Photo: Kevin Dailey

Seamanship, Leadership, and Safety-at-Sea Handbook

PRESENTED BY:
The Storm Trysail Foundation
The Storm Trysail Club

“DON’T GIVE UP THE SHIP!”

MISSION STATEMENTS

The Storm Trysail Foundation: "Dedicated to effecting, promoting and enhancing (i) the education of young sailors, (ii) safe and knowledgeable transitioning from dinghy to big boat racing, particularly through intercollegiate big boat racing, (iii) safe boat handling in all conditions for all sailors, (iv) safe blue water racing and passage making for all sailors, and (v) leadership, seamanship, and navigation, and (vi) environmental stewardship."

The Storm Trysail Club: "Promoting good fellowship among blue water and ocean racing sailors, and encouraging the sport of ocean racing and offshore cruising"

Credits: Many sailors and organizations have advanced Safety-at-Sea over the past 50 years. It is impossible to name them all but here are a few:

- Captain John Bonds - U.S. Naval Academy & U.S. Sailing
- The Original 4 US Sailing Moderators: Capt. John Bonds, Capt. Hal Sutphen, John Rousmaniere, Chuck Hawley (also West Marine)
- The Sailing Foundation - Dick Marshall, Fred Hayes, Doug Fryer - invented Lifesling
- San Francisco Crew Overboard Symposium (2005)
- Karen Prioleau- Orange Coast College & School of Safety & Seamanship
- Scott Swanby- SOSpenders and U.S. Coast Guard approval of inflatable PFDs
- Cruising Club of America - founder Suddenly Alone seminars for cruising couples
- Storm Trysail Club- founder of Junior SAS (1997)
- Ralf Steitz (Kings Point MMA), Butch Ulmer (Storm Trysail), Dan Nowlan (US Sailing) - founders of Hands-On SAS seminars (2006)
- Sir Robin Knox-Johnston- pioneer and founder of the Clipper Race
- Stan and Sally Honey, Ralph Naranjo, Ron Trossbach, Dick York, Rich du Moulin, and many others.

Pamphlet: Editor – Rich du Moulin Designer – Buttons Padin

Overview

The Storm Trysail Club ran its first adult "Hands-On SAS Seminar" at Kings Point Merchant Marine Academy in 2006 based largely on lessons we learned teaching sailors in our Junior SAS programs since 1997. Kids best develop skills- and have a fun time- using "hands-on" learning. This is a great draw into a lifetime enjoyment of big boat sailing. This also applies to adults!

In 2021, Storm Trysail added "Do-It-Yourself SAS Training Days" to its repertoire, emphasizing the importance of practicing on your own boat with your own crew. Military personnel, pilots, emergency responders, and professional athletes have long known that hands-on practice under pressure is the best training for real life incidents and confrontations. In 650 BC, the Greek philosopher Archilochus said: "In an emergency, we don't rise to the level of our expectations, we fall to the level of our training."

In the days of sailing ships, it was not a coincidence that experienced seafarers became the great explorers-- they were trained for it. Men like Nansen, Amundsen, Shackleton, Scott, and Peary were first sailors then explorers. They developed confidence based on navigation, seamanship and survival skills, and most important, were effective leaders under adverse circumstances. Shackleton was perhaps the most striking example of leadership in the face of incredible odds. When his ship the *Endurance* disappeared under the Antarctic ice, he adeptly changed the goal of the expedition to survival and return to civilization. The diaries of his men did not report despair or fear; they reflected Shackleton's optimism and good cheer.

SHACKLETON'S WAY

- Preparation & Planning: selection of the team
- Share a common goal
- Mutual trust, respect, and honesty
- Empathy: understand your people
- Communication: up and down
- Situational awareness
- Adjust plans to changed circumstances
- Accept responsibility for mistakes and move on
- Crisis response: calm, confident, step by step
- Instill optimism
- Resilience: never give up

Storm Trysail's objective is to maximize your knowledge, skills, and positive attitude about offshore voyaging or racing. Like Shackleton, we want you and

your crew to return safely using your leadership and seamanship skills. Your goal should be to prepare your boat and crew for any challenges that Mother Nature or random gear failure can throw at you - to cope and prevail. (See Captain Ned Shuman's remarks at the end of this pamphlet).

If circumstances are such that you have to get airlifted by the Coast Guard, or abandon ship to a raft or rescue vessel, we want you do it safely. But the challenge in today's "connected" world is that people (and sailors) often abdicate responsibility and give up, rather than overcoming adversity. Too many yachts are abandoned unnecessarily. We believe when you go to sea, your plan and attitude must be to prevail. Think Shackleton!

The Owner: the skipper of a yacht going to sea is the "responsible party" from both a legal and moral perspective, even if there are more experienced crew aboard. Here are aspects of that responsibility:

Management: racing or cruising, channel the skills and energy of the crew to achieve objectives and ensure a favorable outcome; adjust your plans as conditions change.

Situational Awareness: identify risks, problems (opportunities) early in order to take corrective action with minimal risk and loss.

Attitude: exhibit optimism and confidence that all challenges can be met if the crew works together as a team; maintain good communications both up and down the chain of command

A Culture of Safety: all crew should be active in enforcing safety: wearing a PFD when conditions warrant, the proper use of tethers (see page 18), rig and bilge inspections every watch, leeward and aft lookouts.

"Train The Way You Fight; Fight The Way You Train"
(Marine Corps) – to evaluate your boat's handling characteristics and to build up team skills, you must practice safety drills such as MOB, Fire, Flooding, Abandon Ship, and use of storm sails on your own boat with your own crew in a range of sailing conditions.

Boat Preparation: understand, inspect, and test everything including:

Watertight integrity: hull, deck, ports, mast partners, fore deck hatch
Pumps: small & big electric, bilge alarm, manual cockpit & cabin, clean bilges
Mechanical: batteries, engine, water maker, fuel system
Rig: closeup inspection, tune, heavy weather setup (positive bend)
Sails: inspection, leads, wind range/sail combinations (see Photos 1 – 4)
Reefing: reef out haul locations, practice, shock cord reef ties
Storm sails: mark leads, practice how to strip and stow main
Steering: inspect all components, spares, test emergency tiller and drogue

Crew Preparation: covers a wide range of skills and practice:

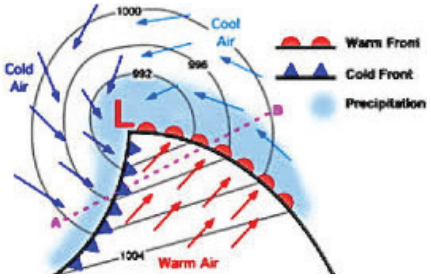
Personal safety gear: PFD, crotch strap, strobe, whistle, knife, AIS/PLB, headlamp, annual PFD inspection and oral inflation test
Proper clothing: foul weather gear, boots, warm wicking clothing and wool
Watch system: balance of skills, intelligent schedule, designated watch captain(PIC), safe handover
Safety habits: proper use of tethers, rig and bilge inspections each watch, lee and aft lookouts, P-cup
Know the boat: emergency chart, assign crew to specialize in boats systems
Know the communications: VHF, Satphone, Epirb, DSC (Register your MMSI)
Practice the drills: MOB including recovery aboard, abandon ship, fire, damage control, emergency steering (emergency tiller and drogue), reefing, storm sails

Heavy Weather Sails

Photo 1: #4 jib/single reef main (27-32 kts)–tiller centerline, balanced helm, no luffing, fast. **Photo 2**: #4 jib/double reef main (32-40 kts) **Photo 3**: storm jib/double reef main (40-50 kts)–balanced and fast. **Photo 4**: storm jib/storm trysail (50 kts plus)–note height of trysail tack and trim to boom (optional)

Cruisers should shift sail combinations much sooner than racers, often going to storm sails around 30-35 kts wind speed. Both racers and cruisers must anticipate deteriorating weather and plan accordingly.

Voyage Plan and Strategy:
Use information to plan a safe voyage:



Pre-departure plan: "flight" plan, forecast, depart now or delay
Route planning: optimal route, racing or cruising
Weather updates: consultants, broadcasts, Internet
Maintain log: hourly lat/long (what if electronics fail?), wind, pressure, sea temperature, sea state, sail combo, sightings–keeps your/crew head in the game

Track lows/fronts: routing, sea room, wind vs. current, imminent sail changes
Heavy weather tactics: anticipation, boat characteristics, heaving to, preparations, dangerous quadrant, avoidance/minimization tactics
Fail-safe: communication links, tracker, port(s) of refuge, emergency contact(s)

Modern forecasting of the movement of defined systems such as classic lows (see diagram) and their associated fronts is remarkably accurate. Changes of path and intensity are analyzed and broadcast promptly. A sailor's challenge is that at 6 or 7 knots boat speed, it is difficult to alter strategy at short notice. To a ship an increase of wind of ten knots may not be important, but to a yacht it can make life much more uncomfortable. Therefore it pays to make decisions well in advance to stay in port, seek a port of refuge, or steer clear of the storm.

