

MAIB

MARINE ACCIDENT INVESTIGATION BRANCH

This *Safety Digest* draws the attention of the leisure community to some of the lessons arising from investigations into recent accidents. It contains facts which have been determined up to the time of issue, and is published to provide information about the general circumstances of marine accidents and to draw out the lessons to be learned.

The sole purpose of the Safety Digest is to prevent similar accidents happening again. The content must necessarily be regarded as tentative and subject to alteration or correction if additional evidence becomes available. The articles do not assign fault or blame nor do they determine liability. The lessons often extend beyond the events of the incidents themselves to ensure the maximum value can be achieved.

This Safety Digest is comprised of 25 articles written in the past 8 years. For some of that time it was the MAIB's policy to name vessels. In 2002 the decision was taken to dis-identify all Safety Digest articles so that vessel names are not included. This is intended to encourage more people to report accidents.

Extracts can be published without specific permission, providing the source is duly acknowledged.

The *Safety Digest* is only available from the Department for Transport, and can be obtained by applying to the MAIB. Other publications are available from the MAIB.

Marine Accident Investigation Branch

The Marine Accident Investigation Branch (MAIB) is an independent part of the Department for Transport. The Chief Inspector of Marine Accidents is responsible to the Secretary of State for Transport.

Extract from The Merchant Shipping (Accident Reporting and Investigation Regulations 1999)

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



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

The telephone number for general use is 023 8039 5500.

The Branch fax number is 023 8023 2459.

The e.mail address is maib@dft.gsi.gov.uk

Safety Digests are also available on the Internet: www.maib.gov.uk

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Leisure craft accident reports have appeared regularly in the MAIB Safety Digest over the past eight years. As with all MAIB reports, the objective has been to describe the basic facts, and to highlight the lessons to be learned. The Digest, of which three issues are produced each year, is distributed widely in printed form and is also available online at www.maib.gov.uk.

Much of MAIB's work is involved with investigating accidents to merchant ships and fishing vessels, and these appear in their own sections in each Safety Digest. The third section in each issue contains, typically, three or four reports relating to leisure craft, sail and power.

This compendium contains 25 of these articles in one, easy to refer to, volume. It has been produced in response to many requests from sailing schools and establishments, Yachtmaster instructors, and individual sailors and powerboat owners.

I very much hope that it will become an important resource for all those who take to the water in small boats, enabling more people to learn important safety lessons.



Stephen Meyer

Chief Inspector of Marine Accidents

If you find this interesting and instructive, think about putting your name on the distribution list for our regular Safety Digests – it is free!





Sail
craft

Three rescued from sinking sailing yacht in Solent

Narrative

A small sailing yacht was chartered for a weekend in early April by a group of three men who intended making passage from Portsmouth to Hythe, near Southampton. The weather forecast was for westerly winds of Force 5 to 6 increasing to 7 later in the Western Solent.

The yacht was a small fractional rigged sloop with a lifting keel – 6.4 metres overall length. The charter company had a fleet of these craft which were used either for individual "bareboat" charter or for group activities, including racing. In the winter months they were permitted to operate only within Portsmouth Harbour.

The voyage within the harbour passed without incident but there was then a noticeable increase in wind strength as they continued, close-hauled, to the Isle of Wight shore which provided some shelter in its lee as they began to close tack westwards. A longer tack NW to enter Southampton Water was then begun and it was only at this point that the crew donned lifejackets.

Larger seas were experienced in mid-Solent and the wind increased to Force 7. A decision was taken to lower the jib. Shortly after going about on to the starboard tack, the yacht was knocked down by a gust and lay at 90° for a short time before completely inverting.

The crew were thrown into the water but were able to climb onto the upturned hull. The lifting keel, which in normal operation is kept in place only by gravity, had fallen back into its housing and was only retrieved with extreme difficulty by the crew who then managed to right the yacht.

However, so much flooding had taken place, because the washboards and hatch had fallen out in the initial knockdown, that the yacht sank by the stern leaving only about four feet of the bow floating above the water, almost certainly due to trapped air.

It was extremely fortunate that the accident was witnessed by those onboard other, larger, craft sailing in the area and who called for help. The crew were recovered by the rescue services and the yacht, which did not completely sink, was taken in tow. The crew were examined in hospital and later discharged.

The Lessons

1 The accident occurred because the yacht was being operated in marginal conditions. The decision to extend beyond the confines of Portsmouth Harbour in the prevailing and forecast weather conditions was unwise and furthermore, they should have been advised against it by the charter organisation.

2 The yacht was not designed with the intention of being able to survive a 90° knockdown in a moderate swell.

3 The crew survived because the incident took place in busy waters and other yachts happened to be close by. They also very sensibly remained with the upturned hull.

If it had happened at that time of year when the water was still very cold and in some less popular part of the UK coast, the outcome would probably have been far more serious, had there been delays in rescuing them.

4 Yachts of this size do not easily fall into a category. By some they are regarded as small offshore-type craft – as witnessed in this case by the fact that lifejackets were not worn until several miles into the passage. Others regard them as “big dinghies”; – a dangerous assumption as an important property of nearly all sailing dinghies is their unsinkability. This yacht had no buoyancy

compartments or other buoyancy arrangements, relying solely upon the integrity of the hull. Once seriously flooded it was likely to sink. It did.

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

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

Yacht founders in Needles Channel in severe gale – Three killed

Narrative

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

They sailed from the Solent to Poole and had hoped to extend westwards to Weymouth but forecast bad weather led to a change of plan. After a period alongside in Poole, they prepared for the return passage to the Solent. The forecast wind was south-west Force 7 to 9. On leaving Poole fairway the skipper reduced sail for the prevailing conditions and headed east with the intention of approaching the Solent via the Needles Channel which he knew well. No passage plan had been filed with the coastguard.

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

Because some difficulty was encountered in identifying their precise position, the skipper altered course to the south as he feared he was too close to the Shingles. Moments later a particularly vicious sea capsized the yacht throwing all four crew overboard. Three who were clipped on by safety harnesses managed to climb back aboard, but the skipper, who had unclipped to go below to the chart table, was lost. A great deal of water had found its way below during the capsize through

the open companionway and was over one metre deep in the cabin. One of the crew went below to make a "Mayday" call and during this time the yacht capsized again, this time being dismasted. The two crew on deck were washed overboard, one being swept away, the other being trapped upside down with his head below the water. By the time he was found by the one survivor, he was dead.

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

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

The Lessons

- 1** Winter sailing with gales forecast demands a high degree of responsibility by skippers. The yacht on this occasion was well found. The experience of the crew appeared adequate for the conditions and the skipper had demonstrated sound judgement by abandoning an ambitious plan to sail further westwards.
- 2** In accordance with the MSA Code of Practice for Small Commercial Sailing Vessels, yacht charter firms are strongly advised to give appropriate guidance to charterers on the use of the craft, bearing in mind the declared experience of the skipper and crew, their knowledge of the boat and the weather forecast.
- 3** No matter how short the passage, proper planning is essential. Given wind forecasts of Force 7 to 9 the skipper had the choice of remaining in Poole, taking the long route to his eventual destination by sailing south of the Isle of Wight, or making for the Solent via either the Needles Channel or the North Channel.
- 4** The indications are that because the tide was flooding, ie, setting north-east and with the wind, the skipper decided that the Needles Channel option was a safe choice. The choice of which passage to adopt must always be the skipper's but the responsibility must be taken after very careful consideration of the dangers and, if lacking in local knowledge, having taken the advice of others. In this instance the skipper, having taken the decision to proceed to sea, appeared unaware of the grave dangers associated with entering the Needles Channel in strong SSW winds, and especially in the early stages of the flood.
- 5** In bad weather conditions safety harnesses should be attached to properly tested securing points at all times, and when fitted, the crotch strap of lifejackets must be correctly fastened.
- 6** Conventional foul weather clothing offers little protection from winter water temperatures (in this case 6 – 8°C) and in breaking seas once the body is fully immersed. Survival times are measured in minutes.
- 7** One set of flares for emergency use must be kept readily available and separate from the main supply. It is recommended that the ready-to-use set is placed under cover and easily accessible by the companionway.
- 8** Yachtsmen are encouraged to report their passage plans to HM Coastguard especially in winter when bad weather is forecast.
- 9** Retroreflective tape on liferafts, lifejackets and foul weather clothing stands a very good chance of being sighted at night when it is picked up by searchlight beams such as those used on RNLI lifeboats.
- 10** Publishers of sailing directions which offer advice on using the Needles Channel should highlight the dangers of breaking seas in the vicinity of the SW Shingles and the Bridge bank especially in strong winds from the south round to west. The swell in such conditions tends to build up once the west-setting ebb has stopped. Around low water the seas at the seaward end of the Needles Channel can be particularly vicious.
- 11** Despite having to sail close to a lee shore, the North Channel offers a viable and usually safer alternative to the Needles Channel when entering and leaving the Solent in adverse weather conditions even when the tide is favourable.

Acknowledgement to Hampshire Police and HM Coroner, Isle of Wight

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.

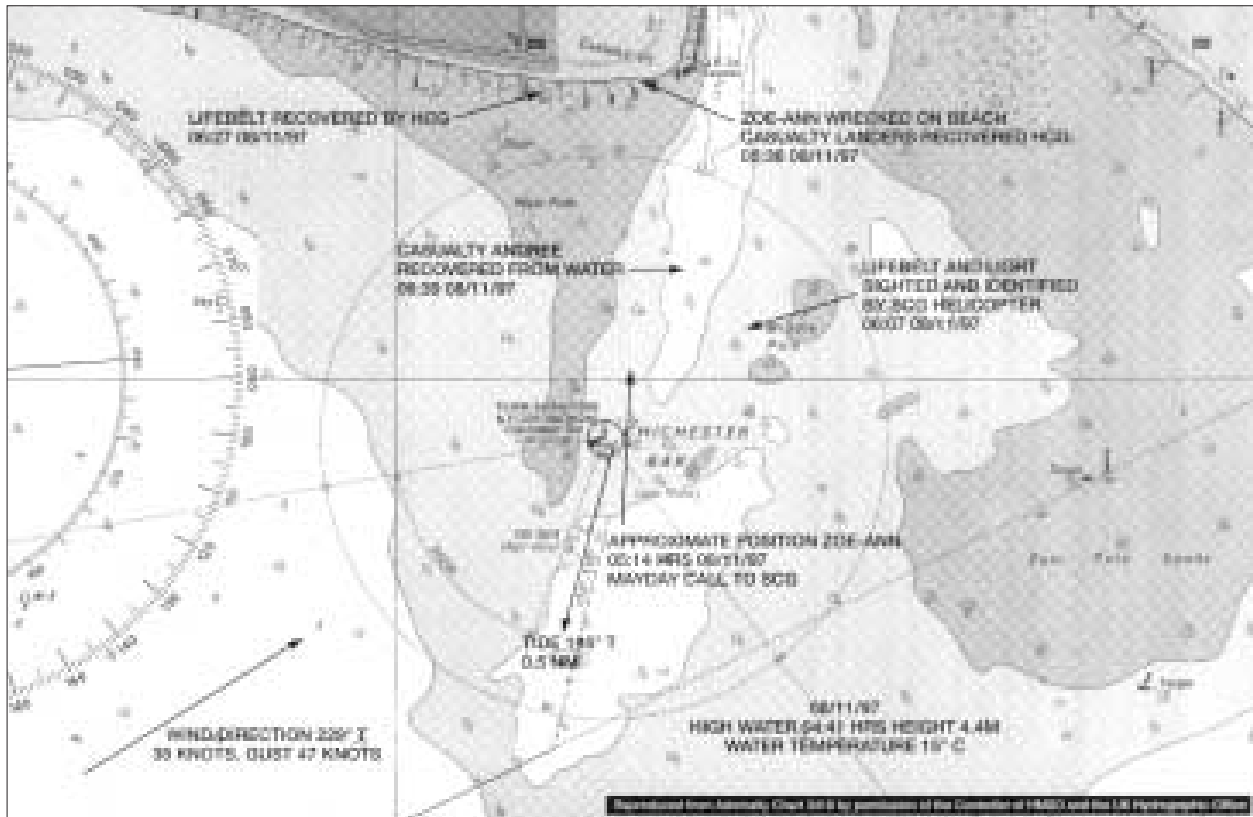
The passage from Chichester Harbour and through the Solent was uneventful in a SW wind force 4 to 5, but when they reached the western end of the Solent near Hurst Point at 2230, weather forecast warned of imminent gales so they decided to turn back. Rather than make for shelter in Lymington, Yarmouth or Southampton, all of which were close by, the owner preferred to return to the yacht's 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 owner's 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 owner's inexperience and an incomplete awareness of the hazards were

probably contributory factors. When sailing at night, in November, in a small yacht, in a gale, safety equipment and the need to secure oneself to the vessel are essential necessities.

- 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.

CASE 4

Yacht knocked down in Bay of Biscay – One man lost

Narrative

The Beneteau Oceanis 390 *Ocean Madam* was on the final leg of a delivery voyage from Malta to Plymouth, UK, when she was knocked down twice in a severe gale while sailing across the Bay of Biscay in a force 9 severe gale. She recovered from the first knockdown but remained inverted after the second. Her skipper and one of the two crew members survived but the second was swept away and never recovered.



Ocean Madam was skippered by an experienced yachtmaster but her two crew had little previous sailing experience.

Before leaving her last port of call, La Coruña, weather forecasts had been received indicating strong to gale force winds, up to force 8 from the south-west in the Bay of Biscay. Once *Ocean Madam* was at sea BBC Radio shipping forecasts were taken. Winds up to severe gale force 9 were forecast in the northern part of the Bay of Biscay.

On their second evening at sea and when about 110 miles south-west of Brittany, conditions developed as forecast. Steep seas with wave heights of 7 – 9m were encountered with a south-westerly force 9 blowing. Occasional waves were observed to be coming from the east which created a confused sea.

With one of the crew at the helm, and under shortened sail in the dark, the yacht was laid flat by a wave. She righted immediately but the event alarmed both skipper and crew. The skipper took over the helm and retained one of the crew on deck to help him. An hour later the yacht was knocked down again but this time she inverted and failed to recover. Once he realised she was not going to right itself, the skipper extricated himself from the submerged cockpit and found his way to the surface where he managed to cling to the transom-mounted boarding ladder.

After an indeterminate period the yacht righted herself and this enabled the skipper to climb back on board. On regaining the cockpit he discovered that the yacht had been dismasted and that he was alone. There was no sign of the crewman who had been on watch with him. When last seen he been wearing a lifejacket and safety harness and had been clipped on. There was no indication of harness failure so it is assumed he had unclipped himself when trapped under water.

The off-watch crewman came on deck after seeing water pouring into the cabin through the open hatch. The situation was aggravated by the washboards falling out.

The two survivors could hear shouts from the man overboard but were confronted with an inflated liferaft that was flailing around in the wind and required securing. This became their immediate priority. In the meantime the crewman activated the yacht's EPIRB while the skipper donned his lifejacket.

The only way to secure the liferaft in the extremely difficult conditions was for the two men to climb into it and make it fast. With both men in the liferaft another wave broke over them and the painter parted before it could be secured. Within seconds they were being swept away. Although any realistic chance of saving the missing man had now passed, they hoped it could still be achieved. Before anything further happened another wave broke over them and capsized the raft. Attention then turned to survival. They had great difficulty trying to right the capsized liferaft and were finally forced to climb onto it with it upside down. It capsized again.



The missing crewman was never found.

They managed to get back on board and spent the next few hours trying to keep warm. They also set off several flares to try and attract the attention of what they thought were passing ships. Meanwhile the EPIRB had successfully operated to alert the French SAR authorities. In the early hours of the morning a fixed wing aircraft found them and at 0530 they were rescued by a French air-sea rescue helicopter.

Any death at sea prompts questions as to whether it could have been avoided. Such questions become more pointed when the events are associated with a leisure activity. Sailing involves many risks and a voyage in bad weather attracts more risks than most. The cause of this accident was bad weather but there were many underlying factors which contributed to the final outcome. As in all accidents there are several lessons to be learned both in the lead up to the capsize and in the hours that followed.

The Lessons

1 The ability to survive in heavy weather is dependent on three factors, a suitable boat, thorough preparation and an experienced and well worked up crew. Providing all three criteria can be met, there are no overwhelming reasons why sailors should not confront these conditions. But as soon as any one of these requirements is ignored, overlooked or underestimated, the risks escalate. If all three are disregarded then the attempt becomes dangerous and the consequences potentially tragic.

2 In deciding whether a boat is capable of standing up to bad weather, there is little to replace practical experience of the actual craft and a sensible appraisal of

what it is capable of. This must be supported by an understanding and knowledge of equipment carried and the boat's handling characteristics. Once the shelter of the land is left behind, a skipper is placing great trust in the boat's design, her rigging, maintenance and watertight integrity. Any small boat is subjected to immense forces in heavy weather and if anything unexpected gives, disaster can follow.

