

The head of the crewmember who just went over the side is getting smaller, disappearing behind waves with increasing frequency. On board, the suddenly solo skipper is trying to simultaneously tack, steer, arrange rescue tackle and keep the MOB in sight. To his side is a person with a stopwatch and clipboard, and, standing silently in the cockpit, are a half-dozen spectators.

After recovering the MOB, the test is repeated, this time, with three crew to divide up the chores, and, to the surprise of the record-keeper, sometimes they take longer than the solo skipper.

That was the scene, repeated some 400 times, during the second week of August in Sausalito, Calif.



A throwing bag can get the MOB alongside, block and tackle will hoist them

## Taking an unplanned dip

“Man overboard” is the dreaded shout

by Greg Jones

Falling overboard is probably every sailor's favorite nightmare. There you are, neck-deep in the Pacific Ocean and there goes your boat, getting smaller and smaller until there is just you. With luck, someone on board sees you go over; with greater luck, they get back to you, and with even greater luck, they get you back on board.

Well, it is not all luck. In the chill waters of San Francisco Bay an international gathering of more than 100 people recently spent four days investigating the techniques and equipment needed to recover a member of your crew who had fallen overboard. The Crew Overboard Recovery Symposium, held August 9-12, was a much-improved reiteration of a similar series of tests conducted in the same waters in 1996, which itself was an improved version of the first two seminars, held in 1993 and 1994, all of them owing a considerable debt of paternity to John Connolly, owner of Modern Sailing Academy. His interest in the subject of MOB rescue dates back as far as 1986 when, living in Newport, R. I., he “had a couple of ideas on MOB recovery and methods,” said Connolly in a conversation after this year's symposium.

Since the last symposium, in 1996, there has been much discussion among maritime professionals, safety





**Parbuckle devices, such as this Markus Lifenet from Iceland, had their fans** engineers and ordinary sailors concerning the results. A lot of new gear has been invented, a few new techniques have evolved, and sailors in general have devoted a fair bit of attention to the thorny problems of locating the man overboard (MOB) and then getting the hapless victim back on the boat.

The first part, locating the MOB, begins with someone on board detailed to constantly point to the MOB. For a solo rescue, that is impossible; at night, or in rough conditions, or when you come up on deck to discover yourself alone, location of the MOB is crucial. Location devices break down into two categories, those using GPS and those radio-direction finders with a transmitter worn by the MOB.

**The elevator method uses standard gear found on all sailboats**



## GPS locators

These devices work by recording the boat's location when the crew went overboard. This is done by the crew wearing a transmitter that communicates with a master unit on the boat. When the crew's transmitter gets out of range, or fails to respond to periodic queries from the master unit, an alarm goes off. The master unit can also be programmed to shut off the engine or put the helm hard over. We reviewed the Mobi-Lert (*BWS* June 2005), and had the chance to test one in use at the COB symposium.

We attached the crew pendant to a dummy and put it over the side, several hours after sundown and when the dummy was in our wake by roughly 100 feet the alarm went off and the display screen showed the bearing to the dummy, which was successfully recovered.

The French company NKE offers a transmitter (reviewed in *BWS* August 2004 and June 2005) that is worn on the wrist or hung around the neck. We placed it on the dummy and, within 12 seconds of going over the side, the alarm sounded. Using the GPS coordinates we were able to navigate back to the dummy.

## Radio direction finders

The second variety uses a radio signal sent to an antenna on the boat to determine the bearing of the MOB. We next tested the Sea Marshall and the Alert 2 devices. The Sea Marshall consists of a necklace and a transmitter, broadcasting at the SAR frequency of 121.5 MHz. When the MOB hits the water the necklace begins to glow, brightly enough that we could see it half a mile away. The receiver shows the relative bearing of the MOB to the boat by means of a ring of lights on the instrument, and you simply adjust the boat's heading to keep the light at the 12 o'clock position lit. The Sea Marshall alarm went off 15 seconds after the dummy went over the side and recovery was easily made.

