Marine Accident Investigation Branch (MAIB) - Safety Digest 3/2002

Contents

Marine Accident Investigation Branch

The Marine Accident Investigation Branch (MAIB) is an independent part of the Department for Transport, the Chief Inspector of Marine Accidents being responsible directly to the Secretary of State for Transport. The offices of the Branch are located at Carlton House, Carlton Place, Southampton, SO15 2DZ.

This Safety Digest draws the attention of the marine community to some of the lessons arising from investigations into recent accidents. It contains facts, which have been determined up to the time o issue.

This information is published to inform the shipping and fishing industries, the pleasure craft community and the public of the general circumstances of marine accidents and to draw out the lessons to be learned. The sole purpose of the Safety Digest is to prevent similar accidents happening again. The content must necessarily be regarded as tentative and subject to alteration or correction if additional evidence becomes available. The articles do not assign fault or blame nor do they determine liability. The lessons often extend beyond the events of the incidents themselves to ensure the maximum value can be achieved.

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Summaries (pre 1997), and Safety Digests are available on the Internet:
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Extract from
The Merchant Shipping
(Accident Reporting and Investigation)
Regulations 1999

The fundamental purpose of investigating an accident under these Regulations is to determine its circumstances and the causes with the aim of improving the safety of life at sea and the avoidance of accidents in the future. It is not the purpose to apportion liability, nor, except so far as is necessary to achieve the fundamental purpose, to apportion blame.

Glossary of terms and abbreviations

CPA Closest Point of Approach

CPO Chief Petty Officer

DGPS Differential Global Positioning System

EPIRB Emergency Position Indicating Radio Beacon

ETA Estimated Time of Arrival

GT Gross tons

ISO International Standards Organisation

LPG Liquefied Petroleum Gas

Mayday Spoken distress signal

MCA Maritime and Coastguard Agency

Mhz megahertz

OOW Officer of the Watch

ORC Offshore Racing Council

RFA Royal Fleet Auxiliary

RHIB Rigid Hulled Inflatable Boat

RNLI Royal National Lifeboat Institution

RORC Royal Ocean Racing Club

Ro-Ro Roll-on, roll-off

RYA Royal Yachting Association

SCBA Self-contained Breathing Apparatus

SOLAS Safety of Life at Sea

TSS Traffic Separation Scheme

VDR Voyage Data Recorder

VHF Very High Frequency

VTS Vessel Traffic Services

Introduction

I must start my first introduction by paying tribute to my predecessor. John Lang drove the development of the *Safety Digest* into the form that now enjoys such acclaim. Distributed to more than 9000 addresses world-wide, and with many of the copies reportedly well thumbed by several readers, it gets its message to a wide cross section of mariners.

It, therefore, saddens me on reading many of the cases in this edition, to recognise old lessons that have not been learned.

Lifejackets. In four of these cases, lifejackets were key factors. In one case, an experienced fisherman is happily walking around today simply because he was wearing a lifejacket. In threeother cases six people, who were not wearing life jackets, drowned. At least two of them would have been alive today had they taken that simplest of precautions. With modern life jackets being light, comfortable and unobtrusive, there really is no excuse. **(See important note on life jackets in MAIB Notice board.)**

A Good Visual Watch. Four of the cases, and one of the deaths, are directly attributable to people not looking where they were going. Surely, this must be the most basic of mariners instincts. Yet we have all seen it happen: officers of the watch distracted by other tasks, or over reliant on radar; fishermen lending their crew mates a hand, when they should have been in the wheelhouse; or leisure boat users enjoying their day out to the full, but at the expense of looking forward.

Awareness of Others. The essence of good seamanship, particularly in congested waters, is awareness of what others are doing, and making clear to others what you are doing. Always try to think from the other persons perspective; you may be happy with what you are doing, but is it clear to the other party? To be safe from collision, both parties need to be quite clear what is happening.

Awareness of the Sea and Machinery. Again, this should be second nature to us all; yet in two of these cases, three very experienced seafarers have died unnecessarily through lack of awareness and, perhaps, complacency. Just pause and think; are you assessing the risks before you start any task? If you think you know better, you could be a danger to yourself and others around you.

Fatigue. Finally, that old chestnut, fatigue. Lifeat sea is knackering! We all know that. And it is not the macho thing to suggest that we cant' hack it. So we press on regardless. Sadly, the MAIB sees the results of fatigue on an almost daily basis. One of the cases in this issue is directly the result of a watchkeeper falling asleep, but how many poor decisions in other reported cases have also been influenced by fatigue?

None of these lessons is new. The reason they need repeating is the innate belief of mariners that accidents happen to other people. Sadly that is a belief that an unacceptable number of seafarers take to their grave. If people acted on just these five basic principles, the sea would be a much safer place for us all.

Stephen Meyer
Chief Inspector of Marine Accidents
December 2002

Part 1 merchant vessels

Slowing down is always an option, and yet it is one rarely taken by give-way vessels. Why? Because it conflicts with the fundamental commercial nature of merchant shipping. Why slow down when you can alter course? Why alter course?

Although an alternative and equally valid option is often available, there are times when it is not. Slowing down not only enables a collision to be avoided; importantly, it allows more time to assess a developing situation.

Good communication, in whatever form, is a cost-effective defence against accidents. Whether between ships, shipmates, or the ship owner and his crew, effective planning, monitoring, and compliance with realistic and relevant standard operating procedures, can mean the difference between a controlled event and one that leads inevitably to disaster.

And even when you've slowed down and communicated well, danger lurks! We are all vulnerable to lapses of attention, either due to a distraction or the fact that we've switched off at the end of a watch.

Slowing down, good communication and the need for continued vigilance all feature in this issue of the *Safety Digest*.

Be safe: slow down, speak up, and stay with it!

Case 1
How not to dry your dirty laundry!

Narrative

A 5,307gt aggregates dredger was alongside, undergoing repair and maintenance, part of which involved overhauling the main engines. A team of engineers from the engine manufacturers had been working on board during the day. On completing their days work the team left the vessel at 2200, leaving their working overalls in the engineers changing room.

Early the following morning, while doing his rounds, the watchman became aware of the smell of smoke. On checking the area, he found that one of the manufacturers engineers had left his boiler suit draped over the heater in the changing room. This had slowly heated up and, since the boiler suit was stained with oil and other debris, it had started to smoulder. Fortunately, it was discovered before it had fully caught fire. The watchman seized the boiler suit quickly, and hurriedly threw it outside the accommodation and on to the deck. It burst into flames immediately.

Following this incident, all contractors were instructed to leave no working clothes on board the vessel overnight, and to ensure that each night, before leaving the vessel, they emptied all rubbish bins they had used that day. The owners also decided to disconnect the heater concerned and to install a battery-operated smoke alarm in the changing room.

The Lessons

1. This is yet another example of the importance of conscientiously doing rounds. If the watchman had not discovered the situation when he did, and responded so rapidly, a very different outcome might have ensued.

2. Never ever leave an article of clothing or material over a heater to dry, despite the temptation to do so. Most of us would prefer to step into a nice, warm, dry boiler suit in the morning, as opposed to stepping into one that is horribly cold and damp. But consider the risks. The MAIB has received numerous reports in the past where fires have occurred because clothes have been draped over heaters to dry. In some cases this has resulted in a fire serious enough to cause the loss of the vessel itself.

3. Ensure that heaters are in good condition and that temperature cut-outs and alarms are in working order. If a proper drying room is available, then use it.

4. Wet clothing, and clothing which is impregnated with oils and left in a heap over a period of time, is liable to spontaneous combustion i.e. they can catch fire without any outside ignition source. Hang clothes up properly to dry or to air *away* from any direct heat source.

Case 2
Ferry grounds because sole look out is distracted

Narrative

An inter-island ferry left port with 4 passengers and 4 crew on board. There was a slight swell, a north-north-easterly wind of force 3 to 4 and good visibility. Once clear of some rocks, the auto - pilot was engaged and the mate went be low for a cup of tea, leaving just the master on the bridge.

The master was occupied at the chart table facing aft, writing up a manifest for the agent. He periodically checked the vessel's progress visually. The chart plotter was switched on, but was set to a small scale, which was of little use in coastal waters. The master was untrained in its use. A passage plan was not being used. There was no admiralty chart out, and no chart on board had course lines or positions on it.

The master saw rocks on his port bow and, once satisfied the vessel would pass clear of them, returned to his paperwork.

A few minutes later, he looked ahead and saw the rocks again. This time, they were dead a head and at close range. He put the engines full astern, but could not prevent the vessel grounding at almost her full speed of 10 knots.

Although there were no injuries or pollution, the vessel suffered substantial damage to her port bow.

The Lessons

1. The International Regulations for Preventing Collision at Sea require all vessels to maintain a proper lookout at all times. This is the basic rule of bridge watch keeping. The busy watchkeeper will, inevitably, have a multitude of tasks to preoccupy him, but these should never, ever, prevent him from keeping a good look out. This watchkeeper allowed himself to become distracted with very costly and embarrassing consequences.

2. The passage was not planned or monitored. It is not known how the rocks came to be right ahead of the vessel after they were initially seen on the port bow. Had a simple passage plan been prepared in advance, and been adequately monitored, it would have been sufficient to keep the vessel on the intended track, and enabled any deviations to be corrected as they occurred.

3. The intended passing distance of the rocks was said to be about 1.5 cables. As the rocks mentioned in this article are in open waters, it would have been wise, and in the interests of good seamanship, to pass at a greater distance than this.

4. It was the owners policy to have two people on the bridge when the vessel was underway. The additional person in this case was enjoying a cup of tea down below, leaving just one watchkeeper, who was preoccupied with other duties. Had two people been on the bridge, this unfortunate accident might have been averted.

5. All watchkeepers should be trained and familiar with the operation of all navigational aids carried on board.

Case 3
You can always slow down!

Narrative

A bulk carrier and a cargo vessel were proceeding on similar courses in the south-west lane of the Dover Traffic Separation Scheme (TSS). It was daylight, and the visibility was good.

Having previously overtaken and crossed to the bulk carriers starboard side, the cargo vessel had then reduced speed and was now being slowly overtaken on her port side by the bulk carrier ata range of about 0.5 mile.

As the vessels approached Dover, both observed a ferry leaving the harbour with the intention of crossing the TSS. The bulk carriers bridge team assessed that the outbound ferry was on a collision course, and that an inbound ferry, bearing approximately 60° to port at a range of about 4.5 miles, would pass astern with a CPA of about 0.2 mile.

The bulk carrier altered course to starboard to increase the outbound ferry's CPA. However, this action resulted in a close quarters situation developing with the cargo vessel and, at a range of about 0.1 mile, the bulk carrier altered course to port, having assessed that the outbound ferry would now pass clear ahead. By this time, the cargo vessel had already taken avoiding action by altering her own course to starboard.

The Lessons

1. The bulk carriers bridge team correctly identified that a risk of collision existed with the outbound ferry and, in accordance with Rule 15 of the *Collision Regulations*, took action to keep out of the way. The master was faced with four single-action options:

- **an alteration of course to port;**
- **an increase of speed;**
- **an alteration of course to starboard; or**
- **a reduction of speed.**

An alteration of course to port had the potential to result in a close quarters situation with the inbound ferry, contrary to Rule 8(c). An increase of speed would have caused the bulk carrier to cross ahead of the outbound ferry, contrary to Rule 15.The masters decision to alter course to star board would have been an appropriate action, had it not been for the presence of the cargo vessel. Although he considered his action to be safe, the alteration reduced what was already a relatively close passing distance, to one which left very little margin for error, again contrary to Rule8(c).

The most appropriate action would have been to reduce speed in accordance with Rule 8(e). This would have avoided a collision with the outbound ferry, avoided a close quarters situation with the cargo vessel, and provided the inbound ferry with sufficient time to reassess the situation and take appropriate action.

A reduction of speed is seldom the option taken by give-way vessels, since it conflicts with the commercial nature of shipping, and there is often a valid alternative action available. This is particularly so in open water collision avoidance situations. However, in coastal waters, and typically in traffic separation schemes, the restricted nature of the available sea room, and the high density of traffic, necessarily reduce the margins of safety. In these situations, it becomes particularly important to consider *all* the options available. If in doubt, err on the side of safety *slow down*.

