Marine Accident Investigation Branch (MAIB) - Safety Digest 01/1998

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Part 1 - Merchant vessels

This edition of the Safety Digest contains a variety of incidents with lessons for both deck and engine room personnel. There is no common theme among the accidents described but we believe they all contain food for thought and should heighten an awareness of what can go wrong at sea.

With the increasing use of fast ferries around our coasts we publish an account of an accident involving a fast ferry colliding with a fishing vessel and are grateful to the Danish Maritime Authority for allowing us to précis their more detailed version. The use of high speed craft adds an extra dimension to seafaring and this incident should focus attention on how propelling at 35 knots requires a special relationship between man and machine.

Given the relatively small number of UK merchant ships on our database, analysis of accident trends is, to an extent, subjective. On the other hand the MAIB is in a position to note certain features in many accident reports which continue to concern us. The issue of fatigue among mariners is not new but it occurs again and again and is an undisputed factor in many of the accidents we investigate in both UK registered and foreign flagged vessels.

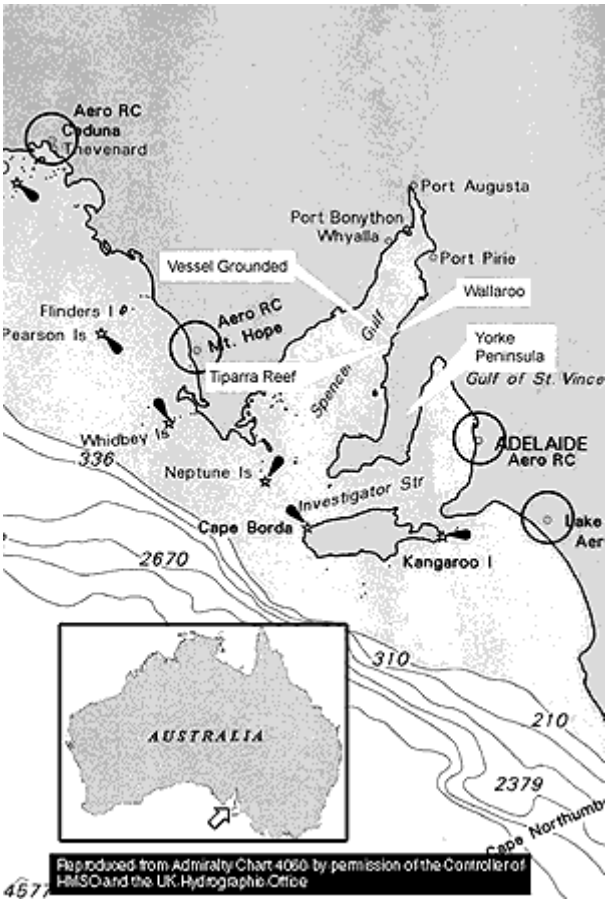
Identifying the root cause is equally subjective but two trends are developing which require attention; the lack of proper rest between periods of duty and a tendency to use watchkeeping time to attend to matters that distract the watchkeeper from his or her principal duty. We do not yet have sufficient data to make any authoritative comment on minimal manning standards but it seems to us that some ships are so short handed that proper rest becomes impossible and many of the tasks of todays seamen can only be carried out by the person on watch. We have, for instance, reports of officers who spend much of their time keeping volumes of new regulations up to date, while on watch.

At the heart of the problem are the commercial pressures arising from too many ships chasing too few cargoes. Some owners cut costs which invariably means savings in manpower. Investment in safety and training is reduced and the potential for accidents increases. This is not a new problem. While it is always very easy to criticise seamen for mistakes made at sea, and owners for not providing them with the necessary resources, responsibility also lies with flag states to implement the various international agreements on standards. The advent of the ISM Code provides an opportunity for every port state to be unrelenting in its determination to detain substandard ships and identify the rotten core of equally substandard ship operators, classification societies, charterers, insurers and financial institutions. We do not require more regulations, only implementation of the existing ones.

Once these substandard ships have been eradicated, the good operators will have a much better opportunity to compete on a sound basis, invest in manpower and training, and man their ships with dedicated crews. Those at sea will, hopefully, be able to carry out their duties more effectively without being permanently tired. This should, in turn, lead to a reduction in the number of accidents.

Case 1: Grounding of Panamanian Bulk Carrier

Narrative



The Panamanian registered bulk carrier WESTERN WINNER of 30,396 tonnes dead-weight was on passage from Singapore to the east coast of Australia.

During the voyage her destination was changed twice, first to Port Adelaide for which she had appropriate charts, and then to Wallaroo in the Spencer Gulf. Her chart portfolio did not, however, include two crucial charts covering the Southern part of the Gulf which she required for safe navigation.

To overcome the problem one of the officers attached some plain paper to the bottom of a chart already held and used this extension for navigation. In lieu of a chart, reference was made to the port entry guide rather than the Admiralty sailing directions and a course plotted towards the pilot boarding area. Its charted position happened to fall on the plain paper. The Master had meanwhile telexed the vessels agents requesting charts for the waters in question but did not give any reasons as to why he needed them.

The vessel continued on passage with positions being plotted at regular intervals on the charts available. The last position, prior to the accident, was plotted on the makeshift chart and some two hours prior to embarking the pilot. The portion of the chart in use was devoid of any detail.

At the time the last position was plotted, the watch was handed over to the Third Officer with the Master in attendance on the bridge. Both radars were in operation, one of which was equipped with

ARPA. A lookout/helmsman was also on watch. The weather was overcast, with moderate visibility and occasional rain showers.

Some one and a half hours later, visibility was reduced in a heavy rain shower and a radar echo was detected fine on the starboard bow. It was assumed to be a small vessel and course was altered to keep clear of it. After steaming a further mile, a light was seen on the same bearing as the radar echo which prompted a further alteration of course. Shortly afterwards, the ship ran aground.

It was then discovered that the echo the Master had assumed to be another vessel was in fact the Tiparra Reef light beacon which was very clearly marked on the appropriate charts but not on the makeshift version being used onboard WESTERN WINNER.

The Lessons

1.All appropriate charts for the required trading area should be carried to ensure that a detailed passage plan can still be constructed should the destination port be changed while the vessel is on passage.

2.Admiralty or other approved sailing directions should always be consulted when planning a passage.

3.Owners should maintain records of charts carried on board the vessels.

4.Masters can never assume the port of destination will remain unchanged. If, as in this case, charts are not held for the area in which the ship is intending to sail and they are ordered by fax, telex or other means, the reasons for demanding them should be given.

5.The largest scale chart should always be used.

6.No Master should ever take his ship into water for which he has no chart of a scale suitable for safe navigation. When the relevant charts are not held, both owner and charterer should be informed without delay.

7.Course alterations based on imprecise or incomplete information can result in vessels being placed in dangerous situations. Stationary targets should be cross-checked against charted objects.

8.When doubt exists as to whether a vessel is in safe water, Masters should proceed with extreme caution until an accurate position has been obtained. The echo sounder should be switched on and monitored. Depending on the circumstances, taking the way off and even anchoring is preferable to running aground. The anchors should be cleared away when entering shallow water and when there is any doubt about the vessels position.

9.When ordering an item to meet an urgent requirement, the demand should include a statement as to why it is required and the date by which it should be delivered.

Footnote

Although the SOLAS Convention requires ships to carry paper charts, the advantages in having digital navigation systems and electronic charts should not be underestimated. These include the facility of being able to carry an extensive portfolio on board, a reliable means of maintaining charts up to date and the ability to access a chart not normally used by entering a special code. In extremis, a new chart can be transmitted via INMARSAT.

With grateful acknowledgement to the Australian Marine Incident Investigation Unit

Case 2: Bridge Management Failure

Narrative

The offshore supply vessel HIGHLAND STAR was leaving Peterhead Harbour in restricted visibility on 16 August 1997. The bridge was manned by the Master, Chief Officer and Second Officer. Two radars were operating on a range scale of 0.75 mile.

After manoeuvring the vessel clear of her berth at the southern end of the harbour, the Master retained the con and steered a course approximately parallel to the south breakwater. He intended turning the vessel to starboard at the appropriate moment to pass between the north and south breakwaters and exit the harbour on the charted leading line.

While proceeding across the harbour, the vessel entered a fog bank with visibility reduced to about 20 metres. The Chief Officer, monitoring progress on the starboard radar, informed the Master they were two cables from the south breakwater. The Master engaged the autopilot and moved to the port radar to determine the range of the quay wall ahead of him. He was surprised to find it was only 1.4 cables dead ahead, much less than he had anticipated.

An immediate course alteration to starboard was necessary but several things then occurred at once. The mobile phone rang on the bridge and was answered by the Second Officer who passed a message to the Master. At almost the same time the Harbour Office called on VHF radio to advise that the vessel was only one cable from the quay and closing it. The transmission was acknowledged by the Chief Officer.

The Master found himself in poor visibility, deluged with information at a critical moment, closing a wall he couldn't see and responsible for taking immediate action with the steering in auto. He changed back to manual steering, applied full starboard helm and put both engines to full astern

before placing the helm amidships. Although this significantly reduced headway, it failed to prevent the vessel hitting the sea defences of the quay wall.

The Lessons

1.Ship handling and pilotage in restricted visibility requires additional care. Not only should the entire manoeuvre be planned in advance but there must be a clear delineation of responsibility and established procedures for who does what.

2.The Master, having taken the decision to sail in conditions where the visibility might change suddenly, should have ensured that both the Chief and Second Officers were totally dedicated to supporting him in what was clearly a difficult manoeuvre once fog had descended. Primarily, this would entail providing him with relevant and accurate information to enable the vessel to proceed safely and for the wheel to be applied at precisely the right moment to alter course to starboard.

3.Anyone handling a vessel in such a situation will normally focus his, or her, total concentration on the matter in hand. Any distraction can be very disconcerting and potentially dangerous. Few people are able to absorb additional, or superfluous, information in such circumstances without losing concentration. Every effort must be made to identify the sources of potential distractions with the aim of either managing them sensibly or removing them altogether. Mobile phones, for instance, can present unwelcome distractions and consideration should be given to switching them off or placing them in the care of personnel not involved in navigation at the time.

4.The need for detailed passage planning and execution applies to harbour transits as well as sea passages and should cater for both visual and blind conditions. It should be possible to change from one plan to the other in the event of sudden changes invisibility. Wheel-over positions should be calculated in advance, using radar information alone. Blind pilotage techniques should be practised regularly so those involved can gain confidence in their ability to navigate safely in poor visibility and to establish the best allocation of responsibilities among those on the bridge.

5.The autopilot should not be used when underway within harbour limits. In blind pilotage conditions Masters will generally find it easier to maintain a better overview of events when they delegate the steering to someone else.

6.Crew resource management training is strongly recommended to assure that divisions of responsibility, pre-planning, equipment failure and unexpected developments can be accommodated and effective procedures established.

Case 3: Collision between a Fast Ferry and a Fishing Vessel

Narrative

On 13 March 1997, the Tasmanian-built, wave piercing catamaran CAT LINK II, with a maximum top speed of 36 knots and a carrying capacity of 125 cars and 583 passengers, was on her regular service between the Danish ports of Kalundborg and Arhus. At 0942 that day, with visibility assessed at between 0.5 to 0.75 of a mile, she collided with, and sank, the 13.4 GT wooden fishing vessel LISSI. The Skipper, who was the sole occupant of the fishing vessel, survived and was picked up by the catamaran.

