



OFFSHORE SAFETY CHECKLIST

A truism that is often heard is that it is the skipper and crew that make a boat safe, not the emergency equipment carried on board. However, even the best seamanship can't mitigate every risk and when things go wrong offshore there's no substitute for having the right kit available.

That is where the Offshore Special Regulations (see boxout, p70) administered by World Sailing (formerly ISAF) come in. They specify the safety criteria, covering design and build standards, equipment to be carried, and crew training, for races of any type, whether an afternoon around the buoys in the Solent, or a trans-oceanic adventure. The past few years have seen much development of new and improved safety and emergency kit for offshore racing, along with increasing regulation that requires more of this new equipment to be carried, especially on longer races.

EPIRBs AND PLBs

Emergency Position Locating Beacons and Personal Locator Beacons have long been the gold standard in indicating distress when offshore, as they send a message directly to a satellite system. It's well worth choosing a model with a built-in GPS – indeed the OSRs now require this for new units. The reason is simple – units with a GPS transmit an accurate position within a couple of minutes of activation, whereas non-GPS models can take almost an hour to provide a position within a range of around three miles.

Unlike EPIRBs, PLBs (Personal Locator Beacons) are designed to be carried by each person to raise an alarm in a man overboard situation and mark their position. It's therefore important to recognise that there are key differences between PLBs and EPIRBs beyond the obvious ones of physical size and transmit time (24 hours vs 48 hours). Most importantly, an EPIRB will transmit while it's floating free

Above
Crossing oceans or coastal racing, your boat must meet 'Category' requirements

in the sea, while a PLB must be held with its retractable antenna pointing towards the sky. In addition EPIRBs can be either manually or automatically activated, whereas PLBs are activated manually to prevent false alarms.

In both cases battery replacement is relatively expensive; however the latest models are cheaper than they have been in the past, and battery life has extended to seven or 10 years. This means it may no longer be economic to replace the battery of older units. It's rarely worth paying extra for an EPIRB with a user-replaceable battery as these cost more to manufacture, so the higher up-front cost negates later savings.

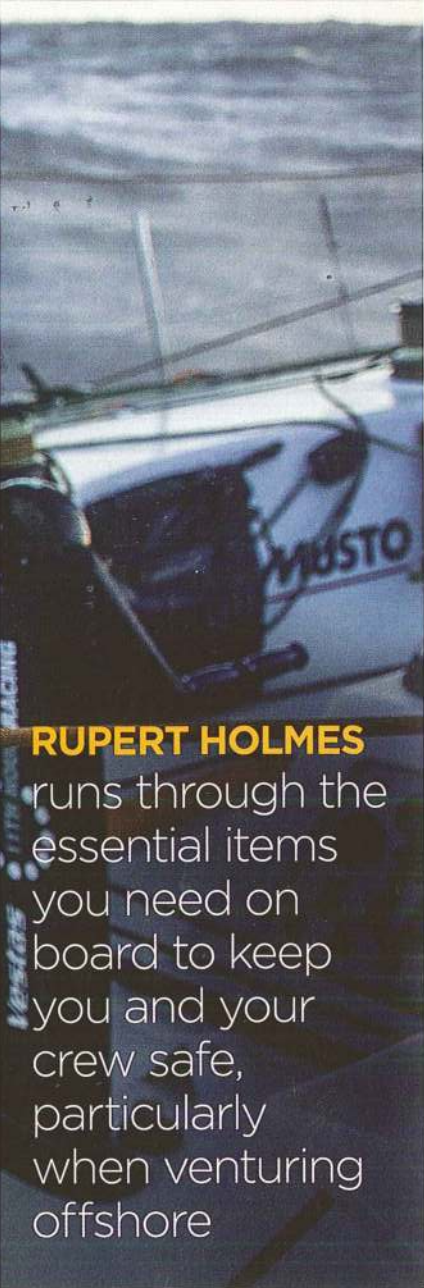
EPIRBs are mandatory for all boats in Category 0, 1 and 2 (e.g. Rolex Fastnet) races. The unit must be registered to the boat, through the Coastguard's UK Beacon Registry. It's worth noting that for a number of years this process has taken around 10 weeks, so it's worth buying these items well in advance of the start of the season.