The Alert 2 uses a proprietary frequency, meaning that SAR re-



**The NKE transmitter just before going over the side**

sources may not necessarily have the gear to aid in the recovery. The RDF antenna is handheld, the receiver in a small box and the antenna sticking out in front. The antenna is moved slowly in an arc, and when it is pointing at the MOB it makes a chirping noise. Recovery of the dummy was also successful, with the blindfolded antenna operator giving helm instructions.

#### Getting the MOB alongside

The second part of the problem, getting the boat to the MOB, breaks down into two categories, point of sail methods and turning methods. In the former category are the Figure Eight method and the Deep Beam Reach method, and most sailing instructors agree they are easier to teach than the turning methods, which are the Quick Stop and the Fast Return. Let's look at each method's advantages and disadvantages.

#### Point of sail methods

Both the Figure Eight and the Deep Beam Reach have the advantage of being essentially the same maneuver regardless of the boat's point of sail. Once you learn what to do, that is all you have to remember. Practice enough and it becomes instinctive, perfect for use when you are tired,

#### The Inflatable Lifesling can be repacked onboard after use



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## Figure Eight

The Figure Eight is a flexible method, adaptable for use from any point of sail and suitable for heavy weather or short-handed rescue.

1. Shout "man overboard;" throw flotation devices; assign spotter. This is the first step in all MOB maneuvers.
2. Immediately go to a beam reach.
3. Tack in roughly five boat lengths, don't worry about trim. Roll up furling headsails.
4. Bear away after tacking until your boat is past the MOB and roughly three boat lengths directly downwind.
5. When the boat can reach the MOB on a close reach, the eye of the wind will be about 60 degrees off the MOB. Round up, release the sheets and coast to a position upwind of the MOB.
6. Easing the tiller to leeward will slow the boat and stabilize it as you prepare for recovery.

## Deep Beam Reach

This method is taught by the California Sailing Academy and has the advantage of being easy to teach and straightforward in execution.

1. Helm to weather, steer to deep beam reach. If running, come about.
2. Tack after two boat lengths, come alongside to weather of MOB, release jib sheets, control speed with mainsheet.

## Quick Stop

Other than on a run, this is a 360-degree turn, returning to the MOB roughly at the spot you initiated the turn. Downwind it is a 180-degree turn. It is the method taught at the U.S. Naval Academy.

1. Bring boat head to wind and keep going. Back the headsail until wind is abaft of the beam.
2. Sail beam to broad reach until you are sailing dead downwind.
3. Keep main centered and douse or furl headsail. Keep jib sheets inside lifelines.
4. When MOB is abeam, jibe (depending on the angle of wind, it may be a tack).
5. Approach to windward of MOB at 45- to 60-degrees off the wind, head up to stop boat.

## Quick Stop downwind

1. Turn to windward, dropping headsails or spinnaker.
2. Approach to windward of MOB on close reach with sails luffing.

## Fast Return upwind

1. Turn the boat downwind.
2. Tack when two boat lengths abeam of MOB.
3. Back the jib, going below MOB briefly.
4. Approach on close reach upwind of MOB.

## Fast Return downwind

1. Turn upwind.
2. Tack two or three boat lengths abeam of MOB.
3. Jib may not need to be backed as boat is already below MOB.
4. Close reach to windward of MOB.

On all Fast Return maneuvers note position of MOB relative to boat at moment boat passes through the eye of the wind. If the boat is below the MOB, back the jib to allow a close-hauled approach. If the boat is above the wind, make a direct approach sailing close-hauled.

cold, half-asleep and suddenly someone goes by the boards. Let the training take over, put the boat on the specific points of sail you have learned and get back beside the MOB or close enough to throw a line.

Both methods are relatively easy to learn (see sidebar) and the Figure Eight is the most commonly taught MOB maneuver at sailing schools. The Deep Beam Reach has its supporters and, as we will see, may be the next standard maneuver to be taught.

The disadvantage of the two maneuvers is the high likelihood that, during the course of the maneuvering, the boat will be farther from the MOB than with either of the turning maneuvers.