The catamaran's modus operandi at sea was for Master and Mate to man the bridge control desks with the vessel being steered from the centre seat. Two radars were fitted. On the day of the accident the Master used a gyro stabilised, true motion, X-band set at 1.5miles but off-centred so that he could detect contacts at a range of 2.5 miles ahead. The Mate had a DGPS stabilised S-band

radar set to a range of three miles and off-centred so that it was possible to see five miles ahead. The Chief Engineer was also on the bridge; seated behind, and to port of, Master and Mate.

The catamaran was proceeding at 34.5 knots. Fog signals were not being made.

Ahead of them LISSI was moving through the water at about three knots, showing lights and shapes to signify she was trawling. In addition a floodlight was shining astern towards the trawl. The Skipper was in the wheelhouse with the radar switched on as an aid to navigation. He was unaware of the catamaran's high speed approach from astern. LISSI was fitted with a radar reflector constructed of plates at right angles which had limited reflective properties for X-band radars and virtually none for S-band.

CAT LINK II's Mate detected two echoes on the radar at a range of four miles and reported them to the Master. Shortly afterwards the Master became aware of a collision warning on his radar from one of the two contacts and altered course to port to avoid them.

The avoiding action having been taken, the Mate sought the Master's approval to leave the bridge to visit the toilet. The Master gave his permission.

The Master, now watchkeeping alone, continued to monitor the very clear computer generated plotting symbols superimposed on the synthetic radar echoes and assessed he was passing clear. Meanwhile he divided his lookout responsibilities between monitoring both radar displays and keeping a visual lookout. Each time he looked up he automatically switched on the wipers to remove spray settling on the bridge windows.

An independent witness states LISSI became visible at a range of 1000 metres. Neither Master nor Chief Engineer saw it until it had closed to less than 100 metres. Despite taking immediate corrective action, it proved impossible to take the way off, or alter course sufficiently, to avoid a collision. The catamaran's starboard pontoon hit the fishing vessel.

The first that LISSI's Skipper knew of impending disaster was hearing the noise of the catamaran when the range had closed to about100 metres. Although he then saw the catamaran approaching from astern, it was too late to do anything. He was thrown into the water on impact.

The catamaran can stop from full speed in 270m within 48 seconds. The man overboard boat was successfully launched in two minutes and the Skipper recovered. Although LISSI was fitted with a four-person life raft and the hydrostatic release had correctly activated, it failed to break free from the sinking vessel because a tarpaulin had been secured on top of it to protect it from the weather.

The investigation showed that the X-band radar's relatively slow rotational speed (24 rpm), together with delays and in accuracies in the gyro and log inputs, led to large errors in the calculated position and speed of the echoes, so much so that they could not be followed automatically at times. It was found to work more effectively when functioning without the various data inputs.

The performance of the S-band radar was also affected by a number of vertical surfaces in the vicinity of the antenna and the presence of an aluminium box which had been specially installed forward of the antenna. The display suffered from excessive clutter as a result.

Reconstruction of the accident revealed that reliable course and speed data on radar targets had been degraded after course alterations by the catamaran.

The Lessons

1.High speed ferries with competent crews and the most modern navigation and radar equipment can collide with other vessels.

2.Despite the ability to stop rapidly in a very short distance, Masters of fast ferries must not hesitate to reduce speed in fog if there is any doubt about the actual range of visibility when approaching another vessel whose movements are uncertain. If, as on this occasion, the Master closes to such a range where he is confident he would see the other vessel, but does not, and the resultant range is very close, he must slow down. Rule 19 of the regulations for the prevention of collision at sea, which addresses the conduct of vessels in restricted visibility, is just as applicable to high speed ferries as to other craft.

3.The ferry was working a tight time schedule with very little scope to slow down without incurring delays. Masters should be left in no doubt that the craft's safety takes precedence over the requirement to arrive on time.

4.A particularly good standard of lookout in a high speed ferry is paramount. Travelling at nearly 35 knots in poor visibility with spray settling on the bridge windows with only one person maintaining a lookout is unsatisfactory. A vessel travelling at this speed will cover half a mile in less than a minute which gives very little time to see an object, make an assessment as to the correct action and, if necessary, take the way off before impact. Two officers are necessary to ensure that an effective visual and radar lookout are maintained at all times in such conditions. The HSC code requires two officers to be on the bridge at all times.

5.Adequate time must be made available for fast ferry bridge watchkeepers to rest between passages so they can give their full attention to the craft's safety in situations as described in this report.

6.Although the fishing vessel was detected relatively early, unwanted clutter interfered with automatic monitoring of the radar. The S-band radar antenna was so situated that some adjacent surfaces lowered its effective performance. Fast ferry operators must ensure that radar performance is checked regularly and sources of controllable clutter identified and removed.

7.ARPA performance in fast ferries is dependent on effective data inputs. Aerial rotation speeds, synthetic displays, echo monitoring, gyro and DGPS inputs are all interdependent and must be constantly checked in good visibility to generate confidence in the radars' efficiency and accuracy in poor visibility. Any discrepancies must be investigated and eliminated.

8.It should not be assumed that small boat radar reflector echoes will give adequate warning. Small boat owners and Skippers should be made aware of the limitations of many radar reflectors and advised on what is most effective.

9.All Masters and Skippers should ensure that life rafts are able to operate in the manner intended and that nothing is likely to stop the hydrostatic release functioning correctly or the life raft deploying without any impedance.

10.CAT LINK II launched her rescue boat in two minutes. It is a useful target time to aim for.

Case 4: Coaster Collides with Fishing Vessel

Narrative

On 28 July 1997 the 3,700 GT Antigua and Barbuda registered feeder container ship RHEIN MASTER was on passage from Dublin to Southampton. It was a dark, clear night and she was about 25 miles north of the Land's End Traffic Separation Scheme at 2300. She was on a course of 181° and making good a speed of 14 knots.

At the same time the 22.75 metre Newlyn based beam trawler ANNELIESE was fishing on the grounds some 20 miles to the north of the Land's End Traffic Separation Scheme. She was showing navigation lights for a vessel engaged in fishing, and deck working lights.

On board the container ship, the Second Officer took over the bridge watch from the Chief Officer at 2300. His primary aid to navigation for position fixing was GPS. One of his two radars was in use. During the watch handover he was made aware of a number of vessels in sight and, to assist him in keeping an effective watch on the bridge, a lookout was posted.

At about 2330, ANNELIESE was making good a speed of 3.5 knots and steering due east with two other fishing vessels nearby. The Skipper, on watch in the wheelhouse, observed the navigation lights of an approaching merchant ship nearly two points forward of his port beam at a range of about six miles. He continued to monitor her progress and realised she would pass very close unless she altered course. He assumed she would alter course to starboard and pass round his stern. He therefore maintained course and speed.

Meanwhile on board RHEIN MASTER, the Second Officer prepared to plot a position taken from the GPS. He was satisfied with the traffic situation but had apparently failed to see any fishing vessel on his starboard bow either visually or on radar.

As the range closed, ANNELIESE's Skipper became concerned by the oncoming merchant ship which gave no sign of altering course or speed. When the two vessels were very close he realised a

collision was unavoidable unless he took action to prevent it. He put the engine astern but was too late and the stem struck the starboard bow of the merchant ship.

RHEIN MASTER's Second Officer was, in the meantime, totally oblivious that anything untoward had occurred until, to his surprise, he saw the lights of a fishing vessel suddenly emerge from behind the second bay of containers forward of the accommodation and pass close down the starboard side. He assumed the lights of the other vessel had just been switched on.

Apart from damaging her bow and buckling some rails, the fishing vessel remained relatively intact. The Skipper did, however, suffer severe bruising from being thrown to the deck by the shock of the collision.

RHEIN MASTER made radio contact with the fishing vessel, ANNELIESE, and established that assistance was not required.

ANNELIESE was escorted to harbour by another fishing vessel and the container ship continued her passage to Southampton.

The Lessons

1.Why did these two vessels collide at night in good visibility? There were two fundamental reasons; RHEIN MASTER's Officer of the Watch failed to keep a good lookout and ANNELIESE's Skipper failed to take effective action in accordance with Rule 17 of the International Regulations for Preventing Collisions at Sea:

> "When, from any cause, the vessel required to keep her course and speed finds herself so close that collision cannot be avoided by the action of the give-way vessel alone, she shall take such action as will best aid to avoid collision."

2.The failure of both the container ship's Officer of the Watch and lookout to see the fishing vessel is inexplicable. Keeping a good lookout at sea is the bridge watchkeeper's most important function. It must be done conscientiously with a sensible division between monitoring radar displays, keeping a good visual lookout and undertaking other essential tasks such as fixing the ship's position. In good visibility, radar echoes should be correlated with the visual picture. Lookouts must not be distracted from their prime task and should use binoculars. Those entrusted with keeping a lookout should vary their position on the bridge to ensure they cover any part of the horizon obscured by masts or containers. Eyes must be night-adapted (and on a very dark night, watchkeepers should develop the technique of looking two or three degrees above the horizon to help them pick out dim or distant lights).

3.Effective radar watchkeeping is crucial. Officers should know the characteristics and limits of their sets and have an instinctive feel for achieving the optimum performance in the prevailing conditions. Range scales should be varied with, under normal circumstances, at least one display on long range. When another vessel is sighted or detected, the watchkeeper has one overriding priority: to determine whether risk of collision exists. ARPA should do this automatically but the conscientious watchkeeper will mentally rehearse the time honoured paragraph in the "Rules" which states, with crystal clarity, that "such risk shall be deemed to exist if the compass bearing of an approaching vessel does not appreciably change."

4.ARPA, in the right hands, is an outstandingly successful tool for preventing collision at sea but the use of radar must never detract from traditional skills. The human eye is still the most effective watchkeeping aid, and the modern officer must never assume that 20th-century technology will make up for any shortcomings on his part. Eyeballing is, with constant practice, an effective and

reliable skill. Shipmasters of old could accurately judge distances by eye, inclinate on other vessels and mentally calculate closest points of approach. There is ample evidence to indicate that these traditional skills are not as widely practised as they once were but, when properly used, they still make a major contribution to safety and should not be neglected. They were based on 100% concentration, an ability to both look and SEE things, and an instinctive use of the compass to assess bearing movement.

5.Watchkeepers in the right of way, or stand-on, ship should never assume the give way ship is keeping an effective lookout or that she will act in the way required by the Rules. She should of course do both, but the onus of responsibility for establishing whether risk of collision exists is a shared duty and is just as important in the stand-on vessel. If risk of collision cannot be avoided by the avoiding action of the give-way vessel alone then the stand-on vessel must take appropriate action in sufficient time to be effective. Failure to do so, as in this case, may well lead to collision.

Footnote As Thucydides is alleged to have said *"Collision at sea can spoil your entire day"*.

Case 5: Oil Tanker Drags Anchor and Grounds

Narrative

The 16,000 GT tanker SANTA ANNA proceeded to Torbay anchorage in ballast to await orders. She embarked a pilot who selected a suitable anchorage clear of two other large vessels already at anchor (see chart extract). The position was agreed by the Master and the vessel let go the port anchor with seven shackles in a water depth of 10m without incident. The wind was from the south-west, Force 3, the holding ground was good and the nearest land was one mile to the north.

The vessel remained at anchor over the next four days during which time the wind remained from the south-west and did not increase above Force 5. An officer and a seaman maintained a continuous anchor watch throughout.

