

Part 3 – Small Craft



After Jan Hawes, the editor of Safety Digest, asked me to write this introduction, my first reaction was surprise, the second was consternation. I wasn't entirely sure what had qualified me for the honour, and it was with some

concern that I sat down to read the articles published in this edition of the Digest, wondering what I might contribute.

Fortunately, I found guidance from those who had gone before; many of the previous introductions were endorsements of this fine publication. I quickly realised that the sensible way to begin would be to add my own – anything you can do to prepare yourself for a moment of crisis is worth doing, and reading the Safety Digest definitely qualifies. And if there's one thing that I can say with some confidence on the topic of safety, it's that it's best to assume that at some point you will experience that moment of crisis.

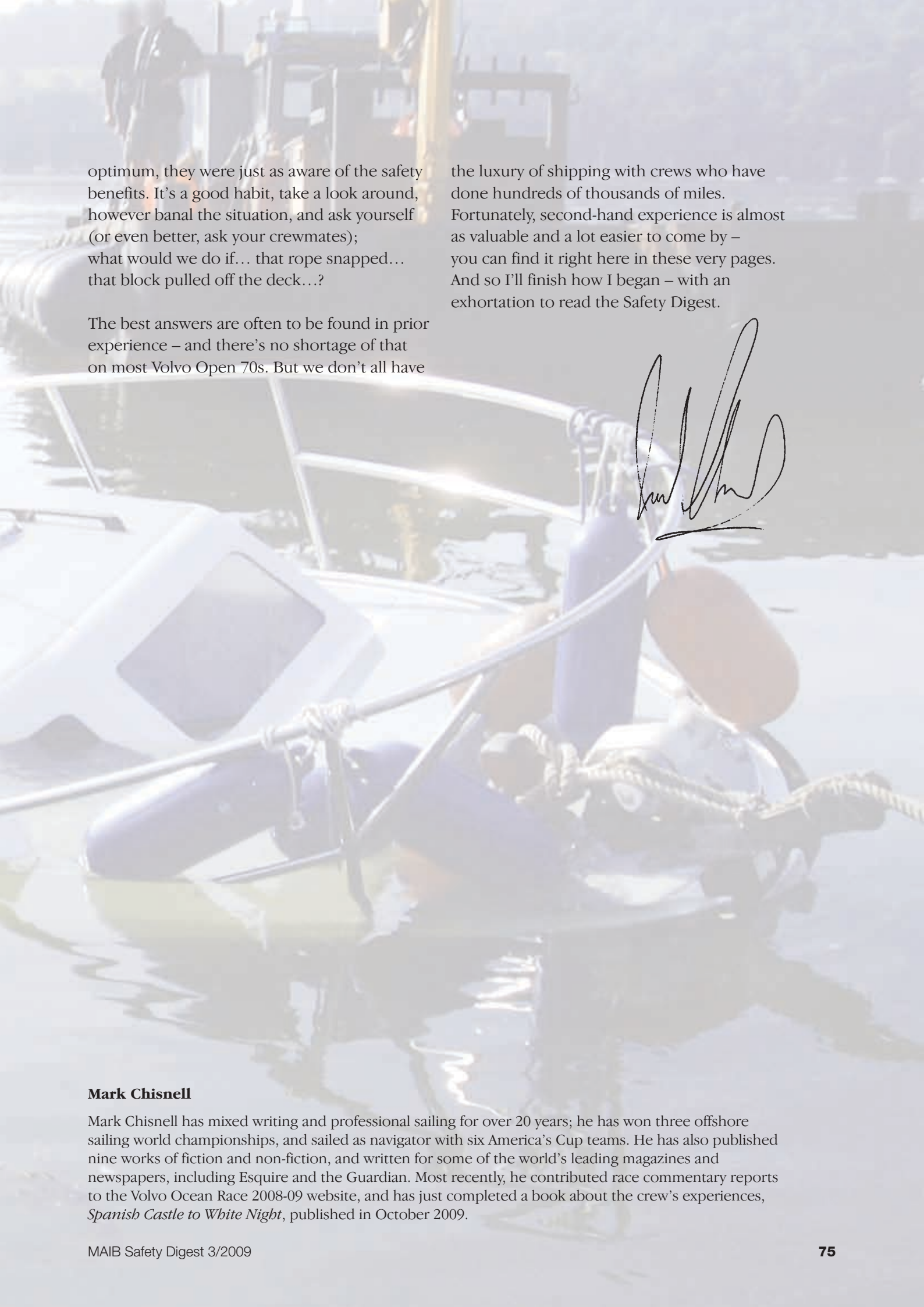
The latest articles in the Small Craft section endorse this; the random nature of accidents cannot be underestimated, whether it's a sudden bigger wave, or a little debris soaking up oil. It's all too easy for those close calls that we've all experienced to turn into a real and life-threatening emergency; a fire, a swamped boat or injured passengers.

