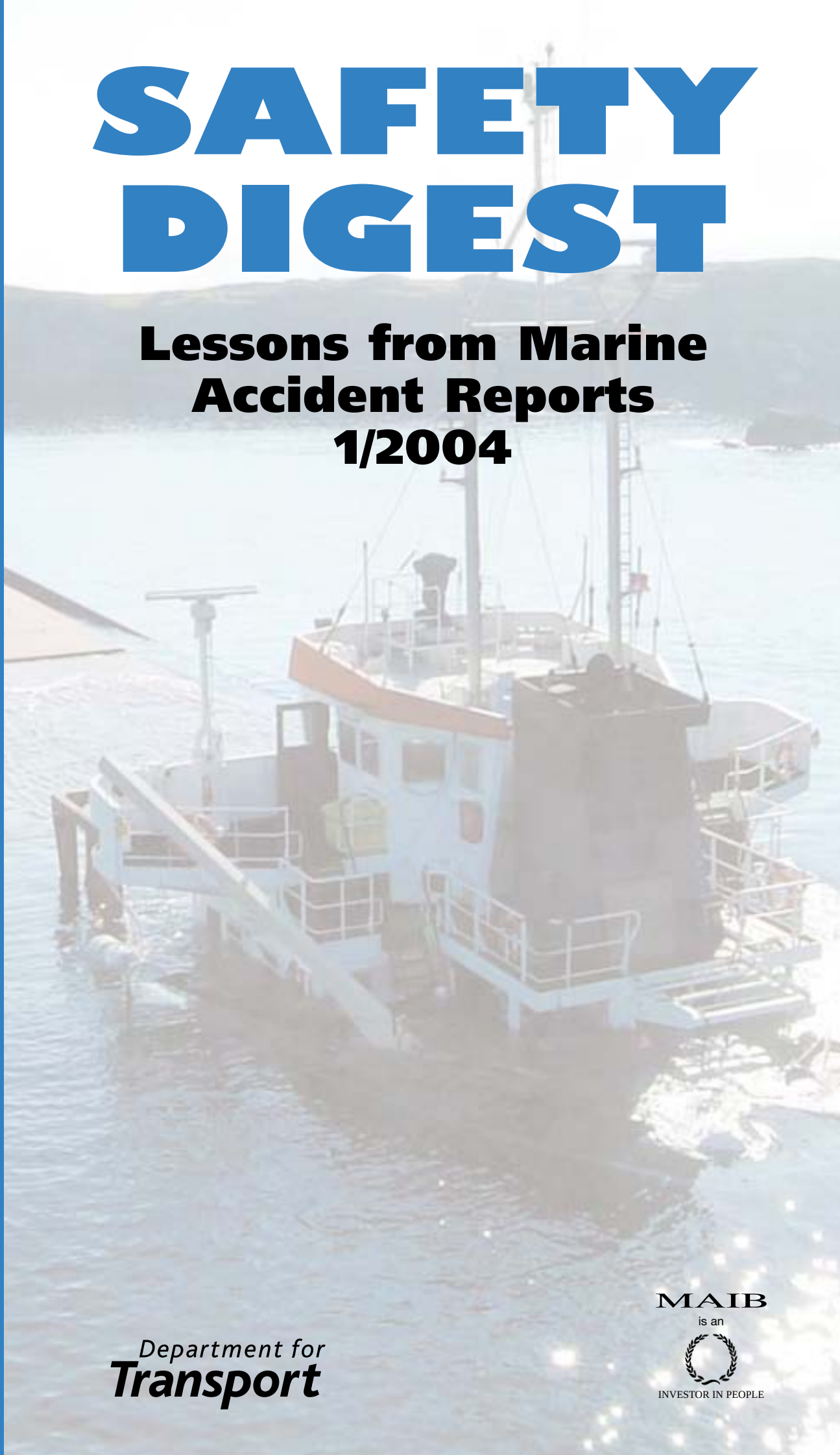
MAIB

MARINE ACCIDENT INVESTIGATION BRANCH

SAFETY DIGEST

Lessons from Marine Accident Reports 1/2004



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No 1/2004

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February 2004

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 1999

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

INDEX

Glossary of Terms and Abbreviations

AB	–	Able Seaman
CPP	–	Controllable Pitch Propeller
EPIRB	–	Emergency Position Indicating Radio Beacon
GT	–	Gross tons
"Mayday"	–	Spoken distress signal
Ro-Ro	–	Roll on – roll off
RYA	–	Royal Yachting Association
VHF	–	Very High Frequency
VLCC	–	Very Large Crude Carrier

Introduction

Welcome to the first *Safety Digest* of 2004. Regular readers will notice a couple of changes in style; not only have we introduced colour, to try to make the articles more readable, but we have also, for the first time, asked non-MAIB people to write the introductions to the three sections. As part of our move to persuade the maritime community to become more involved in our work, you will find introductions written by well-known and respected members of the commercial, fishing and leisure industries.

Although the style might have changed, the substance remains the same. Here are 27 accidents or incidents, all very different, reported in (I hope) a straightforward manner, so that we can all learn the lessons from the misfortunes of others. Please take the time to consider them all.

For anyone operating a vessel commercially – merchant ship, fishing boat or leisure craft – there is a legal duty to report accidents. If you are in doubt about the requirements, give us a ring, or report it anyway – we would far rather have over-reporting than under-reporting. If you believe accidents are being suppressed, rather than reported, tell us (we have a legal duty to protect our sources), or report it to the confidential reporting system – CHIRP.

For those who go to sea for pleasure, there is no legal requirement to report accidents. **However, we would encourage you to report accidents/incidents anyway.** We have recently tracked down an unidentified ship that collided with a yacht and, in Case 27 of this edition, we describe how we followed up a near-miss incident in the English Channel, reported to us by a yachtsman. If you don't report things, we do not know the scale of the problem, and we cannot try to improve matters. Do your bit for safety – report accidents/incidents.

Finally, I would like to draw readers' attention to the MAIB Noticeboard on page 56. This replicates an important Safety Bulletin published as a result of an accident that occurred on 30 January 2004, which had the potential to be lethal. Although it happened on board a fishing vessel, all mariners should take heed.

Stephen Meyer
Chief Inspector of Marine Accidents
April 2004

Part 1 – Merchant Vessels

I like a good read, and I always look forward to the thump of the MAIB *Safety Digest* landing on the doormat. And it is a good read. Draw the curtains, make up the fire and settle into a favourite armchair. Here are exciting tales of adventure on the high seas, groundings, fire on board, storm at sea and others. When you read it from cover to cover you get a whiff of Joseph Conrad in these tales.

But these tales are not fiction. These are not the outpourings of the fevered imagination of the Chief Inspector, Stephen Meyer, and his crew. No imagination could have invented better stories than these. This is cold, stark, mean reality that is laid out before us. Lurking in these pages are not the heroes and villains of fiction. These are real, honest, decent people. Real people who are getting hurt. Real people who are getting killed. They could be our colleagues; for some they are. When this sailor returns home, adoring mothers, wives and children will not see a happy smiling face. Perhaps they may never see his face again. More than one life can be wrecked in these adventures.

So these pages are not for entertainment; they are for learning. And just like those collected stories of fiction there are recurring themes, themes we have seen before on these pages and elsewhere. But unlike Conrad, these are not of murder, greed, desire or revenge; these are much more mundane and straightforward. These are themes of inadequacy. They are about not coming up to scratch, not cutting the mustard.

They tell us of something lacking. A lack of planning, risk assessment, maintenance, training, competence, pre-work briefings (called "tool box talks" in the offshore industry), challenge, management of change, accountability, equipment, and so on and so on. Quite a list! Quite an indictment!

And why do these accidents always seem to happen without warning? Well isn't that what an accident does? But, hold on! Are they without warning? Are not the warning signs there? They just have to be looked for, hunted down, observed, identified and dealt with. Then we will see them for what they are, these same themes.

If one were to choose just a few themes to concentrate on, which should they be? If I were to choose they would be:

- Planning – no work should be considered without a plan. For the complicated and unusual tasks a proper one must be made in advance, but for routine work it can be as simple as "tool box talks" with all those to be involved just before the work starts. What is the job, what resources are needed, what procedures exist, who will do what, etc?

- Risk assessment – a *meaningful* and *thorough* risk assessment is essential to highlight the hazards and risks and the actions to take to lessen them. It will also show up the strengths and weaknesses in training, equipment etc. The risk assessment should be a living document, visited frequently and always aligned with the plan.

- Management of change – widely used in the oil and gas industry, this allows you to deal with unplanned events or changes, which occur during the work. Being alert to changes in weather, timing, berthing, equipment, etc. and revisiting the plan and risk assessment when they occur.

- Challenge – all those carrying out work must continually question the work in hand and if they are unhappy, even that slight unease in the gut, then they should stop the job and challenge the process.

So let's keep Joseph Conrad firmly on the bookshelf and make sure all the characters of *OUR* stories come home safe and sound. Let's make sure they come home to their families without harm. Stop and take time to think how we can achieve this because, make no mistake, it can be achieved. Ask some simple questions such as:

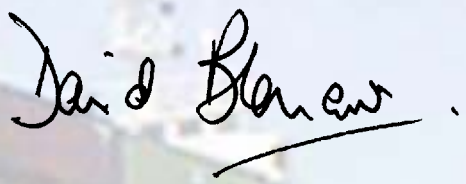
"How can I perform this task without injury to myself?"

"How can I perform this task without injury to others?"

And let's keep this admirable *Safety Digest* off the bookshelf and well thumbed in the mess-rooms and canteens of our workplaces. Do you have enough copies and do you send them out to all your ships? Discuss the stories on board and in the office. Take a copy to the next safety meeting.

Ask another simple question. Can this happen to us? When reading these accounts we can all recognise the familiar themes. Take action before an event happens and you or your colleagues become the main character in the next story the Chief Inspector will write for the entertainment of others.

Safe sailing.



David Blencowe

David Blencowe is Area General Manager of Maersk Supply Service in the UK, based in Aberdeen. He is a master mariner who has served in passenger ships, cross channel ferries and as master of offshore vessels. He has a deep interest in safety of ships' crews and is a member of the steering group on the offshore industry's Marine Safety Forum.

Hands-on Training – yes – but Don't Lose Control!

Narrative

A ferry was leaving port in daylight. The bridge was manned, as normal, by the master, the chief officer and a helmsman. However, instead of the master handling the controls, the chief officer, as part of his training, was manoeuvring the vessel under the guidance of the master. The chief officer had only recently joined the vessel, having served a number of years as a pilot in a different geographical location.

The ferry, which was fitted with a Becker rudder, was required to conduct a port turn to exit the harbour between two breakwaters. After manoeuvring from her berth, she proceeded at slow speed so as to keep sufficiently clear astern of another departing ferry.

After the other ferry had cleared the harbour, the chief officer, from his position at the port bridge wing control position, ordered about 40° port helm. He moved the pitch controls of both propellers to 40% and then, on the master's instruction, to 60% ahead. The vessel started swinging, but her rate of turn was slower than expected. The chief officer then applied full bow thrust to port and, on the master's suggestion, applied astern pitch to the port propeller.

As the vessel was completing the turn, the chief officer applied 60% ahead pitch to both propellers with the helm amidships. At this point, the master walked to the starboard bridge wing and noted that the vessel was moving towards the breakwater on that side, due, partly, to the tidal flow. He then ordered hard to starboard helm and bow thrust to starboard in an attempt to prevent contact with the breakwater knuckle. Although the ferry started swinging to starboard, the manoeuvre failed to prevent her starboard side from striking the knuckle. The master then took control and manoeuvred the vessel back alongside.