On the fourth day, 1 January 1998, the Master received a weather forecast indicating the wind would increase to Force 6 to 7 and perhaps gale Force 8 from the south-west during the next day. He warned his bridge watchkeeping officers to be especially vigilant and instructed them to call him and the engineer officers if they suspected the vessel was dragging. The engines were available for use within ten minutes and this was thought adequate.

As had been forecast, the wind increased steadily on the fifth day and by midday was south-west Force 7. The Master was aware of the situation and during his frequent visits to the bridge he repeated his orders to the watchkeeping officers that they should remain vigilant. The wind strength continued to increase beyond that forecast and by about 1500 had reached Force 9.

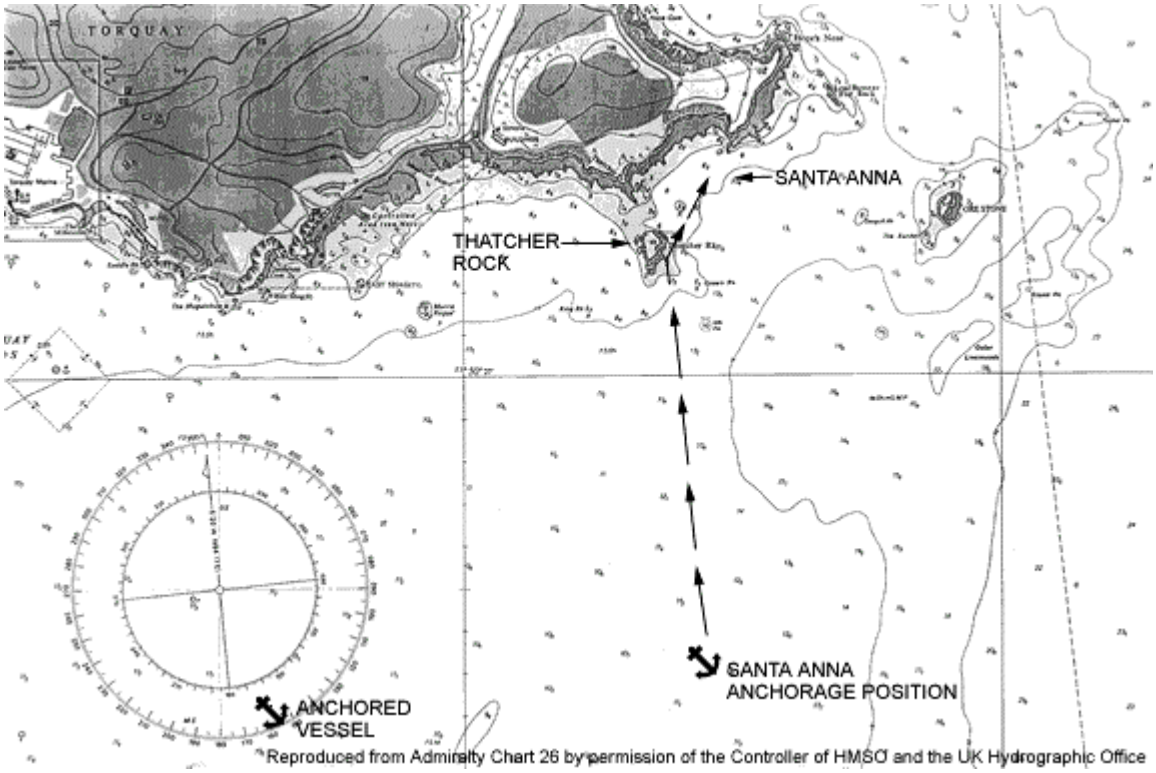
At 1540 the watchkeeper became aware the vessel was moving but was unsure whether she was just swinging or had started to drag. He plotted her position and confirmed the latter. Following instructions, he notified the Master and the duty Engineer immediately. Bridge and engine room teams were mobilised and the Chief Officer and Bosun went forward to stand by the windlass. When the Master arrived on the bridge he found the vessel had moved 1.2 cables from her original position.

The main engines were available under bridge control within ten minutes, at 1555, but by this time the vessel was dragging at about two knots towards the shore. The Master immediately put the engines ahead and ordered the Chief Officer to start heaving the anchor.

During the next 15 minutes it was only possible to shorten in by two shackles of cable despite using full power on the engines to help. Meanwhile the drift towards the shore continued. Just before she grounded, the Master attempted to regain control of the vessel by going full astern in the hope that the stern would come up into the wind. This manoeuvre was unsuccessful and the propeller was stopped just before she took the ground off Thatcher Rock at 1610.

At 2100 the large fishing vessel MARBELLA managed, with the help of local boats, to connect a line and hold SANTA ANNA's bow clear of the shore. The Coastguard tug FAR MINARA arrived on scene at 2115. A tow line was made fast and SANTA ANNA was pulled clear and into safe water at 2228.

There was no pollution and there were no injuries. SANTA ANNA did however, suffer extensive bottom damage.



The Lessons

1.This incident demonstrates, yet again, the power of the wind and sea.

2.Even the most sheltered anchorage has its limitations in strong winds and this incident demonstrates the effect of south-westerly Force 9 winds on a ship at anchor in Torbay which "affords good anchorage, sheltered from W winds" .

3.When the weather deteriorated beyond that forecast, the Master should have appreciated that additional measures were necessary to ensure the safety of his ship; he was obviously aware from his precautions that his ship could drag in the strong winds. Those mariners who have experienced dragging an anchor will need no reminding that the rate of drift downwind can be frighteningly fast. In this incident it was assessed as two knots. The Master would have been well advised to have had both engines running ready for immediate use and perhaps propelling at slow speed at the height of the storm. He should have considered paying out more cable, letting go the second anchor or leaving the anchorage to ride out the storm at sea.

Case 6: Defective Gangway Platform Design

Narrative

The ro-ro cargo/passenger ferry BISON of 14,387 GT had just completed berthing and three crew members were preparing to rig the ship's gangway. The gangway platform was hinged at deck level and stowed securely in a vertical position by a retaining pin.

The normal procedure for deploying the gangway platform was for the crew to take the weight of the platform using the gangway hoist, prior to removing the retaining pin. On this occasion, while two crew members were still preparing the hoist, the third removed the pin prematurely. This caused the platform to rotate inboard and trap his right leg.

A basic design fault was identified as the result of this accident and the Owners are modifying the platform to prevent it from rotating inboard.

The Lessons

1.Procedures are developed to prevent accidents and should always be followed. When short cuts are taken or the wrong sequence of events is followed, the risk of an accident occurring rises significantly. When a job as commonplace as rigging a gangway in a ferry is undertaken, there is always danger that over familiarity with the procedures may result in carelessness. The standard operating procedure should always be followed.

2.Where the potential consequences of not following the standard operating procedure are particularly hazardous, practical safeguards should be introduced to minimise the danger.

Case 7: Fall from Ladder

Narrative

An engine room rating was given the task of cleaning the surface of a ventilation trunking system in the engine room. At the time of the accident, the rating was working alone from a single ladder, the top rung of which had been placed against a vertical corner of the trunking. The ladder was fitted with rubber feet which, after the accident, were noted to have slight traces of oil on them.

Either the rating lost his balance or the movement of the vessel caused the ladder to slip. The rating fell about two metres to the deck.

The Lessons

1.The use of portable ladders on board ships carries a higher than normal element of risk because of ship movement, wet or oily surfaces, and use by lone crew members.

2.Anyone using a ladder should ensure it is stable and is properly secured before use.

3.The use of safety harnesses secured to a standing part of the vessel is also recommended when personnel are working more than two metres above the deck.

Case 8: Complacency during Routine Operation

Narrative

The ro-ro cargo/passenger ferry SATURN was completing berthing operations alongside a pier at Gourock. Prior to rigging the gangway, it was normal practice for a seaman to throw the safety net ashore from the gangway gateway, which was normally secured in the open position by hooks but, on this occasion, was not.

As the net was thrown ashore, part of it became entangled in one of the gates which caused it to close and knock the seaman off balance. He was caught in the net and fell overboard, landing heavily on a pier timber before falling in the water.

The seaman surfaced and, with the assistance of another crew member, managed to hold onto a pier timber. Both were recovered from the water by a fast rescue craft.

The Lessons

1.Gates and doors, unless self-closing, should either remain shut or be securely fastened in the open position.

2.Safe working practice during routine operations is dependant upon crew members following the standard operating procedure and remaining alert to the potential dangers

Case 9: Ship's Fires during Refit

Narrative

This vessel was alongside having new bridge windows fitted. During this work, three fires occurred causing extensive damage to equipment and cabling. After the incident, a report was prepared by a Director of the Shipping Company which highlights the responsibilities of both Ship and Shore Management when a ship is being repaired in port:

Three fires had occurred on this vessel during the space of two days, two within the space of 40 minutes.

The Ship Repairing Group involved were well aware of the dangers of fire during hot work, with the subject being discussed at length during safety meetings and at safety talks.

While every situation is different, there is a duty of care on Management to ensure that the work area is safe.

In this particular case, no thorough examination of the work site prior to starting had been carried out. There were oily rags and debris under the false floor of the bridge. The false floor itself was wood. There were various amounts of paper left in drawers and dropped between consuls and hydraulic fluid left stowed in the bridge. Even after "cleaning" had been carried out after the first fire, debris remained below the false floor and cables remained unprotected.

After the second fire, no additional fire precautions were taken and the fire watcher went for his tea along with everyone else!

The ultimate responsibility for these fires lay with the Yard Management the Ship Manager in charge had a safety qualification, the Safety Officer is trained, and the Chargehand is a member of the Safety Committee. It was concluded therefore that the Management were negligent in:

i. not ensuring proper cleanliness of the work area

ii. not ensuring sufficient protection below the false floor

iii. not ensuring that a suitable firewatch was set for this particular situation

The Ship Owner was advised that while accepting that the repairer has a duty to ensure a safe place of work for his men, and a duty to take care of a vessel under repair, it does not negate the obligations placed on the Master of the vessel or Management Company to ensure that work carried out is done so in a safe manner.

Both the ship's Master and the vessel Superintendent visited the work site on numerous occasions.

At no time did either express any reservations as to the cleanliness of the bridge, neither the paper nor the hydraulic fluid was removed from the bridge prior to hot work starting. No inspection under the false floor was carried out, yet the Master was aware that oily rags may have been present.

In general, there has been a blinkered approach to the work with no responsible person standing up and stopping work while things were made safe. Both Ship Repairing and Shipping Company Management must take aboard the seriousness of this incident and heed the warnings that such incident in the future will result in dismissals for gross negligence.

The Lessons

1.Litter presents a fire risk, can cause people to slip or fall and may conceal other hazards. (Mariners have much to learn from the Kings Cross Underground fire in 1987).Dirty waste, rags, sawdust and other rubbish especially if contaminated with oil are dangerous if left lying about. Sufficient heat may be generated spontaneously within such material to ignite flammable mixtures or even the rubbish itself. (Ref: Code of Safe Working Practices for Merchant Seamen.)

2.Before welding, flamecutting or other hot work is started, a check should be made that there are no combustible solids, liquids or gases below, adjacent to or at the area of work, which might be

ignited by heat or sparks from the work. (Ref: Code of Safe Working Practices for Merchant Seamen.)

Footnote

The MAIB reprints this anonymous report for the benefit of all. The lessons are obvious.
No matter what your function is on board a vessel, you have a responsibility for your own safety. Whether you are an officer or a rating, cargo working, carrying out maintenance or repair work or just visiting, if YOU have any doubt about what is going on, or if you see a potential safety shortcoming, refer to a senior officer or shipyard official. By doing so you will not put yourself, or those concerned, at risk by impeding or needlessly interfering with the conduct of the work.

