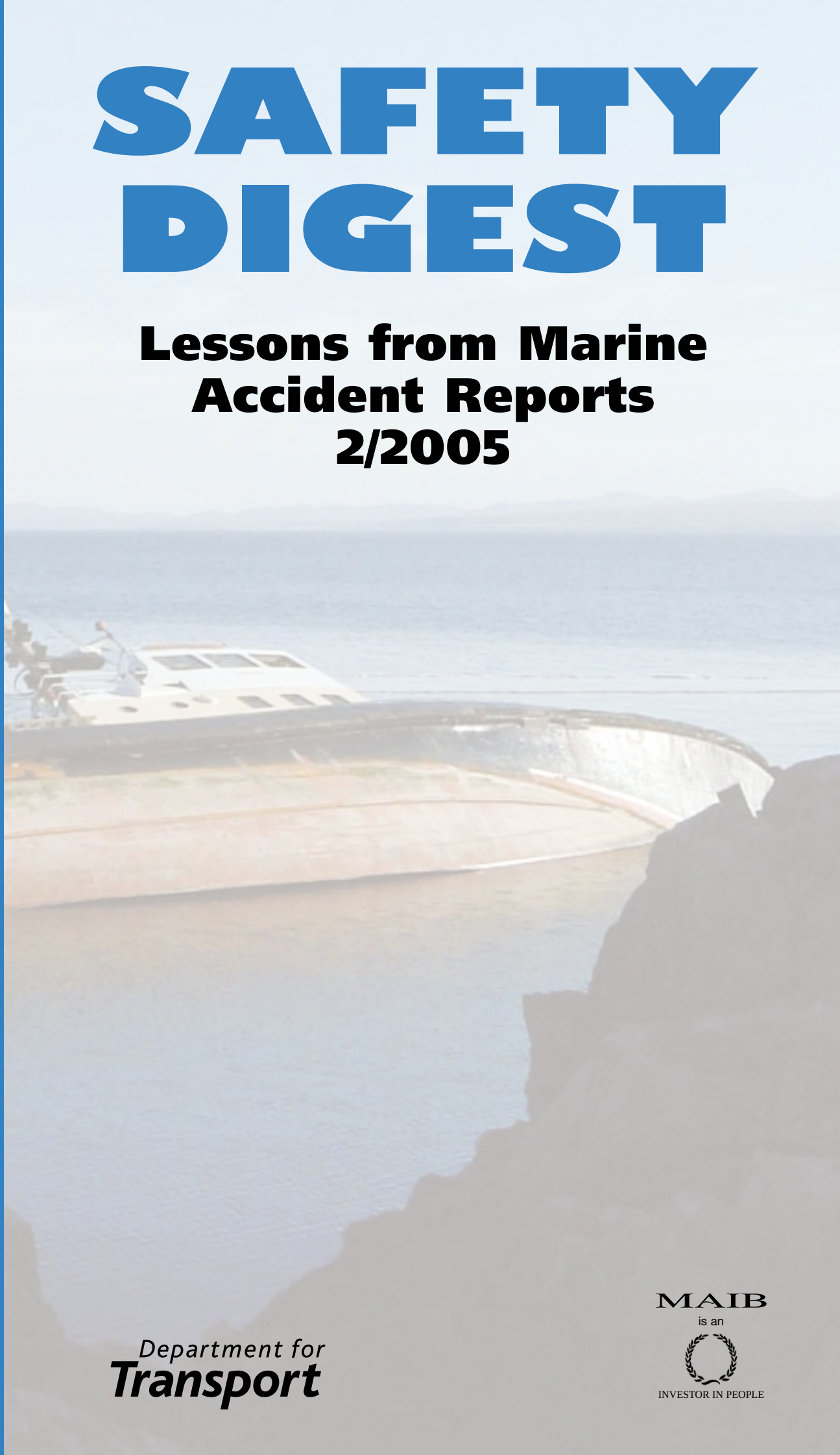
MAIB

MARINE ACCIDENT INVESTIGATION BRANCH

SAFETY DIGEST

Lessons from Marine Accident Reports 2/2005



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Lessons from Marine Accident Reports

No 2/2005

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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 and incidents. It contains facts which have been determined up to the time of 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.

The Editor, Jan Hawes, welcomes any comments or suggestions regarding this issue.

The Safety Digest and other MAIB publications can be obtained by applying to the MAIB.

If you wish to report an accident or incident please call our 24 hour reporting line 023 8023 2527

The telephone number for general use is 023 8039 5500.

The Branch fax number is 023 8023 2459.
The e-mail address is **maib@dft.gov.uk**

Summaries (pre 1997), and Safety Digests are available on the Internet: www.maib.gov.uk

MAIB

MARINE ACCIDENT INVESTIGATION BRANCH

The role of the MAIB is to contribute to safety at sea by determining the causes and circumstances of marine accidents, and working with others to reduce the likelihood of such causes and circumstances recurring in the future.

Extract from
The Merchant Shipping
(Accident Reporting and Investigation)
Regulations 2005 – Regulation 5:

"The sole objective of the investigation of an accident under the Merchant Shipping (Accident Reporting and Investigation) Regulations 2005 shall be the prevention of future accidents through the ascertainment of its causes and circumstances. It shall not be the purpose of an investigation to determine liability nor, except so far as is necessary to achieve its objective, to apportion blame."

INDEX

Glossary of Terms and Abbreviations

AB	–	Able Seaman
ARPA	–	Automatic Radar Plotting Aid
CO_2	–	Carbon Dioxide
CPA	–	Closest Point of Approach
DSC	–	Dangerous Goods, Solid Cargoes and Containers
EPIRB	–	Emergency Position Indicating Radio Beacon
GPS	–	Global Positioning System
GRP	–	Glass Reinforced Plastic
IMDG	–	International Maritime Dangerous Goods Code
Mayday	–	Spoken distress signal
MCA	–	Maritime and Coastguard Agency
MCR	–	Machinery Control Room
MGN	–	Marine Guidance Notice
OOW	–	Officer of the Watch
PAN	–	The international urgency system
RNLI	–	Royal National Lifeboat Institution
SWL	–	Safe Working Load
VHF	–	Very High Frequency

Introduction

In the few months since the last *Safety Digest*, there have been over 500 accidents or incidents reported to the MAIB. Many of the root causes of these accidents are depressingly familiar. All of us, as mariners, need to remind ourselves of why we take precautions and why we put in place safety checks and balances. It is all too easy at sea to become complacent; but when short-cuts are taken or safety checks skipped due to familiarity, we have to recognize that we are becoming dangerous. Reading the accounts in this *Safety Digest* should remind all of us that we work in an inherently dangerous environment, where a lack of attention or forethought can be fatal.

In May 2005, the MAIB issued two Safety Bulletins, to get urgent safety messages out. One, referring to three recent accidents involving tugs manoeuvring ships, is of particular interest to tug operators and crews, harbour authorities and pilots; it is available on our website: www.maib.gov.uk. The other, referring to a recent tragedy involving a rigid inflatable boat, is reproduced in our "Noticeboard" at page 57. If either of them may affect you in any way, please take the time to read them.

The main lesson from all accidents is: keep alert, think carefully about what you are doing and be prepared for the unexpected. In that way, we can all return home safely.

Stephen Meyer
Chief Inspector of Marine Accidents
August 2005

Part 1 – Merchant Vessels

Communicating successfully with those at sea on any matter has always been an issue, and the MAIB *Safety Digest* is one of the most effective ways of communicating and sharing information on safety issues. The staff at the MAIB are committed to safety at sea, and their investigations are aimed at finding the lessons to be learnt from an incident, rather than simply finding fault. The *Safety Digest* allows readers to review their own procedures and learn lessons from the mistakes of others. I fully recommend that these cases are reviewed to see if they could be applicable to your own operation or ship.

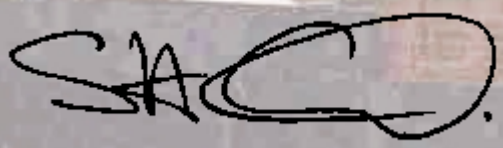
Accident investigation is not an easy task, it is time consuming, and there is often a natural tendency for those involved to be defensive, especially if they have to admit to failings themselves. It remains a fact that human error accounts for the majority of accidents. Only by proper investigation and openness by those involved can we avoid repeating mistakes that cause accidents and, in the worst cases, fatalities.

The incidents reported in this edition of the MAIB *Safety Digest* again show how those at sea must constantly be aware of what is going on around them, and the hazards involved if things do not go as planned. It is pleasing to see one report (Acid Attack) where the awareness and prompt actions of a crewman, followed up by pre-planned emergency procedures, prevented a major incident. Unfortunately, a number of reports indicate the opposite, and show a general lack of awareness by the seafarers for what is going on around them. The consequences of this are clearly illustrated in the reports.

General awareness is an essential part of carrying out any task at sea, but all too often the consequences of failure to plan, consider all the risks, and then continually monitor, leads to damage of equipment, collision, grounding or, worse still, injury or a fatality.

A smaller number of cases show us incidents caused by the 'rule breaker'. These are people who know what they are supposed to do, have been trained to do it properly, but break the rules on their own initiative to complete a job. When questioned afterwards, many of these people genuinely believe they are doing this to help the company, or they think it is how the company actually wants them to do the job. In well run companies, these accidents are sometimes the most difficult to accept, and the most difficult to address.

To address these issues, senior staff, ashore and afloat, must be pro-active in training, supervising and ensuring that rules are adhered to. This does not mean a dictatorial approach, but a safety culture where there is good leadership, good communication, continuous improvement and a no-blame culture. The exchange of information across the industry is essential in assisting us in this, and I commend these case studies to you as part of this process.

