

Offshore Special Regulations, 3.04 Stability Monohulls.

Since the 1979 RORC Fastnet Race the matter of offshore sailing yacht safety has received a great deal of attention from the industry, and those responsible for safety standards.

In the immediate aftermath the RORC implemented the SSS screening formula, and supported research into the mechanisms of yacht capsize and recovery.

The research concluded, in simple terms, that:

- any yacht might be rolled well beyond 90 degrees of heel by a breaking wave which was a similar height to the beam of the boat.
- If the yacht was rolled beyond its angle of vanishing stability (AVS) then it might be left in an inverted position, and remain so until another wave pushed her upright again.
- In summary, the larger the angle of vanishing stability, and the bigger the boat the more resilient it is to a capsize incident.

A large database of AVS for racing yachts was built and this is shown in Figure 1 as AVS against Length. Also shown on this plot are known casualties. These are more prevalent among boats that are short and have a lower AVS. No yacht with an AVS greater than 135 degrees has suffered a capsize incident, so boats do not need to be completely self-righting to make themselves resilient to capsize.

At the heart of all the regulatory calculations is a simple question.

If my boat is 'x' metres long, what angle of vanishing stability should I have to avoid a capsize incident.

If you are very cautious you will use the UK Maritime and Coastguard Agency (MCA) limits.

These are the black lines. You can see that all casualties lie below the solid black line.

These regulations are for commercial vessels taking paying passengers.

If my boat is 10m long I need an AVS of 140 deg. for Cat 1, and 123 deg. for Cat 3

If my boat is 20m long I need an AVS of 103 deg. for Cat 1, and 100 deg. For Cat 3

If the OSR used these limits, very few boats would qualify to race.

So the current OSR / ISO uses the green lines.

If my boat is 10m long I need an AVS of 118 deg. for Cat A, and 99 deg. For Cat B.

If my boat is 20m long I need an AVS of 100 deg. for Cat A, and 95 deg. For Cat B.

You can see that a lot of casualties lie between the black and green lines, so we would still expect capsize events to occur occasionally in Offshore races.

All current, Internationally agreed, safety regulations require the calculation of an AVS. This process requires an inclining test on the boat in a known condition, and a 3D hull shape to do the calculations.

Looking at the SSS system. It does not know the boat's AVS, and it was never considered by the ISO standards committee during its development of the current standard.

It is however published on an IRC certificate and used by the RORC per the OSR rules to screen race entries..

The ORC International Technical Committee believes that SSS should be removed from the OSR.

It has no equivalent in the current "best practice" regulatory regimes (e.g. the UK Maritime and Coastguard Agency). If there were an incident during an offshore race in the future involving a yacht

qualifying on the basis of SSS, the investigators would say that SSS was not an adequate safety screen, given that more proven methods are readily available.

ORC acknowledges that removing SSS from the OSR at short notice is not feasible.

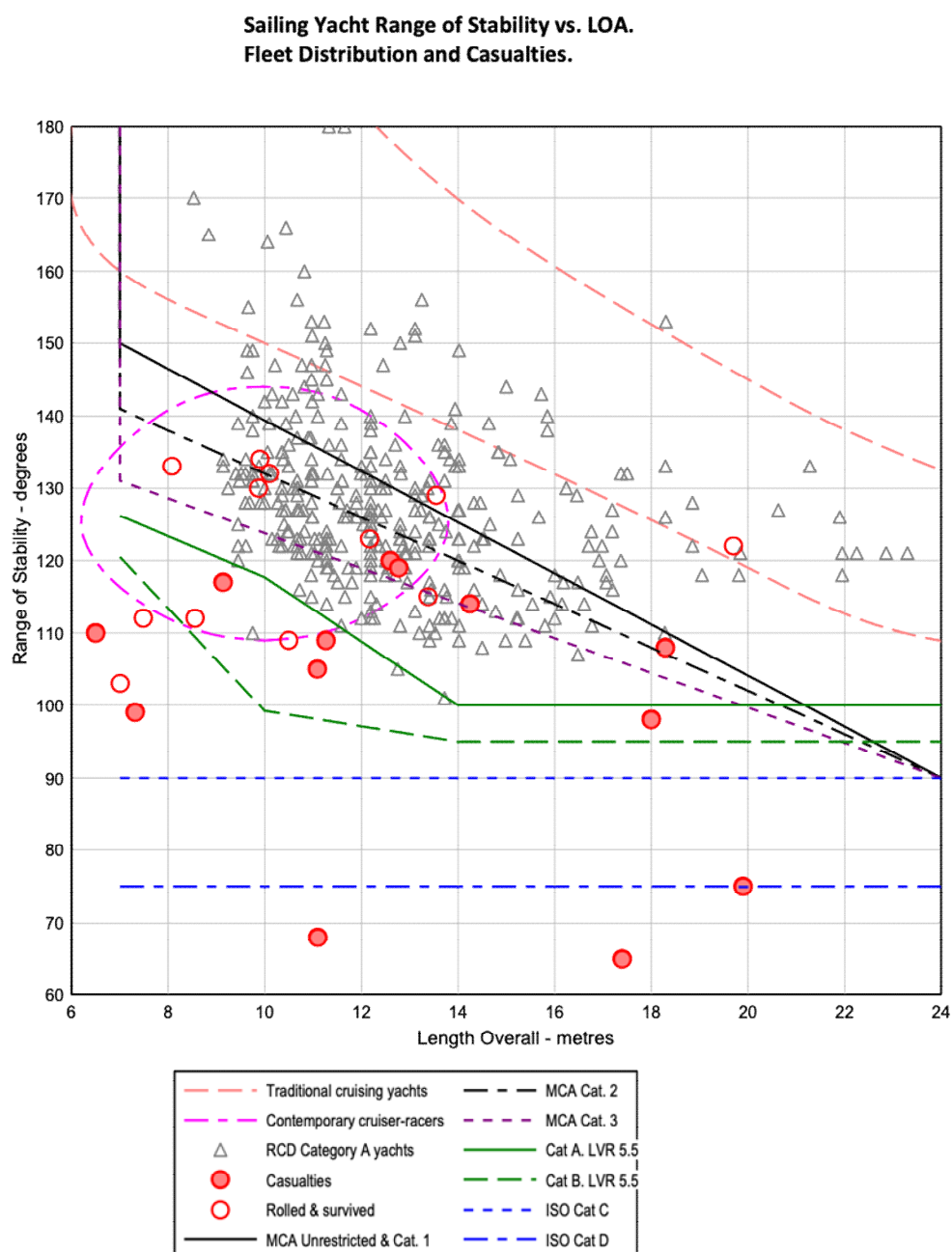
That said, it is our responsibility to do the right thing for our constituency and mandate the use of safety standards that conform to international best practice as soon as possible.

i.e.

Remove SSS for Cat 0 and 1 races for 2025.

Remove SSS for Cat 2 and 3 races for 2026.

Figure 1.



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