A Case Study: The training and preparation worked aboard my Express 37 Lora Ann sailing through a gale back from Bermuda in 2012. Reaching comfortably with only a double-reef main, our weather lower shroud turnbuckle parted. Before the mast collapsed, watch captain Rich Feeley and helmsman Bill Rapf immediately tacked the boat and saved the rig (see Damage Control Grid). We quickly rigged halyards to the rail, fixed a strop and strong line to the remainder of the turnbuckle and lead it to a cockpit winch and pulled the bent mast back into column. We issued a Pan-Pan to several boats on our "radio net" and soon received a Satphone call from Coast Guard Norfolk who tracked our progress to New York. After the storm, friendly boats twice rendezvoused with us to provide spare fuel via ship-to-ship transfer to assist our sailing. We made it home having had a great experience putting many lessons to good use, including make an even closer inspection of all rigging!

Final Questions: Is all this overkill and does it really work? Why can't I just chill out and go offshore sailing? Storm Trysail's answer is: "All the preparation is not overkill; it is sensible, responsible and shows respect for Mother Nature and her oceans." The preparation itself is interesting and fun. This should allow you to enjoy the offshore experience and come back for more. Ideally, you behave like Shackleton without his particular circumstances. It all comes down to: Leadership and Seamanship, combined with Training and Available Technology.

Happy Voyaging,
Richard du Moulin,
Chairman, Storm Trysail Foundation

Medical Kit Check List

Recommendations For Offshore Sailing

Medical kit: assemble a medical kit for simple trauma (cuts and suspected fractures), sea sickness, allergic reactions, and pain. Most items can be obtained "over-the-counter" but help from a physician will be necessary.
Crew training: minimum basic first aid; prefer wilderness medicine.
Reference books: comprehensive first aid for the crew to consult.
Shoreside support: prearrange a consulting medical contact ashore.
Communications: VHF and single sideband radios, satellite phone securely installed and well tested.
Sea sickness: recognize and address sea sickness, hypothermia, dehydration and fatigue in the earliest stages.
Medical pre-conditions: avoid medical conditions among the crew that could be fatal if medical treatment not readily available: seizure disorders; insulin-dependent, brittle diabetes; blood thinners; significant heart conditions and pacemakers.
Prescriptions: crew to bring adequate supply of all their regular medications.
Medical records: skipper collects brief medical records from each crew: allergies, medications, key health history, shoreside family and medical contacts.

Problem or Activity—Equipment List

Examination: Blood pressure cuff, stethoscope, thermometer
Airway, breathing: Airway kit: Oral airways (small, medium and large), Ambu bag, CPR mask
Urinary retention: Prepackaged, sterile Foley catheter tray with catheter
Eye: Sterile irrigation fluid for eye wash
Nose: Nasal packing (nasal tampons, 1" Vaseline gauze)
Dental: Calcium hydroxide dental paste
Dehydration: IV administration set, 19 and 25 gauge butterfly needles, 0.9% (physiological) saline, 500cc sterile plastic bags, 5% dxtrose and 0.9% saline
Fractures: Inflatable (or other) splints for arms and legs, tongue depressors (finger fracture), Sam splint
Simple cuts, burns and wounds dressing material: Band-aids, assorted sizes, Xeroform or Vaseline gauze (12"x12" sheets), Sterile dressing sponges (4X4), Steri-strips (1/2"), Non-adhesive dressings (e.g. Telfa), Roll Gauze (2" and 4"), Ace bandages (2",4", 6"), Adhesive tape 1", Triangle bandages (for sling and swath), Large abdominal/ trauma dressing
Wounds requiring closure: Surgical Kit/ Laceration tray (pre-sterilized and packaged), iodine prep sticks (pre-packaged), 1% lidocaine, 5cc syringes, needles (18 and 25 gauge), 14 gauge angiocath (3"), hemostats, needle driver, forceps, scalpel – 11 blade, sterile dressing sponges (4X4), suture material – 5.0/ 4.0/ 3.0 nylon, 4.0 vicryl, Dermabond topical skin adhesive, skin stapler
Misc: Sterile gloves (sizes 7.5, 8), cervical collar, headlight, suture/staple removal suture removal kit/ staple removal kit. Credit: BermudaRace.com

Fire Fighting

One of the most common reasons to Abandon Ship is fire at sea. Prevention, proper equipment, training and drills are paramount. Three Elements are required to start and sustain a fire: heat, oxygen, and fuel. Denial of any one element will eliminate the fire.

Preventative Measures include keeping mechanical and electrical spaces clean and dry; do not use for storage (which just adds fuel). Conduct regular inspection of electrical wiring, fuel lines, engines, heaters, and exhaust systems. Install accessible shutoffs for engine and stove fuel, and electrical systems. Store and secure Lithium-Ion batteries in a cool, ventilated space.

Extinguishers should exceed Coast Guard requirements with an extra unit of higher capacity (visit uscgboating.org). Mount one extinguisher per cabin–minimum three: forward cabin/head, main cabin, cockpit locker. All extinguishers should be ABC type and inspected annually:

A = Common Combustibles–wood, paper, cloth
B = Flammable Liquids & Gas–gasoline, propane solvents
C = Live Electrical Equipment-radar, radios, computers

We strongly recommend an automatic engine box suppression system such as "Fire Boy". You must have an engine box port such as "Fire Port" to enable you to poke in the extinguisher nozzle without opening the box. Keep a "Fire Blanket" near the galley.

Fighting the Fire requires a Plan that incorporates your Abandon Ship Bill (see page 9). The crew must respond quickly yet remain calm! Remember: A fire doubles in size every 30 seconds! The following steps occur simultaneously:

- Slow boat, drop headsail, steer 150° TWA to minimize apparent wind
- If a fuel fire – close the shut offs
- If electrical fire – shutoff systems except communications and GPS
- Navigator issues Mayday with vessel name, position and situation; activate DSC VHF distress button (See page 30)
- Non-firefighters muster on deck wearing PFDs and prepare raft – but do not deploy until decision to abandon ship!

Firefighters:

- Work in pairs, one with extinguisher, one behind with hand on shoulder of firefighter. Backup person looks for fires breaking out in other areas.
- Do not wear foul weather gear or polypropylene – it can melt to your skin (off watch often best undressed for this)
- Get Low and Stay Low! Less heat and less smoke
- Fight fire with escape route behind you; never let fire get between you and freedom!
- Don't open compartments to see if fire is out; engine fire use Fire Port
- When fire is out, remove debris ("fuel "); for A type fire soak area with sea water; no water on B liquid or C electrical fire.

Abandon Ship Check List

All seagoing ships must post a **Ships Emergency Station Bill** of which the most important is the **Abandon Ship Bill**. The two emergencies that are most likely to lead to abandoning ship are flooding and fire. Time is critical and pre-assigning responsibilities is essential to save the crew. Every yacht should have three charts posted prominently in the main cabin near the companionway:

• Watch Standing Bill • Abandon Ship Bill • Emergency Vessel Diagram

The diagram must show the location of all through-hulls, pumps, life rafts, abandon ship bags, flares, EPIRB, and other important equipment. If you really want your crew to study the Abandon Ship Bill and Emergency Vessel Diagram, post second copies in the head! Write in real crew names!

Abandon Ship Bill

Navigator:	Mayday; take Satphone and EPIRB
Officer in Charge: Cockpit	On-watch Captain
Officer in Charge: Cabin	Off-watch Captain
On-watch:	Prepare life rafts/ditch kits
Off-watch:	Fight fire or flood
Cook:	Gather foul weather gear and water

- Secure life raft painter to cleat but do not toss the raft overboard until ready to abandon ship.
- All crew on deck, wear foul weather gear and PFDs with tethers
- If two rafts: two ditch kits and waters; one watch captain per raft

Fire Fighting (continued)

- Keep a "fire watch" to prevent re-ignition

P.A.S.S. – fire extinguisher technique -

• **P**ull pin • **A**im at base of fire, not the flames • **S**queeze trigger or handle
• **S**weep back and forth across base of flame until extinguisher is empty

Carbon Monoxide (CO) Poisoning:

Carbon Monoxide is a colorless, odorless, tasteless gas produced by engine, generator, or heater combustion. CO enters the bloodstream through lungs and blocks oxygen; exposure to high concentration can be fatal! Symptoms include eye irritation, headache, nausea, weakness, dizziness (feels like seasickness}.