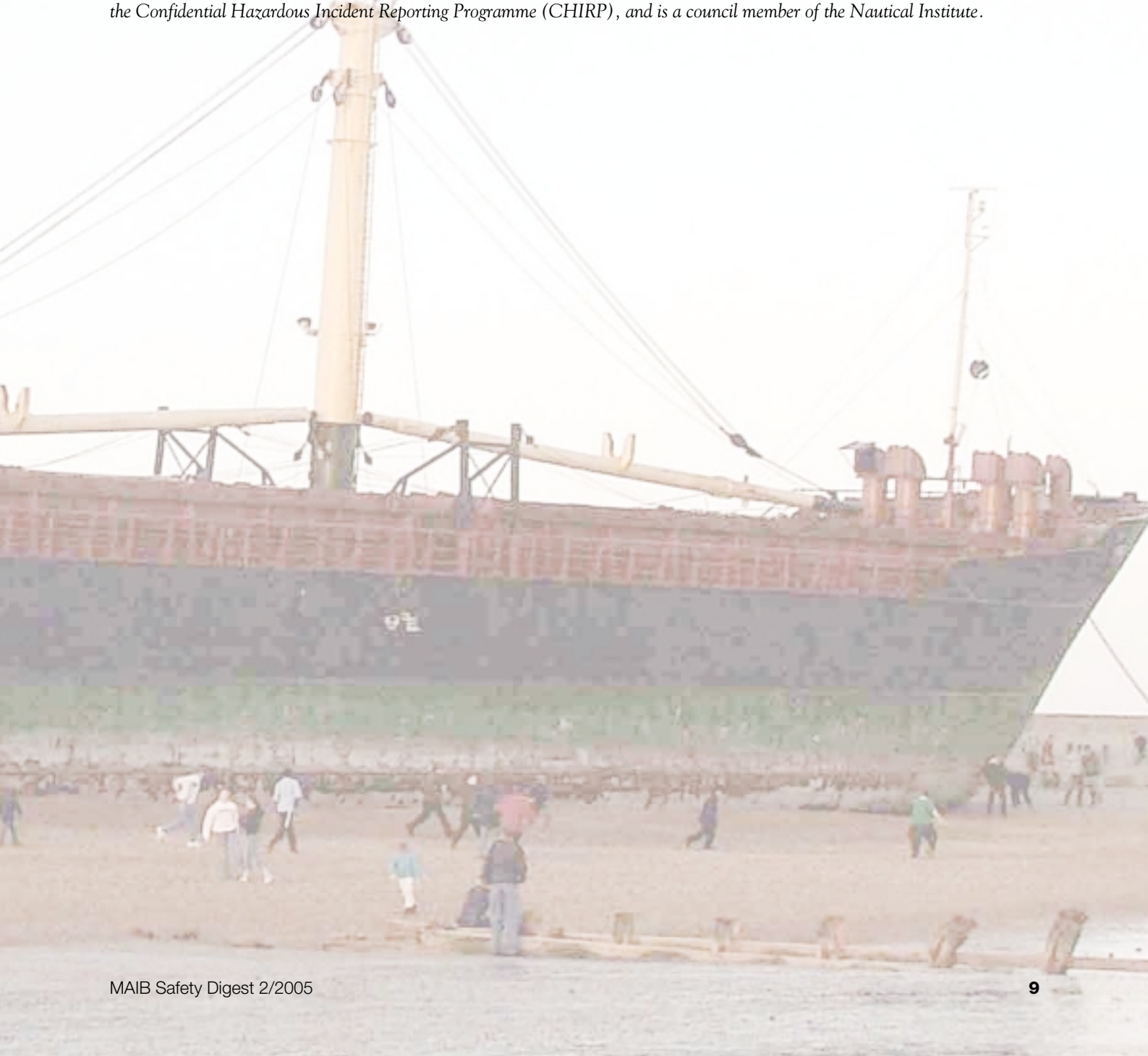


Stuart Greenfield *is Director, Maritime Affairs for Carnival Corporation & plc based in Southampton, Hampshire. The Carnival group operates a total of 78 cruise ships under 12 different brands.*

Stuart went to sea with the Peninsular and Oriental Steam Navigation Company (P&O S N Co) as a group deck cadet in 1974 serving on all types of vessels, and in 1978 was appointed to the Passenger Ship Division as Third Officer. He continued to serve on the cruise ships until 1992 when he became Deputy Marine and Safety Manager for P&O Cruises, based in Southampton.

In 1994 he progressed to Marine and Safety Manager, and at the demerger of the cruise division from P&O S N Co in October 2000, was appointed Head of Maritime Affairs for the new company P&O Princess Cruises. At the merger with Carnival Corporation he assumed a similar role for the dual listed company Carnival Corporation & plc.

He represents Carnival on panels at the UK Chamber of Shipping and assists in work at IMO as either an International Council of Cruise Lines representative, or advising flag states. He has recently been appointed to the advisory board of the Confidential Hazardous Incident Reporting Programme (CHIRP), and is a council member of the Nautical Institute.



Don't Just Watch it Happen

Narrative

While on passage, two deckhands were instructed by the master to prepare the vessel's steel uprights for the next deck cargo, but not to fit them. The weather conditions were good with a force 3 wind and slight sea, but overnight rain had left the hatch covers wet.

The uprights were rusty, and the two deckhands decided, on their own initiative, to make sure they still fitted into the slots on the hatch coaming. This proved difficult, and caused one of the deckhands to slip and fall overboard.

The master, who was on watch, witnessed the accident and immediately altered course. He then released the man overboard smoke float, sounded the general alarm and transmitted a PAN alert on the radio. The rescue boat was launched, and the deckhand was safely retrieved on board within 15 minutes.

The Lessons

1. **The master had specifically instructed the deckhands not to fit the steel uprights. However, they chose to ignore his instruction; something the master was aware of yet chose to do nothing about.**

   An instruction is of no value unless it is implemented. In this case, a risk of someone falling over the side had been identified. The control measure was not to fit the steel uprights. The control measure was overridden, and an accident ensued.

2. **The master's reaction, and that of the crew, immediately following the fall overboard was swift and effective in enabling the deckhand to be recovered from the water quickly, and demonstrated the benefit of regular drills.**

3. **The consequences of this accident could have been far worse if, for example, the deckhand had struck his head while falling overboard, or if the master had been looking elsewhere at the time. Such tasks should be avoided, if possible. However, where there remains an unacceptable risk of someone falling overboard, suitable control measures should be employed, such as the use of safety lines or working lifejackets.**

The Sitting Duck

Narrative

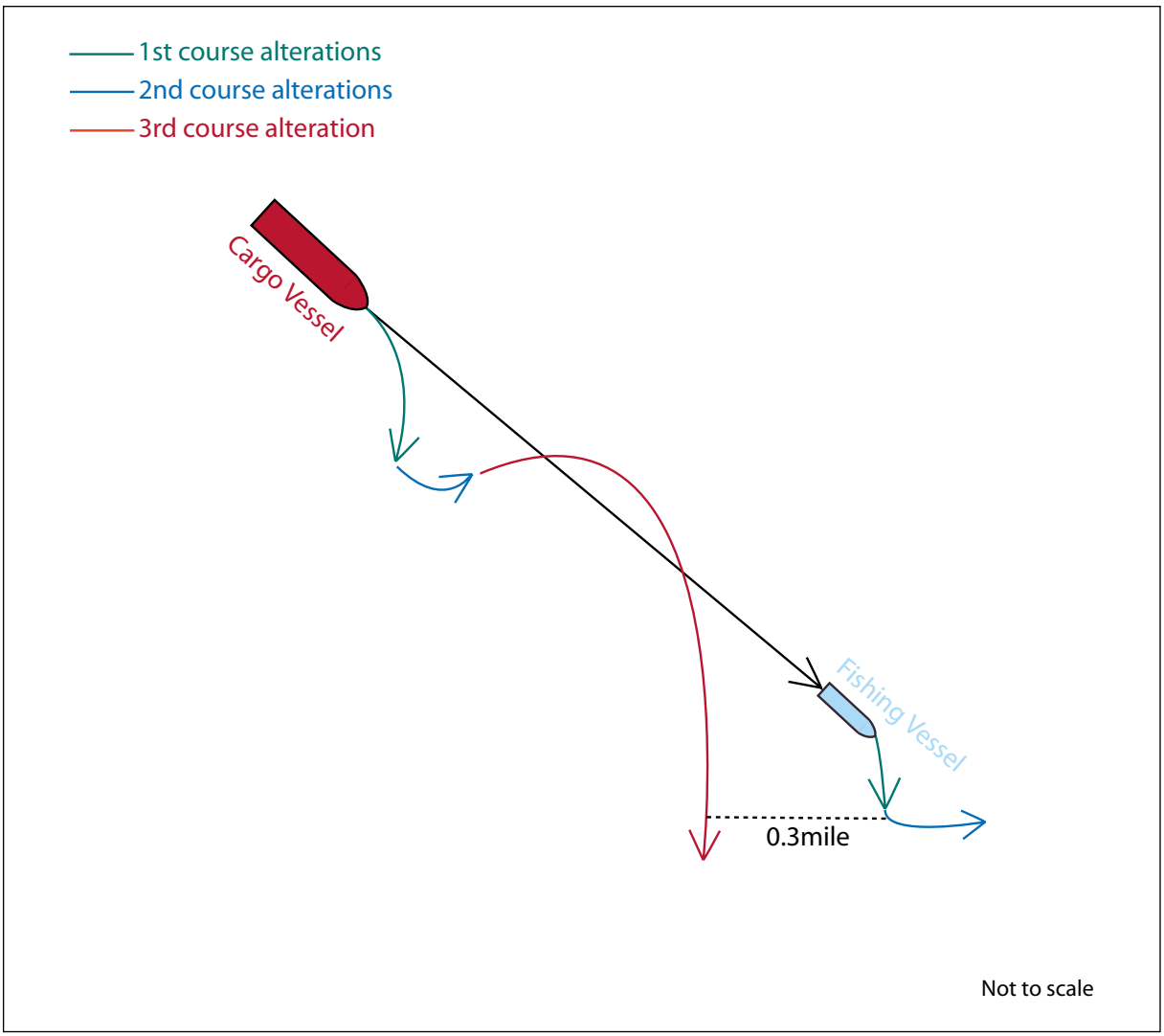
A cargo vessel was overtaking a fishing vessel. Both were on a south-easterly heading. It was daylight with good visibility and a slight sea.

The fishing vessel was trawling at about 2.5 knots. The cargo vessel was on passage and making good about 14 knots. The cargo vessel's OOW saw the fishing vessel on his port bow at about 3 miles range. The fishing vessel was displaying her daytime fishing signal and, as the cargo vessel approached, her trawl lines were clearly visible.

The cargo vessel's OOW recognised his obligation of keeping out of the way, and altered course to starboard with the intention of leaving the fishing vessel on his port side. However, by that time, the fishing vessel's skipper had become anxious that the cargo vessel was taking insufficient action, and had altered course to starboard.

Recognising the resulting risk of collision, the OOW then altered course to port with the intention of leaving the fishing vessel to starboard. Unfortunately, the fishing vessel skipper, concerned by the cargo vessel's previous alteration to starboard, altered course to port at the same time.

Again, the OOW recognised the resulting risk of collision and, again, altered to starboard, eventually passing about 0.3 mile astern of the fishing vessel.



The Lessons

1. A stand-on vessel in an overtaking situation is probably at her most vulnerable. Rule 17(a)(i) requires her to maintain her course and speed and, although Rule 17(b) instructs her to take action when collision cannot be avoided by the action of the give-way vessel alone, this is unlikely to be effective in an overtaking situation. Reliance must therefore be placed on Rule 17(a)(ii), which provides an option for her to take action as soon as it becomes apparent that the give-way vessel is not taking appropriate action in compliance with the Rules. However, for the above reason, this option needs to be taken far earlier in an overtaking situation than in most others.

2. If a stand-on vessel needs to take earlier action in an overtaking situation, it follows that the give-way vessel needs to take earlier action than would otherwise be the case. The same degree of magnitude needs to be applied to any course or speed alterations. In other words, any alteration of course or speed needs to be large enough, and taken early enough, to be readily apparent to the stand-on vessel that sufficient action is being taken without need for the stand-on vessel to consider having to take any action of her own.

   In this case, a large and early alteration of course by the cargo vessel would have avoided any unnecessary confusion and concern, and the enhanced risk of collision that resulted.

A Perennial Hazard

Narrative

A survey vessel, operating offshore, came alongside a mooring buoy in order to recover it. A seaman used a grapple to recover the buoy's line and hauled it to the bulwark, where he made the grapple fast.

He then noticed that the line had taken a riding turn on the grapple hook, and attempted to free it by hand. As he did so, relative movement between the buoy and the ship suddenly put weight on the line. This trapped three of the seaman's fingers, leading to the loss of their tips.

The Lesson

Injuries, caused by weight suddenly coming on to ropes, have happened for almost as long as men have gone to sea. All seamen should be aware of the dangers but, as is seen here, even the best can be caught out. Vigilance and awareness is the seaman's only defence.

Acid Attack!

Narrative

A ferry had just left her berth when a member of the forward mooring team saw a leakage from a vehicle carrying hazardous cargo on the fore deck. The incident was immediately reported to the bridge and the fore deck was evacuated. Ventilation was stopped and two teams began donning chemical suits and breathing apparatus. Meanwhile, the driver of the vehicle was traced and the substance identified as Phosphoric Acid Liquid, UN 1805 in a dilute form. Confirmation of the description was provided by inspection of the hazardous cargo stowage plan.