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NEXT MONTH
Bags and holdalls

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MARTIN NEEDHAM/VOLVO OCEAN RACE



RUPERT HOLMES runs through the essential items you need on board to keep you and your crew safe, particularly when venturing offshore

PERSONAL AIS TRANSMITTERS

A drawback of PLBs is that their signal can't be received by a vessel at sea, so if you lose visual sight of a person in the water your own ability to rescue them is seriously diminished. Personal AIS transmitters, however, will display their position on your own boat's AIS display (often overlaid on the chartplotter).

The personal AIS transmitter therefore gives a yacht's crew far more chance of locating and therefore rescuing a person in the water than a PLB. Some models also have a DSC function which activates the alarm on any DSC equipped VHF transceivers within range. In most cases the unit is attached to the lifejacket and fitted so that it is activated when the jacket inflates. At the moment these are required for all crew in Category 0 and 1 races, although in future this is likely to extend to shorter races. MFDs and stand-alone AIS displays running relatively recent software will show the target as a red symbol, rather than the default black triangle. →

- 1. The RescueMe EPIRB 1 from Ocean Signal
- 2. McMurdo's SmartFind G8 AIS and EPIRB
- 3. Ocean Signal's E100 EPIRB can be purchased with or without GPS locators
- 4. RescueMe PLB1 from Ocean Signal is the smallest, waterproof PLB



5. The FastFind 220 is a compact PLB and will slip into the smallest pocket



6. The McMurdo Smartfind S20 AIS clips on a lifejacket



7. RescueMe EDF1 distress flare uses LED technology for signalling

8. Crewsaver Skyite 2 Flare

9. Pyrotechnic flares in use during safety training





1. The Crewsaver rescue sling can be deployed to assist a MOB



2. A traditional horse-shoe float and light from Ocean Safety



3. Crewsaver's take on the traditional horse-shoe float
4. Spinlock's Lume-On lights up a lifejacket's bladder



5. The Jonbuoy Inflatable Rescue Sling is designed for quick recovery of a MOB, packing into a soft or hard case



It would seem like a natural step to include both a PLB and a personal AIS transmitter in the same device. However, there is a regulatory hurdle to overcome, as PLBs are required to be manually activated, while the AIS unit is best activated automatically.

DISTRESS FLARES

Thanks to the advances in other methods of signalling distress, there is no longer a requirement to carry red parachute flares, and the requirement for white collision-avoiding flares was dropped some time ago. This means it's necessary only to carry four pinpoint red handheld flares and a pair of orange smoke flares. It's worth noting that many chandlers have not yet caught up with these changes and are continuing to promote the old-style larger RORC packs.

High tech electronic flares, which now usually feature LED lights, are also worth considering. These have the advantage of several hours of battery life, rather than around 40 seconds for a conventional hand-held red, and have a longer shelf life.

CREW OVERBOARD EQUIPMENT

We covered lifejackets and harnesses in a recent issue of Y&Y, but it's worth noting the 2018 OSRs will require all crew on Category 3 and longer races to have a mid-point snaphook on a 2m tether. Beyond that, the requirements for basic man overboard kit are for a pair of lifebuoys, each with a drogue and light, plus a danbuoy and a lifesling. Given that this represents a lot of clutter and windage at the back of the boat, most choose a route that will at least reduce this. The Jonbuoy inflatable danbuoy, for instance, is particularly popular, even

though it requires annual maintenance in the same way that lifejackets do. It's worth noting that the type of lifebuoy lights with user-replaceable batteries tend to be extremely unreliable. It is therefore worth going for the sealed and completely waterproof type that will typically have a five year battery life.