There was another potent reminder of the dangers this past summer, with the 30th anniversary of the tragic 1979 Fastnet Race. A small and violent low pressure system turned unexpectedly in the North Atlantic and accelerated towards the Western Approaches of the British Isles, where it collided with the fleet of 303 competing yachts. In the space of 24 hours, 15 people died, and 24 of those crews abandoned boats battered by 60 knot winds and breaking waves in excess of 15 metres high.

The anniversary was well publicised across the mainstream media, and the evident and painful unreadiness of some of those boats and crews is something that I think many national sailing authorities, race organisers and individuals have all subsequently taken onboard. We can be hopeful that such a tragedy would not be repeated.

This hope was reinforced for me during nine months of following the 2008-09 Volvo Ocean Race. Quite apart from the plethora of improvements in the design, manufacture and use of safety equipment, often backed by stringent regulation, the sailors were very aware of safety issues. There's the basic stuff, a willingness to wear and use safety harnesses and lifejackets, but there was also a more subtle consciousness of the risks.

There were crewmen who regularly thought through how any given situation might potentially unravel. And while their motive was primarily to keep the boat racing at its



optimum, they were just as aware of the safety benefits. It's a good habit, take a look around, however banal the situation, and ask yourself (or even better, ask your crewmates); what would we do if... that rope snapped... that block pulled off the deck...?

The best answers are often to be found in prior experience – and there's no shortage of that on most Volvo Open 70s. But we don't all have

the luxury of shipping with crews who have done hundreds of thousands of miles. Fortunately, second-hand experience is almost as valuable and a lot easier to come by – you can find it right here in these very pages. And so I'll finish how I began – with an exhortation to read the Safety Digest.



Mark Chisnell

Mark Chisnell has mixed writing and professional sailing for over 20 years; he has won three offshore sailing world championships, and sailed as navigator with six America's Cup teams. He has also published nine works of fiction and non-fiction, and written for some of the world's leading magazines and newspapers, including Esquire and the Guardian. Most recently, he contributed race commentary reports to the Volvo Ocean Race 2008-09 website, and has just completed a book about the crew's experiences, *Spanish Castle to White Night*, published in October 2009.

Teenage Tragedy

Narrative

A group of 7 adult instructors with 17 members of a UK youth organisation set off for a day's activities as part of their annual summer camp, in 3 open decked, cathedral-hulled powerboats. Two of the boats each carried six persons. The third, which was the largest, had four adults and eight teenagers on board, and its coxswain was in overall charge of the activity. The conditions alongside were calm, although the wind was predicted to be between force 3 and 4, increasing to 5 to 7 and perhaps gale force 8 later. The visibility was also forecast to decrease during the day.

After setting off, the boats soon encountered rougher sea conditions, and the instructor in

charge decided to turn back. He managed to indicate his intentions to the boat behind using hand signals, but he was unable to attract the attention of the boat ahead, and decided to give chase.

The boat started taking on water over its bow and sides, which then accumulated on the deck and caused the boat to loll to port. To address the problem, the instructor in charge turned his boat into the sea and stopped. The 'elephant's trunk'¹ on the port side of the aft transom was lowered. Speed was then increased and a turn to starboard was commenced. As the boat started to turn, the teenagers seated on the port side of the boat were instructed to transfer to the starboard side. As they moved, the boat heeled to starboard and capsized.



