Marine Accident Investigation Branch (MAIB) - Safety Digest 02/1997

Contents

Part 1 - Merchant Vessels

The accidents included in this section are representative of the many reported to the MAIB every day. Although no specific trends are discernible, we have grouped together some reports which highlight current concerns such as sleeping on watch and accidents to crew members working on the vehicle decks of Ro-Ro ferries.

Because the lessons to be learned from marine accidents are international in nature, we have also included reports from two of our sister organisations, the National Transportation Safety Board in Washington, USA, and the Transportation Safety Board of Canada. The texts are a précis of the original drafts but MAIB comments have been added. It will be noted that vessels' names have been given. This is standard practice in both countries.

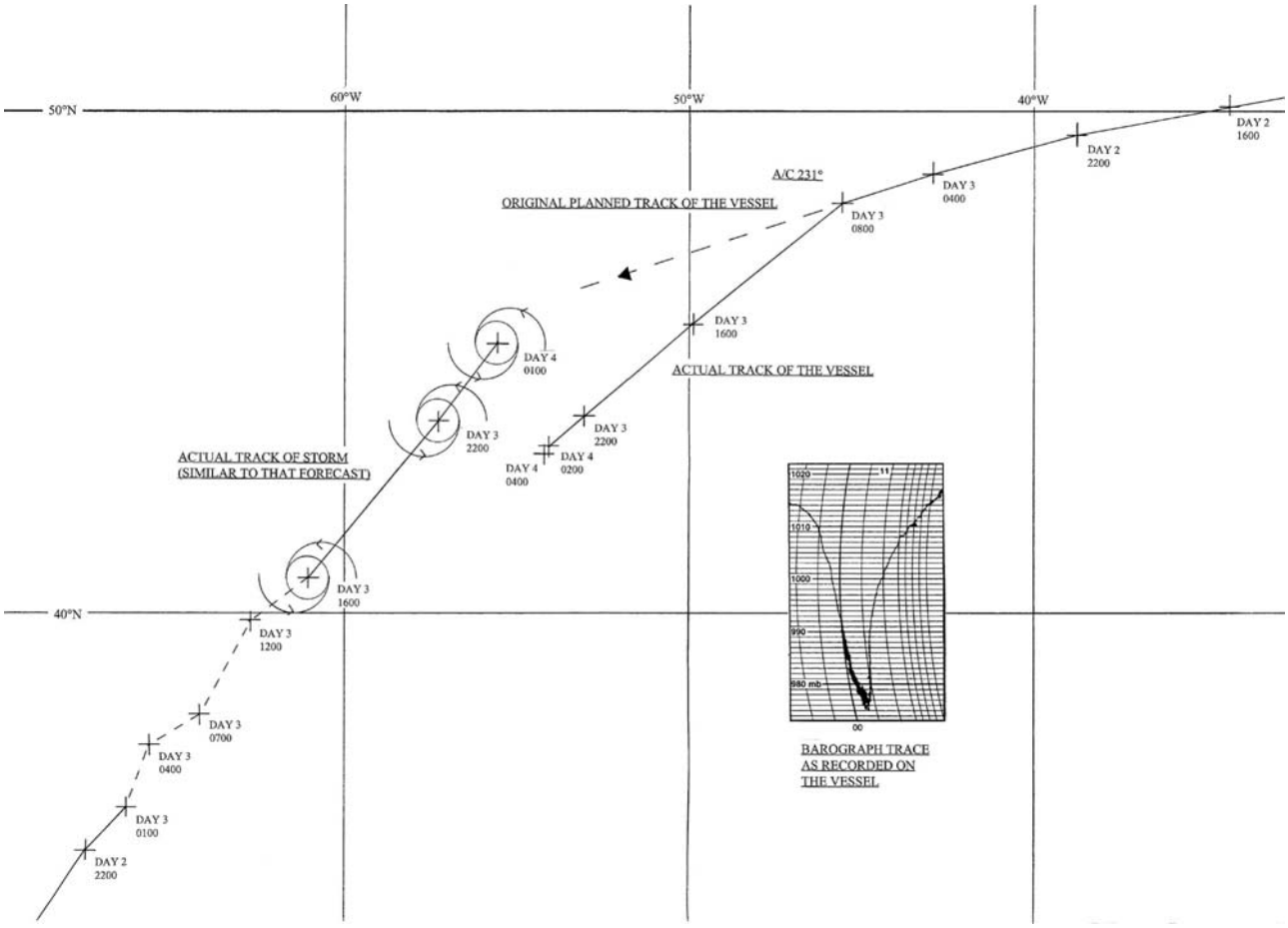
A report from the Southampton Harbour Master of an "almost-accident" involving a VLCC has been included as it shows how disaster can be avoided with careful passage planning and appropriate precautionary measures.

The MAIB often receives reports of incidents stemming from material failures from which many useful lessons are learned by the way the consequences are handled. We notice, however, that the cause of the original failure is either never properly investigated or is not reported. A main propulsion failure or a steering breakdown in the open sea is sometimes no more than an irritant. The same thing occurring in confined waters or when being set onto a lee shore in a gale is a potential disaster. The MAIB stresses the importance of always investigating the causes of such breakdowns and reporting the results. By doing so, design faults or other shortcomings can be identified and corrective action taken. We include one or two reports of incidents which stem from unresolved mechanical or electrical failures.

1. Passenger ship suffers damage in hurricane

Narrative (Times are Ship's Time)

A large passenger ship left a European port in September for an Atlantic crossing. During the passage it became clear that the intended track of the vessel and the predicted track of a hurricane were convergent. Weather forecasts predicted hurricane force winds out to 130 miles and storm force winds out to 275 miles from the storm centre in the south-east quadrant. The hurricane was travelling at about 30 - 35 knots to the north-east. See Figure1.



At 0800 on the third day of the passage, when the storm was about 1000 miles to the south-west, the Master decided to take action to avoid the storm centre. The vessel was making about 28knots on a west-south-westerly course. After discussing the situation with his senior bridge watch keeping officers the Master decided that the vessel's course should be altered 20° to port. The new course was intended to take her about 120 miles to the east and south of the predicted centre of the storm.

Very strong winds were expected during the following night while the storm passed to the west and north of the vessel. Although an uncomfortable night was predicted, it was thought that the speed of this large well-found vessel would be affected for a short time only as the hurricane would pass at a relative speed of about 60 knots. Some delay in the vessel's schedule was anticipated but the proposed course of action was considered sufficient and that any interruption to the voyage would be minimised. At 0930 the passengers were informed, over the public address system, to expect heavy weather during the night and were advised not to go out on deck. At this time the vessel was moving easily in a slight to moderate sea and low swell. The wind was southerly Force 4 and the vessel was still making full service speed.

By 2100 the barometric pressure was falling rapidly and the wind had backed from south to south-south east and increased to gale Force 8. At 2130 the Officer of the Watch reduced the vessel's speed to about 26 knots but maintained a course of231°. Two hours later the vessel's anemometer was carried away by the increasing force of the wind and one of the radar scanners stopped turning.

At midnight the wind was recorded as hurricane force from the south-south east. The course being steered was still231°. The centre of the storm was now about 135 miles away to the north west of the vessel and, although a speed of 23 knots had been made good over the previous hour, the sea

conditions had become every rough. In the circumstances the Master slowed the vessel to minimum steerage way while the storm passed. The course of 231ºwas maintained throughout.

Over the next two hours, and as the wind veered to the south-west, the vessel encountered very large seas of 10 to 15metres in height, many of which broke over the fore deck. Wind speeds in excess of 100 knots were estimated. At 0210 a very large wave, assessed to be approaching 30 metres in height, was encountered. It broke heavily onto the fore deck setting down a large part of it by about 0.5 metre and causing other damage. The damage control routine was set in motion and temporary repairs were swiftly carried out.

By now the storm was quickly tracking away from the vessel to the north-east and the conditions began to moderate. The vessel's course was altered towards her destination and the speed gradually increased. By 0900 she was able to make over 20 knots and, by about 1700, had returned to full service speed.

The vessel arrived safely at her intended destination having been delayed by approximately 8 hours.

From data collected from weather buoys in the vicinity of the vessel, the Canadian Forces Meteorological and Oceanographic Centre was subsequently able to confirm the wave height as nearly 30 metres. They were also able to provide a possible explanation for the phenomenon that some of the waves in the right or easterly semicircle of the storm were, apparently, travelling at nearly the same speed and in the same direction as the storm itself. Thus a situation had been created where those waves had virtually unlimited fetch.

The Lessons

1. The Mariner's Handbook contains sound advice for avoiding or otherwise coping with a tropical revolving storm. In the North Atlantic such storms are called hurricanes. Although originally written many years ago when ships were generally smaller and less powerful, the advice is just as relevant today and remains applicable to large well-found vessels. In accordance with that advice, early action to stay at least 250 miles from the centre of the storm would have been prudent.

2. In any case, by about midnight, when the situation had deteriorated to an extent that minor damage was being caused and hurricane force winds were being experienced, it would have been prudent to have steered a course away from the storm in accordance with the advice given in The Mariner's Handbook.

3. This accident was caused in part by overconfidence in the vessel's ability to withstand the conditions. In this case it was combined with an underestimation of the conditions that might be encountered and the desire to meet a scheduled arrival time or, at least, minimise delay. Good and prudent seamanship dictates that mariners should not underestimate the power and unpredictability of the sea. This is especially true if entering the "dangerous" semicircle of a tropical storm.

2. Over-reliance on integrated navigation system led to grounding of cruise vessel

This summary is based on a report issued earlier in the year by the US National Transportation Safety Board. It is included here with their kind permission.

Narrative

On the evening of 10 June 1995, the Panamanian registered passenger vessel ROYAL MAJESTY grounded on Rose and Crown Shoal about 10 miles east of Nantucket Island, Massachusetts. The vessel, with 1,509 persons on board, was en route from St Georges, Bermuda, to Boston, Massachusetts.

About an hour after leaving St Georges the Global Positioning System (GPS) antenna cable became partly disconnected causing the GPS to switch to dead reckoning mode. Nobody noticed. The auto-pilot continued to react to the information derived from the GPS. Thus the set of the vessel, caused by wind, current and sea conditions, was not detected and allowed for by the system. The fault with the GPS, and the fact that the vessel was not in the position indicated by the integrated bridge navigational system, remained unnoticed by the watch officers during the 34 hours prior to the grounding.

Initial attempts to re-float the vessel were unsuccessful while deteriorating weather and sea conditions prevented the evacuation of passengers and crew.

On 11 June, ROYAL MAJESTY was re-floated with the aid of five tugs. Initial damage surveys revealed deformation of the vessel's double bottom. However, no penetration or cracking of the hull was detected, and no fuel oil had been spilled. The US Coast Guard gave the vessel permission to proceed to Boston to disembark the passengers. She arrived there safely on 12 June.

Although there were no injuries as a result of this accident, the costs of repairs to the vessel and lost revenue were estimated at about US $7 million.

The Lessons

This was a well found vessel with fully qualified and experienced bridge watch keepers. Like most, if not all, passenger liners the ROYAL MAJESTY was equipped with modern navigational aids including GPS, which is capable of determining a vessel's position with great accuracy.

1. Despite their experience and qualifications the watch keepers remained unaware of the increasing deviation from the planned track in the 34 hour period after leaving Bermuda.

General causal factors in the grounding include:

- over-reliance by watch keeping officers on the automated features of the integrated bridge system;
- inadequate training in the technical capabilities and limitations of the integrated bridge system;
- poor navigational watch keeping practices in general.