While all lifejackets should be fitted with lights, at night it's still very difficult to determine the distance you are from the light. Spinlock developed its Lume-On device that makes the bladder of the jacket glow for this reason – it makes it significantly easier to judge the final approach to the casualty.

It's also important to have a viable plan for getting a crewmember back on board. In reasonably calm conditions a boarding ladder on the back of the boat may be all that's necessary. However if there's a sea of any size running, then recovery over the transom risks a head injury, with the back of the boat slamming down in waves. It's therefore sensible to plan how you would recover someone, who is potentially unconscious, from amidships. On a boat that is sufficiently large to have big winches, then a lifting stop attached to the ends of the spinnaker halyard may be all that's needed.

CLASS B AIS TRANSPONDER

An AIS transponder, which allows you to see the position of other AIS equipped vessels and also transmits your own vessel data, is a requirement for Category 2 and longer races (Category 3 in the case of RORC). Although it's possible to buy a standalone unit with its own screen, it's generally more convenient to have one that will integrate with the boat's other electronics, so that targets can be overlaid on a chart plotter –

OFFSHORE SPECIAL REGULATIONS

World Sailing has four different categories that cover the requirements for offshore and oceanic racing. There are also two special categories – one for inshore (big boat) racing and one for inshore dinghy racing.

The entire document, which runs to more than 50 pages, plus a further 55 pages of appendices, is essential reading for anyone who races on a big boat – it can be downloaded for free at sailing.org

Category 0 is for trans-oceanic races, including races which pass through areas in which air or sea temperatures are likely to be less than 5 degrees C and where boats must be self-sufficient for extended periods and capable of withstanding storms and emergencies without outside assistance.

Category 1 is similar, but without the low temperatures of 'Cat 0'. As an example, most transatlantic races are Category 1. Category 2 covers races of extended duration along or not far removed from shorelines where a high degree of self-sufficiency is required. This includes races such as the Rolex Fastnet.

1. Ocean Signal ATB1 Class B AIS Transponder and GPS antenna

2. Exposure's Verso Mk2 Headtorch is a leader in its class



3. The McMurdo SmartFind M5 AIS Class A Transponder with MOB rescue display

4. The lightweight, carbon, floating, LED flashlight from Exposure



if you can't access the information on deck then it is of limited use.

RADAR REFLECTORS

It's easy to assume that, if you can be seen by other boats on AIS, an effective radar reflector is of less importance. However, many commercial vessels still use radar as their primary collision avoidance tool. When in open water, where a yacht under sail is the stand on vessel it can therefore be helpful to show up clearly on radar.

Unfortunately, even in the largest sizes, passive reflectors don't reliably reflect a strong signal. It's therefore worthwhile considering an active reflector, such as the EchoMax product(s), that amplifies the strength of the reflected signal. Ideally an RTE should work with both X and S band radar, which maximises your chances of being seen. My own experience of using such a system is that every ship I've spoken to has already identified my boat through a combination of radar and AIS. That's a huge help in a potential collision situation with only 10 minutes left to run.

TORCHES

There are a number of different requirements for torches on board. One is a personal torch for each crewmember, the other for the safety

of the boat. For deck work and sail trimming it's important that the torch is not too bright, otherwise everyone's night vision gets wrecked. A red bulb is ideal and there are plenty of waterproof LED head torches that will do this job.

It's also worth doing what you can to minimise the need to flash torches around. GlowFast luminous camber stripes on the sails, and on spreader marks, are a huge advantage for a modest cost. Similarly, the company's clutch labels are a worthwhile investment, especially if you don't sail with exactly the same crew through the season.

There's also a RORC requirement to have a bright deck torch and/or a

“ Luminous camber stripes on the sails and on spreader marks are a huge advantage ”

searchlight that is capable of continuous use, plus a floating waterproof torch that can be thrown into the sea as a marker for a man overboard incident at night.