Case 4
Floating maintenance

Narrative

Just before midday, an engine alarm sounded on the bridge of a 2,968gt ro-ro passenger ferry making her scheduled crossing. This was followed almost immediately by the main engines shutting down, owing to the engine over heating.

The initial examination found the jacket water cooling system to be air locked, causing the resultant low system pressure to operate an automatic safety trip and stop the engine. The vessel was incapable of moving under her own power, so the master called for assistance and she was towed back to her berth, where the passengers and freight were discharged.

The subsequent investigation revealed that the automatic control valve, which controlled the main engine jackets water cooling system, had become locked in one position. This prevented the valve floating, with the result that insufficient cooling water was being allowed through the valve during periods of high operating temperatures. As a result, the jacket water continued to increase in temperature until it literally boiled, releasing air into the system. This built up, and eventually created an air lock, which severely reduced the flow and pressure within the system. Further examination of the main engine, found a cracked cylinder head which would also have allowed combustion gasses to enter the system to add to the accumulation of air and gases in the cooling system.

The Lessons

1. Auto control valves are designed to operate freely, floating between the two maximum and minimum set points. As with most valves, they need to be checked at suitable intervals to ensure that slight leaks don't develop, allowing the build-up of scale deposits. If this happens, the scale builds up slowly, decreasing the clearance between the valve spindle and its sleeve, making it stiffer to operate until eventually the valve spindle jams.

2. Check that you know where auto control valves are fitted, which systems they control, and establish a regular routine for checking their condition. Planned maintenance will ensure a regular overhaul BUT good watchkeeping routines will prevent a problem creeping up on you.

Case 5
Chips And ????

Narrative 1

A 3,222gt general cargo vessel had arrived at a South Wales port, from the continent, and by 1830 was secured alongside. With cargo discharge not due to start until 0600 the following morning, the crew were stood downwith just one seaman doing a night aboard. Although some crew members went ashore during the evening most, including two superintendents who were on board, retired to their cabins. Those who had gone ashore returned by midnight. The chief engineer and the watchkeeper stayed up watching TV until about 0130. At that time, the chief engineer retired to his cabin, leaving just the watchkeeper awake and preparing some food in the galley.

At about 0310, the fire alarm sounded. Investigation indicated a fire in the upper engine room, steering gear, or separator room, although smoke was evident in the accommodation. The general alarm was sounded, shore authorities informed, and the ships whistle sounded.

Further investigation by the chief engineer established there was little or no smoke in the engine room. However, when he checked the accommodation fan room he found it full of smoke. Realising the fire was in the accommodation, he retired to the open deck where the master confirmed that four seamen were missing. The chief officer, wearing an SCBA set, rescued two seamen from their cabins, while other officers found one of the superintendents unconscious, behind his cabin door.

With the watchman unaccounted for, and thick smoke found in the mess room, the master and chief officer, both wearing SCBA sets, entered the area to carry out a search. They found the galley door shut, but radiating intense heat, so continued the search. They eventually found the missing seaman, unconscious, on the port side.

Two firefighters, who meanwhile had boarded the vessel, assisted in removing the seaman to the open deck, but he later died.

Further investigation by the fire brigade, combined with crew statements, confirmed that the seat of the fire was the galley stove. The source was overheated cooking oil in a chip pan that had been placed on top of the galley stove.

The result of this fire in human terms was one dead, three crew members requiring a lengthy period of convalescence, and three others suffering from smoke inhalation.

In financial terms, the fire caused considerable smoke and heat damage to the galley and messroom, and minor smoke damage to the accommodation and service spaces.

Narrative 2

A 20,446gt ro-ro vehicle/passenger ferry was on passage from the UK to France. At about 1715, a new heating element was fitted to a deep fat fryer in one of the passenger galleys. It was then refilled with oil, the electrical supply reconnected, and the unit switched on.

Some time later, the galley supervisor noticed that the temperature of the oil had risen above its normal operating range of 170°C, so took the following action:

- telephoned for the assistance of an electrical officer

- placed the fire cover over the fryer
- turned the operating switch to the off position.

The temperature of the oil, however, continued to rise and, once it reached 260°C, smoke was seen. A further temperature rise to 320°Cresulted in the vapours igniting. The flames were smothered using a fire blanket, and the bridge was informed of the situation. The electrical supply was isolated at the local distribution box, and the fire was extinguished using a combination of the fixed water Hi-fog system, portable foam and CO_2 extinguishers.

Further investigation found that the on/off switch energised a coil in the contactor unit to engage the power supply. In this case, one or more of the contacts inside the contactor unit had fused together, allowing current to flow to the heating element continually as long as the power supply was connected. This effectively by passed the local on/off control switch.

In addition to the repairs to the existing system, a local electrical isolation switch was fitted adjacent to the deep fat fryer.

Narrative 3

A 37,583gt ro-ro vehicle/passenger ferry was on passage from the UK to France. In one of the passenger galleys, the catering staff were beginning preparations for cooking lunch. As part of the preparations, a tray of cooking oil was placed in one of the ovens to heat up. Everyone forgot it was there!

All the staff were busily engaged in their duties, and the oil wasn't noticed until about 1230,when a member of staff noticed smoke emitting from the oven. The oven door was opened very briefly and then closed again quickly, the power to the oven and galley were tripped off, the space vacated and all the shutters were closed. The bridge was informed and a fire party assembled to stand by while the oil cooled down.

The Lessons

1. Heating cooking oil can be a very dangerous business indeed UNLESS a safe system of work is followed, with safety devices fitted and working. It has a flashpoint[1] in the region of 310° to 360°C. This is stated in *The Code of Safe Working Practices for Merchant Seamen, Section14.5.3*. The minimum flash point of the cooking medium should be 315°C(600°F).

2. Deep fat fryers should be fitted with fire safety lids, with a second thermostat to provide a thermal cut-out, as specified in Merchant Shipping Notice M1022.

3. Ordinary cooking pots filled with cooking oil are not, and cannot be used as, chip pans! Just a moments in attention can result in overflow, a serious fire, and the generation of thick and potentially lethal smoke. Narrative 1 tragically illustrates the dangers.

THINK SAFETY. Have fire blankets and fire smothering equipment readily to hand, fit electrical isolators close to the equipment (NOT above it!) and ensure that catering staff who operate the equipment always follow safe procedures.

Above all, never use water to extinguish a fire, and never ever carry a pot/pan of hot oil out of the area in which you are working. Water will instantly turn to steam and explode, and shower hot and burning oil everywhere. Remember: attempting to carry a pot/pan of burning or hot oil will usually result in it spilling over the person carrying it.

[1] The lowest temperature at which it produces a flammable vapour

Case 6
Near miss in the solent passenger vessel/container vessel

Narrative

At about 0600, a passenger vessel passed the Needles fairway buoy, inbound for the port of Cowes with an ETA of 0730 at the Cowes pilot boarding point. The tide was flooding in an easterly direction at a rate of 2 knots.

At 0615, a Southampton pilot boarded a 65,475gt container vessel just south of the Nab Tower. The vessel was inbound for the container terminal at Southampton, with an ETA of 0725 at the Prince Consort buoy, which marked the start of a planned turning manoeuvre into the Thorn Channel.

Each vessel was heading inbound from opposite directions for the same area, and was adjusting her speed to arrive at virtually the same time. At0712, VTS informed the container vessel which, by that time, was passing the Ryde Middle at 14knots, of the passenger vessels approach in the West Solent.

At 0712, and twice again at 0713, VTS, which had no harbour authority control of the Western Solent, called the passenger vessel on the VHF radio working channel, with no response.

At 0714, in the vicinity of the Southampton pilot boarding point, VTS advised the passenger vessel that the container vessel would be running down between the Prince Consort buoy and the Gurnard buoy, and then turning into the Thorn Channel, and was asked to keep well clear. The passenger vessel replied that she would, and then reported her position to VTS. She then reduced speed. The container vessel was visible from the passenger vessel at a distance of 4 miles.

At 0716, in the vicinity of the East Lepe buoy, the passenger vessel was requested by VTS to maintain her position. Both vessels acknowledged this request. However, the passenger vessel continued to proceed ahead, albeit at a reduced speed.

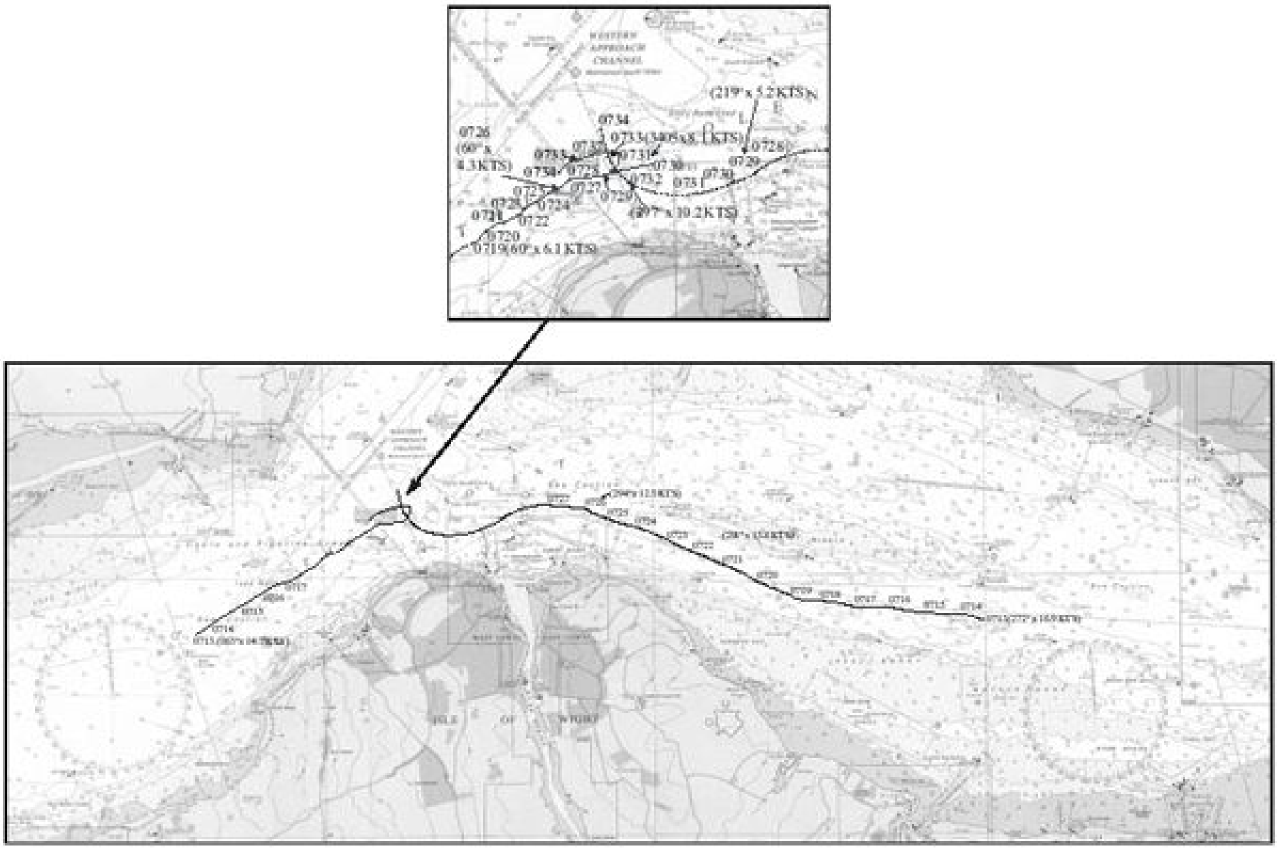
At 0725, VTS contacted the pilot on board the container vessel, and asked whether he wanted VTS to instruct the passenger vessel to turnaround. The pilot replied to the effect that itwould be all right if the passenger vessel remained where she was.

At 0726, VTS again requested the passenger vessel to hold her position, and reiterated that the container vessel would be running down from the Prince Consort buoy towards her, and then turning at the Gurnard buoy for the Thorn Channel. This was acknowledged by the passenger vessel.