3 *Ocean Madam's* skipper knew the boat and had already sailed several hundred miles in varying weather conditions on this voyage without cause for concern. He did not, however, know enough about her stability to predict her

performance in the heavy weather likely to be encountered in an autumn gale in the Bay of Biscay. Yachts are designed for particular conditions and should not be deliberately placed in situations for which they are unsuitable. There is a world of difference between a craft suitable for summer cruising and one designed to cross oceans in all weathers.

4 If the stability characteristics of a modern high displacement sailing yacht are unknown, err on the side of caution. Breaking waves in high sea states can be extremely dangerous to this type of craft.

CASE 4

Continued

5 The decision to sail is always the skipper's. He should not be influenced by perceived peer group pressures but must make a realistic judgement based on sound knowledge. If there is no need to sail when bad weather is forecast, there is nothing to be lost by delaying the departure until conditions improve.

6 Weather forecasting continues to improve but skippers have, ultimately, to make their own judgement based on the best possible data. This includes an analysis of a series of weather reports, in depth study of the sailing directions and local information. Many yachtsmen think of weather in terms of wind strength and the Beaufort Scale. The very experienced sailor goes one further and thinks of it in terms of sea state. A force 9 severe gale in the Solent is one thing; it is something completely different in the shallow seas of the North Sea or the open wastes of the Southern Ocean. High seas can come from different directions; not just the one forecast. This unpredictability is one of the factors that makes them so dangerous. Significant wave height is one thing, the maximum height is another; it can be substantially higher.

7 The skipper's greatest asset is a good crew. A well worked up team who get on well together is a pearl beyond price. Leading such a crew is a great challenge and very rewarding. It is as important a function as an in-depth knowledge of the sea and sailing and can be overlooked. Once mutual trust begins to break down, or inexperience creeps in and tiredness takes a hand, the problems

escalate. Handling a yacht in rough weather makes huge demands on a crew, especially when their experience of such conditions is either very limited or non-existent. If too much is expected of them, they are unlikely to be sufficiently effective. The problems can also escalate if the crew is short handed or they succumb to sea sickness.

8 Handling a boat well in heavy weather can only come with experience. It is not something you acquire from books, but there is a mass of available literature with some extremely good advice that should not be overlooked. Skippers will devise their own systems and check lists to prepare for, and conduct, heavy weather sailing. Such checks will have two underlying themes; keeping sea water out of the boat and the crew in it. The fitting of washboards falls into one category, the wearing of lifejackets and safety harnesses is in the other.

9 EPIRBs should be registered correctly with the Maritime and Coastguard Agency, and a double check made to ensure it has been done if someone else is doing it for you.

10 The two survivors in this accident had a reason to climb into the liferaft. Under normal circumstances it is invariably more sensible to stay on board. Yacht hulls usually survive the worst the weather can do.

11 Among the most important items of kit carried on board any vessel, including yachts, are those relating to lifesaving. It is too easy to assume that because they are on board they will work when

required. Every owner should have a system for ensuring that all lifesaving equipment is thoroughly checked and any requisite servicing is meticulously carried out by the dates due. They should check that flares are in date and kept dry, that jackstays are maintained in good working order, that lifejackets are in good condition and that the effects of UV light do not weaken the fabric of equipment carried on the upper deck. Danbuoys should not disintegrate when removed from their stowage.

12 When planning the contents of a grab or panic bag, give careful thought to the circumstances under which it might be opened. It won't be on the kitchen table at home or the skipper's bunk in harbour. It is much more likely to occur in a tossing liferaft in rough weather in the middle of the night, when you are almost certainly feeling distraught, shaken and very distressed. You might even be injured or even very ill. The question to be answered is: what will I need and what am I likely to want first?

13 The skipper of *Ocean Madam* had attended a sea survival course. The MAIB is seeing evidence that attendance on this course is proving to be a life saver – literally. It is very highly recommended.

14 Keep the registration details of EPIRBs up to date with HM Coastguard. This can be achieved via a simple fax.

Young woman killed when day-boat capsizes

Narrative

A group of 15 people were on a week long activity based team-building course organised by the Prince's Trust, Slough. As part of the course, the group of 12 volunteers and three team leaders/assistants, undertook a day of sailing in Milford Haven led by five instructors employed by the Trust.

The group left Neyland Marina at about 1230 on 3 February in four 6.1m Explorer II ketch rigged open day-boats. Each had five people on board, at least one of whom was an instructor. The boats were rigged and equipped with an outboard motor, crutches and oars. The weather was fine with a moderate westerly breeze. The outboard motors were used for the first part of the day to enable the volunteers to gain experience in boat handling. After a picnic lunch the crews in two of the boats motored across the Haven to Carr Flats where they prepared to sail back to the marina.

The mizzen sail was hoisted on one of the boats as she motored slowly into wind. While preparing to set the jib some water lopped over the port gunwale, prompting the crew to move quickly to starboard to avoid getting wet. The boat heeled to starboard and started to ship water. The situation was possibly aggravated by wind filling the mizzen sail. The boat capsized.

The instructor and volunteers were thrown into the water. The instructor attempted to right the boat but, after lying on its side for a few moments, it inverted. As it did so one of the crutches possibly snagged the buoyancy aid of one of the volunteers, a young woman, who had found herself between the two masts. She was pulled down and held under water beneath the upturned hull. As the boat inverted the centerboard slid into its housing, frustrating further attempts to right it.

Despite strenuous and prolonged attempts by two instructors (the other boat had come to their assistance) they were unable to free the victim.

The accident was witnessed from the beach by two fishermen who ran to their boat where they set off a distress rocket. A harbour authority launch came to assist and managed to attach a line to the rigging and right the boat. As it came upright the unconscious woman slipped out of her buoyancy aid and began to float away. One of the instructors began in-water mouth-to-mouth resuscitation. She was recovered to an inflatable boat which had also come to their assistance and resuscitation attempts continued as she was taken ashore to a waiting ambulance. Despite their efforts they were unable to save her; she was later pronounced dead.

CASE 5

Continued

The Lessons

1 The boats had been modified to enable them to be rowed. The crutches were mounted through the gunwale capping outboard of the hull and were secured with split pins. This made their shipping and removal slow and awkward and it had become the accepted practice to leave them permanently in place. By leaving them in situ they had become a snagging hazard for mooring lines, sheets and other rigging; were vulnerable when coming alongside pontoons or other craft and provided a means whereby people could fall or trip over them. They could also snag clothing or lifejackets in the event of a capsize. Crutches should always be unshipped when not in use.

2 Explorer II, like many open day-boats of similar size, is neither a very stable keel boat nor a light buoyant dinghy. Such boats can and will, on occasions, capsize.

3 Open day-boats are unlike lighter dinghies, difficult to right by the crew if they capsize. Some have a tendency to invert which makes righting them even more awkward without assistance from another craft.

4 Distributing weight evenly for the conditions is part of sailing and novices must be briefed about what to expect and what to avoid. From time to time water will be shipped and people will get wet. They must expect this.

5 As part of the investigation an Explorer II was capsized intentionally. When inverted she sank slowly by the stern. This was because the after stowage lockers were not watertight. When she was righted the water level in the cockpit was above the top of the outboard engine well and made bailing impossible. Other open day-boats share this characteristic

and appropriate measures should be taken to provide additional buoyancy. Such measures should also include providing a means of buoyancy on the mast to prevent inversion in the event of a capsize

6 Before purchasing a boat, look for the European Standards plate marked CE which will provide information on loading and power limitations.

Catamarans capsize in Weymouth Bay – Everybody saved

Narrative

While competing in the International Dart 18 Championships in Weymouth Bay on 2 June 1999, many catamarans were hit by a line squall and capsized within a short space of time. 77 boats had set out for the race but several had retired before the squall struck. A sizeable rescue operation had to be mounted but at least 25 boats were able to return to shore without assistance. By the end of the day all 156 competitors were safe and only one person, a volunteer in one of the rescue boats, was admitted to hospital suffering from sea sickness and possible hypothermia.

The forecast for the event was for freshening south west winds force 4 to 5 and strengthening to 30 knots later in the day but, although the weather pattern had been unstable over the preceding days, there were no signs of thunderstorms prior to the event.

As part of the championship safety preparations, each boat was issued with a clear identification (tally) number that was stuck prominently on both port and starboard hulls. Each boat had a set 'parking space' on the beach with this same number and had to use the tally system when checking in and out with the beachmaster for each race. All competitors were required to wear lifejackets. They were, as a matter of course, wearing suitable and sensible clothing.

The race organisers briefed the emergency services before the event. This included the coastguard, ambulance service and the Weymouth police, but the information was not relayed to Police Headquarters.

Although not a requirement to carry flares, many boats did so and this helped to raise the alarm. Flares were successfully used by one competitor when his crew became separated from the boat.

A major problem was that some of the catamarans could not tack back towards the shore in the prevailing conditions and became scattered over a very wide area before capsizing.

Five safety boats were in attendance, in addition to a committee boat and five keelboats. Although the race organisers were confident they had provided sufficient numbers of craft for normal circumstances (the RYA recommends one rescue boat for every 15 boats competing), they very rapidly assessed that the magnitude of the incident was beyond their immediate resources and did not hesitate to call for additional assistance.

The coastguard came to the same conclusion and not only dispatched the local lifeboats and the coastguard helicopter, but also broadcast a "Mayday" to ensure as many rescue assets could be deployed in the minimum of time. The response to the situation and the rescue was successful.

CASE 6

Continued

There was no hesitation on the part of those responsible for organising the race that the overriding priority was the safety of personnel, with boat recovery taking second place. Although many of the capsized craft were towed to safety by their crews, local fishermen and other craft, some drifted down tide to be washed ashore. Several sustained extensive damage before they could be recovered. Survivors were prepared to leave their boats when asked to do so by the lifeboat crews and this greatly aided the success of the rescue operation.

The smallest of the rescue craft, a 4m RIB, was found to be unsuitable in the prevailing conditions.

The 'tally' system provided a simple and effective means of accounting for people even though many of them landed up far from the regatta headquarters on Weymouth Beach. All competitors were returned to the same landing place so they could be processed and accounted for. The coastguard and police worked in conjunction with the race organisers to process and account for all the competitors. Ambulance teams were also present to check the conditions of those recovered.

The presence and requirements of the media presented difficulties to the organisers trying to cope with a very difficult situation.

The Lessons

- 1 Although this entire incident was unforeseen, the existing contingency plans that had been prepared to cope with an emergency, were in place and ensured a successful outcome to what might have been a tragedy.
- 2 Those planning to race in anything other than 'normal' weather conditions should be mindful of the limitations of the craft involved. This includes the effects of line squalls associated with thunderstorms. Race officers will be the best judges of local weather conditions, but thunderstorms can create very severe local winds as the down-rush of air ahead of the squall hits the sea surface and is deflected ahead of the advancing thunder clouds. There should be no qualms about postponing, or shortening a race if wind speeds are likely to exceed the capability of competing craft to handle.
- 3 The outstanding feature of this race was the tally system for keeping track of competing craft. It worked and is recommended. The essential requirement was to ensure that details of whoever was rescued were reported back to the race control. If anybody is taken to hospital it is essential that his or her name is reported to the race control at the earliest possible opportunity.
- 4 The race organisers insisted on the wearing of suitable clothing and lifejackets. The only person to suffer any ill effects was one of the crew of a rescue craft. Although she was wearing a wetsuit, she showed signs of possible hypothermia. Everyone afloat should be suitably dressed and equipped for the task demanded of them. Failure to wear suitable clothing can often lead to hypothermia, while an effective lifejacket will ensure an unconscious survivor's head is kept above water. It is often forgotten that death from cold shock can occur soon after immersion in the sea, and within a few feet of safety.
- 5 Rescue boats should be capable of being handled in the roughest sea conditions likely to be encountered.
- 6 Before a major event such as this takes place, it pays dividends to alert the coastguard, police and ambulance service that it is taking place. Discussion with these organisations before the event will identify potential problems and propose appropriate solutions.
- 7 Flares were used effectively to alert organisers to the scale of the problem.

8 The prompt and comprehensive reaction by the emergency services and others to the call for assistance ensured a successful outcome.

9 RNLI crews found the co-operation of crews to leave their upturned craft a great help.

10 Whenever a good 'story' is breaking, the media will be present. Their agenda will be entirely different to those coping with the incident. It is very easy to become frustrated or distracted by reporters' inevitable quest for something sensational to report, and their perception that someone must be 'to blame'. The appointment of a dedicated media liaison officer can do much to make the problem manageable and will ensure there is a reliable source on which reporters can draw. Good press liaison pays handsome dividends; a lack of

it will often result in an uncomfortable outcome that can be very distressing to families and friends of those involved in the event.

11 Planning for the unexpected pays.

Footnotes

It is common practice for safety boat crews to tie coloured ribbon (or marker) to an abandoned dinghy after its occupants have been rescued and taken ashore. This practice prevents other rescue boat crews or safety agencies becoming concerned when finding a capsized boat with no-one in or near it.

Those involved in yacht race rescue operations should be aware that most race organisers use M2 (channel 80) and channel 37 to

conduct on-the-water operations. The monitoring of these channels by rescue craft should prevent the duplication of radio traffic during any incident.

This article has been prepared with the co-operation of the race organisers, the coastguard, the RNLI and the Royal Yachting Association (RYA).

The RYA has produced a useful list of lessons learned in its RYA Race Management Newsletter.

So close to home and yet so far

Narrative

At the end of October 1999 five schoolteachers sailed across the English Channel in the 28ft bilge keel Westerly Konsort *Kishmul of Ayr*. Setting off from Plymouth on a Wednesday evening they crossed the Channel to spend a night at St Peter Port, Guernsey, before moving on to Cherbourg. After an evening spent ashore, and with bad weather forecast, they decided to curtail their visit and head for home. Conditions deteriorated during the return passage and by the time they sighted the breakwater at Plymouth on the Saturday evening and in the dark, the wind was blowing force SSW 7 to 8 with a high sea running. As the yacht headed towards the eastern entrance of Plymouth Sound, she grounded on rocks, subsequently broke up and sank. Four of the crew survived but the owner/skipper did not. His body was recovered from the sea the following morning.

The skipper was an experienced yachtsman and had owned his boat for 9 years. He held a yachtmaster's certificate and had crossed the Channel several times before. He knew the approaches to Plymouth well, and had a reputation for putting the safety of his crew first. His crew were less experienced. Two had sailed a number of times before, but the other two were novices. One had no experience at all. All four had total confidence in the skipper.

Kishmul of Ayr was well equipped for the intended passage. She carried adequate navigation equipment including a Garmin GPS navigator. A full range of lifesaving equipment was also held on board.

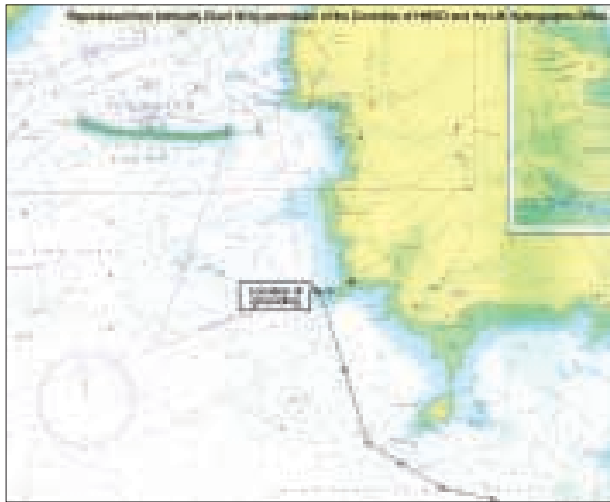
The prime purposes of the voyage were to have an enjoyable time and to provide sailing experience for the crew. One of them was studying for a Yachtmaster's qualification.

The passage had been uneventful until a weather forecast was received on the Friday evening to indicate the conditions were going to deteriorate more than expected. The collective decision was taken to return across the Channel some 12 hours earlier than planned and sail from Cherbourg at midnight. Mindful of the tides prevailing over the weekend the selected destination was to be Salcombe. On departing Cherbourg, a freshening southerly breeze was forecast with an Atlantic depression expected on the Sunday.

During the passage the four crew members shared the watchkeeping, with the skipper coming on deck when required. Lifejackets were not worn. The course selected was towards Start Point so that one of several options for the final destination could be considered once the landfall had been made. Navigation was conducted using the GPS and by plotting the positions on the chart. With the generally unpleasant conditions, there is evidence that towards the end of the passage the crew had become wet and tired, and at least one of them was suffering from sea sickness.

Once Start Point had been raised, and with a fair tide under them, the skipper decided to head for Plymouth. The track selected involved keeping about 10 miles off the coast initially but coming close inshore for the final approach.

The skipper took the helm himself for the last four hours of the passage, and was navigating by eye. He knew the waters well and visibility was good as he approached Plymouth Sound from the east.



It isn't possible to know exactly what plan the skipper had in mind as he headed for the shelter of the Sound, but it involved keeping to seaward of a number of yellow firing range buoys lying off the Great Mew Stone. There are seven such buoys in almost a straight line; three of which were lit with flashing yellow lights. The two end buoys flash every 5 seconds and the centre one every 10. He clearly anticipated following them until he thought it was safe to alter course to starboard. As they passed close down the line, the skipper and the one member of the crew who was with him in the cockpit realised they had not been counting them.