Specific factors include:

- the routing of the GPS antenna cable, which made it vulnerable to damage;
- the fact that the echo sounder alarm had been set to zero depth;
- deficient monitoring of the status of the GPS;
- no cross-checking of the GPS derived positions by watch keepers;
- sole reliance on the position-fix alarm for warning of deviation from the vessel's intended track;
- the configuration of the integrated bridge system which neither recognised nor allowed for the fact that the GPS had switched to dead reckoning mode. Its design did not adequately incorporate human factors engineering;
- the remoteness of the GPS receiver, and the short duration of the aural alarm which sounds when switched to the dead reckoning mode, contributed to the failure of the watch keepers to notice the change.

Acknowledgement to US National Transportation Safety Board

2. **MAIB Comment**. Modern navigation aids can fail; sometimes without being noticed by the operator. A fundamental rule of safe navigation is to always check the primary method of navigation by an independent source. Radio aids, astro-navigation, visual fixing and use of the echo sounder are all available to the conscientious navigator. Special care is needed when making a landfall.

3. Vessel runs aground after auto-pilot failure

Narrative

A general cargo vessel of 1,960 GT loaded with potash was approaching Great Yarmouth from the south-east via Holm Channel (see chart extract). The Master had the con and was the only person on the bridge. The vessel was being steered by auto-pilot. The wind was westerly Force 2 with good visibility and there was a southerly tidal stream of about one knot. The time was about 0530 and it was dark.

Reproduced from Admiralty Chart 1536 by permission of the Controller of HMSO and the Hydrographic Office.

After leaving Cort on buoy to port, the speed of the vessel was reduced to Half Ahead. The auto-pilot was set to steer a course of 300º but due to the effect of the tidal stream the vessel made good a course of 297º. In order to leave NE Holmbuoy to port, the auto-pilot setting was altered to 330º and the vessel initially made good a course of 325º. However, the Master then observed Holm Sand buoy on the starboard bow and altered the auto-pilot setting to starboard in order to counter what he considered to be the increased effect of the southerly set.

Shortly afterwards the Master realised that both the auto-pilot and gyro compass had failed and attempted to prevent the vessel from running aground on Holm Sand by changing over to hand steering and applying full starboard helm. His action was too late to prevent the vessel from grounding. The vessel remained aground for a day but was not seriously damaged.

Like many small vessels operating in United Kingdom coastal waters, bridge watch keeping was shared between Master and Mate.

The Lessons

1. The good seaman knows that when navigating in shoal waters, and especially in a narrow channel, a vessel should be in manual steering with a dedicated helmsman. This Master did not comply and found himself unable to take sufficiently early corrective action when something went wrong. The steering failed, the Master was slow to notice it and the vessel grounded. This accident highlights the real risks arising from one man bridge operation in confined waters. The lesson is to

always have two men on the bridge in such circumstances, one with the con with the other on the helm.

2 Whenever helm is applied, whether in the open sea or in confined waters, an immediate check should always be made to ensure that the rudder has functioned as ordered. This will ensure that early corrective action can be taken if the wrong helm has been applied.

3. The cause of the electrical failure which led to the failure of both auto-pilot and gyro compass was never discovered, but four fuses were reported to have failed. Whatever the reason, it happened at an awkward moment and could happen again.

4. By not having a dedicated lookout on the bridge with him at night, the Master was also in clear breach of the STCW Regulations. The Regulations state, quite clearly, that the only time a look-out can be dispensed with is during daylight in certain circumstances. (See also Report No 9)

4. Crankcase explosion in main engine

Narrative

The engineers on board a 6,737 GT cross Channel Ro-Ro ferry had been monitoring a steady increase in crankcase pressure on one engine over many days. Although the engine was inspected, no problem was identified and it continued to be run.

Shortly after departing Dieppe for an overnight cross-channel passage to Newhaven, Full Away was given at 0107 and the engines brought to full power by 0125. Six minutes later the engine-room fire alarm sounded and an inspection revealed the engine-room to be full of smoke. Both main engines were stopped and the engine-room was battened down. An inspection carried out by a breathing apparatus team revealed no fire but found the crankcase explosion doors on the port main engine had operated.

The vessel continued to Newhaven using only the starboard main engine. On arrival an inspection revealed that No 18piston of the port main engine had partially seized in the liner.

Shortly before the fire alarm sounded the crankcase pressure on the port main engine had been observed as high,90 mm of water, compared to its normal value of 60 mm.

No clear cause for the failure was established but the most likely initiating cause was a broken piston ring.

The Lesson

Some operators of medium speed marine engines have employed vapour detectors in each bay of engine crankcases to locate the units on which blow-by is occurring. A more sensitive method of detecting blow-by, other than a simple water gauge, may be of value for these engines.

5. Engine-room fire on dredger

Narrative

A dredger of 3,500 GT was on passage in the English Channel when the engine-room fire alarm sounded shortly before midnight. The duty Second Engineer made his way to the engine-room, operating in the unmanned mode, and was met by a haze of diesel oil vapour on the port side of the main engine and the adjacent generator.

After informing the Officer of the Watch (OOW) of the situation and his intentions, the Second Engineer switched over generators and stopped the main engine. An inspection revealed that the fuel inlet pipe to one of the main engine's high pressure fuel pumps had fractured allowing oil to spray over the engine, the adjacent walkway and the generator. Because of the absence of a hot surface to provide an ignition source there was no fire or explosion. The pipe was replaced and the main engine restarted, allowing the vessel to resume its passage.

The failure of this fuel pipe was attributed to fatigue which had been induced by vibration; possibly aggravated by pipe securing clips working loose.

The Lessons

1. Engineers should be alert to vibration induced fatigue and during rounds should make a point of checking securing clips to ensure they are not coming loose.

2. Any fuel pipe has the potential to leak. Risk of fire is greatly increased when they run adjacent to heat sources. This risks can be minimised by fitting double skinned pipes for higher pressure fuel lines and keeping low pressure systems as faraway as possible from any potential heat source. In a well designed vessel, pipes carrying flammable material should be positioned well away from any potential heat source.

3. The early detection of a problem can prevent a serious accident developing. Fire alarm systems capable of detecting fuel vapour as well as smoke and flames (as was fitted in this vessel) can enable preventative measures to be implemented in good time.

6. Seamen injured during ro-ro cargo operations

The MAIB receives a steady stream of reports from operators of Ro-Ro ferries informing the Branch of accidents on vehicle decks. Because loading and off-loading operations are often conducted under time pressures, there is the potential for accidents to occur. Providing such operations are properly supervised and crewmembers are constantly alert to bad practice, the process should be a safe one.

Narrative

A trailer had just been reversed onto the vehicle deck of a Ro-Ro vessel and was positioned so there was a small clearance between the rear of the trailer and a side frame. A newly joined, untrained, seaman was monitoring the process and was standing behind the trailer in order to lash it. As the trailer was raised for the trestle to be inserted, it rolled back about 15 cms and trapped the seaman's leg between trailer and frame.

Because the injured seaman had only just joined the vessel he had not been instructed in the safety arrangements in force on the vehicle deck.

The Lessons

1. No-one should be allowed to work on a vehicle deck until he or she has been properly trained in all aspects of the work and the dangers have been drawn to his or her attention;

2. Newly joined crew members are impressionable. They will watch more experienced hands and will copy what they do. Setting a good example is therefore just as important as keeping an eye on the less experienced to make sure they work safely.

7. Collision in fog in the Humber Estuary

Narrative

The cargo vessel was slightly to the north and the fishing vessel was slightly to the south of the channel between the north-east extremity of Bull Anchorage and the Chequer Shoal (see chart extract). When the range had closed to one mile, the Master of the cargo vessel noticed the fishing vessel's echo on his radar and assumed that he would pass starboard to starboard. The Skipper of the fishing vessel on the other hand, having also detected the cargo vessel on his radar at short range, altered course to starboard to pass port to port. Despite the poor visibility both vessels were proceeding at their full service speeds.

Spurn Pilot Station watch keepers, who were monitoring the developing situation on radar, contacted the cargo vessel on VHF and informed the Master of the presence of the fishing vessel. Although both vessels realised that a close quarters situation was developing, neither slowed down. The Master of the cargo vessel attempted to contact the fishing vessel on VHF Channel14 (Spurn Pilot Station) to confirm a starboard to starboard passing but failed. The fishing vessel was, correctly, monitoring the VTS VHF Channel 12.

The two vessels collided. Both vessels were damaged but were able to continue under their own power. There was no pollution and nobody was injured.

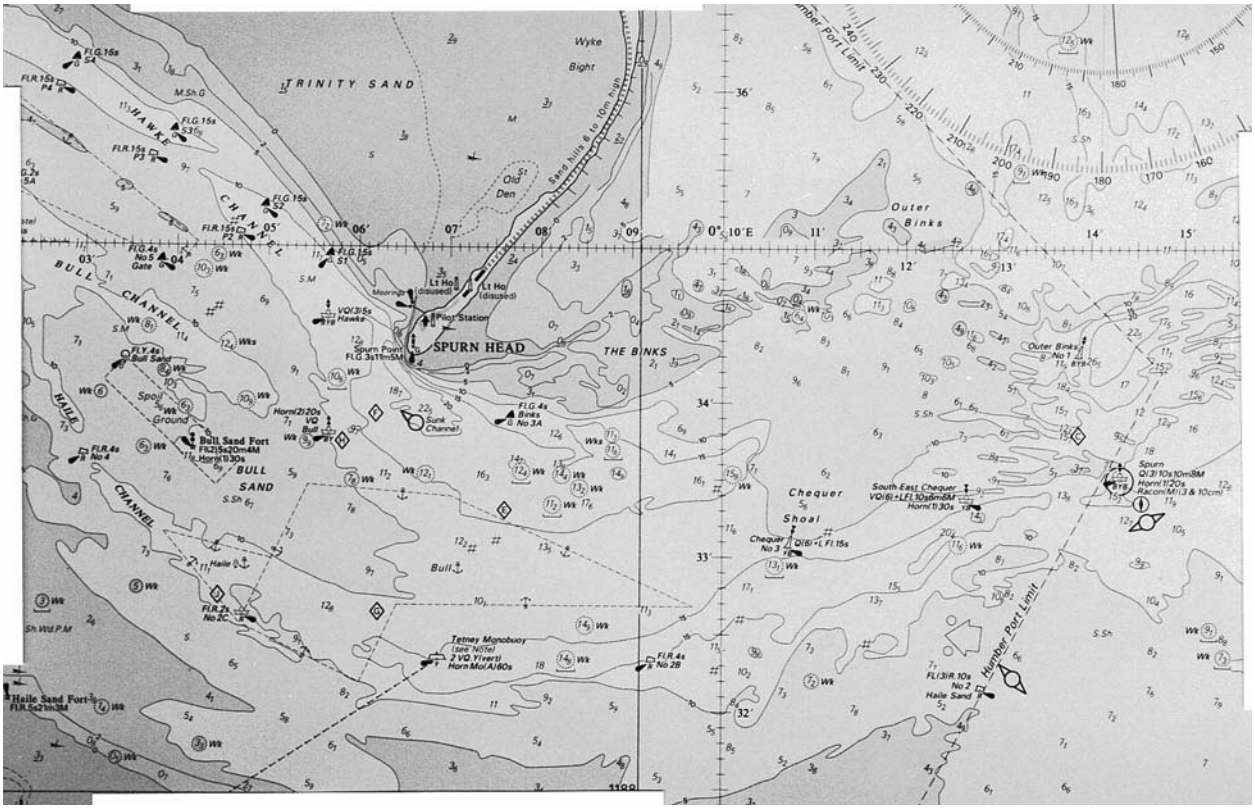
The Lessons

1. Neither the Master of the cargo vessel nor the Skipper of the fishing vessel displayed good seamanship. Both vessels were proceeding at full and excessive speed in fog. Risk of collision would have been much reduced had both vessels kept to the starboard side of the channel as required by the Rules. The late detection on radar of each other's presence indicates low standards of watch keeping.