- **Emergency Response:** evaluate the situation before entering the space that likely has a high CO concentration. Ventilate. Shut off potential CO sources: engine, stove, heater. Take victim to fresh air location and administer oxygen if available or CPR if not breathing. Contact help asap.
- **Prevention:** avoid areas of high CO, such as swim platform with engine running. Maintain fresh air circulation—use engine blower. If you smell exhaust, there may be CO. Inspect exhaust hoses and fittings, and install a CO alarm (right).

Watch Standing Best Practices

Watch Systems For Distance Races And Cruises

A captain is responsible for organizing a watch system that best promotes a safe voyage, or if racing, safe and fast. Opinions vary as to which system is optimum. **Charles "Butch" Ulmer** offers his advices, and then **Rich du Moulin** describes his favorite "staggered watch system."

Butch's Thoughts

There are a variety of watch systems used aboard sailboats and they all seem to work. Systems with an even number of watches per 24 hour cycle create regularity as crew are always on deck or off watch at the same time on the clock. Six 4-hour watches or eight 3 hour watches are examples.

Alternatively, "dogging" the watch so that the same crew doesn't get the same night watches is a feature many people like. It happens automatically if you have an odd number of time periods in your watch system. The US Navy uses a basic 4 on/4 off watch system of five watches from 2000 (8 p.m.) until 1600 (4 p.m.). At that point, the system switches to a pair of 2-hour watches from 1600 to 2000. This creates an odd number of watches over 24 hours and thus rotates (dogs) the times that the same group is on deck.

Other Typical Watch Systems:

- **3 on/3 off:** Eight watch changes per day; watches don't dog, gets fresh crew on deck most often; good in rough weather, short sleep periods
- **4 on/4 off:** Six watch changes per day; watches don't dog. Longer sleep period but 4th hour is a drag at night.
- **Four 3s/Three 4s:** Longer watches during the day (06-1000, 10-1400, 14-1800); watches dog (odd number). Shorter night watches (18-2100, 21-2400, 00-0300, 03-0600)

It is important to stay well rested on a long voyage, whether you are racing or cruising. Conditions can (and usually do) change and getting rest may become difficult or at times, impossible. Being well rested diminishes the chances of seasickness and if someone does get sick, sleep is a great cure. Be disciplined in sticking to the watch schedule and make sure your crew members sleep when they can! Stay well nourished and hydrated while at sea. Watches are typically arranged so that they rotate on or near the usual meal times.

Post a Watch Bill. Be sure your crew knows who is on each watch and when the watches change. Some of this may vary based on the conditions. It takes longer to get ready to go topside if foul weather gear and safety equipment is needed instead of just shorts and a T-shirt. Typically an on-coming watch is awakened 15 minutes before they are expected to relieve and you should insist that they be on deck on time.

The first night of a long distance race or cruise can be tough because everyone is used to sleeping all night. Set the watches as soon as you can and then insist that those off watch get in a bunk, even if they cannot sleep. It also helps to remind the on-watch to keep the noise down so those below can sleep.

Richard's Favorite

I am averse to any system that has one tired watch go off as one sleepy watch stumbles on deck. It is sloppy, the boat loses speed and risks losing control in heavy air. No one going on or off has full focus and awareness. It is also unsafe because crew go up and down the same companionway, usually untethered. Down below there is never enough room for an entire watch to dress, undress, and use the same head.

In all my races, including three Transatlantic on *Carina*, we used a Staggered Watch System where each crew does four hours on/four hours off. *Carina* had eight watch standers with the cook and navigator floating. Every two hours a pair of two (of the four) crew would go off watch as two fresh crew came up. We had the benefit of two fresh crew joining two who were half way through their cycle. Watch changes were smooth, quiet, and the crew enjoyed a change of company and fresh jokes.

Other benefits included having six crew available at two-hour intervals(during watch change) which made it easier to do sail changes without turning people out of their bunks. When we needed extra hands (such as gybing), the floaters were the first to be called, allowing the two off watch crew to get some continuous rest. Each "pair" had at least one person with extensive heavy air downwind helm experience, and one adept on the foredeck. Our floaters could steer or assist with sail changes.

Carina's Transatlantic Watch Bill

(On watch)			(On watch)			
00-0200	A	C	12-1400	B	D	A – Rives, Gerard
02-0400	A	D	14-1600	B	C	B – Rich, Peter
04-0600	B	D	16-1800	A	C	C – Barrett, Kyle
06-0800	B	C	18-2000	A	D	D – Bob, Eben
08-1000	A	C	20-2200	B	D	Cook – Lee
10-1200	A	D	22-2400	B	C	Nav – Gary

This "staggered watch" system can be readily applied to cruising with crew members paired up and relieving each other as they wish. It helps if each pair has similar abilities such as navigation, heavy weather steering, or fore deck skills. Some professional racing crews and cruising sailors utilize a three-watch system with crew divided into on-watch, standby, and off-watch groupings. Regardless of your choice, a watch system should ensure that crew get sufficient rest.

Pyrotechnics

Pyrotechnic Signals Can Save Your Life

Flares or Pyrotechnics ("pyro") are for use in an emergency rescue situation. You will have a limited number of pyros, so use them only when an aircraft or vessel is sighted and there is a chance of rescue. Familiarize yourself and the crew with the use of the pyros before you need to use them. Read the instructions printed on the flares before your life depends on their use. The types of pyro include:

Day Signals: Orange Smoke Device: produces dense orange smoke only for daylight distress signaling.

Day/Night Signals: Red Parachute Rockets: ejects a rocket projectile upwards of 1,000 feet visible for up to 30 miles. The brightly burning ember is suspended by a small parachute. Rockets are effective for day and night distress signaling. Parachute rocket "tandem" firing is most effective. To improve your chances of being seen after sighting a vessel, fire a second parachute rocket as the first is burning out. Make the second rocket mirror the first rocket's trajectory. Once you are spotted use a red hand flare to direct the rescuer to your exact location.

Day/Night Signals – Red Hand Flares: International SOLAS flares have a light intensity of 15,000 candella, a burning time of 60 seconds, and are used for Day and Night distress signaling. The visibility of the red hand flare is limited to the maximum height of the individual holding the hand flare. Use the hand flare once the rescuer is alerted to your distress and is headed your way and within range.

Always Remember:

- When using pyrotechnics situational awareness is critical. Which direction is the wind coming from? Has an aircraft or vessel been sighted? Have you alerted nearby people you are about to ignite a pyro?
- When handling the pyro identify the handle end and the burning end.
- Stow your pyro in a floating ditch bag. Pack them in zip lock bags to assure they remain dry until use. In the ditch bag pack safety glasses and welding gloves to reduce the risk of injury to your eyes or hands when firing the pyro.
- If deploying a life raft, you should also find pyro packed in the life raft. Check with the life raft manufacturer or service company to identify the type and quantity of pyro packed in the life raft.
- Expiration dates occur 42 months after date of manufacture and are stamped on the flares. Keep recently expired pyro as spares.
- SOLAS/USCG flares vs. USCG only: SOLAS flares burn brighter and have higher trajectory. Always purchase SOLAS/USCG approved flares.

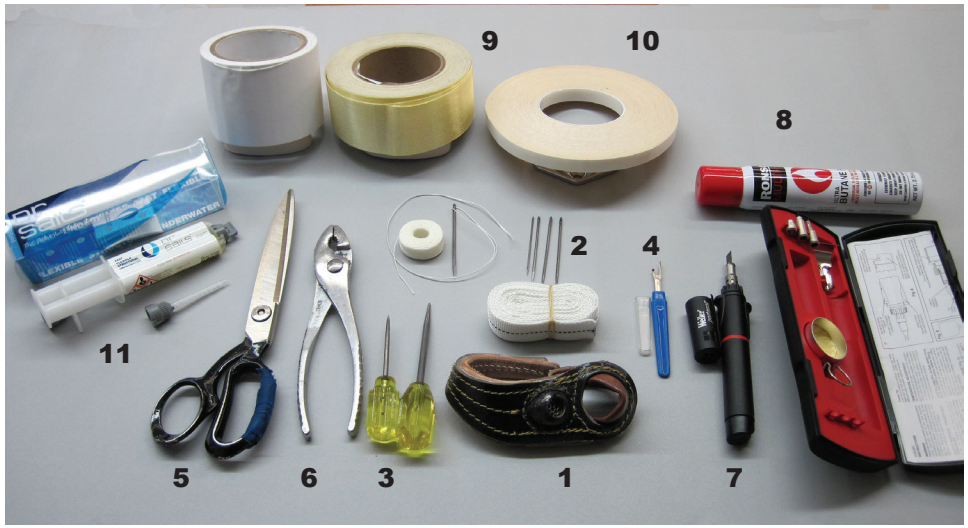
Sail Repair

A sail "First Aid" kit: Woven Dacron® sails can still be repaired with the time tested palm and needle; but today's laminate sails do not respond well to having a line of holes put in them, possibly doing more harm than good with a sailmaker's needle.