As they passed what they thought was either the third or fourth buoy, course was altered to starboard to round up for the Eastern Channel. It is possible the skipper thought he had reached the most westerly buoy in the line and had clear water to run up to the Eastern Channel.

For the approach he used the Eastern Breakwater sector light as the head mark. It was identified as 'a red light'. He did not take a bearing of it or check his position by any means. He continued to navigate by eye.

Throughout this period the GPS was functioning correctly but was not being used. The other three members of the crew were below in the cabin, and the echo sounder was switched off. No positions were being plotted on the chart.

Soon afterwards there was what one of the crew described as an 'almighty bang'. A few moments earlier the skipper had seen something in the dark ahead and thought it might have been a buoy.

Almost immediately the 'something' was identified as a rock. *Kishmul of Ayr* grounded on the Renny Rocks ledge off Renny Point and just to the east of the unlit Shag Stone. It was shortly before 1950. The wind was SSW to SW near gale and the sea assessed as moderate to rough. It was very confused in the immediate vicinity of the rocks.

The yacht did not appear to have been badly damaged on first impact, but subsequent waves swept her back on to the ledge and holed her. She started to fill with water and the skipper went below and transmitted a "Mayday" which was acknowledged immediately. The skipper was already wearing a jacket with built-in buoyancy, but told the others to don lifejackets and come on deck. With the boat moving about so much, at least one of the crew found putting on the lifejacket very difficult. He needed two hands to don it but also needed to steady himself.

With waves continually sweeping over her, the yacht showed signs of breaking up as she was buffeted against the rocks. The liferaft was prepared for launching but was swept away and not used. The survivors subsequently felt that it would have been of limited value given the proximity of the breaking waves on the nearby rocks. The skipper returned below to locate the flares but couldn't find them. With all the gear floating around in the half-filled cabin it was chaos.

Soon afterwards, the Plymouth lifeboat was seen approaching but, because of the yacht's proximity to the rocks, it couldn't get sufficiently close to rescue anyone. The time was 2017. About 20-30 minutes after the first impact it was clear the yacht was about to capsize and the skipper ordered his crew "to get off the boat". They found themselves in the water and trying to survive. One man found that one of his training shoes had caught in one of the halyards. They found that by swimming away from the rocks they were in slightly better conditions.

CASE 7

Continued

Three men were winched from the sea by a helicopter between 2040 and 2052, while a fourth managed to swim ashore after spending about an hour in the water. The fifth, the skipper, was last seen near the wreckage of the yacht. An exhaustive

search was made for him but without success. When his body was recovered the next day, the jacket and buoyancy aid he had been wearing the previous evening was no longer on him.

The Lessons

1 It is very easy to attribute this tragic accident to navigation error. As in all accidents, it happened because a number of events, none in themselves particularly serious, occurred one after another. In this case they eventually led to the loss of a yacht and the life of her skipper.

2 Although it was late in the year, the yacht, her skipper and crew were fully capable of undertaking the planned passage. Bad weather was both forecast and experienced, but there were no overwhelming reasons why *Kishmul of Ayr* could not have made a successful crossing in the conditions encountered. The decision to curtail the weekend cruise while in Cherbourg was reasonable, but it was probably there that the first link in the causal chain occurred.

3 With bad weather forecast a skipper is faced with four basic choices. He can abandon the passage altogether, delay sailing until conditions improve, advance the time of sailing to try and beat it, or batten down completely and go when planned. If the third choice is selected, a skipper must think through what needs to be done before setting out. By the time the yacht is approaching

her destination it is highly likely the conditions on board will be uncomfortable, and there is every prospect the crew will be very tired. The more that can be done before departure the better. Preparations not only involve securing everything for sea and planning the port entries, but thinking through the effects of fatigue. A skipper should also bear in mind the implications of having a crew with relatively little experience. Such considerations might have a bearing on the planned conduct of the passage.

4 If the final approach is likely to be made at night and in foul weather, it pays to think through the height and effects of the tide, unmarked dangers, the availability of navigation marks and the chances of seeing them. Above all, the skipper must plan on giving himself the maximum amount of sea room. A few minutes spent thinking through the options before sailing, and sharing your thoughts with your crew before setting off, will be time well spent. A key component of such planning is to think through the consequences of not having GPS available when at your most vulnerable

5 The all weather yachtsmen will know only too well that those who make up the crew will perform best if they are warm and dry. Anyone who is cold, wet and almost certainly tired, is unlikely to be fully effective. If they are seasick as well, the situation is aggravated further. Any planned passage must take account of the experience and knowledge of the crew, with an allowance being made for the toll that might be taken if bad weather is encountered.

6 A check frequently overlooked is to ensure that everyone on board, particularly anyone without previous experience, is properly equipped with effective foul weather gear. Time should be taken to ensure lifejackets and harnesses fit properly.

7 The greatest enemy to the small boat sailor in rough weather is fatigue. Lack of sleep, or prolonged periods without it, can have a devastating effect on the ability to think straight or exercise cool judgment. Anyone who is very tired will start to do things that would be very unlikely in normal circumstances, or make mistakes. Recognising the state, and making allowances for it, will do much to offset the

effects. Ensure that everyone, and especially the skipper, gets as much sleep as possible before closing the coast at the end of a tiring passage. Even a short catnap can pay handsome dividends.

8 The Sailing Directions contain sound advice; if they advise against using a particular channel in certain wind conditions, heed it. The Channel Pilot embracing Plymouth Sound specifically warns against use of the eastern channel in strong westerly winds.

9 All skippers, even the most experienced, will benefit from help in a potentially difficult situation. In the closing stages of this particular voyage the skipper was, in essence, handling everything himself. At the very least there should, if at all possible, be two people involved. One should be concerned with navigating. A skipper might well choose to delegate steering to one of the others and handle the conning himself. And the fourth could be standing by to handle the sails. A team approach works.

10 Although the GPS was functioning correctly, no fixes were being plotted and no planned track for the approach had been prepared. The actual approach to Plymouth was the shortest available and involved skirting the eastern, and lee, shore as the yacht shaped up towards the sheltered waters of the Sound. When entering a harbour at night give yourself plenty of sea room and have a plan prepared. Deviate from it if necessary, but know by how much. Pre-planned clearing lines on known dangers will do much to ensure you remain in safe water. And you won't go

far wrong if you remember the old adage of good seamanship: log, lead and lookout. Had someone been looking at *Kishmul of Ayr's* echo sounder, and ensured she kept outside the 20m contour line on her approach to harbour, she would have been safe.

11 If your safe navigation depends on counting buoys, do so but make sure you identify them correctly. A miscount or a misidentification (so very easily done when you are very tired) can lead to a course alteration being made in the wrong place. Such a technique must be verified by other means such as GPS, and by calculating the DR.

12 Not all buoys are laid for navigation. While gunnery range buoys should be where charted and lit as stated, they serve a different purpose. The sensible navigator should be aware of this and go to even greater lengths to ensure he or she has an effective alternative method of establishing his or her position.

13 Use the available navigation aids to advantage. Leading lights or natural transits are the easiest to use, but a sectored light can be relied upon to indicate safe water. *Kishmul of Ayr* could have made a safe approach to the Eastern Channel had she identified, and remained within, the white sector of the eastern breakwater light. This would have ensured she kept to seaward of the unlit Renny Ledge rocks and the Shag Stone Rock, and would have alerted the skipper to any leeward set.

14 Making out lights of buoys, and other navigation aids against a well-lit background of street

lights and buildings can be difficult. Don't rely on them alone.

15 When approaching a harbour entrance in bad weather, and most especially at night, the crew may have to work on deck to go about, hand sails, or act as lookouts. There is always the prospect of something going wrong. Lifejackets should be worn and donned well in advance. Trying to put them on after going aground is likely to be extremely difficult.

16 Fitting strobe lights to a lifejacket as well as having a fixed light makes the task of locating you infinitely easier.

17 Don't forget it is not drowning that becomes the most likely cause of death once you are in the water, it's the cold. Survival suits are not such a silly idea. Nor are personal locator beacons (PLBs).

Footnote

*After the accident the GPS was recovered from the wreckage. Using the data contained, it was possible to reconstruct the yacht's track during the final few minutes of its passage. The track on the attached chart has been reproduced using this information but makes no attempt to speculate on exactly where the skipper altered course to starboard, or what the set to leeward would have been. Using this data alone it shows that *Kishmul of Ayr* altered course to starboard after passing one of the middle buoys in the line.*

Tynemouth tragedy – Two killed

Narrative

During the night of 2 – 3 April 1998 an easterly gale had been blowing in sea area Tyne to create a heavy onshore swell along the Northumberland coast. A frontal system passed through during the morning and the wind veered so that, by 0900, it was a force 4 from the south. A gale warning remained, nonetheless, in force. The conditions some 11 miles up the River Tyne at St Peter's Marina had, meanwhile, improved significantly with bright sunshine, blue skies and a force 3 to 4 wind. The Bavaria 46 yacht *Signature* was secured to one of the pontoons, and her skipper was preparing to take nine guests to sea for the day.

Within three hours of sailing, however, the yacht had virtually pitched over and three of the guests had been swept overboard. One was recovered alive, the other two drowned.

The day before the accident *Signature* had put to sea on the first of two days planned hospitality charters aimed at raising funds to enable the skipper to participate in the 1998/99 'Around Alone' circumnavigation race. During the day the wind had been blowing force 6 to 7 with an 8-10 ft swell, the boat behaved impeccably and the nine guests had enjoyed their sail. No problems were encountered and *Signature* returned to the marina in the late afternoon to disembark her guests and spend a wet and windy night alongside.

In the shipping forecasts issued at 2358 the night before and at 0505 that morning, gale warnings for sea area Tyne on 3 April had been issued. Easterly 7 or gale 8 had been forecast and this was reflected in the Tyne Tees Coastguard broadcast transmitted at 0750. The skipper wasn't able to



receive any of these, but had watched the weather forecast on TV the evening before. He was expecting a force 2 to 3 with conditions set to improve further.

Shortly before 0930 on 3 April, the day's guests arrived onboard and were given a 20 – 30 minute safety talk by the skipper. In addition to telling his visitors about his plans for the day, he briefed them on what to do in certain emergencies including man overboard. He also showed them where the liferaft was stowed and how to use it, and where to find the lifejackets and harnesses. Because *Signature* was not going offshore, it was the skipper's practice to provide his guests with waistcoat type 100N (Newton) lifejackets as they were easier to put on with a zip and were warmer. He did not show anyone how to put them on. The policy he adopted for wearing foul weather clothing, lifejackets and harnesses was that unless he directed they should be worn, the decision to do so was left to individuals.

On slipping from the marina, *Signature* made her way down river on the strong ebb tide of about 1.5 knots. The wind was light, and using her engine she made good progress. It was sunny and everyone on board was relaxed and enjoying themselves.

The only experienced yachtsman onboard was the skipper. Although he held no formal qualifications he had extensive sailing experience, knew his boat well and had visited the Tyne before. He was familiar with single-handed sailing and often took newcomers to sea without another experienced sailor on board to assist him. He wore glasses.

The sailing experience of his guests varied from the very limited to the complete novice. At least one was a non-swimmer.

When some three miles from the harbour entrance and still unable to see it himself, the skipper called Tyne Harbour Radio, reported his position and asked, "Is it all right to go seabound through the port?" It was just before 1100. The officer on watch at the Harbour Master's office (Tyne Harbour Radio) could see the harbour entrance and replied, "Yes, but you've got an awfully big swell and sea running." This was acknowledged by *Signature's* skipper who added, "We'll see what it's like out there and may well come back in earlier."

Having been warned about the conditions, the skipper instructed his guests to don foul weather gear. He continued under power heading seawards with two reefs in the main. Two guests chose to wear lifejackets, but removed them later when they began to get too hot. Nobody else wore them at any stage and the skipper did not think it necessary for anyone to put on harnesses or clip on.

Seen from *Signature's* cockpit, the sea conditions ahead were dominated by a heavy swell, but the wind was light and the surface water was calm. None of the waves were breaking and the skipper was totally confident of his, and the boat's, ability to handle the situation. *Signature* was prepared to withstand heavy weather in the Southern Oceans and the skipper had experienced far worse conditions without any untoward effects. Nevertheless he drew his guests' attention to what lay ahead and asked if they were happy to keep going. There was

unanimous agreement that they wanted to press on; they had every confidence in the skipper's judgment and ability.

Seen from ashore however, *Signature* looked extremely vulnerable as she set out in what appeared to be very rough seas. Preceding her out of harbour by about a mile was a small car carrier, also outward bound and seen to be pitching very heavily.



A feature of the Tyne is the strong ebb, especially at springs and after heavy rains. This discharge of fresh water on top of the outgoing tide is magnified when water is released from Kielder water some miles inland. The outgoing stream is stated to run to a maximum of 2.5 knots at springs, but in practice can reach 4 knots. It is channelled as it reaches the bar, or the area between the pier arms. Although there is no longer any shallowing at the river entrance the term bar is still used locally. It is a hangover from the days when a bar did exist at the entrance of the river and before the piers were built.

Heavy seas form at the entrance during the ebb and are particularly pronounced in north-easterly gales. They persist so long as the residual swell continues to feature and do not occur during the flood. The phenomenon of very steep seas is well known locally and is avoided by the locals. On 3 April, high water was at 0857 and low water at 1519. It was two days before neaps.

CASE 8

Continued

The skipper was aware of the effects of an ebb tide meeting an incoming swell, and knew there had been an easterly gale the night before. He could see the seas ahead were not breaking so, not wishing to disappoint his guests, and with total confidence that all was well, he decided to head on out.

Signature began to pitch heavily as she made her way seawards and began to slam but, with the ebb under her, she made good progress and came abeam the pier end lighthouses at 1145. She was soon in open water and found the conditions easier. The skipper believed he had left the shelter of the Tyne at the most difficult time but there had been nothing to unduly trouble him and he had come through the heavy swell without difficulty.

Once about a mile clear of the harbour entrance he set about preparing to sail. The wind had reduced substantially so the main, with the reefs shaken out, was fully hoisted. A working jib was set.

It soon became clear, however, that with almost no headway in the dying wind and heavy swell, the wallowing motion was distinctly uncomfortable and some of the guests began to be seasick. As the day was supposed to be a fun occasion the skipper asked whether they had actually had enough and prefer to return to harbour. They did. Course was shaped for the harbour entrance, the jib handed and the main was reefed again. *Signature* began her homeward passage under power. The skipper knew that low water was predicted shortly after 1500, and with only two hours left of the outgoing stream still to run, believed the worst of the sea conditions would be over by the time he reached the entrance. He had no doubts that returning would be straightforward, and did not anticipate rough conditions. Nobody was told to wear lifejackets or harnesses and clip on.

The skipper furled the main as *Signature* headed back towards the harbour entrance and clipped himself on while doing so. On his return to the cockpit he once again clipped himself on.

Back in the cockpit, and when about a mile from the harbour entrance, he called Tyne Harbour Radio and reported his position. He then asked, "Is it all right to come on in, and up to the marina?" The reply was, "Yes, you are all clear." He headed for the harbour entrance.

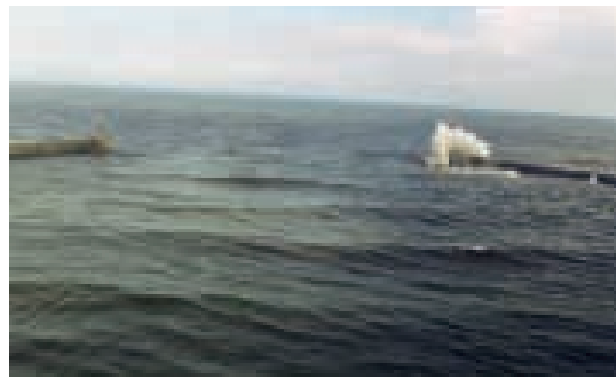
As he approached it was obvious waves were breaking over the piers and the two lighthouses marking the seaward ends but, apart from this, the actual conditions could not be seen from the low height of eye in the cockpit until they were much closer. Once again the sea surface was calm.

The skipper had little inkling, or foreboding of trouble, but was aware his full attention would be necessary to bring the yacht into harbour. The crew was briefed and one of them, known to have dinghy sailing experience, was given instructions for handling the main sheet. *Signature* was under full control with minimal sail set, and those onboard were happy that all was well.

Apart from the skipper who was steering and standing abaft the wheel, nearly everyone else was sitting in the cockpit. At least one other was also standing and another was filming events with a video camera. Everyone had begun to enjoy the experience.

As the yacht entered the river and passed between the pier ends it became obvious the seas were much heavier than expected. Once inside, the skipper, given the following seas, was giving his full attention to steering. The time was shortly before 1300.

When about 2-3 cables inside the entrance, those on board looked astern and saw large waves beginning to build. They began to break, and one of these lifted the stern so much that the yacht adopted a steep bow down angle as she slid down its face. With the bow now digging in, her forward movement was arrested and she virtually pitchpoled. Almost immediately she twisted to port and was knocked down to starboard.