2. There was nothing new in the causes of this accident. Following the late detection of each other on radar, those in charge of both vessels made the classic error of taking action on the basis of insufficient information. Both assumed the other would take a particular course of action. Both were wrong. They collided.

3. The use of VHF to communicate with another vessel when risk of collision exists is valid in certain circumstances. In poor visibility, with a close quarters situation developing, when the

identity of the other vessel is unknown and potential confusion exists over VHF channels, is not one of them.



Reproduced from Admiralty Chart 109 by permission of the Controller of HMSO and the Hydrographic Office.

8. Flash fire in a deep fatfryer

Narrative

After cleaning an electrically heated deep fat fryer in a ferry's galley, one of the crew turned on the heating elements to remove residual drops of water. Once the fryer had been dried out, the crewman assumed the heating elements were off and started to refill the fryer with solid cooking oil. On coming into contact with the elements, the oil ignited in a flash fire.

The man responsible reacted immediately placed afire blanket over the fryer and extinguished the flames.

The follow-up actions were not so effective. Although it was a genuine fire the correct emergency procedures were not followed. The emergency electrical power switch to the galley was not turned off; the manual fire alarm was not activated and the galley fire doors were not closed locally. Fortunately nobody was injured nor was there any damage, but a very shaken member of the crew had cause to reflect on what he had done wrong.

The Lessons

1. The crewman responsible did not follow the authorised and agreed procedure for cleaning the deep fat fryer.

2. Although the fryer was fitted with both safety and manual thermostats, these do not function when the temperature of the elements exceed the set control temperature and the ignition temperature of the oil. Such thermostats do not therefore work in the event of fire.

3. Effective fire fighting is dependent on certain procedures being followed as soon as possible. Although the initial first aid action using a fire blanket was correct, the follow up actions were not. Whenever there is a fire, the alarm must be raised, the source of heat removed if possible, and the supply of oxygen cut off. In galley fires, the electrical power must be isolated, ventilation shut down and all fire doors closed.

9. Two cargo vessels ground in remarkably similar circumstances

Both these cases involve vessels grounding at night while the sole watch keeper slept. The circumstances are remarkably similar, highlighting factors which need to be addressed if comparable accidents are to be avoided. On both vessels the Master and Chief Officer worked a two watch system at sea.

Case 1

Narrative

Case 2

The incident occurred when en route between the Republic of Ireland and the Baltic on a north-about passage through The Minches. The weather was fine and the visibility clear. The Master had an uneventful watch between 1800 and 2400. Towards the end of his watch the Master called the Chief Officer, who had been asleep in his cabin, to relieve him on the bridge. While waiting for his relief the Master sat in the watch keeper's chair and fell asleep. The vessel was not fitted with a bridge watch alarm nor had a lookout been posted. The vessel continued on auto-pilot past a planned alteration of course position. The Chief Officer meanwhile, had gone back to sleep. The Master, and everybody else on board, was woken when the vessel grounded at 0150. Attempts to refloat her failed and, in deteriorating weather, the crew were airlifted to Stornoway. The twenty year old vessel was later declared a constructive to talloss.

This incident occurred when another short sea trader, a general cargo vessel of 2,630 GT and crew complement of eight, was on a ballast voyage between Northern Ireland and Norway. As in Case 1 she was also transiting The Minches. The weather was fine and the visibility was clear. The Master, who was not unduly tired and had recently returned from leave, took over the watch at 1800 with the intention of calling the Chief Officer to relieve him at about midnight. A bridge alarm was fitted but it was poorly designed and, in any case, was not being used. At some time during the early part of his watch the Master went to his cabin to use the toilet and fell asleep. No lookout was posted in this vessel. The vessel continued on auto-pilot, past a planned alteration of course position, and grounded at 0145. The impact woke everybody on board. Fortunately the subsequent attempts to refloat her were successful and she proceeded under her own power to Stornoway.

The Lessons

1. The MAIB regularly receives reports of bridge watch keepers falling asleep while on watch. Whenever such incidents are investigated the following common denominators emerge:

a) There is a growing tendency for short sea traders to adopt one-man bridge operation at night in contravention of International Maritime Organization (IMO) Regulations.

b) Although encouraged, or required by owners to do so, Masters regularly fail to post a lookout.

c) Bridge watch alarms, when fitted, are often defective, are deliberately switched off or are not remoted to another part of the ship where they can be heard by either the Master or another officer not on watch.

2. To avoid further similar accidents occurring as a result of the watch keeper falling asleep, those responsible for a vessel's safety should ensure that:

a) A dedicated lookout must be posted on the bridge at night in addition to the Officer of the Watch, in accordance with STCW 1978 II/I 9.

"(a) the look-out must be able to give full attention to the keeping of a proper look-out and no other duties shall be undertaken or assigned which could interfere with that task.

(b) the duties of the look-out and helmsman are separate and the helmsman shall not be considered to be the look-out while steering, except in small ships where an unobstructed all-round view is provided at the steering position and there is no impairment of night vision or other impediment to the keeping of a proper look-out. The officer in charge of the watch may be the sole look-out in daylight provided that on each such occasion:

(i) the situation has been carefully assessed and it has been established without doubt it is safe to do so;

(ii) full account has been taken of all the relevant factors including, but not limited to:

- state of weather

- visibility

- traffic density

- proximity of danger to navigation

- the attention necessary when navigating in or near traffic separation schemes;

(iii) assistance is immediately available to be summoned to the bridge when any change in the situation so requires."

b) whenever a bridge watch alarm is fitted it must be switched on when the vessel is underway. This is best achieved by interlocking it with the auto-pilot. To be totally effective it must be tamperproof and positioned so that the watch keeper must physically move in order to cancel it. If not cancelled the alarm should sound in another part of the ship where it will be heard by a competent person.

3. There is an increasing tendency for owners of modern ships to provide their bridge watch keepers with comfortable seats. This is often a feature when a high degree of automation is involved or an integrated bridge system is fitted. Unless seated watch keepers have sufficient activities to perform, or the stimulus of events to maintain levels of arousal, even the most conscientious Officer of the Watch will have the greatest difficulty in keeping awake during a night watch. Even fear of prosecution will not prevent this happening. He will be most vulnerable between 0100 and 0500,particularly if he has been awake for much of the previous day or has had insufficient sleep over several days. The chances of him falling asleep will increase significantly if he has to watch keep by himself. The hours of sleep must not be confused with time off duty; the two can be very different.

4. The provision of a second person on the bridge at night will not only ensure that a proper lookout can be kept at all times, but this presence will assist the officer in charge of the ship to remain vigilant and alert throughout his watch.

Footnote

The MAIB has substantial evidence to indicate that many ships, especially short sea traders, operate with only one person on the bridge at night. The STCW Regulations are clear on the matter; a dedicated look-out MUST be posted at night. There are no exemptions.

Merchant Shipping Notice (MSN) No M.1682, issued in April 1997,notifies owners, managers and Masters of merchant ships that the mandatory requirements specified by the Secretary of State under the Merchant Shipping (Safe Manning, Hours of Work and Watch keeping)Regulations 1997, and referring to the STCW Regulations, apply to seagoing United Kingdom merchant ships and to other ships when they are in United Kingdom national waters.

10. Failure to follow cleaning instructions

This Summary is based on the report of an investigation carried out by a Ship's Safety Officer.

Narrative

A chef was cleaning an oven using a chemical oven cleaner. He applied the cleaner to the inside of the oven, shut the door and then switched it to steamer mode. The chef later went to open the door. He should have followed the advice given in the Code of Safe Working Practices for Merchant Seamen which states that:

> " No one should be directly in front of an oven when the door is opened - the initial heat blast can cause burns.
>
> The steam supply to pressure cookers, steamers and boilers should be turned off and pressure released before their lids are opened."

He didn't follow that advice. On opening the oven door, vapour containing the cleaner solution blew out of the oven and over the chef, causing chemical burns to the left part of his body.

The Lesson

If you can't remember the instructions - read them. It is potentially dangerous to open the door of an oven when a chemical oven cleaner has been used. To do so can injure, maim or even kill.

Footnote

Ships safety officer's Reports are welcomed by the MAIB.

11. Escort tug prevents grounding

Narrative

A VLCC was outward bound from Fawley, near Southampton under pilotage and was attended by

an escort tug which was made fast through the VLCC's centre lead aft.

The passage necessitated making a tight turn to port to follow the main channel around a sand bank. As part of the passage planning, the pilot and the port VTS officer had fully discussed the proposed manoeuvre. When the vessel was in the appropriate wheel over position the pilot ordered "hard to port" and automatically checked the rudder indicator. He noted that only 30º of helm had been applied but as this was not unusual, he was not unduly concerned. The actual rate of turn (ROT) of the vessel could not be determined as her ROT indicator was inoperative. Half way through the turn the pilot realised that the ROT had decreased to an extent where he felt it was prudent to assist the turn by applying more wheel and ordered "fullhard to port". The indicator reflected 37º of port rudder, the ROT increased and the turn continued in the normal manner.

Once the turn was almost complete the pilot ordered "ease to 20"followed by "amidships". Instinctively checking the rudder indicator again he noticed no change and drew the matter to the attention of the ship's staff. The Officer of the Watch ran to the helm position to try various switches while the Master telephoned the engine-room.

With full port rudder and a speed of about 8 knots, the VLCC continued to turn. The pilot informed the escort tug that the VLCC had suffered a system failure and ordered the tug to pull on the port quarter with full weight. Almost simultaneously he ordered "stop engine" and "full astern". The anchor party was told to lower both anchors to the water.

Using a combination of the VLCC's engines and the escort tug, the pilot managed to stop the turn and arrest headway within four minutes of the initial failure There was no requirement to use the anchors and the VLCC ended up only 1.5 cables from the edge of the sandbank.

As a result of the passage planning, the VTS Office had been able to monitor the VLCC's turn on a high resolution, short range radar display and was able to offer immediate assistance to the pilot by handling some of the necessary communications.

The pilot repositioned the escort tug to gain stern way and once the steering gear was working correctly, and with engineers standing by in the steering flat, the VLCC was piloted through the rest of the channel at slow speed with the escort tug still made fast aft.

The Lessons

1. Without an alert pilot and an escort tug made fast this incident would most probably have become a grounding accident with possible pollution as a consequence.

2. The pilot was watching the rudder indicator throughout the manoeuvre and spotted the problem immediately.

3. The successful outcome resulted from good communications between the pilot and the Master of an escort tug experienced in the practice, together with a VTS operator working as a team.

4 Although not a specific recommendation arising from this "near miss", the value of thinking through such an occurrence in advance, and planning a range of corrective measures, cannot be overemphasised. Simulator training for such eventualities is highly recommended when propulsion failures or steering breakdowns in pilotage waters can be introduced for pilots (and ship's officers) to handle without suffering any of the consequences. Simulators can also aid harbour authorities in assessing risk.

Acknowledgement to Harbour Master's Department, Southampton

Footnote

The cause of the "steering failure" was never determined and, a sit did not result in an accident, there was no obligation to report it to the MAIB. The Branch often hears of steering failures, usually long after the event, involving vessels in pilotage waters but which do not lead to an accident. Masters, Pilots and Port Authorities are urged to inform the MAIB of any such incidents so that any designed effects, material factors or inadequate operating procedures can be identified and the appropriate recommendations made.