The Lessons

1. The manoeuvre did not proceed as expected. A successful outcome depends on adequate planning, execution and monitoring, and an ability to recover a situation should things go wrong. In this case, the chief officer was following a manoeuvring plan which, although normally achievable, was inappropriate given the circumstances on the day.

   The ferry's exit from the harbour was delayed, resulting in her creeping ahead to a position from which she was unable to complete her normal turn safely, given the prevailing cross-tidal flow. This was because of her slow speed and close proximity to the breakwater at the start of the turn.

2. The chief officer had received no specific guidance as to how to manoeuvre the vessel out of the harbour. He had observed previous departing manoeuvres and did not feel it necessary to receive a specific briefing on this occasion. Equally, the master considered it unnecessary to brief the chief officer since he was aware that he had handled the vessel before and was an experienced pilot, albeit in a different geographical location.

   Although the manoeuvre was inappropriate, the master failed to intervene in sufficient time to prevent the accident. This was due to his misplaced confidence in the chief officer's ability, and the fact that his position on the bridge caused him to adopt an abnormal overall perspective. In other words, he was not in an appropriate position or mind-set to monitor the chief officer's actions effectively.

   Hands-on experience is an essential element of training, but the risks should be carefully evaluated, and the level of supervision should be sufficient to ensure that the master is able to restore control immediately should things go wrong.

3. The effect of a Becker rudder can be significantly different to that of a conventional rudder. Notably, the application of large angles of helm can reduce a vessel's forward motion. This, together with the tidal flow, contributed to the slower than expected rate of turn on this occasion. It is essential that operators are made fully aware of this effect before being required to manoeuvre a vessel in confined waters, particularly if they are unfamiliar with high lift rudder systems.

‘Spontaneous’ Lowering of a Lifeboat

Narrative

During a stay in port, a cruise vessel lowered several of her lifeboats to the water for crew training and engine testing. On completion, the boats were hoisted to their stowed position and their gripes secured.

Shortly afterwards, two seamen noticed that one of the boats was not in its properly stowed position, and released its gripes to re-position it. However, before they were able to complete this task, a senior officer instructed them to carry out another job.

Shortly after this, the lifeboat with the released gripes began to move very slowly from the stowed position because its winch was paying out.

Efforts to insert harbour pins, and apply the winch’s brake, failed to arrest the boat’s motion. Realising that the boat could safely continue lowering, and enter the water, crew entered the boat to release the combined tricing/bowsing gear. They were unable to do this properly and, fearing for their safety, they climbed from the boat.

The boat continued to slowly lower, until the tricing/bowsing gear at the forward end pulled free. Further lowering then caused the boat’s bows to continue until they reached the water, with the boat hanging by the stern (see figure).

The unusual direction of load on the aft suspension hook damaged the boat’s stern, but there were no injuries.

A later examination showed that the remote release wire of the winch had not been set up correctly, and had prevented its brake from being fully applied. Reports from the crew also indicated that there had been earlier incidents where lifeboat winch brakes had not been applied properly because of problems with remote release wires.

The Lessons

1. **It would have been sensible for the senior officer to ask what the ratings were doing to the lifeboat before he diverted them to another task. He would then have been aware that there was a problem with this lifeboat.**

2. **The vessel’s safety management system failed to take account of earlier reports of similar winch brake release wire problems to identify a safety-related issue that required attention.**

3. **Care and attention needs to be taken to ensure that remote operating wires for winch brakes are properly adjusted.**

Low Pressure – Not Low Risk

Generator top

Narrative

A ro-ro ferry with over 400 passengers on board was on an overnight passage. The watchkeeping engineer was alone in the machinery spaces when the automatic fire alarm activated.

When he investigated, the engineer found fire around the top of a diesel generator. He rang the engineers' fire alarm and attempted to tackle the fire using several portable extinguishers.

These efforts were only partly successful. However, he found time to start another generator, transfer the load and stop the affected generator. He then tried to isolate the fuel supply to this generator by going to the lower level of the engine room. Although he was well aware of the location of the fuel shut-off valve, he was unable to find it. Realising he was in a dangerous situation, he left the engine room.

By this stage, all other engineers had arrived to assist, and the vessel's full emergency procedures came into play to effectively tackle the fire using the CO_2 smothering system.

Later examination of the generator found that a low pressure fuel line had failed because it was not properly secured. This had allowed heated fuel and vapour to escape where it was ignited, probably by the engine's hot exhaust manifold.

The Lessons

1. **The engineer was becoming seriously affected by smoke inhalation by the time he attempted to shut off the fuel supply to the generator. This caused his senses to be so impaired that he was unable to find the shut-off valve; an item with which he was very familiar.**

2. **It was most fortunate that the engineer left the engine room at that stage, rather than making further efforts to locate the fuel shut-off; further delay might literally have been fatal.**

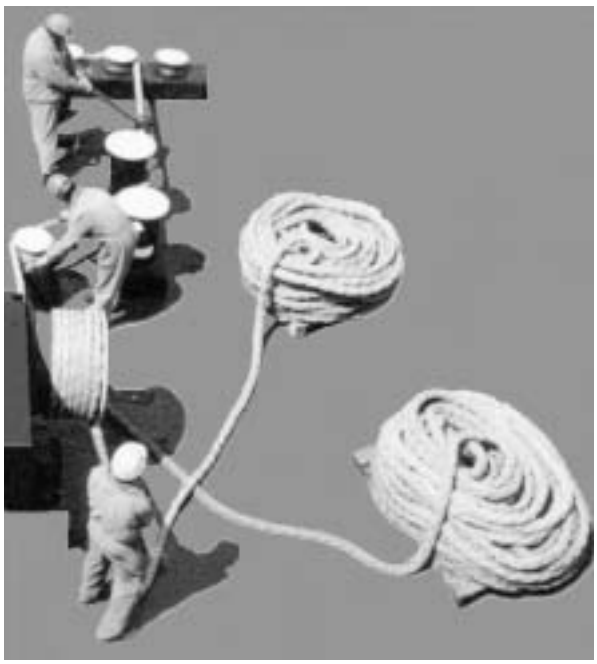
3. **This incident is the latest in a series of fires caused by leakage from engine low pressure fuel lines. It again highlights the importance of paying as much attention to the condition of low pressure fuel lines as is normally given to high pressure systems, which are typically seen as those posing the greater risk to safety.**

A Stopper That Didn't Stop

Narrative

A vessel was being warped along a quay. It was daylight and the weather was fine. A team comprising an officer and three seamen was tending the aft moorings.

A sternline was led from a roller fairlead, through a set of bitts, around a pedestal fairlead and on to a warping drum. The officer was operating the winch. On heaving the sternline tight, one of the seamen used a stopper to secure the rope in readiness for it to be turned up on the bitts. The officer then reversed the warping drum, and a second seaman began removing the slack rope from the pedestal fairlead. While doing so, the rope suddenly slipped through the stopper, thus tightening, striking the second seaman and causing him abdominal injuries.



The Lessons

1. **The sternline was a multiplait synthetic rope. The stopper, which was a singleplait synthetic rope, failed to stop the sternline slipping under tension while it was being transferred from the warping drum to the bitts.**

   If a stopper is to function effectively, it is essential that it is applied correctly. The *Code of Safe Working Practices for Merchant Seamen* recommends the "West Country" method (double and reverse stoppering), which requires two rope tails.

   Ensure you have the right equipment to do the job, and that those who are required to use it are properly trained to do so.

2. **The casualty removed the rope from the pedestal fairlead in the expectation that the stopper would do its job. Both he, and the officer in charge, failed to take account of the possibility of the stopper failing. Had they done so, they could have ensured that he approached the rope from the opposite direction, causing it to move away from him when it came under load.**

   Mooring operations, no matter how routine they become, carry risks. By thinking ahead, and planning for the unexpected, many of those risks can be avoided. Think on your feet and you'll stay on them!

Late Changeover Leads to Grounding

Narrative

A UK ferry was entering a Netherlands port in good weather. The main engine control changeover from *sea* to *manoeuvring* mode was later than usual, and the engine control room phoned the bridge to inform them that there would be a delay in starting the bow thrusters. The master decided to continue heading for the berth at reduced speed, and to berth without bow thrusters by walking out the starboard anchor.

Five minutes later, one of the main engines stopped, followed three minutes later by the other engines. The starboard anchor was dropped and the vessel stopped. However, she was pushed by the wind and tide into the mud on the shoreline.

After restarting two of her main engines, within ten minutes the vessel was able to continue and to berth successfully, aided by one bow thruster and two tugs. She sustained no damage.

In this vessel, when the changeover of main engine control from *sea* to *manoeuvring* mode is initiated, the engine management system automatically synchronises another alternator with the switchboard. On this occasion, the automatic process failed, and the system locked up; preventing it from being reset. The lack of capacity on the switchboard made the use of bow thrusters impossible. Also, when the master reduced speed, the main engine cooling system could not respond. Hence, the main engines overheated and shut down one by one.

The changeover from *sea* to *manoeuvring* mode was carried out at the end of passage, rather than before, as required in the standing orders. This meant that the subsequent faults could not be corrected in time to prevent the main engines shutting down.

The Lessons

1. Given sufficient time to rectify the fault, this grounding would not have occurred. The guidance given by masters' and chief engineers' standing orders is the result of accumulated knowledge and experience. It should not, therefore, be ignored.

2. It is essential that the master is fully briefed by the engine control room, when problems affecting the safe navigation of the vessel are encountered. Had this master been informed of the full extent of the problems, which led to the bow thrusters being unavailable, he would have been able to take appropriate action to ensure the vessel's safety. As it was, he was only aware that there was a problem with the bow thrusters.

3. Control systems on modern vessels are becoming ever more sophisticated. However, they can – and still do – fail. It is essential that control systems are designed to facilitate manual override at any time in the event of a failure, and that ships' staff are practised in manually overriding these control systems quickly and efficiently when necessary.

If There is no Risk Assessment, Do Your Own

Narrative

It was standard practice on board a small UK tanker to rig a gangway from the poop deck. This was secured at the top by looping chains through roller fairleads, and securing them outboard with bottle screws about 1m down each side of the gangway.

When removing the gangway, shore riggers on the quay would steady the lower end, while a shore crane lifted the gangway slightly to take the tension off the securing chains. A seaman then stepped on to the gangway and released the bottle screws, allowing the chains to be removed. The procedure had been done many times.

On this occasion, while the seaman was facing the vessel and undoing the bottle screws, the shore riggers left the lower end of the gangway. This allowed it to tilt and sway, nearly causing him to fall off. It is thought that the riggers left to assist in letting go another adjacent vessel which was leaving the quay at the time.

No risk assessment on this procedure had been carried out, and the seaman tasked with releasing the chains was not using a safety harness. He wasn't even wearing a lifejacket.

Once the chains were released, the gangway was not secured to the vessel in any way. In this condition, it was supported by a shore crane, and was merely 'resting' on the poop of the vessel. Any movement in the vessel could have led to both it, and the seaman, dropping free and into the water or on to the quay.