The Figure Eight maneuver can easily separate the boat and the MOB by five boat lengths, and we observed that boats commonly found themselves 100 yards or more from the MOB by the time they rounded up for the tack. An MOB can become very hard to see at that distance. Our volunteer MOBs, all of whom were wearing wetsuits and life jackets, often reported that, once they were in the water a minute or two, the boat often disappeared behind waves. When your eyes are a few inches off the water, it doesn't take much of a wave to block your view of the rest of the world.

With the Deep Beam Reach method a sharp crew can get the boat around and pointing at the MOB within a few boat lengths. Just as with the Figure Eight, the essential components of the maneuver are similar regardless of the point of sail, thus simplifying the learning process. The advantage of the Deep Beam Reach is that, once headed back to the MOB, you steer the boat directly to the MOB, picking him up on the leeward side.

## Turning methods

The Quick Stop involves a tack and a jibe, calling for good sailing skills and winds light enough that a crash tack, followed by a crash jibe, won't damage the rig. On a run, the possible presence of spinnakers, poled-out headsails or a preventer can considerably complicate the Quick Stop, which was devised by Doug Fryer of the Seattle Sailing Foundation (developers of the Lifesling). Downwind you only need to tack, but preparing the boat for this unplanned maneuver requires a handy crew. The Quick Stop is the method taught at the U.S. Naval Academy, according to Ralph Naranjo, who oversees the academy's sailing program and participated in the COB Symposium.

The Fast Return can resemble a downwind Figure Eight and the Deep Beam Reach when sailing downwind, but, like the Quick Stop, it requires both judgment and skill on the part of the crew. Even with sufficient of the latter, the former can be hard to come by in an emergency. The advantage of both methods is that the boat remains near the MOB, considerably simplifying the task of recovery.

## On the water

Every day the crews of the testing boats, the safety boats and the divers (the volunteer MOBs), met for an hour or so before setting off. The gear to be tested was parceled out to each boat and rotated among them and the techniques to be used were listed as well. Additionally, each MOB test was done assuming a crew of four and a crew of two. Thus, roughly half the rests were completed solo, a sobering exercise, even given the relatively optimal conditions: the MOBs were kitted out in water survival gear, crews were well rested and we stayed in the bay, north of a line running roughly from Angel Island to the north end of the Golden Gate Bridge. True to form, the wind kicked up every day around noon, and the fleet experienced one day with gusts of 30 knots or more.

We met and sailed out of the marina housing the boats of Modern Sailing Academy. Many of their boats were in the fleet, and the additional boats were lent by their owners for use in the tests. There were 15 boats in all, mostly sail, with three powerboats, a Grand Banks 42, a 23-foot RIB and a Fortier 26. There were three trimarans (F-24, F-28 and Dragonfly 40) and one catamaran, a Seawind 1000. The rest were four Beneteaus, ranging in size from 33 to 43 feet, an Island Packet 38 and an Islander 53.

We tested a wide variety of gear designed to locate the MOB, bring the MOB to the boat and then get the MOB back aboard, and while we didn't test every device on the market, there was certainly a representative sampling of the devices available.

One sobering observation was that, in many cases, basic boat-handling skills were insufficient for returning to the MOB with maximum dispatch. In the case of the catamaran, for example, several of the testers had scant familiarity with the unique characteristics of a cat and found themselves in irons when tacking. We observed that, at least in lighter airs, a jibe was a more dependable means of getting the boat around, even with the wind forward of the beam.

"One of the things you get from this is how difficult it is," said John Rousmaniere, one of the symposium's organizers and author of the *Annapolis Book of Seamanship*. Each boat had its own handling peculiarities, and thus, sailors familiar with, say, a Catalina 26 had difficulty maneuvering the Islander 53.

A GPS kept a record of each boat's track as the rescues were effected, and each boat's appointed recorder timed the entire event, breaking down the rescue sequence into the time required to make contact and the time required to get the MOB safely back on board.