Unexpected and unlikely events happen afloat as the Chief Inspector has cause to remember after watching a "near miss" take place in front of him during a visit to a leading harbour authority. While being shown the working of the VTS in the operations centre, he became aware of a sudden rise in tension among his hosts and watch keepers. In full view of the assembled company, an outbound medium sized merchant ship was seen to veer towards the starboard side of the channel and head towards a trot of moored lighters. It appears that someone on the fo'c'sle had inadvertently let go one of the anchors presenting the pilot with an unexpected problem. He not only had to contend with taking immediate action to prevent the ship running aground or colliding with the lighters, but had to alert other traffic in the immediate vicinity of his predicament. The incident was well controlled and no damage was done but it serves to remind mariners of the need to expect the unexpected, and to anticipate things going wrong at the most inconvenient and embarrassing moments. (And if anyone reading this is involved in clearing away the anchors, perhaps he or she might be encouraged to double check that the windlass brakes have been firmly applied. It might just prevent an accident!)

12. Man overboard from pilot boat

Narrative

A pilot was attempting to board a vessel at night in rough sea conditions from a pilot boat manned by a coxswain and two seamen. The wind was Force 6 to 7. Although the pilot boat was in the lee of the vessel, the range of the swell was between 4.5 and 6 metres. As the pilot took hold of the pilot ladder with one hand, the pilot boat descended into a trough, forcing the pilot to lose his grip with the result that he fell into the sea between the vessel and the pilot boat.

The pilot was wearing a personal locator beacon but, because it was on top of his inflated life-jacket and not immersed in the water, it failed to activate automatically. Although the pilot managed to activate it manually, the coxswain switched off the beacon's direction finder to prevent him being distracted during the rescue manoeuvre. He was however able to maintain visual contact with the man overboard.

The pilot was wearing an immersion suit but without the hood over his head. It was trapped under the life-jacket with the result that water was able to enter the suit. No thermal or watertight gloves were provided and, although he was wearing cotton gloves, his hands became numb with cold.

A life buoy was thrown from the pilot boat towards the pilot and an attempt was made to recover him in a "Mate saver", (an adjustable loop, which, once passed over the body, enables a casualty to be supported and safely manoeuvred to a suitable recovery area). The prevailing conditions prevented the loop from remaining in the fully extended position which made it impossible to place it over both pilot and inflated life-jacket. The pilot did, however, manage to hold onto it with one arm and the life buoy with the other.

A scramble net was then rigged but a combination of cold and numbness thwarted the pilot's efforts to use it. Furthermore he was unable to get a foothold on the net which, although weighted, lay against the hull and frustrated his efforts to get a toehold. .

A leading seaman attempted to get hold of the pilot using the fall rope from the starboard davit but the rope had not been made fast and it ran through the davit pulley. The seaman then managed to loop a mooring rope around the pilot, who was eventually assisted on board using a ladder rigged in way of the aft well deck.

In order to be able to rig the scramble net and to loop the mooring rope around the pilot without being restricted in his movement, the leading seaman was forced to unhook his own safety harness.

The life-jacket light with an additional strobe light enabled the coxswain to maintain visual contact with the pilot throughout the rescue manoeuvre.

The pilot was subsequently transferred to a rescue helicopter and transported to hospital, suffering from hypothermia.

The Lessons

1. Transferring from pilot boat to pilot ladder demands immense concentration, especially at night and in bad weather. On this occasion a momentary lapse of concentration led to the pilot losing his grip and falling into the sea.

2. Recovering a man overboard into a boat is one of the most difficult of all seamanship evolutions. Given bad weather, cold seas and a night recovery, the situation is even more complicated. On this

occasion the pilot was lucky. Some things went right, others went wrong, but the coxswain's priority to keep the man in sight throughout the event greatly helped a successful outcome. The first rule of man overboard is locate him as soon as possible and then keep him in sight at all times.

The second rule of recovery is speed. Body temperature falls fast and even the fittest person becomes exhausted within seconds, especially if his clothing is water logged.

Rule number three is to always anticipate the inability of the casualty to help himself. If he is able to do so it must be regarded as a bonus. In this event the pilot was able to give limited assistance to start with but his strength waned rapidly.

Rule number four is to ensure the point of lift for a man overboard is higher than deck level to which he is being recovered. Someone being recovered from the sea is ALWAYS heavier than any rescuer expects. The purchase must be capable of handling the weight with the effort available on the rescue craft, and it must be secured at the inboard end.

And rule number five is that those attempting the rescue must not aggravate the situation by falling into the sea themselves. Unless absolutely essential to do otherwise, rescuers should ensure their safety harnesses are clipped on.

3. Personal safety equipment is only effective if worn correctly and the wearer knows how to use it. The pilot was wearing cotton gloves for gripping the ladder but they were of little value once in the water. The reason for not wearing the immersion suit's hood was because it restricted the wearer's visibility while boarding. This can be categorised as a design deficiency (a neck seal might be amore feasible alternative) but the encountered difficulties could have been prevented by having the hood out of the stowed position and ready to fit when required. It is too late to correct these practices once in the water.

4. Coastguard, port authorities and shipping in the vicinity must be informed of any man overboard incident as soon as possible but long conversations on the VHF should be avoided. Keeping the man insight and speed of recovery remain the absolute priorities.

5. Recovering a man overboard must be practised. The method will depend on the equipment carried and the weather conditions, but those involved should never forget that people fall over the side at the least convenient times and in the worst possible conditions. They will also be far heavier to lift than expected and will tire very rapidly indeed. Even the fittest man will find it difficult to help himself.

The lessons arising from this incident are based on a report submitted by the Milford Haven Port Authority

13. Standby safety vessel hits offshore oil installation

Narrative

The North Sea standby safety vessel concerned in this case was powered by two Caterpillar medium speed diesel engines, each driving a Schottel azimuth propulsion unit capable of independent operation. Control, including steering, was from either the forward or after bridge console. The auto pilot was situated on the forward console. The vessel was highly manoeuvrable for maintaining station and rescuing survivors. There was an excellent all round view from the wheel house at the top of the centre tower-style superstructure.

Before the incident the vessel was maintaining station well outside the statutory 500m safety zone around the offshore oil installation. The sea conditions were good with a south-easterly Force 3 wind, but the visibility was only moderate and fog was expected. The radar was operating. The Chief Officer was the Officer of the Watch (OOW) with a bridge watch rating to assist him. The Second Engineer was also present.

When on routine standby duty it was the practice to have only one of the Schottel units in operation. On this occasion the port unit was in use and in the favourable sea conditions, it only required as light 'kick' now and again to maintain the heading and minimum way through the water.

Ninety minutes before the accident, at about 0130, visibility began to deteriorate. The installation's watch keeper asked the standby safety vessel's OOW to keep them updated on visibility so they would know when to operate their fog signalling equipment. Responding to this request the OOW turned the vessel towards the installation and closed it until he could see it visually where up on he was able to report the range. He continued to close to a point 370metres from the installation when he turned the vessel about and returned to the initial range of 1400 metres. This manoeuvre was repeated several times. At about 0300 the vessel again approached the installation. When 370 metres from the installation the OOW stopped the port Schottel unit, turned the steering ring to starboard and applied power again to make the turn. Nothing happened. The Second Engineer went below to start the starboard unit and, as soon as it became available, the OOW increased power to expedite the turn. Still nothing happened and the vessel ran into the installation. Although there was no serious damage to the installation and no injuries, the vessel sustained bow damage which had to be repaired.

The Lessons

1. Steering the vessel directly towards the installation was a foolish manoeuvre, particularly in fog, and in direct contravention of the owner's standing instructions.

2. The vessel should not have entered the 500m safety zone with only one Schottel unit in use. This, again, was in contravention of standing instructions.

3. The mandatory requirement is that installations must start making fog signals when the visibility falls below 2 miles (3,700m),so there was no need for the vessel to enter the safety zone at all.

4. It is probable that the auto-pilot was still engaged when the vessel was approaching the platform. In this situation manual turning of the steering ring would have had no effect. An auto-pilot is a labour saving device to steer the vessel on a set course with significant way through the water. It should never be used when manoeuvring at minimum speed with limited sea room. This is one of the reasons why control for the auto-pilot was only provided at the forward console.

5. Standby safety vessels are provided near offshore installations to save lives, not jeopardise them.

14. Notices to shipping notheeded

This accident demonstrates what can happen if Notices to Mariners are not heeded and charts are not kept up to date.

Narrative

At about 0155 on 23 September 1994, the pilot of the 22,852 GT bulk carrier ALGOLAKE agreed to an overtaking with the pilot of another vessel GREAT LAKER. Both vessels were bound for the St Lawrence Seaway, down river from Quebec. The arrangement was for the GREAT LAKER to overtake ALGOLAKE with the latter keeping well to the channel's starboard or northern side.

At about 0220 ALGOLAKE passed abeam of a buoy, K108, marking the starboard side of the channel. The pilot ordered a small alteration of course to starboard. Almost immediately the vessel started to vibrate abnormally and, despite the helmsman applying 20º of rudder, no alteration of course resulted. The pilot stopped the engine. Moments later, ALGOLAKE struck the northern limit of the channel, sheered some 30 to port and came to a standstill. External soundings indicated she had grounded on her starboard side forward of the accommodation.

Since 20 July 1994, various Notices to Shipping had been broadcast informing mariners that some buoys, including buoy K108, had been temporarily displaced 45m outside the channel while dredging operations took place. This information was available to both pilot and ship's officers but, despite written notices having been sent to the Pilotage Authority, the pilot was either unaware of it or had forgotten them; while the vessel's bridge watch keepers had failed to make any note of the buoy's displacement.

Since the vessel had passed 23 metres off the displaced buoy, she was completely outside the charted channel, and as the under keel clearance decreased with the vessel's forward momentum, ALGOLAKE inevitably ran aground.

The Lesson

1. Always ensure charts and publications are correct and up-to-date, and that you are aware of the latest relevant Notices to Shipping.

Acknowledgement to the Transportation Safety Board of Canada

Footnote

As a matter of routine, MAIB inspectors always check that charts and other navigation publications are up to date whenever an accident with a navigation dimension is being investigated. The mariner should make similar checks before he or she puts to sea. When not done both vessel and all on board may be put at risk. Pilots must ensure they are in possession of the most up-to-date information before conducting an act of pilotage.

In June 1997, MAIB inspectors investigating a grounding, discovered that the chart in use by the vessel concerned had not been corrected for 17 years.

15. Contact with moored vessel during berthing operations

Extensive research has been conducted on the impact of shift work and irregular work schedules on human performance and on fatigue due to sleep deprivation. The following case shows how these factors may have contributed to the striking of a small tanker and an oil barge by a bulk carrier.

This accident report focuses on the problems arising from lack of sleep. Pilots and Masters may draw additional conclusions from the events described.

Narrative

A pilot boarded the 15,875GT Panamanian-registered bulk carrier NIRJA off Hamilton, Ontario. Due to strong following winds, the pilot, in consultation with the Master, decided to call for three tugs to assist in berthing the vessel.

The Master informed the pilot that the vessel's propeller was fixed-pitch and right-handed. He added that the engine response time for astern power was about nine seconds, that it was 75% of ahead power and would result in the bow going to starboard.