Case 10: Engine Room Fire in General Cargo Vessel

Narrative

The 1970 Russian built, 2,740 GT general cargo vessel MARIA had been lying alongside at Shoreham for several days discharging her cargo using shore cranes.

MARIA was fitted with a "dead front", open back switchboard which was caged to prevent unauthorised access. Early one morning, when only one generator was on load, the engine room lights started to flicker, and smoke was detected in the vicinity of the main switchboard. The generator breaker was "tripped" and the diesel generator shut down.

The Electrician went into the engine room to locate the source and realised that there was a fire in the back of the switchboard. He attempted to unlock the switchboard cage to find the seat, but thick

smoke forced him to retreat to the accommodation. The Second Engineer, wearing a SCBA set and lifeline, entered the engine room and, using a CO2 extinguisher, put the fire out. Finding no further evidence of fire or heat build-up, he returned to the main deck and reported the fire was out.

Although the emergency lights were on, the vessel's radio sets were temporarily unserviceable. Those on board decided the only means of calling the emergency services was for the Chief Officer to walk to the nearby pilot station to raise the alarm.

Meanwhile smoke clearance procedures were initiated using all available doors, skylights and deck openings. Within ten minutes, the smoke had cleared sufficiently to enable a normal entry into the engine room to be made.

Shortly afterwards the emergency services arrived and confirmed the fire was out. The Electrician was sent to hospital for a check up.

This switchboard was in three sections, each being connected by manually operated bus-bar connectors consisting of a knife type switch encased in a metal box and operated from the rear of the switchboard. The fire had started in one such connection switch and spread to another. Looseness in the bus-bar connecting mechanism allowed movement between adjacent faces of connecting bus-bars. This in turn led to arcing and the ignition of dust and oil particles in the immediate vicinity, which provided sufficient fuel for smouldering combustion to continue for some time.

The Lessons

1.Switchboard equipment should be inspected regularly according to manufacturers' recommendations or maintenance procedures. Connections should be systematically checked for good connecting surfaces and tightness.

2.Switchgear should be cleaned at regular intervals and any build-up of oil saturated dust removed. All contact surfaces must be kept clean and dry.

3.Fire teams should consist of at least two people, one to fight the fire, the other to provide a safety back up in the event of difficulties.

4.Instructions and name tags on the principal items of machinery and associated drawings must be in a language clearly understood by all crew members.

5.Duty watchkeepers in port should make themselves familiar with the procedures for calling the emergency services, including the location of the nearest shore communication point.

Case 11: Fire in Engine Room of Ro-Ro Vessel

Narrative

The ro-ro vessel LION was approaching Larne harbour entrance. Stand-by had been rung and the Chief, Second and Third Engineers were in the Engine Control Room (ECR). Both main engines were operating, with electrical power being supplied by the starboard shaft generator. The port diesel alternator was running in the stand-by mode. As the vessel was about to enter harbour, a fire broke out on top of the starboard main engine. The manual fire alarm was sounded and both the Chief and Second Engineers rushed into the engine room, leaving the Third Engineer in the ECR. The Chief Engineer collected a hand-held dry powder extinguisher, while the Second Engineer went for the foam engine.

The Third Engineer, seeing the fire develop rapidly, correctly shut down the starboard main engine, causing a momentary blackout. The emergency generator started immediately, restoring partial electrical power, while the Third Engineer attempted to bring the port diesel alternator on line. Meanwhile the fire was extinguished and the bridge informed that, although only the port main engine was available, the engine room was safe for entering harbour.

While the engine room staff were handling the emergency below, General Emergency Stations was sounded and the main fire party assembled with fire suits and SCBA sets. The support party went forward to stand by the anchors. The emergency lasted for about 30 minutes and LION berthed successfully using one main engine and a thruster, aided by two tugs.

The fire was caused by fuel leaking from the supply pipe to No 2 unit fuel pump on the starboard main engine. Two pump securing screws had fallen out, allowing the pump to become loose enough for the "O" ring seal to blow out. The leaking fuel was then ignited by the hot surface of an indicator cock close to the fuel leak.

The Chief Engineer suffered a minor injury caused by dry powder entering his eye.

During the subsequent investigation it was found that the two missing screws were only 20mm long and not the correct 25mm. It was also found that no locking washers had been fitted.

The Lessons

1.This accident demonstrates very clearly how even a small oversight in maintenance routines can have major implications at a later stage.

2.When overhauls are carried out on ANY machinery, all spare or replacement parts used MUST conform to the proper specification. Regular and systematic checking of all nuts and bolts fitted to fuel oil pressure systems is ESSENTIAL.

3.Wherever possible, hot surfaces should be insulated; in this case insulating covers were not originally provided for the indicator cocks. Following the incident, covers were provided.

Footnote

The successful outcome of this emergency shows that good training, supplemented by sensible teamwork exercises, can produce the safe, confident handling of emergency situations.

Case 12: Accident caused because No Gangway Provided

Narrative

The 671 GT coaster HOO VENTURE was secured alongside a shipyard quay at Rochester. An approved gangway was available on board but the Master had given instructions for it not to be rigged. The Master signed off and went home leaving the Mate in charge of the ship.

The Mate did not countermand or change the Master's instructions. Some time later he was returning to the ship and found the main deck almost level with, and about 1.5 metres off, the quay. He attempted to step from the quay onto the main deck but slipped and fell between the vessel and the quay. He landed in mud at the bottom of the dock.

The Lessons

1.A gap of 1.5m between vessel and quay is more than sufficient to cause an accident if no proper gangway is fitted. So is one of 0.5m or even less.

2.An approved gangway was available. Not only was it not used but the Master had taken a conscious decision not to use it. He is not the first to do this and is probably not the last but the consequences of not doing so should be foremost in every Master's mind. Next time somebody might be killed.

3.A Master's responsibilities include making sure that safe access is maintained at all times, no matter how tempting it is to do otherwise.

Footnote

The MAIB receives a number of accident reports involving gangways. Sometimes they are not rigged at all as in this instance, or incorrectly rigged. Several people have been killed as a result and many more injured. Safe access is a prime responsibility of masters and anyone invited to use a gangway which is manifestly unsafe should not do so until the problem has been resolved.

Case 13: Overtaking Ferry fails to Give Way

Narrative

A cruise ship was on an overnight passage in the Mediterranean Sea. The weather was favourable with good visibility.

At 0400, she was approximately ten miles south-west of the Greek island of Mykonos and was heading 064° at 17.5 knots. There was some traffic in the vicinity but passing clear.

At about 0410, the Officer of the Watch (OOW) became aware of a ferry closing on the starboard quarter on a heading of approximately 024° at 21 knots. The OOW judged the ferry was coming up from a direction of more than two points abaft the beam and was, therefore, the give-way vessel. The ferry's closest point of approach (CPA) was assessed as 0.1 mile ahead.

The OOW monitored the situation thinking the ferry would probably alter course to port and pass astern. As the situation developed it became apparent that this was not the ferry's intention; course and speed were being maintained.

As the ferry approached the starboard beam, the OOW changed to manual steering and gave five short and rapid flashes on the signalling lamp. The ferry maintained her course and speed. At 0430 the OOW decided to stop to allow the ferry to pass ahead and called the Master at the same time. Within a minute the Master arrived on the bridge and the OOW reduced propeller pitch to zero. By this time the ferry was approximately five cables off the starboard bow. The OOW then applied astern pitch and the ferry crossed ahead at a range of about three cables.

The Lessons

1.Officers of the Watch who consider themselves to be in the stand-on vessel should never assume the give-way vessel will comply with its obligations under the Regulations for the Prevention of Collisions at Sea (Colregs).

2.Vessels approaching from a relative bearing about two points abaft the starboard beam have taxed OOWs for generations. There is often doubt as to whether they are overtaking or crossing. In such cases both compass bearing and range should be monitored with care and the slower vessel should exercise extreme caution. It should never be assumed the OOW in the vessel to starboard has considered himself to be overtaking.

3.When a vessel is in any doubt as to whether she is overtaking another, she is required by Rule 13 of the Colregs to assume that she is the overtaking vessel and act accordingly.

4.The OOW was faced with a difficult situation which many mariners will have experienced. Although every master will require his officers to report to him in different situations, the best officers are those who instinctively call the master in good time to enable him to assess a developing situation before it is too late.

Case 14: Mistaken Identity

Narrative

The 2,000 GT general cargo vessel PAMELA EVERARD was bound for Uddevalla on the west coast of Sweden in ballast. It was dark and visibility was good. She was not carrying, nor was required to carry, a pilot. The planned passage involved her having to navigate between various islands through deep water channels marked by buoys and beacons, many with sector lights.

On reaching a position two cables south-west of the island of Astol, the vessel altered course to starboard to pass between the islands of N Menholm and S Menholm, to follow the track best suited for navigation at night. Although narrow, the channel is marked by two sectored lights, one preceding the other. The first light, at the western end of the small island of S Menholm, was Fl(2) WRG with the white sector marking the safe channel. Beyond it, to the east, lay the second light at Algo, with a characteristic of QWRG with, again, the white sector light indicating the safe channel to the north of S Menholm. Vessels have to make a dog leg to port to progress from the first to the second channel.

When PAMELA EVERARD lined up to pass between the two islands, the Master incorrectly identified the closer Fl(2) as that of the more distant quick flashing white sector light of Algo and assumed he had clear water until the next alteration of course. Very shortly afterwards he realised the light ahead, which he was using as a heading marker, was extremely close.

Uncertain of his position the Master put the engine full astern. His remedial action could not avoid grounding on rocks off the island of S Menholm but it did limit the damage.

The Lessons

1.This was a classic case of light mis-identification. Navigating inshore in waters such as are found in the Swedish archipelagoes, demands very careful preparation and immense concentration. Many of the channels are narrow and are marked with sector lights. There is little room for error and even the slightest mistake can lead to a vessel grounding. The echo sounder will give little or no warning of shoaling water or rocks ahead.

2.Careful preparation lies at the heart of pilotage in inshore waters. The largest scale charts should be studied together with the Sailing Directions and a passage plan drawn up in advance. The hazards on each leg should be identified and clearly marked on the chart in use.

3.Execution of such pilotage requires conscious decisions on manning, methods of navigation and a very careful check on the vessels progress. Navigating by eye is an acceptable procedure for those very familiar with the waters in question but, unless supported by an alternative means of establishing the vessels position, is a high-risk method for those who are not.

4.One officer should dedicate himself to the safe navigation. Each leg of the passage should be planned and marked on the largest scale chart. He should know the characteristics of each anticipated light and positively identify it before committing the ship to the next stage of the passage. Whenever more than one light is visible ahead at the same time, he should make absolutely certain he knows which is which. The conscientious navigator will calculate the time he will be on each leg and can advise whoever has the con on the anticipated time of wheel-over to the next course.

5.If in doubt about the vessels safety, way should be taken off and the position fixed before proceeding further.

Case 15: Interaction during Tow Line Connection

Narrative

The tug THUNDERER was preparing to secure her tow line on the starboard bow of an arriving passenger/cargo ship at Greenock. The ship was proceeding at approximately five knots with a Force 5 to 6

wind on her port bow. The tug approached the starboard shoulder and passed the end of the tow line to the ship by heaving line. The Tug Master was operating the engine controls on the port bridge wing while the Mate was on the wheel.

While the tow line was being made fast on the ship, the Master maintained the tug's position relative to the ship. This involved decreasing engine speed initially but, as the distance between the vessels began to reduce rapidly, he had to correct the rate of closing by increasing engine speed to full and ordering hard to starboard.