The Lessons

1. **If you are asked to do something which you feel is unsafe, question it! The procedure followed to release the gangway was incredibly dangerous. The fact that it had been done on many occasions without incident was no reason for anyone on board to have felt content that it was safe.**

2. **A risk assessment, as described in the *Code of Safe Working Practices for Merchant Seamen(Chapter 1)* must be completed, to cover the risks arising from all work activities on board. Such a risk assessment would have highlighted the many dangers associated with this procedure.**

3. **When working aloft or outboard, as in this case, a number of safety precautions must be taken. These are also described in the *Code of Safe Working Practices for Merchant Seamen (15.2).***

4. **Using shore facilities and personnel to assist in ships' procedures other than those for which they are specifically employed, is dangerous. They are not trained in shipboard operations, and are not part of a vessel's safety management system.**

Out of Control

Narrative

A vessel's lifeboat, davits, and associated launching/recovery equipment had been overhauled, and the lifeboat was returned to the vessel by lorry.

The lifeboat was positioned under the davits, and two crewmen climbed into it to connect the hoist wire of a mobile crane. The mobile crane lifted the lifeboat and suspended it below the davit heads while the crewmen attached the falls. They disconnected the crane hoist wire, and stayed in the lifeboat while the crane jib was lowered. The davits took the weight of the lifeboat.

The maintenance work on the davit winch had been performed without the aid of the winch manufacturer's data. Although untested, it was then used to hoist the lifeboat until the limit switch shut off the power.

Suddenly and unexpectedly, the winch began to run out and, despite efforts to apply the winch brake, the lifeboat continued to plummet. It struck the edge of the quay and plunged into the water with the two men still on board.

The two crewmen were slightly injured and the lifeboat suffered moderate impact damage.

The Lessons

1. **Would you climb into a suspended lifeboat knowing that the davits, lifeboat suspension hooks, and winch had all been repaired but had not been load-tested properly?**

2. **Was this the only way to re-attach a lifeboat to the falls? The falls could have been lowered to the lifeboat and reconnected by the crewmen. They could then have left the lifeboat before hoisting began.**

3. **Does your vessel hold maintenance information for the lifeboat and its associated equipment? If it does not, you should raise the matter in your next safety meeting, since it is a requirement to carry instructions for onboard maintenance and repair work.**

4. **Is the person performing the maintenance on your lifeboat competent and experienced? They should not be working on it if they are not.**

5. **If you are sent to perform a task on board, do not assume that someone else has considered all the hazards involved. THINK about those hazards. Can a hazard be avoided, or the risk be reduced as far as possible? If not, speak up!**

This accident provides further evidence of the hazards in operating and maintaining lifeboats and their launching systems.

The *MAIB Safety Study 1/2001 : Review of Lifeboat and Launching Systems' Accidents* (visit our website at www.maib.gov.uk for further information), points out that in the 10 years covering the review, 12 seafarers died and 87 were injured while training on, or testing, lifeboats and launching systems.

Further examination of these accidents found winches to be the most frequently recorded source. Although no fatalities have been recorded, some had the potential to cause serious accidents.

Common faults occur in several winch types which employ one way clutches, brakes and switches. Often they do not operate as intended, usually owing to shortcomings in their maintenance, repair or adjustment.

As winches are often regarded as simple items of machinery, and are readily maintained by ships' staff or engineering contractors, their importance may not be fully respected. As such, major overhauls may be carried out without the knowledge, experience or correct equipment that a specialist contractor can provide.

Unplanned Trip up the River

Windlass after catastrophic failure

Narrative

A 2,240gt general cargo ship carrying packaged timber was berthed on a river wharf starboard side to, pointing downriver, during equinoctial spring tides. She was secured by 2 × 26.5cm (10.5") circumference head ropes and a 19cm (7.5") spring forward; similar sized ropes were used aft. Soon after the onset of the flood tide, the tension on the forward ropes increased and the bow was set slowly off the wharf.

As the chief officer made his way to the forecastle to see what was happening, the fore spring parted. The starboard anchor was quickly let go using about 10m of chain cable, but this failed to check the movement of the bow towards the middle of the river. This caused the port head rope to be lost overboard after being pulled through the bollards upon which it had been turned up. This left just a single mooring rope forward, which also started to slip through its bollards until it was secured by its eye. The port anchor was then let go using a similar amount of cable as before, but when applying the brake, the windlass catastrophically failed (see figure), and its shaft containing the winch drums and associated fittings was wrenched from the deck and pulled forward over the hawse pipes.

Assisted by two able seamen, the chief officer managed to secure the anchor cables using chain cargo lashings. He then ordered the area to be cleared because of the strain on the remaining head rope. As the chief officer was moving aft, however, the head rope parted and struck him on the leg, which luckily was not broken.

By that time, the master and engineer had been alerted to the situation and had gone to the bridge and engine room respectively. The engine and bow thruster had been started and,

with the aft mooring lines having also parted, the master tried to manoeuvre the ship ahead using full rudder. This, however, was unsuccessful because the ship was now aground along some of her length. With the ship lying across the river, and the flood tide gaining momentum, the ship started to list. The list increased to over 30° within 30 minutes and caused some of the deck cargo, which had been unsecured in preparation for discharging, to fall overboard.

Soon after, the ship refloated on the rising tide and, although her list reduced considerably, the master was unable to use the main engine to control the ship's movement because of an apparent problem with the CPP control system. The failure of the windlass also meant that more anchor cable could not be paid out. Consequently, the ship drifted helplessly up the river and collided with three ships moored alongside, before her anchors finally held and tug assistance arrived.

The Lessons

1. **The selection of the sizes and types of berthing ropes used on board ships is largely a matter of commonsense and good practice. A small coaster using ropes usually associated with VLCCs might appear to give a large safety margin, but if the ropes cannot be effectively secured, are stronger than the deck fittings, or are too heavy to be handled by the crew available, they might prove to be a liability. It is in everyone's interest to ensure that mooring lines are fit for purpose. Are yours?**

2. **It is basic seamanship to ensure that mooring ropes are secured by a sufficient number of turns around the bollards, and that they are 'married'. The potential consequences of failing to adhere to these well tried and tested practices can be disastrous.**

3. **Environmental conditions vary from day to day, from port to port, and from berth to berth; they must never be taken for granted. The need to keep a close eye on the tidal and weather conditions is particularly important in areas with strong tidal streams and large tidal ranges, where it is also prudent to seek local advice. It is better to think ahead, and take precautions such as putting out additional mooring lines, or having the engine on stand-by during critical periods, than it is to try and respond to lines parting in the middle of the night, or with many of the crew ashore. Such measures might be inconvenient and unpopular at the time, but they might also save the day.**

4. **Catastrophic failures of deck fittings and equipment are uncommon, but do happen. Therefore, to assume that a winch or windlass is trustworthy, because it looks solid and has stood the test of time, is fraught with danger. Don't be complacent when working in the vicinity of any load-bearing equipment – you will always come off second best.**

5. **It is worth remembering that most machinery on ships is designed to operate up to an angle of 22.5°. Little can be relied upon thereafter.**

Tug Trauma

Narrative

When a refrigerated cargo ship, carrying empty pallets, arrived at a pilot pick-up point, the port control advised that the pilot would have to board just inside the harbour because of the strong gale conditions. Shortly after, port control confirmed that the pilot was on his way and told the vessel *'you can take it very easy'*.

As the vessel entered the harbour, the mooring teams closed up and made ready to come alongside starboard side to. About 60m of 23cm (9") polypropylene rope was taken from its working drum and flaked out in readiness for use as a spring (Figure 1).

The master had anticipated that a tug would need to be secured aft for mooring, and had briefed the aft team accordingly. As the ship was fitted with a powerful bow thruster, the master did not anticipate having to secure a tug forward. Indeed, it was exceptional to secure a tug forward in any port.

By the time the pilot boarded, the vessel had continued into the harbour and was only 4.5 cables from her berth. She had slowed further and had lost steerage. The pilot hurried to the bridge and, with the assistance of one of two tugs in attendance, turned the ship beam-on to the wind in readiness for berthing.

During this manoeuvre, the pilot advised the master that tugs would be secured forward and aft using ship's lines. The master immediately passed this information to the mooring teams, and the forward spring was quickly re-configured so that it could be used by the tug. From its drum, it was led between the bitts on the starboard side (Figure 2).

As soon as the tow line was secured to the tug's hook, the tug's skipper manoeuvred ahead because there was a danger of the tow line (of which between 30m and 50m had paid out very quickly) fouling the tug's propellers. The tug opened from the vessel's port bow, until the bight was clear of the water. At about the same time,

Polypropylene rope flaked out for use as a spring

Rope led between the bitts on the starboard side

while the cargo ship was also being manoeuvred astern and set by the wind, the officer in charge forward ordered an AB to secure the tow line. However, as the AB moved towards the bitts, the tow line suddenly became very tight. It then jumped over the lip at the top of the forward bitt, and struck the AB on the upper front of the body, causing him to be thrown 2m across the deck.

The AB was conscious but had difficulty breathing.

The officer in charge informed the bridge immediately, and requested medical assistance from ashore. The AB was taken to hospital, where he died soon after from internal injuries.

The Lessons

1. Ropes and wires are a constant source of danger for personnel working on deck, and cause numerous deaths and injuries each year. Many accidents of this nature could be avoided if basic precautions are taken, such as not standing in the danger zone of a rope under tension, and not standing in a bight. Such precautions, however, are sometimes more easily said than done, particularly when ropes and wires come under tension without warning, or the danger zone caused by a rope under tension is not readily apparent. In such circumstances, teamwork is critical; several pairs of eyes are more likely to spot the dangers than just one. Therefore, when working on deck, look after number one, but also keep a weather eye on others. It could save a life.

2. Sufficient time for preparation and briefing is beneficial when conducting routine tasks on deck; it is essential when undertaking something out of the ordinary. Ensuring that everyone concerned, regardless of their experience and knowledge, is made aware of what is to be done, how it is to be achieved, what equipment is to be used, and the safety precautions to be taken, is a valuable insurance policy; one which usually yields high dividends.

3. When working with tugs, particularly when securing or releasing, good communication between pilots, masters, mooring teams and tugs is essential. Without it, co-ordinating the actions of the ship and the tug becomes extremely difficult. Everyone needs to be kept in the picture.

4. When using VHF radio, although expressions such as *take it very easy* might be understood by most people, they are open to interpretation, particularly when english is not the recipient's first language. Such phrases are, therefore, best avoided whenever possible. Precise instructions might need a little more thought, but they reduce the potential for confusion, and possible embarrassment.

5. When experiencing rough and uncomfortable conditions at sea, the lure of an alongside berth can be difficult for a master to resist. Berthing in extreme conditions, however, can be risky and is seldom easy. It therefore requires careful consideration. Although staying at sea might be unpopular, occasionally it can be the safer option.

Ouch!

Narrative

A surveyor requested a demonstration of a rescue boat being launched from a 70m vessel while in port.

To lift the boat from its chocks, the motor controls were operated, but there was no movement of the winch. The second engineer was called to investigate and, with a view to raising the boat by hand, the manual winding or crank handle was inserted on to the winch brake shaft.

A crewman began to turn the handle to raise the boat. Meanwhile, another crewman depressed the 'hoist' button on the winch's remote control box. This started the winch's motor, which, in turn, rotated the crank handle. The crewman turning the crank handle was struck by it, before it flew from its shaft into the sea. His arm was broken.

An investigation found the safety cut-off switch, which should have isolated the power supply to the winch's motor with the crank handle in place, was defective. An external indication of the defect, was the switch's operating lever being able to rotate about 330°, rather than the 60° quoted by the manufacturer (see figures).