The Cowes pilot boarded the passenger vessel and, at 0727, established communications with VTS. By that time she was in the vicinity of the Cowes pilot boarding point and was still proceeding ahead at about 4 knots.

The Cowes pilot asked VTS for the container vessels identity. VTS responded, and told him that she would be turning into the Thorn Channel. The Cowes pilot then asked VTS if the container vessels pilot would be happy if the passenger vessel maintained her position; VTS confirmed that he would. The Cowes pilot then asked VTS which way he should turn and was advised a turn to port. The Cowes pilot confirmed that he would turn to port, but the passenger vessel continued on the same heading for the next 2 minutes, and slowly increased speed.

At 0729, the Cowes pilot told VTS that he was altering course to port, and asked if the container vessel would be passing astern. At that point, the container vessels pilot intervened and instructed the passenger vessel to turn around and get out of the way. The passenger vessel had, by then, crossed the south-west limit of the port of Southampton and was entering the Western Approach Channel. She started to alter her course to port and increased her speed rapidly.



At 0730, the Cowes pilot asked the container vessel which side she was going to pass. Her pilotreplied to the effect that he was about to turn to starboard into the Thorn Channel.

As the passenger vessel turned on to a westerly heading, the container vessel turned to starboard and passed astern at a distance of about 1 cable.

The Lessons

1. Where large vessels are required to manoeuvre in exceptionally confined waters, it is essential that their safety is not threatened by the approach of oncoming vessels. An area of concern exists in the Western Approach and Thorn Channels, and is shown on the attached chart as *Entry Restricted*. All vessels of over 150m in length (such as the container vessel) are given a moving prohibited zone of 1,000m ahead and 100m either side of the vessel. Additionally, in view of her deep draught, the container vessel was entitled to sole occupancy of the main channel in the area of concern in accordance with a local notice to mariners.

2. In the vicinity of the Cowes pilot boarding point, the chart provides a warning of *large vessels turning*. Despite this warning, the advice given by VTS with respect to the container vessels intended route, and confirmation that she would keep well clear, the passenger vessel entered the Western Approach Channel, there by threatening the safe execution of the container vessels turn into the Thorn Channel. On the assumption that the passenger vessel

did not do so intentionally, it is necessary to consider what might otherwise have caused her to do so.

- **The passenger vessel was scheduled to board a pilot at the Cowes pilot boarding point at 0730.**
- **On the two occasions that VTS advised the passenger vessel of the container vessels intended route, the bridge team appears to have been distracted, although both calls were acknowledged. The purpose of the passenger vessels call to VTS at 0714was to report her position, rather than to respond to calls from VTS, to which she had already twice failed to respond. At 0726, the passenger vessel was in the process of embarking the Cowes pilot.**
- **From 0714 until 0727, the container vessels port aspect was clearly visible to the passenger vessel.**
- **The chart provides a radar reference line but, with the exception of the warning of *large vessels turning*, gave no indication of the container vessels probable track and extent of her swing during the planned turning manoeuvre.**

None of these factors would have caused the bridge team to consider that, in proceeding to the pilot boarding point as planned, the passenger vessel would threaten the safe execution of the container vessels manoeuvre. In the absence of more detailed advice to the contrary, the pilot boarding point was perceived to be well clear of the container vessels intended track. However, its location, close to an area of concern, considerably reduced the margin for safe passing in the circumstances.

- **From 0727 until 0729, the passenger vessel continued ahead while the Cowes pilot appraised himself of the situation.**

3. The incident could have been avoided if:

- **the vessels had been scheduled to arrive in the vicinity at different times; or**
- **the pilot boarding position had been well clear of the area of concern; or**
- **the passenger vessels bridge team and the Cowes pilot had recognised the probable track and extent of the container vessels planned turning manoeuvre well in advance.**

These factors highlight the need for good liaison between relevant harbour authorities, and effective planning and information exchange between all parties.

Footnote:

The Cowes pilot boarding point has since been moved to the west to be co-located with that of Southampton.

Case 7
Heavy Weather Causes Deaths

Narrative

A semi-refrigerated LPG carrier was in mid-Atlantic on passage from Portugal to the USA. When steaming at a reduced speed in heavy weather she was struck by two waves, which crashed over her forecastle. At the time, the chief officer, bosun and four seamen were attempting to secure the anchors. The waves knocked them over and threw them against various parts of the vessels structure. Neither the master, nor the third officer who was on watch, was aware that anyone was on the forecastle at the time.

An uninjured seaman managed to make his way aft to raise the alarm. Meanwhile, the third officer had noticed some unusual activity forward, so brought it to the masters attention, who went to the bridge immediately.

Some time later, the ships course was altered to reduce the effect of the weather forward, and a rescue effort was mounted to retrieve the injured crew from the deck and bring them to the safety of the accommodation.

The chief officer and one of the seamen died from their injuries. Three crew members suffered major injuries, but were successfully airlifted from the vessel and taken to Bermuda for treatment.

The Lessons

1. In very rough weather, when your vessel is shipping water, let the master and the officer of the watch know you intend to work on deck. This will enable an assessment of the risk to be made, and the ships course and speed to be altered accordingly, before anyone goes on deck.

2. The people involved in this case did not wear safety harnesses, and no lifelines had been rigged. For your own safety, follow the MCAs *Code of Safe Working Practices for Merchant Seamen*. This states in Section 4.10: *if a vessel is shipping frequent seas, nobody should be required to work on deck unless absolutely necessary. However, where this is unavoidable, persons on deck should wear a harness and, where practicable, should be secured by a lifeline as a protection from falls and from being washed overboard or against the ships structure.* Section 13.3.3 states: *when rough weather is expected lifelines should be rigged securely across open decks.*

3. If you are working on deck in rough weather, establish some form of communication with the bridge. A radio handset is ideal for this purpose, and will enable the alarm to be raised quickly should something go wrong.

4. The bridge should be adequately manned so that those who are working on deck can be properly monitored at all times.

Case 8
Slow speed saves the day

Narrative

A ro-ro ferry was leaving port in 50m visibility. Two radar displays were operating; one set to the0.75 mile range scale and the other at 1.5 mile. The ship was in hand steering on a course of007°, and was at slow speed with her bow thruster ready for immediate use.

A passenger ferry was approaching the port on a course of 205°. She was at half speed and was also using two radar displays; one set to 0.5 mile and the other to 1.5 mile range scale.

The ro-ro ferry detected a radar contact one point on the starboard bow at a range of 0.5 mile, and assessed it would pass to starboard at a rang eof about 1.5 cables. The passenger ferry immediately altered 30° to starboard and reduced speed to slow ahead. The ships continued to close and, although both went to full astern, they collided. Fortunately, the speed at impact was minimal, the resulting damage minor, and there were no injuries.

The Lessons

1. Although the ships collided, the speed at which they were moving allowed nearly all of the way to be taken off before impact. Had their initial speeds been higher, the consequences would undoubtedly have been more severe.

2. No one wishes to be in a close-quarters situation in restricted visibility, without reliable radar information to hand. You know something is there but you cant be certain what it is doing. Until you are able to accurately assess the situation, any action you take will be based purely on guesswork and assumptions. In this case, as the passenger ferry did not realise the ro-ro ferry was passing clear to starboard, her reduction in speed and alteration to starboard might have seemed appropriate. Its effect, however, was to put the two ships on a steady bearing.

If you detect a radar contact forward of the beam at close range, slow down or stop. This will allow an accurate assessment to be made.

3. Given the visibility, the choice of the range scales used on the radar displays in both vessels was sensible, and allowed detection at close range. Always adjust the radar range scale in use to suit the conditions and size of vessels likely to be encountered.

4. When taking last-minute action to avoid a collision, always remember the maximum power available, and don't overlook the use of bow thrusters. They could make a difference, particularly when moving at slower speeds.

5. When entering or leaving harbour, it is always useful to be aware of the movements of other vessels, particularly in restricted visibility. This information can make life easier. Don't be shy about asking for it.

Case 9
Safe access routes matter!

Narrative

An 8,861gt vessel was fitted with a bow visor and a three section extending landing ramp stowed in concertina fashion inboard of the visor. Each of the two inboard ramp sections consisted of a steel box structure, with the outboard, or contact section, made up of five separate fingers, each weighing about 8 tonnes. The system was operated hydraulically, with the control centre on the starboard side just below the forecastle deck. Access to the lower levels of the ramp and the hydraulic actuating cylinders etc was via vertical ladders from the forecastle deck through three half decks which formed part of the bow visor. Access to the bottom of the ramp was via a ladder into a box section forming part of the bow visor, with access manholes cut in the aft transverse bulkhead.

With the vessel alongside in Bogen, Norway it was decided to test the operation of the bow visor and ramp. Before the test, and while storm screws were being removed from the hydraulic cleats at the base of the ramp assembly, it was noted that the ramp fingers were resting forward against the intermediate platform of the bow visor. Following an operational brief to all personnel involved, the bow visor was raised. As the hydraulic system for extending the ramp fingers was being operated, a small hydraulic leak was seen. The test was stopped immediately, the ramp fingers returned to their vertical position, and the bow visor closed. The hydraulic systems were shut down and the leaking pipe removed for repair. At the same time, two cadets, who had been sent down by a CPO to refit the storm screws, were shown where they were to be fitted and how.

After refitting the storm screws, the two cadets climbed back up from the base of the ramp assembly, and met the CPO just as they were about to climb the last ladder, which led to the forecastle deck. After a brief conversation they continued upwards, seeing, as they left, the CPO looking over the lower half deck handrails before he turned towards the access ladder to the bottom of the ramp. Shortly after this, they heard a series of screams from the space, prompting the two cadets, plus the chief officer, who was nearby, to enter the space to investigate. They found the CPO crushed between the lower half deck and one of the port side fingers, which had fallen forward. The CPO died.

An analysis of the situation suggested that the CPO had reached the bottom of the ramp via the ladder and lower bow visor manhole access, and had then decided to return to the lower half deck using the ships starboard frames. These were easily accessible, well lit, and provided an easier passage than returning via the manhole and vertical ladder. Unfortunately, during the interval between shutting down the hydraulic systems, and the CPOs exit from the lower regions of the ramp assembly, the hydraulic pressure, which had kept the fingers in the vertical mode, had dissipated. This meant that the fingers were free to move under the ships movement. With the vessel alongside, and with virtually no movement, the fingers remained in a basically neutral position until the CPO place done foot on the underside of one finger to pull himself up and over the handrail on the lower half deck. The sudden effect of his weight on the finger was sufficient to cause it to fall forward, crushing him between the lower half deck and the finger.

A detailed investigation identified the following facts:

- Ships staff were unfamiliar with the ramp operation, and were unaware that hydraulic locking devices had been fitted during previous modification work.

- Instruction manuals on the bridge had been revised to include an update on the modified system, but the crew had not been made aware of the revision.
- Successive crews had accepted that once the hydraulic system had been switched off, the fingers would fall forward on to the lower half deck at some point (significant impact damage to the steel work confirmed that this had been occurring for some considerable time).
- Operating instructions, mounted on the bulkhead adjacent to the control position, were not up to date (the latest modifications were not included).
- There was evidence that crew members had become accustomed to using side stringers for access to and from lower levels, rather than using the correct access route using lightening holes.
- Bridge staff were not aware of either the reason for, or the effect of, the low hydraulicpressure warning light which was fitted on a watertight integrity mimic panel on the bridge.
- No risk assessment had been carried out on the operation.

Following this accident, a safety bar was welded on to the lower half deck, the instructions updated, a standard operating procedure issued, and a full risk assessment carried out.

The Lessons

There can be no doubt that the major cause of this tragedy was a combination of familiarity and ignorance:

> **familiarity had led some of the crew, and that included senior members, to use unauthorised access routes to and from the lower levels of the ramp.**
>
> **ignorance as to the existence of a hydraulic locking device fitted to prevent the fingers falling forward.**

In addition to the crew being unaware of the system modifications, the hydraulic locking device (a positive shut off valve) was fitted at deck level behind a free-standing storage tank not the easiest place to either see or operate.