When questioned further, the driver of the vehicle provided information on securing arrangements: he explained that 20 litre plastic drums were secured by shrink-wrapping onto a wooden pallet, and described verbally the layout inside the vehicle. This was vital information for an effective planned entry by the decontamination team.

Eleven minutes after the initial sighting, the decontamination team, now fully dressed in chemical suits and breathing apparatus, was sent to investigate. As the team entered the vehicle, they realised that the scene inside was not as described by the driver. The drums had been loosely stowed on pallets and had not been shrink-wrapped. Several drums were laid on their sides and not vertically stowed. On re-stacking the fallen drums, the team identified the rogue drum. Meanwhile, the spillage was diluted with a copious amount of water following the procedures laid down in the IMDG Code supplement.

After the incident, a full debrief was undertaken with all key people involved. Lessons learned from the debrief are reproduced below.

The Lessons

1. The information provided by the driver of a vehicle will greatly assist the ship in its decision making process, and, more specifically, the team entering the vehicle. However, always bear in mind that for a variety of reasons, the information provided may not be as accurate as one would wish for. During an incident of this kind, drivers will be understandably concerned about the safety of their vehicles. However, once they have passed on all the necessary information, they must be kept clear of the scene, remaining in a known location and available to provide further information and advice as required.

2. The decontamination team involved in this incident learned that the provision of additional, but minor, pieces of emergency equipment would have made their task considerably safer and more efficient.

   The lessons learned from onboard continuation training exercises can prompt ships to revisit their relevant risk assessments and realise the need for specific equipment. Standard operating procedures can be amended or updated as required. This will ensure that all the equipment necessary to undertake the task is always available and stowed in the most appropriate location.

3. Command and control was effectively managed, with a good flow of information, not only among crew and officers onboard, but also to port authorities and safety management officers ashore. Positive control was established at the scene of the incident, and within 31 minutes of the alarm being raised, the incident had been brought to a successful conclusion. The following key actions describe this time frame:

   - Decontamination team mustered and correctly dressed.
   - Location of the driver established and a full verbal description provided of the contents inside the vehicle received.
   - Hazardous cargo documentation and IMDG Code examined for correct response procedures.
   - Vehicle entered safely and rogue drum identified.
   - Clean up executed efficiently and effectively.

4. This incident was caused by inadequate securing within the vehicle. The IMDG Code is quite clear in its instructions to shippers, forwarding agents and road hauliers:

   IMO Assembly ~ Chapter 5 to the Annex of Resolution A.533(13)

   .3 the cargo in the cargo unit or vehicle is adequately stowed and secured to withstand the forces which may arise during sea transport.

Timber Deck Cargo – on the Move

Narrative

A 3000grt vessel loaded a cargo of sawn timber in Latvia. The planks were bound and stacked in three tiers on top of the deck hatch covers. The deck cargo did not overhang the hatch covers when loaded. While on passage, the vessel encountered very rough confused seas with swells, causing her to roll heavily. This violent movement resulted in the timber shifting across the vessel about 1 metre, giving the vessel an angle of list of about 8° to port.

The master ordered the crew to recheck all the lashings and fit additional lashings as required. The engineers pumped ballast into the upper starboard wing tanks and pumped out some double bottom tanks on the port side. These actions reduced the vessel's list and allowed her to continue her intended course.

Regular checks were made on the vessel and her cargo during the remainder of the voyage, until she docked safely. The photograph shows the vessel alongside, being unloaded.

The Lessons

1. Fabric webbing lashings stretch more than steel wire rope, so daily tensioning is especially necessary. It is often extremely perilous to venture on to the open deck of a vessel during heavy weather, so at such times a crew is more likely to miss a routine. However, it must be remembered that in these conditions lashings will be stretched more, due to greater ship motion.

2. Up-and-over lashings of this type do not adequately prevent sideways movement. They provided downward force on the deck cargo, and this, in association with the friction between the timber packages and the top of the hatch cover, was all that was preventing transverse shift. An angle bar, or flat bar welded to the edge of the hatch cover, or steel uprights slotted into sockets attached to the hatch coamings, would have helped to prevent transverse shift. Alternatively, wooden uprights, positioned along the hatch coamings, and connected port to starboard with hog wires, would restrict sideways movement if no suitable permanent fittings were available.

3. Some vessels carry timber deck cargoes only rarely. These vessels should still carry adequate equipment and information. The lashings provided should be properly certificated, and the cargo securing manual should contain specific information for the vessel so that the master is armed with the best advice to carry the cargo safely. Such advice should include the number of lashings which should be used, and the method of restricting sideways movement.

   N.B. Following a number of marine accidents involving timber deck cargoes, the MAIB carried out a study into the subject and, in 2003, published its Timber Deck Cargo Study. This can be viewed on the MAIB website: www.maib.gov.uk.

Poor Planning Leads to Over Extended Stay – on the Beach

Narrative

An 1175gt general cargo vessel underwent change of ownership, flag and crew before departing her berth for an anchorage in the harbour roads to await further orders. It was anticipated her next port of call would be to the west.

New crew joined the vessel 18 days in advance of sailing to familiarise themselves with the vessel. During that period, she also underwent a number of Flag State and Classification Society surveys. As a result of one of the surveys, a condition of class, which required repairs to the port anchor cable within 3 months, was imposed.

After departing her berth, the pilot who was in attendance, suggested a particular anchorage in the harbour roads, as orders for her next port of call were expected within 4 hours. He also advised, should the weather deteriorate, to seek a more sheltered anchorage to the east.

Shortly after leaving the harbour, the vessel was brought up in a position 1 cable from the fairway buoy, 1.6 nautical miles from the shore, in a depth of 6 meters. Five shackles of cable were deployed on a holding ground of sand. Anchor watches were set and the main engine was shut down, on 15 minutes' notice. At that time, the weather conditions were a force 3–4 wind with a slight swell. The position of the vessel was checked and recorded every 30 minutes with the aid of radar and GPS, but the guard zone function on the GPS was not used.

As the day progressed, the weather conditions deteriorated, and by the time the master came on watch at 2000 the wind had increased to force 7–8 with a heavy swell. No orders had yet been received.

At 2100, the master detected that the vessel was dragging her anchor. Unknown to him, she had been dragging her anchor before the 2030 position was recorded. He then requested main engine power. The master did not use the port anchor cable, afraid he might lose it, neither did he utilise the remainder of the starboard cable.

By the time main engine power was available, some 20 minutes later, due to a combination of the engineer's unfamiliarity with the vessel and poor weather conditions, she had dragged her anchor to such an extent that she grounded on a nearby beach despite the master attempting several engine and rudder movements.

The vessel remained hard and dry for more than 2 weeks, before a salvage team eventually refloated her. She sustained minor damage to her hull plating.

The Lessons

1. **It would have been prudent for the master to have selected a more suitable anchorage, especially in light of the weather forecast. When ever choosing an anchorage, always take into consideration the weather forecast and holding ground, ensuring sufficient cable is deployed.**

2. **If poor weather is forecast, always have engines ready for immediate manoeuvre; you never know when you will require them. Doing so, might have prevented this grounding.**

3. **The master might also have considered using the port anchor cable and/or additional starboard cable. This, too, might have prevented this accident.**

4. **When ever at anchor, it is imperative to check the vessel's position accurately, at regular intervals. Most radars and GPSs are fitted with guard zone alarms these days, and their use can be invaluable in detecting a vessel dragging her anchor.**

5. **When joining a vessel for the first time, always take time to familiarise yourself with her, especially in areas of your responsibility. It will prove worthwhile in an emergency.**

The Dangers of High Speed Loading

Loading operations are usually swift, noisy, busy procedures, with a ship's staff engaged in a flurry of duties. The following narrative illustrates the need for extreme care to be exercised during such times of heightened activity.

Narrative

A ro-ro vessel's late arrival in port had put her loading operation behind schedule: there was no time to lose. This placed the experienced loading officer under increased pressure to expedite the process so that the vessel could proceed without delay.

The loading officer directed the last 12m trailer to its parking position on board. He then moved to the linkspan, where a tugmaster unit was pushing a trailer into position. The trailer hit the loading officer and seriously crushed him. He was hospitalised.

A very similar accident had occurred on board the same vessel some months earlier. On that occasion, another loading officer was struck by the front end of a trailer when he hadn't noticed that the vehicle was reversing. He, too, sustained severe injuries.

It is important to note that a tug driver has no view of the front of the trailer he is pushing. This puts the onus on the pedestrian to remain alert and mindful of moving vehicles at all times. The driver involved in the first accident discussed was completely unaware that someone had been seriously injured.

To reduce the likelihood of further similar accidents, the ship's operator introduced the following two safety recommendations:

- Reversing warning signals to be fitted
- The speed of tugmaster operations to be reduced.

The Lessons

1. **Operating at high speed, and without the aid of signallers, has been the cause of several fatal accidents. These accidents highlight the importance of shore-side and ship management teams working together to ensure that loading operations are conducted safely.**
2. **Ports which operate with high safety standards require tugmasters to be fitted with warning lights and reversing alarms.**
3. **To promote the safety message relating to accidents such as these, in 1998, the MCA produced MGN 19(M). It is well worth a read: section 5.4 will be of particular interest.**

In Hot Water

Narrative

Two motormen were issued with a 'Permit to Work' covering routine maintenance of the main engine on board a ro-ro passenger ferry that was berthed alongside.

The work included changing the circlips and "O" rings on the main engine rockers. Without gaining prior approval, the two men decided to remove an adjacent thermometer pocket in the engine's cooling water system in order to ease access to the rockers.

As the pocket securing union was being removed from the pipe, the pressure in the system ejected the thermometer pocket, and hot water in excess of 75° C sprayed onto the men, badly scalding their legs.

The task that the men were given did not require the pocket to be removed; had they followed their instructions the accident would not have occurred. However, having made the decision to remove the component, neither of the motormen made any attempt to check the system conditions, or make the necessary isolations to ensure that the thermometer pocket was safe to remove.

Engineering staff are, of course, encouraged to use their initiative and to suggest improvements to procedures. Unfortunately, in this case little thought was given to the consequences of the motormen's actions. Neither of them considered the risks involved in removing the thermometer pocket. Fortunately both men escaped serious injury.

The Lessons

1. **Before carrying out maintenance, those involved should ensure that they are fully conversant with the requirement and should know the extent of the work.**

2. **Work should be allocated according to crew members' competence and skill levels.**

3. **Where a "Permit to Work" has been issued, the work undertaken should remain within the bounds of the permit. If this is not possible, revised instructions should be issued.**

4. **Maintenance instructions should always be referred to. Where additional components need to be removed to facilitate access, prior approval should be sought and systems and equipment correctly isolated.**

A Not So Soft Bottom

Narrative

A small aggregates dredger operated within the limits of a large river estuary. She had a crew of five, including the master, who had operated in the area for many years.

When returning from a dredging operation, fully loaded, the vessel sailed upriver on a strong flood tide. To reach her unloading berth she needed to enter a tributary. She reached a mud bank across the entrance to this river, where the master knew he would be unable to proceed until the tide rose further. As was his habit, he nudged his vessel's bows into the mud bank and maintained position with a dead slow ahead engine speed to wait for sufficient depth of water to proceed.

The vessel had been in that position for several minutes when the flood tide caught the stern and pushed her to one side of the narrow channel. With his extensive experience of the area, the master thought little of this, thinking his vessel had harmlessly touched the mud bottom. However, a few minutes later, the engineer made a routine visit to the engine room. To his surprise, he found water just above the lower floor plates, and its level was rising rapidly.

On being told of this, the master then realised the vessel was not responding to engine and helm. She was sitting on the bottom, with a rising tide.

All crew were safely evacuated. Over the next couple of hours, the water level rose until it covered the entire vessel, except her funnel and mast.