The Master also discussed securing the tugs to the vessel and suggested to the pilot the effectiveness, under the prevailing wind conditions, of using the entrance knuckle to swing the vessel ready for berthing alongside. The pilot, however, felt that it would be risky to secure the tugs or to make use of the unfendered knuckle. He indicated that he would carry out his normal approach of swinging the vessel directly into the entrance to the berth without securing the tugs.

The pilot, who had the conduct of the vessel, was on the bridge together with the Master, the Officer of the Watch at the engine telegraph, and a quartermaster at the helm.

The three tugs met with NIRJA about one mile from the turning into the berth, and were positioned on the port side, abreast of hatches Nos 1, 3 and 6 respectively. The vessel proceeded along the starboard side of the channel.

After a further 400 metres, when moving at 3 to 4 knots, the main engine was stopped and the pilot directed the three tugs to assist. None were made fast.

After five minutes, slow astern was ordered, followed about half a minute later by half astern. The tug abreast of hatch No 6 was ordered to push closer to the bow, at hatch No 1, along with the other two tugs. When the NIRJA's bow reached the knuckle of the entrance to the berth, the vessel had just barely begun to turn to starboard and full astern was ordered, then, about half a minute later, emergency full astern. Subsequently, orders were given to let go the starboard anchor, but in the event it was never dropped. Shortly afterwards the NIRJA's bow struck the tanker HAMILTON ENERGY(982 GT) aft of her engine-room bulkhead.

At the time of the striking, the HAMILTON ENERGY was made fast outboard of the oil barge PROVMAR TERMINAL 1 on the far side of the entrance to NIRJA's berth. The wharf and all three vessels involved, sustained some damage. There was no injury or pollution.

Because the pilot had in-depth local knowledge and the tugs were under his control, the Master allowed him to continue having the conduct of the vessel. The Master considered that taking over the vessel from the pilot at a crucial stage in the manoeuvre would only lead to disruption and further compromise safety.

The pilot had started his tour of duty two days before the accident after eight days off. He had no assignment on his first day of duty but piloted two vessels on his second, the first for eight and a half hours and the second for eight hours with a two and a half hour stand down period in between. Throughout this time he managed about five hours sleep. Half an hour after leaving the second vessel he boarded NIRJA and the accident occurred two hours later, some 22hours after starting his first assignment.

The Lessons

1. Although several factors were identified as contributory causes of this accident, sleep loss and sleepiness resulting from extended duty or altered work/rest schedules were identified as significant contributory factors.

2. Research also suggests it is not possible to store sleep. While a person remains awake, a sleep need develops, notwithstanding how well rested the individual was at the beginning of the wake cycle. The sleep need continues to build up until a person goes to sleep. Although many can manage with less, people need on average 7.5 to 8.5hours of sleep per day. A person obtaining less than his/her required sleep develops a sleep debt and will be subject to performance degradation. Performance on cognitive and vigilance tasks is particularly impaired and there is an increased propensity for risk-taking by fatigued persons.

3. There are many instances when excessively long working hours have contributed to marine accidents and, on many occasions, the Master has been involved. In nearly every case he was unaware that this performance had deteriorated. Most Masters take great pride in their ability to be alert after many hours awake but even the best and most robust among them will be facing a degradation in their performance. Overtired mariners are not as safe as those who are properly rested.

Acknowledgement to the Transport Safety Board of Canada

16. Grounding of a small passenger launch

Narrative

This accident involved a 16.45 metre passenger motor launch. She had an enclosed lower deck and an open

upper deck and normally took day trippers from Poole around the large extensive natural harbour. Occasionally the vessel was chartered for evening cruises during which the on-board bar was stocked and staffed by additional crew.

On the night of the accident the vessel was booked for a local club's annual function for a harbour cruise and a passage up the adjoining river to Wareham. It was a fine summer's night, with light winds and clear visibility, but fog was forecast. 112 passengers, two crew and three bar staff were embarked. The launch was not fitted with radar.

The cruise was uneventful but during the return trip from Wareham fog descended. On clearing the river the launch entered a channel marked by unlit beacons which the crew could illuminate using the searchlight. However, as the visibility continued to deteriorate, the searchlight bulb failed and the crew lost sight of the navigation marks. The Boatmaster decided to anchor in the channel and wait for the visibility to improve.

The Lessons

1. Before sailing the Boatmaster was faced with a choice; proceed with the charter as planned and accept that poor visibility might interfere with safe navigation later in the evening, or modify the programme so he could return safely to port if visibility did deteriorate too far.

2. The first course of action was chosen but his reputation as a Boatmaster would have been enhanced if;

> (i) he had accurately assessed the limitations of his vessel for navigating at night in poor visibility and modified his plans accordingly,
>
> (ii) he had warned the passengers in advance that there was a possibility that poor visibility might delay a timely return. Their views might have persuaded him to adopt an alternative course of action,
>
> (iii) he had called the Coastguard or Port Authority immediately the vessel grounded and had kept them informed of subsequent events.

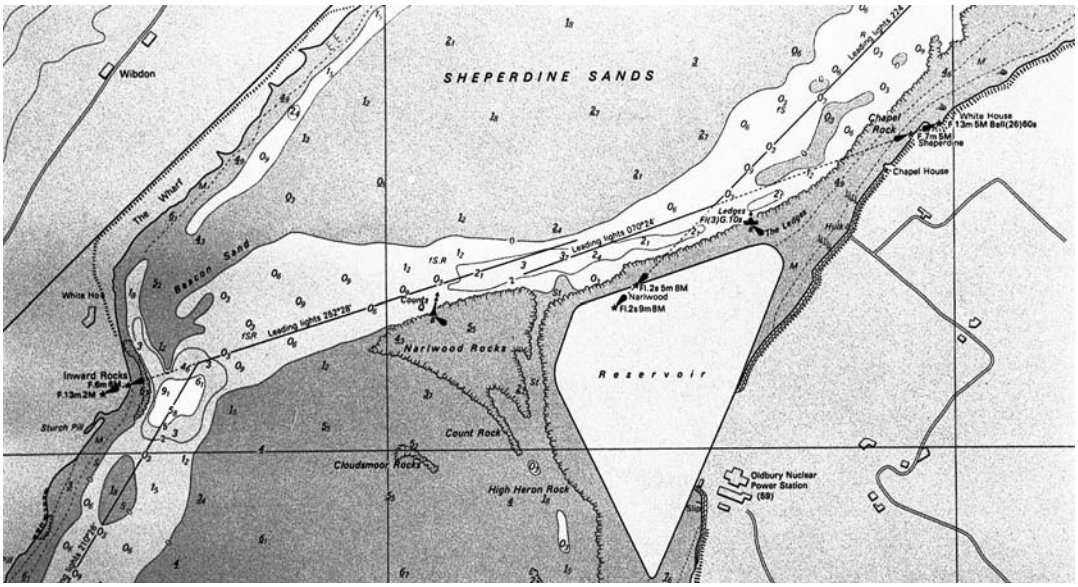
3. A spare searchlight bulb should be carried.

In this instance no harm came to the vessel, passengers or crew but the lessons learned should prevent a more serious situation arising next time.

17. Stranding of a sail training vessel

Narrative

A UK registered sail training vessel was outbound in the River Severn on passage from Sharpness to Barry at the time of the incident. She was carrying twelve crew and twenty trainees. The weather was favourable with good visibility and the tide was ebbing. A pilot was on board and the vessel was making a speed of about 7knots under power (the sails had not been set).



Reproduced from Admiralty Chart 1166 by permission of the Controller of HMSO and the Hydrographi cOffice.

At 1200 the Master handed over the watch to the Sailing Master and went below for his lunch. The Sailing Master was standing next to the pilot in the cockpit where he could monitor the compass heading and the pilot's orders to the helmsman. The pilot was conning by ordering specific courses to steer.

After his lunch the Master went into the chartroom. He had not resumed charge of the watch. The time was about 1220, the vessel was passing Narlwood Reservoir with an ordered course of 250º and the Counts North cardinal buoy was seen to be fine on the port bow(see chart extract).

As the vessel closed the buoy, the pilot realised they were to the south of the channel and ordered the helmsman to "come to starboard a point". The helmsman duly altered course to 260º and this was acknowledged by the pilot. However, Counts buoy remained fine on the starboard bow. The pilot then said "We won't fight it. We can slip under this one. Stay as you are". At just under a cable south-east of the buoy, the vessel grounded on Narlwood Rocks, slewed to starboard and lost way.

Life-jackets were issued to everyone on board. Fortunately there was no water ingress but a PAN Message was transmitted as a precaution. As the tide fell the vessel laid over on her port side and became 'high and dry'. The trainees were evacuated. The vessel refloated on the following tide, having suffered no serious damage.

The Lessons

1. Although the top mark and light character of a cardinal mark indicate the side where the deeper water lies, the pilot was obviously at fault on this occasion for wrongly assuming (on the spurof the moment) that there was still enough height of tide to safely pass over Narlwood Rocks, which lay on the 'wrong' side of the cardinal mark.

2. The pilot should have used helm rather than course orders to con the vessel as they closed the buoy. Once the vessel was seen to be south of the intended track, prompt and substantial action was needed to steer the vessel back to deep water well before she closed the buoy. The pilot should have ordered starboard helm and then conned the vessel to safe water and, ideally, onto the Inward Rocks transit ahead. The helmsman could then have been told to keep the transit in line.

3. The planning and execution of this passage was unseaman like. The pilot allowed the vessel to veer too far to the south of the deepwater channel, and then compounded the error by failing to establish whether there would be sufficient water to enable him to pass on the shallow water side of a cardinal buoy. He made an assumption that sufficient water existed, got it badly wrong, and discovered his mistake the hard way. The Sailing Master, who had monitored the pilot's action throughout, made no attempt to intervene or call the Master.

4. Navigating any vessel in pilotage waters demands great concentration and, in a well run vessel, teamwork and understanding between ships' officers and the pilot. As this incident clearly demonstrates, even experienced pilots can make mistakes. Ships' officers can do much to ensure their vessel remains safe by continually checking she is safe through the use of clearing bearings or parallel indexing on the radar. The most professional and competent bridge teams will use both methods. The common practice of merely noting the times of passing buoys or other conspicuous navigation marks might meet the most basic requirement to log progress, but does next to nothing to ensure a projected passage is safe.

Footnote

Whenever an accident in pilotage waters is investigated MAIB inspectors regularly discover that passage plans start at the outward pilot station and finish at the next port's inward pilot station. They do not extend to the berth. Fixes, when taken, are often no more than time annotations on the chart, the occasional GPS position or radar ranges and bearings plotted at irregular intervals. Manually produced Dead Reckoning (DR) and Estimated Positionings (EP) are rarely seen yet remain one of the most effective ways of alerting navigators to potential dangers and times of wheel over.

Part 2 - Fishing vessels

Fishing, whether deep sea or coastal is a dangerous occupation. It takes place throughout the year and in all but the roughest sea conditions. As a workplace, the fishing vessel is one of the most awkward and potentially most dangerous of all; a heaving deck is not for the unskilled, the careless or the fainthearted. Accidents can, and do, happen.