Capsizing trial illustrating weight shift and boat swamping

¹ The craft was fitted with two elephant's trunks on the aft transom which are designed to act as self-bailers when the craft is underway

Four of the twelve persons on board surfaced in an air pocket under the upturned boat, but only three managed to swim clear. The fourth, a 14 year old girl, manually activated her gas inflation lifejacket, which was designed for military use. The lifejacket was extremely buoyant and pinned the girl under the boat. Within minutes the lead boat arrived on the scene and began to retrieve the teenagers and their instructors from the water; its coxswain also transmitted a 'Mayday' via VHF radio, but an inaccurate position was broadcast. None of the boats was equipped with GPS or nautical charts.

A head count was conducted, but this did not identify that one of the teenagers was missing. The survivors were taken to the shore and were driven back to their base camp for treatment and shelter. About 1 hour 30 minutes after the capsizing, the organisers realised one of the group was missing. A search was started and the girl was found under the capsized boat on the rocky shores of a nearby island. She was air-lifted to the local hospital but, despite the efforts of the coastguard helicopter crew and hospital staff, she could not be revived.

The Lessons

1. When at a sheltered mooring, although the conditions might be calm in the immediate vicinity, they will inevitably be more severe in exposed waters. The checking of the local forecast is a simple cost-free precaution, which can prevent many smaller boats encountering unexpected seas and getting into difficulty.
2. The accumulation of water on the decks of any boat is dangerous, and can quickly lead to the loss of stability where it is able to move freely from one side of a vessel to the other. Prevention is easier than cure, and the use of 'elephant's trunks', self-bailers, freeing ports and bilge pumps is usually very effective, even in rough conditions. However, once water has accumulated and can move unchecked, great care must be taken not to counter any apparent list with the movement of people or weights. This is unlikely to have the desired effect and can result in capsizing. Limiting the movement of people on the boat and getting rid of the water by all means available is the safest and simplest solution.
3. There are many types of lifejackets providing varying degrees of buoyancy in order to meet the differing requirements of the waterborne activities undertaken and the range of sizes and weights of their users. Unfortunately, one size does not fit all, and one type of lifejacket is not suitable for all activities. Consequently, where a lifejacket is ill-fitting, or provides an unsuitable degree of buoyancy, it is more likely to hinder than to assist survival. Too much buoyancy can be just as dangerous as too little.
4. When a boat is in difficulty and requests assistance, this cannot be provided promptly unless an accurate position is available. When navigating in an unfamiliar area, restricted visibility, or in darkness, this is usually best achieved by the use of latitude and longitude or reference to a local feature. Neither of these methods is possible without a GPS or chart.
5. Following capsizing of any craft, it is vital that checks are made to ensure that *everyone* on board is accounted for. The responsibility for this important task rests not only with the persons in charge of individual boats, who should be aware of the numbers carried at all times, but it also rests with the organisers of events involving large numbers of persons engaged in waterborne activities, who must have a system in place to ensure an accurate record of persons on the water is maintained at all times. The failure to quickly determine when someone is missing can and does cost lives.

Waves Aren't Always Fun

Narrative

A small high speed vessel was employed to conduct pleasure trips for tourists. The vessel was skippered by an experienced helmsman and there was one crewman on board, who also acted as the tour guide for the passengers.

On the day of the accident 11 passengers, including 2 children, boarded the vessel and, supervised by the crewman, took their seats. The crewman then stood at the front of the vessel and provided a safety brief as the skipper manoeuvred the vessel slowly out of the bay. Weather and sea conditions were good, there were light winds, clear skies, and relatively calm water with up to a 1m swell.

Once the safety brief was completed, the skipper increased speed and conducted a few manoeuvres as they started the trip. All the passengers appeared to be comfortable and

enjoying themselves. The vessel then proceeded to stop at the usual set points on the route and the crewman provided the relevant commentary.