Several days later, the vessel was salvaged and moved to a drying out berth. There, an examination discovered a gash, 300mm × 450mm, in the otherwise sound single skin shell plating, at the turn of bilge in way of the engine room.

Photograph showing gash in single skin shell plating

The Lessons

1. No matter how well an area of water is known, there is always likely to be a time and a set of conditions which can catch seafarers unawares; even those with much experience.
2. Although the riverbed was thought to consist of soft mud, natural movement had exposed a piece of hard material sufficient to penetrate steel plate. This is a risk taken whenever any vessel sits on, or makes contact with the bottom.

Some Good Fortune – Only a Burned Out Clutch

Narrative

A vessel fitted with a pair of medium speed engines geared to each of two propeller shafts, was programmed to have some repairs done to one engine in the next port. To prepare for this, the engine was to be partially dismantled by ship's staff during the remainder of a seagoing passage.

To begin work, the engine was taken off load, de-clutched from its gearbox and stopped from the machinery control room (MCR). The engine's turning gear was engaged, and the engine was then allowed to cool before the lub-oil pump was stopped and the cooling water system drained.

The partner engine of the pair remained clutched-in and running.

The clutches were of the pneumatically operated friction type. The normal engine shut down procedure, activating solenoid operated valves using the controls in the MCR, had shut off the air supply and exhausted the compressed air from the clutch to cause it to disengage. However, because the engine was to be worked on, the watchkeeping engineer closed the local isolating ball valve on the clutch's air system and opened the system's vent. With the aim of further venting the system, he also, briefly, opened a valve that by-passed the solenoid operated air supply valve.

About half a minute later, he began to notice the smell of burning. Smoke was coming from the grill area of the clutch's guard. This was quickly followed by flames.

A smoke detector, positioned above the clutch, activated the vessel's fire alarm. Assistance arrived quickly, including two teams with breathing apparatus. Dry powder and CO_2 extinguishers were used, but these were unable to remove sufficient heat to prevent re-ignition of the burning material; most probably the rubber air bellows that force the clutch shoes into contact with their mating frictions surfaces. However, a fire hose was rigged and a jet of water was applied for about 1 minute. The other engine was stopped, to arrest the generation of frictional heat in the clutch, and the water fog fire-fighting system was activated.

These measures extinguished the fire, and the water fog system in particular knocked down much of the smoke that had been generated. Although the clutch was totally destroyed, the fire had not spread outside the clutch's guard and no other damage was done (see figure).

The vessel was able to continue her passage using the other engines.

Photograph showing the burnt out clutch

The Lessons

1. Opening the by-pass valve, however briefly, was an unnecessary operation that, combined with defects in the ball type isolating and vent valves which prevented positive operation, allowed sufficient air to enter the operating bellows of the clutch to cause partial engagement. The lack of clear engine isolating procedures allowed this practice to develop, and the defects in the two ball valves then allowed this extra process to generate an unsafe condition. Maintenance of the isolating and vent valves clearly needs attention, but clutch isolating methods need also to be clearly set out.

2. Fortunately, the engine's turning gear was engaged, effectively preventing the engine from being turned at speed by its running partner, and nobody had yet started work on the engine.

   'Spontaneous' engagement of the clutch could so easily have produced disastrous – even nightmarish – consequences for anybody unfortunate enough to be working on the engine. The nature of these consequences suggests there needs to be a rigorous system in place to ensure clutches cannot be engaged inadvertently once shut down; at the very least, padlocking the by-pass valve, and possibly also the isolating and vent valves, with the keys in the custody of the chief engineer. Alternatively, avoid engine crankcase work when the partner engine is running. The enhanced level of safety, and peace of mind, for those working on the engine, would be a handsome return for any extra trouble involved.

Do You Check Your Wires?

Narrative

A high speed passenger ro-ro ferry had completed loading and was preparing to leave her berth. As part of the departure routine, the crew began raising the aft ramps.

The port ramp was in the process of being raised, and had almost reached the fully stowed position when the lifting wire parted and the ramp fell back onto the link span.

On closer inspection, it was found that the design of the lifting arrangement allowed the lifting wire to chafe on the ramp handrails. Additionally, the lifting blocks and wire had a natural twist, which meant that when the weight was taken by the wire, the operator had to realign the blocks manually. This was causing additional unnecessary wear and tear, as well as being potentially hazardous.

Luckily, on this occasion, no one from the ship or the shore was injured during the incident. But what was the real reason for the wire parting?

The securing arrangement for the ramp consisted of two turnbuckles, one on each side of the inboard section. The turnbuckles were designed to pull the ramp tight into the ship's side once the lifting wire had tripped the limit switch. In doing so, they also released the weight on the lifting wire. If the turnbuckles were not fully tightened, the weight of the ramp would remain on the lifting wire and its supporting sheaves.

Interestingly, the ramp was not able to self-adjust, and, as a result, required constant attention throughout the period of loading and discharging, particularly when trimmed by the head, to ensure no weight came onto the lifting wires. Modifications to the braking system are now underway, which will provide a self-adjusting capability and assist in countering ship movement.

In this particular case, it is probable that the securing turnbuckles were, as routine, only secured hand-tight. The combination of rolling and vibration associated with normal in-service operating conditions, could easily have resulted in wear and tear of the wire at a vulnerable position. Maintenance records confirmed that several seized blocks had been replaced and freed over the preceding 4 months.

Planned maintenance history sheets showed a good audit trail of maintenance and equipment rectification throughout the in-service period.

The Lessons

1. **Securing of ramps, using the turnbuckle method, should be carefully monitored, especially the initial tension and any creep back while in use. In this case, the long-term aim is now to significantly improve the securing arrangement by a permanent modification.**

2. **Although no personal injuries were sustained, and the quayside was properly controlled, the case shows the importance of not allowing personnel in the vicinity of ramps during lifting and lowering operations.**

3. **Planned maintenance records were well maintained, however, the importance of thorough and thoughtful visual inspections cannot be over emphasised. This accident could probably have been avoided by careful inspection by the operator on a routine basis and as part of a standard operating procedure.**

Collision Involving a General Cargo Vessel and a Fishing Vessel

Narrative

A 64 metre, 1109gt cargo vessel was underway in daylight off the east coast of England. She was heading on a north-westerly course at a speed of 8 knots. The master had begun his navigational watch at 0600. No additional lookout was present on the bridge; indeed, this vessel did not employ additional lookouts even at night. The visibility was between 2 and 2.5 miles due to light drizzle, and the wind was moderate.

At about 0610, the master checked the radar screen, which was set on the 6-mile range, and saw no targets. After a visual check around, and seeing no other vessels, he left the bridge to gather some papers from his cabin.

Meanwhile, an 8.5 metre single-handed long line fishing vessel was underway and heading on a south-easterly course at about 8 knots. The skipper had just hauled his lines onboard and was heading for another fishing ground. He was standing just outside the after door to his wheelhouse, facing forward and to starboard. He was gutting his catch while maintaining a visual lookout and watch on his radar, which he could see through the doorway. The skipper had only received about 2 hours sleep in the previous 24 hours.

The skipper suddenly noticed the bow of a ship heading straight towards him at less than 0.5 mile and fine on his starboard bow. He wrongly assumed that the other vessel was the give-way vessel under the Collision Regulations. He ran into the wheelhouse and, using his fixed searchlight, tried to signal to the other vessel. He then attempted to call her using one of his VHF radios. This call was not heard by the coastguard and might, therefore, have been made using the wrong radio. The skipper then began altering course to port by pressing the 10° incremental autopilot course change button three times.

As the fishing vessel was swinging to port, the ice-strengthened bow of the cargo vessel collided with her starboard quarter, causing severe damage to her glass fibre hull. She heeled over to port as water gushed on board through the freeing ports. Her bow then swung violently to starboard and struck the starboard shoulder of the cargo vessel as she passed, causing further damage.

The master of the cargo vessel felt the impact as he returned to the bridge. Once he was on the bridge, and had seen the fishing vessel lying astern of his vessel, he rang the general alarm to alert his crew.

Fortunately, the fishing vessel remained afloat. The skipper sent a “Mayday” message to the coastguard to apprise them of the situation.

The general cargo vessel was undamaged, and stood by the fishing vessel until an RNLI lifeboat arrived and escorted her to her home port. The coastguard released the cargo vessel and she proceeded to her next port, where she arrived safely the next morning.

The fishing vessel had not been sighted visually or by radar, despite being painted bright yellow and having a radar reflector on her mast and fishing float radar reflectors in her rigging.

Fishing float radar reflectors

Photograph showing door to wheelhouse

Damage to cargo vessel

The Lessons

1. Leaving the bridge unattended, even for a short period of time, is absolutely unacceptable. The fact that it occurs from time to time is of grave concern to everyone at sea. A poor attitude towards watchkeeping on the cargo vessel was also evidenced by the fact that no designated lookout was posted at night – despite an international requirement for there to be one.

2. It is a wise precaution to bear in mind the possibility that the bridge of the other vessel may be unattended or the watchkeeper may be distracted: The MAIB has come across this all too often, so in this situation it is essential that early action is taken by your vessel. In the future, this fisherman will certainly be taking decisive action much earlier so as to avoid a repetition of this accident.

3. The skipper was a very experienced fisherman. However, it appears from the facts that he wrongly assessed the situation; it was an end-on collision situation between two power-driven vessels underway and, as such, both vessels had a responsibility for action. The decision to act as a stand-on vessel, the delay in taking action, the confusion with the radios and the action he finally took in altering to port, might have been caused, in part, by his fatigued state. Fatigue can have an insidious effect on even the most experienced seafarers: all seafarers *must* guard against fatigue.

A Cook, Live Electrical Wires, a Wet Galley Deck – all the Ingredients Needed for a Shocking Day

Narrative

The galley deck on a ro-ro vehicle and passenger ferry was renewed during the vessel's last period in dry dock. Pending full removal of the compactor, the electrical supply was isolated and the wire ends taped over.

During subsequent routine washing down of the galley deck, the cook noticed the wires and, assuming they were isolated from the supply, he lifted them clear of the deck. He immediately received an electric shock to his left hand and arm.

The cook was landed ashore for hospital treatment. Luckily, he suffered no long-term effects.

It was later found that the power supply had been reinstated without any checks being made.

The Lessons

1. **All bare electrical cables pose a threat to life and must be treated as though they are live until proven otherwise by a competent person.**

2. **Part of the equipment removal process and work specification should include instructions for the isolation, removal (where appropriate) of power supplies and correct termination requirements. The ship's drawings should also accurately reflect these changes.**

3. **Before restoring any electrical supplies, checks should be made to ensure that the end user equipment is not being worked on. Ship's staff should be especially vigilant when work is being undertaken by contractors, to ensure that the correct controls are in place.**

Don't Pass on Bends

Damaged vessel

Narrative

Two vessels collided while passing one another on a bend of a busy river. Both vessels had pilots on board and were regular visitors to the river.

The inbound vessel was running with the tide at about 7 knots over the ground, while the outbound vessel was making 5 knots over the ground against the 4 knot tide. Both vessels had been responding normally to helm, and the pilots had agreed by VHF that they would pass on a particular bend in the river. This meant that neither vessel would have to slow down and the bend was relatively wide and open. Both pilots had passed vessels on this bend previously.

Although the outbound vessel was known to handle poorly at low speeds, at a speed through the water of about 9 knots this was not seen as a problem. However, this speed was reduced as the vessel approached the bend by bringing back the pitch on the controllable pitch propeller. As the vessel entered the bend, the inbound vessel was about 180m ahead, on a reciprocal course, and looked safe to pass about 30m apart.