Your sail repair kit should include patching materials coated with PSA (pressure sensitive adhesive). When applied properly, these adhesives have remarkable holding power and will make a good, temporary repair. Before going on a long race or passage, it is advisable to obtain some large pieces of these materials from your sailmaker and, last but not least, make sure you have a fresh roll of duct tape.

Here are some pointers for using these material to make a repair.

- Damaged area should be dry and free of salt and other contaminants.
- The adhesive patch should extend beyond the damage by three to six inches...particularly if you're dealing with a heavily-loaded part of the sail.
- Make sure to place a patch on both sides of the sail and, if there is on open area (a hole for instance) be sure that the adhesive on one side is in contact with the adhesive on the other.



Another new sail repair possibility is a quick setting epoxy based adhesive. One such adhesive is Dr. Sails. This remarkable product can even be used on wet sails and it sets in as little as 22 minutes and will even do that underwater. Pictured above are some (but not necessarily all) the items you should have in your sail repair kit: 1. Sailmakers palm waxed twine, 2. sailmakers needles, 3. one or two awls, 4. a seam ripper, 5. shears, 6. pliers, 7. a portable hot knife, 8. fuel for the hot knife, 9. various types of repair tape, 10. double stick seam tape, 11. one or more tubes of Dr Sails.

Damage Control Inventory

"Don't Give Up the Ship!"

Fasteners/Caulking

Marine hose clamps: various sizes up to 7 inch
Tape: duct, self vulcanizing, Teflon
Seizing wire: big roll Plastic wire ties: largest size
Bag of self-tapping screws (1-2 inches) Bag of nails (1-3 inches)
Assorted SS or exterior Square or Torx Drive Deck Screws 1.25"–3.5"
Bag of bolts (incl.4 inch carriage bolts with washers/wing nuts)
Caulking gun and minimum 4x10 oz tubes Lifecaulk & 5200
Waterproof putty (West Stay Afloat): 2 pints 1 quart can of lacquer thinner
Spectra rope- 100' x 4 mm Supply of disposable examination gloves

Plugs/Patches

Wooden plugs at each thru-hull Bag of extra wood plugs
Foam plug (Forespar Staplug) Shower pan liner
Rubber sheet, inner tube rubber Tyvek home barrier paper
Dry suit neoprene Dacron sailcloth (10 sq ft)
2x4 – two 6 foot sections Wood block: 12x12x1 inch
Wedges: 3 pair various sizes Plywood patches (can use storage covers)
Sheet lead: 15x15 inch rolled and pre-drilled perimeter
Hose: various sizes to match boat systems, extra long

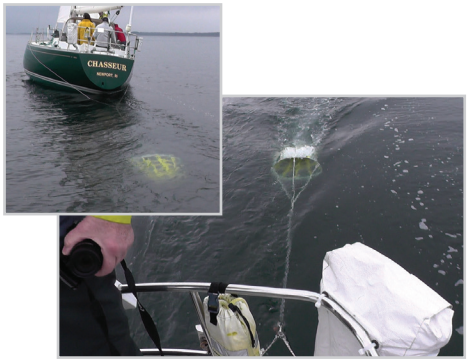
Tools

3 identical Lithium batteries & charger good for all power tools; spare inverter
Cordless drill with bits and nut/screw drivers
Cordless angle grinder with 6 blades including metal cut-off wheels
Cordless sawzall–metal and demolition blades
Juice pack–miniature charger
Brace and bits; egg beater drill Heavy rubber or welder's gloves
Crowbar, hatchet, baby sledge (to tear down interior to access damage)
2 Hacksaws and 10 blades Keyhole saw, wood saw
Big hammer, rubber mallet (for the lead, not wood!)
2 large drift pins (to knock out rig clevis pins)
Spanner wrench (for stuffing box) Knife (sheet rock with extra blades)
Strap wrench (for large fittings) Vise grips, pliers, wire cutters
Socket sets: metric, English (useful sizes, including for engine repairs)
Allen wrenches: metric, English Screwdrivers, crescent wrenches,

Other

Spare shroud: 7x19 galvanized plow steel (5/16 inch 9000 lb. test for 35-40 footer); 10' longer than mast height, spliced loop at one end; 10 wire rope clamps, thimble and shackle for other end OR 12 mm Dyneema (such as Samson Amsteel) also 10' longer with eye splice in one end.
Galerider Drogue with 10 feet heavy chain and two shackles (see pix to right).
Collision Mat: use storm jib or trysail

Damage Control tools and supplies should be stowed in containers so they are available at short notice. Location should be noted on the posted Emergency Chart. Larger items such as timber, spare shroud, drogue, and emergency tiller should also be noted. In the corner photo is a charged power pack drill, rolled lead sheet with pre-drilled perimeter, self- tapping screws with matching nut-driver, and rubber mallet. This hull patching package is stowed together since in an emergency it would be used together, along with Lifecaulk.



Steering with a Galerider drogue deployed astern (see stormtrysail.org/saslinks).

Emergency Responses

Event	Immediate Response		Quick Repair	Permanent Repair
Flooding	**Trapped crew?** **Find Leak Fast & Slow it** • Check all hull openings: seacocks, rudder, thruster • Drop headsail (unless heel reduces flooding)		• Stuff leak • Fother if leak forward of keel • Activate all pumps • Start engine; charge batteries • Prepare to Abandon Ship/ Mayday?	• Wood plugs, Truplug, Nerf balls • "Stay Afloat", shoring timber (2x4) • Plywood or lead patch, shower pan liner, • Abandon Ship? • Withdraw Mayday?
Fire	**Trapped crew? Fight Fire Fast** • Drop headsail • Sail 150 apparent		• Fight Fire • Shut valves-stove/ engine • Prepare to Abandon Ship/ Mayday?	• Abandon Ship? • Withdraw Mayday? • Fire watch
Lee shroud or spreader broken or loose	**Stay on present tack!** • Maintain pressure on windward rigging		• Secure leeward rigging • Rig halyards to rail	• Rig halyard thru end of pole set abeam • Replace or reconnect parts • Fabricate new shroud* or spreader
Windward shroud or spreader broken or loose	**Tack instantly** • Maintain pressure on new windward side		• Secure leeward rigging • Rig halyards to rail	• Rig halyard to end of pole set abeam • Replace or reconnect parts • Fabricate new shroud* or spreader
Headstay broken or loose	**Bear off to run** • Ease main • Do not drop jib		• Run halyards to bow then drop jib. Reduce pressure on backstay and runners	• Reconnect or replace headstay*
Backstay broken or loose	**Luff up to close hauled** • Trim mainsheet tight; drop headsail		• Run spin halyards to stern • Tighten mainsheet & vang	• Reconnect or replace backstay • Spanish windlass if hydraulic failure
Broken Mast	**Crew roll call!** • Man overboard?		• Try to secure rig • Don't start engine until rig cleared	• Retrieve rig if possible (for jury rig) • Cut loose if threatening hull • Pan Pan or Mayday?
Steering lost: rudder and post intact	**Drop headsail** • Trim main • Determine problem		• Deploy Emergency tiller • Engage autopilot (if ram on quadrant)	• Repair steering gear • Tow drogue if needed\
Steering lost: Rudder gone	**Drop headsail** • Trim main • Determine problem		• Plug lower rudder bearing? • Deploy steering drogue	Pan Pan?
Steering lost: **Rudder Post broken & thrashing inside**	Drop headsail • Trim main • Determine problem		• Fight Flooding (if any) • Weight to bow (lift stern) • Push post down & out? • Prepare to Abandon Ship/Mayday?	• Mayday? • Abandon Ship? • If OK, Drogue steering

In addition to bow-to-stern jacklines, try a pair of cabin top jacklines (right) made of Spectra rope running from the forward corners of the trunk cabin to the aft corners near the cockpit. Great as a handhold and also a clipping point for the tether. Since close to the centerline, if you fall over the lifelines you will not hit the water and risk dragging.