Signature went over to about 120°, remained there for an indeterminate number of seconds and then came upright. The engine was still running. It was a difficult moment; the skipper had been pressed so hard against the wheel by the force of the water that he had bent the spokes of the wheel and he found he couldn't steer. He had also lost his glasses and couldn't see properly for a few moments. At the same time it became very obvious that three people had been swept overboard. The yacht had, in the meantime, been turned through 180° and was heading seawards once again.

Rescuing those in the water became the first priority, and various measures were taken including deploying the horseshoe buoy. At the same time and using his hand-held VHF radio, the skipper transmitted a call for assistance. The event was also seen by watchers ashore and some of these took immediate steps to alert the rescue services including the local RNLI lifeboats and the RAF search and rescue helicopter. Other local craft also went to assist.

One of the victims was seen floating face down very shortly afterwards. While attempting to carry out the rescue, and with one of the victims holding on to a deployed lifesling, the yacht was hit by another wave that pushed her well over to starboard. *Signature* recovered a second time and the engine was still running, but the victim at the end of the lifesling had not been able to put it on and had let go. Together with the other two, he was now being swept out to sea.

Assistance, however, soon came with the prompt arrival of the Tynemouth lifeboat. Although all three victims were recovered only one survived; the other two died from drowning. None of those washed overboard were wearing lifejackets.

Some time later the skipper was arrested on a manslaughter charge and for failing to register a vessel under the Merchant Shipping Act.

The Lessons

1 Although the Safety of Small Sailing Vessel Code of Practice (The Blue Code Book) lays down certain requirements for the carriage of lifejackets, skippers cannot go far wrong if they plan on always having 150 N lifejackets onboard regardless of how far offshore they intend going. As the correct fitting of lifejackets and harnesses is so crucial, the conscientious skipper will ensure his guests know how to put them on before going to sea. It is far better to sort out problems at this stage than when the emergency dictates. One of the key features of the lifejacket is its ability to

turn and support the wearer's head so the face is uppermost when the victim is exhausted, injured or unconscious. Experience shows that any of these three conditions can apply within seconds of falling overboard.

2 When taking guests or indeed anyone you don't know to sea, ask if anyone is a non-swimmer, and whether they have been afloat before. If they can't swim, and are new to sailing, think through the implications. If such a person falls overboard through unfamiliarity with either the motion or the environment, they are unlikely to stay afloat sufficiently long for you to pick them up. But if they were wearing a lifejacket ...!

3 The Blue Code does not insist on having a second experienced member of the crew in certain circumstances when close to a safe haven. A skipper working on his own and without having anyone adequately experienced to help him, cannot do everything himself when anything goes wrong. Conditions can be just as bad 100m offshore as 1000 miles, and sometimes worse. The nature of an unexpected problem cannot be foreseen but when it happens, having someone else on board who knows what to do may make all the difference between an adventure and a disaster.

CASE 8

Continued

4 Few mariners would dispute that having the best possible weather forecast before setting out is good seamanship. If for any reason you cannot receive the conventional shipping forecasts broadcast on BBC Radio 4 or VHF, look to the alternatives now available. For those with a computer and onboard Internet access, there are several useful websites giving up to date weather information, while Navtex and the faithful telephone still enable skippers to receive an accurate shipping forecast. Once received, there are two further actions. Read the weather signs yourself, and think through the implications of what both the forecast and your own interpretation may have on your intentions. An overnight onshore gale on the Northumberland coast, for instance, will leave a swell that will create a heavy sea when it meets a strong outgoing stream from the Tyne.

5 When using a commercial port a yacht skipper calling the local authority on VHF may find he or she is treated in the same way as if calling from a merchant vessel. The shoreside operator may not be a yachtsman with an instinctive feel for the type of information a skipper would find useful. Harbour authorities and the coastguard will have no objection to being asked for factual information.

6 Rough seas and heavy weather are unlikely to trouble the well-handled, well-found, yacht. Breaking seas are the danger. Waves break in well-formed storms or when the bottom of the wave

trips in shallow water – such as on a shoaling beach or at a bar. Or when the tide goes down sufficiently far to create the same conditions in a harbour entrance and the outgoing stream is running.

7 Notwithstanding any imperatives that might require you to enter harbour at short notice, you are advised to heed local advice. If the directions say it is better to enter on the in-going stream, there are likely to be very good reasons for saying so. The experienced sailor will understand this and amend his entry time accordingly.

8 The policy to clip, or hank, on is usually established by the skipper. Few insist on clipping on at all times but whatever system is adopted, a skipper should be prepared to change it at short notice if the circumstances dictate. *Signature's* skipper didn't see a need to tell his guests to clip on during this particular trip. With the benefit of hindsight he wished he had. Other skippers have *Signature's* experiences to reflect on.

9 One of the hardest decisions a charter skipper must take sometimes is to call off or amend a planned trip on safety grounds. *Signature's* skipper had done this before but such a prospect must be clearly drawn to charterers' attention at the outset. It is far better to leave guests disappointed than have an avoidable accident. The decision to change a plan on safety grounds must be the skipper's and not the guests. It is reasonable to seek

their views, but a skipper must appreciate that many will be reluctant to reveal their true feelings in the company of others. Never underestimate the effects of seasickness on those embarked, or how little a novice crew will be able to do if things go wrong.

10 If an accident at sea results in fatalities, there is an increasing possibility the police may start a criminal investigation with a view to bringing manslaughter charges. Should this happen skippers can expect the inquiry to probe every aspect of their operation with great thoroughness.

Footnote

The skipper was tried, twice, on manslaughter charges. The jury failed to reach a verdict at the first trial so a retrial was ordered. At the second one, the judge directed the jury to return a verdict of not guilty on the grounds that the prosecution was unable to call expert opinion evidence to support a gross negligence charge. The skipper was also charged for failing to register a vessel under the Merchant Shipping Act. He was found not guilty.

One of the issues to arise after this incident was a dispute about the insurance cover at the time of the incident. The MAIB does not become involved in such matters but very strongly advises skippers to ensure they have documentary evidence of the cover provided before putting to sea.

Even Maxis capsizes

Narrative

One of the entrants for the 2000 Atlantic Rally for Cruisers (ARC) from Las Palmas to St Lucia was the 24m ex-Whitbread maxi sloop, *Creightons Naturally*. She is now operated commercially for corporate entertainment, as well as providing more adventurous passages for paying guests. The passage to the start of the ARC from the United Kingdom offered such an experience to a number of paying guests.

According to the brochure, her original departure date was 1 November but, in the event, she left the Hamble River 2 days later with a crew of 18. The aim was to arrive in adequate time for the start of the rally on 19 November. She never made it.

Three days later, this thoroughly tested and capable craft capsized in bad weather while crossing the Bay of Biscay. The decision was taken to abandon her, and a few hours later search and rescue helicopters successfully rescued all on board. Some of the crew were injured.

In 2000, *Creightons Naturally* was being used to provide both maxi sailing, and adventure training opportunities, to individual and corporate clients. She had a permanent crew of six and, in November 2000, was skippered by a 35 year old man holding an RYA Yachtmasters' Ocean certificate. He had accumulated some 12,000 miles on board *Creightons*, most of it as mate, and had been with the boat since 1999. He had been the skipper since September 2000.

The rest of the permanent crew had a variety of experience and qualifications. The mate held an RYA Yachtmasters' Offshore certificate and had previous onboard experience, while the others offered a range of experience.

The passage crew, known as paying guests, mustered a range of experience from extensive to total novice. Some made only a nominal contribution towards the

cost of their food, since they were there to strengthen the professional crew on board. They were all aware of the potential challenge they might face for an open sea passage at that time of the year.

Creightons Naturally had been surveyed for a Small Commercial Vessel Certificate in October 1995, and this was due for renewal by 6 November 2000. On sailing, neither owner nor skipper had realised it was about to expire. The yacht was surveyed annually by the MCA for the Passenger Vessel Certificate she carries.

With the corporate season behind her, she spent the month of October at a marina on the Hamble, being prepared for her voyage. Much needed to be done, including resealing a cracked diesel tank and, at the last moment, repairing the engine. There were also problems with the external communications systems, which required remedial work. MAIB inspectors were told that several deck hatches were known to leak, including one situated immediately above the navigators' station, where water had been entering electrical equipment, and which had been repaired.

The plan had been to embark the guests at Ocean Village, Southampton, on 1 November and sail the following day.

In the event, the yacht was not ready for sea at the expected time, and it was necessary to transport the guests from Southampton to Swanwick, where they found the crew fully occupied making last minute preparations.

The joining guests were mainly left to their own devices in the hours prior to departure. There were no introductory or pre-sailing safety briefs, although the skipper talked to each crew member individually to assess their sailing experience and strengths to enable him to allocate crew to the separate watches.

CASE 9

Continued

A tide delayed departure, and *Creightons Naturally* finally departed at 0230 on 3 November. In order to embark fuel, the skipper planned to stop briefly at the fuelling pontoon at Port Hamble. However, a combination of weather, and tidal conditions, prevented her from doing so, and the decision was taken to press on westwards to Weymouth to top up with fuel.

She made Weymouth safely, but the refuelling process was interrupted when diesel started to pour into part of the accommodation. The fuelling cap to the diesel tanks had been disconnected during the pre-sailing preparations in the Hamble, and had never been replaced. The resultant mess and smell of diesel were not welcome.

Fully fuelled, *Creightons Naturally* finally set off at about 1400 and made good progress towards Ushant and the Bay of Biscay to follow a passage plan prepared by the skipper. The forecast for Biscay was west or north-westerly 6 or 7 decreasing 4 or 5 with thundery showers.

The sailing conditions were good, and the skipper felt that in view of the predicted weather he would be best placed to make adequate ground to the south, and avoid any developing depressions. He judged they would pass well to the north. As they adjusted to the routine of sea watches, both the crew and guests began to settle in and enjoy the passage, even though the latter were never informed of the planned track, the expected weather or the conditions they might expect.

By dawn the following day, the wind was blowing a steady north-westerly 5, only to ease as Ushant was passed at around midday. The skies had cleared, the sun was shining and, by sunset, the wind had dropped to 9 knots from the west-south-west. As darkness fell the wind began to back and increase and by the early hours of 5 November it was blowing from the south 4 to 5. The forecast issued at 2100 on the 4th had predicted southerly 4 increasing 6 to gale 8. It also referred to an Atlantic low 998 moving steadily eastward, expected Sole 968 by 1800 on 5 November. The barometer at 2000 was logged as 1013.5mb. She pressed on.

Conditions on 5 November slowly deteriorated. The skipper considered his options and took the decision to remain at sea. He contemplated seeking shelter somewhere in Brittany, but rejected this in view of the dangers involved in closing a lee shore in bad weather. He was in a well-found and tested boat, and was confident of its ability to withstand the severest of weather.

He was also aware that he had to make Las Palmas in time to prepare for the start of the ARC, and for some of the paying guests to fly home. In addition he never forgot that one of the main thrusts of the *Creightons* ethos, so strongly advocated by the owner, was 'adventure'. Rough weather provided it.

The broadcast surface analysis for midday on 5 November and received on board, showed a complex situation in the vicinity of the yacht, with two cold fronts forming what was likely to be a secondary depression. The close spacing of the isobars also indicated the likelihood of high winds in the order of force 8 to 9.

By sunset, sail had been shortened to the main with three reefs and the No. 3 genoa. The headsail was later taken in. The wind had veered to the south-south-west, and by midnight had gone round to the north-west 7 to 9. It was a dark night and the seas had begun to build. When the skies were clear there was adequate natural light to at least be aware of the sea state and its direction, but when a number of line squalls came through the visibility dropped dramatically. The skipper remained on deck as the wind increased and the seas built up.

By the early hours of 6 November conditions had deteriorated further. From midnight the skipper and mate remained on watch to handle the situation, while the paying guests remained below. One or two people were suffering from seasickness. The sea state became confused, and when squalls hit the boat it was very dark indeed.

The skipper was uneasy with the amount of sail he was carrying, but judged it too dangerous to lower the main and hoist the storm tri-sail. His selected course of action was to run down sea. This gave the impression of relatively comfortable sailing, but the conditions were such that a preventer could not be rigged safely.

At an indeterminate time (accounts differ), but possibly shortly after 0100, *Creightons Naturally* gybed and her mainsail blew out. She was now running in a south-south-easterly direction under bare poles before the seas. An attempt was made to secure the main. Meanwhile the crew were trying to start the engine but were thwarted by water in the fuel system. Seawater had contaminated the fuel tanks from down-flooding through the fuel vents in the sail pit.

The generator was started but this, too, failed after a few minutes. And then the instrument lights failed. The skipper on the helm had no idea in which direction he was pointing and had to rely on feel as he attempted to maintain his downwind heading.

At about 0530 *Creightons Naturally* broached and was knocked down to starboard to an angle judged to be somewhere between 90° and 130°. One account suggested it might have been as much as 160°. Several people were injured, including the skipper when he was thrown against the wheel. The conditions below were chaotic; most people were thrown from their bunks and a number of heavy items, which had not been properly secured, broke loose including the kedge anchor, the spare mainsail, tools and a range of domestic items. Diesel from the earlier spill made the decks slippery and added to the stench and sense of chaos.

Accounts of what happened next vary, and no two versions agree, but it appears the skipper was completely exhausted and stunned by what had happened. Injured when he was thrown against the wheel, he played relatively little part in the events that followed. The last thing he did before coming below was to activate the EPIRB. A decision to initiate a "Mayday" was taken relatively soon after the knockdown.

The professional permanent crew down below, meanwhile, demonstrated complete composure. Despite his apparent condition, the skipper was able to restore sufficient 12v power to enable, among other things, the VHF radio to function. It was then manned by one of the permanent crew, who having been on board for 3 months, was sufficiently familiar

with the radio and radio procedures, to be responsible for textbook handling of the "Mayday" transmission, and dealing with other shipping and the helicopters.

The decision to initiate the "Mayday", and abandon the vessel once rescue became possible, appears to have been based on a number of factors: the lack of power, the blown out main, a continuing forecast of bad weather, the damaged steering, injuries, the loss of a liferaft and pushpit-mounted lifebelts, the state of the skipper and the general chaos below.

The factor that caused the most anxiety in the early stages of the post-knockdown phase was the lack of knowing whether anyone had received either the EPIRB transmission or the "Mayday". In the event, and unknown to those onboard, the EPIRB transmission had been received. Once the VHF became operable, communications were established with a nearby Russian vessel that indicated it was on its way to render what assistance it could. This contact with the outside world lifted everyone's morale.

Although it became clear that those on board were in no imminent danger, and the craft itself was more or less watertight, it was accepted there was no going back on the original decision to seek help. Early thoughts that a tow might be possible were dismissed, and following the loss of a second liferaft, the SAR authorities were informed that a helicopter evacuation was required.

With two-way communications established, there was some discussion as to the best way to evacuate 18 people. Because of the range at which a helicopter would have to operate to carry out a rescue, and the time it could remain on station, it was eventually agreed that two aircraft would be needed, and that each would attempt to lift nine people from the liferafts. Priority would be given to evacuating the injured first, including the skipper.

The evacuation went well once an attempt to launch a liferaft forward, as advocated by the SAR helicopter crew, had been abandoned. A second vessel, a tanker, had also arrived on the scene and was providing a lee. The first helicopter successfully evacuated the first nine members of the crew, and the second aircraft arrived 15 minutes later.

CASE 9

Continued

Accounts of the evacuation demonstrated the difficulties involved in trying to launch, and then board, a liferaft in severe weather conditions. The 10-man liferafts were found to be very much heavier than expected, and the lack of suitable handles created unwelcome problems. Once launched, at least one of the liferafts inflated upside down, but one of the crew jumped into the sea and was able to right it. The safety harness of a second person caught in the pushpit. One man, weighing 101Kg jumped on to a liferaft from a height of 2.42m, tore the floor, and caused the raft to flood.

When reflecting on their experiences after the event, those who had received survival training commented on the stark differences between handling a liferaft in a swimming pool for training, and the conditions prevailing in a high sea state. They did, however, feel

that this training and a modicum of understanding about what they could expect, helped their self-confidence enormously.

Everyone agreed that the mate handled the evacuation very competently. He was ably assisted by one of the permanent crew who maintained the VHF communication link with the search and rescue aircraft. The mate had recently attended an RYA sea survival course.

All 18 souls on board were successfully evacuated, albeit to different landing sites. Nine went to France, the others to Spain.

Creightons Naturally survived the storm and was eventually salvaged.

The Lessons

A large yacht capsized in severe sea conditions. The decision to abandon her was taken and everyone onboard survived a very harrowing experience, leading to a satisfactory conclusion. There are, nonetheless, some valuable lessons to be learned, and certain aspects will no doubt provide much food for thought and discussion in sailing circles.

The lessons fall into several distinct areas:

- readiness for sea;
- planning and executing the passage;
- leadership style;
- storm tactics;
- the decision to abandon ship; and
- the actual rescue.