The main points to arise from this tragedy are:

1. If you are new to the ship or system, ask for guidance or instruction and read the instruction books. After that, confirm that what you see agrees with the instruction book. If you feel that it doesn't, bring the discrepancy to the notice of the appropriate senior officer before operating any system.

2. Always use the proper access route. If you consider it difficult or dangerous, either raise it at the next safety meeting or before, with the appropriate senior officer.

3. If the vessel has undergone a refit, or modifications have been carried out, check to see if the area/system that you are involved with, or operate, was part of that work. If it was, find out what was done and see how it will affect you.

4. If you are involved in the design of modifications, upgrades, or the installation of new equipment, think safety! Is it in a safe place to operate, is it visible, at the right height, and is it accessible? Put another way, carry out a RISK ASSESSMENT. Then, ensure that all guidance and instruction manuals are updated, and that safe operating procedures are both produced and are readily available.

Case 10
Narrow channels!

Narrative

An 11,723gt ro-ro vehicle/passenger ferry was inward bound to a buoyed channel on the evening flood tide. She was carrying 77 units, 17passengers and had a maximum draught of4.40m. At 2052, the vessel passed the fairway buoy, with a recorded tide gauge reading of 3.3m,with the echo sounder recording 1.47munderkeel clearance. Passing No 11 buoy, with a propeller pitch of 3, a slight vibration was felt, and the echo sounder recorded an under keel clearance of 0.73m.

Shortly after rounding No 16 buoy, the chief engineer called the bridge to report the sound of scraping on the starboard side. About 30 seconds later, the helmsman reported problems with therudder indicator; similar to a problem that had occurred on a previous occasion.

While the vessel continued towards No 18 buoy, an engineer was sent aft to check the steering gear. Clearly, the vessel was not responding as it should have been, so the master decided to manoeuvre her alongside, by operating the main engines independently, as well as utilising the thrusters. By 2130, the vessel was safely secured alongside. Subsequently, the engineers confirmed that the starboard rudder tiller arm had fractured, and this had prevented any control over the starboard rudder.

Although the companys initial investigation suggested that, from the available evidence, the vessels rudder had hit an underwater obstruction, an hydro graphic survey of the channel failed to substantiate this theory. The results from the VDR analysis were disappointing:

- The radar set connected to the VDR was set on too great a range (3 miles) to display accurate detail;
- The DGPS position and time signal were not recorded because of the setting of the controls; and
- The DGPS alarm was non-operational, because it had not been initiated during the original installation.

Further analysis of the VDR, ships head by gyro, and courses ordered, showed that the incident occurred about three ship lengths after No 11buoy. The vessel was passing between Nos 13 and14 buoys at this point, and during the turn the starboard rudder had clipped the steep bank on the west bank of the river. With the vessel turning, and moving away from the contact point (about 1m above the rudder foot), no jolt, slowing or slewing was felt on board. It is not known why the hydraulic relief valves on the control system failed to cope with this situation, because all tested satisfactorily.

The combination of wind and tide were not unusual, but the pilotage in this port involves negotiating a narrow channel, and requires a vessel to maintain a strict line during the passage. Just a few metres off-line, as occurred in this case, will expose a vessel to the possibility of touching ground. The pilotage is demanding, and although this vessel did touch on this occasion, there is no evidence of incompetence, recklessness, or lack of procedural protocol.

The Lessons

This incident illustrates the need for constant attention to detail when negotiating narrow river passages. Even the most competent of masters can be caught out by a slight variation in wind and tide effects.

1. Those on the bridge should be aware from which radar the VDR records data, and should ensure that the range and other control settings on this radar are appropriate for the navigational situation being experienced at the time.

2. The VDR unit, like all other navigational equipment, should be checked regularly to ensure that ALL inputs are operational, and that ALL alarm systems are active and switched on.

A VDR unit is NOT, as some might think, a stick with which to beat the crew. Its function is to provide unbiased and accurate information to owners (and the MAIB) so that the true circumstances of an incident can be established. It is in the crews interest, as well as owners, that these systems are fully operative at all times.

Case 11
Boiler tube corrosion

Narrative

A 46,087gt passenger vessel, with three Foster Wheeler ESD III roof-fired boilers providing steam for the main propulsion turbines, was on passage to Sydney, Australia when No 3 main boiler suffered a screen tube failure. It was shutdown immediately, and the stand-by boiler flashed up and brought on to line. The vessel continued on passage without any further difficulties, using Nos 1 and 2 boilers.

On arrival in port, the ruptured screen tube was removed, and two sections of the carbon steel tube were cut out and sent to specialists in Singapore for analysis. Their report revealed that the boiler screen tube had failed because of hydrogen damage associated with acidic corrosion, i.e. on-load corrosion.

Two months previously, another screen boiler tube had failed in No 3 boiler. It was renewed, and samples were sent to Lloyds Register for examination. This failure was also identified a son-load corrosion.

Both screen tube failures had the same failure symptoms, an internal blister in line with the flame, followed by a brittle fracture. In both cases, the tube wall thickness at the point of rupture was about 3mm.

The vessels record of boiler water treatment shows that apart from the odd condenser leak, the boiler water had been maintained to the required standards, the maximum chloride reading being 30ppm for the previous few years.

A boroscope inspection of all accessible screen tubes followed, and identified other tubes suffering from on-load corrosion. All had localised scale build-up in line with the flame, together with tube wall wastage underneath the scale. Subsequently, No 3 boiler was chemically cleaned, and all screen tubes were scanned for thickness. No 2 boiler was similarly treated. The screen tubes on No 1 boiler had been renewed recently, so were in good condition.

So, what is on-load corrosion?

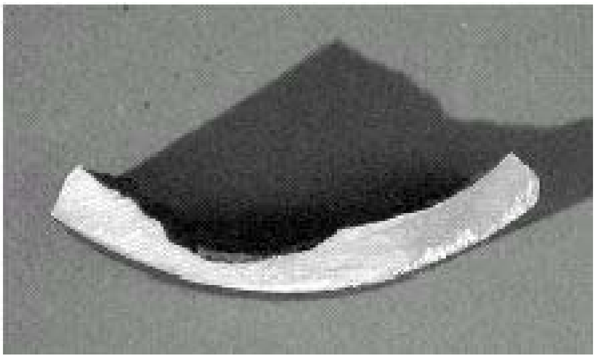
Briefly, on-load boiler tube corrosion results from the local formation of a concentrated alkaline oracidic solution formed at the metal surface. Annual corrosion rates of over 1cm are possible at 300°C, and are several times higher at 400°C.This type of corrosion is almost always confined to surfaces where steam is being generated, i.e. screen tubes.

Extracts from the two reports say:

> *One sample had a blow out like rupture in the form of a window opening characteristic of hydrogen damage. The rupture lip was fairly thick and appeared to be located slightly off the middle of the fireside half. The other sample had two linear fissures at the fireside face, one oriented longitudinally and the other transversely.*
>
> *The internal surface of the tubes had severe gouging and wastage on the fireside half where as the sheltered half was unaffected. The wastage was in the area of the ruptured section and its immediate vicinity.*

Checks at five points on the tube samples showed undulating thickness ranging from 2 to 4mm on the fireside whereas the unaffected sheltered side showed a uniform thickness of about 6 mm. The thickness of the rupture lips at the window opening and open fissure areas was about 1 to 2 mm. Further study showed that apart from slight signs of decarbonisation at the inter granular cracked areas, the base material of the tubes was unalloyed carbon steel. Thick lumpy deposits of oxide scale (magnetite)ranging from about 0.2 to 0.6 mm was found on the internal surface of the fireside half. Copper deposits were also found on the outer layer of the inner surface deposits. pH tests on the scale /deposits showed acidic levels in the range of 3 to 4 confirming that the corrosion was acidic corrosion.

Hydrogen damage is difficult to detect by ultrasonic flaw examination, but ultra sonic thickness gauging can show areas of undulating and reduced wall thickness. Sections of boiler tube can be cut out and tested for hydrogen damage by flattening ring sections for reduced ductility. The ring sections can also be checked or hydrogen damage by macro-etching.



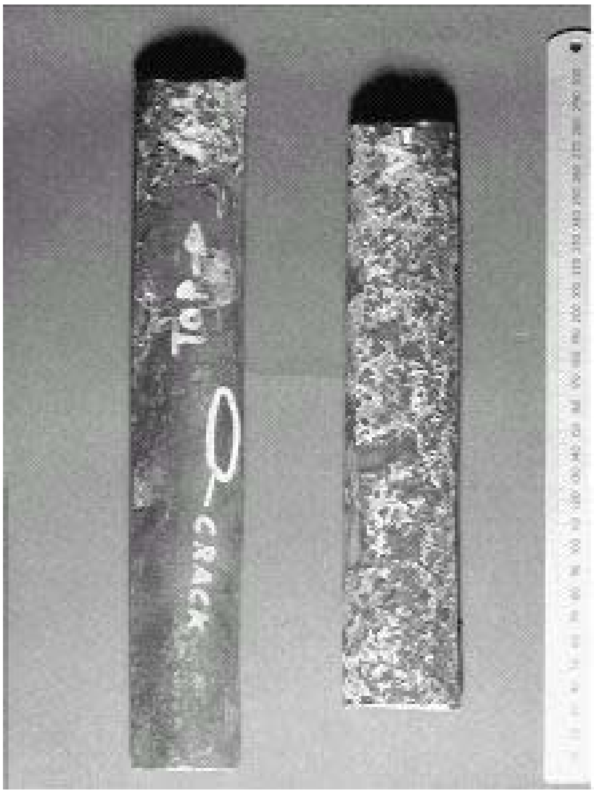
Wall thinning in way of lumps of bore scale

The Lessons

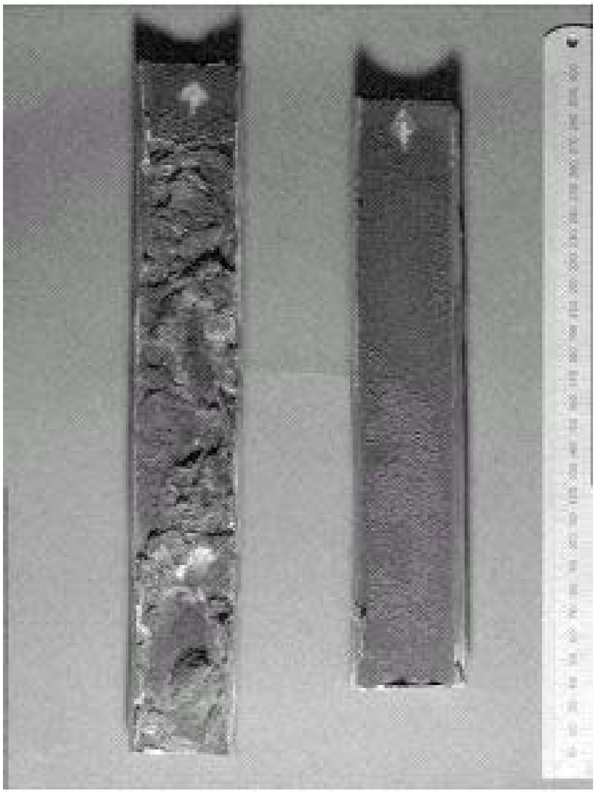
1. This article is included not so much as to highlight lessons to be learned, but more to illustrate a series of incidents which eventually resulted in the identification of a particular type of boiler tube corrosion. Although seawater-cooled condensers, leaking condenser tubes, and contaminated feed water are facts of life in the marine world, this type of corrosion is rarely seen or identified.

2. The condition of boiler water must be tested regularly and accurately, with the results faithfully recorded and monitored. Any abnormal readings or test results should be investigated, with testing procedures and equipment rechecked as necessary.

3. Guidance as to water treatment results, and the desired values, is supplied by the company providing the chemicals. Always read and follow that advice.



Outer surfaces of tube strips



Inner surfaces of tube strips

Case 12
Collision between tug and tow

Narrative

This incident concerns a 10,022gt general cargo ship that was being towed upriver at night to her discharge berth, and illustrates how a routine operation can run into difficulties in a very short time indeed. The events described here took place over a period of about 6 minutes.