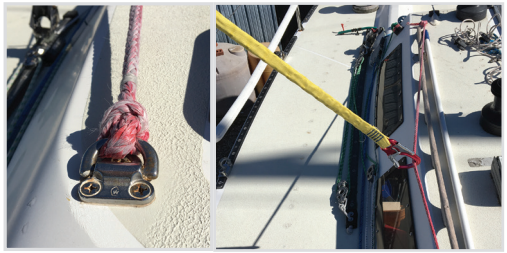


Photo 1: Jackline terminates center of fore deck-tether fetches up before crew drops lower than rail- no dragging in the water. **Photo 2**: Jackline terminates before reaching stern- tether fetches up before crew can go over stern or drag aft of transom. **Photo 3**: "Tripod Walk"–straddle the tether and pull up on jackline for stability. **Photo 4**: Always remain tethered as you go up or down companionway. **Photo 5**: Leave tether hanging after feet are on cabin sole; hook up before ascending.

WHAT IF YOU'RE THE MAN OVERBOARD?

The Survival pool exercise at a Hands-On seminar is essential to prepare you to be an MOB. Learn the three ways to inflate a PFD: automatic (hydrostatic), manual, oral. Know how to access your manual pull and your oral tube. Be prepared to be in the water 20-30 minutes. Once in the water: try to calm down, face downwind/down wave, pull your crotch strap tight to elevate your mouth above water, pull your spray hood over your head, cinch your collar, and cuffs to retain heat. Look for the boat and pat your head if it is visible to indicate you are not injured. Ensure your AIS beacon is functioning and hold it up for better transmission. Use your whistle- the sound carries. When the boat approaches, look for the Lifesling rope. Grab it and slip the Lifesling over your head and under your arms; roll over on your back if you are being dragged. You must do an annual PFD inspection and inflation test - inflate orally and leave overnight.

Recovering an MOB in nice weather in daylight should have a happy ending, especially if the MOB is wearing flotation. However, an offshore crew needs to be prepared to face more challenging conditions. Combat pilots talk about the "**Crisis you planned for, and the crisis you did not plan for**." For those of us who race or cruise offshore, this is the crisis you need to plan for: heavy weather, bad sea state, cold water, moonless night. This not only provides the basis for your response, but also the basic skills to adapt and prevail to differing circumstances. As a Greek philosopher stated: "**In an emergency, we don't' rise to the level of our expectations, we fall to the level of our training**." A few years ago, the US Sailing Safety-at-Sea Committee led by Chuck Hawley, Sally Honey and Dick York studied the reports of many documented MOB incidents, some fatal and some with happy endings. Several common observations include:

FALLING OVERBOARD: always a result of not clipping the tether to the boat, including going up/down the companionway. Often related to poor helming, especially accidental gybes.

FLOTATION: people drown faster than we think; no PFD has bad outcomes. Wearing a PFD buys time, especially in cold water (hypothermia) or in case of injury. Personal AIS beacons, strobes, and whistles increase the likelihood of rescue.

INJURY FROM THE HULL: if the MOB survives until the point of recovery, the greatest threat is being run down, slammed into, or sucked under the hull. Lightweight modern boats are especially difficult to keep bow to the wind/waves even under power. Chines are a special danger as the MOB gets sucked underneath.

LACK OF PRACTICE: too many skipper/owners fail in their responsibility to train their crew, practice MOB recoveries, and develop their own protocol.

USE OF ENGINE: while it is important to practice under sail, the engine provides the best chance of a safe and timely recovery, assuming you don't wrap a line around the propeller.

RECOVERY: getting the MOB quickly and safely up on deck is challenging, and near impossible if unconscious/disabled; any time spent next to the hull is high risk. The 2022 Newport-Bermuda Race witnessed the tragic loss of Storm Trysail member Colin Golder, an experienced offshore sailor and generous volunteer. Colin came on deck without his PFD against his own standing instructions. He was swept overboard and, despite heroic crew efforts, was recovered too late. We all have violated good practices at some point, but think of the potential tragic impact on your crew and family.

Every boat is unique and has rig and handling characteristics that must be taken into account to develop the best MOB recovery technique for that boat and that crew. Storm Trysail Club has had the unique benefit of practicing MOB recoveries at hundreds of Junior and Adult Seminars over the past 25 years using racing and cruising boats ranging from 32-foot Figaros up to the three masted 100-foot *Spirit of Bermuda*.

SAS Training Day

Do-It-Yourself SAS Training Day: To accommodate all these key lessons, in 2021 Storm Trysail instituted "Do-It-Yourself SAS Training Day." Owners brought their own boats and crew for a day of coached practice, which included a Tallboy buoy, MOB dummy, drone film footage, and Zoom debriefs. This concept is picking up momentum. In 2022, Storm Trysail shared its documentation with the Cruising Club of America (CCA), organizer of the Newport-to-Bermuda Race. CCA now recommends that its stations schedule "POYOB" (Practice On Your Own Boat) sessions. Here is a new idea: organizers of offshore races should require eight hours of MOB practice by every entry with minimum 80% of the crew, resulting in a written "MOB Plan" to be submitted as part of entry documentation.

Schedule your own SAS Training Day. Coordinate with other boats to share resources (photo boat and drone). Feel free to use Storm Trysail's "Do it Yourself SAS Training Day" (see stormtrysail.org/saslinks) as a template. It is detailed and includes a Safety Briefing and Damage Control Review. Assign a crew or experienced guest to be your "scribe" to track evolutions and record comments. For MOB Quick Stop under sail upwind and downwind, and Lifesling practice under sail or engine, use a Tallboy buoy that is easy to grab to save time and simulates an MOB. Cushions are useless for practice since they blow downwind.

For actual MOB Recovery (bringing MOB up on deck) we use a Dummy (see photo) designed by Butch Ulmer and fabricated by UK Sailmakers. Unlike bulky human-form types, our Dummies are actually quite intelligent! They weigh about 20 pounds dry, and 200 pounds when filled with water. Use the Dummies: 1) as an unconscious MOB free floating, and 2) tied to a Lifesling and then trailed astern to simulate an MOB in the Lifesling (see stormtrysail.org/saslinks).

After SAS Training on the water, go back to your dock or mooring and in the safety of your home port try the various Recovery techniques with a crew in lieu of the Dummy. Or as my crew said: "Swap out the Dummy for another." Practice throwing the Lifesling from midships, the Standard Lift (1:1), the Midline Lift (1:2), and the Rescue Crew. Try recovering the MOB without any PFD...

Make Your Own MOB Plan: With crew input, the scribe's observations, and a review of the photography, draft your MOB Plan that reflects what works best for your yacht. Print it, circulate to your crew, post it aboard, and practice it. Go to stormtrysail.org/saslinks to review some real MOB Plans: Stan and Sally Honey's plan for their Cal 40 *Illusion*; Rich du Moulin's double-handed plan for the Express 37 *Lora Ann*; and the full crew plan for the 59 foot *Hound* (see page 29).

Please copy Storm Trysail with your Plan so we can review it and we will all learn from it.

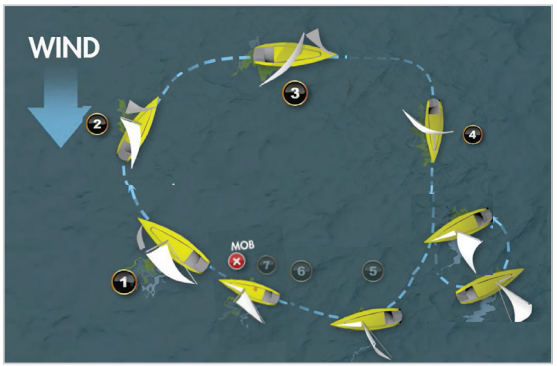
Quick Stop–Upwind

Quick Stop and Immediate Steps: All Recoveries begin with:

- Stopping the boat as quickly as possible to stay close to the MOB,
- Deploying the Mom8
- Hitting the MOB button (usually hold for at least five seconds)
- Assigning a pointer
- Preparing to return when ready

The Upwind and Downwind diagrams describe a sailing recovery, perhaps with an engine assist. It is important to practice this in case your engine will not start or you have wrapped a line in the propeller. However, this is not our recommended technique for offshore conditions. It is too dangerous to the MOB. Study the diagrams and practice the sailing recovery, but then shift modes to engine only. If your boat can power under engine only in the conditions, it is better to drop all sails. Your boat will be more maneuverable and be able to approach the MOB from any direction. Your first attempt will be safer and more likely to succeed. (More details later)

Upwind Quick Stop/Recovery Under Sail



Position 1: Shout "Man Overboard!" Pull pin on MOM. Push MOB button. Helmsman shouts "Hold on! Luffing up!" (Quicktack only in light winds - risky at sea with crew hiking.) One crew becomes Pointer shouting continuous bearing & range of MOB.