The pilot on the outbound vessel applied 10° starboard helm to bring his vessel more toward mid-river, but noticed the bow swinging slowly to port. He therefore increased helm to hard-a-starboard, but, since there was no effect, he instructed the master to kick the engine ahead.

When the vessels were about 50m apart, with the outbound vessel's bow still falling off to port, the pilot ordered full astern to reduce the inevitable impact.

The inbound vessel's pilot had seen the other vessel shear to port and had asked his intentions by VHF. He then also ordered full astern, but the vessels collided seconds later.

It is thought that the outbound vessel was subject to a combination of bank effect and the confused water flow on the inside of the bend, leading to a slight shear to port. Once this had started, the faster flowing stream on the outside of the bend would have quickly taken the bow further to port.

The Lessons

1. This accident would not have occurred had the pilots agreed to pass on a straight section of the river. A slight delay of one vessel was all that was needed to ensure that the vessels met in a straight, either side of the bend.

2. The manoeuvrability of the outbound vessel was known to be poor at slow speeds, and reducing speed on a controllable pitch propeller would have had the effect of creating a baffle to the flow of water over the rudder, exacerbating this problem. This effect could have been minimised by ensuring that the speed was reduced gradually. An earlier reduction of speed would also have allowed power to be increased again just before the helm was applied, thus maximising the flow over the rudder.

A Close Call

Narrative

When about 3 miles from a harbour entrance, the master of a small container ship called the harbour radio and pilot via VHF radio to confirm intentions for embarking the pilot. Speed was then gradually reduced from 15 knots to 10 knots. The ship was on a course of 310° in hand steering, and the master was accompanied on the bridge by the chief and second officers. Several small vessels were visible on the starboard bow, the closest of which had been assessed by radar to be passing about 5 cables astern. Visually, however, this vessel did not appear to be maintaining a steady course. The vessel in question was a fishing vessel, which in fact was also heading for the harbour entrance; she was on a course of about 290° in autopilot, at a speed of 7.5 knots.

When the container ship was about 1.5 miles from the harbour entrance, speed was further reduced to about 6 knots on the advice of the pilot, who was approaching in his cutter; course was also adjusted to 300°. The container vessel and fishing vessel continued to close, and the skipper of the fishing vessel became so concerned that he tried to contact the container ship, which was on his port quarter, via VHF channel 16 – the working channel for the port. These calls were not heard on board the container ship.

Shortly after, because the master of the container ship decided that the fishing vessel's erratic movement was now putting the two vessels unnecessarily close, he stopped his engine and applied port helm. Maximum helm, however, was not used because of the proximity of fishing floats on the container ship's port side. At about the same time, the fishing vessel altered hard to starboard and turned through 360° to pass under the stern of the container ship.

CASE 15

The Lessons

1. There is little doubt that distrust exists between many merchant mariners and fishermen regarding adherence to the collision regulations. Tales of fishing vessels behaving in totally unpredictable ways, even when not fishing, and of merchant ships not taking action to avoid collisions, because of incompetent or absent watchkeepers, are common. Undoubtedly, there are rogues in both camps, but tarring each vessel type with the same brush does not help matters. It would be more beneficial for each to gain a better understanding of the other's methods, goals and constraints. At the end of the day, it pays for all watchkeepers to expect the unexpected, regardless of the types of vessel encountered.

2. The aspect of fishing vessels can frequently change because of their relatively small size and slow speed, particularly in bad weather. This increases the difficulty in determining their courses, speeds, and CPAs, which must be taken into account when determining the risk of collision and action to be taken. Where aspect is difficult to determine, caution is required.

3. The use of shapes to indicate that a vessel is fishing has fallen into disrepute in recent years, largely due to the fact that they are constantly hoisted in many vessels, even when in harbour. As a result, many watchkeepers on merchant vessels either don't bother to look for such signals, or ignore them. This is not in the interests of the safety of fishermen, but the onus is squarely on their shoulders to use the shapes correctly if this trend is to be reversed.

4. When other shipping or navigational hazards prevent an alteration of course required to avoid a collision or increase the CPA of another vessel, slowing right down or stopping are often the only courses of action left. Like any action taken to avoid a close quarters situation or collision, however, the earlier such action is taken, the greater the chances of its success.

5. Slowing down and altering course to pick up a pilot can be difficult, especially when navigationally constrained in a tideway, with other vessels in the area. In such situations, although a focus on the manoeuvring required to get the pilot cutter alongside is natural, it is important to maintain an overview of the whole situation and keep a close eye on how such manoeuvring affects others. The collision regulations must not be forgotten in such circumstances.

6. When a close quarters situation has developed, it is seldom resolved by the use of VHF radio. Positive action is far more effective.

Whiteout

Narrative

A 2500grt general cargo ship, carrying a timber deck cargo, was heading towards the entrance to a 300m wide buoyed channel, on a course of 004° in autopilot. She was travelling at a speed of 13.5 knots. An AB lookout had been stood down because it was getting light, and the OOW considered there was little for him to do. The OOW was content with the navigational situation, as the two buoys marking the southern limit of the channel were clearly visible on the radar, and had been acquired by ARPA.

At 0747, the OOW called the master via intercom to wake him in preparation for taking over the watch at 0800. At about the same time, he recorded the visibility in the deck log, which he assessed to be about 2 miles in light snow. The weather forecast had predicted snow with moderate to poor visibility. At 0750, when 8.5 cables from the channel entrance, course was adjusted on the autopilot to 345° in accordance with the passage plan. The tidal stream at the entrance to the channel was easterly at 2 knots. No tidal stream information was shown on the chart but was contained in the relevant sailing directions.

Minutes later, visibility was suddenly reduced to less than 100m by heavy snow, which also degraded the radar picture to the extent that the channel buoys were no longer displayed. The OOW immediately changed to hand steering, reduced speed to 12 knots and called the master via intercom to hurry to the bridge. The OOW had very little experience of manoeuvring the ship in hand steering.

Distorted propeller blades

The OOW then saw the nearest red lateral buoy at about 40m off the starboard bow. Port helm was applied to manoeuvre the ship clear. The OOW did this while watching the buoy over the timber deck cargo from behind the starboard radar display; he did not monitor the amount of rudder used, or the rate the ship was turning. The buoy was seen to be passing very close down the starboard side when it disappeared from view.

As the master arrived on the bridge, the OOW realised the ship was now swinging to port, and applied starboard helm in order to check this movement. Seconds later, the ship hit the buoy with her starboard quarter. The ship's propeller blades were distorted (Figure) and the buoy was severed from its moorings.

The Lessons

1. **Night watches can be boring, and the need for both an OOW and a lookout to be on the bridge is frequently questioned. The usefulness of having a second person on the bridge sometimes only becomes obvious when the unexpected occurs. In this case, had the lookout not been stood down as the ship approached a narrow channel and with poor visibility forecast, he might have alerted the OOW to the approaching blizzard, been put on the helm, or used to monitor the buoy. Any of these actions would have been of benefit to the OOW.**

2. **Charts are usually comprehensive, but they are not a font of all knowledge. Not referring to other sources of information such as sailing directions when planning, and during a passage, can lead to embarrassment, or worse.**

3. **When buoys do not mark a danger, *they* are the danger, and knowing the extent of safe water around a buoy is invaluable if forced to take avoiding action. Leaving the buoy on the wrong side might be possible and, in some situations, the best course of action, particularly when tidal stream is a factor.**

4. **A reduction of speed when encountering a problem is usually a sensible precaution. To be effective, however, such a reduction must be sufficient to buy enough time to allow remedial action to be taken. The smaller the reduction, the less time will be available.**

5. **Being unfamiliar with handling a ship, and having to manoeuvre to avoid a danger only several meters away, with minimal visual references available, is akin to parking a new car while wearing a blindfold. Providing opportunities for bridge watchkeepers to become familiar with manoeuvring characteristics, and encouraging them to use all of the tools available, such as rudder angle and rate of turn indicators, can only help prevent such undesirable situations from arising.**

6. **On every passage there are some areas which, through the proximity to navigational dangers or traffic density, are potentially more hazardous than others. It is not always easy for masters to decide whether or not to be on the bridge when transiting these areas, and there are no hard and fast rules. However, having identified a potentially hazardous area, it is worth bearing in mind that it is easier for a master to influence the outcome of a dangerous situation from the bridge, than it is from his cabin. The OOW might call, but the few seconds taken to reach the bridge, might be a few seconds too many.**

Part 2 – Fishing Vessels

It's the same the whole world over. In my working lifetime in the fishing industry, I have experienced many highs and lows, including incidents and accidents with both minor and major consequences. Some I have been close to, others more distant from, but the common thread is one of identity. I and others within the industry can identify and sympathise with those involved in the incident concerned.

Indeed, when such an event occurs, it is often the subject of much discussion and debate. What happened? How did it happen? What could best have been done (with the benefit of hindsight) to prevent the accident? Frequently, conjecture based on something less than a full appreciation of the facts and circumstances leads to erroneous conclusions.

This process is common to fisher folk all over the world. Besides involvement in the UK fishing industry, I have also experienced the extremes of artisanal fishing in the Pacific Islands and industrial fisheries of Japan. The only difference appears to be in mode of communication. Among Pacific Islanders, it was word of mouth while reclining under a coconut tree, on the Japanese ships it was electronic newsletters and satellite communications. The theme was the same: accident at sea – how, why and where now?

This brings me to the publication I have been asked to write about in the form of an introduction. The MAIB Safety Digest is a publication which gives factual insight into those accidents and incidents we have such a seemingly morbid interest in.

However, I commend the reading of this to you all, as the Digest does give us the facts and circumstances of each and every incident, and, in doing so, fulfils two important functions. First and foremost it makes us safety conscious, reminding us of how easy it is to get caught up in circumstances which potentially could lead to disaster. Secondly, it gives us the knowledge (otherwise gained only through costly experience), which better prepares us for incidents which will happen to us at some time in the future.

Subconsciously, that is what we all are trying to do in our own individual and group assessment of such situations. Here, we have a publication which puts the facts and issues to us to assist in our learning and appreciation process. Read this Safety Digest well, relate to the incidents, and learn. It could help you one day – perhaps without you being fully aware of it.

Dick James's *lifetime in the industry started as an academic with a chosen path in marine biology but always with an interest in the practical and commercial side of fish and fishing. Taking the route of Government Fishery Officer (in those days development oriented) through to boat ownership and running a business. Dick worked in overseas fisheries for 10 years, both for the United Nations and UK Overseas Development Program before returning to his first place of work, Northern Ireland, to take on the role of Chief Executive to the Northern Ireland Fishermen's Federation and P.O.*

For the past 20 years, Dick has been actively involved with the Maritime and Coastguard Agency, Fishing Industry Safety Group and its working groups.

Not a Stroll in the Park

Narrative

A 16 metre wooden fishing vessel, with a crew of six, was making an overnight coastal passage to her usual fishing grounds. One crewman was on watch, the rest were asleep in the accommodation.

A couple of miles before reaching a position where an alteration of course was necessary, the crewman stepped from the wheelhouse into the galley area just behind the wheelhouse. While there, the watch alarm sounded. Moving quickly to silence the alarm, he jumped up a step into the wheelhouse. In doing so, he struck his forehead very hard on the low door frame. Although managing to take the two steps to reach the wheelhouse chair, he lost consciousness.

The vessel continued on its course, at almost 8 knots, and the course alteration was missed. Minutes later, she struck the almost vertical cliff face of a small headland; a headland that the course alteration would have caused her to avoid.