Thirty minutes into the trip the vessel reached a 15-20m wide channel between two rocks where, as normal, the skipper stopped the boat to assess the current sea conditions. Having decided they were suitable, he told the crewman he intended to transit the channel, and the crewman then briefed the passengers. Once the brief was complete and the crewman had returned aft, the skipper increased thrust and headed through the channel.

While the boat was in the channel, a single steep wave, roughly 2m in height, rose up immediately ahead of it. Despite the skipper's best efforts, he was unable to stop the vessel slamming heavily as it dropped off the back of the wave. The passengers landed heavily on



Figure 1: Rear view of the high speed vessel

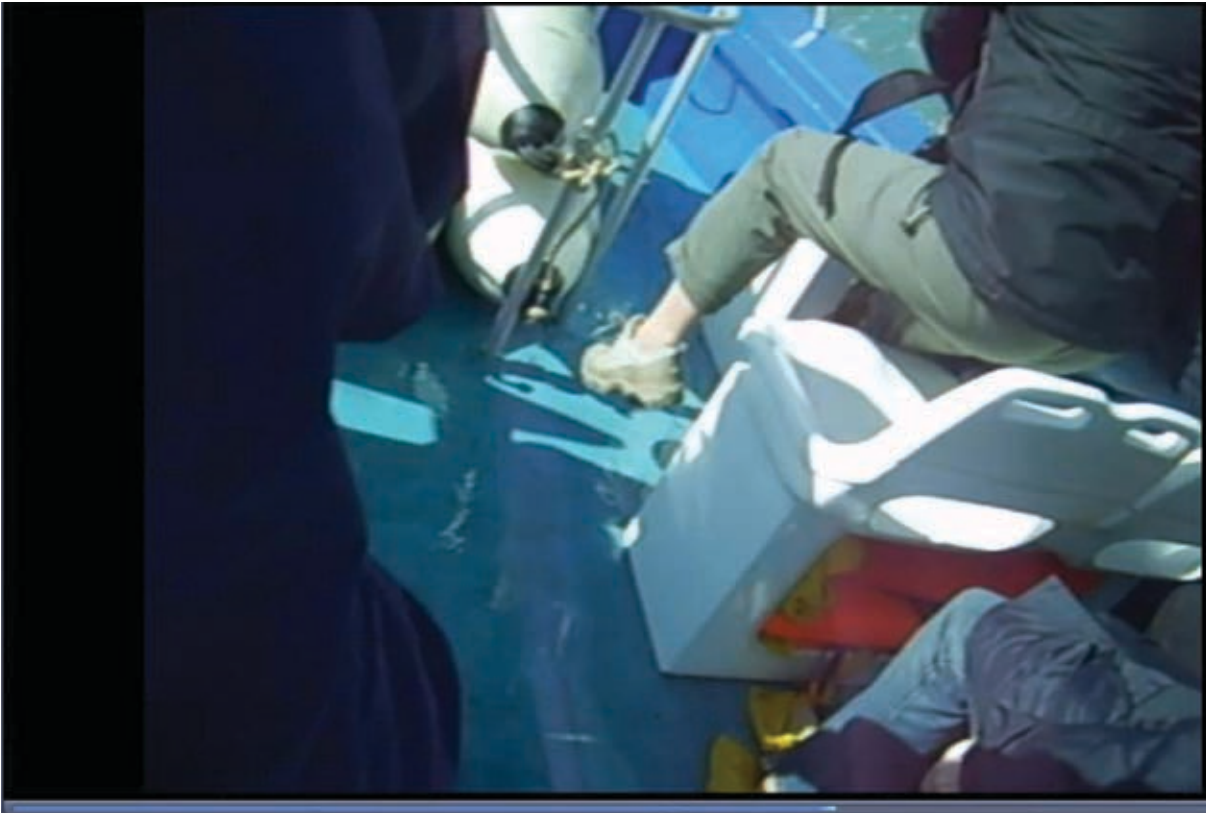


Figure 2: Photograph of a passenger being lifted from her seat by a wave

their seats as the vessel slammed down. A man seated at the front of the vessel collapsed to the deck in great pain, and many of the other passengers reported they were injured.

The crewman attended to the passengers while the skipper called the Coastguard. An initial injury assessment was provided and the skipper informed the Coastguard that the vessel would be back at the boarding point in 15 minutes.