This excessive movement allowed the internal cam to move the switch's contacts from the closed, to the open, and then to the closed position. This final closed position allowed the winch motor to be started with the crank handle in place. However, with the movement limited to 60° the switch would have moved just from closed to open, as intended.

Further examination found that the switch's operating cam had been modified several years previously. This modification allowed the excessive movement.

As an interim measure, a substantial external stop was welded to the winch's body to prevent unwanted movement of the switch lever.

Interlock switch lever

Correct position of interlock switch lever

The Lessons

1. Using replacement or modified components that are not to manufacturers' specification can have consequences that are not always easy to predict. Particularly on safety-related equipment, it is always prudent to use manufacturers' replacement parts.

2. Having recognised the dangers of the switch lever's excessive movement, the owners and crew sensibly made immediate efforts to make the system safe, by fitting an external stop.

3. Changes in operational procedures were also made, by requiring the winch's remote control box to be unplugged whenever the crank handle was in place.

330° rotation of interlock switch lever

Incorrect position of interlock switch lever

Quick Response to Vehicle Fire on Ro-Ro Ferry

Narrative

A ro-ro passenger ferry was in the process of loading vehicles on to her main vehicle deck. Towards the end of the loading period, the deck crew directed a lorry to the starboard side amidships.

When the driver of the lorry switched off the ignition, after having parked in the designated position, a small electrical fire started in the vehicle cab. He quickly informed the deck crew.

The response from the deck crew was immediate. A CO_2 extinguisher was used initially, followed by a fire hose, to quench the fire and cool the surrounding area. The master assessed the situation, and decided the fire brigade need not be called. He also ensured that the passengers were kept fully informed throughout.

When the fire had been extinguished, a small 'shunter' truck was sent on board to tow the fire-damaged lorry ashore.

The driver of the lorry suffered minor smoke inhalation. The ferry eventually sailed 10 minutes late.

The Lessons

This case is one in which the crew put their meticulously practised procedures into place, which led to a successful outcome. The lessons are therefore positives ones:

1. **Incidents such as this one can happen at any time where vehicles of unknown condition are loaded onto a ro-ro vessel. It is, therefore, imperative that crew are vigilant at all times, and make regular inspections of car decks, both before and during sailing, so that a small fire is not allowed to escalate into a larger one.**

2. **Any fire on board a passenger ferry can lead to panic and confusion among passengers if the crew do not respond effectively and professionally. By demonstrating their training in dealing with such an emergency, these crew members were able to reassure the passengers, maintain calm and prevent the outbreak of panic.**

   Keeping passengers informed about what is happening, as was done during this incident, will have the added benefit of eliciting a much more helpful response from them in the event of evacuation.

3. **The ultimate decision as to whether the fire brigade should be called to tackle a fire lies with the master. Remember, the fire brigade would rather arrive at the scene of a fire, and find it already extinguished, than deal with a far more serious incident – caused by hesitation on the part of the crew in seeking their help.**

What a Foul Up!

Narrative

A totally enclosed lifeboat was boarded by its crew and a number of others for a practice drill. All were on board with their seat belts secured.

Once everyone was ready, the cox'n pulled on the winch brake's remote release wire. The davit's arms began to swing out and the automatic gripes released.

The process continued without a hitch until the davit arms were fully swung out and the boat began to lower. The boat started to lean in towards the ship, its stern continuing to lower and its bows not moving. As lowering continued, the rotation increased until the boat was almost on its beam-ends and with its stern hanging down. At this stage the aft lower block came free from the suspension hook. Operation of the brake stopped, with the boat hanging from the forward suspension hook.

Some of those in the boat slipped involuntarily from their seat belts. Various pieces of gear broke free and tumbled about the boat's interior. There were a number of minor injuries.

The aft suspension hook was re-engaged and the lifeboat was safely lowered to the water. There was serious damage to the davit's arms, and the unit was taken out of service.

An investigation concluded that the ring on the released end of the forward gripe, instead of safely sliding over the lifeboat's canopy during lowering, had fouled on the gripe bobbin attached to the lifeboat (see figure).

The Lessons

1. This incident could have had much more serious consequences. It shows that even well maintained systems can suffer the most unexpected problems.

2. During practice launchings, it is prudent to have a person on deck who can ensure that all is running freely, and who is able to halt the operation in the event of problems.

3. If the gripe wire end rings are large enough to fit over an attachment on the lifeboat's exterior, be sure that eventually it will happen, and probably during launching. Consider changing the rings' dimensions or attachments so that fouling is impossible.

Who Put That There?

Narrative

Immediately after a ro-ro ferry, with 54 passengers and 40 crew on board, entered the approach channel of a port she routinely visited, she grounded at a speed of 8 knots. The ferry's draught was 5.8m, the charted maintained depth of the channel was 6m, and the height of tide was 1.42m. The approach channel was prone to silting, and a warning to this effect was shown on the appropriate Admiralty chart.

Fortunately, because the bottom was soft silt, nobody was injured and the ship was undamaged. She was refloated about 2 hours later on the rising tide.

The Lessons

1. When a channel of 'maintained' depth is shown on a chart, it is probably not unfair to assume that most mariners consider the depth shown to be reliable. Unfortunately, this is not always the case. Some areas are particularly prone to silting at varying rates depending on tidal and weather conditions. This can make it very difficult for port authorities to maintain channels to the depths advertised, and their failure to do so can spoil a master's day, particularly if no warning is given. Don't take maintained depths in channels, or at alongside berths, for granted; make sure you have the latest information from the port or harbour authority. Where doubt exists, at least proceed with caution.
2. Echo sounders appear to be used less and less, possibly due in part to the improved accuracy and reliability of both charts and navigation systems in recent years. When in restricted waters, however, particularly where survey information is old or scant, or where the nature of the seabed is known to change, it is foolhardy to ignore them. Take the opportunity to compare *actual* against *expected* depths. It costs nothing, and might prevent your aspirations becoming high and dry.
3. Warnings, cautions, and notes on navigational charts are there for a reason. Don't ignore them!

It Has Been Drained, But is it Dry?

Narrative

A 3,500 tonne ro-ro cargo vessel was on passage in restricted waters to carry out sea trials following her main engine being converted to run on gas oil. About 4 hours after leaving her berth, the fire detection system in the wheelhouse indicated there was a fire in the engine room.

The engine room was manned, and the chief engineer reported to the master within 5 minutes of the alarm sounding, that there was a fire in the economiser and that it was being attacked with hand-held extinguishers. The general alarm was sounded and the crew were mustered. It became apparent that the fire could not be controlled by hand-held extinguishers, and the master and chief engineer decided to use the CO_2 fixed fire-fighting system. With the master's permission, the chief engineer stopped the main engine and the vessel grounded lightly on the mud-lined shore.

Twenty five minutes after the initial alarm, the crew were all accounted for and the engine room was battened down ready for CO_2 flooding. The first charge of CO_2 was released and the fire brigade was called. Boundary cooling was established, and 10 minutes later, two of the fire officers boarded the vessel. A second charge of CO_2 was released as a precautionary measure.

Ninety minutes after the first release of CO_2, and on the fire brigade's advice, the engine room was opened up to allow ventilation of the space. A fire party in breathing apparatus entered the engine room after a further 40 minutes. They reported that the fire had been successfully extinguished, and 4½ hours after the initial alarm, the fire brigade confirmed that the engine room was safe to enter without breathing apparatus.

The vessel was towed back to her berth, where the cause of the fire was investigated. Since she had been converted to run on gas oil, there was

no longer any need to heat the fuel. This led to the thermal oil waste heat unit being drained and isolated, as it was no longer needed. The manufacturers stated that it was safe to operate with the unit drained and opened to atmosphere. This was done by removing the oil inlet and outlet headers at the bottom of the unit.

However, the horizontal tubes took the form of coils, so some thermal oil remained in the unit. When the exhaust gasses heated it sufficiently, this oil ignited.

The Lessons

1. **When taking equipment out of service, it is essential that all possible dangers are identified and eliminated. Had it been known that the tubes were coiled, it would have been clear that oil residues were likely. The unit could then have been flushed through. An assumption that the unit was fully drained led to a serious fire.**

2. **The fire was tackled quickly and effectively. The decision to use CO_2 was taken early enough to ensure the best possible outcome. As a result, there were no injuries and the damage was minor and local to the seat of the fire.**

3. **The assistance of the fire brigade was useful and very welcome. Not only were they able to give the master good advice, they also assisted with specialist equipment and in ensuring that the fire was fully extinguished.**

Beware of Berths that Dry Out

Narrative

A 58m length general cargo vessel entered a port on the north coast of France to load a cargo of stone. The vessel had used the port on many occasions in the past without problems. There was a high tidal range at the port, and the berth dried out at low water. Normally, the sandy bottom was level, but a westerly gale had blown into the harbour, which had caused sand to build up at the ends of the berth.

A substantial amount of cargo had been loaded by the time the vessel took the bottom, with the tide still falling. She broke her back. The double bottom was unaffected, but the deck plating crumpled around amidships when the hull sagged on the uneven surface. The ship's sides were crumpled in a "V" shape, with a deformation of about 200mm at the deck edge, tapering down to nothing at the double bottom.

The cargo was discharged, and when she floated she straightened out. Although the ship was damaged, it was considered safe for her to sail to a port of repair. This was reached without incident.

The Lessons

1. Using berths that dry out can be safe, but the hull must not be overloaded. In the case of a flat-bottomed vessel, the master should satisfy himself that the surface of the ground at the berth is fairly level, before heavy cargo is taken on board. This check is not so important with soft mud, but it could be crucial if the bottom is hard sand, as was the case with this accident.
2. When a vessel uses a port regularly it is easy to assume that everything will be fine. If the bottom is hard sand, don't make this assumption. If the flatness of a berth is in doubt, it should be allowed to dry out, and an inspection should be carried out before a vessel uses it to load heavy cargo.

Stay A Leading Light – Use Them!

Narrative

On arrival at her port of discharge, an oil tanker carrying about 3000 tonnes of gas oil was advised that the conditions were too severe to allow her to enter. The tanker's master, who had recently joined the ship and had never previously visited the port, decided to anchor in its approaches.

Early the next morning, after a smaller vessel had entered the port without difficulty, the harbour authority considered that the conditions had moderated sufficiently to also allow the tanker to enter. The wind at the time was onshore between 25 to 30 knots, with a moderate swell and a flood tide. It was dark.

After weighing anchor, the master, who was accompanied on the bridge by an AB helmsman, was advised by the pilot embarked in a cutter, that in view of the conditions, he would board at the harbour entrance rather than the normal embarkation point in the vicinity of the fairway buoy. He was also instructed to manoeuvre well south of the fairway buoy before making an approach. The tanker, however, initially passed to the north of the fairway buoy, and about 15 minutes later, was still about 0.5 cable north of the intended track of 236°, indicated by leading lights. At this point, the master altered course about 25° to port, to bring the ship further south. Although the tanker then crossed the intended track, course was not adjusted back to starboard, and shortly after, the tanker grounded just inside the harbour entrance.

She was later refloated on the rising tide, and there was no pollution.

The Lessons

1. Entering a port for the first time, without a pilot and in adverse conditions, while feasible, carries additional risks. If in doubt, don't do it. Nobody will thank you for trying, but getting it wrong. Equally, it would be prudent for harbour authorities to determine the master's experience before inviting him to enter what would normally be areas of compulsory pilotage.