The noise and shock of the impact awoke the rest of the crew. Entering the wheelhouse, the skipper found the watchkeeper barely conscious in the chair. Engine room and hold bilge alarms were sounding. The skipper instructed the others to prepare the liferaft for launching and pressed the emergency button on the DSC/VHF. Recognising he needed to get out of the wheelhouse because of the vessel's rapidly deteriorating state, he was unable to hold down the DSC button for long. One of the crew opened a forward hatch, to be met by a rapidly rising level of sea water. Even in the dark, it was clear to all that the vessel was in a desperate state.

The liferaft was launched and all six men climbed in. They pushed themselves away from the stricken boat, and watched her as the engine stopped and the stern light went underwater. She was soon sitting on the bottom, with only her masts visible above water (see figures).

Realising they would be unable to get ashore by climbing the steep cliffs, the survivors decided to paddle along the coast. They had great difficulty in opening the liferaft's equipment pack because there was no light fitted to the canopy. Two of the men had had the opportunity to collect lifejackets during their evacuation, and the lights on these were used to give some rudimentary illumination. Once the pack was open, the paddles were found, as were three hand-held flares and a torch. The torch did not work, even after the batteries were changed for the spares that were also in the pack. One flare was set off in the hope of attracting somebody's attention, but the remaining two were saved.

At that stage, some of the men were confused because of the apparent shortage of kit in the liferaft's pack. In the words of the skipper: '*we were becoming angry because we did not find the kit we knew should have been there. We could not understand why there was not more gear. I expected to find some parachute flares at least*'.

A moderate wind assisted them to paddle along the coast, and they found a place to clamber ashore nearly an hour after the grounding.

Once ashore, the men found themselves in very remote terrain, with no shelter, cold, in the dark, in drizzly rain and with no signs of habitation, apart from a single light a couple of miles away. Nobody had any warm clothing and one man had no shoes. However, they began to walk towards this light.

During their walk, attempts were made to call for assistance using a mobile telephone. Unfortunately, due to its remoteness, the area had no coverage. Their trek lasted nearly 2 hours. However, they finally managed to reach a private house, where they raised the alarm.

All the men suffered some degree of distress due to the cold and wet. The watchkeeper who had struck his head was taken to hospital, where he was detained.

The Lessons

1. **The watch alarm could not be heard outside the wheelhouse and galley area. Without a second person being awake and in the vicinity of the wheelhouse, the vessel was not under control once the watchkeeper had been disabled. Unless able to alert others, a watch alarm has no value when, for whatever reason, the watchkeeper is disabled.**

2. **No "mayday" signal was sent because the skipper was unable to hold down the DSC button for the necessary 5 seconds. An audible signal is usually given when the 5 seconds have elapsed and a message is sent. In the event, the rather loud bilge alarms would have prevented the skipper hearing the signal in this case.**

3. **Because of an administrative error, the liferaft was a type not approved by the MCA for carriage on fishing vessels of this size. An approved liferaft would have carried parachute flares and had a canopy light, just as this crew had expected and been trained to use. This crew now appreciate the value of some of the equipment the MCA requires.**

4. **Another feature of the liferaft was that its manufacturers recommended servicing every 36 months, rather than the more common 12 months. It was last serviced 30 months before this accident. Although the failure of the liferaft's torch cannot be attributed to the time since the last service, the shorter service interval is likely to reduce the chances of equipment becoming faulty.**

5. **It is important that skippers and owners appreciate the significance of the differences between liferafts made and equipped to MCA standards and those that satisfy other bodies. This is not just a matter of satisfying regulations: crews' lives might depend on it.**

6. **Although the liferaft was not equipped or serviced to the usual MCA standards, and the crew were rather upset at its limited equipment, it almost certainly saved their lives.**

Stability Aware?

Narrative

Families were left mourning their loved ones after the entire crew of a 17m fishing vessel was lost in force 6 winds and a strong tidal stream. The following narrative provides the detail of this tragic incident.

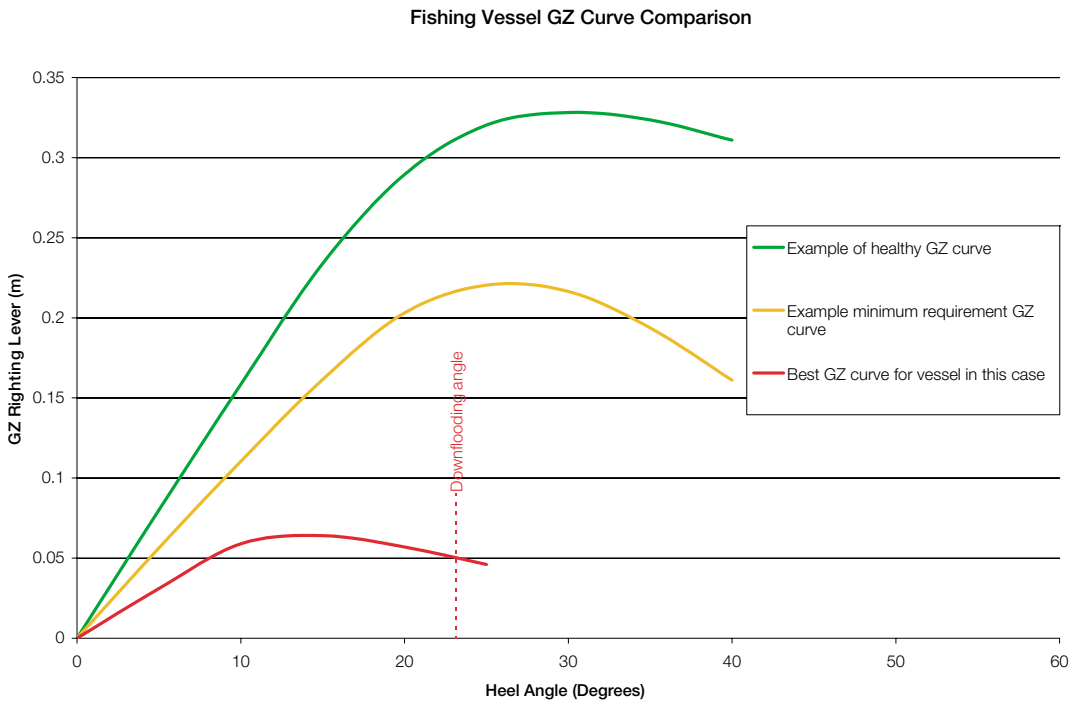
The vessel and her crew of four headed for her regular fishing grounds and started trawling. After about 4 hours, the cod end was hauled on board and the catch was stowed down below. The skipper turned in during the second tow, leaving one of his crew on watch. The wind was east-north-easterly force 6, and a strong tidal stream was running with the vessel when her trawl gear became snagged. Water entered the vessel through vents and other openings, causing her to capsize to starboard.

The vessel sank suddenly and her crew of four was lost.

The vessel's EPIRB was released and started transmitting, prompting an extensive air and sea search. That day, only the EPIRB and debris were found. The following morning, the liferaft was recovered, inflated but with a severed painter. The wreck was located on the seabed and two of the crew members' bodies were retrieved from it.

The vessel was later raised to enable a thorough examination to be made, including an assessment of her stability. The results were alarming: the vessel had very poor stability, well below the required standard for a vessel of her size. The chart below shows righting lever (GZ), which is a measure of a vessel's ability to return to upright when heeled, against heel angle. The greater the righting lever, the greater the force restoring the vessel to upright. It was later found out that some time before the accident, concerns had been raised about her stability.

During the detailed examination of the vessel, a fuse, which supplied both the fire alarm and the bilge alarm, was found pulled in the wheelhouse, rendering these two safety systems inoperable. The bilge alarm sensors were blocked with debris, the fixed bilge pumping system was also in a poor state and had lacked proper maintenance. Reliance appears to have been placed on a single portable electric bilge pump to cope with any flooding.



The Lessons

1. An awareness of stability and its importance is vital to the safe operation of a fishing vessel. If your vessel requires stability approval, make sure it is up to date and that the vessel has not subsequently been modified or changed its operation significantly. If it has, the vessel's stability must be checked by an expert.

2. Snagging places you and your vessel at great risk. Ensure you have minimised the risk of becoming snagged when trawling: know your ground and use the correct length of trawl warp. Although you might have survived numerous occasions of your fishing gear becoming snagged, this does not mean your vessel is immune from capsize.

3. The bilge alarm is the main line of defence against flooding, giving you additional time to react promptly to an incident. Make sure yours is working and test it before every trip to sea. You never know when you might need it.

4. Pulling the fuse on safety systems such as the bilge alarm or fire/smoke alarm puts crews' lives at greater risk. If a system is giving false alarms, get it fixed. Remember the systems are there for you and your crew's safety.

5. Make sure your float-free liferaft can do just that! Position the raft to maximise the chances of it deploying successfully and not entangling the painter. And make sure your raft has been serviced and that any hydrostatic release is in date.

Corrosion, What Corrosion?

Narrative

This accident occurred to a 9.8m creel boat. She was built of GRP and had a wheelhouse forward, with the hauler and additional engine and steering controls on the starboard side. She was well maintained and always operated with a two-man crew, who were also the owners of the boat.

The vessel had been fitted with a vivier tank below decks some time after her initial build. A pump for circulating water had been fitted below deck in the space aft of the tank. This had through hull fittings to supply the pump. When the owners bought the boat, they intended to occasionally leave the pump running overnight unattended. They thought it would be dangerous to site the pump below decks, since any pipework failure might have meant water filling the boat. They therefore moved it up on deck, but left the original sea cocks in place.

As delivered, the boat was fitted with a toilet, but this was considered unnecessary so was removed and the space used as a store. Again, the sea cocks for the toilet system were left in place.

The vessel had sailed early in the morning, and the crew were working their second string of pots. At about midday, the bilge alarm sounded. A check of the bilge in the engine space showed that there was a fair amount of water present, so the deck wash pump suction was switched over from the sea suction to the bilge suction. The water in the bilges continued to rise, so the vivier circulating pump was started and the suction put into the bilges. At that stage, the skipper made a call to the coastguard indicating their problems – but not their position.

Shortly after that, the main engine stopped due to the amount of water in the bilges, and this stopped the deck wash pump, which was driven from this engine. The crew donned their lifejackets and launched their liferaft. The boat was feeling very sluggish and, with the water still rising in the bilges, a second and final call was made to the coastguard. This time they gave their position, which was read from the GPS receiver.

The crew took to the liferaft and were winched to safety by helicopter. The fishing vessel was lost.

The exact reason for the boat sinking has not been established. However, the number of electrically isolated through hull metal fittings suggests that undetected corrosion of one of these, eventually caused a failure of the fitting and the subsequent loss of the boat.

The Lessons

1. The boat was well supplied with sacrificial anodes, the bolts of one passing through the hull. The earthing straps from the pipework systems were connected to it, providing electrical continuity and therefore protecting these systems from galvanic corrosion. There were no earthing straps connected to the redundant sea cocks, and therefore no electrical connection between them and the sacrificial anodes. It is possible that one of the sea cocks became corroded due to galvanic action. It failed, allowing unrestricted flooding of the boat. To avoid areas of severe galvanic corrosion, redundant hull fittings on GRP hulls should, ideally, be removed and appropriate repairs made to the GRP. Where this is not possible, care should be taken to ensure that any redundant hull fittings retain electrical continuity.

2. The boat was not required to have a liferaft on board. The fact that one was carried, and deployed early, combined with prompt calls to the coastguard, saved the crew from a long, cold and wet afternoon.

3. By not giving the coastguard the vessel's position during his first call, the skipper presented the rescue services with a quandary. Although the helicopter that was scrambled to provide assistance was deployed towards the general direction of the fishing vessel, valuable time was lost until the second call provided the coastguard with a more accurate fix of the boat. In other circumstances, the additional time taken by the rescue helicopter to reach the crew men might have made the difference between life and death. It is imperative that the position of your vessel is passed to the rescue authorities as soon as an emergency situation begins to develop.