Despite his actions the ship's stem hit the tug's port quarter causing it to swing to port with the result that the tug lay alongside the port bow of the ship facing aft. The Tug Master put the engine astern to ease the load on the tow line which was then released by the ship's crew.

The Lessons

1.Tug masters probably have more experience of the effects of interaction between vessels than any other type of mariner. They will be acutely aware of the dangers associated with manoeuvring in the close vicinity of large vessels bows. As this Tug Master discovered to his cost, a moment's miscalculation can lead to events getting out of hand. Quick thinking and immediate remedial action probably saved an awkward situation developing into something more serious, but the potential danger of interaction occurring during the connection of a tow line should never be underestimated.

2.Where possible, a tow line should be connected only when the ship is proceeding at very slow speed, in accordance with the advice promulgated in Merchant Shipping Notice No M.930.

Case 16: Bow Visor Damage on Large Ro-Ro Passenger Ferry

Narrative

A large, modern ro-ro passenger ferry was making a routine voyage across the English Channel in winter. During the crossing, which was made in heavy weather, the ferry was struck on the bow by a very large wave. An inspection forward was made immediately but revealed nothing untoward. The voyage was completed and the passengers and their vehicles disembarked without further incident. Some two hours later, with the ferry reloaded in readiness for the return voyage, it was found that the bow visor could not be closed properly. Closer examination showed that the visor had been badly dented on the starboard side and that two of its securing devices had been pushed out of alignment to prevent closure. The extent of the damage meant the ferry had to be withdrawn from service and repaired.

The function of the bow visor is to prevent seas directly impacting upon the two sets of doors which maintain the watertight integrity of the ship.

The Lessons

1.Apart from the necessity of designing and building bow visors capable of taking on heavy weather, two crucial lessons emerge from this incident; an awareness of how to handle vessels in such conditions and the need to carry out a meticulous inspection for possible damage as soon as possible after encountering heavy seas.

2.Other accidents have alerted ship designers and shipbuilders to the necessity for strong visors to cope with heavy seas. These have resulted in significant improvements to the structures involved.

3.An awareness of the forces involved when steaming into heavy weather must always be foremost in the minds of the watchkeepers charged with the safe operation of such vessels. Weather conditions in the English Channel in winter can be severe, especially when strong winds have been blowing from the same direction over several days.

4.When viewing the elements from the comfort of the enclosed bridge of a large modern ferry with substantial power to hand, it is all too easy to be lulled into a false sense of security. An instinctive feel for when to slow down before sustaining any damage is an essential requirement for any

watchkeeper. While most mariners can recognise the dangers of slamming, the power of heavy seas is still underestimated by some officers and this incident will serve to remind them that large waves can still damage large powerful ships, even on short sea crossings.

5.Junior watchkeepers should never hesitate to call the master should they have any doubts about the wisdom of remaining at passage speed, especially on emerging from the lee of the land. Notwithstanding commercial pressures to maintain schedules, no operator will be pleased if his vessel has to be withdrawn from service to repair voyage damage caused by bad weather. Ships are designed to operate in bad weather but they must be handled sensibly.

6.Whenever bad weather is encountered, the external structure including the bow visor, should be carefully examined on completion of the voyage. It is recommended that such inspections are recorded in the deck log.

Footnote

The ferry's bow visor had been damaged by heavy weather on a previous occasion. Some weeks after the incident the bow visors of this vessel, and a sister, were repaired and modified to meet the latest requirements of the International Association of Classification Societies (such requirements having been developed following the tragic loss of the Scandinavian ro-ro passenger ferry ESTONIA in September 1994).Since these repairs were made both vessels have operated in all types of weather without further damage to their visors.

Case 17: Seaman Trapped when Handling Screens on board a Suction Dredger

Narrative

Two seamen were working in the screen box of the trailing suction dredger ARCO TYNE. The function of a wire cargo screen is to separate sand from stone, and handling screens is a routine feature of this type of dredger's activity. On this occasion there was a requirement to replace screens. One of the seamen went to collect them from where they were stowed, on end, with a single lashing retaining them against the hand railings, on both sides of a narrow walkway. The removal of the replacement screens involved standing between the two stows while the lashing was undone.

While this was being done the ship rolled, causing all eighteen screens in the bundle to topple onto the seaman. With his back to the screens on the other side of the walkway, he found himself trapped by their weight. They were crushing his chest and making breathing difficult. His colleague immediately went to his aid but had difficulty in removing all the screens by himself. Assistance was sought and provided but not before the injured seaman had stopped breathing. Mouth-to-mouth resuscitation was initiated by the Second Officer and, after the fifth breath, the casualty started to breath again. He was subsequently airlifted to hospital where he was found to have three broken ribs.

The Lessons

1.This was a very basic accident, variations of which can, and do, occur in any type of vessel. The seeds of this incident were sown long before the event by the established practice of stowing large numbers of screens together with nothing to hold them in place once the single lashing is released.

2.Wire cargo screens should be stacked and lashed securely in manageable numbers.

3.Even a gentle roll will dislodge an unsecured cargo or ship fitting. In this instance a long swell was running with a reported height of 1.5 metres. The wind was Force 3.

4.A man's life was almost certainly saved by the prompt application of mouth-to-mouth resuscitation.

5.Many shipboard accidents can be prevented by assessing the risks involved before undertaking any routine or unusual activity. By thinking through the consequences of an intended action and applying the "what if" rule may well save a serious injury and even a life. Any seaman should be capable of carrying out such an assessment.

Case 18: Crew Member Lost Overboard from a Small Coaster

Narrative

A small general cargo vessel, BURHOU I of 674 GT, was on passage from Cherbourg to St Helier, Jersey, with a full cargo of marina pontoons stowed in the hold and on top of the hatch covers. Five crew members including the Master were on board. It was daylight; the wind was west-south-westerly force 5 and a moderate, confused, sea was running.

Each pontoon was 12 metres long, 2.5 metres wide and 0.75 metre deep. Those stowed as deck cargo were stacked up to four high, with the three top layers secured together with nylon binding. The whole deck stowage was secured with a combination of ratchet straps and chains. At the forward and after ends of each batch, ratchet straps had been led diagonally across the ship from the corners of the top three layers and made fast to securing points, either on the deck or on the hatch covers. Only the two extreme forward and after ends of the bottom layer had been secured.

Once past Cap de la Hague, the Master chose not to take the direct route to St Helier, but made for the Big Russel channel between the islands of Sark and Herm. Had he taken the direct route to Jersey, the seas would have been on the beam. By taking the indirect route, the seas were on the starboard bow, making the movement of the ship more comfortable.

Shortly after leaving the channel, the ship encountered confused seas. On the bridge, the Master and Mate noticed that the bottom layer of pontoons of the after and amidships batches had moved to port by about 300mm. The Mate and the two seamen went on deck to tighten the ratchet straps. As no seas or spray were being shipped, waterproof clothing and lifejackets were not worn.

One seaman climbed onto the hatch on the starboard side to tighten the straps of the forward end of the after batch of pontoons. He was standing in the small space created by the pontoons that had shifted and was observed by the Mate, who was walking forward. The Mate then crossed to the port side, where the second seaman was already working. At about this time the ship began to roll more heavily causing the pontoons to shift again.

Moments later, the Master heard a shout and, looking out of one of the aft facing windows of the wheelhouse, saw a seaman in the sea astern of the ship waving his arms above his head. The Master moved the engine control to full astern, went to the bridge wing and shouted to the remaining two on deck that there was a man overboard. The Master returned to the wheelhouse to call Guernsey Radio on the VHF set. He then put the engine to full ahead and the wheel hard-a-port.

The Mate and the seaman went to the stern to keep the Master informed of the man overboard's position as the ship turned to port. Then, with the man on the port bow, the seaman took a lifebuoy and went to the fo'csle to throw it to him as the ship approached. When the man was about 200 metres ahead of the ship, a wave passed over his head. He was not seen again.

An intensive air and sea search was mounted without success.

The height of the hatch top is 1.5 metres from the deck and the coamings are 1.5 metres from the bulwarks. Had the seaman fallen off the hatch, he would have landed on the deck inside the bulwarks. It is possible that, as the pontoons shifted to starboard, the space in which he was standing became smaller. Faced with the prospect of falling to the deck and probably being badly injured, he may have decided to jump over the side instead. No-one saw him fall overboard.

The Lessons

1.The loss of this seaman's life stemmed from a failure to secure cargo securely before proceeding to sea. The bottom layers of the after and midships batches of pontoons should have been bound together with the upper three layers, to form an integral unit.

2.No matter how benign the sea conditions may seem, every precaution should be taken to ensure people are properly dressed before working on deck on a potentially hazardous task such as securing a shifting cargo. The wearing of lifejackets is always a sensible precaution. Had the seaman been wearing one on this occasion his chances of survival would have been significantly greater. Once seamen become used to wearing lifejackets they need no further directive, it becomes second nature.

3.Those in charge on deck should assess the risks and foresee hazards not immediately apparent to subordinates. Standing in a small space created by a cargo that has just shifted is an obvious risk; the loose pontoons could have moved back with the next roll, and probably did. The seaman found himself in a vulnerable position as the ship could, and did, lurch more than usual. He was standing relatively high above the deck and close to the ship's side allowing him no safe means of escape.

4.Man overboard at sea, especially in rough conditions is a Master's nightmare. Two overriding considerations should apply; maintain the casualty in sight at all times and recover him with the utmost speed. Several sources predict that the survival time in 13oC (the sea temperature at the time of the accident) for a person wearing working clothes is just over an hour. So much for the theory. In MAIB's experience, based on the analysis of several accidents, survival time is measured in minutes. The shock of hitting cold water must never be underestimated, while the energy expended in keeping the head above water exhausts even the fittest individual very quickly. The wearing of working clothes and shoes, and without any form of buoyancy aid, only aggravates the situation. It is therefore imperative that anyone who falls overboard, for whatever reason, must be rescued from the water with the utmost speed.

5.As soon as it is known that someone has fallen overboard a lifebuoy should be released, ideally one with a smoke marker. If the action is very quick, the casualty may be able to see it and swim to it. Failing that, it provides an additional datum on which to focus, should the man become lost from sight.

6.Keeping an eye on the man is imperative. One person should be given the task of maintaining a watch on him at all times. Once the eye has been taken off the casualty it can become extremely difficult to relocate him. It helps if this can be done from an elevated position such as a bridge wing. By watching the direction of the lookout's gaze, the Master will have a good idea where to steer until such time as he sights the casualty himself.

7.In a vessel with minimum manning, pre-planning the reaction to such an event is crucial. While someone is manoeuvring the ship and a second is maintaining a watch, the others must prepare to recover the person from the sea. This is the most difficult part of all. The casualty will be very heavy, will almost certainly be exhausted and unlikely to be able to help himself. He may be

unconscious or even dead. No two ships will have the same procedure for manoverboard recovery; the important thing is to have one. The difficulties are often underestimated.

Part 2 - Fishing vessels

The MAIB and MCA, more than any other organisations in the United Kingdom, are subjected to daily reminders that fishing is a dangerous occupation. Some will argue it has always been that way and is unlikely to change. Others will advocate ever more regulations to improve the safety record while the average fisherman will wish to be left alone to make a living from an unforgiving environment. The MAIB's contribution to the debate is to thoroughly investigate the causes of these accidents and use every available means to promulgate the lessons and raise safety awareness.