There is always a great temptation to criticise people for the way they handle an emergency and *Creightons Naturally* is unlikely to be an exception. So that as many lessons as possible can be learned from this particular incident, some of the issues have been expanded to draw them out.

Readiness for sea

1 Everyone who has ever planned a long distance passage will recognise the seemingly impossible task of being ready on time. The success of any voyage will, ultimately, depend on how well the vessel and her crew are prepared. Planning what needs to be done, managing the workload, applying quality assurance checks, and delegating responsibility in

a sensible way, demands managerial and organisational skills. A sense of humour helps. Failure in any one of these areas will mean that something important will not be ready on time and will return to haunt skipper and crew at the most inconvenient moment.

2 Not only must the vessel be prepared for sea, but also the crew. Failure to welcome newcomers properly, to show them where everything is, how to operate basic safety equipment and where to stow everything, will mean the skipper's greatest asset, his crew, will not be well-prepared for what lies ahead. An untried crew is always an unknown quantity and the more time spent getting to know them, and for them getting to know the skipper is time well

spent. Time spent in a shakedown before undertaking the planned passage is time well spent.

3 A feature of the ARC is the meticulous programme of briefings and safety checks made before departure. The passage to the start at Las Palmas is, if anything, even more of a challenge and demands the same high quality preparation.

4 Use a checklist for the safety brief to ensure nothing is omitted. The MAIB has noticed time and time again that one of the most frequently made observations in small craft accident investigations is the number of times the crew was not briefed at the outset on safety procedures or where lifesaving equipment was stowed. Many people are left unaware how to use the lifesaving equipment and do not try on the lifejackets or harnesses.

5 Check that all electrical equipment is functioning satisfactorily and that all pipe runs for water, waste, hydraulics and fuel have been connected correctly. Having diesel pouring into the accommodation spaces is not only a total pain, but very smelly and ultimately dangerous. It is also extremely difficult to eradicate completely.

6 Stow everything away carefully, and make sure it cannot break free in severe weather. The kedge anchor alone on *Creightons* weighed 57kg and was simply resting in a cradle: it could easily have killed someone. Deep lockers, with only gravity keeping stores in place, are fine – until the capsize! Of all the things that can make

life difficult for the crew of a yacht in heavy weather, loose gear flying all over the place is guaranteed to be the most frustrating.

7 Break out severe weather equipment and check it for both condition and accessibility. When did anyone last check the trisail and storm jib stowed in some musty locker? Is the stitching intact? Do the hanks move freely?

Planning and execution of the passage

8 Ensure you have plenty of time to reach your planned destination. The Bay of Biscay in November is notorious for bad weather, and a passage to the Canary Islands involves having to cross the edge of the Continental Shelf. Plan on allowing several extra days for such a passage. This will ensure that any decision to do anything other than make for the chosen destination direct can be accommodated without incurring unnecessary risks.

9 The success of any passage depends on three key factors: the state of the boat and her equipment, the competence, experience, knowledge and leadership qualities of the skipper, and the crew. Don't expect a fresh and untried crew to settle in immediately. Plan the passage accordingly. It takes about 3 to 5 days for people to adjust to living on board, and considerably longer to be familiar with all essential equipment. Do not expect a new crew to be in the same league as one that has been working together for some time. The skipper should keep the crew

informed about the plans for the voyage and the expected weather conditions. They will be better motivated as a result.

10 Competent helmsmen are vital to safe sailing in bad weather. Do you have the number required and are you confident of their competence? If the answer is no, a change in the basic passage plan may well become necessary. The combination of a well-found yacht and a good skipper can be severely undermined if the crew lack the necessary experience and competence.

11 Start taking weather forecasts several days in advance. Plan which forecasts you expect to read and when, and study all the available information on weather patterns.

12 Plan and prepare your bad weather sailing tactics. What do you propose to do if faced with a storm 3 days out and before the crew has completely settled down? Do you have the charts you may need for a diversion? Do you have warps available, a sea anchor or a drogue, and if so are you confident you know how to stream and secure them?

13 Do not underestimate the seas that can develop in the vicinity of the Continental Shelf in the Bay of Biscay in bad weather. Cross-seas were forecast at the time of this accident, caused in part by the rapidly changing wind direction. Anticipate such conditions.

14 Check your barometer. It remains one of your best friends even if it doesn't tell you what to do. The crucial factor is the rate of change of pressure.

15 Maintain the ship's log up to date. This may not be easy, but experience shows that a record of what has happened can be invaluable.

Leadership style

16 Few things make such a demand on a yacht skipper as providing effective leadership in bad weather. He has one overriding priority: the safety of his craft and all on board her. His ability to provide it will almost certainly be the result of hard-won experience and careful study of how other skippers have responded to heavy weather conditions. To an inexperienced and possibly frightened crew, nothing breeds confidence quite so effectively as demonstrable competence, cool judgment, decisive action and a smile.

17 The skipper, above all, must have the determination to survive no matter how bad the conditions. Fear, apprehension and a negative attitude convey themselves to others very rapidly and could contribute to a tragic, rather than a happy ending.

18 A yacht in bad weather makes great demands on a skipper. If he allows himself to become too tired he cannot give of his best. A skipper must rest no matter how great the temptation to keep going. Failure to do so could mean that when his experience, skill and knowledge is most needed, he may not be able to function as well as he would wish or his crew deserve.

Storm tactics

19 Never allow yourself to be over canvassed. Reduce sail early, while you still can, and before it becomes too dangerous for people to work on deck. Whenever in the cockpit or on deck, clip on and do so before leaving the cabin.

20 A seaworthy yacht can cope with virtually every type of wave except in extreme conditions. Even relatively small craft can cope with the large, but very long, seas of the deep Southern Ocean, but the shorter waves encountered when deep water gives way to shallow in the vicinity of a continental shelf, present a formidable challenge.

21 Seeking shelter might be the right solution if the approach is straightforward and can be guaranteed to offer the quality of shelter sought. It is an attractive option if it can be reached before the onset of the bad weather but, if the severe conditions are already present, the choice may be fraught with danger if there is any uncertainty about one's navigation, or it involves having to cross a bar. A number of people have lost their lives by trying to seek shelter in bad weather. Many others have ridden it out at sea and have survived.

22 Given a choice, many experienced seamen will opt to stay at sea providing there is adequate sea room. Skippers will have their preferred solution for how to handle severe conditions based on personal and other people's experience.

23 Riding out bad weather can involve a variety of techniques, all of which require, in an ideal world, practice. Qualified skippers may not have a vast amount of extreme weather experience. Two basic factors prevail. The bow is the most suitable part of a boat to face very heavy seas, and ample sea room is an enormous asset.

24 Heaving to with minimum sail set is appropriate in the early stages of a blow, or if the sea state is not too severe. It is not for use in very severe conditions with a high sea state.

25 A skipper should aim to place his vessel on a heading that will minimise a broach, capsize, knockdown or pitchpole. A combination of storm jib and trisail might provide the means of achieving this until such time the wind and sea state become unmanageable.

26 If conditions are so severe that it becomes necessary to hand all sail, yachts manage to survive very satisfactorily under bare poles providing they do not lie beam to sea. Parachute sea anchors have proved to be very successful providing they are large enough, well secured to a secure part of the boat and the recommended length of parachute line is deployed. The length is debatable, but 120m has been used with success and the line must be protected against chafe where it leads outboard. One overwhelming advantage of a well-deployed parachute sea anchor is that it enables the crew to rest. Bad weather is very, very tiring.

27 And don't forget the crew. Having available food and hot drinks ready in thermos flasks can make all the difference.

Abandoning ship

28 Any decision to abandon ship, which results in everyone being rescued without further harm, must be judged a success.

29 There are no hard and fast rules about abandoning ship, but past experience shows that unless it is absolutely essential to do otherwise because the vessel is sinking rapidly, the best and safest solution is to remain on board. If there is no means of propulsion, evacuation may be necessary, especially if there are other factors present such as drifting on to a lee shore. In general terms, however, your craft is your best lifeboat.

30 If you do have a major problem, do not hesitate to let people know about it. The rescue co-ordination centre watchkeepers can often provide valuable advice, and would always seek to have as much notice as possible. They will not criticise you for sending out a genuine "Pan Pan" or even a "Mayday" when you first realise you are in trouble, but may find a delayed call very difficult to respond to in time.

31 VHF transmissions on channel 16 can be used as a source for direction finding.

Rescue at sea

32 The value of attending a sea survival course cannot be sufficiently over-emphasised. *Creightons Naturally's* skipper and mate had, and it stood them in good stead.

33 Launch liferafts to leeward and keep them away from any stanchions. Anticipate the liferaft being much heavier than expected, and ensure the painter is properly secured.

34 If at all possible, keep dry. The cold is just as likely to kill as drowning.

35 In severe conditions it is sensible to clip your harness on to the liferaft painter when you are boarding. The wearing of lifejackets should be mandatory.

36 Try and avoid jumping on to a liferaft canopy feet-first. If you can't get on board by more conventional means, a spread-eagled approach is better. The person underneath it might resent your sudden arrival, but you should at least arrive, rather than go straight through.

37 If being rescued by a helicopter, never forget it will be burning valuable fuel all the time it is airborne. Don't keep it waiting unnecessarily.

38 Establish VHF communications early with the aircraft (or other rescue vehicle), but do not underestimate the noise a rescue helicopter makes when overhead.

Footnote

This is an unusually long report to appear in a Safety Digest, but every one of the lessons is worth learning, or relearning.

Lessons on the heavy weather tactics alone could fill several volumes of the Safety Digest. This article strays beyond the experiences of Creightons Naturally, but confines itself to some principles.

Above all, it aims to provoke discussion on how you would handle a similar situation.

Vigilance, ARPA and relative speed

Narrative

The skipper of a 13m steel ketch told the MAIB of two separate close-quarters incidents that occurred in the Dover Strait and the Thames Estuary. His yacht was equipped with radar with ARPA, and a high specification radar reflector.

To encourage others to report near miss incidents, the names of the vessels involved are not included.

Incident 1:

The yacht was heading in a north-westerly direction to cross the west-going Dover Strait TSS at right angles to pass south of the Goodwin Sands. The tide was setting SW so, at a speed of 6 knots, the yacht was heading 320°T while making good about 300°T. A ship was spotted to starboard heading south, outside the Goodwins, but to the west of the traffic lane. It was assumed she was intending to join the TSS. The yacht's ARPA predicted the ship would pass safely astern, but when the range was relatively close she made an alteration of course to starboard. This instantly created a collision situation. The yacht had to make a late alteration to starboard to avoid a collision, and the two vessels passed about 1.5 cables apart.

Incident 2:

The yacht was making passage on a course of approximately 290°T in the Thames Estuary to the north-east of the East Swin, at a speed of about 6 knots. A ship was detected on the yacht's starboard quarter making at least 12 knots on a course of between 240-260°T. She was on a steady bearing, and the ARPA indicated that a risk of collision existed. As the range closed, the overtaking vessel made no attempt to alter course. When the vessels were 3 cables apart, the yacht had to do something to avoid being run down, and made a 360° turn to port while the merchant vessel passed by.

The Lessons

Many yachtsmen can associate themselves with such incidents. Their overriding concern is always to know whether the approaching vessel has seen them and, if so, are they going to do anything about it? Such encounters tend to age yacht skippers prematurely. In this instance the yacht was made of steel, had an effective radar reflector and was, unusually, fitted with ARPA. Her skipper could reasonably expect to be seen both visually and on radar.

1 The overwhelming lesson to arise from these incidents is for all bridge/cockpit watchkeepers to keep a good lookout. Merchant ship OOWs should be constantly alert to the likely presence of yachts and other small craft in coastal waters. In taking action to avoid close quarter situations they should leave no doubt in the yacht watchkeeper's mind what their intentions are.

2 In both cases the yacht was forced to take avoiding action owing to the questionable actions (or inactions) of a much larger and faster vessel. The yacht skipper's vigilance prevented what might have been worse than a 'near-miss'. Anyone in charge of a vessel at sea must be mentally prepared for the give-way vessel not to take the necessary action to avoid a close quarters situation. The alternative nightmare is for the 'other' ship to do something very odd at the last moment. Collision can sometimes only be avoided by the 'stand on' vessel "taking such action as will best aid to avoid collision."

3 Where two vessels are converging at differing speeds, the importance of taking regular compass bearings is paramount. What might appear to the casual eye as a vessel passing well astern or ahead because of its relative position, could be passing much closer – it is very difficult to assess the speed of another vessel with a quick glance.

4 In a strong current, the aspect of a slow vessel might be very different to its track over the ground.

5 In confined waters, yachtsmen should be very alert to the various constraints that can prevent larger vessels taking the textbook action to manoeuvre freely to avoid a collision. A nearby sandbank, other traffic, deep water channels, a nearby fishing vessel or even confusion as to your intentions, can make life very difficult for the other watchkeeper. Good sea manners, a good lookout, a sound knowledge of the Rule of the Road, and the importance of making your intentions clear, will do much to ensure a safe passage.

Tragic end to a Twister

Narrative

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

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

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

In mid July the skipper planned to sail the yacht across to the Netherlands and had earlier approached the Cambridge Cruising Club to offer berths for anyone wanting to sail across the North Sea. The offer was taken up by two groups of young people, most of whom were students at Cambridge University.

One group would do the outbound passage, the second the homebound, with a crew change in Amsterdam. No money changed hands and there was no formal contract between skipper and crew. The students were there for the experience and enjoyment.

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

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

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

There were times when the skipper rested, leaving the watchkeeping in the hands of the relatively untried and inexperienced crew. There was one recorded incident of the yacht veering off course by, perhaps

90° and another whereby an overtaking vessel closed to short range without anyone being aware of it. The weather deteriorated during the passage.

She arrived at IJmuiden at about 1800 on Sunday 9 July and spent some time motoring along the Nordzee Canal before finally arriving at Sixhaven, Amsterdam. On arrival, the four temporary crew disembarked.

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

At this juncture in the narrative, speculation takes over. Nothing is known about her homebound passage, except that a reasonable assumption can be made that her general direction of sailing would have been towards Harwich. Her speed made good would have been in the order of 4 to 5 knots

depending on wind and tide. The weather at the time was north-westerly force 4 to 5, and the visibility is reported to have been good. She was expected to have arrived off Harwich no later than 27 July. She didn't.

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

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

The Lessons

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

- 1 There is no reason why an experienced skipper should not sail with a novice crew, providing certain ground rules are observed. The first requirement is to gauge the crew's actual, rather than the stated, experience. If they are all new to the sea, the skipper is advised to tailor his or her
- 2 Any member of the crew with knowledge and experience will be a great help, but those whose experience is confined to dinghy or estuarine sailing will find offshore work strange at first. Human nature being what it is, they may be very reluctant to admit they are on unfamiliar territory. Maintaining an all
- 3 Before embarking on any passage with an unknown crew, a shakedown cruise is strongly recommended. This is particularly relevant before embarking on an overnight passage.
- 4 Safety equipment should meet the highest standards and be suitable for the intended passage. For a vessel going offshore, a liferaft capable of carrying everyone on board is strongly recommended.

CASE 11

Continued

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

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

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

8 Make sure you are carrying an effective radar reflector and that it is rigged correctly. As from 1 July 2002, all ships under 150gt are required to have a radar reflector

(see footnotes). To be effective, such a reflector should, at the very least, comply with ISO 8729: 1987, RORC or ORC specifications. An acknowledged problem facing the small boat skipper is the difficulty in fitting a radar reflector that has a good capability to reflect radar transmissions in the S Band (3Ghz) with its superior ability to penetrate precipitation.

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

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

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

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

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

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

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

Footnote

At the inquest held in July 2002, an open verdict was returned on the victims of this tragic accident. The new Chapter V of the Safety of Life at Sea Convention (SOLAS) states in Regulation 19.2.1.7 that "All ships irrespective of size shall have: if less than 150gt and if practicable, a radar reflector or other means to enable detection by ships navigating by radar at both 9Ghz and 3hz."

Two persons lost overboard from sailing yacht

Narrative

A 10.15 metre sailing yacht was bareboat chartered for an intended voyage across the English Channel and back. She carried a crew of seven including the Skipper. The last weather forecast obtained before sailing was for north-easterly winds of force 5 to 7. It was considered that the wind would be coming from a favourable direction for the proposed cruise across the Channel.

The yacht sailed in the afternoon but during the night some difficulty was experienced in steering her and she made a number of uncontrolled gybes. As dawn broke it started raining and the visibility became poor, the crew were cold and miserable and some were sea-sick. It was decided that the best course of action was not to carry on to the proposed destination but to make for the nearest harbour. During the subsequent manoeuvre the sheets which had been snap-shackled to the jib broke loose; the jib was furled and not used again. However, while making the presumed approach to the harbour, a west cardinal buoy marking shallows was seen very close to on the port bow and it was realised that the tidal stream had been setting to the east and not to the west as had been assumed.

The yacht remained on course while one person checked the navigational chart. The eventual gybe back on to a westerly heading was not properly controlled because of the increasing wave heights. The mainsail boom swung over very quickly, the mainsheet went taut and came away from the boom end.