Position 2: Crew holds on while helmsman luffs up (tacks). Check for lines in water; start engine and keep in neutral.

Position 3: As soon as crew is prepared (off-watch on deck wearing footwear and PFDs), ease main and beam reach 2-4 lengths. Jib trimmed (or cleated and backed). Crew prepares for jib douse (furl).

Position 4: Helmsman bears off to dead run (not broad reach); jib dropped (furled); mainsail gybed (in heavy air can do a chicken tack to avoid gybe).

Position 5: When boat is 1–1.5 boat lengths past MOB, helmsman luffs towards MOB. Pointer moves forward to shrouds to better see MOB and guide helmsman. In rough seas, keep bow well clear of MOB.

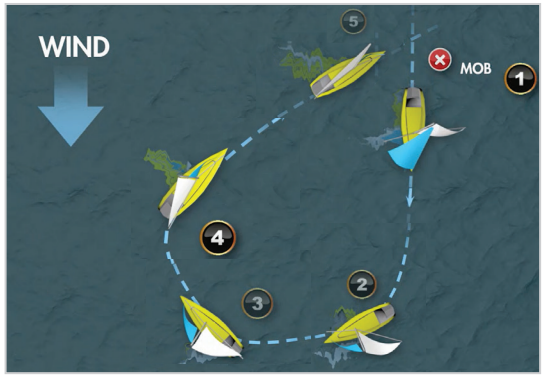
Position 6: Helmsman/tactician decide windward or leeward pickup and tell crew port or starboard. Foredeck prepares to deploy throw bag. Main is trimmed/ luffed and engine engaged (check for lines again) to control boat speed. (1-2 knots maximum as bow passes MOB).

Position 7: As bow passes MOB, throw bag is deployed and MOB is pulled in midships and boat stopped. Lifesling is lowered (thrown) to MOB and with halyard on Lifesling bridle (or knot on line above bridle), the MOB is hoisted on deck.

Quick Stop–Downwind

Downwind Quick Stop/Recovery Under Sail

Symmetric Spinnaker:



Position 1: Shout "Man Overboard!" Pull pin on the MOM. Push MOB button. Helmsman shouts: "Hold on! Coming up!" One crew becomes Pointer.

Position 2: Ease pole to headstay, trim foreguy, cleat both. Sheet trimmer gives quick luff to unload spinnaker. Crew holds on as helmsman luffs up to close hauled.

Position 3: Spin sheet pulled tight as crew grabs foot of chute. Spin halyard (with 1-2 turns remaining on winch to avoid jams) is run as crew pulls in spin. When spin is down, tack is eased out.

Position 4: Check for lines in water; start engine and keep in neutral. Tack towards MOB using engine to gain speed and steerage. (if no engine, may need to set jib to get upwind). Pointer moves forward to shrouds. Foredeck prepares to deploy throw bag.

Remainder of Recovery: same as Upwind Positions 6 & 7.

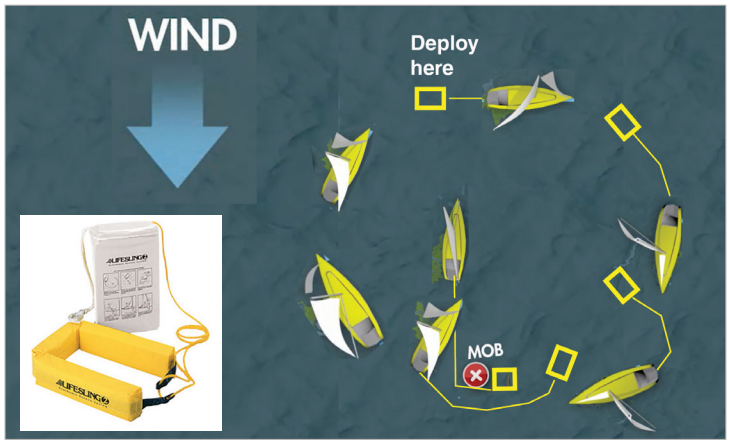
If Asymmetrical Spinnaker: Spin sheet eased 10-15 feet to unload sail as helmsman luffs to close hauled. Sheet then trimmed tight, crew grabs foot and halyard is run (keep 1-2 turns). For both the spinnaker pole and sprit rigs, the tack of the spinnaker is not eased until the sail is on deck under control and the bowman asks for it. This prevents sail from blowing aft and overboard.

Heavy Air Downwind MOB: Depending on specific boat characteristics, Downwind Quick Stops are not recommended in heavy air (winds over 20-25 knots). A Quick Stop risks damage, injury, and a delayed return to the MOB. Each boat and crew must establish their own threshold. For offshore racing routine and emergency takedowns, it is recommended that the windward (or extra) sheet be rigged "letterbox" style between the foot of the mainsail and boom to a block on the weather rail and to a winch. UK Sailmakers has produced a great letterbox video (see stormtrysail.org/saslinks). In heavy air downwind, the boat will be distant from the MOB, who better be wearing a PFD with an AIS beacon.

Cool idea from Volvo racers! For heavy air downwind, the helmsman executes a few quick up and down course changes to create a "squiggle" on the chart plotter which marks the MOB position quicker than hitting the MOB button. Do both!

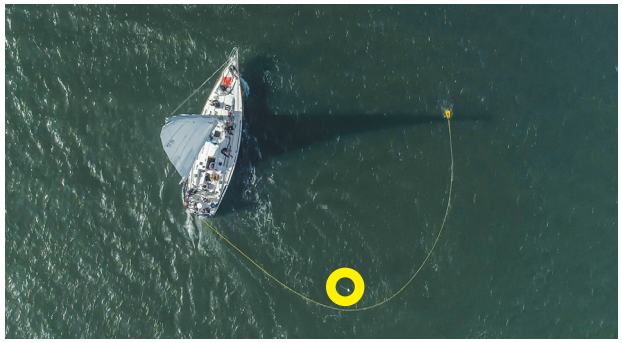
Quick Stop–Lifesling

Lifesling Upwind Quick Stop



The Lifesling is required for all ocean races and is a "must have" for a family cruiser - sail or power, full crew or short-handed. The Lifesling is a horseshoe flotation device connected to the boat by a yellow floating line (see pages 26 & 27 for improvements). The Lifesling does not require a close approach, and once in the Lifesling, it is easier to haul aboard the MOB. The end of the rope is always left secured to an aft stanchion base or strong point.

After a Quick Stop, when the boat is on its approach to the MOB, the Lifesling is towed behind. In heavy air, when a chicken tack is preferred to a gybe, do not deploy Lifesling until after the tack. The boat circles the MOB "water skier pickup style" until the MOB makes contact with the floating rope. The boat is immediately stopped so the Lifesling is not ripped from the MOB's grip. The engine is a big help. All sails are quickly dropped/furled.



The MOB slips the Lifesling over the head and under the armpits. If the boat is dragging the MOB, it might help if the MOB rolls over on their back. The crew pulls the MOB to midships where a halyard is attached to the Lifesling bridle (or knot) and the MOB hoisted on deck.

Practice both Lifesling and Alongside: Crew should practice recoveries both luffing alongside, and towing the Lifesling. An unconscious or disabled MOB will not be able to use a Lifesling. An Alongside Recovery using a Rescue Crew in a bosun chair (climbing harness) is the only viable option.

Improved MOB Recoveries

All Sails Down Improves Your Recovery:

The Engine is Your Best Friend

If the yacht can operate under power in the conditions, in addition to the spinnaker or jib, the mainsail should also be doused. Using the engine with all sails doused, the yacht can approach the MOB from any direction, maneuver, stop, and best maintain position. If the main (or jib) is needed to assist the return (such as beating back in heavy seas) to the vicinity of the MOB, the douse(s) can be delayed. **If the MOB has no PFD**, definitely delay the douse(s) until you have motor sailed past the MOB to deliver flotation ASAP! A throwable device like a Jon-Buoy is ideal. Then stop nearby, douse all sails, and proceed with the Recovery. (This important practice is from Stan and Sally Honey),

Using the engine is critical to enable the yacht to return to the MOB promptly and make the first approach successful. Before commencing your return to the MOB, make sure the boat and crew are squared away and ready– you want your first approach to be safe and successful.

