

**AusSAR Briefing Note**  
**Carriage of personal distress beacons by yacht racing crews.**

**Purpose**

This briefing note is to advise the NSW Coroner investigating deaths during the 1998 Sydney-Hobart yacht race of the implications of a possible recommendation that each yachtsman should carry a personal distress beacon operating on 121.5 MHz.

**Benefits to be realised**

In a search and rescue (SAR) operation the most critical issue is the time remaining until a survivor will die if not helped. An operational distress beacon will help to reduce the time to rescue by:

- communicating an indication that a distress is in progress directly to an authority with the means to respond (AusSAR in this case); and
- moving the operation directly to the "rescue" stage without the need to engage in time-consuming search operations to find the survivor.

The resulting time taken will vary significantly between individual incidents. The most influential factors would include:

- the frequency of satellite passes which can pinpoint (to within about 20 km) the beacon. For the Sydney-Hobart a good working average time between passes is about 1 hour, noting that (being an average) some times will be longer; and
- the availability of a suitable rescue platform. The Sydney-Hobart race occurs generally within range of rescue helicopters. These aircraft have the ability both to home on the beacon and recover the survivors.

It would be difficult to predict accurately the expected time taken to rescue a Sydney-Hobart survivor. However, it could be characterised as "a few to several hours" with a beacon or "very many hours or even days" without. The time differential could very well be fatal, particularly in rough weather, cold water or for injured survivors.

Hence, AusSAR would prefer that a survivor, or a group of survivors, has a distress beacon. Since the 1998 Sydney-Hobart involved two separate cases of a man in the water alone, that could also indicate that personal carriage of a distress beacon would be an important last line of defence for any individual participant.

**Difficulties to be overcome**

The prospect of multiple 121.5 MHz beacon activations would, however, present AusSAR with some operational problems to overcome.

The Cospas/Sarsat satellite system for detecting 121.5 MHz beacons is capable of processing a maximum of 10 active beacons on any one satellite pass. In the 1998 Sydney-Hobart case, which was characterised by yacht usage of beacons rather than personal usage, AusSAR detected 9 beacons. Indiscriminate use of more than 10

personal beacons in the one area could saturate the satellite system and thereby exclude other beacon detections, perhaps more urgent.

That potential problem is mirrored at the scene of operations. A rescue aircraft despatched to the scene could have difficulty in homing quickly to a beacon because the direction-finding equipment is not designed to cope with multiple signals. This problem was experienced to an extent in 1998 but was overcome by experienced aircrew on the spot. While a viable technique in 1998, the number of beacons detected was still very small compared with the number of which might occur through indiscriminate use of personal beacons. A larger number of beacons could well present an unmanageable problem for aircrew on-scene

Potentially, these two factors could undermine the effectiveness of distress beacons as a means of prioritising the rescue effort towards those most urgently in need. If presented with an overwhelming number of beacons, AusSAR might well need to revert to other means to direct the rescue effort.

Regrettably, the only means available to control this potential problem is disciplined usage by individuals. Discipline would need to be based on an understanding of how distress beacons fit into the larger SAR system, and reinforced by guiding protocols for beacon usage.

## **Conclusion**

In summary, personal beacons have a vital role in the larger SAR system. For a single Sydney-Hobart person overboard and separated from his yacht, a personal beacon would likely represent the difference between recovery alive and disappearance without trace, particularly if night intervenes. On that basis alone, AusSAR could not do other than support the personal carriage of distress beacons.

Indiscriminate usage in large numbers, however, could undermine their value in an operation of the scale of the 1998 rescues. Since the power to obviate that situation would lie only in the hands of the individuals, it would be incumbent upon those best-placed (arguably the Australian Yachting Federation and / or the CYCA working together with AusSAR) to ensure that the individuals had an adequate understanding of the beacons and the protocols for their use.

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