While attempting to drop the mainsail, the yacht was struck by a huge wave which washed four crew members overboard. All were attached to the yacht by harnesses and two managed to get back on board. One of the other two remained attached but it was not possible to pull him back on board and he did not survive. He was not wearing a life-

jacket. The other person either slipped through his harness or removed it himself and was unable to get back on board; his body has not been found.

The remainder of the crew were rescued by a helicopter. The abandoned yacht eventually ran aground on the coast.

Observations

- 1 A proper handover, in accordance with the "Code of Practice for the Safety of Small Commercial Sailing Vessels", was not made at the commencement of the bareboat charter.
- 2 No proper passage plan was prepared before the start of the cruising voyage.
- 3 The yacht's track was not monitored after altering course for the nearest harbour.

Comment

- 1 Because only one mainsail reef of the three available was reeved, the Skipper had insufficient control of the yacht's sail area in the worsening weather conditions.
- 2 Sheets with snap shackles should not be used for foresails; bowlines are preferable.
- 3 A boom preventer may have proved beneficial in this case.
- 4 On sighting the west cardinal buoy and knowing that the danger lay to the east, the yacht should have gybed to the west immediately. It is possible that, if this had been done, the heavy breaking seas might have been avoided.

Differing perspectives!

Narrative

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

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

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

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

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

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

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

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

The Lessons

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

1 The action taken by the ferry

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

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

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

Appropriate avoiding action can be measured against these requirements.

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

2 The action taken by the yacht

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

At what stage can the skipper of a stand-on yacht legitimately decide that the give-way vessel is not taking *appropriate avoiding action*? In this case, with the two vessels only a cable apart, and therefore within a minute of colliding, and the give-way vessel having shown no sign that he had the situation under control, the skipper was justified in taking action. As the yacht was already close to West Knoll buoy, an

alteration of course to port towards the buoy was the most obvious choice, but any alter course action stood the risk of making matters worse. Rule 34 contains sound signals for this situation and it is important to make every effort to communicate intentions to the other party.

3 The importance of communication

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

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

Yachtswoman dragged under chain ferry

Narrative

Poole Harbour is an important yachting centre, with marinas and moorings for more than 5,000 yachts and other pleasure craft. A passenger chain ferry, which spans the mouth of the harbour, operates every 20 minutes from Sandbanks to South Haven Point.

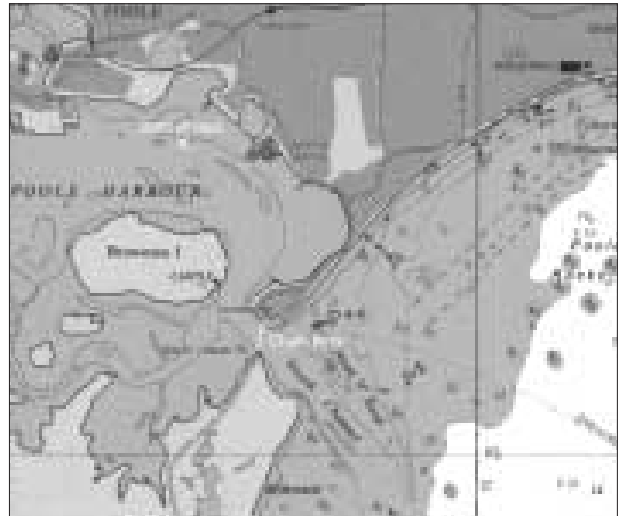
Many recreational craft, including a fleet of 15 x OD-class yachts, were enjoying a particularly balmy spring afternoon.

The fleet of yachts had set out on a 10-mile race. As the fleet approached the harbour entrance, they unexpectedly encountered an inward-bound fast ferry, which was late arriving. The fleet moved out of the channel to avoid it.

The ferry passed and, seeing a gap between the leading three yachts and the rest of the fleet, the chain ferry's skipper manoeuvred his vessel away from the Sandbanks slipway. As some of the fleet approached the chain ferry, they lost the wind and their steerage. They were close to the Sandbanks side, and the north-easterly wind had created a lee. The chain ferry's skipper had not realised the lee of Sandbanks would affect the yachts' steerage, leaving them no effective alternative means of steerage.

Under an obligation to keep out of the way of all traffic, the skipper reversed the chain ferry to allow the leading group to pass to the south of it. However, a strong ebb tide swept the next four XODs into the side of the ferry.

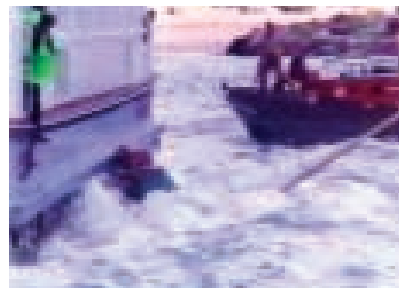
Two of the yacht club's safety/rescue boats attempted to rescue them but one damaged her propeller, and the crew of the other boat felt that the tide was too strong. Fortunately, RNLI lifeboats were nearby



and were able to quickly tow away three of the XODs from the side of the chain ferry. One yacht remained, pinned to the side of the ferry. Its owner, his 72 year old wife, and one other crew member were on board.

The yacht was buffeted and pounded into the ferry. She was in danger of capsizing. Water was quickly being taken on board, there was a great deal of turbulence and a very strong ebb tide. Within minutes, the boat was drawn under the chain ferry, together with the owner's wife. The lady was swept under the ferry but, less than 2 minutes later, emerged on the other side, conscious and, miraculously, unscathed. She was quickly recovered by one of the RNLI lifeboats.

Meanwhile, the owner and his other crew member clung to the grab lines which hung from the ferry's side. Both men were rescued, unhurt.



The Lessons

The MAIB investigation highlighted a number of contributing factors pertaining to various parties. However, the following lessons focus mainly on those to be learned by yacht club race officers.

- 1** In a busy harbour, yacht clubs' race officers should obtain not only the scheduled shipping movements before the start of the race, but also the latest movements. Arrival and leaving times are often changed at short notice for operational reasons.
- 2** Effective communication between port control, the race officer, safety/rescue boats and racing craft, is essential. This will ensure that everyone is aware of unexpected situations which may be developing.
- 3** When planning a racecourse, race officers should consider wind direction and force. Yachts sailing downwind tend to keep together, and can bunch-up in positions of navigational importance. Short start-elapsed times between different classes of craft will exacerbate the situation.
- 4** When different operators or interests are working within a harbour area without comprehensive lines of communication existing between them, accidents happen. All parties should meet regularly, to discuss their different needs and operational limits. Potential problems can then be resolved quickly and easily.
- 5** Safety/rescue boats should be adequately designed and equipped, and should be manned by properly trained crew.

This incident had a satisfactory outcome and all crew were rescued unhurt, having suffered an extremely harrowing experience. However, a keelhauling is not normally on the agenda these days when one sets out for an exciting afternoon of sailing!

Helmsman dies after recovery attempt fails

Narrative

A 10.1m sailing yacht, with a crew of four, left their home port early one Sunday morning with the intention of sailing to Ireland. The wind was south-westerly force 5 and they motorsailed for about two hours, with the wind on the port bow, without incident. A new weather forecast was received that alerted them to very rough conditions later in their planned passage. The decision was made to turn round and head for home.

The double-reefed mainsail was left up and sheeted in, and the yacht was motorsailed back on a reciprocal course. When within sight of the port entrance, a large wave caught the yacht's starboard quarter, and pitched the helmsman forward against the wheel and automatic steering equipment. This caused the yacht to broach, whereupon she was hit by a second wave which flooded the cockpit and caused substantial damage to the spray dodger. The yacht was heeled to 70–80°, during which time the water that was in the cockpit poured over the side, carrying the helmsman overboard. The yacht quickly righted herself, and the owner immediately initiated manoverboard procedures.

A dan buoy was launched, together with an 'Oscar' type life sling on a long floating line. One of the crew made a "Mayday" call. The man in the water was conscious and responded to calls from the yacht. He had not been wearing a safety harness, but was wearing a waterproof jacket with built-in buoyancy. The yacht circled the man towing the life sling.

The man reached the floating line, but instead of following it back to the sling, he tried to haul himself towards the yacht. He found the line too thin and slippery for this purpose but, in time, the

yacht managed to manoeuvre alongside him. He made his way to the transom, where attempts were made to bring him back on board. The skipper and crew were unable to lift him bodily, and with no harness or other mechanism for attaching a line, they could not winch him on board.

By this time, the wind had increased to force 6 to 7 and the yacht had been set north-west on a strong spring tide into a well-known tidal race. Sea conditions became substantially worse, with steep confused waves of 6–7 metres. This hindered the attempts to recover the man, and the motion of the yacht in these conditions meant that his head was frequently being ducked under the water. The skipper ordered the liferaft to be launched so that they might be able to support the lower part of the man's body and aid his recovery.

The liferaft was successfully deployed with another crew member on board. However, it is thought that at this point the man in the water suffered a heart attack, because his condition changed rapidly and he let go of the yacht. The same recovery manoeuvre was tried again, this time with the assistance of the liferaft in the water. However, the liferaft broke away and drifted free.

A coastguard helicopter recovered the man, and he was evacuated to hospital, where he was confirmed dead. The lifeboat crew, who had come to assist, found the crew member in the liferaft to be suffering from hypothermia. He, too, was airlifted to hospital. He made a full recovery.

The yacht's owner and his wife were able to return to port under their own power.

The Lessons

1 This tragic accident emphasises once again the importance of wearing a safety harness and clipping on. The crew had not perceived any significant risk as they returned to their home port on a brisk but sunny morning. The fact that the helmsman had not been wearing a harness or conventional lifejacket made the job of those trying to recover him far more difficult because there were no lifting rings, webbing, or straps on which to secure a line.

2 The instinct of the man overboard when he reached the life sling line might have been to use it to haul himself back to the yacht as soon as possible. He might have been better served to have followed the line back to the

sling, which, once placed over his head and shoulders, would have made his recovery easier.

3 Recovering a man overboard to a vessel with even a relatively small freeboard is very difficult in the most benign conditions. The attempts at recovery were hindered by the sea state and low water temperature, which would have quickly reduced the extent to which the man in the water could help himself.

All yachtsmen need to work out how they would recover a man overboard in adverse conditions. There is now simple, light and relatively cheap equipment on the market to recover people from the water.

Footnote

The owner was particularly struck by the difficulties he experienced recovering the man overboard, and is taking steps to promote a simple retrieval device of his own design.

Watchleader falls from bowsprit and loses consciousness in harness

Narrative

The sail training vessel *Morning Star Of Revelation* was on passage from Scheveningen, Netherlands to the River Orwell on the UK's east coast. There were thirteen on board, split into three watches.

At 0100 the wind was south-west force 4 and the sails were set accordingly. If anything she was slightly undercanvassed. By 0540 the wind had freshened to south-west force 6 and at 0630 it was decided to shorten sail. The skipper was called on deck to take the helm while the watch on duty performed the sail change.

The vessel was beam on to the wind with seas breaking across the bowsprit. The foresail was lowered but as it was being detached from the forestay the watchleader, working on the bowsprit, was washed off. She was attached to the jackstay running along the bowsprit and found herself hanging in the water. She tried to climb back on board with the help of others but, because her clothing had absorbed so much water and increased her weight, it proved extremely difficult to recover her.

The casualty lost consciousness. The skipper, made a "Pan Pan" call which was acknowledged by Thames Coastguard, and then supervised her retrieval by passing a line through her harness. She was hauled back on board by several other members of the crew. She vomited as she came back on board and bleeding through her nose and mouth. Her breathing was short and her pulse was rapid. The skipper provided effective first aid treatment and attempted to establish the extent of her injuries which were then passed to the coastguard. A helicopter evacuation was arranged.

The patient was successfully evacuated by hi-line transfer and treated in hospital for hypothermia, cuts, and bruises. Most of the injuries were caused by the safety harness but some seawater was also found in her lungs. She was discharged from hospital two days later.

The Lessons

1 Single point life-harnesses are not suited for work on bowsprits. The length of line needed for normal working means that in the event of a fall, the wearer will drop to the full extent of the harness line. This means they are likely to land up in, and being dragged through, the water without anything to hold on to. Climbing back on board is virtually impossible. A harness line with a short and long attachment would be more suitable.

2 In rising wind conditions, sail changes should be made as soon as they are thought necessary. It was admitted in this case that the decision was made late and that conditions for the sail change had become difficult.

3 When bowsprit work is required in heavy weather, and there is no pressing need to do otherwise, the vessel should be hove to or turned downwind.

4 Recovering people from the water is always extremely difficult especially when still making way. Not every sailing vessel has the luxury of a large crew to provide manpower and skippers must have a contingency plan for recovering anyone in the water. There are no hard and fast rules but it must be done as rapidly as possible and, so far as possible, the lifting point must be above deck level. Above all nobody else should fall in during the recovery process. In thinking through the best method to adopt, skippers should reflect

on the effectiveness of any system that involves passing a strop around the body and under the arms.

5 Anybody in charge of a vessel at sea must be prepared to administer first aid. Some Certificates of Competency require certain standards of proficiency. In practice skippers need to ensure that their first aid kit is properly maintained and fully stocked. They should be capable of handling most common injuries and situations including hypothermia. They must know how to handle a patient without injuring him or her further and be able to communicate the symptoms accurately over the radio. Finally they should know how to prepare a casualty for evacuation.

Vessel drying out falls over, away from Quay

Narrative

While drying out alongside a quay wall in Brixham harbour, the 100 tonne displacement, 25m long sailing vessel, *Leader* fell away from the quay.

Leader, an ex-trawler fitted out as a gaff-rigged ketch, is normally used for adventure holidays. She usually berths at a pontoon in Brixham harbour, but on this occasion had been alongside a quay wall for two or three days to enable repairs to be carried out. To allow her to dry out safely at low tide, she had been heeled slightly towards the quay using drums filled with water, and the main halyard taken ashore and made fast to a ring on the quayside.

On this particular occasion the crew member looking after *Leader* had gone to another vessel to carry out some work, and left her unattended as the tide fell. There was nobody around to notice that she was upright on taking the ground, and the halyard made fast to the ring on the quayside had been released as the tide rose and had not been made fast again.

She remained on an even keel until, with only 1m of water remaining, she fell away from the quay. Although the ground slopes away from the quay, the remaining water cushioned the fall and little damage was done. Nobody was on board *Leader* at the time.

The Lessons

1 There have been a number of reported instances where vessels have fallen away from the quay when drying out. There is considerable potential for damage to the vessel or injury to personnel; especially if the vessel is a deep keel sailing craft. The process of safely drying out alongside a wall should present no problems, providing some simple precautions are taken.

2 If it is intended that the vessel will take the ground as the tide falls, she should be tended at all times until she has safely dried out. The aim is to make sure the keel touches bottom sufficiently

far out from the wall so she can lean towards it once the tide is out.

3 Sufficient weights should be placed on the inboard side to assist the heel as she takes the ground. The main halyard should be unclipped, or unshackled, from its normal harbour securing point, and led ashore to a point well back from the edge of the wall and made fast. A line should also be passed around the main mast, and both ends made fast ashore in such a way that the mast can slide up and down inside the bight.

4 As the tide begins to fall, it is strongly recommended that at

least two people are onboard attending to the warps, fenders and – most especially – the main halyard, to ensure a steady heel towards the quay is maintained. Once the vessel is firmly on the ground, warps should be tightened, the rope round the mast pulled tight and the main halyard tensioned and made fast.

5 If the owner is not personally supervising the process he should make sure that those entrusted with the task are in no doubt about what to do. If the vessel is being used commercially with a paid crew, it is strongly recommended the instructions are in writing.



Power
craft



Capsize of a RIB

Narrative

Towards the end of a 'white-water' adventure trip to the Bitches, a ledge on the south east of Ramsay Island off the Pembrokeshire coast, two RIBs, *Atlantic Eagle* and *Storm Raven*, were returning to the lifeboat slip at St Justinians to disembark their passengers. It was late September 2000. Because the coxswain of one of the RIBs knew there would be a delay before he could go alongside the slip, he decided to carry out one further 'white-water' run. In the process the craft capsized. All on board were rescued.

On completion of the scheduled programme, and with both RIBs returning to the slip, *Storm Raven* was in the lead. As there was only sufficient space at the slip for one boat, *Atlantic Eagle's* coxswain realised he would have to wait several minutes to disembark his passengers. Rather than loiter, he decided to extend the 'white-water' trip by carrying out some further manoeuvres in turbulent water. He chose the vicinity of Horse Rock, about 1100 metres off St Justinians, and not normally visited.