Too many documented MOB incidents have seen up to four approaches without the assistance of an engine, or under sail and engine, where the MOB is OK on the first failed attempt but ends up a fatality due to further exposure or being run over by the yacht. **All crew should know how to start the engine in neutral. Before starting, ensure no lines are over the side. Then before engaging gear, check again.**

Know the Steering Characteristics of Your Boat

The operating characteristics of modern, high performance yachts increase the degree of difficulty. Their sailing speed results in greater separation from the MOB, particularly downwind. When trying to motor back to the MOB, these designs are often underpowered, displaying poor handling under both power and sail at low speed. Their light displacement and narrow, high aspect keels increase the risk of the bow falling off and striking the MOB. Narrow rudders and smaller propellers – often retractable and located far forward from the rudder – reduce steering control. Dual rudders do not line up with centerline propellers, eliminating the prop wash necessary to steer at slow speeds. Even conventional displacement yachts – with more engine horsepower and easier steering at slow speed – can run down the MOB, especially at night in rough water. Know the steering characteristics of your boat, especially at slow speed in turbulent water.

Photo: This Saildrive is far forward with rudders to the sides, no prop wash on rudders to help steer. Also note the dangerous chine.

Critical Decision: Alongside or Lifesling Recovery?

As you return to the MOB, your Rescue Crew (more details later) will be on deck and ready just in case. When you are about 5-10 boat lengths from the MOB, begin to trail the Lifesling. If deployed too early, it forces you to slow down too soon. From practice, you know how fast you can motor before the Lifesling submarines – usually about 3.5 knots. As you get closer to the MOB, plan on executing the J-turn to deliver the Lifesling to the MOB. However, if it becomes apparent that the MOB is incapacitated – unable to use the Lifesling – quickly pull in the Lifesling and revert to the Alongside Recovery using the Rescue Crew. The MOB can be helpful by patting the top of their head to let the crew know they are OK.

Lifesling Setup: an Important Factor

When you setup your Lifesling at the beginning of the season, it will either be near the starboard or port quarter. Both are OK but we prefer starboard. When trying to "hook (make contact with) the MOB, if your Lifesling is mounted to starboard, you must turn **clockwise** around the MOB. (If mounted to port, **counter-clockwise**.) Otherwise, the Lifesling rope will drag under the stern risking a jam in the rudder or even the propeller. If starboard, then douse your mainsail to port to keep the starboard deck clear for the MOB recovery. We learned this in practice by jamming our Lifesling rope and falling all over ourselves trying to run on the doused mainsail.

If you picked a starboard approach, then the starboard spinnaker halyard is your preferred choice (cleaner masthead lead), and it should have about 25 extra feet of tail to accommodate its use with a Rescue Crew. The Lifesling rope should also have a permanent loop-knot setup about 25 feet from the Lifesling for ease of attaching a spinnaker halyard while the MOB is still a safe distance from the hull. In fact, the knot can be as far up the rope as about 2/3 the length of "P" (mainsail luff length). Any greater and the halyard might two block at the masthead prematurely.

"Hooking" the MOB with the Lifesling: the "J-Turn" not a Circle!

After deploying the Lifesling about 5-10 boat lengths from the MOB, maintain your 3.5 knot speed, and aim to pass about one boat length from the MOB, leaving the MOB to starboard (see above). When the MOB is passing the cockpit, turn sharply to starboard 90 degrees, and about two boat lengths later turn sharply starboard again so the MOB can make contact with the Lifesling rope. Your boat speed will radically drop with the two sharp turns. Then use reverse to stop dead in the water about two or three boat lengths away, **turning abeam to the MOB**. Until the MOB is aboard, the Helmsman and "Throttle-man" work the engine and rudder to maintain position with the MOB dead abeam. This is critical so the MOB is not pulled in past the dangerous bow or stern. The "Throttle-man" is a big help, allowing the Helmsman to keep his eye on the MOB. The propeller is no threat to the MOB unless they are sucked under the boat, in which case hit neutral and cut the engine.

An Important Night Time Tip: the standard Lifesling light is at the end pointing away from the boat and MOB, making the Lifesling useless at night. Tape/tie lights at the sling-end of the Lifesling, one pointing up and the other down since you don't know which way the Lifesling will float. Also have a crew aim a searchlight beam along the rope to light the rope and Lifesling.

Recovering the MOB: Standard Lifesling Lift:

Regardless of whether the yacht is conventional or high octane, lifting the MOB safely on deck is difficult due to the freeboard and wave action. It is most dangerous on yachts with chines or hull flare where the MOB can slide under the hull. Using a Lifesling eliminates the need to make direct contact alongside with the MOB.

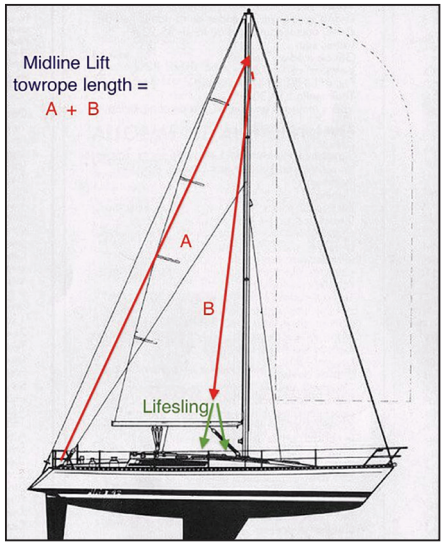
With the MOB abeam in the Lifesling, walk the Lifesling rope to midships, then steadily pull it in until you reach the pre-set loop to which the spinnaker halyard is attached. At this point, the MOB is a safe 25 feet (or more) from the hull. Then smoothly (don't yank the Lifesling away from the MOB) hoist the halyard and don't stop until the MOB is lifeline height and pulled aboard-- any time spend alongside the hull creates risk. Note: with the halyard directly secured to the rope, there is a 1:1 mechanical advantage.

Recovering the MOB – A New Idea: The Mid-Line Lift:

Walk the spinnaker halyard aft and Lifesling rope forward, and clip the halyard directly to the rope (not to the knot), leaving the bitter end of the rope secured to the stern as always. Instead of manually pulling in the rope, only use the halyard. As the halyard is taken up, the halyard shackle slides out on the Lifesling rope, and the MOB is pulled upwards (about half out of the water) and towards the yacht. As the MOB reaches the yacht, the MOB is lifted into the air to be grabbed by the crew. At no time is the MOB free-floating and vulnerable alongside the yacht. One crew hauling smoothly at the mast, with a tailer pulling in the slack on a winch is usually adequate until the full weight of the MOB is felt and winching may be needed, or a second hauler. Don't yank the MOB out of the Lifesling…smooth! This configuration has a mechanical disadvantage of 1:2, which is no problem unless there is inadequate winch or crew power. See the mid-line lift video at stormtrysail.org/saslinks.

Fitting out your boat for the Mid-Line Lift:

The Mid-Line Lift has a 1:2 mechanical disadvantage, but most yachts have winches and crew strong enough to recover the MOB. The initial hoisting that brings the MOB near the yacht is quite easy. The final ten feet gets more loaded as the MOB is lifted out of the water.



Double-handed sailors, whether racers or cruising couples, might be more challenged if the remaining crew on board is not strong, or if the winches are underpowered. If practice confirms this, the Standard Lifesling Lift may be preferred. Or consider an electric winch or electric winch handle!

To properly size the Lifesling rope for a Mid-Line Lift, it must be about 5-10 feet shorter than twice the height of the spinnaker halyard sheave off the water. Otherwise the halyard will two-block as it reaches the masthead before the MOB is on deck. With the J-turn, a shortened rope still works well.

If you select the Midline Lift with its 1:2 and sliding shackle, **we strongly recommend** switching the standard yellow Lifesling polypropylene rope to 6-8 mm floating yellow spectra. This provides much greater strength, resistance to sun and abrasion, and reduced stretch. **For serious offshore sailing, regardless of Standard or Midline Lift, Spectra is best**. In our trials, one polypropylene rope parted, and many looked about to part.