The same types of accident occur time and time again. A significant number of accidents occur shortly after an extensive refit, especially when extra top weight has been added or the vessel has been converted from one type of fishing to another. Fishermen, more than any other seafarer, develop an instinctive feel for their vessel and this is acknowledged as being a major contribution to safety. When this intimate knowledge of a vessel is undeveloped, perhaps because the Skipper is trying a new fishing method or has yet to develop a feel for how his vessel handles at sea, the risk of an accident is significantly higher. An awareness of this should do much to reduce accidents. The owner or Skipper is also very strongly advised to seek professional advice whenever he is considering adding top weight to his vessel. Ill-considered modifications can seriously affect stability.

The selection of accidents included in this edition of the Safety Digest are representative of those investigated by the MAIB. One common theme is the susceptibility of older wooden fishing vessels to suffer flooding. They often sink as a result, and it is the nimpossible to determine exactly how the ingress of water occurred. Those who sail in such vessels should take particular care that the hulls are properly maintained, that bilge alarms are in working order, all bilge pumping systems are fully operational and that their operation is understood by all on board.

Perhaps the saddest feature of MAIB work in recent months has been the discovery that some fishermen's lives may have been lost unnecessarily by a failure to ensure that lifesaving equipment was in good order, properly rigged and in date for service. Notable factors include painting over EPIRBs, strapping down life rafts so they cannot break free, failing to rig Hydrostatic Release Units correctly, allowing serviceable apparatus to go out of date and not wearing a lifejacket when about to embark on an identifiably dangerous task.

The MAIB now has a fishing vessel Skipper on its staff of accident investigators.

Case 19: Small Angling Boat Overturned in Waves

Narrative

A 6m long, outboard powered, GRP, open boat was carrying three anglers across Cambois Bay on the Northumberland coast. It was making way between half and three quarters of a mile offshore where sea conditions were slight to moderate. The occupants of the boat did not consider the sea to be dangerous although it was on the beam.

At some point the helmsman noticed a large wave approaching. He tried to bring the bow head to sea but before he could do so, the wave struck and overturned the boat. All three occupants were thrown into the sea and the boat sank. Nobody was wearing a life jacket and none were carried on board.

All three managed to swim to shore where they received help from local residents and were treated for hypothermia. One had to be airlifted to hospital where he was detained overnight.

The Lessons

1.Anybody going to sea in a small boat must ask themselves three fundamental questions; are they sufficiently competent to handle the craft, is the boat seaworthy for the likely conditions and, is it carrying the right gear, including lifesaving equipment? If the answer to any of these questions is no, they should not go. In this instance, not only was the boat unsuitable for the sea conditions (it clearly lacked sufficient built-in-buoyancy to remain afloat when swamped) but no lifesaving equipment was carried.

2.Judging sea conditions from the shore is not always easy but basic checks can be made by even the least experienced individual and will include listening to the weather forecasts and seeking local advice. An open boat is obviously more vulnerable to waves than, say, a small fishing vessel or a yacht, and this aspect must be borne in mind before proceeding offshore.

3.Once at sea, on this occasion the boat's occupants failed to judge correctly whether the conditions were suitable for the intended passage across the Bay. An open boat steering a course parallel to the coast and the prevailing sea is at risk from breaking waves on the beam. One of the most common features in small boat accidents is a misplaced confidence in the crew's ability to handle such craft in adverse conditions.

4.To set off without ensuring lifejackets were onboard was to disregard the most fundamental safety rule for small craft. Not only should lifejackets have been carried, they should have been worn.

Case 20: Loss of Life Close Inshore

Narrative

ANTRIM FISHERIES IV, an open top fishing boat, had been launched down the slipway at Portrush, Northern Ireland, in choppy conditions and was approximately 25 metres offshore when a series of large waves struck on the beam and rolled her over. All three crew were thrown into the sea. Two regained their feet on a sandbank almost immediately and started to wade ashore whilst the other, who was somewhat older, surfaced by the upturned boat but could only manage to cling onto it. One man turned back to assist him whilst the third continued to wade ashore.

When only metres from the shore, this third man was swept off his feet in a fierce undertow and dragged into deeper water. He surfaced briefly but was swept out to sea and drowned.

The other two managed to hang onto the boat until, with the aid of a piece of wood and a lifebuoy, they managed to get ashore.

The boat was recovered the same day with slight bottom and frame damage, but with the lower half of the rudder post broken. Despite an extensive search by a Police Diving Unit, the body of the other young man was not recovered until some time later.

The Lessons

1.No matter how close inshore fishing boats work, or the number of times that launching has been carried out, accidents can and do happen. In this case, the victim was wearing the proper wet weather gear but NOT a lifejacket.

2.The effect of tide changes and rough weather often results in unusually strong local currents and confused sea states. These currents are not always visible and frequently flow close to the bottom. Large waves at the surface and strong currents on the bottom make for a very dangerous combination, particularly close to any rock formation.

3.Working close to the shore can introduce a false sense of security. Being able to swim is an advantage but even the strongest will find swimming in choppy seas when fully dressed extremely difficult and very, very tiring. The arguments for not wearing lifejackets in the fishing industry are well known but are quite meaningless when trying to explain to the next-of-kin that a life could have been saved had one been worn. The wearing of a lifejacket greatly increases the chances of survival.

Case 21: Poor Design of Working Arrangements Led to Death of Skipper

Narrative

The Skipper and three crew were hauling a fleet of pots for only the second time since their 16m long vessel FLAMBOROUGH LIGHT had been converted from a stern trawler. While doing so, the main line came off the lead block, and jumped off the line hauler. The Skipper, who was operating the hauler, was caught by the wrist and pulled over the side and into the water. The weight on the line dragged him under. He was never seen alive again.

Before the event, FLAMBOROUGH LIGHT had been drifting before a force 5 wind. At the time the accident occurred she had turned causing the line to lead aft and under the vessel.

A thorough search of the sea surface involving a rescue helicopter, three RNLI lifeboats and the fishing vessel itself failed to locate the missing man. The Skipper's body was subsequently recovered from the sea still attached to the fleet of pots.

The MAIB investigation concluded that the accident occurred as a result of several shortcomings in the vessel's conversion from a stern trawler to a potter. Some of the working arrangements had been badly designed and the following features were found to have had a significant role in causing the accident:

- the line hauler had been sited too far from the lead block;
- the open lead block had been crudely converted from a wide-throated trawl block;
- there were no local engine and rudder controls sited near the hauler;
- nobody was assigned the duty of conning the vessel during the hauling operation, the engine was out of gear and the vessel had been left to drift;

- two of the crew were inexperienced fishermen which made it necessary for the Skipper to take charge of the after deck instead of conning the vessel.

The Lesson

1. This accident was caused by a combination of circumstances which resulted in a fisherman losing his life. Accidents often occur in fishing vessels which have just been converted and before the new Skipper has become used to its handling characteristics, equipment, stability and, quite possibly, his crew.

2. The origins of this accident occurred in the conversion process when all the implications of the modified design were not thought through. Furthermore, the lead block was adapted to fulfil a function for which it was not designed and it failed to conform to an adequate level of safe operation.

3. When converting or re-equipping a fishing vessel, owners and skippers should take every care to ensure:

- the basic design of the boat is suitable for the intended purpose;
- any newly purchased or converted equipment is fully fit for the intended purpose;
- the advice of specialist professional designers or experienced specialist fishermen is sought on the layout of the working arrangements and on the vessel's future operation.

4. Until the converted vessel has been fully tested in its new mode of operating and any wrinkles ironed out, skippers should exercise even greater care in handling her, and have special regard for the safety of all on board.

Footnote

The MAIB has noticed a tendency for accidents to occur in vessels which have just been converted from one type of fishing to another. A variation on this theme is when a new skipper and crew embark in a vessel with which they are unfamiliar. The evidence is still tenuous but lack of familiarity with a boat is a contributory factor to unsafe practices at sea. Perhaps more than in any other form of seafaring, a skipper with long experience of a single boat will develop a sixth sense for when something is not right. This is acquired over time and is rarely present when sailing in an unfamiliar vessel or one that has recently been converted.

Case 22: Fishermen Struck by Seas on Deck

Narrative

The 34.96m stern trawler NORINA was hauling downwind in force 7 to 8 weather conditions. During the operation, she shipped a large wave over the stern which struck, and knocked down, two members of the crew working on deck. One struck a bollard and the second a hatch coaming.

The crew were concentrating on the hauling operation. The Skipper tried to warn them of the oncoming sea but was not heard against the noise of wind and sea.

The Lessons

1.Fishermen will need no reminding that the sea is a dangerous place and breaking waves an occupational hazard. Skippers develop a sixth sense in knowing which waves are likely to be dangerous; they also know their impact will be affected by how the vessel is lying. They will also

be aware that less protection is provided when the seas approach from astern. In such conditions there is a need to keep a particularly vigilant lookout for oncoming seas when crew are working on deck.

2.Those on deck will be pre-occupied with hauling or shooting. Keeping a sharp lookout will never be easy but the skipper has a responsibility to ensure that it is always maintained and that the crew are warned of the imminent approach of heavy, oncoming, following or quartering seas during fishing operations. Only the skipper can decide whether he undertakes the task of maintaining that lookout himself or whether the circumstances require some form of delegation. The requirement is straightforward, the lookout must be kept and there must be a means of alerting the crew.

3.It is very easy for those not in this situation to say what should, or should not be done. The important thing is that each crew should work out how it can best be handled in their vessel. Ignoring it could lead to injury and, possibly, death.

Case 23: Lifesaving Appliance Shortages Cost Lives Again

Narrative

This accident involved the 6.5m wooden open boat PENTLAND SPRAY, engaged in creel fishing around the Scottish Islands. She was built with a small wheelhouse forward and was equipped with a power hauler and inboard engine but had no radio or bilge pump for her final voyage. Lifejackets and flares were carried, but not a liferaft. The vessel was considered to be in sound condition but had a persistent leak from the stern gland.

On an October morning her owner, and another man acting as crew, collected bait before heading to sea to recover some creels. They had expected to complete their days work by early afternoon. The vessel was sighted at sea later the same morning by another fishing vessel and an observer ashore. She was apparently returning to her berth but was not seen again.

Weather conditions at the time were no worse than force 3 or 4 and the sea conditions were moderate, presenting no apparent difficulty. It appeared to observers, however, that she had very little freeboard.

When she was clearly overdue, the local Lifeboat Station was alerted. The subsequent SAR operation found nothing more than debris, identified as coming from PENTLAND SPRAY. Both men lost their lives.

The Lessons

Tragic accidents such as this occur from time to time. Establishing what happened in such circumstances is not easy and, in all probability, the precise reasons for her loss will never be determined. Nonetheless some lessons can be learned for others to heed:

1.A combination of the weight of creels on board and effects of water ingress, via the leaking stern gland, could have reduced the vessels freeboard making it susceptible to seas breaking over the side. Being an open vessel, any water taken over the bulwark would have to be pumped clear. With no bilge pump on board this would have been difficult. It has been concluded that had the leakage from the stern gland been stopped, free water might not have accumulated in the bilge and the boat might not have foundered.

2.Had there been an inflatable liferaft on board, both men might have survived.

3.Had a radio been carried both men might have been able to call for help.

Case 24: Discharged EPIRB and VHF Batteries cause Problems

Narrative

The 20m wooden fishing vessel ALLIANCE, with a crew of four, had been working only sporadically over several days during February due to poor weather conditions. Before the incident the vessel was in Amlwch, Anglesey, taking shelter from the bad weather.