Two tugs lets call them *Alpha* and *Beta* had been escorting the ship eastwards upriver for about 9 miles, when *Alpha* spotted a low-lying fog bank ahead. The pilot decided to make the tugs fast.

When the three vessels entered the fog bank, the tugs were unable to see the ship. This was not a problem for *Beta*, as she was towing over the bow, astern of the ship. But *Alphas* mate was steering ahead of the ship, maintaining his position in the river with the aid of radar.

Alphas master posted port and starboard look outs in the wheelhouse, while controlling the engine and the winch. Because the river was only about100 metres wide at this point, the winch wire had to be kept relatively short, at about 30metres. This meant that there was only about 20metres between the stern of the tug and the bowof the ship.

At this time their speed was about 5 knots. *Alphas* master was having trouble keeping the tug ahead of the ship because of the poor visibility. The pilot, therefore, stopped the ships engine and they decided to make for a temporary berth about 2 miles ahead.

As *Alpha* approached a bend in the river, the radar picture of the south low lying bank became less well defined, so the mate had to monitor the northern bank in an effort to keep to the centre of the river. But then things began to go wrong:

- The pilot told *Alpha* that she was too far to port of the centre line. The tug moved over to starboard, bringing the ships head with her.
- The master saw a navigation light on the *southern* riverbank and realised that the tug had gone too far to starboard, and instructed the mate to steer to port.
- As *Alpha* moved to the centre of the river, her stern came in line with the bow of the ship. Realising the danger of either colliding with the ship or girting, *Alpha* increased speed, went further to port and slackened the gob wire to maximise steerage.
- While the master was subsequently taking up the bight in the gob wire some lights on the *northern* bank suddenly came into view. So *Alphas* master reduced speed and went hard to starboard again. Believing this wasn't enough to avoid hitting the northern bank, he went to full astern, and radioed for the ship to do the same.
- The ships captain ordered a double full astern. He and the pilot then felt a cushioned impact and thought the ship had gone aground. *Beta* also went full astern.
- Going full astern in a flood tide caused *Alphas* stern to swing out into the river at right angles to the bank. Believing that the ship would pass astern of him, the master heaved in the gob wire to change the towing point from amidships to the stern so that the tug would not be girted.

- The ships bow struck *Alpha* amidships on the port side, pushing her over on to her starboard side and on to the riverbank. The tow-line (which had been let go by the crew on the pilots orders) then fouled the tugs propeller.

Thankfully, *Alpha* righted herself, while the ship and *Beta* continued upriver. Visibility improved, and the ship was berthed without further incident.

The Lessons

1. The tugs ability to right herself, following the collision, was in no mean way due to her intact watertight integrity. Quite rightly, all external openings had been checked shut before starting the towing operation and, again, before entering the fog bank. Recognising the risks, and following standard operating procedures to address them, is fundamental to reducing the potential consequences of an accident.

2. A tug and tow requires teamwork. Teamwork requires an understanding of each others perspective. Understanding requires good communication. The tug master was concerned about the potential danger of conducting the tow in fog. Although he reported the fog bank to the pilot, he failed to communicate his concern. The pilot was less anxious and, not appreciating the tug masters concern, decided to proceed with the tow. Had he understood the tug masters perspective, he would have been in a position to postpone the tow. Good communication sometimes means relaying bad news!

3. Navigating in fog requires additional skills. Before doing so, make sure those charged with the navigation are adequately trained and are provided with and use all necessary equipment, and that the surrounding terrain and conditions permit the operation to be carried out safely.

4. Tug masters must be prepared, and have the ability, to release a towline in an emergency. In this case, the tug master recognised the danger of girting and yet resisted the temptation of slipping the towline for fear of the ship grounding. While recognising his good intentions, the outcome of this incident might well have been disastrous in terms of injury and damage. Tug masters should not hesitate to slip a tow if they perceive their vessel and crew to be in imminent danger.

Part 2 Fishing vessels

The sea is unforgiving, and it has a nasty habit of catching out those who are least prepared for when things get rough.

At this time of year, the onslaught of heavy weather means that life for a fisherman at sea can become very busy indeed. Gale force winds and pounding seas take their toll; both on the vessel itself and on the fatigued fisherman. Commercial pressures bring yet further challenges.

The safety-conscious seafarer will pay particular attention to the maintenance of his vessel. He will remember that the sea must be kept out during heavy weather. He can achieve this by checking that all doors and hatches can be made watertight rapidly. Any modifications that have been made to the vessel in an effort to speed uploading/unloading of the catch, must be examined to make sure they are completely watertight.

Many tragic accidents have occurred as a result of insufficient care being taken to ensure a vessels watertight integrity. Often, the simple act of closing a door, has been overlooked, and has meant that the vessels buoyancy has been jeopardised. All too often, complacency sets in because an open door is convenient as it enables a busy crew to go about their business without any hindrance. Eventually, the door is secured open, and it stays that way. The result, a heartbreaking accident in which both vessel and lives may be lost.

Water must be free to flow overboard. This means ensuring that freeing ports and tonnage valves operate effectively and remain clear of blockages. Remove any loose gear and rubbish, as these will block freeing ports. Water trapped on deck will add weight fairly high up and reduce the vessels stability. A large quantity of accumulated water on deck that has been unable to flow overboard, has been known to capsize fishing vessels. Don't let it happen to yours.

Remember, it pays to be safe.

Case 13
Fisherman saved by lifejacket

Narrative

A 4.95m GRP vessel was being used for creeling off the coast of Northern Ireland on an April afternoon. The wind was from the south-west force 4, the sea and swell were slight, and the visibility was good. She was being operated single-handedly.

While hauling creels about half a mile offshore, the skipper heard a thump and realised that a rope was caught around the vessels propeller. He attempted to cut the rope free and, in the process, noticed floodwater coming up through the floorboards.

Alarmed at how quickly his vessel was taking on water, the skipper pulled the release toggle to inflate his lifejacket. Less than five minutes later the vessel disappeared beneath the surface. The skipper had had no time to call for help or fire distress flares. Buoyed by his lifejacket, he slowly drifted inshore and, about an hour later, was able to stagger ashore. He walked home, took a hot bath and then notified the coastguard of his experience.

The vessel was subsequently recovered. When examined, it became apparent that the rope had wrenched the propeller away, along with a section of the hull.

The Lessons

1. This skipper had a very lucky escape indeed, especially given that the sea is extremely cold in April, and there can be no doubt that the lifejacket saved his life. The MAIB has consistently advised fishermen to wear inflatable lifejackets when working, and this case illustrates very well that by doing so, you will greatly increase your chances of survival.

An EN 396 inflatable lifejacket can cost as little as £60, a worthwhile investment. One of this type satisfies the regulatory requirement for vessels of less than 12m in length (an inherently buoyant lifejacket is not required if a self-inflating lifejacket is carried).

2. The risks multiply when sailing alone, so it is particularly important to wear a self inflatable lifejacket when doing so. This skipper owes his life to the fact that he took this most basic of safety precautions.

3. The skipper should have paid a little more attention to communication. Had the drift been offshore, the outcome might have been very different. Mobile phones are not ideal; they a rent waterproof and a signal isn't always available offshore. Lone fishermen should always carry a waterproof portable VHF radio, the cost of which is about £300. Although this may seem a little pricey, few would argue that if it saves your life, it is money very well spent.

Case 14
See no vessel, hear no vessel!

Narrative

A potter of 10m registered length was hauling a fleet of pots in thick fog. She was exhibiting navigation lights and was displaying an appropriate shape forward. The skipper and his crew were all involved in the operation on deck and the wheelhouse was left unattended. A radar was operating on a 0.5 mile range scale.

A 1,441gt cargo vessel was steaming at about 7knots. The chief officer was on watch with operational radar and, she, too was exhibiting navigation lights.

The fishing vessels skipper first became aware of the cargo vessel when he heard her wash in the fog; he then saw her emerge from the fog and approach his port side. He entered the wheelhouse immediately and applied full astern propulsion, while his crew quickly threw the fleet of pots overboard.

The cargo vessel passed close ahead of the fishing vessel and has no record of the incident.

The Lessons

1. Neither vessel was aware of the other insufficient time to prevent a close quarters situation. In the prevailing fog, the cargo vessels chief officer was reliant on radar and sound to detect the fishing vessel, and the fishing vessels skipper was reliant only on sound, since he had chosen to leave the wheelhouse unattended. It is uncertain whether or not the cargo vessel sounded her whistle. What is known, however, is that the crew of the fishing vessel did not hear one. In view of her length, the fishing vessel was not required to be fitted with a whistle. She carried a bell, but didn't use it.

In the absence of radar detection, effective sound signals are essential if close quarters situations are to be avoided.

2. Both vessels had operational radar, but each failed to detect the other. The fishing vessel was placing much reliance on the larger vessel detecting her by radar and taking the appropriate avoiding action. She did not. In fact, she didn't even see the smaller fishing vessel on her radar, and was totally unaware of the entire near miss situation. If you are fishing in dense fog, be aware that you may not be seen.

It is uncertain why the cargo vessels chief officer did not observe the fishing vessel on radar, or sight her visually at close range. Possible reasons include a sub-standard look out, and poor radar return caused by the fishing vessels fibreglass construction and a possibly ineffective radar reflector.

The fishing vessels skipper has since fitted a larger radar reflector to his vessel, which will assist in his vessel being detected in the future. He will also remember not to leave his wheelhouse unattended, since by doing so he is removing his ability to detect approaching vessels by radar.

3. Many seafarers will relate to this incident, which underlines the need for a proper lookout to be kept at all times, to maintain a full appraisal of the situation, and to enable action to be

taken at an early stage. In this case, although late, the prompt emergency action taken by the skipper and his crew was effective in preventing a disaster.

Case 15
Things that go bump in the night

Narrative

A wooden stern trawler landed her catch in Mallaig, then sailed in the early hours of the next day to return to fishing grounds to the south. The prawn fishing was good and, accordingly, the workload high. The watch alarm was not working and had been landed ashore for repair, and the vessel was sailing one man short of her normal complement.

The deckhand, who was alone on watch, noted another, slower outbound vessel on the port side. Two other vessels were inbound, and they passed by safely. The deckhand was feeling tired, having managed only 5 hours sleep in the previous 24 hours, and having had no sleep for 17 hours. This was in addition to his having worked the previous 4 days with a similar disrupted sleep pattern. He sat down in the wheelhouse chair.

The deckhand had known he would be taking the first watch after departure Mallaig, but had, nonetheless, opted to join his colleagues for an evening at a bar ashore, rather than taking the opportunity of a well earned rest.

While ashore, he drank a moderate two pints of beer. However, given his lack of sleep and increased workload, the alcohol probably had a greater adverse effect than he realised.

At around 0230, the way point for the next alteration of course was reached. Owing to the close proximity of the other vessel being overtaken on the port side, the deckhand altered course to port only about 10°. He intended altering the full amount once the other vessel had been passed safely. The other deckhand was due to be called about 10 minutes later for his watch. Shortly after making the alteration, the deckhand fell asleep.

At 0320 he was awoken suddenly by a series of bumps and bangs. The vessel had grounded.

The vessel was re-floated at high water later that day, with the assistance of Mallaig lifeboat. She had sustained superficial hull damage, and water damage to the accommodation and engine room. There were no injuries or pollution as a result of the grounding.

The vessel was later repaired and re-entered service.

The Lessons

1. The workload was high on this trip, owing to the good fishing and the fact that the vessel sailed a man short of her normal complement. This resulted in the skipper deciding to have only one man on watch, instead of the normal two. Having another person in the wheelhouse would have not only provided a second pair of eyes, but it would also have given the deckhand company and kept him more alert.

2. The deckhand had chosen to go ashore in Mallaig, rather than opting to get some much needed rest. While ashore, he had a few drinks and, later, had sat down in a comfortable chair while on watch and feeling very tired. This combination of circumstances resulted in him falling asleep and failing to make the required alteration of course. The result, a very rude awakening.

The effects of drinking alcohol can occur more quickly when tired, and be more pronounced, than expected. Avoid alcohol if you are tired, and if tired don't take the watch!