2. Ignoring navigational advice given by port authorities can be perilous. Sometimes, such advice might seem irrelevant or unnecessary, but it is usually based on experience and the knowledge of local conditions; unless there are sound safety reasons for not doing so, such advice is best adhered to.

3. It is important that bridge organisation and manning is adjusted to meet the changing navigational situation. Passage through restricted waters, particularly without the assistance of a pilot, is usually very demanding and requires a master's unerring concentration. With the presence of numerous distractions on a modern bridge, this can only really be achieved if there are enough people available to share the load. Good bridge management is an essential requirement to keep any ship safe. Is yours up to scratch?

4. When operating in restricted waters, in adverse weather or strong tidal streams, the importance of the use of headmarks, transits, leading lights, and radar parallel indices, should not be underestimated. When applied correctly, these methods can provide a real-time indication of position relative to planned track, give a rapid assessment of the set and leeway induced by the prevailing conditions, and allow the ship to be navigated with great accuracy. Successful application, however, requires the methods in use to be continuously monitored, cross-checked, and practised. Sadly, however, with the advent of electronic charts, and the reliance on pilots, there is a tendency for bridge watchkeepers to dispense with leading lights and other visual pilotage techniques. Such skills are not purely the gift of pilots, so don't let them fade away.

5. Running a transit ahead, like most things, takes practice, and when left to their own devices, inexperienced officers are usually only on track when they cross it!

   Nothing can replace practical experience, but a few tips when running a transit are worthy of mention:

   - A quicker assessment of tidal set and leeway is usually achieved by getting on track early;
   - Take care not to overshoot; and
   - Beware of the fact that the sensitivity of transits, which is a function of the distance between the two marks, relative to your range from them, varies considerably.

Part 2 – Fishing Vessels

Having been asked to write this introduction to the fishing vessel section of the *Safety Digest*, it strikes me that many fishermen are unaware of the role that the MAIB carries out. The MAIB investigates accidents which occur in our industry, and produces a report of the accident so that we, as fishermen, may learn lessons to reduce the possibility of this occurring again in the future.

In this issue of the *Safety Digest*, you will read about a number of accidents and incidents which have occurred to all types of fishing vessels. In a number of cases here, a key area is stability. Stability is difficult for most of us to understand, but in some of the cases you are about to read, what becomes clear is that stability has been greatly affected by modifications. These changes sometimes occur over a period of time whereby the vessel has been constructed for one particular fishing pattern, and has changed to another. Other effects on stability can be the overloading of fishing gear on deck, along with the unwanted fastener/boulder which may occur at any time whilst fishing.

So what is stability in fishing vessels? Stability is the ability of your vessel to right itself to the upright position after it has been forced over by an external force. But if modifications are made to the vessel, these changes can severely restrict the vessel's ability to come to the upright position, and can, in extreme cases, cause the vessel to overturn.

So what can we, as fishermen, do to ensure the stability of our vessels? We need to ask advice from a suitably qualified person before we make any modifications to our vessels, no matter how small that change may be. We need to be aware of the capabilities of our vessels, and be prepared for the unexpected. Remember, stability cannot be measured, it needs to be calculated.

Take care when fishing, return home safely.

George Geddes

An experienced seine net and trawl skipper, who is also a representative of the Scottish Fishermen's Federation. George is currently a part-time instructor for the basic fishermen's safety courses, and has recently completed a diploma in Safety and Risk Management. He is skipper/owner of a 21m twin rig trawler working out of north east Scotland.

Modifications Result in Loss of Stability, Vessel and a Life

Narrative

A 10-metre vessel was single-handedly trawling for prawns. It was dark, and the weather was fine and clear with light winds.

While hauling, it became apparent that a heavy object had entered the net. The skipper tried to clear it by hauling on the dog rope, but this parted under load. He then wound as much of the net as he could on to the net drum and started to tow the heavy object towards port, where he intended to get help to remove it.

During the tow, the skipper established radio contact with the coastguard, but communications were suddenly lost. A search for the missing vessel was initiated.

The vessel was subsequently found on the seabed. The skipper's body was recovered from the wheelhouse, and the vessel was later raised and inclined to establish her stability at the time of her loss. The heavy object was found to be a large rock.

The inclining experiment, and its subsequent analysis, indicated that her inherent stability had been poor. The vessel had been modified extensively: the gunwale had been raised and a shelter and net drum had been fitted, all of which reduced her inherent stability. The result was that it would have taken little to capsize her so suddenly that the skipper did not even have a chance to get out of the wheelhouse.

The Lessons

1. Without a stability standard, adequate stability awareness, and knowledge of the loading limits of their particular vessel, skippers of fishing vessels under 15 metres in length are severely hampered in their ability to judge when it is safe to lift, tow or carry heavy loads.

   Knowledge of a vessel's stability and her loading limits is, therefore, an essential control measure aimed at reducing the risk of capsize. To this end, skippers should take advantage of the one-day safety awareness course offered by Seafish, and seek professional advice, particularly following any significant modifications.

2. The *Code of Practice for the Safety of Small Fishing Vessels* does not stipulate any stability requirements for fishing vessels under 15 metres in length. However, it does require the fitting of a bilge alarm, which provides early warning of flooding, and ensures those on board have time to react. This vessel did not have a bilge alarm. Therefore, her skipper would not have been automatically alerted to any ingress of water which would have affected the vessel's freeboard and stability.

Overloaded, Overdue, Over.....

Narrative

A 6.5m creel boat failed to return to port as planned. A search began, and she was found partly submerged several hours later. The vessel was recovered, but there was no sign of her crew of two. It was concluded that the vessel was lost because of poor stability caused by material alterations, overloading and water ingress.

During the creel boat's 25 years in service, substantial modifications had been made to her. In particular: the raising of gunwales, the fitting of a deck (which was not watertight), enlargement of the wheelhouse, the addition of an hydraulic pot-hauler and the fitting of ballast. All would have significantly changed her stability characteristics. The insertion of freeing ports above a non-watertight deck would also have increased the probability of water accumulating in the bilge.

The vessel had recently changed ownership, and the previous operator's maximum load on deck was sixty creels. At the time of her loss, she was carrying ninety.

The vessel was not fitted with a bilge alarm, and her electrical bilge pump was defective. Lifejackets were found in the vessel, but a liferaft was not carried.

Estimated loading condition after recovery

The Lessons

1. Most vessels are modified over the course of their time in service so that they keep pace with technology, are more efficient and comfortable, or as a result of a change in the type of fishing conducted. Consequently, some vessels have 'grown' considerably since build. However, any structural modifications have the potential to adversely affect a vessel's stability, which might not be obvious. So before making any significant alterations, such as adding a winch, extending a wheelhouse, fitting a deck and freeing ports, and adjusting ballast, it is always wise to seek the advice of a qualified person.

2. The overloading of small fishing vessels is an ever-present danger, and almost total reliance is placed on skippers' experience and knowledge of their boats to guard against it. However, after a change of ownership, in most cases a new skipper will not be familiar with how a vessel handles. It is therefore important, when buying a second-hand boat, that its maximum loading and limiting conditions be included among the information passed on from its previous operators. Without this, a skipper's assessment is reliant on trial and error. Unfortunately, some crews don't get a second chance when such assessments are misjudged.

3. In a decked vessel, the easiest way to ensure that an accumulation of water in the bilge does not pass unnoticed, is to fit a high level alarm. Physical checks of the bilge can tend to fall towards the bottom of the priority list when fishing, and even when automatic bilge pumps are working, they might mask, or not cope with, a serious ingress.

4. There will not always be time to grab and don a lifejacket when things go pear-shaped. Think about wearing them at all times when on deck, particularly when conditions are marginal.

5. Just because a vessel is not required to carry a liferaft, does not mean that her crew will never need one. If there is room to carry one, do so. It's not the regulators' lives which are at risk.

CASE 19

Too Much On Top

Narrative

The owner/skipper of a 10-metre steel fishing vessel operated her for several years as a prawn trawler. He then decided to convert her to cockle dredging for operations in local rivers and a large estuary.

For this conversion, he removed the trawl winch and fitted a large diesel-driven water pump, a suction pump, a powered riddle and an 'A' frame for handling the gear. The two pumps were mounted on deck, and the riddle on the port bulwark. These three items were of substantial weight. Some extra ballast was added in an effort to compensate for this topweight.

The vessel was operated with few problems for a couple of months by the skipper and one crewman.

On this occasion, the skipper agreed that a third person could join him for a day. The day went well, with a substantial catch of cockles. These were stowed in large bags, each holding an estimated one tonne. Two bags were stowed in the fish hold, three on deck and one on the fish hatch forward of the wheelhouse.

The skipper decided this was their limit, and hauled the dredging gear on board. The boat was in a narrow part of a river, and the skipper needed to turn her, to return to their landing quay.

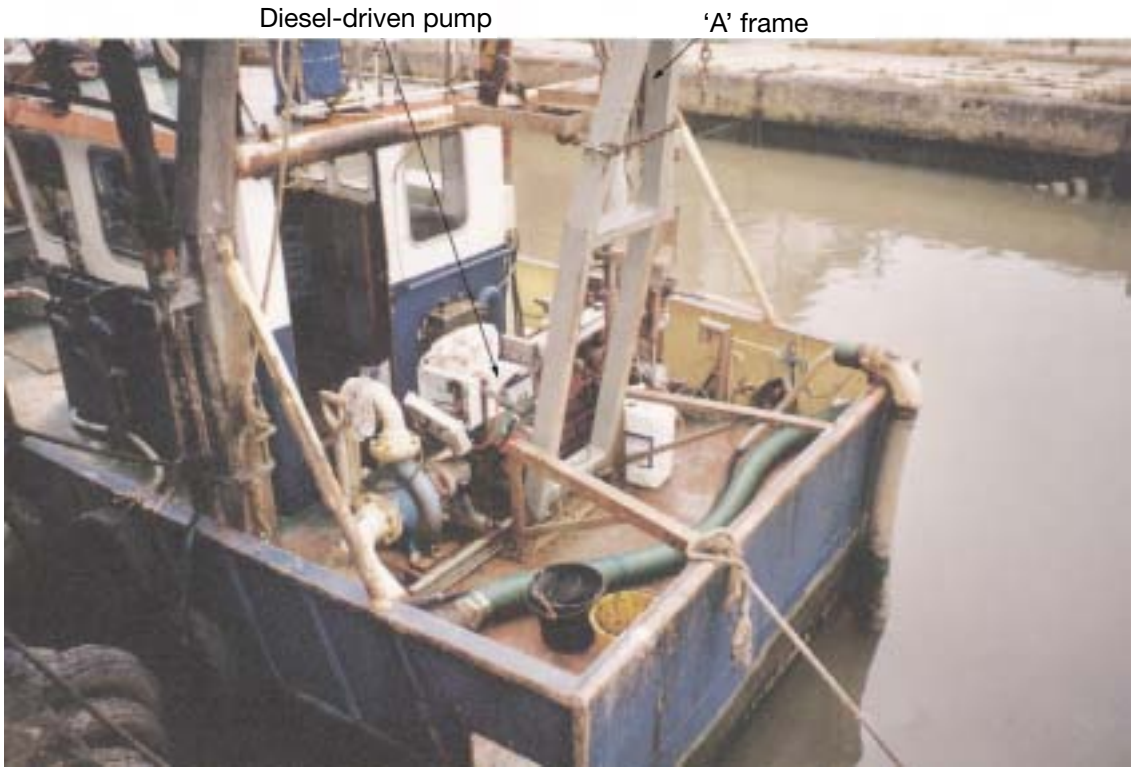
As he knocked the boat out of gear, to begin a three-point turn in the narrow river, the boat began to heel to port. This heeling continued. The three men realised something was amiss, and managed to jump into the water before the boat completely capsized.