‘It Just Went off in my Hand Chief!’

Narrative

An 18 metre beam trawler had just returned to port after a successful fishing trip. Good husbandry is always to be encouraged, and in this case the skipper wasted no time instructing the crew member to thoroughly clean out and wash down the accommodation area. Keen to please, the crew member set about his task with gusto ensuring no stone was left unturned and no locker remained untouched!

While tidying and cleaning one of the lockers, the crew member removed a rocket line-throwing appliance in order to gain better access. Shortly afterwards, the line-throwing appliance was detonated. Travelling diagonally across the accommodation, and lodging itself in the starboard aft bunk, a fire broke out immediately. After raising the alarm, the fire was quickly extinguished by the crew member, ably assisted by shore staff and the crew of an adjacent vessel.

The fire brigade was called and attended the incident as a precaution, but were satisfied that there was no chance of re-ignition.

The Lessons

1. **Skippers should ensure that the locker containing a vessel’s pyrotechnics is located on or near the bridge in a secure, dry and readily accessible location. The locker should be clearly marked with the contents.**

2. **The crew member in this case appeared unaware of the dangers and the consequences of operating a rocket line-throwing appliance. It is a sensible precaution for a skipper to include, within a crew member’s joining instructions, the designated stowage and the operation of all pyrotechnics carried onboard.**

3. **Thankfully, in this case no personal injury was sustained. Circumstances could have been very different and the outcome very much worse. Quick reactions by those involved in fighting the fire also helped keep physical damage to a minimum.**

Elevated Work, Elevated Risks

Narrative

It was a very pleasant day, which provided the opportunity to carry out routine maintenance on board a UK flagged trawler. Some of the crew were working aft on the trawl wires, the skipper was in the wheelhouse and the chief engineer was on the main deck. The engineer noticed that the port main deck floodlight situated on the 4 metre high platform (Figure 1) between the forward masts had a "crazed" glass. This was not unusual; a combination of the hot glass and cold sea spray had caused this before, and the engineer was accustomed to changing the glass.

Having obtained a new glass, the engineer climbed the ladder to the platform. He was wearing safety shoes, but no other personal protection equipment. He was not wearing a safety harness, although six were on board and all were in date for test. The engineer informed nobody that he was going aloft.

The engineer accessed the platform through an unguarded gap in the guardrails (Figure 2). The platform (Figure 3) was wet, did not have a non-slip finish and contained several tripping hazards. He stepped over these, knelt down and rotated the floodlight to remove the damaged glass.

The next thing the engineer recalls was a helicopter hovering overhead preparing to transfer him to hospital.

From the subsequent investigation, it was clear that the glass had been replaced and that the floodlight was returned to its original position. The engineer then either stepped back through the guardrail gap, or fell from the mast ladder onto the wheelhouse roof, landing on his back and cutting his head. No one saw him fall, although the skipper heard him land on the wheelhouse roof.

Sadly, this accident resulted in the engineer severing the lower part of his spinal cord.

Figure 1: General view from stern

Figure 2: Port ladder and access showing unguarded gap

Figure 3: Port side of the platform

The Lessons

While we cannot be sure whether the lack of a non-slip finish, or the open guardrail contributed to this accident, the following lessons should be learned from this tragic accident:

1. Safety harnesses or other restraining devices *must always* be used when working aloft in accordance with the Code for Safe Working Practices. There should be no exceptions to this rule.

2. Safety chains should be fitted to open accesses in guardrails. If they have to be removed to gain access, they should be re-instated immediately.

3. A non-slip finish should be applied to hazardous working deck areas, or where risk assessments have identified there is a risk to personnel.

4. When working aloft, crew should tell others of their intentions, and they should be aware of any potential hazards.

5. Risk assessments should be conducted where personnel are exposed to dangerous or unusual activities.

Two Fires, a Flood and a Foundering

Narrative

In less than 5 weeks, a twin rig trawler suffered two engine room fires, a flood and a foundering. The second fire and the subsequent flooding resulted in her total loss.

In the first incident, the vessel had been trawling for about 3 hours when the skipper noticed smoke emitting from the outlet of the engine room exhaust ventilator. He immediately headed for the engine room, where he attempted to isolate the fuel systems, without success. His attempt to then operate the CO_2 system (despite the compartment ventilation flaps remaining open) also failed because the system had been poorly maintained. Unaware that the CO_2 had not been successfully discharged, a short time later he entered the engine room with the ship's engineer to see if the fire had been extinguished.

The fire had actually died out without the use of the CO_2. The trawl wires were subsequently cut and the vessel towed into port.

Five weeks later, following extensive repairs, including a complete overhaul of the CO_2 fire-fighting system, the vessel sailed to recover her trawl gear. She suffered another engine room fire. The crew were alerted; this time the ventilation flaps were closed and the main engine shut down. The CO_2 system was activated and the fuel shut off valves were closed. Despite the dangers posed by the toxic effects of combustion and CO_2, the skipper then attempted to enter

CO_2 bottle and operating arrangement

General smoke damage

the space. He was beaten back by the gases. Water entered the engine room, probably from failed water pipework systems, and the vessel quickly adopted a list to port.

A lifeboat's salvage pump was transferred by helicopter, but the pump was rendered ineffective by debris blocking its suction. The water level increased rapidly, so the decision was taken to abandon the vessel. Within a short space of time, the vessel plunged by the stern.

Replicated fuel leakage from main engine duplex fuel filters

The Lessons

1. In the event of a fire, your life and the lives of your colleagues may well depend on the proper maintenance of fixed CO_2 fire-fighting sytems and remotely operated emergency shut off valves. All too often, an "out of sight, out of mind" approach to these systems results in their neglect.

2. CO_2 extinguishes fires by smothering and reducing a compartment's oxygen content. The compartment must, therefore, be isolated and the ventilation flaps closed prior to its use. The space must then not be opened and ventilated until crew are confident that the fire is fully extinguished and the compartment is cool. Failing to do this, will mean the risk of re-ignition.

3. Skippers and crew should be aware of the dangers of entering a compartment that has been subject to CO_2 smothering. The residual toxic gases from both combustion and CO_2 can be fatal if a compartment is entered before it has been adequately ventilated and oxygen levels checked to be satisfactory. In the first instance, seek the coastguard's advice.

4. Only by conducting drills will actions become instinctive and crew be able to cope with emergency situations effectively, thus improving everyone's chances of survival. This includes being familiar with the operation of emergency facilities such as smothering systems, pipework isolations and pumping sytems.

5. Debris from the engine room rendered the lifeboat's salvage pump ineffective. Equipment must be correctly and securely stowed, debris must be removed and bilge areas must be kept clear of anything which may affect pumping operations. A vessel that is clean, tidy and secure is a safer vessel.

Part 3 – Leisure Craft

Photograph courtesy of Richard Langdon

For any seafarer, at any time, complacency is a killer. As a solo sailor myself, I perhaps know this more than most, as my very existence can, at times, depend totally on a rigorous adherence to safe practices and procedures whatever the circumstance. Whilst my colleagues and I seldom formalise such procedures, it is our individual self-discipline and experience that keeps us from making fatal errors.

This self-imposed discipline, if applied every time, is the best security for every mariner. The lessons which can be gained from the experiences of those who have encountered serious problems – whether fatal or not – serve to highlight potential areas of risk for all of us who put to sea.

This constant process of review is one very close to my heart as the Vice President and Technical President of the IMOCA 60 class that controls the safety rules in the Open 60 monohull class (the 60ft Vendee Globe yachts). As a fundamentally derestricted class, these yachts have, in the past, had serious flaws in their characteristics – perhaps most notably being unable to self right. Now, through an extraordinary cooperation between individual sailors, and across national boundaries, such incidents have been all but eliminated through careful management of the rule.

IMOCA works tirelessly to address the issue of safety in the solo sailing environment. This vigilance has paid dividends, and we are pleased to say that the sailors now enjoy safer racing than ever before. However, we recognise that you can never be too safe, and that this is an everlasting quest; practices are constantly evolving and improving. Life teaches us time and time again to never underestimate the power of the ocean, and it is important to explore and experience it with respect, caution and vigilance.

Mike Golding

The first person to have sailed round the world both ways, Mike Golding just can't get enough of sailing and competition. His sailing profile is as long as a "no wind day", and many fellow sailors consider him to be one of their fiercest competitors. He beat the Global Challenge in 1992-1993 solo, won the BT Global Challenge in 1996-1997, crewed and moved onto the IMOCA Open 60 monohulls Class. Challenging the French supremacy, he was the first British sailor to share all the podium places with the top skippers of the Class. 2004 was a year of great achievement for Mike as he went one step further, winning Le Défi Atlantique and The Transat. As he set off to win the Vendée Globe 2004-2005, Mike proved, once again, the extent of his talent by being the fastest boat from Cape of Good Hope to the finish; unfortunately, that was just an ounce too short to win the race. He did finish spectacularly though, by crossing the finish line in Les Sables d'Olonne with no keel, proving his great seamanship too. Mike is currently IMOCA World Champion and is leading the 2005 IMOCA and FICO Championships.

Knockdown and Total Loss off the Portuguese Coast

Narrative

An 11.3m sailing yacht was being used for an intensive 13 week Yachtmaster training course. The instructor and four crew had already spent almost 2 months on board sailing on the south coast of England and then to the Channel Islands, Brittany and western France before heading across the Bay of Biscay for Spain and Portugal in mid-November.

By this time, the students had amassed a good deal of experience and the instructor decided it was time for them to skipper the yacht without him being on board. A passage of around 75 miles southwards down the coast was planned, and the instructor stepped ashore. Winds were forecast to be a force 4 westerly, veering northerly force 5.

However, while on passage, the winds increased to gale force from the north-west. The skipper on board phoned the instructor ashore and it was agreed that the original destination was going to be too dangerous to approach in the prevailing conditions as there was a bar at the harbour entrance and the pilot book suggested this may be dangerous. An alternative destination was agreed, which was thought to offer a safer approach but which was another 30 miles further south.

The designated skipper became incapacitated with seasickness as the severe conditions continued, so another student, the most experienced of the four, took over. With sails furled and the engine on, they made their approach but were knocked down to an estimated 110° by a breaking wave.

The acting skipper was on the helm and was washed overboard. He had been clipped on but was unable to get back on board. The next wave took the yacht past the harbour entrance, and shortly afterwards she hit the beach. The acting skipper suffered cracked ribs, but he and the rest of the crew were otherwise unscathed. The yacht was damaged beyond repair.

The Lessons

1. **The decision to continue to an alternative port further south was understandable, but an approach to any port on a lee shore in the conditions carried risks. Although unpalatable to the crew, staying out at sea would probably have saved the yacht. The MAIB has looked into other accidents where the crew were less fortunate, and such action would have saved lives.**
2. **Leaving experienced students aboard without their instructor has the value of ensuring that the skipper knows he or she really is in charge, and must stand or fall by the decisions made. However, the instructor should carry out a particularly thorough risk assessment with the full involvement of the students.**

Lucky Escape as Spring Hook Fails During Hoisting of a Tender

Narrative

A large, UK registered luxury motor yacht was on charter and was berthed "stern to" in a Mediterranean port. The guests had completed their water sports for the day so the vessel's tender was sent to collect them. They were then disembarked onto the diving platform on the vessel's stern. The tender was then positioned immediately below the vessel's crane, which was used to hoist the tender and transfer it to its stowage position on the sun deck.

The eye of the three-legged strop (Figure 1) was connected to the crane hook and the coxswain attached each of the spring hooks (Figure 2) to the tender's lifting points. The coxswain remained in the tender as it was hoisted about 500mm clear of the water. This was to ensure that the spring hooks were correctly positioned as the crane took the weight.