Every year fishing boats are lost or damaged. Fishermen are injured, maimed and killed. The effects on a fishing community when confronted by a fatal accident involving one of its vessels can be devastating while the grief felt by the next of kin of those lost deserves the greatest sympathy. On average, the MAIB receives an incident report involving a fishing vessel every 101/2 hours. Much of the Branch's work is devoted to investigating the causes of the sea accidents with the specific aim of preventing the same thing happening again. As we endeavour to look for the reasons why so many happen, two dominating factors emerge. First, the same types of accident occur again and again, and second, there is a need for the fishing industry to change its culture. It not only needs to think about safety, it must do something about it. Many people are deeply concerned about the lack of a safety culture and are endeavouring to change things but the responsibility lies, ultimately, with the owners, Skippers and crews

The causes of most accidents generally fall into well defined categories. With ever increasing pressures on the industry we see fishermen taking small boats to sea areas for which they were not designed. Many accidents occur because of stability problems caused by ill thought out modifications and the addition of top weight, often after a second hand purchase. We see many instances of no effective lookout at sea. We note poor maintenance of machinery and regularly hear of complacency or carelessness on deck. Fishermen more than most know the sea is an unforgiving environment but the annual toll of accidents must be reduced. The MAIB can only draw attention to the problems, identify causes and make recommendations. The various Regulations have a role to play as does personal responsibility. In short, everyone who goes to sea in a fishing vessel must THINK SAFETY as well as catch fish. Thinking safety does not cost money.

18. Loss of a Fish Processing Factory Ship

Although this report features in the Fishing Vessel section, the lessons arising from it are applicable to all mariners

Narrative

A fish processing factory ship 165 metres long was anchored with seven shackles out on her port anchor, a few cables to the south-east of a rocky promontory on the north side of a bay. This area was exposed to winds from east through to south. It was within harbour limits. The vessel had large blocks of accommodation forward andaft, and was in a relatively light condition.

One morning the vessel received a weather forecast for winds of Force 5 from the south-east. By 1500 the vessel was experiencing winds of Force 6 and, following standard procedure, the engine was kept in constant readiness.

At about 2105 winds were predicted to increase to Force 6 to 7.Shortly afterwards, the vessel experienced winds of Force 7 to 8 from the ESE. The Master decided to drop the starboard anchor. Four shackles were paid out and a further shackle was paid out on the port anchor.

At about 2345 the Officer of the Watch noted from the radar that the vessel was dragging her anchors. The wind at this time had increased to ESE Force 9. A nearby shore station recorded a wind speed of 60 knots (Force 11). The engine was put to dead slow ahead in an attempt to halt the drift and a man was placed on the wheel. By now, however, the vessel's stern was dangerously close to the shore and it was decided to weigh the anchors and move to another area. No attempt was made to inform the Coastguard or Harbour Authorities of the predicament.

Difficulties were experienced heaving the anchors and it was not until nearly an hour later, at 0049, that both anchors were weighed, but by now there was insufficient sea room to manoeuvre clear of the lee shore and, at 0051, the vessel grounded on the north side of the bay.

The anchorage, including the area in which the vessel ran aground, was covered by the Harbour Authority's radar surveillance system. During the incident, the shore radar observers did not make any enquiries as to why the vessel was so close to the shore. The port had two tugs which could have been called to provide assistance.

The vessel made a MAYDAY call on VHF Channel 16 which was acknowledged by the Coastguard. Rescue services were called out to assist. All the vessel's personnel were successfully evacuated by helicopter and a RNLI lifeboat, without loss of life or injury.

The vessel broke her back and became a total loss, causing shore pollution with her bunkers. Atmospheric pollution was also caused by ammonia gas leaking from her refrigeration plants.

The Lessons

1.This was a large vessel with substantial windage. She should not have anchored in a position exposed from the south through to the east in the particular location.

2.Strong winds were forecast but the Master decided to remain at anchor. In the circumstances a wiser choice would have been to put to sea.

3.Wind of that strength puts immense strain on the holding ability of anchors. When the anchors were weighed, it was found that the starboard anchor had lost both flukes and the port anchor was missing one fluke.

4.Once difficulties in weighing anchor were experienced the Master should have realised his options were closing in on him. He should not have hesitated to inform the harbour authorities. His failure to do so denied him the opportunity to call on the tugs to prevent him grounding. Masters should never forget that seeking the help of a tug is infinitely better than running aground. The decision to use tugs must be made in sufficient time to allow them to be of use.

Footnote

Study of accident reports over the years reveals numerous occasions when ships have grounded because the Master has either failed to notify the shore authorities of his predicament or has delayed calling for assistance until too late. The reluctance of Masters to report potential difficulties, perhaps because they have not consulted with their owners, or because they think the problem will go away, is human but flawed. If in trouble and there is even the remotest possibility of your vessel being hazarded INFORM THECOASTGUARD OR HARBOUR AUTHORITY WITHOUT DELAY.

19. Deckhand injured by parting rope

Narrative

The crew of a 24 metres steel fishing vessel involved in pair trawling was in the process of hauling across the net from her partner vessel. The rope in use led from the starboard gallows, through well greased blocks along the shelter deck and then down to the winch on the main deck.

A moderate swell was running, the remnant of the previous day's gale. It was early morning and still dark.

Two deckhands were standing on the shelter deck, just forward of the wheelhouse, waiting to clear away the rope after the net had been connected to the warps. The Skipper was operating the vessel from the controls located on the starboard side of the wheelhouse. In this position he had a good view of both the deck operations and the partner vessel. Looking aft, the Skipper noticed that the rope to the winch had been led inadvertently through the loop of the preventer chain instead of directly over the sheave of the block. Before he could do anything about it the rope parted, struck one of the deckhands across the head and knocked him out.

The injured deckhand was covered with blankets to keep him warm and was not moved from where he had fallen. He was evacuated by helicopter and retained in hospital for about 10 days. His injuries included a fractured collar bone and vertebra but he was expected to make a full recovery.

The Lessons

1.Although the condition of the rope was acceptable, it parted because the loop of chain through which it had passed had gripped it tightly when it came under load. Even the strongest rope or wire is liable to part if rove incorrectly.

2.In order to prevent a similar occurrence the preventer chain should be substantially shortened to keep it well away from the sheave of the block.

3.The winchman, on the main deck, could see nothing of the operations on the shelter deck. The Skipper's instructions were passed to him over an intercom which, in this vessel, was an unsatisfactory arrangement. When things go wrong, as in this instance, immediate action will be necessary. Not only must it be possible for effective warnings to be passed instantly but an alternative means of stopping the winch in an emergency must be provided. Skippers and owners are recommended to review the procedures in force in their own vessels and, should they find there are shortcomings, they should take whatever measures are necessary to ensure both criteria can be met. Crews, and their families, can rightly expect such safety measures to be provided. Emergency winch stops should not only be provided and fitted in immediately accessible positions but must also be subjected to regular tests to ensure they are reliable and available when needed.

4.The deckhand who was injured should have stood well clear of the rope until the winch had stopped hauling.

Footnote

Merchant Shipping Notice No M.1561 **Dangers from Winches, Machinery and Fishing Gear** adequately covers the safety issues raised by this accident.

20. Fishing vessel struck by unidentified coaster

Narrative

A fishing vessel was on passage from Cherbourg to Kings wear, Devon, making good about 8 knots. It was night and the Skipper was alone on watch in the wheelhouse. There was a slight south-westerly sea and the range of visibility was between 6 and 8 miles.

The auto-pilot was steering a magnetic course of approximately290º, the VHF radio was monitoring Channel 16 and the radar was operating on the 3-miles range scale. The vessel was exhibiting appropriate navigation lights for a power-driven vessel underway.

The Skipper became aware of an overtaking vessel on the port quarter at a range of about 2.5 miles. He expected the overtaking vessel would keep out of the way by altering course around his vessel's stern.

The Skipper then left the wheelhouse to call the next watch keeper. When he returned, the overtaking vessel was at a range of 2 miles. He left the wheelhouse again to call his relief a second time. As he was returning to the wheelhouse, the overtaking vessel collided with the port side of the fishing vessel and continued on its way without stopping. The Skipper thought the colliding vessel was a coaster.

While the crew assessed the extent of damage, the Skipper called the unknown vessel on Channel 16 but received no reply. The fishing vessel started to take water and the Skipper broadcast a request for additional pumps. This was acknowledged. The pumps were supplied by RNLI lifeboats who then stood by for the rest of the passage to Kings wear.

The Lessons

This is yet another case of a merchant vessel colliding with a fishing vessel at night. Because the coaster was never identified it is not possible to establish why she collided and what factors led to the accident.

1.The evidence indicates that a careful lookout was not being kept on the merchant vessel; still the single most common reason why collisions of this nature occur. The stark lesson, to arise from this accident and so many of its kind throughout the maritime world, is that those entrusted with

lookout responsibilities should not be distracted from this supremely important task and should remain alert at all times.

2.The evidence also indicates poor watch keeping standards in the fishing vessel. Although the Skipper eventually became aware of the overtaking vessel, his first mistake was failing to ascertain whether risk of collision existed. The second was his assumption that the overtaking vessel would keep out of his way and, finally, he abrogated all responsibility by leaving the wheelhouse at a time when collision was at least possible.

3.Had the Skipper remained on watch and established that risk of collision existed, he would have had various options. He could have used the sound signal required in Rule 34(d) of the Collision Regulations to indicate his doubt (ie give at least five short and rapid blasts on the whistle which may be supplemented by a light signal of at least five short and rapid flashes). Furthermore he could have taken action as permitted by Rule 17(a)(ii) and he should have taken action as required by Rule 17(b).

4There is a tendency for watch keepers in all vessels, and especially in those where bridge or wheelhouse visibility astern is restricted, to focus most attention on what is happening ahead. Those in low powered or relatively slow ships such as the smaller fishing vessels, must be constantly alert to the faster vessel coming up astern, particularly if in, or obliquely crossing, a shipping lane. Experience indicates that in non ARPA equipped vessels, radar echoes appearing abaft the beam often remain unnoticed until the range is very close. This is especially true when the radar display is maintained with the ship's head up. All watch keepers should make a conscious decision to look astern as well as ahead. A good all round visual look is not only a matter of good seamanship but is also a clear requirement of the Collision Regulations.

5Sounding five or more short blasts as a means of communicating concern is relatively common in pilotage waters. It is less so in the open sea but can be effective. It cannot feature as an option unless the means of giving such signals is available. Masters and Skippers should ensure that whistles can be sounded at short notice and a working directional light is provided for the watch keeper to use.

6.Neither a MAYDAY nor a PAN message was broadcast by the fishing vessel until at least half an hour after the incident.

Footnote

Determining the causes of 'hit and run' collisions between merchant vessels and small vessels such as fishing boats and yachts is often frustrated by having too little information about the "other" vessel, the alleged culprit. Although probably not the first priority of Skippers or watch keepers who have either been run down or experience a near miss, they can help MAIB investigators by reporting the event as soon as possible and giving as much information as possible about the other vessel. The time and position of the collision, the estimated course and speed, size, colour, type, general layout and, most important of all, the name and port of registry of the other vessel, will greatly assist the investigation.

21. lack of lookout leads to collision in fog

Narrative

A 14.5 metre gill netter was approaching her intended fishing grounds in the North Sea. The time was shortly before 0200, the weather was calm with fog; the vessel was steaming on a course of275º at a speed of about 7 knots and showing the lights of a power-driven vessel under way. She was not equipped with a radar reflector.

The Skipper, who was alone on watch, was aware from monitoring his VHF radio that beam trawlers were operating in the area. He observed a radar echo cross ahead from starboard to port at a range of 2miles. He also observed a further five or six radar echoes to the north at ranges of between 4 and 5 miles. He interpreted the echoes to the north to be beam trawlers towing in a westerly direction and the crossing echo ahead to be a beam trawler towing in a south-easterly direction.

The Skipper then put the propeller out of gear. Once the vessel had lost way, he switched on two all-round red lights in a vertical line and switched off the steaming lights. He also switched on additional decklights and a floodlight in way of the hauler before going below to call his crew to prepare for fishing. Before leaving the wheelhouse, he saw that the range of the radar echo of the beam trawler on the port bow was more than 3 miles and assessed that she was now towing in a south-westerly direction.