Conditions eventually improved and the vessel left port at 0530 for passage to her home port to land her fish. At 1000 the high level bilge alarm sounded. An inspection of the engine room confirmed the presence of a significant quantity of floodwater.

Over the next few hours both powered and hand bilge pumps were used with various degrees of success in controlling the ingress.

By early afternoon the Skipper recognised he needed assistance. Efforts to broadcast a MAYDAY were unsuccessful due to lack of battery power for both main and portable VHF sets. Judging it as the only remaining method of summoning assistance, the Skipper activated the EPIRB and placed it in the sea alongside the vessel at 1500. At about this time the engine driven bilge pump ceased to function and the main engine stopped; the drive belt to the alternator had slipped off earlier.

The first signals from the EPIRB were detected at 1529 but confined to 121.5MHz; a reliable position for the EPIRB was not obtained until 1708. SAR operations were initiated and a MRCC accepted responsibility for co-ordinating operations at 1745.

The Skipper and crew of ALLIANCE transferred to an RNLI lifeboat at 2010 and the vessel finally sank at 0423 the following morning. There was no loss of life.

The Lessons

1.The start of SAR operations was delayed because the EPIRB failed to transmit on 406MHz. This was due to its battery having insufficient power to operate on this frequency, which requires a higher output than does 121.5MHz. In turn, the lack of battery power was due to the EPIRB being two years overdue for service and battery replacement. EPIRBs must be serviced at recommended intervals to ensure their correct functioning.

2.The vessel's electrical system was effectively disabled very early in the incident. It is vital that all components of electrical systems, generators and batteries are maintained in good condition so that electrical power is available both for normal and emergency conditions.

3.ALLIANCE carried a portable VHF set, as part of her LSA, together with a suitable battery charger. The VHF's battery was allowed to discharge, rendering this important item useless at the time it was needed most. It is clearly vital for VHF sets to be maintained ready for immediate use; otherwise they have no value.

Case 25: Rapid Capsize Following Flooding

Narrative

The 23m wooden pair trawler STARLIGHT left Fraserburgh, in company with its partner vessel, with a crew of six on board. About 50 miles into the passage the vessel's high level bilge alarm emitted a brief bleep. The alarm's buzzer and light did not remain on and the unit did not require resetting. The watchkeeper waited about five minutes for another crewman to come to the wheelhouse before investigating why the alarm had sounded.

Inspection of the engine room showed water lapping over the floor plates and being thrown around by the engine's drive belts. No cause for the flooding could be seen. The other members of the crew were alerted and each, sensibly, donned a survival suit. The partner vessel was informed of the situation and she broadcast a PAN call.

Use of the vessel's own bilge pumps, which appeared to be functioning properly, failed to lower or control the flooding.

An SAR helicopter arrived on scene about 45 minutes after the flooding was discovered and lowered a portable pump. Use of this pump, supplemented by the vessel's own, failed to control the flooding. At this stage, three of STARLIGHT's crew were airlifted off.

Inspection of the fish hold showed some flooding of this space. A Royal Navy vessel arrived on scene and despatched an inflatable craft with crew and self-inflating air bags. One air bag was passed into the engine room and inflated. At this instant the stern began to sink rapidly giving the four men on board very little time to scramble into the sea. They were all recovered from the water by the RN inflatable craft. Although the vessel sank, there was no loss of life.

The Lessons

1.The cause of the flooding could not be found by the crew due to the level of water in the engine room being too high at the time of discovery with the most likely sites of ingress covered from view. Earlier detection, by a properly functioning high level bilge alarm, may have allowed more of the bilge area to be inspected at an early stage, the ingress located and a repair effected.

2.Although not a statutory requirement on this fishing vessel, the carriage and use of survival suits proved to be of tremendous value, particularly for those crew who had to spend some time in the sea.

3.Once major spaces of a vessel are flooded, such as engine room and/or fish hold, the dangers of rapid foundering or capsize increase.

Case 26: Defective Bilge Alarm Delays Discovery of Flooding

Narrative

Due to poor weather the 20.8m prawn dredger VALIANT, constructed of wood, was berthed unattended alongside a quay at Mallaig for two weeks during February. The vessel was hard up against the quay with up to ten other vessels moored alongside her.

Following an improvement in the weather, she sailed at 0500 with a crew of four on board. Three were newcomers on board and only the Skipper had any knowledge of its main and auxiliary machinery.

At about 0900 the fishing gear was shot, and towing commenced, continuing until 1200 when the Skipper found flooding in the engine room during a routine inspection. After starting the main bilge pump the Skipper returned up top to supervise the hauling of the gear. Having completed hauling, he returned to the engine room at 1230 to find the water level slightly higher.

Another fishing vessel was contacted by VHF and replied that she was about an hour's steaming away, but would assist. By now, flooding was found to have spread to the cabin and fish hold. As a precaution, one liferaft was unlashed from its cradle by the crew but not launched or inflated.

In spite of using the bilge pump driven by the auxiliary engine in addition to the main pump, the water level in the engine room continued to rise.

VALIANT was taken in tow by the second fishing vessel once she had arrived on scene and two crewmen were also transferred. The Coastguard was contacted and, in response to this call, an RNLI lifeboat was requested to launch and provide a portable pump.

Towing VALIANT proved very difficult and the water level in her engine room continued to rise. The Skipper and remaining crewman on board decided to evacuate to the second vessel to await the arrival of the lifeboat.

However, 15 minutes later, and before the lifeboat arrived, the vessel rolled to port, capsized, moved quickly astern and sank. The unlashed liferaft floated free but the second liferaft and EPIRB did not.

The Lessons

1.The cause of the flooding was not identified by the crew. However, the squeezing of the vessel's hull between the quay and a number of other vessels during the poor weather period in port, could have been a factor and is a practice which should be avoided.

2.The discovery of the flooding was delayed by the failure of the high level bilge alarm. This contributed to the difficulty of finding the cause of flooding and emphasises the value of these alarms. Defective bilge alarms are useless. They should be regularly checked and, if found defective, repaired at the earliest opportunity and before next proceeding to sea.

3.The failure of the second liferaft and the EPIRB to float free when the vessel sank, is also a feature which cannot be fully explained and is a matter of concern. All owners and skippers should ensure that these important items of LSA have every chance of floating free and operating as intended. In particular, they should be free of obstructions and serviced as required. HRUs should be properly serviced or replaced when necessary and must be properly installed.

4.The vessel sailed with a crew which, apart from the Skipper, had limited knowledge of the vessel and its systems. This imposed a significant workload on the Skipper during the emergency. There is value in ensuring a low turnover of crew so that most people on board have a detailed knowledge of the vessel, not just for routine fishing operations but also when things go wrong.

Case 27: Dirty Fuel Disables a Fishing Vessel

Narrative

An under 10m fishing vessel bunkered from a 45 gallon drum on the quayside, before sailing for the fishing grounds. Shortly after leaving, the main engine stopped. On investigating the cause, the Skipper found the water trap and fuel filters were full of water. As the sea conditions were reasonably calm, the water was drained and attempts made to re-start the engine.

When the engine failed to start, a further investigation found the lift pump which was used to transfer fuel from the tanks to the engine had become choked with dirt. The Skipper managed to partially clear the pump but, with the weather deteriorating, felt it prudent to advise the Coastguard of the problem.

While the Coastguard organised a tow by the local lifeboat, the Skipper managed to keep the engine running sufficiently long to reach the lee of the land. The lifeboat arrived shortly afterwards and towed the fishing boat some two to three miles into port.

The Lessons

1.When taking fuel from drums stored on the quayside, care must be taken to check that water and dirt has not entered the drum during storage. As water will sink to the bottom of the drum during storage, test the outflow for water content prior to filling the vessels fuel tanks.

2When filling the fuel tanks, a fine filter should be in the filling line to ensure that any dirt in the drum is prevented from entering the vessels fuel system.

3.Fuel systems, including the fuel tanks, should be cleaned on a regular basis. Dirt in the fuel system acts as a grinding paste and can cause an increased rate of wear in the engine.

4.Skippers should advise the Coastguard if their vessels suffer any kind of engine failure even if they feel they will be able to rectify the problem themselves. Early warning of a possible problem can be a life saver!

Part 3 - Leisure craft

Although leisure craft have their fair share of accidents, most are relatively minor and the experiences of those involved probably contribute to greater safety awareness and higher standards of seamanship in the future. The MAIB takes an interest in all accidents drawn to its attention but, in general, will only investigate the most serious or if it appears there is some particularly useful lesson to be learned or relearned. The Branch maintains close links with other authorities involved in the investigation of leisure craft accidents and acts as the broker to ensure lessons are effectively promulgated.

This edition of the Safety Digest features two very different incidents with appropriate lessons. Strictly speaking the first report on a medical predicament is not an accident but has been included to focus attention on an issue not often covered. One of the great attractions of sailing is its appeal and accessibility to all including those with physical disabilities or medical conditions. Nonetheless the sea is an unforgiving environment and the limitations must be recognised and appropriate limits set to prevent accidents. At the same time, the incident draws attention to the importance of Skippers knowing how to handle unexpected medical predicaments.

The second report concerns, once again, the question of sailing in rough weather. A life was tragically lost as a result of several unfortunate decisions but none greater than not wearing a lifejacket and harness when specifically advised to do so.

MAIB Inspectors regularly take passage in a variety of vessels sailing in and out of UK ports and routinely ask Masters and Pilots what constitutes their biggest headache in confined waters. There is a depressing familiarity about many of their replies; sailing boats that get in the way. Accidents arising from such situations do occur from time to time and there have been numerous close quarter situations. One of the principal reasons has been a lack of awareness by small craft sailors of the problems they can generate when they sail close to, or in, a fairway, channel or harbour entrance used by larger vessels.

Although the lessons are obvious and well known they bear repetition. Keeping a good lookout in a sailing craft is just as essential as in any other vessel. Too often nobody is keeping an eye open astern while that traditional blind spot, the genoa, requires a conscientious decision to see beyond it. When sailing in busy waters there is much to be said for keeping two or three rolls in a furling headsail so the horizon beyond can be seen. Seeing other ships in good time is one thing, doing something about them is another. While an understanding of the Rule of the Road is essential, so is an awareness of how the other vessel might be constrained in her ability to manoeuvre and what she is likely to do next. Don't embarrass her and NEVER obstruct the water a head of a large vessel underway in confined waters. The Master of the other ship has enough to keep him occupied, including fulfilling his obligations under the Prevention of Collision Regulations, without having to wonder what the yacht ahead of him is going to do next. An ability to judge distances at sea by eye only comes with practice and is a useful skill when sailing. Remember, a ship propelling at 15 knots covers 1.5 miles in six minutes. That far distant ship can be on top of you very quickly if you are not paying attention.

Case 28: Diabetic Not Fit for Sea

Narrative

A client of a Scottish sea school aged 62 with several thousand miles sailing experience behind him had embarked as a member of the crew in a yacht undertaking a 14 day cruise around the North of Scotland. He had been a diabetic for many years but declared his condition to be well-controlled. He had also signed a declaration of physical and medical fitness for the duties expected in as mall yacht at sea.

On the 11th day the yacht was lying at anchor in South Harbour, Fair Isle, following a passage in adverse weather that had taxed the62 year old. He had, nonetheless, gone ashore with his shipmates by dinghy, but had opted to return early at 1600 and had turned in. Two hours later the other clients returned on board and by 1900 preparations for sea were complete. The gentleman was then roused from his bunk but was found to be in a hypo-glycaemic condition ie his blood sugar level was low, causing him to be drowsy, confused and unresponsive.