A full report on the times and maneuvers will be published after the data has been analyzed, but it is safe to say that the venerable Lifesling still provides good service. There is now an inflatable version, which has the possible benefit of being in a bag and hence more easily thrown than the standard Lifesling, but we noticed that many throwers were unable to get any real distance out of throws upwind, and in the press of the "emergency" failed to take that into account. Additionally, once inflated it tended to "sail" with the wind and at times did not drag behind the boat and form a loop as readily as the non-inflatable version.

Once alongside, the block and tackle offered by Lifesling in conjunction with their rescue sling worked reasonably well, provided the onboard crew remembered to attach it high enough to allow full recovery.

One of the better methods used to get the MOB back on board turned out to be the so-called "elevator" method. This entails cleating a dockline to a forward cleat and running the other end aft to a turning block and a winch, with a droop in the line low enough to allow the MOB to sit or stand on it. Aided by an onboard crew for stability, another crewmember then cranks in the line and the MOB is slowly raised to deck level.

With the representatives of numerous manufacturers of rescue and recovery gear hovering near virtually every boat, the prospects of a method that does not involve selling anything might be seen as poor, but the elevator method was used often enough to convince us that it is a viable recovery method, at least in the COB symposium test environment.

Flexible boarding ladders are very difficult to use, regardless of their design. Swim platforms are not nearly as useful as one might think, but having one makes it vastly easier to get your crew back on board. Nearly anything is better than a blank, four-foot-high wall of fiberglass.

A second article, once all the data are correlated, will present the full

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report and, as nearly as possible, a comparison of the various methods and devices. Speaking strictly from our observations and participations, we have a few conclusions.

## Some sobering conclusions

The first thing we have to say is that recovery of a member of your crew that has gone over the side is very difficult. The conditions of the four days of testing were nearly ideal, but there were numerous trials in which the MOB was in the water for upward of 15 minutes. For a cold, tired, shocked and possibly injured crewmember, that could easily be too long. While practice using MOB techniques can certainly improve those times, everyone on board should be aware of this reality.

The other observation is that recovery of an unconscious crewmember goes beyond difficult. When the volunteer diver announced himself to be unconscious and went limp (only after grabbing the recovery device and already being alongside), the whole scenario changed. Fishing with boathooks, attempts to loop a line around his shoulders, all were virtually futile. We think it would be nearly impossible to recover an unconscious crewmember without sending another crew over the side. That is the reality of actually getting someone back to the boat. Given that the trauma associated with being knocked overboard could easily include being hit with a boom, or snagged by a sheet, or overcome by a boarding wave, the chances that an MOB would not be in full control of his faculties seem to be rather high. Even with a self-inflating life jacket, anyone going over the side after onboard trauma is in serious trouble.

Although we didn't spend time recovering the U.S. Coast Guard's 150-pound manikin "Bob," everyone who did noted that he was very difficult to grab hold of. "Bob" had a life jacket on, but 150 pounds of dead weight is very difficult to get on board. Tie four, 36-pound CQRs together and drag them on board—that is how hard it is.

Although all rescues were done under sail alone, in practice, starting the engine could be useful. There is additional risk with this, beginning with fouling the prop with overboard lines and concluding with prop injury to the MOB.

## DVD to be released

The entire four days of exercises were videotaped, and an edited DVD will be available, in due course. The DVD will be free of charge, and possibly available for free download at the event's website, [www.cobevent.com](http://www.cobevent.com).

The symposium's steering committee was international in composition and included Yoh Aoki, American Sailing Association's first International Instructor Evaluator; Peter Beauclerk, ASA Instructor Evaluator; Yann Chauty of France's UNCL (roughly equivalent to US Sailing); Connolly; Chuck Hawley, West Marine's vice-president of product development and a member of US Sailing Safety at Sea Committee; Ted Laurentius of the Canadian Yachting Association; Peter Millard of the Cruising Club of America; Richard de Moulin, Storm Trysail Club; Bill Munster, US Sailing; Naranjo and Karen Prioleau of Orange Coast Community College in Newport Beach, Calif., and an instructor trainer for US Sailing.

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