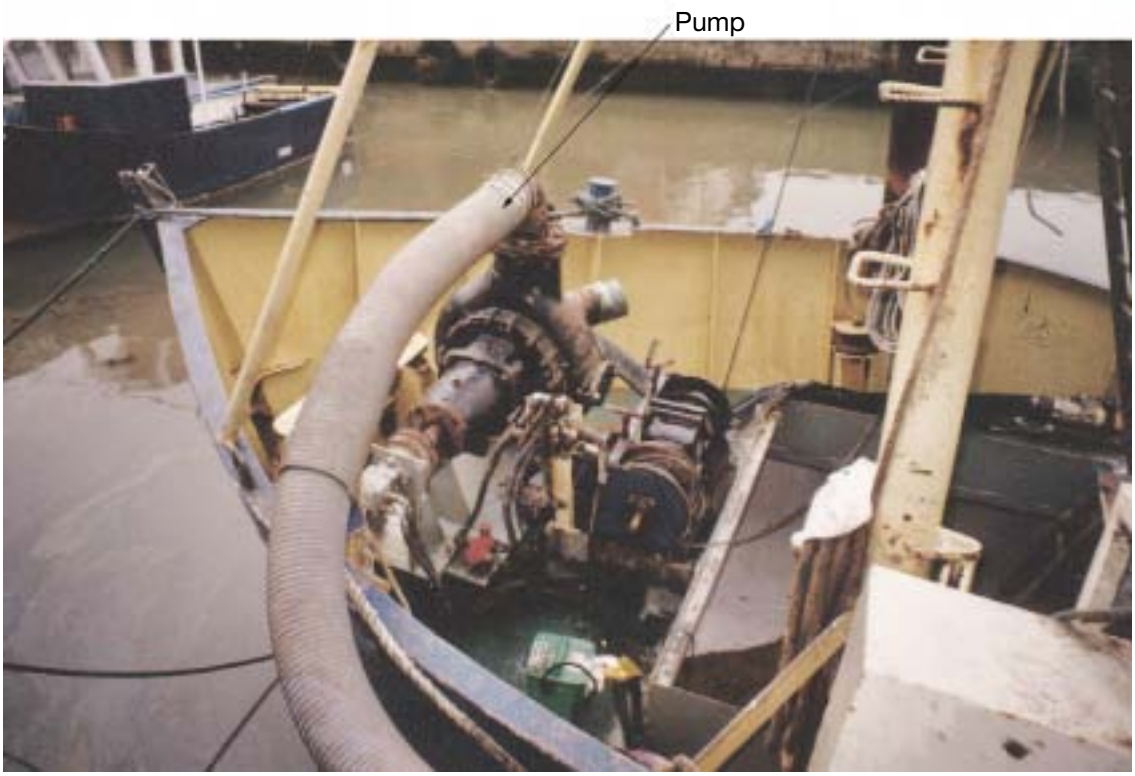
Fortunately, all three men managed to kick off their boots etc and swim to the shore. One managed to walk to a nearby house, where the emergency services were called. None suffered any serious injury.

The Lessons

1. **The weight of cockle bags on deck was substantial for a boat of this size. This topweight, coupled with the unknown effects of the modifications made to the boat, generated a condition where she had no reserves of stability. For boats of this size, which are not required to comply with any formal stability standards, it is vital that owners and skippers take great care when modifying and loading them, so that they retain some reserve of stability.**

2. **Fortunately, all three men were able to make their way to the bank of the river. In less friendly conditions they might have been less fortunate. Permanent wear buoyancy, that is comfortable to wear while working, can provide vital support in such circumstances. All fishermen should consider wearing such aids.**


Diesel-driven pump
'A' frame


Pump

Quick Action Saves Fishing Boat and Crew

Narrative

The skipper of a 22-metre fishing vessel was reading in his bunk at about 2130, when he noticed a strong smell of burning plastic. He quickly left his cabin and checked the engine room. Although the engine room was clear of smoke, there was a light smoky haze in the accommodation.

On carefully opening the galley door, the skipper saw that the area was full of smoke. He shut the door immediately, and raised the alarm by shouting for all the crew to get up and bring their lifejackets to the bridge. He told the cook to shut off the power to the cooker, and then went up to the wheelhouse. Once there, he again raised the alarm over the tannoy, and was met on the bridge by the rest of the crew. Not all had brought their lifejackets.

Having told the crew that there was a fire in the galley, he called the coastguard on Channel 16. The coastguard put out a "Mayday" distress call.

The smoke by that time was very heavy, and the cook shut the hatch down from the wheelhouse and checked that the entry to the forward shelter was shut.

An offshore stand-by vessel in the vicinity reacted to the "Mayday" and sent its fast rescue boat to the fishing boat, with 4 lifejackets and a breathing apparatus set. The stand-by vessel then came in close, and trained its fire monitors on to the hotspot on the lower accommodation.

The fire was brought under control, and the fishing vessel was able to return to port under her own power, having first evacuated three of the five crew members as a precaution.

Investigation showed that the fire had been started by a survival suit coming into contact with a 'black heater' in the drying room when the vessel had started rolling, about 30 minutes before the fire was noticed. This spread through a bulkhead to the galley area.

The Lessons

This incident shows how a difficult situation can be brought under control by clear thinking and quick action.

1. **By opening the galley door carefully, and only a little, the skipper prevented the fire from spreading, and ensured his own safety.**

2. **Immediately raising the alarm and instructing all the crew to muster on the bridge allowed further action to be taken once all the crew were accounted for.**

3. **Ensuring that all available hatches and openings were closed, contained the fire long enough for it to be brought under control.**

4. **The unguarded 'black heater' has since been fitted with a guard six inches all around it, and the bulkhead to the galley has been replaced by a steel one. Think about where *you* dry wet clothing.**

Winch Problem Leads to Capsize

Narrative

A large vessel was fishing to the west of Scotland. The wind was north-west force 3, there was a heavy swell, the visibility was moderate to poor in rain, and it was dark. A crew of six was on board.

In the late evening, the port fishing gear became snagged on an underwater obstruction. While trying to pull it free, the winches stopped. This effectively anchored the vessel to the seabed in the heavy swell, which caused her to take a large list to port. Because she was rolling either side of the port list, the port engine intakes went below the waterline. This, in turn, caused the engine room to flood. Between 5 and 10 minutes later, the vessel capsized to port.

After the winches stopped, all six hydraulic pumps that powered them were restarted, but before the load could be taken off the port winch, the system failed again. The computer-controlled winch system on the vessel was very complex. It has not been possible to identify clearly the reason why the winches stopped. However, had the emergency start been used, it is possible that the load on the port winch could have been released. Also, it was not necessary to re-start all six hydraulic pumps. Starting one of them that supplied the port winch might have been sufficient to release the load. However, there was very little time to consider the options, because the capsize and foundering were very rapid.

The brakes were set up so that they came on automatically when the winches stopped. The winch control system could have been configured so that the brakes stayed off. Had the safety brake been enabled, and worked as intended, it might have saved the vessel.

The engine intakes were low on the port side. Although this arrangement met the requirements of the regulations, these intakes should have been positioned higher up and/or further inboard to avoid the risk of downflooding.

Events happened so quickly that the crew did not have time to radio for help before they abandoned their vessel. Five of them successfully boarded the liferaft; tragically one man was lost. The five survivors were wet and very cold; it was crucial that they were rescued without delay. The EPIRB saved the day; the coastguard were able to pinpoint the accident, and immediately dispatched a helicopter which rescued the survivors.

Winch control panel

The Lessons

1. If your vessel is fitted with a complicated winch control system, be sure that you would know what to do if faced with this sort of emergency. If a safety brake feature is fitted, it should be enabled.

2. If your vessel is fitted with vulnerable engine intakes, be aware of the risk of downflooding. Such intakes should ideally be moved further up and/or further inboard.

3. The liferaft and EPIRB almost certainly saved five lives:

   - Without the liferaft, the five men would have found themselves in rough seas and darkness. Their survival time would have been severely limited.

   - The EPIRB alerted the coastguard and enabled the recovery to be initiated.

In cases like this, the value of such safety equipment is clearly demonstrated.

'Dodgy' Alarm, So No Warning

Narrative

A 9.9 metre length wooden stern trawler was operating with a crew of two. She left her home port in the early morning and, after steaming for about five hours, shot her gear. The weather conditions were very good.

After towing for about 1½ hours, the skipper, suspecting a problem with the gear, decided to haul it in. The gear was hauled on board and the cod end emptied on to the deck. The skipper's suspicion was unfounded; the gear was in good order and was shot again.

After gutting and boxing the small amount of fish caught, the crewman asked the skipper to turn on the deck wash water. The skipper did this by switching on the electromagnetic clutch of the deck wash pump from the wheelhouse console.

When the crewman reported there was no water coming from the deck wash hose, the skipper opened the engine room hatch in the wheelhouse to investigate. He immediately saw water halfway up the engine. This surprised him, as there had been no sound from the bilge alarm, all the electrics were still working, and during his last look into the engine room, about three hours earlier, he had seen no problem.

Inspection of the fish room confirmed that the flooding was widespread and serious.

After telling his crewman to remove his leggings and boots, and to fetch the lifejackets, the skipper called a nearby fishing vessel on the VHF radio, asking for assistance. The two men then launched and inflated their liferaft, and the crewman climbed on board. In the meantime, the skipper had broadcast a "Mayday". The floodwater on their boat had reached deck level.

Before any further assistance was required, the nearby fishing boat came alongside and took both the skipper and his crewman on board.

Not long after evacuating their boat, the two men watched it sink.

This was a well-maintained boat, and there was no obvious cause for the flooding. However, there is some suspicion that there was a failure of a flexible hose in the engine's seawater cooling system.

The Lessons

1. **The boat was fitted with a bilge alarm, but the last occasion the skipper had heard it sound was about a year before this accident. A routine for testing the alarm, before departure and during normal working conditions, would have allowed any defect to be detected and remedied as soon as it developed. Had the bilge alarm sounded early in this accident, it might have given the skipper time to take corrective action, such as closing seacocks.**

2. **This boat was not required to carry a liferaft by the code of practice governing its operation. However, the skipper prudently carried one on board, and had it serviced annually. It worked during this accident and, had the nearby fishing vessel been a little slower in coming to assist, could have proved vital to the survival of the two men.**

3. **Although the cause of the flooding has not been established, because of their age, some suspicion has fallen on the flexible hoses fitted to the engine's seawater cooling system. Flexible hoses have a limited life span and, where their use is unavoidable, best practice is to inspect them regularly, together with any worm drive clips used to secure their ends.**

CASE 23

A Fatal Override

Narrative

An 11-metre prawn trawler was normally operated by her skipper and a deckhand. However, on this occasion, the skipper was unable to employ anybody as a deckhand so decided to sail single-handed.

The vessel's layout was conventional: a fishing winch amidships, just aft of the forward wheelhouse, and a net drum mounted on a stern gantry. The winch and net drum were hydraulically-powered from an engine-driven pump.