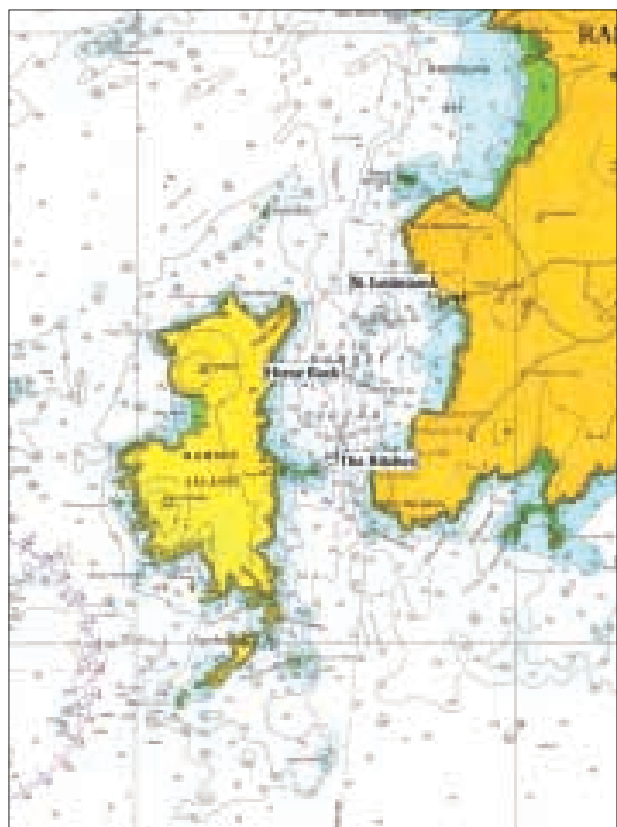
The tide was setting to the north at its maximum rate of about 6 knots, making the waters around the rock resemble a 'witches cauldron'. While approaching the rock from the north at full throttle, the RIB began to surf on the front of a wave. Moments later the bows entered a whirlpool, or eddy, and sheered to port. The boat decelerated rapidly, the port quarter lifted to an irrecoverable angle and she capsized.

The coxswain and several passengers were thrown clear, but a crewman and two passengers were initially trapped under the overturned boat. The crewman had snagged on a loose mooring line while the two passengers had difficulty extricating themselves from under the boat due to the buoyancy in their lifejackets.

Many of the occupants were wearing several layers of clothing and heavy footwear, and experienced difficulty in staying afloat. Several experienced problems inflating their lifejackets by mouth.

Seconds after the capsize, *Storm Raven's* coxswain saw the overturned boat as he approached the lifeboat slip. He immediately turned around, with his 12 passengers still embarked, and was able to recover *Atlantic Eagle's* passengers and crew from the water without any delay. Although a head count revealed one passenger missing, he was seen and recovered.

The coastguard was alerted by a company employee who was watching from St Justinians while awaiting their return.



CASE 18

Continued

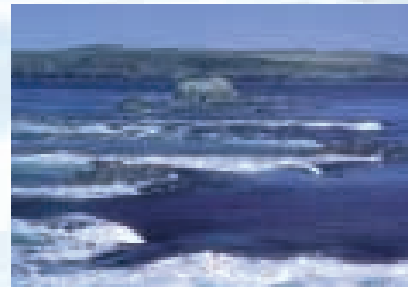
The Lessons

1 By definition 'adventure experiences' involve risk. It is an accepted part of the process, but safeguards must exist to ensure that every aspect of the operation has been thought through, and that contingency arrangements are in place to cater for the unexpected. A bad accident can have serious, if not terminal, implications for the future viability of a venture. A key feature of any such risk assessment is that those responsible for carrying out the operation must remain within the declared limits.



2 Although the RIB *Atlantic Eagle* was well designed and built, and was handled by an experienced coxswain familiar with operating in 'white-water', she was no match for the strength and unpredictability of the conditions encountered in the vicinity of Horse Rock that day. The effects of a strong tide can be extreme and, in the vicinity of hazards such as Horse Rock, are capable of turning tranquil waters into 'cauldrons'. Such conditions are hazardous to small craft including high-powered RIBs, especially when carrying paying passengers. The lessons for general small boat users will be different to those who organise adventure trips, but for the majority of people, tide rips, overfalls, eddies and whirlpools should be avoided. For the adventure trip organiser, each location must be very carefully studied, the risks identified and operating parameters laid down. Coxswains must then operate within those limits and not be tempted to take an unassessed risk.

3 When operating small boats in potentially hazardous pursuits, there is safety in numbers. With another RIB close by in this instance, assistance was readily available and a prolonged search and rescue avoided. Always be aware of the additional risks of being at sea with no other vessels nearby to render assistance.



4 Capsize and foundering can occur without warning. Unless someone else has seen what has happened it is probable your predicament will go unnoticed. If, however, there is somebody ashore who is aware of where you have gone and knows when you expect to return, he or she is well placed to raise the alarm when you fail to return at the expected time.

5 Selecting the right type of lifejacket for any type of activity afloat requires care and attention. What might be suitable for a windsurfer will be very different to the needs of blue water sailor or the member of the lifeboat crew. Whatever type is selected it has three aims: to work when needed, to keep one's head above water and it must not aggravate the situation further. To work when needed it must be robust, and have a system of inflation that requires the minimum of effort at the right time. To keep one's head above water it must fit

correctly, have the correct inflation properties and must not ride up over the ears. And to not aggravate the situation further, it must inflate at the opportune moment and by reliable means. Inflating a lifejacket manually when you are cold, exhausted and in rough seas is not sensible. Having an automatic system when you might be trapped beneath an upturned boat is equally unhelpful. Owners must make up their own mind about the best system, and it may not be possible to cater for every eventuality. Whatever type is adopted, it must be reliable, and in date.

6 Securing mooring lines etc in lockers when not at sea is not only sound husbandry, it is also a sensible safety precaution. If equipment is not needed, stow it away.

7 If people who are taken in a boat are unfamiliar with the safety equipment or environment, they must be given a detailed safety brief. Where possible this should be conducted clear of distractions and before putting to sea. Safety briefs can be monotonous and boring for the crew, but they are essential for passengers. (Examination of a number of accidents where passengers have been embarked, reveals that after the event many of them have complained about the quality of the safety brief. Very often it was superficial, inaudible, unintelligible or inadequate for what they actually experienced.)

8 The importance of conducting a head count following capsize or foundering cannot be over-emphasised. Without it, the absence of passengers or crew

may go undetected, and valuable time in which to find them may be lost. The knowledge that 'all personnel are accounted for' is not only a morale booster for survivors, it is also vital information required by lifeboats and the coastguard.

RIB – Be prepared!

Narrative

In May 2001, a Morayshire club was running a number of activities including sailing and a two-day RYA powerboat course. The club had insufficient resources of its own for all the activities, and was using lent boats and equipment to meet the requirement.

The powerboat course had nine trainees. Following classroom sessions on the first day, practical on-water sessions, using rigid hulled inflatable boats (RIBs), was scheduled for the second day.

Having nearly completed the initial practical sessions by late morning, the decision was taken to carry out further training in more open water. The weather was good, there was no noticeable sea state and little wind.

At about midday, two of the three RIBs, complete with instructor and three trainees, were offshore waiting for the remaining boat to join them.

The instructors took the opportunity to demonstrate medium speed pacing techniques, and were holding their respective positions while moving at about 15 knots. Part of the demonstration was the “breakout”, where one of the RIBs peels away from its companion when at speed. The first try was aborted as the designated RIB failed to break away. On the second try, just as separation began, one of the RIBs suffered a power-drive failure.

The disabled RIB slowed immediately, and found herself rolling violently in the wake of the other boat to such an extent that one of the trainees was thrown overboard. Another trainee, meanwhile, was thrown against the centre line driving rack, and was injured.

The trainee thrown overboard was then hit by the trailing propeller of the disabled RIB and injured his left hand.

The other RIB turned and rescued the injured trainee from the sea and attempted to provide first-aid. It was only then that the occupants discovered that the first-aid box did not contain any dressings. The first-aid box in the disabled RIB was not much better equipped, but did have some limited dressings. The instructor on board the disabled RIB was also the course director. He transferred to this RIB, and instructed the third RIB which had, by that time, arrived on scene to take the disabled RIB back to base. Attempts were then made to make a “Pan Pan” call on channel 16 using the hand-held VHF radio, but when this failed, the decision was taken to return direct to base.

On arrival, the emergency services were called using a mobile telephone, while the two injured crew members were brought ashore. At that point, another instructor collapsed and needed treatment for a diabetic coma. This was possibly brought on by heat exhaustion. Both he and the student were subsequently taken to hospital by ambulance.

The cause of the power-drive failure was the fracture of the coupling between the selector lever and the gear selector cable. With the gear train spring-loaded to neutral, the drive immediately shifted into neutral, and propulsion was lost.

The Lessons

1 As a member of a powerboat crew, ALWAYS make sure that you are firmly “anchored” to the boat using either foot or hand-holds. Vibration and violent movements of the boat are constant companions, and should be expected at all times – it is the UNEXPECTED that will catch you out.

2 For all training courses organised by a club, each boat – whether club owned or on loan – MUST carry a recognised first-aid kit at all times, and ensure that the kit is both adequate and in date.

3 Good radio communication is essential at all times. Check for “black spots” and if found, provide a radio capable of making immediate and reliable contact either with the emergency services, or the club base.

4 Some medical conditions are aggravated by sea going activities. If you think yours could be so affected, seek medical advice BEFORE starting. It is your responsibility to ensure that you are both fit and capable of meeting the requirements of the activities.

It is important to realise that any organisation, whether voluntary or not, is required to comply with health and safety regulations; particularly when under-age persons are involved. Nothing should be taken for granted; if the regulations say it is required, check that it is both there, in date and functional.

RIB – Kill-cord conduct

Narrative

On 7 November, three RIBs, *Kestrel*, *Eagle*, and *Lanner* had been involved in a corporate sea challenge event with guests embarked. The day finished at Lymington, and once the guests had disembarked, the driver of each boat prepared to return to Southampton. The three RIBs left Lymington at 1730, having called the company engineer to advise him of their ETA. About 10 minutes later, and as they were leaving the Lymington River, the RIB drivers were told over the radio that it was “all clear” to head home in formation. As they were low on fuel, and it was now dark, this would ensure they would remain in company by transiting three abreast or in-line astern.

They headed east along the Solent at between 20 and 25 knots and more or less in-line abreast, with *Eagle* slightly ahead of the others. As they approached Calshot, it became obvious that *Eagle* was accelerating away. Despite radio calls for her to rejoin the formation, and the other two RIBs increasing speed, she continued to pull away. By the time *Kestrel* and *Lanner* had rounded Calshot Spit to the west of the main shipping channel, and were approaching the Fawley jetties, *Eagle* had pulled away. She was in the middle of the channel and travelling fast. Although displaying the correct navigational lights, her rear light had become indistinguishable from the background lights of Southampton.

By now, wake from large vessels was causing difficulties to both *Kestrel* and *Lanner*, prompting them to slow down and alter course to remain safe. They also lost sight of *Eagle*, and subsequent attempts to contact her driver by radio, or mobile phone, failed. Concerned for his safety, they crossed

the shipping channel at 90° to see if he was on the other side, possibly having “stalled.” They did not find him, so began a search down to the River Itchen, and back up Southampton Water; maintaining contact with their base by radio.

They were then informed that a RIB had gone aground at Hamble Point, so headed in that direction. They found a coastguard helicopter monitoring the situation, while a coastguard RIB was pulling a casualty out of the water some 400 meters from where the grounding had occurred.

When a search was made for the RIB, it was found in the Hamble Point car park after it had hit the boulder sea defences at speed and launched itself into the air. The throttle arm was at half to two thirds power, with the ignition key (and kill-cord) still in place and in the “on” position.

Eagle's driver knew the Solent well, and the track he had taken on this occasion was done in the best interests of safety. He had, however, become caught in the wash from commercial traffic in Southampton Water. Although he had slowed down to 30 knots, his craft pitched so violently that it threw him overboard and into the middle of the shipping lane. He inflated his lifejacket, but the weight of his clothes and boots made flotation difficult. Wash from passing traffic made swimming difficult, and it was only when a sailing vessel, coming up Southampton Water, noticed him that he was rescued. After a brief check-up in hospital, he was released – shaken but unharmed.

The Lessons

Eagle's driver was experienced and well qualified. He was an RYA Powerboat instructor with an advanced driver ability, an RYA Yachtmaster Ocean in Sail and Power, and an RYA Yachtmaster instructor in Sail. As the MAIB has noticed on many previous occasions, small craft accidents often involve people who would appear to satisfy all criteria for qualification and experience. We also notice how often something goes wrong right at the end. So what can be learned?

- 1** Qualifications and experience do NOT guarantee a SAFE and SENSIBLE approach to boat operations.
- 2** Travelling in company in such conditions is both sensible and seamanlike but, to be really effective, coxswains or drivers should be constantly aware of what the others are doing.
- 3** No matter who or what you are, you MUST follow standard agreed procedures and instructions. If you do not, you not only place yourself at risk but also everybody else involved.

4 SPEED at sea, like on the roads, can be a killer – your speed MUST be judged according to the conditions.

5 The loading and condition of the boat must be checked before you set out, and a JUDGMENT made as to what effect this will have on its operating characteristics.

6 Above all else, the KILL CORD must be firmly and correctly attached to the driver's harness. The whole point of this is to STOP THE ENGINE in the event the driver falls out or becomes thrown backwards. If you do not do this, there is a strong possibility that the boat will circle and run you down. High-speed propellers can do an awful lot of damage to skin and bone!

7 Give very careful thought to your choice of lifejacket and clothing. Heavy boots and other gear can create enormous problems to people trying to keep their heads above water, especially in rough conditions. To survive, you need equipment which will keep you afloat, is warm, and lets people find you easily.

Footnote

Tiredness might also have had an influence in this accident. After a long and demanding day, a trip back through busy shipping lanes, particularly at night, can be very demanding. The natural tendency is to want to get home as quickly as possible, but judgment at night is a totally different thing to that experienced during the day.

Planning an adventure exercise for the clients is one thing, considering the effects on the boat operators is another.

Sightseeing on a bend invites trouble

Narrative

After a day at sea in the English Channel a frigate was returning to Devonport, and was shaping up to enter harbour via the west entrance to Plymouth Sound. She was on track, all was normal and she had Plymouth Breakwater Light on her starboard bow. The navigating officer had the con, and was waiting for his wheel over bearing to come on before altering course to starboard to enter the Sound.

In accordance with established procedures, someone checked to see that everything was clear to starboard before course was altered. There was another hand on the port bridge wing keeping a lookout.

Just before course was altered, the man on the port bridge wing looked aft and saw that a fast motor cruise had taken station very close on the port quarter and was following the frigate in. The occupants looked extremely happy, and were waving to the matelots on the flight deck aft.

The commanding officer was informed straight away, and realised that a potentially dangerous situation had arisen. If he were to alter course to starboard as planned, his stern would swing out and, very likely, strike the cruiser only feet away from his port quarter. He slowed right down and told the officer in charge of the aft mooring station to tell the powerboat to keep clear.

An attempt to convey the message was made. The occupants waved back with even more enthusiasm. This was followed by more emphatic, and nautically embellished, instructions to keep clear. The penny eventually dropped, and the motor cruiser veered off just in time to allow the frigate to come round safely to starboard, having already overshot the wheel over bearing.

The Lessons

1 Many merchant ships have signs aft saying KEEP CLEAR OF PROPELLERS. Warships don't, but it shouldn't be necessary to warn any skipper of the danger of manoeuvring too close to another ship's stern.

2 There are occasions when small craft deliberately accompany large vessels while under way. A welcome home after a long deployment is a typical example. But skippers of small vessels should be alert to the potential dangers involved. They should never, for example, impede the large vessel's progress.

3 It is just as important to appreciate the dangers of being too close to the stern, and most especially when the large vessel is about to alter course. This can happen at any time, and not only when following a predetermined track.

4 When a vessel alters course she pivots about a point roughly one third of her length from her bow. This means her stern will swing away from the direction she is turning. Never, ever, put yourself in such a position that you are so close that the swinging stern will hit you. Putting the same predicament another way, never come so close that the ship

has to delay her course alteration so that she too places herself in an embarrassing position.

5 In short, keep well clear of large vessels.

6 This is another example of the benefits of keeping a good lookout, especially before altering course. A glance aft is just as important as the more conventional lookout ahead.

Footnote

This is another near miss report and is produced without naming the vessels involved.

Flooding caused by faulty hull fittings

Narrative

Random Harvest, a 9.86m GRP boat was returning from an angling trip in the English Channel with eight people on board, including six anglers. Four miles south-west of Brighton the bilge alarm sounded briefly. The skipper lifted the hatch in the wheelhouse and saw the bilges filling with water. He could not identify the source, but started the electric bilge pump and diverted the engine cooling water intake to direct bilge suction. The deckhand operated the manual bilge pump.

The skipper tried to call other vessels in the vicinity, but found the VHF had failed because the batteries had already been covered by floodwater. He used his mobile phone to contact another fishing vessel, *Morning Breeze*, whose skipper relayed the distress to Solent Coastguard.

Fortunately, *Random Harvest's* bilge pumping arrangement was able to contain the flooding, and she made her own way towards Brighton, escorted by *Morning Star* and an RNLI lifeboat. Once alongside



she was pumped dry and the cause of the leak was discovered: a brass, through-hull, 25mm diameter fitting to the toilet seawater inlet had failed.

