



MAN OVERBOARD BEACONS

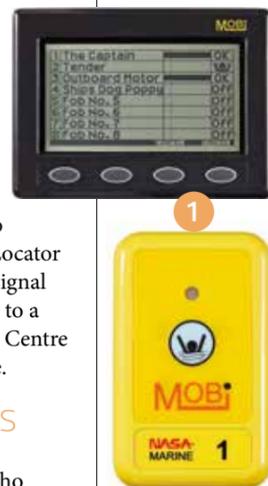
IF THE WORST SHOULD HAPPEN, YOU WANT YOUR CREW TO KNOW EXACTLY WHERE YOU ARE. **DUNCAN WELLS** EXPLORES THE OPTIONS

One are the days when falling overboard on passage was a death sentence. It's still dangerous, of course, and the best guarantee of survival is to be wearing a lifejacket. But there is now a huge range of gadgets and beacons designed to pinpoint a casualty's whereabouts and make the job of rescuing them easier.

They range from simple proximity alarms that alert the mother ship when a radio signal is broken to Personal Locator Beacons that send a distress signal and GPS position via satellite to a Marine Rescue Coordination Centre who will co-ordinate a rescue.

PROXIMITY ALARMS

These maintain radio contact between the crew member, who



wears a fob or beacon and the base station on board. If contact is lost an alarm is triggered and the position of the boat at that time is marked on the chart plotter.

PRODUCTS AVAILABLE

1 **Nasamarine MOBI MOB indicator.**

Fobs £48; base station £285.

Raymarine Life Tag. No longer in production but secondhand ones can be found on eBay.

PROS: The cheapest option of all MOB devices, deploys automatically.

CONS: Better than nothing perhaps but we can improve on this.

AIS BEACONS

The GPS on board the device gets a lock on the satellites and a lat/long position is transmitted on AIS (a VHF frequency readable by DSC-enabled radio sets and by AIS units). Modern AIS receivers will see a

'SART' target on their screens; older receivers will simply see the target as another vessel. Certain modern AIS receivers (receive only) and transponders (send and receive), also have audible alarms that sound when a SART signal is received. The rescuer can then make their way back to the casualty by following the GPS co-ordinates on the AIS screen.

Because VHF relies on line of sight and the device is either attached to the lifejacket or held by the MOB, the aerial is never more than a couple of feet above the water and so the range is dependant on the height of the aerial on the rescue vessel, from about 4nM for motorboats up to about 15nM or so for a yacht with a reasonably tall mast. Coastguards with their 100m aerials and rescue helicopters in the air will be able to pick up the signal from much further away. Some models can be activated automatically when fitted

to certain life jackets that trigger them as the life jacket inflates. Others have to be activated manually.

PRODUCTS AVAILABLE:

2 **McMurdo Smartfind S10.**

O/L 24hr. This has to be handheld and manually activated. £200.

3 **McMurdo Smartfind S20.** O/L 24hr

This can be fitted to certain lifejackets for automatic activation. £200.

4 **Kannad Safelink R10.**

O/L 24hr. Again this can be fitted to certain lifejackets for automatic activation. £200.

easyONE A109. Palm-sized with manual/automatic activation and battery life in excess of 36 hours £220

ACR ResQLink+. Manual activation, with self-test and 30-hour operating life. £265.95

PROS: Automatic activation on Smartfind S20 and Safelink R10. Having the GPS position of the casualty. Target marked as SART on the AIS screen of more modern sets.

CONS: Manual only deployment and handheld for the Smartfind S10. What if the MOB was unconscious or in shock?

AIS/DSC BEACONS

Here AIS is linked with DSC to send an automatic alarm or call. All AIS/DSC beacons are capable of sending an automatic 'open loop' All Ships Distress Alert. However, regulators in certain countries (including the UK) are concerned that they could interfere with DSC operation for commercial shipping.

They restrict the automatic transmission to an Individual Call to the MMSI No of the mother ship or to a group of MMSI Nos in what is called 'a closed loop'. The unit will be programmed to perform according to the local regulations (see table). Even when the unit is programmed for 'closed loop' one can still make an all ships distress alert but this has to be done manually. Because of →

Rules regarding what DSC transmissions are allowed

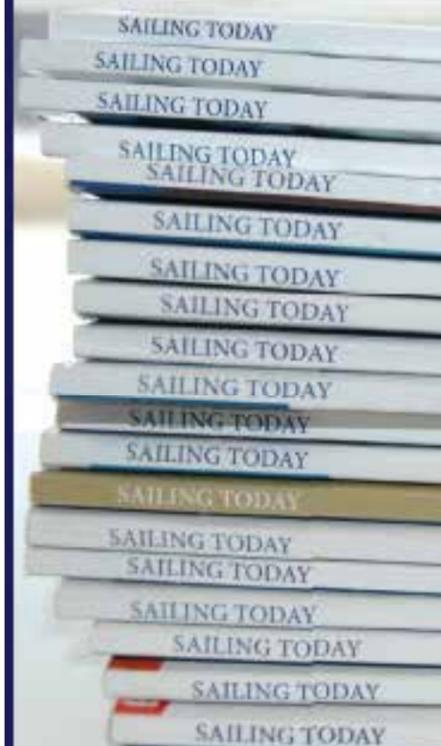
Clearly there is no point having an AIS/DSC MOB device in France or Latvia. Canada is thinking about what to do but until they have decided they don't accept automatic DSC transmission from AIS/DSC beacons.