He was fed crushed glucose in water until he showed some sign of response. Meanwhile an all stations Pan-Medico call was made without response. The yacht proceeded to sea, radio contact was made with Shetland Coastguard and a medevac arranged by helicopter. The casualty made a full recovery.

The Lessons

1.In general terms there are no reasons why those with physical disabilities or known medical conditions should not crew in yachts, providing their condition is recognised and declared, the skipper is happy to take them, the craft is equipped to embark them (including having suitable access to safety equipment) and appropriate medical attention can be provided in a reasonable timescale should the need arise. A trained first-aider should have sufficient knowledge to be able to

deal with a hypo-glycaemic diabetic in almost all circumstances, and the diabetic should fully brief the skipper and crew on appropriate action. In this case the casualty was already recovering when the helicopter arrived and would probably have made a full recovery on board within half an hour.

2.Diabetics must remember that sailing is a strenuous pursuit likely to disturb their blood sugar balance. Even the act of bracing your body against the motion of a yacht causes more energy to be expended than usual. Blood sugar levels should therefore be monitored more often. The safety of the vessel and its crew must be paramount and if there is evidence that a diabetic does not have his or her condition under control, charter or training skippers should carefully consider their acceptance.

3.A yacht should not normally proceed to sea if there is concern about the health or medical condition of a member of the crew.

Case 29: Yacht Owner Loses Life after Failing to Wear Safety Harness

Narrative

The 8.5m bilge keel sailing cruiser ZOE-ANNE was to be delivered from Chichester Harbour to Dartmouth for a refit. The Owners sailing experience was limited, so a professional Yachtmaster was used to carry out the delivery accompanied by the Owner.

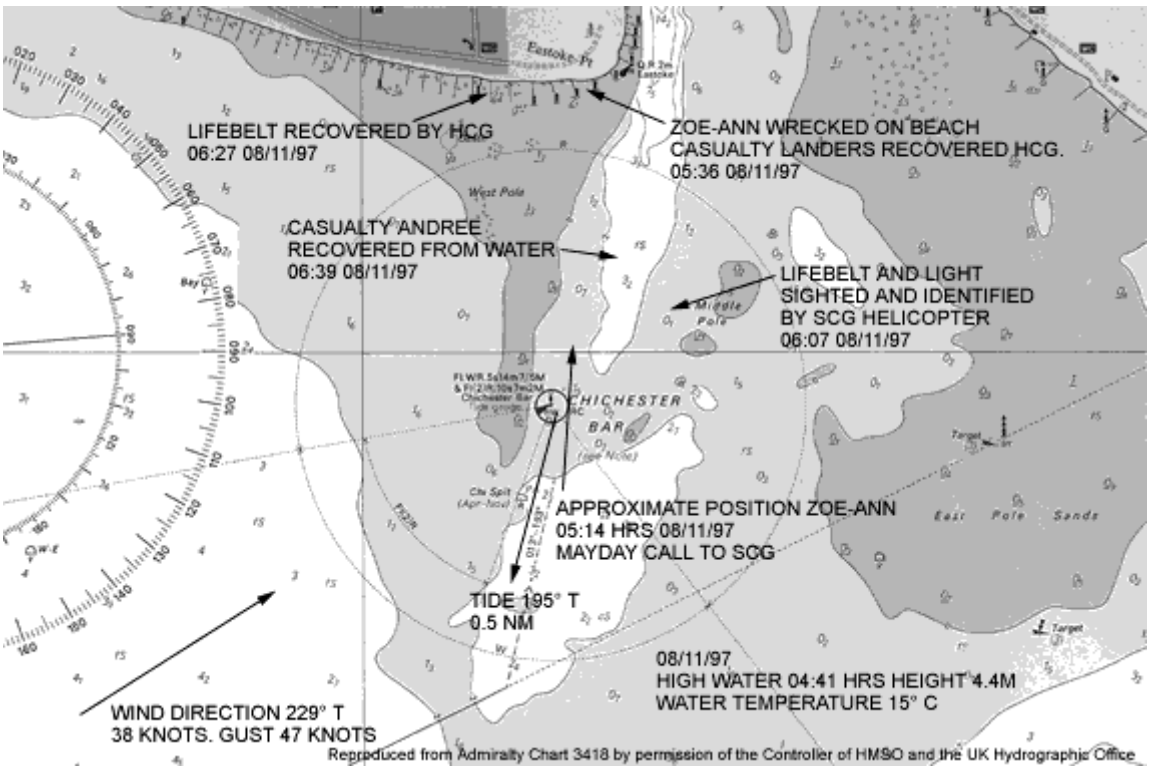
The yacht was checked before departure in the late afternoon in November and judged to be seaworthy for the proposed passage. The necessary safety equipment was on board. The weather forecast was for SW winds 5 to 6 increasing to 8 to 9 the following afternoon. A passage plan was completed and although the Yachtmaster realised bad weather was forecast he was confident there were a number of safe havens available en-route should they be needed.

The passage from Chichester Harbour and through the Solent was uneventful in a SW wind force 4 to 5, but when they reached the western end of the Solent near Hurst Point at 2230, the weather forecast warned of imminent gales, so they decided to turn back. Rather than make for shelter in Lymington, Yarmouth or Southampton, all of which were close by, the Owner preferred to return to the yachts home port of Chichester. The return trip passed without incident although the Yachtmaster suggested to the Owner he should don a lifejacket and harness on several occasions. The advice was ignored.

ZOE-ANNE approached Chichester Bar between 0430 and 0500 the following morning. It was very shortly after high water and the south-going ebb had just started. The wind had increased noticeably and the crew, particularly the Owner, were tired. The windspeed was recorded at Solent Coastguard at 0500 as SW 38 knots with gusts to 47 knots. Neither man showed signs of seasickness. Once again the Yachtmaster advised the Owner to put on a harness. He went below but emerged several minutes later not wearing any safety equipment.

Two to three boat lengths north of Chichester Bar beacon, the boat was struck on the port quarter by a large wave estimated to be 6 metres high. The yacht was knocked down to almost 90°, and the Owner thrown overboard. The Yachtmaster threw a dan-buoy towards him and tried, unsuccessfully, to start the engine. The Owner could not be recovered. A MAYDAY call was made at 0514 and the emergency services were alerted. The yacht ran aground on a groyne at Eastoke Point at the entrance to Chichester Harbour and the Yachtmaster was able to scramble ashore. The Owners body was found an hour later. He could not be revived.

When the yacht was examined later, five lifejackets and harnesses were found stowed on board.



The Lessons

1.The most significant feature of this incident was the lack of clarity as to who was in charge. Only one person can be the Skipper. He must take full responsibility for the safety of vessel and crew and must have authority over all those on board, regardless of status.

2.The Owner committed a serious error of judgement in choosing not to wear a lifejacket or safety harness. The Owners inexperience and an incomplete awareness of the hazards were probably contributory factors. When sailing in a gale on a November night in a small yacht, safety equipment and the need to secure oneself to the vessel are essential requirements.

3.Conditions at the entrance to Chichester Harbour or indeed any other shallow harbour approach can be extremely hazardous in gale conditions.

4.Seeking a safe haven in a Solent port or even remaining at sea until conditions had improved would have been a more sensible and safer option.

Appendix A: Investigations Commenced in the Period 01/01/98 31/08/98

Date of Accident	Name of Vessel	Type of Vessel	Flag	Size	Type of Accident
07/12/97	ISLAND PRINCESS	Cruise Liner	UK	20,186 GT	Accident to Personnel
23/12/97	EDINBURGH CASTLE	Cruise Liner	UK	32,753 GT	Accident to Personnel
28/12/97	LADY KATHLEEN	Tug	UK	364 GT	Accident to Personnel
	STENA AKARITA	Oil Tanker	UK	58,959 GT	
12/01/98	ACCORD R J	Fishing Vessel	UK	8.19 M	Missing Vessel
17/01/98	AUDACIOUS II	Fishing Vessel	UK	23.95 M	Foundered
21/02/98	JEROME LETZER	Tug	Belgium	311 GT	Accident to Personnel
16/03/98	AALSKERE	Fishing Vessel	UK	24.49 M	Machinery
03/04/98	SIR GERAINT	Naval Craft	UK	6207 GT	Heavy Weather Damage
06/04/98	MORWENNOL	Fishing Vessel	UK	5.56 M	Capsizing
08/04/98	CHALLENGE II	Fishing Vessel	UK	23.90 M	Collision
	FAITHFUL III	Fishing Vessel	UK	23.98 M	
25/04/98	REMA	Gen Cargo-Single Deck	Belize	748 GT	Foundering
28/04/98	GOLDEN GIRL	Fishing Vessel	UK	16.04 M	Fire
05/05/98	ANANGEL HONOUR	Bulk Carrier	Greece	13633 GT	Collision
	TOWING WIZARD	Tug	St Vincent & the Grenadines	347 GT	
14/06/98	SILVERY SEA	Fishing Vessel	UK	35.11 M	Collision
	MURKUR	Gen Cargo-Single Deck	Germany	3815 GT	
23/06/98	CONSTANT FAITH	Fishing Vessel	UK	21.90 M	Collision
	STROMNES	Fishing Vessel	Denmark	54.21 M	

27/07/98	SALLY JANE	Fishing Vessel	UK	11.07 M	Capsizing
27/07/98	PRIDE OF LE HAVRE	Ro-Ro Passenger	UK	33336 GT	Fire
27/07/98	AJAX	Fishing Vessel	UK	24.15 M	Accident to Personnel
30/07/98	CONSTANCY	Fishing Vessel	UK	9.8 M	Foundering
10/08/98	BREMER ZUKUNFT	Container [FC]	Germany	2986 GT	Grounding
19/08/98	DRUM MAJOR	Pleasure Craft	UK	18.47 M	Flooding

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**
WESTHAVEN	Fishing Vessel; foundered, North Sea
ALBATROS	Passenger Liner; grounded, Isles of Scilly
SAPPHIRE	Fishing Vessel; foundered off Peterhead
SAND KITE	Dredger; collided with Thames Barrier
MARGARETHA MARIA	Fishing Vessel; foundered, SW Approaches
GREEN LILY	Cargo Vessel; grounded, Shetland Islands
ISLAND PRINCESS	Passenger Cruise Ship; Economiser Accident
CITA	Container Ship; grounded, Isles of Scilly
REMA	Cargo Vessel; foundered in North Sea

Appendix C: Reports Issued in 1998

GORAH LASS Loss of a fishing vessel on 11 March 1997 with the loss of 3 lives

Report published 23 July 1998
ISBN 1 85112 100 5
£12
MAIB Annual Report 1997
ISBN 1 85112 103 X
£16

PESCADO Loss of a fishing vessel in February 1991 with the loss of 6 lives Report published 22 September 1998
ISBN 1 85112 101 3
£25

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.

SAFETY DIGEST 2/97

Copies of this publication can be obtained, free of charge, on application to the Marine Accident Investigation Branch(Mrs J Blackbourn 01703 395509).

WEBSITE

Summaries (pre-1998) and Safety Digests are available on this web site.

Appendix D: Stationery Office Stockists and Distributors Overseas

If there is no agent in your country and you have difficulty placing an order, please write to:

Stationery Office Books, PO Box 276, London, SW8 5DT,England

Argentina Carlos Hirsch
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Victoria 3066

Bangladesh
Karim International
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Jean de Lannoy
Avenue du Roi 202
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