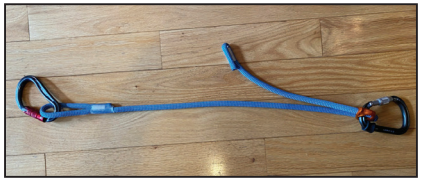
Most halyard shackles slide easily along Spectra, but with the 1:2 disadvantage, a sliding low-friction loop or snatch block reduces friction. If a loop (see photo), when not in use secure it with wool or a quick release knot next to the end of the line at the stern cleat so it is easily available. With a loop or snatch block, ignore the shackle and bowline the halyard for added security. Also, ensure your spinnaker halyard is long enough to reach the stern.

Photo: Loop tied to stern cleat and spinnaker halyard snapped into sliding loop (a snatch block also works well).

If the MOB is Incapacitated: Alongside with a Rescue Crew

When the MOB is unconscious or disabled- injured, hypothermic, or weak- and unable to grab the Lifesling or remain in it – this is when the amateur crew is at a disadvantage. Many professional yachts have a trained Rescue Swimmer – connected to the boat with a safety line – that can swim to the MOB and together get Mid-Line Lifted. Without a professionally trained Rescue Swimmer, the amateur yacht must maneuver much closer, adding some degree of risk, and lower a **Rescue Crew** on a halyard into the water to secure the MOB. This Rescue Crew is best equipped with a climbing harness, helmet, tether or lanyard to connect to the MOB, and wearing a Rescue PFD. This style PFD is less cumbersome than an inflatable and has a safety ring on the back for a safety line. In our practices, any reasonably fit male or female, comfortable in a harness, was able to perform quite well.

Techniques to secure the MOB include using a tether, adjustable mountaineering lanyard (see photo), or a second halyard. To be effective, the Rescue Crew must be lowered into the water as the MOB passes the bow, and the halyard should be eased out 10 feet or more so the Rescue Crew can take a few strokes out to the MOB.



We recommend assigning each watch a Rescue Crew. If an MOB, the off-watch Rescue Crew kits up and then proceeds on deck.

In practices and real MOB situations, it can be difficult to attach a halyard or tether to the D-rings of the PFD because the inflated chambers block the D-rings. New offshore PFDs have a dedicated lifting strap built into the unit. The first of these straps were retro-fitted for the Clipper Race years ago by Sir Robin Knox-Johnson. **Make sure your PFD has an easily accessed lifting point**.

If the MOB is not wearing a PFD and too weak to stay in a Lifesling, you must use a Rescue Crew. If your Rescue Crew is incredibly strong and the MOB not too heavy, maybe a bear-hug would work. But without a Coast Guard rescue harness fitted with a crotch strap (see photo), it is almost impossible to secure the MOB. Without a PFD with its lifting strap, a weakened MOB is at great risk of being lost, even when alongside.

HOUND MOB PLAN

UPWIND: Quick stop: Luff up

SPINNAKER: TW below 20: Luff up to close-hauled- stretch & drop,
TW above 20: Steer 135 TWA & letterbox

ALL SITUATIONS:

- "Man Overboard!"
  – Deploy MOM
  – Push "MOB" (hold 5 seconds)
  – Pointer
  – "All Hands on Deck!" (PFD/shoes)
  – Off watch Rescue Crew (RC) dresses
- Douse Headsail: jib or spinnaker
- Check lines in water
- Start engine in neutral
- If starts, drop mainsail; secure on port side
  (however, if MOB conscious with no PFD, with main and engine do quick first pass to throw Jon-buoy; then proceed to drop main & deploy Lifesling)
- Return to vicinity of MOB; Pointer at shroud
- Starboard spin halyard secured midships
- Deploy Lifesling when 5-10 boat length from MOB; speed 3.5 kts
- If MOB disabled: pull in Lifesling; initiate Alongside Rescue w/RC
- If MOB active: leave MOB one boat length to starboard
- J-turn clockwise until contact with MOB
- Turn boat perpendicular to MOB and Stop
- Helmsman & Throttle-man hold position beam to MOB
- Bowline spin halyard to loop/strop on Lifesling rope
- Hoist halyard smoothly; not too fast (watch MOB)
- Recover MOB midships starboard

Hound is a 59-foot heavy displacement sloop built 1970 with a tall new carbon rig, winged keel, and spade rudder. The crew tested and practiced the above technique during two four-hour sessions with winds up to 30 kts.

Emergency Radio Procedures

Identify - Situation - Position - Your Intent

SPEAK SLOWLY, CLEARLY, & CALMLY

1. **Make sure the communication equipment is ON**, on **HIGH POWER** and assure that the "SQUELCH" control is adjusted properly.
2. Press the **RED DISTRESS** button **AND HOLD** for 3-5 seconds.
3. Wait for 15 seconds for the auto distress transmission to complete.
4. Select VHF Channel 16, or other emergency frequency used where you operate.
5. Press microphone button and calmly say, "MAYDAY, MAYDAY, MAYDAY This is S/V_____, S/V_____, S/V_____."
6. State the Nature of Your Distress, Condition of Your Vessel, and Number of Injuries (if any).
7. State Your Location Twice (latitude & longitude, or range & bearing from a known point).
8. Finally state your intent:
   a. _____Holding position and listening on VHF channel 16 or
   b. _____Making way toward safe harbor or
   c. _____Launching life raft(s) and abandoning ship or
   d. _____Other: _____
9. End by saying, "This is S/V _____. Over."
10. Release the microphone button briefly and wait for an acknowledgment. If no answer, repeat Step 4.
11. If the Coast Guard or another vessel responds, say, "MAYDAY, this is S/V_____."
12. If the situation permits, stand by the radio for further communication with the Coast Guard or another vessel. If no one answers, repeat the above, then try on another channel.

Fill in the necessary information above and post beside the radio.
The life you save may be your own!

Courtesy of USCG and Capt. John Miller.

Safety-at-Sea Resources

Safety and Seamanship

Safety and Giving Assistance Guidelines	Stormtrysail.org
Links to videos, Junior Safety-at-Sea	Stormtrysailfoundation.org
Links to papers and videos	SAS.cruisingclub.org
Links to medical and communications	Bermudarace.com
Links to safety reports, videos, Junior SAS	USSailing.org
U.S. Coast Guard main page- visit SAR	USCG.mil
Safety Equipment: PFD, rafts, pyrotechnics	LandfallNavigation.com
	LRSE.com
	SeaSafety.com

Great Seamanship Books

"The Art of Seamanship" by Ralph Naranjo
"Safety at Sea Core Topics Handbook" edited by Sally Honey (published by US Sailing)
"South" by Sir Ernest Shackleton and "Endurance" by Alfred Lansing

Weather Sources

NOAA–primary source of all data	noaa.gov
Ocean Prediction Center–offshore analysis/forecast	www.opc.ncep.noaa.gov
National Weather Service–official forecasts	www.weather.gov
National Marine Weather–official forecasts	nws.noaa.gov/om/marine/home
Geostationary Satellites–weather photographs	goes.noaa.gov
Bermuda Marine Services–Western Atlantic	weather.bm

Gulf Stream

Rutgers Oceanographic–satellite imagery	marine.rutgers.edu
	runcool.marine.rutgers.edu
Johns Hopkins Lab–satellite imagery	fermi.jhuapl.edu

EPIRB Registration

NOAA Beacon Register	Beacon.registration@noaa.gov

Emergency Contacts US Coast Guard

Mainland line:	800-323-7233 or 911
	VHF Channel 16
Atlantic Area SAR (Sea Air Rescue):	757-398-6700
Rescue Coordination Centers:	Boston–617-223-8555
	Norfolk–757-398-6231
	Miami–305-415-6800
USCG Head Office	202-372-2091
USCG VHF DSC MMSI Number	003 669 995
Bermuda Marine Services	441-297-1100
Bermuda VHF DSC MMSI Number	003 669 995

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Storm Trysail Foundation – StormTrysailFoundation.org 914-813-0233
Storm Trysail Club – StormTrysail.org 914-834-8857
1 Woodbine Avenue, Larchmont, New York 10538

"I have often compared ocean racing with being a prisoner of war, an environment with which, unfortunately, I have had some experience. Hard conditions, cramped quarters, bad food (really bad on boats stocked by midshipmen) and diverse personalities. Instead of the guards beating you, Mother Nature takes over. You can't get out so you make the best of it. It's a character builder."

Navy Captain Ned Shuman (1931-2014), a Storm Trysail member, was shot down over Vietnam and held as a POW for five years. When he retired he was put in charge of Sail Training at the US Naval Academy. He survived the Hanoi Hilton and the 1979 Fastnet Race. Want some leadership inspiration? Google Edwin A. Shuman III.