He then prepared to disembark into another of the vessel's small boats so that the tender could be hoisted the remaining 8 metres to its stowage position. As he was about to leave the tender, one of the spring hooks catastrophically deformed (Figure 3). The tender, now supported by only two hooks, became unbalanced and the coxswain was thrown into the sea. The coxswain was uninjured.

Figure 1: Lifting strop – crane hook eye

Figure 2: Shackle as supplied

Figure 3: Failed shackle

The crane and lifting strop arrangement were all in date for test. However, the combined weight of the tender and the coxswain put the arrangement close to its Safe Working Load (SWL). The situation was likely to have been further exacerbated by wash from other vessels causing the tender to "snatch" at the strop and probably prompting the deformation process.

None of the yacht's team had conducted or were familiar with risk assessment procedures. However, precautions were taken: surplus weight had been removed from the tender, and the custom and practice was for the crew to leave the tender as it was hoisted.

The Lessons

Although not documented, a mental risk assessment had been undertaken, and some of the risks associated with hoisting the tender with crew on board had been recognised. However, no one appeared to realise how close to the SWL they had been operating, and what effect the additional "snatching" would have on the system. Had the snap hook failed when the tender was at its highest lift of 8 meters, with someone onboard, the outcome would have been very different.

1. **Risk assessments are an essential mechanism in identifying those activities that require control measures to be put in place to prevent the likelihood of an accident. They should be regularly reviewed to ensure their currency.**
2. **Crew should not be permitted to remain in a lifeboat for any longer than necessary during the lowering or hoisting procedures.**
3. **Regular examination and testing of lifting equipment is an essential element of safety management and risk reduction.**
4. **Due account should be taken of the likely additional weights on board boats/tenders and the "snatching" effect of the boat's motion when considering the suitability of the SWL of related lifting equipment.**

Don't Underestimate the Familiar

Narrative

On a windy spring morning, two professional mariners from a popular, small, estuary harbour went out within the mouth of the estuary to lay a yacht mooring, which was required for the following holiday weekend.

Both men were very experienced in small boat work and knew the area intimately. The weather conditions were, however, very poor. The spring tide was in full ebb, running about 6 knots, and the winds were gusting up to force 7, against the tide. This led to breaking crested waves throughout the harbour and especially at the estuary mouth. The sea temperature was 9°C.

One of the men was wearing a dry suit and swam out to his boat, a 4.5m dory, on its moorings near the quay. Having prepared the boat, he then motored to the quay to collect his assistant who was wearing jeans and a hi-vis jacket. They then loaded the mooring onto the dory.

The mooring consisted of two legs of chain, each leading from a mid-link to an anchor. A chain riser then ran from the mid-link to a hippo buoy. The complete mooring weighed 240kg and was placed on the bow of the dory [see photo].

Once loaded, they were seen motoring away from the quay towards the mouth of the estuary, which they would have to cross to reach the intended site of the mooring.

When they could not be found at 5 o'clock that evening, the alarm was raised. Tragically, and despite an extensive search and rescue operation, they were not found until their bodies were washed ashore some time later. Both men had drowned.

One of the men's lifejacket was found washed ashore on the evening of the accident and, while it was inflated, the seat belt-style buckle was not done up. The other man was not wearing a lifejacket, but was relying on a buoyancy aid; this too was found washed ashore that evening.

The outboard motor on the dory had failed on a number of occasions in the past and, based on its condition after the accident, it is likely that it failed as the dory was crossing the mouth of the estuary. The vessel would have been swept out into rougher water very quickly and foundered. The position in which the dory and the mooring (which was recovered from the seabed) were subsequently found supports this scenario, although it will never be known exactly what happened.

Photograph showing the mooring placed on the bow of the dory

The Lessons

1. The more senior of the two professionals was very conscientious and had [as part of his job] assessed the risks of the harbour during a series of written risk assessments. He had revised these only months before the accident, and they had covered all of the dangers present on the day of the accident. Specifically, they made reference to the danger of small dinghies capsizing, or being carried away to heavy seas at the mouth of the estuary, by strong tidal streams within the harbour, especially during spring tides or in the event of machinery breakdown. The control measures identified for these risks included to arrange a system to establish successful transit with someone ashore and for people to wear lifejackets. Unfortunately, these risk assessments were aimed at leisure users of the harbour, and he had not assessed the risks involved in his own work.

2. The dory was completely unsuitable for the task of laying moorings. While it was designed as a stable platform for fishing, it was not designed to have 240kg of steel sitting on the bow. It was not overloaded, but the loading led to very little freeboard forward, and the boat would have been shipping a considerable amount of water in the prevailing conditions. This would have made the boat less stable and brought the outboard motor closer to the water, allowing it to become swamped more easily.

3. While one of the men was wearing a dry-suit, it would seem that his lifejacket was either not done up or not worn. The other man was not wearing appropriate clothing or a lifejacket. Buoyancy aids are never suitable replacements for lifejackets.

4. Had a specific risk assessment been done on the work to be carried out that day, it is likely that the dangers of the weather, the unsuitability of the boat and the need for appropriate clothing and lifejackets would have been addressed. Unfortunately, this was not done and two experienced professionals died as a result.

5. Quite apart from the tragic consequences of this accident, professional mariners who work closely with the public have a duty to lead by example. They must ensure that they are seen to be taking all the necessary safety precautions and apply best practice at all times.

MAIB Safety Bulletin 1/2005

Two Fatalities from a High-Speed Rigid Inflatable Boat Accident

The Accident

The owner of a 6m RIB took his two teenage daughters for a day trip in sheltered waters. It was the first of the season, the boat having been laid-up for the winter. The RIB was powered by a 150hp outboard, and was capable of speeds in excess of 50 knots. The water temperature was 3^{o} C, the air temperature about 5^{o} C and the wind strength was force 4. All were wearing warm clothing, but were not dressed for entering the water and **were not wearing lifejackets.**

During the day out, the RIB's steering was described as difficult, the wheel needing many turns to achieve any movement of the engine. On their way back to the launch point at the end of their day, the owner was steering, the younger teenager was sitting behind him, and the elder girl was standing behind the seat holding the backrest. The RIB was travelling at full speed when it suddenly lurched, throwing the owner and his younger daughter out of the boat. The elder teenager was thrown to the deck but remained in the boat which, because **the kill-cord was not in use**, continued away from the two people in the water. Although the elder girl managed to control the RIB and return, with difficulty, to the casualties, there was insufficient time to rescue them before they disappeared below the surface. **There were no flares or radio onboard** the RIB so the survivor was unable to raise the alarm immediately.

After the accident, investigations discovered the oil level in the hydraulic steering system in the RIB to be very low, and there were indications that the system had been leaking for some time. It is probable that air in the system caused the engine to lurch unexpectedly to one side, causing the accident.

Safety Lessons

Any unintended movement of the outboard engine on a planing craft can be highly dangerous. It is therefore ***essential*** that owners and users of powerboats ensure that steering systems are fully operational before using the boat. It is especially important to ensure hydraulic systems are topped up as required and are checked for leakage. If the owner or user is in any doubt about the condition of the steering system, they should **seek professional advice**.

All powerboat users are further strongly urged to ensure that:

- Kill-cords, where fitted, are used correctly.
- All crew and passengers are wearing suitable clothing and lifejackets.
- They have the means to summon assistance: ideally a VHF radio, or in the very least distress flares.

APPENDIX A

Preliminary examinations started in the period 01/03/05 – 30/06/05

A preliminary examination identifies the causes and circumstances of an accident to see if it meets the criteria required to warrant an investigation, which will culminate in a publicly available report.

Date of Accident	Name of Vessel	Type of Vessel	Flag	Size (grt)	Type of Accident
07/03/05	*Bro Traveller* *Island Gem*	Chemical tanker Bulk carrier	Sweden Greece	7973 17065	Collision
20/03/05	*Corner Brook*	Specialised carrier	Bermuda	7587	Fire
27/04/05	*Sonas* *Union Pearl*	Fishing vessel General cargo	UK Barbados	41.47 22.36	Collision
28/04/05	*Bitfjord*	Chemical tanker	Sweden	1573	Fire
10/05/05	*Maranatha*	Fishing vessel	UK	242	Flooding/foundering
19/05/05	*Murmansk*	Tanker/combination	Russia	10321	Fatal Accident to person
21/05/05	*Lerrix*	General cargo	UK	1992	Grounding
21/05/05	*Etoiles des Ondes*	Fishing vessel	UK	40	Fatal Accident to person
23/05/05	*Bounty*	Fishing vessel	UK	10	Capsize
02/06/05	*OOCL Malaysia* *IBIS*	Container vessel Yacht	Liberia UK	66283 N/A	Collision
18/06/05	*Queen Zenobia*	Liquid gas carrier	Panama	16770	Accident to person
19/06/05	Speedboat (un-named) Speedboat (un-named)	Pleasure craft Pleasure craft	UK UK	N/A N/A	Collision
21/06/05	*Siesta*	Yacht	Unknown	N/A	Fatal accident to person
30/06/05	*Auriga*	Fishing vessel	UK	4.42	Flooding/foundering

Investigations started in the period 01/03/05 – 30/06/05

Date of Accident	Name of Vessel	Type of Vessel	Flag	Size (grt)	Type of Accident
01/03/05	*Orade*	General cargo	Antigua & Barbuda	1354	Grounding
13/03/05	*RHIB Loch Lomond*	Pleasure craft	UK	N/A	Fatal Accident to Person
06/04/05	*Brenscombe Kayaks*	Commercially operated	UK	N/A	Capsize
08/04/05	*Lykes Voyager* *Washington Senator*	Container Container	UK Germany	23540 34454	Collision
113/04/05	*Stolt Aspiration* *Thorngarth*	Oil/chemical tanker Tug	Liberia UK	7901 365	Collision

Reports issued in 2005

Albatros – accident on board the commercial sailing vessel *Albatros*, Thames Estuary, on 22 August 2004, resulting in one fatality
Published 8 April 2005

Attilio Ievoli – grounding of the Italian registered chemical tanker on Lymington Banks in the west Solent, South Coast of England on 3 June 2004
Published 7 February 2005

Coral Acropora – escape of vinyl chloride monomer onboard *Coral Acropora*, Runcorn, Manchester Ship Canal, on 10 August 2004
Published 8 March 2005

Daggri – contact made by the UK registered ro-ro ferry *Daggri*, with the breakwater at Ulsta, Shetland Islands, on 30 July 2004
Published 5 April 2005

Jackie Moon – grounding of *Jackie Moon*, Dunoon Breakwater, Firth of Clyde, Scotland on 1 September 2004
Published 23 March 2005

Nordstrand – fatal accident on board mv *Nordstrand* at Agencia Maritima Portillo, Seville, Spain on 20 September 2004
Published 15 April 2005

RFA Fort Victoria – investigation of the lifeboat release gear test on *Fort Victoria* which caused injuries to two people at Falmouth ship repair yard on 10 September 2004
Published 18 May 2005

Scot Explorer and Dorthe Dalsoe – collision between *Scot Explorer* and *Dorthe Dalsoe*, Route 'T' in the Kattegat, Scandinavia, on 2 November 2004
Published 10 June 2005

Star Clipper – failure of a mooring bollard from the Class V passenger vessel *Star Clipper*, resulting in a fatal accident at St Katherine's Pier, River Thames, London on 2 May 2005
Published 18 February 2005

Waverley – grounding of the passenger vessel *Waverley*, South of Sanda Island, west coast of Scotland on 20 June 2004
Published 1 February 2005

Annual Report 2004 Published May 2005

Safety Digest 1/2005 Published April 2005

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