After leaving the wheelhouse, the Skipper went to the forward cabin, lit the gas range and boiled a kettle of water, which took between 5 and 10 minutes. He then called the crew, made a cup of coffee for himself and returned to the wheelhouse. A few seconds later, a 37 metre beam trawler, which had been trawling on a heading of 250º at a speed of 6 knots, collided with the gill netter.

It is hard to determine which of the two Skippers was the more surprised. Although the gill netter was stopped in the water, was showing not under command lights and had several working lights switched on, the beam trawler ran into her. The trawler's Skipper had seen the radar echoes of two other vessels in the vicinity but not that of the gill netter. The fact that he collided suggests he was not looking out of the wheelhouse windows.

After the collision, communications between the two vessels were established on VHF Channel 16. An internal inspection of the gill netter revealed a small leakage in the forward cabin which was contained effectively using the available manual bilge pump.

The Lessons

1.The collision occurred due to the fact that no avoiding action was taken by either the gill netter or the beam trawler. The watch keepers in both vessels were unaware of the presence of the other and neither had any appreciation that risk of collision existed. In other words, no proper lookout was being kept by either vessel.

2.Although the Skipper of the gill netter had assessed there were no vessels in the immediate vicinity and that it would be safe for him to leave the wheelhouse unattended temporarily, his assumption was based on the radar information presented at the time. He further assumed that any approaching vessel would keep out of the way of a vessel displaying not under command lights. He appears to have ignored the prevailing poor visibility while his lack of a radar reflector was a factor he had clearly overlooked.

3.The prolonged absence of the gill netter's Skipper from his wheelhouse was potentially disastrous. Not only did it result in his failing to keep a good lookout (a proper lookout must be kept from every vessel under way, even when stopped and making no way) but his decision to display the lights of a vessel not under command because he had gone below to boil the kettle and call his relief was a gross abuse of Collision Regulation privilege. Marine Guidance Note MGN 25(M+F) draws attention to the increasing use of not under command signals by vessels which are not restricted in manoeuvring through some exceptional circumstance. It also draws attention to the requirement for such vessels to adhere to their collision avoidance responsibilities.

4.The Skipper of the trawler failed to maintain an effective visual lookout and probably failed to maintain a proper radar watch. Although the smaller fishing vessel was well-illuminated, the rangeof visibility was poor and it is probable that the Skipper of the trawler was relying upon his radar to detect other vessels.

5.The provision of a radar reflector might have enabled the gill netter to be detected by the Skipper of the trawler in sufficient time for effective avoiding action to be taken. (Merchant Shipping Notice No M.1638 recommends that all fishing vessels should be fitted with an approved radar reflector in order to enhance their detection.)

6.No sound signals were made by the gill netter nor did her Skipper hear any sound signals from the trawler. Sound signals must be made by every vessel when visibility is restricted.

Footnote

MAIB Inspectors often ask Skippers of fishing vessels whether they ever read M Notices (or MGN Marine Guidance Notes as they are now known). In many instances Skippers are refreshingly honest and admit they do not. On the basis of an admittedly limited survey it seems as if the MGN notice system is not an effective means of conveying important safety related information to the fishing community. The MAIB has raised the matter with the Marine Safety Agency (MSA) and recommended it reviews its methods of promulgating advice and guidance.

The MAIB does, however, remind Skippers that such notices havebeen produced to help them operate their vessels safely. Ignoringthem is a dereliction of responsibility.

Part 3 - Leisure craft

Recent accident reports from the leisure craft community focuses attention on small boat sailors going to sea in bad weather without the necessary experience or an awareness of the potential dangers.

Providing a small boat is sufficiently seaworthy for the expected conditions, and sensible precautions are taken, bad weather itself need not necessarily be the direct cause of accidents. When it is forecast the sensible small boat sailor will carefully consider whether his best option is to delay his departure until the weather moderates, or opt for a change of plan and confine his activities to sheltered waters. If caught in deteriorating weather at sea, he will weigh up the various courses of action and discard the most dangerous. This may well necessitate having to change previously laid plans and settle for something less convenient. The experienced sailor will often welcome plenty of sea room.

The MAIB sees reports of yachtsmen and yachts women who, through lack of bad weather experience, totally underestimate the power of the wind and sea and take their craft to sea in conditions which more experienced mariners would avoid if at all possible. The reports also indicate that important decisions are made far too late with the result that those onboard cannot cope when the conditions deteriorate. Very often the problem is aggravated when the Skipperis handling a boat with which he or she is unfamiliar (perhaps a charter vessel), or the crew lacks effective sea experience.

When bad weather is forecast and the decision to proceed is taken, Skippers must plan their passages with even greater care than normal. Once at sea, conditions will very likely take a toll on equipment and crew. Tasks which seem straightforward in normal conditions will become extremely difficult, if not impossible. Planning an entry toa diversionary port in a storm when you are tired, wet, cold and hungry is not recommended. Anticipation, forethought and preparation will greatly aid a safe and responsible passage.

Experience is a difficult thing to quantify and must not be confused with holding a recognised qualification. Someone with a Yacht Master's certificate may be a very competent sailor but may never have experienced genuine bad weather conditions. Obtaining such experience is important and relevant but it must be acquired in the right boat and in the right company. When deciding the pros and cons of undertaking a passage in foul weather, Skippers and crews must be scrupulously honest with themselves and ask whether they are sufficiently competent to handle it. Swallowing one's pride is better than losing a life.

22. Three rescued from sinking sailing yacht in Solent

Narrative

A small sailing yacht was chartered for a weekend in early April by a group of three men who intended sailing from Portsmouth to Hythe, near Southampton. The weather forecast was for westerly winds of Force 5 to 6 increasing to 7 later in the Western Solent. The yacht was a small fractional rigged sloop with a lifting keel and a length overall of 6.4 metres. The charter company had a fleet of these craft and used them for individual "bareboat" charter and for group activities which included racing. In the winter months the craft were confined to sailing within Portsmouth Harbour.

The passage through the harbour passed without incident but the wind strength increased as they emerged into the Solent and continued to sail close-hauled towards the Isle of Wight. The land provided some shelter as they began to tack westwards. Despite the poor conditions, the crew chose not to don life-jackets until they started a longer tack to the north to enter Southampton Water.

Larger seas were experienced in mid-Solent and the wind increased to Force 7. A decision was taken to lower the jib. Shortly after going about onto the starboard tack, the yacht was knocked down by a gust and lay at 90° for a short time before completely inverting. The crew were thrown into the water but were able to climb onto the upturned hull. The lifting keel, normally kept in place by gravity, fell back into its housing and was only retrieved with extreme difficulty by the crew who then managed to right the yacht. However, because the washboards and hatch had fallen out in the initial knockdown, and so much flooding had taken place, the yacht sank by the stern leaving only about four feet of the bow floating above the water. The buoyancy was almost certainly provided by the trapped air.

Fortunately the accident was witnessed by others onboard larger craft in the area who promptly reported the capsize and called for help. The crew, very sensibly, decided to stay with the capsized hull and were subsequently recovered by the rescue services. The yacht, which did not completely sink, was taken in tow. The crew were examined in hospital and later discharged.

The Lessons

1.The accident occurred because the yacht was being operated in conditions for which she was not suited. The decision to extend beyond the confines of Portsmouth Harbour in the prevailing and forecast weather conditions was unwise and, furthermore, the crew should have been advised against it by the charter organisation.

2.The yacht was perfectly safe for normal recreational sailing activities in moderate conditions. She was not designed to survive a90° knockdown in a moderate swell and such limitations must betaken into account when planning a sail.

3.The crew survived because the incident took place in busy waters and other yachts in the vicinity saw what happened and reported it immediately. The chances of survival would have been significantly reduced had life-jackets not been worn

4.By remaining with the still visible upturned hull and resisting the temptation to swim to other craft in the vicinity, they preserved their energy, provided mutual support and ensured that those best equipped to recover them from the water had a conspicuous datum on which to home.

5. The speed with which the rescue services were alerted and able to respond was a decisive factor in ensuring that the survivors were recovered alive. The water is still very cold in April and, had the accident occurred without being observed by others, the outcome might have been very different.

6.Yachts of this size do not fall easily into an identifiable category. By some they are regarded as small offshore-type craft (as witnessed in this case by the fact that life-jackets were not worn until several miles into the passage). Others regard them as "bigdinghies"; a dangerous assumption as an important property of nearly all sailing dinghies is their unsinkability. This yacht had no buoyancy compartments or other buoyancy arrangements, relying solely upon the integrity of the hull. Once seriously flooded she was likely to sink.

7.Washboards and hatches should be properly secured so as to prevent flooding in the event of a capsize.

8.A lifting keel which cannot be fixed in the down position will hinder attempts to recover from a capsize. It increases inverted stability if it falls back into its housing, and cannot provide an effective lever for the crew unless it is easily retrieved.

9.Responsibility for wearing life-jackets in a craft of this size lies with both the Skipper and each individual on board. If risk exists, or if there is any doubt about the conditions or any other factor, they should be worn. The crew in this instance would not have gone far wrong had they decided to wear life-jackets from the time they left the pontoon or, at the very latest, by the time they left the shelter of Portsmouth Harbour.

23.Yacht founders in needles channel in severe gale - three killed

Narrative

A group of work colleagues chartered a seaworthy and well equipped yacht for five days coastal sailing on the south coast of England in February. Their experience varied but was adequate for what they planned.

They sailed from the Solent to Poole and had hoped to extend westwards to Weymouth but forecast bad weather led to a change of plan. After a period alongside in Poole, they prepared for there turn passage to the Solent. The forecast wind was south-west Force7 to 9. On leaving Poole fairway the Skipper reduced sail for the prevailing conditions and headed east with the intention of approaching the Solent via the Needles Channel which he knew well. No passage plan had been filed with the Coastguard.

It was a rough passage but the crew were confident they were in control until they confronted the first steep-sided seas at these award end of the Needles Channel. These were typical of those encountered in this area when either the west setting ebb tide meets strong south-westerly winds or, as in this case, heavy seas build up in the vicinity of the Shingles and the Bridge bank.

Because some difficulty was encountered in identifying their precise position, the Skipper altered course to the south as he feared he was too close to the Shingles. Moments later a particularly vicious sea capsized the yacht throwing all four crew over board. Three who were clipped on by safety harnesses managed to climb back aboard, but the Skipper, who had unclipped to go below to the chart table, was lost. A great deal of water had found its way below during the capsize through the open companionway and was over one metre deep in the cabin. One of the crew went below to make a MAYDAY call and during this time the yacht capsized again, this time being dis masted. The two crew on deck were washed overboard, one being swept away, the other being trapped upside down with his head below the water. By the time he was found by the one survivor, he was dead.

Only a fragment of the MAYDAY transmission was received. It is most likely that the radio had been damaged in the capsize and was only transmitting intermittently. The MAYDAY was received by HM Coastguard and by another vessel in the Solent but no position was received, just an urgent request as to whether anyone could hear the signal. For want of any further information and lack of detail as to the origin or location of the vessel making the distress call, no search and rescue operation was mounted.

The yacht was eventually washed up on an Isle of Wight beach with the one survivor on board. The three remaining members of the crew were recovered but all had been killed through drowning or hypothermia.

The Lessons

1.Winter sailing with gales forecast demands a high degree of responsibility by Skippers. The yacht on this occasion was well found. The experience of the crew appeared adequate for the conditions and the Skipper had demonstrated sound judgement by abandoning an ambitious plan to sail further westwards.