Once at the boarding point, those able to walk stepped ashore and were attended to by paramedics. The man who had collapsed to the deck was winched off the boat by SAR helicopter and taken to hospital, and two others that had been transferred ashore at the slipway were also taken to hospital by air ambulance. One passenger suffered a shattered vertebra; another, a fractured sternum. The other passengers suffered less serious back injuries and bruising.

The Lessons

Travelling at speed on rough water, or even just encountering a single large wave, such as experienced here, can expose occupants of RIBs or similar vessels to high acceleration forces and shock loads as the vessels they are in slam into the water. These forces can result in serious injuries, especially back injuries, being sustained. A number of actions can be taken to reduce this risk, including:

1. Providing proper seating, handholds and, if appropriate, restraints for all passengers and crew.
2. Briefing passengers to adopt the correct posture to minimise the risk of injury by maintaining a straight spine, using handholds, and absorbing some of the shock through slightly bent legs. The safety brief should also emphasise that an inappropriate posture could increase the risk of injury.
3. Limiting the ride to those who are able to use the seats, hold on, and brace themselves effectively. For example, key to effective bracing is the ability to place both feet firmly on the deck, and the height of the seating might therefore dictate that passengers should be of a certain minimum height.
4. Prior to a trip, identifying anyone with a condition that could place them at greater risk, for example if they have a pre-existing back problem, are infirm or are pregnant, and determining whether the trip is suitable for them.
5. Ensuring helmsmen are alert to the risks to people from slamming, and that they drive their vessels appropriately. This should be emphasised where the helmsman is positioned behind the passengers, and is exposed to less violent motion.
6. Considering the suitability of the vessel for the intended trips. Planing hulls with 22-28 degrees of deadrise angle at the transom will provide a reasonable ride in moderate waves. In general, the shallower a vessel's deadrise, the greater its propensity to slam in steep or confused seas.

Injured, But Lucky to be Alive

Narrative

A yachtsman was attempting to board his yacht from a tender when he lost his balance and fell into the water. The man had rowed out to his yacht, which was at its mooring, and had just stood up prior to climbing on board, when the tender moved away from the side of the yacht. The man then made a grab for the rail but could not hold on, and fell in.

He was alone, and no one from the shore had seen him rowing out to his boat. Furthermore, he was not wearing a lifejacket and was not a strong swimmer. He quickly became tired as he tried to keep his head above the water while being pushed away from his yacht by a freshening wind and a strengthening tidal stream. He was passing close to a boat on an adjacent mooring and managed to hold onto its mooring chain long enough to call out for help.

Very fortunately, two men on a nearby yacht then heard his cries and motored towards him. On arrival they threw the man a lifebuoy, with a line attached, which the man was able to grasp. However, the men's yacht had a high freeboard, and it proved impossible for them to lift the man from the water, so they decided to tow him gently towards shallow water.

Unfortunately, as the yacht manoeuvred towards shore in the freshening wind, the man was struck by the yacht's propeller, which fractured and lacerated his left leg.

Despite his injuries, and being in shock, he was able to make his way onto the beach and was subsequently airlifted to hospital.

Later, reflecting on the accident, he realised that although he had been seriously injured, he was very lucky to have survived. He promised his wife that, once recovered, he would never again set out without wearing a lifejacket.

The Lessons

1. This incident demonstrates that, even on a short trip, things can go wrong. Be prepared – always wear a lifejacket.
2. The man did not consider the risks of boarding his boat from his tender. He knew the tender was prone to being unstable when he stood up to board his yacht but, as he had previously always managed to steady himself on the rail, he had taken no additional precautions. Doing the simplest routine tasks, without thought, is often when we put ourselves at most risk.
3. Recovering a person from the water is much more difficult than people imagine. In this case, two men could not recover the man overboard. How would you cope in your vessel?
4. Finally, towing this victim into shallow water was probably the only feasible means of saving his life, despite the risk presented by the rotating propeller. However it does illustrate the ever present danger of propellers – always keep people (and lines) away from them.