3. Had the watch alarm been working, it is probable the deckhand would have awoken before the vessel grounded. It had been sent ashore previously and had not been returned to the vessel. The watch alarm is a fundamental piece of safety equipment, especially on a vessel with a high workload, and one that is sailing short handed.

Case 16
A wooden vessel flood sand then sinks

Narrative

A 23.99m wooden fishing vessel, built in 1982,was trawling about 75 miles from her home port. The wind was from the north-north-east, force 5and visibility was moderate to good. A crew off our was on board.

At about midday, the port net became snagged on a seabed obstruction. The crew spent the next few hours trying to haul the net, sometime during which the vessel started to flood. Damage caused by a contact between the port trawl door and the hull is considered to be the most likely source of the ingress, although flooding via the pipe work cannot be ruled out.

The two main bilge pumps were electrically driven and both were disabled when the floodwater reached the transformer box. Both pumps received electricity from the same source, which meant that if one was disabled, both pumps were lost. They should have been independently driven, but they were not.

Although the flooding filled the engine room, the bilge alarm didn't alert the crew because the audible signal was not working at the time. By the time the floodwater was discovered, it was too deep for its source to be identified.

The crew were unable to contain the flooding, so were forced to abandon the vessel. The batteries for the fixed VHF radio were disabled by the floodwater, so the portable VHF radio was used for communication in the latter stage of the rescue. Help arrived in the form of a fast rescue craft from an oil-rig guard ship, just seconds before the vessel sank by the stern. All crew were rescued, unhurt.

The Lessons

1. Defective bilge alarms have been a factor in the loss of many fishing vessels. The MAIB, and others concerned with marine safety, have repeatedly emphasised the importance of a correctly functioning bilge alarm. Ensure that yours is working before sailing, since without it, you and your crews lives are at risk. Consider the time it would take to repair one which is defective often minutes the time it took for this vessel to sink.

2. The electrical supply for bilge pumps should be independently-driven. This will ensure that if the supply to one pump is lost, the other will continue functioning.

3. This article clearly demonstrates the value of the portable VHF radio. Had the skipper of this vessel lost communication with the guard ship, the rescue might have been delayed, leaving the crew on board when the vessel sank.

Case 17
Look after your tonnage valves

Narrative

A 15.24m-long steel fishing vessel was twin trawling near an offshore platform in the North Sea at midday. The wind was force 5, the sea moderate with a 2m swell and visibility was 8 miles. An experienced crew of five was on board. The fishing operation was to be the vessels last before she returned to her home port.

When the trawl was hauled, it became clear there was a good catch in the nets; enough to fill the hopper up to the shelter deck head. The full hopper caused an angle of list of about 9 degrees to starboard. While gutting the catch, the crew became alarmed at the sight of flood water starting to build up inside the shelter. This floodwater caused the vessel to slowly capsize to starboard. She sank in 140m-deep water and has not been recovered.

All crew members were rescued by the fast rescue craft from a nearby stand-by vessel.

A tonnage valve had been fitted either side of the vessels shelter, to discharge deck water. These were freeing ports fitted with a flap, which should have allowed water to flow out, but not in. It is possible the tonnage valve on the starboard side became jammed open, perhaps by a piece of fish offal. This would have allowed the vessels shelter to flood if her stability had been sufficiently degraded by the weight of the fish in the hopper, high up on the starboard side.

The deck wash supplied seawater to the shelter so that the fish could be washed before they were stowed in the hold. Had the tonnage valve been blocked, or seized closed, it would have taken about 30 minutes for sufficient seawater to build up to capsize the vessel, if the deck wash was on. Given either of these scenarios, the tonnage valve on the starboard side malfunctioned, something surveyors find all too frequently.

The Lessons

1. If your fishing vessel is fitted with tonnage valves, inspect them regularly preferably between each trip and remember to keep the spindle lubricated so that the flap moves freely.

2. When fish are being gutted, the tonnage valves should be checked regularly to ensure they have not become blocked by fish offal; this is especially important when the deck wash is running. If water starts to build up in the shelter, check the deck wash immediately to ensure that it is turned off.

3. Tonnage valves should be screwed shut, unless the deck wash is on. Never wedge them open.

Case 18
Skippers last-Minute action saves Vessel

Narrative

An 18m-long stern trawler was trawling in the St Georges Channel in association with four other fishing vessels when she noticed a container vessel approaching from astern. The 116m-longcontainer vessel was on passage between Liverpool and Portugal. It was a warm summer evening, with a light breeze and excellent visibility.

The trawler was towing a bottom trawl at about1.5 knots on a heading of 220°. Her skipper had first noticed the container vessel on radar at a range of about 2 miles (see photograph). He had monitored the approach of the other vessel on a collision course until the range between them had reduced to 0.5 mile.

The container vessel was making a speed of about 15 knots on a course of about 190°. The master had been alone on her bridge and had been aware of his vessels approach to a number of fishing vessels. The containers on deck hampered his close range visibility from the wheel house. As he had neared the other vessel she altered course to avoid them, but found that close passing was inevitable.

The trawlers skipper considered the other vessel was not going to alter course sufficiently, and that his vessel was at risk. He therefore immediately instructed his crew to come out from the cabin to the comparative safety of the deck. The skipper released the fishing gear and ,at the same time, put the helm hard to starboard.

The container vessel passed about 6m clear on the trawlers port side.

The Lessons

1. We are all taught to drive a motor vehicle defensively, and to be prepared for the unexpected. Fishing vessel skippers are also advised to heed this sound advice. Consider the possibility that give-way vessels just might not have seen you, or that perhaps they have been hampered by other vessels or for a myriad of other reasons. Prepare a contingency plan, just in case the other vessel doesn't take appropriate anti-collision action.

2. This skipper did well, and saved the day. He is particularly commended for calling his crew out on deck. He realised the situation was potentially dangerous, and head dressed the issue immediately. Failing to take such action under similar circumstances has resulted in many fishermen being trapped on board their vessels, and losing their lives as a consequence.

3. The container vessels master had been aware of his vessels approach to a number of fishing vessels. He was also aware that the cargo on deck posed limitations to his visibility. Given these conditions, he should have taken early action to keep well clear of the group of fishing vessels, or slowed his vessel and navigated with extreme caution until clear of them.

Case 19
No redundancy!

Narrative

A fishing vessel was leaving port. It was dark and the weather was calm. The skipper was alone in the wheelhouse. Once clear of immediate dangers, he engaged the autopilot, forgetting that it had an unresolved fault, and then studied his fishing charts. The vessel deviated from the intended track and grounded.

The Lessons

1. The departure followed a regular routine. The skipper was alone in the wheel house, while his crew cleared away the ropes and fenders on deck. It was to be a normal days fishing.

Having operated satisfactorily for 14 years, the autopilot had developed a fault prior to arriving at the port, and although the skipper had attempted to have it repaired, the fault remained unresolved. He was aware of the wisdom of checking the autopilot against the compass heading, but apparently failed to do so on this occasion. With no obvious indication to remind him that the autopilot was not working, he engaged it with misplaced confidence, based on its 14 years of good service.

Apart from monitoring the compass, the skipper had no means fitted to alert him to the fact that the vessel was deviating from the intended heading. Relevant and necessary check procedures should be followed at all times to guard against complacency.

2. In deciding to look at his fishing charts, the skipper was unable to rely on anyone else to maintain a proper lookout. A second person on watch would have enabled the autopilot malfunction to be identified, and remedial action to be taken. With no redundancy, the skipper was reliant on the correct operation of the navigational equipment and his ability to maintain a proper lookout. A measure of built-in redundancy is required in any navigational operation so as to ensure that an error by one person, or the failure of a single item of equipment, does not result in an irreversible dangerous situation.

Case 20
Collision between fishing vessel and a general cargo ship

Narrative

In clear visibility, slight seas and force 4 to 5 winds, a small fishing vessel began to haul her nets while heading into a westerly wind. She had been on the same westerly heading for about 3 hours. Before hauling, the skipper had seen a merchant vessel on the port side, heading in a northerly direction.

When the trawling gear reached the sea surface, the crew found it to be fouled with a large piece of timber. The skipper, therefore, kept the vessel making way through the water to avoid the trawl fouling the propeller, and the timber causing damage to the vessel.

The skipper decided to help the crew and, before leaving the wheelhouse, anticipated there would be no problem in the ship avoiding his vessel. However, while busy retrieving the gear, the skipper heard one blast from the cargo ships whistle. The two vessels collided.

The cargo ship was on a heading of 304° and travelling at a speed of 8 knots. Using VHF radio, the chief officer had tried in vain to call the fishing vessel on his starboard bow. He then called the master who, on reaching the bridge, saw that the fishing vessel was on a collision course. The master reduced the ships speed and turned the helm hard to port. He then sounded the whistle, but his action failed to prevent a collision.

The fishing vessel ran along the starboard side of the cargo ship, before clearing. The skippers first response was to call the ship on VHF radio channel 16, but he received no reply. He then noticed water running across the accommodation deck, so went below to check for leaks. Water was present, so he moved the batteries to a higher position.

The fishing vessel was able to reach port safely.

The Lessons

1. The skipper thought the ship didn't pose a problem, based partly on his knowledge that it was approaching from his port side, and partly because he was fishing with the appropriate signals displayed. An assumption that any vessel, whether fishing or merchant, will meet her obligation to keep out of the way when there is risk of collision, is a dangerous one to make. Many have made this assumption and, when avoiding action has eventually been taken, it has been too late. Some collisions in similar circumstances have resulted in loss of life, sometimes considerably so. The need to keep a proper lookout so as to maintain a full appraisal of the situation is paramount.

2. The obligation of the chief officer was clear under the International Regulations for Preventing Collisions at Sea. He had to keep out of the way of the fishing vessel, which was engaged in fishing. We don't know why the chief officer wasted time trying to contact the fishing vessel by VHF radio, why there was apparent doubt as to his obligations, and why he felt it necessary to call the master, whose subsequent actions were too late to prevent a collision.

Case 21
Fishing vessel capsizes with loss of life

Narrative

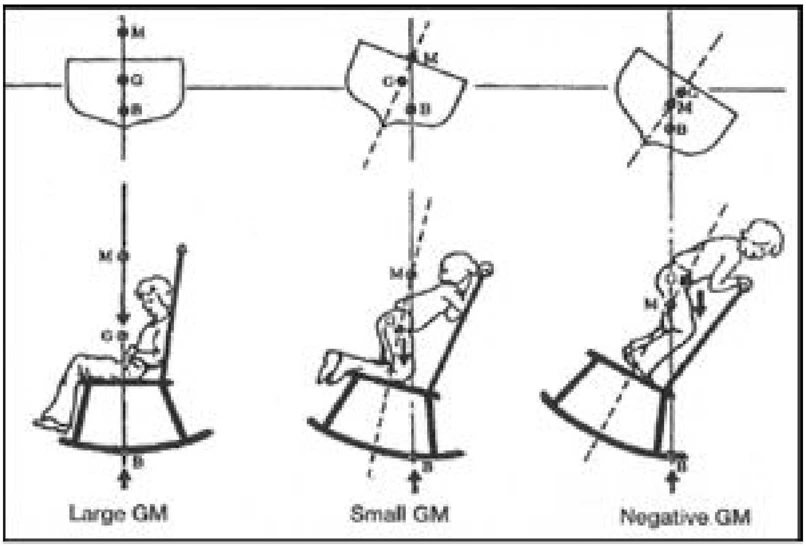
A 10m-long stern trawler left port in the south coast of England, with three crew members onboard. She headed for popular grounds off Gilkicker Point, unfamiliar to her skipper and crew. The weather was fine with a west-north westerly wind of force 4 and good visibility.

During the first trawl of the day she picked up part of a WW2 torpedo, as well as a quantity of mud and shells. The skipper was aware that a heavy load had been caught, so he and the crew decided to try and recover it so that they could then decide how to deal with the situation. They managed to raise the net to the surface fairly easily, but when they tried to lift the cod end clear of the water, the weight was too much for the trawl winch. As the winch struggled to lift the cod end by the gilson rope led through a block on the A frame, at a height above the deck of about 4.8m, the vessel took an increasing list to starboard. The load snagged on the starboard quarter and, with the winchs relief valve blowing, it could neither be pulled inboard, nor lowered back into the water.