2.In accordance with the MSA Code of Practice for Small Commercial Sailing Vessels, yacht charter firms are strongly advised to give appropriate guidance to charterers on the use of the craft,

bearing in mind the declared experience of the Skipper and crew, their knowledge of the boat and the weather forecast.

3.No matter how short the passage, proper planning is essential. Given wind forecasts of Force 7 to 9 the Skipper had the choice of remaining in Poole, taking the long route to his eventual destination by sailing south of the Isle of Wight, or making for the Solent via either the Needles Channel or the North Channel.

4.The indications are that because the tide was flooding, i.e., setting north-east and with the wind, the Skipper decided that the Needles Channel option was a safe choice. The choice of which passage to adopt must always be the Skipper's but the responsibility must be taken after very careful consideration of the dangers and, if lacking in local knowledge, having taken the advice of others. In this instance the Skipper, having taken the decision to proceed to sea, appeared unaware of the grave dangers associated with entering the Needles Channel in strong SSW winds, and especially in the early stages of the flood.

5.In bad weather conditions safety harnesses should be attached to properly tested securing points at all times, and when fitted, the crotch strap of life-jackets must be correctly fastened.

6.Conventional foul weather clothing offers little protection from winter water temperatures (in this case 6 - 8°C) and in breaking seas once the body is fully immersed. Survival times are measured in minutes.

7.One set of flares for emergency use must be kept readily available and separate from the main supply. It is recommended that the ready-to-use set is placed under cover and easily accessible by the companionway.

8.Yachtsmen are encouraged to report their passage plans to HM Coastguard especially in winter when bad weather is forecast.

9.Retroflective tape on liferafts, life-jackets and foul weather clothing stands a very good chance of being sighted at night when it is picked up by searchlight beams such as those used on RNLI lifeboats.

10.Publishers of sailing directions which offer advice on using the Needles Channel should highlight the dangers of breaking seas in the vicinity of the SW Shingles and the Bridge bank especially in strong winds from the south round to west. The swell in such conditions tends to build up once the west-setting ebb has stopped. Around low water the seas at the seaward end of the Needles Channel can be particularly vicious.

11Publishers of charts specifically designed for the small boat user should draw attention to potential dangers in high sea states. Areas for special consideration are sandbars at the entrances to harbours.

12.Despite having to sail close to a lee shore, the North Channel offers a viable and usually safer alternative to the Needles Channel when entering and leaving the Solent in adverse weather conditions even when the tide is favourable.

Acknowledgement to Hampshire Police and HM Coroner, Isle of Wight

24. Motor cruiser sinks with loss of life in the Thames Estuary

Narrative

A 9 metre long fully decked motor cruiser was purchased by a private individual with the intention of using it for pleasure purposes on the upper, non tidal, reaches of the River Thames. Before setting out on her final voyage, the vessel was moored in another river which flows into the Thames

estuary.

The new owner wished to sail the vessel to its intended area of operation but, due to his lack of experience, employed a certificated delivery Skipper to undertake the passage. The Skipper, the owner and a friend arranged to be on board during the 50 mile passage.

Having made an uneventful transit down river from its mooring, the vessel entered the Thames estuary and started to roll. Although mid-winter, weather conditions were moderate, with a Force 4 wind. When about 3 miles into estuarial waters the vessel rolled very heavily, did not recover and started to flood. Shortly afterwards it began to sink by the stern.

All three persons on board managed to climb out of the wheel house and cling to the motor cruiser's bow. They had no opportunity to make any distress call or signal for assistance, but fortunately their plight was noticed by a large merchant vessel, whose Master called the port authorities for assistance.

Two of those onboard were recovered from the sinking vessel but the third, the owner, slipped into the water and was never seen again. He was not wearing a life-jacket. Of the two who survived, one suffered badly from hypothermia and came close to losing his life.

The Lessons

1.A motor cruiser sank and a life was lost because of basic errors. The craft was making a passage in conditions for which she was not designed and the failure to have life-jackets on board denied the occupants a means of keeping afloat once they found themselves in the water.

2.A detailed history of the vessel's former use is unknown but it seems likely she had never previously been used on the open sea. Although there is no reason why some craft designed for

inland waters should not be used for estuarial, coastal or even open seas in set fair conditions, the limitations must be clearly understood and acted upon sensibly.

3No stability information was available for the vessel. Whenever purchasing a yacht or motor cruiser, prospective owners should ensure that basic stability information is available and understood. Skippers should likewise satisfy themselves that the craft they have charge of is capable of undertaking the planned voyage.

4.The vessel had no arrangements for rapidly clearing water from her deck, which made her unsuitable for operations in waters where sea could break on deck.

5.In this particular instance, the complete absence of stability information, the lack of deck water freeing arrangements, the record of previous use and the size of the vessel itself should have made it obvious to the certificated delivery Skipper that a sea passage was not a viable option given the time of year and the expected sea conditions. He should have advised the Skipper to consider alternative arrangements including the use of road transport.

6.Although the planned passage was never to be far from the shore and did not involve an open sea component, a life was lost due the lack of a fundamental item of safety equipment; a supply of life-jackets.

7No life-jackets or other buoyancy aids were carried on board the vessel. It is important that more than sufficient life saving apparatus is carried on any vessel, no matter how big or small, and at all times.

Appendix A
Investigations Commenced in the Period 01/04/97 - 31/12/97

DATE OF ACCIDENT	NAME OF VESSEL	TYPE OF VESSEL	FLAG	SIZE	TYPE OF ACCIDENT
09/12/96	RELUME	Buoy Tender	UK	1,727 GT	Accident to Personnel
03/01/97	TOVE KNUTSEN	Oil Tanker	Norway	60,719GT	Fire
11/03/97	LONDON GLORY	Oil Tanker	UK	79,979 GT	Machinery
19/03/97	ASSURANCE	Tug	UK	65.18 GT	Heavy Weather Damage
05/04/97	MISS-GUIDED	Small Commercial Sail	UK	6.4 M	Capsizing and Foundering
14/04/97	MARBELLA	Fishing Vessel	UK	61.63 M	Fire
20/04/97	SUNBAS	Standby Safety vessel	UK	1,151 GT	Dangerous Occurrence
05/05/97	AURORA	Fishing Vessel	UK	21.91 M	Heavy Weather and Fatality
09/05/97	ENAK /	Dry Cargo Barge	Germany	1,701 GT	Accident to Personnel
	LOVE LETTER	Gen Cargo - Multi Deck	Germany	6,500 GT	
16/05/97	ALBATROS	Cruise Liner	Bahamas	24,803 GT	Grounding
19/05/97	JENMAR	Fishing Vessel	UK	20.28 M	Grounding
20/05/97	SIGGEN II	Gen Cargo - Multi Deck	Tuvalu	1,973 GT	Explosion
05/06/97	CONTENDER	Ro-Ro Cargo	UK	2,292 GT	Accident to Personnel
21/06/97	LION	Ro-Ro Cargo	Bahamas	5,897 GT	Accident to Personnel
01/07/97	ST MARK	Fishing Vessel	UK	33.02 M	Accident to Personnel
02/07/97	ANTRIM FISHERIES IV	Fishing Vessel	UK	7.56 M	Capsizing

22/07/97	RIX HARRIER	Gen Cargo - One Deck	UK	572 GT	Accident to Personnel
27/07/97	ANNELIESE/	Fishing Vessel	UK	22.75 M	Collision
	RHEIN MASTER	Gen Cargo - One Deck	Antigua and Barbuda	3,790 GT	
11/08/97	ANNA LOUISE	Fishing Vessel	UK	14.50 M	Accident to Personnel
19/08/97	ILONA G /	Gen Cargo - Single Deck	UK	999 GT	Collision
	ANTONIA B	Gen Cargo - Single Deck	UK	498 GT	
04/09/97	MARIA	Gen Cargo - Single Deck	Malta	2,740 GT	Fire
06/09/97	FLAMBOROUGH LIGHT	Fishing Vessel	UK	16.68 M	Accident to Personnel
01/10/97	QUEEN ELIZABETH 2	Cruise Liner	UK	70,327 GT	Fire
01/10/97	SAPPHIRE	Fishing Vessel	UK	20.56 M	Capsize
12/10/97	YUSUP K	Chemical Tanker	Malta	10,937 GT	Machinery
14/10/97	ST PAUL	Offshore Supply	UK	622 GT	Accident to Personnel
24/10/97	SEA HUMBER	Cargo Vessel	Bahamas	1,602 GT	Stranding and Grounding
25/10/97	OCEAN SPRAY	Fishing Vessel	UK	11.96 M	Accident to Personnel
27/10/97	SAND KITE	Dredger	UK	3,110 GT	Collision
29/10/97	BLACKHEATH	Tanker	UK	751 GT	Collision
&emdash;/11/97	MARGARETHA MARIA	Fishing Vessel	UK	21.48 M	Missing Vessel
19/11/97	GREEN LILY	Specialised Carrier	Bahamas	3,624 GT	Machinery
22/11/97	NORLIFT	Drilling	Bermuda	4,604GT	Accident to Personnel

29/11/97	KELLY MARENA	Fishing Vessel	UK	18.29 M	Grounding
29/11/97	BURHOU I	Gen Cargo - Single Deck	UK	674GT	Accident to Personnel
14/12/97	SAGA ROSE	Cruise Liner	Bahamas	24,474GT	Fire
16/12/97	FAITHFULL III	Fishing Vessel	UK	26.5M	Accident to Personnel

Appendix B
Inspector's Inquiries

An Inspector's Inquiry is the highest level of investigation carried out by the MAIB. Reports arising from such Inquiries have to be submitted to the Secretary of State for the Environment, Transport and the Regions within twelve months of the date of the incident.

Such reports are published subject to the approval of the Secretary of State.

The following accidents are at present subject to Inspector's Inquiries and due to be submitted to the Secretary of State by the dates shown:

Name of Vessel	**Brief Details**	
Pescado	Fishing Vessel; foundered English Channel	28/11/97
Westhaven	Fishing Vessel; foundered, North Sea	10/03/98
Gorah lass	Fishing Vessel; foundered, Bristol Channel	11/03/98
Cita	Feeder Container Vessel; grounded Isles of Scilly	26/03/98
Albatros	Passenger Liner; grounded, Isles of Scilly	16/05/98
Sapphire	Fishing Vessel; foundered off Peterhead	1/10/98
Sand kite	Dredger; collision with Thames Barrier	27/10/98
Green lily	Cargo vessel, grounding, Shetland Islands	19/11/98
Island princess	Passenger Cruise Ship, Economiser Accident	07/12/98

Appendix C
Reports issued in 1997

Sea Empress - Grounding and Subsequent Salvage of a Tanker at Milford Haven between 15 and 21February 1996.

Report published 16 July 1997.

ISBN 0-11-551890-8

£30.00

MAIB Annual Report 1996

ISBN 0-11-551934-3

£15.00

Atlantic Princess - Three Fatalities and Injuries to Six Crew Members on 25 July 1996.

Report published 16 December 1997

ISBN 0-11-552007-4

£23.99

Copies of the above Reports are available in the UK from the Stationery Office, PO Box 276, London SW8 5DT and good booksellers. Copies are not available direct from MAIB and no payments by any means are accepted by this office.

A list of Stationery Office stockists and distributors outside the UK appears at Appendix D.

Summary of investigations 1/97

Copies of this publication can be obtained, free of charge, on application to the Marine Accident Investigation Branch.

Appendix D
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