COUNTRY	INDIVIDUAL CALL CLOSED LOOP	GROUP CALL CLOSED LOOP	DISTRESS ALERT MANUAL OPEN LOOP	DISTRESS ALERT AUTOMATIC OPEN LOOP
France, Canada, Latvia	No	No	No	No
Germany, Netherlands, UK	Yes	No	No	No
USA	Yes	Yes	No	No
Other European countries	Yes	Yes	Yes	No
Rest of world	Yes	Yes	Yes	Yes



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this one could always send a DSC distress alert while still on board, if one was injured on deck and couldn't get to the ship's radio at the navigation station for example. The AIS/DSC beacon is automatically activated, establishes its GPS position and then sends the relevant DSC call/alert. The AIS then transmits its signal.

So we have an audible alert on board via the radio and a position and target on the AIS screen. Range again between 4nM and 15nM, surface to ship.

PRODUCTS AVAILABLE

- 5 Ocean Signal RescueME MOB1. Operational life 24hr. £200.
- 6 MRT Smrt V100. Operational life 12hr. £549*.

*You might wonder why the V100 and easyRESCUE PRO are two and a half times the price of the MOB1? The fact that the V100 can be pre-programmed with up to 8 individual MMSI numbers to notify a fleet of vessels, suggests that it is catering for the commercial rather than leisure market. Also it will show when a DSC distress alert has been acknowledged. This is possibly why it is rated as having a minimum operating life of 12hr, because the DSC not only sends but receives.

PROS: An audible DSC alert on board the mother ship via individual call that



a man is in the water, automatic, GPS position transmitted via AIS. Target marked as SART on the AIS screen of more modern sets.

CONS: None that I can think of.

PERSONAL LOCATOR BEACON

These are effectively small EPIRBs, but where an EPIRB is registered to a ship, a PLB is registered to a person.

They have to be deployed manually, and their inbuilt GPS establishes your position then transmits it to the COSPAS/SARSAT satellites on the 406MHz frequency. The distress and position information is then sent to an MRCC and a rescue is mounted.

The PLB also has a 121.5MHz homing transmitter to help rescue services pinpoint your precise location. Range: enormous – the world.

PRODUCTS AVAILABLE

- 7 McMurdo Fastfind 220. £180
- 8 McMurdo Fastfind Max G. £280
- 9 Ocean Signal PLB 1. £200 (the world's smallest PLB)
- 10 Kannad Solo. £250
- 11 Kannad Pro. £350
- 12 ACR Aqualink View. Unique digital display shows battery life and alert status. £474

PROS: Essential for ocean sailing where there are few other ships. AIS and DSC that work on VHF may not have the range to be picked up by another vessel.

CONS: None of them activate automatically – regulators are concerned that there would be too many false alerts if they were automatic.

MAN OVERBOARD OPERATING SYSTEM

This system uses UHF and is deployed automatically when the lifejacket inflates. The beacon on the casualty uses GPS to establish its position and then transmits to the mother station on the boat, giving co-ordinates and a course to steer to return to the MOB.

PRODUCTS AVAILABLE

- 13 Seareq MOBOS. Base station £1200, beacons £480 each.

PROS: A dedicated self-contained system.

CONS: As the system is 'closed loop' the alert and GPS co-ordinates of the MOB are sent to the mother ship only. Other vessels, the coastguard and MRCC would not be aware of the MOB and would not therefore



be able to help, unless the mother vessel sent a DSC distress alert.

MOBOS was developed from Seareq's Electronic Rescue and Locating System which is designed to keep divers in contact with the mother ship when they surface.

CONCLUSIONS

It does depend on where you do your sailing and if there are any crew on the mother ship to effect a rescue. But for my money, sailing in coastal waters, I want to alert the ship via DSC VHF and then send them my position by AIS, so that they know when I've fallen in and they know where I am. With any luck they'll come back and pick me up. And as I'll have an MOB Lifesaver attached to my lifejacket which will be floating on the water beside me, they'll be able to retrieve me on board with ease.

I'm not very keen, though, on the idea of my AIS/DSC device sending only an individual alert automatically to the mother ship. I'd rather like it to send a DSC distress alert automatically to all ships. Then the vessels around me and the coastguard would know I was in trouble. Australia allows automatic distress alerts from these beacons so I may have to move there.

CONTACTS

- kannadmarine.com
- mcmurdmarine.com
- mrtos.com
- nasamarine.com
- oceansignal.com
- seareq.de
- acartex.com
- easyais.com



ABOUT THE AUTHOR

Duncan Wells is principal of Westview Sailing, author of *Stress Free Sailing* and creator of MOB Lifesavers



Breitling PLB watch

No report on AIS/PLB would be complete without mentioning the Breitling Emergency 2. Here we have a watch with an inbuilt PLB which transmits on the 406/121.5MHz frequencies, 406 for alerting Cospas Sarsat and 121.5 for last mile location.

One deploys the aerial manually, so like all PLBs the MOB cannot afford to be unconscious or suffering from hypothermia and unable to activate the device. Added to which there is no GPS on the Breitling Emergency 2, so it doesn't transmit a position to the satellites. This means that while the geo-stationary satellites will receive the distress signal they won't have been given a position and because they are stationary relative to the earth they can't work it out, so we will have to rely on the Low Earth Orbiting Satellites to locate the position by Doppler shift and then broadcast this to a ground station when they pass over one of these.

There are six LEO satellites and they don't cover the whole world at the same time. So there could be a delay of up to an hour and a half before one passes over and gets the position to pass to the MRCC. Thinking about hypothermia, that's an hour and a half before anyone sets off, never mind how long it takes to get to the casualty. Still, the MOB will be able to admire his lovely Breitling watch while he waits.

Breitling Emergency 2 approximately £12,000.

PROS: A nice watch, probably.

CONS: Better than nothing but without an inbuilt GPS to transmit position, the MOB could be in for a long wait.

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