The situation seemed to stabilise with the vessel listed to starboard, and with freeing ports on the aft starboard side underwater. As the crewmember cut the net to release the unwanted load, the vessel encountered the wash from a passing vessel. She rolled, took water over the starboard bulwark and capsized rapidly. Within minutes, she inverted and foundered.

The crew of a nearby yacht witnessed the event. They rescued the skipper and his son quickly from the water and raised the alarm. Other rescue craft were soon on scene. The crewmember who, with the skipper, co-owned the vessel, was discovered floating face-down in the water. He was airlifted to hospital but, despite continuous attempts to resuscitate him, was eventually pronounced dead. He was believed to have been a non-swimmer and had not been wearing a lifejacket.

The gantry and A frame



Note: this diagram simply shows the importance of keeping the vessels centre of gravity (G) as low as possible to prevent capsize (Negative GM). Source: University of Texas, Austin

The Lessons

1. It is essential that skippers have a good basic understanding of ship stability so that they can make informed decisions when extraordinary events occur.

2. Once again, we are reminded of the need for fishermen to heed the advice the MAIB so frequently issues: always wear a lifejacket when working on the open deck even in seemingly benign weather and sea conditions.

Accidents are rarely caused by a single event. All too often, several factors combine and tragedy strikes; leaving a bereaved relative grieving and leaving a vessel without a valued crew member. This case was no exception. The removal of anyone of the following four situations might have averted the accident:

- Picking up part of a WW2 torpedo while fishing. The area off Gilkicker Point is known to contain a substantial amount of ordnance. Anyone fishing there should be aware of this hazard and should make contingency plans in the event theyare unlucky enough to catch more than they bargained for.
- The decision to try and lift the load on deck using a lifting point 4.8m above the deck. This action raised the vessels centre of gravity (as illustrated in the diagram of the girl standing on the rocking chair) and resulted in the capsize. Having raised the load to the surface, and having realised that it was very heavy, the skipper and crew should have decided on the safer option of releasing the net and buoying it for recovery by a specialist craft. Alternatively, they could have dragged the load into shallow water fo rinspection at low tide.
- The snagging of the load on the fishing vessels quarter. This left the crew unable to lower the net into the water to reduce the list and increase the stability. The MAIB is unsure exactly how the net became caught.
- Finally, encountering the wash from a passing vessel. This area is close to the main routes used by many ferries, high-speed craft and merchant vessels. It is, therefore, not unusual for a vessel to encounter wash from a passing craft.

Part 3 Leisure craft

When navigating in areas with a large concentration of ships, a high degree of concentration and a good visual lookout, are required to understand correctly the current situation, and in what direction ships are about to steer. Knowledge of the Rules of the Road alone is no guarantee that collisions will be avoided.

The Rules provide a list of options of what to do in certain situations. But if one is unaware of what other people are going to do, misunderstanding will occur and wrong options will be taken. Inevitably, accidents will happen.

People continue to drown from pleasure craft because they did not wear lifejackets. Complacency can blight experience and able seamanship, the prerequisites to rational decisions and good judgment. Often it leads skippers to believe that the wearing of life jackets is unnecessary.

Like others before them, they may live to regret this belief should one of their crew fall overboard, and they learn afterwards that had a lifejacket been worn, a fatality might have been prevented.

Fast and highly manoeuvrable rubber inflatable pleasure craft are becoming increasingly popular: a trend which has led to an increasing number of speed-related accidents. Depending on hull shape and outboard motor size, the range of handling sensitivity can be extreme, increasing the risk of an accident with, or to, the inexperienced or unwary.

The ability to steer the largest tanker, or smallest pleasure craft safely will surely be affected by alcohol abuse. Like fatigue, it degrades standards of behaviour and places fellow shipmates at risk.

Case 22
Tragic end to a twister

Narrative

Towards the end of July 2000, a 9 metre (28ft) sloop, with a crew of four set off from the Netherlands port of Ijmuiden to sail across the North Sea to Harwich and the River Orwell. She never arrived. The alarm for this Twister class yacht was raised three days after she could reasonably have been expected to arrive and one of the most extensive air and sea searches ever made was mounted without, sadly, any success.

Three bodies were recovered from the sea off the Netherlands coast about three weeks after the yacht was reported missing, and a fourth was found in October. They were identified as the crew. Part of the wreck was trawled from the sea in November, and showed signs of catastrophic damage. A search for further wreckage by the Royal Netherlands Navy failed to find any.

The owner, described as an experienced yachts man, was immensely proud of his boat and had done much of the fitting out himself. He sometimes sailed alone, but on other occasions offered berths to people who wanted to sail but had no craft of their own. She was adequately equipped for coastal water sailing, carried a manually operated EPIRB, automatic steering, GPS and basic lifesaving equipment. She did not carry a life raft, but did have an inflatable tender. It is not known if the flares carried were in date.

In mid July the skipper planned to sail the yacht across to the Netherlands and had earlier approached the Cambridge Cruising Club to offer berths for anyone wanting to sail across the North Sea. The offer was taken up by two groups of young people, most of whom were students at Cambridge University. One group would do the outbound passage, the second the homebound, with a crew change in Amsterdam. No money changed hands and there was no formal contract between skipper and crew. The students were there for the experience and enjoyment.

The first crew of four joined at Pin Mill on 7 July and sailed the next day for the Netherlands. The experience of those on board, apart from the skipper, was varied and embraced everything from almost none at all, to fairly extensive in coastal waters.

The crew later described the skipper as being meticulous about where everything was stowed. The newcomers were shown where lifejackets were and how to use the safety harnesses. The pre sailing briefing included directions on how to use domestic equipment, the radio and some safety equipment. The safety policy on board involved wearing lifejackets and harnesses at night, but these measures were voluntary during the day. The outward passage crew cannot recall having been told what to do in an emergency.

Watches were mounted on a 4 hours on 4 off basis with the skipper making himself available as required and, in practice, being in the cockpit for extensive periods. He chose to be up and about when the two with the least experience were on watch together. None of the two experienced watchkeepers had ever kept a night watch before.

There were times when the skipper rested, leaving the watchkeeping in the hands of the relatively untried and inexperienced crew. There was one recorded incident of the yacht veering off course by, perhaps 90°, and another where by an overtaking vessel closed to short range without anyone being aware of it. The weather deteriorated during the passage.

She arrived at Ijmuiden at about 1800 on Sunday9 July and spent some time motoring along the Nordzee Canal before finally arriving at Sixhaven, Amsterdam. On arrival, the four temporary crew disembarked.

They were replaced some time later by three other students, all from Cambridge University. They joined on the evening of 24 July, and by all accounts the yacht sailed early the next morning for the 11-mile long westbound transit of the Nordzee Canal. There is no record of anyone having sighted the yacht on this transit, or having passed through the locks at Ijmuiden to the tidal waters of the North Sea.

At this juncture in the narrative, speculation takes over. Nothing is known about her homebound passage, except that a reasonable assumption can be made that her general direction of sailing would have been towards Harwich. Her speed made good would have been in the order of 4 to 5 knots depending on wind and tide. The weather at the time was north-westerly force 4 to 5, and the visibility is reported to have been good. She was expected to have arrived off Harwich no later than 27 July. She didn't.

The investigation into her loss flagged up many questions and few answers, but some facts have been established. No Mayday or other distress signals were sent. The manually operated EPIRB was not activated. No other vessel reported a collision or any indication of a yacht in distress. Inspection of the recovered wreckage, confirmed as the yacht, showed no sign of fire or explosion. A black substance on both sails and hull was identified as crude oil. None of the bodies showed any sign of trauma and none were wearing lifejackets. The cause of her loss, and a satisfactory explanation for the deaths of four people, is a mystery.

The balance of probability supports the hypothesis however that she was probably in collision with another vessel for reasons that can not, at present, be explained.

The Lessons

It is impossible to determine the precise cause of the yachts loss. However, if any good is to come out of this tragedy, it will be if fellow sailors take on board the following important lessons, some of which extend beyond the actual incident:

1. There is no reason why an experienced skipper should not sail with a novice crew, providing certain ground rules are observed. The first requirement is to gauge the crews actual, rather than the stated, experience. If they are all new to the sea, the skipper is advised to tailor his or her aspirations accordingly. Under normal circumstances, nothing too ambitious should be contemplated unless there is at least one other person on board who can demonstrate reasonable competence.

2. Any member of the crew with knowledge and experience will be a great help, but those whose experience is confined to dinghy or estuarine sailing will find offshore work strange at first. Human nature being what it is, they may be very reluctant to admit they are on unfamiliar territory. Maintaining an all round lookout at sea, especially at night, is far from straightforward and is likely to be very taxing for the inexperienced.

3. Before embarking on any passage with an unknown crew, a shakedown cruise is strongly recommended. This is particularly relevant before embarking on an overnight passage.

4. Safety equipment should meet the highest standards and be suitable for the intended passage. For a vessel going offshore, a life raft capable of carrying everyone onboard is very strongly recommended.

5. The crew must be thoroughly briefed, and instructed on how to handle the lifesaving equipment provided. Each member of the crew should not only be shown where the lifejackets are stowed before going to sea, but they must try them on as well. Everyone should be briefed about what to do in an emergency and how to react in the event of the skipper becoming incapacitated.

6. Carry an EPIRB and ensure it has been correctly registered. With so many choices available for use in a small sailing vessel, the most practical option is, in the MAIB's opinion, a manually operated 406Mhz beacon.

7. It can be surprisingly difficult for other vessels to see yachts in certain sea states and lighting conditions. Never assume the other ship has detected you, especially in fog, rain or a high sea state. Not only must you make sure your watchkeepers keep a very good lookout, but also equal attention must be given to making your craft as visible as possible. Unless big ship watchkeepers detect you at about 5 miles, the speed and size of their ships could mean they have very little time and sea room to take avoiding action. If the ship is approaching from down sea, your radar echo runs the additional risk of being swallowed in the clutter at relatively close range.

8. Make sure you are carrying an effective radar reflector and that it is rigged correctly. As from 1 July 2002, all ships under 150gt are required to have a radar reflector (see footnotes). To be effective, such a reflector should, at the very least, comply with ISO 8729: 1987, RORC or ORC specifications. An acknowledged problem facing the small boat skipper is the difficulty in fitting a radar reflector that has a good capability to reflect radar transmissions in the S Band (3Ghz) with its superior ability to penetrate precipitation.

9. And also check that the navigation lights are functioning correctly. Small boat lights can be difficult to see at night.

10. Have a white flare available to alert oncoming shipping to your presence.

11. Join the MCAs CG66 Voluntary Safety Identification Scheme. By filling in formCG66, and sending it off to your nearest Coastguard Co-ordination Centre, it ensures the coastguard has the latest information on your craft should an emergency arise. The form can be downloaded from the MCAs website http://www.mcga.gov.uk/publications/cg66/index.htm

12. The southern North Sea is among the busiest stretches of waters in the world and a challenge for the inexperienced. Pay particular attention to teaching watchkeepers how to keep a lookout and assess whether risk of collision exists. Rehearse the Rule of the Road. You are likely to see every possible combination of lights and shapes in the waters between East Anglia and the Netherlands coast.

13. And don't ever forget Rule 17(b): ***When, from any cause, the vessel required to keep her course and speed finds herself so close that collision cannot be avoided by the action of the give-way vessel alone, she shall take such action as will best aid to avoid collision.***

14. If you are the skipper, choose your time for rest with great care. You cannot afford to be fatigued when you are most needed to give advice. The problem of managing ones own sleep when acting as skipper is one of the most difficult tasks facing the average person in charge of a vessel at sea.

15. Nobody on board the yacht was wearing a lifejacket. It is impossible to speculate on the outcome had they been wearing them, but...

Footnote

At the inquest held in July 2002, an open verdict was returned on the victims of this tragic accident. The new Chapter V of the Safety of Life at Sea Convention (SOLAS) states in Regulation19.2.1.7 that All ships irrespective of size shall have: if less than 150gt and if practicable, a radar reflector or other means to enable detection by ships navigating by radar at both 9Ghz and 3hz.