The Exposure range has some excellent models for both these purposes that retain charge throughout a 600 mile race, will float with the beam pointing skywards and are also bright enough for use as a searchlight.

LIFERAFTS AND GRAB BAGS

In the UK this is normally a requirement for Category 3 (e.g. cross-Channel) and longer races. If buying a new raft it must comply with the ISO9650 or specific SOLAS standards, although older models that comply with other standards (as defined in the OSRs) are still acceptable. It's important to note that a raft stowed in a valise may only be kept in a dedicated self-draining deck locker, or below decks on a boat launched before June 2001. In the latter case, it must be possible to get the raft to the rail within 15 seconds. If you want to keep the raft on deck, then it must be in a canister and a raft weighing more than 40kg must be located such that it

can be easily launched without lifting.

ISO9650 rafts have the option of less than 24 hour or greater than 24 hour equipment packs. Items missing from the former can be kept in a grab bag ready for immediate use should you need to abandon the boat.

FIREFIGHTING

It's easy to gloss over this aspect of safety, but a fire on board has the potential →



1. Crewsaver's new liferaft range launched this year
2. McMurdo's Grab Bag provides space for emergency necessities
3. Ocean Safety's Grab Bag comes with a see through panel and roll-top opening
4. Seago's four person coastal leisure liferaft in action

to be one of the most frightening situations you can meet offshore. In many cases yachts are underspecified in this department and the OSR requirements should be considered as a bare minimum. It's important to recognise that extinguishers do not have an infinite lifespan and ideally should be weighed and serviced annually.

RIG CUTTERS

In the past these were typically a pair of bolt cutters that would slice through 6-7mm standing rigging. Today's larger and higher stability boats require a more powerful solution. There are options available, including hydraulic cutters, models with an explosive charge and even cordless angle grinders. All require care with use, including eye protection, which should be stowed with the device.

It's well worth getting a test sample of wire or rod that matches the largest diameter standing rigging on your boat (a rigger should be happy to supply an off-cut or a one metre length) and use that to test your equipment to make sure it works effectively. It's also worth noting that cutting away Dyneema halyards will quickly dull the best of knife blades.

EMERGENCY TILLER

A carbon tiller may look trendy, but the OSRs require you to carry a spare tiller unless the main one is made of metal. Given that's the case, it may be better to go for an unbreakable option in the first place. This is the route taken by the Figaro class in both the Figaro 2 and retained for the Figaro 3 (see test in next issue).

BATTERY MONITOR

There are no requirements to have a battery monitoring system, however, repeated deep discharges of the service bank will drastically shorten its lifespan. In longer races there's a surprising number of boats that end up suffering from power failure. However this can be avoided by ensuring the batteries are recharged before they reach loads and 50 per cent of capacity.

The big question is, how do you know when the batteries reach that point? Many people rely on guesswork, but that simply doesn't do the job. It might be fine when the batteries are new, but not as their capacity declines with age. That's where battery monitors such as Victron's BMV 700 series and Nasa's

BM units are useful. Provided they are properly calibrated, and the calibration is readjusted as the batteries age, they will tell you exactly the percentage charge left in the batteries and the time remaining until you have to recharge.

A simpler – and lower cost – option is just to wire in a digital voltmeter. While this will not give you all the information that a sophisticated battery monitor will provide, it will indicate the most important single criteria – you need to start charging when the voltage has dropped to around 12.2V. □

TRAINING REQUIREMENTS

In addition to carrying the appropriate equipment, maintaining it and ensuring that everyone on board is familiar with it, the Offshore Special Regulations also specify further training for a proportion of the crew to ensure they are kept abreast of the basics of what to do in an emergency situation.

These cover First Aid and Sea Survival with again the precise requirements differing for different offshore categories and whether the boat is raced fully crewed or doublehanded.