enable a satisfactory radar watch to be maintained.
• The stand-on vessel maintained the course line precisely by use of the cross-track-error on the GPS which increased the risk of a close quarters situation with overtaking vessels using the same course line.
• The chief officer who was the sole watchkeeper of the stand-on vessel failed to appreciate that there was available sea room to port, probably because of his reliance on the GPS for passage monitoring rather than reference to the working chart.

What can we learn?

• The best way to prevent marine accidents is a good lookout and sharp radar watch.
• Identified deficiencies of navigational equipment on vessels must be promptly and effectively rectified and sufficient bridge watchkeepers must be maintained at all times on board.
• Over reliance of masters and deck officers on GPS for passage monitoring might bring about serious dangers, without due reference to the working charts.
• All masters and deck officers must at all times comply with COLREG.

COLLISION (FSI 12)

What happened?

An overtaking vessel collided with a stand-on vessel at a speed of about 6 knots faster than the stand-on vessel in the southwest (SW) traffic lane of the Dover Strait Traffic Separation Scheme (TSS). Consequently, the stand-on vessel foundered and its master died.

Why did it happen?

The officer of watch (OOW) of the overtaking vessel did not notice the stand-on vessel, either visually or by radar until the collision was imminent and therefore was not keeping a proper lookout. The OOW of the stand-on vessel was distracted from lookout duties by a mobile telephone call. He was therefore unaware of the developing situation and, as the stand-on vessel, was unable to fulfil his obligations under the collision regulations.
Dedicated lookouts were not posted on either vessels.

What can we learn?

A fundamental basis for collision avoidance is a good lookout.
In heavy traffic situations like those that exist in the Dover Strait TSS, the posting of a dedicated lookout is a sensible and seamanlike precaution.
Dangerously close overtaking has become commonplace in the SW lane of the Dover Strait TSS.
Dangerous situations arise where vessels of markedly different speeds are travelling on coincident tracks.
Vessels should always be guided by Rule 5 of the COLREGs relating to Lookout (PART B - STEERING AND SAILING RULES, Section I - Conduct of vessels in any condition of visibility), which states that :
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.

COLLISIONS (FSI 11)

What happened?

A pleasure craft (8 meters) whilst anchored 28 miles from the nearest land for the night in a shipping lane off the North East coast of Australia, with all hands on board sleeping, was struckby a passing bulk carrier. Fortunately there were no casualties. The collision went unnoticed by the OOW and the lookout on the bulk carrier.

Why did it happen?

Available evidence indicates that proper radar and visual lookout was maintained on the bulk carrier. There could be several possible reasons for the pleasure craft not being observed on the bulk carrier: (i) pleasure craft presented a poor radar target; (ii) anchor light on the pleasure craft was too weak and did not comply with COLREGs; and (iii) reflection of moonlight from the water prevented the pleasure craft hull being seen from the bulk carrier bridge. Another contributory cause to the collision was the lack of a lookout on the pleasure craft which was anchored in a shipping lane at night.

What can we learn?

Numerous collisions occur between large ships and small craft every year resulting from lack of proper lookout on one or both vessels. All watchkeepers need to be aware that small craft may not be readily sighted by radar or visually from the navigating bridge of large ships. The importance of proper lookout on all vessels, large and small, cannot be overemphasized and watchkeepers shall also be guided by Rule 5 on Look-out of the COLREGs. Smaller ships should consider warning larger ships of any developing collision risk by using all available means including light signals, sound signals and radio communication. Larger ships must remember that provision of proper radar lookout does not obviate the need for effective visual

lookout and vessels with operational radar shall be guided by Rule 6 (b) of the COLREGs. All ships including small craft, shall avoid anchoring in a known shipping lane.

What happened?

Sudden steering system failure of an oil tanker led to collision with a passing bulk carrier in the Baltic Sea. The collision resulted in serious damage to both vessels and spillage of 2,700 tonnes of fuel oil from the tanker.

Why did it happen?

The cause of the sudden steering failure could not be established. Small passing distance (0.5 miles) between the two vessels precluded effective avoidance action being taken on both vessels. Both vessels unnecessarily restricted their passing distance by choosing the deepwater route although their relatively shallow draft permitted them to use the recommended directions of traffic flow outside the deepwater route.

What can we learn?

Vessels should avoid using deepwater routes when their draft permits them to use a traffic separation scheme. OOW should remain at heightened alert when passing another vessel at close range and should be vigilant for equipment failure and unexpected response from own or other vessel including interaction between vessels passing each other at close distances.

What happened?

A passenger cruise ship collided with a container ship in a crossing situation in the Dover Straits.
Both ships sustained serious damage including a very serious fire on the container ship.

Why did it happen?

The attention of the passenger ship's OOW was diverted by other tasks in a heavy traffic situation. The container ship reduced its available options for avoiding action by overtaking another vessel from the port side just when a close quarters situation was developing with the passenger ship. The collision could have been averted if one or both vessels had reduced speed in good time.

What can we learn?

In heavy traffic situations, doubling of the watch should be considered if there is a possibility of the OOW being distracted by other tasks such as need for radio communication for reporting ship's position.
Vessels shall follow Rule 13 of the COLREGs when overtaking any other vessel. In addition, when overtaking another vessel, careful consideration should be given to the side on which to overtake. Factors to be taken into account should include available sea room and possible need to take avoiding action in respect of other vessels in the vicinity.

The OOW should not hesitate in reducing speed to avert collision if circumstances so require and should also be guided by Rule 8 (e) of the COLREGs.