The control levers for the winch and net drum were both self-centring, so whenever they were released, each returned to the 'stop' or safe position.

The skipper left his home port early in the morning and sailed for about an hour until he shot the gear. It was probably at the end of his first tow that he ran into trouble.

He hauled the gear until the doors were hung from the gantry. He then attached the bridle to the net drum, and began hauling to bring the net in. However, he latched the spring-loaded lever of the drum control into the 'haul' position, using a bent wire hook, so he could stand aft of the drum to guide the net on to it.

For some reason, he put his hand on to a swivel shackle on the bridle as it came on to the net drum; probably to lay the shackle flat. But his gloved hand became caught in the shackle and, as he was out of reach of the control lever, he was unable to stop the drum.

He was dragged around with the moving drum until he was covered by a number of turns of the bridle. The force in the bridle fatally crushed him.

Meanwhile, the vessel was still steaming under control of the autopilot. She slowly sailed on her pre-set course for several hours until she grounded on a headland. There she was found, with her engine still running and with the dead skipper horribly wrapped around the net drum.

The Lessons

1. **A fishing vessel of this size is required to operate under *The Fishing Vessels' Code of Practice for the Safety of Small Fishing Vessels Under 12 Metres in Length*. This Code requires that a risk assessment be performed on the operations carried out on board. In this case, no risk assessment had been done. Ideally, a risk assessment should have identified the unsuitability of this vessel for single-handed operation as a trawler.**
2. **A risk assessment should also have shown that the self-centring control levers of the net drum and the winch were critical safety devices, and essential to the safety of those on board. Overriding these safety features completely removes a vital control measure, makes a nonsense of any risk assessment performed, and places crew in serious danger.**

Part 3 – Leisure Craft

Learning by personal experience is probably the best way of retaining knowledge and skills. However, no sensible recreational skipper would deliberately put either themself, or their boat, at risk in order to learn what actions to take when either life or their boat is in danger.

This unique contribution that the *Safety Digest* makes to avoiding mishaps and accidents, is that we can all learn from the properly documented and analysed experiences of others.

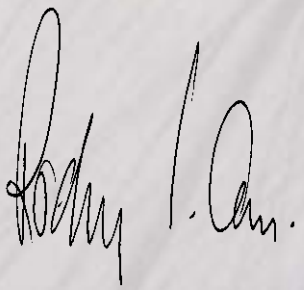
Not all incidents can be avoided; using the sea and inland waters always has a certain element of risk attached to it. Indeed, it is the proper management of those risks that attracts many people to both the freedoms and responsibilities associated with all forms of boating.

The RYA believes that a lifelong commitment to learning and, when necessary, training, should be an integral part of every skipper's mindset. Safety at sea is not just a list of equipment on a properly maintained vessel. It is a "golden thread" linking all aspects of maintaining, equipping and, most of all, skippering a small boat.

The value judgments that a good skipper or crew apply to passage planning, navigation or seamanship can be critical in ensuring a safe passage. Complacency, particularly that borne out of an over familiarity with a particular boat or venue, can become an infectious attitude that eventually leads to sloppy practices and accidents.

The lack of awareness of the needs and requirements of other water users is a constant reoccurring theme in these reports. It is every skipper's responsibility to be familiar with the key provisions of the collision regulations, particularly those associated with large commercial vessels.

All recreational boat skippers need to assess whether their boat and equipment is appropriate for the planned voyage, use their judgment and skill in managing their boat and crew to best effect, and plan to be self reliant and resourceful if the unexpected does happen.



Rod Carr, RYA Chief Executive

Rod Carr has been Chief Executive of the RYA since December 2000. Among his many sailing achievements, he was Crew Boss for the Admirals Cup campaign in 1981 on board Yeoman, he coached the Olympic team for the Los Angeles games in 1984, the Seoul and Barcelona Olympics in 1988 and 1992 before being appointed overall team manager for the Savannah games in 1996. He was appointed RYA Racing Manager in 1997.

Catamaran Capsize in Solent

Narrative

A catamaran was being sailed by her new owners who had taken delivery from Portsmouth. The skipper and three crew were experienced and were wearing suitable clothing for a blustery April evening. The boat was equipped with VHF radio and a good selection of emergency equipment, although no EPIRB was carried.

It was getting dark, and with the wind blowing 20 to 25 knots from SSW, the crew were sailing under a double-reefed mainsail and reefed headsail. They tacked on to starboard and soon afterwards an unusual wave pattern hit the weather hull, reported to be travelling against the direction of the wind and swell. It lifted the hull so far that the boat lost stability and capsized.

The catamaran inverted almost immediately, leaving the crew to find safety on the upturned hulls. Because the capsize had happened so quickly, there had been no time to retrieve the 'grab-bag' containing flares and other equipment. The VHF was now out of action, as well as being inaccessible, and the mobile telephones were down below.

Skipper and crew had no option but to huddle together for warmth, and hope for a rescue.

Luckily, they were less than a mile offshore from Stansore Point in the Solent, but it was now completely dark.

It was not until about 0700 the following day, as it grew light, that their distress signals (raised and lowered arms) were spotted from the shore and the alarm was raised. All four were taken off by the inshore lifeboat, and taken to hospital suffering from mild hypothermia. Fortunately, all made complete recoveries.

The Lessons

1. **The importance of correct clothing for the conditions cannot be over emphasised. All four members of the crew were wearing thermal underclothing, midlayer garments, as well as heavy weather jackets and high trousers. They were also wearing lifejackets and harnesses. Despite low sea and air temperatures, all four survived eleven hours on the upturned hulls relatively unscathed.**

2. **Locate the grab-bag somewhere so that it can be reached if the boat becomes inverted. This is obviously particularly important with a multi-hull, which, once inverted, will stay inverted.**

3. **An EPIRB mounted in the cockpit would have raised the alarm within minutes of the capsize, and would have spared the crew a long, cold and extremely uncertain night.**

4. **The skipper told the MAIB that he was grateful that they had all eaten a good meal before departure, and had stayed away from alcohol. He also highlighted the importance of keeping morale high and "believing in the rescue".**

Out of Sight, Out of Mind

Narrative

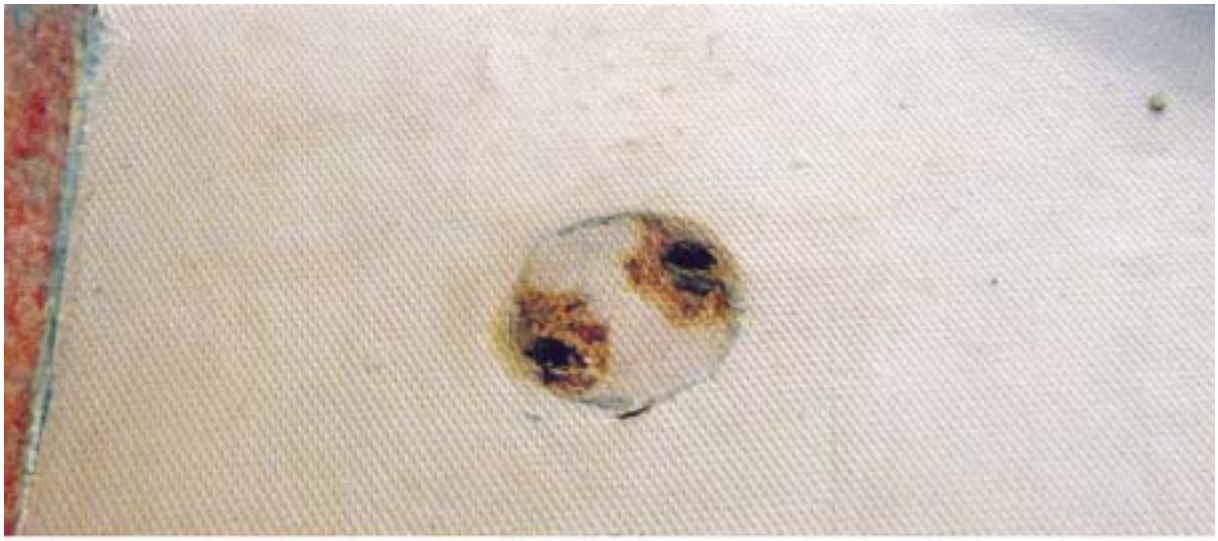
A family hired a 13 metre-long wooden motor cruising boat for a week's holiday on the Norfolk Broads. The boat had nine berths and a displacement of about 8 tonnes.

The family sailed downstream on the ebb tide and approached a closed swing bridge. Because they were towing a dinghy with a mast too high to pass under the bridge, three long blasts, the signal required for the bridge to be opened, were given. However, on closer approach, it was obvious that the bridge was not going to open in time. The person in control of the boat had to decide quickly whether to let go the dinghy or to go alongside the jetty adjacent to the bridge. He chose the latter. On approaching the jetty at some speed, one of the family's young sons jumped ashore holding a rope, which had been made fast to a metal cleat attached to the deck of the boat, and put a few turns around a wooden bollard on the jetty. The intention was to use the rope to swing the boat's head into the ebb tide before making her fast alongside. The young man was bent down near the bollard as the tension came on to the rope. The momentum of the boat, enhanced by the tidal current, came to bear on the metal cleat which broke free of the deck and flew back along the line of the rope. The cleat struck him in the face with great force. He suffered severe injuries.

An inspection of the metal cleat found that the two mild steel holding-down bolts were severely corroded. One of them had failed some time before the accident, the other one had failed because it could not take the force of the rope under tension.

The boat owner had no set maintenance programme for his boats, and did not look at fittings on a regular basis. The last time the bolts had been inspected and replaced was 8 years before the accident.

View from under sheared bolts before removal



View from above

Above view of adjacent cleat (incident cleat would have looked exactly like this)

The Lessons

1. Boat owners should ensure regular servicing procedures for all equipment on board are in place. That includes "standing" equipment, integral parts of which cannot be seen without dismantling. In a salty atmosphere, mild steel bolts should be visually inspected annually and, if necessary, replaced every two years. Better still, stainless steel bolts should be fitted.
2. When berthing a boat, it is preferable to turn her to stem the stream before manoeuvring alongside, as she will then be under easy control due to the braking effect of the current.
3. Always be aware of the hazards involved in berthing, especially from ropes and wires coming under tension, and the need to maintain a safe distance from them.

Early Warning Headaches

Narrative

Four members of a family were on their 15 tonne, twin screw motor yacht for a winter holiday. She was berthed at a marina. It was cold, so they turned on the oil-fired cabin heater during one evening.

While the family was having an evening meal, two of them complained of feeling unwell. It was suspected that they were suffering from the early stages of 'flu and they went to bed with headaches and sore throats. The cabin heating was turned off overnight, and all felt fine the next morning.

The following evening, the heating system was again used. This time, all four members of the family began to feel unwell. It was at this stage that suspicion fell on the heating system.

These suspicions were confirmed when a professional examination showed that there were various defects which allowed exhaust gases from the heater to be drawn into the cabin.

It is most fortunate that nobody suffered anything worse than a headache. Fatalities from carbon monoxide poisoning could so easily have resulted.

The Lessons

1. **A simple carbon monoxide detector in the cabin could have given an early warning of the problem.**

2. **In the absence of a detector, complaints of headaches or sore throats from anybody on board should be taken seriously when any gas or oil-fired cabin heater is in use. It is better to turn off the heater, and shiver, than to suffer fatalities.**

3. **Because of the dangers that may be caused by poor or defective installations, it is always prudent to use qualified and experienced personnel to install and routinely check these systems to ensure safe operation.**

Lookout! What Lookout?