Case 23
Don't drink and drive

Narrative

It was a balmy summers evening when three young friends set off for a short river passage in an RHIB (rigid hulled inflatable boat). It was something they had done many times before, yet one minute later, one of the friends was dead, having been thrown into the river and drowned after the RHIB had collided at speed with another vessel.

All had drunk large amounts of alcohol, none were wearing lifejackets, and the boat was travelling in excess of 20 knots. The speed limit on the river was 6 knots.

The Lessons

1. Just because there is no statutory maximum level of alcohol allowed in persons driving boats, and no requirement for breathalysers, it does not mean that it is safe to drink and drive on water. The effects of alcohol when driving a boat are exactly the same as when driving a car they can kill! The onus to remain in a fit state to safely drive a boat rests squarely on the shoulders of the individuals concerned. When responsible for the safety of a boat and all those on board, think twice before drinking alcohol; its not just your life at stake.

2. Wearing lifejackets might not appear the macho thing to do, but its the right thing. No matter how good a swimmer, or how short the trip, everyone in a boat runs the risk of falling or being thrown into the water and drowning. Lifejackets save lives, but only when they are worn.

3. RHIBs are fast and highly manoeuvrable, but if not driven with care they can be dangerous. When driving an RHIB, keep to speed limits, stay in control, keep a good watch out and think of others.

4. The number of RHIBs used for pleasure has increased dramatically in recent years, and as ever, the experience and ability of those in charge is variable. If you own or have access to an RHIB, make sure you are aware of its characteristics and are able to operate it safely in all conditions. As with any other type of boat, you should attend one of the various courses available through RYA-recognised training schools.

Case 24
Differing perspectives!

Narrative

A ro-ro passenger ferry was on her regular passage from Southampton to Cowes, it was daylight and the visibility was good. The wind was south-easterly force 4 and the tidal stream was easterly.

The ferry left the Thorn Channel and headed south-south-westerly across the western part of the Bramble Bank towards the West Knoll buoy with the intention of leaving it to port. She would then head towards the South Bramble buoy. She was making good between 12 and 13knots.

A sailing yacht, the closest of four yachts crossing the Bramble Bank ahead of the ferry, was making about 6 knots on a close reach and, although on a more westerly heading than the ferry, was making good a similar track. The other three yachts were making similar tracks but further to the west.

Assuming the yacht would maintain her heading, the ferry's master considered he would be able to overtake her on her port side soon after she had passed the West Knoll buoy. There was only just enough sea room for this manoeuvre, but the ferry master knew that he could stop or slowdown rapidly if necessary. Staying clear of the main area of congested leisure traffic further to the west was another consideration.

The skipper of the yacht was watching the approach of the ferry with some alarm. He was aware that unless the ferry altered her course or speed very soon his vessel would be run down. He could not be sure that the watchkeeper on the ferry had seen him.

When the yacht was about 1 cable ahead, the ferry began to alter course to port as planned. However, by this time, the skipper of the yacht had become so concerned that he also had begun to alter course to port. The skipper considered that his own vessels close proximity to the West Knoll Buoy ruled out the possibility that the ferry would pass down his port side. With this in mind, his intention had been to tuck up closer to the buoy to give the ferry more room to pass him on his starboard side.

The combined effect of the two actions was to maintain both vessels on their collision course. The ferry's master sounded two short blasts, with the intention of altering course further to port, but immediately decided that it would be better to pass down the starboard side of the yacht. He stopped his vessel swinging further to port accordingly.

The ferry passed only a few metres clear of the yacht when she was just over half a cable south of West Knoll Buoy about 1 minute after beginning his anti-collision manoeuvre.

The Lessons

Anyone who has sailed in the Solent, or been on passage through it in a larger vessel, will know that it can get quite exciting; especially in summer. It demands a very high degree of concentration and nowhere more so than in the area to the north of Cowes. Its limited area, and simultaneous use by merchant vessels, ferry operators, warships and leisure craft effectively restricts the available sea room in which to comply with the Collision Regulations, and vessels have differing perspectives of the requirements.

1. The action taken by the ferry

In accordance with Rule 13 of the Collision Regulations, the ferry was required to keep out of the way of the yacht. In accordance with Rule 17, the yacht was required to maintain her course and speed until it became apparent that the ferry was not taking *appropriate avoiding action*.

The Collision Rules variously call for the action of the give-way vessel to be:

- **positive, made in ample time and with the observance of good seamanship;**
- **large enough to be readily apparent to another vessel;**
- **such as to result in passing at a safe distance; and**
- **early and substantial.**

***Appropriate avoiding action* can be measured against these requirements.**

The master of the ferry's planned anticollision action did not fulfil many, if any, of the above requirements. Bearing in mind the ferry's ability to slow down and stop very rapidly, more *appropriate avoiding action* in these circumstances might have been to have slowed down until both vessels were well past West Knoll Buoy where greater sea room would have enabled a safer passing manoeuvre.

2. The action taken by the yacht

Compliance with Rule 17 (maintaining her course and speed until it became apparent that the ferry was not taking *appropriate avoiding action*) can place the yacht, or any other slow speed stand-on vessel, in a very difficult position.

At what stage can the skipper of a stand-on yacht legitimately decide that the give-way vessel is not taking *appropriate avoiding action?* In this case, with the two vessels only a cable apart, and therefore within a minute of colliding, and the give-way vessel having shown no sign that he had the situation under control, the skipper was justified in taking action. As the yacht was already close to West Knoll buoy, an alteration of course to port towards the buoy was the most obvious choice, but any alter course action stood the risk of making matters worse. Rule 34 contains sound signals for this situation and it is important to make every effort to communicate intentions to the other party.

3. The importance of communication

***Early* use of the sound signal of two short blasts would have indicated the ferry's intentions under Rule 34 of the Collision Regulations.**

In the absence of a positive early indication of the intentions of the give-way vessel, the skipper of the stand-on yacht needs reassurance that the watchkeeper of the give way vessel has seen him. Under Rule 34,the skipper may try to attract the attention of the give way vessel by sounding five or more short blasts using the boats sound signalling equipment and/or flashing a signal light. This signal indicates that you are in doubt as to whether sufficient action is being taken. Because the ferry had an enclosed bridge, flashing the light might have been the more effective signal on this occasion.

MAIB Noticeboard

Attention all wearers of inflatable lifejackets!

All mariners working on deck should wear lifejackets, and those who do so rightly expect them to function reliably when required. However, a recent fatality raised very serious concerns.

The fatality occurred when a fisherman whose vessel had capsized and sunk - tried to inflate his lifejacket by pulling the release toggle. The lifejacket didn't inflate and, as a result, he drowned. Further investigation revealed that the gas cylinder was no longer attached to the release unit. With constant use it had unscrewed from the release unit.

- **All wearers of inflatable lifejackets are strongly urged to ensure that the gas cylinders are firmly tightened into the release units.**
- **Lifejackets must be serviced annually.**
- **If all else fails, remember that lifejackets can be inflated by removing the dust cap, and then using the oral tube provided.**

Appendix a

Investigations started in the period 01/07/02 - 31/10/02

Date of accident	**Name of vessel**	**Type of vessel**	**Flag**	**Size**	**Type of accident**
01/07/02	*Shemaron*	Fishing vessel	UKM	28.13	Accident to person
07/07/02	*Flamingo*	Fishing vessel	Belgium	23.82	Capsize/listing
19/07/02	*Portsmouth Express*	Passenger ro/ro	Bahamas	5,902	Accident to person
20/0702	*Pride of Bath*	Passenger other	UKM	53.00	Fire/explosion
02/09/02	*Norsea*	Passenger ro/ro	UKM	31,785	Fire/explosion
21/09/02	*Jacoba*	Fishing vessel	Netherlands	270.00	Grounding
27/10/02	*Pride of Portsmouth* *HMS St Albans*	Passenger ro-ro Naval craft	UK UK	33,336	Collision

Appendix b
Reports issued in 2002 (unpriced)

Beatrice propulsion failure, and subsequent beaching of the Class V amphibious passenger craft on 31 March 2001, opposite the River Thames Fire Station, Lambeth
Published 1 February 2002

***Bramble Bush Bay* (Sandbanks ferry)** collision between chain ferry and four XOD class yachts at the entrance to Poole Harbour on 5 May 2001
Published 25 June 2002

CEC Crusader fatal accident on board CEC *Crusader*, 1.8 miles north of Foreness Point, on 22 November 2001
Published 15 August 2002

Commodore Clipper broaching of fast rescue boat while being launched from *Commodore Clipper* on 18 February 2001
Published 21 June 2002

Constant Faith loss of *Constant Faith* about 100 miles north-north-east of Peterhead on 30 June 2001
Published 28 June 2002

Crimond II loss of vessel 30 miles north-east of Scarborough on 24 April 2001
Published 18 February 2002

European Highway accident to lifeboat and fast rescue craft from *European Highway*, in Zeebrugge on 1 December 2000, four injured
Published 23 January 2002

Finnreel grounding of UK ro-ro vessel *Finnreel*, off Rauma, Finland on 14 March 2001
Published 13 May 2002

Fishing Vessel Safety Study 1/2002 report on the analysis of fishing vessel accident data 1992 to 2000
Published 31 July 2002

Galateia lifeboat accident on mv *Galateia*, Seaforth Docks, Liverpool 26 January 2002
Published 25 July 2002

Gemma Fidelis fatal accident on board *Gemma Fidelis*, 9 miles east of the River Tees on 23 October 2001
Published 19 July 2002

Grand Turk injury sustained during the firing of cannon on sv *Grand Turk* while alongside at Portsmouth on 24 August 2001
Published 16 April 2002

Gudermes and Saint Jacques II collision between vessels in the Dover Strait on 23 April 2001
Published 8 February 2002

Hampoel and Atlantic Mermaid collision between vessels in the Dover Strait on 7 June 2001
Published 19 March 2002

Lomur grounding of *Lomur* in the approaches to Scalloway, Shetland Islands 14 June 2001
Published 15 February 2002

Lysfoss grounding of *Lysfoss* in Sound of Mull, Scotland 7 May 2001
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Marine Explorer failure of lifeboat winch brake on *Marine Explorer* in Harwich on 14 March 2001, two injured
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Mathilda and Lady Hamilton of Helford near miss incident between *Mathilda* and *Lady Hamilton of Helford,* 7 miles east-south-east of Lizard Point, Cornwall on 28 June 2001
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Our Nicholas grounding and loss of the crabber *Our Nicholas* near the entrance to Stornoway Harbour on 24 July 2001
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Our Sarah Jayne/Thelisis collision between vessels in the Thames Estuary 20 June 2001
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P&O Nedlloyd Magellan grounding of Liberian-registered container ship *P&O Nedlloyd Magellan* in the Western Approach Channel to Southampton Water on 20 February 2001
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P&OSL Canterbury flooding of the forward machinery space of *P&OSL Canterbury* as she entered Dover Harbour on 17 May 2001
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Pride of Cherbourg and Briarthorn near-miss between vessels in the Eastern Solent on 7 February 2001
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Primrose grounding of *Primrose* on the Island of Rhum on 15 June 2001
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Randgrid parting of mooring line between the Tetney buoy and the North Sea shuttle tanker *Randgrid*, resulting in the discharge of 12 tonnes of crude oil into the Humber Estuary on 20 December 2000
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Resplendent grounding of *Resplendent* in Bluemull Sound Shetland Islands 13 June 2001
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Rosebank accommodation fire on *mv Rosebank* 7 miles east of Alnmouth, off the Northumberland coast 14 December 2001
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Sand Heron and Celtit collision between vessels north-east traffic lane, Dover TSS on 30 July 2001
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Sundance capsize and foundering of *Sundance* off Gilkicker Point, East Solent with the loss of one life 10 September 2001
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Vertrauen investigation of the loss of *Vertrauen* about 75 miles north-east of Peterhead 19 July 2001
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***Safety Digest* 1/2002 : Published April 2002**

***Safety Digest 2/2002* : Published July 2002**

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