In turn, this failure was caused by de-zincification. The fitting had been installed new only 16 months before, so the de-zincification was probably accelerated by stray electrical currents from the vessel's batteries.

Brass is not accepted for use in underwater, through-hull fittings, either by classification societies or by the MCA because of its susceptibility to de-zincification.

During the course of the investigation it was found that some suppliers were unwittingly selling brass fittings incorrectly labelled as bronze. This was brought to their attention.

The Lessons

- 1** Always ensure that through-hull fittings and seacocks are of an approved material such as silicon bronze, gunmetal or dezincification resistant (DZR) brass. Be wary of purchasing fittings made from a material that is described by a trade name and not a recognisable metal alloy – ask for details of its constituent metals. Rather than lose your boat, and possibly lives, it is better to pay a few pounds more for an approved fitting.
- 2** Reduce the likelihood of stray electrical currents and the possibility of rapid electrolytic corrosion of underwater metal fittings by following good electrical installation practice such as isolating the positive pole of the battery when the vessel is left at her moorings.
- 3** The battery supplying electricity to the VHF radio and other emergency equipment should be placed in a position where it is less likely to be affected by flooding.
- 4** The bilge alarm gave early warning, and alerted those on board to the flooding. The outcome might have been very different had the flooding continued undetected – especially as the VHF was disabled before it was discovered.
- 5** Although the use of mobile telephones as a means of alerting others to incidents and emergencies at sea creates genuine difficulties, it is an invaluable tool when all else fails.

Footnote

Dezincification was first identified as the cause of failure of condenser tubes on naval vessels in the 1920s. It is a form of corrosion in salt water (or fresh water containing other impurities), confined to brass, where the zinc is leached from the metal. The copper shell that remains is porous and fragile.

Two drown in speedboat sinking

Narrative

Four men left a Scottish harbour in June in a 5m Sabre-plane speedboat fitted with an 85 horsepower outboard. The boat had been purchased the week before, and this was the first time its new owner had used it. He had been on the water once before, in another speedboat the week before.

The owner was wearing a lifejacket and a wet suit; the others were dressed in normal clothes. The wind was south-westerly force 5.

The speedboat had not been properly prepared for sea, and neither battery nor fuel tank was secured at the after end. No sooner had the craft cleared

the harbour entrance when the fuel line came away from the engine; the clip securing it was inadequate. The boat stopped in the confused sea state as attempts were made to resecure the fuel line.

Meanwhile she started to ship water. The engine was restarted, but died almost immediately, most probably because of water contamination of the fuel. More water was shipped, and the boat sank, throwing all four men into the water. Two were able to swim to shore, one of which was the owner and the only one wearing a lifejacket. The bodies of the other two were recovered later.

The Lessons

Buying and going to sea in a powerboat is, to some people, a very straightforward business. All that needs to be done is:

- complete the purchase
- board the boat
- start the engine
- let go the mooring lines
- open the throttle, and
- steer it like a car.

This very simplistic approach is fraught with danger and can have, as this accident demonstrated, very tragic consequences.

1 If you are thinking of buying a powerboat, seek advice about the craft most suitable for your requirements. Resist the temptation, for instance, to buy something that may well be overpowered for your needs.

2 Before going out in it for the first time, get someone with the appropriate knowledge and experience to advise you on how the craft should be prepared and equipped.

3 Taking a boat to sea for the first time is not as straightforward as it might seem. If you have no, or very limited experience, you are very strongly recommended to seek appropriate training. Ideally this should be a Practical Motor Cruising Course run by the Royal Yachting Association, and newcomers are strongly advised to contact one of the RYA-recognised motor cruising schools for advice. The alternative is to go to sea with someone responsible who can show you how to do things correctly and sensibly.

CASE 23

Continued

4 Care must be taken to ensure vital equipment crucial to the boats operation, such as fuel tanks and batteries, are secured in place, and that fuel lines are properly secured.

5 It is always advisable to carry a means of communication with the shore, such as a hand-held VHF radio. A skipper should also know the range of signals available to him to alert others to an emergency.

6 Reference should be made to the guidelines contained in Safety Afloat, a voluntary code of best and safe practice for leisure craft users.

7 If going afloat, wear the appropriate clothing. Anyone doing so for the first time in British waters may be unaware how cold it can get, or how quickly insulation breaks down if clothing becomes wet.

8 The one essential item that must always, always be carried in any craft is a lifejacket for everyone embarked. If a non-swimmer, or the conditions are a bit on the rough side, or you are unsure about whether or not to wear one, put it on before going to sea. They must be on board and easily accessible for all others. The decision to wear them is left to the discretion of individuals, or the requirement of the skipper. But everyone should (a) know where they are (b) how to put them on and (c) put them on so they know how to, and to ensure they fit properly. To ignore this advice could cost you your life.

Footnote

The Royal Yachting Association can be contacted at RYA House, Ensign Way, Hamble, Southampton SO31 4YA.

Telephone: 0845 345 0400

Four die after dinghy capsizes in Sound of Iona

Narrative

Five young men were returning to the Isle of Iona after a Christmas ceilidh in a hotel on Mull. The dinghy they were using to take them across the Sound of Mull capsized and threw them into the water. Only one of those on board survived; the remaining four lost their lives.

Generations of Ionians have crossed the 1.4 km wide Sound of Iona in open boats without incident over many, many years. The early hours of Sunday 13 December 1998 were little different to many others.

It was dark, the wind was from the south west force 5 against the remains of the ebbing tide and a moderate swell was running. Five young men, great friends and living life to the full, decided to attend a ceilidh in the nearby village of Bunnessan on Mull. They left Iona at about 2100 and crossed the Sound in their 4.27m [14ft] dinghy to enjoy a very happy evening with friends until about 0200 when they set off on the return journey. One had not drunk alcohol all evening, the others were 'happy'.

They re-embarked in their dinghy from the jetty at Fionnphort at about 0215 and set off for what should have been no more than a 10 minute crossing. The seating configuration on board meant that most of the weight was concentrated forward despite the 6hp outboard engine clamped to the transom. The dinghy did not contain any additional buoyancy and nobody was wearing a lifejacket. They were wearing normal clothing and shoes. In varying degrees each of them had extensive experience in small boats and knew the waters of the Sound intimately.

About two to three minutes into their crossing the dinghy nosed into a wave and shipped an extensive amount of water. Although they started to bail almost immediately the freeboard had been reduced

to such an extent that the gunwale dipped below the waves and the dinghy capsized. They were all thrown into the water. Although two of them were not good swimmers there was no panic. Each looked for something to hang onto and found fenders or the floating fuel canister. The boat itself had inverted and was floating bow up but was inclined to roll if too many hung onto it. One man, the eventual survivor and wearing boots rather than shoes, found himself, clinging to a bottom board. After a while he became separated from the others who were talking among themselves. He drifted for a while until he became aware of the shore line close by and decided to swim for it.

He made the rocks and managed to pull himself ashore. Having been in the water for about 45 minutes, he was very very cold but was able to climb the rise to reach a track some 200 metres inland. It was about 0400. He then walked back to nearby Fionnphort where he woke some friends who lived there. Although in an advanced stage of hypothermia he managed to convey what had happened. His friends did three things, raise the alarm, did all they could to restore body heat and initiate a search for the others.

Using a local fishing boat, they found the upturned dinghy within an hour and the body of one man shortly afterwards. There was no sign of the others. The Oban lifeboat arrived shortly after 0600 and was joined by both Royal Navy and coastguard helicopters, the Tobermory lifeboat and many of the local community who searched along the shore for more survivors.

There were none. The community was devastated.

The Lessons

1 This accident could have happened anywhere in the world where embarking in a small open boat for a short journey is an everyday occurrence. As many car accidents are said to happen within one mile of home, so too do many boating accidents occur in that short distance between shore and shore or when transferring by tender between larger vessel and the jetty. That no accident had occurred on the short crossing from Iona to Mull persuaded people over many years to take what they thought was an acceptable risk. Familiarity with a particular course of action is often the prelude to a tragic accident.

2 This accident, as in so many others was not the result of one catastrophic event but rather the accumulation of many smaller ones. Even the decision to cross the Sound of Iona in the early hours of the morning is worth analysing. There was an option to stay put on Mull until the morning when it least it could be attempted by daylight.

3 Being alert is the hall mark of the true seaman. Many things can adversely affect alertness such as trying to do things at the end of a long day, or having to make accurate decisions between 0100 and 0600 when body temperature drops in the self sustained biological rhythm synchronised to the 24 hour clock. Drink, even in small quantities, affects judgment. It also exaggerates self confidence.

4 Placing five people in an open 4.27m dinghy might be safe in calm weather and in daylight – providing nothing goes wrong nor additional weight added. Water or spray being shipped adds to the weight and reduces freeboard. An open dinghy is designed to rise to the sea and swell but it is limited in its ability to do so if heavily laden, especially forward. This dinghy failed to rise to an oncoming sea, shipped a substantial amount of water and lost all its stability. From that moment the capsize was inevitable.

5 The weather was not particularly bad. Had it been so it is generally thought inconceivable the five men would have taken the actual route adopted and headed across the sound into the weather. The alternative track usually adopted in bad weather entailed taking a slightly different passage that lay further to the north. Recognising the limits imposed by sea states was a natural process to all on board – providing they could see it. Although they knew the wind had freshened since their outward trip it was very dark on their return journey and it was very hard to see. The man on the helm gave no warning of a large wave nor did he slow down. It is very unlikely he could see the waves ahead of him and take appropriate action to ride them. Handling a small boat in potentially rough conditions requires special skills and an ability to see what is coming next. The middle of the night is not the best time to be trying it, especially when heavily laden and no reserves of buoyancy.

6 Even if all the right precautions are taken, a capsize or some other disaster is always a possibility and measures taken to anticipate being in the water. There are four basic requirements to consider before setting out in any small boat at any time no matter what the time of the day or night, or for how short a journey. The considerations are prompted by the question what shall I do if I find myself in the water. The first is personal buoyancy. Those without it are at an instant disadvantage and will find it difficult to keep afloat. The second is an instinctive need to hold onto something that will keep you from sinking. The third is to attract attention and the fourth is to stay warm. The sea can be very chilly, especially in winter.

7 The well prepared man will be wearing a lifejacket before he sets out. His boat will have some form of additional buoyancy in it. He will have some means of attracting attention which will be anything from flares in a waterproof container to a personal locator beacon and finally he will be wearing clothing to help him survive. Everyday clothes, light jackets and heavy shoes are ideal for many occasions but swimming around at night is not one of them.

8 Before embarking in that open dinghy for that journey you have done many times before without incident, just pause for a moment and think of Iona. And put on that lifejacket.

School trip tragedy

Narrative

As part of an organised term-time activity, an independent school decided to give nine of its pupils practical experience afloat using a 4.27m dory-type open boat, in the sheltered waters of Portsmouth Harbour. There was only one teacher on board, in charge of the nine pupils.

Because the conditions had been judged unsuitable for sailing, the decision was taken to use the dory for some very basic manoeuvring in a relatively sheltered area where the wind strength was force 2 to 3.

Shortly after leaving the pontoon, the outboard motor stalled, but was successfully restarted. Various events followed, all of which generated a sense of excitement among the children:

- a large plastic sheet found floating in the harbour, was pulled on board;
- a jellyfish fell out of a bailer and stung one of the pupils;
- a boy fell into the water but was recovered safely; and
- while making way at 3 to 4 knots, spray came in over the bow.

Throughout this time water and spray began to accumulate in the boat.

The outboard engine then stalled a second time but could not be restarted. The teacher told four of the pupils to start paddling but, when only 75m from the pontoon, the boat capsized and inverted. All 10 occupants were pitched into the water.



Buoyed by their lifejackets, some children managed to climb on to the upturned boat while others, including the teacher, clung to the hull. The crew of a local boat saw what had happened and gave immediate assistance. They recovered all the pupils they could see and the teacher, but when the rescue was complete, one of the children was found to be missing. The crew lifted the upturned boat and found a young girl underneath. She was pulled from the water and given first-aid, but died later in hospital.

Following the accident, the boat was examined to reveal a substantial amount of water trapped in the void between the inner and outer hulls under the floor. The investigation revealed that uncontrolled movement of seawater in both the boat, and the void beneath the floor, combined to make it so unstable that she would eventually capsize. It was found that seawater had entered the void through two small holes in the bows where a towing bolt had been fastened, but had at some stage become detached.

The Lessons

1 Sailing or boating activities are a wonderful way of introducing children to a sense of adventure, respect for the elements, individual responsibility, realistic discipline and, in controlled conditions, an element of risk. It is also great fun and supremely rewarding. But it needs to be carefully planned, sensibly supervised and sufficiently well thought through to ensure that risks have been identified, and measures to ameliorate them are in place.

2 Those approving and authorising such activities must have access to the best advice and guidelines available. Such advice has been drawn up as a result of others' experience, sometimes tragic.

3 Everyone involved in youth projects afloat should heed the advice available on the level of supervision, replacement of outboard motors, fitting of kill switch cords, fuel tank securing, and many other safety considerations.

4 Any person placed in charge of activities afloat, should be trained to the standard recommended by the Adventure Activity Licensing Authority.

5 Any youth organisation (including schools) buying a second-hand craft, should ensure it is professionally surveyed before it is purchased, and any deficiencies revealed should be made good before use.

6 Any craft likely to be used afloat must be properly maintained, regularly checked and inspected carefully before it is used. By noticing something important that a bolt is missing to leave two small holes just above the waterline, could be the difference between a few minutes delay rectifying it, and a very tragic accident.

7 Many young children in today's safety conscious and risk aversion world may be totally unaware of potential dangers, and have little feel for certain kinds of hazard. This puts an added weight of responsibility on those supervising them. It also requires a degree of firmness in taking charge of excitable and impressionable youngsters. Having responsibility for nine children is making unrealistic demands on a single adult. Four, possibly five, is a general working maximum when afloat.

8 Lifejackets are essential. But remember what might happen if the boat completely inverts; someone could be trapped underneath it. Anyone caught in such a predicament could find the inflated lifejacket actually inhibits an escape. Once survivors find themselves in the water and in the open, it becomes essential to carry out an immediate check to make sure everyone is accounted for.

9 If someone is missing, the chances are that he or she is either inside, or beneath the inverted craft. There are no hard and fast rules about what should



be done because there is a real prospect the missing person is alive and well. The important thing is to get help as soon as possible.

10 Always have some means of alerting people to an emergency. A VHF radio, suitably contained in some form of a waterproof material, mini flares, whistles or even a mobile telephone, might suffice. Offshore, a personal locator beacon could pay handsome dividends.

The dory in this accident was fitted with lifelines. They greatly helped those in the water by providing them with something to hang on to. The rigging of such equipment is strongly recommended.

Footnote

This incident was the subject of a full MAIB investigation. A comprehensive report, giving details of the causes, an analysis, and recommendations was published in March 2001. It can be obtained free of charge by contacting the MAIB.

List of leisure craft accident reports published since 1999

Atlantic Eagle – capsized of vessel off St Justinians, Ramsey Sound, 28 September 2000.

Bluebell of Warsash – collision between the yacht and an unidentified ship 23 miles south of the Needles, IOW.

Bramble Bush Bay (Sandbanks ferry) – collision between chain ferry and four XOD class yachts at the entrance to Poole Harbour on 5 May 2001.

Chapter Two – intake of exhaust gas fumes into cabin spaces of motor cruiser while transiting the River Medway on 31 December 1999.

Dinghy (Unnamed) – which capsized in The Sound of Iona with the loss of four lives on 13 December 1998.

Dory (Unnamed) – which sank on Loch Awe with the loss of three lives on 29 May 1999.

Drum Major – foundering of narrow boat with the loss of four lives at Steg Neck lock near Gargrave, North Yorkshire, on 19 August 1998.

Grand Turk – injury sustained during the firing of cannon on sv Grand Turk while alongside at Portsmouth on 24 August 2001.

Lord Trenchard – explosion on board vessel in Poole Harbour on 30 June 1999.

Ocean Madam – capsized of yacht with the loss of one life in the Bay of Biscay on 8 October 1997.

Portsmouth Dory – capsized of school boat on Fountain Lake, Portsmouth with the loss of one life on 16 September 1999.

Samphire of Wells – foundering of dinghy off north Norfolk coast with loss of two lives on 16 December 1999.

Southampton Boat Show RIB – report of 3 persons falling overboard from RIB in River Test on 22 September 2000 with one fatality.

Wahkuna – collision between the container ship *P&O Nedlloyd Vespucci* and the yacht *Wahkuna*.

Wahoo – a man overboard fatality from an Etchells 22 keelboat off Yarmouth, Isle of Wight on 14 May 1999.

Wightstone/Rose Ryal – collision between Wightstone and the moored yacht *Rose Ryal* in River Medina, Isle of Wight on 9 November 2000.

Safety Digest 1/2003:
Published April 2003.

Safety Digest 2/2003:
Published July 2003.

Safety Digest 3/2003:
Published December 2003.

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