Narrative

A yacht, under sail, was crossing the English Channel, which is a busy waterway requiring increased levels of vigilance regardless of the prevailing weather conditions. It was daylight, and the weather was fine with good visibility. A cargo ship was seen approaching from the starboard side, and a series of compass bearings was taken, which confirmed a risk of collision.

As the ship closed, the yachtsmen became concerned and called the ship on VHF radio Channels 16 and 13, without response. No avoiding action was taken by the ship, and the yacht finally hove to, resulting in the ship passing ahead at a range of about 0.25 mile.

Those on the ship were unaware of the incident.

The Lessons

Sadly, this is not an uncommon story.

It should never be assumed that a ship will automatically keep out of the way of a vessel under sail. In this case, the yachtsmen correctly took a series of compass bearings to ascertain if a risk of collision existed. They then continued to monitor the situation, and took appropriate action to avoid a collision when it became apparent that the ship did not intend to do so.

Following this incident, the MAIB held discussions with the merchant vessel's company. As a result of these discussions, the ship's master will ensure that, while transiting the area in the future, VHF radio controls are correctly set, watches are doubled, and an additional lookout is posted forward.

This article re-emphasises the importance of notifying the MAIB of incidents and accidents. Only by receiving notification, can the MAIB take action by suggesting improvements to safety and passing the lessons on to others. Our role is to encourage discussion, which, by increasing awareness, hopefully then reduces the risk of a recurrence.

- **We do take note of incidents which are reported to us.**
- **And we do endeavour to implement and follow up any recommendations to emerge as a result.**
- **But we need your help to do this.**

MAIB SAFETY BULLETIN 1/2004

Near lethal use of CO_2 onboard fishing vessel

30 January 2004

Background

At 2300 on 29 January 2004, a twin rig 23.92 metre trawler sailed to her fishing grounds.

The vessel had been towing her twin rig gear for about 3 hours when the skipper saw smoke coming from the outlet of the engine room exhaust ventilator. He went to the engine room immediately, where he discovered a fire. The skipper attempted to isolate the fuel systems, but without success. He then transmitted a "Mayday". About 30 minutes into the incident, he tried to operate the fixed CO_2 system. However, this failed because the system had been badly maintained, and the crew's knowledge of the operating procedures was, at best, superficial. At about this time, smoke from the engine room began to reduce, and the skipper was under the impression that CO_2 had been successfully discharged. A short time later, he, together with the ship's engineer, entered the engine room to see if the fire had been extinguished.

In this case, the fire died out without the use of the CO_2. However, the outcome could have been very different, and this case highlights the need for effective maintenance and testing, and knowledge of how to use the system.

Even more importantly, the skipper and ship's engineer were unaware of the potentially lethal dangers they faced when they re-entered the compartment. Had the CO_2 system been successfully discharged, the engine room would still have contained dangerous levels of CO_2 at this time, and it is highly likely that the decision to enter could have resulted in the death of both men.

Safety Recommendations

Skippers and crews are reminded that the Regulations require that all crew onboard UK registered fishing vessels have completed the compulsory one day "Fire Prevention and Fire-Fighting" training course. This course can be arranged by contacting SEAFISH on 01482 327 837.

In the event of a fire in the engine room, skippers and crews should ensure that they are fully conversant with the operation of the remote controls for the isolation of fuel oil, hydraulic oil and ventilation systems from the space. They must also have a good understanding of the operation of fixed CO_2 fire extinguishing systems.

In particular:

1. Whenever it has been necessary to release CO_2 into the engine room to extinguish a fire, ventilation of the space should not be resumed until it has been confirmed that the fire is out and the space has sufficiently cooled to prevent re-ignition.

2. Thereafter, entry into a space that has contained CO_2 should only be attempted by personnel using breathing apparatus. If breathing apparatus is not carried on board, and it really is impossible to wait for assistance from ashore, entry should only be attempted when the space has been thoroughly ventilated with clean air, and all residues of CO2 have been removed. It is strongly recommended that this should include the need to obtain expert advice from ashore before any attempt at re-entry is made.

Additionally, all fishing vessel skippers and crews are recommended to:

1. Ensure remote controls for fuel oil and hydraulic pumps, quick closing fuel oil valves and closing devices for ventilators, emergency stops for ventilation fans and CO2 fixed fire-fighting systems are tested regularly and maintained in good order.

2. Ensure clear instructions for operating CO2 extinguishing systems are displayed near the distribution control valves and near the gas cylinders.

3. Ensure audible alarms for warning personnel within the engine room, that the CO2 fire extinguishing system is about to be operated, are regularly tested and maintained in working order.

Preliminary examinations started in the period 01/11/03 – 29/02/04

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	Type of Accident
29/11/03	*La Belle Trois*	Fishing vessel	UK	15.59	Fire
14/07/03	*Lord Nelson*	Commercial sail training vessel	UK	368	Hazardous inc.
07/12/03	*Onward Star*	Fishing vessel	UK	39.53	Acc. to person
08/12/03	*Dart 9*	Ro-ro cargo	Bermuda	22748	Acc. to person
08/12/03	*Nora*	Dry cargo vessel	Estonian	2351	Acc. to person
27/12/03	Unnamed speedboat	Pleasure craft	UK		Missing vessel
28/12/03	*Reliance*	Yacht	UK	—	Capsize/Listing
04/01/04	*Telesis*	Fishing vessel	UK	20.05	Hazardous inc.
04/01/04	*Amenity*	Tanker	UK	1453	Hazardous inc.
05/01/04	*Ann Marie*	Fishing vessel	UK	5.02	Flooding
07/01/04	*Roseanne* *Sven Dede*	Fishing vessel Dry cargo	UK Antigua Barbuda	9.94 3815	Hazardous inc. Hazardous inc.
22/01/04	*Sea Riss*	Dry Cargo	Netherlands	1595	Fire
31/01/04	*Adamant*	Crewboat, twin-hull	UK	134	Collision
02/02/04	*Aalskere*	Fishing vessel	UK	242	Acc. to person
13/02/04	*Transcend*	Fishing vessel	UK	48.86	Fire
25/2/04	*Tian Tong Feng*	Bulk carrier	Hong Kong	39042	Grounding

Investigations started in the period 01/11/03 – 29/02/04

Date of Accident	Name of Vessel	Type of Vessel	Flag	Size	Type of Accident
01/11/03	*Donald Redford*	Dredger	UK	681	Contact
03/12/03	*H.C. Katia*	Passenger ferry	UK	186	Contact
29/01/04	*Scot Venture*	Dry Cargo	UK	2594	Hazardous inc.
30/01/04	*Elegance*	Fishing vessel	UK	357.00	Fire

APPENDIX B

Reports issued in 2003

Amber – loss of fishing vessel in the Firth of Forth on 6 January 2003 with the loss of one life
Published 23 October

Arco Adur – investigation of a fatal accident on the River Medway on 25 February 2003
Published 25 September

Ash/Dutch Aquamarine – collision between mv *Ash* and mv *Dutch Aquamarine* in the SW lane of the Dover Strait TSS, with the loss of one life, on 9 October 2001
Published 20 March

Bro Axel/Noordhinder – near miss between *Bro Axel* and *Noordhinder,* and the subsequent grounding of *Bro Axel* at Milford Haven on 5 December 2002
Published 16 September

Claymore – investigation of the entanglement in moorings, St Margaret's Hope, on 11 March 2003
Published 3 October

Diamant/Northern Merchant – collision between vessels 3 miles SE of Dover on 6 January 2002
Published 4 April

Flamingo – capsize of fishing vessel east of Harwich on 7 July 2002
Published 12 June

Jambo – grounding and loss of the Cypriot-registered general cargo ship off Summer Islands, West Coast of Scotland on 29 June 2003
Published 17 December

Kirsteen Anne – loss of vessel at Firth of Lorn on 31 December 2002 with the loss of her two crew
Published 31 July

Kodima – cargo shift, abandonment and grounding in the English Channel on 1 February 2002
Published 21 January

Marbella – collision between UK-registered fishing vessel and offshore platform in the Rough Gas Field about 25 miles south-east of Flamborough Head on 8 May 2002
Published 26 April 2003

Maria H –vessel striking the Keadby railway bridge on 29 May 2002
Published 28 March

Nedlloyd Vespucci/Wahkuna – collision between container ship and yacht in the English Channel on 28 May 2003
Published 19 December

Norsea – fire in the aft engine room of ro-ro ferry on 2 September 2002
Published 30 June

Nottingham Princess – investigation of *Nottingham Princess* striking Trent Bridge, Nottingham, on 15 November 2002
Published 22 August

Ocean Star – failure of a warp block on board the UK registered fishing vessel north of the Shetland Islands, resulting in one fatality on 26 November 2001
Published 13 May

Osprey – fatal accident to a man overboard from the fishing vessel in Lochinver Harbour on 20 April 2002
Published 3 February

P&OSL Aquitaine – investigation of a fatal accident during a vertical chute evacuation drill from the UK registered ro-ro ferry *P&OSL Aquitaine,* in Dover Harbour, on 9 October 2002
Published 25 July

Portsmouth Express – wash wave incident off East Cowes on 18 July 2002
Published 3 June

Pride of Bath – investigation of a barbecue fire in the galley of *Pride of Bath* on the River Avon, Bath on 20 July 2002
Published 25 February

Pride of Portsmouth – collision between *Pride of Portsmouth* and *HMS St Albans*, Portsmouth Harbour on 27 October 2002
Published 5 August

Pride of Provence – contact between the vessel and The Southern Breakwater, Dover Harbour eastern entrance, on 18 April 2003
Published 13 November

Pride of the Dart – grounding of the class VI passenger vessel on Mew Stone rocks near the entrance to the River Dart on 28 June 2002
Published 30 April

QE2 – flooding of aft engine room of passenger cruise ship *QE2* on 21/22 May 2002
Published 31 March

QE2 – escape of steam and hot water on board *QE2* in mid-Atlantic, resulting in one fatality on 23 June 2002
Published 8 July

Radiant – capsize and foundering about 45 miles north-west of the Isle of Lewis, with the loss of one life on 10 April 2002
Published 24 January

Solway Harvester – summary report on investigation of the capsize and sinking 11 miles east of the Isle of Man on 11 January 2000, with the loss of seven lives
Published 13 June

Stena Explorer – fire on board HSS *Stena Explorer* entering Holyhead, 20 September 2001
Published 17 February

Tullaghmurry Lass – sinking of fishing vessel *Tullaghmurry Lass*, with loss of three lives, in the Irish Sea on 14 February 2002
Published 3 February

Annual Report 2002 Published June 2003

Safety Digest 1/2003 Published April 2003

Safety Digest 2/2003 Published August 2003

Safety Digest 3/2003 Published December 2003

Timber Deck Cargo Study Published August 2003

A full list of all publications available from the MAIB can be found on our website at **www.maib.gov.uk**

APPENDIX C

Reports issued in 2004

Breakaway 5 – investigation of the capsize of the hire boat, on the Norfolk Broads, resulting in one fatality, 19 July 2003
Published 12 February

Elhanan T – investigation of the flooding and foundering of the fishing vessel east-north-east of Fraserburgh, 14 August 2003
Published 4 March

Trident VI – investigation of grounding of the inter-island passenger vessel off Herm Island, near Guernsey, in the Channel Islands, 23 August 2003
Published 30 January